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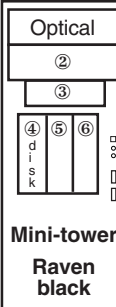
System x™

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This document is available at
<http://www.redbooks.ibm.com/xref>

IBM® Type-GAV	Processor	GHz	Memory	Disk and rpm	Disk controllers	Optical	Graphics adapter and memory	Slots x bays	FireWire Preload ¹⁷	Available date
6217-21U	2xOpteron™ 250	2.42	2GB	80.0GB SATA 7.2K	SATA,EIDE	Combo	Quadro™ NVS 280 64MB	6x6	1394	XP Pro Jun 2005
6217-22U	1xOpteron 250	2.4	2GB	80.0GB SATA 7.2K	SATA,EIDE	Combo	Quadro FX1400 128MB	6x6	1394	XP Pro Jun 2005
6217-28U	2xOpteron 250	2.4	4GB	73.4GB U320 10K	Ultra320,EIDE	Combo	Quadro FX 3400 256MB	6x6	1394	RH3.0 Jun 2005
6217-30U	1xOpteron 252	2.6	2GB	80.0GB SATA 7.2K	SATA,EIDE	Combo	Quadro NVS 280 64MB	6x6	1394	XP Pro Jun 2005
6217-33U	1xOpteron 252	2.6	2GB	73.4GB U320 10K	Ultra320,EIDE	Combo	Quadro FX 1400 128MB	6x6	1394	XP Pro Jun 2005
6217-35U	2xOpteron 252	2.6	2GB	80.0GB SATA 7.2K	SATA,EIDE	Multi-B	3DLabs™ Wildcat 800 640MB	6x6	1394	XP Pro Jun 2005
6217-36U	2xOpteron 252	2.6	4GB	80.0GB SATA 7.2K	SATA,EIDE	Multi-B	Quadro FX 1400 128MB	6x6	1394	XP Pro Jun 2005
6217-37U	2xOpteron 252	2.6	8GB	80.0GB SATA 7.2K	SATA,EIDE	Combo	Quadro NVS 280 64MB	6x6	1394	RH3.0 Jun 2005
6217-38U	2xOpteron 252	2.6	8GB	73.4GB U320 10K	Ultra320,EIDE	Combo	3DLabs™ Wildcat 800 640MB	6x6	1394	RH3.0 Jun 2005
6217-62U	1xOpteron 275	2.2	2GB	80.0GB SATA 7.2K	SATA,EIDE	Combo	Quadro FX 1400 128MB	6x6	1394	XP Pro Jun 2005
6217-68U	2xOpteron 275	2.2	4GB	73.4GB U320 10K	Ultra320, EIDE	Combo	3DLabs™ Wildcat 800 640MB	6x6	1394	XP Pro Jun 2005
Processor	1 or 2 AMD® Opteron 250 (2.4 GHz), 252 (2.6 GHz) or 275 (2.2 GHz Dual Core)									
L2 cache	1MB standard and maximum / at processor speed									
Processor upgrade Implementation	2-way SMP / up to two Opteron Processors (same speed/cache size) Systemboard contains one AMD Socket 940 micro PGA ZIF socket, four DIMM slots, six slots (five PCI-X: one with ServeRAID 6i Plus support; one PCI-Express), and integrated SATA, SCSI, IEEE 1394a, USB 2.0, AC-97 and Ethernet. Additional four DIMM slots and one CPU socket are provided with purchase of optional second CPU									
Memory - std / max	2GB, 4GB or 8GB std / 16GB ¹³ max / 2 slots available / four slots available per CPU, 8 slots total									
Memory - features	PC3200 (512MB, 1GB), PC2700 or PC3200 (2GB) 400MHz registered 184-pin ECC CL3 DDR-SDRAM DIMMs / four DIMM slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / ECC									
Graphics controller (one of following)	(see IntelliStation Graphics sheet for full graphics specifications) <ul style="list-style-type: none"> • NVIDIA™ Quadro NVS 280, PCI Express x16 • NVIDIA Quadro FX 1400, PCI Express x16 • NVIDIA Quadro FX 3400, PCI Express x16 • 3DLabs Wildcat Realizm 800, PCI Express x16 									
IDE disk controller	Enhanced IDE busmaster / ATA-133 / integrated in I/O Hub / two connectors on planar									
SATA disk controller	Silicon Image 3512A / dual channel SATA-150 controller (150MB/sec) / on planar / HostRAID 0 (striping) or 1 (mirroring) supported									
SCSI disk controller	Adaptec® AIC7902W / dual channel Ultra320 SCSI controller (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X / HostRAID 0 or 1 supported									
SCSI channels and cables	Two 16-bit channels (one internal and one external) / <i>Internal channel</i> : one 4-drop 16-bit 68-pin LVD SCSI cable from systemboard to internal disks bays; <i>External channel</i> : Optionally available 1-drop 16-bit 68-pin LVD SCSI cable from systemboard to rear external 68-pin connector (cable available as option part number 24P7929) or 1-drop U320 External SCSI Interface Kit (VHCDI) (option part number 24P7973)									
Cables	One SATA cable, one 2-drop EIDE cable (to optical) and one SCSI cable (listed above)									
Disk - features	<i>Some</i> : 80.0GB SATA-150 / 7200 rpm / 9.0 ms seek; <i>Some</i> : 73.4GB Ultra320 SCSI / 10K rpm / 4.7 ms; <i>All</i> : S.M.A.R.T. ⁵									
Mechanical	6 x 6 Mini-tower with 4U ⁴ rack mount support via tower-to-rack kit option (part number 09N4300)									
Chipset	AMD 8131 / Nvidia™ IO4 for PCI-E 16X slot / AMD 8111 I/O Hub / NECuPD 72400 / Four 64-bit PCI-X buses (Bus A for slot 1, Bus B for slot 2, Bus C for slot 3 and Bus 4 for slots 5 and 6), ATA-133 EIDE, USB / NS PC87363 Super I/O									
Gigabit Ethernet	One Gigabit 10/100/1000 Ethernet controller / Broadcom BCM5703ci / full Gigabit Ethernet MAC and PHY layer functions / chip on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / Alert Standard Format 1.03 / one rear RJ-45 port									
Optical drives	One of the following: 48X/24X/48X/16X Max ^{6,19} CD-RW/DVD-ROM Combo, or IBM Multi-Burner Plus DVD/CD RW									
IEEE 1394	Integrated IEEE 1394a, 400Mbps, 6-pin port on rear, 4-pin port on front									
Audio	Audio AC '97 v2.2 interface via 8111 (ALC655) / internal speaker (use of audio line out requires powered speakers)									
Rear ports	Three USB (Ver 2.0), two 9-pin serial, parallel, keyboard, mouse, Ethernet, audio line in/out, mic in / 6-pin IEEE 1394a									
Front ports	Two USB (Ver 2.0), audio line out (stereo), mic in / 4-pin IEEE 1394a									
Systems mgmt	Autonomous monitoring and alerting of thermal, fans, and voltage faults									
Keyboard / mouse	IBM 104-key keyboard (6-pin PS/2)/IBM 3-button optical mouse (6-pin PS/2 conn)									
Cooling fans	Three variable speed fans (power supply, two in rear) / one fan per CPU / not redundant or hot-swap									
Power supply	530 watts / universal / auto sensing / built-in overload and surge protection									
Optical	 <p>Bay ① 5.25", HH 1.6", access, optical Bay ② 5.25", HH 1.6", access, open Bay ③ 3.5", SL 1", access, open Bay ④ 3.5", SL 1", no access, disk Bay ⑤ 3.5", SL 1", no access, open Bay ⑥ 3.5", SL 1", no access, open</p>									
Mini-tower	<p>Slot 1: fullsize, 64-bit 100MHz, PCI-X 1.0 Slot 2: 2/3 size, 64-bit 133MHz, PCI-X 1.0 Slot 3: fullsize, 64-bit 100MHz, PCI-X 1.0 Slot 4: fullsize, PCI Express x16 - used by std graphics adapter Slot 5: fullsize, 64-bit 100MHz, PCI-X 1.0 - N/A with 3DLabs Wildcat Realizm 800 Slot 6: fullsize, 64-bit 100MHz, PCI-X 1.0* *with ServeRAID 6i Plus support</p>									
Raven black	<ul style="list-style-type: none"> ◇ Metal cage for disk bays 4,5,6 rotates out of chassis ◇ Two front stabilizing feet ◇ Handle grip on top ◇ H 17.25" x W 6.5" x D 19.0" ◇ H 438mm x W 165mm x D 483mm ◇ 36 lb to 45.8 lb (16.3kg to 20.8kg) • Maximum internal disk capacity¹³: SCSI: 584GB (4 disks x 146GB) SATA:500GB (2 disks x 250GB; 1TB w/ 4 disks, requires ServeRAID-7t)) • Removable left side panel • BIOS Setup Utility via F1 at startup • Adaptec Configuration Utility near startup by pressing CTRL+A • Product Recovery Program via F11 at startup • Adv Config Power Interface (ACPI) 2.0 • DMI 2.2-compliant 									
AMD Opteron Processor 250 2.4GHz	13N0748									
AMD Opteron Processor 252 2.6GHz	13N0749									
AMD Opteron Processor 275 2.2GHz	25R8962									
2x512MB PC3200 CL3 ECC DDR-SDRAM DIMM	73P3233									
2x1GB PC3200 CL3 ECC DDR-SDRAM DIMM	73P3234									
2x2GB PC3200 CL3 ECC DDR-SDRAM DIMM	73P3235									
IBM ServeRAID-7t SATA controller	71P8648									
IBM ServeRAID-6i+ SCSI controller	13N2190									
IBM 73.4GB 10K rpm Ultra320 SCSI HDD	32P0724									
IBM 146GB 10K rpm Ultra320 SCSI HDD	32P0725									
IBM 80GB 7.2K rpm SATA-150 HDD	09N4253									
Other options at	ibm.com/pc/us/accessories									
Preload with	<ul style="list-style-type: none"> • Redhat® Enterprise Linux® 3 WS (64-bit) or Windows® XP Professional (32-bit)¹⁷ ◇ Device Drivers CD ◇ IBM IntelliStation Documentation CD • Disk-to-Disk Recovery (in service partition) 									
								SECURITY		
								<ul style="list-style-type: none"> • U-bolt anchoring feature (U-bolt is optional; supports optional padlock) • Security slot (for attachment of optional cable lock such as Kensington cable lock) • Cover key lock • Cover tamper detect switch • Secure fixed DASD • Power-on password • Administrator password • Boot sequence control • Boot without keyboard or mouse • Diskette boot inhibit • Disable mouse • Diskette, disk, serial port, parallel port I/O control • WPD stored in EEPROM • Write protection control for EEPROM • IBM Security Solutions 		
								LIMITED WARRANTY³		
								<ul style="list-style-type: none"> • 3 year parts and labor • International Warranty Service³ • On site, 8 am through 5 pm, Mon through Fri excluding holidays, next business day response time • On site warranty service upgrade options⁷ available as ServicePac options at http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf • 24x7¹⁴ toll-free support for warranty issues during the warranty period¹ 		

See footnotes for important warranty information

IBM® Type-GAV	Processor	GHz	Memory	Disk and rpm	Disk controllers	Optical	Graphics adapter and memory	Slots x bays	FireWire Preload ¹⁷	Available date
6217-41Y	1xOpteron™254	2.8	4GB	80.0GB ² SATA 7.2K	SATA,U320	Combo	Quadro® FX 3400 256MB	6x6	1394 XP 64	Oct 2005
6217-42Y	1xOpteron 254	2.8	1GB	80.0GB SATA 7.2K	SATA,U320	Combo	Quadro NVS 285 64MB	6x6	1394 XP 64	Oct 2005
6217-43Y	2xOpteron 254	2.8	4GB	80.0GB SATA 7.2K	SATA,U320	Multi-B	Quadro FX 3400 256MB	6x6	1394 RH4 U1	Oct 2005
6217-44Y	2xOpteron 254	2.8	4GB	80.0GB SATA 7.2K	SATA,U320	Combo	Quadro NVS 285 64MB	6x6	1394 RH4 U1	Oct 2005
6217-45Y	2xOpteron 254	2.8	4GB	80.0GB SATA 7.2K	SATA,U320	Multi-B	Quadro FX 3400 256MB	6x6	1394 XP 64	Oct 2005
6217-46Y	2xOpteron 254	2.8	4GB	80.0GB SATA 7.2K	SATA,U320	Multi-B	Quadro FX 4500 512MB	6x6	1394 XP 64	Oct 2005
6217-47Y	2xOpteron 254	2.8	8GB	73.4GB SCSI 10K	SATA,U320	Combo	Quadro FX 4500 512MB	6x6	1394 RH4 U1	Oct 2005
6217-61Y	2xOpteron 280	2.4	4GB	80.0GB SATA 7.2K	SATA,U320	Combo	Quadro NVS 285 64MB	6x6	1394 XP 64	Oct 2005
6217-E3Y	1xOpteron 252	2.6	4GB	80.0GB SATA 7.2K	SATA,U320	Combo	Quadro FX1400 128MB	6x6	1394 XP 64	Oct 2005

Processor **1 or 2 AMD® Opteron up to 254 (2.8 GHz) Single Core or 280 (2.4 GHz) Dual Core**
 L2 cache **1MB** standard per core / at processor speed
 Processor upgrade implementation **2-way SMP** / up to two Opteron Processors (same speed/cache size)
 Systemboard contains one AMD Socket 940 micro PGA ZIF socket, four DIMM slots, six slots (five PCI-X: one with ServeRAID 6i Plus adapter support; one PCI-Express), and integrated SATA, SCSI, IEEE 1394a, USB 2.0, AC-97 and Ethernet. Additional four DIMM slots and one CPU socket are provided with purchase of optional second CPU

Memory - std / max **2GB, 4GB or 8GB** std / 16GB¹³ max / 2 slots available / four slots available per CPU, 8 slots total
 Memory - features **PC3200** (512MB, 1GB or 2GB) 400MHz registered 184-pin ECC CL3 DDR-SDRAM DIMMs / four DIMM slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / **ECC**

Graphics controller (one of following) (see IntelliStation Graphics sheet for full graphics specifications)
 • **Performance 2D: NVIDIA® Quadro NVS 285, PCI Express x16**
 • **Advanced 3D: NVIDIA Quadro FX 1400, PCI Express x16**
 • **High-Advanced 3D: NVIDIA Quadro FX 3400, PCI Express x16**
 • **Extreme 3D: NVIDIA Quadro FX 4500, PCI Express x16**

IDE disk controller Enhanced IDE busmaster / ATA-133 / integrated in I/O Hub / two connectors on planar
 SATA disk controller **Silicon Image 3512A / dual channel SATA-150 controller** (150MB/sec) / on planar / HostRAID 0 (striping) or 1 (mirroring) supported with Windows® XP Professional x64 Edition and Red Hat® Enterprise Linux® 4 (32-/64-bit distros)
 SCSI disk controller **Adaptec® AIC7902W / dual channel Ultra320 SCSI controller** (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X / HostRAID 0 or 1 supported with Windows XP Professional x64 Edition and Red Hat Enterprise Linux 4 (32-/64-bit distros)
 SCSI channels and cables Two 16-bit channels (one internal and one external) / *Internal channel:* one 4-drop 16-bit 68-pin LVD SCSI cable from systemboard to internal disks bays; *External channel:* Optionally available 1-drop 16-bit 68-pin LVD SCSI cable from systemboard to rear external 68-pin connector (cable available as option part number 24P7929) or 1-drop U320 External SCSI Interface Kit (VHCDI) (option part number 24P7973)

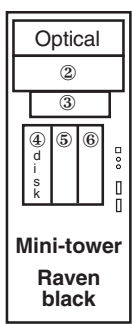
Cables One SATA cable, one 2-drop EIDE cable (to optical) and one SCSI cable (listed above)
 Disk - features *Some:* 80.0GB SATA-150 / 7200 rpm / 9.0 ms seek; *Some:* 73.4GB Ultra320 SCSI / 10K rpm / 4.7 ms; *All:* S.M.A.R.T.⁵

Mechanical Chipset **6 x 6 Mini-tower** with 4U⁴ rack mount support via tower-to-rack kit option (part number 09N4300)
AMD 8131 / NVIDIA IO4 for PCI-e 16X slot / AMD 8111 I/O Hub / NECuPD 72400 / Four 64-bit PCI-X buses (Bus A for slot 1, Bus B for slot 2, Bus C for slot 3 and Bus 4 for slots 5 and 6), ATA-133 EIDE, USB / NS PC87363 Super I/O
 Gigabit Ethernet One Gigabit 10/100/1000 Ethernet controller / Broadcom BCM5703ci / full Gigabit Ethernet MAC and PHY layer functions / chip on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / Alert Standard Format 1.03 / one rear RJ-45 port
 Optical drives One of the following: 48X/24X/48X/16X Max^{6,19} CD-RW/DVD-ROM Combo, or IBM Multi-Burner Plus DVD/CD RW
 IEEE 1394 Integrated IEEE 1394a, 400Mbps, 6-pin port on rear, 4-pin port on front
 Audio Audio AC '97 v2.2 interface via 8111 (ALC655) / internal speaker (use of audio line out requires powered speakers)
 Rear ports Three USB (Ver 2.0), two 9-pin serial, parallel, keyboard, mouse, Ethernet, audio line in/out, mic in / 6-pin IEEE 1394a
 Front ports Two USB (Ver 2.0), audio line out (stereo), mic in / 4-pin IEEE 1394a
 Systems mgmt Autonomous monitoring and alerting of thermal, fans, and voltage faults

Keyboard / mouse IBM 104-key keyboard (6-pin PS/2)/IBM 3-button optical mouse (6-pin PS/2 conn)
 Cooling fans Three variable speed fans (power supply, two in rear) / one fan per CPU / not redundant or hot-swap
 Power supply 530 watts / universal / auto sensing / built-in overload and surge protection

SECURITY

- U-bolt anchoring feature (U-bolt is optional; supports optional padlock)
- Security slot (for attachment of optional cable lock such as Kensington cable lock)
- Cover key lock
- Cover tamper detect switch
- Secure fixed DASD
- Power-on password
- Administrator password
- Boot sequence control
- Boot without keyboard or mouse
- Diskette boot inhibit
- Disable mouse
- Diskette, disk, serial port, parallel port I/O control
- VPD stored in EEPROM
- Write protection control for EEPROM
- IBM Security Solutions



Bay ① 5.25", HH 1.6", access, optical
 Bay ② 5.25", HH 1.6", access, open
 Bay ③ 3.5", SL 1", access, open
 Bay ④ 3.5", SL 1", no access, disk
 Bay ⑤ 3.5", SL 1", no access, open
 Bay ⑥ 3.5", SL 1", no access, open

Slot 1: fullsize, 64-bit 100MHz, PCI-X 1.0
 Slot 2: 2/3 size, 64-bit 133MHz, PCI-X 1.0
 Slot 3: fullsize, 64-bit 100MHz, PCI-X 1.0
 Slot 4: fullsize, PCI Express x16
 - used by std graphics adapter
 Slot 5: fullsize, 64-bit 100MHz, PCI-X 1.0
 - N/A with NVIDIA Quadro FX 4500
 Slot 6: fullsize, 64-bit 100MHz, PCI-X 1.0*
 *with ServeRAID 6i Plus support

- Metal cage for disk bays 4,5,6 rotates out of chassis
- Two front stabilizing feet
- Handle grip on top
- H 17.25" x W 6.5" x D 19.0"
- H 438mm x W 165mm x D 483mm
- 36 lb to 45.8 lb (16.3kg to 20.8kg)

- **Maximum internal disk capacity¹³:**
 SCSI: 1.2TB (4 disks x 300GB)
 SATA: 500GB (2 disks x 250GB; 1TB w/ 4 disks, requires ServeRAID-7i adapter 71P8648)
- Removable left side panel
- BIOS Setup Utility via F1 at startup
- Adaptec Configuration Utility near startup by pressing CTRL+A
- Product Recovery Program via F11 at startup
- Adv Config Power Interface (ACPI) 2.0
- DMI 2.2-compliant

Preloaded with **Red Hat Enterprise Linux 4 WS (32-/64-bit)** or **Windows XP Pro x64 Edition (32-/64-bit)¹⁷**
 ✦ Device Drivers CD
 ✦ IBM IntelliStation Documentation CD
 • Disk-to-Disk Recovery (in service partition)

LIMITED WARRANTY³

- **3 year parts and labor International Warranty Service³**
- **On site, 8 am through 5 pm, Mon through Fri excluding holidays, next business day response time**
- **On site warranty service upgrade options² available as ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>**
- **24x7¹⁴ toll-free support for warranty issues during the warranty period¹**

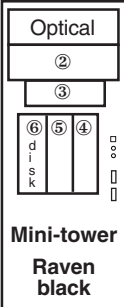
AMD Opteron Processor 250 2.4GHz	13N0748
AMD Opteron Processor 252 2.6GHz	13N0749
AMD Opteron Processor 254 2.8GHz	13N0704
AMD Opteron Processor 275 2.2GHz	25R8962
AMD Opteron Processor 280 2.4GHz	25R8996
2x512MB PC3200 CL3 ECC DDR-SDRAM DIMM	73P3233
2x1GB PC3200 CL3 ECC DDR-SDRAM DIMM	73P3234
2x2GB PC3200 CL3 ECC DDR-SDRAM DIMM	73P3235
IBM 73.4GB 10K rpm Ultra320 SCSI HDD	32P0724
IBM 146GB 10K rpm Ultra320 SCSI HDD	32P0725
IBM 300GB 10K rpm Ultra320 SCSI NHS HDD	32P0799
IBM 80GB 7.2K rpm Simple-swap SATA HDD	73P8002
IBM 160GB 7.2K rpm Simple-swap SATA HDD	73P8003
IBM 250GB 7.2K rpm Simple-swap SATA HDD	73P8006

Other options at ibm.com/pc/us/accessories

See footnotes for important warranty information

IBM® Type-GAV	Processor	GHz	Memory	Disk and rpm	Disk controllers	Optical	Graphics adapter and memory	Slots x bays	FireWire	Preload ¹⁷	Available date	
6217-4BU	1xOpteron™254	2.8	2GB	160GB ² SATA 7.2K	SATA,U320	Combo	Quadro® NVS 285 64MB	6x6	1394	XP 64	May 2006	
6217-4CU	1xOpteron	254	2.8	4GB	160GB SATA 7.2K	SATA,U320	Combo	Quadro FX 3500 256MB	6x6	1394	XP 64	May 2006
6217-4DU	2xOpteron	254	2.8	4GB	160GB SATA 7.2K	SATA,U320	Combo	Quadro FX 4500 512MB	6x6	1394	XP 64	May 2006
6217-4FU	2xOpteron	254	2.8	8GB	73GB SCSI 10K	SATA,U320	Combo	Quadro FX 4500 512MB	6x6	1394	RH4 U1	May 2006
6217-52U	1xOpteron	256	3.0	2GB	160GB ² SATA 7.2K	SATA,U320	Combo	Quadro FX1500 128MB	6x6	1394	XP 64	Aug 2006
6217-82U	1xOpteron	285	2.6	2GB	160GB SATA 7.2K	SATA,U320	Combo	Quadro FX1400 128MB	6x6	1394	XP 64	May 2006
6217-83U	1xOpteron	285	2.6	2GB	160GB SATA 7.2K	SATA,U320	Combo	Quadro NVS 285 64MB	6x6	1394	XP 64	May 2006
6217-84U	2xOpteron	285	2.6	4GB	73GB SCSI 710K	SATA,U320	Multi-B	Quadro FX 4500 512MB	6x6	1394	RH4 U1	May 2006
6217-85U	2xOpteron	285	2.6	4GB	160GB SATA 7.2K	SATA,U320	Combo	Quadro FX 3500 256MB	6x6	1394	XP 64	May 2006
6217-87U	1xOpteron	285	2.6	2GB	160GB ² SATA 7.2K	SATA,U320	Combo	Quadro FX 4500x2 1024MB	6x6	1394	RH4 U3	Aug 2006
<p>Processor 1 or 2 AMD® Opteron up to 256 (3.0 GHz) Single Core or 285 (2.6 GHz) Dual Core L2 cache 1MB standard per core / at processor speed Processor upgrade 2-way SMP / up to two Opteron Processors (same speed/cache size) Implementation Systemboard contains one AMD Socket 940 micro PGA ZIF socket, four DIMM slots, six slots (five PCI-X: one with ServerRAID 6i Plus adapter support; one PCI-Express), and integrated SATA, SCSI, IEEE 1394a, USB 2.0, AC-97 and Ethernet. Additional four DIMM slots and one CPU socket are provided with purchase of optional second CPU</p>												
<p>Memory - std / max 2GB, 4GB or 8GB std / 16GB¹³ max / 2 slots available / four slots available per CPU, 8 slots total Memory - features PC3200 (512MB, 1GB or 2GB) 400MHz registered 184-pin ECC CL3 DDR-SDRAM DIMMs / four DIMM slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / ECC</p>												
<p>Graphics controller (one of following) (see IntelliStation Graphics sheet for full graphics specifications) • Performance 2D: NVIDIA® Quadro NVS 285, PCI Express x16 • Advanced 3D: NVIDIA Quadro FX 1400, PCI Express x16 • Advanced 3D: NVIDIA Quadro FX 1500, PCI Express x16 • High-Advanced 3D: NVIDIA Quadro FX 3500, PCI Express x16 • Extreme 3D: NVIDIA Quadro FX 4500, PCI Express x16 • Ultra High Performance: NVIDIA Quadro FX 4500 x2, PCI Express x16</p>												
<p>IDE disk controller Enhanced IDE busmaster / ATA-133 / integrated in I/O Hub / two connectors on planar SATA disk controller Silicon Image 3512A / dual channel SATA-150 controller (150MB/sec) / on planar / HostRAID 0 (striping) or 1 (mirroring) supported with Windows® XP Professional x64 Edition and Red Hat® Enterprise Linux® 4 (32-/64-bit distros) SCSI disk controller Adaptec® AIC7902W / dual channel Ultra320 SCSI controller (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X / HostRAID 0 or 1 supported with Windows XP Professional x64 Edition and Red Hat Enterprise Linux 4 (32-/64-bit distros) SCSI channels and cables Two 16-bit channels (one internal and one external) / <i>Internal channel</i>: one 4-drop 16-bit 68-pin LVD SCSI cable from systemboard to internal disks bays; <i>External channel</i>: Optionally available 1-drop 16-bit 68-pin LVD SCSI cable from systemboard to rear external 68-pin connector (cable available as option part number 24P7929) or 1-drop U320 External SCSI Interface Kit (VHCDI) (option part number 24P7973)</p>												
<p>Cables One SATA cable, one 2-drop EIDE cable (to optical) and one SCSI cable (listed above) Disk - features <i>Some</i>: 80.0GB SATA-150 / 7200 rpm / 9.0 ms seek; <i>Some</i>: 73.4GB Ultra320 SCSI / 10K rpm / 4.7 ms; <i>All</i>: S.M.A.R.T.⁵</p>												
<p>Mechanical 6 x 6 Mini-tower with 4U⁴ rack mount support via tower-to-rack kit option (part number 09N4300) Chipset AMD 8131 / NVIDIA IO4 for PCI-e 16X slot / AMD 8111 I/O Hub / NECuPD 72400 / Four 64-bit PCI-X buses (Bus A for slot 1, Bus B for slot 2, Bus C for slot 3 and Bus 4 for slots 5 and 6), ATA-133 EIDE, USB / NS PC87363 Super I/O Gigabit Ethernet One Gigabit 10/100/1000 Ethernet controller / Broadcom BCM5703ci / full Gigabit Ethernet MAC and PHY layer functions / chip on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / Alert Standard Format 1.03 / one rear RJ-45 port Optical drives One of the following: 48X/24X/48X/16X Max^{6,19} CD-RW/DVD-ROM Combo, or IBM Multi-Burner Plus DVD/CD RW IEEE 1394 Integrated IEEE 1394a, 400Mbps, 6-pin port on rear, 4-pin port on front Audio Audio AC '97 v2.2 interface via 8111 (ALC655) / internal speaker (use of audio line out requires powered speakers) Rear ports Three USB (Ver 2.0), two 9-pin serial, parallel, keyboard, mouse, Ethernet, audio line in/out, mic in / 6-pin IEEE 1394a Front ports Two USB (Ver 2.0), audio line out (stereo), mic in / 4-pin IEEE 1394a Systems mgmt Autonomous monitoring and alerting of thermal, fans, and voltage faults</p>												
<p>Keyboard / mouse IBM 104-key keyboard (6-pin PS/2)/IBM 3-button optical mouse (6-pin PS/2 conn) Cooling fans Three variable speed fans (power supply, two in rear) / one fan per CPU / not redundant or hot-swap Power supply 530 watts / universal / auto sensing / built-in overload and surge protection</p>												
<p style="text-align: center;">SECURITY</p> <ul style="list-style-type: none"> • U-bolt anchoring feature (U-bolt is optional; supports optional padlock) • Security slot (for attachment of optional cable lock such as Kensington cable lock) • Cover key lock • Cover tamper detect switch • Secure fixed DASD • Power-on password • Administrator password • Boot sequence control • Boot without keyboard or mouse • Diskette boot inhibit • Disable mouse • Diskette, disk, serial port, parallel port I/O control • VPD stored in EEPROM • Write protection control for EEPROM • IBM Security Solutions 												
<p style="text-align: center;">LIMITED WARRANTY³</p> <ul style="list-style-type: none"> ↔ 3 year parts and labor ↔ International Warranty Service³ ↔ On site, 8 am through 5 pm, Mon through Fri excluding holidays, next business day response time ↔ On site warranty service upgrade options⁷ available as ServicePac options at http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf ↔ 24x7¹⁴ toll-free support for warranty issues during the warranty period¹ 												
<p>Optical Bay ① 5.25", HH 1.6", access, optical Bay ② 5.25", HH 1.6", access, open Bay ③ 3.5", SL 1", access, open Bay ④ 3.5", SL 1", no access, disk Bay ⑤ 3.5", SL 1", no access, open Bay ⑥ 3.5", SL 1", no access, open</p> <p>Mini-tower Raven black</p> <p>Slot 1: fullsize, 64-bit 100MHz, PCI-X 1.0 Slot 2: 2/3 size, 64-bit 133MHz, PCI-X 1.0 Slot 3: fullsize, 64-bit 100MHz, PCI-X 1.0 Slot 4: fullsize, PCI Express x16 - used by std graphics adapter Slot 5: fullsize, 64-bit 100MHz, PCI-X 1.0 - N/A with NVIDIA Quadro FX 4500 Slot 6: fullsize, 64-bit 100MHz, PCI-X 1.0* *with ServerRAID 6i Plus support</p> <ul style="list-style-type: none"> ↔ Metal cage for disk bays 4,5,6 rotates out of chassis ↔ Two front stabilizing feet ↔ Handle grip on top ↔ H 17.25" x W 6.5" x D 19.0" ↔ H 438mm x W 165mm x D 483mm ↔ 36 lb to 45.8 lb (16.3kg to 20.8kg) <ul style="list-style-type: none"> • <i>Maximum internal disk capacity¹³</i>: SCSI: 1.2TB (4 disks x 300GB) SATA: 500GB (2 disks x 250GB); 1TB w/ 4 disks, requires ServerRAID-7t adapter 71P8648) • Removable left side panel • BIOS Setup Utility via F1 at startup • Adaptec Configuration Utility near startup by pressing CTRL+A • Product Recovery Program via F11 at startup • Adv Config Power Interface (ACPI) 2.0 • DMI 2.2-compliant <p style="text-align: center;">Preloaded with Red Hat Enterprise Linux 4 WS (64-bit) or Windows XP Pro x64 Edition (32-/64-bit)¹⁷</p> <ul style="list-style-type: none"> ↔ Device Drivers CD ↔ IBM IntelliStation Documentation CD • Disk-to-Disk Recovery (in service partition) 												
<p>AMD Opteron Processor 250 2.4GHz 40K2524 AMD Opteron Processor 252 2.6GHz 40K2525 AMD Opteron Processor 254 2.8GHz 40K2526 AMD Opteron Processor 256 3.0GHz 40K1219 AMD Opteron Processor 275 2.2GHz 40K2527 AMD Opteron Processor 280 2.4GHz 40K2528 AMD Opteron Processor 285 2.6GHz 25R8962 2x512MB PC3200 CL3 ECC DDR-SDRAM DIMM 73P3233 2x1GB PC3200 CL3 ECC DDR-SDRAM DIMM 73P3234 2x2GB PC3200 CL3 ECC DDR-SDRAM DIMM 73P3235 IBM 73.4GB 10K rpm Ultra320 SCSI HDD 32P0724 IBM 146GB 10K rpm Ultra320 SCSI HDD 32P0725 IBM 300GB 10K rpm Ultra320 SCSI NHS HDD 32P0799 IBM 80GB 7.2K rpm Simple-swap SATA HDD 73P8002 IBM 160GB 7.2K rpm Simple-swap SATA HDD 39M4507 IBM 250GB 7.2K rpm Simple-swap SATA HDD 73P8006 Other options at ibm.com/pc/us/accessories</p>												

See footnotes for important warranty information

IBM® Type-model	Processor	GHz ² Memory	Disk and rpm	Disk controllers	Optical	Graphics adapter and memory	Slots x bays	FireWire	Preload ¹⁷	Available date
6224-10U	1xOpteron™ 244	1.81GB	80.0GB ² SATA 7.2K	SATA,EIDE	CD	Quadro4 280NVS 64MB	6x6	1394	XP Pro	May 2004
6224-20U	1xOpteron 246	2.0	1GB 80.0GB SATA 7.2K	SATA,EIDE	CD	Quadro4 280NVS 64MB	6x6	1394	XP Pro	May 2004
6224-30U	1xOpteron 248	2.2	1GB 80.0GB SATA 7.2K	SATA,EIDE	CD-RW	Quadro4 280NVS 64MB	6x6	1394	XP Pro	May 2004
6224-33U	1xOpteron 248	2.2	1GB 36.4GB U320 10K	Ultra320,EIDE	CD-RW	Quadro FX 1100 128MB	6x6	1394	XP Pro	May 2004
6224-35U	1xOpteron 248	2.2	1GB 36.4GB U320 10K	Ultra320,EIDE	Combo	Quadro FX 3000 256MB	6x6	1394	XP Pro	May 2004
6224-37U	1xOpteron 248	2.2	2GB 36.4GB U320 10K	Ultra320,EIDE	CD-RW	Quadro4 280NVS 64MB	6x6	1394	RHEL3-WS	May 2004
6224-38U	1xOpteron 248	2.2	1GB 36.4GB U320 10K	Ultra320,EIDE	Combo	Quadro FX 1100 128MB	6x6	1394	RHEL3-WS	May 2004
6224-39U	1xOpteron 248	2.2	2GB 36.4GB U320 10K	Ultra320,EIDE	Combo	Quadro FX 3000 256MB	6x6	1394	RHEL3-WS	May 2004
Processor	1 x AMD® Opteron 244, 246 or 248 (1.8, 2.0 or 2.2 GHz)									
L2 cache	1MB standard and maximum / at processor speed									
Processor upgrade	2-way SMP / up to two Opteron Processors (same speed/cache size)									
Implementation	Systemboard contains one AMD Socket 940 micro PGA ZIF socket, four DIMM slots, six slots (five PCI-X (one with ServeRAID 6i Plus support), one 8X AGP), and integrated SATA, SCSI, IEEE 1394a, USB 2.0, AC-97 and ethernet. Additional four DIMM slots and one CPU socket are provided with purchase of optional second CPU									
Memory - std / max	1GB or 2GB std / 16GB ¹³ max / two slots used / two slots available / four additional slots available with optional second CPU /									
Memory - features	PC3200 400MHz registered 184-pin ECC CL3 DDR-SDRAM DIMMs / four DIMM slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips)									
Graphics controller	(see IntelliStation Graphics sheet for full graphics specifications)									
(one of following)	<ul style="list-style-type: none"> • NVIDIA™ Quadro4 280NVS • NVIDIA Quadro FX 1100 • NVIDIA Quadro FX 3000 									
IDE disk controller	Enhanced IDE busmaster / ATA-133 / integrated in I/O Hub / two connectors on planar									
SATA disk controller	Silicon Image 3512A / dual channel SATA-150 controller (150MB/sec) / on planar / Host RAID 0 (striping) or 1 (mirroring) supported									
SCSI disk controller	Adaptec® AIC7902W / dual channel Ultra320 SCSI controller (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X / Host RAID 0 (striping) or 1 (mirroring) supported									
SCSI channels and cables	Two 16-bit channels (one internal and one external) / <i>Internal channel:</i> one 4-drop 16-bit 68-pin LVD SCSI cable from systemboard to internal disks bays; <i>External channel:</i> Optionally available 1-drop 16-bit 68-pin LVD SCSI cable from systemboard to rear external 68-pin connector (cable available as option part number 24P7929) or 1-drop U320 External SCSI Interface Kit (VHCDI) (option part number 24P7973)									
Cables	One SATA cable, one 2-drop EIDE cable (to optical) and one SCSI cable (listed above)									
Disk - features	<i>Some:</i> 80.0GB SATA-150 / 7200 rpm / 9.0 ms seek; <i>Some:</i> 36.4GB Ultra320 SCSI / 10K rpm / 4.7 ms; <i>All:</i> S.M.A.R.T. ⁵									
Rack support	4U ⁴ rack mount support via tower-to-rack kit option (part number 09N4300)									
Chipset	Dual AMD 8131 chipset / AMD 8151 for AGP 8X slot / AMD 8111 I/O Hub / Four 64-bit PCI-X buses (Bus A for slot 1, Bus B for slot 2, Bus C for slot 3 and Bus 4 for slots 5 and 6), PCI 2.2 bus (one slot), ATA-133 EIDE, USB / NS PC87363 Super I/O									
Gigabit ethernet	One gigabit 10/100/1000 ethernet controller / Broadcom BCM5703ci / full gigabit ethernet MAC and PHY layer functions / chip on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / Alert Standard Format 1.03 / one rear RJ-45 port									
Optical drives	One of the following: 48X-20X ⁶ CD-ROM, 48X/24X/48X/16X Max ^{6,19} CD-RW/DVD-ROM Combo or 48X/24X/48X Max ⁶ CD-RW									
IEEE 1394(FireWire)	Integrated IEEE 1394a, 400Mbps, 6-pin port on rear, 4-pin port on front									
Audio	Audio AC '97 v2.2 interface via 8111 (ALC655) / internal speaker (use of audio line out requires powered speakers)									
Rear ports	Three USB (Ver 2.0), two 9-pin serial, parallel, keyboard, mouse, ethernet, audio line in/out, mic in / 6-pin IEEE 1394a									
Front ports	Two USB (Ver 2.0), audio line out (stereo), mic in / 4-pin IEEE 1394a									
Systems mgmt	Autonomous monitoring and alerting of thermal, fans, and voltage faults									
Keyboard / mouse	IBM 104-key keyboard (6-pin PS/2) / IBM three button mouse (6-pin PS/2 conn)									
Cooling fans	Three variable speed fans (power supply, two in rear) / one fan per CPU / not redundant or hot-swap									
Power supply	530 watts / universal / auto sensing / built-in overload and surge protection									
	<p>Bay ① 5.25", HH 1.6", access, optical</p> <p>Bay ② 5.25", HH 1.6", access, open</p> <p>Bay ③ 3.5", SL 1", access, open</p> <p>Bay ④ 3.5", SL 1", no access, open</p> <p>Bay ⑤ 3.5", SL 1", no access, open</p> <p>Bay ⑥ 3.5", SL 1", no access, disk</p> <p>Slot 1: fullsize, 64-bit 100MHz, PCI-X 1.0</p> <p>Slot 2: 2/3 size, 64-bit 133MHz, PCI-X 1.0</p> <p>Slot 3: fullsize, 64-bit 100MHz, PCI-X 1.0*</p> <p>Slot 4: fullsize, AGP 8X (1.5v) - used by std AGP graphics adapter</p> <p>Slot 5: fullsize, 64-bit 100MHz, PCI-X 1.0</p> <p>Slot 6: fullsize, 64-bit 100MHz, PCI-X 1.0</p> <p>* Extended slot</p>									
	<ul style="list-style-type: none"> ➤ Metal cage for disk bays 4,5,6 rotates out of chassis ➤ Two front stabilizing feet ➤ Handle grip on top ➤ H 17.375" x W 6.5" x D 19.375" ➤ H 441mm x W 165mm x D 492mm ➤ 36 lb to 45.8 lb (16.3kg to 20.8kg) 									
	<ul style="list-style-type: none"> • <i>Maximum internal disk capacity¹³:</i> SCSI: 584GB (4 disks x 146GB) SATA: 320GB (2 disks x 160GB) • Removable left side panel • BIOS Setup Utility via F1 at startup • Adaptec Configuration Utility near startup by pressing CTRL+A • Product Recovery Program via F11 at startup • Adv Config Power Interface (ACPI) 2.0 • DMI 2.2-compliant 									
	<p>Preload with Redhat Enterprise Linux 3 WS (64-bit) or Windows XP Professional (32-bit)¹⁷</p> <ul style="list-style-type: none"> ➤ Device Drivers CD ➤ IBM IntelliStation Documentation CD • Disk-to-Disk Recovery (in service partition) 									
	<p>Opteron model 244 (1.8GHz) Proc Upgrade 13N0740</p> <p>Opteron model 246 (2.0GHz) Proc Upgrade 13N0741</p> <p>Opteron model 248 (2.2GHz) Proc Upgrade 13N0742</p> <p>2x512MB PC3200 CL3 ECC DDR-SDRAM DIMM 73P3233</p> <p>2x1GB PC3200 CL3 ECC DDR-SDRAM DIMM 73P3234</p> <p>2x2GB PC3200 CL3 ECC DDR-SDRAM DIMM 73P3235</p> <p>IBM 36.4GB 10K rpm Ultra320 SCSI HDD 32P0723</p> <p>IBM 73.4GB 10K rpm Ultra320 SCSI HDD 32P0724</p> <p>IBM 146GB 10K rpm Ultra320 SCSI HDD 32P0725</p> <p>IBM 80GB 7.2K rpm SATA-150 HDD 09N4253</p> <p>IBM 160GB 7.2K rpm SATA-150 HDD 09N4254</p> <p>IBM ThinkVision L200P 20.1inLCD Black A/D 6736-HB0</p> <p>IBM 4Ux20D Tower-to-Rack Conversion Kit 09N4300</p> <p>Other options at ibm.com/pc/us/accessories</p>									
	<p>SECURITY</p> <ul style="list-style-type: none"> • U-bolt anchoring feature (U-bolt is optional; supports optional padlock) • Security slot (for attachment of optional cable lock such as Kensington cable lock) • Cover key lock • Cover tamper detect switch • Secure fixed DASD • Power-on password • Administrator password • Boot sequence control • Boot without keyboard or mouse • Diskette boot inhibit • Disable mouse • Diskette, disk, serial port, parallel port I/O control • VPD stored in EEPROM • Write protection control for EEPROM • IBM Security Solutions 									
	<p>LIMITED WARRANTY³</p> <ul style="list-style-type: none"> ➤ 3 year parts and labor ➤ International Warranty Service³ ➤ On site, 8 am through 5 pm, Mon through Fri excluding holidays, next business day response time ➤ On site warranty service upgrade options⁷ available as ServicePac options at http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf ➤ 24x7¹⁴ toll-free support for warranty issues during the warranty period¹ 									

See footnotes for important warranty information
US models announced Mar 16, 2004

IBM® Type-GAV	Processor	GHz	Memory	Disk and rpm	Disk controllers	Optical	Graphics adapter and memory	Slots x bays	FireWire	Preload ¹⁷	Available date
6224-40U	1xOpteron™ 250	2.42	2GB	80.0GB ² SATA 7.2K	SATA,EIDE	CD-RW	Quadro™ NVS 280 64MB	6x6	1394	XP Pro	Dec 2004
6224-42U	1xOpteron 250	2.4	2GB	80.0GB SATA 7.2K	SATA,EIDE	CD-RW	Quadro FX1100 128MB	6x6	1394	XP Pro	Dec 2004
6224-43U	2xOpteron 250	2.4	2GB	80.0GB SATA 7.2K	SATA,EIDE	Combo	Quadro FX 4000 256MB	6x6	1394	XP Pro	Dec 2004
6224-45U	1xOpteron 250	2.4	2GB	36.4GB U320 15K	Ultra320,EIDE	CD-RW	Quadro NVS 280 64MB	6x6	1394	RH3.0	Dec 2004
6224-46U	1xOpteron 250	2.4	2GB	36.4GB U320 15K	Ultra320,EIDE	Combo	Quadro FX 1100 128MB	6x6	1394	RH3.0	Dec 2004
6224-48U	2xOpteron 250	2.4	2GB	80.0GB SATA 7.2K	SATA,EIDE	CD-RW	Quadro FX 1100 128MB	6x6	1394	RH3.0	Dec 2004
6224-49U	2xOpteron 250	2.4	2GB	36.4GB U320 15K	Ultra320,EIDE	Combo	Quadro FX 4000 256MB	6x6	1394	RH3.0	Dec 2004

Processor **1 x AMD® Opteron 250 (2.4 GHz)**
 L2 cache **1MB** standard and maximum / at processor speed
 Processor upgrade **2-way SMP** / up to two Opteron Processors (same speed/cache size)
 Implementation Systemboard contains one AMD Socket 940 micro PGA ZIF socket, four DIMM slots, six slots (five PCI-X: one with ServeRAID 6i Plus support; one AGP 8X), and integrated SATA, SCSI, IEEE 1394a, USB 2.0, AC-97 and Ethernet. Additional four DIMM slots and one CPU socket are provided with purchase of optional second CPU

Memory - std / max **2GB** std / 16GB¹³ max / two slots used / two slots available / four additional slots available with optional second CPU
 Memory - features **PC3200** (512MB, 1GB) or **PC2700** (2GB) 400MHz registered 184-pin ECC CL3 DDR-SDRAM DIMMs / four DIMM slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / **ECC**

(see IntelliStation Graphics sheet for full graphics specifications)
 Graphics controller (one of following) **• NVIDIA™ Quadro NVS 280 AGP 8X**
• NVIDIA Quadro FX 1100 AGP 8X
• NVIDIA Quadro FX 4000 AGP 8X

IDE disk controller Enhanced IDE busmaster / ATA-133 / integrated in I/O Hub / two connectors on planar
 SATA disk controller **Silicon Image 3512A / dual channel SATA-150 controller** (150MB/sec) / on planar / HostRAID 0 (striping) or 1 (mirroring) supported
 SCSI disk controller **Adaptec® AIC7902W / dual channel Ultra320 SCSI controller** (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X
 SCSI channels and cables Two 16-bit channels (one internal and one external) / *Internal channel:* one 4-drop 16-bit 68-pin LVD SCSI cable from systemboard to internal disks bays; *External channel:* Optionally available 1-drop 16-bit 68-pin LVD SCSI cable from systemboard to rear external 68-pin connector (cable available as option part number 24P7929) or 1-drop U320 External SCSI Interface Kit (VHCDI) (option part number 24P7973)

Cables One SATA cable, one 2-drop EIDE cable (to optical) and one SCSI cable (listed above)
 Disk - features *Some:* 80.0GB SATA-150 / 7200 rpm / 9.0 ms seek; *Some:* 36.4GB Ultra320 SCSI / 15K rpm / 3.6 ms; *All:* S.M.A.R.T.⁵

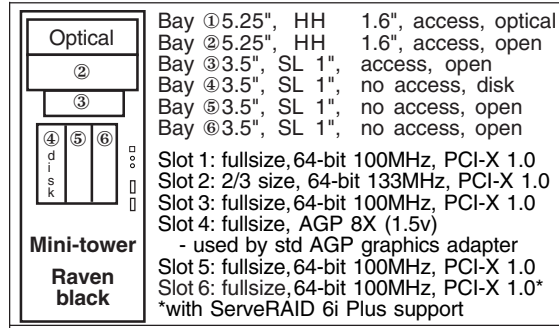
Mechanical Chipset 6 x 6 Mini-tower with 4U⁴ rack mount support via tower-to-rack kit option (part number 09N4300)
Dual AMD 8131 chipset / AMD 8151 for AGP 8X slot / AMD 8111 I/O Hub / Four 64-bit PCI-X buses (Bus A for slot 1, Bus B for slot 2, Bus C for slot 3 and Bus 4 for slots 5 and 6), ATA-133 EIDE, USB / NS PC87363 Super I/O

Gigabit Ethernet One Gigabit 10/100/1000 Ethernet controller / Broadcom BCM5703ci / full Gigabit Ethernet MAC and PHY layer functions / chip on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / Alert Standard Format 1.03 / one rear RJ-45 port
 Optical drives One of the following: 48X/24X/48X/16X Max^{6,19} CD-RW/DVD-ROM Combo, 48X/24X/48X Max⁶ CD-RW or IBM Multi-Burner Plus DVD/CD RW

IEEE 1394 (FireWire) Integrated IEEE 1394a, 400Mbps, 6-pin port on rear, 4-pin port on front
 Audio Audio AC '97 v2.2 interface via 8111 (ALC655) / internal speaker (use of audio line out requires powered speakers)
 Rear ports Three USB (Ver 2.0), two 9-pin serial, parallel, keyboard, mouse, Ethernet, audio line in/out, mic in / 6-pin IEEE 1394a
 Front ports Two USB (Ver 2.0), audio line out (stereo), mic in / 4-pin IEEE 1394a
 Systems mgmt Automatic monitoring and alerting of thermal, fans, and voltage faults

Keyboard / mouse IBM 104-key keyboard (6-pin PS/2)/IBM 3-button optical mouse (6-pin PS/2 conn)
 Cooling fans Three variable speed fans (power supply, two in rear) / one fan per CPU / not redundant or hot-swap
 Power supply 530 watts / universal / auto sensing / built-in overload and surge protection

- SECURITY**
- U-bolt anchoring feature (U-bolt is optional; supports optional padlock)
 - Security slot (for attachment of optional cable lock such as Kensington cable lock)
 - Cover key lock
 - Cover tamper detect switch
 - Secure fixed DASD
 - Power-on password
 - Administrator password
 - Boot sequence control
 - Boot without keyboard or mouse
 - Diskette boot inhibit
 - Disable mouse
 - Diskette, disk, serial port, parallel port I/O control
 - VPD stored in EEPROM
 - Write protection control for EEPROM
 - IBM Security Solutions



- Metal cage for disk bays 4,5,6 rotates out of chassis
- Two front stabilizing feet
- Handle grip on top
- H 17.25" x W 6.5" x D 19.0"
- H 438mm x W 165mm x D 483mm
- 36 lb to 45.8 lb (16.3kg to 20.8kg)

- *Maximum internal disk capacity¹³:*
SCSI: 584GB (4 disks x 146GB)
SATA: 320GB (2 disks x 160GB; 640GB w/ 4 disks, requires ServeRAID-7t))
- Removable left side panel
- BIOS Setup Utility via F1 at startup
- Adaptec Configuration Utility near startup by pressing CTRL+A
- Product Recovery Program via F11 at startup
- Adv Config Power Interface (ACPI) 2.0
- DMI 2.2-compliant

2x512MB PC3200 CL3 ECC DDR-SDRAM DIMM	73P3233
2x1GB PC3200 CL3 ECC DDR-SDRAM DIMM	73P3234
1x2GB PC2700 CL3 ECC DDR-SDRAM DIMM	22P9270
IBM ServeRAID-7t SATA controller	71P8648
IBM ServeRAID-6i+ SCSI controller	13N2190
IBM 36.4GB 10K rpm Ultra320 SCSI HDD	32P0723
IBM 73.4GB 10K rpm Ultra320 SCSI HDD	32P0724
IBM 146GB 10K rpm Ultra320 SCSI HDD	32P0725
IBM 80GB 7.2K rpm SATA-150 HDD	09N4253
IBM 160GB 7.2K rpm SATA-150 HDD	09N4254
IBM ThinkVision L200P 20.1in LCD Black A/D	6736-HB0
IBM 4Ux20D Tower-to-Rack Conversion Kit	09N4300

Other options at ibm.com/pc/us/accessories

Preload with Redhat® Enterprise Linux® 3 WS (64-bit) or Windows® XP Professional (32-bit)¹⁷

- Device Drivers CD
- IBM IntelliStation Documentation CD
- Disk-to-Disk Recovery (in service partition)

- LIMITED WARRANTY³**
- 3 year parts and labor
 - International Warranty Service³
 - On site, 8 am through 5 pm, Mon through Fri excluding holidays, next business day response time
 - On site warranty service upgrade options⁷ available as ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
 - 24x7¹⁴ toll-free support for warranty issues during the warranty period¹

IBM IntelliStation® E Pro (6204) - withdrawn

IBM® Type-model	Processor	L2 GHz ¹	cache	Memory	Disk and rpm	SCSI adapter	CD-ROM	Graphics adapter and memory	Slots x bays	Preload ¹⁷	Available date
6204-10U	Pentium® 4	1.6GHz	256KB	128MB	40GB ² 7200	None	CD-ROM	NVIDIA™ Quadro2 EX 32MB	4x3	Windows® 2000	Oct 2001
6204-20U	Pentium 4	1.8GHz	256KB	128MB	40GB 7200	None	CD-ROM	NVIDIA Quadro2 EX 32MB	4x3	Windows 2000	Oct 2001
6204-30U	Pentium 4	2.0GHz	256KB	128MB	40GB 7200	None	CD-ROM	NVIDIA Quadro2 EX 32MB	4x3	Windows 2000	Oct 2001

Positioning	<i>Compelling combination of price, performance and design</i>		Desktop		Small Form Factor			
Processor	Intel® Pentium 4 at 1.6, 1.8, 2.0GHz with 400MHz frontside bus		<ul style="list-style-type: none"> Bay ① 3.5", SL 1", access, std diskette Bay ② 5.25", HH 1.6", access, std CD-ROM Bay ③ 3.5", SL 1", no access, std disk 		<ul style="list-style-type: none"> Slot 1: Low Profile, 32-bit AGP 4X (1.5v) - used Slot 2: Low Profile, 32-bit PCI 2.2 (5v) Slot 3: Low Profile, 32-bit PCI 2.2 (5v) Slot 4: Low Profile, 32-bit PCI 2.2 (5v) 		<ul style="list-style-type: none"> • Stealth black color • 14.2" W X 16.2" D X 4.1" H • 360mm W X 412mm D X 104mm H • 20.0 to 22.0 lb (9.1 to 10.0 kg) • Bays 1 and 2/3 flip up (latched and pivoting) • Toolless rails for disk mounting • Toolless cover removal • Toolless AGP and PCI slots • Support for 100 lb monitor on top 	
L2 cache	256KB std and max / ECC / full speed							
Implementation	Processor and L2 cache in FC-PGA2 in mPGA478 socket							
SMP support	No SMP support							
Memory - std/max	128MB / 1GB max ¹³							
Memory - sockets	Two 168-pin gold plated DIMM sockets / one socket used							
Memory - type	133MHz SDRAM / Error Checking and Correcting (ECC) DIMMs and ECC memory controller / industry std / unbuffered / PC133-compliant / CAS Latency 2 (CL2)							
Graphics controller	<ul style="list-style-type: none"> • NVIDIA Quadro2 EX (entry 3D) / AGP 4X adapter / NV11GL GPU / 32MB std and max 166MHz SDRAM / 350MHz RAMDAC / one analog DB-15 connector 							
SCSI disk controller	None							
Disk	ATA-100, 7200 rpm, 8.7 ms average read seek, S.M.A.R.T. ⁵							
Disk controller	Enhanced IDE / ATA-100 / integrated in I/O Controller Hub (ICH2)							
Diskette drive	3.5" 1.44MB diskette drive							
CD-ROM	<i>Some models:</i> 48X-20X ⁶ CD-ROM / bootable							
DVD-ROM	Option							
Cables	Two EIDE 80-conductor cables (one 1-drop cable to CD, one 1-drop cable to disk)							
Rack support	None							
Chipset	Intel 845 chipset / 82845 Memory Controller Hub (MCH) / 82801BA I/O Controller Hub (ICH2) for PCI 2.2 bus, ATA-100 EIDE, ethernet MAC, USB, Low Pin Count Interface / 82802 Firmware Hub / National® 87360 Super I/O for diskette, parallel, serial, keyboard, mouse						SECURITY <ul style="list-style-type: none"> • Optional U-bolt support via knockout • Cover key lock (on rear) • Secure fixed DASD • Power-on password • Administrator password • Boot sequence control • Boot without keyboard or mouse • Diskette boot inhibit and write-protect • Diskette, disk, serial port, parallel port I/O control • Secure access openings • Secure removable media • VPD stored in EEPROM • Write protection control for EEPROM • Barcode labels on most components 	
Ports	<i>Front:</i> None <i>Back:</i> two 9-pin serial, parallel, two USB (Ver 1.1), keyboard, mouse, ethernet, monitor							
Audio	Integrated digital audio / SoundMAX® 3.0 with SPX™ / software-based audio (done by processor and ICH2) / AC '97 interface / ADI1887 codec (analog mixing, Analog-to-Digital and Digital-to-Analog conversion)							
Audio connectors	<i>Back:</i> microphone jack, line-in, line-out							
Speakers	One internal speaker for business audio							
Ethernet	10/100 ethernet on planar / ICH2 (MAC layer) with Intel 82562ETPHY (physical layer) / supports PXE and Wake on LAN® / Intel Pro/100VE Desktop Connection							
Security chip	None (so no cover tamper detect switch)							
Keyboard / mouse	104-key (rubber dome) keyboard / IBM 3-button mouse							
Cooling fans	Two or three variable speed fans (power supply, fansink, some have third fan)							
Power supply	160 watts with variable speed fan / universal / manual switch							
Preload with Windows 2000¹⁷	<ul style="list-style-type: none"> • Microsoft® Windows® 2000 Professional • Lotus® SmartSuite® Millennium license • Lotus Notes® Client license • Disk-to-Disk Recovery (in Service Partition) • Device Drivers and Diagnostics CD-ROM • Software Selections CD-ROM 		Options <ul style="list-style-type: none"> 128MB SDRAM PC133 CL2 ECC UDIMM 10K0044 256MB SDRAM PC133 CL2 ECC UDIMM 10K0046 512MB SDRAM PC133 CL2 ECC UDIMM 10K0048 20GB IDE Disk ATA-100 (7200 rpm) 19K4461 40GB IDE Disk ATA-100 (7200 rpm) 22P7157 60GB IDE Disk ATA-100 (7200 rpm) 09N4207 80GB IDE Disk ATA-100 (7200 rpm) 09N4208 PCI Ultra160 SCSI Adapter 19K4646 IBM 16X Max⁶ DVD-ROM Drive (black) 22P6950 16X/10X/40X Max⁶ CD-RW internal (blk) 24P3626 8X/4X/32X/8X Max^{6,19} CD-RW/DVD-ROM Combo drive (black) 10K3790 IBM DVD-RAM/DVD-R Drive (black) 22P6959 Zip Drive 250MB (white/black) 00N8078 IBM P96 19" (17.9" v.i.s.) Monitor (black) 655163N IBM P275 21" (19.8" v.i.s.) Monitor (blk) 6652U3N IBM T540 15" Flat Panel Monitor (black) 9511AG4 IBM T560 15" Flat Panel Monitor (black) 6656HG2 IBM Wireless keyboard and mouse (blk) 22P5170 Spaceball 3D Input Device 33L3252 IBM 1394 Firewire Adapter 19K5790 		LIMITED WARRANTY³ <ul style="list-style-type: none"> ⇒ 3 year parts and labor ⇒ International Warranty Service³ ⇒ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time ⇒ 3 year on site warranty service upgrade options:⁷ <ul style="list-style-type: none"> • 4 hour response, Mon-Fri 8-5 (ServicePac® part number 41L2735) • 4 hour response, 7 day x 24 hr (ServicePac part number 41L2741) ⇒ Post warranty maintenance services available ⇒ 24x7¹⁴ toll-free support for warranty issues during the warranty period³ 			
<ul style="list-style-type: none"> • <i>Maximum internal EIDE disk capacity¹³:</i> 80GB (1 disk x 80GB 7200 rpm) • Configuration/Setup Utility invoked by pressing F1 at startup • Universal Manageability Services enabled • LANClient Control Manager™ enabled • Common Information Model (CIM) 2.2 • PC 2001-compliant • Advanced Power Management 1.2 • Advanced Configuration and Power Interface (ACPI) 1.0b • System Management BIOS • DMI 2.0-compliant • Wired for Management 2.0-compliant 								

See footnotes for important warranty information

US models announced September 18, 2001; withdrawn effective April 2002 or July 2002

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IBM IntelliStation® E Pro (6204) - February 2002 - withdrawn

IBM® Type-model	Processor	GHz ¹	L2 cache	Memory	Disk and rpm	SCSI adapter	CD-ROM	Graphics adapter and memory	Slots x bays	Preload ¹⁷	Available date	
6204-40U	Pentium® 4	2.0GHz	512KB	256MB	40GB ² 7200	None	CD-ROM	NVIDIA™ Quadro4 64MB	4x3	Windows® 2000	Mar 2002	
6204-41U	Pentium 4	2.0GHz	512KB	256MB	40GB 7200	None	CD-ROM	Millennium G450 DVI-I 32MB	4x3	Windows 2000	Mar 2002	
6204-43U	Pentium 4	2.0GHz	512KB	256MB	18.2GB 10K 29160LP		CD-ROM	Millennium G450 DVI-I 32MB	4x3	Windows 2000	Mar 2002	
6204-50U	Pentium 4	2.2GHz	512KB	256MB	40GB ² 7200	None	CD-ROM	NVIDIA Quadro4 64MB	4x3	Windows 2000	Mar 2002	
6204-51U	Pentium 4	2.2GHz	512KB	256MB	40GB 7200	None	CD-ROM	Millennium G450 DVI-I 32MB	4x3	Windows 2000	Mar 2002	
Positioning		<i>Compelling combination of price, performance and design</i>						Desktop				
Processor		Intel® Pentium 4 at 2.0 or 2.2GHz with 400MHz frontside bus						Small Form Factor				
L2 cache		512KB std and max / ECC / full speed										
Implementation		Processor and L2 cache in FC-PGA2 in mPGA478 socket										
SMP support		No SMP support										
Memory - std/max		256MB / 1GB max ¹³								Bay ① 3.5", SL 1", access, std diskette Bay ② 5.25", HH 1.6", access, std CD-ROM Bay ③ 3.5", SL 1", no access, std disk		
Memory - sockets		Two 168-pin gold plated DIMM sockets / one socket used								Slot 1: Low Profile, 32-bit AGP 4X (1.5v) - used Slot 2: Low Profile, 32-bit PCI 2.2 (5v) - SCSI (some) Slot 3: Low Profile, 32-bit PCI 2.2 (5v) Slot 4: Low Profile, 32-bit PCI 2.2 (5v)		
Memory - type		133MHz SDRAM / Error Checking and Correcting (ECC) DIMMs and ECC memory controller / industry std / unbuffered / PC133-compliant / CAS Latency 2 (CL2)								<ul style="list-style-type: none"> Stealth black color 14.2" W X 16.2" D X 4.1" H 360mm W X 412mm D X 104mm H 20.0 to 22.0 lb (9.1 to 10.0 kg) Bays 1 and 2/3 flip up (latched and pivoting) Toolless rails for disk mounting Toolless cover removal Toolless AGP and PCI slots Support for 100 lb monitor on top 		
Graphics controller (one of following)		<ul style="list-style-type: none"> Matrox® Millennium G450 DVI-I (high-perf 2D) / AGP 4X adapter / MGA G450F GPU / 32MB 150MHz DDR-SDRAM / dual RAMDAC [360/232MHz] / dual head support / one DVI-I connector (ships with one cable with two DB-15 analog conns) NVIDIA Quadro4 200NVS (high-perf 2D) / AGP 4X adapter / NV17LT 250MHz GPU / 64MB 166MHz SDRAM / dual 350MHz RAMDACs / dual head: 2048x1536x16M each monitor / LFH60 connector for std cable with two DB-15 analog 										
SCSI disk controller		SCSI model: Adaptec® 29160LP / single channel Wide Ultra160 SCSI (LVD 160MB/sec) / 64-bit 33MHz PCI adapter (in a 32-bit slot) / one channel with up to 15 device support SCSI models: One 68-pin internal SCSI connector / one 0.8mm VHDCI 68-pin external SCSI connector										
SCSI connectors		Enhanced IDE / ATA-100 / integrated in I/O Controller Hub (ICH2) / two connectors on planar										
Disk controller		SCSI model: One 1-drop 16-bit LVD SCSI cable, one 2-drop EIDE cable (connected to CD-ROM) EIDE models: Two EIDE 80-conductor cables (one 1-drop cable to CD, one 1-drop cable to disk)										
Cables		SCSI model: 18.2GB Ultra160 SCSI / 10000 rpm / 4.9 ms read seek / S.M.A.R.T. ⁵ EIDE models: 40GB EIDE / ATA-100 / 7200 rpm / 9.0 ms read seek / S.M.A.R.T.										
Disk												
Diskette drive		3.5" 1.44MB diskette drive								SECURITY		
CD-ROM		48X-20X ⁶ CD-ROM / bootable										
Rack support		None								<ul style="list-style-type: none"> Optional U-bolt support via knockout Cover key lock (on rear) Secure fixed DASD Power-on password Administrator password Boot sequence control Boot without keyboard or mouse Diskette boot inhibit and write-protect Diskette, disk, serial port, parallel port I/O control Secure access openings Secure removable media VPD stored in EEPROM Write protection control for EEPROM Barcode labels on most components 		
Chipset		Intel 845 chipset / 82845 Memory Controller Hub (MCH) / 82801BA I/O Controller Hub (ICH2) for PCI 2.2 bus, ATA-100 EIDE, ethernet MAC, USB, Low Pin Count Interface / 82802 Firmware Hub / National® 87360 Super I/O for diskette, parallel, serial, keyboard, mouse										
Ports		Front: two USB (Ver 1.1) Back: two 9-pin serial, parallel, two USB (Ver 1.1), keyboard, mouse, ethernet, monitor								<ul style="list-style-type: none"> Maximum internal EIDE disk capacity¹³: 80GB (1 disk x 80GB 7200 rpm) Maximum internal SCSI disk capacity¹³: 36.4GB (1 disk x 36.4GB 10000 rpm) 		
Audio		Integrated digital audio / SoundMAX® 3.0 with SPX™ / software-based audio (done by processor and ICH2) / AC '97 interface / ADI1887 codec (analog mixing, Analog-to-Digital and Digital-to-Analog conversion) Back: microphone jack, line-in, line-out One internal speaker for business audio										
Audio connectors		10/100 ethernet on planar / ICH2 (MAC layer) with Intel 82562ETPHY (physical layer) / supports PXE and Wake on LAN® / Intel Pro/100VE Desktop Connection								LIMITED WARRANTY³ ⇨ 3 year parts and labor ⇨ International Warranty Service ³ ⇨ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time ⇨ 3 year on site warranty service upgrade options: ⁷ <ul style="list-style-type: none"> 4 hour response, Mon-Fri 8-5 (ServicePac® part number 41L2735) 4 hour response, 7 day x 24 hr (ServicePac part number 41L2741) ⇨ Post warranty maintenance services available ⇨ 24x ¹⁴ toll-free support for warranty issues during the warranty period ⁵		
Speakers		None (so no cover tamper detect switch)										
Ethernet		None (so no cover tamper detect switch)										
Security chip		None (so no cover tamper detect switch)										
Keyboard / mouse		104-key (rubber dome) keyboard / IBM 3-button mouse										
Cooling fans		Two or three variable speed fans (power supply, fansink, some have third fan)										
Power supply		160 watts with variable speed fan / universal / manual switch										
Preload with Windows 2000¹⁷		Options										
Microsoft® Windows® 2000 Professional		128MB SDRAM PC133 CL2 ECC UDIMM 10K0044										
- Lotus® SmartSuite® Millennium license		256MB SDRAM PC133 CL2 ECC UDIMM 10K0046										
- Lotus Notes® Client license		512MB SDRAM PC133 CL2 ECC UDIMM 10K0048										
- Disk-to-Disk Recovery (in Service Partition)		20GB IDE Disk ATA-100 (7200 rpm) 19K4461										
◇ Device Drivers and Diagnostics CD-ROM		40GB IDE Disk ATA-100 (7200 rpm) 22P7157										
◇ Software Selections CD-ROM		60GB IDE Disk ATA-100 (7200 rpm) 09N4207										
		80GB IDE Disk ATA-100 (7200 rpm) 09N4208										
		PCI Ultra160 SCSI Adapter 19K4646										
		IBM 16X Max ⁶ DVD-ROM Drive (black) 22P6950										
		16X/10X/40X Max ⁶ CD-RW internal (blk) 24P3626										
		8X/4X/32X/8X Max ^{6,19} CD-RW/DVD-ROM Combo drive (black) 10K3790										
		IBM DVD-RAM/DVD-R Drive (black) 22P6959										
		Zip Drive 250MB (white/black) 00N8078										
		IBM P96 19" (17.9" v.i.s.) Monitor (black) 655163N										
		IBM P275 21" (19.8" v.i.s.) Monitor (blk) 6652U3N										
		IBM T540 15" Flat Panel Monitor (black) 9511AG4										
		IBM T560 15" Flat Panel Monitor (black) 6656HG2										
		IBM Wireless keyboard and mouse (blk) 22P5170										
		Spaceball 3D Input Device 33L3252										
		Other options at ibm.com/pc/us/accessories										
<ul style="list-style-type: none"> Configuration/Setup Utility invoked by pressing F1 at startup Universal Manageability Services enabled LANClient Control Manager™ enabled Common Information Model (CIM) 2.2 PC 2001-compliant Advanced Power Management 1.2 Advanced Configuration and Power Interface (ACPI) 1.0b System Management BIOS DMI 2.0-compliant Wired for Management 2.0-compliant 												

See footnotes for important warranty information

US models announced February 5, 2002; withdrawn effective October 2002

(6204B) © IBM Corp. October 2002

IBM IntelliStation® E Pro (6204) - June 2002 - withdrawn

IBM® Type-model	Processor	GHz ¹	L2 cache	Memory	Disk and rpm	SCSI adapter	CD-ROM	Graphics adapter and memory	Slots x bays	Preload ¹⁷	Available date
6204-45U	Pentium® 4	2.0GHz	512KB	256MB	40GB ² 7200	None	CD-ROM	NVIDIA™ Quadro4 64MB	4x3	Windows® XP Pro	Jun 02
6204-46U	Pentium 4	2.0GHz	512KB	256MB	40GB 7200	None	CD-ROM	Millennium G450 DVI-I 32MB	4x3	Windows XP Pro	Jun 02
6204-48U	Pentium 4	2.0GHz	512KB	256MB	18.2GB 10K 29160LP		CD-ROM	Millennium G450 DVI-I 32MB	4x3	Windows XP Pro	Jun 02
6204-55U	Pentium 4	2.2GHz	512KB	256MB	40GB 7200	None	CD-ROM	NVIDIA Quadro4 64MB	4x3	Windows XP Pro	Jun 02
6204-56U	Pentium 4	2.2GHz	512KB	256MB	40GB 7200	None	CD-ROM	Millennium G450 DVI-I 32MB	4x3	Windows XP Pro	Jun 02
Positioning		<i>Compelling combination of price, performance and design</i>							Desktop		
Processor		Intel® Pentium 4 at 2.0 or 2.2GHz with 400MHz frontside bus							Small Form Factor		
L2 cache		512KB std and max / ECC / full speed									
Implementation		Processor and L2 cache in FC-PGA2 in mPGA478 socket							Bay ① 3.5", SL 1", access, std diskette Bay ② 5.25", HH 1.6", access, std CD-ROM Bay ③ 3.5", SL 1", no access, std disk		
SMP support		No SMP support							Slot 1: Low Profile, 32-bit AGP 4X (1.5v) - used Slot 2: Low Profile, 32-bit PCI 2.2 (5v) - SCSI (some) Slot 3: Low Profile, 32-bit PCI 2.2 (5v) Slot 4: Low Profile, 32-bit PCI 2.2 (5v)		
Memory - std/max		256MB / 1GB max¹³							<ul style="list-style-type: none"> Stealth black color 14.2" W X 16.2"D X 4.1"H 360mm W X 412mm D X 104mm H 20.0 to 22.0 lb (9.1 to 10.0 kg) Bays 1 and 2/3 flip up (latched and pivoting) Toolless rails for disk mounting Toolless cover removal Toolless AGP and PCI slots Support for 100 lb monitor on top 		
Memory - sockets		Two 168-pin gold plated DIMM sockets / one socket used									
Memory - type		133MHz SDRAM / Error Checking and Correcting (ECC) DIMMs and ECC memory controller / industry std / unbuffered / PC133-compliant / CAS Latency 2 (CL2)									
Graphics controller (one of following)		<ul style="list-style-type: none"> Matrox® Millennium G450 DVI-I (high-perf 2D) / AGP 4X adapter / MGA G450F GPU / 32MB 150MHz DDR-SDRAM / dual RAMDAC [360/232MHz] / dual head support / one DVI-I connector (ships with one cable with two DB-15 analog conns) NVIDIA Quadro4 200NVS (high-perf 2D) / AGP 4X adapter / NV17LT 250MHz GPU / 64MB 166MHz SDRAM / dual 350MHz RAMDACs / dual head: 2048x1536x16M each monitor / LFH60 connector for std cable with two DB-15 analog 									
SCSI disk controller		SCSI model: Adaptec® 29160LP / single channel Wide Ultra160 SCSI (LVD 160MB/sec) / 64-bit 33MHz PCI adapter (in a 32-bit slot) / one channel with up to 15 device support SCSI models: One 68-pin internal SCSI connector / one 0.8mm VHDCI 68-pin external SCSI connector									
SCSI connectors		Enhanced IDE / ATA-100 / integrated in I/O Controller Hub (ICH2) / two connectors on planar									
Disk controller		SCSI model: One 1-drop 16-bit LVD SCSI cable, one 2-drop EIDE cable (connected to CD-ROM) EIDE models: Two EIDE 80-conductor cables (one 1-drop cable to CD, one 1-drop cable to disk)									
Cables		SCSI model: 18.2GB Ultra160 SCSI / 10000 rpm / 4.9 ms read seek / S.M.A.R.T. ⁵ EIDE models: 40GB EIDE / ATA-100 / 7200 rpm / 9.0 ms read seek / S.M.A.R.T.									
Disk											
Diskette drive		3.5" 1.44MB diskette drive							SECURITY		
CD-ROM		48X-20X ⁶ CD-ROM / bootable									
Rack support		None							<ul style="list-style-type: none"> Optional U-bolt support via knockout Cover key lock (on rear) Secure fixed DASD Power-on password Administrator password Boot sequence control Boot without keyboard or mouse Diskette boot inhibit and write-protect Diskette, disk, serial port, parallel port I/O control Secure access openings Secure removable media VPD stored in EEPROM Write protection control for EEPROM Barcode labels on most components 		
Chipset		Intel 845 chipset / 82845 Memory Controller Hub (MCH) / 82801BA I/O Controller Hub (ICH2) for PCI 2.2 bus, ATA-100 EIDE, ethernet MAC, USB, Low Pin Count Interface / 82802 Firmware Hub / National® 87360 Super I/O for diskette, parallel, serial, keyboard, mouse									
Ports		Front: two USB (Ver 1.1) Back: two 9-pin serial, parallel, two USB (Ver 1.1), keyboard, mouse, ethernet, monitor							<ul style="list-style-type: none"> Maximum internal EIDE disk capacity¹³: 80GB (1 disk x 80GB 7200 rpm) Maximum internal SCSI disk capacity¹³: 36.4GB (1 disk x 36.4GB 10000 rpm) 		
Audio		Integrated digital audio / SoundMAX® 3.0 with SPX™ / software-based audio (done by processor and ICH2) / AC '97 interface / ADI1887 codec (analog mixing, Analog-to-Digital and Digital-to-Analog conversion) Back: microphone jack, line-in, line-out One internal speaker for business audio									
Audio connectors		10/100 ethernet on planar / ICH2 (MAC layer) with Intel 82562ETPHY (physical layer) / supports PXE and Wake on LAN® / Intel Pro/100VE Desktop Connection							LIMITED WARRANTY³ <ul style="list-style-type: none"> 3 year parts and labor International Warranty Service³ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time 3 year on site warranty service upgrade options:⁷ <ul style="list-style-type: none"> 4 hour response, Mon-Fri 8-5 (ServicePac® part number 41L2735) 4 hour response, 7 day x 24 hr (ServicePac part number 41L2741) Post warranty maintenance services available 24 hour x 7 day¹⁴ telephone, electronic, and Internet support³ 		
Speakers		None (so no cover tamper detect switch)									
Ethernet		104-key (rubber dome) keyboard / IBM 3-button mouse									
Security chip		Two or three variable speed fans (power supply, fansink, some have third fan)									
Keyboard / mouse		160 watts with variable speed fan / universal / manual switch									
Cooling fans											
Power supply											
Preload with Windows XP Professional¹⁷		Options									
Microsoft® Windows® XP Professional		128MB SDRAM PC133 CL2 ECC UDIMM 10K0044									
- Lotus® SmartSuite® Millennium license		256MB SDRAM PC133 CL2 ECC UDIMM 10K0046									
- Lotus Notes® Client license		512MB SDRAM PC133 CL2 ECC UDIMM 10K0048									
- Disk-to-Disk Recovery (in Service Partition)		20GB IDE Disk ATA-100 (7200 rpm) 19K4461									
◇ Device Drivers and Diagnostics CD-ROM		40GB IDE Disk ATA-100 (7200 rpm) 22P7157									
◇ Software Selections CD-ROM		60GB IDE Disk ATA-100 (7200 rpm) 09N4207									
		80GB IDE Disk ATA-100 (7200 rpm) 09N4208									
		PCI Ultra160 SCSI Adapter 19K4646									
		IBM 16X Max ⁶ DVD-ROM Drive (black) 22P6950									
		24X/10X/40X Max ⁶ CD-RW internal (blk) 24P6965									
		8X/4X/32X/8X Max ^{6,19} CD-RW/DVD-ROM Combo drive (black) 10K3790									
		IBM DVD-RAM/DVD-R Drive (black) 22P6959									
		Zip Drive 250MB (white/black) 00N8078									
		IBM P96 19" (17.9" v.i.s.) Monitor (black) 655163N									
		IBM P275 21" (19.8" v.i.s.) Monitor (blk) 6652U3N									
		IBM T545 15.1" Flat Panel Monitor (black) 6653HG2									
		IBM T560 15" Flat Panel Monitor (black) 6656HG2									
		IBM Wireless keyboard and mouse (blk) 22P5170									
		Spaceball 3D Input Device 33L3252									
		Other options at ibm.com/pc/us/accessories									
<ul style="list-style-type: none"> Configuration/Setup Utility invoked by pressing F1 at startup Universal Manageability Services enabled LANClient Control Manager™ enabled Common Information Model (CIM) 2.2 PC 2001-compliant Advanced Power Management 1.2 Advanced Configuration and Power Interface (ACPI) 1.0b System Management BIOS DMI 2.0-compliant Wired for Management 2.0-compliant 											

See footnotes for important warranty information

US models announced June 4, 2002; withdrawn effective October 2002

(6204J) © IBM Corp. October 2002

IBM IntelliStation® E Pro (6214) - withdrawn

IBM® Type-model	Processor	GHz ¹	L2 cache	Memory	Disk and rpm	SCSI adapter	CD-ROM	Graphics adapter and memory	Slots x bays	Preload ¹⁷	Available date	
6214-10U	Pentium® 4	1.6GHz	256KB	128MB	40GB ² EIDE	7200	None	CD-ROM Millennium G450 16MB	6x7	Windows® 2000	Oct 2001	
6214-20U	Pentium 4	1.8GHz	256KB	128MB	40GB EIDE	7200	None	CD-ROM Millennium G450 16MB	6x7	Windows 2000	Oct 2001	
6214-23U	Pentium 4	1.8GHz	256KB	128MB	18.2G SCSI	10K	29160LP	CD-ROM Quadro2 Pro 64MB	6x7	Windows 2000	Oct 2001	
6214-30U	Pentium 4	2.0GHz	256KB	128MB	40GB EIDE	7200	None	CD-ROM Millennium G450 16MB	6x7	Windows 2000	Oct 2001	
6214-33U	Pentium 4	2.0GHz	256KB	256MB	18.2G SCSI	10K	29160LP	CD-ROM Quadro2 Pro 64MB	6x7	Windows 2000	Oct 2001	
Positioning	<i>Compelling combination of price, performance and design</i>							Mini-tower				
Processor	Intel® Pentium 4 at 1.6, 1.8, 2.0GHz with 400MHz frontside bus							<ul style="list-style-type: none"> Stealth black color H 18.5" x W 6.5" x D 20.0" H 470mm x W 165mm x D 508mm 35 to 43 pounds (15.9 to 19.5kg) Metal cage for disk bays 5,6,7 rotates out of chassis Two front stabilizing feet Handle grip on top Toolless cover removal Toolless AGP and PCI slots Removable left side panel 				
L2 cache	256KB std and max / ECC / full speed							<ul style="list-style-type: none"> Bay ① 5.25", HH 1.6", access, CD-ROM Bay ② 5.25", HH 1.6", access, open Bay ③ 3.5", SL 1", access, diskette Bay ④ 3.5", SL 1", access, open Bay ⑤ 3.5", SL 1", no access, open Bay ⑥ 3.5", SL 1", no access, open Bay ⑦ 3.5", SL 1", no access, disk 				
Implementation	Processor and L2 cache in FC-PGA2 in mPGA478 socket							<ul style="list-style-type: none"> Slot 1: fullsize, AGP 4X, 25 watt (3.3v) - used by graphics Slot 2: fullsize, 32-bit 33MHz, PCI 2.2 (5v) Slot 3: fullsize, 32-bit 33MHz, PCI 2.2 (5v) Slot 4: fullsize, 32-bit 33MHz, PCI 2.2 (5v) - used by SCSI adapter (some models) Slot 5: fullsize, 32-bit 33MHz, PCI 2.2 (5v)** Slot 6: fullsize, 32-bit 33MHz, PCI 2.2 (5v)** 				
SMP support	No SMP support							<ul style="list-style-type: none"> ** on two-slot PCI extender board 				
Memory - std/max	128MB or 256MB / 1.5GB max ¹³							SECURITY <ul style="list-style-type: none"> Optional U-bolt support via knockout Cover key lock (on side) Secure fixed DASD Power-on password Administrator password Boot sequence control Boot without keyboard or mouse Diskette boot inhibit and write-protect Diskette, disk, serial port, parallel port I/O control Secure access openings Secure removable media VPD stored in EEPROM Write protection control for EEPROM Barcode labels on most components 				
Memory - sockets	Three 168-pin gold plated DIMM sockets / one socket used											
Memory - type	133MHz SDRAM / Error Checking and Correcting (ECC) DIMMs and ECC memory controller / industry std / unbuffered / PC133-compliant / CAS Latency 2 (CL2)							LIMITED WARRANTY³ <ul style="list-style-type: none"> 3 year parts and labor International Warranty Service³ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time 3 year on site warranty service upgrade options:⁷ <ul style="list-style-type: none"> 4 hour response, Mon-Fri 8-5 (ServicePac® part number 41L2735) 4 hour response, 7 day x 24 hr (ServicePac part number 41L2741) Post warranty maintenance services available 24x7¹⁴ toll-free support for warranty issues during the warranty period³ 				
Graphics controller (one of following)	<ul style="list-style-type: none"> Matrox® Millennium G450 (performance 2D) / AGP 4X adapter / MGA G450F GPU / 16MB 150MHz SDRAM / dual RAMDAC [360/232MHz] / dual head: 2048x1536x16M at 70Hz and 1600x1200x16M at 85Hz / two DB-15 connectors NVIDIA™ Quadro2 Pro (advanced 3D) / AGP 4X adapter / NV15GL 250MHz GPU / 64MB 200MHz DDR-SDRAM / 350MHz RAMDAC / single head: 2048x1535x16M at 75Hz / DB-15 and DVI-I connectors (same image if both used) 											
SCSI disk controller	<i>SCSI models:</i> Adaptec® 29160LP / single channel Wide Ultra160 SCSI (LVD 160MB/sec) / 64-bit 33MHz PCI adapter (in a 32-bit slot) / one channel with up to 15 device support							Options <ul style="list-style-type: none"> 128MB SDRAM PC133 CL2 ECC UDIMM 10K0044 256MB SDRAM PC133 CL2 ECC UDIMM 10K0046 512MB SDRAM PC133 CL2 ECC UDIMM 10K0048 60GB IDE Disk ATA-100 (7200 rpm) 09N4207 80GB IDE Disk ATA-100 (7200 rpm) 09N4208 PCI Ultra160 SCSI Adapter 19K4646 18.2GB 15K rpm Ultra160 SCSI disk 19K0658 36.4GB 10K rpm Ultra160 SCSI disk 00N8209 IBM 16X Max® DVD-ROM Drive (black) 22P6950 12X/8X/32X Max⁶ CD-RW internal (black) 10K3785 16X/10X/40X Max⁶ CD-RW internal (blk) 24P3626 8X/4X/32X/8X Max^{6,19} CD-RW/DVD-ROM Combo drive (black) 10K3790 IBM DVD-RAM/DVD-R Drive (black) 22P6959 Zip Drive 250MB (white/black) 00N8078 IBM P96 19" (17.9" v.i.s.) Monitor (black) 655163N IBM P275 21" (19.8" v.i.s.) Monitor (blk) 6652U3N IBM T540 15" Flat Panel Monitor (black) 9511AG4 IBM T560 15" Flat Panel Monitor (black) 6656HG2 IBM Wireless keyboard and mouse (blk) 22P5170 Spaceball 3D Input Device 33L3252 IBM rack mount kit 09N4300 				
SCSI connectors	<i>SCSI models:</i> One 68-pin internal SCSI connector / one 0.8mm VHDCI 68-pin external SCSI connector											
IDE disk controller	Enhanced IDE / ATA-100 / integrated in I/O Controller Hub (ICH2)							Preload with Windows 2000¹⁷ <ul style="list-style-type: none"> Microsoft® Windows® 2000 Professional Lotus® SmartSuite® Millennium license Lotus Notes® Client license Disk-to-Disk Recovery (in Service Partition) Device Drivers and Diagnostics CD-ROM Software Selections CD-ROM 				
Cables	<i>SCSI models:</i> One 5-drop 16-bit LVD SCSI cable, one 2-drop EIDE cable (connected to CD-ROM)											
Disk - features	<i>SCSI models:</i> 18.2GB Ultra160 SCSI / 10K rpm / 5.2 ms read seek / S.M.A.R.T. ⁵							<ul style="list-style-type: none"> • <i>EIDE models:</i> 40GB EIDE / ATA-100 / 7200 rpm / 8.7 ms read seek / S.M.A.R.T. 				
CD-ROM / diskette	48X-20X ⁶ CD-ROM, bootable, IDE / 3.5" 1.44MB diskette drive											
Rack support	4U ⁴ rack mount support via tower-to-rack kit option							<ul style="list-style-type: none"> • <i>SCSI models:</i> 40GB EIDE / ATA-100 / 7200 rpm / 8.7 ms read seek / S.M.A.R.T. 				
Chipset	Intel 845 chipset / 82845 Memory Controller Hub (MCH) / 82801BA I/O Controller Hub (ICH2) for PCI 2.2 bus, ATA-100 EIDE, ethernet MAC, USB, Low Pin Count Interface / 82802 Firmware Hub / National® 87360 Super I/O for diskette, parallel, serial, keyboard, mouse											
Ports	<i>Front:</i> None <i>Back:</i> two 9-pin serial, parallel, two USB (Ver 1.1), keyboard, mouse, ethernet, monitor							<ul style="list-style-type: none"> • Secure access openings • Secure removable media • VPD stored in EEPROM • Write protection control for EEPROM • Barcode labels on most components 				
Audio	Integrated digital audio / SoundMAX® 3.0 with SPX™ / software-based audio (done by processor and ICH2) / AC '97 interface / ADI1887 codec											
Audio connectors	<i>Back:</i> microphone jack, line-in, line-out							<ul style="list-style-type: none"> • Secure access openings • Secure removable media • VPD stored in EEPROM • Write protection control for EEPROM • Barcode labels on most components 				
Speakers	One internal speaker for business audio											
Ethernet	10/100 ethernet on planar / ICH2 (MAC layer) with Intel 82562ETPHY (physical layer) / supports PXE and Wake on LAN® / Intel Pro/100VE Desktop Connection							<ul style="list-style-type: none"> • Secure access openings • Secure removable media • VPD stored in EEPROM • Write protection control for EEPROM • Barcode labels on most components 				
Security chip	None (so no cover tamper detect switch)											
Keyboard / mouse	104-key (rubber dome) keyboard / IBM 3-button mouse							<ul style="list-style-type: none"> • Secure access openings • Secure removable media • VPD stored in EEPROM • Write protection control for EEPROM • Barcode labels on most components 				
Cooling fans	Three variable speed cooling fans (power supply, processor fansink, rear)											
Power supply	340 watts with variable speed fan / universal / auto-sensing							<ul style="list-style-type: none"> • Secure access openings • Secure removable media • VPD stored in EEPROM • Write protection control for EEPROM • Barcode labels on most components 				
Preload with Windows 2000¹⁷			Options				<ul style="list-style-type: none"> • Secure access openings • Secure removable media • VPD stored in EEPROM • Write protection control for EEPROM • Barcode labels on most components 					
<ul style="list-style-type: none"> Microsoft® Windows® 2000 Professional Lotus® SmartSuite® Millennium license Lotus Notes® Client license Disk-to-Disk Recovery (in Service Partition) Device Drivers and Diagnostics CD-ROM Software Selections CD-ROM 			<ul style="list-style-type: none"> 128MB SDRAM PC133 CL2 ECC UDIMM 10K0044 256MB SDRAM PC133 CL2 ECC UDIMM 10K0046 512MB SDRAM PC133 CL2 ECC UDIMM 10K0048 60GB IDE Disk ATA-100 (7200 rpm) 09N4207 80GB IDE Disk ATA-100 (7200 rpm) 09N4208 PCI Ultra160 SCSI Adapter 19K4646 18.2GB 15K rpm Ultra160 SCSI disk 19K0658 36.4GB 10K rpm Ultra160 SCSI disk 00N8209 IBM 16X Max® DVD-ROM Drive (black) 22P6950 12X/8X/32X Max⁶ CD-RW internal (black) 10K3785 16X/10X/40X Max⁶ CD-RW internal (blk) 24P3626 8X/4X/32X/8X Max^{6,19} CD-RW/DVD-ROM Combo drive (black) 10K3790 IBM DVD-RAM/DVD-R Drive (black) 22P6959 Zip Drive 250MB (white/black) 00N8078 IBM P96 19" (17.9" v.i.s.) Monitor (black) 655163N IBM P275 21" (19.8" v.i.s.) Monitor (blk) 6652U3N IBM T540 15" Flat Panel Monitor (black) 9511AG4 IBM T560 15" Flat Panel Monitor (black) 6656HG2 IBM Wireless keyboard and mouse (blk) 22P5170 Spaceball 3D Input Device 33L3252 IBM rack mount kit 09N4300 									<ul style="list-style-type: none"> • Secure access openings • Secure removable media • VPD stored in EEPROM • Write protection control for EEPROM • Barcode labels on most components
<ul style="list-style-type: none"> • <i>Maximum internal EIDE disk capacity¹³:</i> 240GB (3 disk x 80GB 7200 rpm) • <i>Maximum internal SCSI disk capacity¹³:</i> 145.6GB (4 disks x 36.4GB) • Configuration/Setup Utility invoked by pressing F1 at startup • Universal Manageability Services enabled • LANClient Control Manager™ enabled • Common Information Model (CIM) 2.2 • PC2001-compliant • Advanced Power Management 1.2 • Advanced Configuration and Power Interface (ACPI) 1.0b • System Management BIOS • DMI 2.0-compliant • Wired for Management 2.0-compliant 							<ul style="list-style-type: none"> • Secure access openings • Secure removable media • VPD stored in EEPROM • Write protection control for EEPROM • Barcode labels on most components 					

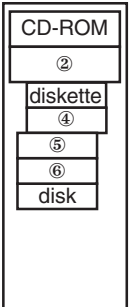
See footnotes for important warranty information

US models announced September 18, 2001; withdrawn effective April 2002 or July 2002

(6214) © IBM Corp. July 2002

IBM IntelliStation® E Pro (6214) - Fall 2001 - withdrawn

IBM® Type-model	Processor	GHz ¹	L2 cache	Memory	Disk and rpm	SCSI adapter	CD-ROM	Graphics adapter and memory	Slots x bays	Preload ¹⁷	Available date
6214-77U	Pentium® 4	1.6GHz	256KB	128MB	40GB ² EIDE 7200	None	CD-ROM	NVIDIA™ Vanta 16MB	6x7	Windows® 2000	Nov 2001
6214-88U	Pentium 4	1.8GHz	256KB	128MB	40GB EIDE 7200	None	CD-ROM	NVIDIA Vanta 16MB	6x7	Windows 2000	Nov 2001

Positioning Processor L2 cache Implementation SMP support	<i>Compelling combination of price, performance and design</i> Intel® Pentium 4 at 1.6, 1.8GHz with 400MHz frontside bus 256KB std and max / ECC / full speed Processor and L2 cache in FC-PGA2 in mPGA478 socket No SMP support		Mini-tower <ul style="list-style-type: none"> Stealth black color H 18.5" x W 6.5" x D 20.0" H 470mm x W 165mm x D 508mm 35 to 43 pounds (15.9 to 19.5kg) Metal cage for disk bays 5,6,7 rotates out of chassis Two front stabilizing feet Handle grip on top Toolless cover removal Toolless AGP and PCI slots Removable left side panel 
Memory - std/max Memory - sockets Memory - type	128MB / 1.5GB max¹³ Three 168-pin gold plated DIMM sockets / one socket used 133MHz SDRAM / non-parity / industry std / unbuffered / PC133-compliant / CAS Latency 2 (CL2) / does support optional Error Checking and Correcting (ECC) DIMMs		
Graphics controller	<ul style="list-style-type: none"> NVIDIA Vanta (2D and 3D) / AGP 4X adapter / TNT2 Vanta GPU / 16MB std and max 125MHz SDRAM / 250MHz RAMDAC / one analog DB-15 connector 		
SCSI disk controller SCSI connectors	None None		
IDE disk controller Cables	Enhanced IDE / ATA-100 / integrated in I/O Controller Hub (ICH2) Two EIDE cables (one 2-drop cable to CD-ROM, one 2-drop cable to EIDE disk)		
Disk - features	40GB EIDE / ATA-100 / 7200 rpm / 8.7 ms read seek / S.M.A.R.T. ⁵		
CD-ROM / diskette	48X-20X ⁶ CD-ROM, bootable, IDE / 3.5" 1.44MB diskette drive		
Rack support Chipset	4U ⁴ rack mount support via tower-to-rack kit option Intel 845 chipset / 82845 Memory Controller Hub (MCH) / 82801BA I/O Controller Hub (ICH2) for PCI 2.2 bus, ATA-100 EIDE, ethernet MAC, USB, Low Pin Count Interface / 82802 Firmware Hub / National [®] 87360 Super I/O for diskette, parallel, serial, keyboard, mouse		
Ports	Front: None Back: two 9-pin serial, parallel, two USB (Ver 1.1), keyboard, mouse, ethernet, monitor		
Audio	Integrated digital audio / SoundMAX [®] 3.0 with SPX™ / software-based audio (done by processor and ICH2) / AC '97 interface / ADI1887 codec		
Audio connectors Speakers Ethernet	Back: microphone jack, line-in, line-out One internal speaker for business audio 10/100 ethernet on planar / ICH2 (MAC layer) with Intel 82562ETPHY (physical layer) / supports PXE and Wake on LAN [®] / Intel Pro/100VE Desktop Connection		
Security chip	None (so no cover tamper detect switch)		
Keyboard / mouse Cooling fans Power supply	104-key (rubber dome) keyboard / IBM 3-button mouse Three variable speed cooling fans (power supply, processor fansink, rear) 340 watts with variable speed fan / universal / auto-sensing		
Preload with Windows 2000¹⁷ Microsoft® Windows® 2000 Professional - Lotus® SmartSuite® Millennium license - Lotus Notes® Client license - Disk-to-Disk Recovery (in Service Partition) ♦ Device Drivers and Diagnostics CD-ROM ♦ Software Selections CD-ROM			Options 64MB SDRAM 133MHz CL2 NP DIMM 10K0055 128MB SDRAM 133MHz CL2 NP DIMM 10K0057 256MB SDRAM 133MHz CL2 NP DIMM 10K0059 512MB SDRAM 133MHz CL2 NP DIMM 10K0061 128MB SDRAM PC133 CL2 ECC UDIMM 10K0044 256MB SDRAM PC133 CL2 ECC UDIMM 10K0046 512MB SDRAM PC133 CL2 ECC UDIMM 10K0048 60GB IDE Disk ATA-100 (7200 rpm) 09N4207 80GB IDE Disk ATA-100 (7200 rpm) 09N4208 PCI Ultra160 SCSI Adapter 19K4646 18.2GB 15K rpm Ultra160 SCSI disk 19K0658 36.4GB 10K rpm Ultra160 SCSI disk 00N8209 IBM 16X Max ⁶ DVD-ROM Drive (black) 22P6950 12X/8X/32X Max ⁶ CD-RW internal (black) 10K3785 16X/10X/40X Max ⁶ CD-RW internal (blk) 24P3626 8X/4X/32X/8X Max ^{6,19} CD-RW/DVD-ROM Combo drive (black) 10K3790 IBM DVD-RAM/DVD-R Drive (black) 22P6959 Zip Drive 250MB (white/black) 00N8078 IBM P96 19" (17.9" v.i.s.) Monitor (black) 655163N IBM P275 21" (19.8" v.i.s.) Monitor (blk) 6652U3N IBM T540 15" Flat Panel Monitor (black) 9511AG4 IBM T560 15" Flat Panel Monitor (black) 6656HG2 IBM Wireless keyboard and mouse (blk) 22P5170 Spaceball 3D Input Device 33L3252 IBM rack mount kit 09N4300
<ul style="list-style-type: none"> Maximum internal EIDE disk capacity¹³: 240GB (3 disk x 80GB 7200 rpm) Maximum internal SCSI disk capacity¹³: 145.6GB (4 disks x 36.4GB) Configuration/Setup Utility invoked by pressing F1 at startup Universal Manageability Services enabled LANClient Control Manager™ enabled Common Information Model (CIM) 2.2 PC2001-compliant Advanced Power Management 1.2 Advanced Configuration and Power Interface (ACPI) 1.0b System Management BIOS DMI 2.0-compliant Wired for Management 2.0-compliant 			SECURITY <ul style="list-style-type: none"> Optional U-bolt support via knockout Cover key lock (on side) Secure fixed DASH Power-on password Administrator password Boot sequence control Boot without keyboard or mouse Diskette boot inhibit and write-protect Diskette, disk, serial port, parallel port I/O control Secure access openings Secure removable media VPD stored in EEPROM Write protection control for EEPROM Barcode labels on most components
LIMITED WARRANTY³ ⇨ 3 year parts and labor ⇨ International Warranty Service ³ ⇨ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time ⇨ 3 year on site warranty service upgrade options: ⁷ <ul style="list-style-type: none"> 4 hour response, Mon-Fri 8-5 (ServicePac® part number 41L2735) 4 hour response, 7 day x 24 hr (ServicePac part number 41L2741) ⇨ Post warranty maintenance services available ⇨ 24x7 ¹⁴ toll-free support for warranty issues during the warranty period ³			

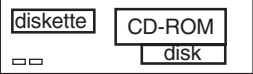
See footnotes for important warranty information
 US models announced November 6, 2001
 US models withdrawn effective July 2002

IBM® Type-model	Processor	GHz ¹	L2 cache	Memory	Disk and rpm	SCSI adapter	CD-ROM	Graphics adapter and memory	Slots x bays	Preload ¹⁷	Available date
6214-40U	Pentium® 4	2.0GHz	512KB	256MB ECC	40GB ² 7200	None	CD	NVIDIA™ Quadro4 64MB	6x7	Windows® 2000	Mar 2002
6214-41U	Pentium 4	2.0GHz	512KB	256MB ECC	40GB 7200	None	CD	Millennium G450 DVI-I 32MB	6x7	Windows 2000	Mar 2002
6214-43U	Pentium 4	2.0GHz	512KB	256MB ECC	18.2GB 10K	29160LP	CD	ATI® Fire GL8800™.11 128MB	6x7	Windows 2000	Mar 2002
6214-91U	Pentium 4	2.0GHz	512KB	128MB NP	40GB 7200	None	CD	NVIDIA Vanta 16MB	6x7	Windows 2000	Mar 2002
6214-50U	Pentium 4	2.2GHz	512KB	256MB ECC	40GB 7200	None	CD	NVIDIA Quadro4 64MB	6x7	Windows 2000	Mar 2002
6214-51U	Pentium 4	2.2GHz	512KB	256MB ECC	40GB 7200	None	CD	Millennium G450 DVI-I 32MB	6x7	Windows 2000	Mar 2002
6214-53U	Pentium 4	2.2GHz	512KB	256MB ECC	18.2GB 10K	29160LP	CD	ATI Fire GL8800 128MB	6x7	Windows 2000	Mar 2002
Positioning	<i>Compelling combination of price, performance and design</i>							Mini-tower			
Processor	Intel® Pentium 4 at 2.0 or 2.2GHz with 400MHz frontside bus							<ul style="list-style-type: none"> Stealth black color H 18.5" x W 6.5" x D 20.0" H 470mm x W 165mm x D 508mm 35 to 43 pounds (15.9 to 19.5kg) Metal cage for disk bays 5,6,7 rotates out of chassis Two front stabilizing feet Handle grip on top Toolless cover removal Toolless AGP and PCI slots Removable left side panel 			
L2 cache	512KB std and max / ECC / full speed							Bay ① 5.25", HH 1.6", access, CD-ROM Bay ② 5.25", HH 1.6", access, open Bay ③ 3.5", SL 1", access, diskette Bay ④ 3.5", SL 1", access, open Bay ⑤ 3.5", SL 1", no access, disk Bay ⑥ 3.5", SL 1", no access, open Bay ⑦ 3.5", SL 1", no access, open			
Implementation	Processor and L2 cache in FC-PGA2 in mPGA478 socket							Slot 1: fullsize, AGP 4X, 25 watt (3.3v) - used by graphics Slot 2: fullsize, 32-bit 33MHz, PCI 2.2 (5v) - SCSI (some) Slot 3: fullsize, 32-bit 33MHz, PCI 2.2 (5v) Slot 4: fullsize, 32-bit 33MHz, PCI 2.2 (5v) Slot 5: fullsize, 32-bit 33MHz, PCI 2.2 (5v)** Slot 6: fullsize, 32-bit 33MHz, PCI 2.2 (5v)** ** on two-slot PCI extender board			
SMP support	No SMP support										
Memory - std/max	128MB or 256MB / 1.5GB max¹³										
Memory - sockets	Three 168-pin gold plated DIMM sockets / one socket used										
Memory - type	133MHz SDRAM / Error Checking and Correcting (ECC) DIMMs and ECC memory controller [except 6214-91U uses non-parity DIMMs] / industry std / unbuffered / PC133-compliant / CAS Latency 2 (CL2)										
Graphics controller (one of following)	<ul style="list-style-type: none"> NVIDIA Vanta (2D and 3D) / AGP 4X adapter / TNT2 Vanta GPU / 16MB std and max 125MHz SDRAM / 250MHz RAMDAC / one analog DB-15 connector Matrox® Millennium G450 DVI-I (high-perf 2D) / AGP 4X adapter / MGA G450F GPU / 32MB 150MHz DDR-SDRAM / dual RAMDAC [360/232MHz] / dual head support / one DVI-I connector (ships with one cable with two DB-15 analog conns) NVIDIA Quadro4 200NVs (high-perf 2D) / AGP 4X adapter / NV17LT 250MHz GPU / 64MB 166MHz SDRAM / dual 350MHz RAMDACs / dual head: 2048x1536x16M each monitor / LFH60 connector for std cable with two DB-15 analog ATI Fire GL8800™ (advanced 3D) / AGP 4X adapter / Radeon™ 8800 GPU / 128MB 300MHz DDR-SGRAM / dual RAMDAC [400/165MHz] / dual head support / one DB-15 analog and one DVI-I conrtr (ships with one DVI-I to DB-15 cable) 										
SCSI disk controller	SCSI <i>model</i> : Adaptec® 29160LP / single channel Wide Ultra160 SCSI (LVD160MB/sec) / 64-bit 33MHz PCI adapter (in a 32-bit slot) / one channel with up to 15 device support										
SCSI connectors	SCSI <i>models</i> : One 68-pin internal SCSI connector / one 0.8mm VHDCI 68-pin external SCSI connector										
Disk controller	Enhanced IDE / ATA-100 / integrated in I/O Controller Hub (ICH2) / two connectors on planar										
Cables	SCSI <i>model</i> : One 5-drop 16-bit LVD SCSI cable, one 2-drop EIDE cable (connected to CD-ROM)										
Disk	EIDE <i>models</i> : Two EIDE 80-conductor cables (one 2-drop cable to CD, one 2-drop cable to disk) SCSI <i>models</i> : 18.2GB Ultra160 SCSI / 10000 rpm / 4.9 ms read seek / SMART ⁵ EIDE <i>models</i> : 40GB EIDE / ATA-100 / 7200 rpm / 9.0 ms read seek / SMART										
CD-ROM / diskette	48X-20X ⁶ CD-ROM, bootable, IDE / 3.5" 1.44MB diskette drive										
Rack support	4U ⁴ rack mount support via tower-to-rack kit option										
Chipset	Intel 845 chipset / 82845 Memory Controller Hub (MCH) / 82801BA I/O Controller Hub (ICH2) for PCI 2.2 bus, ATA-100 EIDE, ethernet MAC, USB, Low Pin Count Interface / 82802 Firmware Hub / National® 87360 Super I/O for diskette, parallel, serial, keyboard, mouse										
Ports	<i>Back</i> : two 9-pin serial, parallel, two USB (Ver 1.1), keyboard, mouse, ethernet, monitor; <i>Front</i> : two USB (Ver 1.1)										
Audio	Integrated digital audio / SoundMAX™ 3.0 with SPX™ / software-based audio (done by processor and ICH2) / AC '97 interface / ADI1887 codec										
Audio connectors	<i>Back</i> : microphone jack, line-in, line-out										
Speakers	One internal speaker for business audio										
Ethernet	10/100 ethernet on planar / ICH2 (MAC layer) with Intel 82562ETPHY (physical layer) / supports PXE and Wake on LAN® / Intel Pro/100VE Desktop Connection										
Security chip	None (so no cover tamper detect switch)										
Keyboard / mouse	104-key (rubber dome) keyboard / IBM 3-button mouse										
Cooling fans	Three variable speed cooling fans (power supply, processor fansink, rear)										
Power supply	340 watts with variable speed fan / universal / auto-sensing										
Preload with Windows 2000¹⁷			Options								
Microsoft® Windows® 2000 Professional			128MB SDRAM 133MHz CL2 NP DIMM*			10K0057					
- Lotus® SmartSuite® Millennium license			256MB SDRAM 133MHz CL2 NP DIMM*			10K0059					
- Lotus Notes® Client license			512MB SDRAM 133MHz CL2 NP DIMM*			10K0061					
- Disk-to-Disk Recovery (in Service Partition)			128MB SDRAM PC133 CL2 ECC UDIMM			10K0044					
◇ Device Drivers and Diagnostics CD-ROM			256MB SDRAM PC133 CL2 ECC UDIMM			10K0046					
◇ Software Selections CD-ROM			512MB SDRAM PC133 CL2 ECC UDIMM			10K0048					
<ul style="list-style-type: none"> Configuration/Setup Utility invoked by pressing F1 at startup Universal Manageability Services enabled LANClient Control Manager™ enabled Common Information Model (CIM) 2.2 PC 2001-compliant Advanced Configuration and Power Interface (ACPI) 1.0b System Management BIOS DMI 2.0-compliant Wired for Management 2.0-compliant 			80GB IDE Disk ATA-100 (7200 rpm)			09N4208					
			PCI Ultra160 SCSI Adapter			19K4646					
			36.4GB 10K rpm Ultra160 SCSI disk			00N8209					
			IBM 16X Max ⁶ DVD-ROM Drive (black)			22P6950					
			12X/8X/32X Max ⁶ CD-RW internal (black)			10K3785					
			16X/10X/40X Max ⁶ CD-RW internal (blk)			24P3626					
			8X/4X/32X/8X Max ^{6,19} CD-RW/DVD-ROM Combo drive (black)			10K3790					
			IBM DVD-RAM/DVD-R Drive (black)			22P6959					
			IBM T560 15" Flat Panel Monitor (black)			6656HG2					
			IBM rack mount kit			09N4300					
			Other options at ibm.com/pc/us/accessories								
LIMITED WARRANTY³											
⇒ 3 year parts and labor											
⇒ International Warranty Service³											
⇒ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time											
⇒ 3 year on site warranty service upgrade options:⁷											
<ul style="list-style-type: none"> 4 hour response, Mon-Fri 8-5 (ServicePac® part number 41L2735) 4 hour response, 7 day x 24 hr (ServicePac part number 41L2741) 											
⇒ Post warranty maintenance services available											
⇒ 24x7¹² toll-free support for warranty issues during the warranty period³											

See footnotes for important warranty information *Non-parity memory for Model 91U only
US models announced February 5, 2002; withdrawn effective February 28, 2003

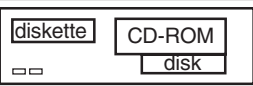
IBM® Type-model	Processor	GHz ¹	L2 cache	Memory	Disk and rpm	SCSI adapter	CD-ROM	Graphics adapter and memory	Slots x bays	Preload ¹⁷	Available date
6214-45U	Pentium® 4	2.0GHz	512KB	256MB ECC	40GB ² 7200	None	CD NVIDIA™ Quadro4	64MB	6x7	Windows® XP Pro	Jun 02
6214-46U	Pentium 4	2.0GHz	512KB	256MB ECC	40GB 7200	None	CD Millennium G450 DVI-I	32MB	6x7	Windows XP Pro	Jun 02
6214-48U	Pentium 4	2.0GHz	512KB	256MB ECC	18.2GB 10K	29160LP	CD ATI® Fire GL8800™.11	128MB	6x7	Windows XP Pro	Jun 02
6214-96U	Pentium 4	2.0GHz	512KB	128MB NP	40GB 7200	None	CD NVIDIA Vanta	16MB	6x7	Windows XP Pro	Jun 02
6214-55U	Pentium 4	2.2GHz	512KB	256MB ECC	40GB 7200	None	CD NVIDIA Quadro4	64MB	6x7	Windows XP Pro	Jun 02
6214-56U	Pentium 4	2.2GHz	512KB	256MB ECC	40GB 7200	None	CD Millennium G450 DVI-I	32MB	6x7	Windows XP Pro	Jun 02
6214-58U	Pentium 4	2.2GHz	512KB	256MB ECC	18.2GB 10K	29160LP	CD ATI Fire GL8800	128MB	6x7	Windows XP Pro	Jun 02
Positioning	<i>Compelling combination of price, performance and design</i>							Mini-tower			
Processor	Intel® Pentium 4 at 2.0 or 2.2GHz with 400MHz frontside bus							<ul style="list-style-type: none"> Stealth black color H 18.5" x W 6.5" x D 20.0" H 470mm x W 165mm x D 508mm 35 to 43 pounds (15.9 to 19.5kg) Metal cage for disk bays 5,6,7 rotates out of chassis Two front stabilizing feet Handle grip on top Toolless cover removal Toolless AGP and PCI slots Removable left side panel 			
L2 cache	512KB std and max / ECC / full speed							<ul style="list-style-type: none"> Bay ① 5.25", HH 1.6", access, CD-ROM Bay ② 5.25", HH 1.6", access, open Bay ③ 3.5", SL 1", access, diskette Bay ④ 3.5", SL 1", access, open Bay ⑤ 3.5", SL 1", no access, disk Bay ⑥ 3.5", SL 1", no access, open Bay ⑦ 3.5", SL 1", no access, open 			
Implementation	Processor and L2 cache in FC-PGA2 in mPGA478 socket							<ul style="list-style-type: none"> Slot 1: fullsize, AGP 4X, 25 watt (3.3v) - used by graphics Slot 2: fullsize, 32-bit 33MHz, PCI 2.2 (5v) - SCSI (some) Slot 3: fullsize, 32-bit 33MHz, PCI 2.2 (5v) Slot 4: fullsize, 32-bit 33MHz, PCI 2.2 (5v) Slot 5: fullsize, 32-bit 33MHz, PCI 2.2 (5v)** Slot 6: fullsize, 32-bit 33MHz, PCI 2.2 (5v)** 			
SMP support	No SMP support							<ul style="list-style-type: none"> ** on two-slot PCI extender board 			
Memory - std/max	128MB or 256MB / 1.5GB max¹³										
Memory - sockets	Three 168-pin gold plated DIMM sockets / one socket used										
Memory - type	133MHz SDRAM / Error Checking and Correcting (ECC) DIMMs and ECC memory controller [except 6214-96U uses non-parity DIMMs] / industry std / unbuffered / PC133-compliant / CAS Latency 2 (CL2)										
Graphics controller (one of following)	<ul style="list-style-type: none"> NVIDIA Vanta (2D and 3D) / AGP 4X adapter / TNT2 Vanta GPU / 16MB std and max 125MHz SDRAM / 250MHz RAMDAC / one analog DB-15 connector Matrox® Millennium G450 DVI-I (high-perf 2D) / AGP 4X adapter / MGA G450F GPU / 32MB 150MHz DDR-SDRAM / dual RAMDAC [360/232MHz] / dual head support / one DVI-I connector (ships with one cable with two DB-15 analog conns) NVIDIA Quadro4 200NVS (high-perf 2D) / AGP 4X adapter / NV17LT 250MHz GPU / 64MB 166MHz SDRAM / dual 350MHz RAMDACs / dual head: 2048x1536x16M each monitor / LFH60 connector for std cable with two DB-15 analog ATI Fire GL8800™ (advanced 3D) / AGP 4X adapter / Radeon™ 8800 GPU / 128MB 300MHz DDR-SGRAM / dual RAMDAC [400/165MHz] / dual head support / one DB-15 analog and one DVI-I conrtr (ships with one DVI-I to DB-15 cable) 										
SCSI disk controller	SCSI model: Adaptec® 29160LP / single channel Wide Ultra160 SCSI (LVD160MB/sec) / 64-bit 33MHz PCI adapter (in a 32-bit slot) / one channel with up to 15 device support										
SCSI connectors	SCSI models: One 68-pin internal SCSI connector / one 0.8mm VHDCI 68-pin external SCSI connector										
Disk controller	Enhanced IDE / ATA-100 / integrated in I/O Controller Hub (ICH2) / two connectors on planar										
Cables	SCSI model: One 5-drop 16-bit LVD SCSI cable, one 2-drop EIDE cable (connected to CD-ROM)										
Disk	EIDE models: Two EIDE 80-conductor cables (one 2-drop cable to CD, one 2-drop cable to disk)										
	SCSI models: 18.2GB Ultra160 SCSI / 10000 rpm / 4.9 ms read seek / SMART ⁵										
	EIDE models: 40GB EIDE / ATA-100 / 7200 rpm / 9.0 ms read seek / SMART										
CD-ROM / diskette	48X-20X ⁶ CD-ROM, bootable, IDE / 3.5" 1.44MB diskette drive										
Rack support	4U ⁴ rack mount support via tower-to-rack kit option										
Chipset	Intel 845 chipset / 82845 Memory Controller Hub (MCH) / 82801BA I/O Controller Hub (ICH2) for PCI 2.2 bus, ATA-100 EIDE, ethernet MAC, USB, Low Pin Count Interface / 82802 Firmware Hub / National® 87360 Super I/O for diskette, parallel, serial, keyboard, mouse										
Ports	<i>Back:</i> two 9-pin serial, parallel, two USB (Ver 1.1), keyboard, mouse, ethernet, monitor; <i>Front:</i> two USB (Ver 1.1)										
Audio	Integrated digital audio / SoundMAX® 3.0 with SPX™ / software-based audio (done by processor and ICH2) / AC '97 interface / ADI1887 codec										
Audio connectors	<i>Back:</i> microphone jack, line-in, line-out										
Speakers	One internal speaker for business audio										
Ethernet	10/100 ethernet on planar / ICH2 (MAC layer) with Intel 82562ETPHY (physical layer) / supports PXE and Wake on LAN® / Intel Pro/100VE Desktop Connection										
Security chip	None (so no cover tamper detect switch)										
Keyboard / mouse	104-key (rubber dome) keyboard / IBM 3-button mouse										
Cooling fans	Three variable speed cooling fans (power supply, processor fansink, rear)										
Power supply	340 watts with variable speed fan / universal / auto-sensing										
Preload with Windows XP Professional¹⁷			Options								
Microsoft® Windows® XP Professional			128MB SDRAM 133MHz CL2 NP DIMM*			10K0057					
- Lotus® SmartSuite® Millennium license			256MB SDRAM 133MHz CL2 NP DIMM*			10K0059					
- Lotus Notes® Client license			512MB SDRAM 133MHz CL2 NP DIMM*			10K0061					
- Disk-to-Disk Recovery (in Service Partition)			128MB SDRAM PC133 CL2 ECC UDIMM			10K0044					
◇ Device Drivers and Diagnostics CD-ROM			256MB SDRAM PC133 CL2 ECC UDIMM			10K0046					
◇ Software Selections CD-ROM			512MB SDRAM PC133 CL2 ECC UDIMM			10K0048					
<ul style="list-style-type: none"> Configuration/Setup Utility invoked by pressing F1 at startup Universal Manageability Services enabled LANClient Control Manager™ enabled Common Information Model (CIM) 2.2 PC 2001-compliant Advanced Configuration and Power Interface (ACPI) 1.0b System Management BIOS DMI 2.0-compliant Wired for Management 2.0-compliant 			80GB IDE Disk ATA-100 (7200 rpm)			09N4208					
			PCI Ultra160 SCSI Adapter			19K4646					
			36.4GB 10K rpm Ultra160 SCSI disk			00N8209					
			IBM 16X Max ⁶ DVD-ROM Drive (black)			22P6950					
			24X/10X/40X Max ⁶ CD-RW internal (blk)			24P6965					
			8X/4X/32X/8X Max ^{6,19} CD-RW/DVD-ROM Combo drive (black)			10K3790					
			IBM DVD-RAM/DVD-R Drive (black)			22P6959					
			IBM T560 15" Flat Panel Monitor (black)			6656HG2					
			IBM P275 21" (19.8" v.i.s.) Monitor (blk)			6652U3N					
			IBM Rack Mount Kit			09N4300					
			Other options at ibm.com/pc/us/accessories								
LIMITED WARRANTY³											
⇒ 3 year parts and labor											
⇒ International Warranty Service³											
⇒ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time											
⇒ 3 year on site warranty service upgrade options:⁷											
<ul style="list-style-type: none"> 4 hour response, Mon-Fri 8-5 (ServicePac® part number 41L2735) 4 hour response, 7 day x 24 hr (ServicePac part number 41L2741) 											
⇒ Post warranty maintenance services available											
⇒ 24 hour x 7 day¹⁴ telephone, electronic, and Internet support											

See footnotes for important warranty information * Non-parity memory for Model 96U only
 ⚡ US models announced June 4, 2002; withdrawn effective February 28, 2003

IBM® Type-model	Processor	GHz	L2 cache	FSB MHz	Memory	Disk and rpm	SCSI adapter	CD-ROM	Graphics adapter and memory	Slots x bays	Preload ¹⁷	Available date	
6216-20U	Pentium® 4	2.0	512KB	400	256MB	40GB ² 7200	None	CD-ROM	Millennium G450 DVI-I 32MB	4x3	Windows® XP Pro	Aug 02	
6216-22U	Pentium 4	2.0	512KB	400	256MB	40GB 7200	None	CD-ROM	NVIDIA™ Quadro4 64MB	4x3	Windows XP Pro	Aug 02	
6216-23U	Pentium 4	2.0	512KB	400	256MB	18.2GB 10K 29160LP	None	CD-ROM	NVIDIA Quadro4 64MB	4x3	Windows XP Pro	Aug 02	
6216-30U	Pentium 4	2.26	512KB	533	256MB	40GB 7200	None	CD-ROM	Millennium G450 DVI-I 32MB	4x3	Windows XP Pro	Aug 02	
6216-32U	Pentium 4	2.26	512KB	533	256MB	40GB 7200	None	CD-ROM	NVIDIA Quadro4 64MB	4x3	Windows XP Pro	Aug 02	
6216-40U	Pentium 4	2.4	512KB	533	256MB	40GB 7200	None	CD-ROM	Millennium G450 DVI-I 32MB	4x3	Windows XP Pro	Aug 02	
6216-42U	Pentium 4	2.4	512KB	533	256MB	40GB 7200	None	CD-ROM	NVIDIA Quadro4 64MB	4x3	Windows XP Pro	Aug 02	
Positioning Processor		<i>Essential workstation performance</i> Intel® Pentium 4 at 2.0, 2.26, or 2.4GHz with 400 or 533MHz frontside bus (FSB)							Low-profile Desktop				
L2 cache Implementation SMP support		512KB std and max / ECC / full speed Processor and L2 cache in FC-PGA2 in mPGA478 socket No SMP support											
Memory - std/max Memory - sockets Memory - type		256MB / 2GB ¹³ max Two 184-pin gold-plated DIMM sockets / one socket used PC2100 266MHz DDR-SDRAM / Error Checking and Correcting (ECC) DIMMs and ECC memory controller / industry std / unbuffered / CAS Latency 2.5 (CL2.5)							Bay ① 3.5", SL 1", access, std diskette Bay ② 5.25", HH 1.6", access, std CD-ROM Bay ③ 3.5", SL 1", no access, std disk Slot 1: low-profile, 32-bit AGP 4X (1.5v) - used Slot 2: low-profile, 32-bit PCI 2.2 (5v) Slot 3: low-profile, 32-bit PCI 2.2 (5v) Slot 4: low-profile, 32-bit PCI 2.2 (5v)- SCSI (some)				
Graphics controller (one of following)		<ul style="list-style-type: none"> • Matrox® Millennium G450 DVI-I (high-perf 2D) / AGP 4X adapter / MGA G450F GPU / 32MB 150MHz DDR-SDRAM / dual RAMDAC [360/232MHz] / dual head support / one DVI-I connector (ships with one cable with two DB-15 analog connors) • NVIDIA Quadro4 200NVS (high-perf 2D) / AGP 4X adapter / NV17LT 250MHz GPU / 64MB 166MHz SDRAM / dual 350MHz RAMDACs / dual head: 2048x1536x16M each monitor / LFH60 connector for std cable with two DB-15 analog 							<ul style="list-style-type: none"> • Stealth black color • 14.2" W X 16.2" D X 4.1" H • 360mm W X 412mm D X 104mm H • 20.0 to 22.0 lb (9.1 to 10.0 kg) • Bays 1 and 2/3 flip up (latched and pivoting) • Toolless rails for disk mounting • Toolless cover removal • Toolless AGP and PCI slots • Support for 100 lb monitor on top 				
SCSI disk controller		<i>SCSI model:</i> Adaptec® 29160LP / single channel Wide Ultra160 SCSI (LVD 160MB/sec) / 64-bit 33MHz PCI adapter (in a 32-bit slot) / one channel with up to 15 device support											
SCSI connectors		<i>SCSI models:</i> One 68-pin internal SCSI connector / one 0.8mm VHDCI 68-pin external SCSI connector											
Disk controller		Enhanced IDE / ATA-100 / integrated in I/O Controller Hub / two connectors on planar											
Cables		<i>SCSI model:</i> One 1-drop 16-bit LVD SCSI cable, one 1-drop EIDE 80-conductor cable (connected to CD-ROM) <i>EIDE models:</i> Two EIDE 80-conductor cables (one 1-drop cable to CD, one 1-drop cable to disk)											
Disk		<i>SCSI model:</i> 18.2GB Ultra160 SCSI / 10000 rpm / 4.9 ms read / S.M.A.R.T. ⁵ <i>EIDE models:</i> 40GB EIDE / ATA-100 / 7200 rpm / 9.0 ms read seek / S.M.A.R.T.											
Diskette / CD-ROM Rack support Chipset		3.5" 1.44MB diskette drive / 48X-20X ⁶ CD-ROM, bootable None Intel 845E chipset / 82845E Memory Controller Hub (MCH) / 82801DB I/O Controller Hub (ICH4) for PCI 2.2 bus, ATA-100 EIDE, ethernet MAC, USB, Low Pin Count Interface / Firmware Hub / SMSC® LPC47M102 Super I/O for diskette, parallel, serial, keyboard, mouse							<p style="text-align: center;">SECURITY</p> <ul style="list-style-type: none"> • Optional U-bolt support via knockout • Cover key lock (on rear) • Cover tamper detect switch • Secure fixed DASD • Power-on password • Administrator password • Boot sequence control • Boot without keyboard or mouse • Diskette boot inhibit and write-protect • Diskette, disk, serial port, parallel port I/O control • Secure access openings • Secure removable media • VPD stored in EEPROM • Write protection control for EEPROM • Barcode labels on most components 				
Ports		<i>Front:</i> two USB (Ver 2.0) <i>Back:</i> two 9-pin serial, parallel, two USB (Ver 2.0), keyboard, mouse, ethernet, monitor							<ul style="list-style-type: none"> • <i>Maximum internal EIDE disk capacity:</i> 80GB¹³ (1 disk x 80GB 7200 rpm) • <i>Maximum internal SCSI disk capacity:</i> 73.4GB¹³ (1 disk x 73.4GB 10000 rpm) 				
Audio		Integrated digital audio / SoundMAX® 3.0 with SPX™ / software-based audio (done by processor and ICH4) / AC '97 interface / Realtec®ALC202 codec / (analog mixing, Analog-to-Digital and Digital-to-Analog conversion) <i>Back:</i> microphone-in (mono), line-in (stereo), line-out (stereo) [all 3.5mm]											
Audio connectors		One internal speaker for business audio											
Speakers		10/100/1000 gigabit / Broadcom® BCM 5702 / on planar / PCI 2.2 32-bit 33MHz / full duplex / PHY and MAC layers / Wake on LAN® / Alert Standard Format 1.0											
Ethernet		None											
Security chip		None											
Keyboard / mouse		104-key (rubber dome) keyboard / IBM 3-button mouse											
Cooling fans		Two or three variable speed fans (power sply, fansink, SCSI model has third fan)											
Power supply		160 watts with variable speed fan / universal / manual switch											
Preload with Windows XP Professional¹⁷		Options											
Microsoft® Windows® XP Professional		256MB PC2100 CL2.5 ECC DDR UDIMM 10K0067											
- Lotus® SmartSuite® Millennium license		512MB PC2100 CL2.5 ECC DDR UDIMM 10K0069											
- Lotus Notes® Client license		1GB PC2100 CL2.5 ECC DDR UDIMM 10K0071											
- Disk-to-Disk Recovery (in Service Partition)		40GB IDE Disk ATA-100 (7200 rpm) 22P7157											
◇ Device Drivers and Diagnostics CD-ROM		60GB IDE Disk ATA-100 (7200 rpm) 09N4207											
		80GB IDE Disk ATA-100 (7200 rpm) 09N4226											
		PCI Ultra160 SCSI Adapter 19K4646											
		36.4GB 10K rpm Ultra160 SCSI Disk 06P5751											
		73.4GB 10K rpm Ultra160 SCSI Disk 06P5752											
		40X/12X/40X Max ⁶ CD-RW internal (black) 22P6976											
		32X/10X/40X/16X Max ^{6,19} CD-RW/DVD-ROM Combo drive (black) 22P6973											
		IBM DVD-RAM/DVD-R Drive (black) 22P6959											
		IBM P97 19" (18.0" v.i.s.) Monitor (black) 6551U3N											
		IBM P275 21" (19.8" v.i.s.) Monitor (black) 6652U3N											
		IBM T545 15.1" Flat Panel Monitor (black) 6653HG2											
		IBM T750 17" Flat Panel Monitor (black) 6657HG2											
		IBM Wireless keyboard and mouse (black) 22P5170											
		Spaceball 3D Input Device 33L3252											
		Other options at ibm.com/pc/us/accessories											
<ul style="list-style-type: none"> • Configuration/Setup Utility invoked by pressing F1 at startup • Product Recovery by pressing F11 at startup • Systems management capabilities: Remote Deployment Manager, IBM Director Agent, System Migration Assistant • Common Information Model (CIM) 2.2 • PC 2001-compliant • Advanced Power Management 1.2 • Advanced Configuration and Power Interface (ACPI) 1.0b • System Management BIOS • DMI 2.0-compliant 													
		<p style="text-align: center;">LIMITED WARRANTY³</p> <ul style="list-style-type: none"> ⇒ 3 year parts and labor ⇒ International Warranty Service³ ⇒ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time ⇒ On site service upgrade options (in eligible locations):⁷ <ul style="list-style-type: none"> • 3yr IOR Mon-Fri 8-5, 4 hr average response (ServicePac® 41L2735) • 3yr IOR 7 day x 24 hr, 4 hr average response (ServicePac 41L2741) • 4yr IOR Mon-Fri 8-5, next business day response (ServicePac 69P9167) • 4yr IOR Mon-Fri 8-5, 4 hr average response (ServicePac 69P9168) • 4yr IOR 7 day x 24 hr, 4 hr average response (ServicePac 69P9169) ⇒ 24x7¹⁴ toll-free support for warranty issues during the warranty period 											

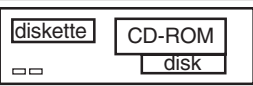
See footnotes for important warranty information
US models announced July 16, 2002; withdrawn effective October 2002 or October 30, 2003

IBM IntelliStation® E Pro (6216) - November 2002 - withdrawn xREF by eServer Field Skills Enablement Team

IBM® Type-model	Processor	L2 cache	FSB MHz	Memory	Disk and rpm	SCSI adapter	CD-ROM	Graphics adapter and memory	Slots x bays	Preload ¹⁷	Available date						
6216-50U	Pentium® 4	2.67	512KB	533	256MB 40GB ² 7200	None	CD-ROM	Millennium G450 DVI-I 32MB	4x3	Windows® XP Pro	Nov02						
6216-52U	Pentium 4	2.67	512KB	533	256MB 40GB 7200	None	CD-ROM	Quadro® 4 200NVS 64MB	4x3	Windows XP Pro	Nov02						
6216-54U	Pentium 4	2.67	512KB	533	256MB 40GB 7200	None	CD-ROM	Quadro4 580XGL 64MB	4x3	Windows XP Pro	Nov02						
6216-55U	Pentium 4	2.67	512KB	533	256MB 18.2GB 10K	29160LP	CD-ROM	Quadro4 580XGL 64MB	4x3	Windows XP Pro	Nov02						
Positioning Processor	<i>Essential workstation performance</i> Intel® Pentium 4 at 2.67GHz with 533MHz frontside bus (FSB)							Low-profile Desktop									
L2 cache	512KB std and max / ECC / full speed																
Implementation	Processor and L2 cache in FC-PGA2 in mPGA478 socket							Bay ① 3.5", SL 1", access, std diskette Bay ② 5.25", HH 1.6", access, std CD-ROM Bay ③ 3.5", SL 1", no access, std disk									
SMP support	No SMP support							Slot 1: low-profile, 32-bit AGP 4X (1.5v) - used Slot 2: low-profile, 32-bit PCI 2.2 (5v) Slot 3: low-profile, 32-bit PCI 2.2 (5v) Slot 4: low-profile, 32-bit PCI 2.2 (5v)- SCSI (some)									
Memory - std/max	256MB / 2GB ¹³ max							<ul style="list-style-type: none"> Stealth black color 14.2" W X 16.2" D X 4.1" H 360mm W X 412mm D X 104mm H 20.0 to 22.0 lb (9.1 to 10.0 kg) Bays 1 and 2/3 flip up (latched and pivoting) Toolless rails for disk mounting Toolless cover removal Toolless AGP and PCI slots Support for 100 lb monitor on top 									
Memory - sockets	Two 184-pin gold-plated DIMM sockets / one socket used																
Memory - type	PC2100 266MHz DDR-SDRAM / Error Checking and Correcting (ECC) DIMMs and ECC memory controller / industry std / unbuffered / CAS Latency 2.5 (CL2.5)																
Graphics controller (one of following)	<ul style="list-style-type: none"> Matrox® Millennium G450 DVI-I (high-perf 2D) / AGP 4X adapter / MGA G450F GPU / 32MB 150MHz DDR-SDRAM / dual RAMDAC [360/232MHz] / dual head support / one DVI-I connector (ships with one cable with two DB-15 analog connectors) NVIDIA® Quadro4 200NVS (high-perf 2D) / AGP 4X adapter / NV17LT 250MHz GPU / 64MB 166MHz SDRAM / dual 350MHz RAMDACs / dual head: 2048x1536x16M each monitor / LFH60 connector for std cable with two DB-15 analog NVIDIA Quadro4 580XGL (entry 3D) / AGP 8X adapter / NV18GL 300MHz GPU / 64MB 275MHz DDR-SDRAM / dual 350MHz RAMDACs / dual head: 2048x1536x16M each monitor / LFH60 connector including std cable with two DB-15 analog connectors 																
SCSI disk controller	SCSI model: Adaptec® 29160LP / single channel Wide Ultra160 SCSI (LVD 160MB/sec) / 64-bit 33MHz PCI adapter (in a 32-bit slot) / one channel with up to 15 device support																
SCSI connectors	SCSI model: One 68-pin internal SCSI connector / one 0.8mm VHDCI 68-pin external SCSI connector																
Disk controller	Enhanced IDE / ATA-100 / integrated in I/O Controller Hub / two connectors on planar																
Cables	SCSI model: One 1-drop 16-bit LVD SCSI cable, one 1-drop EIDE 80-conductor cable (connected to CD-ROM)																
Disk	SCSI model: 18.2GB Ultra160 SCSI / 10000 rpm / 4.9 ms read / S.M.A.R.T. ⁵ EIDE models: 40GB EIDE / ATA-100 / 7200 rpm / 9.0 ms read seek / S.M.A.R.T.																
Diskette / CD-ROM	3.5" 1.44MB diskette drive / 48X-20X ⁶ CD-ROM, bootable							SECURITY <ul style="list-style-type: none"> Optional U-bolt support via knockout Cover key lock (on rear) Cover tamper detect switch Secure fixed DASH Power-on password Administrator password Boot sequence control Boot without keyboard or mouse Diskette boot inhibit and write-protect Diskette, disk, serial port, parallel port I/O control Secure access openings Secure removable media VPD stored in EEPROM Write protection control for EEPROM Barcode labels on most components <ul style="list-style-type: none"> Maximum internal EIDE disk capacity: 80GB¹³ (1 disk x 80GB 7200 rpm) Maximum internal SCSI disk capacity: 73.4GB¹³ (1 disk x 73.4GB 10000 rpm) 									
Rack support	None																
Chipset	Intel 845E chipset / 82845E Memory Controller Hub (MCH) / 82801DB I/O Controller Hub (ICH4) for PCI 2.2 bus, ATA-100 EIDE, ethernet MAC, USB, Low Pin Count Interface / Firmware Hub / SMSC® LPC47M102 Super I/O for diskette, parallel, serial, keyboard, mouse																
Ports	Front: two USB (Ver 2.0) Back: two 9-pin serial, parallel, two USB (Ver 2.0), keyboard, mouse, ethernet, monitor																
Audio	Integrated digital audio / SoundMAX® 3.0 with SPX™ / software-based audio (done by processor and ICH4) / AC '97 interface / Realtec® ALC202 codec / (analog mixing, Analog-to-Digital and Digital-to-Analog conversion)																
Audio connectors	Back: microphone-in (mono), line-in (stereo), line-out (stereo) [all 3.5mm]																
Speakers	One internal speaker for business audio																
Ethernet	10/100/1000 gigabit / Broadcom® BCM 5702 / on planar / PCI 2.2 32-bit 33MHz / full duplex / PHY and MAC layers / Wake on LAN® / Alert Standard Format 1.0																
Security chip	None																
Keyboard / mouse	104-key (rubber dome) keyboard / IBM 3-button mouse																
Cooling fans	Two or three variable speed fans (power sply, fansink, SCSI model has third fan)																
Power supply	160 watts with variable speed fan / universal / manual switch																
Preload with Windows XP Professional¹⁷																	
Microsoft® Windows® XP Professional - Lotus® SmartSuite® Millennium license - Lotus Notes® Client license - Disk-to-Disk Recovery (in Service Partition) ♦ Device Drivers and Diagnostics CD-ROM						Options											
<ul style="list-style-type: none"> Configuration/Setup Utility invoked by pressing F1 at startup Product Recovery by pressing F11 at startup Systems management capabilities: Remote Deployment Manager, IBM Director Agent, System Migration Assistant Common Information Model (CIM) 2.2 PC 2001-compliant Advanced Power Management 1.2 Advanced Configuration and Power Interface (ACPI) 1.0b System Management BIOS DMI 2.0-compliant 						256MB PC2100 CL2.5 ECC DDR UDIMM 10K0067 512MB PC2100 CL2.5 ECC DDR UDIMM 10K0069 1GB PC2100 CL2.5 ECC DDR UDIMM 10K0071 40GB IDE Disk ATA-100 (7200 rpm) 22P7157 60GB IDE Disk ATA-100 (7200 rpm) 09N4207 80GB IDE Disk ATA-100 (7200 rpm) 09N4226 PCI Ultra160 SCSI Adapter 19K4646 36.4GB 10K rpm Ultra160 SCSI Disk 06P5751 73.4GB 10K rpm Ultra160 SCSI Disk 06P5752 40X/12X/40X Max ⁶ CD-RW internal (black) 22P6976 32X/10X/40X/16X Max ^{6,19} CD-RW/DVD-ROM Combo drive (black) 22P6973 IBM DVD-RAM/DVD-R Drive (black) 22P6959 IBM P97 19" (18.0" v.i.s.) Monitor (black) 6551U3N IBM P275 21" (19.8" v.i.s.) Monitor (black) 6652U3N IBM T545 15.1" Flat Panel Monitor (black) 6653HG2 IBM T750 17" Flat Panel Monitor (black) 6657HG2 IBM Wireless keyboard and mouse (black) 22P5170 Spaceball 3D Input Device 33L3252 Other options at ibm.com/pc/us/accessories											
LIMITED WARRANTY³ <ul style="list-style-type: none"> 3 year parts and labor International Warranty Service³ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time On site service upgrade options (in eligible locations):⁷ <ul style="list-style-type: none"> 3yr IOR Mon-Fri 8-5, 4 hr average response (ServicePac® 41L2735) 3yr IOR 7 day x 24 hr, 4 hr average response (ServicePac 41L2741) 4yr IOR Mon-Fri 8-5, next business day response (ServicePac 69P9167) 4yr IOR Mon-Fri 8-5, 4 hr average response (ServicePac 69P9168) 4yr IOR 7 day x 24 hr, 4 hr average response (ServicePac 69P9169) 24x7¹⁴ toll-free support for warranty issues during the warranty period 																	

See footnotes for important warranty information

US models announced November 19, 2002; withdrawn October 30, 2003

IBM® Type-model	Processor	L2 cache	FSB MHz	Memory	Disk and rpm	SCSI adapter	CD-ROM	Graphics adapter and memory	Slots x bays	Preload ¹⁷	Available date	
6216-60U	Pentium® 4	2.8	512KB	533	256MB 40GB ²	7200 None	CD-ROM	Millennium G450 DVI-I 32MB	4x3	Windows® XP Pro	Mar03	
6216-63U	Pentium 4	2.8	512KB	533	256MB 40GB	7200 None	CD-ROM	Quadro® 4 280NVS 64MB	4x3	Windows XP Pro	Mar03	
6216-64U	Pentium 4	2.8	512KB	533	256MB 40GB	7200 None	CD-ROM	Quadro4 580XGL 64MB	4x3	Windows XP Pro	Mar03	
6216-65U	Pentium 4	2.8	512KB	533	256MB 18.2GB	10K 29160LP	CD-ROM	Quadro4 580XGL 64MB	4x3	Windows XP Pro	Mar03	
Positioning Processor	<i>Essential workstation performance</i> Intel® Pentium 4 at 2.8GHz with 533MHz frontside bus (FSB)							Low-profile Desktop				
L2 cache	512KB std and max / ECC / full speed											
Implementation	Processor and L2 cache in FC-PGA2 in mPGA478 socket							Bay ① 3.5", SL 1", access, std diskette Bay ② 5.25", HH 1.6", access, std CD-ROM Bay ③ 3.5", SL 1", no access, std disk				
SMP support	No SMP support							Slot 1: low-profile, 32-bit AGP 4X (1.5v) - used Slot 2: low-profile, 32-bit PCI 2.2 (5v) Slot 3: low-profile, 32-bit PCI 2.2 (5v) Slot 4: low-profile, 32-bit PCI 2.2 (5v)- SCSI (some)				
Memory - std/max	256MB / 2GB ¹³ max							<ul style="list-style-type: none"> Stealth black color 14.2" W X 16.2" D X 4.1" H 360mm W X 412mm D X 104mm H 20.0 to 22.0 lb (9.1 to 10.0 kg) Bays 1 and 2/3 flip up (latched and pivoting) Toolless rails for disk mounting Toolless cover removal Toolless AGP and PCI slots Support for 100 lb monitor on top 				
Memory - sockets	Two 184-pin gold-plated DIMM sockets / one socket used											
Memory - type	PC2100 266MHz DDR-SDRAM / Error Checking and Correcting (ECC) DIMMs and ECC memory controller / industry std / unbuffered / CAS Latency 2.5 (CL2.5)											
Graphics controller (one of following)	<ul style="list-style-type: none"> Matrox® Millennium G450 DVI-I (high-perf 2D) / AGP 4X adapter / MGA G450F GPU / 32MB 150MHz DDR-SDRAM / dual RAMDAC [360/232MHz] / dual head support / one DVI-I connector (ships with one cable with two DB-15 analog connors) NVIDIA® Quadro4 280NVS (high-perf 2D) / AGP 8X adapter / NV17LT 250MHz GPU / 64MB 200MHz DDR SDRAM / dual 350MHz RAMDACs / dual head: 2048x1536x16M each monitor / LFH60 connector for std cable with two DB-15 analog NVIDIA Quadro4 580XGL (entry 3D) / AGP 8X adapter / NV18GL 300MHz GPU / 64MB 275MHz DDR-SDRAM / dual 350MHz RAMDACs / dual head: 2048x1536x16M each monitor / LFH60 connector including std cable with two DB-15 analog connectors 											
SCSI disk controller	SCSI model: Adaptec® 29160LP / single channel Wide Ultra160 SCSI (LVD 160MB/sec) / 64-bit 33MHz PCI adapter (in a 32-bit slot) / one channel with up to 15 device support											
SCSI connectors	SCSI model: One 68-pin internal SCSI connector / one 0.8mm VHDCI 68-pin external SCSI connector											
Disk controller	Enhanced IDE / ATA-100 / integrated in I/O Controller Hub / two connectors on planar											
Cables	SCSI model: One 1-drop 16-bit LVD SCSI cable, one 1-drop EIDE 80-conductor cable (connected to CD-ROM)											
Disk	SCSI model: 18.2GB Ultra160 SCSI / 10000 rpm / 4.9 ms read / S.M.A.R.T. ⁵ EIDE models: 40GB EIDE / ATA-100 / 7200 rpm / 9.0 ms read seek / S.M.A.R.T.											
Diskette / CD-ROM	3.5" 1.44MB diskette drive / 48X-20X ⁶ CD-ROM, bootable											
Rack support	None											
Chipset	Intel 845E chipset / 82845E Memory Controller Hub (MCH) / 82801DB I/O Controller Hub (ICH4) for PCI 2.2 bus, ATA-100 EIDE, ethernet MAC, USB, Low Pin Count Interface / Firmware Hub / SMSC® LPC47M102 Super I/O for diskette, parallel, serial, keyboard, mouse											
Ports	Front: two USB (Ver 2.0) Back: two 9-pin serial, parallel, two USB (Ver 2.0), keyboard, mouse, ethernet, monitor											
Audio	Integrated digital audio / SoundMAX® 3.0 with SPX™ / software-based audio (done by processor and ICH4) / AC '97 interface / Realtec® ALC202 codec / (analog mixing, Analog-to-Digital and Digital-to-Analog conversion)											
Audio connectors	Back: microphone-in (mono), line-in (stereo), line-out (stereo) [all 3.5mm]											
Speakers	One internal speaker for business audio											
Ethernet	10/100/1000 gigabit / Broadcom® BCM 5702 / on planar / PCI 2.2 32-bit 33MHz / full duplex / PHY and MAC layers / Wake on LAN® / Alert Standard Format 1.0											
Security chip	None							SECURITY <ul style="list-style-type: none"> Optional U-bolt support via knockout Cover key lock (on rear) Cover tamper detect switch Secure fixed DASH Power-on password Administrator password Boot sequence control Boot without keyboard or mouse Diskette boot inhibit and write-protect Diskette, disk, serial port, parallel port I/O control Secure access openings Secure removable media VPD stored in EEPROM Write protection control for EEPROM Barcode labels on most components 				
Keyboard / mouse	104-key (rubber dome) keyboard / IBM 3-button mouse											
Cooling fans	Two or three variable speed fans (power sply, fansink, SCSI model has third fan)											
Power supply	160 watts with variable speed fan / universal / manual switch											
Preload with Windows XP Professional¹⁷			Options									
Microsoft® Windows® XP Professional			256MB PC2100 CL2.5 ECC DDR UDIMM 10K0067									
- Lotus® SmartSuite® Millennium license			512MB PC2100 CL2.5 ECC DDR UDIMM 10K0069									
- Lotus Notes® Client license			1GB PC2100 CL2.5 ECC DDR UDIMM 10K0071									
- Disk-to-Disk Recovery (in Service Partition)			40GB IDE Disk ATA-100 (7200 rpm) 22P7157									
◇ Device Drivers and Diagnostics CD-ROM			60GB IDE Disk ATA-100 (7200 rpm) 09N4207									
			80GB IDE Disk ATA-100 (7200 rpm) 09N4226									
			PCI Ultra160 SCSI Adapter 19K4646									
			36.4GB 10K rpm Ultra160 SCSI Disk 06P5751									
			73.4GB 10K rpm Ultra160 SCSI Disk 06P5752									
			48X/24X/48X Max ⁶ CD-RW internal (black) 22P6997									
			48X/24X/48X/16X Max ^{6,19} CD-RW/DVD-ROM Combo drive (black) 22P7031									
			IBM DVD-RAM/DVD-R Drive (black) 22P6959									
			IBM P97 19" (18.0" v.i.s.) Monitor (black) 6551U3N									
			IBM T275 21" (19.8" v.i.s.) Monitor (black) 6652U3N									
			IBM T545 15.1" Flat Panel Monitor (black) 6653HG2									
			IBM T750 17" Flat Panel Monitor (black) 6657HG2									
			IBM Wireless keyboard and mouse (black) 22P5170									
			Spaceball 3D Input Device 33L3252									
			Other options at ibm.com/pc/us/accessories									
			<ul style="list-style-type: none"> Configuration/Setup Utility invoked by pressing F1 at startup Product Recovery by pressing F11 at startup Systems management capabilities: Remote Deployment Manager, IBM Director Agent, System Migration Assistant Common Information Model (CIM) 2.2 PC 2001-compliant Advanced Power Management 1.2 Advanced Configuration and Power Interface (ACPI) 1.0b System Management BIOS DMI 2.0-compliant 									
			LIMITED WARRANTY³ <ul style="list-style-type: none"> 3 year parts and labor International Warranty Service³ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time On site service upgrade options (in eligible locations):⁷ <ul style="list-style-type: none"> 3yr IOR Mon-Fri 8-5, 4 hr average response (ServicePac® 41L2735) 3yr IOR 7 day x 24 hr, 4 hr average response (ServicePac 41L2741) 4yr IOR Mon-Fri 8-5, next business day response (ServicePac 69P9167) 4yr IOR Mon-Fri 8-5, 4 hr average response (ServicePac 69P9168) 4yr IOR 7 day x 24 hr, 4 hr average response (ServicePac 69P9169) 24x7¹⁴ toll-free support for warranty issues during the warranty period 									

See footnotes for important warranty information

US models announced February 18, 2003; withdrawn October 30, 2003

IBM® Type-model	Processor	FSB GHz ¹	FSB MHz	Memory	Disk and rpm	Disk controllers	Optical	Graphics adapter and memory	Slots x bays	FireWire	Preload ¹⁷	Available date
6219-10U	Pentium®4	2.4	533	256MB	40.0GB ² EIDE	7.2K	EIDE	CD Millennium G450 DVI-I	32MB	6x7	XP Pro	Jan 2003
6219-12U	Pentium 4	2.4	533	256MB	40.0GB EIDE	7.2K	EIDE	CD Quadro4 280NVS	64MB	6x7	XP Pro	Jan 2003
6219-21U	Pentium 4	2.67	533	512MB	36.4GB U320	10K	Ultra320, EIDE	Combo Millennium G450 DVI-I	32MB	6x7	1394	XP Pro Jan 2003
6219-26U	Pentium 4	2.67	533	512MB	36.4GB U320	10K	Ultra320, EIDE	CD-RW Quadro4 980XGL	128MB	6x7	1394	XP Pro Jan 2003
6219-32U	Pentium 4	2.8	533	512MB	40.0GB EIDE	7.2K	EIDE	CD Quadro4 280NVS	64MB	6x7	1394	XP Pro Jan 2003
6219-36U	Pentium 4	2.8	533	512MB	36.4GB U320	10K	Ultra320, EIDE	CD-RW Quadro4 980XGL	128MB	6x7	1394	XP Pro Jan 2003
6219-37U	Pentium 4	2.8	533	1GB	36.4GB U320	10K	Ultra320, EIDE	CD-RW Wildcat 4™	71 10 256MB	6x7	1394	XP Pro Jan 2003
6219-42U	Pentium 4	3.06	533	512MB	40.0GB EIDE	7.2K	EIDE	CD Quadro4 280NVS	64MB	6x7	1394	XP Pro Jan 2003
6219-46U	Pentium 4	3.06	533	512MB	36.4GB U320	10K	Ultra320, EIDE	CD-RW Quadro4 980XGL	128MB	6x7	1394	XP Pro Jan 2003
6219-47U	Pentium 4	3.06	533	1GB	36.4GB U320	10K	Ultra320, EIDE	CD-RW Wildcat 4	71 10 256MB	6x7	1394	XP Pro Jan 2003
Processor	Intel® Pentium 4 at 2.4B, 2.67, 2.8 or 3.06GHz with 533MHz frontside bus (FSB) / 3.06 supports Hyper-Threading technology											
L2 cache	512KB std and max / at processor speed											
Processor upgrade	No SMP support											
Implementation	Motherboard contains one mPGA478B socket (processor/L2 cache in FC-PGA2), four DIMM sockets, one AGP slot, ethernet controller, three PCI slots, connector for extender board (two PCI slots, some have SCSI controller)											
Memory - std / max	256MB, 512MB or 1GB std / 4GB ¹³ max / two slots used / two slots available / PC2100 266MHz unbuffered 184-pin ECC											
Memory - features	CL2.5 DDR-SDRAM DIMMs / four DIMM gold-conductor slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / Error Checking and Correcting (ECC) DIMMs and memory controller											
Graphics controller (one of following)	<ul style="list-style-type: none"> • Matrox® Millennium G450 DVI-I (entry 2D) / AGP 4X adapter / MGA G450F GPU / 32MB 150MHz DDR-SDRAM / dual RAMDAC [360/232MHz] / dual head support / one DVI-I connector (ships with one cable with two DB-15 analog conns) • NVIDIA™ Quadro4 280NVS (high-perf 2D) / AGP 8X adapter / NV 18LT 275MHz GPU / 64MB 200MHz DDR-SDRAM / dual 350MHz RAMDACs / dual head: 2048x1536x16M each monitor / LFH60 connector for std cable with two DB-15 analog • NVIDIA Quadro4 980XGL (advanced 3D) / AGP 8X adapter / 128MB 325MHz DDR-SDRAM / dual 350MHz RAMDACs / dual head: 2048x1536x16M each monitor / two DVI-I connectors (ships with two DVI-I to DB-15 dongles) • 3DLabs Wildcat4™ 7110 (extreme 3D) / AGP 8X Pro 50 adapter / 256MB total DDR-SDRAM (128MB frame buffer, 128MB texture buffer) / dual RAMDAC [320/280MHz] / dual head support (up to two digital or analog monitors) / two DVI-I connectors (ships with two DVI-I to analog DB-15 adapters for analog monitor attachment) 											
IDE disk controller	Enhanced IDE busmaster / ATA-100 / integrated in I/O Controller Hub 4 / two connectors on planar											
SCSI disk controller	SCSI models: Adaptec® AIC-7901 / single channel Ultra320 SCSI controller (LVD 320MB/sec) / on extender board / 32-bit 33MHz PCI 2.2 / one 68-pin internal connector on extender board / no external SCSI connector / one 16-bit channel (internal only)											
Cables	EIDE models: Two EIDE cables (one 2-drop cable to CD-ROM, one 2-drop cable to EIDE disk) SCSI models: One 4-drop 16-bit 68-pin LVD SCSI cable from extender to int disks bays, one 2-drop EIDE cable (to optical)											
Disk - features	Some: 40.0GB EIDE / ATA-100 / 7200 rpm / 9.0 ms seek; Some: 36.4GB Ultra320 SCSI / 10K rpm / 4.7 ms; All: S.M.A.R.T. ⁵											
Rack support	4U ⁴ rack mount support via tower-to-rack kit option											
Chipset	Intel E7205 chipset / E7205 MCH (Memory Controller Hub) for AGP 8X slot and ICH4 / I/O Controller Hub (ICH4) for PCI 2.2 bus (five slots and one Mini PCI slot), SCSI (som models), ethernet, ATA-100 EIDE, USB, Low Pin Count Interface / SMC 47M102 Super I/O off LPC											
Gigabit ethernet	One gigabit 10/100/1000 ethernet controller / Broadcom® BCM5702 or 5705 / full gigabit ethernet MAC and PHY layer functions / chip on planar / PCI-X 64-bit 100MHz (limited to PCI 2.2 32-bit 33MHz) / full duplex / Wake on LAN® / Alert Standard Format 1.0											
Diskette drive	3.5" 1.44MB diskette drive											
Optical drive	One of following: 48X-20X ⁶ CD-ROM, 32X/10X/40X/16X Max ^{6,19} CD-RW/DVD-ROM Combo, or 40X/24X/40X Max ⁶ CD-RW											
IEEE 1394 (FireWire)	Some: FireWire controller in Mini PCI slot / 1394A, 400Mbps, 6-pin port on rear, 4-pin port on front											
Audio	Soft audio AC '97 v2.2 interface via ICH4 (AD1885) / internal speaker (use of audio line out requires powered speakers)											
Rear ports	Two USB (Ver 2.0), two 9-pin serial, parallel, keyboard, mouse, ethernet, audio line in, audio line out, mic in / some: 6-pin 1394											
Front ports	Two USB (Ver 2.0), audio line out (stereo), mic in / some: 4-pin 1394 FireWire											
Systems mgmt	Monitoring and alerting of thermal, fans, and voltage faults / Winbond® W83791D											
Keyboard / mouse	IBM 104-key keyboard (6-pin PS/2) / IBM three button mouse (6-pin PS/2 conn)											
Cooling fans	Three variable speed fans (pwr supply, rear, processor) / not redundant or hot-swap											
Power supply	340 watts / universal / auto sensing / built-in overload and surge protection											
	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;">  <p>Bay ① 5.25", HH 1.6", access, optical</p> <p>Bay ② 5.25", HH 1.6", access, open</p> <p>Bay ③ 3.5", SL 1", access, diskette</p> <p>Bay ④ 3.5", SL 1", access, open</p> <p>Bay ⑤ 3.5", SL 1", no access, disk</p> <p>Bay ⑥ 3.5", SL 1", no access, open</p> <p>Bay ⑦ 3.5", SL 1", no access, open</p> <p>Slot 1: fullsize, 32-bit 33MHz, PCI 2.2 (5v) - N/A on models with Wildcat4 7110 vid</p> <p>Slot 2: fullsize, 32-bit 33MHz, PCI 2.2 (5v)</p> <p>Slot 3: fullsize, 32-bit 33MHz, PCI 2.2 (5v)</p> <p>Slot 4: fullsize, 32-bit 33MHz, PCI 2.2 (5v)*</p> <p>Slot 5: fullsize, 32-bit 33MHz, PCI 2.2 (5v)*</p> <p>Slot 6: Mini PCI type III - FireWire (some)</p> <p>Slot: fullsize, AGP 8X (1.5v) - used by std AGP graphics adapter * on two-slot extender board</p> </div> <div style="width: 45%;"> <ul style="list-style-type: none"> ➤ Metal cage for disk bays 5, 6, and 7 rotates out of chassis ➤ Two front stabilizing feet ➤ Handle grip on top ➤ H 17.375" x W 6.5" x D 19.0" ➤ H 441mm x W 165mm x D 483mm ➤ 36 lb to 42 lb (16.3kg to 19.1kg) • Maximum internal disk capacity¹³: SCSI: 282GB (4 disks x 73.4GB) EIDE: 320GB (3 disks x 80GB) • Removable left side panel • Configuration/Setup Utility: F1 at startup • Product Recovery Program: F11 at startup • SCSISelect Utility: CTRL+A at startup • Network Boot: F12 at startup • Adv Config Power Interface (ACPI) 1.0a • DMI 2.2-compliant </div> </div>											
	<p>256MB PC2100 CL2.5 ECC DDR-SDRAM 10K0067</p> <p>512MB PC2100 CL2.5 ECC DDR-SDRAM 10K0069</p> <p>1GB PC2100 CL2.5 ECC DDR-SDRAM DIMM 10K0071</p> <p>IBM 36.4GB 15K rpm Ultra160 SCSI HDD 06P5766</p> <p>IBM 36.4GB 10K rpm Ultra320 SCSI HDD 32P0723</p> <p>IBM 73.4GB 10K rpm Ultra320 SCSI HDD 32P0724</p> <p>IBM 80GB 7.2K rpm ATA-100 EIDE HDD 09N4226</p> <p>IBM 4Ux20D Tower-to-Rack Conversion Kit 09N4300</p> <p>IBM P97 19" (18.0" v.i.s.) Monitor (black) 6551U3N</p> <p>IBM T750 17" Flat Panel Monitor (black) 6657HG2</p> <p>Other options at ibm.com/pcl/us/accessories</p>											
	<p>Preload with Windows XP Professional¹⁷</p> <p>Microsoft® Windows® XP Professional - Free license for Lotus® SmartSuite® - Free license for Lotus Notes® Client</p> <p>◆ Device Drivers and IBM Enhanced Diagnostics CD</p> <p>◆ IBM IntelliStation Documentation CD</p> <p>◆ Disk-to-Disk Recovery (in service partition)</p>											
	<p style="text-align: center;">SECURITY</p> <ul style="list-style-type: none"> • U-bolt anchoring feature (U-bolt is optional; supports optional padlock) • Security slot (for attachment of optional cable lock such as Kensington cable lock) • Side cover key lock • Cover tamper detect switch • Secure fixed DASD • Power-on password • Administrator password • Keyboard/mouse password • Boot sequence control • Boot without keyboard or mouse • Diskette boot inhibit and write-protect • Disable mouse • Diskette, disk, serial port, parallel port I/O control • Secure access openings • VPD stored in EEPROM • Write protection control for EEPROM • IBM Security Solutions 											
	<p style="text-align: center;">LIMITED WARRANTY³</p> <ul style="list-style-type: none"> ↔ 3 year parts and labor ↔ International Warranty Service³ ↔ On site, 8 am through 5 pm, Mon through Fri excluding holidays, next business day response time ↔ On site warranty service upgrade options⁷ available as ServicePac options at ibm.com/services/its/us/source/wamomxeu.pdf ↔ 24x7¹⁴ toll-free support for warranty issues during the warranty period¹ 											

See footnotes for important warranty information
US models announced November 19, 2002; withdrawn effective March 25, 2003, April 25, 2003 or October 30, 2003

IBM® Type-model	Processor	FSB GHz ¹ MHz	Memory	Disk and rpm	Disk controllers	Optical	Graphics adapter and memory	Slots x bays	FireWire	Preload ¹⁷	Available date		
6219-22U	Pentium®4	2.67	533	512MB	36.4GB ² U320	10K Ultra320, EIDE	Combo Millennium G450 DVI-I	32MB	6x7	1394	XP Pro	Mar 2003	
6219-23U	Pentium 4	2.67	533	512MB	40.0GB EIDE	7.2K EIDE	CD-RW Quadro4™	580XGL	64MB	6x7	XP Pro	Mar 2003	
6219-27U	Pentium 4	2.67	533	512MB	36.4GB U320	10K Ultra320, EIDE	CD-RW Quadro4	980XGL	128MB	6x7	1394	XP Pro	Mar 2003
6219-34U	Pentium 4	2.8	533	512MB	36.4GB U320	10K Ultra320, EIDE	CD-RW Quadro4	580XGL	64MB	6x7	1394	XP Pro	Mar 2003
6219-35U	Pentium 4	2.8	533	1GB	36.4GB U320	10K Ultra320, EIDE	CD-RW Quadro FX	1000	128MB	6x7	1394	XP Pro	Apr 2003
6219-38U	Pentium 4	2.8	533	512MB	36.4GB U320	10K Ultra320, EIDE	CD-RW Quadro4	980XGL	128MB	6x7	1394	XP Pro	Mar 2003
6219-39U	Pentium 4	2.8	533	1GB	36.4GB U320	10K Ultra320, EIDE	CD-RW Wildcat 4™	7110	256MB	6x7	1394	XP Pro	Mar 2003
6219-45U	Pentium 4	3.06	533	1GB	36.4GB U320	10K Ultra320, EIDE	CD-RW Quadro FX	1000	128MB	6x7	1394	XP Pro	Apr 2003
6219-48U	Pentium 4	3.06	533	512MB	36.4GB U320	10K Ultra320, EIDE	CD-RW Quadro4	980XGL	128MB	6x7	1394	XP Pro	Mar 2003
6219-49U	Pentium 4	3.06	533	1GB	36.4GB U320	10K Ultra320, EIDE	CD-RW Wildcat 4	7110	256MB	6x7	1394	XP Pro	Mar 2003

Processor **Intel® Pentium 4 at 2.67, 2.8 or 3.06GHz with 533MHz frontside bus (FSB)** / 3.06 supports Hyper-Threading technology
 Proc. Upg/L2 cache **No SMP Support / 512KB** std and max / at processor speed
 Implementation Motherboard contains one mPGA478B socket (processor/L2 cache in FC-PGA2), four DIMM sockets, one 8X AGP slot, ethernet controller, five total PCI slots (two PCI slots on extender board, some have SCSI controller)

Memory - std/max **512MB** or **1GB** std / 4GB¹³ max / two slots used / two slots available / **PC2100** 266MHz unbuffered 184-pin ECC CL2.5
 Memory - features DDR-SDRAM DIMMs / four DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / **Error Checking and Correcting (ECC)** DIMMs and memory controller

Graphics controller (one of following) • **Matrox® Millennium G450 DVI-I** (entry 2D) / (see 6219 sheet for specs)
 • **NVIDIA Quadro4™ 580XGL** (entry 3D) / AGP 8X adapter / NV18GL 300MHz GPU / 64MB 275MHz DDR-SDRAM / dual 350MHz RAMDACs / dual head: 2048x1536x16M each monitor / LFH60 conn. including two DB-15 analog conn.
 • **NVIDIA Quadro4 980XGL** (advanced 3D) / AGP 8X adapter / 128MB 325MHz DDR-SDRAM / dual 350MHz RAMDACs / dual head: 2048x1536x16M each monitor / two DVI-I connectors (ships with two DVI-I to DB-15 dongles)
 • **3DLabs Wildcat4™ 7110** (extreme 3D) / AGP 8X Pro 50 adapter / 256MB total DDR-SDRAM (128MB frame buffer, 128MB texture buffer) / dual RAMDAC [320/280MHz] / dual head support (up to two digital or analog monitors) / two DVI-I connectors (ships with two DVI-I to analog DB-15 adapters for analog monitor attachment)
 • **NVIDIA Quadro FX 1000** (advanced 3D) / AGP 8X adapter / 128MB 800MHz DDR-SDRAM / dual 400MHz RAMDACs / dual head: 2048x1536x16M each monitor / two DVI-I connectors (ships with two DVI-I to DB-15 dongles)

IDE disk controller Enhanced IDE busmaster / ATA-100 / integrated in I/O Controller Hub 4 / two connectors on planar
 SCSI disk controller *SCSI models:* **Adaptec® AIC-7901** / single channel **Ultra320 SCSI controller** (LVD 320MB/sec) / on extender board / 32-bit 33MHz PCI 2.2 / one 68-pin internal connector on extender board / no external SCSI connector / one 16-bit channel (internal only)

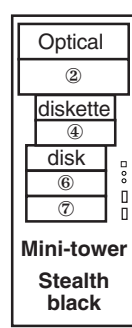
Cables *EIDE models:* Two EIDE cables (one 2-drop cable to CD-ROM, one 2-drop cable to EIDE disk)
SCSI models: One 4-drop 16-bit 68-pin LVD SCSI cable from extender to int disks bays, one 2-drop EIDE cable (to optical)
 Disk - features *Some:* 40.0GB EIDE / ATA-100 / 7200 rpm / 9.0 ms seek; *Some:* 36.4GB Ultra320 SCSI / 10K rpm / 4.7 ms; *All:* S.M.A.R.T.⁵

Rack support 4U¹⁷ rack mount support via tower-to-rack kit option
 Chipset **Intel E7205 chipset** / E7205 MCH (Memory Controller Hub) for AGP 8X slot and ICH4 / I/O Controller Hub (ICH4) for PCI 2.2 bus (five slots and one Mini PCI slot), SCSI (some models), ethernet, ATA-100 EIDE, USB, Low Pin Count Interface / SMC 47M102 Super I/O off LPC

Gigabit ethernet One gigabit 10/100/1000 ethernet controller / Broadcom® BCM5702 or 5705 / full gigabit ethernet MAC and PHY layer functions / chip on planar / PCI-X 64-bit 100MHz (limited to PCI 2.2 32-bit 33MHz) / full duplex / Wake on LAN® / Alert Standard Format 1.0
 Diskette drive 3.5" 1.44MB diskette drive
 Optical drive *One of following:* 48X/24X/48X/16X Max^{6,19} CD-RW/DVD-ROM Combo, or 48X/24X/48X Max⁶ CD-RW

IEEE 1394 (FireWire) *Some:* FireWire controller in Mini PCI slot / 1394A, 400Mbps, 6-pin port on rear, 4-pin port on front
 Audio Soft audio AC '97 v2.2 interface via ICH4 (AD1885) / internal speaker (use of audio line out requires powered speakers)
 Rear ports Two USB (Ver 2.0), two 9-pin serial, parallel, keyboard, mouse, ethernet, audio line in, audio line out, mic in / *some:* 6-pin 1394
 Front ports Two USB (Ver 2.0), audio line out (stereo), mic in / *some:* 4-pin 1394 FireWire
 Systems mgmt Monitoring and alerting of thermal, fans, and voltage faults / Winbond® W83791D

Keyboard / mouse IBM 104-key keyboard (6-pin PS/2) / IBM three button mouse (6-pin PS/2 conn)
 Cooling fans Three variable speed fans (pwr supply, rear, processor) / not redundant or hot-swap
 Power supply 340 watts / universal / auto sensing / built-in overload and surge protection



Bay ① 5.25", HH 1.6", access, optical
 Bay ② 5.25", HH 1.6", access, open
 Bay ③ 3.5", SL 1", access, diskette
 Bay ④ 3.5", SL 1", access, open
 Bay ⑤ 3.5", SL 1", no access, disk
 Bay ⑥ 3.5", SL 1", no access, open
 Bay ⑦ 3.5", SL 1", no access, open

Slot 1: fullsize, 32-bit 33MHz, PCI 2.2 (5v)
 - N/A on models with Wildcat4 7110 vid
 Slot 2: fullsize, 32-bit 33MHz, PCI 2.2 (5v)
 Slot 3: fullsize, 32-bit 33MHz, PCI 2.2 (5v)
 Slot 4: fullsize, 32-bit 33MHz, PCI 2.2 (5v)*
 Slot 5: fullsize, 32-bit 33MHz, PCI 2.2 (5v)*
 Slot 6: Mini PCI type III - FireWire (some)
 Slot: fullsize, AGP 8X (1.5v)
 - used by std AGP graphics adapter
 * on two-slot extender board

➤ Metal cage for disk bays 5, 6, and 7 rotates out of chassis
 ➤ Two front stabilizing feet
 ➤ Handle grip on top
 ➤ H 17.375" x W 6.5" x D 19.0"
 ➤ H 441mm x W 165mm x D 483mm
 ➤ 36 lb to 42 lb (16.3kg to 19.1kg)

• *Maximum internal disk capacity¹³:*
SCSI: 282GB (4 disks x 73.4GB)
EIDE: 320GB (3 disks x 80GB)
 • Removable left side panel
 • Configuration/Setup Utility: F1 at startup
 • Product Recovery Program: F11 at startup
 • SCSISelect Utility: CTRL+A at startup
 • Network Boot: F12 at startup
 • Adv Config Power Interface (ACPI) 1.0a
 • DMI 2.2-compliant

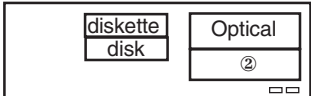
Preload with Windows XP Professional¹⁷
 Microsoft® Windows® XP Professional - Free license for Lotus® SmartSuite®
 - Free license for Lotus Notes® Client
 ♦ Device Drivers and IBM Enhanced Diagnostics CD
 ♦ IBM IntelliStation Documentation CD
 ♦ Disk-to-Disk Recovery (in service partition)

- SECURITY**
- U-bolt anchoring feature (U-bolt is optional; supports optional padlock)
 - Security slot (for attachment of optional cable lock such as Kensington cable lock)
 - Side cover key lock
 - Cover tamper detect switch
 - Secure fixed DASD
 - Power-on password
 - Administrator password
 - Keyboard/mouse password
 - Boot sequence control
 - Boot without keyboard or mouse
 - Diskette boot inhibit and write-protect
 - Disable mouse
 - Diskette, disk, serial port, parallel port I/O control
 - Secure access openings
 - VPD stored in EEPROM
 - Write protection control for EEPROM
 - IBM Security Solutions

- LIMITED WARRANTY³**
- ↔ **3 year parts and labor**
 - ↔ **International Warranty Service³**
 - ↔ **On site, 8 am through 5 pm, Mon through Fri excluding holidays, next business day response time**
 - ↔ **On site warranty service upgrade options⁷ available as ServicePac options at ibm.com/services/its/us/source/wamomxeu.pdf**
 - ↔ **24x7¹⁴ toll-free support for warranty issues during the warranty period³**

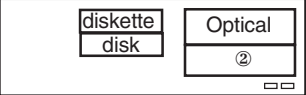
256MB PC2100 CL2.5 ECC DDR-SDRAM	10K0067
512MB PC2100 CL2.5 ECC DDR-SDRAM	10K0069
1GB PC2100 CL2.5 ECC DDR-SDRAM DIMM	10K0071
IBM 36.4GB 15K rpm Ultra160 SCSI HDD	06P5766
IBM 36.4GB 10K rpm Ultra320 SCSI HDD	32P0723
IBM 73.4GB 10K rpm Ultra320 SCSI HDD	32P0724
IBM 80GB 7.2K rpm ATA-100 EIDE HDD	09N4226
IBM 4Ux20D Tower-to-Rack Conversion Kit	09N4300
IBM ThinkVision L200P 20.1inLCD Black A/D	6736-HB0
IBM T221 22.2inLCD Black Digital	9503-DG3

Other options at ibm.com/pc/us/accessories

IBM® Type-model	Processor	GHz	L2 cache	FSB MHz	Memory	Disk and rpm	SCSI adapter	CD-ROM	Graphics adapter and memory	Slots x bays	Preload ¹⁷	Available date
6226-20U	Pentium® 4	2.0	512KB	400	256MB	40GB ² 7200	None	CD-ROM	Millennium G450 DVI-I 32MB	4x4	Windows® XP Pro	Aug 02
6226-22U	Pentium 4	2.0	512KB	400	256MB	40GB 7200	None	CD-ROM	NVIDIA™ Quadro4 64MB	4x4	Windows XP Pro	Aug 02
6226-30U	Pentium 4	2.26	512KB	533	256MB	40GB 7200	None	CD-ROM	Millennium G450 DVI-I 32MB	4x4	Windows XP Pro	Aug 02
6226-32U	Pentium 4	2.26	512KB	533	256MB	40GB 7200	None	CD-ROM	NVIDIA Quadro4 64MB	4x4	Windows XP Pro	Aug 02
6226-35U	Pentium 4	2.26	512KB	533	256MB	18.2GB 10K	29160LP	CD-ROM	ATI® Fire GL8800™, 11 128MB	4x4	Windows XP Pro	Aug 02
6226-40U	Pentium 4	2.4	512KB	533	256MB	40GB 7200	None	CD-ROM	Millennium G450 DVI-I 32MB	4x4	Windows XP Pro	Aug 02
6226-42U	Pentium 4	2.4	512KB	533	256MB	40GB 7200	None	CD-ROM	NVIDIA Quadro4 64MB	4x4	Windows XP Pro	Aug 02
6226-45U	Pentium 4	2.4	512KB	533	256MB	18.2GB 10K	29160LP	CD-ROM	ATI® Fire GL8800 128MB	4x4	Windows XP Pro	Aug 02
Positioning Processor	<i>Essential workstation performance</i> Intel® Pentium 4 at 2.0, 2.26, or 2.4GHz with 400 or 533MHz frontside bus (FSB)								Full-size Desktop			
L2 cache	512KB std and max / ECC / full speed											
Implementation SMP support	Processor and L2 cache in FC-PGA2 in mPGA478 socket No SMP support								Bay ① 5.25", HH 1.6", access, std CD-ROM Bay ② 5.25", HH 1.6" access, open Bay ③ 3.5", SL 1", access, std diskette Bay ④ 3.5", SL 1", no access, std disk Slot 1: full-length, full-height, 32-bit AGP 4X (1.5v) - used Slot 2: full-length, full-height, 32-bit PCI 2.2 (5v) Slot 3: full-length, full-height, 32-bit PCI 2.2 (5v) Slot 4: full-length, full-height, 32-bit PCI 2.2 (5v) - SCSI in some			
Memory - std/max	256MB / 2GB ¹³ max								• 16.7" W X 16.7" D X 5.5" H • 425mm W X 425mm D X 140mm H • 23 to 25 lb (10.46 to 11.36kg) • Stealth black color • Bay 1 and 2 in cage flips up (latched and pivoting) • Bay 3 and 4 in cage flips up (latched and pivoting) • Toolless rails for disk mounting • Toolless cover removal; toolless AGP and PCI slots			
Memory - sockets	Two 184-pin gold-plated DIMM sockets / one socket used											
Memory - type	PC2100 266MHz DDR-SDRAM / Error Checking and Correcting (ECC) DIMMs and ECC memory controller / industry std / unbuffered / CAS Latency 2.5 (CL2.5)											
Graphics controller (one of following)	<ul style="list-style-type: none"> • Matrox® Millennium G450 DVI-I (see the 6216 sheet for specs) • NVIDIA Quadro4 200NVS (high-perf 2D) / AGP 4X adapter / NV17LT 250MHz GPU / 64MB 166MHz SDRAM / dual 350MHz RAMDACs / dual head: 2048x1536x16M each monitor / LFH60 connector for std cable with two DB-15 analog • ATI Fire GL8800™, 11 (advanced 3D) / AGP 4X adapter / Radeon™ 8800 GPU / 128MB 300MHz DDR-SGRAM / dual RAMDAC [400/165MHz] / dual head support / one DB-15 analog and one DVI-I connector (ships with one DVI-I to DB-15 cable) 											
SCSI disk controller	<i>SCSI model:</i> Adaptec® 29160LP / single channel Wide Ultra160 SCSI (LVD 160MB/sec) / 64-bit 33MHz PCI adapter (in a 32-bit slot) / one channel with up to 15 device support											
SCSI connectors	<i>SCSI models:</i> One 68-pin internal SCSI connector / one 0.8mm VHDCI 68-pin external SCSI connector											
Disk controller	Enhanced IDE / ATA-100 / integrated in I/O Controller Hub / two connectors on planar											
Cables	<i>SCSI models:</i> One 3-drop 16-bit LVD SCSI cable, one 2-drop EIDE cable <i>EIDE models:</i> Two EIDE 80-conductor cables (one 2-drop cable to CD, one 1-drop cable to disk)											
Disk	<i>SCSI models:</i> 18.2GB Ultra160 SCSI / 10000 rpm / 4.9 ms read / S.M.A.R.T. ⁵ <i>EIDE models:</i> 40GB EIDE / ATA-100 / 7200 rpm / 9.0 ms read seek / S.M.A.R.T.											
Diskette / CD-ROM	3.5" 1.44MB diskette drive / 48X-20X ⁶ CD-ROM, bootable								SECURITY			
Chipset	Intel 845E chipset / 82845E Memory Controller Hub (MCH) / 82801DB I/O Controller Hub (ICH4) for PCI 2.2 bus, ATA-100 EIDE, ethernet MAC, USB, Low Pin Count Interface / Firmware Hub / SMSC® LPC47M102 Super I/O for diskette, parallel, serial, keyboard, mouse											
Ports	<i>Front:</i> two USB (Ver 2.0); <i>Back:</i> two 9-pin serial, parallel, two USB (Ver 2.0), keyboard, mouse, ethernet, monitor								<ul style="list-style-type: none"> • Optional U-bolt support via knockout • Cover key lock (on rear) • Cover tamper detect switch • Secure fixed DASD • Power-on password • Administrator password • Boot sequence control • Boot without keyboard or mouse • Diskette boot inhibit and write-protect • Diskette, disk, serial port, parallel port I/O control • Secure access openings • Secure removable media • VPD stored in EEPROM • Write protection control for EEPROM • Barcode labels on most components 			
Audio	Integrated digital audio / SoundMAX® 3.0 with SPX™ / software-based audio (done by processor and ICH4) / AC '97 interface / Realtec® ALC202 codec / (analog mixing, Analog-to-Digital and Digital-to-Analog conversion) <i>Back:</i> microphone-in (mono), line-in (stereo), line-out (stereo) [all 3.5mm]											
Audio connectors	<i>Back:</i> microphone-in (mono), line-in (stereo), line-out (stereo) [all 3.5mm]								<ul style="list-style-type: none"> • <i>Maximum internal EIDE disk capacity:</i> 160GB¹³ (2 disks x 80GB 7200 rpm) • <i>Maximum internal SCSI disk capacity:</i> 146.8GB¹³ (2 disks x 73.4GB 10000 rpm) 			
Speakers	One internal speaker for business audio											
Ethernet	10/100/1000 gigabit / Broadcom® BCM 5702 / on planar / PCI 2.2 32-bit 33MHz / full duplex / PHY and MAC layers / Wake on LAN® / Alert Standard Format 1.0								LIMITED WARRANTY³			
Security chip	None											
Keyboard / mouse	104-key (rubber dome) keyboard / IBM 3-button mouse								<ul style="list-style-type: none"> ⇒ 3 year parts and labor ⇒ International Warranty Service³ ⇒ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time ⇒ On site service upgrade options (in eligible locations):⁷ <ul style="list-style-type: none"> • 3yr IOR Mon-Fri 8-5, 4 hr average response (ServicePac® 41L2735) • 3yr IOR 7 day x 24 hr, 4 hr average response (ServicePac 41L2741) • 4yr IOR Mon-Fri 8-5, next business day response (ServicePac 69P9167) • 4yr IOR Mon-Fri 8-5, 4 hr average response (ServicePac 69P9168) • 4yr IOR 7 day x 24 hr, 4 hr average response (ServicePac 69P9169) ⇒ 24x7¹⁴ toll-free support for warranty issues during the warranty period 			
Cooling fans	Three or four variable spd fans (pwr sup, fansink, rear, SCSI models have 4th fan)											
Power supply	200 watts with variable speed fan / universal / manual switch											
Preload with Windows XP Professional¹⁷		Options										
Microsoft® Windows® XP Professional		256MB PC2100 CL2.5 ECC DDR UDIMM 10K0067										
- Lotus® SmartSuite® Millennium license		512MB PC2100 CL2.5 ECC DDR UDIMM 10K0069										
- Lotus Notes® Client license		1GB PC2100 CL2.5 ECC DDR UDIMM 10K0071										
- Disk-to-Disk Recovery (in Service Partition)		40GB IDE Disk ATA-100 (7200 rpm) 22P7157										
◇ Device Drivers and Diagnostics CD-ROM		60GB IDE Disk ATA-100 (7200 rpm) 09N4207										
• Configuration/Setup Utility invoked by pressing F1 at startup		80GB IDE Disk ATA-100 (7200 rpm) 09N4226										
• Product Recovery by pressing F11 at startup		PCI Ultra160 SCSI Adapter 19K4646										
• Systems management capabilities: Remote Deployment Manager, IBM Director Agent, System Migration Assistant		36.4GB 10K rpm Ultra160 SCSI Disk 06P5751										
• Common Information Model (CIM) 2.2		73.4GB 10K rpm Ultra160 SCSI Disk 06P5752										
• PC2001-compliant		40X/12X/40X Max ⁶ CD-RW internal (black) 22P6976										
• Advanced Power Management 1.2		32X/10X/40X/16X Max ^{6,19} CD-RW/DVD-ROM Combo drive (black) 22P6973										
• Advanced Configuration and Power Interface (ACPI) 1.0b		IBM DVD-RAM/DVD-R Drive (black) 22P6959										
• System Management BIOS		IBM P97 19" (18.0" v.i.s.) Monitor (black) 6551U3N										
• DMI 2.0-compliant		IBM P275 21" (19.8" v.i.s.) Monitor (black) 6652U3N										
		IBM T545 15.1" Flat Panel Monitor (black) 6653HG2										
		IBM T750 17" Flat Panel Monitor (black) 6657HG2										
		IBM Wireless keyboard and mouse (black) 22P5170										
		Spaceball 3D Input Device 33L3252										
		Other options at ibm.com/pc/us/accessories										

See footnotes for important warranty information

IBM® Type-model	Processor	GHz	L2 cache	FSB MHz	Memory	Disk and rpm	SCSI adapter	CD-ROM	Graphics adapter and memory	Slots x bays	Preload ¹⁷	Available date
6226-60U	Pentium® 4	2.8	512KB	533	256MB	40GB ² 7200	None	CD-ROM	Millennium G450 DVI-I 32MB	4x4	Windows® XP Pro	Mar 03
6226-63U	Pentium 4	2.8	512KB	533	256MB	40GB 7200	None	CD-ROM	Quadro®4 280NVS 64MB	4x4	Windows XP Pro	Mar 03
6226-64U	Pentium 4	2.8	512KB	533	256MB	40GB 7200	None	CD-ROM	Quadro4 580XGL 64MB	4x4	Windows XP Pro	Mar 03
6226-65U	Pentium 4	2.8	512KB	533	256MB	18.2GB 10K	29160LP	CD-ROM	Quadro4 580XGL 64MB	4x4	Windows XP Pro	Mar 03

Positioning Processor	<i>Essential workstation performance</i> Intel® Pentium 4 at 2.8GHz with 533MHz frontside bus (FSB) 512KB std and max / ECC / full speed Processor and L2 cache in FC-PGA2 in mPGA478 socket No SMP support		Full-size Desktop	
L2 cache Implementation	512KB std and max / ECC / full speed Processor and L2 cache in FC-PGA2 in mPGA478 socket			
SMP support	No SMP support			
Memory - std/max	256MB / 2GB ¹³ max		Bay ① 5.25", HH 1.6", access, std CD-ROM Bay ② 5.25", HH 1.6" access, open Bay ③ 3.5", SL 1", access, std diskette Bay ④ 3.5", SL 1", no access, std disk	
Memory - sockets	Two 184-pin gold-plated DIMM sockets / one socket used		Slot 1: full-length, full-height, 32-bit AGP 4X (1.5v) - used Slot 2: full-length, full-height, 32-bit PCI 2.2 (5v) Slot 3: full-length, full-height, 32-bit PCI 2.2 (5v) Slot 4: full-length, full-height, 32-bit PCI 2.2 (5v) - SCSI in some	
Memory - type	PC2100 266MHz DDR-SDRAM / Error Checking and Correcting (ECC) DIMMs and ECC memory controller / industry std / unbuffered / CAS Latency 2.5 (CL2.5)		<ul style="list-style-type: none"> Stealth black color 16.7" W X 16.7" D X 5.5" H 425mm W X 425mm D X 140mm H 23 to 25 lb (10.46 to 11.36kg) Bay 1 and 2 in cage flips up (latched and pivoting) Bay 3 and 4 in cage flips up (latched and pivoting) Toolless rails for disk mounting Toolless cover removal; toolless AGP and PCI slots 	
Graphics controller (one of following)	<ul style="list-style-type: none"> Matrox® Millennium G450 DVI-I (see the 6216 sheet for specs) NVIDIA® Quadro4 280NVS (high-perf 2D) / AGP 8X adapter / NV17LT 250MHz GPU / 64MB 200MHz DDR SDRAM / dual 350MHz RAMDACs / dual head: 2048x1536x16M each monitor / LFH60 connector for std cable with two DB-15 analog connectors NVIDIA Quadro4 580XGL (entry 3D) / AGP 8X adapter / NV18GL 300MHz GPU / 64MB 275MHz DDR-SDRAM / dual 350MHz RAMDACs / dual head: 2048x1536x16M each monitor / LFH60 connector including std cable with two DB-15 analog connectors 			
SCSI disk controller	SCSI model: Adaptec® 29160LP / single channel Wide Ultra160 SCSI (LVD 160MB/sec) / 64-bit 33MHz PCI adapter (in a 32-bit slot) / one channel with up to 15 device support SCSI model: One 68-pin internal SCSI connector / one 0.8mm VHDCI 68-pin external SCSI connector			
SCSI connectors	Enhanced IDE / ATA-100 / integrated in I/O Controller Hub / two connectors on planar			
Disk controller	SCSI model: One 3-drop 16-bit LVD SCSI cable, one 2-drop EIDE cable EIDE models: Two EIDE 80-conductor cables (one 2-drop cable to CD, one 1-drop cable to disk)			
Cables	SCSI model: 18.2GB Ultra160 SCSI / 10000 rpm / 4.9 ms read / S.M.A.R.T. ⁵ EIDE models: 40GB EIDE / ATA-100 / 7200 rpm / 9.0 ms read seek / S.M.A.R.T.			
Disk	SCSI model: 18.2GB Ultra160 SCSI / 10000 rpm / 4.9 ms read / S.M.A.R.T. ⁵ EIDE models: 40GB EIDE / ATA-100 / 7200 rpm / 9.0 ms read seek / S.M.A.R.T.		SECURITY <ul style="list-style-type: none"> Optional U-bolt support via knockout Cover key lock (on rear) Cover tamper detect switch Secure fixed DASD Power-on password Administrator password Boot sequence control Boot without keyboard or mouse Diskette boot inhibit and write-protect Diskette, disk, serial port, parallel port I/O control Secure access openings Secure removable media VPD stored in EEPROM Write protection control for EEPROM Barcode labels on most components <ul style="list-style-type: none"> Maximum internal EIDE disk capacity: 160GB¹³ (2 disks x 80GB 7200 rpm) Maximum internal SCSI disk capacity: 146.8GB¹³ (2 disks x 73.4GB 10000 rpm) 	
Diskette / CD-ROM	3.5" 1.44MB diskette drive / 48X-20X ⁴ CD-ROM, bootable			
Chipset	Intel 845E chipset / 82845E Memory Controller Hub (MCH) / 82801DB I/O Controller Hub (ICH4) for PCI 2.2 bus, ATA-100 EIDE, ethernet MAC, USB, Low Pin Count Interface / Firmware Hub / SMSC® LPC47M102 Super I/O for diskette, parallel, serial, keyboard, mouse			
Ports	Front: two USB (Ver 2.0); Back: two 9-pin serial, parallel, two USB (Ver 2.0), keyboard, mouse, ethernet, monitor			
Audio	Integrated digital audio / SoundMAX® 3.0 with SPX™ / software-based audio (done by processor and ICH4) / AC '97 interface / Realtek® ALC202 codec / (analog mixing, Analog-to-Digital and Digital-to-Analog conversion)			
Audio connectors	Back: microphone-in (mono), line-in (stereo), line-out (stereo) [all 3.5mm]			
Speakers	One internal speaker for business audio			
Ethernet	10/100/1000 gigabit / Broadcom® BCM 5702 / on planar / PCI 2.2 32-bit 33MHz / full duplex / PHY and MAC layers / Wake on LAN® / Alert Standard Format 1.0			
Security chip	None			
Keyboard / mouse	104-key (rubber dome) keyboard / IBM 3-button mouse			
Cooling fans	Three or four variable spd fans (pwr sup, fansink, rear, SCSI models have 4th fan)			
Power supply	200 watts with variable speed fan / universal / manual switch			
Preload with Windows XP Professional¹⁷	Options 256MB PC2100 CL2.5 ECC DDR UDIMM 10K0067 512MB PC2100 CL2.5 ECC DDR UDIMM 10K0069 1GB PC2100 CL2.5 ECC DDR UDIMM 10K0071 40GB IDE Disk ATA-100 (7200 rpm) 22P7157 60GB IDE Disk ATA-100 (7200 rpm) 09N4207 80GB IDE Disk ATA-100 (7200 rpm) 09N4226 PCI Ultra160 SCSI Adapter 19K4646 36.4GB 10K rpm Ultra160 SCSI Disk 06P5751 73.4GB 10K rpm Ultra160 SCSI Disk 06P5752 48X/24X/48X Max ⁶ CD-RW internal (black) 22P6997 48X/24X/48X/16X Max ^{6,19} CD-RW/DVD-ROM Combo drive (black) 22P7031 IBM DVD-RAM/DVD-R Drive (black) 22P6959 IBM P97 19" (18.0" v.i.s.) Monitor (black) 6551U3N IBM P275 21" (19.8" v.i.s.) Monitor (black) 6652U3N IBM T545 15.1" Flat Panel Monitor (black) 6653HG2 IBM T750 17" Flat Panel Monitor (black) 6657HG2 IBM Wireless keyboard and mouse (black) 22P5170 Spaceball 3D Input Device 33L3252 Other options at ibm.com/pc/us/accessories			
Microsoft® Windows® XP Professional			LIMITED WARRANTY³ ⇨ 3 year parts and labor ⇨ International Warranty Service ³ ⇨ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time ⇨ On site service upgrade options (in eligible locations): ⁷ <ul style="list-style-type: none"> 3yr IOR Mon-Fri 8-5, 4 hr average response (ServicePac® 41L2735) 3yr IOR 7 day x 24 hr, 4 hr average response (ServicePac 41L2741) 4yr IOR Mon-Fri 8-5, next business day response (ServicePac 69P9167) 4yr IOR Mon-Fri 8-5, 4 hr average response (ServicePac 69P9168) 4yr IOR 7 day x 24 hr, 4 hr average response (ServicePac 69P9169) ⇨ 24x ¹⁴ toll-free support for warranty issues during the warranty period	
- Lotus® SmartSuite® Millennium license				
- Lotus Notes® Client license				
- Disk-to-Disk Recovery (in Service Partition)				
◇ Device Drivers and Diagnostics CD-ROM				
• Configuration/Setup Utility invoked by pressing F1 at startup				
• Product Recovery by pressing F11 at startup				
• Systems management capabilities: Remote Deployment Manager, IBM Director Agent, System Migration Assistant				
• Common Information Model (CIM) 2.2				
• PC2001-compliant				
• Advanced Power Management 1.2				
• Advanced Configuration and Power Interface (ACPI) 1.0b				
• System Management BIOS				
• DMI 2.0-compliant				

See footnotes for important warranty information
 US models announced February 18, 2002; withdrawn effective October 30, 2003

IBM IntelliStation® E Pro (6836) - withdrawn

IBM® Type-model	Processor	MHz ¹	Memory	Disk	SCSI adapter	CD-ROM ⁶	Graphics adapter and memory	Slots x bays	Ethernet	Preload ¹⁷	Available date
6836-10U	Pentium® III	800	64MB	15GB EIDE	None	48X-20X	Millennium G450 16MB	4x4	10/100	2000 or NT	Oct 2000
6836-21U	Pentium III	866	128MB	15GB EIDE	None	48X-20X	Millennium G450 16MB	4x4	10/100	2000 or NT	Oct 2000
6836-22U	Pentium III	866	128MB	9.1GB SCSI	29160LP	48X-20X	Millennium G450 16MB	4x4	10/100	2000 or NT	Oct 2000
6836-31U	Pentium III	933	128MB	15GB EIDE	None	48X-20X	Millennium G450 16MB	4x4	10/100	2000 or NT	Oct 2000
6836-35U	Pentium III	933	128MB	15GB EIDE	None	48X-20X	NVIDIA GeForce2 MX 32MB	4x4	10/100	2000 or NT	Oct 2000
6836-36U	Pentium III	933	128MB	9.1GB SCSI	29160LP	48X-20X	NVIDIA GeForce2 MX 32MB	4x4	10/100	2000 or NT	Oct 2000
6836-41U	Pentium III	1.0GHz	128MB	15GB EIDE	None	48X-20X	Millennium G450 16MB	4x4	10/100	2000 or NT	Oct 2000
6836-1PU	Pentium III	800	128MB	None	None	48X-20X	Millennium G450 16MB	4x4	10/100	2000 or NT	Oct 2000
6836-2PU	Pentium III	866	128MB	None	None	48X-20X	Millennium G450 16MB	4x4	10/100	2000 or NT	Oct 2000

Intel® processor **Pentium® III 800EB, 866, 933MHz¹ or 1.0GHz¹ with 133MHz Front Side Bus**
 L2 cache **256KB** std and max / ECC / at processor speed
 Implementation Processor and L2 cache in Flip-Chip Pin Grid Array (FC-PGA) / motherboard contains one Intel PGA370 socket, three DIMM sockets, three PCI slots, one AGP slot, and integrated ethernet
 SMP support No SMP support

Memory - std / max **64MB or 128MB** std / 1.5GB max¹³
 Memory - sockets **3** sockets / 2 available / ECC (Error Checking and Correcting) DIMMs and ECC memory controller / PC133-compliant /
 Memory - features **SDRAM / 133MHz** / three 168-pin gold-plated DIMM 3.3 v sockets / supports unbuffered SDRAM ECC DIMMs

Graphics controller (one of following)

- **Matrox® Millennium G450** (high-performance 2D) / AGP 4X adapter / Matrox MGA G450C GPU / 16MB std and max 166MHz SDRAM / two DB-15 connectors (dual monitor capable)
- **NVIDIA™ GeForce2 MX** (advanced 3D) / AGP 4X adapter / NV11 GPU / 32MB std and max 166MHz SDRAM / one DB-15 connector

SCSI disk controller *SCSI models:* **Adaptec® 29160LP / single channel Wide Ultra160 SCSI** (LVD 160MB/sec) / 64-bit 33MHz PCI adapter (in a 32-bit slot) / one channel with up to 15 device support
 SCSI connectors *SCSI models:* One 68-pin internal SCSI connector / one 0.8mm VHDCI 68-pin external SCSI connector
 IDE disk controller Enhanced IDE busmaster / ATA-66 support (ATA-100 on later models) / two connectors on planar
 Cables *SCSI models:* One 3-drop 16-bit LVD SCSI cable, one 2-drop EIDE cable (connected to CD-ROM)
EIDE models: Two EIDE cables (one 2-drop cable to CD-ROM, one 1-drop cable to EIDE disk)

Disk - features *EIDE models:* 15GB EIDE / ATA-100 / 7200 rpm / 8.7 ms read seek / S.M.A.R.T.⁵
SCSI models: 9.1GB Ultra160 SCSI / 7200 rpm / 7.5 ms read seek / S.M.A.R.T.

Rack support None
 Architecture / chipsets **VIA® Apollo Pro133A chip set** / VT82C694X North Bridge (memory controller, PCI 2.2 32-bit 33MHz controller, AGP 4X) / VIA VT82C686A or 686B South Bridge (IDE ATA-66 [686B is ATA-100], USB, diskette, par, serial, kybd, mouse)

100/10Mbps ethernet Intel 82559 / on planar / 10BaseT, 100BaseTX / full duplex / 32-bit 33MHz PCI bus / support for Wake on LAN®

CD-ROM / diskette 48X-20X⁶ CD-ROM / CAV (ATAPI) / bootable / IDE: 3.5" 1.44MB diskette drive

External ports *Serial:* Two 9 pin; *Parallel:* One (EPP, ECP) / IEEE 1284; *USB:* Two (Ver 1.1); keyboard, mouse, audio line in, audio line out, microphone in, MIDI

Systems mgmt Monitoring and alerting of memory, thermal, fans, and voltage faults / support for Wake on LAN, Alert on LAN™ 2, PXE

Keyboard / mouse IBM 104-key keyboard / IBM ScrollPoint® II mouse
 Cooling fans Two (800MHz models) or three (other models) cooling fans (power supply, front, rear) / not redundant or hot-swap / fans have two speeds

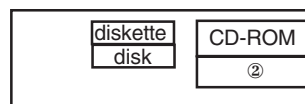
Power supply 155 watts / universal / auto sensing

SECURITY

- Cover key lock (in rear)
- Cover tamper detect switch
- Secure fixed DASD
- Power-on password
- Administrator password
- Boot sequence control
- Boot without keyboard or mouse
- Diskette boot inhibit and write-protect
- Diskette, disk, serial port, parallel port I/O control
- Secure access openings
- Secure removable media
- VPD stored in EEPROM
- Write protection control for EEPROM
- Barcode labels on most components
- IBM Security Solutions

Slot 1: fullsize, AGP 4X, 25 watt (3.3v) - used by std graphics adpr
 Slot 2: fullsize, 32-bit 33MHz, PCI 2.2 (5v) - Alert on LAN 2 support
 Slot 3: fullsize, 32-bit 33MHz, PCI 2.2 (5v) - used by SCSI (some)
 Slot 4: fullsize, 32-bit 33MHz, PCI 2.2 (5v)

Bay ① 5.25", HH 1.6", access, CD-ROM
 Bay ② 5.25", HH 1.6" access, open
 Bay ③ 3.5", SL 1", access, std diskette
 Bay ④ 3.5", SL 1", no access, std disk



- Stealth black color
- Bay 1 and 2 in cage flips up
- Bay 3 and 4 in cage flips up
- ⊳ H 5.52" x W 16.73" x D 16.73"
- ⊳ H140mm x W425mm x D425mm
- ⊳ 23 to 25 pounds (10.5 to 11.4kg)

Windows 2000 Professional Preload¹⁷

- Microsoft® Windows® 2000 Professional
- Free license for Lotus® SmartSuite® Millennium
- Free license for Lotus Notes® Client
- ⊳ Device Drivers and Diagnostics CD-ROM
- ⊳ Software Selections CD-ROM
- ⊳ Windows 2000 Product Recovery CD-ROM
- ⊳ Windows NT 4.0 (SP6) Product Recovery CD
- ⊳ Disk-to-Disk Recovery (Windows 2000 or NT 4.0 SP6 in hidden service partition)

Options

- 64MB SDRAM ECC 133MHz unbuffered DIMM 33L3079
- 128MB SDRAM ECC 133MHz unbuffered DIMM 33L3081
- 256MB SDRAM ECC 133MHz unbuffered DIMM 33L3083
- 512MB SDRAM ECC 133MHz unbuffered DIMM 33L3085
- IBM 20.4GB ATA-100 EIDE HDD 19K4461
- IBM 30GB ATA-100 EIDE HDD 00N8203
- IBM 9.1GB 7200rpm Ultra160 SCSI HDD 00N8204
- IBM 18.2GB 7200rpm Ultra160 SCSI HDD 00N8205
- IBM 36.4GB 7200rpm Ultra160 SCSI HDD 00N8206
- IBM 9.1GB 10K Ultra160 SCSI HDD 00N8207
- IBM 18.2GB 10K Ultra160 SCSI HDD 00N8208
- IBM 36.4GB 10K Ultra160 SCSI HDD 00N8209
- IBM 9.4GB DVD-RAM (black) 10K3561
- IBM IDE 8X/4X/32X⁶ CD-Rewritable (black) 33L5020
- IBM 250MB Zip Drive (black) 00N8078
- IBM P96 Color Monitor (black) 655163N

- *Maximum internal SCSI disk capacity*¹³: 72.8GB (2 disks x 36.4GB)
- Removable top cover
- Configuration/Setup Utility (in flash memory) invoked by pressing F1 at startup
- SCSISelect near startup by pressing CTRL+A
- Adv Config Power Interface (ACPI) 1.0
- ISO 9241-3 capable
- Universal Manageability Services enabled
- LANClient Control Manager™ enabled
- SMART Reaction™.5 II
- PC99-compliant
- DMI 2.0-compliant
- Common Information Model (CIM) 2.2

LIMITED WARRANTY*³

- ⊳ **3 year parts and labor**
- ⊳ **International Warranty Service³**
- ⊳ **On site, 8 am through 5 pm, Mon through Fri excluding holidays, next business day response time**
- ⊳ **3 year on site warranty service upgrade options:⁷**
 - 4 hour response, 7 day x 24 hr
- ⊳ **Post warranty maintenance services available**
- ⊳ **24 hour x 7 day¹⁴ telephone, electronic, and Internet support**

* For a copy of IBM's Statement of Limited Warranty, call 1-800-772-2227

US models announced October 10, 2000

US models withdrawn from marketing effective May 2001 or October 2001 or January 2002

No warranties are expressed or implied in this summary (6836) © IBM Corp. December 2001

IBM IntelliStation® E Pro (6846) - withdrawn

IBM® Type-model	Processor	MHz ¹	Memory	Disk	SCSI adapter	CD-ROM ⁶	Graphics adapter and memory	Slots x bays Ethernet	Preload ¹⁷	Available date
6846-11U	Pentium® III	800	128MB	15GB EIDE	None	48X-20X	Millennium G450 16MB	6x7 10/100	2000 or NT	Oct 2000
6846-21U	Pentium III	866	128MB	15GB EIDE	None	48X-20X	Millennium G450 16MB	6x7 10/100	2000 or NT	Oct 2000
6846-22U	Pentium III	866	128MB	9.1GB SCSI	29160LP	48X-20X	Millennium G450 16MB	6x7 10/100	2000 or NT	Oct 2000
6846-26U	Pentium III	866	128MB	9.1GB SCSI	29160LP	48X-20X	NVIDIA GeForce2 MX 32MB	6x7 10/100	2000 or NT	Oct 2000
6846-31U	Pentium III	933	128MB	15GB EIDE	None	48X-20X	Millennium G450 16MB	6x7 10/100	2000 or NT	Oct 2000
6846-35U	Pentium III	933	128MB	15GB EIDE	None	48X-20X	NVIDIA GeForce2 MX 32MB	6x7 10/100	2000 or NT	Oct 2000
6846-37U	Pentium III	933	256MB	9.1GB SCSI	29160LP	48X-20X	NVIDIA GeForce2 MX 32MB	6x7 10/100	2000 or NT	Oct 2000
6846-47U	Pentium III	1.0GHz	256MB	9.1GB SCSI	29160LP	48X-20X	NVIDIA GeForce2 MX 32MB	6x7 10/100	2000 or NT	Oct 2000
6846-3PU	Pentium III	866	256MB	None	None	48X-20X	Millennium G450 16MB	6x7 10/100	2000 or NT	Oct 2000

Intel® processor **Pentium® III 800EB, 866, 933MHz¹ or 1.0GHz¹ with 133MHz Front Side Bus**
 L2 cache **256KB** std and max / ECC / at processor speed
 Implementation Processor and L2 cache in Flip-Chip Pin Grid Array (FC-PGA) / motherboard contains one Intel PGA370 socket, three DIMM sockets, three PCI slots, connector for two-slot PCI extender board, one AGP slot, and integrated ethernet
 SMP support No SMP support

Memory - std / max **128MB or 256MB** std / 1.5GB max¹³
 Memory - sockets **3** sockets / 2 available / ECC (Error Checking and Correcting) DIMMs and ECC memory controller / PC133-compliant /
 Memory - features **SDRAM / 133MHz** / three 168-pin gold-plated DIMM 3.3 v sockets / supports unbuffered SDRAM ECC DIMMs

Graphics controller (one of following)

- **Matrox® Millennium G450** (high-performance 2D) / AGP 4X adapter / Matrox MGA G450C GPU / 16MB std and max 166MHz SDRAM / two DB-15 connectors (dual monitor capable)
- **NVIDIA™ GeForce2 MX** (advanced 3D) / AGP 4X adapter / NV11 GPU / 32MB std and max 166MHz SDRAM / one DB-15 connector

SCSI disk controller *SCSI models:* **Adaptec® 29160LP / single channel Wide Ultra160 SCSI** (LVD 160MB/sec) / 64-bit 33MHz PCI adapter (in a 32-bit slot) / one channel with up to 15 device support
 SCSI connectors *SCSI models:* One 68-pin internal SCSI connector / one 0.8mm VHDCI 68-pin external SCSI connector
 IDE disk controller Enhanced IDE busmaster / ATA-66 support (ATA-100 on later models) / two connectors on planar
 Cables *SCSI models:* One 5-drop 16-bit LVD SCSI cable, one 2-drop EIDE cable (connected to CD-ROM)
EIDE models: Two EIDE cables (one 2-drop cable to CD-ROM, one 2-drop cable to EIDE disk)

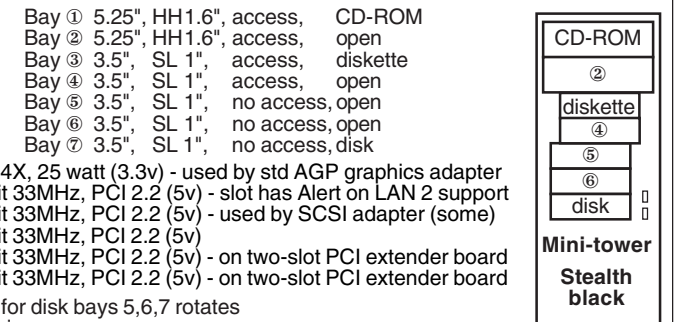
Disk - features *EIDE models:* 15GB EIDE / ATA-100 / 7200 rpm / 8.7 ms read seek / S.M.A.R.T.⁵
SCSI models: 9.1GB Ultra160 SCSI / 7200 rpm / 7.5 ms read seek / S.M.A.R.T.

Rack support 4U⁴ rack mount support via tower-to-rack kit option
 Architecture / chipsets **VIA® Apollo Pro133A chip set** / VT82C694X North Bridge (memory controller, PCI 2.2 32-bit 33MHz controller, AGP 4X) / VIA VT82C686A or 686B South Bridge (IDE ATA-66 [686B is ATA-100], USB, VDKette, par, serial, kybd, mouse)

100/10Mbps ethernet Intel 82559 / on planar / 10BaseT, 100BaseTX / full duplex / 32-bit 33MHz PCI bus / support for Wake on LAN®
 CD-ROM / diskette 48X-20X⁶ CD-ROM / CAV (ATAPI) / bootable / IDE⁷ 3.5" 1.44MB diskette drive
 External ports *Serial:* Two 9 pin; *Parallel:* One (EPP, ECP) / IEEE 1284; *USB:* Two (Ver 1.1); keyboard, mouse, audio line in, audio line out, microphone in, MIDI
 Systems mgmt Monitoring and alerting of memory, thermal, fans, and voltage faults / support for Wake on LAN, Alert on LAN™ 2, PXE

Keyboard / mouse IBM 104-key keyboard / IBM ScrollPoint® II mouse
 Cooling fans Three (800 and 866MHz models) or four (other models) cooling fans (power supply, disks, rear, middle) / not redundant or hot-swap / fans have two speeds
 Power supply 300 watts / universal / auto sensing

- SECURITY**
- Cover key lock (in rear)
 - Cover tamper detect switch
 - Secure fixed DASD
 - Power-on password
 - Administrator password
 - Boot sequence control
 - Boot without keyboard or mouse
 - Diskette boot inhibit and write-protect
 - Diskette, disk, serial port, parallel port I/O control
 - Secure access openings
 - Secure removable media
 - VPD stored in EEPROM
 - Write protection control for EEPROM
 - Barcode labels on most components
 - IBM Security Solutions



Windows 2000 Professional Preload¹⁷
 Microsoft® Windows® 2000 Professional
 - Free license for Lotus® SmartSuite® Millennium
 - Free license for Lotus Notes® Client
 ♦ Device Drivers and Diagnostics CD-ROM
 ♦ Software Selections CD-ROM
 ♦ Windows 2000 Product Recovery CD-ROM
 ♦ Windows NT 4.0 (SP6) Prod Recovery CD-ROM
 ♦ Disk-to-Disk Recovery (Windows 2000 or NT 4.0 SP6 in hidden service partition)

Slot 1: fullsize, AGP 4X, 25 watt (3.3v) - used by std AGP graphics adapter
 Slot 2: fullsize, 32-bit 33MHz, PCI 2.2 (5v) - slot has Alert on LAN 2 support
 Slot 3: fullsize, 32-bit 33MHz, PCI 2.2 (5v) - used by SCSI adapter (some)
 Slot 4: fullsize, 32-bit 33MHz, PCI 2.2 (5v)
 Slot 5: fullsize, 32-bit 33MHz, PCI 2.2 (5v) - on two-slot PCI extender board
 Slot 6: fullsize, 32-bit 33MHz, PCI 2.2 (5v) - on two-slot PCI extender board
 ♦ Metal cage for disk bays 5,6,7 rotates out of chassis
 ♦ Two front stabilizing feet
 ♦ Handle grip on top
 ♦ H 18.5" x W 6.5" x D 20.0"
 ♦ H 470mm x W 165mm x D 508mm
 ♦ 35 to 43 pounds (15.9 to 19.5kg)

Options
 64MB SDRAM ECC 133MHz unbuffered DIMM 33L3079
 128MB SDRAM ECC 133MHz unbuffered DIMM 33L3081
 256MB SDRAM ECC 133MHz unbuffered DIMM 33L3083
 512MB SDRAM ECC 133MHz unbuffered DIMM 33L3085
 IBM 4Ux20D Tower-to-Rack Kit 09N4300
 IBM 20.4GB ATA-100 EIDE HDD 19K4461
 IBM 30GB ATA-100 EIDE HDD 00N8203
 IBM 9.1GB 7200rpm Ultra160 SCSI HDD 00N8204
 IBM 18.2GB 7200rpm Ultra160 SCSI HDD 00N8205
 IBM 36.4GB 7200rpm Ultra160 SCSI HDD 00N8206
 IBM 9.1GB 10K Ultra160 SCSI HDD 00N8207
 IBM 18.2GB 10K Ultra160 SCSI HDD 00N8208
 IBM 36.4GB 10K Ultra160 SCSI HDD 00N8209
 IBM 9.4GB DVD-RAM (black) 10K3561
 IBM IDE 8X/4X/32X CD-Rewritable (black) 33L5020
 IBM 250MB Zip Drive (black) 00N8078
 IBM P96 Color Monitor (black) 655163N

• *Maximum internal SCSI disk capacity:* 145.6GB (4 disks x 36.4GB)
 • Removable left side panel
 • Configuration/Setup Utility (in flash memory) invoked by pressing F1 at startup
 • SCSISelect near startup by pressing CTRL+A
 • Adv Config Power Interface (ACPI) 1.0
 • Universal Manageability Services enabled
 • LANClient Control Manager™ enabled
 • DMI 2.0-compliant

LIMITED WARRANTY^{4,3}

- ↪ 3 year parts and labor
- ↪ International Warranty Service³
- ↪ On site, 8 am through 5 pm, Mon through Fri excluding holidays, next business day response time
- ↪ 3 year on site warranty service upgrade option:⁷
 - 4 hour response, 7 day x 24 hr
- ↪ Post warranty maintenance services available
- ↪ 24 hour x 7 day¹⁴ telephone, electronic, and Internet support

* For a copy of IBM's Statement of Limited Warranty, call 1-800-772-2227
 No warranties are expressed or implied in this summary
 US models announced October 10, 2000
 US models withdrawn from marketing effective May 2001 or October 2001 or January 2002
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IBM IntelliStation® E Pro (6867) - withdrawn

Type-model	Standard disk (rpm) ms seek ⁹ / disk interface CD-ROM / interface	Intel® Processor MHz ¹	Write-back L2 cache standard	Rambus memory; std MB / type; devices / type	SVGA controller; AGP; memory (MB) std / max	Bus slots P=PCI avail Total A=AGP avail bays	Chip set Ethernet Preload ¹⁷	Available date	
Desktop; 5 slot x 4 bay - US Models									
⌘ 6867-12U	13.5GB ² std (7200) 9.0ms / EIDE / ATA-66 48X-20X ⁶ CD-ROM / EIDE	Pentium® III 600EB/133 MHz	256KB full spd	128MB / PC700 8D / RDRAM ECC	Millennium G400 AGP 4X adapter 16/16MB WRAM	PCI=3 AGP=0	3 used 1 empty	820 ethernet NT 4.0	Dec 1999
⌘ 6867-13U	9.1GB std (7200) 7.5ms / Wide Ultra2 SCSI 48X-20X CD-ROM / EIDE	Pentium III 600EB/133 MHz	256KB full spd	128MB / PC700 8D / RDRAM ECC	Millennium G400 AGP 4X adapter 16/16MB WRAM	PCI=2 AGP=0	3 used 1 empty	820 ethernet, SCSI NT 4.0	Dec 1999
⌘ 6867-15U	9.1GB std (7200) 7.5ms / Wide Ultra2 SCSI 48X-20X CD-ROM / EIDE	Pentium III 600EB/133 MHz	256KB full spd	128MB / PC700 8D / RDRAM ECC	IBM Fire GL1 ¹¹ AGP 2X adapter 32/32MB SGRAM	PCI=2 AGP=0	3 used 1 empty	820 ethernet, SCSI NT 4.0	Dec 1999
⌘ 6867-17U	13.5GB std (7200) 9.0ms / EIDE / ATA-66 48X-20X CD-ROM / EIDE	Pentium III 600EB/133 MHz	256KB full spd	128MB / PC700 8D / RDRAM ECC	Appian Gemini AGP 2X adpr / 16MB dual display ports	PCI=3 AGP=0	3 used 1 empty	820 ethernet NT 4.0	Jan 2000
⌘ 6867-30U	13.5GB std (7200) 9.0ms / EIDE / ATA-66 48X-20X CD-ROM / EIDE	Pentium III 667/133 MHz	256KB full spd	128MB / PC700 8D / RDRAM ECC	Millennium G400 AGP 4X adapter 16/16MB WRAM	PCI=3 AGP=0	3 used 1 empty	820 ethernet NT 4.0	Dec 1999
⌘ 6867-32U	9.1GB std (7200) 7.5ms / Wide Ultra2 SCSI 48X-20X CD-ROM / EIDE	Pentium III 667/133 MHz	256KB full spd	128MB / PC700 8D / RDRAM ECC	Millennium G400 AGP 4X adapter 16/16MB WRAM	PCI=2 AGP=0	3 used 1 empty	820 ethernet, SCSI NT 4.0	Dec 1999
⌘ 6867-34U	13.5GB std (7200) 9.0ms / EIDE / ATA-66 48X-20X CD-ROM / EIDE	Pentium III 667/133 MHz	256KB full spd	128MB / PC700 8D / RDRAM ECC	IBM Fire GL1 ¹¹ AGP 2X adapter 32/32MB SGRAM	PCI=3 AGP=0	3 used 1 empty	820 ethernet NT 4.0	Dec 1999
⌘ 6867-35U	9.1GB std (7200) 7.5ms / Wide Ultra2 SCSI 48X-20X CD-ROM / EIDE	Pentium III 667/133 MHz	256KB full spd	128MB / PC700 8D / RDRAM ECC	IBM Fire GL1 ¹¹ AGP 2X adapter 32/32MB SGRAM	PCI=2 AGP=0	3 used 1 empty	820 ethernet, SCSI NT 4.0	Dec 1999
⌘ 6867-37U	9.1GB std (7200) 7.5ms / Wide Ultra2 SCSI 48X-20X CD-ROM / EIDE	Pentium III 667/133 MHz	256KB full spd	128MB / PC700 8D / RDRAM ECC	Appian Gemini AGP 2X adpr / 16MB dual display ports	PCI=2 AGP=0	3 used 1 empty	820 ethernet, SCSI NT 4.0	Jan 2000
⌘ 6867-40U	13.5GB std (7200) 9.0ms / EIDE / ATA-66 48X-20X CD-ROM / EIDE	Pentium III 733/133 MHz	256KB full spd	128MB / PC700 8D / RDRAM ECC	Millennium G400 AGP 4X adapter 16/16MB WRAM	PCI=3 AGP=0	3 used 1 empty	820 ethernet NT 4.0	Dec 1999
⌘ 6867-41U	13.5GB std (7200) 9.0ms / EIDE / ATA-66 48X-20X CD-ROM / EIDE	Pentium III 733/133 MHz	256KB full spd	128MB / PC700 8D / RDRAM ECC	Millennium G400 AGP 4X adapter 16/16MB WRAM	PCI=3 AGP=0	3 used 1 empty	820 ethernet Windows 2000	Feb 2000
⌘ 6867-45U	9.1GB std (7200) 7.5ms / Wide Ultra2 SCSI 48X-20X CD-ROM / EIDE	Pentium III 733/133 MHz	256KB full spd	128MB / PC700 8D / RDRAM ECC	IBM Fire GL1 ¹¹ AGP 2X adapter 32/32MB SGRAM	PCI=2 AGP=0	3 used 1 empty	820 ethernet, SCSI NT 4.0	Dec 1999
⌘ 6867-19U for AAP	<i>no disk</i> 48X-20X CD-ROM / EIDE	Pentium III 600EB/133 MHz	256KB full spd	0MB RDRAM	None	PCI=3 AGP=1	1 used 3 empty	820 ethernet No OS	Dec 1999
⌘ 6867-39U for AAP	<i>no disk</i> 48X-20X CD-ROM / EIDE	Pentium III 667/133 MHz	256KB full spd	0MB RDRAM	None	PCI=3 AGP=1	1 used 3 empty	820 ethernet No OS	Dec 1999
⌘ 6867-49U for AAP	<i>no disk</i> 48X-20X CD-ROM / EIDE	Pentium III 733/133 MHz	256KB full spd	0MB RDRAM	None	PCI=3 AGP=1	1 used 3 empty	820 ethernet No OS	Dec 1999

<p>Windows NT Preload¹⁷ Windows NT® Workstation 4.0 (SP5) ConfigSafe for Windows NT Norton AntiVirus for IBM (OEM Version) Other utilities, drivers, and applications - Free license for Lotus® SmartSuite® Millennium - Free license for Lotus Notes Client ♦ Software Selections CD-ROM ♦ Windows NT Product Recovery CD-ROM ♦ Device Drivers and Diagnostic CD-ROM - C: is 2GB as FAT16 - Remainder of disk is unformatted</p> <p>Windows 2000 Professional Preload¹⁷ Microsoft® Windows® 2000 Professional - Free license for Lotus® SmartSuite® Millennium ♦ Software Selections CD-ROM ♦ Windows 2000 Product Recovery CD-ROM (includes drivers and diagnostics) - C: is FAT32 of entire disk</p>	<p>Options 64MB 700MHz ECC RDRAM (4 Dev) 33L3105 128MB 700MHz ECC RDRAM (8 Dev) 33L3107 256MB 700MHz ECC RDRAM (16 Dev) 33L3109 64MB 800MHz ECC RDRAM (4 Dev) 20L0274 128MB 800MHz ECC RDRAM (8 Dev) 20L0275 256MB 800MHz ECC RDRAM (16 Dev) 20L0277 IBM 10.1GB 7,200 rpm EIDE disk 33L4958 IBM 13.5GB 7,200 rpm EIDE disk 33L5043 IBM 20.4GB 7,200 rpm EIDE disk 33L5044 IBM 9.1GB 7,200 rpm Wide Ultra2 SCSI disk 20L0553 IBM 18.2GB 7,200 rpm Wide Ultra2 SCSI disk 20L0554 IBM 9.1GB 10,000 rpm Wide Ultra2 SCSI disk 20L0539 IBM 9.1GB 10,000 rpm Wide Ultra2 SCSI disk 00N8071 IBM 18.2GB 10,000 rpm Wide Ultra2 SCSI disk 00N8072 IBM IDE DVD-ROM (Black) 33L5003 IBM IDE Rewritable CD-ROM (Black) 33L5005 Radip Access II Keyboard (Black) 33L3174 Desktop Floor Stand 33L5136</p> <p>Visit www.ibm.com/options for a complete list of compatible options</p> <p>Software Selections CD-ROM⁷ All models ship with a CD with various appls, utilities, and customization features</p> <p>↔ 13.5GB EIDE disk is ATA-66 (up to 66MB/sec) and SMART¹⁵ III</p>	<p>WARRANTY SERVICE SUPPORT³ ↔ 3 year parts and labor warranty ↔ International Warranty Service³ ↔ On site, 8 am through 5 pm, Mon through Fri excluding holidays, next business day response time ↔ On site warranty upgrade option: • 4 hour response¹⁴, 7 day x 24 hr ↔ Post warranty on site options: • Next day response¹⁴, Mon-Fri 8-5 • 4 hour response¹⁴, 7 day x 24 hr ↔ IBM SystemXtra® ↔ 24 hour x 7 day telephone, electronic, and Internet support</p>
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IBM IntelliStation® E Pro (6867) - withdrawn

IBM® IntelliStation® E Pro		Desktop	
Type-model	6867-xxx		
Processor(s)	Intel® Pentium® III 600EB, 667, or 733MHz¹ with 133MHz system bus		
Implementation	Processor and L2 cache in Single Edge Cartridge (SECC2) in Intel Slot 1 CPU connector / motherboard has one Slot 1		
Processor upgrade	Enabled for Slot 1 Intel upgrade processors		
Avail / withdrawn date	Dec 1999 or Jan 2000 or Feb 2000 / June 2000 and Nov 2000	Bay ① 5.25", HH 1.6", access, open or CD-ROM	Bay ② 3.5", SL 1", access, open
L2 cache	256KB std and max / full speed / ECC support / integrated in SECC2 / 8-way set associative / write-back	Bay ③ 3.5", SL 1", no acc, open or std disk, rails	Bay ④ 3.5", SL 1", access, std diskette
Memory - std / max	128MB std / 512MB max ¹³ (memory controller max is 1GB)	Slot 1: fullsize, 32-bit PCI 2.2 (5v)* - ethernet adapter	Slot 2: fullsize, 32-bit PCI 2.2 (5v) - SCSI (some mdl's)
Mem - architecture	Single RDRAM (Rambus) channel / 32 devices max / ECC	Slot 3: halfsize, 32-bit PCI 2.2 (5v)	Slot 4: halfsize, 32-bit PCI 2.2 (5v)
Mem - sockets used	Two 184-pin gold-plated RIMM sockets	Slot: fullsize, 32-bit AGP 4X - on planar, not riser	
Mem - sockets used	One socket used by RIMM / one socket used by CRIMM		
Mem - type (support)	ECC (memory controller is ECC) / non-parity not supported		
Memory - supported	ECC RDRAM / PC700, PC800 RIMM (no PC600 support)		
Graphics controller (Performance 2D)	<i>Some models</i> Matrox® Millennium G400 / AGP 4X adapter / 16MB std / 16MB max / 166MHz SGRAM / sideband addressing / 250 MHz RAMDAC / 256-bit DualBus chip / max 2D resolution of 2048x1536 / supports 1280x1024x16.7million at 100 Hz		
Graphics controller (Advanced 3D)	<i>Some models</i> IBM Fire GL1 / AGP 2X adapter / 32MB std / 32MB max / SGRAM / sideband-capable / 250MHz RAMDAC / split transactions		
Graphics controller (Dual displays)	<i>Some models</i> Appian Gemini / AGP 2X adapter / 16MB std / 16MB max two controllers with two DB-15 ports for multiple monitors		
Disk	None (AAP models), one EIDE, or one Wide Ultra2 SCSI / SMART ⁵		
SCSI controller	<i>SCSI models only:</i> Adaptec® AHA-2940U2B / single channel Wide Ultra2 SCSI adapter / PCI adapter		
SCSI connectors	<i>Internal:</i> 68 pin (attaches 5-drop cable to SCSI disk); <i>External:</i> 68 pin SCSI port		
Cables - SCSI mod	<i>SCSI models:</i> 5-drop 16-bit LVD cable on internal connector; one 1-drop IDE ATA-33 cable (CD-ROM)		
Cables - IDE models	<i>EIDE models:</i> Two 2-drop IDE ATA-66 cable / CD-ROM uses second 1-drop IDE ATA-33 cable / no SCSI cable		
Cables - AAP models	<i>AAP models:</i> One 1-drop IDE ATA-33 cable		
EIDE disk controller	Enhanced IDE in ICH / ATA-66 and PIO modes 0-4 with 2 channel, 4 device support		
Motherboard	NLX motherboard / slides out without removing cables / riser contains rear I/O ports and IDE and diskette connectors		
Bus slots (see side)	PCI 2.2 (33MHz), 4X AGP (66MHz);		
Architecture	Accelerated Hub Architecture / 266MB/sec I/O channel / Intel 820 chip set / 82810 Memory Controller Hub (MCH) / 82801 I/O Controller Hub (ICH) for PCI 2.2 bus, ATA-66 EIDE, USB, Low Pin Count Interface / 82802AC Firmware Hub / NS 87360 Super I/O for diskette, parallel, serial, keyboard, mouse		
Ports	<i>Ser:</i> Two 9 pin <i>Par:</i> One (EPP, ECP) / IEEE 1284 <i>USB:</i> Two 4-pin USB (Vers 1.1)		
Diskette drive	3.5" 1.44MB diskette drive		
CD-ROM	<i>Some models:</i> 48X-20X [®] CD-ROM / CAV / ATAPI / bootable		
Audio	SoundMAX™ integrated digital audio / software-based (done by Pentium and ICH) / AC '97 interface / ADI 1881 codec (analog mixing, A-to-D and D-to-A conversion)		
Audio connectors	Stereo line in / mic in / line out (all 3.5mm; all in back) / software volume control		
Ethernet controller	<i>Some models:</i> IBM 10/100 EtherJet PCI Adapter with Alert on LAN 2 / 82559 / 10BaseT and 100BaseTX / RJ45 connector / Wake on LAN [®] / part number 34L1101		
Systems mgmt cntrl	Chip to monitor temperature, fan speed, power supply/processor voltage, cover removal / Philips® PCA9556		
Security chip	Integrated IBM Security Chip / soldered on motherboard		
Keyboard / mouse	104 key (rubber dome) / keyboard extender / IBM ScrollPoint™ II mouse		
Cooling fans	One fan in front		
Power supply	145 watts / universal / manual switch / Wake on LAN support / internal fan		
SECURITY CHIP		SECURITY	
<ul style="list-style-type: none"> - Provides electronic digital signature and secure key storage - Can sign each e-mail with a digital signature (1024-bit) so receiving party can verify sender - Public Key Infrastructure (PKI) for more secure e-mail, web access and Internet transactions, and Secure Sockets Layer (SSL) for encryption/decryption capabilities - Uses User Verification Manager software available from IBM web site 		<ul style="list-style-type: none"> • Cover key lock • Cover tamper detect switch • Secure fixed DASD • Serial EEPROM with write protect • Power-on password • Setup utility password (administrator password) • Keyboard/mouse password • Wake on LAN password prompt • Boot sequence control • Boot without keyboard or mouse • Diskette boot inhibit • Disable mouse • Disable external SCSI port • Diskette write-protect • Diskette I/O control • Hard drive I/O control • Serial port I/O control • Parallel port I/O control • Secure access openings (vents, louvers) • Secure removable media • Data storage for LCCM function • U Bolt enabled • Vital product data stored in on-board flash ROM • Write protection control circuit for flash ROM 	
Serviceability features: <ul style="list-style-type: none"> • Metal top cover (supports a 100 pound monitor) • Tool-less entry • Cover removed by two easy-lift tabs (desktop) • Pivoting disk cage to access three right bays with release latch (desktop) • Disk installation with snap-in rails (desktop, bay 3) 		SYSTEMS MANAGEMENT	
Dual orientation with optional stand (desktop) Configuration/Setup Utility resides in flash memory; invoked by pressing F1 key at startup ESC for fast POST F12 for network boot at startup Plug-and-Play 1.0a Desktop: 17.60"W x 17.72"D x 5.28"H 22 to 25 lbs (10 to 11.4 kg) ISO 9241-3 capable 512KB IBM BIOS in flash memory EPA ENERGY STAR-compliant (some models) PC-Doctor diagnostic software Color-coded icons for rear connectors		<ul style="list-style-type: none"> • Asset ID™ (RFID)¹⁶ • Alert on LAN™ 2 • Universal Manageability Services and Universal Manageability (UM) Desktop Extensions enabled • LANClient Control Manager™ enabled • SMART Reaction™⁵ II • PC 99-compliant • DMI 2.0-compliant • Common Information Model (CIM) 2.2 • Asset Information Chip (EEPROM) • Wired for Management 1.1a • ACPI 1.04 • Advanced Power Management 1.2 • Wake on LAN support • Alternate Boot Sequence • RPL, DHCP, and PXE support • Setup on LAN, Flash on LAN • Wake on Alarm • System Management BIOS • Systems Migration Assistant support 	

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(6867 - Page 2 of 2) © IBM Corp. January 2001

IBM IntelliStation® E Pro (6867) - Spring 2000 - withdrawn

Type-model	Standard disk (rpm) ms seek ⁵ / disk interface CD-ROM / interface	Intel® Processor MHz ¹	Write-back L2 cache standard	Rambus memory; std MB / type; devices / type	Graphics controller; AGP; memory (MB) std / max	Bus slots P=PCI avail Total A=AGP avail bays	Chip set Eth / SCSI Preload ¹⁷	Avail- able date	
Desktop; 5 slot x 4 bay - US Models									
6867-52U	15.0GB ² std (7200) 9.0ms / EIDE / ATA-66 48X-20X ⁶ CD-ROM / EIDE	Pentium® III 800EB/133 ²⁰ MHz	256KB full spd	128MB / PC700 8D / RDRAM ECC	Millennium G400 AGP 4X adapter 16/16MB WRAM	PCI=3 AGP=0	3 used 1 empty	820 ethernet NT 4.0	April 2000
6867-53U	9.1GB std (7200) 7.5ms / Wide Ultra2 SCSI 48X-20X CD-ROM / EIDE	Pentium III 800EB/133 MHz	256KB full spd	128MB / PC700 8D / RDRAM ECC	Millennium G400 AGP 4X adapter 16/16MB WRAM	PCI=2 AGP=0	3 used 1 empty	820 ethernet, SCSI NT 4.0	April 2000
6867-55U	9.1GB std (7200) 7.5ms / Wide Ultra2 SCSI 48X-20X CD-ROM / EIDE	Pentium III 800EB/133 MHz	256KB full spd	128MB / PC700 8D / RDRAM ECC	ELSA™ Gloria II AGP 4X adapter 64/64MB SDRAM	PCI=2 AGP=0	3 used 1 empty	820 ethernet, SCSI NT 4.0	April 2000
6867-62U	15.0GB ² std (7200) 9.0ms / EIDE / ATA-66 48X-20X ⁴ CD-ROM / EIDE	Pentium III 866/133 MHz	256KB full spd	128MB / PC700 8D / RDRAM ECC	Millennium G400 AGP 4X adapter 16/16MB WRAM	PCI=3 AGP=0	3 used 1 empty	820 ethernet NT 4.0	April 2000
6867-63U	9.1GB std (7200) 7.5ms / Wide Ultra2 SCSI 48X-20X CD-ROM / EIDE	Pentium III 866/133 MHz	256KB full spd	128MB / PC700 8D / RDRAM ECC	Millennium G400 AGP 4X adapter 16/16MB WRAM	PCI=2 AGP=0	3 used 1 empty	820 ethernet, SCSI NT 4.0	April 2000
6867-65U	9.1GB std (7200) 7.5ms / Wide Ultra2 SCSI 48X-20X CD-ROM / EIDE	Pentium III 866/133 MHz	256KB full spd	128MB / PC700 8D / RDRAM ECC	ELSA Gloria II AGP 4X adapter 64/64MB SDRAM	PCI=2 AGP=0	3 used 1 empty	820 ethernet, SCSI NT 4.0	April 2000
6867-59U for AAP	<i>no disk</i> 48X-20X CD-ROM / EIDE	Pentium III 800EB/133 MHz	256KB full spd	0MB RDRAM	None	PCI=3 AGP=1	1 used 3 empty	820 ethernet No OS	April 2000
6867-69U for AAP	<i>no disk</i> 48X-20X CD-ROM / EIDE	Pentium III 866/133 MHz	256KB full spd	0MB RDRAM	None	PCI=3 AGP=1	1 used 3 empty	820 ethernet No OS	April 2000
6867-72U	15.0GB ² std (7200) 9.0ms / EIDE / ATA-66 48X-20X ⁴ CD-ROM / EIDE	Pentium III 933/133 MHz	256KB full spd	128MB / PC700 8D / RDRAM ECC	Millennium G400 AGP 4X adapter 16/16MB WRAM	PCI=3 AGP=0	3 used 1 empty	820 ethernet NT 4.0	June 2000
6867-78U	15.0GB ² std (7200) 9.0ms / EIDE / ATA-66 48X-20X ⁴ CD-ROM / EIDE	Pentium III 933/133 MHz	256KB full spd	256MB / PC700 RDRAM ECC 2 x 128MB 8D	Millennium G400 AGP 4X adapter 16/16MB WRAM	PCI=3 AGP=0	3 used 1 empty	820 ethernet NT 4.0 and Rational Suite Enterprise Studio software 30-day temporary license	August 2000

Windows NT Preload ¹⁷	Options	WARRANTY SERVICE SUPPORT ³
Windows NT® Workstation 4.0 (SP5) ConfigSafe for Windows NT Norton AntiVirus for IBM (OEM Version) Other utilities, drivers, and applications - Free license for Lotus® SmartSuite® Millennium - Free license for Lotus Notes Client ⇨ Software Selections CD-ROM ⇨ Windows NT Product Recovery CD-ROM ⇨ Device Drivers and Diagnostic CD-ROM - C: is 2GB as FAT16 - Remainder of disk is unformatted	64MB 700MHz ECC RDRAM (4 Dev) 33L3105 128MB 700MHz ECC RDRAM (8 Dev) 33L3107 256MB 700MHz ECC RDRAM (16 Dev) 33L3109 64MB 800MHz ECC RDRAM (4 Dev) 20L0274 128MB 800MHz ECC RDRAM (8 Dev) 20L0275 256MB 800MHz ECC RDRAM (16 Dev) 20L0277 IBM 10.1GB 7,200 rpm EIDE disk 33L4958 IBM 13.5GB 7,200 rpm EIDE disk 33L5043 IBM 20.4GB 7,200 rpm EIDE disk 33L5044 IBM 9.1GB 7,200 rpm Wide Ultra2 SCSI disk 20L0553 IBM 18.2GB 7,200 rpm Wide Ultra2 SCSI disk 20L0554 IBM 9.1GB 10,000 rpm Wide Ultra2 SCSI disk 20L0539 IBM 9.1GB 10,000 rpm Wide Ultra2 SCSI disk 00N8071 IBM 18.2GB 10,000 rpm Wide Ultra2 SCSI disk 00N8072 IBM IDE DVD-ROM (Black) 33L5003 IBM IDE Rewritable CD-ROM (Black) 33L5005 Rapid Access II Keyboard (Black) 33L3174 Desktop Floor Stand 33L5136	⇨ 3 year parts and labor warranty ⇨ International Warranty Service ³ ⇨ On site, 8 am through 5 pm, Mon through Fri excluding holidays, next business day response time ⇨ On site warranty upgrade option: • 4 hour response ¹⁴ , 7 day x 24 hr ⇨ Post warranty on site options: • Next day response ¹⁴ , Mon-Fri 8-5 • 4 hour response ¹⁴ , 7 day x 24 hr ⇨ IBM SystemXtra® ⇨ 24 hour x 7 day telephone, electronic, and Internet support
Software Selections CD-ROM¹⁷ All models ship with a CD with various appls, utilities, and customization features	Visit www.ibm.com/options for a complete list of compatible options	
⇨ 15.0GB EIDE disk is ATA-66 (up to 66MB/sec) and SMART ⁵ III		

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 Models announced January 25, June 6, or August 14, 2000
 Models withdrawn from marketing effective November 2000 or May 2001

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 (6867S - Page 1 of 2) © IBM Corp. May 2001

IBM IntelliStation® E Pro (6867) - Spring 2000 - withdrawn

IBM® IntelliStation® E Pro		Desktop
Type-model	6867-xxx	 <p>Bay ① 5.25", HH 1.6", access, CD-ROM Bay ② 3.5", SL 1", access, open Bay ③ 3.5", SL 1", no acc, open or std disk, rails Bay ④ 3.5", SL 1", access, std diskette</p> <p>Slot 1: fullsize, 32-bit PCI 2.2 (5v)* - ethernet adapter Slot 2: fullsize, 32-bit PCI 2.2 (5v) Slot 3: halfsize, 32-bit PCI 2.2 (5v) - SCSI (some mdl) Slot 4: halfsize, 32-bit PCI 2.2 (5v) Slot: fullsize, 32-bit AGP 4X - on planar, not riser</p> <p>* Slot 1 has Alert on LAN support with compatible LAN adapter</p> <p>- Optional Floor Stand and Bottom Cover (33L5136) - CD-ROM/disk (Bay 1-3) in flip out cage - All systems stealth black color</p> <p>All models: Maximum internal SCSI disk capacity¹³: 36.4GB with two 18.1GB 10000 rpm Wide Ultra2 SCSI disks All models: Maximum internal EIDE disk capacity¹³: 40.8GB with two 20.4GB EIDE disks</p>
Processor(s) Implementation	Intel® Pentium® III 800EB, 866, or 933MHz¹ with 133MHz system bus Processor and L2 cache in Single Edge Cartridge (SECC2) in Intel Slot 1 CPU connector / motherboard has one Slot 1	
Processor upgrade Avail / withdrawn date	Enabled for Slot 1 Intel upgrade processors April 00 or June 00 or August 00 / November 00 or May 01	
L2 cache	256KB std and max / full speed / ECC support / integrated in SECC2 / 8-way set associative / write-back	
Memory - std / max Mem - architecture	128MB std / 512MB max ¹³ (memory controller max is 1GB) Single RDRAM (Rambus®) channel / 32 devices max / ECC	
Mem - sockets used	Two 184-pin gold-plated RIMM sockets	
Mem - sockets used	One socket used by RIMM / one socket used by CRIMM (except model 78U contains two 128MB RIMMs)	
Mem - type (support)	ECC (memory controller is ECC) / non-parity not supported	
Memory - supported	ECC RDRAM / PC700, PC800 RIMM (no PC600 support)	
Graphics controller (Performance 2D)	<i>Some models</i> Matrox® Millennium G400 / AGP 4X adapter / 16MB std / 16MB max / 166MHz SGRAM / sideband addressing / 250 MHz RAMDAC / 256-bit DualBus chip / max 2D resolution of 2048x1536 / supports 1280x1024x16.7million at 100 Hz	
Graphics controller (Advanced 3D)	<i>Some models</i> ELSA Gloria II / AGP 4X adapter / 64MB 128-bit 110MHz SDRAM std and max / 350MHz RAMDAC / 2048x1536 at 75Hz / NVIDIA™ Quadro controller / 256-bit QuadPipe rendering engine	
SCSI controller	<i>SCSI models only:</i> Adaptec® AHA-2940U2B / single channel Wide Ultra2 SCSI adapter / PCI adapter	
SCSI connectors	<i>Internal:</i> 68 pin (attaches 5-drop cable to SCSI disk); <i>External:</i> 68 pin SCSI port	
Cables - SCSI mod	<i>SCSI models:</i> 5-drop 16-bit LVD cable on internal connector; one 1-drop IDE ATA-33 cable (CD-ROM)	
Cables - IDE models	<i>EIDE models:</i> Two 2-drop IDE ATA-66 cable / CD-ROM uses second 1-drop IDE ATA-33 cable / no SCSI cable	
Cables - AAP models	<i>AAP models:</i> One 1-drop IDE ATA-33 cable	
EIDE disk controller	Enhanced IDE in ICH / ATA-66 and PIO modes 0-4 with 2 channel, 4 device support	
Motherboard	NLX motherboard / slides out without removing cables / riser contains rear I/O ports and IDE and diskette connectors	
Bus slots (see side) Architecture	PCI 2.2 (33MHz), 4X AGP (66MHz); Accelerated Hub Architecture / 266MB/sec I/O channel / Intel 820 chip set / 82810 Memory Controller Hub (MCH) / 82801 I/O Controller Hub (ICH) for PCI 2.2 bus, ATA-66 EIDE, USB, Low Pin Count Interface / 82802AC Firmware Hub / NS 87360 Super I/O for diskette, parallel, serial, keyboard, mouse	
Ports	<i>Ser:</i> Two 9 pin <i>Par:</i> One (EPP, ECP) / IEEE 1284 <i>USB:</i> Two 4-pin USB (Vers 1.1)	
Diskette drive	3.5" 1.44MB diskette drive	
CD-ROM	<i>All models:</i> 48X-20X ⁶ CD-ROM / CAV / ATAPI / bootable	
Audio	SoundMAX™ integrated digital audio / software-based (done by Pentium and ICH) / AC '97 interface / ADI 1881 codec (analog mixing, A-to-D and D-to-A conversion)	
Audio connectors	Stereo line in / mic in / line out (all 3.5mm; all in back) / software volume control	
Ethernet controller	<i>All models:</i> IBM 10/100 EtherJet PCI Adapter with Alert on LAN 2 / 82559 / 10BaseT and 100BaseTX / RJ45 connector / Wake on LAN® / part number 34L1101	
Systems mgmt cntrl	Chip to monitor temperature, fan speed, power supply/processor voltage, cover removal / Philips® PCA9556	
Security chip	Integrated IBM Security Chip / soldered on motherboard	
Keyboard / mouse	104 key (rubber dome) / keyboard extender / IBM ScrollPoint™ II mouse	
Cooling fans	One fan in front	
Power supply	145 watts / universal / manual switch / Wake on LAN support / internal fan	
<p>SECURITY CHIP</p> <ul style="list-style-type: none"> - Provides electronic digital signature and secure key storage - Can sign each e-mail with a digital signature (1024-bit) so receiving party can verify sender - Public Key Infrastructure (PKI) for more secure e-mail, web access and Internet transactions, and Secure Sockets Layer (SSL) for encryption/decryption capabilities - Uses User Verification Manager software available from IBM web site <p>Serviceability features:</p> <ul style="list-style-type: none"> • Metal top cover (supports a 100 pound monitor) • Tool-less entry • Cover removed by two easy-lift tabs (desktop) • Pivoting disk cage to access three right bays with release latch (desktop) • Disk installation with snap-in rails (desktop, bay 3) 		<p>SECURITY</p> <ul style="list-style-type: none"> • Cover key lock • Cover tamper detect switch • Secure fixed DASD • Serial EEPROM with write protect • Power-on password • Setup utility password (administrator password) • Keyboard/mouse password • Wake on LAN password prompt • Boot sequence control • Boot without keyboard or mouse • Diskette boot inhibit • Disable mouse • Disable external SCSI port • Diskette write-protect • Diskette I/O control • Hard drive I/O control • Serial port I/O control • Parallel port I/O control • Secure access openings (vents, louvers) • Secure removable media • Data storage for LCCM function • U Bolt enabled • Vital product data stored in on-board flash ROM • Write protection control circuit for flash ROM <p>SYSTEMS MANAGEMENT</p> <ul style="list-style-type: none"> • Asset ID™ (RFID)¹⁶ • Alert on LAN™ 2 • Universal Manageability Services and Universal Manageability (UM) Desktop Extensions enabled • LANClient Control Manager™ enabled • SMART Reaction™⁵ II • PC 99-compliant • DMI 2.0-compliant • Common Information Model (CIM) 2.2 • Asset Information Chip (EEPROM) • Wired for Management 1.1a • ACPI 1.04 • Advanced Power Management 1.2 • Wake on LAN¹⁴ support • Alternate Boot Sequence • RPL, DHCP, and PXE support • Setup on LAN, Flash on LAN • Wake on Alarm • System Management BIOS • Systems Migration Assistant support

IBM IntelliStation® E Pro models (6893) - withdrawn

Type-model	Standard disk (rpm) ms seek / disk interface CD-ROM ² /interface	CPU MHz ¹ / Upgrade	Write-back L2 cache std / max KB / KB	Memory in MB; std / max 100MHz	SVGA controller; memory std / max	Bus slots P=PCI avail PCI/ISA=avail A=AGP avail	Total bays	Chipset Ethernet Preload ¹⁷	Available date	
5 slot x 4 bay; PCI/ISA/AGP; Stealth Gray										
⌘ 6893-10U	6.4GB ² std (7200) 9.5ms / EIDE / ATA-33 32X-14X CD-ROM / EIDE	Pentium® II 350/100 MHz	Pent II 400MHz, 450MHz	512/512 175MHz in SEC	64 / 768 SDRAM ECC	Millennium II AGP adapter 8 / 16 WRAM	PCI=2 PCI/ISA=1 ISA=1; AGP=0	4 bays 3 used 1 empty	440BX Ethernet Windows NT 4.0	June 1998
⌘ 6893-11U	4.5GB std (7200) 7.5ms / Wide Ultra SCSI 32X-14X CD-ROM / EIDE	Pentium II 350/100 MHz	Pent II 400MHz, 450MHz	512/512 200MHz in SEC	64 / 768 SDRAM ECC	Millennium II AGP Adapter 8 / 16 WRAM	PCI=1 PCI/ISA=1 ISA=1; AGP=0	4 bays 3 used 1 empty	440BX Ethernet Windows NT 4.0	June 1998
⌘ 6893-12U	6.4GB std (7200) 9.5ms / EIDE / ATA-33 32X-14X CD-ROM / EIDE	Pentium II 400/100 MHz	Pent II 450MHz, 450MHz	512/512 200MHz in SEC	64 / 768 SDRAM ECC	Millennium II AGP Adapter 8 / 16 WRAM	PCI=2 PCI/ISA=1 ISA=1; AGP=0	4 bays 3 used 1 empty	440BX Ethernet Windows NT 4.0	June 1998
⌘ 6893-14U	4.5GB std (7200) 7.5ms / Wide Ultra SCSI 32X-14X CD-ROM / EIDE	Pentium II 400/100 MHz	Pent II 450MHz	512/512 200MHz in SEC	128/768 SDRAM ECC	PERMEDIA 2A AGP Adapter 8/8M SGRAM	PCI=1 PCI/ISA=1 ISA=1; AGP=0	4 bays 3 used 1 empty	440BX Ethernet Windows NT 4.0	June 1998
⌘ 6893-18U for AAP	<i>no disk</i> 32X-14X CD-ROM / EIDE	Pentium II 400/100 MHz	Pent II 450MHz	512/512 200MHz in SEC	64 / 768 SDRAM ECC	<i>None</i>	PCI=2 PCI/ISA=1 ISA=1; AGP=1	4 bays 2 used 2 empty	440BX Ethernet Open OS	June 1998
⌘ 6893-41U	6.4GB std (7200) 9.5ms / EIDE / ATA-33 32X-14X CD-ROM / EIDE	Pentium II 450/100 MHz	None	512/512 225MHz in SEC	64 / 768 SDRAM ECC	Millennm G200 AGP-2x Adapter 8/16M SGRAM	PCI=2 PCI/ISA=1 ISA=1; AGP=0	4 bays 3 used 1 empty	440BX Ethernet Windows NT 4.0	Sept 1998
⌘ 6893-42U	4.5GB std (7200) 7.5ms / Wide Ultra SCSI 32X-14X CD-ROM / EIDE	Pentium II 450/100 MHz	None	512/512 225MHz in SEC	64 / 768 SDRAM ECC	Millennm G200 AGP-2x Adapter 8/16M SGRAM	PCI=1 PCI/ISA=1 ISA=1; AGP=0	4 bays 3 used 1 empty	440BX Ethernet Windows NT 4.0	Sept 1998
⌘ 6893-43U	10.1GB std (7200) 9.5ms / EIDE / ATA-33 32X-14X CD-ROM / EIDE	Pentium II 450/100 MHz	None	512/512 225MHz in SEC	128 / 768 SDRAM ECC	Millennm G200 AGP-2x Adapter 8/16M SGRAM	PCI=2 PCI/ISA=1 ISA=1; AGP=0	4 bays 3 used 1 empty	440BX Ethernet Windows NT 4.0	Sept 1998
⌘ 6893-44U	9.1GB std (7200) 7.5ms / Wide Ultra SCSI 32X-14X CD-ROM / EIDE	Pentium II 450/100 MHz	None	512/512 225MHz in SEC	128/768 SDRAM ECC	Millennm G200 AGP-2x Adapter 8/16M SGRAM	PCI=1 PCI/ISA=1 ISA=1; AGP=0	4 bays 3 used 1 empty	440BX Ethernet Windows NT 4.0	Sept 1998
⌘ 6893-48U for AAP	<i>no disk</i> 32X-14X CD-ROM / EIDE	Pentium II 450/100 MHz	None	512/512 225MHz in SEC	64 / 768 SDRAM ECC	<i>None</i>	PCI=2 PCI/ISA=1 ISA=1; AGP=1	4 bays 2 used 2 empty	440BX Ethernet Open OS	Sept 1998
⌘ 6893-17U for AAP	<i>no disk</i> 32X-14X CD-ROM / EIDE	Pentium II 350/100 MHz	Pent II 400MHz, 450MHz	512/512 175MHz in SEC	64 / 768 SDRAM ECC	<i>None</i>	PCI=2 PCI/ISA=1 ISA=1; AGP=1	4 bays 2 used 2 empty	440BX Ethernet Open OS	Sept 1998
⌘ 6893-60U	6.4GB ² std (7200) 9.5ms / EIDE / ATA-33 32X-14X ⁴ CD-ROM / EIDE	Pentium II 350/100 MHz	Pent II 400MHz, 450MHz	512/512 175MHz in SEC	64 / 768 SDRAM ECC	Millennm G200 AGP-2x Adapter 8/16M SGRAM	PCI=2 PCI/ISA=1 ISA=1; AGP=0	4 bays 3 used 1 empty	440BX Ethernet Windows NT 4.0	Nov 1998
⌘ 6893-61U	4.5GB std (7200) 7.5ms / Wide Ultra SCSI 32X-14X CD-ROM / EIDE	Pentium II 350/100 MHz	Pent II 400MHz, 450MHz	512/512 175MHz in SEC	64 / 768 SDRAM ECC	Millennm G200 AGP-2x Adapter 8/16M SGRAM	PCI=1 PCI/ISA=1 ISA=1; AGP=0	4 bays 3 used 1 empty	440BX Ethernet Windows NT 4.0	Nov 1998
⌘ 6893-62U	6.4GB std (7200) 9.5ms / EIDE / ATA-33 32X-14X CD-ROM / EIDE	Pentium II 400/100 MHz	Pent II 450MHz	512/512 200MHz in SEC	64 / 768 SDRAM ECC	Millennm G200 AGP-2x Adapter 8/16M SGRAM	PCI=2 PCI/ISA=1 ISA=1; AGP=0	4 bays 3 used 1 empty	440BX Ethernet Windows NT 4.0	Nov 1998

Windows NT Preload ¹⁷	Supported Memory and Options	Ready to Configure CD-ROM
Windows NT® Workstation 4.0 (SP3) Internet Explorer 4.0 install icon IBM Welcome Center Device drivers for each subsystem Ready to install: - ConfigSafe for Windows NT 4.0 - Norton AntiVirus for Windows NT - DMI Service Provider - DMI BIOS Instrumentation - IBM PC System Monitor Instrumentation - IBM AssetCare Serial Number Information IBM RTC CD-ROM Setup Utility IBM Utilities for Windows 95/NT 4.0 - Hummingbird "Try and Buy" Suite CD-ROM - Ready to Configure CD-ROM - Free license for Lotus SmartSuite 97 CD-ROM - IBM ViaVoice 98 Office Edition CD-ROM - Windows NT Workstation 4.0 CD-ROM - IBM Diagnostics CD-ROM - Access to IBM HomePage Creator C: is 2GB as FAT16 Remainder is unformatted	32MB SDRAM ECC DIMM 100MHz 64MB SDRAM ECC DIMM 100MHz 128MB SDRAM ECC DIMM 100MHz 256 MB SDRAM ECC DIMM Registered IBM Netfinity 400MHz Pentium II/512KB IBM Netfinity 450MHz Pentium II/512KB Matrox Millennium G200 Graphics Adap Matrox Millennium II AGP Graphics Adap PERMEDIA 2A Graphics Accelerator 4.2GB EIDE Deskstar 5 (ATA-33) 6.4GB EIDE Deskstar 5 (ATA-33) 6.4GB 7200 rpm EIDE disk 8.4GB Deskstar 9.1GB 7200 rpm EIDE disk 10.1GB 7200 rpm EIDE disk IBM Ultrastar 2ES 2.1GB WU SCSI IBM Ultrastar 2ES 4.3GB WU SCSI 4.5GB Wide Ultra SCSI (7200 rpm) 9.1GB Wide Ultra SCSI (7200 rpm) 10/100 PCI EtherJet Adapter WOL Auto Wake Token-Ring ISA Adapter PCI Token Ring Adapter WOL	All models ship with a CD with drivers for Windows® 95, 98, and NT 3.51 and 4.0 and various utilities. Includes: - Intel LANDesk® Client Manager - ConfigSafe - IBM Systems Management Tools WARRANTY SERVICE SUPPORT³ ⇨ 3 year parts warranty ⇨ 1 year labor warranty ⇨ International Warranty Service ³ ⇨ 1st year: on site, 8 am - 5 pm, Mon - Fri coverage, 2nd business day response time ⇨ 2nd/3rd year: parts exchange only, call 1-800-772-2227 ⇨ On site warranty upgrade options: • Next day response ⁷ , Mon-Fri 8-5 • 4 hour response ⁷ , 7 day x 24 hr ⇨ Post warranty: on site options above ⇨ IBM SystemXtra® ⇨ 24 hour / 7 day telephone, electronic, Internet (www.pc.ibm.com) support

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(IS698 - Page 1 of 2) © IBM Corp. July 1999

IBM IntelliStation® E Pro (6893) - withdrawn

IBM® IntelliStation® E Pro		Desktop	
Type-model	6893-xxx	<div style="border: 1px solid black; display: inline-block; padding: 2px;">diskette</div> <div style="border: 1px solid black; display: inline-block; padding: 2px; margin-left: 10px;">CD-ROM</div>	
Processor	Intel® Pentium® II 350/100, 400/100, or 450/100MHz¹	<div style="border: 1px solid black; display: inline-block; padding: 2px; margin-left: 10px;">②</div>	
Implementation	Processor and L2 cache in Single Edge Cartridge (SEC) in Intel Slot 1 CPU connector / motherboard has one Slot 1	<div style="border: 1px solid black; display: inline-block; padding: 2px; margin-left: 10px;">disk</div>	
Processor upgrade	No SMP / Pentium II 400/100MHz or Pentium II 450/100MHz	Bay ① 5.25", HH 1.6", access, CD-ROM Bay ② 5.25** SL 1", access, open Bay ③ 3.5", SL 1", no access, open or std disk Bay ④ 3.5", SL 1", access, std diskette	
Avail / withdr date	Sept 1998 or Nov 1998 / Nov 98, Mar 99, or Jun 99	** Brackets to convert to 3.5" available from AirSpeed with part number 01K5873 from 919-304-5000	
L2 cache	512KB std / 512KB max / ECC / half speed of CPU / integrated in SEC / 4 way set associative / write-back	Slot 1: fullsize, 16-bit ISA Slot 2: fullsize, 16-bit ISA or 32 bit PCI 2.1 (5v) Slot 3: halfsize, 32-bit PCI 2.1 (5v) - SCSI adptr (some) Slot 4: halfsize, 32-bit PCI 2.1 (5v) Slot 5: fullsize, 32-bit AGP-2x - on motherboard, not riser <i>All systems stealth gray color</i>	
Memory - std / max	64 or 128MB / 768MB max¹³ / SDRAM / 100MHz / ECC / 3.3 volt		
Mem - total sockets	Three 168 pin gold-plated DIMM sockets / industry standard		
Mem - sockets used	One DIMM used / PC100-compliant / hardware scrubbing ECC		
Mem - type (support)	Non-parity or ECC (memory controller is Error Checking Correcting)		
Memory - supported	32, 64, 128 or 256MB ECC SDRAM DIMMs / only 256MB DIMMs are registered (buffered); can not mix registered with non-registered		
Graphics controller	AAP models may include: Matrox® Millennium II (2D), Matrox Millennium G200 (2D/value 3D), Intergraph Intense 3D Pro 3400 (fast 3D), Intergraph Intense 3D Pro 3400 Geometry Accelerator (fastest 3D), 3DIabs® PERMEDIA® 2A (value 3D), or Appian J Pro (two connectors on adapter for multi-monitor)		
Graphics - type	Millennium II / AGP-1x 266MB/s adpt	Millennium G200 / AGP-2x 533MB/s adpt	PERMEDIA 2A / AGP-1x 266MB/s adpt
Graphics - memory	8MB std / 16MB max / WRAM	8MB std / 16MB max 128-bit SGRAM	8MB std/max / 90MHz SGRAM
Graphics - features	Sideband / split transatns 250MHz 64-bit RAMDAC / 16.7M colors Max resolution of 1920 x 1200	Sideband / split transactions 250 MHz RAMDAC / 16.7M colors Max 2D resolution of 1920x1200	Sideband / split transactions 230MHz RAMDAC / 16.7 mil colors Max resolution of 1600x1200
Disk	<i>Vary:</i> None (AAP), one EIDE disk (Ultra DMA/33), or one Wide Ultra SCSI disk / all disks SMART ⁹ and SMART Reaction™ <i>Enhanced IDE busmaster on planar (PIIX4E) / 32-bit PCI 2.1 / Ultra DMA/33 and PIO modes 3, 4 / 2 IDE conn on riser</i> <i>SCSI models:</i> Adaptec® AHA-2940UW UltraSCSI / PCI adapter supports one channel for 15 devices / 16-bit int, 8-bit int, and 16-bit ext connectors		
Disk controller	<i>SCSI models:</i> Three drop 16-bit SCSI cable <i>All:</i> One 2 drop IDE cable and one 1 drop IDE cable (1 drop cable attaches to CD)		
Disk cable(s)			
Motherboard	NLX motherboard / slides out w/o removing cables or adapters riser contains rear I/O ports and IDE and diskette connectors PCI 2.1 (33MHz), AGP-2x (66MHz), and ISA slots (see side)		
Bus slots	Intel 440BX AGPset / PIIX4E for EIDE, ISA Bridge, USB / AGP-2x SMC FDC37C673 Super I/O for diskette, par, ser, kybd, mouse		
Architecture			
Serial/parallel ports	<i>Ser:</i> Two 9 pin / 115Kbps / 16550A / non-DMA / <i>Par:</i> One (EPP, ECP) / IEEE 1284 Two USB ports / 1.5MB/sec (12Mbps) max speed		
Universal Serial Bus			
Diskette drive	3.5" 1.44MB diskette drive		
CD-ROM	32X-14X ⁴ speed CD-ROM / CAV / ATAPI / bootable		
Audio	Crystal CS4235 chip on planar / stereo / ISA bus / FM Synthesis / int speaker		
Audio connectors	Stereo line in / mic in / line out (all in back) / software volume control		
Ethernet controller	Intel EtherExpress PRO/100B / PCI 82558 ethernet chip on planar / PCI bus 10BaseT and 100BaseTX / RJ45 UTP connector / Wake on LAN [®] / Alert on LAN LANClient Control Manager™ enabled / Wake on LAN / Setup on LAN / Flash on LAN / Hybrid RPL / DHCP/BOOTP / software image download		
LCCM	National Semiconductor [®] LM80 compatible chip / monitors temperature, front fan speed and optional disk fan A, voltage (processor/pwr supply), cover removal		
Systems mgmt cntrl			
Keyboard / Mouse	104 key (rubber dome) keyboard / keyboard extender / IBM 3 button mouse		
Cooling fans	Two or three fans (pwr supply, processor, a third may be installed in disk area A)		
Power supply	145 watts / universal / manual switch / Wake on LAN support		
<div style="border: 1px solid black; padding: 5px;"> <p>All models: Maximum internal SCSI disk capacity¹³: 18.2GB with two 9.1GB 7200 rpm Wide Ultra SCSI disks</p> <p>All models: Maximum internal EIDE disk capacity¹³: 20.2GB with two 10.1GB EIDE disks</p> </div>			
Alert on LAN™ - provides local or remote monitoring; immediate notification of system events such as chassis intrusion, disconnect, start up errors, even if powered off Asset ID™ (RFID)¹⁶ - uses radio frequency (RF) technology for deployment, inventory, and security; includes EEPROM that can be accessed via DMI software through network or an external RF link such as hand-held RF read/write units; theft protection SMART Reaction™ - automatic backup of disk PC 97 compliant DMI 2.0 compliant with DMI manageability chip; includes MIF browser with DMI Service Layer 2.0, DMI BIOS 2.1, and DMI software Wired for Management 1.1a Adv Config and Power Interface (ACPI) 1.0 PC-Doctor diagnostic software		Dual orientation with optional stand The Setup Utility resides in flash memory; invoked by pressing F1 key during memory POST Plug-and-Play 1.0a Vital Product Data support Desktop: 17.72"W x 17.72"D x 5.02" H; 450mm W x 450mm D x 128mm H; 22 to 25 lbs (10 to 11.4 kg) Advanced Power Mgmt 1.2 ISO 9241-3 capable Several hardcopy publications 256KB IBM BIOS in flash memory Power management features: - Configurable levels for system, CPU, disk, and monitor including powering system and/or display off - Wake Up on Ring (via modem) from off state - Wake Up on Alarm (scheduled time) from off state - Wake on LAN (from LAN) from off state - PCI Wake Up (supported PCI devices)	
SECURITY			
<ul style="list-style-type: none"> - Chassis intrusion protection - Cover key lock - U-Bolt support - Secure fixed disk - Serial EEPROM with write protect - Power-on password - Admin password - Keyboard/mouse password - Wake on LAN password prompt - Boot sequence control - Boot without keyboard/mouse - Diskette boot inhibit - Disable mouse - Disable external SCSI port - Diskette write protect - Diskette and disk I/O control - Serial/parallel I/O control - Secure access openings (louvers) - Secure removable media - Data storage for LCCM function - Vital Product Data stored in EEPROM - Write protect control circuit for EEPROM - Barcode labels on most components 			
Remotely readable DMI-compliant: - System EEPROM on motherboard (info and serial no for CPU, system unit, planar, power supply, empty fields); also can read/write with external RF unit - EEPROMs on DIMMs (component info, serial no) - Disk firmware (component info, serial no)			
Chassis enhancements: - Cover removed by two easy-lift tabs - Cover includes metal plate and connecting tabs for easier removal - Pivoting disk cage to access three right bays - Segmented cooling (power supply fan cools power supply and DASD bays; fan in front cools motherboard, processor, DIMMs, and adapters) - Metal monitor support bar to support monitor without sagging			

IBM IntelliStation® E Pro - Spring 1999 (6893) - withdrawn

Type-model	Standard disk (rpm) ms seek / disk interface CD-ROM ⁵ /interface	CPU MHz ¹	Write-back L2 cache std / max KB / KB	Memory in MB; std / max ¹³ 100MHz	SVGA controller; memory std / max	Bus slots P=PCI avail PCI/ISA=avail A=AGP avail	Total bays	Chipset Ethernet Preload ¹⁷	Available date
5 slot x 4 bay; PCI/ISA/AGP; Stealth Gray									
6893-71U	6.8GB ² std (7200) 9.0ms / EIDE / ATA-33 40X-17X ⁶ CD-ROM / EIDE	Pentium® III 500/100 MHz	512 / 512 half speed in SEC	64 / 768 SDRAM ECC	Millennium G200 AGP 2X adapter 8 / 16MB SGRAM	PCI=2 PCI/ISA=1 ISA=1; AGP=0	4 bays 3 used 1 empty	440BX Ethernet NT 4.0	May 1999
6893-74U	13.5GB std (7200) 9.0ms / EIDE / ATA-33 40X-17X CD-ROM / EIDE	Pentium III 550/100 MHz	512 / 512 half speed in SEC	128 / 768 SDRAM ECC	Millennium G200 AGP 2X adapter 8 / 16MB SGRAM	PCI=2 PCI/ISA=1 ISA=1; AGP=0	4 bays 3 used 1 empty	440BX Ethernet NT 4.0	May 1999
6893-76U	13.5GB std (7200) 9.0ms / EIDE / ATA-33 40X-17X CD-ROM / EIDE	Pentium III 550/100 MHz	512 / 512 half speed in SEC	128 / 768 SDRAM ECC	IBM Fire GL1 ¹¹ AGP 2X Adapter 32/32MB SGRAM	PCI=2 PCI/ISA=1 ISA=1; AGP=0	4 bays 3 used 1 empty	440BX Ethernet NT 4.0	May 1999
6893-77U	9.1GB std (7200) 7.0ms / Wide Ultra SCSI 40X-17X CD-ROM / EIDE	Pentium III 550/100 MHz	512 / 512 half speed in SEC	128 / 768 SDRAM ECC	IBM Fire GL1 AGP 2X Adapter 32/32MB SGRAM	PCI=1 PCI/ISA=1 ISA=1; AGP=0	4 bays 3 used 1 empty	440BX Ethernet NT 4.0	May 1999
6893-78U for AAP	<i>no disk</i> 40X-17X CD-ROM / EIDE	Pentium III 550/100 MHz	512 / 512 half speed in SEC	64 / 768 SDRAM ECC	<i>None</i>	PCI=2 PCI/ISA=1 ISA=1; AGP=1	4 bays 2 used 2 empty	440BX Ethernet Open OS	May 1999
6893-80U	6.8GB std (7200) 9.0ms / EIDE / ATA-33 40X-17X CD-ROM / EIDE	Pentium® III 450/100 MHz	512 / 512 half speed in SEC	64 / 768 SDRAM ECC	Millennium G400 AGP 2X adapter 16/16MB SGRAM	PCI=2 PCI/ISA=1 ISA=1; AGP=0	4 bays 3 used 1 empty	440BX Ethernet NT 4.0	July 1999
6893-81U	6.8GB std (7200) 9.0ms / EIDE / ATA-33 40X-17X CD-ROM / EIDE	Pentium III 500/100 MHz	512 / 512 half speed in SEC	64 / 768 SDRAM ECC	Millennium G400 AGP 2X adapter 16/16MB SGRAM	PCI=2 PCI/ISA=1 ISA=1; AGP=0	4 bays 3 used 1 empty	440BX Ethernet NT 4.0	July 1999
6893-82U	13.5GB std (7200) 9.0ms / EIDE / ATA-33 40X-17X CD-ROM / EIDE	Pentium III 500/100 MHz	512 / 512 half speed in SEC	128 / 768 SDRAM ECC	Millennium G400 AGP 2X adapter 16/16MB SGRAM	PCI=2 PCI/ISA=1 ISA=1; AGP=0	4 bays 3 used 1 empty	440BX Ethernet NT 4.0	July 1999
6893-84U	13.5GB std (7200) 9.0ms / EIDE / ATA-33 40X-17X CD-ROM / EIDE	Pentium III 550/100 MHz	512 / 512 half speed in SEC	128 / 768 SDRAM ECC	Millennium G400 AGP 2X adapter 16/16MB SGRAM	PCI=1 PCI/ISA=1 ISA=1; AGP=0	4 bays 3 used 1 empty	440BX Ethernet NT 4.0	July 1999
6893-85U	9.1GB std (7200) 7.0ms / Wide Ultra SCSI 40X-17X CD-ROM / EIDE	Pentium III 550/100 MHz	512 / 512 half speed in SEC	128 / 768 SDRAM ECC	Millennium G400 AGP 2X adapter 16/16MB SGRAM	PCI=2 PCI/ISA=1 ISA=1; AGP=0	4 bays 3 used 1 empty	440BX Ethernet NT 4.0	July 1999
6893-86U	6.8GB std (7200) 9.0ms / EIDE / ATA-33 40X-17X CD-ROM / EIDE	Pentium III 500/100 MHz	512 / 512 half speed in SEC	128 / 768 SDRAM ECC	Appian J Pro PCI Adapter 16/16MB SGRAM	PCI=2 PCI/ISA=0 ISA=1; AGP=1	4 bays 3 used 1 empty	440BX Ethernet NT 4.0	July 1999
6893-87U for AAP	<i>no disk</i> 40X-17X CD-ROM / EIDE	Pentium III 450/100 MHz	512 / 512 half speed in SEC	0 / 768 SDRAM ECC	<i>None</i>	PCI=2 PCI/ISA=1 ISA=1; AGP=1	4 bays 2 used 2 empty	440BX Ethernet Open OS	July 1999
6893-88U for AAP	<i>no disk</i> 40X-17X CD-ROM / EIDE	Pentium III 500/100 MHz	512 / 512 half speed in SEC	0 / 768 SDRAM ECC	<i>None</i>	PCI=2 PCI/ISA=1 ISA=1; AGP=1	4 bays 2 used 2 empty	440BX Ethernet Open OS	July 1999
6893-89U for AAP	<i>no disk</i> 40X-17X CD-ROM / EIDE	Pentium III 550/100 MHz	512 / 512 half speed in SEC	0 / 768 SDRAM ECC	<i>None</i>	PCI=2 PCI/ISA=1 ISA=1; AGP=1	4 bays 2 used 2 empty	440BX Ethernet Open OS	July 1999

Windows NT Preload ¹⁷	Supported Memory and Options	Ready to Configure CD-ROM
Windows NT® Workstation 4.0 (SP4) Internet Explorer 4.0 install icon IBM Welcome Center Device drivers for each subsystem Ready to install: - ConfigSafe® - Norton AntiVirus (OEM Version) - DMI Service Provider - DMI BIOS Instrumentation - IBM PC System Monitor Instrumentation - IBM AssetCare Serial Number Information - IBM Universal Management Agent IBM RTC CD-ROM Setup Utility IBM Utilities for Windows 95/NT 4.0 - Hummingbird "Try and Buy" Suite CD-ROM - Ready to Configure CD-ROM - Free license for Lotus SmartSuite 97 CD-ROM - IBM ViaVoice 98 Office Edition CD-ROM - Windows NT Workstation 4.0 CD-ROM - Service Pack 4 CD-ROM - IBM Diagnostics CD-ROM - Access to IBM HomePage Creator	32MB SDRAM ECC DIMM 100MHz 64MB SDRAM ECC DIMM 100MHz 128MB SDRAM ECC DIMM 100MHz 256MB SDRAM ECC RDIMM Registered Matrox Millennium G200 Graphics Adap IBM Fire GL1 Graphics Accelerator 6.8GB EIDE 7200 rpm 13.5GB EIDE 7200 rpm 20.4GB EIDE 7200 rpm 9.1GB Wide Ultra SCSI (7200 rpm) 18.2GB Wide Ultra SCSI (7200 rpm) 9.1GB 10000 rpm Wide Ultra2 SCSI SL 10/100 PCI EtherJet Adapter WOL Auto Wake Token-Ring ISA Adapter PCI Token Ring Adapter WOL 2X/4X/24X ⁶ CD-RW Drive C: is 2GB as FAT16 Remainder is unformatted	All models ship with a CD with drivers for Windows® 98 and Windows NT 4.0 and various utilities. Includes: - Intel LANDesk® Client Manager - ConfigSafe - IBM Universal Management Agent™ WARRANTY SERVICE SUPPORT³ ⇨ 3 year parts warranty ⇨ 1 year labor warranty ⇨ International Warranty Service ³ ⇨ 1st year: on site, 8 am - 5 pm, Mon - Fri coverage, 2nd business day response time ⇨ 2nd/3rd year: parts exchange only, call 1-800-772-2227 ⇨ On site warranty upgrade options: • Next day response ⁷ , Mon-Fri 8-5 • 4 hour response ⁷ , 7 day x 24 hr ⇨ Post warranty: on site options above ⇨ IBM SystemXtra® ⇨ 24 hour / 7 day telephone, electronic, Internet (www.pc.ibm.com) support
Ethernet = Intel® 10/100 ethernet chip; 10BaseT and 100BaseTX; Alert on LAN™ RTC CD = ReadyTo Configure CD-ROM Wide Ultra SCSI = Adaptec® AHA-2940UW PCI Adapter; single channel Wide Ultra SCSI ⁵ = Models announced June 22, 1999 ⁶ = Withdrawn from marketing		

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(6893S - Page 1 of 2) © IBM Corp. May 2000

IBM IntelliStation® E Pro - Spring 1999 (6893) - withdrawn

IBM® IntelliStation® E Pro		Desktop	<div style="border: 1px solid black; padding: 2px; display: inline-block;">diskette</div> <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-left: 10px;">CD-ROM</div>
Type-model	6893-xxx	- Optional black Floor Stand (02K2734) avail at 919-304-5000	<div style="border: 1px solid black; padding: 2px; display: inline-block; margin-left: 10px;">②</div>
Processor Implementation	Intel® Pentium® III 450, 500, or 550MHz¹ / 100MHz front side bus Processor and L2 cache in Single Edge Cartridge (SEC) in Intel Slot 1 CPU connector / motherboard has one Slot 1	- CD-ROM/disk in cage that flips out	<div style="border: 1px solid black; padding: 2px; display: inline-block; margin-left: 10px;">disk</div>
Processor upgrade	No SMP	Bay ① 5.25", HH 1.6", access, CD-ROM	
Avail / withdrawn date	May 1999 or July 1999 / Sept 99, Nov 99, Feb 00, or May 00	Bay ② 5.25** SL 1", access, open	
L2 cache	512KB std / 512KB max / ECC / half speed of CPU / integrated in SEC / 4 way set associative / write-back	Bay ③ 3.5", SL 1", no access, open or std disk	
Memory - std / max Mem - total sockets	64 or 128MB / 768MB max¹³ / SDRAM / 100MHz / ECC / 3.3 volt	Bay ④ 3.5", SL 1", access, std diskette	
Mem - sockets used	Three 168 pin gold-plated DIMM sockets / industry standard	** Brackets to convert to 3.5" available from AirSpeed with part number 01K5873 from 919-304-5000	
Mem - type (support)	One DIMM used / PC100-compliant / hardware scrubbing ECC	Slot 1: fullsize, 16-bit ISA	
Memory - supported	Non-parity or ECC (memory controller is Error Checking Correcting) 32, 64, 128 or 256MB ECC SDRAM DIMMs / only 256MB DIMMs are registered (buffered); can not mix registered with non-register	Slot 2: fullsize, 16-bit ISA or 32 bit PCI 2.1 (5v) - Appian	
Graphics controller	Matrox® Millennium G200-D or G400 (performance 2D), IBM Fire GL1¹¹ (performance 2D/3D), or Appian Graphics® Jeronimo Pro (2D multiple display)	Slot 3: halfsize, 32-bit PCI 2.1 (5v) - SCSI adptr (some)	
	Millennium G200-D / AGP 2X adapter / sideband-capable 8MB std / 16 MB max 128-bit SGRAM 250MHz RAMDAC / 16.7 million colors	Slot 4: halfsize, 32-bit PCI 2.1 (5v)	
	Millennium G400 / AGP 2X adapter / sideband addressing 16MB std / 16MB max / 166MHz SGRAM / 250MHz RAMDAC / 256-bit DualBus chip / max 2D resolution of 2048x1536 / supports 1280x1024x16.7 million at 100Hz	Slot 5: fullsize, 32-bit AGP-2x - on motherboard, not riser* *used by AGP graphics adapter (most models)	
	IBM Fire GL1 / AGP 2X adapter / sideband-capable 32MB std / 32MB max / 256-bit 100MHz SGRAM 2D and OpenGL 3D engine / 250MHz RAMDAC / DDC2B		
	Appian Graphics Jeronimo Pro / 32-bit PCI adapter / 16MB std / 16MB max / 125MHz SGRAM / 250MHz RAMDAC two controllers with two ports for multiple monitor support / max resolution of 1280x1024 at 85Hz with 16.7 million colors max resolution of 1600x1200 at 85Hz with 65,536 colors		
Disk	Vary: None (AAP), one EIDE disk (Ultra DMA/33), or one Wide Ultra SCSI disk / all disks SMART [®] and SMART Reaction [™]		
Disk controller	Enhanced IDE busmaster on planar (PIIX4E) / 32-bit PCI 2.1 / Ultra DMA/33 and PIO modes 3, 4 / two IDE conn on riser <i>SCSI models:</i> Adaptec® AHA-2940UW UltraSCSI / PCI adapter supports one channel for 15 devices / 16-bit int, 8-bit int, and 16-bit ext connectors		
Disk cable(s)	<i>SCSI models:</i> Three drop 16-bit SCSI cable All: One 2 drop IDE cable and one 1 drop IDE cable (1 drop cable attaches to CD)		
Motherboard	NLX motherboard / slides out w/o removing cables or adapters riser contains rear I/O ports and IDE and diskette connectors		
Bus slots	PCI 2.1 (33MHz), AGP 2X (66MHz), and ISA slots (see side)		
Architecture	Intel 440BX AGPset / PIIX4E for EIDE, ISA Bridge, USB / AGP 2X SMC FDC37C673 Super I/O for diskette, par, ser, kybd, mouse		
Serial/parallel ports	<i>Ser:</i> Two 9 pin / 115Kbps / 16550A / non-DMA / <i>Par:</i> One (EPP, ECP) / IEEE 1284		
Universal Serial Bus	Two USB ports / 1.5MB/sec (12Mbps) max speed		
Diskette drive	3.5" 1.44MB diskette drive		
CD-ROM	40X-17X ⁴ speed CD-ROM / CAV / ATAPI / bootable		
Audio	Crystal CS4235 chip on planar / stereo / ISA bus / FM Synthesis / int speaker		
Audio connectors	Stereo line in / mic in / line out (all in back) / software volume control		
Ethernet controller	Intel EtherExpress PRO/100B / PCI 82558 ethernet chip on planar / PCI bus 10BaseT and 100BaseTX / RJ45 UTP connector / Wake on LAN [®] / Alert on LAN		
LCCM	LANClient Control Manager [™] enabled / Wake on LAN / Setup on LAN / Flash on LAN / Hybrid RPL / DHCP/BOOTP / software image download		
Systems mgmt cntrl	National Semiconductor [®] LM80-compatible chip / monitors temperature, front fan speed and optional disk fan A, voltage (processor/pwr supply), cover removal		
Keyboard / mouse	104 key (rubber dome) keyboard / keyboard extender / IBM 3 button mouse		
Cooling fans	Two or three fans (pwr supply, processor, a third may be installed in disk area A)		
Power supply	145 watts / universal / manual switch / Wake on LAN support		
All models: Maximum internal SCSI disk capacity ¹³ : 18.2GB with two 9.1GB 7200 rpm Wide Ultra SCSI disks		All models: Maximum internal EIDE disk capacity ¹³ : 40.8GB with two 20.4GB EIDE disks	
		<i>All systems stealth gray color</i>	
Alert on LAN[™] - provides local or remote monitoring; immediate notification of system events such as chassis intrusion, disconnect, start up errors, even if powered off		Dual orientation with optional stand The Setup Utility resides in flash memory; invoked by pressing F1 key during memory POST	
Asset ID[™] (RFID)¹⁶ - uses radio frequency (RF) technology for deployment, inventory, and security; includes EEPROM that can be accessed via DMI software through network or an external RF link such as hand-held RF read/write units; theft protection		Plug-and-Play 1.0a Vital Product Data support	
SMART Reaction[™] - automatic backup of disk		Desktop: 17.72"W x 17.72"D x 5.02" H; 450mm W x 450mm D x 128mm H; 22 to 25 lbs (10 to 11.4 kg)	
PC 98-compliant		Advanced Power Mgmt 1.2 ISO 9241-3 capable	
DMI 2.0-compliant with DMI manageability chip; includes MIF browser with DMI Service Layer 2.0, DMI BIOS 2.1, and DMI software		Several hardcopy publications 256KB IBM BIOS in flash memory	
Wired for Management 1.1a		Power management features:	
Adv Config and Power Interface (ACPI) 1.0		- Configurable levels for system, CPU, disk, and monitor including powering system and/or display off	
PC-Doctor diagnostic software		- Wake Up on Ring (via modem) from off state	
Universal Management Agent[™] (UMA) and UMA Plus-enabled		- Wake Up on Alarm (scheduled time) from off state	
		- Wake on LAN (from LAN) from off state	
		- PCI Wake Up (supported PCI devices)	
		Chassis enhancements:	
		- Cover removed by two easy-lift tabs	
		- Cover includes metal plate and connecting tabs for easier removal	
		- Pivoting disk cage to access three right bays	
		- Segmented cooling (power supply fan cools power supply and DASD bays; fan in front cools motherboard, processor, DIMMs, and adapters)	
		- Metal monitor support bar to support monitor without sagging	

IBM IntelliStation® E Pro - Summer 1999 (6893) - withdrawn

Type-model	Standard disk (rpm) ms seek / disk interface CD-ROM ⁵ / interface	Intel® Processor MHz ¹	Write-back L2 cache std / max KB / KB	Memory in MB; std / max ¹³ 100MHz	SVGA controller; memory std / max	Bus slots P=PCI avail PCI/ISA=avail A=AGP avail	Total bays	Chipset Ethernet Preload ¹⁷	Available date
5 slot x 4 bay; PCI/ISA/AGP; Stealth Black									
ⓧ 6893-91U	13.5GB ² std (7200) 9.0ms / EIDE / ATA-33 40X-17X CD-ROM / EIDE	Pentium® III 550/100 MHz	512 / 512 half speed in SEC	128 / 768 SDRAM ECC	Appian J Pro PCI Adapter 16/16MB SGRAM	PCI=1 PCI/ISA=1 ISA=1; AGP=1	4 bays 3 used 1 empty	440BX Ethernet NT 4.0	Aug 1999
ⓧ 6893-94U	13.5GB std (7200) 9.0ms / EIDE / ATA-33 40X-17X CD-ROM / EIDE	Pentium III 600/100 MHz	512 / 512 half speed in SEC	128 / 768 SDRAM ECC	Millennium G400 AGP 2X Adapter 16/16MB SGRAM	PCI=2 PCI/ISA=1 ISA=1; AGP=0	4 bays 3 used 1 empty	440BX Ethernet NT 4.0	Aug 1999
ⓧ 6893-95U	9.1GB std (7200) 7.0ms / Wide Ultra SCSI 40X-17X CD-ROM / EIDE	Pentium III 600/100 MHz	512 / 512 half speed in SEC	128 / 768 SDRAM ECC	Millennium G400 AGP 2X adapter 16/16MB SGRAM	PCI=1 PCI/ISA=1 ISA=1; AGP=0	4 bays 3 used 1 empty	440BX Ethernet NT 4.0	Aug 1999
ⓧ 6893-96U	13.5GB std (7200) 9.0ms / EIDE / ATA-33 40X-17X CD-ROM / EIDE	Pentium III 600/100 MHz	512 / 512 half speed in SEC	128 / 768 SDRAM ECC	IBM Fire GL1 ¹¹ AGP 2X Adapter 32/32MB SGRAM	PCI=2 PCI/ISA=1 ISA=1; AGP=0	4 bays 3 used 1 empty	440BX Ethernet NT 4.0	Aug 1999
ⓧ 6893-97U	9.1GB std (7200) 7.0ms / Wide Ultra SCSI 40X-17X CD-ROM / EIDE	Pentium III 600/100 MHz	512 / 512 half speed in SEC	128 / 768 SDRAM ECC	IBM Fire GL1 AGP 2X adapter 32/32MB SGRAM	PCI=1 PCI/ISA=1 ISA=1; AGP=0	4 bays 3 used 1 empty	440BX Ethernet NT 4.0	Aug 1999
ⓧ 6893-98U for AAP	<i>no disk</i> 40X-17X CD-ROM / EIDE	Pentium III 600/100 MHz	512 / 512 half speed in SEC	0 / 768 SDRAM ECC	<i>None</i>	PCI=2 PCI/ISA=1 ISA=1; AGP=1	4 bays 2 used 2 empty	440BX Ethernet Open OS	Aug 1999

<p>Windows NT Preload¹⁷</p> <p>Windows NT® Workstation 4.0 (SP4) Internet Explorer 4.0 install icon IBM Welcome Center Device drivers for each subsystem Ready to install: - ConfigSafe® - Norton AntiVirus (OEM Version) - DMI Service Provider - DMI BIOS Instrumentation - IBM PC System Monitor Instrumentation - CoSession® Remote 32 - IBM Universal Management Agent IBM RTC CD-ROM Setup Utility IBM Utilities for Windows 95/NT 4.0 - Hummingbird "Try and Buy" Suite CD-ROM - Ready to Configure CD-ROM - Free license for Lotus SmartSuite 97 CD-ROM - IBM ViaVoice 98 Office Edition CD-ROM - LANDesk® Client Manager CD-ROM - Windows NT Workstation 4.0 CD-ROM - Service Pack 4 CD-ROM - IBM Diagnostics CD-ROM - Access to IBM HomePage Creator</p>	<p>Supported Memory and Options</p> <p>32MB SDRAM ECC DIMM 100MHz 01K1133 64MB SDRAM ECC DIMM 100MHz 01K1130 128MB SDRAM ECC DIMM 100MHz 01K1131 256MB SDRAM ECC RDIMM Registered 01K1132 6.8GB EIDE 7200 rpm 33L5045 13.5GB EIDE 7200 rpm 33L5043 20.4GB EIDE 7200 rpm 33L5044 9.1GB Wide Ultra SCSI (7200 rpm) 20L0553 18.2GB Wide Ultra SCSI (7200 rpm) 20L0554 9.1GB 10000 rpm Wide Ultra2 SCSI SL 20L0539 10/100 PCI EtherJet Adapter WOL 34L0201 Auto Wake Token-Ring ISA Adapter 55H6760 PCI Token Ring Adapter WOL 34L0701 2X/4X/24X⁶ CD-RW Drive 33L5005</p> <p>C: is 2GB as FAT16 Remainder is unformatted</p>	<p>Ready to Configure CD-ROM¹⁷</p> <p>All models ship with a CD with drivers for Windows® 98 and Windows NT 4.0 and various utilities. Includes: - Intel LANDesk® Client Manager - ConfigSafe - IBM Universal Management Agent™</p> <p>WARRANTY SERVICE SUPPORT³</p> <p>⇒ 3 year parts warranty ⇒ 1 year labor warranty ⇒ International Warranty Service³ ⇒ 1st year: on site, 8 am - 5 pm, Mon - Fri coverage, 2nd business day response time ⇒ 2nd/3rd year: parts exchange only, call 1-800-772-2227 ⇒ On site warranty upgrade options: • Next day response⁷, Mon-Fri 8-5 • 4 hour response⁷, 7 day x 24 hr ⇒ Post warranty: on site options above ⇒ IBM SystemXtra® ⇒ 24 hour / 7 day telephone, electronic, Internet (www.pc.ibm.com) support</p>
<p>Ethernet = Intel® 10/100 ethernet chip; 10BaseT and 100BaseTX; Alert on LAN™ RTC CD = ReadyTo Configure CD-ROM Wide Ultra SCSI = Adaptec® AHA-2940UW PCI Adapter; single channel Wide Ultra SCSI ⓧ = Models announced August 3, 1999</p>		

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ⓧ = Withdrawn from marketing

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IBM IntelliStation® E Pro - Summer 1999 (6893) - withdrawn

IBM® IntelliStation® E Pro		Desktop	<div style="border: 1px solid black; padding: 2px; display: inline-block;">diskette</div> <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-left: 10px;">CD-ROM</div>
Type-model	6893-xxx	- Optional black Floor Stand (02K2734) avail at 919-304-5000	<div style="border: 1px solid black; padding: 2px; display: inline-block; margin-left: 10px;">②</div>
Processor Implementation	Intel® Pentium® III 550 or 600MHz¹ / 100MHz front side bus Processor and L2 cache in Single Edge Cartridge (SEC) in Intel Slot 1 CPU connector / motherboard has one Slot 1	- CD-ROM/disk in cage that flips out	<div style="border: 1px solid black; padding: 2px; display: inline-block; margin-left: 10px;">disk</div>
Processor upgrade	No SMP	Bay ① 5.25", HH 1.6", access, CD-ROM	
Avail / withdrawn date	August 1999 / withdrawn June 2000	Bay ② 5.25** SL 1", access, open	
L2 cache	512KB std / 512KB max / ECC / half speed of CPU / integrated in SEC / 4 way set associative / write-back	Bay ③ 3.5", SL 1", no access, open or std disk	
Memory - std / max	64 or 128MB / 768MB max¹³ / SDRAM / 100MHz / ECC / 3.3 volt	Bay ④ 3.5", SL 1", access, std diskette	
Mem - total sockets	Three 168 pin gold-plated DIMM sockets / industry standard	** Brackets to convert to 3.5" available from AirSpeed with part number 01K5873 from 919-304-5000	
Mem - sockets used	One DIMM used / PC100-compliant / hardware scrubbing ECC	Slot 1: fullsize, 16-bit ISA	
Mem - type (support)	Non-parity or ECC (memory controller is Error Checking Correcting)	Slot 2: fullsize, 16-bit ISA or 32 bit PCI 2.1 (5v) - Appian	
Memory - supported	32, 64, 128 or 256MB ECC SDRAM DIMMs / only 256MB DIMMs are registered (buffered); can not mix registered with non-register	Slot 3: halfsize, 32-bit PCI 2.1 (5v) - SCSI adptr (some)	
Graphics controller	Matrox® Millennium G400 (performance 2D), IBM Fire GL1¹¹ (performance 2D/3D), or Appian Graphics® Jeronimo Pro (2D multiple display)	Slot 4: halfsize, 32-bit PCI 2.1 (5v)	
	IBM Fire GL1 / AGP 2X adapter / sideband-capable 32MB std / 32MB max / 256-bit 100MHz SGRAM 2D and OpenGL 3D engine / 250MHz RAMDAC / DDC2B	Slot 5: fullsize, 32-bit AGP-2x - on motherboard, not riser* *used by AGP graphics adapter (most models)	
	Millennium G400 / AGP 2X adapter / sideband addressing 16MB std / 16MB max / 166MHz SGRAM / 250MHz RAMDAC / 256-bit DualBus chip / max 2D resolution of 2048x1536 / supports 1280x1024x16.7 million at 100Hz	Appian Graphics Jeronimo Pro / 32-bit PCI adapter / 16MB std / 16MB max / 125MHz SGRAM / 250MHz RAMDAC two controllers with two ports for multiple monitor support / max resolution of 1280x1024 at 85Hz with 16.7 million colors max resolution of 1600x1200 at 85Hz with 65,536 colors	
Disk	<i>Vary:</i> None (AAP), one EIDE disk (Ultra DMA/33), or one Wide Ultra SCSI disk / all disks SMART [®] and SMART Reaction [™]		
Disk controller	Enhanced IDE busmaster on planar (PIIX4E) / 32-bit PCI 2.1 / Ultra DMA/33 and PIO modes 3, 4 / two IDE conn on riser <i>SCSI models:</i> Adaptec® AHA-2940UW UltraSCSI / PCI adapter supports one channel for 15 devices / 16-bit int, 8-bit int, and 16-bit ext connectors		
Disk cable(s)	<i>SCSI models:</i> Three drop 16-bit SCSI cable <i>All:</i> One 2 drop IDE cable and one 1 drop IDE cable (1 drop cable attaches to CD)		
Motherboard	NLX motherboard / slides out w/o removing cables or adapters riser contains rear I/O ports and IDE and diskette connectors		
Bus slots	PCI 2.1 (33MHz), AGP 2X (66MHz), and ISA slots (see side)		
Architecture	Intel 440BX AGPset / PIIX4E for EIDE, ISA Bridge, USB / AGP 2X SMC FDC37C673 Super I/O for diskette, par, ser, kybd, mouse		
Serial/parallel ports	<i>Ser:</i> Two 9 pin / 115Kbps / 16550A / non-DMA / <i>Par:</i> One (EPP, ECP) / IEEE 1284		
Universal Serial Bus	Two USB ports / 1.5MB/sec (12Mbps) max speed		
Diskette drive	3.5" 1.44MB diskette drive		
CD-ROM	40X-17X ⁴ speed CD-ROM / CAV / ATAPI / bootable		
Audio	Crystal CS4235 chip on planar / stereo / ISA bus / FM Synthesis / int speaker		
Audio connectors	Stereo line in / mic in / line out (all in back) / software volume control		
Ethernet controller	Intel EtherExpress PRO/100B / PCI 82558 ethernet chip on planar / PCI bus 10BaseT and 100BaseTX / RJ45 UTP connector / Wake on LAN [®] / Alert on LAN		
LCCM	LANClient Control Manager [™] enabled / Wake on LAN / Setup on LAN / Flash on LAN / Hybrid RPL / DHCP/BOOTP / software image download		
Systems mgmt cntrl	National Semiconductor [®] LM80-compatible chip / monitors temperature, front fan speed and optional disk fan A, voltage (processor/pwr supply), cover removal		
Keyboard / mouse	104 key (rubber dome) keyboard / keyboard extender / IBM 3 button mouse		
Cooling fans	Two or three fans (pwr supply, processor, a third may be installed in disk area A)		
Power supply	145 watts / universal / manual switch / Wake on LAN support		
All models: Maximum internal SCSI disk capacity ¹³ : 18.2GB with two 9.1GB 7200 rpm Wide Ultra SCSI disks			
All models: Maximum internal EIDE disk capacity ¹³ : 40.8GB with two 20.4GB EIDE disks			
		<i>All systems stealth black color</i>	
Alert on LAN[™] - provides local or remote monitoring; immediate notification of system events such as chassis intrusion, disconnect, start up errors, even if powered off			
Asset ID[™] (RFID)¹⁶ - uses radio frequency (RF) technology for deployment, inventory, and security; includes EEPROM that can be accessed via DMI software through network or an external RF link such as hand-held RF read/write units; theft protection			
SMART Reaction[™] - automatic backup of disk			
PC 98-compliant			
DMI 2.0-compliant with DMI manageability chip; includes MIF browser with DMI Service Layer 2.0, DMI BIOS 2.1, and DMI software			
Wired for Management 1.1a			
Adv Config and Power Interface (ACPI) 1.0			
PC-Doctor diagnostic software			
Universal Management Agent[™] (UMA) and UMA Plus-enabled			
Dual orientation with optional stand The Setup Utility resides in flash memory; invoked by pressing F1 key during memory POST Plug-and-Play 1.0a Vital Product Data support Desktop: 17.72"W x 17.72"D x 5.02" H; 450mm W x 450mm D x 128mm H; 22 to 25 lbs (10 to 11.4 kg)			
Advanced Power Mgmt 1.2 ISO 9241-3 capable Several hardcopy publications 256KB IBM BIOS in flash memory Power management features:			
- Configurable levels for system, CPU, disk, and monitor including powering system and/or display off			
- Wake Up on Ring (via modem) from off state			
- Wake Up on Alarm (scheduled time) from off state			
- Wake on LAN (from LAN) from off state			
- PCI Wake Up (supported PCI devices)			
		SECURITY	
		- Chassis intrusion protection	
		- Cover key lock	
		- Secure fixed disk	
		- Serial EEPROM with write protect	
		- Power-on password	
		- Setup utility password (admin password)	
		- Keyboard/mouse password	
		- Wake on LAN password prompt	
		- Boot sequence control	
		- Boot without keyboard/mouse	
		- Diskette boot inhibit	
		- Disable mouse	
		- Disable external SCSI port	
		- Diskette write protect	
		- Diskette and disk I/O control	
		- Serial/parallel I/O control	
		- Secure access openings (louvers)	
		- Secure removable media	
		- Data storage for LCCM function	
		- U-Bolt enabled	
		- Vital Product Data stored in EEPROM	
		- Write protect control circuit for EEPROM	
		- Barcode labels on most components	
		- Remotely readable DMI-compliant:	
		- System EEPROM on motherboard (info and serial no for CPU, system unit, planar, power supply, empty fields); also can read/write with external RF unit	
		- EEPROMs on DIMMs (component info, serial no)	
		- Disk firmware (component info, serial no)	
		Chassis enhancements:	
		- Cover removed by two easy-lift tabs	
		- Cover includes metal plate and connecting tabs for easier removal	
		- Pivoting disk cage to access three right bays	
		- Segmented cooling (power supply fan cools power supply and DASD bays; fan in front cools motherboard, processor, DIMMs, and adapters)	
		- Metal monitor support bar to support monitor without sagging	

IBM IntelliStation® E Pro models - Winter 1999 (6893) - withdrawn

Type-model	Standard disk (rpm) ms seek / disk interface CD-ROM ⁵ /interface	CPU MHz ¹	Write-back L2 cache std / max KB / KB	Memory in MB; std / max ¹³ 100MHz	SVGA controller; memory std / max	Bus slots P=PCI avail PCI/ISA=avail A=AGP avail	Total bays	Chipset Ethernet Preload ¹⁷	Available date
5 slot x 4 bay; PCI/ISA/AGP; Stealth Gray									
6893-50U	13.5GB ² std (7200) 9.0ms / EIDE / ATA-33 40X-17X ⁶ CD-ROM / EIDE	Pentium® III 450/100 MHz	512 / 512 half speed in SEC	64 / 768 SDRAM ECC	Millennium G200 AGP-2x adapter 8 / 16 WRAM	PCI=2 PCI/ISA=1 ISA=1; AGP=0	4 bays 3 used 1 empty	440BX Ethernet NT 4.0	Mar 1999
6893-52U	13.5GB ² std (7200) 9.0ms / EIDE / ATA-33 40X-17X ⁶ CD-ROM / EIDE	Pentium III 500/100 MHz	512 / 512 half speed in SEC	128 / 768 SDRAM ECC	Millennium G200 AGP-2x adapter 8 / 16 WRAM	PCI=2 PCI/ISA=1 ISA=1; AGP=0	4 bays 3 used 1 empty	440BX Ethernet NT 4.0	Mar 1999
6893-53U	9.1GB std (7200) 7.0ms / Wide Ultra SCSI 40X-17X CD-ROM / EIDE	Pentium III 500/100 MHz	512 / 512 half speed in SEC	128 / 768 SDRAM ECC	IBM Fire GL1 ¹¹ AGP-2x Adapter 32/32MB SGRAM	PCI=1 PCI/ISA=1 ISA=1; AGP=0	4 bays 3 used 1 empty	440BX Ethernet NT 4.0	Mar 1999
6893-54U	4.5GB std (7200) 7.5ms / Wide Ultra SCSI 40X-17X CD-ROM / EIDE	Pentium III 450/100 MHz	512 / 512 half speed in SEC	64 / 768 SDRAM ECC	Millennium G200 AGP-2x Adapter 8 / 16 WRAM	PCI=1 PCI/ISA=1 ISA=1; AGP=0	4 bays 3 used 1 empty	440BX Ethernet NT 4.0	Mar 1999
6893-56U	9.1GB std (7200) 7.0ms / Wide Ultra SCSI 40X-17X CD-ROM / EIDE	Pentium III 500/100 MHz	512 / 512 half speed in SEC	128 / 768 SDRAM ECC	Millennium G200 AGP-2x Adapter 8 / 16 WRAM	PCI=1 PCI/ISA=1 ISA=1; AGP=0	4 bays 3 used 1 empty	440BX Ethernet NT 4.0	Mar 1999
6893-57U	13.5GB std (7200) 9.0ms / EIDE / ATA-33 40X-17X CD-ROM / EIDE	Pentium III 500/100 MHz	512 / 512 half speed in SEC	128 / 768 SDRAM ECC	IBM Fire GL1 AGP-2x Adapter 32/32MB SGRAM	PCI=2 PCI/ISA=1 ISA=1; AGP=0	4 bays 3 used 1 empty	440BX Ethernet NT 4.0	Mar 1999
6893-58U for AAP	<i>no disk</i> 40X-17X CD-ROM / EIDE	Pentium III 500/100 MHz	512 / 512 half speed in SEC	64 / 768 SDRAM ECC	<i>None</i>	PCI=2 PCI/ISA=1 ISA=1; AGP=1	4 bays 2 used 2 empty	440BX Ethernet Open OS	Mar 1999
6893-59U for AAP	<i>no disk</i> 40X-17X CD-ROM / EIDE	Pentium III 450/100 MHz	512 / 512 half speed in SEC	64 / 768 SDRAM ECC	<i>None</i>	PCI=2 PCI/ISA=1 ISA=1; AGP=1	4 bays 2 used 2 empty	440BX Ethernet Open OS	Mar 1999

Windows NT Preload ¹⁷	Supported Memory and Options	Ready to Configure CD-ROM ¹⁷
Windows NT® Workstation 4.0 (SP4) Internet Explorer 4.0 install icon IBM Welcome Center Device drivers for each subsystem Ready to install: - ConfigSafe® - Norton AntiVirus (OEM Version) - DMI Service Provider - DMI BIOS Instrumentation - IBM PC System Monitor Instrumentation - IBM AssetCare Serial Number Information - IBM Universal Management Agent IBM RTC CD-ROM Setup Utility IBM Utilities for Windows 95/NT 4.0 - Hummingbird "Try and Buy" Suite CD-ROM - Ready to Configure CD-ROM - Free license for Lotus SmartSuite 97 CD-ROM - IBM ViaVoice 98 Office Edition CD-ROM - Windows NT Workstation 4.0 CD-ROM - Service Pack 4 CD-ROM - IBM Diagnostics CD-ROM - Access to IBM HomePage Creator C: is 2GB as FAT16 Remainder is unformatted	32MB SDRAM ECC DIMM 100MHz 64MB SDRAM ECC DIMM 100MHz 128MB SDRAM ECC DIMM 100MHz 256MB SDRAM ECC DIMM Registered Matrox Millennium G200 Graphics Adap IBM Fire GL1 Graphics Accelerator 13.5GB EIDE 7200 rpm 20.4GB EIDE 7200 rpm 9.1GB Wide Ultra SCSI (7200 rpm) 18.2GB Wide Ultra SCSI (7200 rpm) 9.1GB 10000 rpm Wide Ultra2 SCSI SL 10/100 PCI EtherJet Adapter WOL Auto Wake Token-Ring ISA Adapter PCI Token Ring Adapter WOL	All models ship with a CD with drivers for Windows® 95, 98, and NT 3.51 and 4.0 and various utilities. Includes: - Intel LANDesk® Client Manager - ConfigSafe - IBM Universal Management Agent
Ethernet = Intel® 10/100 ethernet chip; 10BaseT and 100BaseTX; Alert on LAN™ RTC CD = ReadyTo Configure CD-ROM Wide Ultra SCSI = Adaptec® AHA-2940UW PCI Adapter; single channel Wide Ultra SCSI ⁶ = Withdrawn from marketing	01K1133 01K1130 01K1131 01K1132 10L7127 33L5032 33L5043 33L5044 20L0553 20L0554 20L0539 34L0201 55H6760 34L0701	WARRANTY SERVICE SUPPORT³ ⇨ 3 year parts warranty ⇨ 1 year labor warranty ⇨ International Warranty Service ³ ⇨ 1st year: on site, 8 am - 5 pm, Mon - Fri coverage, 2nd business day response time ⇨ 2nd/3rd year: parts exchange only, call 1-800-772-2227 ⇨ On site warranty upgrade options: • Next day response ⁷ , Mon-Fri 8-5 • 4 hour response ⁷ , 7 day x 24 hr ⇨ Post warranty: on site options above ⇨ IBM SystemXtra® ⇨ 24 hour / 7 day telephone, electronic, Internet (www.pc.ibm.com) support

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 (6893 - Page 1 of 2) © IBM Corp. January 2000

IBM IntelliStation® E Pro - Winter 1999 (6893) - withdrawn

IBM® IntelliStation® E Pro		Desktop	<div style="border: 1px solid black; padding: 2px; display: inline-block;">diskette</div> <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-left: 10px;">CD-ROM</div>
Type-model	6893-xxx	- Optional black Floor Stand (02K2734) avail at 919-304-5000	<div style="border: 1px solid black; padding: 2px; display: inline-block;">②</div>
Processor	Intel® Pentium® III 450/100 or 500/100MHz¹	- CD-ROM/disk in cage that flips out	<div style="border: 1px solid black; padding: 2px; display: inline-block;">disk</div>
Implementation	Processor and L2 cache in Single Edge Cartridge (SEC) in Intel Slot 1 CPU connector / motherboard has one Slot 1	Bay ① 5.25", HH 1.6", access, CD-ROM	
Processor upgrade	No SMP	Bay ② 5.25** SL 1", access, open	
Avail / withdrawn date	March 1999 / withdrawn June or Sept or Nov 1999 or Jan 2000	Bay ③ 3.5", SL 1", no access, open or std disk	
L2 cache	512KB std / 512KB max / ECC / half speed of CPU / integrated in SEC / 4 way set associative / write-back	Bay ④ 3.5", SL 1", access, std diskette	
Memory - std / max	64 or 128MB / 768MB max¹³ / SDRAM / 100MHz / ECC / 3.3 volt	** Brackets to convert to 3.5" available from AirSpeed with part number 01K5873 from 919-304-5000	
Mem - total sockets	Three 168 pin gold-plated DIMM sockets / industry standard	Slot 1: fullsize, 16-bit ISA	
Mem - sockets used	One DIMM used / PC100-compliant / hardware scrubbing ECC	Slot 2: fullsize, 16-bit ISA or 32 bit PCI 2.1 (5v)	
Mem - type (support)	Non-parity or ECC (memory controller is Error Checking Correcting)	Slot 3: halfsize, 32-bit PCI 2.1 (5v) - SCSI adptr (some)	
Memory - supported	32, 64, 128 or 256MB ECC SDRAM DIMMs / only 256MB DIMMs are registered (buffered); can not mix registered with non-register	Slot 4: halfsize, 32-bit PCI 2.1 (5v)	
Graphics controller	Matrox® Millennium G200-D (2D/value 3D) or IBM Fire GL1 (advanced 3D)		
Graphics - type	Millennium G200-D / AGP-2x 533MB/s adapter	IBM Fire GL1 / AGP-2x adapter / sideband-capable / split transactions	
Graphics - memory	8MB std / 16MB max 128-bit SGRAM	32MB std / 32MB max / 256-bit, 2-way interleaved, 100MHz SGRAM	
Graphics - features	Sideband / split transactions 250 MHz RAMDAC / 16.7M colors Max 2D resolution of 1920x1200	2D and OpenGL 3D engine / 250MHz RAMDAC / DDC2B Max resolution of 1600x1200 at 85Hz or 1920x1200 at 75Hz Optimized for multiprocessor environments	
Disk	Vary: None (AAP), one EIDE disk (Ultra DMA/33), or one Wide Ultra SCSI disk / all disks SMART ⁵ and SMART Reaction TM		
Disk controller	Enhanced IDE busmaster on planer (PIIX4E) / 32-bit PCI 2.1 / Ultra DMA/33 and PIO modes 3, 4 / two IDE conn on riser <i>SCSI models:</i> Adaptec® AHA-2940UW UltraSCSI / PCI adapter supports one channel for 15 devices / 16-bit int, 8-bit int, and 16-bit ext connectors		
Disk cable(s)	<i>SCSI models:</i> Three drop 16-bit SCSI cable <i>All:</i> One 2 drop IDE cable and one 1 drop IDE cable (1 drop cable attaches to CD)		
Motherboard	NLX motherboard / slides out w/o removing cables or adapters riser contains rear I/O ports and IDE and diskette connectors		
Bus slots	PCI 2.1 (33MHz), AGP-2x (66MHz), and ISA slots (see side)		
Architecture	Intel 440BX AGPset / PIIX4E for EIDE, ISA Bridge, USB / AGP-2x SMC FDC37C673 Super I/O for diskette, par, ser, kybd, mouse		
Serial/parallel ports	<i>Ser:</i> Two 9 pin / 115Kbps / 16550A / non-DMA / <i>Par:</i> One (EPP, ECP) / IEEE 1284		
Universal Serial Bus	Two USB ports / 1.5MB/sec (12Mbps) max speed		
Diskette drive	3.5" 1.44MB diskette drive		
CD-ROM	40X-17X ⁶ speed CD-ROM / CAV / ATAPI / bootable		
Audio	Crystal CS4235 chip on planar / stereo / ISA bus / FM Synthesis / int speaker		
Audio connectors	Stereo line in / mic in / line out (all in back) / software volume control		
Ethernet controller	Intel EtherExpress PRO/100B / PCI 82558 ethernet chip on planar / PCI bus 10BaseT and 100BaseTX / RJ45 UTP connector / Wake on LAN [®] / Alert on LAN		
LCCM	LANClient Control Manager TM enabled / Wake on LAN / Setup on LAN / Flash on LAN / Hybrid RPL / DHCP/BOOTP / software image download		
Systems mgmt cntrl	National Semiconductor [®] LM80-compatible chip / monitors temperature, front fan speed and optional disk fan A, voltage (processor/pwr supply), cover removal		
Keyboard / Mouse	104 key (rubber dome) keyboard / keyboard extender / IBM 3 button mouse		
Cooling fans	Two or three fans (pwr supply, processor, a third may be installed in disk area A)		
Power supply	145 watts / universal / manual switch / Wake on LAN support		
All models: Maximum internal SCSI disk capacity ¹³ : 18.2GB with two 9.1GB 7200 rpm Wide Ultra SCSI disks All models: Maximum internal EIDE disk capacity ¹³ : 27GB with two 13.5GB EIDE disks		<i>All systems stealth gray color</i>	
Alert on LANTM - provides local or remote monitoring; immediate notification of system events such as chassis intrusion, disconnect, start up errors, even if powered off Asset IDTM (RFID)¹⁶ - uses radio frequency (RF) technology for deployment, inventory, and security; includes EEPROM that can be accessed via DMI software through network or an external RF link such as hand-held RF read/write units; theft protection SMART ReactionTM - automatic backup of disk PC 97 compliant DMI 2.0 compliant with DMI manageability chip; includes MIF browser with DMI Service Layer 2.0, DMI BIOS 2.1, and DMI software Wired for Management 1.1a Adv Config and Power Interface (ACPI) 1.0 PC-Doctor diagnostic software		Dual orientation with optional stand The Setup Utility resides in flash memory; invoked by pressing F1 key during memory POST Plug-and-Play 1.0a Vital Product Data support Desktop: 17.72"W x 17.72"D x 5.02" H; 450mm W x 450mm D x 128mm H; 22 to 25 lbs (10 to 11.4 kg) Advanced Power Mgmt 1.2 ISO 9241-3 capable Several hardcopy publications 256KB IBM BIOS in flash memory Power management features: - Configurable levels for system, CPU, disk, and monitor including powering system and/or display off - Wake Up on Ring (via modem) from off state - Wake Up on Alarm (scheduled time) from off state - Wake on LAN (from LAN) from off state - PCI Wake Up (supported PCI devices)	
		SECURITY <ul style="list-style-type: none"> - Chassis intrusion protection - Cover key lock - Secure fixed disk - Serial EEPROM with write protect - Power-on password - Setup utility password (admin password) - Keyboard/mouse password - Wake on LAN password prompt - Boot sequence control - Boot without keyboard/mouse - Diskette boot inhibit - Disable mouse - Disable external SCSI port - Diskette write protect - Diskette and disk I/O control - Serial/parallel I/O control - Secure access openings (louvers) - Secure removable media - Data storage for LCCM function - U-Bolt enabled - Vital Product Data stored in EEPROM - Write protect control circuit for EEPROM - Barcode labels on most components - Remotely readable DMI-compliant: - System EEPROM on motherboard (info and serial no for CPU, system unit, planar, power supply, empty fields); also can read/write with external RF unit - EEPROMs on DIMMs (component info, serial no) - Disk firmware (component info, serial no) Chassis enhancements: <ul style="list-style-type: none"> - Cover removed by two easy-lift tabs - Cover includes metal plate and connecting tabs for easier removal - Pivoting disk cage to access three right bays - Segmented cooling (power supply fan cools power supply and DASD bays; fan in front cools motherboard, processor, DIMMs, and adapters) - Metal monitor support bar to support monitor without sagging 	

IBM® Type-GAV-model	Processor & GHz/Core ¹	L2 Memory	Disk & rpm	Disk controllers	Optical	Graphics adapter and memory	FireWire	Slots x bays	Preload ¹⁷	Available date
6218-10y-10U	Pentium 4 3.0GHz/SC	2MB 1GB	80GB 7.2K	SATA	DVD/CD-RW	Quadro™ NVS 280 64MB	1394	4x4	XP Pro	Sept 2005
6218-12y-12U	Pentium 4 3.0GHz/SC	2MB 1GB	80GB 7.2K	SATA	DVD/CD-RW	ATI® FireGL™ V3100 128MB	1394	4x4	XP Pro	Sept 2005
6218-20y-20U	Pentium 4 3.2GHz/SC	2MB 1GB	80GB 7.2K	SATA	DVD/CD-RW	Quadro NVS 280 64MB	1394	4x4	XP Pro	Sept 2005
6218-22y-22U	Pentium 4 3.2GHz/SC	2MB 1GB	80GB 7.2K	SATA	DVD/CD-RW	Quadro FX 1400 128MB	1394	4x4	XP Pro	Sept 2005
6218-32y-32U	Pentium 4 3.4GHz/SC	2MB 1GB	80GB 7.2K	SATA	DVD/CD-RW	ATI FireGL V3100 128MB	1394	4x4	XP Pro	Sept 2005
6218-45y-45U	Pentium 4 3.6GHz/SC	2MB 2GB	73GB 10K	SCSI	DVD/CD-RW	Quadro FX 1400 128MB	1394	4x4	XP Pro	Sept 2005
6218-47y-47U	Pentium 4 3.6GHz/SC	2MB 2GB	73GB 10K	SCSI	DVD/CD-RW	ATI FireGL V7100 256MB	1394	4x4	XP Pro	Sept 2005
6218-55y-55U	Pentium 4 3.8GHz/SC	2MB 1GB	73GB 10K	SCSI	DVD/CD-RW	Quadro NVS 280 64MB	1394	4x4	XP Pro	Sept 2005
6218-57y-57U	Pentium 4 3.8GHz/SC	2MB 2GB	80GB 7.2K	SATA	DVD/CD-RW	Quadro FX 1400 128MB	1394	4x4	XP Pro	Sept 2005
6218-59y-59U	Pentium 4 3.8GHz/SC	2MB 2GB	73GB 10K	SCSI	DVD/CD-RW	Wildcat™ Realizm 800 640MB	1394	4x4	XP Pro	Sept 2005
6218-84y-84U	Pentium 4 3.2GHz/DC	2MB 2GB	80GB 7.2K	SATA	DVD/CD-RW	Quadro FX 1400 128MB	1394	4x4	XP 64 bit	Sept 2005

Positioning Processor *Powerful, dual-core capable, uni-processor workstation with Intel® Extended Memory 64 Technology and 2MB L2 Cache*
Processor **1 Intel Pentium® 4 at up to 3.8GHz with 800MHz FSB & Extended Memory 64 Technology (EM64T). Intel Pentium dual-core at 3.2GHz available with 800MHz FSB and EM64T**
L2 cache **2MB** standard and maximum / at processor speed
Processor upgrade **Single Processor**, no upgrade
Implementation Systemboard contains one Intel LGA775 socket, four DIMM slots, four slots (1 PCI Express x16, 1 PCI Express x8, 1 PCI Express x1, 1 PCI), and integrated SATA and Gigabit Ethernet

Memory - std / max **1GB, 2GB** std / 4GB^{13,21} max (8GB with 64-bit operating system) / two slots used / two slots available / **PC-4200 533MHz** registered ECC DDR2-SDRAM DIMMs / four DIMM gold-connector slots on systemboard / must be installed in pairs

Graphics controller (see IntelliStation Graphics sheet for full graphics specifications)
 (one of following)

- **NVIDIA® Quadro NVS 280, 2D 64MB PCI Express x16**
- **ATI® FireGL V3100, 3D 128MB PCI Express x16**
- **NVIDIA® Quadro FX 1400, 3D 128MB PCI Express x16**
- **ATI® FireGL V7100, 3D 256MB PCI Express x16**
- **3Dlabs® Wildcat Realizm 800, 640MB PCI Express x16**

SATA controller SATA Controller (3.0GB/sec) / integrated in ICH7R / three connectors on planar /
SCSI controller *SCSI models: Ultra320 / single channel Ultra320 SCSI controller / mini-PCI adapter*
SCSI channels and cables One 16-bit channel / *Internal channel: one 3-drop 16-bit 68-pin LVD SCSI cable from systemboard to internal disk bays*
Ports/Cables *All models: Three SATA ports on planar, SCSI models: One SCSI cable (listed above), ALL: one 2-drop EIDE cable (to optical)*
Disk - features *Some: 80GB / SATA / 7200 rpm / 9.0 ms seek; Some: 73.0GB Ultra320 SCSI / 10K rpm / 4.7 ms; All: S.M.A.R.T.⁵*

Mechanical Chipset 4 x 4 minitower / functions in rack with 19" Fixed Shelf Option kit
Chipset **Intel 955X chipset** / 955X MCH (Memory Controller Hub) for PCI Express x16 (video), Broadcom, ICH7R / ICH7R for one 32-bit/33MHz PCI slots, 1394a, SATA, 8x USB (2.0), Low Pin Count Interface / NS PC87366 Super I/O with LPC interface

Gigabit Ethernet One Gigabit 10/100/1000 Ethernet controller / Broadcom BCM5721 / full Gigabit Ethernet MAC and PHY layer functions / chip on planar / PCI-e x1 / full duplex / Wake on LAN® / Alert Standard Format 2.0 / one rear RJ-45 port
Diskette / Optical *Diskette: none in MTM, CTO Option / Optical: 48X/32X/48X/16X Max⁶ CD-RW/DVD-ROM*
IEEE 1394 (FireWire) FireWire on planar / 1394a, 400Mbps, 6-pin port on rear, 4-pin port on front
Audio AC - 97 Audio, ADI1981B via ICH7R / internal speaker (use of audio line out requires powered speakers)
Rear ports Six USB (Ver 2.0), two 9-pin serial, parallel, keyboard, mouse, Ethernet, audio line in, audio line out, mic in / 6-pin 1394a
Front ports Two USB (Ver 2.0), audio line out (stereo), mic in / 4-pin 1394
Systems mgmt Monitoring and alerting of thermal, fans, and voltage faults

Keyboard / mouse IBM 104-key keyboard (6-pin PS/2) / IBM 3-button optical mouse (6-pin PS/2 conn)
Cooling fans Two variable speed fans (1 Front, 1 Power Supply) / not redundant or hot-swap
Power supply 400 watts / universal / auto sensing / built-in overload and surge protection

<p>Bay ① 5.25", HH 1.6", access, optical Bay ② 5.25", HH 1.6", access, open Bay ③ 3.5", SL 1", access, open Bay ④ 3.5", SL 1", no access, HDD Bay ⑤ 3.5", SL 1", no access, option only</p> <p>Slot 1: fullsize, PCI Express x1* Slot 2: fullsize, PCI Express x16 (video) Slot 3: fullsize, PCI Express x 8 (x4 electrical) Slot 4: fullsize, 32-bit 33MHz, PCI (5v) * - Slot not available w/ Wildcat Realizm</p> <p>Two front stabilizing feet Handle grip on top H 16.9" x W 7" x D 17.5" H 430mm x W 178mm x D 445mm 27.6 lb to 34.2 lb (12.5kg to 15.5kg)</p>	<p>SECURITY</p> <ul style="list-style-type: none"> • Integrated panel lock • U-Bolt Anchoring Feature; U-Bolt optional • Cover tamper detect switch • Secure fixed DAST • Power-on password • Administrator password • Boot sequence control • Boot without keyboard or mouse • Diskette boot inhibit and write-protect • Disable mouse • Diskette, disk, serial port, parallel port I/O control • Secure access openings • VPD stored in EEPROM • Write protection control for EEPROM • IBM Security Solutions
<p>512MB PC-4200 CL3 ECC DDR2-SDRAM 30R5148 2GB PC-4200 CL3 ECC DDR2-SDRAM(2x1GB) 30R5149 4GB PC-4200 CL3 ECC DDR2-SDRAM(2x2GB) 30R5150 ServeRAID-7i SATA Controller 71P8648 IBM 80GB 7.2K SATA HDD 73P8002 IBM 160GB 7.2K SATA HDD 73P8003 IBM 250GB 7.2K SATA HDD 73P8006 IBM 73.4GB 10K rpm Ultra320 SCSI HDD 32P0724 IBM 146GB 10K rpm Ultra320 SCSI HDD 32P0725 300GB 10K Ultra320 SCSI HDD NHS 32P0799 19" Fixed Shelf Option 94G7442 Bay 5 HDD tray 39M0497</p>	<p>Microsoft® Windows® XP Professional preinstalled¹⁷ Choice of: -Windows XP Pro (32-bit) -Windows XP Pro x64 Edition</p> <p>Device Drivers and IBM Enhanced Diagnostics CD IBM IntelliStation Documentation CD Disk-to-Disk Recovery (in service partition) - Windows models: Adobe Acrobat Reader, Norton Antivirus, IBM Record Now</p>
<p>Other options at ibm.com/pc/us/accessories</p>	<p>LIMITED WARRANTY³</p> <ul style="list-style-type: none"> ↔ 3 year parts and labor ↔ International Warranty Service³ ↔ On site, 8 am through 5 pm, Mon through Fri excluding holidays, next business day response time ↔ On site warranty service upgrade options⁷ available as ServicePac options at http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf ↔ 24x7¹⁴ toll-free support for warranty issues during the warranty period¹

IBM® Type-GAV-model	Processor & GHz/Core¹	L2 Memory	Disk, RPM & Controller	Optical	Graphics adapter & memory	FireWire bays	Slots x Preload¹⁷	Available date
6218-25y-25U	Pentium®4 631 3.0GHz/SC	2MB	1GB 80GB 7.2K SATA	DVD/CD-RW	Quadro® NVS285 64MB	1394 4x5	XP Pro	Feb 2006
6218-35y-35U	Pentium 4 641 3.2GHz/SC	2MB	1GB 80GB 7.2K SATA	DVD/CD-RW	Quadro FX1400 128MB	1394 4x5	XP Pro	Feb 2006
6218-46y-46U	Pentium 4 651 3.4GHz/SC	2MB	2GB 73GB 10K SCSI	DVD/CD-RW	Quadro FX1400 128MB	1394 4x5	XP Pro	Feb 2006
6218-54y-54U	Pentium 4 661 3.6GHz/SC	2MB	2GB 160GB 7.2K SATA	DVD/CD-RW	Quadro FX4500 512MB	1394 4x5	XP Pro	Feb 2006
6218-56y-56U	Pentium 4 661 3.6GHz/SC	2MB	2GB 73GB 10K SCSI	DVD/CD-RW	Quadro NVS285 64MB	1394 4x5	RHEL4	Feb 2006
6218-58y-58U	Pentium 4 661 3.6GHz/SC	2MB	2GB 80GB 7.2K SATA	DVD/CD-RW	Quadro FX1400 128MB	1394 4x5	XP Pro	Feb 2006
6218-85y-85U	Pentium D 950 3.4GHz/DC	4MB	2GB 80GB 7.2K SATA	DVD/CD-RW	Quadro FX1400 128MB	1394 4x5	RHEL4	Feb 2006
6218-87y-87U	Pentium D 950 3.4GHz/DC	4MB	2GB 80GB 7.2K SATA	DVD/CD-RW	Quadro FX1400 128MB	1394 4x5	XP Pro	Feb 2006

Positioning Processor *Powerful, dual-core capable, uni-processor workstation with Intel® Extended Memory 64 Technology and PCI Express®*
Processor **Intel Pentium 4 up to 3.6GHz Single-Core / Intel Pentium D at 3.4GHz Dual-Core / All 800MHz FSB and Optimized for Extended Memory 64 Technology (EM64T)**
L2 cache **2 MB** per core / standard and maximum / at processor speed
Processor upgrade Implementation **Single Processor**, no upgrade
 Systemboard contains one Intel LGA775 socket, four DIMM slots, four slots (1 PCI Express x16, 1 PCI Express x4, 1 PCI Express x1, 1 PCI), and integrated SATA and Gigabit Ethernet

Memory - std / max **1GB or 2GB** std/ 4GB^{13,21} max (8GB with 64-bit operating system) / two slots used / two slots available / **PC-4200 533MHz** registered ECC DDRII-SDRAM DIMMs / four DIMM gold-connector slots on systemboard / must be installed in pairs

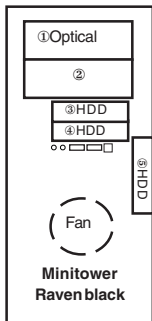
Graphics controller (see IntelliStation Graphics sheet for full graphics specifications)
 (one of following)
 • **Performance 2D: NVIDIA® Quadro NVS 285, 2D 64MB PCI Express x16**
 • **Advanced 3D: NVIDIA Quadro FX 1400, 3D 128MB PCI Express x16**
 • **Extreme 3D: NVIDIA Quadro FX 4500, 3D 512MB PCI Express x16**

SATA controller SATA Controller (3.0GB/sec) / integrated in ICH7R / three connectors on planar
SCSI controller *SCSI models: Ultra320 / single-channel Ultra320 SCSI controller* / mini-PCI adapter
SCSI channels and cables One 16-bit channel / *Internal channel: one 3-drop 16-bit 68-pin LVD SCSI cable from systemboard to internal disk bays*
Ports/Cables *All models: Three SATA ports on planar, SCSI models: One SCSI cable (listed above), ALL: one 2-drop EIDE cable (to optical)*
Disk - features *Some: 80GB / SATA / 7200 rpm / 9.0 ms seek; Some: 73.0GB Ultra320 SCSI / 10K rpm / 4.7 ms; All: S.M.A.R.T.⁵*

Mechanical Chipset 4 x 5 minitower / functions in rack with 19" Fixed Shelf Option kit
Chipset **Intel 955X chipset** / 955X MCH (Memory Controller Hub) for PCI Express x16 (video), Broadcom®, ICH7R / ICH7R for one 32-bit / 33MHz PCI slot, 1394a, SATA, 8x USB (2.0), Low Pin Count Interface / NS PC87366 Super I/O with LPC interface

Gigabit Ethernet One Gigabit 10/100/1000 Ethernet controller / Broadcom BCM5721 / full Gigabit Ethernet MAC and PHY layer functions / chip on planar / PCIe x1 / full duplex / Wake on LAN® / Alert Standard Format 2.0 / one rear RJ-45 port
Diskette / Optical *Diskette: none in MTM, CTO Option / Optical: 48X/32X/48X/16X Max⁶ CD-RW/DVD-ROM*
IEEE 1394 (FireWire) FireWire on planar / 1394a, 400Mbps, 6-pin port on rear, 4-pin port on front
Audio AC-97 Audio, ADI1981B via ICH7R / internal speaker (use of audio line out requires powered speakers)
Rear ports Six USB (Ver 2.0), two 9-pin serial, parallel, keyboard, mouse, Ethernet, audio line in, audio line out, mic in / 6-pin 1394a
Front ports Two USB (Ver 2.0), audio line out (stereo), mic in / 4-pin 1394
Systems mgmt Monitoring and alerting of thermal, fans, and voltage faults

Keyboard / mouse IBM 104-key keyboard (6-pin PS/2) / IBM 3-button optical mouse (6-pin PS/2)
Cooling fans Two variable speed fans (1 Front, 1 Power Supply) / not redundant or hot-swap
Power supply 400 watts / universal / auto sensing / built-in overload and surge protection



Bay ① 5.25", HH 1.6", external access, optical
 Bay ② 5.25", HH 1.6", external access, open
 Bay ③ 3.5", SL 1", external access, open
 Bay ④ 3.5", SL 1", internal access, HDD
 Bay ⑤ 3.5", SL 1", internal access, open
 Slot 1: fullsize, PCI Express x1
 Slot 2: fullsize, PCI Express x16 (video)
 Slot 3: fullsize, PCI Express x4 (x8 mechanically)
 Slot 4: fullsize, 32-bit 33MHz, PCI (5v)
 ⇨ Two front stabilizing feet
 ⇨ Handle grip on top
 ⇨ H 16.9" x W 7" x D 17.5"
 ⇨ H 430mm x W 178mm x D 445mm
 ⇨ 27.6 lb to 34.2 lb (12.5kg to 15.5kg)

- **Maximum internal disk capacity^{A3}:**
 SCSI: 900GB (3 disks x 300GB)
 SATA: 1TB (4 disks x 250GB)
*Requires optional ServeRAID 7i adapter
- Removable left side panel
- BIOS Setup Utility via F1 at startup

- Adaptec Configuration Utility near startup by pressing CTRL+A
- Product Recovery Program via F11 at startup
- Adv Config Power Interface (ACPI) 1.0a
- DMI 2.2-compliant

SECURITY

- Integrated panel lock
- U-Bolt Anchoring Feature; U-Bolt optional
- Cover tamper detect switch
- Secure fixed DASD
- Power-on password
- Administrator password
- Boot sequence control
- Boot without keyboard or mouse
- Diskette boot inhibit and write-protect
- Disable mouse
- Diskette, disk, serial port, parallel port I/O control
- Secure access openings
- VPD stored in EEPROM
- Write protection control for EEPROM
- IBM Security Solutions

512MB PC-4200 CL3 ECC DDRII-SDRAM	30R5148
2GB PC-4200 CL3 ECC DDRII-SDRAM (2x1GB)	30R5149
4GB PC-4200 CL3 ECC DDRII-SDRAM (2x2GB)	30R5150
ServeRAID 7i SATA Controller	71P8648
IBM 80GB 7.2K SATA HDD	73P8002
IBM 160GB 7.2K SATA HDD	73P8003
IBM 250GB 7.2K SATA HDD	73P8006
IBM 73.4GB 10K rpm Ultra320 SCSI HDD	32P0724
IBM 146GB 10K rpm Ultra320 SCSI HDD	32P0725
300GB 10K Ultra320 SCSI HDD NHS	32P0799
19" Fixed Shelf Option	94G7442

Choice of Preinstalled¹⁷ OS:
Windows® XP Pro x64 Edition (32-/64-bit); Red Hat® Enterprise Linux 4 WS (32-/64-bit)
 ⇨ Device Drivers CD
 ⇨ IBM IntelliStation Documentation CD
 • Disk-to-Disk Recovery (in service partition)
 - Windows models:
 Adobe Acrobat Reader, Norton Antivirus, IBM Record Now

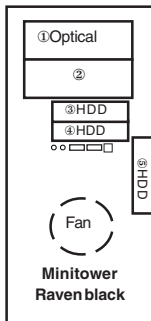
LIMITED WARRANTY³

- ⇨ 3 year parts and labor
- ⇨ International Warranty Service³
- ⇨ On site, 8 am through 5 pm, Mon through Fri excluding holidays, next business day response time
- ⇨ On site warranty service upgrade options⁷ available as ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ⇨ 24x7¹⁴ toll-free support for warranty issues during the warranty period¹

Other options at ibm.com/pc/us/accessories

IBM® Type-GAV-model	Processor & GHz/Core¹	L2	Memory	Disk, RPM & Controller	Optical	Graphics adapter & memory	FireWire bays	Slots x Preload¹⁷	Available date
6218-27y-27U	Pentium®4 631 3.0GHz/SC	2MB	1GB	80GB 7.2K SATA	DVD/CD-RW	Quadro® FX 550 128MB	1394 4x5	XP Pro June 2006	
6218-37y-37U	Pentium 4 641 3.2GHz/SC	2MB	1GB	80GB 7.2K SATA	DVD/CD-RW	Quadro FX 550 128MB	1394 4x5	XP Pro June 2006	
6218-48y-48U	Pentium 4 651 3.4GHz/SC	2MB	2GB	73GB 10K SCSI	DVD/CD-RW	Quadro FX 3500 256MB	1394 4x5	XP Pro June 2006	
6218-92y-92U	Pentium D 960 3.6GHz/DC	4MB	2GB	80GB 7.2K SATA	DVD/CD-RW	Quadro FX 1500 256MB	1394 4x5	RHEL4 June 2006	
6218-94y-94U	Pentium D 960 3.6GHz/DC	4MB	2GB	80GB 7.2K SATA	DVD/CD-RW	Quadro FX 3500 256MB	1394 4x5	XP Pro June 2006	

Positioning Processor	Powerful, dual-core capable, uni-processor workstation with Intel® Extended Memory 64 Technology and PCI Express® Intel Pentium 4 up to 3.6GHz Single-Core / Intel Pentium D at 3.4GHz Dual-Core / All 800MHz FSB and Optimized for Extended Memory 64 Technology (EM64T)
L2 cache	2 MB per core / standard and maximum / at processor speed
Processor upgrade Implementation	Single Processor, no upgrade Systemboard contains one Intel LGA775 socket, four DIMM slots, four slots (1 PCI Express x16, 1 PCI Express x4, 1 PCI Express x1, 1 PCI), and integrated SATA and Gigabit Ethernet
Memory - std / max	1GB or 2GB std/ 4GB ^{13,21} max (8GB with 64-bit operating system) / two slots used / two slots available / PC-4200 533MHz registered ECC DDRII-SDRAM DIMMs / four DIMM gold-connector slots on systemboard / must be installed in pairs
Graphics controller (one of following)	(see IntelliStation Graphics sheet for full graphics specifications) • Entry 3D: NVIDIA® Quadro FX 550, 3D 128MB PCI Express x16 • Advanced 3D: NVIDIA Quadro FX 1500, 3D 256MB PCI Express x16 • High-advanced 3D: NVIDIA Quadro FX 3500, 3D 256MB PCI Express x16
SATA controller	SATA Controller (3.0GB/sec) / integrated in ICH7R / three connectors on planar
SCSI controller	SCSI models: Ultra320 / single-channel Ultra320 SCSI controller / mini-PCI adapter
SCSI channels and cables	One 16-bit channel / Internal channel: one 3-drop 16-bit 68-pin LVD SCSI cable from systemboard to internal disk bays
Ports/Cables	All models: Three SATA ports on planar, SCSI models: One SCSI cable (listed above), ALL: one 2-drop EIDE cable (to optical)
Disk - features	Some: 80GB / SATA / 7200 rpm / 9.0 ms seek; Some: 73.0GB Ultra320 SCSI / 10K rpm / 4.7 ms; All: S.M.A.R.T. ⁵
Mechanical Chipset	4 x 5 minitower / functions in rack with 19" Fixed Shelf Option kit Intel 955X chipset / 955X MCH (Memory Controller Hub) for PCI Express x16 (video), Broadcom®, ICH7R / ICH7R for one 32-bit / 33MHz PCI slot, 1394a, SATA, 8x USB (2.0), Low Pin Count Interface / NS PC87366 Super I/O with LPC interface
Gigabit Ethernet	One Gigabit 10/100/1000 Ethernet controller / Broadcom BCM5721 / full Gigabit Ethernet MAC and PHY layer functions / chip on planar / PCIe x1 / full duplex / Wake on LAN® / Alert Standard Format 2.0 / one rear RJ-45 port
Diskette / Optical	Diskette: none in MTM, CTO Option / Optical: 48X/32X/48X/16X Max® CD-RW/DVD-ROM
IEEE 1394 (FireWire)	FireWire on planar / 1394a, 400Mbps, 6-pin port on rear, 4-pin port on front
Audio	AC-97 Audio, ADI1981B via ICH7R / internal speaker (use of audio line out requires powered speakers)
Rear ports	Six USB (Ver 2.0), two 9-pin serial, parallel, keyboard, mouse, Ethernet, audio line in, audio line out, mic in / 6-pin 1394a
Front ports	Two USB (Ver 2.0), audio line out (stereo), mic in / 4-pin 1394
Systems mgmt	Monitoring and alerting of thermal, fans, and voltage faults
Keyboard / mouse	IBM 104-key keyboard (6-pin PS/2) / IBM 3-button optical mouse (6-pin PS/2)
Cooling fans	Two variable speed fans (1 Front, 1 Power Supply) / not redundant or hot-swap
Power supply	400 watts / universal / auto sensing / built-in overload and surge protection



- Bay ① 5.25", HH 1.6", external access, optical
- Bay ② 5.25", HH 1.6", external access, open
- Bay ③ 3.5", SL 1", external access, open
- Bay ④ 3.5", SL 1", internal access, HDD
- Bay ⑤ 3.5", SL 1", internal access, open
- Slot 1: fullsize, PCI Express x1
- Slot 2: fullsize, PCI Express x16 (video)
- Slot 3: fullsize, PCI Express x4 (x8 mechanically)
- Slot 4: fullsize, 32-bit 33MHz, PCI (5v)
- Two front stabilizing feet
- Handle grip on top
- H 16.9" x W 7" x D 17.5"
- H 430mm x W 178mm x D 445mm
- 27.6 lb to 34.2 lb (12.5kg to 15.5kg)

- Maximum internal disk capacity^{A3}:
SCSI: 900GB (3 disks x 300GB)
SATA: 1TB (4 disks x 250GB)
^{A3}Requires optional ServeRAID 7i adapter
- Removable left side panel
- BIOS Setup Utility via F1 at startup

- Adaptec Configuration Utility near startup by pressing CTRL+A
- Product Recovery Program via F11 at startup
- Adv Config Power Interface (ACPI) 1.0a
- DMI 2.2-compliant

SECURITY

- Integrated panel lock
- U-Bolt Anchoring Feature; U-Bolt optional
- Cover tamper detect switch
- Secure fixed DASD
- Power-on password
- Administrator password
- Boot sequence control
- Boot without keyboard or mouse
- Diskette boot inhibit and write-protect
- Disable mouse
- Diskette, disk, serial port, parallel port I/O control
- Secure access openings
- VPD stored in EEPROM
- Write protection control for EEPROM
- IBM Security Solutions

512MB PC-4200 CL3 ECC DDRII-SDRAM	30R5148
2GB PC-4200 CL3 ECC DDRII-SDRAM (2x1GB)	30R5149
4GB PC-4200 CL3 ECC DDRII-SDRAM (2x2GB)	30R5150
ServeRAID 7i SATA Controller	71P8648
IBM 80GB 7.2K SATA HDD	73P8002
IBM 160GB 7.2K SATA HDD	73P8003
IBM 250GB 7.2K SATA HDD	73P8006
IBM 73.4GB 10K rpm Ultra320 SCSI HDD	32P0724
IBM 146GB 10K rpm Ultra320 SCSI HDD	32P0725
300GB 10K Ultra320 SCSI HDD NHS	32P0799
19" Fixed Shelf Option	94G7442

Other options at ibm.com/pc/us/accessories

Choice of Preinstalled¹⁷ OS:
Windows® XP Pro x64 Edition (32-/64-bit);
Red Hat® Enterprise Linux 4 WS (32-/64-bit)

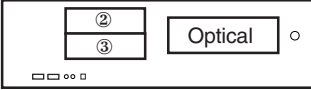
- ◆ Device Drivers CD
- ◆ IBM IntelliStation Documentation CD
- Disk-to-Disk Recovery (in service partition)
- Windows models:
Adobe Acrobat Reader,
Norton Antivirus, IBM Record Now

LIMITED WARRANTY³

- ⇒ 3 year parts and labor
- ⇒ International Warranty Service³
- ⇒ On site, 8 am through 5 pm, Mon through Fri excluding holidays, next business day response time
- ⇒ On site warranty service upgrade options⁷ available as ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ⇒ 24x7¹⁴ toll-free support for warranty issues during the warranty period¹

IBM® Type-model	Processor	FSB MHz	Memory	Disk and rpm	Disk controllers	Optical	Graphics adapter and memory	Slots x Firewire F/R	USB/F/R	Preload ¹⁷	Available date
6220-20U	Pentium®4 2.8	800	256MB	40.0GB ² EIDE 7.2K	EIDE	CD-ROM	Quadro4™ 280NVS 64MB	4x3	0/0/2/4	XP Pro	Aug 2003
6220-24U	Pentium 4 2.8	800	512MB	80.0GB SATA 7.2K	EIDE	CD-ROM	Quadro4 580XGL 64MB	4x3	0/0/2/4	XP Pro	Aug 2003
6220-40U	Pentium 4 3.2	800	256MB	40.0GB EIDE 7.2K	EIDE	CD-ROM	Quadro4 280NVS 64MB	4x3	0/0/2/4	XP Pro	Aug 2003
6220-44U	Pentium 4 3.2	800	512MB	80.0GB SATA 7.2K	EIDE	CD-ROM	Quadro4 580XGL 64MB	4x3	0/0/2/4	XP Pro	Aug 2003

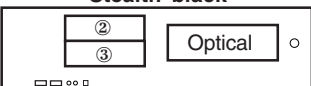
Processor	Intel® Pentium 4 at 2.8 or 3.2GHz with 800MHz frontside bus (FSB) / All support Hyper-Threading technology
Proc. Upg/L2 cache Implementation	No SMP Support / 512KB std and max / at processor speed Motherboard contains one mPGA478B socket (processor/L2 cache in FC-PGA2), four DIMM sockets, one 8X AGP slot, ethernet controller, five total PCI slots (two PCI slots on extender board, some have SCSI controller)
Memory - std / max Memory - features	256MB or 512MB std / 4GB ¹³ max / one slot used / three slots available / PC2700 333MHz unbuffered 184-pin ECC CL2.5 DDR-SDRAM UDIMMs / four DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / Error Checking and Correcting (ECC) DIMMs and memory controller
Graphics controller (one of following)	<ul style="list-style-type: none"> • NVIDIA Quadro4™ 280NVS (entry 3D) / (see IntelliStation Graphics sheet for specs) • NVIDIA Quadro4 580XGL (entry 3D)
IDE disk controller	Four Ultra ATA ports / ATA-100 / integrated in I/O Controller Hub 5 / four 40-pin connectors on planar
Cables	Two Serial ATA ports / ATA-150 / integrated in I/O Controller Hub 5 / two 7-pin connectors on planar
Disk - features	EIDE models: Two EIDE cables (one 2-drop cable to CD-ROM, one 2-drop 40-pin EIDE cable or 7-pin SATA cable) Some: EIDE ATA-100 or SATA ATA-150 / 7200 rpm / 9.0 ms seek; All: S.M.A.R.T. ⁵
Rack support	Not available
Chipset	Intel 875P chipset / 82875P MCH (Memory Controller Hub) for AGP 8X slot and ICH5 / I/O Controller Hub (ICH5) for PCI 2.2 bus (four slots and one Mini-PCI slot), ethernet, ATA-100 EIDE, USB, Low Pin Count Interface / SMC 47M102 Super I/O off LPC
Gigabit ethernet	One gigabit 10/100/1000 ethernet controller / Intel Kenai II CSA / full gigabit ethernet MAC and PHY layer functions / chip on planar / PCI 2.2 32-bit 33MHz / full duplex / Wake on LAN® / Alert Standard Format 1.0
Diskette drive	None (USB floppy optional)
Optical drive	Ultra ATA / 48X/20X Max ⁶ CD-ROM
IEEE 1394 (FireWire)	Not enabled (purchase of 3rd party mini-PCI card will enable ports)
Audio	Soft audio AC '97 v2.2 interface via ICH4 (AD1885) / internal speaker (use of audio line out requires powered speakers)
Rear ports	Four USB (Ver 2.0), two 9-pin serial, parallel, keyboard, mouse, ethernet, audio line in, audio line out, mic in / 6-pin 1394
Front ports	Two USB (Ver 2.0), audio line out (stereo), mic in / 4-pin 1394 FireWire
Systems mgmt	Monitoring and alerting of thermal, fans, and voltage faults / Winbond® W83791D
Keyboard / mouse	IBM 104-key keyboard (6-pin PS/2) / IBM three button mouse (6-pin PS/2 conn)
Cooling fans	Two or three variable speed fans (pwr supply, rear, processor) / not redundant or hot-swap / third fan operates based on heat
Power supply	200 watts / universal / auto sensing / built-in overload and surge protection

<p>Desktop Stealth black</p>  <p>Bay ① 5.25", HH 1.6", access, optical Bay ② 3.5", SL 1", no access, disk Bay ③ 3.5", SL 1", no access, open</p> <p>Slot 1: Half-height, 32-bit 33MHz, PCI 2.2 (5v) Slot 2: Half-height, 32-bit 33MHz, PCI 2.2 (5v) Slot 3: Half-height, 32-bit 33MHz, PCI 2.2 (5v) Slot 4: short, AGP 8X (1.5v) - used by std AGP graphics adapter</p>	<p>Weight and Dimensions</p> <ul style="list-style-type: none"> ◇ H 4.1" x W 14.2" x D 16.2" ◇ H 104mm x W 360mm x D 412mm ◇ 20.0 lb to 22.0 lb (9.07kg to 9.98kg) <p>• Maximum internal disk capacity¹³: EIDE: 240GB (2 disks x 120GB) SATA: 320GB (2 disks x 160GB)</p> <ul style="list-style-type: none"> • Removable left side panel • Configuration/Setup Utility: F1 at startup • Product Recovery Program: F11 at startup • Network Boot: F12 at startup • Adv Config Power Interface (ACPI) 1.0a • DMI 2.2-compliant 	<p>SECURITY</p> <ul style="list-style-type: none"> • U-bolt anchoring feature (U-bolt is optional; supports optional padlock) • Security slot (for attachment of optional cable lock such as Kensington cable lock) • Side cover key lock • Cover tamper detect switch • Secure fixed DASD • Power-on password • Administrator password • Keyboard/mouse password • Boot sequence control • Boot without keyboard or mouse • Diskette boot inhibit and write-protect • Disable mouse • Diskette, disk, serial port, parallel port I/O control • Secure access openings • VPD stored in EEPROM • Write protection control for EEPROM • IBM Security Solutions 																						
<p>Options and Accessories</p> <table border="0"> <tr><td>256MB PC2700 CL2.5 ECC DDR-SDRAM</td><td>06P4053</td></tr> <tr><td>512MB PC2700 CL2.5 ECC DDR-SDRAM</td><td>06P4054</td></tr> <tr><td>1GB PC2700 CL2.5 ECC DDR-SDRAM</td><td>06P4055</td></tr> <tr><td>IBM USB Portable Diskette Drive</td><td>05K9276</td></tr> <tr><td>IBM 40GB 7.2K-rpm EIDE ATA-100 HDD</td><td>22P7157</td></tr> <tr><td>IBM 80GB 7.2K-rpm EIDE ATA-100 HDD</td><td>09N4226</td></tr> <tr><td>IBM 120GB 7.2K-rpm EIDE ATA-100 HDD</td><td>09N4231</td></tr> <tr><td>IBM 80GB S-ATA 7.2K-RPM HDD</td><td>09N4253</td></tr> <tr><td>IBM 160GB S-ATA 7.2K-RPM HDD</td><td>09N4254</td></tr> <tr><td>IBM ThinkVision L200P 20.1inLCD Black A/D</td><td>6736-HB0</td></tr> <tr><td>IBM T221 22.2inLCD Black Digital</td><td>9503-DG3</td></tr> </table> <p>Other options at ibm.com/pc/us/accessories</p>	256MB PC2700 CL2.5 ECC DDR-SDRAM	06P4053	512MB PC2700 CL2.5 ECC DDR-SDRAM	06P4054	1GB PC2700 CL2.5 ECC DDR-SDRAM	06P4055	IBM USB Portable Diskette Drive	05K9276	IBM 40GB 7.2K-rpm EIDE ATA-100 HDD	22P7157	IBM 80GB 7.2K-rpm EIDE ATA-100 HDD	09N4226	IBM 120GB 7.2K-rpm EIDE ATA-100 HDD	09N4231	IBM 80GB S-ATA 7.2K-RPM HDD	09N4253	IBM 160GB S-ATA 7.2K-RPM HDD	09N4254	IBM ThinkVision L200P 20.1inLCD Black A/D	6736-HB0	IBM T221 22.2inLCD Black Digital	9503-DG3	<p>Preload with Windows XP Professional¹⁷</p> <p>Microsoft® Windows® XP Professional</p> <ul style="list-style-type: none"> - Free license for Lotus® SmartSuite® - Free license for Lotus Notes® Client ◇ Device Drivers CD ◇ IBM IntelliStation Documentation CD ◇ Disk-to-Disk Recovery (in service partition) 	<p>LIMITED WARRANTY³</p> <ul style="list-style-type: none"> ↔ 3 year parts and labor ↔ International Warranty Service³ ↔ On site, 8 am through 5 pm, Mon through Fri excluding holidays, next business day response time ↔ On site warranty service upgrade options⁷ available as ServicePac options at http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf ↔ 24x7¹⁴ toll-free support for warranty issues during the warranty period³
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IBM T221 22.2inLCD Black Digital	9503-DG3																							

See footnotes for important warranty information
US models announced July 29, 2003

IBM® Type-model	Processor	GHz ¹	L2 Cache	FSB MHz	Memory	Disk and rpm	Optical	Graphics adapter and memory	Slots x Firewire F/R bays USB/F/R	Preload ¹⁷	Available date
6220-50U	Pentium 4	3.4	512KB	800	256MB	40.0GB EIDE 7.2K	CD-ROM	Quadro4 280NVS 64MB	4x3 0/0/2/4	XP Pro	Apr 2004
6220-54U	Pentium 4	3.4	512KB	800	512MB	80.0GB SATA 7.2K	CD-ROM	Quadro4 580XGL 64MB	4x3 0/0/2/4	XP Pro	Apr 2004
6220-71U	Pentium 4	3.4	1MB	800	512MB	80.0GB SATA 7.2K	CD-ROM	Quadro4 280NVS 64MB	4x3 0/0/2/4	RHEL3-WS	May 2004
6220-74U	Pentium 4	3.4	1MB	800	512MB	80.0GB SATA 7.2K	CD-ROM	Quadro4 580XGL 64MB	4x3 0/0/2/4	XP Pro	May 2004

Processor	Intel® Pentium 4 at 3.4GHz with 800MHz frontside bus (FSB) / All support Hyper-Threading technology
Proc. Upg/L2 cache Implementation	No SMP Support / 512KB or 1MB std and max / at processor speed Motherboard contains one mPGA478B socket (processor/L2 cache in FC-PGA2), four DIMM sockets, one 8X AGP slot, ethernet controller, five total PCI slots (two PCI slots on extender board, some have SCSI controller)
Memory - std / max Memory - features	256MB or 512MB std / 4GB ¹³ max / one slot used / three slots available / PC2700 (50U) or PC3200 (54U, 7xU) unbuffered 184-pin ECC CL2.5 (50U) or CL3 (54U, 7xU) DDR-SDRAM UDIMMs / four DIMM slots on systemboard / DIMMs must be installed in matched pairs / 2-way memory interleave / dual channel / Error Checking and Correcting (ECC) DIMMs and memory controller
Graphics controller (one of following)	• NVIDIA Quadro4™ 280NVS (entry 3D) / (see IntelliStation Graphics sheet for specs) • NVIDIA Quadro4 580XGL (entry 3D)
IDE disk controller	Four Ultra ATA ports / ATA-100 / integrated in I/O Controller Hub 5 / four 40-pin connectors on planar Two Serial ATA ports / ATA-150 / integrated in I/O Controller Hub 5 / two 7-pin connectors on planar
Cables	EIDE models: Two EIDE cables (one 2-drop cable to CD-ROM, one 2-drop 40-pin EIDE cable or 7-pin SATA cable)
Disk - features	Some: EIDE ATA-100 or SATA ATA-150 / 7200 rpm / 9.0 ms seek; All: S.M.A.R.T. ⁵
Rack support Chipset	Not available Intel 875P chipset / 82875P MCH (Memory Controller Hub) for AGP 8X slot and ICH5 / I/O Controller Hub (ICH5) for PCI 2.2 bus (four slots and one Mini-PCI slot), ethernet, ATA-100 EIDE, USB, Low Pin Count Interface / SMC 47M102 Super I/O off LPC
Gigabit ethernet	One gigabit 10/100/1000 ethernet controller / Intel Kenai II CSA / full gigabit ethernet MAC and PHY layer functions / chip on planar / PCI 2.2 32-bit 33MHz / full duplex / Wake on LAN® / Alert Standard Format 1.0
Diskette drive	None (USB floppy optional)
Optical drive	Ultra ATA / 48X/20X Max ⁶ CD-ROM
IEEE 1394 (FireWire)	Not enabled / available via CTO
Audio	Soft audio AC '97 v2.2 interface via ICH4 (AD1885) / internal speaker (use of audio line out requires powered speakers)
Rear ports	Four USB (Ver 2.0), two 9-pin serial, parallel, keyboard, mouse, ethernet, audio line in, audio line out, mic in / 6-pin 1394
Front ports	Two USB (Ver 2.0), audio line out (stereo), mic in / 4-pin 1394 FireWire
Systems mgmt	Monitoring and alerting of thermal, fans, and voltage faults / Winbond® W83791D
Keyboard / mouse	IBM 104-key keyboard (6-pin PS/2) / IBM three button mouse (6-pin PS/2 conn)
Cooling fans	Two or three variable speed fans (pwr supply, rear, processor) / not redundant or hot-swap / third fan operates based on heat
Power supply	200 watts / universal / auto sensing / built-in overload and surge protection

<p>Desktop</p> <p>Stealth black</p>  <p>Bay ① 5.25", HH 1.6", access, optical Bay ② 3.5", SL 1", no access, disk Bay ③ 3.5", SL 1", no access, open</p> <p>Slot 1: fullsize, 32-bit 33MHz, PCI 2.2 (5v) Slot 2: fullsize, 32-bit 33MHz, PCI 2.2 (5v) Slot 3: fullsize, 32-bit 33MHz, PCI 2.2 (5v) Slot 4: short, AGP 8X (1.5v), low-profile - used by std AGP graphics adapter</p> <p>Options and Accessories</p> <table border="0"> <tr><td>256MB PC3200 CL3 ECC DDR-SDRAM</td><td>06P4049</td></tr> <tr><td>512MB PC3200 CL3 ECC DDR-SDRAM</td><td>06P4050</td></tr> <tr><td>1GB PC3200 CL3 ECC DDR-SDRAM</td><td>06P4051</td></tr> <tr><td>256MB PC2700 CL2.5 ECC DDR-SDRAM</td><td>06P4053</td></tr> <tr><td>512MB PC2700 CL2.5 ECC DDR-SDRAM</td><td>06P4054</td></tr> <tr><td>1GB PC2700 CL2.5 ECC DDR-SDRAM</td><td>06P4055</td></tr> <tr><td>IBM USB Portable Diskette Drive</td><td>05K9276</td></tr> <tr><td>IBM 40GB 7.2K-rpm EIDE ATA-100 HDD</td><td>22P7157</td></tr> <tr><td>IBM 80GB 7.2K-rpm EIDE ATA-100 HDD</td><td>09N4226</td></tr> <tr><td>IBM 120GB 7.2K-rpm EIDE ATA-100 HDD</td><td>09N4231</td></tr> <tr><td>IBM 80GB S-ATA 7.2K-RPM HDD</td><td>09N4253</td></tr> <tr><td>IBM 160GB S-ATA 7.2K-RPM HDD</td><td>09N4254</td></tr> <tr><td>IBM ThinkVision L200P 20.1inLCD Black A/D</td><td>6736-HB0</td></tr> <tr><td>IBM T221 22.2inLCD Black Digital</td><td>9503-DG3</td></tr> </table> <p>Other options at ibm.com/pc/us/accessories</p>	256MB PC3200 CL3 ECC DDR-SDRAM	06P4049	512MB PC3200 CL3 ECC DDR-SDRAM	06P4050	1GB PC3200 CL3 ECC DDR-SDRAM	06P4051	256MB PC2700 CL2.5 ECC DDR-SDRAM	06P4053	512MB PC2700 CL2.5 ECC DDR-SDRAM	06P4054	1GB PC2700 CL2.5 ECC DDR-SDRAM	06P4055	IBM USB Portable Diskette Drive	05K9276	IBM 40GB 7.2K-rpm EIDE ATA-100 HDD	22P7157	IBM 80GB 7.2K-rpm EIDE ATA-100 HDD	09N4226	IBM 120GB 7.2K-rpm EIDE ATA-100 HDD	09N4231	IBM 80GB S-ATA 7.2K-RPM HDD	09N4253	IBM 160GB S-ATA 7.2K-RPM HDD	09N4254	IBM ThinkVision L200P 20.1inLCD Black A/D	6736-HB0	IBM T221 22.2inLCD Black Digital	9503-DG3	<p>Weight and Dimensions</p> <ul style="list-style-type: none"> ◇ H 4.1" x W 14.2" x D 16.2" ◇ H 104mm x W 360mm x D 412mm ◇ 20.0 lb to 22.0 lb (9.07kg to 9.98kg) <ul style="list-style-type: none"> • Maximum internal disk capacity¹³: EIDE: 240GB (2 disks x 120GB) SATA: 320GB (2 disks x 160GB) • Removable left side panel • Configuration/Setup Utility: F1 at startup • Product Recovery Program: F11 at startup • Network Boot: F12 at startup • Adv Config Power Interface (ACPI) 1.0a • DMI 2.2-compliant <p>Preload with</p> <p>Red Hat Enterprise Linux 3 WS (32-bit) or Windows XP Professional (32-bit)¹⁷</p> <ul style="list-style-type: none"> Microsoft® Windows® XP Professional - Free license for Lotus® SmartSuite® - Free license for Lotus Notes® Client ◇ Device Drivers CD ◇ IBM IntelliStation Documentation CD • Disk-to-Disk Recovery (in service partition) <p>Red Hat Enterprise Linux 3 WS ◇ Device Drivers CD</p>	<p>SECURITY</p> <ul style="list-style-type: none"> • U-bolt anchoring feature (U-bolt is optional; supports optional padlock) • Security slot (for attachment of optional cable lock such as Kensington cable lock) • Side cover key lock • Cover tamper detect switch • Secure fixed DASD • Power-on password • Administrator password • Keyboard/mouse password • Boot sequence control • Boot without keyboard or mouse • Diskette boot inhibit and write-protect • Disable mouse • Diskette, disk, serial port, parallel port I/O control • Secure access openings • VPD stored in EEPROM • Write protection control for EEPROM • IBM Security Solutions <p>LIMITED WARRANTY³</p> <ul style="list-style-type: none"> ⇨ 3 year parts and labor ⇨ International Warranty Service³ ⇨ On site, 8 am through 5 pm, Mon through Fri excluding holidays, next business day response time ⇨ On site warranty service upgrade options⁷ available as ServicePac options at http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf ⇨ 24x7¹⁴ toll-free support for warranty issues during the warranty period³
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512MB PC2700 CL2.5 ECC DDR-SDRAM	06P4054																													
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See footnotes for important warranty information

US models announced March 16, 2004 (50U, 54U) and May 18, 2004 (71U, 74U)

IBM® Type-GAV-model	Processor & GHz ¹	L2	Memory	Disk & rpm	Disk controllers	Optical	Graphics adapter and memory	FireWire	Slots x bays	Preload ¹⁷	Available date
6225-10y-10U	Pentium® 4 3.4GHz	1MB	512MB	40GB 7.2K	SATA	CD-ROM	Quadro® NVS 280 64MB	1394	4x5	XP Pro	Dec 2004
6225-11y-11U	Pentium 4 3.4GHz	1MB	512MB	73GB 10K	Ultra320	CD-ROM	ATI FireGL™ V3100 128MB	1394	4x5	XP Pro	Dec 2004
6225-20y-20U	Pentium 4 3.6GHz	1MB	512MB	80GB 7.2K	SATA	CD-RW	ATI FireGL V3100 128MB	1394	4x5	XP Pro	Dec 2004
6225-23y-23U	Pentium 4 3.6GHz	1MB	512MB	73GB 10K	Ultra320	CD-RW	Quadro FX 1300 128MB	1394	4x5	XP Pro	Dec 2004
6225-25y-25U	Pentium 4 3.6GHz	1MB	1GB	73GB 10K	Ultra320	CD-RW	Quadro FX 3400 256MB	1394	4x5	XP Pro	Dec 2004
6225-26y-26U	Pentium 4 3.6GHz	1MB	512MB	80GB 7.2K	SATA	CD-RW	Quadro NVS 280 64MB	1394	4x5	RH 3	Dec 2004
6225-32y-32U	Pentium 4 3.8GHz	1MB	512MB	80GB 7.2K	SATA	CD-RW	Quadro FX 1300 128MB	1394	4x5	XP Pro	Jan 2004
6225-35y-35U	Pentium 4 3.8GHz	1MB	1GB	73GB 10K	Ultra320	CD-RW	Quadro FX 3400 256MB	1394	4x5	XP Pro	Jan 2004
6225-36y-36U	Pentium 4 3.8GHz	1MB	512MB	80GB 7.2K	SATA	CD-RW	Quadro NVS 280 64MB	1394	4x5	RH 3	Jan 2004

Positioning Processor L2 cache Processor upgrade Implementation
Powerful uni-processor workstation with Intel® Extended Memory 64 Technology 1 Intel Pentium 4 at 3.4, 3.6GHz & 3.8GHz with 800MHz frontside bus (FSB) & Extended Memory 64 Technology (EM64T) 1MB standard and maximum / at processor speed
Single Processor, no upgrade
 Systemboard contains one Intel 604-pin micro-PGA2 ZIF socket, four DIMM slots, single slots (one PCI Express x16, PCI Express x1, 2 PCI), and integrated SATA and Gigabit Ethernet

Memory - std / max **512MB or 1GB** std / 4GB^{13,21} max / two slots used / two slots available / **PC3200 400MHz** registered ECC DDR2-SDRAM DIMMs / four DIMM gold-connector slots on systemboard

Graphics controller (see IntelliStation Graphics sheet for full graphics specifications) (one of following)
 • **NVIDIA Quadro NVS 280 2D 64MB PCI Express x16**
 • **ATI FireGL V3100 3D 128MB PCI Express x16**
 • **NVIDIA Quadro FX 1300 3D 128MB PCI Express x16**
 • **NVIDIA Quadro FX 3400 3D 256MB PCI Express x16**

SATA controller SCSI controller
SATA-150 controller (1.5GB/sec) / integrated in ICH6R / two connectors on planar / SCSI models: PCI-X Ultra320 / single channel Ultra320 SCSI controller (LVD 320MB/sec) / 64-bit 100MHz PCI-X / mini-PCI adapter
 SCSI channels and cables One 16-bit channel (one internal or external) / *Internal channel:* one 4-drop 16-bit 68-pin LVD SCSI cable from systemboard to internal disks bays
 Ports/Cables *All models:* Four SATA ports on planar *SCSI models:* One SCSI cable (listed above), *ALL:* one 2-drop EIDE cable (to optical)
 Disk - features *Some:* 40 & 80GB / SATA-150 / 7200 rpm / 9.0 ms seek; *Some:* 73.0GB Ultra320 SCSI / 10K rpm / 4.7 ms; *All:* S.M.A.R.T.⁵

Mechanical Chipset
 4 x 5 Mini-tower with no rack support
Intel 925X chipset / 925X MCH (Memory Controller Hub) for PCI Express x16 (video), Broadcom, ICH6R / ICH6R for two 32-bit/33MHz PCI slots (slots 2 & 3), 1394a, SATA, 4x USB (2.0), Low Pin Count Interface / NS PC87366 Super I/O off LPC interface

Gigabit Ethernet One Gigabit 10/100/1000 Ethernet controller / Broadcom BCM5721 / full Gigabit Ethernet MAC and PHY layer functions / chip on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / Alert Standard Format 2.0 / one rear RJ-45 port
 Diskette / Optical drives *Diskette:* none *Optical:* One of the following: 48X-20X® CD-ROM, 48X/32X/48X Max® CD-RW or IBM Multi-Burner Plus DVD/CD RW
 IEEE 1394 (FireWire) FireWire on planar / 1394a, 400Mbps, 6-pin port on rear, 4-pin port on front
 Audio AC - 97 Audio, ADI1981B via ICH6r / internal speaker (use of audio line out requires powered speakers)
 Rear ports Six USB (Ver 2.0), two 9-pin serial, parallel, keyboard, mouse, Ethernet, audio line in, audio line out, mic in / 6-pin 1394a
 Front ports Two USB (Ver 2.0), audio line out (stereo), mic in / 4-pin 1394
 Systems mgmt Monitoring and alerting of thermal, fans, and voltage faults / Winbond® W791D

Keyboard / mouse IBM 104-key keyboard (6-pin PS/2) / IBM 3-button optical mouse (6-pin PS/2 conn)
 Cooling fans Two variable speed fans (1 Front, 1 PS) / not redundant or hot-swap
 Power supply 400 watts / universal / auto sensing / built-in overload and surge protection

- SECURITY**
- Security slot (for attachment of optional cable lock e.g. Kensington cable lock)
 - Cover lockable with padlock or laptop cable
 - Cover tamper detect switch
 - Secure fixed DASD
 - Power-on password
 - Administrator password
 - Boot sequence control
 - Boot without keyboard or mouse
 - Diskette boot inhibit and write-protect
 - Disable mouse
 - Diskette, disk, serial port, parallel port I/O control
 - Secure access openings
 - VPD stored in EEPROM
 - Write protection control for EEPROM
 - IBM Security Solutions

- LIMITED WARRANTY³**
- ↔ 3 year parts and labor
 - ↔ International Warranty Service³
 - ↔ On site, 8 am through 5 pm, Mon through Fri excluding holidays, next business day response time
 - ↔ On site warranty service upgrade options⁷ available as ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
 - ↔ 24x7¹⁴ toll-free support for warranty issues during the warranty period¹

<p>Bay ① 5.25", HH 1.6", access, optical Bay ② 5.25", HH 1.6", access, open Bay ③ 3.5", SL 1", access, open Bay ④ 3.5", SL 1", access, open Bay ⑤ 3.5", SL 1", no access, disk</p> <p>Slot 1: fullsize, PCI Express x1 Slot 2: fullsize, PCI Express x16 (video) Slot 3: fullsize, 32-bit 33MHz, PCI (5v) Slot 4: fullsize, 32-bit 33MHz, PCI (5v)</p>	<p>↔ Two front stabilizing feet ↳ Handle grip on top ↳ H 19.4" x W 6.9" x D 17.7" ↳ H 492mm x W 175mm x D 450mm ↳ 23 lb to 30 lb (10.5kg to 13.5kg)</p> <p>• Maximum internal disk capacity¹³: SCSI: 438GB (3 disks x 146GB) SATA: 750GB (3 disks x 250GB)</p> <p>• Removable left side panel • BIOS Setup Utility via F1 at startup • Adaptec Configuration Utility near startup by pressing CTRL+C • Product Recovery Program via F11 at startup • Adv Config Power Interface (ACPI) 1.0a • DMI 2.2-compliant</p> <p>Preload with Windows XP Professional¹⁷ Microsoft® Windows® XP Professional - Free license for Lotus® SmartSuite® - Free license for Lotus Notes® Client ↳ Device Drivers and IBM Enhanced Diagnostics CD ↳ IBM IntelliStation Documentation CD • Disk-to-Disk Recovery (in service partition)</p>
512MB PC3200 CL3 ECC DDR2-SDRAM 73P3524 1GB PC3200 CL3 ECC DDR2-SDRAM 73P3525 2GB PC3200 CL3 ECC DDR2-SDRAM 74P3526 ServeRAID-7i SATA Controller 71P8651 IBM 73.4GB 10K rpm Ultra320 SCSI HDD 32P0724 IBM 146GB 10K rpm Ultra320 SCSI HDD 32P0725 IBM 160GB 7.2K rpm SATA-150 HDD 09N4254 IBM ThinkVision L200P 20.1in LCD Black A/D 6736-HB0 Other options at ibm.com/pc/us/accessories	

See footnotes for important warranty information

IBM® Type-GAV-model	Processor & GHz ¹	L2	Memory	Disk & rpm	Disk controllers	Optical	Graphics adapter and memory	FireWire	Slots x bays	Preload ¹⁷	Available date
6225-40y-40U	Pentium®4 3.0GHz	2MB	512MB	80GB 7.2K	SATA	CD-RW	Quadro™ NVS 280	64MB	1394 4x5	XP Pro	Apr 2005
6225-42y-42U	Pentium 4 3.0GHz	2MB	1GB	80GB 7.2K	SATA	CD-RW	ATI® FireGL™ V3100	128MB	1394 4x5	XP Pro	Apr 2005
6225-44y-44U	Pentium 4 3.0GHz	2MB	1GB	80GB 7.2K	SATA	CD-RW	Quadro FX 1400	128MB	1394 4x5	XP Pro	Apr 2005
6225-50y-50U	Pentium 4 3.2GHz	2MB	1GB	80GB 7.2K	SATA	CD-RW	NVS 280	64MB	1394 4x5	XP Pro	Apr 2005
6225-52y-52U	Pentium 4 3.2GHz	2MB	1GB	80GB 7.2K	SATA	CD-RW	ATI FireGL V3100	128MB	1394 4x5	XP Pro	Apr 2005
6225-54y-54U	Pentium 4 3.2GHz	2MB	1GB	80GB 7.2K	SATA	CD-RW	Quadro FX 1400	128MB	1394 4x5	XP Pro	Apr 2005
6225-64y-64U	Pentium 4 3.4GHz	2MB	1GB	80GB 7.2K	SATA	CD-RW	Quadro FX 1400	128MB	1394 4x5	XP Pro	Apr 2005
6225-66y-66U	Pentium 4 3.4GHz	2MB	2GB	80GB 7.2K	SATA	CD-RW	ATI FireGL V7100	256MB	1394 4x5	XP Pro	Apr 2005
6225-67y-67U	Pentium 4 3.4GHz	2MB	2GB	73GB 10K	Ultra320	CD-RW	ATI FireGL V7100	256MB	1394 4x5	XP Pro	Apr 2005
6225-74y-74U	Pentium 4 3.6GHz	2MB	2GB	80GB 7.2K	SATA	CD-RW	Quadro FX 1400	128MB	1394 4x5	XP Pro	Apr 2005
6225-79y-79U	Pentium 4 3.6GHz	2MB	2GB	73GB 10K	Ultra320	CD-RW	Wildcat™ Realizm 800	640MB	1394 4x5	XP Pro	Apr 2005

Positioning *Powerful uni-processor workstation with Intel® Extended Memory 64 Technology and 2MB L2 Cache*
 Processor **1 Intel Pentium 4 at 3.0, 3.2GHz, 3.4 & 3.6GHz with 800MHz (FSB) & Extended Memory 64 Technology (EM64T)**
 L2 cache **2MB** standard and maximum / at processor speed
 Processor upgrade **Single Processor**, no upgrade
 Implementation Systemboard contains one Intel 604-pin micro-PGA2 ZIF socket, four DIMM slots, four slots (one PCI Express x16, PCI Express x1, 2 PCI), and integrated SATA and Gigabit Ethernet

Memory - std / max **512MB, 1GB, 2GB** std / 4GB^{13,21} max / two slots used / two slots available / **PC3200 400MHz** registered ECC DDR2-SDRAM DIMMs / four DIMM gold-connector slots on systemboard

Graphics controller (see IntelliStation Graphics sheet for full graphics specifications)
 (one of following) **• NVIDIA® Quadro NVS 280 2D 64MB PCI Express x16**
• ATI FireGL V3100 3D 128MB PCI Express x16
• NVIDIA Quadro FX 1400 3D 128MB PCI Express x16
• ATI FireGL V7100 256MB PCI Express x16
• 3Dlabs® Wildcat Realizm 640MB PCI Express x16

SATA controller SATA-150 controller (1.5GB/sec) / integrated in ICH6R / two connectors on planar /
 SCSI controller **SCSI models: PCI-X Ultra320 / single channel Ultra320 SCSI controller** (LVD 320MB/sec) / 64-bit 100MHz PCI-X / mini-PCI adapter
 SCSI channels and cables One 16-bit channel (one internal or external) / *Internal channel:* one 4-drop 16-bit 68-pin LVD SCSI cable from systemboard to internal disks bays
 Ports/Cables *All models:* Four SATA ports on planar *SCSI models:* One SCSI cable (listed above), *ALL:* one 2-drop EIDE cable (to optical)
 Disk - features *Some:* 80GB / SATA-150 / 7200 rpm / 9.0 ms seek; *Some:* 73.0GB Ultra320 SCSI / 10K rpm / 4.7 ms; *All:* S.M.A.R.T.⁵

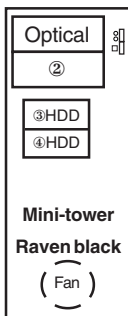
Mechanical 4 x 5 Mini-tower with no rack support
 Chipset **Intel 925X chipset** / 925X MCH (Memory Controller Hub) for PCI Express x16 (video), Broadcom, ICH6R / ICH6R for two 32-bit/33MHz PCI slots (slots 2 & 3), 1394a, SATA, 4x USB (2.0), Low Pin Count Interface / NS PC87366 Super I/O off LPC interface

Gigabit Ethernet One Gigabit 10/100/1000 Ethernet controller / Broadcom BCM5721 / full Gigabit Ethernet MAC and PHY layer functions / chip on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / Alert Standard Format 2.0 / one rear RJ-45 port
 Diskette / Optical *Diskette:* none *Optical:* 48X/32X/48X Max® CD-RW
 IEEE 1394 (FireWire) FireWire on planar / 1394a, 400Mbps, 6-pin port on rear, 4-pin port on front
 Audio AC - 97 Audio, ADI1981B via ICH6r / internal speaker (use of audio line out requires powered speakers)
 Rear ports Six USB (Ver 2.0), two 9-pin serial, parallel, keyboard, mouse, Ethernet, audio line in, audio line out, mic in / 6-pin 1394a
 Front ports Two USB (Ver 2.0), audio line out (stereo), mic in / 4-pin 1394
 Systems mgmt Monitoring and alerting of thermal, fans, and voltage faults / Winbond® W791D

Keyboard / mouse IBM 104-key keyboard (6-pin PS/2) / IBM 3-button optical mouse (6-pin PS/2 conn)
 Cooling fans Two variable speed fans (1 Front, 1 PS) / not redundant or hot-swap
 Power supply 400 watts / universal / auto sensing / built-in overload and surge protection

SECURITY

- Security slot (for attachment of optional cable lock e.g. Kensington cable lock)
- U-Bolt Anchoring Feature; U-Bolt optional
- Cover tamper detect switch
- Secure fixed DASD
- Power-on password
- Administrator password
- Boot sequence control
- Boot without keyboard or mouse
- Diskette boot inhibit and write-protect
- Disable mouse
- Diskette, disk, serial port, parallel port I/O control
- Secure access openings
- VPD stored in EEPROM
- Write protection control for EEPROM
- IBM Security Solutions



Bay ① 5.25", HH 1.6", access, optical
 Bay ② 5.25", HH 1.6", access, open
 Bay ③ 3.5", SL 1", access, open
 Bay ④ 3.5", SL 1", access, open
 Bay ⑤ 3.5", SL 1", no access, disk

Slot 1: fullsize, PCI Express x1
 Slot 2: fullsize, PCI Express x16 (video)
 Slot 3: fullsize, 32-bit 33MHz, PCI (5v)*
 Slot 4: fullsize, 32-bit 33MHz, PCI (5v)
 * - Slot not available w/ Wildcat Realizm

- ↳ Two front stabilizing feet
- ↳ Handle grip on top
- ↳ H 19.4" x W 6.9" x D 17.7"
- ↳ H 492mm x W 175mm x D 450mm
- ↳ 23 lb to 30 lb (10.5kg to 13.5kg)
- **Maximum internal disk capacity¹³:**
 SCSI: 438GB (3 disks x 146GB)
 SATA: 750GB (3 disks x 250GB)
- Removable left side panel
- BIOS Setup Utility via F1 at startup
- Adaptec Configuration Utility near startup by pressing CTRL+C
- Product Recovery Program via F11 at startup
- Adv Config Power Interface (ACPI) 1.0a
- DMI 2.2-compliant

512MB PC3200 CL3 ECC DDR2-SDRAM	73P3524
1GB PC3200 CL3 ECC DDR2-SDRAM	73P3525
2GB PC3200 CL3 ECC DDR2-SDRAM	74P3526
ServeRAID-7i SATA Controller	71P8651
IBM 80GB 7.2K SATA HDD	09N4253
IBM 160GB 7.2K SATA HDD	09N4254
IBM 250GB 7.2K SATA HDD	73P8006
IBM 73.4GB 10K rpm Ultra320 SCSI HDD	32P0724
IBM 146GB 10K rpm Ultra320 SCSI HDD	32P0725
IBM 160GB 7.2K rpm SATA-150 HDD	09N4254
IBM ThinkVision L200P 20.1in LCD Black A/D	6736-HB0
IBM Radial Arm LCD Mount	19K4464
Other options at ibm.com/pc/us/accessories	

Preload with Windows® XP Professional¹⁷
 ↳ Device Drivers and IBM Enhanced Diagnostics CD
 ↳ IBM IntelliStation Documentation CD
 • Disk-to-Disk Recovery (in service partition)
 - Windows models:
 Adobe Acrobat Reader,
 Norton Antivirus, IBM Record Now

LIMITED WARRANTY³

- ↳ **3 year parts and labor**
- ↳ **International Warranty Service³**
- ↳ **On site, 8 am through 5 pm, Mon through Fri excluding holidays, next business day response time**
- ↳ **On site warranty service upgrade options⁷ available as ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>**
- ↳ **24x7¹⁴ toll-free support for warranty issues during the warranty period¹**

IBM® Type-model	Processor	L2 cache	Memory	Disk and rpm	SCSI adapter	CD-ROM	Graphics adapter and memory	Slots x bays	Ethernet	Preload ¹⁷	Available date
6229-10U	Pentium® 4	2.0 512KB	256MB	40.0GB ² EIDE 7.2K	None	CD	Millennium G450 DVI-I 32MB	6x7	10/100	2000	Feb 2002
6229-12U	Pentium 4	2.0 512KB	256MB	40.0GB EIDE 7.2K	None	CD	NVIDIA™ Quadro4 64MB	6x7	10/100	2000	Feb 2002
6229-13U	Pentium 4	2.0 512KB	512MB	18.2GB Ultra160 10K	29160LP	CD	NVIDIA Quadro4 64MB	6x7	10/100	2000	Feb 2002
6229-15U	Pentium 4	2.0 512KB	512MB	18.2GB Ultra160 10K	29160LP	CD	ATI® Fire GL8800™.11 128MB	6x7	10/100	2000	Feb 2002
6229-16U	Pentium 4	2.0 512KB	512MB	18.2GB Ultra160 10K	29160LP	CD	Wildcat III 6110 208MB	6x7	10/100	2000	Feb 2002
6229-20U	Pentium 4	2.2 512KB	256MB	40.0GB EIDE 7.2K	None	CD	Millennium G450 DVI-I 32MB	6x7	10/100	2000	Feb 2002
6229-22U	Pentium 4	2.2 512KB	256MB	40.0GB EIDE 7.2K	None	CD	NVIDIA Quadro2 Pro 64MB	6x7	10/100	2000	Feb 2002
6229-23U	Pentium 4	2.2 512KB	512MB	18.2GB Ultra160 10K	29160LP	CD	NVIDIA Quadro4 64MB	6x7	10/100	2000	Feb 2002
6229-25U	Pentium 4	2.2 512KB	512MB	18.2GB Ultra160 10K	29160LP	CD	ATI Fire GL8800 128MB	6x7	10/100	2000	Feb 2002
6229-26U	Pentium 4	2.2 512KB	512MB	18.2GB Ultra160 10K	29160LP	CD	Wildcat III 6110 208MB	6x7	10/100	2000	Feb 2002

Processor **Intel® Pentium® 4 at 2.0 or 2.2GHz with 400MHz frontside bus**
 L2 cache **512KB** std and max / at processor speed
 Implementation Processor and L2 cache in Pin Grid Array (PGA) / motherboard contains one Intel mPGA478B socket (with Pentium 4 FC-PGA2 and heat sink), four RIMM sockets, five PCI slots, one AGP slot, integrated ethernet, and 850 chip with heat sink
 SMP support No SMP support

Memory - std / max **256 or 512MB std / 2GB max¹³ / dual RDRAM (Rambus) channels / 32 devices max each channel / 256MB models: Two 4D 128MB PC800 RIMMs; 512MB models: Two 8D 256MB PC800 RIMMs / ECC memory controller and RIMMs / four 184-pin gold-plated RIMM sockets (two per channel) / two RIMMs installed (one per channel) / CRIMMs in two sockets / supports PC600 or PC800 RIMMs (not PC700) / all installed RIMMs must be installed in pairs across channels / mixing speeds will have all RIMMs operate at slowest**
 Memory - features

Graphics controller (one of following)

- **Matrox® Millennium G450 DVI-I** (high-perf 2D) / AGP 4X adapter / MGA G450F GPU / 32MB 150MHz DDR-SDRAM / dual RAMDAC [360/232MHz] / dual head support / one DVI-I connector (ships with one cable with two DB-15 analog conns)
- **NVIDIA Quadro4 200NVs** (high-perf 2D) / AGP 4X adapter / NV17LT 250MHz GPU / 64MB 166MHz SDRAM / dual 350MHz RAMDACs / dual head: 2048x1536x16M each monitor / LFH60 connector for std cable with two DB-15 analog
- **ATI Fire GL8800™** (advanced 3D) / AGP 4X adapter / Radeon™ 8800 GPU / 128MB 300MHz DDR-SGRAM / dual RAMDAC [400/165MHz] / dual head support / one DB-15 analog and one DVI-I connt (ships with one DVI-I to DB-15 cable)
- **3DLabs Wildcat III™ 6110** (extreme 3D) / AGP 4X Pro 50 adapter / 208MB total DDR-SDRAM (64MB frame buffer, 128MB texture buffer, 16MB direct burst) / dual RAMDAC [320/300MHz] / dual head support (up to two digital or analog monitors) / two DVI-I connectors (ships with two DVI-I to analog DB-15 cables for analog monitor attachment)

IDE disk controller Enhanced IDE busmaster / ATA-100 / two connectors on planar
 SCSI disk controller **SCSI models: Adaptec® 29160LP / Ultra160 SCSI (LVD 160MB/sec) / 64-bit 33MHz PCI adapter (in a 32-bit slot)**
 SCSI connectors **SCSI models: One 68-pin internal / one 0.8mm VHDCI 68-pin external connector**
 Cables **SCSI models: One 5-drop 16-bit LVD SCSI cable, one 2-drop EIDE cable**
 EIDE models: Two EIDE cables (one 2-drop cable to CD-ROM, one 2-drop cable to EIDE disk)
 Disk - features **EIDE models: 40.0GB EIDE / ATA-100 / 7200 rpm / 9 ms read seek / S.M.A.R.T.⁵**
SCSI models: 18.2GB Ultra160 SCSI / 10K rpm / 4.9 ms read seek / S.M.A.R.T.

Rack support 4U⁴ rack mount support via tower-to-rack kit option
 Architecture / chipset **Intel 850 chipset / MCH (Memory Controller Hub) / I/O Controller Hub (ICH2) for PCI 2.2 bus, ATA-100 EIDE, ethernet MAC, USB, Low Pin Count Interface / Firmware Hub / SMC LPC47M142 Super I/O off LPC interface**

10/100Mbps ethernet Intel 82562EM / on planar / 10BaseT, 100BaseTX / full duplex / RJ-45 port / LAN Connect Interface / controller in ICH2 and 82562EM / support for Wake on LAN®, Alert on LAN™, PXE

CD-ROM / diskette 48X-20X⁶ CD-ROM, CAV (ATAPI), bootable / 3.5" 1.44MB diskette drive
 Audio Soft audio AC '97 v2.1 controller via ICH2 (AD1885) / internal speaker (use of audio line out requires powered speakers)
 Rear ports Two 9-pin serial, four USB (Vers 1.1) [two in front], parallel, keyboard, mouse, ethernet, audio line in, audio line out, mic in
 Systems mgmt Monitoring and alerting of thermal, fans, and voltage faults

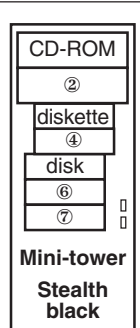
Keyboard / mouse IBM 104-key keyboard / IBM three button mouse
 Cooling fans Three variable speed fans (pwr supp, rear, processor) / not redund or hot-swap
 Power supply 340 watts / universal / auto sensing

SECURITY

- Cover key lock
- Cover tamper detect switch
- Secure fixed DASD
- Power-on password
- Administrator password
- Keyboard/mouse password
- Boot sequence control
- Boot without keyboard or mouse
- Diskette boot inhibit and write-protect
- Disable mouse
- Diskette, disk, serial port, parallel port I/O control
- Secure access openings
- VPD stored in EEPROM
- Write protection control for EEPROM
- IBM Security Solutions

LIMITED WARRANTY³

- ↔ 3 year parts and labor
- ↔ International Warranty Service³
- ↔ On site, 8 am through 5 pm, Mon through Fri excluding holidays, next business day response time
- ↔ 3 year on site warranty service upgrade options:⁷
 - 4 hour response, Mon-Fri 9-5 (ServicePac® part number 41L2735)
 - 4 hour response, 7 day x 24 hr (ServicePac part number 41L2741)
- ↔ Post warranty maint services avail
- ↔ 24x7¹⁴ toll-free support for warranty issues during the warranty period³



Bay ① 5.25", HH 1.6", access, open
 Bay ② 5.25", HH 1.6", access, open
 Bay ③ 3.5", SL 1", access, diskette
 Bay ④ 3.5", SL 1", access, open
 Bay ⑤ 3.5", SL 1", no access, disk
 Bay ⑥ 3.5", SL 1", no access, open
 Bay ⑦ 3.5", SL 1", no access, open

Slot 1: fullsize, AGP 4X (1.5v)
 - used by std AGP graphics adapter
 Slot 2: fullsize, 32-bit 33MHz, PCI 2.2 (5v)
 - N/A on models with 6110 graphics
 Slot 3: fullsize, 32-bit 33MHz, PCI 2.2 (5v)
 Slot 4: fullsize, 32-bit 33MHz, PCI 2.2 (5v)
 Slot 5: fullsize, 32-bit 33MHz, PCI 2.2 (5v)
 Slot 6: fullsize, 32-bit 33MHz, PCI 2.2 (5v)
 - used by SCSI adapter (some)

↔ Metal cage for disk bays 5,6,7 rotates out of chassis
 ↔ Two front stabilizing feet
 ↔ Handle grip on top
 ↔ H 18.5" x W 6.5" x D 20.0"
 ↔ 36 to 42 pounds (16.4 to 19.1kg)

• **Maximum internal disk capacity¹³:**
SCSI: 293GB (4 disks x 73.4GB)
EIDE: 180GB (3 disks x 60GB)
 • Removable left side panel
 • BIOS Setup Utility - F1 at startup
 • SCSISelect via CTRL+A at prompt
 • Product Recovery Pgm - F11 at startup
 • Adv Config Power Interface (ACPI) 1.0

128 MB PC 800 ECC RDRAM RIMM (4 Dev)	33L3350
256 MB PC 800 ECC RDRAM RIMM (8 Dev)	33L3352
512 MB PC 800 ECC RDRAM RIMM (16 Dev)	33L3254
IBM 36.4GB 15K rpm Ultra160 SCSI HDD	06P5766
IBM 73.4GB 10K Ultra160 SCSI HDD	06P5752
IBM 60.0GB 7.2K rpm ATA-100 EIDE HDD	09N4207
IBM IDE 40X/12X/40X Max ⁶ CD-RW (black)	22P6976
IBM CD-RW/DVD-ROM ^{6,19} Combo (black)	10K3790
IBM 4Ux20D Tower-to-Rack Kit	09N4300
IBM P97 19" (18.0" viewable) Monitor (black)	6651U3N
IBM P275 21" (19.8" viewable) Monitor (black)	6652U3N
IBM T860 18.1" Flat Panel Monitor (black)	9494HB0

Other options at ibm.com/pc/us/accessories

PRELOAD¹⁷
 Microsoft® Windows® 2000 Professional
 - Free license for Lotus® SmartSuite®
 - Free license for Lotus Notes® Client
 ↕ Device Drivers and Diagnostics CD
 ↕ Software Selections CD-ROM
 ↕ Windows 2000 Product Recovery CD
 • Disk-to-Disk Recovery (Windows 2000 in hidden service partition)

IBM® Type-model	Processor	L2 cache	FSB MHz	Memory	Disk and rpm	SCSI adapter	CD-ROM	Graphics adapter and memory	Slots x bays	Preload ¹⁷	Available date
6229-30U	Pentium® 4	2.4 512KB	533	256MB	40.0GB ² EIDE 7.2K	None	CD	Millennium G450 DVI-I 32MB	6x7	XP Pro	Jun 2002
6229-32U	Pentium 4	2.4 512KB	533	256MB	40.0GB EIDE 7.2K	None	CD	Quadro4 200NVS 64MB	6x7	XP Pro	Jun 2002
6229-33U	Pentium 4	2.4 512KB	533	512MB	18.2GB Ultra160 10K	29160LP	CD	Quadro4 200NVS 64MB	6x7	XP Pro	Jun 2002
6229-35U	Pentium 4	2.4 512KB	533	512MB	18.2GB Ultra160 10K	29160LP	CD	ATI® Fire GL8800™.11 128MB	6x7	XP Pro	Jun 2002
6229-36U	Pentium 4	2.4 512KB	533	512MB	18.2GB Ultra160 10K	29160LP	CD	Wildcat III™ 6110 208MB	6x7	XP Pro	Jun 2002
6229-37U	Pentium 4	2.4 512KB	533	512MB	18.2GB Ultra160 10K	29160LP	CD	Quadro4 900XGL 128MB	6x7	XP Pro	Jun 2002

Processor **Intel® Pentium® 4 at 2.4GHz with 533MHz frontside bus (FSB)**
 L2 cache **512KB** std and max / at processor speed
 Implementation Processor and L2 cache in Pin Grid Array (PGA) / motherboard contains one Intel mPGA478B socket (with Pentium 4 FC-PGA2 and heat sink), four RIMM sockets, five PCI slots, one AGP slot, integrated ethernet, and 850 chip with heat sink
 SMP support No SMP support

Memory - std / max **256 or 512MB std / 2GB max / dual RDRAM (Rambus) channels / 32 devices max each channel /**
 Memory - features **256MB models:** Two 4D 128MB PC800 RIMMs; **512MB models:** Two 8D 256MB PC800 RIMMs / **ECC memory controller and RIMMs /** four 184-pin gold-plated RIMM sockets (two per channel) / two RIMMs installed (one per channel) / CRIMMs in two sockets / supports PC600 or PC800 RIMMs (not PC700) / all installed RIMMs must be installed in pairs across channels / mixing speeds will have all RIMMs operate at slowest

Graphics controller (one of following)

- **Matrox® Millennium G450 DVI-I** (high-perf 2D) / AGP 4X adapter / MGA G450F GPU / 32MB 150MHz DDR-SDRAM / dual RAMDAC [360/232MHz] / dual head support / one DVI-I connector (ships with one cable with two DB-15 analog conns)
- **NVIDIA™ Quadro4 200NVS** (high-perf 2D) / AGP 4X adapter / NV17LT 250MHz GPU / 64MB 166MHz SDRAM / dual 350MHz RAMDACs / dual head: 2048x1536x16M each monitor / LFH60 connector for std cable with two DB-15 analog
- **ATI Fire GL8800™** (advanced 3D) / AGP 4X adapter / Radeon™ 8800 GPU / 128MB 300MHz DDR-SGRAM / dual RAMDAC [400/165MHz] / dual head support / one DB-15 analog and one DVI-I conntr (ships with one DVI-I to DB-15 cable)
- **3DLabs Wildcat III™ 6110** (extreme 3D) / AGP 4X Pro 50 adapter / 208MB total DDR-SDRAM (64MB frame buffer, 128MB texture buffer, 16MB direct burst) / dual RAMDAC [320/300MHz] / dual head support (up to two digital or analog monitors) / two DVI-I connectors (ships with two DVI-I to analog DB-15 cables for analog monitor attachment)
- **NVIDIA Quadro4 900XGL** (extreme 3D) / AGP 4X adapter / NV25GL 300MHz GPU / 128MB 325MHz DDR-SDRAM / dual 350MHz RAMDACs / dual head: 2048x1536x16M each monitor / two DVI-I connectors (ships with two DVI-I to DB-15 dongles)

IDE disk controller Enhanced IDE busmaster / ATA-100 / two connectors on planar
 SCSI disk controller **SCSI models:** Adaptec® 29160LP / Ultra160 SCSI (LVD 160MB/sec) / 64-bit 33MHz PCI adapter (in a 32-bit slot)
 SCSI connectors **SCSI models:** One 68-pin internal / one 0.8mm VHDCI 68-pin external connector
 Cables **SCSI models:** One 5-drop 16-bit LVD SCSI cable, one 2-drop EIDE cable
EIDE models: Two EIDE cables (one 2-drop cable to CD-ROM, one 2-drop cable to EIDE disk)
 Disk - features **EIDE models:** 40.0GB EIDE / ATA-100 / 7200 rpm / 9 ms read seek / S.M.A.R.T.⁵
SCSI models: 18.2GB Ultra160 SCSI / 10K rpm / 4.9 ms read seek / S.M.A.R.T.

Rack support 4U⁴ rack mount support via tower-to-rack kit option
 Architecture / chipset **Intel 850 chipset** / MCH (Memory Controller Hub) / I/O Controller Hub (ICH2) for PCI 2.2 bus, ATA-100 EIDE, ethernet MAC, USB, Low Pin Count Interface / Firmware Hub / SMC LPC47M142 Super I/O off LPC interface

10/100Mbps ethernet Intel 82562EM / on planar / 10BaseT, 100BaseTX / full duplex / RJ-45 port / LAN Connect Interface / controller in ICH2 and 82562EM / support for Wake on LAN®, Alert on LAN™, PXE
 CD-ROM / diskette 48X-20X⁶ CD-ROM, CAV (ATAPI), bootable / 3.5" 1.44MB diskette drive
 Audio Soft audio AC '97 v2.1 controller via ICH2 (AD1885) / internal speaker (use of audio line out requires powered speakers)
 Rear ports Two 9-pin serial, four USB (Vers 1.1) [two in front], parallel, keyboard, mouse, ethernet, audio line in, audio line out, mic in
 Systems mgmt Monitoring and alerting of thermal, fans, and voltage faults

Keyboard / mouse IBM 104-key keyboard / IBM three button mouse
 Cooling fans Three variable speed fans (pwr supp, rear, processor) / not redund or hot-swap
 Power supply 340 watts / universal / auto sensing

- SECURITY**
- Cover key lock
 - Cover tamper detect switch
 - Secure fixed DASD
 - Power-on password
 - Administrator password
 - Keyboard/mouse password
 - Boot sequence control
 - Boot without keyboard or mouse
 - Diskette boot inhibit and write-protect
 - Disable mouse
 - Diskette, disk, serial port, parallel port I/O control
 - Secure access openings
 - VPD stored in EEPROM
 - Write protection control for EEPROM
 - IBM Security Solutions

	Bay ① 5.25", HH 1.6", access, CD-ROM Bay ② 5.25", HH 1.6", access, open Bay ③ 3.5", SL 1", access, diskette Bay ④ 3.5", SL 1", access, open Bay ⑤ 3.5", SL 1", no access, disk Bay ⑥ 3.5", SL 1", no access, open Bay ⑦ 3.5", SL 1", no access, open Slot 1: fullsize, AGP 4X (1.5v) - used by std AGP graphics adapter Slot 2: fullsize, 32-bit 33MHz, PCI 2.2 (5v) - N/A on models with 6110 graphics Slot 3: fullsize, 32-bit 33MHz, PCI 2.2 (5v) Slot 4: fullsize, 32-bit 33MHz, PCI 2.2 (5v) Slot 5: fullsize, 32-bit 33MHz, PCI 2.2 (5v) Slot 6: fullsize, 32-bit 33MHz, PCI 2.2 (5v) - used by SCSI adapter (some)	⇨ Metal cage for disk bays 5,6,7 rotates out of chassis ⇨ Two front stabilizing feet ⇨ Handle grip on top ⇨ H 18.5" x W 6.5" x D 20.0" ⇨ 36 to 42 pounds (16.4 to 19.1kg) • Maximum internal disk capacity: SCSI: 293GB (4 disks x 73.4GB) EIDE: 180GB (3 disks x 60GB) • Removable left side panel • BIOS Setup Utility - F1 at startup • SCSISelect via CTRL+A at prompt • Product Recovery Program via F11 at startup • Adv Config Power Interface (ACPI) 1.0
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- LIMITED WARRANTY³**
- ⇨ **3 year parts and labor**
 - ⇨ **International Warranty Service³**
 - ⇨ **On site, 8 am through 5 pm, Mon through Fri excluding holidays, next business day response time**
 - ⇨ **3 year on site warranty service upgrade options:⁷**
 - **4 hour response, Mon-Fri 9-5** (ServicePac® part number 41L2735)
 - **4 hour response, 7 day x 24 hr** (ServicePac part number 41L2741)
 - ⇨ **Post warranty maint services avail**
 - ⇨ **24x7¹⁴ toll-free support for warranty issues during the warranty period³**

PRELOAD¹⁷

128MB PC800 4D ECC RDRAM RIMM - 40ns	31P8431
256MB PC800 8D ECC RDRAM RIMM - 40ns	31P8433
512MB PC800 16D ECC RDRAM RIMM - 40ns	31P8435
IBM 36.4GB 15K rpm Ultra160 SCSI HDD	06P5766
IBM 73.4GB 10K Ultra160 SCSI HDD	06P5752
IBM 60.0GB 7.2K rpm ATA-100 EIDE HDD	09N4207
IBM IDE 40X/12X/40X Max ⁶ CD-RW (black)	22P6976
IBM CD-RW/DVD-ROM ^{6,19} Combo (black)	10K3790
IBM 4Ux20D Tower-to-Rack Kit	09N4300
IBM P97 19" (18.0" viewable) Monitor (black)	6651U3N
IBM T860 18.1" Flat Panel Monitor (black)	9494HB0
Spaceball 3D Input Device	33L3252
IBM Radial Arm Flat Panel Mount	19K4464
Other options at ibm.com/pc/us/accessories	

Microsoft® Windows® XP Professional
 - Free license for Lotus® SmartSuite®
 - Free license for Lotus Notes® Client
 ⇨ Device Drivers and Diagnostics CD
 ⇨ Windows XP Pro Product Recovery CD
 • Disk-to-Disk Recovery (Windows XP Pro in hidden service partition)

IBM® Type-model	Processor	L2 cache	FSB MHz	Memory	Disk and rpm	SCSI adapter	CD-ROM	Graphics adapter and memory	Slots x bays	Preload ¹⁷	Available date
6229-40U	Pentium® 4	2.67 512KB	533	256MB	40.0GB ² EIDE 7.2K	None	CD	Millennium G450 DVI-I 32MB	6x7	XP Pro	Sep 2002
6229-42U	Pentium 4	2.67 512KB	533	256MB	40.0GB EIDE 7.2K	None	CD	Quadro4 200NVS 64MB	6x7	XP Pro	Sep 2002
6229-45U	Pentium 4	2.67 512KB	533	512MB	18.2GB Ultra160 10K	29160LP	CD	ATI® Fire GL8800™.11 128MB	6x7	XP Pro	Sep 2002
6229-47U	Pentium 4	2.67 512KB	533	512MB	18.2GB Ultra160 10K	29160LP	CD	Quadro4 900XGL 128MB	6x7	XP Pro	Sep 2002
6229-53U	Pentium 4	2.8 512KB	533	512MB	18.2GB Ultra160 10K	29160LP	CD	Quadro4 200NVS 64MB	6x7	XP Pro	Sep 2002
6229-56U	Pentium 4	2.8 512KB	533	512MB	18.2GB Ultra160 10K	29160LP	CD	Wildcat III™ 6110 208MB	6x7	XP Pro	Sep 2002
6229-57U	Pentium 4	2.8 512KB	533	512MB	18.2GB Ultra160 10K	29160LP	CD	Quadro4 900XGL 128MB	6x7	XP Pro	Sep 2002

Processor **Intel® Pentium® 4 at 2.67 or 2.8GHz with 533MHz frontside bus (FSB)**
 L2 cache **512KB** std and max / at processor speed
 Implementation Processor and L2 cache in Pin Grid Array (PGA) / motherboard contains one Intel mPGA478B socket (with Pentium 4 FC-PGA2 and heat sink), four RIMM sockets, five PCI slots, one AGP slot, integrated ethernet, and 850 chip with heat sink
 SMP support No SMP support

Memory - std / max **256 or 512MB std / 2GB max¹³ / dual RDRAM (Rambus) channels / 32 devices max each channel / 256MB models: Two 4D 128MB PC800 RIMMs; 512MB models: Two 8D 256MB PC800 RIMMs / ECC memory controller and RIMMs / four 184-pin gold-plated RIMM sockets (two per channel) / two RIMMs installed (one per channel) / CRIMMs in two sockets / supports PC600 or PC800 RIMMs (not PC700) / all installed RIMMs must be installed in pairs across channels / mixing speeds will have all RIMMs operate at slowest**
 Memory - features

Graphics controller (one of following)

- **Matrox® Millennium G450 DVI-I** (high-perf 2D) / AGP 4X adapter / MGA G450F GPU / 32MB 150MHz DDR-SDRAM / dual RAMDAC [360/232MHz] / dual head support / one DVI-I connector (ships with one cable with two DB-15 analog conns)
- **NVIDIA™ Quadro4 200NVS** (high-perf 2D) / AGP 4X adapter / NV17LT 250MHz GPU / 64MB 166MHz SDRAM / dual 350MHz RAMDACs / dual head: 2048x1536x16M each monitor / LFH60 connector for std cable with two DB-15 analog
- **ATI Fire GL8800™** (advanced 3D) / AGP 4X adapter / Radeon™ 8800 GPU / 128MB 300MHz DDR-SGRAM / dual RAMDAC [400/165MHz] / dual head support / one DB-15 analog and one DVI-I conntr (ships with one DVI-I to DB-15 cable)
- **3DLabs Wildcat III™ 6110** (extreme 3D) / AGP 4X Pro 50 adapter / 208MB total DDR-SDRAM (64MB frame buffer, 128MB texture buffer, 16MB direct burst) / dual RAMDAC [320/300MHz] / dual head support (up to two digital or analog monitors) / two DVI-I connectors (ships with two DVI-I to analog DB-15 cables for analog monitor attachment)
- **NVIDIA Quadro4 900XGL** (extreme 3D) / AGP 4X adapter / NV25GL 300MHz GPU / 128MB 325MHz DDR-SDRAM / dual 350MHz RAMDACs / dual head: 2048x1536x16M each monitor / two DVI-I connectors (ships with two DVI-I to DB-15 dongles)

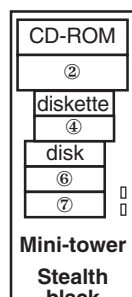
IDE disk controller Enhanced IDE busmaster / ATA-100 / two connectors on planar
 SCSI disk controller *SCSI models:* Adaptec® 29160LP / Ultra160 SCSI (LVD 160MB/sec) / 64-bit 33MHz PCI adapter (in a 32-bit slot)
 SCSI connectors *SCSI models:* One 68-pin internal / one 0.8mm VHDCI 68-pin external connector
 Cables *SCSI models:* One 5-drop 16-bit LVD SCSI cable, one 2-drop EIDE cable
 Disk - features *EIDE models:* Two EIDE cables (one 2-drop cable to CD-ROM, one 2-drop cable to EIDE disk) / *EIDE models:* 40.0GB EIDE / ATA-100 / 7200 rpm / 9 ms read seek / S.M.A.R.T.⁵ / *SCSI models:* 18.2GB Ultra160 SCSI / 10K rpm / 4.9 ms read seek / S.M.A.R.T.

Rack support 4U⁴ rack mount support via tower-to-rack kit option
 Architecture / chipset **Intel 850 chipset** / MCH (Memory Controller Hub) / I/O Controller Hub (ICH2) for PCI 2.2 bus, ATA-100 EIDE, ethernet MAC, USB, Low Pin Count Interface / Firmware Hub / SMC LPC47M142 Super I/O off LPC interface

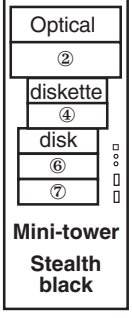
10/100Mbps ethernet Intel 82562EM / on planar / 10BaseT, 100BaseTX / full duplex / RJ-45 port / LAN Connect Interface / controller in ICH2 and 82562EM / support for Wake on LAN®, Alert on LAN™, PXE

CD-ROM / diskette 48X-20X⁶ CD-ROM, CAV (ATAPI), bootable / 3.5" 1.44MB diskette drive
 Audio Soft audio AC '97 v2.1 controller via ICH2 (AD1885) / internal speaker (use of audio line out requires powered speakers)
 Rear ports Two 9-pin serial, four USB (Vers 1.1) [two in front], parallel, keyboard, mouse, ethernet, audio line in, audio line out, mic in
 Systems mgmt Monitoring and alerting of thermal, fans, and voltage faults

Keyboard / mouse IBM 104-key keyboard / IBM three-button mouse
 Cooling fans Three variable speed fans (pwr supp, rear, processor) / not redud or hot-swap
 Power supply 340 watts / universal / auto sensing

 <p>Bay ① 5.25", HH 1.6", access, CD-ROM Bay ② 5.25", HH 1.6", access, open Bay ③ 3.5", SL 1", access, diskette Bay ④ 3.5", SL 1", access, open Bay ⑤ 3.5", SL 1", no access, disk Bay ⑥ 3.5", SL 1", no access, open Bay ⑦ 3.5", SL 1", no access, open</p> <p>Slot 1: fullsize, AGP 4X (1.5v) - used by std AGP graphics adapter Slot 2: fullsize, 32-bit 33MHz, PCI 2.2 (5v) - N/A on models with 6110 graphics Slot 3: fullsize, 32-bit 33MHz, PCI 2.2 (5v) Slot 4: fullsize, 32-bit 33MHz, PCI 2.2 (5v) Slot 5: fullsize, 32-bit 33MHz, PCI 2.2 (5v) Slot 6: fullsize, 32-bit 33MHz, PCI 2.2 (5v) - used by SCSI adapter (some)</p>	<p>➤ Metal cage for disk bays 5,6,7 rotates out of chassis ➤ Two front stabilizing feet ➤ Handle grip on top ➤ H 18.5" x W 6.5" x D 20.0" ➤ 36 to 42 pounds (16.4 to 19.1kg)</p> <p>• Maximum internal disk capacity¹³: <i>SCSI:</i> 293GB (4 disks x 73.4GB) <i>EIDE:</i> 180GB (3 disks x 60GB) • Removable left side panel • BIOS Setup Utility - F1 at startup • SCSISelect via CTRL+A at prompt • Product Recovery Program via F11 at startup • Adv Config Power Interface (ACPI) 1.0</p>	<p style="text-align: center;">SECURITY</p> <ul style="list-style-type: none"> • Cover key lock • Cover tamper detect switch • Secure fixed DASD • Power-on password • Administrator password • Keyboard/mouse password • Boot sequence control • Boot without keyboard or mouse • Diskette boot inhibit and write-protect • Diskable mouse • Diskette, disk, serial port, parallel port I/O control • Secure access openings • VPD stored in EEPROM • Write protection control for EEPROM • IBM Security Solutions <p style="text-align: center;">LIMITED WARRANTY³</p> <ul style="list-style-type: none"> ➤ 3 year parts and labor ➤ International Warranty Service³ ➤ On site, 8 am through 5 pm, Mon through Fri excluding holidays, next business day response time ➤ On site service upgrade options (in eligible locations):⁷ <ul style="list-style-type: none"> • 3 year IOR 9x5, 4 hour response (ServicePac® part number 41L2735) • Other ServicePac options at ibm.com/services/its/us/source/wamomxeu.pdf ➤ 24x7¹⁴ toll-free support for warranty issues during the warranty period³
<p>128MB PC800 4D ECC RDRAM RIMM - 40ns 31P8431 256MB PC800 8D ECC RDRAM RIMM - 40ns 31P8433 512MB PC800 16D ECC RDRAM RIMM - 40ns 31P8435 IBM 36.4GB 15K rpm Ultra160 SCSI HDD 06P5766 IBM 73.4GB 10K Ultra160 SCSI HDD 06P5752 IBM 60.0GB 7.2K rpm ATA-100 EIDE HDD 09N4207 IBM IDE 40X/12X/40X Max⁶ CD-RW (black) 22P6976 IBM CD-RW/DVD-ROM^{6,19} Combo (black) 10K3790 IBM 4Ux20D Tower-to-Rack Kit 09N4300 IBM P97 19" (18.0" viewable) Monitor (black) 6651U3N IBM T860 18.1" Flat Panel Monitor (black) 9494HB0 IBM Radial Arm Flat Panel Mount 19K4464 Other options at ibm.com/pc/us/accessories</p>	<p style="text-align: center;">PRELOAD¹⁷</p> <p>Microsoft® Windows® XP Professional - Free license for Lotus® SmartSuite® - Free license for Lotus Notes® Client ➤ Device Drivers and Diagnostics CD ➤ Windows XP Pro Product Recovery CD • Disk-to-Disk Recovery (Windows XP Pro in hidden service partition)</p>	

IBM® Type-model	Processor	GHz ¹	FSB MHz	Memory	Disk and rpm	Disk controllers	Optical	Graphics adapter and memory	Slots x bays	FireWire	Preload ¹⁷	Available date
6230-20U	Pentium®4	2.8	800	256MB	40.0GB ² EIDE	7.2KEIDE	CD	Quadro4™ 280NVS 64MB	6x7	XP Pro	Aug 2003	
6230-27U	Pentium 4	2.8	800	512MB	40.0GB EIDE	7.2KEIDE	CD-RW	Quadro4 980XGL 128MB	6x7	1394	XP Pro Aug 2003	
6230-38U	Pentium 4	3.0	800	512MB	36.4GB U320 10K	Ultra320, EIDE	CD-RW	Quadro4 980XGL 128MB	6x7	1394	XP Pro Aug 2003	
6230-39U	Pentium 4	3.0	800	1GB	36.4GB U320 10K	Ultra320, EIDE	CD-RW	Quadro FX 3000 256MB	6x7	1394	XP Pro Aug 2003	
6230-41U	Pentium 4	3.2	800	512GB	80.0GB SATA	7.2KEIDE	CD	Quadro4 280NVS 64MB	6x7	1394	XP Pro Aug 2003	
6230-49U	Pentium 4	3.2	800	1GB	36.4GB U320 10K	Ultra320, EIDE	CD-RW	Quadro FX 3000 256MB	6x7	1394	XP Pro Aug 2003	
6230-2PU	Pentium 4	2.8	800	256MB	None	EIDE	None	Quadro4 280NVS 64MB	6x7		DOS2K Aug 2003	
6230-3PU	Pentium 4	3.0	800	256MB	None	EIDE	None	Quadro4 280NVS 64MB	6x7		DOS2K Aug 2003	
6230-4PU	Pentium 4	3.2	800	256MB	None	EIDE	None	Quadro4 280NVS 64MB	6x7		DOS2K Aug 2003	

Processor	Intel® Pentium 4 at 2.8, 3.0 or 3.2GHz with 800MHz frontside bus (FSB) / all support Hyper-Threading technology											
Proc. Upg/L2 cache Implementation	No SMP Support / 512KB std and max / at processor speed Motherboard contains one mPGA478B socket (processor/L2 cache in FC-PGA2), four DIMM sockets, one 8X AGP slot, ethernet controller, five total PCI slots (two PCI slots on extender board, some have SCSI controller)											
Memory - std / max	256MB to 1GB std / 4GB ¹³ max / one or two slots used / two or three slots available / PC2700 333MHz unbuffered 184-pin ECC											
Memory - features	CL2.5 DDR-SDRAM UDIMMs / four DIMM gold-conductor slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / Error Checking and Correcting (ECC) DIMMs and memory controller											
Graphics controller (one of following)	<ul style="list-style-type: none"> • NVIDIA Quadro4™ 280NVS (advanced 2D) / (see IntelliStation Graphics sheet for specs) • NVIDIA Quadro4 580XGL (entry 3D) • NVIDIA Quadro4 980XGL (advanced 3D) • NVIDIA Quadro FX 1000 (advanced 3D) • NVIDIA Quadro FX 3000 (extreme 3D) 											
IDE disk controller	Four Ultra ATA ports / ATA-100 / integrated in I/O Controller Hub 5 / four 40-pin connectors on planar											
SCSI disk controller	Two Serial ATA ports / ATA-150 / integrated in I/O Controller Hub 5 / two 7-pin connectors on planar SCSI models: Adaptec® AIC-7901 / single channel Ultra320 SCSI controller (LVD 320MB/sec) / on extender board / 32-bit 33MHz PCI 2.2 / one 68-pin internal connector on extender board / no external SCSI connector / one 16-bit channel (internal only)											
Cables	EIDE models: Two EIDE cables (one 2-drop cable to CD-ROM, one 2-drop 40-pin EIDE cable or 7-pin SATA cable) SCSI models: One 4-drop 16-bit 68-pin LVD SCSI cable from extender to int disks bays, one 2-drop EIDE cable (to optical)											
Disk - features	Some: EIDE ATA-100 or SATA ATA-150 / 7200 rpm / 9.0 ms seek; Some: Ultra320 SCSI / 10K rpm / 4.7 ms; All: S.M.A.R.T. ⁵											
Rack support	4U ¹⁷ rack mount support via tower-to-rack kit option											
Chipset	Intel 875P chipset / 82875P MCH (Memory Controller Hub) for AGP 8X slot and ICH5 / I/O Controller Hub (ICH5) for PCI 2.2 bus (six slots and one Mini-PCI slot), SCSI (some models), ethernet, ATA-100 EIDE, USB, Low Pin Count Interface / SMC 47M102 Super I/O off LPC											
Gigabit ethernet	One gigabit 10/100/1000 ethernet controller / Intel Kenai II CSA / full gigabit ethernet MAC and PHY layer functions / chip on planar / PCI 2.2 32-bit 33MHz / full duplex / Wake on LAN®											
Diskette drive	3.5" 1.44MB diskette drive											
Optical drive	One of following: 48X/24X/48X Max ^{6,19} CD-RW, or 48X/20X Max ⁶ CD-ROM											
IEEE 1394 (FireWire)	Some: FireWire controller on planar / 1394A, 400Mbps, 6-pin port on rear, 4-pin port on front											
Audio	Soft audio AC '97 v2.2 interface via ICH5 / internal speaker (use of audio line out requires powered speakers)											
Rear ports	Four USB (Ver 2.0), two 9-pin serial, parallel, keyboard, mouse, ethernet, audio line in, audio line out, mic in / some: 6-pin 1394											
Front ports	Two USB (Ver 2.0), audio line out (stereo), mic in / some: 4-pin 1394 FireWire											
Systems mgmt	Monitoring and alerting of thermal, fans, and voltage faults / Winbond® W83791D											
Keyboard / mouse	IBM 104-key keyboard (6-pin PS/2) / IBM three button mouse (6-pin PS/2 conn)											
Cooling fans	Three variable speed fans (pwr supply, rear, processor) / not redundant or hot-swap											
Power supply	340 watts / universal / auto sensing / built-in overload and surge protection											
	Bay ① 5.25", HH 1.6", access, optical Bay ② 5.25", HH 1.6", access, open Bay ③ 3.5", SL 1", access, diskette Bay ④ 3.5", SL 1", access, open Bay ⑤ 3.5", SL 1", no access, disk Bay ⑥ 3.5", SL 1", no access, open Bay ⑦ 3.5", SL 1", no access, open - N/A on models with FX 1000/3000											
	Slot 1: fullsize, 32-bit 33MHz, PCI 2.2 (5v) Slot 2: fullsize, 32-bit 33MHz, PCI 2.2 (5v) Slot 3: fullsize, 32-bit 33MHz, PCI 2.2 (5v) Slot 4: fullsize, 32-bit 33MHz, PCI 2.2 (5v) Slot 5: fullsize, 32-bit 33MHz, PCI 2.2 (5v) Slot 6: fullsize, AGP 8X (1.5v) - used by std AGP graphics adapter Slot : Mini PCI type III - FireWire (some)											
<ul style="list-style-type: none"> ➤ Metal cage for disk bays 5, 6, and 7 rotates out of chassis ➤ Two front stabilizing feet ➤ Handle grip on top ➤ H 17.375" x W 6.5" x D 19.0" ➤ H 441mm x W 165mm x D 483mm ➤ 36 lb to 42 lb (16.3kg to 19.1kg) • Maximum internal disk capacity¹³: SCSI: 587.2GB (4 disks x 146.8GB) EIDE: 360GB (3 disks x 120GB) SATA: 320GB (2 disks x 160GB) • Removable left side panel • Configuration/Setup Utility: F1 at startup • Product Recovery Program: F11 at startup • SCSI Select Utility: CTRL+A at startup • Network Boot: F12 at startup • Adv Config Power Interface (ACPI) 1.0a • DMI 2.2-compliant 												
256MB PC2700 CL2.5 ECC DDR-SDRAM 06P4053 512MB PC2700 CL2.5 ECC DDR-SDRAM 06P4054 1GB PC2700 CL2.5 ECC DDR-SDRAM 06P4055 IBM 36.4GB 10K rpm Ultra320 SCSI HDD 32P0723 IBM 73.4GB 10K rpm Ultra320 SCSI HDD 32P0724 IBM 80GB 7.2K-rpm EIDE ATA-100 HDD 09N4226 IBM 120GB 7.2K-rpm EIDE ATA-100 HDD 09N4231 IBM 80GB S-ATA 7.2K-RPM HDD 09N4253 IBM 160GB S-ATA 7.2K-RPM HDD 09N4254 IBM 4Ux20D Tower-to-Rack Conversion Kit 09N4300 IBM ThinkVision L200P 20.1inLCD Black A/D 6736-HB0 Other options at ibm.com/pc/us/accessories												
<p style="text-align: center;">SECURITY</p> <ul style="list-style-type: none"> • U-bolt anchoring feature (U-bolt is optional; supports optional padlock) • Security slot (for attachment of optional cable lock such as Kensington cable lock) • Side cover key lock • Cover tamper detect switch • Secure fixed DASD • Power-on password • Administrator password • Keyboard/mouse password • Boot sequence control • Boot without keyboard or mouse • Diskette boot inhibit and write-protect • Disable mouse • Diskette, disk, serial port, parallel port I/O control • Secure access openings • VPD stored in EEPROM • Write protection control for EEPROM • IBM Security Solutions 												
<p style="text-align: center;">LIMITED WARRANTY³</p> <ul style="list-style-type: none"> ➤ 3 year parts and labor ➤ International Warranty Service³ ➤ On site, 8 am through 5 pm, Mon through Fri excluding holidays, next business day response time ➤ On site warranty service upgrade options⁷ available as ServicePac options at http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf ➤ 24x7¹⁴ toll-free support for warranty issues during the warranty period³ 												
<p>Preload with Windows XP Professional¹⁷</p> <ul style="list-style-type: none"> • Microsoft® Windows® XP Professional - Free license for Lotus® SmartSuite® • Free license for Lotus Notes® Client • Device Drivers CD • IBM IntelliStation Documentation CD • Disk-to-Disk Recovery (in service partition) 												

IBM® Type-model	Processor	GHz ¹	FSB MHz	Memory	Disk and rpm	Disk controllers	Optical	Graphics adapter and memory	Slots x bays	FireWire	Preload ¹⁷	Available date
6230-51U	Pentium 4	3.4	800	512MB	80.0GB SATA 7.2K	SATA,EIDE	CD-RW	Quadro4 280NVS 64MB	6x7	1394	XP Pro	Apr 2004
6230-52U	Pentium 4	3.4	800	512MB	80.0GB SATA 7.2K	SATA,EIDE	CD-RW	Quadro FX 500 128MB	6x7		XP Pro	Apr 2004
6230-55U	Pentium 4	3.4	800	1GB	36.4GB U320 10K	Ultra320, EIDE	CD-RW	Quadro FX 1100 128MB	6x7	1394	DOS2K	Apr 2004
6230-56U	Pentium 4	3.4	800	1GB	36.4GB U320 10K	Ultra320, EIDE	CD-RW	Quadro FX 1100 128MB	6x7	1394	XP Pro	Apr 2004
6230-58U	Pentium 4	3.4	800	512MB	36.4GB U320 10K	Ultra320, EIDE	CD-RW	Quadro4 980XGL 128MB	6x7	1394	XP Pro	Apr 2004
6230-59U	Pentium 4	3.4	800	1GB	36.4GB U320 10K	Ultra320, EIDE	CD-RW	Quadro FX 3000 256MB	6x7	1394	XP Pro	Apr 2004
6230-61U	Pentium 4	3.2	800	512MB	80.0GB SATA 7.2K	SATA,EIDE	CD-RW	Quadro4 280NVS 64MB	6x7		XP Pro	May 2004
6230-65U	Pentium 4	3.2	800	1GB	160GB SATA 7.2K	SATA,EIDE	CD-RW	Quadro FX 1100 128MB	6x7		XP Pro	May 2004
6230-72U	Pentium 4	3.4	800	512MB	80.0GB SATA 7.2K	SATA,EIDE	CD-RW	Quadro FX 500 128MB	6x7		XP Pro	May 2004
6230-75U	Pentium 4	3.4	800	1GB	36.4GB U320 10K	Ultra320, EIDE	CD-RW	Quadro FX 1100 128MB	6x7	1394	RHEL3	May 2004
6230-78U	Pentium 4	3.4	800	1GB	36.4GB U320 10K	Ultra320, EIDE	CD-RW	Quadro4 980XGL 128MB	6x7	1394	XP Pro	May 2004

Processor **Intel® Pentium 4 at 3.4GHz with 800MHz frontside bus (FSB)** / supports Hyper-Threading technology
 Proc. Upg/L2 cache **No SMP Support / 512KB (5xU) or 1MB (6xU, 7xU)** std and max / at processor speed
 Implementation Motherboard contains one mPGA478B socket (processor/L2 cache in FC-PGA2), four DIMM sockets, one 8X AGP slot, ethernet controller, five total PCI slots (two PCI slots on extender board, some have SCSI controller)

Memory - std / max **512MB to 1GB** std / 4GB¹³ max / one or two slots used / two or three slots available / **PC3200** 400MHz unbuffered 184-pin ECC CL3
 Memory - features DDR-SDRAM UDIMMs / four DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / **Error Checking and Correcting (ECC)** DIMMs and memory controller

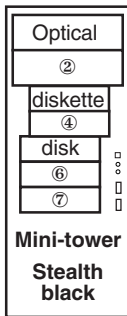
Graphics controller **• NVIDIA Quadro4™ 280NVS (advanced 2D) / (see IntelliStation Graphics sheet for specs)**
 (one of following) **• NVIDIA Quadro4 980XGL (advanced 3D)**
• NVIDIA Quadro FX 500 (entry 3D)
• NVIDIA Quadro FX 1100 (advanced 3D)
• NVIDIA Quadro FX 3000 (extreme 3D)

IDE disk controller Four Ultra ATA ports / ATA-100 / integrated in I/O Controller Hub 5 / four 40-pin connectors on planar
 Two Serial ATA ports / ATA-150 / integrated in I/O Controller Hub 5 / two 7-pin connectors on planar
 SCSI disk controller **SCSI models: Adaptec® AIC-7901 / single channel Ultra320 SCSI controller (LVD 320MB/sec) / on extender board / 32-bit 33MHz PCI 2.2 / one 68-pin internal connector on extender board / no external SCSI connector / one 16-bit channel (internal only)**
 Cables **EIDE models:** Two EIDE cables (one 2-drop cable to CD-ROM, one 2-drop 40-pin EIDE cable or 7-pin SATA cable)
SCSI models: One 4-drop 16-bit 68-pin LVD SCSI cable from extender to int disks bays, one 2-drop EIDE cable (to optical)
 Disk - features **Some:** EIDE ATA-100 or SATA ATA-150 / 7200 rpm / 9.0 ms seek; **Some:** Ultra320 SCSI / 10K rpm / 4.7 ms; **All:** S.M.A.R.T.⁵

Rack support **4U¹⁷ rack mount support via tower-to-rack kit option**
 Chipset **Intel 875P chipset / 82875P MCH (Memory Controller Hub) for AGP 8X slot and ICH5 / I/O Controller Hub (ICH5) for PCI 2.2 bus (six slots and one Mini-PCI slot), SCSI (some models), ethernet, ATA-100 EIDE, USB, Low Pin Count Interface / SMC 47M102 Super I/O off LPC**

Gigabit ethernet One gigabit 10/100/1000 ethernet controller / Intel Kenai II CSA / full gigabit ethernet MAC and PHY layer functions / chip on planar / PCI 2.2 32-bit 33MHz / full duplex / Wake on LAN®
 Diskette drive 3.5" 1.44MB diskette drive
 Optical drive **One of following: 48X/24X/48X Max^{6,19} CD-RW, or 48X/20X Max⁶ CD-ROM**
 IEEE 1394 (FireWire) **Some:** FireWire controller on planar / 1394A, 400Mbps, 6-pin port on rear, 4-pin port on front. CTO availability for 1394 on all models.
 Audio Soft audio AC '97 v2.2 interface via ICH5 / internal speaker (use of audio line out requires powered speakers)
 Rear ports Four USB (Ver 2.0), two 9-pin serial, parallel, keyboard, mouse, ethernet, audio line in, audio line out, mic in / **some:** 6-pin 1394
 Front ports Two USB (Ver 2.0), audio line out (stereo), mic in / **some:** 4-pin 1394 FireWire
 Systems mgmt Monitoring and alerting of thermal, fans, and voltage faults / Winbond® W83791D

Keyboard / mouse IBM 104-key keyboard (6-pin PS/2) / IBM three button mouse (6-pin PS/2 conn)
 Cooling fans Three variable speed fans (pwr supply, rear, processor) / not redundant or hot-swap
 Power supply 340 watts / universal / auto sensing / built-in overload and surge protection



Bay ① 5.25", HH 1.6", access, optical
 Bay ② 5.25", HH 1.6", access, open
 Bay ③ 3.5", SL 1", access, diskette
 Bay ④ 3.5", SL 1", access, open
 Bay ⑤ 3.5", SL 1", no access, disk
 Bay ⑥ 3.5", SL 1", no access, open
 Bay ⑦ 3.5", SL 1", no access, open
 - N/A on models with FX 1100/3000

Slot 1: fullsize, 32-bit 33MHz, PCI 2.2 (5v)
 Slot 2: fullsize, 32-bit 33MHz, PCI 2.2 (5v)
 Slot 3: fullsize, 32-bit 33MHz, PCI 2.2 (5v)
 Slot 4: fullsize, 32-bit 33MHz, PCI 2.2 (5v)
 Slot 5: fullsize, 32-bit 33MHz, PCI 2.2 (5v)
 Slot 6: fullsize, AGP 8X (1.5v)
 - used by std AGP graphics adapter
 Slot : Mini PCI type III - FireWire (some)

➤ Metal cage for disk bays 5, 6, and 7 rotates out of chassis
 ➤ Two front stabilizing feet
 ➤ Handle grip on top
 ➤ H 17.375" x W 6.5" x D 19.0"
 ➤ H 441mm x W 165mm x D 483mm
 ➤ 36 lb to 42 lb (16.3kg to 19.1kg)

• **Maximum internal disk capacity¹³:**
SCSI: 587.2GB (4 disks x 146.8GB)
EIDE: 360GB (3 disks x 120GB)
SATA: 320GB (2 disks x 160GB)
 • Removable left side panel
 • Configuration/Setup Utility: F1 at startup
 • Product Recovery Program: F11 at startup
 • SCSISelect Utility: CTRL+A at startup
 • Network Boot: F12 at startup
 • Adv Config Power Interface (ACPI) 1.0a
 • DMI 2.2-compliant

Preloads

Microsoft® Windows® XP Professional¹⁷
 - Free license for Lotus® SmartSuite®
 - Free license for Lotus Notes® Client
 ➤ Device Drivers CD
 ➤ IBM IntelliStation Documentation CD
 • Disk-to-Disk Recovery (in service partition)
 Red Hat Enterprise Linux 3 WS
 ➤ Device Drivers CD

SECURITY

- U-bolt anchoring feature (U-bolt is optional; supports optional padlock)
- Security slot (for attachment of optional cable lock such as Kensington cable lock)
- Side cover key lock
- Cover tamper detect switch
- Secure fixed DASD
- Power-on password
- Administrator password
- Keyboard/mouse password
- Boot sequence control
- Boot without keyboard or mouse
- Diskette boot inhibit and write-protect
- Disable mouse
- Diskette, disk, serial port, parallel port I/O control
- Secure access openings
- VPD stored in EEPROM
- Write protection control for EEPROM
- IBM Security Solutions

LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am through 5 pm, Mon through Fri excluding holidays, next business day response time
- On site warranty service upgrade options⁷ available as ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

256MB PC3200 CL3 ECC DDR-SDRAM	06P4049
512MB PC3200 CL3 ECC DDR-SDRAM	06P4050
1GB PC3200 CL3 ECC DDR-SDRAM	06P4051
IBM 36.4GB 10K rpm Ultra320 SCSI HDD	32P0723
IBM 73.4GB 10K rpm Ultra320 SCSI HDD	32P0724
IBM 80GB 7.2K-rpm EIDE ATA-100 HDD	09N4226
IBM 120GB 7.2K-rpm EIDE ATA-100 HDD	09N4231
IBM 80GB S-ATA 7.2K-RPM HDD	09N4253
IBM 160GB S-ATA 7.2K-RPM HDD	09N4254
IBM 4Ux20D Tower-to-Rack Conversion Kit	09N4300
IBM ThinkVision L200P 20.1inLCD Black A/D	6736-HB0
IBM T221 22.2inLCD Black Digital	9503-DG5
Other options at ibm.com/pc/us/accessories	

See footnotes for important warranty information
 US models announced March 16, 2004 (5xU) and May 18, 2004 (6xU, 7xU)

IBM IntelliStation® M Pro (6849) - withdrawn

IBM® Type-model	Processor	GHz ¹	Memory	Disk and rpm	SCSI adapter	CD-ROM	Graphics adapter and memory	Slots x bays Ethernet	Preload ¹⁷	Available date
6849-10U	Pentium® 4	1.4	256MB	20.4GB ² EIDE 7.2K	None	48X-20X ⁶	Millennium G450 16MB	6x7 10/100	2000 or NT	Nov 2000
6849-11U	Pentium 4	1.4	512MB	18.2GB Ultra160 10K	29160LP	48X-20X	Millennium G450 16MB	6x7 10/100	2000 or NT	Nov 2000
6849-12U	Pentium 4	1.4	512MB	18.2GB Ultra160 10K	29160LP	48X-20X	NVIDIA™ Quadro2 MXR 32M	6x7 10/100	2000 or NT	Nov 2000
6849-13U	Pentium 4	1.4	512MB	18.2GB Ultra160 10K	29160LP	48X-20X	IBM Fire GL2 64MB	6x7 10/100	2000 or NT	Nov 2000
6849-20U	Pentium 4	1.5	256MB	20.4GB EIDE 7.2K	None	48X-20X	Millennium G450 16MB	6x7 10/100	2000 or NT	Nov 2000
6849-21U	Pentium 4	1.5	512MB	18.2GB Ultra160 10K	29160LP	48X-20X	Millennium G450 16MB	6x7 10/100	2000 or NT	Nov 2000
6849-22U	Pentium 4	1.5	512MB	18.2GB Ultra160 10K	29160LP	48X-20X	NVIDIA Quadro2 MXR 32MB	6x7 10/100	2000 or NT	Nov 2000
6849-23U	Pentium 4	1.5	512MB	18.2GB Ultra160 10K	29160LP	48X-20X	IBM Fire GL2 64MB	6x7 10/100	2000 or NT	Nov 2000
6849-1PU	Pentium 4	1.4	256MB	None	None	48X-20X	Millennium G450 16MB	6x7 10/100	2000 or NT	Nov 2000
6849-2PU	Pentium 4	1.5	256MB	None	None	48X-20X	Millennium G450 16MB	6x7 10/100	2000 or NT	Nov 2000

Intel® processor **Pentium® 4 at 1.4 or 1.5GHz¹ with 400MHz Front Side Bus**
 L2 cache **256KB** std and max / at processor speed
 Implementation Processor and L2 cache in Pin Grid Array (PGA) / motherboard contains one Intel PGA423 socket (with Pentium 4 and heat sink), four RIMM sockets, five PCI slots, one AGP slot, integrated ethernet, and 850 chip w/ heat sink
 SMP support No SMP support

Memory - std / max **256 or 512MB std / 2GB max¹³ / dual RDRAM (Rambus) channels / 32 devices max each channel /**
 Memory - features **256MB models:** Two 8D 128MB PC600 RIMMs; **512MB models:** Two 16D 256MB PC600 RIMMs
ECC memory controller and RIMMs / four 184-pin gold-plated RIMM sockets (two per channel) /
 two RIMMs installed (one per channel) / CRIMMs in two sockets / supports PC600 or PC800 RIMMs (not PC700) /
 all installed RIMMs must be installed in pairs across channels / mixing speeds will have all RIMMs operate at slowest

Graphics controller (one of following)

- **Matrox® Millennium G450** (high-performance 2D) / AGP 4X adapter / MGA G450C GPU / 16MB 150MHz SDRAM / dual RAMDAC [360/232MHz] / dual head: 2048x1536x16M at 70Hz and 1600x1200x16M at 85Hz / two DB-15 connectors
- **NVIDIA Quadro2 MXR** (advanced 3D) / AGP 4X adapter / NV11GL GPU / 32MB std and max 183MHz SDRAM / DB-15 and DVI-I connectors (dual monitor capable)
- **IBM Fire GL2** (extreme 3D) / AGP 4X adapter / 64MB std and max 120MHz DDR-SGRAM / DB-15 and DVI-D connectors (single head; same image if both used)

IDE disk controller Enhanced IDE busmaster / ATA-100 / two connectors on planar
 SCSI disk controller **SCSI models:** Adaptec® 29160LP / Ultra160 SCSI (LVD 160MB/sec) / 64-bit 33MHz PCI adapter (in a 32-bit slot) / one channel 15 dev
 SCSI connectors **SCSI models:** One 68-pin internal / one 0.8mm VHDCI 68-pin external connector
 Cables **SCSI models:** One 5-drop 16-bit LVD SCSI cable, one 2-drop EIDE cable
EIDE models: Two EIDE cables (one 2-drop cable to CD-ROM, one 2-drop cable to EIDE disk)
 Disk - features **EIDE models:** 20.4GB EIDE / ATA-100 / 7200 rpm / 9 ms read seek / S.M.A.R.T.⁵
SCSI models: 18.2GB Ultra160 SCSI / 10K rpm / 5.5 ms read seek / S.M.A.R.T.

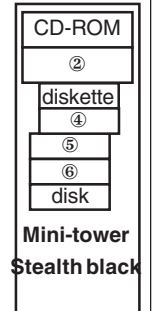
- SECURITY**
- Cover key lock
 - Cover tamper detect switch
 - Secure fixed DASD
 - Power-on password
 - Administrator password
 - Keyboard/mouse password
 - Boot sequence control
 - Boot without keyboard or mouse
 - Diskette boot inhibit and write-protect
 - Disable mouse
 - Diskette, disk, serial port, parallel port I/O control
 - Secure access openings
 - VPD stored in EEPROM
 - Write protection control for EEPROM
 - Barcode labels on most components
 - IBM Security Solutions

Rack support 4U⁴ rack mount support via tower-to-rack kit option
 Chipset **Intel 850 chip set /** MCH (Memory Controller Hub) / I/O Controller Hub (ICH2) for PCI 2.2 bus, ATA-100 EIDE, ethernet MAC, USB, Low Pin Count Interface / Firmware Hub / SMC LPC47M102 Super I/O off LPC interface

100/10Mbps ethernet Intel 82562EM / on planar / 10BaseT, 100BaseTX / full duplex / RJ-45 port / LAN Connect Interface / controller in ICH2 and 82562EM / support for Wake on LAN®, Alert on LAN™, Preboot eXecution Envir (PXE)
 CD-ROM / diskette 48X-20X⁶ CD-ROM / CAV (ATAPI) / bootable / 3.5" 1.44MB diskette drive
 Audio Soft audio AC '97 v2.1 controller via ICH2 (powered speakers required)
 External ports **Serial:** Two 9 pin; **Parallel:** One (EPP, ECP) / IEEE 1284; **USB:** Two (Ver 1.1);
 kybd, mouse, audio line in, audio line out, microphone in
 Systems mgmt Monitoring and alerting of thermal, fans, and voltage faults

Keyboard / mouse IBM 104-key keyboard / IBM three button mouse
 Cooling fans Three variable speed fans (power supply, rear, processor) / not redundant or hot-swap
 Power supply 340 watts / universal / auto sensing

- Bay ① 5.25", HH1.6", access, CD-ROM
- Bay ② 5.25", HH1.6", access, open
- Bay ③ 3.5", SL 1", access, diskette
- Bay ④ 3.5", SL 1", access, open
- Bay ⑤ 3.5", SL 1", no access, open
- Bay ⑥ 3.5", SL 1", no access, open
- Bay ⑦ 3.5", SL 1", no access, disk



Preload with Windows 2000 Professional¹⁷
 Microsoft® Windows® 2000 Professional
 - Free license for Lotus® SmartSuite® Millennium
 - Free license for Lotus Notes® Client
 ♦ Device Drivers and Diagnostics CD-ROM
 ♦ Software Selections CD-ROM
 ♦ Windows 2000 Product Recovery CD-ROM
 ♦ Windows NT 4.0 (SP6) Product Recovery CD
 ♦ Disk-to-Disk Recovery (Windows 2000 or NT 4.0 SP6 in hidden service partition)

Slot 1: fullsize, AGP 4X Pro50 (1.5v) - used by std AGP graphics adapter
 Slot 2: fullsize, 32-bit 33MHz, PCI 2.2 (5v)
 Slot 3: fullsize, 32-bit 33MHz, PCI 2.2 (5v)
 Slot 4: fullsize, 32-bit 33MHz, PCI 2.2 (5v)
 Slot 5: fullsize, 32-bit 33MHz, PCI 2.2 (5v)
 Slot 6: fullsize, 32-bit 33MHz, PCI 2.2 (5v) - used by SCSI adapter (some)

♦ Metal cage for disk bays 5,6,7 rotates out of chassis
 ♦ Two front stabilizing feet
 ♦ Handle grip on top
 ♦ H 18.5" x W 6.5" x D 20.0"
 ♦ H 470mm x W 165mm x D 508mm
 ♦ 36 to 42 pounds (16.4 to 19.1kg)

Options

64MB PC600 ECC RDRAM RIMM (4 Dev)	33L3093
128MB PC600 ECC RDRAM RIMM (8 Dev)	33L3095
256MB PC600 ECC RDRAM RIMM (16 Dev)	33L3097
64MB PC800 ECC RDRAM RIMM (4 Dev)	20L0274
128MB PC800 ECC RDRAM RIMM (8 Dev)	20L0275
256MB PC800 ECC RDRAM RIMM (16 Dev)	20L0277
IBM 4Ux20D Tower-to-Rack Kit	09N4300
IBM 30GB ATA-100 EIDE HDD	00N8203
IBM 18.2GB 7200rpm Ultra160 SCSI HDD	00N8205
IBM 36.4GB 7200rpm Ultra160 SCSI HDD	00N8206
IBM 36.4GB 10K Ultra160 SCSI HDD	00N8209
IBM 18.2GB 15K Ultra160 SCSI HDD	19K0658
IBM 9.4GB DVD-RAM (black)	10K3561
IBM IDE 8X/4X/32X ⁶ CD-Rewritable (black)	33L5020
IBM 250MB Zip Drive (black)	00N8078
IBM P96 Color Monitor (black)	655163N

• Maximum internal SCSI disk capacity¹³: 182GB (5 disks x 36.4GB)
 • Removable left side panel
 • BIOS Setup Utility via F2 at startup
 • SCSISelect via CTRL+A at startup
 • Product Recovery Pgm via F11 at startup
 • Adv Config Power Interface (ACPI) 1.0
 • LANClientControl Manager™ enabled
 • DMI 2.0-compliant

LIMITED WARRANTY*³

- ⇒ 3 year parts and labor
- ⇒ International Warranty Service³
- ⇒ On site, 8 am through 5 pm, Mon through Fri excluding holidays, next business day response time
- ⇒ 3 year on site warranty service upgrade options:⁷
 - 4 hour response, 7 day x 24 hr
 - Post warranty maintenance services available
 - 24 hour x 7 day¹⁴ telephone, electronic, and Internet support

* For a copy of IBM's Statement of Limited Warranty, call 1-800-772-2227
 US models announced November 21, 2000
 US models withdrawn effective October 2001 or January 2002
 No warranties are expressed or implied in this summary (6849) © IBM Corp. December 2001

IBM IntelliStation® M Pro (6849) - Spring 2001 - withdrawn

IBM® Type-model	Processor	GHz ¹	Memory	Disk and rpm	SCSI adapter	CD-ROM	Graphics adapter and memory	Slots x bays Ethernet	Preload ¹⁷	Available date
6849-30U	Pentium® 4	1.7	512MB	18.2GB Ultra160 10K	29160LP	48X-20X	Millennium G450	16MB 6x7 10/100	2000 or NT	May 2001
6849-31U	Pentium 4	1.7	512MB	18.2GB Ultra160 10K	29160LP	48X-20X	Millennium G450	16MB 6x7 10/100	2000 or NT	May 2001
6849-32U	Pentium 4	1.7	512MB	18.2GB Ultra160 10K	29160LP	48X-20X	NVIDIA™ Quadro2 MXR	32MB 6x7 10/100	2000 or NT	May 2001
6849-33U	Pentium 4	1.7	512MB	18.2GB Ultra160 10K	29160LP	48X-20X	ATI® Fire GL2 ¹¹	64MB 6x7 10/100	2000 or NT	May 2001
6849-34U	Pentium 4	1.7	512MB	18.2GB Ultra160 10K	29160LP	48X-20X	ATI Fire GL4	128MB 6x7 10/100	2000 or NT	Jun 2001

Processor	Intel® Pentium® 4 1.7GHz¹ with 400MHz Front Side Bus										
L2 cache	256KB std and max / at processor speed										
Implementation	Processor and L2 cache in Pin Grid Array (PGA) / motherboard contains one Intel PGA423 socket (with Pentium 4 and heat sink), four RIMM sockets, five PCI slots, one AGP slot, integrated ethernet, and 850 chip with heat sink										
SMP support	No SMP support										
Memory - std / max	256 or 512MB std / 2GB max¹³ / dual RDRAM (Rambus) channels / 32 devices max each channel /										
Memory - features	256MB models: Two 8D 128MB PC800 RIMMs; 512MB models: Two 16D 256MB PC800 RIMMs / ECC memory controller and RIMMs / four 184-pin gold-plated RIMM sockets (two per channel) / two RIMMs installed (one per channel) / CRIMMs in two sockets / supports PC600 or PC800 RIMMs (not PC700) / all installed RIMMs must be installed in pairs across channels / mixing speeds will have all RIMMs operate at slowest										
Graphics controller (one of following)	<ul style="list-style-type: none"> • Matrox® Millennium G450 (high-performance 2D) / AGP 4X adapter / MGA G450C GPU / 16MB 150MHz SDRAM / dual RAMDAC [360/232MHz] / dual head: 2048x1536x16M at 70Hz and 1600x1200x16M at 85Hz / two DB-15 connectors • NVIDIA Quadro2 MXR (advanced 3D) / AGP 4X adapter / NV11GL GPU / 32MB 183MHz SDRAM / dual RAMDAC [350/150MHz] / dual head: 2048x1536x16M at 75Hz and 1280x1024x16M at 85Hz / DB-15 and DVI-I conn • ATI Fire GL2¹¹ (extreme 3D) / AGP 4X adapter / IBM GT1000-RT1000 GPUs / 64MB 120MHz DDR-SGRAM / 300MHz RAMDAC / single head: 1920x1200x16M at 76Hz / DB-15 and DVI-D connectors (same image if both used) • ATI Fire GL4 (extreme 3D) / AGP 4X adapter / IBM GT1000-RT1000 GPUs / 128MB 120MHz DDR-SGRAM / dual RAMDAC [300/135MHz] / dual head: 1920x1200x16M at 76Hz and 1280x1024x16M at 75Hz / two DVI-I w/ DB-15 dongles 										
IDE disk controller	Enhanced IDE busmaster / ATA-100 / two connectors on planar										
SCSI disk controller	<i>SCSI models:</i> Adaptec® 29160LP / Ultra160 SCSI (LVD 160MB/sec) / 64-bit 33MHz PCI adapter (in a 32-bit slot)										
SCSI connectors	<i>SCSI models:</i> One 68-pin internal / one 0.8mm VHDCI 68-pin external connector										
Cables	<i>SCSI models:</i> One 5-drop 16-bit LVD SCSI cable, one 2-drop EIDE cable										
Disk - features	<i>EIDE models:</i> Two EIDE cables (one 2-drop cable to CD-ROM, one 2-drop cable to EIDE disk) / <i>EIDE models:</i> 40.0GB EIDE / ATA-100 / 7200 rpm / 9 ms read seek / S.M.A.R.T. ⁵ / <i>SCSI models:</i> 18.2GB Ultra160 SCSI / 10K rpm / 5.5 ms read seek / S.M.A.R.T.										
Rack support	4U ⁴ rack mount support via tower-to-rack kit option										
Architecture / chipset	Intel 850 chip set / MCH (Memory Controller Hub) / I/O Controller Hub (ICH2) for PCI 2.2 bus, ATA-100 EIDE, ethernet MAC, USB, Low Pin Count Interface / Firmware Hub / SMC LPC47M102 Super I/O off LPC interface										
10/100 Mbps ethernet	Intel 82562EM / on planar / 10BaseT, 100BaseTX / full duplex / RJ-45 port / LAN Connect Interface / controller in ICH2 and 82562EM / support for Wake on LAN®, Alert on LAN™, Preboot eXecution Envir (PXE)										
CD-ROM / diskette	48X-20X ⁶ CD-ROM / CAV (ATAPI) / bootable / 3.5" 1.44MB diskette drive										
Audio	Soft audio AC '97 v2.1 controller via ICH2 / internal speaker (use of audio line out requires powered speakers)										
External ports	<i>Serial:</i> Two 9 pin; <i>Parallel:</i> One (EPP, ECP) / IEEE 1284; <i>USB:</i> Two; keyboard, mouse, audio line in/line out, mic in										
Systems mgmt	Monitoring and alerting of thermal, fans, and voltage faults										
Keyboard / mouse	IBM 104-key keyboard / IBM three button mouse										
Cooling fans	Three variable speed fans (power supply, rear, processor) / not redundant or hot-swap										
Power supply	340 watts / universal / auto sensing										

	Bay ① 5.25", HH 1.6", access, CD-ROM Bay ② 5.25", HH 1.6", access, open Bay ③ 3.5", SL 1", access, diskette Bay ④ 3.5", SL 1", access, open Bay ⑤ 3.5", SL 1", no access, open Bay ⑥ 3.5", SL 1", no access, open Bay ⑦ 3.5", SL 1", no access, disk Slot 1: fullsize, AGP 4X Pro50 (1.5v) - used by std AGP graphics adapter Slot 2: fullsize, 32-bit 33MHz, PCI 2.2 (5v) - not available on models with GL4 Slot 3: fullsize, 32-bit 33MHz, PCI 2.2 (5v) Slot 4: fullsize, 32-bit 33MHz, PCI 2.2 (5v) Slot 5: fullsize, 32-bit 33MHz, PCI 2.2 (5v) Slot 6: fullsize, 32-bit 33MHz, PCI 2.2 (5v) - used by SCSI adapter (some)	<ul style="list-style-type: none"> ◇ Metal cage for disk bays 5,6,7 rotates out of chassis ◇ Two front stabilizing feet ◇ Handle grip on top ◇ H 18.5" x W 6.5" x D 20.0" ◇ 36 to 42 pounds (16.4 to 19.1kg) 	PRELOAD¹⁷ Microsoft® Windows® 2000 Professional - Free license for Lotus® SmartSuite® - Free license for Lotus Notes® Client ◇ Device Drivers and Diagnostics CD ◇ Software Selections CD-ROM ◇ Windows 2000 Product Recovery CD ◇ NT 4.0 (SP6) Product Recovery CD ◇ Disk-to-Disk Recovery (Windows 2000 or NT 4.0 SP6 in hidden service partition)
	OPTIONS 64MB PC600 ECC RDRAM RIMM (4 Dev) 33L3093 128MB PC600 ECC RDRAM RIMM (8 Dev) 33L3095 256MB PC600 ECC RDRAM RIMM (16 Dev) 33L3097 64MB PC800 ECC RDRAM RIMM (4 Dev) 20L0274 128MB PC800 ECC RDRAM RIMM (8 Dev) 20L0275 256MB PC800 ECC RDRAM RIMM (16 Dev) 20L0277 512MB PC800 ECC RDRAM RIMM (16 Dev) 33L3254 IBM 18.2GB 7.2K rpm Ultra160 SCSI HDD 00N8205 IBM 36.4GB 7.2K rpm Ultra160 SCSI HDD 00N8206 IBM 36.4GB 10K Ultra160 SCSI HDD 00N8209 IBM 18.2GB 15K Ultra160 SCSI HDD 19K0658 IBM 40.0GB 7.2K rpm ATA-100 EIDE HDD 22P7157 IBM 9.4GB DVD-RAM (black) 10K3561 IBM IDE 8X/4X/32X ⁶ CD-Rewritable (black) 33L5020 IBM 250MB Zip Drive (black) 00N8078 IBM 4Ux20D Tower-to-Rack Kit 09N4300 IBM P260 Color Monitor (black) 655263N	SECURITY <ul style="list-style-type: none"> • Cover key lock • Cover tamper detect switch • Secure fixed DASD • Power-on password • Administrator password • Keyboard/mouse password • Boot sequence control • Boot without keyboard or mouse • Diskette boot inhibit and write-protect • Disable mouse • Diskette, disk, serial port, parallel port I/O control • Secure access openings • VPD stored in EEPROM • Write protection control for EEPROM • IBM Security Solutions 	LIMITED WARRANTY*³ <ul style="list-style-type: none"> ⇨ 3 year parts and labor ⇨ International Warranty Service³ ⇨ On site, 8 am through 5 pm, Mon through Fri excluding holidays, next business day response time ⇨ 3 year on site warranty service upgrade options:⁷ <ul style="list-style-type: none"> • 4 hour response, Mon-Fri 9-5 (ServicePac® part number 41L2735) • 4 hour response, 7 day x 24 hr (ServicePac part number 41L2741) ⇨ Post warranty maintenance services available ⇨ 24 hour x 7 day¹⁴ telephone, electronic, and Internet support

* For a copy of IBM's Statement of Limited Warranty, call 1-800-772-2227

US models announced April 24, 2001
 US models withdrawn effective April 2002

No warranties are expressed or implied in this summary
 (6849S) © IBM Corp. April 2002

IBM IntelliStation® M Pro (6849) - Summer 2001 - withdrawn

IBM® Type-model	Processor	GHz ¹	Memory	Disk and rpm	SCSI adapter	CD-ROM	Graphics adapter and memory	Slots x bays	Ethernet	Preload ¹⁷	Available date
6849-40U	Pentium® 4	1.8	256MB	40.0GB ² EIDE 7.2K	None	CD	Millennium G450 16MB	6x7	10/100	2000 or NT	Aug 2001
6849-41U	Pentium 4	1.8	512MB	18.2GB Ultra160 10K	29160LP	CD	Millennium G450 16MB	6x7	10/100	2000 or NT	Aug 2001
6849-42U	Pentium 4	1.8	512MB	18.2GB Ultra160 10K	29160LP	CD	NVIDIA™ Quadro2 Pro 64MB	6x7	10/100	2000 or NT	Aug 2001
6849-44U	Pentium 4	1.8	512MB	18.2GB Ultra160 10K	29160LP	CD	ATI® Fire GL4™ 11 128MB	6x7	10/100	2000 or NT	Aug 2001
6849-50U	Pentium 4	2.0	256MB	40.0GB EIDE 7.2K	None	CD	Millennium G450 16MB	6x7	10/100	2000 or NT	Sep 2001
6849-51U	Pentium 4	2.0	512MB	18.2GB Ultra160 10K	29160LP	CD	Millennium G450 16MB	6x7	10/100	2000 or NT	Sep 2001
6849-52U	Pentium 4	2.0	512MB	18.2GB Ultra160 10K	29160LP	CD	NVIDIA™ Quadro2 Pro 64MB	6x7	10/100	2000 or NT	Sep 2001
6849-54U	Pentium 4	2.0	512MB	18.2GB Ultra160 10K	29160LP	CD	ATI® Fire GL4 128MB	6x7	10/100	2000 or NT	Sep 2001

Processor **Intel® Pentium® 4 at 1.8 or 2.0GHz with 400MHz frontside bus**
 L2 cache **256KB** std and max / at processor speed
 Implementation Processor and L2 cache in Pin Grid Array (PGA) / motherboard contains one Intel PGA423 socket (with Pentium 4 and heat sink), four RIMM sockets, five PCI slots, one AGP slot, integrated ethernet, and 850 chip with heat sink
 SMP support No SMP support

Memory - std / max **256 or 512MB std / 2GB max¹³ / dual RDRAM (Rambus) channels / 32 devices max each channel /**
 Memory - features **256MB models:** Two 8D 128MB PC800 RIMMs; **512MB models:** Two 16D 256MB PC800 RIMMs / **ECC memory controller and RIMMs** / four 184-pin gold-plated RIMM sockets (two per channel) / two RIMMs installed (one per channel) / CRIMMs in two sockets / supports PC600 or PC800 RIMMs (not PC700) / all installed RIMMs must be installed in pairs across channels / mixing speeds will have all RIMMs operate at slowest

Graphics controller (one of following)

- **Matrox® Millennium G450** (high-performance 2D) / AGP 4X adapter / MGA G450C GPU / 16MB 150MHz SDRAM / dual RAMDAC [360/232MHz] / dual head: 2048x1536x16M at 70Hz and 1600x1200x16M at 85Hz / two DB-15 connectors
- **NVIDIA Quadro2 Pro** (advanced 3D) / AGP 4X adapter / NV15GL 250MHz GPU / 64MB 200MHz DDR-SDRAM / 350MHz RAMDAC / single head: 1600x1200x16M at 85Hz / DB-15 and DVI-I connectors (same image if both used)
- **ATI Fire GL4** (extreme 3D) / AGP 4X Pro 50 adapter / IBM GT1000-RT1000 GPUs / 128MB 150MHz DDR-SGRAM / dual RAMDAC [300/135MHz] / dual head: 1920x1200x16M at 76Hz and 1280x1024x16M at 75Hz / two DVI-I w/ DB-15 dongles

IDE disk controller Enhanced IDE busmaster / ATA-100 / two connectors on planar
 SCSI disk controller **SCSI models:** Adaptec® 29160LP / Ultra160 SCSI (LVD 160MB/sec) / 64-bit 33MHz PCI adapter (in a 32-bit slot)
 SCSI connectors **SCSI models:** One 68-pin internal / one 0.8mm VHDCI 68-pin external connector
 Cables **SCSI models:** One 5-drop 16-bit LVD SCSI cable, one 2-drop EIDE cable
EIDE models: Two EIDE cables (one 2-drop cable to CD-ROM, one 2-drop cable to EIDE disk)
 Disk - features **EIDE models:** 40.0GB EIDE / ATA-100 / 7200 rpm / 9 ms read seek / S.M.A.R.T.⁵
SCSI models: 18.2GB Ultra160 SCSI / 10K rpm / 5.5 ms read seek / S.M.A.R.T.

Rack support 4U⁴ rack mount support via tower-to-rack kit option
 Architecture / chipset **Intel 850 chipset** / MCH (Memory Controller Hub) / I/O Controller Hub (ICH2) for PCI 2.2 bus, ATA-100 EIDE, ethernet MAC, USB, Low Pin Count Interface / Firmware Hub / SMC LPC47M102 Super I/O off LPC interface

10/100Mbps ethernet Intel 82562EM / on planar / 10BaseT, 100BaseTX / full duplex / RJ-45 port / LAN Connect Interface / controller in ICH2 and 82562EM / support for Wake on LAN®, Alert on LAN™, PXE

CD-ROM / diskette 48X-20X⁶ CD-ROM, CAV (ATAPI), bootable / 3.5" 1.44MB diskette drive
 Audio Soft audio AC '97 v2.1 controller via ICH2 / internal speaker (use of audio line out requires powered speakers)
 Rear ports Two 9-pin serial; two USB (Vers 1.1), parallel, keyboard, mouse, ethernet, audio line in, audio line out, mic in
 Systems mgmt Monitoring and alerting of thermal, fans, and voltage faults

Keyboard / mouse IBM 104-key keyboard / IBM three button mouse
 Cooling fans Three variable speed fans (power supply, rear, processor) / not redundant or hot-swap
 Power supply 340 watts / universal / auto sensing

<p>Mini-tower Stealth black</p>	Bay ① 5.25", HH 1.6", access, CD-ROM Bay ② 5.25", HH 1.6", access, open Bay ③ 3.5", SL 1", access, diskette Bay ④ 3.5", SL 1", access, open Bay ⑤ 3.5", SL 1", no access, open Bay ⑥ 3.5", SL 1", no access, open Bay ⑦ 3.5", SL 1", no access, disk Slot 1: fullsize, AGP 4X (1.5v) - used by std AGP graphics adapter Slot 2: fullsize, 32-bit 33MHz, PCI 2.2 (5v) - not available on models with GL4 Slot 3: fullsize, 32-bit 33MHz, PCI 2.2 (5v) Slot 4: fullsize, 32-bit 33MHz, PCI 2.2 (5v) Slot 5: fullsize, 32-bit 33MHz, PCI 2.2 (5v) Slot 6: fullsize, 32-bit 33MHz, PCI 2.2 (5v) - used by SCSI adapter (some)	<ul style="list-style-type: none"> ◇ Metal cage for disk bays 5,6,7 rotates out of chassis ◇ Two front stabilizing feet ◇ Handle grip on top ◇ H 18.5" x W 6.5" x D 20.0" ◇ 36 to 42 pounds (16.4 to 19.1kg) 	<p>PRELOAD¹⁷</p> Microsoft® Windows® 2000 Professional - Free license for Lotus® SmartSuite® - Free license for Lotus Notes® Client ◇ Device Drivers and Diagnostics CD ◇ Software Selections CD-ROM ◇ Windows 2000 Product Recovery CD ◇ NT 4.0 (SP6) Product Recovery CD ◇ Disk-to-Disk Recovery (Windows 2000 or NT 4.0 SP6 in hidden service partition)
	<p>OPTIONS</p> 64MB PC 800 ECC RDRAM RIMM (4 Dev) 20L0274 128MB PC 800 ECC RDRAM RIMM (8 Dev) 20L0275 256MB PC 800 ECC RDRAM RIMM (16 Dev) 20L0277 64MB PC 800 ECC RDRAM RIMM (2 Dev) 33L3348 128MB PC 800 ECC RDRAM RIMM (4 Dev) 33L3350 256MB PC 800 ECC RDRAM RIMM (8 Dev) 33L3352 512MB PC 800 ECC RDRAM RIMM (16 Dev) 33L3254 IBM 18.2GB 7.2K rpm Ultra160 SCSI HDD 00N8205 IBM 36.4GB 7.2K rpm Ultra160 SCSI HDD 00N8206 IBM 36.4GB 10K Ultra160 SCSI HDD 00N8209 IBM 18.2GB 15K Ultra160 SCSI HDD 19K0658 IBM 40.0GB 7.2K rpm ATA-100 EIDE HDD 22P7157 IBM IDE 12X/8X/32X Max ⁸ CD-RW (black) 10K3785 IBM 20/40GB 8mm SCSI Tape Drive (black) 01K1325 IBM 250MB Zip Drive (black) 00N8078 IBM 4Ux20D Tower-to-Rack Kit 09N4300 IBM P260 Color Monitor (black) 655263N	<p>SECURITY</p> <ul style="list-style-type: none"> • Cover key lock • Cover tamper detect switch • Secure fixed DASD • Power-on password • Administrator password • Keyboard/mouse password • Boot sequence control • Boot without keyboard or mouse • Diskette boot inhibit and write-protect • Disable mouse • Diskette, disk, serial port, parallel port I/O control • Secure access openings • VPD stored in EEPROM • Write protection control for EEPROM • IBM Security Solutions 	

<p>OPTIONS</p> 64MB PC 800 ECC RDRAM RIMM (4 Dev) 20L0274 128MB PC 800 ECC RDRAM RIMM (8 Dev) 20L0275 256MB PC 800 ECC RDRAM RIMM (16 Dev) 20L0277 64MB PC 800 ECC RDRAM RIMM (2 Dev) 33L3348 128MB PC 800 ECC RDRAM RIMM (4 Dev) 33L3350 256MB PC 800 ECC RDRAM RIMM (8 Dev) 33L3352 512MB PC 800 ECC RDRAM RIMM (16 Dev) 33L3254 IBM 18.2GB 7.2K rpm Ultra160 SCSI HDD 00N8205 IBM 36.4GB 7.2K rpm Ultra160 SCSI HDD 00N8206 IBM 36.4GB 10K Ultra160 SCSI HDD 00N8209 IBM 18.2GB 15K Ultra160 SCSI HDD 19K0658 IBM 40.0GB 7.2K rpm ATA-100 EIDE HDD 22P7157 IBM IDE 12X/8X/32X Max ⁸ CD-RW (black) 10K3785 IBM 20/40GB 8mm SCSI Tape Drive (black) 01K1325 IBM 250MB Zip Drive (black) 00N8078 IBM 4Ux20D Tower-to-Rack Kit 09N4300 IBM P260 Color Monitor (black) 655263N	<p>SECURITY</p> <ul style="list-style-type: none"> • Cover key lock • Cover tamper detect switch • Secure fixed DASD • Power-on password • Administrator password • Keyboard/mouse password • Boot sequence control • Boot without keyboard or mouse • Diskette boot inhibit and write-protect • Disable mouse • Diskette, disk, serial port, parallel port I/O control • Secure access openings • VPD stored in EEPROM • Write protection control for EEPROM • IBM Security Solutions 	<p>LIMITED WARRANTY³</p> <ul style="list-style-type: none"> ⇨ 3 year parts and labor ⇨ International Warranty Service³ ⇨ On site, 8 am through 5 pm, Mon through Fri excluding holidays, next business day response time ⇨ 3 year on site warranty service upgrade options:⁷ <ul style="list-style-type: none"> • 4 hour response, Mon-Fri 9-5 (ServicePac® part number 41L2735) • 4 hour response, 7 day x 24 hr (ServicePac part number 41L2741) ⇨ Post warranty maintenance services available ⇨ 24x7¹⁴ toll-free support for warranty issues during the warranty period³
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IBM IntelliStation® M Pro (6850) - withdrawn

IBM® Type-model	Qty x Processor	L2 cache	Memory	Disk and rpm	Disk controllers	CD-ROM	Graphics adapter and memory	Slots x bays	Preload ¹⁷	Available date
6850-10U	1 x Xeon 1.5	256KB	256MB	40GB ² EIDE 7.2K	Ultra160, EIDE	CD	Millennium G450 16MB	6x9	2000	Aug 2001
6850-20U	1 x Xeon 1.7	256KB	256MB	40GB EIDE 7.2K	Ultra160, EIDE	CD	Millennium G450 16MB	6x9	2000	Aug 2001
6850-21U	1 x Xeon 1.7	256KB	256MB	18.2GB Ultra 160 10K	Ultra160, EIDE	CD	Millennium G450 16MB	6x9	2000	Aug 2001
6850-22U	1 x Xeon 1.7	256KB	512MB	18.2GB Ultra 160 10K	Ultra160, EIDE	CD	NVIDIA™ Quadro2 Pro 64MB	6x9	2000	Aug 2001
6850-25U	1 x Xeon 1.7	256KB	512MB	18.2GB Ultra 160 10K	Ultra160, EIDE	CD	ATI® Fire GL4™, 11 128 MB	6x9	2000	Aug 2001
Positioning	<i>Ultimate workstation performance and scalability</i>									
Processor	1 x Intel® Xeon™ 1.5 or 1.7GHz¹ with 400MHz frontside bus									
L2 cache	256KB L2 cache / on die of Xeon / at processor speed / no L3 cache									
Implementation	Processor and L2 cache in Pin Grid Array (PGA) / motherboard contains two Intel Socket-603 sockets, one memory card connector, five PCI slots, one AGP Pro slot, integrated ethernet and SCSI, and 860 chipset									
SMP support	2-way SMP via identical processor									
Memory	256 or 512MB std / 4GB max¹³ / PC800 ECC Rambus / two or four RDRAM (Rambus) channels / 32 devices max each channel / 8 slot memory card with four RDRAM channels and max of 8x512MB=4GB / each 82803 Memory Repeater Hub (MRH-R) converts each channel into two channels (2x2=4 channels total) / ECC memory controller and RIMMs / 184-pin gold-plated RIMM sockets / supports PC800 RIMMs only / all installed RIMMs must be installed in pairs across channels / 2.5v									
Graphics controller (one of following)	<ul style="list-style-type: none"> • Matrox® Millennium G450 (high-perf 2D) / AGP 4X adapter / Matrox MGA G450C GPU / 16MB 150MHz SDRAM / dual RAMDAC [360/232MHz] / dual head: 2048x1536x16M at 70Hz and 1600x1200x16M at 85Hz / two DB-15 connectors • NVIDIA Quadro2 Pro (advanced 3D) / AGP 4X adapter / NV15GL 250MHz GPU / 64MB 200MHz DDR-SDRAM / 350MHz RAMDAC / single head: 1600x1200x16M at 85Hz / DB-15 and DVI-I connectors (same image if both used) • ATI Fire GL4 (extreme 3D) / AGP 4X Pro 50 adapter / IBM GT1000-RT1000 GPUs / 128MB 150MHz DDR-SGRAM / dual RAMDAC [300/135MHz] / dual head: 1920x1200x16M at 76Hz and 1280x1024x16M at 75Hz / two DVI-I w/ DB-15 dongles 									
SCSI controller	Adaptec® AIC-7899 / dual channel Ultra 160 SCSI controller (160MB/sec) / on planar / 64-bit PCI bus									
SCSI connectors	Internal Port A: 68 pin (attaches 6-drop 16-bit LVD cable to SCSI disk [cable std on SCSI models, not EIDE models]); External Port B: 68-pin SCSI port on rear (connected by 1-drop 16-bit LVD cable to conn on planar [cable on all models])									
IDE cables	EIDE and SCSI models: one 2-drop IDE ATA-33 cable (for CD-ROM); EIDE models: one 2-drop ATA-66/100 cable (to disk)									
EIDE controller	Enhanced IDE / ATA-100 with two channel support / integrated in I/O Controller Hub (ICH2)									
Disk - features	SCSI models: 18.2GB Ultra160 / 10K rpm / 5.5 ms read seek; EIDE: 40GB / 7200 rpm / 8.7 ms read seek; All: S.M.A.R.T. ⁵									
Rack support	4U ⁴ rack mount support via tower-to-rack kit option									
Chipset	Intel 860 chipset / 82860 MCH (Memory Controller Hub) / two 82803AA Memory Repeater Hubs (MRH-R) / 82801BA I/O Controller Hub (ICH2) for PCI 2.2 bus, ATA-100 EIDE, ethernet MAC, USB, Low Pin Count Interface / 82806AA 64-bit PCI controller (P64H) / 82802 Firmware Hub / Winbond® Super I/O off LPC interface									
10/100 Mbps ethernet	Intel 82550 / on planar / 10BaseT, 100BaseTX / full duplex / RJ-45 port / LAN Connect Interface / controller in ICH2 and 82550 / support for Wake on LAN®, Alert on LAN™, Preboot eXecution Envir (PXE)									
CD-ROM / diskette	CD-ROM: 48X-20X® / CAV (ATAPI) / bootable; Diskette: 3.5" 1.44MB drive									
Audio	Soft audio AC '97 v2.1 controller via ICH2 / ADI 1885 codec / internal mono speaker (use of audio line out requires powered speakers)									
External rear ports	Serial: two 9-pin; Parallel: one (EPP, ECP) / IEEE 1284; USB: two; keyboard, mouse, audio line in, audio line out, mic in									
Systems mgmt	Monitoring and alerting of thermal, fans, voltage faults, and chassis intrusion									
Keyboard / mouse	IBM 104-key keyboard (black) / IBM three-button mouse (black)									
Cooling fans	Five variable speed fans (two for processors, one for chassis, one for PCI cards, one in power supply) / not redundant or hot-swap									
Power supply	480 watts / universal / auto sensing									
					Bay ① 5.25", HH 1.6", access, open Bay ② 5.25", HH 1.6", access, std CD-ROM Bay ③ 3.5", SL 1", access, diskette Bay ④ 3.5", SL 1", no access, open (disk only) Bay ⑤ 3.5", SL 1", no access, open (disk only) Bay ⑥ 3.5", SL 1", no access, open (disk only) Bay ⑦ 3.5", SL 1", no access, open (disk only) Bay ⑧ 3.5", SL 1", no access, open (disk only) Bay ⑨ 3.5", SL 1", no access, std disk (disk only)				<ul style="list-style-type: none"> • Mini tower • Stealth black color • Swinging door covers bays 1 to 3 	
	Slot 1: full, 32-bit 4X AGP (universal) - used by AGP adapter Slot 2: full, 32-bit 33MHz PCI 2.2 (5v) - not available with Fire GL4 model Slot 3: full, 32-bit 33MHz PCI 2.2 (5v) Slot 4: full, 32-bit 33MHz PCI 2.2 (5v) Slot 5: full 64-bit 66MHz PCI 2.2 (3.3v) Slot 6: full, 64-bit 66MHz PCI 2.2 (3.3v)									
	OPTIONS Xeon 1.5GHz/256KB Proc Upgrade 24P8401 Xeon 1.7GHz/256KB Proc Upgrade 24P8402 64MB PC800 ECC RDRAM RIMM (4 Dev) 20L0274 128MB PC800 ECC RDRAM RIMM (8 Dev) 20L0275 256MB PC800 ECC RDRAM RIMM (16 Dev) 20L0277 512MB PC800 ECC RDRAM RIMM (16 Dev) 33L3254 IBM 36.4GB 10K Ultra160 SCSI HDD 00N8209 IBM 73.4GB 10K Ultra160 SCSI HDD 06P5752 IBM 18.2GB 15K Ultra160 SCSI HDD 19K0658 IBM 40.0GB 7.2K rpm ATA-100 EIDE HDD 22P7157 IBM 9.4GB DVD-RAM (black) 10K3561 IBM 12X/8X/14-32x Max ⁶ CD-RW IDE (black) 10K3785 IBM 4Ux20D Tower-to-Rack Kit 10L7006 IBM P260 Color Monitor (black) 655263N IBM T540 15" TFT Flat Panel Monitor (black) 9511AG4				<ul style="list-style-type: none"> • Maximum internal disk capacity¹³: SCSI: 218.4GB (6 disks x 36.4GB) EIDE: 120GB (3 disks x 40GB) • H 17.3" x W 8.6" x D 23.7" • H 440mm" x W 217mm x D 603mm • 59 pounds max (26.8kg) • Removable left side panel • Configuration Manager at startup • SCSISelect via CTRL+A at prompt • Adv Config Power Interface (ACPI) 1.1-compliant • Wired for Manageability (WfM) 2.0-compliant • SMBIOS 2.3-compliant • PC99A-compliant 					
	LIMITED WARRANTY³ <ul style="list-style-type: none"> ⇒ 3 year parts and labor ⇒ International Warranty Service³ ⇒ On site, 8 am through 5 pm, Mon through Fri excluding holidays, next business day response time ⇒ 3 year on site warranty service upgrade options:⁷ <ul style="list-style-type: none"> • 4 hour response, Mon-Fri 9-5 (ServicePac® part number 41L2735) • 4 hour response, 7 day x 24 hr (ServicePac part number 41L2741) ⇒ 24x7¹⁴ toll-free support for warranty issues during the warranty period³ 									

See footnotes for important warranty information
 US models announced July 31, 2001
 US models withdrawn effective April 2002 or July 2002

(6850) © IBM Corp. July 2002

IBM IntelliStation® M Pro (6850) - Fall 2001 - withdrawn

IBM® Type-model	Qty x Processor	L2 cache	Memory	Disk and rpm	Disk controllers	CD-ROM	Graphics adapter and memory	Slots x bays	Preload ¹⁷	Available date																																													
6850-30U	1 x Xeon 2.0	256KB	256MB	40GB ² EIDE 7.2K	Ultra160, EIDE	CD	Millennium G450 16MB	6x9	2000	Oct 2001																																													
6850-31U	1 x Xeon 2.0	256KB	256MB	18.2GB Ultra 160 10K	Ultra160, EIDE	CD	Millennium G450 16MB	6x9	2000	Oct 2001																																													
6850-32U	1 x Xeon 2.0	256KB	512MB	18.2GB Ultra 160 10K	Ultra160, EIDE	CD	NVIDIA™ Quadro2 Pro 64MB	6x9	2000	Oct 2001																																													
6850-35U	1 x Xeon 2.0	256KB	512MB	18.2GB Ultra 160 10K	Ultra160, EIDE	CD	ATI® Fire GL4™, 11 128 MB	6x9	2000	Oct 2001																																													
Positioning	<i>Ultimate workstation performance and scalability</i>																																																						
Processor	1 x Intel® Xeon™ 2.0GHz¹ with 400MHz Front Side Bus																																																						
L2 cache	256KB L2 cache / on die of Xeon / at processor speed / no L3 cache																																																						
Implementation	Processor and L2 cache in Pin Grid Array (PGA) / motherboard contains two Intel Socket-603 sockets, one memory card connector, five PCI slots, one AGP Pro slot, integrated ethernet and SCSI, and 860 chipset																																																						
SMP support	2-way SMP via identical processor																																																						
Memory	256 or 512MB std / 4GB max¹³ / PC800 ECC Rambus / two or four RDRAM (Rambus) channels / 32 devices max each channel / 8 slot memory card with four RDRAM channels and max of 8x512MB=4GB / each 82803 Memory Repeater Hub (MRH-R) converts each channel into two channels (2x2=4 channels total) / ECC memory controller and RIMMs / 184-pin gold-plated RIMM sockets / supports PC800 RIMMs only / all installed RIMMs must be installed in pairs across channels / 2.5v																																																						
Graphics controller (one of following)	<ul style="list-style-type: none"> • Matrox® Millennium G450 (high-perf 2D) / AGP 4X adapter / Matrox MGA G450C GPU / 16MB 150MHz SDRAM / dual RAMDAC [360/232MHz] / dual head: 2048x1536x16M at 70Hz and 1600x1200x16M at 85Hz / two DB-15 connectors • NVIDIA Quadro2 Pro (advanced 3D) / AGP 4X adapter / NV15GL 250MHz GPU / 64MB 200MHz DDR-SDRAM / 350MHz RAMDAC / single head: 1600x1200x16M at 85Hz / DB-15 and DVI-I connectors (same image if both used) • ATI Fire GL4 (extreme 3D) / AGP 4X Pro 50 adapter / IBM GT1000-RT1000 GPUs / 128MB 150MHz DDR-SGRAM / dual RAMDAC [300/135MHz] / dual head: 1920x1200x16M at 76Hz and 1280x1024x16M at 75Hz / two DVI-I w/ DB-15 dongles 																																																						
SCSI controller	Adaptec® AIC-7899 / dual channel Ultra 160 SCSI controller (160MB/sec) / on planar / 64-bit PCI bus																																																						
SCSI connectors	Internal Port A: 68 pin (attaches 6-drop 16-bit LVD cable to SCSI disk [cable std on SCSI models, not EIDE models]); External Port B: 68-pin SCSI port on rear (connected by 1-drop 16-bit LVD cable to conn on planar [cable on all models])																																																						
IDE cables	EIDE and SCSI models: one 2-drop IDE ATA-33 cable (for CD-ROM); EIDE models: one 2-drop ATA-66/100 cable (to disk)																																																						
EIDE controller	Enhanced IDE / ATA-100 with two channel support / integrated in I/O Controller Hub (ICH2)																																																						
Disk - features	SCSI models: 18.2GB Ultra160 / 10K rpm / 5.5 ms read seek; EIDE: 40GB / 7200 rpm / 8.7 ms read seek; All: S.M.A.R.T. ⁵																																																						
Rack support	4U ⁴ rack mount support via tower-to-rack kit option																																																						
Chipset	Intel 860 chipset / 82860 MCH (Memory Controller Hub) / two 82803AA Memory Repeater Hubs (MRH-R) / 82801BA I/O Controller Hub (ICH2) for PCI 2.2 bus, ATA-100 EIDE, ethernet MAC, USB, Low Pin Count Interface / 82806AA 64-bit PCI controller (P64H) / 82802 Firmware Hub / Winbond® Super I/O off LPC interface																																																						
Ethernet	10/100 ethernet on planar / Intel 82550 / 10BaseT, 100BaseTX / full duplex / RJ-45 port / LAN Connect Interface / controller in ICH2 and 82550 / support for Wake on LAN®, Alert on LAN™, Preboot eXecution Envir (PXE)																																																						
CD-ROM / diskette	CD-ROM: 48X-20X ⁶ / CAV (ATAPI) / bootable; Diskette: 3.5" 1.44MB drive																																																						
Audio	Soft audio AC '97 v2.1 controller via ICH2 / ADI 1885 codec / internal mono speaker (use of audio line out requires powered speakers)																																																						
External rear ports	Serial: two 9-pin; Parallel: one (EPP, ECP) / IEEE 1284; USB: two; keyboard, mouse, audio line in, audio line out, mic in																																																						
Systems mgmt	Monitoring and alerting of thermal, fans, voltage faults, and chassis intrusion																																																						
Keyboard / mouse	IBM 104-key keyboard (black) / IBM three-button mouse (black)																																																						
Cooling fans	Five variable speed fans (two for processors, one for chassis, one for PCI cards, one in power supply) / not redundant or hot-swap																																																						
Power supply	480 watts / universal / auto sensing																																																						
	 <p>Bay ① 5.25", HH 1.6", access, open</p> <p>Bay ② 5.25", HH 1.6", access, std CD-ROM</p> <p>Bay ③ 3.5", SL 1", access, diskette</p> <p>Bay ④ 3.5", SL 1", no access, open (disk only)</p> <p>Bay ⑤ 3.5", SL 1", no access, open (disk only)</p> <p>Bay ⑥ 3.5", SL 1", no access, open (disk only)</p> <p>Bay ⑦ 3.5", SL 1", no access, open (disk only)</p> <p>Bay ⑧ 3.5", SL 1", no access, open (disk only)</p> <p>Bay ⑨ 3.5", SL 1", no access, std disk (disk only)</p> <p>Slot 1: full, 32-bit 4X AGP (universal) - used by AGP adapter</p> <p>Slot 2: full, 32-bit 33MHz PCI 2.2 (5v) - not available with Fire GL4 model</p> <p>Slot 3: full, 32-bit 33MHz PCI 2.2 (5v)</p> <p>Slot 4: full, 32-bit 33MHz PCI 2.2 (5v)</p> <p>Slot 5: full 64-bit 66MHz PCI 2.2 (3.3v)</p> <p>Slot 6: full, 64-bit 66MHz PCI 2.2 (3.3v)</p>																																																						
	<ul style="list-style-type: none"> • Mini tower • Stealth black color • Swinging door covers bays 1 to 3 																																																						
	<p style="text-align: center;">SECURITY</p> <ul style="list-style-type: none"> • Cover key lock • Cover tamper detect switch • Secure fixed DASD • Power-on password • Administrator password • Keyboard/mouse password • Boot sequence control • Boot without keyboard or mouse • Diskette boot inhibit and write-protect • Disable mouse • Disk, serial port I/O control • Secure access openings • VPD stored in EEPROM • Write protection control for EEPROM • Optional U-bolt support 																																																						
	<p style="text-align: center;">PRELOAD¹⁷</p> <p>Microsoft® Windows® 2000 Professional</p> <ul style="list-style-type: none"> - License for Lotus® SmartSuite® - License for Lotus Notes® Client ◆ Device Drivers and Diagnostics CD ◆ Software Selections CD-ROM ◆ Disk-to-Disk Recovery (Windows 2000 in hidden service partition) 																																																						
	<p style="text-align: center;">LIMITED WARRANTY*³</p> <ul style="list-style-type: none"> ↔ 3 year parts and labor ↔ International Warranty Service³ ↔ On site, 8 am through 5 pm, Mon through Fri excluding holidays, next business day response time ↔ 3 year on site warranty service upgrade options⁷: <ul style="list-style-type: none"> • 4 hour response, Mon-Fri 9-5 (ServicePac® part number 41L2737) • 4 hour response, 7 day x 24 hr (ServicePac part number 30L9186) ↔ 24 hour x 7 day¹⁴ telephone, electronic, and Internet support 																																																						
	<p style="text-align: center;">OPTIONS</p> <table border="0"> <tr> <td>Xeon 2.0GHz/256KB Processor Upgrade</td> <td>24P8453</td> <td>• Maximum internal disk capacity¹³:</td> </tr> <tr> <td>64MB PC800 ECC RDRAM RIMM (4 Dev)</td> <td>20L0274</td> <td>SCSI: 440.4GB (6 disks x 73.4GB)</td> </tr> <tr> <td>128MB PC800 ECC RDRAM RIMM (8 Dev)</td> <td>20L0275</td> <td>EIDE: 120GB (3 disks x 40GB)</td> </tr> <tr> <td>256MB PC800 ECC RDRAM RIMM (16 Dev)</td> <td>20L0277</td> <td>• H 17.3" x W 8.6" x D 23.7"</td> </tr> <tr> <td>512MB PC800 ECC RDRAM RIMM (16 Dev)</td> <td>33L3254</td> <td>• H 440mm" x W 217mm x D 603mm</td> </tr> <tr> <td>IBM 36.4GB 10K Ultra160 SCSI HDD</td> <td>00N8209</td> <td>• 59 pounds max (26.8kg)</td> </tr> <tr> <td>IBM 73.4GB 10K Ultra160 SCSI HDD</td> <td>06P5752</td> <td>• Removable left side panel</td> </tr> <tr> <td>IBM 18.2GB 15K Ultra160 SCSI HDD</td> <td>19K0658</td> <td>• Configuration Manager at startup</td> </tr> <tr> <td>IBM 40.0GB 7.2K rpm ATA-100 EIDE HDD</td> <td>22P7157</td> <td>• SCSISelect via CTRL+A at prompt</td> </tr> <tr> <td>IBM 9.4GB DVD-RAM (black)</td> <td>10K3561</td> <td>• Adv Config Power Interface (ACPI) 1.1-compliant</td> </tr> <tr> <td>IBM 12X/8X/14-32x⁶ CD-Rewritable IDE (black)</td> <td>10K3785</td> <td>• Wired for Manageability (WfM) 2.0-compliant</td> </tr> <tr> <td>IBM 4Ux20D Tower-to-Rack Kit</td> <td>10L7006</td> <td>• SMBIOS 2.3-compliant</td> </tr> <tr> <td>IBM P275 (21.0" viewable)Color Monitor (black)</td> <td>6552U3N</td> <td>• PC99A-compliant</td> </tr> <tr> <td>IBM T540 15" TFT Flat Panel Monitor (black)</td> <td>9511AG4</td> <td></td> </tr> <tr> <td>IBM T750 17" TFT Flat Panel Monitor (black)</td> <td>6657HG2</td> <td></td> </tr> </table>										Xeon 2.0GHz/256KB Processor Upgrade	24P8453	• Maximum internal disk capacity¹³:	64MB PC800 ECC RDRAM RIMM (4 Dev)	20L0274	SCSI: 440.4GB (6 disks x 73.4GB)	128MB PC800 ECC RDRAM RIMM (8 Dev)	20L0275	EIDE: 120GB (3 disks x 40GB)	256MB PC800 ECC RDRAM RIMM (16 Dev)	20L0277	• H 17.3" x W 8.6" x D 23.7"	512MB PC800 ECC RDRAM RIMM (16 Dev)	33L3254	• H 440mm" x W 217mm x D 603mm	IBM 36.4GB 10K Ultra160 SCSI HDD	00N8209	• 59 pounds max (26.8kg)	IBM 73.4GB 10K Ultra160 SCSI HDD	06P5752	• Removable left side panel	IBM 18.2GB 15K Ultra160 SCSI HDD	19K0658	• Configuration Manager at startup	IBM 40.0GB 7.2K rpm ATA-100 EIDE HDD	22P7157	• SCSISelect via CTRL+A at prompt	IBM 9.4GB DVD-RAM (black)	10K3561	• Adv Config Power Interface (ACPI) 1.1-compliant	IBM 12X/8X/14-32x ⁶ CD-Rewritable IDE (black)	10K3785	• Wired for Manageability (WfM) 2.0-compliant	IBM 4Ux20D Tower-to-Rack Kit	10L7006	• SMBIOS 2.3-compliant	IBM P275 (21.0" viewable)Color Monitor (black)	6552U3N	• PC99A-compliant	IBM T540 15" TFT Flat Panel Monitor (black)	9511AG4		IBM T750 17" TFT Flat Panel Monitor (black)	6657HG2	
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* For a copy of IBM's Statement of Limited Warranty, call 1-800-772-2227
 US models announced September 25, 2001
 US models withdrawn effective April 2002

No warranties are expressed or implied in this summary
 (6850F) © IBM Corp. April 2002

IBM® Type-model	Qty x Processor	L2 cache	Memory	Disk and rpm	Disk controllers	CD-ROM	Graphics adapter and memory	Slots x bays	Preload ¹⁷	Available date
6850-40U	1 x Xeon 2.0	512KB	512MB	40GB ² EIDE 7.2K	Ultra160, EIDE	CD	Millennium G450 DVI-I 32MB	6x9	2000	Feb 2002
6850-42U	1 x Xeon 2.0	512KB	512MB	40GB EIDE 7.2K	Ultra160, EIDE	CD	NVIDIA™ Quadro4 64MB	6x9	2000	Feb 2002
6850-43U	1 x Xeon 2.0	512KB	512MB	18.2GB Ultra 160 10K	Ultra160, EIDE	CD	NVIDIA Quadro4 64MB	6x9	2000	Feb 2002
6850-45U	1 x Xeon 2.0	512KB	512MB	18.2GB Ultra 160 10K	Ultra160, EIDE	CD	ATI® Fire GL8800™, 11 128MB	6x9	2000	Feb 2002
6850-46U	1 x Xeon 2.0	512KB	512MB	18.2GB Ultra 160 10K	Ultra160, EIDE	CD	Wildcat III™ 6110 208MB	6x9	2000	Feb 2002
6850-50U	1 x Xeon 2.2	512KB	512MB	40GB EIDE 7.2K	Ultra160, EIDE	CD	Millennium G450 DVI-I 32MB	6x9	2000	Feb 2002
6850-52U	1 x Xeon 2.2	512KB	512MB	40GB EIDE 7.2K	Ultra160, EIDE	CD	NVIDIA Quadro4 64MB	6x9	2000	Feb 2002
6850-53U	1 x Xeon 2.2	512KB	512MB	18.2GB Ultra 160 10K	Ultra160, EIDE	CD	NVIDIA Quadro4 64MB	6x9	2000	Feb 2002
6850-55U	1 x Xeon 2.2	512KB	512MB	18.2GB Ultra 160 10K	Ultra160, EIDE	CD	ATI Fire GL8800 128MB	6x9	2000	Feb 2002
6850-56U	1 x Xeon 2.2	512KB	512MB	18.2GB Ultra 160 10K	Ultra160, EIDE	CD	Wildcat III 6110 208MB	6x9	2000	Feb 2002

Processor **1 x Intel® Xeon™ 2.0 or 2.2GHz¹ with 400MHz frontside bus** / supports Hyper-Threading technology
 L2 cache **512KB** / on die of Xeon / at processor speed / no L3 cache
 Implementation Processor and L2 cache in Pin Grid Array (PGA) / motherboard contains two Intel Socket-603 sockets, one memory card connector, five PCI slots, one AGP Pro slot, integrated ethernet and SCSI, and 860 chipset
 SMP support **2-way SMP** via identical processor *Positioning: Ultimate workstation performance and scalability*

Memory **512MB std / 4GB max¹³ / PC800 ECC Rambus** / two or four RDRAM (Rambus) channels / 32 devices max each channel / 8 slot memory card with four RDRAM channels and max of 8x512MB=4GB / each 82803 Memory Repeater Hub (MRH-R) converts each channel into two channels (2x2=4 channels total) / **ECC** memory controller and RIMMs / 184-pin gold-plated RIMM sockets / supports PC800 RIMMs only / RIMMs must be installed in pairs across channels

Graphics controller (one of following) **• Matrox® Millennium G450 DVI-I** (high-perf 2D) / AGP 4X adapter / MGA G450F GPU / 32MB 150MHz DDR-SDRAM / dual RAMDAC [360/232MHz] / dual head support / one DVI-I connector (ships with one cable with two DB-15 analog conns)
• NVIDIA Quadro4 200NVs (high-perf 2D) / AGP 4X adapter / NV17LT 250MHz GPU / 64MB 166MHz SDRAM / dual 350MHz RAMDACs / dual head: 2048x1536x16M each monitor / LFH60 connector for std cable with two DB-15 analog
• ATI Fire GL8800™ (advanced 3D) / AGP 4X adapter / Radeon™ 8800 GPU / 128MB 300MHz DDR-SGRAM / dual RAMDAC [400/165MHz] / dual head support / one DB-15 analog and one DVI-I conntr (ships with one DVI-I to DB-15 cable)
• 3DLabs Wildcat III™ 6110 (extreme 3D) / AGP 4X Pro 50 adapter / 208MB total DDR-SDRAM (64MB frame buffer, 128MB texture buffer, 16MB direct burst) / dual RAMDAC [320/300MHz] / dual head support (up to two digital or analog monitors) / two DVI-I connectors (ships with two DVI-I to analog DB-15 cables for analog monitor attachment)

SCSI controller **Adaptec® AIC-7899** / dual channel Ultra160 SCSI controller (160MB/sec) / on planar / 64-bit PCI bus
 SCSI connectors **Internal Port A:** 68 pin (attaches 6-drop 16-bit LVD cable to SCSI disk [cable std on SCSI models, not EIDE models]); **External Port B:** 68-pin SCSI port on rear (connected by 1-drop 16-bit LVD cable to conn on planar [cable on all models])
 IDE cables **EIDE and SCSI models:** one 2-drop IDE ATA-33 cable (for CD-ROM); **EIDE models:** one 2-drop ATA-66/100 cable (to disk)
 EIDE controller Enhanced IDE / ATA-100 with two channel support / integrated in I/O Controller Hub (ICH2)
 Disk - features **SCSI models:** 18.2GB Ultra160 / 10K rpm / 4.9 ms read seek; **EIDE:** 40GB / 7200 rpm / 9.0 ms read seek; **All:** S.M.A.R.T.⁵

Rack support **4U⁴ rack mount support via tower-to-rack kit option**
 Chipset **Intel 860 chipset** / 82860 MCH (Memory Controller Hub) / two 82803AA Memory Repeater Hubs (MRH-R) / 82801BA I/O Controller Hub (ICH2) for PCI 2.2 bus, ATA-100 EIDE, ethernet MAC, USB, Low Pin Count Interface / 82806AA 64-bit PCI controller (P64H) / 82802 Firmware Hub / Winbond® Super I/O off LPC interface

10/100 ethernet Intel 82550 / on planar / full duplex / LAN Connect Interface / RJ-45 port / controller in ICH2 and 82550 / support for Wake on LAN®, Alert on LAN™, PXE
 CD-ROM / diskette **CD-ROM:** 48X-20X⁶ / CAV (ATAPI) / bootable; **Diskette:** 3.5" 1.44MB drive
 Audio **Soft audio AC '97 v2.1** controller via ICH2 / ADI 1885 codec / internal mono speaker (use of audio line out requires powered speakers)
 External rear ports **Serial:** two 9-pin; **Parallel:** one (EPP, ECP) / IEEE 1284; **USB:** two; keyboard, mouse, audio line in, audio line out, mic in
 Monitoring and alerting of thermal, fans, voltage faults, and chassis intrusion

- SECURITY**
- Cover key lock
 - Cover tamper detect switch
 - Secure fixed DASD
 - Power-on password
 - Administrator password
 - Keyboard/mouse password
 - Boot sequence control
 - Boot without keyboard or mouse
 - Diskette boot inhibit and write-protect
 - Disable mouse
 - Disk, serial port I/O control
 - Secure access openings
 - VPD stored in EEPROM
 - Write protection control for EEPROM
 - Optional U-bolt support

Systems mgmt IBM 104-key keyboard (black) / IBM three-button mouse (black)
 Keyboard / mouse Five variable speed fans (two for processors, one for PCI cards, one in power supply) / not redundant or hot-swap
 Cooling fans
 Power supply 480 watts / universal / auto sensing

Bay ① 5.25", HH 1.6", access, open
 Bay ② 5.25", HH 1.6", access, std CD-ROM
 Bay ③ 3.5", SL 1", access, diskette
 Bay ④ 3.5", SL 1", no access, open (disk only)
 Bay ⑤ 3.5", SL 1", no access, open (disk only)
 Bay ⑥ 3.5", SL 1", no access, open (disk only)
 Bay ⑦ 3.5", SL 1", no access, open (disk only)
 Bay ⑧ 3.5", SL 1", no access, open (disk only)
 Bay ⑨ 3.5", SL 1", no access, std disk (disk only)

Slot 1: full, 32-bit 4X AGP (universal) - used by AGP adapter
 Slot 2: full, 32-bit 33MHz PCI 2.2 (5v) - not available with Wildcat III models
 Slot 3: full, 32-bit 33MHz PCI 2.2 (5v)
 Slot 4: full, 32-bit 33MHz PCI 2.2 (5v)
 Slot 5: full 64-bit 66MHz PCI 2.2 (3.3v)
 Slot 6: full, 64-bit 66MHz PCI 2.2 (3.3v)

PRELOAD¹⁷

Microsoft® Windows® 2000 Professional - License for Lotus® SmartSuite®
 - License for Lotus Notes® Client
 ♦ Device Drivers and Diagnostics CD
 ♦ Software Selections CD-ROM
 ♦ Disk-to-Disk Recovery (Windows 2000 in hidden service partition)

- Mini tower
 - Stealth black color
 - Swinging door covers bays 1 to 3
 - Maximum internal disk capacity¹³: SCSI: 440.4GB (6 disks x 73.4GB) EIDE: 180GB (3 disks x 60GB)
 - H 17.3" x W 8.6" x D 23.7"
 - H 440mm" x W 217mm x D 603mm
 - 59 pounds max (26.8kg)
 - Removable left side panel
 - Configuration Manager at startup
 - SCSISelect via CTRL+A at prompt
 - Adv Config Power Interface (ACPI) 1.1-compliant
 - Wired for Manageability (WfM) 2.0-compliant
 - SMBIOS 2.3-compliant
 - PC99A-compliant
- Xeon 2.0GHz/512KB L2 Cache Proc Upgrade 25P2653
 Xeon 2.2GHz/512KB L2 Cache Proc Upgrade 32P8586
 64MB PC800 ECC RDRAM RIMM (4 Dev) 20L0274
 128MB PC800 ECC RDRAM RIMM (8 Dev) 20L0275
 256MB PC800 ECC RDRAM RIMM (16 Dev) 20L0277
 512MB PC800 ECC RDRAM RIMM (16 Dev) 33L3254
 IBM 73.4GB 10K Ultra160 SCSI HDD 06P5752
 IBM 9.4GB DVD-RAM (black) 10K3561
 IBM IDE 40X/12X/40X Max⁶ CD-RW (black) 22P6976
 IBM 4Ux20D Tower-to-Rack Kit 10L7006
 IBM P275 (21.0" viewable) Color Monitor (black) 6552U3N
 IBM T750 17" TFT Flat Panel Monitor (black) 6657HG2
 Other options at ibm.com/us/pc/accessories

LIMITED WARRANTY³

- ⇒ **3 year parts and labor**
- ⇒ **International Warranty Service³**
- ⇒ **On site, 8 am through 5 pm, Mon through Fri excluding holidays, next business day response time**
- ⇒ **3 year on site warranty service upgrade options⁷:**
 - **4 hour response, Mon-Fri 9-5** (ServicePac® part number 41L2735)
 - **4 hour response, 7 day x 24 hr** (ServicePac part number 41L2741)
- ⇒ **24x7¹⁴ toll-free support for warranty issues during the warranty period³**

IBM® Type-model Qty x Processor	L2 cache	Memory	Disk and rpm	Disk controllers	CD-ROM	Graphics adapter and memory	Slots x bays	Preload ¹⁷	Available date
6850-60U 1 x Xeon 2.4	512KB	512MB	40GB ² EIDE 7.2K	Ultra160, EIDE	CD	Millennium G450 DVI-I 32MB	6x9	XP Pro	Jun 2002
6850-62U 1 x Xeon 2.4	512KB	512MB	40GB EIDE 7.2K	Ultra160, EIDE	CD	Quadro4 200NVS 64MB	6x9	XP Pro	Jun 2002
6850-63U 1 x Xeon 2.4	512KB	512MB	18.2GB Ultra 160 10K	Ultra160, EIDE	CD	Quadro4 200NVS 64MB	6x9	XP Pro	Jun 2002
6850-65U 1 x Xeon 2.4	512KB	512MB	18.2GB Ultra 160 10K	Ultra160, EIDE	CD	ATI® Fire GL8800™, 11 128MB	6x9	XP Pro	Jun 2002
6850-66U 1 x Xeon 2.4	512KB	512MB	18.2GB Ultra 160 10K	Ultra160, EIDE	CD	Wildcat III™ 6110 208MB	6x9	XP Pro	Jun 2002
6850-67U 1 x Xeon 2.4	512KB	512MB	18.2GB Ultra 160 10K	Ultra160, EIDE	CD	Quadro4 900XGL 128MB	6x9	XP Pro	Jun 2002
Positioning	<i>Ultimate workstation performance and scalability</i>								
Processor	1 x Intel® Xeon™ 2.4GHz¹ with 400MHz frontside bus / supports Hyper-Threading technology								
L2 cache	512KB / on die of Xeon / at processor speed / no L3 cache								
Implementation	Processor and L2 cache in Pin Grid Array (PGA) / motherboard contains two Intel Socket-603 sockets, one memory card connector, five PCI slots, one AGP Pro slot, integrated ethernet and SCSI, and 860 chipset								
SMP support	2-way SMP via identical processor								
Memory	512MB std / 4GB max¹³ / PC800 ECC Rambus / two or four RDRAM (Rambus) channels / 32 devices max each channel / 8 slot memory card with four RDRAM channels and max of 8x512MB=4GB / each 82803 Memory Repeater Hub (MRH-R) converts each channel into two channels (2x2=4 channels total) / ECC memory controller and RIMMs / 184-pin gold-plated RIMM sockets / supports PC800 RIMMs only / RIMMs must be installed in pairs across channels								
Graphics controller (one of following)	<ul style="list-style-type: none"> • Matrox® Millennium G450 DVI-I (high-perf 2D) / AGP 4X adapter / MGA G450F GPU / 32MB 150MHz DDR-SDRAM / dual RAMDAC [360/232MHz] / dual head support / one DVI-I connector (ships with one cable with two DB-15 analog conns) • NVIDIA™ Quadro4 200NVS (high-perf 2D) / AGP 4X adapter / NV17LT 250MHz GPU / 64MB 166MHz SDRAM / dual 350MHz RAMDACs / dual head: 2048x1536x16M each monitor / LFH60 connector for std cable with two DB-15 analog • ATI Fire GL8800™ (advanced 3D) / AGP 4X adapter / Radeon™ 8800 GPU / 128MB 300MHz DDR-SGRAM / dual RAMDAC [400/165MHz] / dual head support / one DB-15 analog and one DVI-I conntr (ships with one DVI-I to DB-15 cable) • 3DLabs Wildcat III™ 6110 (extreme 3D) / AGP 4X Pro 50 adapter / 208MB total DDR-SDRAM (64MB frame buffer, 128MB texture buffer, 16MB direct burst) / dual RAMDAC [320/300MHz] / dual head support (up to two digital or analog monitors) / two DVI-I connectors (ships with two DVI-I to analog DB-15 cables for analog monitor attachment) • NVIDIA Quadro4 900XGL (extreme 3D) / AGP 4X adapter / NV25GL 300MHz GPU / 128MB 325MHz DDR-SDRAM / dual 350MHz RAMDACs / dual head: 2048x1536x16M each monitor / two DVI-I connectors (ships with two DVI-I to DB-15 dongles) 								
SCSI controller	Adaptec® AIC-7899 / dual channel Ultra160 SCSI controller (160MB/sec) / on planar / 64-bit PCI bus								
SCSI connectors	<i>Internal Port A:</i> 68 pin (attaches 6-drop 16-bit LVD cable to SCSI disk [cable std on SCSI models, not EIDE models]); <i>External Port B:</i> 68-pin SCSI port on rear (connected by 1-drop 16-bit LVD cable to conn on planar [cable on all models])								
IDE cables	<i>EIDE and SCSI models:</i> one 2-drop IDE ATA-33 cable (for CD-ROM); <i>EIDE models:</i> one 2-drop ATA-66/100 cable (to disk)								
EIDE controller	Enhanced IDE / ATA-100 with two channel support / integrated in I/O Controller Hub (ICH2)								
Disk - features	<i>SCSI models:</i> 18.2GB Ultra160 / 10K rpm / 4.9 ms read seek; <i>EIDE:</i> 40GB / 7200 rpm / 9.0 ms read seek; <i>All:</i> S.M.A.R.T. ⁵								
Rack support	4U ⁴ rack mount support via tower-to-rack kit option								
Chipset	Intel 860 chipset / 82860 MCH (Memory Controller Hub) / two 82803AA Memory Repeater Hubs (MRH-R) / 82801BA I/O Controller Hub (ICH2) for PCI 2.2 bus, ATA-100 EIDE, ethernet MAC, USB, Low Pin Count Interface / 82806AA 64-bit PCI controller (P64H) / 82802 Firmware Hub / Winbond® Super I/O off LPC interface								
10/100 ethernet	Intel 82550 / on planar / full duplex / LAN Connect Interface / RJ-45 port / controller in ICH2 and 82550 / support for Wake on LAN®, Alert on LAN™, PXE						SECURITY <ul style="list-style-type: none"> • Cover key lock • Cover tamper detect switch • Secure fixed DASD • Power-on password • Administrator password • Keyboard/mouse password • Boot sequence control • Boot without keyboard or mouse • Diskette boot inhibit and write-protect • Disable mouse • Disk, serial port I/O control • Secure access openings • VPD stored in EEPROM • Write protection control for EEPROM • Optional U-bolt support 		
CD-ROM / diskette	<i>CD-ROM:</i> 48X-20X ⁶ / CAV (ATAPI) / bootable; <i>Diskette:</i> 3.5" 1.44MB drive								
Audio	Soft audio AC '97 v2.1 controller via ICH2 / ADI 1885 codec / internal mono speaker (use of audio line out requires powered speakers)								
External rear ports	<i>Serial:</i> two 9-pin; <i>Parallel:</i> one (EPP, ECP) / IEEE 1284; <i>USB:</i> two; keyboard, mouse, audio line in, audio line out, mic in								
Systems mgmt	IBM 104-key keyboard (black) / IBM three-button mouse (black)								
Keyboard / mouse	Five variable speed fans (two for processors, one for chassis, one for PCI cards, one in power supply) / not redundant or hot-swap								
Cooling fans	480 watts / universal / auto sensing								
Power supply	 <p>Bay ① 5.25", HH 1.6", access, open</p> <p>Bay ② 5.25", HH 1.6", access, std CD-ROM</p> <p>Bay ③ 3.5", SL 1", access, diskette</p> <p>Bay ④ 3.5", SL 1", no access, open (disk only)</p> <p>Bay ⑤ 3.5", SL 1", no access, open (disk only)</p> <p>Bay ⑥ 3.5", SL 1", no access, open (disk only)</p> <p>Bay ⑦ 3.5", SL 1", no access, open (disk only)</p> <p>Bay ⑧ 3.5", SL 1", no access, open (disk only)</p> <p>Bay ⑨ 3.5", SL 1", no access, std disk (only)</p> <p>Slot 1: full, 32-bit 4X AGP (universal) - used by AGP adapter</p> <p>Slot 2: full, 32-bit 33MHz PCI 2.2 (5v) - not available with Wildcat III models</p> <p>Slot 3: full, 32-bit 33MHz PCI 2.2 (5v)</p> <p>Slot 4: full, 32-bit 33MHz PCI 2.2 (5v)</p> <p>Slot 5: full 64-bit 66MHz PCI 2.2 (3.3v)</p> <p>Slot 6: full, 64-bit 66MHz PCI 2.2 (3.3v)</p> <ul style="list-style-type: none"> • Mini tower • Stealth black color • Swinging door covers bays 1 to 3 								
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128MB PC800 ECC RDRAM RIMM (8 Dev)	20L0275								
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256MB PC800 ECC RDRAM RIMM (16 Dev)	20L0277								
256MB PC800 ECC RDRAM RIMM (8 Dev)	33L3352								
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Other options at	ibm.com/us/pc/accessories								
<ul style="list-style-type: none"> • <i>Maximum internal disk capacity¹³:</i> SCSI: 440.4GB (6 disks x 73.4GB) EIDE: 180GB (3 disks x 60GB) • H 17.3" x W 8.6" x D 23.7" • H 440mm" x W 217mm x D 603mm • 59 pounds max (26.8kg) • Removable left side panel • Configuration Manager at startup • SCSISelect via CTRL+A at prompt • Adv Config Power Interface (ACPI) 1.1-compliant • SMBIOS 2.3-compliant • PC99A-compliant 							PRELOAD¹⁷ <ul style="list-style-type: none"> Microsoft® Windows® XP Professional - License for Lotus® SmartSuite® - License for Lotus Notes® Client ◆ Device Drivers and Diagnostics CD ◆ Software Selections CD-ROM ◆ Disk-to-Disk Recovery (Windows XP Pro in hidden service partition) 		
LIMITED WARRANTY³ <ul style="list-style-type: none"> ⇒ 3 year parts and labor ⇒ International Warranty Service³ ⇒ On site, 8 am through 5 pm, Mon through Fri excluding holidays, next business day response time ⇒ 3 year on site warranty service upgrade options⁹: <ul style="list-style-type: none"> • 4 hour response, Mon-Fri 9-5 (ServicePac® part number 41L2735) • 4 hour response, 7 day x 24 hr (ServicePac part number 41L2741) ⇒ 24x7¹⁴ toll-free support for warranty issues during the warranty period³ 									

See footnotes for important warranty information
 US models announced May 7, 2002; withdrawn January 31, 2003.

No warranties are expressed or implied in this summary
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IBM® Type-model Qty x Processor	L2 cache	Memory	Disk and rpm	Disk controllers	CD-ROM	Graphics adapter and memory	Slots x bays	Preload ¹⁷	Available date
6850-70U 1 x Xeon 2.8	512KB	512MB	40GB ² EIDE 7.2K	Ultra160, EIDE	CD	Millennium G450 DVI-I 32MB	6x9	XP Pro	Sep 2002
6850-72U 1 x Xeon 2.8	512KB	512MB	40GB EIDE 7.2K	Ultra160, EIDE	CD	Quadro4 200NVS 64MB	6x9	XP Pro	Sep 2002
6850-73U 1 x Xeon 2.8	512KB	512MB	18.2GB Ultra 160 10K	Ultra160, EIDE	CD	Quadro4 200NVS 64MB	6x9	XP Pro	Sep 2002
6850-75U 1 x Xeon 2.8	512KB	512MB	18.2GB Ultra 160 10K	Ultra160, EIDE	CD	ATI® Fire GL8800™, 11 128MB	6x9	XP Pro	Sep 2002
6850-76U 1 x Xeon 2.8	512KB	512MB	18.2GB Ultra 160 10K	Ultra160, EIDE	CD	Wildcat III™ 6110 208MB	6x9	XP Pro	Sep 2002
6850-77U 1 x Xeon 2.8	512KB	512MB	18.2GB Ultra 160 10K	Ultra160, EIDE	CD	Quadro4 900XGL 128MB	6x9	XP Pro	Sep 2002
Positioning Processor	<i>Ultimate workstation performance and scalability</i>								
L2 cache Implementation	1 x Intel® Xeon™ 2.8GHz¹ with 400MHz frontside bus / supports Hyper-Threading technology								
SMP support	512KB / on die of Xeon / at processor speed / no L3 cache Processor and L2 cache in Pin Grid Array (PGA) / motherboard contains two Intel Socket-603 sockets, one memory card connector, five PCI slots, one AGP Pro slot, integrated ethernet and SCSI, and 860 chipset								
Memory	2-way SMP via identical processor								
Graphics controller (one of following)	512MB std / 4GB max¹³ / PC800 ECC Rambus / two or four RDRAM (Rambus) channels / 32 devices max each channel / 8 slot memory card with four RDRAM channels and max of 8x512MB=4GB / each 82803 Memory Repeater Hub (MRH-R) converts each channel into two channels (2x2=4 channels total) / ECC memory controller and RIMMs / 184-pin gold-plated RIMM sockets / supports PC800 RIMMs only / RIMMs must be installed in pairs across channels								
SCSI controller	<ul style="list-style-type: none"> • Matrox® Millennium G450 DVI-I (high-perf 2D) / AGP 4X adapter / MGA G450F GPU / 32MB 150MHz DDR-SDRAM / dual RAMDAC [360/232MHz] / dual head support / one DVI-I connector (ships with one cable with two DB-15 analog conns) • NVIDIA™ Quadro4 200NVS (high-perf 2D) / AGP 4X adapter / NV17LT 250MHz GPU / 64MB 166MHz SDRAM / dual 350MHz RAMDACs / dual head: 2048x1536x16M each monitor / LFH60 connector for std cable with two DB-15 analog • ATI Fire GL8800™ (advanced 3D) / AGP 4X adapter / Radeon™ 8800 GPU / 128MB 300MHz DDR-SGRAM / dual RAMDAC [400/165MHz] / dual head support / one DB-15 analog and one DVI-I conntr (ships with one DVI-I to DB-15 cable) • 3DLabs Wildcat III™ 6110 (extreme 3D) / AGP 4X Pro 50 adapter / 208MB total DDR-SDRAM (64MB frame buffer, 128MB texture buffer, 16MB direct burst) / dual RAMDAC [320/300MHz] / dual head support (up to two digital or analog monitors) / two DVI-I connectors (ships with two DVI-I to analog DB-15 cables for analog monitor attachment) • NVIDIA Quadro4 900XGL (extreme 3D) / AGP 4X adapter / NV25GL 300MHz GPU / 128MB 325MHz DDR-SDRAM / dual 350MHz RAMDACs / dual head: 2048x1536x16M each monitor / two DVI-I connectors (ships with two DVI-I to DB-15 dongles) 								
SCSI connectors	Adaptec® AIC-7899 / dual channel Ultra160 SCSI controller (160MB/sec) / on planar / 64-bit PCI bus								
IDE cables	<i>Internal Port A:</i> 68 pin (attaches 6-drop 16-bit LVD cable to SCSI disk [cable std on SCSI models, not EIDE models]);								
EIDE controller	<i>External Port B:</i> 68-pin SCSI port on rear (connected by 1-drop 16-bit LVD cable to conn on planar [cable on all models])								
Disk - features	<i>EIDE and SCSI models:</i> one 2-drop IDE ATA-33 cable (for CD-ROM); <i>EIDE models:</i> one 2-drop ATA-66/100 cable (to disk) Enhanced IDE / ATA-100 with two channel support / integrated in I/O Controller Hub (ICH2)								
Rack support	<i>SCSI models:</i> 18.2GB Ultra160 / 10K rpm / 4.9 ms read seek; <i>EIDE:</i> 40GB / 7200 rpm / 9.0 ms read seek; <i>All:</i> S.M.A.R.T. ⁵								
Chipset	4U ⁴ rack mount support via tower-to-rack kit option								
10/100 ethernet	Intel 82550 / on planar / full duplex / LAN Connect Interface / RJ-45 port / controller in ICH2 and 82550 / support for Wake on LAN®, Alert on LAN™, PXE								
CD-ROM / diskette	Intel 860 chipset / 82860 MCH (Memory Controller Hub) / two 82803AA Memory Repeater Hubs (MRH-R) / 82801BA I/O Controller Hub (ICH2) for PCI 2.2 bus, ATA-100 EIDE, ethernet MAC, USB, Low Pin Count Interface / 82806AA 64-bit PCI controller (P64H) / 82802 Firmware Hub / Winbond® Super I/O off LPC interface								
Audio	<div style="display: flex; justify-content: space-between;"> <div style="width: 65%;"> <p><i>CD-ROM:</i> 48X-20X⁶ / CAV (ATAPI) / bootable; <i>Diskette:</i> 3.5" 1.44MB drive</p> <p>Soft audio AC '97 v2.1 controller via ICH2 / ADI 1885 codec / internal mono speaker (use of audio line out requires powered speakers)</p> <p><i>Serial:</i> two 9-pin; <i>Parallel:</i> one (EPP, ECP) / IEEE 1284; <i>USB:</i> two; keyboard, mouse, audio line in, audio line out, mic in</p> </div> <div style="width: 30%; border: 1px solid black; padding: 5px;"> <p style="text-align: center;">SECURITY</p> <ul style="list-style-type: none"> • Cover key lock • Cover tamper detect switch • Secure fixed DASD • Power-on password • Administrator password • Keyboard/mouse password • Boot sequence control • Boot without keyboard or mouse • Diskette boot inhibit and write-protect • Disable mouse • Disk, serial port I/O control • Secure access openings • VPD stored in EEPROM • Write protection control for EEPROM • Optional U-bolt support </div> </div>								
External rear ports	Monitoring and alerting of thermal, fans, voltage faults, and chassis intrusion								
Systems mgmt	IBM 104-key keyboard (black) / IBM three-button mouse (black)								
Keyboard / mouse	Five variable speed fans (two for processors, one for chassis, one for PCI cards, one in power supply) / not redundant or hot-swap								
Cooling fans	480 watts / universal / auto sensing								
Power supply	<div style="display: flex; align-items: flex-start;"> <div style="width: 25%; border: 1px solid black; padding: 5px; margin-right: 10px;"> </div> <div style="width: 75%;"> <p>Bay ① 5.25", HH 1.6", access, open</p> <p>Bay ② 5.25", HH 1.6", access, std CD-ROM</p> <p>Bay ③ 3.5", SL 1", access, diskette</p> <p>Bay ④ 3.5", SL 1", no access, open (disk only)</p> <p>Bay ⑤ 3.5", SL 1", no access, open (disk only)</p> <p>Bay ⑥ 3.5", SL 1", no access, open (disk only)</p> <p>Bay ⑦ 3.5", SL 1", no access, open (disk only)</p> <p>Bay ⑧ 3.5", SL 1", no access, open (disk only)</p> <p>Bay ⑨ 3.5", SL 1", no access, open (disk only)</p> <p>Slot 1: full, 32-bit 4X AGP (universal) - used by AGP adapter</p> <p>Slot 2: full, 32-bit 33MHz PCI 2.2 (5v) - not available with Wildcat III models</p> <p>Slot 3: full, 32-bit 33MHz PCI 2.2 (5v)</p> <p>Slot 4: full, 32-bit 33MHz PCI 2.2 (5v)</p> <p>Slot 5: full 64-bit 66MHz PCI 2.2 (3.3v)</p> <p>Slot 6: full, 64-bit 66MHz PCI 2.2 (3.3v)</p> </div> </div>								
Xeon 2.8GHz/512KB Proc Upgrade	<ul style="list-style-type: none"> • Mini tower • Stealth black color • Swinging door covers bays 1 to 3 								
128MB PC800 4D ECC RDRAM RIMM - 40ns	<p>• <i>Maximum internal disk capacity¹³:</i></p> <p>SCSI: 440.4GB (6 disks x 73.4GB)</p> <p>EIDE: 180GB (3 disks x 60GB)</p> <p>• H 17.3" x W 8.6" x D 23.7"</p> <p>• H 440mm" x W 217mm x D 603mm</p> <p>• 59 pounds max (26.8kg)</p> <p>• Removable left side panel</p> <p>• Configuration Manager at startup</p> <p>• SCSISelect via CTRL+A at prompt</p> <p>• Adv Config Power Interface (ACPI) 1.1-compliant</p> <p>• SMBIOS 2.3-compliant</p> <p>• PC99A-compliant</p>								
256MB PC800 8D ECC RDRAM RIMM - 40ns	<p>• 3 year parts and labor</p> <p>• International Warranty Service³</p> <p>• On site, 8 am through 5 pm, Mon through Fri excluding holidays, next business day response time</p> <p>• On site service upgrade options (in eligible locations):⁹</p> <p>• 3 year IOR 9x5, 4 hour response (ServicePac® part number 41L2735)</p> <p>• Other ServicePac options at ibm.com/services/its/us/source/wamomxeu.pdf</p> <p>• 24x7¹² toll-free support for warranty issues during the warranty period³</p>								
512MB PC800 16D ECC RDRAM RIMM - 40ns	<p>24P7470</p> <p>31P8431</p> <p>31P8433</p> <p>31P8435</p> <p>09N4226</p> <p>06P5752</p> <p>22P6976</p> <p>10L7006</p> <p>22P6501</p> <p>6552U3N</p> <p>6657HG2</p>								
IBM 80GB 7200 rpm EIDE ATA-100 HDD									
IBM 73.4GB 10K Ultra160 SCSI HDD									
IBM IDE 40X/12X/40X Max ⁶ CD-RW (black)									
IBM 4Ux20D Tower-to-Rack Kit									
Gigabit Pro/1000 T Desktop Adapter by Intel									
IBM P275 (21.0" viewable) Color Monitor (black)									
IBM T750 17" TFT Flat Panel Monitor (black)									
Other options at ibm.com/us/pc/accessories									

See footnotes for important warranty information
US models announced September 10, 2002; withdrawn effective January 31, 2003

No warranties are expressed or implied in this summary (6850S) © IBM Corp. September 2002

IBM IntelliStation® M Pro (6868) - withdrawn

Type-model	Disk / rpm / interface CD-ROM ⁶	Intel® Processor MHz ¹ ; 2-way SMP support	Write-back L2 cache standard	Rambus memory; std MB / type; devices / type	SVGA controller; AGP Pro50 slot; memory std / max or positioning	Total bus slots available	Total bays	Ethernet / SCSI Chip set Preload ¹⁷	Available date
Mini Tower; 6 slot x 7 bay; Stealth Black - US models									
6868-10U	13.5GB ² 7200 EIDE 48X-20X ⁶ CD-ROM	Pentium® III 600EB/133	256KB full spd	128MB / PC600 Two 4D RIMMs	Millennium G400 AGP 4X; 16 / 16 MB	PCI=4 AGP 50=0	3 used 4 empty	ethernet 840 / NT 4.0	Dec 1999
6868-11U	9.1GB 7200 Ultra2 48X-20X CD-ROM	Pentium III 600EB/133	256KB full spd	128MB / PC600 Two 4D RIMMs	Appian Gemini dual display ports	PCI=3 AGP 50=0	3 used 4 empty	ethernet / SCSI 840 / NT 4.0	Jan 2000
6868-12U	9.1GB 7200 Ultra2 48X-20X CD-ROM	Pentium III 600EB/133	256KB full spd	128MB / PC600 Two 4D RIMMs	Millennium G400 AGP 4X; 16 / 16MB	PCI=3 AGP 50=0	3 used 4 empty	ethernet / SCSI 840 / NT 4.0	Dec 1999
6868-13U	13.5GB 7200 EIDE 48X-20X CD-ROM	Pentium III 600EB/133	256KB full spd	128MB / PC600 Two 4D RIMMs	Appian Gemini dual display ports	PCI=4 AGP 50=0	3 used 4 empty	ethernet 840 / NT 4.0	Jan 2000
6868-14U	13.5GB 7200 EIDE 48X-20X CD-ROM	Pentium III 600EB/133	256KB full spd	128MB / PC600 Two 4D RIMMs	IBM Fire GL 1 ¹¹ AGP 2X; 32 / 32 MB	PCI=4 AGP 50=0	3 used 4 empty	ethernet / SCSI 840 / NT 4.0	Dec 1999
6868-15U	9.1GB 10K Ultra2 48X-20X CD-ROM	Pentium III 600EB/133	256KB full spd	256MB / PC600 Two 8D RIMMs	IBM Fire GL1 AGP 2X; 32 / 32 MB	PCI=3 AGP 50=0	3 used 4 empty	ethernet / SCSI 840 / NT 4.0	Dec 1999
6868-20U	13.5GB 7200 EIDE 48X-20X CD-ROM	Pentium III 667/133	256KB full spd	128MB / PC600 Two 4D RIMMs	Millennium G400 AGP 4X; 16 / 16MB	PCI=4 AGP 50=0	3 used 4 empty	ethernet 840 / NT 4.0	Dec 1999
6868-21U	9.1GB 7200 Ultra2 48X-20X CD-ROM	Pentium III 667/133	256KB full spd	128MB / PC600 Two 4D RIMMs	Appian Gemini dual display ports	PCI=3 AGP 50=0	3 used 4 empty	ethernet / SCSI 840 / NT 4.0	Jan 2000
6868-22U	9.1GB 7200 Ultra2 48X-20X CD-ROM	Pentium III 667/133	256KB full spd	256MB / PC600 Two 8D RIMMs	Millennium G400 AGP 4X; 16 / 16MB	PCI=3 AGP 50=0	3 used 4 empty	ethernet / SCSI 840 / NT 4.0	Dec 1999
6868-23U	13.5GB 7200 EIDE 48X-20X CD-ROM	Pentium III 667/133	256KB full spd	128MB / PC600 Two 4D RIMMs	Appian Gemini dual display ports	PCI=4 AGP 50=0	3 used 4 empty	ethernet 840 / NT 4.0	Dec 1999
6868-25U	9.1GB 10K Ultra2 48X-20X CD-ROM	Pentium III 667/133	256KB full spd	256MB / PC600 Two 8D RIMMs	IBM Fire GL1 AGP 2X; 32 / 32 MB	PCI=3 AGP 50=0	3 used 4 empty	ethernet / SCSI 840 / NT 4.0	Dec 1999
6868-27U	9.1GB 10K Ultra2 48X-20X CD-ROM	Pentium III 667/133	256KB full spd	256MB / PC600 Two 8D RIMMs	Wildcat 4110 AGP 2X; 128/128MB	PCI=2 AGP 50=0	3 used 4 empty	ethernet / SCSI 840 / NT 4.0	Jan 2000
6868-30U	13.5GB 7200 EIDE 48X-20X CD-ROM	Pentium III 733/133	256KB full spd	128MB / PC600 Two 4D RIMMs	Millennium G400 AGP 4X; 16 / 16MB	PCI=4 AGP 50=0	3 used 4 empty	ethernet 840 / NT 4.0	Dec 1999
6868-31U	9.1GB 7200 Ultra2 48X-20X CD-ROM	Pentium III 733/133	256KB full spd	256MB / PC600 Two 8D RIMMs	Millennium G400 AGP 4X; 16 / 16MB	PCI=3 AGP 50=0	3 used 4 empty	ethernet / SCSI 840 / W2000	Feb 2000
6868-32U	9.1GB 7200 Ultra2 48X-20X CD-ROM	Pentium III 733/133	256KB full spd	256MB / PC600 Two 8D RIMMs	Millennium G400 AGP 4X; 16 / 16MB	PCI=3 AGP 50=0	3 used 4 empty	ethernet / SCSI 840 / NT 4.0	Dec 1999
6868-35U	9.1GB 10K Ultra2 48X-20X CD-ROM	Pentium III 733/133	256KB full spd	256MB / PC600 Two 8D RIMMs	IBM Fire GL1 AGP 2X; 32 / 32 MB	PCI=3 AGP 50=0	3 used 4 empty	ethernet / SCSI 840 / NT 4.0	Dec 1999
6868-37U	9.1GB 10K Ultra2 48X-20X CD-ROM	Pentium III 733/133	256KB full spd	256MB / PC600 Two 8D RIMMs	Wildcat 4110 AGP 2X; 128/128MB	PCI=2 AGP 50=0	3 used 4 empty	ethernet / SCSI 840 / NT 4.0	Jan 2000
6868-91U	9.1GB 7200 Ultra2 18.2GB 7200 Ultra2 48X-20X CD-ROM	Pentium III 600EB/133	256KB full spd	128MB / PC600 Two 4D RIMMs	Millennium G400 AGP 4X; 16 / 16MB	PCI=3 AGP 50=0	4 used 3 empty	ethernet / SCSI 840 / NT 4.0	Feb 2000
6868-18U for AAP	no disk 48X-20X CD-ROM	Pentium III 600EB/133	256KB full spd	None	None	PCI=4 AGP 50=1	2 used 5 empty	ethernet 840 / No OS	Dec 1999
6868-28U for AAP	no disk 48X-20X CD-ROM	Pentium III 667/133	256KB full spd	None	None	PCI=4 AGP 50=1	2 used 5 empty	ethernet 840 / No OS	Dec 1999
6868-39U for AAP	no disk 48X-20X CD-ROM	Pentium III 733/133	256KB full spd	None	None	PCI=4 AGP 50=1	2 used 5 empty	ethernet 840 / No OS	Dec 1999

<p>Windows NT Preload¹⁷</p> <p>Windows NT® Workstation 4.0 (SP5) ConfigSafe for Windows NT Access IBM Other utilities, drivers, and applications - Free license for Lotus® Smart® Millennium - Free license for Lotus Notes® Client ◇ Software Selections CD-ROM - Norton AntiVirus™ (OEM edition) - CoSession Remote 32 - IBM Update Connector™ - IBM Internet Connection - IBM Universal Manageability Services - IBM UM Desktop Extensions - PC-Doctor ◇ Windows NT Product Recovery CD-ROM ◇ Device Drivers and Diagnostics CD-ROM - C: is 2GB as FAT16 - Remainder of disk is unformatted</p> <p>↪ 13.5GB EIDE ATA-66 is 9.0ms, SMART⁵ III ↪ 9.1GB Ultra2 SCSI 7200 rpm disk is 7.5ms ↪ 9.1GB Ultra2 SCSI 10K rpm disk is 6.0ms ↪ 18.2GB Ultra2 SCSI 7200 rpm is 7.5ms</p>	<p>Options</p> <p>600EB Second Proc for M Pro 6868 33L5121 667MHz Second Proc for M Pro 6868 00N7951 733MHz Second Proc for M Pro 6868 00N7952 64MB 600MHz ECC RDRAM (4 Dev) 33L3093 128MB 600MHz ECC RDRAM (8 Dev) 33L3095 256MB 600MHz ECC RDRAM (16 Dev) 33L3097 64MB 800MHz ECC RDRAM (4 Dev) 20L0274 128MB 800MHz ECC RDRAM (8 Dev) 20L0275 256MB 800MHz ECC RDRAM (16 Dev) 20L0277 IBM IDE DVD-ROM (black) 33L5003 IBM IDE ReWritable CD-RW (black) 33L5005 20.4GB 7200 rpm EIDE disk 33L5044 18.2GB 7200 rpm Wide Ultra2 SCSI disk 20L0554 18.2GB 10000 rpm Wide Ultra2 SCSI 00N8072 T55D Stealth Black Color Monitor 9513DG0 T85D Stealth Black Color Monitor 9519DG0 IBM 20/40GB 8mm SCSI tape drive (blk) 01K1325 IBM 10/20GB SCSI tape backup (black) 01K1319 IBM 12/24GB DDS3 SCSI tape (black) 01K1282 IBM 20/40GB DDS/4mm tape (SCSI, blk) 00N7991 Mounting Kit (vendor 972-595-1436) CIS-CAMZPR</p> <p>Visit www.ibm.com/options for a complete list of compatible options</p>	<p>WARRANTY SERVICE SUPPORT³</p> <p>↪ 3 year parts and labor warranty ↪ International Warranty Service³ ↪ On site, 8 am through 5 pm, Mon through Fri excluding holidays, next business day response time ↪ On site warranty upgrade option: • 4 hour response¹⁴, 7 day x 24 hr ↪ Post warranty on site options: • Next day response¹⁴, Mon-Fri 8-5 • 4 hour response¹⁴, 7 day x 24 hr ↪ IBM SystemXtra¹⁰ ↪ 24 hour x 7 day telephone, electronic, and internet support</p> <p>Windows 2000 Professional Preload¹⁷ Microsoft® Windows® 2000 Professional - Free license for SmartSuite® Millennium ◇ Software Selections CD-ROM ◇ Windows 2000 Product Recovery CD (includes drivers and diagnostics) - C: is FAT32 of entire disk</p>
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IBM IntelliStation® M Pro (6868) - withdrawn

IBM® IntelliStation® M Pro							
Type	6868						
Processor(s)	One or two Intel® Pentium® III 600EB²⁰, 667, or 733MHz¹ / 133MHz Front Side Bus						
Implementation	Processor and L2 cache in Single Edge Contact (SECC2) in protective metal case / SECC2 plugged into Intel® Slot 1						
Processor upgrade	2-way SMP via identical processor / upgrade via second SECC2 into second motherboard Slot 1 connector / MPS 1.4						
L2 cache	256KB std / 256KB max / ECC / at processor speed / 8-way set associative / write-back / integrated in SECC2						
Avail / withdrawn date	December 1999 or January 2000 or February 2000 / June 2000 or November 2000						
Mem - std / max / type	128 or 256MB std / 2GB max ¹³ / dual RDRAM (Rambus) channels / 32 devices max each channel / ECC memory controller and RIMMs / four 184-pin gold-plated RIMM sockets (two per channel) /						
Memory - features	two RIMMs installed (one per channel) / CRIMMs in two sockets / supports PC600 or PC800 RIMMs (not PC700) / all installed RIMMs must be same speed (PC600 or PC800) and installed in pairs across channels						
Graphics controller	Matrox® Millennium G400 (performance 2D), IBM Fire GL1¹¹ (advanced 3D), Appian® Gemini (2D multiple display), or Intense3D® Wildcat 4110 AGP Adapter (extreme 3D)						
	<table border="1"> <tr> <td>IBM Fire GL1 / AGP 2X adapter / sideband-capable 32MB std / 32MB max / 256-bit 100MHz SGRAM 2D and OpenGL 3D engine / 250MHz RAMDAC / DDC2B</td> <td>Appian Gemini / AGP 2X adapter / 16MB std / 16MB max / 110MHz SGRAM / 270MHz RAMDAC / 1280x1024x24bpp at 85Hz two controllers with two DB-15 ports for multiple monitor support</td> </tr> <tr> <td colspan="2">Intense3D Wildcat 4110 AGP Adapter / AGP 2X adapter / 64MB 128-bit 143MHz SDRAM (frame buffer) and 64MB 64-bit 143MHz SDRAM (texture memory) / 2D and 3D engine / DB-15 and DVI-I ports (same image if both used)</td> </tr> </table>	IBM Fire GL1 / AGP 2X adapter / sideband-capable 32MB std / 32MB max / 256-bit 100MHz SGRAM 2D and OpenGL 3D engine / 250MHz RAMDAC / DDC2B	Appian Gemini / AGP 2X adapter / 16MB std / 16MB max / 110MHz SGRAM / 270MHz RAMDAC / 1280x1024x24bpp at 85Hz two controllers with two DB-15 ports for multiple monitor support	Intense3D Wildcat 4110 AGP Adapter / AGP 2X adapter / 64MB 128-bit 143MHz SDRAM (frame buffer) and 64MB 64-bit 143MHz SDRAM (texture memory) / 2D and 3D engine / DB-15 and DVI-I ports (same image if both used)			
IBM Fire GL1 / AGP 2X adapter / sideband-capable 32MB std / 32MB max / 256-bit 100MHz SGRAM 2D and OpenGL 3D engine / 250MHz RAMDAC / DDC2B	Appian Gemini / AGP 2X adapter / 16MB std / 16MB max / 110MHz SGRAM / 270MHz RAMDAC / 1280x1024x24bpp at 85Hz two controllers with two DB-15 ports for multiple monitor support						
Intense3D Wildcat 4110 AGP Adapter / AGP 2X adapter / 64MB 128-bit 143MHz SDRAM (frame buffer) and 64MB 64-bit 143MHz SDRAM (texture memory) / 2D and 3D engine / DB-15 and DVI-I ports (same image if both used)							
Architecture (chipset)	Intel 840 chip set / Accelerated Hub Architecture / 266MB/sec I/O channel / 82840 Memory Controller Hub (MCH) / 82801AA I/O Controller Hub (ICH) for PCI 2.2 bus, ATA-66 EIDE, USB, Low Pin Count Interface / 82802AC Firmware Hub / SMSC 47B272 SIO LPC Super I/O for diskette, parallel, serial, keyboard, mouse						
Form factor / bus	ATX / slots on planar (no riser) / PCI 2.2 (33MHz), Accelerated Graphics Port 2.0 (66MHz; AGP 4X; 1GB/sec) / see below						
Rack mountable	Rack mountable via optional mounting kit						
Disk	None (AAP models), one EIDE, or one or two Wide Ultra2 SCSI / SMART ⁵						
SCSI controller	<i>SCSI models only:</i> Adaptec® AHA-2940U2B / single channel Wide Ultra2 SCSI adapter / PCI adapter						
SCSI connectors	<i>Internal:</i> 68 pin (attaches 5 drop cable to SCSI disk); <i>External:</i> 68 pin SCSI port						
Cables - SCSI mod	<i>SCSI models:</i> 5 drop 16-bit LVD cable on internal connector; one 1 drop IDE ATA-33 cable (CD-ROM)						
Cables - IDE models	<i>EIDE models:</i> Two 2 drop IDE ATA-66 cable / CD-ROM uses second 1 drop IDE ATA-33 cable / no SCSI cable						
Cables - AAP models	<i>AAP models:</i> One 1 drop IDE ATA-33 cable						
EIDE disk controller	Enhanced IDE / ATA-66 and PIO modes 0-4 with 2 channel, 4 device support / integrated in I/O Controller Hub (ICH)						
CD-ROM / diskette	48X-20X⁶ CD-ROM , CAV (ATAPI), bootable / 3.5" 1.44MB diskette drive						
Ethernet controller	Intel EtherExpress™ PRO/100 / 82559 ethernet chip on planar / PCI bus / 10BaseT and 100BaseTX / RJ45 UTP connector / Wake on LAN® / Alert on LAN 2						
Systems mgmt cntrl	Temperature sensors, fan-speed monitor, chassis-intrusion detector, power supply and CPU voltage monitor, and power-switch bypass / AD1025						
Audio	SoundMAX™ integrated digital audio / software-based (done by Pentium and ICH) / AC '97 interface / AD1881 codec (analog mixing, A-to-D and D-to-A conversion)						
Audio connectors	Line in with active pre-amp / mic in / line out (all 3.5mm; all in back)						
Audio features	Internal speaker with automatic jack sense switching / software volume control						
Microphone	None						
Serial/parallel/USB	<i>Ser:</i> One 9 pin <i>Par:</i> One (EPP, ECP) / IEEE 1284 <i>USB:</i> Two ports (Vers 1.1)						
Security chip	Integrated IBM Security Chip / soldered on motherboard						
Keyboard / mouse	104 key keyboard / keyboard extender / IBM ScrollPoint™ II mouse						
Power supply	330 watts / universal / auto-sensing / Wake on LAN						
	<table border="1"> <tr> <td>  </td> <td> Bay ① 5.25", HH 1.6", access, std CD-ROM Bay ② 5.25", HH 1.6", access, open Bay ③ 3.5", SL 1", access, open Bay ④ 3.5", SL 1", access, std diskette Bay ⑤ 3.5", HH 1.6", no access, open (disk only) Bay ⑥ 3.5", HH 1.6", no access, open (disk only) - used by 2nd disk in model 91x Bay ⑦ 3.5", HH 1.6", no access, std disk (disk only) Slot 1: fullsize, 32-bit AGP Pro50 (universal) - used by AGP graphics adapter Slot 2: fullsize, 32-bit PCI 2.2 (5v) - not usable with AGP Pro50 adapter in AGP slot or Slot 3: fullsize, 32-bit PCI 2.2 (5v) in models with Intense3D Wildcat Slot 4: fullsize, 32-bit PCI 2.2 (5v) - occupied by Canopus DVRRaptor in model 91x Slot 5: fullsize, 32-bit PCI 2.2 (5v) Slot 6: fullsize, 32-bit PCI 2.2 (5v) - occupied by SCSI adapter in SCSI disk models </td> </tr> </table>		Bay ① 5.25", HH 1.6", access, std CD-ROM Bay ② 5.25", HH 1.6", access, open Bay ③ 3.5", SL 1", access, open Bay ④ 3.5", SL 1", access, std diskette Bay ⑤ 3.5", HH 1.6", no access, open (disk only) Bay ⑥ 3.5", HH 1.6", no access, open (disk only) - used by 2nd disk in model 91x Bay ⑦ 3.5", HH 1.6", no access, std disk (disk only) Slot 1: fullsize, 32-bit AGP Pro50 (universal) - used by AGP graphics adapter Slot 2: fullsize, 32-bit PCI 2.2 (5v) - not usable with AGP Pro50 adapter in AGP slot or Slot 3: fullsize, 32-bit PCI 2.2 (5v) in models with Intense3D Wildcat Slot 4: fullsize, 32-bit PCI 2.2 (5v) - occupied by Canopus DVRRaptor in model 91x Slot 5: fullsize, 32-bit PCI 2.2 (5v) Slot 6: fullsize, 32-bit PCI 2.2 (5v) - occupied by SCSI adapter in SCSI disk models				
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IBM IntelliStation® M Pro (6868) - Spring 2000 - withdrawn

Type-model	Disk / rpm / interface CD-ROM ⁶	Intel® Processor MHz ¹ ; 2-way SMP support	Write-back L2 cache standard	Rambus memory; std MB / type; devices / type	SVGA controller; AGP Pro50 slot; memory std / max or positioning	Total bus slots available	Total bays	Ethernet / SCSI Chip set Preload ¹⁷	Available date
Mini Tower; 6 slot x 7 bay; Stealth Black - US models									
6868-36U	9.1GB ² 7200 Ultra2 48X-20X ⁶ CD-ROM	Pentium® III 733/133	256KB full spd	256MB / PC600 Two 8D RIMMs	ELSA™ GLoria II AGP 4X; 64 / 64MB	PCI=4 AGP 50=0	3 used 4 empty	ethernet / SCSI 840 / NT 4.0	Apr 2000
6868-40U	15.0GB 7200 EIDE 48X-20X CD-ROM	Pentium III 800EB/133	256KB full spd	256MB / PC600 Two 8D RIMMs	Millennium G400 AGP 4X; 16 / 16MB	PCI=5 AGP 50=0	3 used 4 empty	ethernet 840 / NT 4.0	Apr 2000
6868-42U	9.1GB 7200 Ultra2 48X-20X CD-ROM	Pentium III 800EB/133	256KB full spd	256MB / PC600 Two 8D RIMMs	Millennium G400 AGP 4X; 16 / 16MB	PCI=4 AGP 50=0	3 used 4 empty	ethernet / SCSI 840 / NT 4.0	Apr 2000
6868-46U	9.1GB 10K Ultra2 48X-20X CD-ROM	Pentium III 800EB/133	256KB full spd	256MB / PC600 Two 8D RIMMs	ELSA GLoria II AGP 4X; 64 / 64MB	PCI=4 AGP 50=0	3 used 4 empty	ethernet / SCSI 840 / NT 4.0	Apr 2000
6868-47U	9.1GB 10K Ultra2 48X-20X CD-ROM	Pentium III 800EB/133	256KB full spd	512MB / PC600 Two 16D RIMMs	Wildcat 4110 AGP 2X; 128/128MB	PCI=3 AGP 50=0	3 used 4 empty	ethernet / SCSI 840 / NT 4.0	Apr 2000
6868-92U	9.1GB 7200 Ultra2 18.2GB 7200 Ultra2 48X-20X CD-ROM	Pentium III 733/133	256KB full spd	128MB / PC600 Two 4D RIMMs	Millenium G400 AGP 4X; 16 / 16MB	PCI=3 AGP 50=0	4 used 3 empty	ethernet / SCSI 840 / NT 4.0	Apr 2000
6868-52U	9.1GB 7200 Ultra2 48X-20X CD-ROM	Pentium III 866/133	256KB full spd	256MB / PC600 Two 8D RIMMs	Millennium G400 AGP 4X; 16 / 16MB	PCI=4 AGP 50=0	3 used 4 empty	ethernet / SCSI 840 / NT 4.0	Apr 2000
6868-56U	9.1GB 10K Ultra2 48X-20X CD-ROM	Pentium III 866/133	256KB full spd	512MB / PC600 Two 16D RIMMs	ELSA GLoria II AGP 4X; 64 / 64MB	PCI=4 AGP 50=0	3 used 4 empty	ethernet / SCSI 840 / NT 4.0	Apr 2000
6868-57U	9.1GB 10K Ultra2 48X-20X CD-ROM	Pentium III 866/133	256KB full spd	512MB / PC600 Two 16D RIMMs	Wildcat 4110 AGP 2X; 128/128MB	PCI=3 AGP 50=0	3 used 4 empty	ethernet / SCSI 840 / NT 4.0	Apr 2000
6868-49U for AAP	no disk 48X-20X CD-ROM	Pentium III 800EB/133	256KB full spd	None	None	PCI=5 AGP 50=1	2 used 5 empty	ethernet 840 / No OS	Apr 2000
6868-59U for AAP	no disk 48X-20X CD-ROM	Pentium III 866/133	256KB full spd	None	None	PCI=5 AGP 50=1	2 used 5 empty	ethernet 840 / No OS	Apr 2000
6868-50U	15.0GB 7200 EIDE 48X-20X ⁴ CD-ROM	Pentium III 866/133	256KB full spd	256MB / PC600 Two 8D RIMMs	Millennium G400 AGP 4X; 16 / 16MB	PCI=4 AGP 50=0	3 used 4 empty	ethernet / SCSI 840 / NT 4.0	Jun 2000
6868-60U	15.0GB 7200 EIDE 48X-20X CD-ROM	Pentium III 933/133	256KB full spd	256MB / PC600 Two 8D RIMMs	Millennium G400 AGP 4X; 16 / 16MB	PCI=5 AGP 50=0	3 used 4 empty	ethernet 840 / NT 4.0	Jun 2000
6868-62U	9.1GB 7200 Ultra2 48X-20X CD-ROM	Pentium III 933/133	256KB full spd	256MB / PC600 Two 8D RIMMs	Millennium G400 AGP 4X; 16 / 16MB	PCI=4 AGP 50=0	3 used 4 empty	ethernet / SCSI 840 / NT 4.0	Jun 2000
6868-66U	9.1GB 10K Ultra2 48X-20X CD-ROM	Pentium III 933/133	256KB full spd	512MB / PC600 Two 16D RIMMs	ELSA GLoria II AGP 4X; 64 / 64MB	PCI=4 AGP 50=0	3 used 4 empty	ethernet / SCSI 840 / NT 4.0	Jun 2000
6868-67U	9.1GB 10K Ultra2 48X-20X CD-ROM	Pentium III 933/133	256KB full spd	512MB / PC600 Two 16D RIMMs	Wildcat 4110 AGP 2X; 128/128MB	PCI=3 AGP 50=0	3 used 4 empty	ethernet / SCSI 840 / NT 4.0	Jun 2000
6868-93U	15.0GB 7200 EIDE 30.0GB 7200 EIDE 48X-20X CD-ROM	Pentium III 733/133	256KB full spd	128MB / PC600 Two 4D RIMMs	Millennium G400 AGP 4X; 16 / 16MB	PCI=4 AGP 50=0	4 used 3 empty	ethernet 840 / NT 4.0	Aug 2000
6868-94U	9.1GB 7200 Ultra2 36.4GB 10K Ultra160 48X-20X CD-ROM	Pentium III 933/133	256KB full spd	128MB / PC600 Two 4D RIMMs	Millenium G400 AGP 4X; 16 / 16MB	PCI=3 AGP 50=0	4 used 3 empty	ethernet / SCSI 840 / NT 4.0	Aug 2000

Windows NT Preload ¹⁷	Options	WARRANTY SERVICE SUPPORT* ³
Windows NT® Workstation 4.0 (SP5)	733MHz Second Processor for M Pro 6868	00N7952
ConfigSafe for Windows NT	800EB MHz Second Proc for M Pro 6868	10K3802
Access IBM	866MHz Second Processor for M Pro6868	10K3813
Other utilities, drivers, and applications	933MHz Second Processor for M Pro6868	10K3814
- Free license for Lotus® Smart® Millennium	64MB 600MHz ECC RDRAM (4 Dev)	33L3093
- Free license for Lotus Notes® Client	128MB 600MHz ECC RDRAM (8 Dev)	33L3095
Software Selections CD-ROM	256MB 600MHz ECC RDRAM (16 Dev)	33L3097
- Norton AntiVirus™ (OEM edition)	64MB 800MHz ECC RDRAM (4 Dev)	20L0274
- CoSession Remote 32	128MB 800MHz ECC RDRAM (8 Dev)	20L0275
- IBM Update Connector™	256MB 800MHz ECC RDRAM (16 Dev)	20L0277
- IBM Internet Connection	IBM IDE DVD-ROM (black)	33L5003
- IBM Universal Manageability Services	IBM IDE ReWritable CD-RW (black)	33L5005
- IBM UM Desktop Extensions	30GB 7200 rpm ATA-100 EIDE disk	00N8203
- PC-Doctor	18.2GB 7200 rpm Wide Ultra2 SCSI disk	20L0554
Windows NT Product Recovery CD-ROM	18.2GB 10000 rpm Ultra160 SCSI	00N8208
Device Drivers and Diagnostics CD-ROM	36.4GB 10000 rpm Ultra160 SCSI	00N8209
	T55A LCD TFT Stealth Blk Color Monitor	9513AW1
	T56A LCD TFT Stealth Blk Color Monitor	9493AG1
	T55D LCD TFT Stealth Blk Color Monitor	9513DG0
	T85A LCD TFT Stealth Blk Color Monitor	9519AG1
	T85D LCD TFT Stealth Blk Color Monitor	9519DG0
	IBM 20/40GB 8mm SCSI tape drive (blk)	01K1325
	IBM 10/20GB SCSI tape backup (black)	09N4042
	IBM 12/24GB DDS3 SCSI tape (black)	09N4041
	IBM 20/40GB DDS/4mm tape (SCSI, blk)	00N7991
	Mounting Kit (vendor at 972-647-1565)	CIS-CAMZPR
↪ 15.0 and 30GB EIDE ATA-66 is 9.0ms, SMART ⁵ III	Visit www.ibm.com/options for a complete list of compatible options	
↪ 9.1GB Ultra2 SCSI 7200 rpm disk is 7.5ms		
↪ 9.1GB Ultra2 SCSI 10K rpm disk is 6.0ms		
↪ 18.2GB Ultra2 SCSI 7200 rpm is 7.5ms		
↪ 36.4GB Ultra160 SCSI 10K rpm disk is 5.5ms		

* For a copy of IBM's Statement of Limited Warranty, call 1-800-772-2227

US models announced on March 20, June 6, or August 14, 2000

⌘ US models withdrawn from marketing effective November 2000 or May 2001 or October 2001

No warranties are expressed or implied in this summary

(6868S - Page 1 of 2) © IBM Corp. October 2001

IBM IntelliStation® M Pro (6868) - Spring 2000 - withdrawn

IBM® IntelliStation® M Pro

Type	6868															
Processor(s)	One or two Intel® Pentium® III 733, 800EB, 866, or 933MHz¹ / 133MHz Front Side Bus															
Implementation	Processor and L2 cache in Single Edge Contact (SECC2) in protective metal case / SECC2 plugged into Intel® Slot 1															
Processor upgrade	2-way SMP via identical processor / upgrade via second SECC2 into second motherboard Slot 1 connector / MPS 1.4															
L2 cache	256KB std and max / ECC / at processor speed / 8-way set associative / write-back / integrated in SECC2															
Avail / withdrawn date	April 2000 or June 2000 or August 2000 / November 2000 or April 2001 or May 2001															
Mem - std / max / type	128 or 256 or 512MB std / 2GB max¹³ / dual RDRAM (Rambus) channels / 32 devices max each channel / ECC memory controller and RIMMs / four 184-pin gold-plated RIMM sockets (two per channel) /															
Memory - features	two RIMMs installed (one per channel) / CRIMMs in two sockets / supports PC600 or PC800 RIMMs (not PC700) / all installed RIMMs must be same speed (PC600 or PC800) and installed in pairs across channels															
Graphics controller	Matrox® Millennium G400 (performance 2D), ELSA™ Gloria II (advanced 3D), or Intense3D® Wildcat 4110 AGP Adapter (extreme 3D)															
	Millennium G400 / AGP 4X adapter / sideband addressing / 16MB std / 16MB max / 166MHz SGRAM / 250MHz RAMDAC / 256-bit DualBus chip / max 2D resolution of 2048x1536 / supports 1280x1024x16.7 million at 100Hz	ELSA GLoria II / AGP 4X adapter / 64MB 128-bit 110MHz SDRAM std and max / 350MHz RAMDAC / 2048x1536 at 75Hz / NVIDIA™ Quadro controller / 256-bit QuadPipe rendering engine														
	Intense3D Wildcat 4110 AGP Adapter / AGP 2X adapter / 64MB 128-bit 143MHz SDRAM (frame buffer) and 64MB 64-bit 143MHz SDRAM (texture memory) / 2D and 3D engine / DB-15 and DVI-I ports (same image if both used)															
Architecture (chipset)	Intel 840 chip set / Accelerated Hub Architecture / 266MB/sec I/O channel / 82840 Memory Controller Hub (MCH) / 82801AA I/O Controller Hub (ICH) for PCI 2.2 bus, ATA-66 EIDE, USB, Low Pin Count Interface / 82802AC Firmware Hub / SMSC 47B272 SIO LPC Super I/O for diskette, parallel, serial, keyboard, mouse															
Form factor / bus	ATX / slots on planar (no riser) / PCI 2.2 (33MHz), Accelerated Graphics Port 2.0 (66MHz; AGP 4X; 1GB/sec) / see below															
Rack mountable	Rack mountable via optional mounting kit															
Disk	None (AAP models), one EIDE ¹ , or one or two Wide Ultra2 SCSI / SMART ⁵															
SCSI controller	SCSI models only: Adaptec® AHA-2940U2B / single channel Wide Ultra2 SCSI adapter / PCI adapter															
SCSI connectors	<i>Internal</i> : 68 pin (attaches 5 drop cable to SCSI disk); <i>External</i> : 68 pin SCSI port															
Cables - SCSI mod	SCSI models: 5 drop 16-bit LVD cable on internal connector; one 1 drop IDE ATA-33 cable (CD-ROM)															
Cables - IDE models	EIDE models: Two 2 drop IDE ATA-66 cable / CD-ROM uses second 1 drop IDE ATA-33 cable / no SCSI cable															
Cables - AAP models	AAP models: One 1 drop IDE ATA-33 cable															
EIDE disk controller	Enhanced IDE / ATA-66 and PIO modes 0-4 with 2 channel, 4 device support / integrated in I/O Controller Hub (ICH)															
CD-ROM / diskette	48X-20X⁶ CD-ROM , CAV (ATAPI), bootable / 3.5" 1.44MB diskette drive															
Ethernet controller	Intel EtherExpress™ PRO/100 / 82559 ethernet chip on planar / PCI bus / 10BaseT and 100BaseTX / RJ45 UTP connector / Wake on LAN® / Alert on LAN 2															
Systems mgmt cntrl	Temperature sensors, fan-speed monitor, chassis-intrusion detector, power supply and CPU voltage monitor, and power-switch bypass / AD1025															
Audio	SoundMAX™ integrated digital audio / software-based (done by Pentium and ICH) / AC '97 interface / AD1881 codec (analog mixing, A-to-D and D-to-A conversion)															
Audio connectors	Line in with active pre-amp / mic in / line out (all 3.5mm; all in back)															
Audio features	Internal speaker with automatic jack sense switching / software volume control															
Microphone	None															
Serial / parallel / USB	<i>Ser</i> : One 9 pin <i>Par</i> : One (EPP, ECP) / IEEE 1284 <i>USB</i> : Two ports (Vers 1.1)															
Security chip	Integrated IBM Security Chip / soldered on motherboard															
Keyboard / mouse	104 key keyboard / keyboard extender / IBM ScrollPoint™ II mouse															
Power supply	330 watts / universal / auto-sensing / Wake on LAN															
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disk	Bay ⑦ 3.5", HH 1.6", no access, std disk (disk only)															
Mini tower; Stealth black color																
	<p>SECURITY CHIP</p> <ul style="list-style-type: none"> - Provides electronic digital signature and secure key storage - Can sign each e-mail with a digital signature (1024-bit) so receiving party can verify sender - Public Key Infrastructure (PKI) for more secure e-mail, web access and Internet transactions, and Secure Sockets Layer (SSL) for encryption/decryption capabilities - Uses User Verification Manager software available from IBM web site 	<p>OTHER STANDARD FEATURES</p> <p>The Setup Utility resides in flash memory; invoked by pressing F1 key during memory POST</p> <p>Plug-and-Play 1.0a</p> <p>ISO 9241-3 capable</p> <p>Vital Product Data support (type, model, serial, id)</p> <p>7.9"W x 18.1"D x 19.4"H; 45 lbs max (shipped)</p> <p>200 mm W x 460 mm D x 492 mm H; 17.3 kg</p> <p>Several hardcopy publications</p> <p>Four stabilizing feet</p> <p>512KB BIOS (Flash over LAN support)</p> <p>Supplier's Declaration available</p> <p>Three fans (one in front, one in rear, one in power supply)</p>														
	<p>SECURITY</p> <ul style="list-style-type: none"> - Cover key lock (in rear) - Cover tamper detect switch - Secure fixed DASH - Serial EEPROM with write protect - Power-on password - Administrator password - Keyboard/mouse password - Wake Up on LAN password prompt - Boot sequence control - Boot without keyboard or mouse - Diskette boot inhibit - Disable mouse - Disable external SCSI port - Diskette write-protect - Diskette, disk, serial port, parallel port I/O control - Secure access openings - Secure removable media - VPD stored in EEPROM - Write protection control for EEPROM - Barcode labels on most components - IBM Security Solutions <p><i>Maximum internal SCSI disk capacity¹³</i>: 91GB (5 x 18.2GB (7200 or 10K rpm);</p> <p><i>Maximum internal EIDE disk capacity¹³</i>: 61.2GB (3 x 20.4GB 7200 rpm)</p> <p>SYSTEMS MANAGEMENT</p> <ul style="list-style-type: none"> • Asset ID™ (RFID)¹⁶ • Alert on LAN™ 2 • Universal Manageability Services and Universal Manageability (UM) Desktop Extensions enabled • LANClient Control Manager™ enabled • SMART Reaction™.5 II • PC 99-compliant • DMI 2.0-compliant • Common Information Model (CIM) 2.2 • Asset Information Chip (EEPROM) • Wired for Management 2.0 • ACPI 1.0 • Advanced Power Management 1.2 • Wake on LAN support • Alternate Boot Sequence • RPL, DHCP, and PXE 2.0support • Setup on LAN, Flash on LAN • Wake on Alarm • System Management BIOS Version 2.3 • Systems Migration Assistant support 															

IBM IntelliStation® M Pro (6868) - Fall 2000 - withdrawn

Type-model	Disk / rpm / interface CD-ROM ⁶	Intel® Processor MHz ¹ ; 2-way SMP support	Write-back L2 cache standard	Rambus memory; std MB / type; devices / type	SVGA controller; AGP Pro50 slot; memory std / max	Total bus slots available	Total bays	Ethernet / SCSI Chip set Preload ¹⁷	Avail- able date
Mini Tower; 6 slot x 7 bay; Stealth Black - US models									
6868-4AU	15.0GB ² 7200 EIDE 48X-20X ⁶ CD-ROM	Pentium® III 800EB/133	256KB full spd	256MB / PC600 Two 8D RIMMs	Millennium G450 AGP 4X; 16 / 16MB	PCI=5 AGP 50=0	3 used 4 empty	ethernet 840 / 2000 or NT	Oct 2000
6868-4BU	9.1GB 10K Ultra160 48X-20X CD-ROM	Pentium III 800EB/133	256KB full spd	256MB / PC600 Two 8D RIMMs	Millennium G450 AGP 4X; 16 / 16MB	PCI=4 AGP 50=0	3 used 4 empty	ethernet / SCSI 840 / 2000 or NT	Oct 2000
6868-4CU	9.1GB 10K Ultra160 48X-20X CD-ROM	Pentium III 800EB/133	256KB full spd	256MB / PC600 Two 8D RIMMs	NVIDIA Quadro2 MXR AGP 4X; 32 / 32MB	PCI=4 AGP 50=0	3 used 4 empty	ethernet / SCSI 840 / 2000 or NT	Oct 2000
6868-4DU	9.1GB 10K Ultra160 48X-20X CD-ROM	Pentium III 800EB/133	256KB full spd	512MB / PC600 Two 16D RIMMs	Wildcat 4110 AGP 2X; 128/128MB	PCI=3 AGP 50=0	3 used 4 empty	ethernet / SCSI 840 / 2000 or NT	Oct 2000
6868-5AU	15.0GB 7200 EIDE 48X-20X CD-ROM	Pentium III 866/133	256KB full spd	256MB / PC600 Two 8D RIMMs	Millennium G450 AGP 4X; 16 / 16MB	PCI=5 AGP 50=0	3 used 4 empty	ethernet 840 / 2000 or NT	Oct 2000
6868-5BU	9.1GB 10K Ultra160 48X-20X CD-ROM	Pentium III 866/133	256KB full spd	256MB / PC600 Two 8D RIMMs	Millennium G450 AGP 4X; 16 / 16MB	PCI=4 AGP 50=0	3 used 4 empty	ethernet / SCSI 840 / 2000 or NT	Oct 2000
6868-5CU	9.1GB 10K Ultra160 48X-20X CD-ROM	Pentium III 866/133	256KB full spd	512MB / PC600 Two 16D RIMMs	NVIDIA Quadro2 MXR AGP 4X; 32 / 32MB	PCI=4 AGP 50=0	3 used 4 empty	ethernet / SCSI 840 / 2000 or NT	Oct 2000
6868-5DU	9.1GB 10K Ultra160 48X-20X CD-ROM	Pentium III 866/133	256KB full spd	512MB / PC600 Two 16D RIMMs	Wildcat 4110 AGP 2X; 128/128MB	PCI=3 AGP 50=0	3 used 4 empty	ethernet / SCSI 840 / 2000 or NT	Oct 2000
6868-6AU	20.4GB 7200 EIDE 48X-20X CD-ROM	Pentium III 933/133	256KB full spd	256MB / PC600 Two 8D RIMMs	Millennium G450 AGP 4X; 16 / 16MB	PCI=5 AGP 50=0	3 used 4 empty	ethernet 840 / 2000 or NT	Oct 2000
6868-6BU	18.2GB 10K Ultra160 48X-20X CD-ROM	Pentium III 933/133	256KB full spd	256MB / PC600 Two 8D RIMMs	Millennium G450 AGP 4X; 16 / 16MB	PCI=4 AGP 50=0	3 used 4 empty	ethernet / SCSI 840 / 2000 or NT	Oct 2000
6868-6CU	18.2GB 10K Ultra160 48X-20X CD-ROM	Pentium III 933/133	256KB full spd	512MB / PC600 Two 16D RIMMs	NVIDIA Quadro2 MXR AGP 4X; 32 / 32MB	PCI=4 AGP 50=0	3 used 4 empty	ethernet / SCSI 840 / 2000 or NT	Oct 2000
6868-6DU	18.2GB 10K Ultra160 48X-20X ⁴ CD-ROM	Pentium III 933/133	256KB full spd	512MB / PC600 Two 16D RIMMs	Wildcat 4110 AGP 2X; 128/128MB	PCI=3 AGP 50=0	3 used 4 empty	ethernet / SCSI 840 / 2000 or NT	Oct 2000
6868-70U	20.4GB 7200 EIDE 48X-20X CD-ROM	Pentium III 1.0GHz/133	256KB full spd	256MB / PC600 Two 8D RIMMs	Millennium G450 AGP 4X; 16 / 16MB	PCI=5 AGP 50=0	3 used 4 empty	ethernet 840 / 2000 or NT	Oct 2000
6868-72U	18.2GB 10K Ultra160 48X-20X CD-ROM	Pentium III 1.0GHz/133	256KB full spd	512MB / PC600 Two 16D RIMMs	Millennium G450 AGP 4X; 16 / 16MB	PCI=4 AGP 50=0	3 used 4 empty	ethernet / SCSI 840 / 2000 or NT	Oct 2000
6868-76U	18.2GB 10K Ultra160 48X-20X CD-ROM	Pentium III 1.0GHz/133	256KB full spd	512MB / PC600 Two 16D RIMMs	NVIDIA Quadro2 MXR AGP 4X; 32 / 32MB	PCI=4 AGP 50=0	3 used 4 empty	ethernet / SCSI 840 / 2000 or NT	Oct 2000
6868-77U	18.2GB 10K Ultra160 48X-20X CD-ROM	Pentium III 1.0GHz/133	256KB full spd	512MB / PC600 Two 16D RIMMs	Wildcat 4110 AGP 2X; 128/128MB	PCI=3 AGP 50=0	3 used 4 empty	ethernet / SCSI 840 / 2000 or NT	Oct 2000
6868-78U	18.2GB 10K Ultra160 48X-20X CD-ROM	Pentium III 1.0GHz/133	256KB full spd	512MB / PC600 Two 16D RIMMs	IBM Fire GL2 AGP 4X; 64 / 64MB	PCI=4 AGP 50=0	3 used 4 empty	ethernet / SCSI 840 / 2000 or NT	Oct 2000
6868-5RU	no disk 48X-20X CD-ROM	Pentium III 866/133	256KB full spd	256MB / PC600 Two 8D RIMMs	Millennium G450 AGP 4X; 16 / 16MB	PCI=5 AGP 50=0	2 used 5 empty	ethernet 840 / no OS	Oct 2000
6868-6RU	no disk 48X-20X CD-ROM	Pentium III 933/133	256KB full spd	256MB / PC600 Two 8D RIMMs	Millennium G450 AGP 4X; 16 / 16MB	PCI=5 AGP 50=0	2 used 5 empty	ethernet 840 / no OS	Oct 2000
6868-7PU	no disk 48X-20X CD-ROM	Pentium III 1.0GHz/133	256KB full spd	256MB / PC600 Two 8D RIMMs	Millennium G450 AGP 4X; 16 / 16MB	PCI=5 AGP 50=0	2 used 5 empty	ethernet 840 / no OS	Oct 2000

Windows 2000 Professional Preload ¹⁷	Options	WARRANTY SERVICE SUPPORT* ³
Windows 2000 Professional - Free license for Lotus® SmartSuite® Millennium - Free license for Lotus Notes® Client ⇨ Device Drivers and Diagnostics CD-ROM ⇨ Software Selections CD-ROM ⇨ Windows 2000 Product Recovery CD-ROM ⇨ Windows NT 4.0 (SP6) Product Recovery CD-ROM	800EB MHz Second Proc for M Pro 6868 866MHz Second Processor for M Pro6868 933MHz Second Processor for M Pro6868 1GHZ Second Processor for M Pro 6868 64MB 600MHz ECC RDRAM (4 Dev) 128MB 600MHz ECC RDRAM (8 Dev) 256MB 600MHz ECC RDRAM (16 Dev) 64MB 800MHz ECC RDRAM (4 Dev) 128MB 800MHz ECC RDRAM (8 Dev) 256MB 800MHz ECC RDRAM (16 Dev) IBM IDE 8X DVD-ROM (black) IBM DVD-RAM (black) IBM IDE ReWritable CD-RW (black) 20.4GB 7200 rpm ATA-100 EIDE disk 30GB 7200 rpm ATA-100 EIDE disk 36.4GB 7200 rpm Ultra160 SCSI 36.4GB 10000 rpm Ultra160 SCSI T54A LCD TFT Stealth Blk Color Monitor T55D LCD TFT Stealth Blk Color Monitor T56A LCD TFT Stealth Blk Color Monitor T85A LCD TFT Stealth Blk Color Monitor T86D LCD TFT Stealth Blk Color Monitor IBM 20/40GB 8mm SCSI tape drive (blk) IBM 10/20GB SCSI tape backup (black) IBM 12/24GB DDS3 SCSI tape (black) IBM 20/40GB DDS/4mm tape (SCSI, blk) Mounting Kit (vendor at 972-647-1565)	⇨ 3 year parts and labor warranty ⇨ International Warranty Service ³ ⇨ On site, 8 am through 5 pm, Mon through Fri excluding holidays, next business day response time ⇨ On site warranty service upgrade option: • 4 hour response, 7 day x 24 hr ¹⁴ ⇨ Post warranty maintenance services available ⇨ 24 hour x 7 day telephone, electronic, and Internet support
⇨ 15.0 and 20.4GB EIDE disks are ATA-66, 9.0ms average read seek time, SMART ⁵ III ⇨ 9.1GB Ultra160 SCSI 10000 rpm disk is 6.0ms average read seek time, SMART ⁵ ⇨ 18.2GB Ultra160 SCSI 10000 rpm is 5.5ms average read seek time, SMART ⁵		
Visit www.ibm.com/options for a complete list of compatible options		

* For a copy of IBM's Statement of Limited Warranty, call 1-800-772-2227
 US models announced October 10, 2000
 US models withdrawn from marketing effective May 2001 or October 2001

No warranties are expressed or implied in this summary
 (6868F - Page 1 of 2) © IBM Corp. October 2001

IBM IntelliStation® M Pro (6868) - Fall 2000 - withdrawn

IBM® IntelliStation® M Pro

Type	6868															
Processor(s)	One or two Intel® Pentium® III 800EB, 866, 933MHz¹ or 1.0B GHz¹ / 133MHz Front Side Bus															
Implementation	Processor and L2 cache in Single Edge Contact (SECC2) in protective metal case / SECC2 plugged into Intel® Slot 1															
Processor upgrade	2-way SMP via identical processor / upgrade via second SECC2 into second motherboard Slot 1 connector / MPS 1.4															
L2 cache	256KB std and max / ECC / at processor speed / 8-way set associative / write-back / integrated in SECC2															
Avail / withdrawn date	October 2000 / May 2001 or October 2001															
Mem - std / max / type	256 or 512MB std / 2GB max ¹³ / dual RDRAM (Rambus) channels / 32 devices max each channel / ECC memory controller and RIMMs / four 184-pin gold-plated RIMM sockets (two per channel) /															
Memory - features	two RIMMs installed (one per channel) / CRIMMs in two sockets / supports PC600 or PC800 RIMMs (not PC700) / all installed RIMMs must be same speed (PC600 or PC800) and installed in pairs across channels															
Graphics controller (one of following)	<ul style="list-style-type: none"> • Matrox® Millennium G450 (high-performance 2D) / AGP 4X adapter / Matrox MGA G450C GPU / 16MB std and max 166MHz SDRAM / two DB-15 connectors (dual monitor capable) • NVIDIA™ Quadro2 MXR (advanced 3D) / AGP 4X adapter / NV11GL GPU / 32MB std and max 183MHz SDRAM / DB-15 and DVI-I connectors (dual monitor capable) • IBM Fire GL2 (extreme 3D) / AGP 4X adapter / 64MB std and max 120MHz DDR-SGRAM / DB-15 and DVI-I connectors (single head; same image if both used) • Intense3D® Wildcat 4110 AGP Adapter (extreme 3D) / AGP 2X adapter / 64MB 128-bit 143MHz SDRAM (frame buffer) and 64MB 64-bit 143MHz SDRAM (texture memory) / DB-15 and DVI-I ports (single head; same image if both used) 															
Architecture (chipset)	Intel 840 chip set / Accelerated Hub Architecture / 266MB/sec I/O channel / 82840 Memory Controller Hub (MCH) / 82801AA I/O Controller Hub (ICH) for PCI 2.2 bus, ATA-66 EIDE, USB, Low Pin Count Interface / 82802AC Firmware Hub / SMSC 47B272 SIO LPC Super I/O for diskette, parallel, serial, keyboard, mouse															
Form factor / bus	ATX / slots on planar (no riser) / PCI 2.2 (33MHz), Accelerated Graphics Port 2.0 (66MHz; AGP 4X; 1GB/sec) / see below															
Rack mountable	Rack mountable via optional mounting kit															
Disk	None (AAP models), one ATA-66 EIDE, or one Wide Ultra160 SCSI / SMART ⁵															
SCSI controller	<i>SCSI models only:</i> Adaptec® 29160LP / single channel Wide Ultra160 SCSI adapter (LVD 160MB/sec) / PCI adapter															
SCSI connectors	<i>Internal:</i> 68-pin (attaches 5 drop cable to SCSI disk); <i>External:</i> 68-pin SCSI port															
Cables - SCSI mod	<i>SCSI models:</i> 5 drop 16-bit LVD cable on internal connector; one 1-drop IDE ATA-33 cable (CD-ROM)															
Cables - IDE models	<i>EIDE models:</i> Two 2-drop IDE ATA-66 cables / CD-ROM uses second 1-drop IDE ATA-33 cable / no SCSI cable															
Cables - AAP models	<i>AAP models:</i> One 1 drop IDE ATA-33 cable															
EIDE disk controller	Enhanced IDE / ATA-66 and PIO modes 0-4 with 2 channel, 4 device support / integrated in I/O Controller Hub (ICH)															
CD-ROM / diskette	48X-20X⁶ CD-ROM , CAV (ATAPI), bootable / 3.5" 1.44MB diskette drive															
Ethernet controller	Intel EtherExpress™ PRO/100 / 82559 ethernet chip on planar / PCI bus / 10BaseT and 100BaseTX / RJ45 UTP connector / Wake on LAN® / Alert on LAN 2															
Systems mgmt cntrl	Temperature sensors, fan-speed monitor, chassis-intrusion detector, power supply and CPU voltage monitor, and power-switch bypass / AD1025															
Audio	SoundMAX™ integrated digital audio / software-based (done by Pentium and ICH) / AC '97 interface / AD1881 codec (analog mixing, A-to-D and D-to-A conversion)															
Audio connectors	Line in with active pre-amp / mic in / line out (all 3.5mm; all in back)															
Audio features	Internal speaker with automatic jack sense switching / software volume control															
Microphone	None															
Serial/parallel/USB	<i>Ser:</i> One 9 pin <i>Par:</i> One (EPP, ECP) / IEEE 1284 <i>USB:</i> Two ports (Vers 1.1)															
Security chip	Integrated IBM Security Chip / soldered on motherboard															
Keyboard / mouse	104 key keyboard / keyboard extender / IBM ScrollPoint™ II mouse															
Fans	Three (one in front, one in rear, one in power supply)															
Power supply	330 watts / universal / auto-sensing / Wake on LAN															
	<table border="1"> <tr> <td>CD-ROM</td> <td>Bay ① 5.25", HH 1.6", access, std CD-ROM</td> </tr> <tr> <td>②</td> <td>Bay ② 5.25", HH 1.6", access, open</td> </tr> <tr> <td>③</td> <td>Bay ③ 3.5", SL 1", access, open</td> </tr> <tr> <td>diskette</td> <td>Bay ④ 3.5", SL 1", access, std diskette</td> </tr> <tr> <td>⑤</td> <td>Bay ⑤ 3.5", HH 1.6", no access, open (disk only)</td> </tr> <tr> <td>⑥</td> <td>Bay ⑥ 3.5", HH 1.6", no access, open (disk only)</td> </tr> <tr> <td>disk</td> <td>Bay ⑦ 3.5", HH 1.6", no access, std disk (disk only)</td> </tr> </table>	CD-ROM	Bay ① 5.25", HH 1.6", access, std CD-ROM	②	Bay ② 5.25", HH 1.6", access, open	③	Bay ③ 3.5", SL 1", access, open	diskette	Bay ④ 3.5", SL 1", access, std diskette	⑤	Bay ⑤ 3.5", HH 1.6", no access, open (disk only)	⑥	Bay ⑥ 3.5", HH 1.6", no access, open (disk only)	disk	Bay ⑦ 3.5", HH 1.6", no access, std disk (disk only)	<p>Slot 1: fullsize, 32-bit AGP Pro50 (universal) - used by AGP graphics adapter</p> <p>Slot 2: fullsize, 32-bit PCI 2.2 (5v) - not usable with AGP Pro50 adapter in AGP slot or in models with Intense3D Wildcat</p> <p>Slot 3: fullsize, 32-bit PCI 2.2 (5v)</p> <p>Slot 4: fullsize, 32-bit PCI 2.2 (5v)</p> <p>Slot 5: fullsize, 32-bit PCI 2.2 (5v)</p> <p>Slot 6: fullsize, 32-bit PCI 2.2 (5v) - occupied by SCSI adapter in SCSI disk models</p>
CD-ROM	Bay ① 5.25", HH 1.6", access, std CD-ROM															
②	Bay ② 5.25", HH 1.6", access, open															
③	Bay ③ 3.5", SL 1", access, open															
diskette	Bay ④ 3.5", SL 1", access, std diskette															
⑤	Bay ⑤ 3.5", HH 1.6", no access, open (disk only)															
⑥	Bay ⑥ 3.5", HH 1.6", no access, open (disk only)															
disk	Bay ⑦ 3.5", HH 1.6", no access, std disk (disk only)															
Mini tower; Stealth black color																
SECURITY CHIP	<ul style="list-style-type: none"> - Provides electronic digital signature and secure key storage - Can sign each e-mail with a digital signature (1024-bit) so receiving party can verify sender - Public Key Infrastructure (PKI) for more secure e-mail, web access and Internet transactions, and Secure Sockets Layer (SSL) for encryption/decryption capabilities - Uses User Verification Manager software available from IBM web site 															
OTHER STANDARD FEATURES	<p>The Setup Utility resides in flash memory; invoked by pressing F1 key during memory POST</p> <p>Plug-and-Play 1.0a</p> <p>ISO 9241-3 capable</p> <p>Vital Product Data support (type, model, serial, id)</p> <p>7.9"W x 18.1"D x 19.4"H; 45 lbs max (shipped)</p> <p>200 mm W x 460 mm D x 492 mm H; 17.3 kg</p> <p>Several hardcopy publications</p> <p>Four stabilizing feet</p> <p>512KB BIOS (Flash over LAN support)</p> <p>Supplier's Declaration available</p> <p>Three fans (one in front, one in rear, one in power supply)</p>															
	<p align="center">SECURITY</p> <ul style="list-style-type: none"> - Cover key lock (in rear) - Cover tamper detect switch - Secure fixed DASD - Serial EEPROM with write protect - Power-on password - Administrator password - Keyboard/mouse password - Wake Up on LAN password prompt - Boot sequence control - Boot without keyboard or mouse - Diskette boot inhibit - Disable mouse - Disable external SCSI port - Diskette write-protect - Diskette, disk, serial port, parallel port I/O control - Secure access openings - Secure removable media - VPD stored in EEPROM - Write protection control for EEPROM - Barcode labels on most components - IBM Security Solutions <p><i>Maximum internal SCSI disk capacity¹³:</i> 182GB (5 x 36.4GB (7200 or 10K rpm));</p> <p><i>Maximum internal EIDE disk capacity¹³:</i> 90GB (3 x 30GB 7200 rpm)</p> <p align="center">SYSTEMS MANAGEMENT</p> <ul style="list-style-type: none"> • Asset ID™ (RFID)¹⁶ • Alert on LAN™ 2 • Universal Manageability Services enabled • LANClient Control Manager™ enabled • SMART Reaction™.5 II • PC 99-compliant • DMI 2.0-compliant • Common Information Model (CIM) 2.2 • Asset Information Chip (EEPROM) • Wired for Management 2.0 • ACPI 1.0 • Advanced Power Management 1.2 • Wake on LAN support • Alternate Boot Sequence • RPL, DHCP, and PXE 2.0support • Setup on LAN, Flash on LAN • Wake on Alarm • System Management BIOS Version 2.3 • Systems Migration Assistant support 															

IBM IntelliStation® M Pro models (6888) - withdrawn

Type-model	Diskette drive Disk: std-max internal ms seek / disk interface CD-ROM ⁶ / interface	CPU MHz ¹ / Upgrade	Write-thru L2 cache std / max KB / KB	Memory in MB; std / max all 60 ns	SVGA controller; memory std / max	Five total bus slots; P=PCI avail I=ISA avail	Total bays	Std features	Estimated Reseller Price*	Available date
5 slot x 5 bay; PCI/ISA; Stealth Gray										
⌘ 6888-28U for Auth Assembler Program	1.44 MB diskette <i>no disk</i> EIDE	Pentium® II 266/66 MHz	enabled for future upgrades	512/512 133 MHz in SEC Non-parity	32 / 512 EDO ECC	None	PCI=0 PCI/ISA=3 ISA=2	5 bays 1 used 4 empty Total=5	UU//L/A/Eth RTC CD	\$2639 May 1997
⌘ 6888-22U	1.44 MB diskette 4.3 GB std - 27.2 GB max 10 ms / Wide Ultra SCSI 16 x CD-ROM / EIDE	Pentium II 266/66 MHz	enabled for future upgrades	512/512 133 MHz in SEC Non-parity	64 / 512 EDO ECC	Matrox® Millennium PCI Adapter 4 / 8 WRAM	PCI=0 PCI/ISA=1 ISA=2 Total=5	5 bays 3 used 2 empty	UU//L/A/Eth Windows NT 4.0 RTC CD	3051 ⚡ May 1997
⌘ 6888-26U	1.44 MB diskette 4.3 GB std - 27.2 GB max 10 ms / Wide Ultra SCSI 16 x CD-ROM / EIDE	Pentium II 266/66 MHz	enabled for future upgrades	512/512 133 MHz in SEC Non-parity	128/512 EDO ECC	Intergraph® Intense 3D 16 MB SDRAM 4 MB SGRAM	PCI=0 PCI/ISA=1 ISA=2 Total=5	5 bays 3 used 2 empty	UU//L/A/Eth Windows NT 4.0 RTC CD	5650 May 1997
⌘ 6888-36U	1.44 MB diskette 4.3 GB std - 27.2 GB max 10 ms / Wide Ultra SCSI 16 x CD-ROM / EIDE	Pentium II 300/66 MHz	enabled for future upgrades	512/512 133 MHz in SEC ECC	128/512 EDO	Intergraph Intense 3D 16 MB SDRAM 4 MB SGRAM	PCI=0 PCI/ISA=1 ISA=2 Total=5	5 bays 3 used 2 empty	UU//L/A/Eth Windows NT 4.0 RTC CD	6102 July 1997

Windows NT Preload¹⁷

Windows® NT Workstation 4.0
ConfigSafe for Windows NT 4.0
DMI for Windows NT
DMI for Windows NT BIOS Instrumentation
IBM AntiVirus for Windows NT
IBM PC System Monitor for Windows NT
IBM Product Registration
IBM Utilities for NT 4.0
Online Books
Device Drivers for each subsystem
- Hummingbird "Try and Buy" Suite CD-ROM
Exceed 5.1.3
Exceed 3D 5.1.3
NFS Maestro Solo 5.1.3
- Intel LANDesk 3.0 for Windows NT CD-ROM
- Ready to Configure CD-ROM
- Free license for Lotus SmartSuite 97 CD-ROM
- Windows NT Workstation 4.0 CD-ROM
- Access to IBM HomePage Creator

Supported Memory and Options

16 MB EDO ECC Au 60 ns 3.3v 76H0278
32 MB EDO ECC Au 60 ns 3.3v 76H0279
64 MB EDO ECC Au 60 ns 3.3v 76H0280
128 MB EDO ECC Au 60 ns 3.3v 76H0281
256 MB EDO ECC Au 60 ns 3.3v 76H0269
16 x max speed CD-ROM 76H6110
Infrared dongle 75H7987
Adaptec AHA-2940 Ultra Wide SCSI 76H3579
RF Mouse (wireless) 12J3614
Stealth Gray P70 Monitor 6554-6E3
Stealth Gray P200 Monitor 6555-7E3
Stealth Gray P201 Monitor 6555-8E3
Stealth Gray 9516 TFT LCD Monitor 9516-A23

Ready to Configure CD-ROM

All models ship with a CD with drivers for OS/2, Windows 95, and Windows NT and various utilities.
ConfigSafe for Windows NT 4.0 (and Win 95)
CoSession Remote 32 for Windows 95/NT 4.0
CoSession Remote Host for Win 95
CoSession Remote Viewer for Win 95
Crystal Audio for Windows NT (and Win 95, OS/2)
DMI for Windows NT (and Win 95, OS/2)
DMI for Windows NT BIOS Instrumentation (and Win 95, OS/2)
IBM AntiVirus for Windows NT (and Win 95, OS/2)
CPU Thermal Monitor for Windows NT 4.0
IBM IDE Disk Monitor for Windows 95/NT (and OS/2)
IBM PC QAPlus/PRO Diagnostics
IBM PC QAPlus/WIN-WIN Diagnostics
IBM PC Supplemental Diagnostics
IBM Product Registration
IBM Utilities for Windows 95/NT 4.0
Intel Ethernet Driver
Intergraph 3D Graphics for Windows NT 3.51, 4.0
Matrox Millennium Graphics Drivers
S3-V2 Graphics for Winows 95/NT/OS/2
Online Books
TME 10 NetFinity for Windows NT (and Win 95, OS/2)
Bus Mastering IDE/SMART for Windows NT
IBM PC System Monitor for OS/2
Infrared for Win 95, OS/2
Infrared Mode Selection for Windows 95
Infrared PDA Connect for Windows 95
Busmastering IDE/SMART for OS/2
IBM Diskette Factory for RTC
IBM RTC CD-ROM Setup Utility
RTC CD Overview Help Files

Open Bay

Open bay model contains no hard disk. No preload or operating system license is included.
- Hummingbird "Try and Buy" Suite CD-ROM
Exceed 5.1.3
Exceed 3D 5.1.3
NFS Maestro Solo 5.1.3
- Intel LANDesk 3.0 for Windows NT CD-ROM
- Ready to Configure CD-ROM
- Free license for Lotus SmartSuite 97 CD-ROM (via 800 number)

WARRANTY SERVICE SUPPORT

- ⚡ 3 year parts warranty
- ⚡ 1 year labor warranty
- ⚡ International warranty
- ⚡ 1st year: on site, 8 am - 5 pm, Mon - Fri coverage, 2nd business day response time
- ⚡ 2nd/3rd year: parts exchange only, call 1-800-772-2227
- ⚡ On site warranty upgrade options:
 - ① Next day, on site, Mon-Fri 8-5
 - ② Same day, on site, 7 day x 24 hr
- ⚡ Post warranty: on site options above
- ⚡ 24 hour / 7 day telephone, bulletin board, fax, electronic, Internet (<http://www.pc.ibm.com>) support

A = CS4236 FM synthesis audio chip
W95 = Windows 95 OS/2.1 preinstalled
Eth = Intel 10/100 ethernet chip; 10BaseT and 100BaseTX
I = Infrared port to 115 Kbps (requires Infrared cable 75H7987)
L = LAN Client Control Manager (LCCM) enabled
NT4 = Windows NT Workstation 4.0 preinstalled
RTC CD = ReadyTo Configure CD-ROM
UU = Two Universal Serial Bus (USB) port
Wide Ultra SCSI = Adaptec AHA-2940UW UltraSCSI PCI Adapter

⚡ 16 x CD-ROM can use PIO Mode 4 (16.6), Multi-Word DMA 1 (13.33), or Single-Word DMA 2 (8.33); PIO Mode 0 (3.3 MB/sec) used on preload; bootable; CAV; ATAPI

Ⓜ Models announced July 15, 1997

⚡ Price decrease effective January 21, 1998

⌘ Withdrawn effective January 27, 1998 or August 21, 1998

All trademarks are the property of their respective owners

No warranties are expressed or implied in this summary

* Prices are estimated reseller prices and subject to change without notice; actual prices may vary

(IS597 - Page 1 of 2)

IBM IntelliStation M Pro (6888) - withdrawn

IBM® IntelliStation™ M Pro																																
Type (code name)	6888-xxx																															
Processor / MHz	Pentium® II 266/66 MHz¹ or 300/66 MHz (Klamath) / MMX technology / 16 KB ins + 16 KB data L1 cache																															
Implementation	Processor and L2 cache in Single Edge Contact (SEC) cartridge in protective metal case / SEC plugged into Intel Slot 1																															
Processor upgrade(s)	Enabled for future upgrade via SEC into motherboard Intel® Slot 1 CPU connector																															
VRM	Voltage Regulator Module built into SEC (no socket)																															
Available date	May 1997 for 266 MHz; July 1997 for 300 MHz (□□□□□□□□ □□□□□□ 1998 □□□ □□□□□□ 1998)																															
L2 cache - features	512 KB std / 512 KB max / integrated in SEC / 8.5 ns / write-through / direct mapped / 4 way set associative / pipelined burst synchronous / 1/2 processor frequency bus / non-parity for 266 MHz; ECC for 300 MHz																															
Memory - std / max	32, 64, or 128 MB std / 512 MB max ¹³ (60 ns / ind std / 64 bit) / Error Check and Correcting memory controller																															
Mem - total sockets	Three 168 pin gold-plated DIMM sockets / 3.3 volt																															
Mem - sockets used	32 or 64 MB models: 1 DIMM used; 128 MB model: two 64 MB DIMMs used / EDO ECC DIMMs standard																															
Mem - type (support)	EDO non-parity or EDO ECC / 16, 32, 64, 128 MB EDO non-parity DIMM or 16, 32, 64, 128, 256 MB EDO ECC DIMM																															
Memory - supported	Mixing ECC/non-parity gives non-parity / processor can only cache 512 MB although 3 x 256 = 768 MB physically installed																															
Graphics controller	Matrox® MGA Millennium, Intergraph® Intense 3D Pro1000/T , (or none on Model 28U for Authorized Assembler Program)																															
Graphics - type	Matrox / MGA Millennium / SVGA 64 bit acceltr / PCI adapter	Intergraph / Intense 3D / 3D accelerator / PCI adapter																														
Graphics - memory	4 MB std / 8 MB max (WRAM 20 ns) / 220 MHz RAMDAC	16 MB SDRAM buffer and 4 MB SGRAM texture memory																														
Graphics - features	VESA DPMS, DDC1, DDC2B, Auto Refresh Rate Utility On the fly resolution and color depth switching Hardware zoom / virtual desktop / panlock / DirectDraw Hardware accelerated 3D gouraud shading and Z buffering	VESA DPMS, DDC2B / onboard VGA / OpenGL / fogging 810,000 3D triangles per second / 24 bit double buffering Color space conversion / alpha blending / 32 bit textures 24 or 32 bit Z buffer / optional hardware geometry accelertn																														
Disk	<i>Models vary:</i> Diskless or one Wide Ultra SCSI disk (10 ms / 5400 rpm) / SMART ⁵ and PFA																															
SCSI disk controller	Adaptec® AHA-2940UW UltraSCSI / PCI adapter supports one channel and 15 devices / 16 bit int, 8 bit int, and 16 bit ext connectors																															
SCSI cable	4 drop 16 bit 68 pin SCSI cable standard / one drop to std SCSI disk																															
EIDE disk controller	Enhanced IDE busmaster / PIO modes 0 to 4 or DMA Modes 0 to 2 / two connectors on planar / one 2 drop cable standard																															
CD-ROM	16 x max CD-ROM CAV (ATAPI) / bootable	<i>Maximum internal SCSI disk capacity¹³:</i> 27.2 GB (9.1 GB in bays 2 and 3 plus 4.51 GB in bays 4 and 5)																														
Bus slots	PCI 2.1 (33 MHz) and ISA slots (see below)																															
Architecture	IntelDublin LPX motherboard with Intel Natoma 440FX PCIset / PIIX3 for EIDE, ISA Bridge, USB National Semiconductor® PC87307 Super I/O for diskette, parallel, serial, GPIO, keyboard, mouse, infrared																															
Serial / parallel ports	<i>Serial:</i> one 9 pin / 115 Kbps max speed / 16550A / non-DMA; <i>Parallel:</i> One bidirectional (EPP, ECP) / IEEE 1284																															
Universal Serial Bus	Two USB ports / 1.5 MB/sec (12 Mbps) max speed																															
Infrared	Infrared port (on back) requiring optional Infrared Dongle; part number 75H7987 / IrDA-2 / 115 Kbps																															
Diskette drive	3.5" 1.44 MB / 3 drop cable (cable supports 3.5" 1.44 MB, 5.25" 1.2 MB, and tape)																															
CD-ROM	<i>Some models:</i> 16 x max speed CD-ROM CAV (ATAPI) / bootable (CD-ROM standard only in Audio model)																															
Audio	Crystal CS4236 chip on planar / ISA bus / FM Synthesis / connectors for stereo line out, mic in / no hardware volume cont																															
Ethernet controller	Intel 10/100 PCI 82557 ethernet chip on planar / 10BaseT and 100BaseTX / PCI bus / RJ45 UTP connector / Wake-on-LAN																															
Wake-on-LAN	Supported on all models; requires compliant Ethernet or Token-Ring LAN Adapter																															
LCCM	LAN Client Control Manager enabled / Wake-on-LAN / Setup-on-LAN / Flash-on-LAN / Hybrid RPL / DHCP/BOOTP																															
Systems mgmt cntrl	National Semiconductor® LM78 compatible / hardware chip to monitor temperature, voltage, system cover removal																															
Preloaded software	<i>Models vary:</i> ① Open Bay, ② Windows NT Workstation 4.0 / Disk-based models include Easy Tools (many utilities) preloaded All include Ready to Configure CD-ROM (device drivers and utilities) All include a free license for Lotus® SmartSuite 97 CD-ROM (via 800 number)																															
Keyboard / mouse	104 key (rubber dome) keyboard / IBM 3 button mouse	<ol style="list-style-type: none"> Cover key lock U-Bolt support Diskette write inhibit Serial/parallel port inhibit Power-on password Administrator passwd □□□□□□□□ Boot sequence control Boot w/o keyboard/mouse/diskette Disk disable, 10. Diskette disable Unattended start-up (network) Sliding front door lock Secure removable media Mouse disable Wake-up on LAN (Dual Mode) 																														
Power supply	200 watts / universal / manual switch / Wake-on-LAN support																															
	 <p>Bay ① 3.5", SL 1", access, std diskette □□□□ = PCMCIA front access; but not supported</p> <p>Bay ② 5.25", HH 1.6", access, open or CD-ROM</p> <p>Bay ③ 5.25", HH 1.6", access, open</p> <p>Bay ④ 3.5", SL 1", no access, open or std disk</p> <p>Bay ⑤ 3.5", SL 1", no access, open (disk only)</p>																															
Stealth gray color	Slot 1: 16 bit ISA (half) or 32 bit PCI (full) 2.1 (3.3v/5v) - PCI UltraSCSI Adapter																															
Base Cover and Floor Stand standard	Slot 2: 16 bit ISA (full; half on 300) or 32 bit PCI (full; half on 300) 2.1 (3.3v/5v)																															
	Slot 3: 16 bit ISA (full) or 32 bit PCI (full) 2.1 (3.3v/5v) - PCI Graphics Adapter																															
	Slot 4: halfsize, 16 bit ISA																															
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IBM IntelliStation® M Pro models - Spring 1998 (6889) - withdrawn

Type-model	Std disk (rpm) ms seek / disk interface CD-ROM / interface	CPU MHz / Upgrade	Write-back L2 cache std / max KB / KB	Memory in MB; std / max 100MHz	SVGA controller; memory std / max	Bus slots P=PCI avail PCI/ISA=av A=AGP av	Total bays	Std features Preload	Avail date	
6 slot x 6 bay; PCI/ISA/AGP; Stealth Gray										
⌘ 6889-10U	6.4GB ² std (7200) 9.5ms / EIDE / ATA-33 32X-14X ⁶ CD-ROM / EIDE	1 x Pentium® II 350/100	SMP via 2nd Pent II	512/512 175MHz in SEC	64 / 1G SDRAM ECC	Millennium II AGP adapter 8 / 16 WRAM	PCI=4 PCI/ISA=1 AGP=0	6 bays 3 used 3 empty	440BX A/Eth Windows NT 4.0	May 1998
⌘ 6889-11U	9.1GB ⁸ std (7200) 9.5ms / EIDE / ATA-33 32X-14X CD-ROM / EIDE	1 x Pentium II 400/100	SMP via 2nd Pent II	512/512 200MHz in SEC	64 / 1G SDRAM ECC	Millennium II AGP Adapter 8 / 16 WRAM	PCI=4 PCI/ISA=1 AGP=0	6 bays 3 used 3 empty	440BX A/Eth Windows NT 4.0	May 1998
⌘ 6889-13U	9.1GB std (7200) 7.5ms / Wide Ultra SCSI 32X-14X CD-ROM / EIDE	1 x Pentium II 400/100	SMP via 2nd Pent II	512/512 200MHz in SEC	64 / 1G SDRAM ECC	Millennium II AGP Adapter 8 / 16 WRAM	PCI=4 PCI/ISA=1 AGP=0	6 bays 3 used 3 empty	440BX A/Eth Windows NT 4.0	May 1998
⌘ 6889-14U	9.1GB std (7200) 7.5ms / Wide Ultra SCSI 32X-14X CD-ROM / EIDE	1 x Pentium II 400/100	SMP via 2nd Pent II	512/512 200MHz in SEC	128/1G SDRAM ECC	Intense 3400 PCI Adapter 32/32 SDRAM	PCI=3 PCI/ISA=1 AGP=1	6 bays 3 used 3 empty	440BX A/Eth Windows NT 4.0	May 1998
⌘ 6889-15U	9.1GB std (7200) 9.5ms / EIDE / ATA-33 32X-14X CD-ROM / EIDE	1 x Pentium II 400/100	SMP via 2nd Pent II	512/512 200MHz in SEC	128/1G SDRAM ECC	PERMEDIA 2A AGP Adapter 8/8M SGRAM	PCI=4 PCI/ISA=1 AGP=0	6 bays 3 used 3 empty	440BX A/Eth Windows NT 4.0	July 1998
⌘ 6889-16U	9.1GB std (7200) 7.5ms / Wide Ultra SCSI 32X-14X CD-ROM / EIDE	1 x Pentium II 400/100	SMP via 2nd Pent II	512/512 200MHz in SEC	128/1G SDRAM ECC	PERMEDIA 2A AGP Adapter 8/8M SGRAM	PCI=4 PCI/ISA=1 AGP=0	6 bays 3 used 3 empty	440BX A/Eth Windows NT 4.0	July 1998
⌘ 6889-18U for AAP	<i>no disk</i> 32X-14X CD-ROM / EIDE EIDE / 2 x Wide Ultra SCSI	1 x Pentium II 350/100	SMP via 2nd Pent II	512/512 175MHz ECC	64 / 1G SDRAM ECC	<i>None</i>	PCI=4 PCI/ISA=1 AGP=1	6 bays 2 used 4 empty	440BX A/Eth	AAP May 1998
⌘ 6889-19U for AAP	<i>no disk</i> 32X-14X CD-ROM / EIDE EIDE / 2 x Wide Ultra SCSI	1 x Pentium II 400/100	SMP via 2nd Pent II	512/512 200MHz ECC	64 / 1G SDRAM ECC	<i>None</i>	PCI=4 PCI/ISA=1 AGP=1	6 bays 2 used 4 empty	440BX A/Eth	AAP May 1998
⌘ 6889-50U for AAP	<i>no disk</i> 32X-14X CD-ROM / EIDE EIDE / 2 x Wide Ultra SCSI	<i>No CPU</i>	SMP via 2nd Pent II	512/512 <i>varies</i> ECC	0 / 1G SDRAM ECC	<i>None</i>	PCI=4 PCI/ISA=1 AGP=1	6 bays 2 used 4 empty	440BX A/Eth	AAP Jun 1998
⌘ 6889-24U	4.5GB std (7200) 9ms / Wide Ultra SCSI 32X-14X CD-ROM / EIDE	1 x Pentium II 400/100	SMP via 2nd Pent II	512/512 200MHz in SEC	128/1G SDRAM ECC	Millennium II AGP Adapter 8 / 16 WRAM	PCI=4 PCI/ISA=1 AGP=0	6 bays 3 used 3 empty	440BX A/Eth Windows NT 4.0	July 1998
⌘ 6889-25U	4.5GB std (7200) 9ms / Wide Ultra SCSI 32X-14X CD-ROM / EIDE	SMP via 2 x Pentium II 400/100	<i>None</i>	512/512 200MHz in SEC	128/1G SDRAM ECC	Millennium II AGP Adapter 8 / 16 WRAM	PCI=4 PCI/ISA=1 AGP=0	6 bays 3 used 3 empty	440BX A/Eth Windows NT 4.0	July 1998
⌘ 6889-27U	9.1GB std (10K) 8.5ms / Wide Ultra SCSI 32X-14X CD-ROM / EIDE	1 x Pentium II 400/100	SMP via 2nd Pent II	512/512 200MHz in SEC	256/1G RDIMM ECC	Intense 3400 + Geo Acceler 32/32 SDRAM	PCI=2 PCI/ISA=1 AGP=1	6 bays 3 used 3 empty	440BX A/Eth Windows NT 4.0	July 1998
⌘ 6889-29U	9.1GB std (7200) 7.5ms / Wide Ultra SCSI 32X-14X CD-ROM / EIDE	1 x Pentium II 400/100	SMP via 2nd Pent II	512/512 200MHz in SEC	256/1G RDIMM ECC	Millennium II AGP Adapter 8 / 16 WRAM	PCI=3 PCI/ISA=1 AGP=0	6 bays 3 used 3 empty	440BX A/Eth Windows NT 4.0	July 1998
⌘ 6889-30U	9.1GB std (7200) 7.5ms / Wide Ultra SCSI 32X-14X CD-ROM / EIDE	1 x Pentium II 400/100	SMP via 2nd Pent II	512/512 200MHz in SEC	256/1G RDIMM ECC	Intense 3400 PCI Adapter 32/32 SDRAM	PCI=4 PCI/ISA=1 AGP=1	6 bays 3 used 3 empty	440BX A/Eth Windows NT 4.0	July 1998
⌘ 6889-90U	9.1GB std (7200) 7.5ms / Wide Ultra SCSI 32X-14X CD-ROM / EIDE	1 x Pentium II 400/100	SMP via 2nd Pent II	512/512 200MHz in SEC	256/1G SDRAM ECC	Millennium II AGP Adapter 8 / 16 WRAM	PCI=4 PCI/ISA=1 AGP=0	6 bays 3 used 3 empty	440BX A/Eth Windows NT 4.0	July 1998

Web Design Bundle

Windows NT Preload¹⁷

Windows NT® Workstation 4.0 (SP3)
Windows Internet Explorer 4.0 install icon
Ready to install:
- ConfigSafe for Windows NT 4.0
- IBM AntiVirus for Windows NT
- DMI Service Provider
- DMI BIOS Instrumentation
- IBM PC System Monitor Instrumentation
- IBM AssetCare Serial Number Information
IBM RTC CD-ROM Setup Utility
IBM Utilities for Windows 95/NT 4.0
- Hummingbird "Try and Buy" Suite CD-ROM
- Intel LANdesk 3.0 for Windows NT CD-ROM
- Ready to Configure CD-ROM
- Free license for Lotus SmartSuite CD-ROM
- Windows NT Workstation 4.0 CD-ROM
- Access to IBM HomePage Creator

Supported Memory and Options

32MB SDRAM ECC DIMM 100MHz 01K1133
64MB SDRAM ECC DIMM 100MHz 01K1130
128MB SDRAM ECC DIMM 100MHz 01K1131
256MB SDRAM ECC DIMM (registered) 01K1132
Adaptec ARO-1130 CA-B PCI RAIDport Adap1681100
IBM Netfinity 350MHz Pentium II 10L5883
IBM Netfinity 400MHz Pentium II 10L5884
Matrox Millennium II AGP Graphics Ad 02K3459
Intergraph Intense 3D Pro 3400 02K3460
Intergraph Intense 3D Pro 3400 GA 02K3461
Geometry Accelerator

WARRANTY SERVICE SUPPORT

- ↪ 3 year parts warranty³
- ↪ 1 year labor warranty
- ↪ International Warranty Service³
- ↪ 1st year: on site, 8 am - 5 pm,
Mon - Fri coverage,
2nd business day response time
- ↪ 2nd/3rd year: parts exchange only,
call 1-800-772-2227
- ↪ On site warranty upgrade options:
 - Next day response¹⁴, Mon-Fri 8-5
 - 4 hour response¹⁴, 7 day x 24 hr
- ↪ Post warranty: on site options above
- ↪ IBM SystemXtra®
- ↪ 24 hour / 7 day telephone, electronic,
Internet (www.pc.ibm.com) support

A = CS4235 FM synthesis audio chip
Eth = Intel 10/100 ethernet chip; 10BaseT and 100BaseTX; Alert on LAN
RDIMM = Registered DIMM
Wide Ultra SCSI = Adaptec AHA-7895; dual channel Wide Ultra SCSI
Models announced April 15 or July 21, 1998
⌘ = Withdrawn from marketing

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No warranties are expressed or implied in this summary
(IS498 - Page 1 of 2) © IBM Corp. July 1999

IBM IntelliStation® M Pro - Spring 1998 (6889) - withdrawn

IBM® IntelliStation® M Pro

Type	6889		
Processor(s)	One or two Intel® Pentium® II 350/100MHz or 400/100MHz / MMX™ technology / 16KB ins + 16KB data L1 cache		
Implementation	Processor and L2 cache in Single Edge Contact (SEC) cartridge in protective metal case / SEC plugged into Intel Slot 1		
Processor upgrade	SMP via second identical processor / upgrade via SEC into motherboard Intel® Slot 1 CPU connector / MPS 1.4		
L2 cache	512KB std / 512KB max / ECC / 1/2 speed of processor / 4 way set associative / write-back / integrated in SEC		
Avail / withdrawn date	May 1998 or July 1998 / withdrawn effective November 1998 or March 1999 or June 1999		
Mem - std / max / type	0MB (AAP), 64MB, 128MB, or 256MB std / 1GB max / Error Checking and Correction (ECC)		
Memory - sockets	4 sockets / 3 available (all have Error Checking and Correcting memory controller) / Model 90U uses two 128MB DIMMs		
Memory - features	SDRAM / 100MHz / four 168 pin gold-plated DIMM 3.3 volt sockets / PC100-compliant / hardware scrubbing of ECC errors		
Memory - support	Supports SDRAM ECC DIMMs (32,64,128,256MB) / only 256MB DIMMs are registered (buffered); can not mix reg/non-reg		
Graphics controller	Matrox® Millennium II (2D), 3Dlabs® PERMEDIA® 2A (entry 3D), Intergraph® Intense 3D Pro 3400 (advanced 3D, or Intergraph Intense 3D Pro 3400/Geometry Accelerator (ultimate 3D))		
Graphics - type	Millennium II / AGP-1x 266MB/s adaptor	PERMEDIA 2A / AGP-1x 266MB/s adaptor	Intense 3D Pro 3400 / PCI adaptor
Graphics - memory	8MB std / 16MB max / WRAM	8MB std/max / 90MHz SGRAM	16MB frame buffer and 16M texture mem
Graphics - features	Baseline / no sideband or split transatsns 250MHz 64-bit RAMDAC / 16.7M colors Max resolution of 1920 x 1200	Sideband / split transactions 230MHz RAMDAC / 16.7 mil colors Max resolution of 1600x1200	32MB std / 32MB max / 170 MHz SDRAM Optional or std Geo Accelerator available Max resolution of 1280x1024 at 85Hz
Architecture - chip set	Intel 440BX AGPset / PIIX4E for EIDE (Ultra DMA/33), ISA Bridge, USB / Adaptec® AHA-7895		
Bus slots	National Semiconductor PC87307 Super I/O for diskette, parallel, serial, keyboard, mouse PCI 2.1 (33MHz), Accelerated Graphics Port (66MHz; AGP-2x; 533MB/sec), and ISA slots (8.33MHz) / see below		
Disk	None (AAP models), one EIDE (Ultra DMA/33), or one Wide Ultra SCSI / SMART		
SCSI controller	Adaptec® AHA-7895 / dual channel Wide Ultra SCSI controller / on motherboard / PCI 2.1		
SCSI connectors	<i>Channel A:</i> 68 pin (attaches 4 drop cable to SCSI disk); <i>Channel B:</i> 50 pin and 68 pin / 68 pin cable std to external SCSI port (all mod)		
RAID option	Supports Adaptec ARO™-1130 PCI RAIDport™ adaptor (RAID 0,1) / installs in PCI slot / uses 7895 controller and connectrs		
Cables - SCSI and IDE	<i>SCSI and AAP models:</i> 4 drop 16-bit cable on Chan A; 16-bit cable to ext port on Chan B; one 2 drop IDE cable (CD-ROM) <i>EIDE models:</i> Two 2 drop IDE cables (one for disk; one for CD-ROM) and SCSI cable to external SCSI port		
EIDE disk controller	Enhanced IDE busmaster (PIIX4E) / Ultra DMA/33 (ATA-33) support / two connectors on planar		
CD-ROM	32X-14X⁺ CD-ROM / CAV (ATAPI) / bootable		SECURITY <ul style="list-style-type: none"> - Chassis-intrusion detection - Cover key lock (in rear) - U-Bolt support - Power-on password - Admin passd (in security EEPROM) - Boot sequence control (in security EEPROM on motherboard) - Diskette boot inhibit - Boot without keyboard/mouse/diskette - Diskette write protect - Diskette and disk I/O control - Serial/parallel I/O control - Unattended start-up (network) - Secure removable media - Wake-up on LAN (Dual Mode) - Mouse disable - Barcode labels on most components
Diskette drive	3.5" 1.44MB diskette drive / 1 drop cable		
Ethernet controller	Intel EtherExpress PRO/100B / PCI 82558 ethernet chip on planar / PCI bus 10BaseT and 100BaseTX / RJ45 UTP connector / Wake on LAN / Alert on LAN		
LCCM support	LANClient Control Manager™ enabled / Wake on LAN® / Setup over LAN / Hybrid RPL / DHCP/BOOTP / software image download		
Systems mgmt cntrl	National Semiconductor® LM81 compatible / hardware chip to monitor temperature, fan speeds, voltage, system cover removal / I2C		
Audio	Crystal CS4235 chip on planar / stereo / ISA bus / FM Synthesis / int speaker		
Audio connectors	Stereo line in / mic in / line out (all in back) / software volume control		
Microphone	Headset with microphone		
Serial / parallel / USB	<i>Ser:</i> Two 9 pin / 115Kbps <i>Par:</i> One (EPP, ECP) / IEEE 1284 <i>USB:</i> Two ports		
Preloaded software ⁷	N/A (if no disk AAP model), or Windows NT Workstation 4.0 (SP3) All include Ready to Configure CD-ROM (device drivers and utilities) All include Windows NT Workstation 4.0 CD-ROM		
Keyboard / Mouse	104 key (rubber dome) keyboard / keyboard extender / IBM 3 button mouse		
Power supply	330 watts / universal / auto-sensing / Wake on LAN		
	Bay ① 5.25", HH 1.6", access, std CD-ROM Bay ② 5.25", HH 1.6", access, open Bay ③ 3.5", SL 1", access, open Bay ④ 3.5", SL 1", access, std diskette Bay ⑤ 3.5", SL 1", no access, open (disk only) Bay ⑥ 3.5", SL 1", no access, std disk (disk only)		Remotely readable DMI-compliant: <ul style="list-style-type: none"> - System EEPROM on motherboard (info and serial no for CPU, riser, system unit, CD-ROM, diskette, empty blank fields); also can read/write with external RF unit - EEPROMs on DIMMs (component info, serial no) - Disk firmware (component info, serial no)
Mini tower; Stealth gray color	Slot 1: fullsize, 32-bit AGP (3.3v) - used by AGP graphics adapter (some models) Slot 2: fullsize, 32-bit PCI 2.1 (3.3v/5v) - supports optional Adaptec RAIDport Slot 3: fullsize, 32-bit PCI 2.1 (3.3v/5v) - used by PCI graphics adptr (some models) Slot 4: fullsize, 32-bit PCI 2.1 (3.3v/5v) - used by Geometry Accelerator (some mdl) Slot 5: fullsize, 32-bit PCI 2.1 (3.3v/5v) Slot 6: fullsize, 16-bit ISA or 32-bit PCI 2.1 (3.3v/5v)		
Alert on LAN™ - provides local or remote monitoring; immediate notification of system events such as chassis intrusion, disconnect, start up errors, even if powered off Asset ID (RFID)⁵ - uses radio frequency (RF) technology for deployment, inventory, and security; includes EEPROM that can be accessed via DMI software through network or an external RF link such as hand-held RF read/write units; theft protection SMART Reaction™ - automatic backup of disk PC 97 compliant DMI 2.0 compliant with DMI manageability chip Wired for Management 1.1a Adv Config and Power Interface (ACPI) 1.0 IBM Performance Enhancement Program - initially distributed via Internet	OTHER STANDARD FEATURES The Setup Utility resides in flash memory; invoked by pressing F1 key during memory POST Advanced Power Mgmt 1.2 Support for DMI technology (includes MIF browser) with DMI Service Layer 2.0, DMI BIOS 2.1, and DMI software; DMI 2.0 compliant Plug-and-Play 1.0a ISO 9241-3 capable Vital Product Data support (type, model, serial, id) 7.87"W x 17.52"D x 19.37"H; 38 lbs max (shipped) 200 mm W x 445 mm D x 492 mm H; 17.3 kg Several hardcopy publications; four stabilizing feet 512KB IBM BIOS (Flash over LAN support) Supplier's Declaration available Four fans (three in system and one in power supply)		Maximum internal SCSI disk capacity: 63.7GB (3 x 18.2GB (7200 rpm) plus 1 x 9.1GB (7200 rpm)); if no CD-ROM Maximum internal EIDE disk capacity: 27.3GB (3 x 9.1GB) Power management features: <ul style="list-style-type: none"> - Configurable levels for system, CPU, and monitor including powering system and/or display off - Wake Up on Ring (via modem) from off state - Wake Up on Alarm (scheduled time) from off state - Wake-on-LAN from off state - PCI Wake Up from supported PCI devices

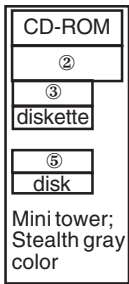
IBM IntelliStation® M Pro models - Fall 1998 (6889) - withdrawn

Type-model	Std disk (rpm) ms seek / disk interface CD-ROM / interface	Intel® Processor MHz' / Upgrade		Write-back L2 cache std / max KB / KB	Memory in MB; std / max 100MHz	SVGA controller; memory std / max	Bus slots P=PCI avail PCI/ISA=av A=AGP av	Total bays	Chip set Ethernet Preload	Available date
6 slot x 6 bay; PCI/ISA/AGP; Stealth Gray										
ⓧ 6889-41U	10.1GB² std (7200) 9.5ms / EIDE 32X-14X CD-ROM / EIDE	1 x Pentium® II 450/100	SMP via 2nd Pent II	512 / 512 225MHz in SEC	128 / 1G SDRAM ECC	Millennm G200 AGP Adapter 8 / 16 SGRAM	PCI=4 PCI/ISA=1 AGP=0	6 bays 3 used 3 empty	440BX Ethernet Windows NT 4.0	Sept 1998
ⓧ 6889-42U	4.5GB std (7200) 9ms / Wide Ultra SCSI 32X-14X CD-ROM / EIDE	1 x Pentium II 450/100	SMP via 2nd Pent II	512 / 512 225MHz in SEC	128 / 1G SDRAM ECC	Millennm G200 AGP Adapter 8 / 16 SGRAM	PCI=4 PCI/ISA=1 AGP=0	6 bays 3 used 3 empty	440BX Ethernet Windows NT 4.0	Sept 1998
ⓧ 6889-43U	9.1GB std (7200) 7.5ms / Wide Ultra SCSI 32X-14X CD-ROM / EIDE	1 x Pentium II 450/100	SMP via 2nd Pent II	512 / 512 225MHz in SEC	128 / 1G SDRAM ECC	Millennm G200 AGP Adapter 32/32 SGRAM	PCI=4 PCI/ISA=1 AGP=0	6 bays 3 used 3 empty	440BX Ethernet Windows NT 4.0	Sept 1998
ⓧ 6889-44U	9.1GB std (7200) 7.5ms / Wide Ultra SCSI 32X-14X CD-ROM / EIDE	1 x Pentium II 450/100	SMP via 2nd Pent II	512 / 512 225MHz in SEC	128 / 1G SDRAM ECC	Intense 3400 PCI Adapter 8 / 16 SDRAM	PCI=3 PCI/ISA=1 AGP=1	6 bays 3 used 3 empty	440BX Ethernet Windows NT 4.0	Sept 1998
ⓧ 6889-45U	9.1GB std (10000) 8.5ms / Wide Ultra SCSI 32X-14X CD-ROM / EIDE	SMP via 2 x Pentium II 450/100	None	512 / 512 225MHz in SEC	256 / 1G RDIMM ECC	Millennm G200 AGP Adapter 8 / 16 SGRAM	PCI=4 PCI/ISA=1 AGP=0	6 bays 3 used 3 empty	440BX Ethernet Windows NT 4.0	Sept 1998
ⓧ 6889-46U	9.1GB std (10000) 8.5ms / Wide Ultra SCSI 32X-14X CD-ROM / EIDE	1 x Pentium II 450/100	SMP via 2nd Pent II	512 / 512 225MHz in SEC	256 / 1G RDIMM ECC	Intense 3400 + Geo Accel 32/32 SDRAM	PCI=2 PCI/ISA=1 AGP=1	6 bays 3 used 3 empty	440BX Ethernet Windows NT 4.0	Sept 1998
ⓧ 6889-48U for AAP	<i>no disk</i> 32X-14X CD-ROM / EIDE EIDE / 2 x Wide Ultra SCSI	1 x Pentium II 450/100	via 2nd Pent II	512 / 512 225MHz in SEC	128 / 1G SDRAM ECC	<i>None</i>	PCI=4 PCI/ISA=1 AGP=1	6 bays 2 used 4 empty	440BX Ethernet Open OS	Sept 1998
ⓧ 6889-60U	6.4GB std (7200) 9.5ms / EIDE / ATA-33 32X-14X CD-ROM / EIDE	1 x Pentium II 350/100	SMP via 2nd Pent II	512 / 512 175MHz in SEC	64 / 1G SDRAM ECC	Millennm G200 AGP adapter 8 / 16 SGRAM	PCI=4 PCI/ISA=1 AGP=0	6 bays 3 used 3 empty	440BX Ethernet Windows NT 4.0	Nov 1998
ⓧ 6889-61U	9.1GB std (7200) 9.5ms / EIDE / ATA-33 32X-14X CD-ROM / EIDE	1 x Pentium II 400/100	SMP via 2nd Pent II	512 / 512 200MHz in SEC	64 / 1G SDRAM ECC	Millennm G200 AGP Adapter 8 / 16 SGRAM	PCI=4 PCI/ISA=1 AGP=0	6 bays 3 used 3 empty	440BX Ethernet Windows NT 4.0	Nov 1998
ⓧ 6889-63U	9.1GB std (7200) 7.5ms / Wide Ultra SCSI 32X-14X CD-ROM / EIDE	1 x Pentium II 400/100	SMP via 2nd Pent II	512 / 512 200MHz in SEC	64 / 1G SDRAM ECC	Millennm G200 AGP Adapter 8 / 16 SGRAM	PCI=4 PCI/ISA=1 AGP=0	6 bays 3 used 3 empty	440BX Ethernet Windows NT 4.0	Nov 1998
ⓧ 6889-64U	4.5GB std (7200) 7.5ms / Wide Ultra SCSI 32X-14X CD-ROM / EIDE	1 x Pentium II 400/100	SMP via 2nd Pent II	512 / 512 200MHz in SEC	128 / 1G SDRAM ECC	Millennm G200 AGP Adapter 8 / 16 SGRAM	PCI=4 PCI/ISA=1 AGP=0	6 bays 3 used 3 empty	440BX Ethernet Windows NT 4.0	Nov 1998
ⓧ 6889-65U	4.5GB std (7200) 7.5ms / Wide Ultra SCSI 32X-14X CD-ROM / EIDE	SMP via 2 x Pentium II 400/100	None	512 / 512 200MHz in SEC	128 / 1G SDRAM ECC	Millennm G200 AGP Adapter 8 / 16 SGRAM	PCI=4 PCI/ISA=1 AGP=0	6 bays 3 used 3 empty	440BX Ethernet Windows NT 4.0	Nov 1998
ⓧ 6889-69U	9.1GB std (7200) 7.5ms / Wide Ultra SCSI 32X-14X CD-ROM / EIDE	1 x Pentium II 400/100	SMP via 2nd Pent II	512 / 512 200MHz in SEC	256 / 1G RDIMM ECC	Millennm G200 AGP Adapter 8 / 16 SGRAM	PCI=4 PCI/ISA=1 AGP=0	6 bays 3 used 3 empty	440BX Ethernet Windows NT 4.0	Nov 1998

<p>Windows NT Preload¹⁷</p> <p>Windows NT® Workstation 4.0 (SP3) Internet Explorer 4.0 install icon IBM Welcome Center Device drivers for each subsystem Ready to install:</p> <ul style="list-style-type: none"> - ConfigSafe for Windows NT 4.0 - Norton AntiVirus for Windows NT - DMI Service Provider - DMI BIOS Instrumentation - IBM PC System Monitor Instrumentation - IBM AssetCare Serial Number Information IBM RTC CD-ROM Setup Utility IBM Utilities for Windows 95/NT 4.0 - Hummingbird "Try and Buy" Suite CD-ROM - Ready to Configure CD-ROM - Free license for Lotus SmartSuite 97 CD-ROM - IBM ViaVoice 98 Office Edition CD-ROM - Windows NT Workstation 4.0 CD-ROM - IBM Diagnostics CD-ROM - Access to IBM HomePage Creator <p>C: is 2GB as FAT16 Remainder is unformatted</p>	<p>Ready to Configure CD-ROM</p> <p>All models ship with a CD with drivers for Windows® 95, 98, and NT 3.51 and 4.0 and various utilities. Includes:</p> <ul style="list-style-type: none"> - Intel LANDesk® Client Manager - ConfigSafe - IBM Systems Management Tools <p>Supported Memory and Options</p> <table border="0"> <tr> <td>32MB SDRAM ECC DIMM 100MHz</td> <td>01K1133</td> </tr> <tr> <td>64MB SDRAM ECC DIMM 100MHz</td> <td>01K1130</td> </tr> <tr> <td>128MB SDRAM ECC DIMM 100MHz</td> <td>01K1131</td> </tr> <tr> <td>256 MB SDRAM ECC DIMM Registered</td> <td>01K1132</td> </tr> <tr> <td>Adaptec ARO™-1130 CA-B PCI RAIDport</td> <td>1681100</td> </tr> <tr> <td>IBM Netfinity 400MHz Pentium II/512KB</td> <td>10L5884</td> </tr> <tr> <td>IBM Netfinity 450MHz Pentium II/512KB</td> <td>10L5900</td> </tr> <tr> <td>Matrox Millennium G200</td> <td>10L7127</td> </tr> <tr> <td>Intergraph Intense 3D Pro 3400</td> <td>02K3460</td> </tr> <tr> <td>Intergraph Intense 3D Pro 3400 GA</td> <td>02K3461</td> </tr> <tr> <td>Geometry Accelerator</td> <td></td> </tr> <tr> <td>10/100 PCI EtherJet Adapter WOL</td> <td>08L2565</td> </tr> <tr> <td>Auto Wake Token-Ring ISA Adapter</td> <td>55H6760</td> </tr> <tr> <td>PCI Token Ring Adapter WOL</td> <td>86H1880</td> </tr> <tr> <td>10.1GB 10000 rpm EIDE disk</td> <td>20L0548</td> </tr> </table>	32MB SDRAM ECC DIMM 100MHz	01K1133	64MB SDRAM ECC DIMM 100MHz	01K1130	128MB SDRAM ECC DIMM 100MHz	01K1131	256 MB SDRAM ECC DIMM Registered	01K1132	Adaptec ARO™-1130 CA-B PCI RAIDport	1681100	IBM Netfinity 400MHz Pentium II/512KB	10L5884	IBM Netfinity 450MHz Pentium II/512KB	10L5900	Matrox Millennium G200	10L7127	Intergraph Intense 3D Pro 3400	02K3460	Intergraph Intense 3D Pro 3400 GA	02K3461	Geometry Accelerator		10/100 PCI EtherJet Adapter WOL	08L2565	Auto Wake Token-Ring ISA Adapter	55H6760	PCI Token Ring Adapter WOL	86H1880	10.1GB 10000 rpm EIDE disk	20L0548	<p>Authorized Assembler Program models</p> <p>AAP models contain no hard disk or graphics adapter. No preload or operating system license is included.</p> <ul style="list-style-type: none"> - Hummingbird "Try and Buy" Suite CD-ROM - Ready to Configure CD-ROM - Free license for Lotus SmartSuite CD-ROM (via 800 number)
32MB SDRAM ECC DIMM 100MHz	01K1133																															
64MB SDRAM ECC DIMM 100MHz	01K1130																															
128MB SDRAM ECC DIMM 100MHz	01K1131																															
256 MB SDRAM ECC DIMM Registered	01K1132																															
Adaptec ARO™-1130 CA-B PCI RAIDport	1681100																															
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10.1GB 10000 rpm EIDE disk	20L0548																															
<p>Ethernet = Intel® 10/100 ethernet chip; 10BaseT and 100BaseTX; Alert on LAN NT4 = Windows NT Workstation 4.0 preinstalled RDIMM = Registered DIMM Wide Ultra SCSI = Adaptec AHA-7895; dual channel Wide Ultra SCSI</p> <p>ⓧ< = Withdrawn from marketing</p>		<p>WARRANTY SERVICE SUPPORT³</p> <ul style="list-style-type: none"> ↪ 3 year parts warranty ↪ 1 year labor warranty ↪ International Warranty Service³ ↪ 1st year: on site, 8 am - 5 pm, Mon - Fri coverage, 2nd business day response time ↪ 2nd/3rd year: parts exchange only, call 1-800-772-2227 ↪ On site warranty upgrade options: <ul style="list-style-type: none"> • Next day response¹⁴, Mon-Fri 8-5 • 4 hour response¹⁴, 7 day x 24 hr ↪ Post warranty: on site options above ↪ IBM SystemXtra® ↪ 24 hour / 7 day telephone, electronic, Internet (www.pc.ibm.com) support 																														

IBM IntelliStation® M Pro - Fall 1998 (6889) - withdrawn

IBM® IntelliStation® M Pro

Type	6889	
Processor(s)	One or two Intel® Pentium® II 450/100MHz¹ / MMX™ technology / 16KB ins + 16KB data L1 cache	
Implementation	Processor and L2 cache in Single Edge Contact (SEC) cartridge in protective metal case / SEC plugged into Intel Slot 1	
Processor upgrade	SMP via second identical processor / upgrade via SEC into motherboard Intel® Slot 1 CPU connector / MPS 1.4	
L2 cache	512KB std / 512KB max / ECC / half speed of processor / 4 way set associative / write-back / integrated in SEC	
Avail / withdrawn date	September 1998 or November 1998 / withdrawn March 1999 or June 1999	
Mem - std / max / type	64MB, 128MB, or 256MB std / 1GB max¹³ / Error Checking and Correction (ECC)	
Memory - sockets	4 sockets / 3 available (all have Error Checking and Correcting memory controller)	
Memory - features	SDRAM / 100MHz / four 168 pin gold-plated DIMM 3.3 volt sockets / PC100-compliant / hardware scrubbing of ECC errors	
Memory - support	Supports SDRAM ECC DIMMs (32,64,128,256MB) / only 256MB DIMMs are registered (buffered); can not mix reg/non-reg	
Graphics controller	Matrox® Millennium G200 (2D), Intergraph® Intense 3D Pro 3400 (advanced 3D), or Intergraph Intense 3D Pro 3400 and Geometry Accelerator (ultimate 3D)	
Graphics - type	Matrox Millennium G200 / AGP-2x 533MB/sec adapter	Intense 3D Pro 3400 / PCI adapter / 32MB std / 32MB max
Graphics - memory	8MB std / 16MB max / 142MHz, 128-bit SGRAM	16MB frame buffer (125MHz SDRAM) and
Graphics - features	Sideband addressing / split transactions 250 MHz RAMDAC / MGA-G200 128-bit DualBus chip Max 2D resolution of 1920x1200 in 24-bit color at 80Hz	16MB texture memory (SGRAM) Optional or std PCI geometry accelerator (3D Pro 3400 GA) Max resolution of 1280x1024 at 16.7 million colors at 85Hz
Architecture - chip set	Intel 440BX AGPset / PIIX4E for EIDE (Ultra DMA/33), ISA Bridge, USB / Adaptec® AHA-7895	
Bus slots	National Semiconductor PC87307 Super I/O for diskette, parallel, serial, keyboard, mouse PCI 2.1 (33MHz), Accelerated Graphics Port (66MHz; AGP-2x; 533MB/sec), and ISA slots (8.33MHz) / see below	
Disk	None (AAP models), one EIDE (Ultra DMA/33), or one Wide Ultra SCSI / SMART ⁵	
SCSI controller	Adaptec® AHA-7895 / dual channel Wide Ultra SCSI controller / on motherboard / PCI 2.1	
SCSI connectors	Channel A: 68 pin (attaches 4 drop cable to SCSI disk); Channel B: 50 pin and 68 pin / 68 pin cable std to external SCSI port (all mod)	
RAID option	Supports Adaptec ARO™-1130 CA-B PCI RAIDport™ adapter (RAID 0,1) / installs in PCI slot / uses 7895 controller and connectors	
Cables - SCSI and IDE	SCSI and AAP models: 4 drop 16-bit cable on Chan A; 16-bit cable to ext port on Chan B; one 2 drop IDE cable (CD-ROM)	
EIDE disk controller	EIDE models: Two 2 drop IDE cables (one for disk; one for CD-ROM) and SCSI cable to external SCSI port Enhanced IDE busmaster (PIIX4E) / Ultra DMA/33 (ATA-33) support / two connectors on planar	
CD-ROM	32X-14X⁶ CD-ROM / CAV (ATAPI) / bootable	
Diskette drive	3.5" 1.44MB diskette drive / 1 drop cable	
Ethernet controller	Intel EtherExpress PRO/100B / PCI 82558 ethernet chip on planar / PCI bus 10BaseT and 100BaseTX / RJ45 UTP connector / Wake on LAN® / Alert on LAN	
LCCM support	LANClient Control Manager™ enabled / Wake on LAN / Setup over LAN / Hybrid RPL / DHCP/BOOTP / software image download	
Systems mgmt cntrl	National Semiconductor® LM81 compatible / hardware chip to monitor temperature, fan speeds, voltage, system cover removal / I2C	
Audio	Crystal CS4235 chip on planar / stereo / ISA bus / FM Synthesis / int speaker	
Audio connectors	Stereo line in / mic in / line out (all in back) / software volume control	
Microphone	Headset with microphone (noise canceling for ViaVoice application)	
Serial/parallel/USB	Ser: Two 9 pin / 115Kbps Par: One (EPP, ECP) / IEEE 1284 USB: Two ports	
Keyboard / Mouse	104 key (rubber dome) keyboard / keyboard extender / IBM 3 button mouse	
Power supply	330 watts / universal / auto-sensing / Wake on LAN	
	 <p>Bay ① 5.25", HH 1.6", access, std CD-ROM Bay ② 5.25", HH 1.6", access, open Bay ③ 3.5", SL 1", access, open Bay ④ 3.5", SL 1", access, std diskette Bay ⑤ 3.5", SL 1", no access, open (disk only) Bay ⑥ 3.5", SL 1", no access, std disk (disk only)] or Half Height</p> <p>Slot 1: fullsize, 32-bit AGP (3.3v) - used by AGP graphics adapter (some models) Slot 2: fullsize, 32-bit PCI 2.1 (5v) - supports optional Adaptec RAIDport Slot 3: fullsize, 32-bit PCI 2.1 (5v) - used by PCI graphics adptr (some models) Slot 4: fullsize, 32-bit PCI 2.1 (5v) - used by Geo Accelerator (some models) Slot 5: fullsize, 32-bit PCI 2.1 (5v) Slot 6: fullsize, 16-bit ISA or 32-bit PCI 2.1 (5v)</p>	<p>SECURITY</p> <ul style="list-style-type: none"> - Cover key lock (in rear) - Cover tamper detect switch - Secure fixed DASD - Serial EEPROM with write protect - Power-on password - Administrator password - Keyboard/mouse password - Wake Up on LAN password prompt - Boot sequence control - Boot without keyboard or mouse - Diskette boot inhibit - Disable mouse - Disable external SCSI port - Diskette write-protect - Diskette, disk, serial port, parallel port I/O control - Secure access openings - Secure removable media - VPD stored in EEPROM - Write protection control for EEPROM - Barcode labels on most components <p>Remotely readable DMI-compliant:</p> <ul style="list-style-type: none"> - System EEPROM on motherboard (info and serial no for CPU, riser, system unit, CD-ROM, diskette, empty blank fields); also can read/write with external RF unit - EEPROMs on DIMMs (component info, serial no) - Disk firmware (compnt info, serial no)
Alert on LAN™ - provides local or remote monitoring; immediate notification of system events such as chassis intrusion, disconnect, start up errors, even if powered off	<p>OTHER STANDARD FEATURES</p> <p>The Setup Utility resides in flash memory; invoked by pressing F1 key during memory POST Advanced Power Mgmt 1.2 Support for DMI technology (includes MIF browser) with DMI Service Layer 2.0, DMI BIOS 2.1, and DMI software; DMI 2.0 compliant Plug-and-Play 1.0a ISO 9241-3 capable Vital Product Data support (type, model, serial, id) 7.87"W x 17.52"D x 19.37"H; 38 lbs max (shipped) 200 mm W x 445 mm D x 492 mm H; 17.3 kg Several hardcopy publications; four stabilizing feet 512KB IBM BIOS (Flash over LAN support) Supplier's Declaration available Four fans (three in system and one in power supply)</p>	
Asset ID (RFID)¹⁶ - uses radio frequency (RF) technology for deployment, inventory, and security; includes EEPROM that can be accessed via DMI software through network or an external RF link such as hand-held RF read/write units; theft protection		
SMART Reaction™ - automatic backup of disk		
PC 98 compliant		
DMI 2.0 compliant with DMI manageability chip		
Wired for Management 1.1a		
Adv Config and Power Interface (ACPI) 1.0		
		<p>Maximum internal SCSI disk capacity¹³: 63.7GB (3 x 18.2GB (7200 rpm) plus 1 x 9.1GB (7200 rpm)); if no CD-ROM</p> <p>Maximum internal EIDE disk capacity: 30.3GB (3 x 10.1GB)</p> <p>Power management features:</p> <ul style="list-style-type: none"> - Configurable levels for system, CPU, and monitor including powering system and/or display off - Wake Up on Ring (via modem) from off state - Wake Up on Alarm (scheduled time) from off state - Wake-on-LAN from off state - PCI Wake Up from supported PCI devices

IBM IntelliStation® M Pro (6889) - Spring 1999 - withdrawn

Type-model	Std disk (rpm) ms seek / disk interface CD-ROM / interface	Intel® Processor MHz' / Upgrade	Write-back L2 cache std / max KB / KB	Memory in MB; std / max 100MHz	SVGA controller; memory std / max	Bus slots P=PCI avail PCI/ISA=av A=AGP av	Total bays	Chip set Ethernet Preload ¹⁷	Available date	
6 slot x 6 bay; PCI/ISA/AGP; Stealth Black										
6889-72U	13.5GB ² std (7200) 9.0ms / EIDE 40X-17X ⁶ CD-ROM / EIDE	1 x Pentium® III 550/100	SMP via 2nd Pent III	512/512 half speed in SEC	128/ 1G SDRAM ECC	Millennium G200 AGP 2X Adapter 8 / 16MB SGRAM AGP=0	PCI=4 PCI/ISA=1 AGP=0	6 bays 3 used 3 empty	440BX Ethernet Windows NT 4.0	May 1999
6889-73U	9.1GB std (7200) 7.0ms / Wide Ultra SCSI 40X-17X CD-ROM / EIDE	1 x Pentium III 550/100	SMP via 2nd Pent III	512 / 512 half speed in SEC	128/ 1G SDRAM ECC	Millennium G200 AGP 2X Adapter 8 / 16MB SGRAM AGP=0	PCI=4 PCI/ISA=1 AGP=0	6 bays 3 used 3 empty	440BX Ethernet Windows NT 4.0	May 1999
6889-75U	9.1GB std (7200) 7.0ms / Wide Ultra SCSI 40X-17X CD-ROM / EIDE	1 x Pentium III 550/100	SMP via 2nd Pent III	512 / 512 half speed in SEC	128/ 1G SDRAM ECC	IBM Fire GL1 ¹¹ AGP 2X Adapter 32/32MB SGRAM AGP=0	PCI=4 PCI/ISA=1 AGP=0	6 bays 3 used 3 empty	440BX Ethernet Windows NT 4.0	May 1999
6889-76U	9.1GB std (10K) 5.4ms / Wide Ultra SCSI 40X-17X CD-ROM / EIDE	1 x Pentium III 550/100	SMP via 2nd Pent III	512 / 512 half speed in SEC	256/ 1G RDIMM ECC	IBM Fire GL1 AGP 2X Adapter 32/32MB SGRAM AGP=0	PCI=4 PCI/ISA=1 AGP=0	6 bays 3 used 3 empty	440BX Ethernet Windows NT 4.0	May 1999
6889-78U for AAP	<i>no disk</i> 40X-17X CD-ROM / EIDE	1 x Pentium III 550/100	SMP via 2nd Pent III	512 / 512 half speed in SEC	128/ 1G SDRAM ECC	<i>None</i>	PCI=4 PCI/ISA=1 AGP=1	6 bays 2 used 4 empty	440BX Ethernet Open OS	May 1999
6889-80U	13.5GB std (7200) 9.0ms / EIDE 40X-17X CD-ROM / EIDE	1 x Pentium III 500/100	SMP via 2nd Pent III	512/512 half speed in SEC	128/ 1G SDRAM ECC	Millennium G400 AGP 2X Adapter 16/16MB SGRAM AGP=0	PCI=4 PCI/ISA=1 AGP=0	6 bays 3 used 3 empty	440BX Ethernet Windows NT 4.0	July 1999
6889-81U	9.1GB std (7200) 7.0ms / Wide Ultra SCSI 40X-17X CD-ROM / EIDE	1 x Pentium III 500/100	SMP via 2nd Pent III	512 / 512 half speed in SEC	128/ 1G SDRAM ECC	Millennium G400 AGP 2X Adapter 16/16MB SGRAM AGP=0	PCI=4 PCI/ISA=1 AGP=0	6 bays 3 used 3 empty	440BX Ethernet Windows NT 4.0	July 1999
6889-82U	13.5GB std (7200) 9.0ms / EIDE 40X-17X CD-ROM / EIDE	1 x Pentium III 550/100	SMP via 2nd Pent III	512 / 512 half speed in SEC	128/ 1G SDRAM ECC	Millennium G400 AGP 2X Adapter 16/16MB SGRAM AGP=0	PCI=4 PCI/ISA=1 AGP=0	6 bays 3 used 3 empty	440BX Ethernet Windows NT 4.0	July 1999
6889-83U	9.1GB std (7200) 7.0ms / Wide Ultra SCSI 40X-17X CD-ROM / EIDE	1 x Pentium III 550/100	SMP via 2nd Pent III	512 / 512 half speed in SEC	128/ 1G SDRAM ECC	Millennium G400 AGP 2X Adapter 16/16MB SGRAM AGP=0	PCI=4 PCI/ISA=1 AGP=0	6 bays 3 used 3 empty	440BX Ethernet Windows NT 4.0	July 1999
6889-84U	9.1GB std (10K) 5.4ms / Wide Ultra SCSI 40X-17X CD-ROM / EIDE	SMP via 2x Pentium III 550/100	<i>None</i>	512/512 half speed in SEC	256/ 1G RDIMM ECC	Millennium G400 AGP 2X Adapter 16/16MB SGRAM AGP=0	PCI=4 PCI/ISA=1 AGP=0	6 bays 3 used 3 empty	440BX Ethernet Windows NT 4.0	July 1999
6889-85U	9.1GB std (7200) 7.0ms / Wide Ultra SCSI 40X-17X CD-ROM / EIDE	1 x Pentium III 550/100	SMP via 2nd Pent III	512 / 512 half speed in SEC	128/ 1G SDRAM ECC	Appian J Pro PCI Adapter 16/16MB SGRAM AGP=1	PCI=3 PCI/ISA=1 AGP=1	6 bays 3 used 3 empty	440BX Ethernet Windows NT 4.0	July 1999
6889-86U	13.5GB std (7200) 9.0ms / EIDE 40X-17X CD-ROM / EIDE	1 x Pentium III 500/100	SMP via 2nd Pent III	512 / 512 half speed in SEC	128/ 1G SDRAM ECC	Appian J Pro PCI Adapter 16/16MB SGRAM AGP=1	PCI=3 PCI/ISA=1 AGP=1	6 bays 3 used 3 empty	440BX Ethernet Windows NT 4.0	July 1999
6889-87U	9.1GB std (10K) 5.4ms / Wide Ultra SCSI 40X-17X CD-ROM / EIDE	1 x Pentium III 550/100	SMP via 2nd Pent III	512 / 512 half speed in SEC	256/ 1G RDIMM ECC	Wildcat 4000 RA Wildcat 4000 GA 80/80MB SDRAM AGP=0	PCI=3 PCI/ISA=1 AGP=0	6 bays 3 used 3 empty	440BX Ethernet Windows NT 4.0	July 1999
6889-88U for AAP	<i>no disk</i> 40X-17X CD-ROM / EIDE	1 x Pentium III 450/100	SMP via 2nd Pent III	512 / 512 half speed in SEC	0 / 1G SDRAM ECC	<i>None</i>	PCI=4 PCI/ISA=1 AGP=1	6 bays 2 used 4 empty	440BX Ethernet Open OS	July 1999
6889-89U for AAP	<i>no disk</i> 40X-17X CD-ROM / EIDE	1 x Pentium III 500/100	SMP via 2nd Pent III	512 / 512 half speed in SEC	0 / 1G SDRAM ECC	<i>None</i>	PCI=4 PCI/ISA=1 AGP=1	6 bays 2 used 4 empty	440BX Ethernet Open OS	July 1999
6889-8AU for AAP	<i>no disk</i> 40X-17X CD-ROM / EIDE	1 x Pentium III 550/100	SMP via 2nd Pent III	512 / 512 half speed in SEC	0 / 1G SDRAM ECC	<i>None</i>	PCI=4 PCI/ISA=1 AGP=1	6 bays 2 used 4 empty	440BX Ethernet Open OS	July 1999

Windows NT Preload¹⁷

Windows NT® Workstation 4.0 (SP4)
Internet Explorer 4.0 install icon
IBM Welcome Center
Device drivers for each subsystem
Ready to install:
- ConfigSafe®
- Norton AntiVirus™ (OEM version)
- DMI Service Provider
- DMI BIOS Instrumentation
- IBM PC System Monitor Instrumentation
- IBM AssetCare Serial Number Information
CD-ROM discs:
- Hummingbird "Try and Buy" Suite CD-ROM
- Ready to Configure CD-ROM
- Free license for Lotus SmartSuite 97 CD-ROM
- IBM ViaVoice™ 98 Office Edition CD-ROM
- Windows NT Workstation 4.0 CD-ROM
- IBM Diagnostics CD-ROM (PC-Doctor)
- Access to IBM HomePage Creator



C: is 2GB as FAT16
Remainder is unformatted

Authorized Assembler Program models

AAP models contain no disk or graphics adapter.
No preload or operating system license is included.
- Hummingbird "Try and Buy" Suite CD-ROM
- Ready to Configure CD-ROM
- Free license for Lotus SmartSuite CD-ROM (via 800 number)

Supported Memory and Options

32MB SDRAM ECC DIMM 100MHz	01K1133
64MB SDRAM ECC DIMM 100MHz	01K1130
128MB SDRAM ECC DIMM 100MHz	01K1131
256MB SDRAM ECC DIMM Registered	01K1132
Adaptec ARO™-1130 CA-B PCI RAIDport	1681100
100MB IDE Zip Drive	20L0544
IBM Fire GL1 (3D graphics accelerator)	33L5032
2X/4X/24X ⁶ CD-RW IDE Drive	33L5005
550MHz Pentium III Second Processor	33L5112

RDIMM = Registered DIMM
 = Announced June 22, 1999
 = Withdrawn from marketing

WARRANTY SERVICE SUPPORT*³

- ↔ 3 year parts warranty
- ↔ 1 year labor warranty
- ↔ International Warranty Service³
- ↔ 1st year: on site, 8 am - 5 pm, Mon - Fri coverage, 2nd business day response time
- ↔ 2nd/3rd year: parts exchange only, call 1-800-772-2227
- ↔ On site warranty service upgrade options:
 - Next day response, Mon-Fri 8-5¹⁴
 - 4 hour response, 7 day x 24 hr¹⁴
- ↔ Post warranty maintenance services available
- ↔ 24 hour / 7 day telephone, electronic, and Internet support

* For a copy of IBM's Statement of Limited Warranty, call 1-800-772-2227

No warranties are expressed or implied in this summary (6889S - Page 1 of 2) © IBM Corp. October 2001

IBM IntelliStation® M Pro (6889) - Spring 1999 - withdrawn

IBM® IntelliStation® M Pro				
Type	6889			
Processor(s)	One Intel® Pentium® III 450, 500, or 550MHz¹ / 100MHz Front Side Bus			
Implementation	Processor and L2 cache in Single Edge Contact (SEC) cartridge in protective metal case / SEC plugged into Intel Slot 1			
Processor upgrade	SMP via second identical processor / upgrade via SEC into motherboard Intel® Slot 1 CPU connector / MPS 1.4			
L2 cache	512KB std / 512KB max / ECC / half speed of processor / 4 way set associative / write-back / integrated in SEC			
Avail / withdrawn date	May 1999 or July 1999 / November 1999 or February 2000 or May 2000			
Mem - std / max / type	128MB or 256MB std / 1GB max¹³ / Error Checking and Correction (ECC)			
Memory - sockets	4 sockets / 3 available (all have Error Checking and Correcting memory controller)			
Memory - features	SDRAM / 100MHz / four 168 pin gold-plated DIMM 3.3 volt sockets / PC100-compliant / hardware scrubbing of ECC errors			
Memory - support	Supports SDRAM ECC DIMMs (32,64,128, 256MB) / only 256MB DIMMs are registered (buffered); can not mix reg/non-reg			
Graphics controller	Matrox® Millennium G200-D or G400 (performance 2D), IBM Fire GL1¹¹ (performance 2D/3D), Appian Graphics® J Pro (2D multiple display), or Intense3D® Wildcat 4000 RA w/ Geo Acceleratr GA (extreme 3D)			
	<table border="1"> <tr> <td>IBM Fire GL1 / AGP 2X adapter / sideband-capable 32MB std / 32MB max / 256-bit 100MHz SGRAM 2D and OpenGL 3D engine / 250MHz RAMDAC / DDC2B</td> <td>Appian Graphics Jeronimo Pro / 32-bit PCI adapter / 16MB std / 16MB max / 125MHz SGRAM / 250MHz RAMDAC / two controllers with two ports for multiple monitor support</td> </tr> </table>	IBM Fire GL1 / AGP 2X adapter / sideband-capable 32MB std / 32MB max / 256-bit 100MHz SGRAM 2D and OpenGL 3D engine / 250MHz RAMDAC / DDC2B	Appian Graphics Jeronimo Pro / 32-bit PCI adapter / 16MB std / 16MB max / 125MHz SGRAM / 250MHz RAMDAC / two controllers with two ports for multiple monitor support	
IBM Fire GL1 / AGP 2X adapter / sideband-capable 32MB std / 32MB max / 256-bit 100MHz SGRAM 2D and OpenGL 3D engine / 250MHz RAMDAC / DDC2B	Appian Graphics Jeronimo Pro / 32-bit PCI adapter / 16MB std / 16MB max / 125MHz SGRAM / 250MHz RAMDAC / two controllers with two ports for multiple monitor support			
	Intense3D Wildcat 4000 RA / 32-bit 33MHz PCI 2.1 adapter / 16MB 128-bit 143MHz SDRAM (frame buffer) and 64MB 128-bit 143MHz SDRAM (texture memory) / 2D and 3D engine / Intergraph 3D Wildcat 4000 Geometry Accelerator (GA) / AGP 2X adapter (requires 4000 RA) / max of 1280x1024 at 85Hz			
Architecture - chip set	Intel 440BX AGPset / PIIX4E for EIDE (Ultra DMA/33), ISA Bridge, USB / Adaptec® AHA-7895 / National Semiconductor PC87307 Super I/O for diskette, parallel, serial, keyboard, mouse			
Bus slots	PCI 2.1 (33MHz), Accelerated Graphics Port (66MHz; AGP 2X; 533MB/sec), and ISA slots (8.33MHz) / see below			
Disk	None (AAP models), one EIDE (Ultra DMA/33), or one Wide Ultra SCSI / SMART ⁵			
SCSI controller	Adaptec® AHA-7895 / dual channel Wide Ultra SCSI controller / on motherboard / PCI 2.1			
SCSI connectors	<i>Channel A:</i> 68 pin (attaches 4 drop cable to SCSI disk); <i>Channel B:</i> 50 pin and 68 pin / 68 pin cable std to external SCSI port (all mod)			
RAID option	Supports Adaptec ARO™-1130 CA-B PCI RAIDport™ adapter (RAID 0,1) / installs in PCI slot / uses 7895 controller and connects			
Cables - SCSI and IDE	<i>SCSI and AAP models:</i> 4 drop 16-bit cable on Chan A; 16-bit cable to ext port on Chan B; one 2 drop IDE cable (CD-ROM) <i>EIDE models:</i> Two 2 drop IDE cables (one for disk; one for CD-ROM) and SCSI cable to external SCSI port			
EIDE disk controller	Enhanced IDE busmaster (PIIX4E) / Ultra DMA/33 (ATA-33) support / two connectors on planar			
CD-ROM	40X-17X⁶ CD-ROM / CAV (ATAPI) / bootable			
Diskette drive	3.5" 1.44MB diskette drive / 1 drop cable			
Ethernet controller	Intel EtherExpress PRO/100B / PCI 82558 ethernet chip on planar / PCI bus / 10BaseTX and 100BaseTX / RJ45 UTP connector / Wake on LAN® / Alert on LAN			
LCCM support	LANClient Control Manager™ enabled / Wake on LAN / Setup over LAN / Hybrid RPL / DHCP/BOOTP / software image download			
Systems mgmt cntrl	National Semiconductor® LM81-compatibile / hardware chip to monitor temperature, fan speeds, voltage, system cover removal / I2C			
Audio	Crystal CS4235 chip on planar / stereo / ISA bus / FM Synthesis / int speaker			
Audio connectors	Stereo line in / mic in / line out (all in back) / software volume control			
Microphone	Headset with microphone (noise canceling for ViaVoice application)			
Serial/parallel/USB	<i>Ser:</i> Two 9 pin / 115Kbps <i>Par:</i> One (EPP, ECP) / IEEE 1284 <i>USB:</i> Two ports			
Keyboard / mouse	104 key (rubber dome) keyboard / keyboard extender / IBM 3 button mouse			
Power supply	330 watts / universal / auto-sensing / Wake on LAN			
	<table border="1"> <tr> <td> </td> <td> Bay ① 5.25", HH 1.6", access, std CD-ROM Bay ② 5.25", HH 1.6", access, open Bay ③ 3.5", SL 1", access, open Bay ④ 3.5", SL 1", access, std diskette Bay ⑤ 3.5", SL 1", no access, open (disk only) Bay ⑥ 3.5", SL 1", no access, std disk (disk only) </td> <td>] or Half Height </td> </tr> </table> <p>Slot 1: halfsize, 32-bit AGP (3.3v) - used by AGP graphics adapter (most models) Slot 2: fullsize, 32-bit PCI 2.1 (5v) - supports optional Adaptec RAIDport - used by Appian or Wildcat in some models Slot 3: fullsize, 32-bit PCI 2.1 (5v) Slot 4: fullsize, 32-bit PCI 2.1 (5v) Slot 5: fullsize, 32-bit PCI 2.1 (5v) Slot 6: fullsize, 16-bit ISA or 32-bit PCI 2.1 (5v)</p>		Bay ① 5.25", HH 1.6", access, std CD-ROM Bay ② 5.25", HH 1.6", access, open Bay ③ 3.5", SL 1", access, open Bay ④ 3.5", SL 1", access, std diskette Bay ⑤ 3.5", SL 1", no access, open (disk only) Bay ⑥ 3.5", SL 1", no access, std disk (disk only)] or Half Height
	Bay ① 5.25", HH 1.6", access, std CD-ROM Bay ② 5.25", HH 1.6", access, open Bay ③ 3.5", SL 1", access, open Bay ④ 3.5", SL 1", access, std diskette Bay ⑤ 3.5", SL 1", no access, open (disk only) Bay ⑥ 3.5", SL 1", no access, std disk (disk only)] or Half Height		
	<p style="text-align: center;">SECURITY</p> <ul style="list-style-type: none"> - Cover key lock (in rear) - Cover tamper detect switch - Secure fixed DASD - Serial EEPROM with write protect - Power-on password - Administrator password - Keyboard/mouse password - Wake Up on LAN password prompt - Boot sequence control - Boot without keyboard or mouse - Diskette boot inhibit - Disable mouse - Disable external SCSI port - Diskette write-protect - Diskette, disk, serial port, parallel port I/O control - Secure access openings - Secure removable media - VPD stored in EEPROM - Write protection control for EEPROM - Barcode labels on most components <p>Remotely readable DMI-compliant:</p> <ul style="list-style-type: none"> - System EEPROM on motherboard (info and serial no for CPU, riser, system unit, CD-ROM, diskette, empty blank fields); also can read/write with external RF unit - EEPROMs on DIMMs (component info, serial no) - Disk firmware (compnt info, serial no) 			
Alert on LAN™ - provides local or remote monitoring; immediate notification of system events such as chassis intrusion, disconnect, start up errors, even if powered off				
Asset ID (RFID)¹⁶ - uses radio frequency (RF) technology for deployment, inventory, and security; includes EEPROM that can be accessed via DMI software through network or an external RF link such as hand-held RF read/write units; theft protection				
SMART Reaction™ - automatic backup of disk				
PC 98-compliant				
DMI 2.0-compliant with DMI manageability chip				
Wired for Management 1.1a				
Adv Config and Power Interface (ACPI) 1.0				
Universal Management Agent (UMA) and UMA Plus-enabled				
	<p style="text-align: center;">OTHER STANDARD FEATURES</p> <p>The Setup Utility resides in flash memory; invoked by pressing F1 key during memory POST</p> <p>Advanced Power Mgmt 1.2</p> <p>Support for DMI technology (includes MIF browser) with DMI Service Layer 2.0, DMI BIOS 2.1, and DMI software; DMI 2.0 compliant</p> <p>Plug-and-Play 1.0a</p> <p>ISO 9241-3 capable</p> <p>Vital Product Data support (type, model, serial, id)</p> <p>7.87"W x 17.52"D x 19.37"H; 38 lbs max (shipped)</p> <p>200 mm W x 445 mm D x 492 mm H; 17.3 kg</p> <p>Several hardcopy publications; four stabilizing feet</p> <p>512KB IBM BIOS (Flash over LAN support)</p> <p>Supplier's Declaration available</p> <p>Four fans (three in system and one in power supply)</p>	<p><i>Maximum internal SCSI disk capacity¹³:</i> 72.8GB (4 x 18.2GB (7200 rpm); 91GB if remove CD-ROM</p> <p><i>Maximum internal EIDE disk capacity¹³:</i> 61.2GB (3 x 20.4GB)</p> <p>Power management features:</p> <ul style="list-style-type: none"> - Configurable levels for system, CPU, and monitor including powering system and/or display off - Wake Up on Ring (via modem) from off state - Wake Up on Alarm (scheduled time) from off state - Wake on LAN from off state - PCI Wake Up from supported PCI devices 		

IBM IntelliStation® M Pro - Summer 1999 (6889) - withdrawn

Type-model	Std disk (rpm) ms seek / disk interface CD-ROM ⁶ / interface	Intel® Processor MHz ¹ / Upgrade	Write-back L2 cache std / max KB / KB	Memory in MB; std / max 100MHz	SVGA controller; memory std / max	Bus slots P=PCI avail PCI/ISA=av A=AGP av	Total bays	Chip set Ethernet Preload ¹⁷	Available date	
6 slot x 6 bay; PCI/ISA/AGP; Stealth Black										
⌘ 6889-91U	13.5GB ² std (7200) 9.0ms / EIDE / ATA-33 40X-17X CD-ROM / EIDE	1 x Pentium III 550/100	SMP via 2nd Pent III	512 / 512 half speed in SEC	128/ 1G SDRAM ECC	Appian J Pro PCI Adapter 16/16MB SGRAM	PCI=3 PCI/ISA=1 AGP=1	6 bays 3 used 3 empty	440BX Ethernet Windows NT 4.0	Aug 1999
⌘ 6889-92U	13.5GB std (7200) 9.0ms / EIDE / ATA-33 40X-17X CD-ROM / EIDE	1 x Pentium III 600/100	SMP via 2nd Pent III	512 / 512 half speed in SEC	128/ 1G SDRAM ECC	Millennium G400 AGP 2X Adapter 16/16MB SGRAM	PCI=4 PCI/ISA=1 AGP=0	6 bays 3 used 3 empty	440BX Ethernet Windows NT 4.0	Aug 1999
⌘ 6889-93U	9.1GB std (7200) 7.0ms / Wide Ultra SCSI 40X-17X CD-ROM / EIDE	1 x Pentium III 600/100	SMP via 2nd Pent III	512 / 512 half speed in SEC	128/ 1G SDRAM ECC	Millennium G400 AGP 2X Adapter 16/16MB SGRAM	PCI=4 PCI/ISA=1 AGP=0	6 bays 3 used 3 empty	440BX Ethernet Windows NT 4.0	Aug 1999
⌘ 6889-94U	9.1GB std (10K) 5.4ms / Wide Ultra SCSI 40X-17X CD-ROM / EIDE	1 x Pentium III 600/100	SMP via 2nd Pent III	512/512 half speed in SEC	256/ 1G RDIMM ECC	Millennium G400 AGP 2X Adapter 16/16MB SGRAM	PCI=4 PCI/ISA=1 AGP=0	6 bays 3 used 3 empty	440BX Ethernet Windows NT 4.0	Aug 1999
⌘ 6889-95U	9.1GB std (7200) 7.0ms / Wide Ultra SCSI 40X-17X CD-ROM / EIDE	1 x Pentium III 600/100	SMP via 2nd Pent III	512 / 512 half speed in SEC	256/ 1G RDIMM ECC	IBM Fire GL1 ¹¹ AGP 2X Adapter 32/32MB SGRAM	PCI=4 PCI/ISA=1 AGP=0	6 bays 3 used 3 empty	440BX Ethernet Windows NT 4.0	Aug 1999
⌘ 6889-96U	13.5GB std (7200) 9.0ms / EIDE / ATA-33 40X-17X CD-ROM / EIDE	1 x Pentium III 600/100	SMP via 2nd Pent III	512 / 512 half speed in SEC	128/ 1G SDRAM ECC	IBM Fire GL1 AGP 2X Adapter 32/32MB SGRAM	PCI=4 PCI/ISA=1 AGP=0	6 bays 3 used 3 empty	440BX Ethernet Windows NT 4.0	Aug 1999
⌘ 6889-97U	9.1GB std (10K) 5.4ms / Wide Ultra SCSI 40X-17X CD-ROM / EIDE	1 x Pentium III 600/100	SMP via 2nd Pent III	512 / 512 half speed in SEC	256/ 1G RDIMM ECC	Wildcat 4000 RA Wildcat 4000 GA 80/80MB SDRAM	PCI=3 PCI/ISA=1 AGP=0	6 bays 3 used 3 empty	440BX Ethernet Windows NT 4.0	Aug 1999
⌘ 6889-98U for AAP	<i>no disk</i> 40X-17X CD-ROM / EIDE	1 x Pentium III 600/100	SMP via 2nd Pent III	512 / 512 half speed in SEC	0 / 1G SDRAM ECC	<i>None</i>	PCI=4 PCI/ISA=1 AGP=1	6 bays 2 used 4 empty	440BX Ethernet Open OS	Aug 1999
⌘ 6889-99U	9.1GB std (10K) 5.4ms / Wide Ultra SCSI 40X-17X CD-ROM / EIDE	1 x Pentium III 600/100	SMP via 2nd Pent III	512 / 512 half speed in SEC	256/ 1G RDIMM ECC	IBM Fire GL1 AGP 2X Adapter 32/32MB SGRAM	PCI=4 PCI/ISA=1 AGP=0	6 bays 3 used 3 empty	440BX Ethernet Windows NT 4.0	Oct 1999
⌘ 6889-9AU	9.1GB std (10K) 5.4ms / Wide Ultra SCSI 40X-17X CD-ROM / EIDE	SMP via 2x Pentium III 600/100	None	512/512 half speed in SEC	512/ 1G RDIMM ECC	Millennium G400 AGP 2X Adapter 16/16MB SGRAM	PCI=4 PCI/ISA=1 AGP=0	6 bays 3 used 3 empty	440BX Ethernet Windows NT 4.0	Oct 1999

Windows NT Preload¹⁷

Windows NT® Workstation 4.0 (SP4)
Internet Explorer 4.0 install icon
IBM Welcome Center

Device drivers for each subsystem
Ready to install:

- ConfigSafe®
- Norton AntiVirus™ (OEM version)
- DMI Service Provider
- DMI BIOS Instrumentation
- IBM PC System Monitor Instrumentation
- CoSession Remote® 32

CD-ROM discs:

- ⌘ Hummingbird "Try and Buy" Suite CD-ROM
- ⌘ Ready to Configure CD-ROM
- ⌘ Free license for Lotus SmartSuite 97 CD-ROM
- ⌘ IBM ViaVoice™ 98 Office Edition CD-ROM
- ⌘ LANDesk® Client Manager CD-ROM
- ⌘ Windows NT Workstation 4.0 CD-ROM
- ⌘ IBM Diagnostics CD-ROM (PC-Doctor)
- ⌘ Access to IBM HomePage Creator

C: is 2GB as FAT16
Remainder is unformatted

Authorized Assembler Program models

AAP models contain no disk or graphics adapter.
No preload or operating system license is included.

- Hummingbird "Try and Buy" Suite CD-ROM
- Ready to Configure CD-ROM
- Free license for Lotus SmartSuite CD-ROM (via 800 number)

Supported Memory and Options

32MB SDRAM ECC DIMM 100MHz	01K1133
64MB SDRAM ECC DIMM 100MHz	01K1130
128MB SDRAM ECC DIMM 100MHz	01K1131
256MB SDRAM ECC DIMM Registered	01K1132
Adaptec ARO™-1130 CA-B PCI RAIDport	1681100
100MB IDE Zip Drive	20L0544
2X/4X/24X CD-RW IDE Drive	33L5005
550MHz Pentium III Second Processor	33L5112
600MHz Pentium III Second Processor	33L5106

RDIMM = Registered DIMM
⌘ = Announced August 3, 1999
⌘ = Withdrawn from marketing

WARRANTY SERVICE SUPPORT³

- ⌘ 3 year parts warranty
- ⌘ 1 year labor warranty
- ⌘ International Warranty Service³
- ⌘ 1st year: on site, 8 am - 5 pm, Mon - Fri coverage, 2nd business day response time
- ⌘ 2nd/3rd year: parts exchange only, call 1-800-772-2227
- ⌘ On site warranty upgrade options:
 - Next day response¹⁴, Mon-Fri 8-5
 - 4 hour response¹⁴, 7 day x 24 hr
- ⌘ Post warranty: on site options above
- ⌘ IBM SystemXtra®
- ⌘ 24 hour / 7 day telephone, electronic, Internet (www.pc.ibm.com) support

IBM IntelliStation® M Pro - Summer 1999 (6889) - withdrawn

IBM® IntelliStation® M Pro

Type	6889													
Processor(s)	One or two Intel® Pentium® III 550 or 600MHz¹ / 100MHz Front Side Bus													
Implementation	Processor and L2 cache in Single Edge Contact (SEC) cartridge in protective metal case / SEC plugged into Intel Slot 1													
Processor upgrade	SMP via second identical processor / upgrade via SEC into motherboard Intel® Slot 1 CPU connector / MPS 1.4													
L2 cache	512KB std / 512KB max / ECC / half speed of processor / 4 way set associative / write-back / integrated in SEC													
Avail / withdrawn date	August 1999 / Model 91U withdrawn May 2000; others in June 2000													
Mem - std / max / type	128MB or 256MB or 512MB std / 1GB max¹³ / Error Checking and Correction (ECC)													
Memory - sockets	4 sockets / 3 available (all have Error Checking and Correcting memory controller)													
Memory - features	SDRAM / 100MHz / four 168 pin gold-plated DIMM 3.3 volt sockets / PC100-compliant / hardware scrubbing of ECC errors													
Memory - support	Supports SDRAM ECC DIMMs (32,64,128, 256MB) / only 256MB DIMMs are registered (buffered); can not mix reg/non-reg													
Graphics controller	Matrox® Millennium G400 (performance 2D), IBM Fire GL1¹¹ (advanced 3D), Appian Graphics® J Pro (2D multiple display), or Intense3D® Wildcat 4000 RA w/ Geo Accelerator GA (precision 3D)													
	IBM Fire GL1 / AGP 2X adapter / sideband-capable 32MB std / 32MB max / 256-bit 100MHz SGRAM 2D and OpenGL 3D engine / 250MHz RAMDAC / DDC2B	Appian Graphics Jeronimo Pro / 32-bit PCI adapter / 16MB std / 16MB max / 125MHz SGRAM / 250MHz RAMDAC / two controllers with two ports for multiple monitor support												
	Intense3D Wildcat 4000 RA / 32-bit 33MHz PCI 2.1 adapter / 16MB 128-bit 143MHz SDRAM (frame buffer) and 64MB 128-bit 143MHz SDRAM (texture memory) / 2D and 3D engine / Intergraph 3D Wildcat 4000 Geometry Accelerator (GA) / AGP 2X adapter (requires 4000 RA) / max of 1280x1024 at 85Hz													
Architecture - chip set	Intel 440BX AGPset / PIIX4E for EIDE (Ultra DMA/33), ISA Bridge, USB / Adaptec® AHA-7895 / National Semiconductor PC87307 Super I/O for diskette, parallel, serial, keyboard, mouse													
Bus slots	PCI 2.1 (33MHz), Accelerated Graphics Port (66MHz; AGP 2X; 533MB/sec), and ISA slots (8.33MHz) / see below													
Disk	None (AAP models), one EIDE (Ultra DMA/33), or one Wide Ultra SCSI / SMART ⁵													
SCSI controller	Adaptec® AHA-7895 / dual channel Wide Ultra SCSI controller / on motherboard / PCI 2.1													
SCSI connectors	Channel A: 68 pin (attaches 4 drop cable to SCSI disk); Channel B: 50 pin and 68 pin / 68 pin cable std to external SCSI port (all mod)													
RAID option	Supports Adaptec ARO™-1130 CA-B PCI RAIDport™ adapter (RAID 0,1) / installs in PCI slot / uses 7895 controller and connects													
Cables - SCSI and IDE	SCSI and AAP models: 4 drop 16-bit cable on Chan A; 16-bit cable to ext port on Chan B; one 2 drop IDE cable (CD-ROM)													
EIDE disk controller	Enhanced IDE busmaster (PIIX4E) / Ultra DMA/33 (ATA-33) support / two connectors on planar													
CD-ROM	40X-17X⁶ CD-ROM / CAV (ATAPI) / bootable													
Diskette drive	3.5" 1.44MB diskette drive / 1 drop cable													
Ethernet controller	Intel EtherExpress PRO/100B / PCI 82558 ethernet chip on planar / PCI bus / 10BaseT and 100BaseTX / RJ45 UTP connector / Wake on LAN® / Alert on LAN													
LCCM support	LANClient Control Manager™ enabled / Wake on LAN / Setup over LAN / Hybrid RPL / DHCP/BOOTP / software image download													
Systems mgmt cntrl	National Semiconductor® LM81-compatible / hardware chip to monitor temperature, fan speeds, voltage, system cover removal / I2C													
Audio	Crystal CS4235 chip on planar / stereo / ISA bus / FM Synthesis / int speaker													
Audio connectors	Stereo line in / mic in / line out (all in back) / software volume control													
Microphone	Headset with microphone (noise canceling for ViaVoice application)													
Serial/parallel/USB	Ser: Two 9 pin / 115Kbps Par: One (EPP, ECP) / IEEE 1284 USB: Two ports													
Keyboard / mouse	104 key (rubber dome) keyboard / keyboard extender / IBM 3 button mouse													
Power supply	330 watts / universal / auto-sensing / Wake on LAN													
	<table border="1"> <tr> <td>CD-ROM</td> <td>Bay ① 5.25", HH 1.6", access, std CD-ROM</td> </tr> <tr> <td>②</td> <td>Bay ② 5.25", HH 1.6", access, open</td> </tr> <tr> <td>③</td> <td>Bay ③ 3.5", SL 1", access, open</td> </tr> <tr> <td>diskette</td> <td>Bay ④ 3.5", SL 1", access, std diskette</td> </tr> <tr> <td>⑤</td> <td>Bay ⑤ 3.5", SL 1", no access, open (disk only)</td> </tr> <tr> <td>disk</td> <td>Bay ⑥ 3.5", SL 1", no access, std disk (disk only)</td> </tr> </table>	CD-ROM	Bay ① 5.25", HH 1.6", access, std CD-ROM	②	Bay ② 5.25", HH 1.6", access, open	③	Bay ③ 3.5", SL 1", access, open	diskette	Bay ④ 3.5", SL 1", access, std diskette	⑤	Bay ⑤ 3.5", SL 1", no access, open (disk only)	disk	Bay ⑥ 3.5", SL 1", no access, std disk (disk only)	<p>or Half Height</p> <p>Slot 1: halfsize, 32-bit AGP (3.3v) - used by AGP graphics adapter (most models)</p> <p>Slot 2: fullsize, 32-bit PCI 2.1 (5v) - supports optional Adaptec RAIDport - used by Appian or Wildcat in some models</p> <p>Slot 3: fullsize, 32-bit PCI 2.1 (5v)</p> <p>Slot 4: fullsize, 32-bit PCI 2.1 (5v)</p> <p>Slot 5: fullsize, 32-bit PCI 2.1 (5v)</p> <p>Slot 6: fullsize, 16-bit ISA or 32-bit PCI 2.1 (5v)</p>
CD-ROM	Bay ① 5.25", HH 1.6", access, std CD-ROM													
②	Bay ② 5.25", HH 1.6", access, open													
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⑤	Bay ⑤ 3.5", SL 1", no access, open (disk only)													
disk	Bay ⑥ 3.5", SL 1", no access, std disk (disk only)													
		<p>SECURITY</p> <ul style="list-style-type: none"> - Cover key lock (in rear) - Cover tamper detect switch - Secure fixed DASD - Serial EEPROM with write protect - Power-on password - Administrator password - Keyboard/mouse password - Wake Up on LAN password prompt - Boot sequence control - Boot without keyboard or mouse - Diskette boot inhibit - Disable mouse - Disable external SCSI port - Diskette write-protect - Diskette, disk, serial port, parallel port I/O control - Secure access openings - Secure removable media - VPD stored in EEPROM - Write protection control for EEPROM - Barcode labels on most components <p>Remotely readable DMI-compliant:</p> <ul style="list-style-type: none"> - System EEPROM on motherboard (info and serial no for CPU, riser, system unit, CD-ROM, diskette, empty blank fields); also can read/write with external RF unit - EEPROMs on DIMMs (component info, serial no) - Disk firmware (compnt info, serial no) 												
Alert on LAN™ - provides local or remote monitoring; immediate notification of system events such as chassis intrusion, disconnect, start up errors, even if powered off														
Asset ID (RFID)¹⁶ - uses radio frequency (RF) technology for deployment, inventory, and security; includes EEPROM that can be accessed via DMI software through network or an external RF link such as hand-held RF read/write units; theft protection														
SMART Reaction™ - automatic backup of disk														
PC 98-compliant														
DMI 2.0-compliant with DMI manageability chip														
Wired for Management 1.1a														
Adv Config and Power Interface (ACPI) 1.0														
Universal Management Agent (UMA) and UMA Plus-enabled														
	<p>OTHER STANDARD FEATURES</p> <p>The Setup Utility resides in flash memory; invoked by pressing F1 key during memory POST</p> <p>Advanced Power Mgmt 1.2</p> <p>Support for DMI technology (includes MIF browser) with DMI Service Layer 2.0, DMI BIOS 2.1, and DMI software; DMI 2.0 compliant</p> <p>Plug-and-Play 1.0a</p> <p>ISO 9241-3 capable</p> <p>Vital Product Data support (type, model, serial, id)</p> <p>7.87"W x 17.52"D x 19.37"H; 38 lbs max (shipped)</p> <p>200 mm W x 445 mm D x 492 mm H; 17.3 kg</p> <p>Several hardcopy publications; four stabilizing feet</p> <p>512KB IBM BIOS (Flash over LAN support)</p> <p>Supplier's Declaration available</p> <p>Four fans (three in system and one in power supply)</p>	<p>Maximum internal SCSI disk capacity¹³: 72.8GB (4 x 18.2GB (7200 rpm); 91GB if remove CD-ROM</p> <p>Maximum internal EIDE disk capacity¹³: 61.2GB (3 x 20.4GB)</p> <p>Power management features:</p> <ul style="list-style-type: none"> - Configurable levels for system, CPU, and monitor including powering system and/or display off - Wake Up on Ring (via modem) from off state - Wake Up on Alarm (scheduled time) from off state - Wake on LAN from off state - PCI Wake Up from supported PCI devices 												

IBM IntelliStation® M Pro models - Winter 1999 (6889) - withdrawn

Type-model	Std disk (rpm) ms seek / disk interface CD-ROM ⁶ / interface	Intel® Processor MHz ¹ / Upgrade	Write-back L2 cache std / max KB / KB	Memory in MB; std / max 100MHz	SVGA controller; memory std / max	Bus slots P=PCI avail PCI/ISA=av A=AGP av	Total bays	Chip set Ethernet Preload ¹⁷	Available date	
6 slot x 6 bay; PCI/ISA/AGP; Stealth Gray										
⌘ 6889-51U	13.5GB ² std (7200) 9.0ms / EIDE 40X-17X ⁶ CD-ROM / EIDE	1 x Pentium® III 500/100	SMP via 2nd Pent III	512 / 512 half speed in SEC	128/ 1G SDRAM ECC	Millennium G200 AGP-2x Adapter 8 / 16 SGRAM	PCI=4 PCI/ISA=1 AGP=0	6 bays 3 used 3 empty	440BX Ethernet Windows NT 4.0	Mar 1999
⌘ 6889-52U	9.1GB std (7200) 7.0ms / Wide Ultra SCSI 40X-17X CD-ROM / EIDE	1 x Pentium III 500/100	SMP via 2nd Pent III	512 / 512 half speed in SEC	128/ 1G SDRAM ECC	Millennium G200 AGP-2x Adapter 8 / 16 SGRAM	PCI=4 PCI/ISA=1 AGP=0	6 bays 3 used 3 empty	440BX Ethernet Windows NT 4.0	Mar 1999
⌘ 6889-53U	9.1GB std (7200) 7.0ms / Wide Ultra SCSI 40X-17X CD-ROM / EIDE	1 x Pentium III 500/100	SMP via 2nd Pent III	512 / 512 half speed in SEC	256/ 1G RDIMM ECC	Millennium G200 AGP-2x Adapter 8 / 16 SGRAM	PCI=4 PCI/ISA=1 AGP=0	6 bays 3 used 3 empty	440BX Ethernet Windows NT 4.0	Mar 1999
⌘ 6889-54U	9.1GB std (7200) 7.0ms / Wide Ultra SCSI 40X-17X CD-ROM / EIDE	1 x Pentium III 500/100	SMP via 2nd Pent III	512 / 512 half speed in SEC	128/ 1G SDRAM ECC	IBM Fire GL1 ¹¹ AGP-2x Adapter 32/32 SGRAM	PCI=4 PCI/ISA=1 AGP=0	6 bays 3 used 3 empty	440BX Ethernet Windows NT 4.0	Mar 1999
⌘ 6889-55U	9.1GB std (10000) 5.4ms / Wide Ultra SCSI 40X-17X CD-ROM / EIDE	SMP via 2 x Pentium III 500/100	None via 2nd Pent III	512 / 512 half speed in SEC	256/ 1G RDIMM ECC	Millennium G200 AGP-2x Adapter 8 / 16 SGRAM	PCI=4 PCI/ISA=1 AGP=0	6 bays 3 used 3 empty	440BX Ethernet Windows NT 4.0	Mar 1999
⌘ 6889-56U	9.1GB std (10000) 5.4ms / Wide Ultra SCSI 40X-17X CD-ROM / EIDE	1 x Pentium III 500/100	SMP via 2nd Pent III	512 / 512 half speed in SEC	256/ 1G RDIMM ECC	IBM Fire GL1 AGP-2x Adapter 32/32 SGRAM	PCI=4 PCI/ISA=1 AGP=0	6 bays 3 used 3 empty	440BX Ethernet Windows NT 4.0	Mar 1999
⌘ 6889-57U	13.5GB std (7200) 9.0ms / EIDE 40X-17X CD-ROM / EIDE	1 x Pentium III 450/100	SMP via 2nd Pent III	512/512 half speed in SEC	128/ 1G SDRAM ECC	Millennium G200 AGP-2x Adapter 8 / 16 SGRAM	PCI=4 PCI/ISA=1 AGP=0	6 bays 2 used 4 empty	440BX Ethernet Windows NT 4.0	Mar 1999
⌘ 6889-5EU	9.1GB std (7200) 7.0ms / Wide Ultra SCSI 40X-17X CD-ROM / EIDE	1 x Pentium III 450/100	SMP via 2nd Pent III	512 / 512 half speed in SEC	128/ 1G SDRAM ECC	Millennium G200 AGP-2x Adapter 8 / 16 SGRAM	PCI=4 PCI/ISA=1 AGP=0	6 bays 3 used 3 empty	440BX Ethernet Windows NT 4.0	Mar 1999
⌘ 6889-58U for AAP	<i>no disk</i> 40X-17X CD-ROM / EIDE	1 x Pentium III 500/100	SMP via 2nd Pent III	512 / 512 half speed in SEC	128/ 1G SDRAM ECC	<i>None</i>	PCI=4 PCI/ISA=1 AGP=1	6 bays 2 used 4 empty	440BX Ethernet Open OS	Mar 1999
⌘ 6889-59U for AAP	<i>no disk</i> 40X-17X CD-ROM / EIDE	1 x Pentium III 450/100	SMP via 2nd Pent III	512 / 512 half speed in SEC	128/ 1G SDRAM ECC	<i>None</i>	PCI=4 PCI/ISA=1 AGP=1	6 bays 2 used 4 empty	440BX Ethernet Open OS	Mar 1999

<p>Windows NT Preload¹⁷</p> <p>Windows NT® Workstation 4.0 (SP3) Internet Explorer 4.0 install icon IBM Welcome Center Device drivers for each subsystem Ready to install: - ConfigSafe® - Norton AntiVirus™ (OEM version) - DMI Service Provider - DMI BIOS Instrumentation - IBM PC System Monitor Instrumentation - IBM AssetCare Serial Number Information - IBM RTC CD-ROM Setup Utility - IBM Utilities for Windows 95/NT 4.0 - Hummingbird "Try and Buy" Suite CD-ROM - Ready to Configure CD-ROM - Free license for Lotus SmartSuite 97 CD-ROM - IBM ViaVoice 98 Office Edition CD-ROM - Windows NT Workstation 4.0 CD-ROM - IBM Diagnostics CD-ROM - Access to IBM HomePage Creator</p> <p>C: is 2GB as FAT16 Remainder is unformatted</p>	<p>Ready to Configure CD-ROM</p> <p>All models ship with a CD with drivers for Windows® 95, 98, and NT 3.51 and 4.0 and various utilities. Includes: - Intel LANDesk® Client Manager - ConfigSafe - IBM Universal Management Agent™</p> <p>Supported Memory and Options</p> <table border="0"> <tr><td>32MB SDRAM ECC DIMM 100MHz</td><td>01K1133</td></tr> <tr><td>64MB SDRAM ECC DIMM 100MHz</td><td>01K1130</td></tr> <tr><td>128MB SDRAM ECC DIMM 100MHz</td><td>01K1131</td></tr> <tr><td>256MB SDRAM ECC DIMM Registered</td><td>01K1132</td></tr> <tr><td>Adaptec ARO™-1130 CA-B PCI RAIDport</td><td>1681100</td></tr> <tr><td>Matrox Millennium G200</td><td>10L7127</td></tr> <tr><td>IBM Fire GL1 (3D graphics accelerator)</td><td>33L5032</td></tr> <tr><td>10/100 PCI EtherJet Adapter WOL</td><td>08L2565</td></tr> <tr><td>Auto Wake Token-Ring ISA Adapter</td><td>55H6760</td></tr> <tr><td>PCI Token Ring Adapter WOL</td><td>86H1880</td></tr> <tr><td>13.5GB 7200 rpm EIDE disk</td><td>33L5043</td></tr> <tr><td>20.5GB 7200 rpm EIDE disk</td><td>33L5044</td></tr> <tr><td>9.1GB Ultra Wide SCSI 7200 rpm</td><td>20L0553</td></tr> <tr><td>18.2GB Ultra Wide SCSI 7200 rpm</td><td>20L0554</td></tr> <tr><td>9.1GB Ultra2 Wide SCSI 10K rpm SL20L0539</td><td></td></tr> <tr><td>500MHz Pentium III Second Processor</td><td>36L9673</td></tr> </table>	32MB SDRAM ECC DIMM 100MHz	01K1133	64MB SDRAM ECC DIMM 100MHz	01K1130	128MB SDRAM ECC DIMM 100MHz	01K1131	256MB SDRAM ECC DIMM Registered	01K1132	Adaptec ARO™-1130 CA-B PCI RAIDport	1681100	Matrox Millennium G200	10L7127	IBM Fire GL1 (3D graphics accelerator)	33L5032	10/100 PCI EtherJet Adapter WOL	08L2565	Auto Wake Token-Ring ISA Adapter	55H6760	PCI Token Ring Adapter WOL	86H1880	13.5GB 7200 rpm EIDE disk	33L5043	20.5GB 7200 rpm EIDE disk	33L5044	9.1GB Ultra Wide SCSI 7200 rpm	20L0553	18.2GB Ultra Wide SCSI 7200 rpm	20L0554	9.1GB Ultra2 Wide SCSI 10K rpm SL20L0539		500MHz Pentium III Second Processor	36L9673	<p>Authorized Assembler Program models</p> <p>AAP models contain no hard disk or graphics adapter. No preload or operating system license is included. - Hummingbird "Try and Buy" Suite CD-ROM - Ready to Configure CD-ROM - Free license for Lotus SmartSuite CD-ROM (via 800 number)</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p align="center">WARRANTY SERVICE SUPPORT³</p> <ul style="list-style-type: none"> ↪ 3 year parts warranty ↪ 1 year labor warranty ↪ International Warranty Service³ ↪ 1st year: on site, 8 am - 5 pm, Mon - Fri coverage, 2nd business day response time ↪ 2nd/3rd year: parts exchange only, call 1-800-772-2227 ↪ On site warranty upgrade options: <ul style="list-style-type: none"> • Next day response¹⁴, Mon-Fri 8-5 • 4 hour response¹⁴, 7 day x 24 hr ↪ Post warranty: on site options above ↪ IBM SystemXtra® ↪ 24 hour / 7 day telephone, electronic, Internet (www.pc.ibm.com) support </div>
32MB SDRAM ECC DIMM 100MHz	01K1133																																	
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500MHz Pentium III Second Processor	36L9673																																	
<p>Ethernet = Intel 10/100 ethernet chip; 10BaseT and 100BaseTX; Alert on LAN NT4 = Windows NT Workstation 4.0 preinstalled RDIMM = Registered DIMM Wide Ultra SCSI = Adaptec AHA-7895; dual channel Wide Ultra SCSI ⌘ = Withdrawn from marketing (systems announced March 1, 1999)</p>																																		

IBM IntelliStation® M Pro - Winter 1999 (6889) - withdrawn

IBM® IntelliStation® M Pro		
Type	6889	
Processor(s)	One or two Intel® Pentium® III 450/100 or 500/100MHz¹	
Implementation	Processor and L2 cache in Single Edge Contact (SEC) cartridge in protective metal case / SEC plugged into Intel Slot 1	
Processor upgrade	SMP via second identical processor / upgrade via SEC into motherboard Intel® Slot 1 CPU connector / MPS 1.4	
L2 cache	512KB std / 512KB max / ECC / half speed of processor / 4 way set associative / write-back / integrated in SEC	
Avail / withdrawn date	March 1999 / Models 58U and 59U withdrawn September 1999, all others withdrawn November 1999	
Mem - std / max / type	128MB or 256MB std / 1GB max¹³ / Error Checking and Correction (ECC)	
Memory - sockets	4 sockets / 3 available (all have Error Checking and Correcting memory controller)	
Memory - features	SDRAM / 100MHz / four 168 pin gold-plated DIMM 3.3 volt sockets / PC100-compliant / hardware scrubbing of ECC errors	
Memory - support	Supports SDRAM ECC DIMMs (32,64,128, 256MB) / only 256MB DIMMs are registered (buffered); can not mix reg/non-reg	
Graphics controller	Matrox® Millennium G200-D (2D/value 3D) or IBM Fire GL1 (advanced 3D)	
Graphics - type	Matrox Millennium G200-D / AGP 2X 533MB/sec adptr	
Graphics - memory	8MB std / 16MB max / 142MHz, 128-bit SGRAM	
Graphics - features	Sideband addressing / split transactions 250 MHz RAMDAC / MGA-G200 128-bit DualBus chip Max 2D resolution of 1920x1200 in 24-bit color at 80Hz	
	IBM Fire GL1 / AGP 2X adap / sideband-capable / split transactns 32MB std / 32MB max / 256-bit, 2-way interleaved, 100MHz SGRAM 2D and OpenGL 3D engine / 250MHz RAMDAC / DDC2B Max resolution of 1600x1200 at 85Hz or 1920x1200 at 75Hz Optimized for multiprocessor environments	
Architecture - chip set	Intel 440BX AGPset / PIIX4E for EIDE (Ultra DMA/33), ISA Bridge, USB / Adaptec® AHA-7895 National Semiconductor PC87307 Super I/O for diskette, parallel, serial, keyboard, mouse	
Bus slots	PCI 2.1 (33MHz), Accelerated Graphics Port (66MHz; AGP-2x; 533MB/sec), and ISA slots (8.33MHz) / see below	
Disk	None (AAP models), one EIDE (Ultra DMA/33), or one Wide Ultra SCSI / SMART ⁵	
SCSI controller	Adaptec® AHA-7895 / dual channel Wide Ultra SCSI controller / on motherboard / PCI 2.1	
SCSI connectors	<i>Channel A:</i> 68 pin (attaches 4 drop cable to SCSI disk); <i>Channel B:</i> 50 pin and 68 pin / 68 pin cable std to external SCSI port (all mod)	
RAID option	Supports Adaptec ARO™-1130 CA-B PCI RAIDport™ adapter (RAID 0, 1) / installs in PCI slot / uses 7895 controller and connects	
Cables - SCSI and IDE	<i>SCSI and AAP models:</i> 4 drop 16-bit cable on Chan A; 16-bit cable to ext port on Chan B; one 2 drop IDE cable (CD-ROM) <i>EIDE models:</i> Two 2 drop IDE cables (one for disk; one for CD-ROM) and SCSI cable to external SCSI port	
EIDE disk controller	Enhanced IDE busmaster (PIIX4E) / Ultra DMA/33 (ATA-33) support / two connectors on planar	
CD-ROM	40X-17X⁶ CD-ROM / CAV (ATAPI) / bootable	
Diskette drive	3.5" 1.44MB diskette drive / 1 drop cable	
Ethernet controller	Intel EtherExpress PRO/100B / PCI 82558 ethernet chip on planar / PCI bus	
LCCM support	10BaseT and 100BaseTX / RJ45 UTP connector / Wake on LAN® / Alert on LAN LANClient Control Manager™ enabled / Wake on LAN / Setup over LAN / Hybrid RPL / DHCP/BOOTP / software image download	
Systems mgmt cntrl	National Semiconductor® LM81 compatible / hardware chip to monitor temperature, fan speeds, voltage, system cover removal / I2C	
Audio	Crystal CS4235 chip on planar / stereo / ISA bus / FM Synthesis / int speaker	
Audio connectors	H stereo line in / mic in / line out (all in back) / software volume control	
Microphone	Headset with microphone (noise canceling for ViaVoice application)	
Serial/parallel/USB	<i>Ser:</i> Two 9 pin / 115Kbps <i>Par:</i> One (EPP, ECP) / IEEE 1284 <i>USB:</i> Two ports	
Keyboard / Mouse	104 key (rubber dome) keyboard / keyboard extender / IBM 3 button mouse	
Power supply	330 watts / universal / auto-sensing / Wake on LAN	
	SECURITY	
	<ul style="list-style-type: none"> - Cover key lock (in rear) - Cover tamper detect switch - Secure fixed DASD - Serial EEPROM with write protect - Power-on password - Administrator password - Keyboard/mouse password - Wake Up on LAN password prompt - Boot sequence control - Boot without keyboard or mouse - Diskette boot inhibit - Disable mouse - Disable external SCSI port - Diskette write-protect - Diskette, disk, serial port, parallel port I/O control - Secure access openings - Secure removable media - VPD stored in EEPROM - Write protection control for EEPROM - Barcode labels on most components 	
	Remotely readable DMI-compliant:	
	<ul style="list-style-type: none"> - System EEPROM on motherboard (info and serial no for CPU, riser, system unit, CD-ROM, diskette, empty blank fields); also can read/write with external RF unit - EEPROMs on DIMMs (component info, serial no) - Disk firmware (compnt info, serial no) 	
	<p>Bay ① 5.25", HH 1.6", access, std CD-ROM</p> <p>Bay ② 5.25", HH 1.6", access, open</p> <p>Bay ③ 3.5", SL 1", access, open</p> <p>Bay ④ 3.5", SL 1", access, std diskette</p> <p>Bay ⑤ 3.5", SL 1", no access, open (disk only)</p> <p>Bay ⑥ 3.5", SL 1", no access, std disk (disk only) } or Half Height</p> <p>Slot 1: fullsize, 32-bit AGP (3.3v) - used by AGP graphics adapter</p> <p>Slot 2: fullsize, 32-bit PCI 2.1 (5v) - supports optional Adaptec RAIDport</p> <p>Slot 3: fullsize, 32-bit PCI 2.1 (5v)</p> <p>Slot 4: fullsize, 32-bit PCI 2.1 (5v)</p> <p>Slot 5: fullsize, 32-bit PCI 2.1 (5v)</p> <p>Slot 6: fullsize, 16-bit ISA or 32-bit PCI 2.1 (5v)</p>	
<p>Alert on LAN™ - provides local or remote monitoring; immediate notification of system events such as chassis intrusion, disconnect, start up errors, even if powered off</p> <p>Asset ID (RFID)¹⁶ - uses radio frequency (RF) technology for deployment, inventory, and security; includes EEPROM that can be accessed via DMI software through network or an external RF link such as hand-held RF read/write units; theft protection</p> <p>SMART Reaction™ - automatic backup of disk</p> <p>PC 98 compliant</p> <p>DMI 2.0 compliant with DMI manageability chip</p> <p>Wired for Management 1.1a</p> <p>Adv Config and Power Interface (ACPI) 1.0</p>	OTHER STANDARD FEATURES	<p><i>Maximum internal SCSI disk capacity¹³:</i> 81.9GB (3 x 18.2GB (7200 rpm) plus 1 x 9.1GB (7200 rpm)); if no CD-ROM</p> <p><i>Maximum internal EIDE disk capacity¹³:</i> 40.5GB (3 x 13.5GB)</p> <p>Power management features:</p> <ul style="list-style-type: none"> - Configurable levels for system, CPU, and monitor including powering system and/or display off - Wake Up on Ring (via modem) from off state - Wake Up on Alarm (scheduled time) from off state - Wake-on-LAN from off state - PCI Wake Up from supported PCI devices
	<p>The Setup Utility resides in flash memory; invoked by pressing F1 key during memory POST</p> <p>Advanced Power Mgmt 1.2</p> <p>Support for DMI technology (includes MIF browser) with DMI Service Layer 2.0, DMI BIOS 2.1, and DMI software; DMI 2.0 compliant</p> <p>Plug-and-Play 1.0a</p> <p>ISO 9241-3 capable</p> <p>Vital Product Data support (type, model, serial, id)</p> <p>7.87"W x 17.52"D x 19.37"H; 38 lbs max (shipped)</p> <p>200 mm W x 445 mm D x 492 mm H; 17.3 kg</p> <p>Several hardcopy publications; four stabilizing feet</p> <p>512KB IBM BIOS (Flash over LAN support)</p> <p>Supplier's Declaration available</p> <p>Four fans (three in system and one in power supply)</p>	

IBM® Type-model	Processor & GHz/Core/L2	Memory	Disk, RPM & Controller	Optical	Graphics adapter & memory	FireWire bays	Slots x Preload ¹⁷	Available date
9229-42U	Core™2 Duo E6300 1.86GHz/DC/2MB	1GB	160GB 7.2K SATA	DVD/CD-RW	Quadro® NVS 285 128MB	1394 4x6	XP Pro Oct 2006	
9229-52U	Core 2 Duo E6400 2.13GHz/DC/2MB	1GB	160GB 7.2K SATA	DVD/CD-RW	Quadro FX 550 128MB	1394 4x6	XP Pro Oct 2006	
9229-62U	Core 2 Duo E6600 2.40GHz/DC/4MB	2GB	160GB 7.2K SATA	DVD/CD-RW	Quadro FX 1500 256MB	1394 4x6	XP Pro Oct 2006	
9229-72U	Core 2 Duo E6700 2.66GHz/DC/4MB	2GB	73GB 15K SAS	DVD/CD-RW	Quadro FX 3500 256MB	1394 4x6	XP Pro Oct 2006	
9229-74U	Core 2 Duo E6700 2.66GHz/DC/4MB	2GB	73GB 15K SAS	DVD/CD-RW	Quadro FX 3500 256MB	1394 4x6	RHEL4 Oct 2006	
9229-76U	Core 2 Duo E6700 2.66GHz/DC/4MB	2GB	73GB 15K SAS	DVD/CD-RW	Quadro FX 3500 256MB	1394 4x6	Vista Mar 2007	
9229-78U	Core 2 Duo E6700 2.66GHz/DC/4MB	2GB	160GB 7.2K SATA	DVD/CD-RW	Quadro FX 1500 256MB	1394 4x6	Vista Mar 2007	
9229-92U	Core 2 Duo Q6600 2.40GHz/QC/8MB	4GB	73GB 15K SAS	DVD/CD-RW	Quadro FX 3500 256MB	1394 4x6	Vista Mar 2007	

Positioning Processor **Powerful, quad-core capable, uni-processor workstation with Intel® Extended Memory 64 Technology and PCI Express®**
Intel Core 2 Duo at 2.4GHz Quad-Core / Core 2 Duo up to 2.66GHz Dual-Core / all 1067MHz FSB and Optimized for Extended Memory 64 Technology (EM64T)
 L2 cache **2, 4 or 8MB** shared core / standard and maximum / at processor speed
 Processor upgrade **Single Processor**, no upgrade
 Implementation Systemboard contains one Intel LGA775 socket, four DIMM slots, four slots (2 PCI Express x16, 1 PCI Express x4, 1 PCI), and integrated SATA and Gigabit Ethernet

Memory - std / max **1, 2 or 4GB** std / 8GB^{13,21} max / two slots used / two slots available / **PC2-5300 667MHz** un-buffered ECC DDRII-SDRAM DIMMs / four DIMM gold-connector slots on systemboard / must be installed in pairs

Graphics controller (one of following) (see IntelliStation Graphics sheet for full graphics specifications)
 • **Performance 2D: NVIDIA® Quadro NVS 285, 2D 128MB PCI Express x16**
 • **Entry 3D: NVIDIA Quadro FX 550, 3D 128MB PCI Express x16**
 • **Advanced 3D: NVIDIA Quadro FX 1500, 3D 256MB PCI Express x16**
 • **High-advanced 3D: NVIDIA Quadro FX 3500, 3D 256MB PCI Express x16**

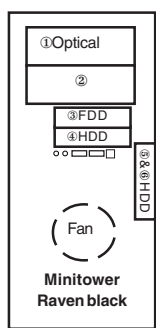
SATA controller SAS controller SATA Controller (3.0GB/sec) / integrated in ICH7R / four connectors on planar
 SAS models: **LSI SAS/SATA daughter card / LSI 1064e** / PCI-E x1 / RAID 0,1,1E / one 4-drop SAS/SATA cable / supports SAS or SATA / dedicated slot
 Ports/Cables All models: Four SATA ports on planar, *one SATA cable per installed HDD*; ALL: one 2-drop EIDE cable (to optical)
 Disk - features Some: 160GB / SATA / 7200 rpm / 9.0 ms seek; Some: 73.0GB / SAS / 15K rpm / 3.5 ms seek; All: S.M.A.R.T.⁵

Mechanical Chipset 4 x 5 minitower / functions in rack with 19" Fixed Shelf Option kit
Intel 975X chipset / 975X MCH (Memory Controller Hub) for two PCI Express x16 slots, Broadcom® ICH7R / ICH7R for one 32-bit / 33MHz PCI slot, one PCI-E x4, 1394a, SATA, 8x USB (2.0), Low Pin Count Interface / SMSC 5027 Super I/O with LPC interface

Gigabit Ethernet One Gigabit 10/100/1000 Ethernet controller / Broadcom BCM5752 / full Gigabit Ethernet MAC and PHY layer functions / chip on planar / PCI-E x1 / full duplex / Wake on LAN® / Alert Standard Format 2.0 / one rear RJ-45 port

Diskette / Optical FireWire 1394(FireWire) none in MTM, CTO Option / Optical: 48X/32X/48X/16X Max® CD-RW/DVD-ROM
 Audio Intel HD Audio, ADI1981HD via ICH7R / internal speaker (use of audio line out requires powered speakers)
 Rear ports Six USB (Ver 2.0), two 9-pin serial, parallel, keyboard, mouse, Ethernet, audio line in, audio line out / 6-pin 1394a
 Front ports Two USB (Ver 2.0), audio line out (stereo), mic in / 4-pin 1394
 Systems mgmt Monitoring and alerting of thermal, fans, and voltage faults

Keyboard / mouse IBM Preferred Pro Keyboard (USB) / IBM 2-button optical wheel mouse (USB)
 Cooling fans Two variable speed fans (1 Front, 1 Power Supply) / not redundant or hot-swap
 Power supply 400 watts / universal / auto sensing / built-in overload and surge protection



- Bay ① 5.25", HH 1.6", external access, optical
- Bay ② 5.25", HH 1.6", external access, open
- Bay ③ 3.5", SL 1", external access, open
- Bay ④ 3.5", SL 1", internal access, HDD
- Bay ⑤ 3.5", SL 1", internal access, open
- Bay ⑥ 3.5", SL 1", internal access, open

- Slot 1: fullsize, 32-bit 33MHz, PCI (5v)
- Slot 2: fullsize, PCI Express x16 (video)
- Slot 3: fullsize, PCI Express x4 (x8 mechanically)
- Slot 4: fullsize, PCI Express x16

- ⇨ Two front stabilizing feet
- ⇨ Handle grip on top
- ⇨ H 16.9" x W 7" x D 17.5"
- ⇨ H 430mm x W 178mm x D 445mm
- ⇨ 27.8 lb to 34.4 lb (12.5kg to 15.5kg)

- **Maximum internal disk capacity¹³:**
 SAS: 220GB (3 disks x 73GB)*
 SATA: 2TB (4 disks x 500GB)
 *Requires optional SAS/SATA RAID Kit
- Removable left side panel
- BIOS Setup Utility via F1 at startup
- LSI Configuration Utility near startup by pressing CTRL+C
- Product Recovery Program via F11 at startup
- Adv Config Power Interface (ACPI) 1.0a
- DMI 2.2-compliant

SECURITY

- Integrated panel lock
- U-Bolt Anchoring Feature; U-Bolt optional
- Cover tamper detect switch
- Secure fixed DASH
- Power-on password
- Administrator password
- Boot sequence control
- Boot without keyboard or mouse
- Diskette boot inhibit and write-protect
- Disable mouse
- Diskette, disk, serial port, parallel port I/O control
- Secure access openings
- VPD stored in EEPROM
- Write protection control for EEPROM
- IBM Security Solutions

LIMITED WARRANTY³

- ⇨ 3 year parts and labor
- ⇨ International Warranty Service³
- ⇨ On site, 8 am through 5 pm, Mon through Fri excluding holidays, next business day response time
- ⇨ On site warranty service upgrade options⁷ available as ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ⇨ 24x7¹⁴ toll-free support for warranty issues during the warranty period¹

512MB PC2-5300 CL5 ECC DDR2 FBD-SDRAM	41Y2726
2GB PC2-5300 CL5 ECC DDR2 FBD-SDRAM (2x1GB)	41Y2729
4GB PC2-5300 CL5 ECC DDR2 FBD-SDRAM (2x2GB)	41Y2732
IBM SAS/SATA RAID Kit	41Y3885
IBM 80GB 7.2K SATA HDD	39M4500
IBM 160GB 7.2K SATA HDD	39M4504
IBM 250GB 7.2K SATA HDD	39M4508
IBM 500GB 7.2K SATA HDD	39M4514
IBM 36GB 15K rpm SAS HDD	40K1048
IBM 73.4GB 15K rpm SAS HDD	40K1049
IBM Multi-Burner Plus	32R2906

Choice of Preinstalled¹⁷ OS:
Windows® XP Pro x64 Edition (32-/64-bit);
Windows Vista Business Professional;
Red Hat® Enterprise Linux 4 WS (64-bit)
 ⇨ Device Drivers CD
 ⇨ IBM IntelliStation Documentation CD
 ⇨ Disk-to-Disk Recovery (in service partition)
 - Windows models:
 Adobe Acrobat Reader, Norton Antivirus (Win XP 32-bit only), IBM Record Now

Other options at ibm.com/products/us

IBM® Type-model	Processor	FSB GHz ¹	FSB MHz	Memory	Disk and rpm	Disk controllers	Optical	Graphics adapter and memory	Slots x bays	FireWire	Preload ¹⁷	Available date
6221-10U	1 x Xeon™	2.4	533	512MB	40.0GB ² EIDE	7.2K Ultra320,	EIDE CD	Millennium G450 DVI-I	32MB	6x6	XP Pro	Dec 2002
6221-22U	1 x Xeon	2.67	533	512MB	40.0GB EIDE	7.2K Ultra320,	EIDE CD	Quadro4 280NVS	64MB	6x6	XP Pro	Dec 2002
6221-29U	2 x Xeon	2.67	533	512MB	36.4GB U320	10K Ultra320,	EIDE Combo	Quadro4 280NVS	64MB	6x6	1394	Dec 2002
6221-33U	1 x Xeon	2.8B	533	512MB	36.4GB U320	10K Ultra320,	EIDE CD	Quadro4 280NVS	64MB	6x6	XP Pro	Dec 2002
6221-36U	1 x Xeon	2.8B	533	1GB	36.4GB U320	10K Ultra320,	EIDE CD-RW	Quadro4 980XGL	128MB	6x6	1394	Dec 2002
6221-37U	1 x Xeon	2.8B	533	1GB	36.4GB U320	10K Ultra320,	EIDE Combo	Wildcat 4™	7110 256MB	6x6	1394	Dec 2002
Processor	1 or 2 x Intel® Xeon at 2.4, 2.67, or 2.8B GHz with 533MHz frontside bus (FSB)											
L2 cache	512KB std and max / at processor speed											
Processor upgrade Implementation	2-way SMP / up to two Xeon Processors (same speed/cache size) Systemboard contains two Intel 604-pin micro-PGA2 ZIF sockets, four DIMM slots, seven slots (one PCI 2.2, four PCI-X, one Mini PCI, one AGP), and integrated SCSI and ethernet											
Memory - std / max	512MB or 1GB std / 8GB ¹³ max / two slots used / two slots available / PC2100 266MHz registered 184-pin ECC DDR-SDRAM DIMMs / four DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips)											
Graphics controller (one of following)	<ul style="list-style-type: none"> • Matrox® Millennium G450 DVI-I (entry 2D) / AGP 4X adapter / MGA G450F GPU / 32MB 150MHz DDR-SDRAM / dual RAMDAC [360/232MHz] / dual head support / one DVI-I connector (ships with one cable with two DB-15 analog conns) • NVIDIA™ Quadro4 280NVS (high-perf 2D) / AGP 8X adapter / NV18LT 275MHz GPU / 64MB 200MHz DDR-SDRAM / dual 350MHz RAMDACs / dual head: 2048x1536x16M each monitor / LFH60 connector for std cable with two DB-15 analog • NVIDIA Quadro4 980XGL (advanced 3D) / AGP 8X adapter / 128MB 325MHz DDR-SDRAM / dual 350MHz RAMDACs / dual head: 2048x1536x16M each monitor / two DVI-I connectors (ships with two DVI-I to DB-15 dongles) • 3DLabs Wildcat4™ 7110 (extreme 3D) / AGP 8X Pro 50 adapter / 256MB total DDR-SDRAM (128MB frame buffer, 128MB texture buffer) / dual RAMDAC [320/280MHz] / dual head support (up to two digital or analog monitors) / two DVI-I connectors (ships with two DVI-I to analog DB-15 adapters for analog monitor attachment) 											
IDE disk controller	Enhanced IDE busmaster / ATA-100 / integrated in I/O Controller Hub 4 / two connectors on planar											
SCSI disk controller	LSI Logic® 53C1030 / dual channel Ultra320 SCSI controller (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X / supports RAID-1 mirroring (Embedded Mirroring)											
SCSI channels and cables	Two 16-bit channels (one internal and one external) / <i>Internal channel</i> : one 3-drop 16-bit 68-pin LVD SCSI cable from systemboard to internal disks bays; <i>External channel</i> : Models 29U/37U have one 1-drop 16-bit 68-pin LVD SCSI cable from systemboard to rear external 68-pin connector (cable available as option part number 24P7929)											
Cables	<i>EIDE models</i> : Two EIDE cables (one 2-drop cable to CD-ROM, one 2-drop cable to EIDE disk) <i>SCSI models</i> : One or two SCSI cables (listed above), one 2-drop EIDE cable (to optical)											
Disk - features	<i>Some</i> : 40.0GB EIDE / ATA-100 / 7200 rpm / 9.0 ms seek; <i>Some</i> : 36.4GB Ultra320 SCSI / 10K rpm / 4.7 ms; <i>All</i> : S.M.A.R.T. ⁵											
Rack support	4U ⁴ rack mount support via tower-to-rack kit option											
Chipset	Intel E7505 chipset / E7505 MCH (Memory Controller Hub) for AGP 8X slot, P64H2, ICH4 / P64H2 for two PCI-X buses (Bus A for slots 2 and 3 and ethernet controller; Bus B for slots 4 and 5 and SCSI controller) / I/O Controller Hub (ICH4) for PCI 2.2 bus (one slot and one Mini PCI slot), ATA-100 EIDE, USB, Low Pin Count Interface / NS PC87366 Super I/O off LPC interface											
Gigabit ethernet	One gigabit 10/100/1000 ethernet controller / Broadcom BCM5703i / full gigabit ethernet MAC and PHY layer functions / chip on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / Alert Standard Format 1.0 / one rear RJ-45 port											
Diskette drive	3.5" 1.44MB diskette drive											
Optical drive	<i>One of following</i> : 48X-20X ⁶ CD-ROM, 32X/10X/40X/16X Max ^{6,19} CD-RW/DVD-ROM Combo, or 40X/24X/40X Max ⁶ CD-RW											
IEEE 1394 (FireWire)	<i>Some</i> : FireWire controller in Mini PCI slot / 1394A, 400Mbps, 6-pin port on rear, 4-pin port on front, no cables included											
Audio	Soft audio AC '97 v2.2 interface via ICH4 (AD1885) / internal speaker (use of audio line out requires powered speakers)											
Rear ports	Two USB (Ver 2.0), two 9-pin serial, parallel, keyboard, mouse, ethernet, audio line in, audio line out, mic in / <i>some</i> : 6-pin 1394											
Front ports	Two USB (Ver 2.0), audio line out (stereo), mic in / <i>some</i> : 4-pin 1394 FireWire											
Systems mgmt	Monitoring and alerting of thermal, fans, and voltage faults / Winbond® W791D											
Keyboard / mouse	IBM 104-key keyboard (6-pin PS/2) / IBM three button mouse (6-pin PS/2 conn)											
Cooling fans	Three variable speed fans (power supply, two in rear) / not redundant or hot-swap											
Power supply	425 watts / universal / auto sensing / built-in overload and surge protection											
	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;">  <p>Bay ① 5.25", HH 1.6", access, optical</p> <p>Bay ② 5.25", HH 1.6", access, open</p> <p>Bay ③ 3.5", SL 1", access, diskette</p> <p>Bay ④ 3.5", SL 1", no access, disk</p> <p>Bay ⑤ 3.5", SL 1", no access, open</p> <p>Bay ⑥ 3.5", SL 1", no access, open</p> <p>Slot 1: fullsize, 32-bit 33MHz, PCI 2.2 (5v) - N/A on models with Wildcat4 7110 vid</p> <p>Slot 2: fullsize, 64-bit 100MHz, PCI-X 1.0</p> <p>Slot 3: fullsize, 64-bit 100MHz, PCI-X 1.0</p> <p>Slot 4: fullsize, 64-bit 100MHz, PCI-X 1.0*</p> <p>Slot 5: fullsize, 64-bit 100MHz, PCI-X 1.0</p> <p>Slot 6: Mini PCI type III - FireWire (some)</p> <p>Slot: fullsize, AGP 8X (1.5v) - used by std AGP graphics adapter * Extended slot</p> </div> <div style="width: 45%;"> <ul style="list-style-type: none"> ➤ Metal cage for disk bays 4,5,6 rotates out of chassis ➤ Two front stabilizing feet ➤ Handle grip on top ➤ H 17.375" x W 6.5" x D 19.375" ➤ H 44.1mm x W 165mm x D 492mm ➤ 36 lb to 45.8 lb (16.3kg to 20.8kg) • <i>Maximum internal disk capacity¹³</i>: <i>SCSI</i>: 438GB (3 disks x 146GB) <i>EIDE</i>: 240GB (2 disks x 120GB) • Removable left side panel • BIOS Setup Utility via F1 at startup • LSI Configuration Utility near startup by pressing CTRL+C • Product Recovery Program via F11 at startup • Adv Config Power Interface (ACPI) 1.0a • DMI 2.2-compliant </div> </div>											
	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>Xeon 2.4GHz/512KB L2 Cache Proc Upgrade 24P7468</p> <p>Xeon 2.67GHz/512KB L2 Cache Proc Upgrade 59P5109</p> <p>Xeon 2.8GHz/512KB L2 Cache Proc Upgrade 59P5110</p> <p>256MB PC2100 CL2.5 ECC DDR-SDRAM x4 33L5037</p> <p>512MB PC2100 CL2.5 ECC DDR-SDRAM x4 33L5038</p> <p>1GB PC2100 CL2.5 ECC DDR-SDRAM DIMM 33L5039</p> <p>2GB PC2100 CL2.5 ECC DDR-SDRAM DIMM 33L5040</p> <p>IBM 73.4GB 15K rpm Ultra320 SCSI HDD 32P0733</p> <p>IBM 146GB 10K rpm Ultra320 SCSI HDD 32P0725</p> <p>IBM 120GB 7.2K rpm ATA-100 EIDE HDD 09N4231</p> <p>IBM 4Ux20D Tower-to-Rack Conversion Kit 09N4300</p> <p>Other options at ibm.com/pc/us/accessories</p> </div> <div style="width: 45%;"> <p>Preload with Windows XP Professional¹⁷</p> <p>Microsoft® Windows® XP Professional</p> <ul style="list-style-type: none"> - Free license for Lotus® SmartSuite® - Free license for Lotus Notes® Client ➤ Device Drivers and IBM Enhanced Diagnostics CD ➤ IBM IntelliStation Documentation CD • Disk-to-Disk Recovery (in service partition) </div> </div>											
	<p style="text-align: center;">SECURITY</p> <ul style="list-style-type: none"> • U-bolt anchoring feature (U-bolt is optional; supports optional padlock) • Security slot (for attachment of optional cable lock such as Kensington cable lock) • Cover key lock • Cover tamper detect switch • Secure fixed DASD • Power-on password • Administrator password • Keyboard/mouse password • Boot sequence control • Boot without keyboard or mouse • Diskette boot inhibit and write-protect • Disable mouse • Diskette, disk, serial port, parallel port I/O control • Secure access openings • VPD stored in EEPROM • Write protection control for EEPROM • IBM Security Solutions 											
	<p style="text-align: center;">LIMITED WARRANTY³</p> <ul style="list-style-type: none"> ➤ 3 year parts and labor ➤ International Warranty Service³ ➤ On site, 8 am through 5 pm, Mon through Fri excluding holidays, next business day response time ➤ On site warranty service upgrade options⁷ available as ServicePac options at http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf ➤ 24x7¹⁴ toll-free support for warranty issues during the warranty period¹ 											

See footnotes for important warranty information
US models announced November 19, 2002

≠ US model 36U withdrawn effective March 25, 2003; models 29U and 37U withdrawn effective April 25, 2003; others withdrawn effective December 29, 2003

IBM® Type-model	Processor	FSB GHz ¹ MHz	Memory	Disk and rpm	Disk controllers	Optical	Graphics adapter and memory	Slots x bays	FireWire	Preload ¹⁷	Available date
6221-38U 1 x Xeon™	2.8B	533	1GB	36.4GB ² U320 10K	Ultra320, EIDE	CD-RW	Quadro4 980XGL 128MB	6x6	1394	XP Pro	Apr 2003
6221-40U 1 x Xeon	3.06	533	512MB	40.0GB EIDE 7.2K	Ultra320, EIDE	CD	Millennium G450 DVI-I 32MB6x6	6x6	1394	XP Pro	Apr 2003
6221-42U 1 x Xeon	3.06	533	512MB	40.0GB EIDE 7.2K	Ultra320, EIDE	CD	Quadro4 280NVS 64MB	6x6	1394	XP Pro	Apr 2003
6221-46U 1 x Xeon	3.06	533	1GB	36.4GB U320 10K	Ultra320, EIDE	Combo	Quadro4 980XGL 128MB	6x6	1394	XP Pro	Apr 2003
6221-47U 1 x Xeon	3.06	533	1GB	36.4GB U320 10K	Ultra320, EIDE	CD-RW	Wildcat4 7110 256MB	6x6	1394	XP Pro	Apr 2003
6221-48U 1 x Xeon	3.06	533	1GB	36.4GB U320 10K	Ultra320, EIDE	Combo	Quadro FX 1000 128MB	6x6	1394	XP Pro	Apr 2003
6221-49U 2 x Xeon	3.06	533	1GB	36.4GB U320 10K	Ultra320, EIDE	DVD	Quadro4 280NVS 64MB	6x6	1394	XP Pro	Apr 2003
6221-4PU 1 x Xeon	3.06	533	512MB	(none) open-bay	Ultra320, EIDE	None	Quadro4 280NVS 64MB	6x6	1394	DOS lic	Apr 2003
Processor	1 or 2 x Intel® Xeon at 2.8B or 3.06 GHz with 533MHz frontside bus (FSB)										
L2 cache	512KB std and max / at processor speed										
Processor upgrade	2-way SMP / up to two Xeon Processors (same speed/cache size)										
Implementation	Systemboard contains two Intel 604-pin micro-PGA2 ZIF sockets, four DIMM slots, seven slots (one PCI 2.2, four PCI-X, one Mini PCI, one 8X AGP), and integrated SCSI and ethernet										
Memory - std / max	512MB or 1GB std / 8GB ¹³ max / two slots used / two slots available / PC2100 266MHz registered 184-pin ECC DDR-SDRAM DIMMs / four DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips)										
Memory - features											
Graphics controller (one of following)	<ul style="list-style-type: none"> • Matrox® Millennium G450 DVI-I (entry 2D) (see 6221-November 2002 sheet for specs) • NVIDIA™ Quadro4 280NVS (high performance 2D) (see 6221-November 2002 sheet for specs) • NVIDIA Quadro4 980XGL (advanced 3D) / AGP 8X adapter / 128MB 325MHz DDR-SDRAM / dual 350MHz RAMDACs / dual head: 2048x1536x16M each monitor / two DVI-I connectors (ships with two DVI-I to DB-15 dongles) • 3DLabs Wildcat4™ 7110 (extreme 3D) / AGP 8X adapter / 256MB total DDR-SDRAM (128MB frame buffer, 128MB texture buffer) / dual RAMDAC [320/280MHz] / dual head support (up to two digital or analog monitors) / two DVI-I connectors (ships with two DVI-I to analog DB-15 adapters for analog monitor attachment) • NVIDIA Quadro FX 1000 (advanced 3D) / AGP 8X adapter / 128MB 800MHz DDR-SDRAM / dual 400MHz RAMDACs / dual head: 2048x1536x16M each monitor / two DVI-I connectors (ships with two DVI-I to DB-15 dongles) 										
IDE disk controller	Enhanced IDE busmaster / ATA-100 / integrated in I/O Controller Hub 4 / two connectors on planar										
SCSI disk controller	LSI Logic® 53C1030 / dual channel Ultra320 SCSI controller (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X / supports RAID-1 mirroring (Embedded Mirroring)										
SCSI channels and cables	Two 16-bit channels (one internal and one external) / Internal channel: one 3-drop 16-bit 68-pin LVD SCSI cable from systemboard to internal disks bays; External channel: Models 29U/37U have one 1-drop 16-bit 68-pin LVD SCSI cable from systemboard to rear external 68-pin connector (cable available as option part number 24P7929)										
Cables	EIDE models: Two EIDE cables (one 2-drop cable to CD-ROM, one 2-drop cable to EIDE disk) SCSI models: One or two SCSI cables (listed above), one 2-drop EIDE cable (to optical) Some: 40.0GB EIDE / ATA-100 / 7200 rpm / 9.0 ms seek; Some: 36.4GB Ultra320 SCSI / 10K rpm / 4.7 ms; All: S.M.A.R.T. ⁵										
Disk - features											
Rack support	4U ⁴ rack mount support via tower-to-rack kit option										
Chipset	Intel E7505 chipset / E7505 MCH (Memory Controller Hub) for AGP 8X slot, P64H2, ICH4 / P64H2 for two 64-bit PCI-X buses (Bus A for slots 2 and 3 and ethernet controller; Bus B for slots 4 and 5 and SCSI controller) / I/O Controller Hub (ICH4) for PCI 2.2 bus (one slot and one Mini PCI slot), ATA-100 EIDE, USB, Low Pin Count Interface / NS PC87366 Super I/O off LPC interface										
Gigabit ethernet	One gigabit 10/100/1000 ethernet controller / Broadcom BCM5703i / full gigabit ethernet MAC and PHY layer functions / chip on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / Alert Standard Format 1.0 / one rear RJ-45 port										
Diskette / Optical drives	3.5" 1.44MB diskette drive and one of the following: 48X-20X ⁶ CD-ROM, 48X/24X/48X/16X Max ^{6,19} CD-RW/DVD-ROM Combo, 48X/24X/48X Max ⁶ CD-RW or 16X Max ⁶ DVD-ROM										
IEEE 1394(FireWire)	Some: FireWire controller in Mini PCI slot / 1394A, 400Mbps, 6-pin port on rear, 4-pin port on front										
Audio	Soft audio AC '97 v2.2 interface via ICH4 (AD1885) / internal speaker (use of audio line out requires powered speakers)										
Rear ports	Two USB (Ver 2.0), two 9-pin serial, parallel, keyboard, mouse, ethernet, audio line in, audio line out, mic in / some: 6-pin 1394										
Front ports	Two USB (Ver 2.0), audio line out (stereo), mic in / some: 4-pin 1394 FireWire										
Systems mgmt	Monitoring and alerting of thermal, fans, and voltage faults / Winbond® W791D										
Keyboard / mouse	IBM 104-key keyboard (6-pin PS/2) / IBM three button mouse (6-pin PS/2 conn)										
Cooling fans	Three variable speed fans (power supply, two in rear) / not redundant or hot-swap										
Power supply	425 watts / universal / auto sensing / built-in overload and surge protection										
	 <p>Bay ① 5.25", HH 1.6", access, optical</p> <p>Bay ② 5.25", HH 1.6", access, open</p> <p>Bay ③ 3.5", SL 1", access, diskette</p> <p>Bay ④ 3.5", SL 1", no access, disk</p> <p>Bay ⑤ 3.5", SL 1", no access, open</p> <p>Bay ⑥ 3.5", SL 1", no access, open</p> <p>Slot 1: fullsize, 32-bit 33MHz, PCI 2.2 (5v) - N/A on models with Wildcat4 7110 vid</p> <p>Slot 2: fullsize, 64-bit 100MHz, PCI-X 1.0</p> <p>Slot 3: fullsize, 64-bit 100MHz, PCI-X 1.0</p> <p>Slot 4: fullsize, 64-bit 100MHz, PCI-X 1.0*</p> <p>Slot 5: fullsize, 64-bit 100MHz, PCI-X 1.0</p> <p>Slot 6: Mini PCI type III - FireWire (some)</p> <p>Slot: fullsize, AGP 8X (1.5v)</p> <p>* used by std AGP graphics adapter</p> <p>* Extended slot</p> <ul style="list-style-type: none"> ➤ Metal cage for disk bays 4,5,6 rotates out of chassis ➤ Two front stabilizing feet ➤ Handle grip on top ➤ H 17.375" x W 6.5" x D 19.375" ➤ H 441mm x W 165mm x D 492mm ➤ 36 lb to 45.8 lb (16.3kg to 20.8kg) • Maximum internal disk capacity¹³: SCSI: 438GB (3 disks x 146GB) EIDE: 240GB (2 disks x 120GB) • Removable left side panel • BIOS Setup Utility via F1 at startup • LSI Configuration Utility near startup by pressing CTRL+C • Product Recovery Program via F11 at startup • Adv Config Power Interface (ACPI) 1.0a • DMI 2.2-compliant 										
Xeon 2.8BGHz/512KB L2 Cache Proc Upgrade	59P5110										
Xeon 3.06GHz/512KB L2 Cache Proc Upgrade	24P8123										
512MB PC2100 CL2.5 ECC DDR-SDRAM x4	33L5038										
1GB PC2100 CL2.5 ECC DDR-SDRAM DIMM	33L5039										
2GB PC2100 CL2.5 ECC DDR-SDRAM DIMM	33L5040										
IBM 73.4GB 15K rpm Ultra320 SCSI HDD	32P0733										
IBM 146GB 10K rpm Ultra320 SCSI HDD	32P0725										
IBM 120GB 7.2K rpm ATA-100 EIDE HDD	09N4231										
IBM ThinkVision L20P 20.1inLCD Black A/D	6736-HB01										
IBM T221 22.2inLCD Black Digital	9503-DG3										
IBM 4Ux20D Tower-to-Rack Conversion Kit	09N4300										
Other options at ibm.com/pc/us/accessories											
	<p>Microsoft® Windows® XP Professional¹⁷</p> <ul style="list-style-type: none"> - Free license for Lotus® SmartSuite® - Free license for Lotus Notes® Client ➤ Device Drivers and IBM Enhanced Diagnostics CD ➤ IBM IntelliStation Documentation CD • Disk-to-Disk Recovery (in service partition) 										
	<p>SECURITY</p> <ul style="list-style-type: none"> • U-bolt anchoring feature (U-bolt is optional; supports optional padlock) • Security slot (for attachment of optional cable lock such as Kensington cable lock) • Cover key lock • Cover tamper detect switch • Secure fixed DASD • Power-on password • Administrator password • Keyboard/mouse password • Boot sequence control • Boot without keyboard or mouse • Diskette boot inhibit and write-protect • Disable mouse • Diskette, disk, serial port, parallel port I/O control • Secure access openings • VPD stored in EEPROM • Write protection control for EEPROM • IBM Security Solutions 										
	<p>LIMITED WARRANTY³</p> <ul style="list-style-type: none"> ➤ 3 year parts and labor ➤ International Warranty Service³ ➤ On site, 8 am through 5 pm, Mon through Fri excluding holidays, next business day response time ➤ On site warranty service upgrade options⁷ available as ServicePac options at http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf ➤ 24x7¹⁴ toll-free support for warranty issues during the warranty period¹ 										

See footnotes for important warranty information

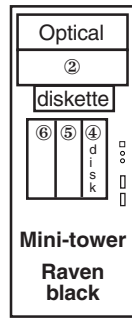
US models announced March 18, 2002

Ⓜ US model available only through ibm.com and must be configured with additional hardware and software before purchase

IBM® Type-model	Processor	GHz ¹	FSB MHz	Memory	Disk and rpm	Disk controllers	Optical	Graphics adapter and memory	Slots x bays	FireWire	Preload ¹⁷	Available date
6221-52U	1 x Xeon™	3.2	533	512MB	40.0GB ² EIDE 7.2K	Ultra320,EIDE	CD	Quadro4 280NVS 64MB	6x6	1394	XP Pro	Oct 2003
6221-53U	1 x Xeon	3.2	533	512MB	40.0GB EIDE 7.2K	Ultra320,EIDE	CD-RW	Quadro4 980XGL 128MB	6x6	1394	XP Pro	Oct 2003
6221-56U	1 x Xeon	3.2	533	512MB	36.4GB U320 10K	Ultra320,EIDE	CD-RW	Quadro4 980XGL 128MB	6x6	1394	XP Pro	Oct 2003
6221-57U	1 x Xeon	3.2	533	1GB	36.4GB U320 10K	Ultra320,EIDE	Combo	Quadro FX 1000 128MB	6x6	1394	XP Pro	Oct 2003
6221-58U	2 x Xeon	3.2	533	1GB	40.0GB EIDE 7.2K	Ultra320,EIDE	Combo	Quadro FX 1000 128MB	6x6	1394	XP Pro	Oct 2003
6221-59U	1 x Xeon	3.2	533	1GB	36.4GB U320 10K	Ultra320,EIDE	Combo	Quadro FX 3000 256MB	6x6	1394	XP Pro	Oct 2003
⚡ 6221-5PU	1 x Xeon	3.2	533	512MB	(none) open-bay	Ultra320,EIDE	None	Quadro4 280NVS 64MB	6x6	1394	DOS lic	Oct 2003

Processor	1 or 2 x Intel® Xeon at 3.2 GHz with 533MHz frontside bus (FSB)											
L2 cache	512KB standard and maximum / at processor speed											
L3 cache	1MB standard and maximum / at processor speed											
Processor upgrade	2-way SMP / up to two Xeon Processors (same speed/cache size)											
Implementation	Systemboard contains two Intel 604-pin micro-PGA2 ZIF sockets, four DIMM slots, seven slots (one PCI 2.2, four PCI-X, one Mini PCI, one 8X AGP), and integrated SCSI and ethernet											
Memory - std / max	512MB or 1GB std / 8GB ¹³ max / two slots used / two slots available / PC2100 266MHz registered 184-pin ECC DDR-SDRAM DIMMs / four DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] /											
Memory - features	2-way memory interleave / dual channel / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips)											
Graphics controller	(see IntelliStation Graphics sheet for full graphics specifications)											
(one of following)	<ul style="list-style-type: none"> • NVIDIA™ Quadro4 280NVS • NVIDIA Quadro4 980XGL • NVIDIA Quadro FX 1000 • NVIDIA Quadro FX 3000 											
IDE disk controller	Enhanced IDE busmaster / ATA-100 / integrated in I/O Controller Hub 4 / two connectors on planar											
SCSI disk controller	LSI Logic® 53C1030 / dual channel Ultra320 SCSI controller (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X / supports RAID-1 mirroring (Embedded Mirroring)											
SCSI channels and cables	Two 16-bit channels (one internal and one external) / <i>Internal channel</i> : one 3-drop 16-bit 68-pin LVD SCSI cable from systemboard to internal disks bays; <i>External channel</i> : Models 29U/37U have one 1-drop 16-bit 68-pin LVD SCSI cable from systemboard to rear external 68-pin connector (cable available as option part number 24P7929)											
Cables	<i>EIDE models</i> : Two EIDE cables (one 2-drop cable to CD-ROM, one 2-drop cable to EIDE disk) <i>SCSI models</i> : One or two SCSI cables (listed above), one 2-drop EIDE cable (to optical)											
Disk - features	<i>Some</i> : 40.0GB EIDE / ATA-100 / 7200 rpm / 9.0 ms seek; <i>Some</i> : 36.4GB Ultra320 SCSI / 10K rpm / 4.7 ms; <i>All</i> : S.M.A.R.T. ⁵											
Rack support	4U ⁴ rack mount support via tower-to-rack kit option											
Chipset	Intel E7505 chipset / E7505 MCH (Memory Controller Hub) for AGP 8X slot, P64H2, ICH4 / P64H2 for two 64-bit PCI-X buses (Bus A for slots 2 and 3 and ethernet controller; Bus B for slots 4 and 5 and SCSI controller) / I/O Controller Hub (ICH4) for PCI 2.2 bus (one slot and one Mini PCI slot), ATA-100 EIDE, USB, Low Pin Count Interface / NS PC87366 Super I/O off LPC interface											
Gigabit ethernet	One gigabit 10/100/1000 ethernet controller / Broadcom BCM5703i / full gigabit ethernet MAC and PHY layer functions / chip on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / Alert Standard Format 1.0 / one rear RJ-45 port											
Diskette / Optical drives	3.5" 1.44MB diskette drive and one of the following: 48X-20X ⁶ CD-ROM, 48X/24X/48X/16X Max ^{6,19} CD-RW/DVD-ROM Combo or 48X/24X/48X Max ⁶ CD-RW											
IEEE 1394(FireWire)	FireWire controller in Mini PCI slot / 1394A, 400Mbps, 6-pin port on rear, 4-pin port on front											
Audio	Soft audio AC '97 v2.2 interface via ICH4 (AD1885) / internal speaker (use of audio line out requires powered speakers)											
Rear ports	Two USB (Ver 2.0), two 9-pin serial, parallel, keyboard, mouse, ethernet, audio line in, audio line out, mic in / 6-pin 1394											
Front ports	Two USB (Ver 2.0), audio line out (stereo), mic in / 4-pin 1394											
Systems mgmt	Monitoring and alerting of thermal, fans, and voltage faults / Winbond® W791D											
Keyboard / mouse	IBM 104-key keyboard (6-pin PS/2) / IBM three button mouse (6-pin PS/2 conn)											
Cooling fans	Three variable speed fans (power supply, two in rear) / not redundant or hot-swap											
Power supply	425 watts / universal / auto sensing / built-in overload and surge protection											

- SECURITY**
- U-bolt anchoring feature (U-bolt is optional; supports optional padlock)
 - Security slot (for attachment of optional cable lock such as Kensington cable lock)
 - Cover key lock
 - Cover tamper detect switch
 - Secure fixed DASD
 - Power-on password
 - Administrator password
 - Keyboard/mouse password
 - Boot sequence control
 - Boot without keyboard or mouse
 - Diskette boot inhibit and write-protect
 - Disable mouse
 - Diskette, disk, serial port, parallel port I/O control
 - Secure access openings
 - VPD stored in EEPROM
 - Write protection control for EEPROM
 - IBM Security Solutions

 <p>Bay ① 5.25", HH 1.6", access, optical</p> <p>Bay ② 5.25", HH 1.6", access, open</p> <p>Bay ③ 3.5", SL 1", access, diskette</p> <p>Bay ④ 3.5", SL 1", no access, disk</p> <p>Bay ⑤ 3.5", SL 1", no access, open</p> <p>Bay ⑥ 3.5", SL 1", no access, open</p> <p>Slot 1: fullsize, 32-bit 33MHz, PCI 2.2 (5v)</p> <p>Slot 2: fullsize, 64-bit 100MHz, PCI-X 1.0</p> <p>Slot 3: fullsize, 64-bit 100MHz, PCI-X 1.0</p> <p>Slot 4: fullsize, 64-bit 100MHz, PCI-X 1.0*</p> <p>Slot 5: fullsize, 64-bit 100MHz, PCI-X 1.0</p> <p>Slot 6: Mini PCI type III - FireWire</p> <p>Slot: fullsize, AGP 8X (1.5v)</p> <p>- used by std AGP graphics adapter</p> <p>* Extended slot</p>	<ul style="list-style-type: none"> ➤ Metal cage for disk bays 4,5,6 rotates out of chassis ➤ Two front stabilizing feet ➤ Handle grip on top ➤ H 17.375" x W 6.5" x D 19.375" ➤ H 441mm x W 165mm x D 492mm ➤ 36 lb to 45.8 lb (16.3kg to 20.8kg) <ul style="list-style-type: none"> • <i>Maximum internal disk capacity¹³</i>: <i>SCSI</i>: 438GB (3 disks x 146GB) <i>EIDE</i>: 240GB (2 disks x 120GB) • Removable left side panel • BIOS Setup Utility via F1 at startup • LSI Configuration Utility near startup by pressing CTRL+C • Product Recovery Program via F11 at startup • Adv Config Power Interface (ACPI) 1.0a • DMI 2.2-compliant <p>Preload with Windows XP Professional¹⁷</p> <p>Microsoft® Windows® XP Professional - Free license for Lotus® SmartSuite®</p> <p>- Free license for Lotus Notes® Client</p> <p>◆ Device Drivers and IBM Enhanced Diagnostics CD</p> <p>◆ IBM IntelliStation Documentation CD</p> <p>• Disk-to-Disk Recovery (in service partition)</p>
<p>Xeon 3.2GHz/1MB L3 Cache Proc Upgrade 13N0691</p> <p>512MB PC2100 CL2.5 ECC DDR-SDRAM x4 33L5038</p> <p>1GB PC2100 CL2.5 ECC DDR-SDRAM DIMM 33L5039</p> <p>2GB PC2100 CL2.5 ECC DDR-SDRAM DIMM 33L5040</p> <p>IBM 36.4GB 10K rpm Ultra320 SCSI HDD 32P0723</p> <p>IBM 73.4GB 10K rpm Ultra320 SCSI HDD 32P0724</p> <p>IBM 146GB 10K rpm Ultra320 SCSI HDD 32P0725</p> <p>IBM 120GB 7.2K rpm ATA-100 EIDE HDD 09N4231</p> <p>IBM ThinkVision L200P 20.1inLCD Black A/D 6736-HB30</p> <p>IBM T221 22.2inLCD Black Digital 9503-DG3</p> <p>IBM 4Ux20D Tower-to-Rack Conversion Kit 09N4300</p> <p>Other options at ibm.com/pc/us/accessories</p>	<p>LIMITED WARRANTY³</p> <ul style="list-style-type: none"> ↔ 3 year parts and labor ↔ International Warranty Service³ ↔ On site, 8 am through 5 pm, Mon through Fri excluding holidays, next business day response time ↔ On site warranty service upgrade options⁷ available as ServicePac options at http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf ↔ 24x7¹⁴ toll-free support for warranty issues during the warranty period¹

See footnotes for important warranty information

US models announced October 7, 2003

⚡ US model available only through ibm.com and must be configured with additional hardware and software before purchase

IBM® Type-model	Processor	FSB GHz ¹	FSB MHz	Memory	Disk and rpm	Disk controllers	Optical	Graphics adapter and memory	Slots x bays	FireWire	Preload ¹⁷	Available date
6221-66U	1 x Xeon™	3.2	533	2GB	36.4GB U320 10K	Ultra320,EIDE	CD-RW	Quadro4 980XGL 128MB 6x6	1394	DOS2K	Mar 2004	
6221-67U	1 x Xeon	3.2	533	1GB	36.4GB U320 10K	Ultra320,EIDE	Combo	Quadro FX 1100 128MB 6x6	1394	XP Pro	Mar 2004	
6221-68U	1 x Xeon	3.2	533	2GB	40.0GB EIDE 7.2K	Ultra320,EIDE	Combo	Quadro FX 1100 128MB 6x6	1394	DOS2K	Mar 2004	

Processor	1 or 2 x Intel® Xeon at 3.2 GHz with 533MHz frontside bus (FSB)
L2 cache	512KB standard and maximum / at processor speed
L3 cache	1MB standard and maximum / at processor speed / 2MB L3 cache available via CTO
Processor upgrade	2-way SMP / up to two Xeon Processors (same speed/cache size)
Implementation	Systemboard contains two Intel 604-pin micro-PGA2 ZIF sockets, four DIMM slots, seven slots (one PCI 2.2, four PCI-X, one Mini PCI, one 8X AGP), and integrated SCSI and ethernet
Memory - std / max	1GB or 2GB std / 8GB ¹³ max / two slots used / two slots available / PC2100 266MHz registered 184-pin ECC DDR-SDRAM DIMMs / four DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] /
Memory - features	2-way memory interleave / dual channel / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips)

Graphics controller (see IntelliStation Graphics sheet for full graphics specifications)
(one of following) • **NVIDIA Quadro4 980XGL**
• **NVIDIA Quadro FX 1100**

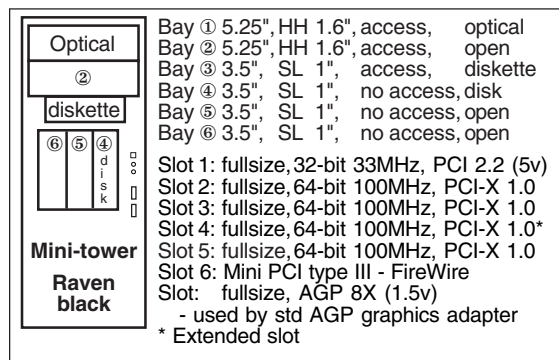
IDE disk controller	Enhanced IDE busmaster / ATA-100 / integrated in I/O Controller Hub 4 / two connectors on planar
SCSI disk controller	LSI Logic® 53C1030 / dual channel Ultra320 SCSI controller (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X / supports RAID-1 mirroring (Embedded Mirroring)
SCSI channels and cables	Two 16-bit channels (one internal and one external) / <i>Internal channel</i> : one 3-drop 16-bit 68-pin LVD SCSI cable from systemboard to internal disks bays; <i>External channel</i> : Optionally available 1-drop 16-bit 68-pin LVD SCSI cable from systemboard to rear external 68-pin connector (option part number 24P7929)
Cables	<i>EIDE models</i> : Two EIDE cables (one 2-drop cable to CD-ROM, one 2-drop cable to EIDE disk) <i>SCSI models</i> : One or two SCSI cables (listed above), one 2-drop EIDE cable (to optical) <i>Some</i> : 40.0GB EIDE / ATA-100 / 7200 rpm / 9.0 ms seek; <i>Some</i> : 36.4GB Ultra320 SCSI / 10K rpm / 4.7 ms; <i>All</i> : S.M.A.R.T. ⁵
Disk - features	

Rack support
Chipset
4U⁴ rack mount support via tower-to-rack kit option
Intel E7505 chipset / E7505 MCH (Memory Controller Hub) for AGP 8X slot, P64H2, ICH4 / P64H2 for two 64-bit PCI-X buses (Bus A for slots 2 and 3 and ethernet controller; Bus B for slots 4 and 5 and SCSI controller) / I/O Controller Hub (ICH4) for PCI 2.2 bus (one slot and one Mini PCI slot), ATA-100 EIDE, USB, Low Pin Count Interface / NS PC87366 Super I/O off LPC interface

Gigabit ethernet	One gigabit 10/100/1000 ethernet controller / Broadcom BCM5703i / full gigabit ethernet MAC and PHY layer functions / chip on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / Alert Standard Format 1.0 / one rear RJ-45 port
Diskette / Optical drives	3.5" 1.44MB diskette drive and one of the following: 48X-20X ⁶ CD-ROM, 48X/24X/48X/16X Max ^{6,19} CD-RW/DVD-ROM Combo or 48X/24X/48X Max ⁶ CD-RW
IEEE 1394(FireWire)	FireWire controller in Mini PCI slot / 1394A, 400Mbps, 6-pin port on rear, 4-pin port on front
Audio	Soft audio AC '97 v2.2 interface via ICH4 (AD1885) / internal speaker (use of audio line out requires powered speakers)
Rear ports	Two USB (Ver 2.0), two 9-pin serial, parallel, keyboard, mouse, ethernet, audio line in, audio line out, mic in / 6-pin 1394
Front ports	Two USB (Ver 2.0), audio line out (stereo), mic in / 4-pin 1394
Systems mgmt	Monitoring and alerting of thermal, fans, and voltage faults / Winbond® W791D

Keyboard / mouse
Cooling fans
Power supply
IBM 104-key keyboard (6-pin PS/2) / IBM three button mouse (6-pin PS/2 conn)
Three variable speed fans (power supply, two in rear) / not redundant or hot-swap
425 watts / universal / auto sensing / built-in overload and surge protection

- SECURITY**
- U-bolt anchoring feature (U-bolt is optional; supports optional padlock)
 - Security slot (for attachment of optional cable lock such as Kensington cable lock)
 - Cover key lock
 - Cover tamper detect switch
 - Secure fixed DASD
 - Power-on password
 - Administrator password
 - Keyboard/mouse password
 - Boot sequence control
 - Boot without keyboard or mouse
 - Diskette boot inhibit and write-protect
 - Disable mouse
 - Diskette, disk, serial port, parallel port I/O control
 - Secure access openings
 - VPD stored in EEPROM
 - Write protection control for EEPROM
 - IBM Security Solutions



- Metal cage for disk bays 4,5,6 rotates out of chassis
- Two front stabilizing feet
- Handle grip on top
- H 17.375" x W 6.5" x D 19.375"
- H 441mm x W 165mm x D 492mm
- 36 lb to 45.8 lb (16.3kg to 20.8kg)
- *Maximum internal disk capacity¹³*:
SCSI: 438GB (3 disks x 146GB)
EIDE: 240GB (2 disks x 120GB)
- Removable left side panel
- BIOS Setup Utility via F1 at startup
- LSI Configuration Utility near startup by pressing CTRL+C
- Product Recovery Program via F11 at startup
- Adv Config Power Interface (ACPI) 1.0a
- DMI 2.2-compliant

Xeon 3.2GHz/1MB L3 Cache Proc Upgrade	13N0691
512MB PC2100 CL2.5 ECC DDR-SDRAM x4	33L5038
1GB PC2100 CL2.5 ECC DDR-SDRAM DIMM	33L5039
2GB PC2100 CL2.5 ECC DDR-SDRAM DIMM	33L5040
IBM 36.4GB 10K rpm Ultra320 SCSI HDD	32P0723
IBM 73.4GB 10K rpm Ultra320 SCSI HDD	32P0724
IBM 146GB 10K rpm Ultra320 SCSI HDD	32P0725
IBM 120GB 7.2K rpm ATA-100 EIDE HDD	09N4231
IBM ThinkVision L200P 20.1inLCD Black A/D	6736-HB01
IBM T221 22.2inLCD Black Digital	9503-DG3
IBM 4Ux20D Tower-to-Rack Conversion Kit	09N4300
Other options at ibm.com/pc/us/accessories	

Preload with Windows XP Professional¹⁷

Microsoft® Windows® XP Professional
- Free license for Lotus® SmartSuite®
- Free license for Lotus Notes® Client
➤ Device Drivers and IBM Enhanced Diagnostics CD
➤ IBM IntelliStation Documentation CD
• Disk-to-Disk Recovery (in service partition)

- LIMITED WARRANTY³**
- **3 year parts and labor**
 - **International Warranty Service³**
 - **On site, 8 am through 5 pm, Mon through Fri excluding holidays, next business day response time**
 - **On site warranty service upgrade options⁷ available as ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>**
 - **24x7¹⁴ toll-free support for warranty issues during the warranty period¹**

See footnotes for important warranty information
US models announced March 16, 2004
Ⓜ US model available only through ibm.com and must be configured with additional hardware and software before purchase
(6221D) © IBM Corp. March 2004

IBM® Type-GAV-model	Processor & GHz¹	L2	Memory	Disk & rpm	Disk controllers	Optical	Graphics adapter and memory	FireWire	Slots x bays	Preload¹⁷	Available date
6223-10y-10U 1	x Xeon™3.4GHz	1MB	512MB	80GB 7.2K	SATA,U320	CD-ROM	Quadro®NVS 280 64MB	1394	6x6	XP Pro	Sept 2004
6223-11y-11U 1	x Xeon 3.4GHz	1MB	1GB	80GB 7.2K	SATA,U320	CD-RW	Quadro NVS 280 64MB	1394	6x6	XP Pro	Sept 2004
6223-14y-14U 1	x Xeon 3.4GHz	1MB	1GB	73GB 10K	SATA,U320	COMBO	Quadro FX 3400 256MB	1394	6x6	XP Pro	Sept 2004
6223-21y-21U 1	x Xeon 3.6GHz	1MB	1GB	80GB 7.2K	SATA,U320	CD-RW	Quadro FX 1300 128MB	1394	6x6	XP Pro	Sept 2004
6223-22y-22U 1	x Xeon 3.6GHz	1MB	1GB	73GB 10K	SATA,U320	CD-RW	Quadro FX 1300 128MB	1394	6x6	XP Pro	Sept 2004
6223-23y-23U 1	x Xeon 3.6GHz	1MB	1GB	80GB 7.2K	SATA,U320	COMBO	Quadro FX 3400 256MB	1394	6x6	XP Pro	Sept 2004
6223-24y-24U 1	x Xeon 3.6GHz	1MB	1GB	73GB 10K	SATA,U320	COMBO	Quadro FX 3400 256MB	1394	6x6	XP Pro	Sept 2004
6223-28y-28U 1	x Xeon 3.6GHz	1MB	1GB	73GB 10K	Ultra320	CD-RW	Quadro FX 1300 256MB	1394	6x6	RH 3	Sept 2004
6223-29y-29U 2	x Xeon 3.6GHz	1MB	1GB	73GB 10K	Ultra320	CD-RW	Quadro FX 3400 256MB	1394	6x6	RH 3	Sept 2004

Positioning **Powerful multi-processor workstation with Intel® Extended Memory 64 Technology**
 Processor **1 or 2 x Intel Xeon at up to 3.8GHz with 800MHz FSB & Extended Memory 64 Technology (EM64T)**
 L2 cache **1MB** standard and maximum / at processor speed
 Processor upgrade **2-way SMP** / up to two Xeon Processors (same speed/cache size)
 Implementation Systemboard contains two Intel 604-pin micro-PGA2 ZIF sockets, six DIMM slots, six slots (one PCI Express, three PCI-X, 2 PCI), and integrated dual-channel SCSI, integrated SATA and gigabit ethernet

Memory - std / max **512MB or 1GB** std / 16GB^{13,21} max / two slots used / four slots available / **PC2-3200 400MHz** registered ECC DDR2-SDRAM DIMMs / six DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank]
 Memory - features 2-way memory interleave / dual channel / **Error Checking and Correcting (ECC)** / single rank memory kits available to allow maximum utilization of system resources

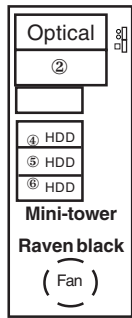
Graphics controller (see IntelliStation Pro Graphics page for full graphics specifications)
 (one of following)
 • **Performance 2D: NVIDIA® Quadro4 NVS280 2D 64MB PCI-Express**
 • **Advanced 3D: NVIDIA Quadro FX 1300 3D 128MB PCI-Express**
 • **Extreme 3D: NVIDIA Quadro FX 3400 3D 256MB PCI-Express**

SATA controller SATA-150 controller (150MB/sec / integrated in ICH5R / two connectors on planar / supports SATA HostRAID
 SCSI controller **Adaptec® 7902 / dual-channel Ultra320 SCSI controller** (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X / HostRAID supports **RAID0(striping) & 1 (mirroring)**
 SCSI channels and cables Two 16-bit channels (one internal and one external) / **Internal channel:** one 3-drop 16-bit 68-pin LVD SCSI cable from systemboard to internal disks bays; **External channel:** Optionally available 1-drop 16-bit 68-pin LVD SCSI cable from systemboard to rear external 68-pin connector (option part number 24P7929)
 Cables **SATA models:** Two SATA cables (1 drop)
SCSI models: One or two SCSI cables (listed above), **ALL:** one 2-drop EIDE cable (to optical)
 Disk - features **Some:** 80GB / SATA-150 / 7200 rpm / 9.0 ms seek; **Some:** 73.0GB Ultra320 SCSI / 10K rpm / 4.7 ms; **All:** S.M.A.R.T.⁵

Rack support 5U⁴ rack mount support via tower-to-rack kit option
 Chipset **Intel E7525 chipset** / E7525 MCH (Memory Controller Hub) for PCI-Express x16(vid), Broadcom, PXH, ICH5R / PXH BUS A supports Adaptec 7902, 2 64bit/100MHz PCI-X slots (5 & 6), BUS B supports one 64bit/133MHz PCI-X slot (4) / ICH5R for two 32-bit/33MHz PCI slots (slots 2 & 3), 1394a, SATA, 4xUSB(2.0), Low Pin Count Interface / NS PC87366 Super I/O off LPC interface

Gigabit ethernet One gigabit 10/100/1000 ethernet controller / Broadcom BCM5721 / full gigabit ethernet MAC and PHY layer functions / chip on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / Alert Standard Format 2.0 / one rear RJ-45 port
 Diskette / Optical **Diskette:** none **Optical:** One of the following: 48X-20X⁶ CD-ROM, 48X/24X/48X/16X Max^{6,19} CD-RW/DVD-ROM Combo or 48X/32X/48X Max⁶ CD-RW
 IEEE 1394(FireWire) FireWire on planar / 1394a, 400Mbps, 6-pin port on rear, 4-pin port on front
 Audio AC - 97 Audio, ADI1981B via ICH5r / internal speaker (use of audio line out requires powered speakers)
 Rear ports Four USB (Ver 2.0), two 9-pin serial, parallel, keyboard, mouse, ethernet, audio line in, audio line out, mic in / 6-pin 1394
 Front ports Two USB (Ver 2.0), audio line out (stereo), mic in / 4-pin 1394
 Systems mgmt Monitoring and alerting of thermal, fans, and voltage faults / Winbond® W791D

Keyboard / mouse IBM 104-key keyboard (6-pin PS/2) / IBM three button mouse (6-pin PS/2 conn)
 Cooling fans Four variable speed fans (1 PCI, 1 HDD, 2 Fr) / not redundant or hot-swap
 Power supply 530 watts / universal / auto sensing / built-in overload and surge protection



Bay ① 5.25", HH 1.6", access, optical
 Bay ② 5.25", HH 1.6", access, open
 Bay ③ 3.5", SL 1", access, open
 Bay ④ 3.5", SL 1", no access, disk
 Bay ⑤ 3.5", SL 1", no access, open
 Bay ⑥ 3.5", SL 1", no access, open
 Slot 1: fullsize, PCI Express x16 (std vid)
 Slot 2: half-size, 32-bit 33MHz, PCI (5v)*
 Slot 3: half-size, 32-bit 33MHz, PCI (5v)
 Slot 4: fullsize, 64-bit 133MHz, PCI-X 1.0 (3.3v)
 Slot 5: fullsize, 64-bit 100MHz, PCI-X 1.0** (3.3v)
 Slot 6: fullsize, 64-bit 100MHz, PCI-X 1.0 (3.3v)
 * - Not available w/ Wildcat Realizm models
 **- Must be used if installing ServerRAID 6i+

Choice of preinstalled OS:
Windows® XP Professional¹⁷ (32-bit);
Red Hat® Enterprise Linux WS 3 (32-bit)
 ✦ Device Drivers and IBM Enhanced Diagnostics CD
 ✦ IBM IntelliStation Documentation CD
 • Disk-to-Disk Recovery (in service partition)
 ✦ Metal cage for disk bays 4,5,6 rotates out of chassis
 ✦ Two front stabilizing feet
 ✦ Handle grip on top
 ✦ H 18.5" x W 8.5" x D 19.5"
 ✦ H 450mm x W 216mm x D 496mm
 ✦ 36 lb to 50 lb (16.3kg to 22.6kg)

- Removable left side panel
- BIOS Setup Utility via F1 at startup
- Adaptec Configuration Utility near startup by pressing CTRL+C
- Product Recovery Program via F11 at startup
- Adv Config Power Interface (ACPI) 1.0a
- DMI 2.2-compliant
- **Maximum internal disk capacity¹³:**
 SCSI: 1.2TB (4 disks x 300GB)
 SATA: 500GB (2 disks x 250GB), 1TB with optional ServRAID 7t (4 disks x 250GB)

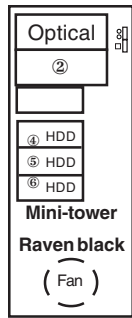
	SECURITY
Xeon 3.4GHz/1MB L2 Cache Proc Upgrade	13N0674
Xeon 3.6GHz/1MB L2 Cache Proc Upgrade	13N0675
Xeon 3.0GHz/2MB L2 Cache Proc Upgrade	25R8900
Xeon 3.2GHz/2MB L2 Cache Proc Upgrade	25R8901
Xeon 3.4GHz/2MB L2 Cache Proc Upgrade	13N0676
Xeon 3.6GHz/2MB L2 Cache Proc Upgrade	13N0677
Xeon 3.8GHz/2MB L2 Cache Proc Upgrade	13N0678
1GB PC2-3200 (2x1GB) CL3 ECC DDR2-SDRAM Double Rank	73P2865
2GB PC2-3200 (2x1GB) CL3 ECC DDR2-SDRAM Double Rank	73P2866
4GB PC2-3200 (2x2GB) CL3 ECC DDR2-SDRAM Double Rank	73P2877
4GB PC2-3200 (2x2GB) CL3 ECC DDR2-SDRAM Single Rank	73P4792
IBM 73.4GB 10K rpm Ultra320 SCSI HDD	32P0724
IBM 146GB 10K rpm Ultra320 SCSI HDD	32P0725
IBM 300GB 10K rpm Ultra320 SCSI HDD	32P0799
IBM 160GB 7.2K rpm SATA-150 HDD	73P8003
IBM 250GB 7.2K rpm SATA-150 HDD	73P8006
IBM 5Ux20D Tower-to-Rack Conversion Kit	13N2455
1.44MB Diskette Drive 1" Black Bezel 2-mode	18R9993

- U-bolt anchoring feature (U-bolt is optional; supports optional padlock)
- Security slot (for attachment of optional cable lock such as Kensington cable lock)
- Cover key lock
- Cover tamper detect switch
- Secure fixed DAST
- Power-on password
- Administrator password
- Boot sequence control
- Boot without keyboard or mouse
- Diskette boot inhibit and write-protect
- Disable mouse
- Diskette, disk, serial port, parallel port I/O control
- Secure access openings
- VPD stored in EEPROM
- Write protection control for EEPROM
- IBM Security Solutions

LIMITED WARRANTY³
 ✦ **3 year parts and labor**
 ✦ **International Warranty Service³**
 ✦ **On site, 8 am through 5 pm, Mon through Fri excluding holidays, next business day response time**
 ✦ **On site warranty service upgrade options⁷ available as ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>**
 ✦ **24x7¹⁴ toll-free support for warranty issues during the warranty period¹**

Other options at ibm.com/pc/us/accessories

IBM® Type-GAV-model	Processor & GHz¹	L2 Memory	Disk & rpm	Disk controllers	Optical	Graphics adapter and memory	FireWire	Slots x bays	Preload¹⁷	Available date
6223-27y-27U	2 x Xeon™3.6GHz	1MB 2GB	73GB 10K	SATA,U320	DVD/CD-RW	Wildcat™Realizm®800	640MB	1394 6x6	XP Pro	Apr 2005
6223-31y-31U	1 x Xeon 3.0GHz	2MB 1GB	80GB 7.2K	SATA,U320	DVD/CD-RW	Quadro® NVS 280	64MB	1394 6x6	XP Pro	Apr 2005
6223-41y-41U	1 x Xeon 3.2GHz	2MB 1GB	80GB 7.2K	SATA,U320	DVD/CD-RW	Quadro NVS 280	64MB	1394 6x6	XP Pro	Apr 2005
6223-42y-42U	1 x Xeon 3.2GHz	2MB 1GB	73GB 10K	SATA,U320	DVD/CD-RW	Quadro FX 1400	128MB	1394 6x6	XP Pro	Apr 2005
6223-43y-43U	2 x Xeon 3.2GHz	2MB 2GB	80GB 7.2K	SATA,U320	DVD/CD-RW	Quadro FX 1400	128MB	1394 6x6	XP Pro	Apr 2005
6223-51y-51U	1 x Xeon 3.6GHz	2MB 2GB	80GB 7.2K	SATA,U320	DVD/CD-RW	Quadro FX 1400	128MB	1394 6x6	XP Pro	Apr 2005
6223-52y-52U	2 x Xeon 3.4GHz	2MB 1GB	73GB 10K	SATA,U320	DVD/CD-RW	Wildcat Realizm 800	640MB	1394 6x6	RHEL3	Apr 2005
6223-64y-64U	2 x Xeon 3.6GHz	2MB 2GB	73GB 10K	SATA,U320	DVD/CD-RW	FireGL™ V7100	256MB	1394 6x6	XP Pro	Apr 2005
6223-68y-68U	2 x Xeon 3.6GHz	2MB 2GB	73GB 10K	SATA,U320	DVD/CD-RW	Wildcat Realizm 800	640MB	1394 6x6	RHEL3	Apr 2005
Positioning	<i>Powerful multi-processor workstation with Intel® Extended Memory 64 Technology</i>									
Processor	1 or 2 x Intel Xeon at up to 3.8GHz with 800MHz (FSB) & Extended Memory 64 Technology (EM64T)									
L2 cache	1MB or 2MB standard and maximum / at processor speed									
Processor upgrade	2-way SMP / up to two Xeon Processors (same speed/cache size)									
Implementation	Systemboard contains two Intel 604-pin micro-PGA2 ZIF sockets, six DIMM slots, six slots (one PCI Express, three PCI-X, 2 PCI), and integrated dual-channel SCSI, integrated SATA and gigabit ethernet									
Memory - std / max	1GB or 2GB std / 16GB ^{13,21} max / two slots used / four slots available / PC2-3200 400MHz registered ECC DDR2-SDRAM DIMMs / six DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank]									
Memory - features	2-way memory interleave / dual-channel / Error Checking and Correcting (ECC) / single rank memory kits available to allow maximum utilization of system resources									
Graphics controller (one of following)	(see IntelliStation Pro Graphics page for full graphics specifications) <ul style="list-style-type: none"> • Performance 2D: NVIDIA® Quadro NVS280 2D 64MB PCI Express x16 • Advanced 3D: NVIDIA Quadro FX 1400 3D 128MB PCI Express x16 • High-Advanced 3D: ATI FireGL V7100 256MB PCI Express x16 • Extreme 3D: 3Dlabs® Wildcat Realizm 800 640MB PCI Express x16 									
SATA controller	SATA-150 controller (150MB/sec / integrated in ICH5R / two connectors on planar / supports SATA HostRAID									
SCSI controller	Adaptec® 7902 / dual-channel Ultra320 SCSI controller (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X / HostRAID supports RAID0(striping) & 1 (mirroring)									
SCSI channels and cables	Two 16-bit channels (one internal and one external) / <i>Internal channel:</i> one 3-drop 16-bit 68-pin LVD SCSI cable from systemboard to internal disks bays; <i>External channel:</i> Optionally available 1-drop 16-bit 68-pin LVD SCSI cable from systemboard to rear external 68-pin connector (option part number 24P7973)									
Cables	<i>SATA models:</i> Two SATA cables (1 drop) <i>SCSI models:</i> One or two SCSI cables (listed above), <i>ALL:</i> one 2-drop EIDE cable (to optical)									
Disk - features	<i>Some:</i> 80GB / SATA-150 / 7200 rpm / 9.0 ms seek; <i>Some:</i> 73.0GB Ultra320 SCSI / 10K rpm / 4.7 ms; <i>All:</i> S.M.A.R.T. ⁵									
Rack support	5U ⁴ rack mount support via tower-to-rack kit option									
Chipset	Intel E7525 chipset / E7525 MCH (Memory Controller Hub) for PCI-Express x16(vid), Broadcom, PXH, ICH5R / PXH BUS A supports Adaptec 7902, 2 64bit/100MHz PCI-X slots (5 & 6), BUS B supports one 64bit/133MHz PCI-X slot (4) / ICH5R for two 32-bit/33MHz PCI slots (slots 2 & 3), 1394a, SATA, 4xUSB(2.0), Low Pin Count Interface / NS PC87366 Super I/O off LPC interface									
Gigabit ethernet	One gigabit 10/100/1000 ethernet controller / Broadcom BCM5721 / full gigabit ethernet MAC and PHY layer functions / chip on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / Alert Standard Format 2.0 / one rear RJ-45 port									
Diskette / Optical	<i>Diskette:</i> optional / <i>Optical:</i> CD-RW/DVD-ROM Combo									
IEEE 1394(FireWire)	FireWire on planar / 1394a, 400Mbps, 6-pin port on rear, 4-pin port on front									
Audio	AC - 97 Audio, ADI1981B via ICH5r / internal speaker (use of audio line out requires powered speakers)									
Rear ports	Four USB (Ver 2.0), two 9-pin serial, parallel, keyboard, mouse, ethernet, audio line in, audio line out, mic in / 6-pin 1394									
Front ports	Two USB (Ver 2.0), audio line out (stereo), mic in / 4-pin 1394									
Systems mgmt	Monitoring and alerting of thermal, fans, and voltage faults / Winbond® W791D									
Keyboard / mouse	IBM 104-key keyboard (6-pin PS/2) / IBM three button mouse (6-pin PS/2 conn)									
Cooling fans	Five variable speed fans (1 PCI, 1 HDD, 2 Fr, 1 PS) / not redundant or hot-swap									
Power supply	530 watts / universal / auto sensing / built-in overload and surge protection									



Bay ① 5.25", HH 1.6", access, optical
 Bay ② 5.25", HH 1.6", access, open
 Bay ③ 3.5", SL 1", access, open
 Bay ④ 3.5", SL 1", no access, disk
 Bay ⑤ 3.5", SL 1", no access, open
 Bay ⑥ 3.5", SL 1", no access, open

Slot 1: fullsize, PCI Express x16 (std vid)
 Slot 2: half-size, 32-bit 33MHz, PCI (5v)*
 Slot 3: half-size, 32-bit 33MHz, PCI (5v)
 Slot 4: fullsize, 64-bit 133MHz, PCI-X 1.0 (3.3v)
 Slot 5: fullsize, 64-bit 100MHz, PCI-X 1.0** (3.3v)
 Slot 6: fullsize, 64-bit 100MHz, PCI-X 1.0 (3.3v)

* - Not available w/ Wildcat Realizm models
 **- Must be used if installing ServeRAID 6i+

Choice of preinstalled OS:
Windows® XP Professional¹⁷ (32-bit);
Red Hat® Enterprise Linux WS 3 (32-bit)

- ✦ Device Drivers and IBM Enhanced Diagnostics CD
- ✦ IBM IntelliStation Documentation CD
- Disk-to-Disk Recovery (in service partition)

- Removable left side panel
- BIOS Setup Utility via F1 at startup
- Adaptec Configuration Utility near startup by pressing CTRL+C
- Product Recovery Program via F11 at startup
- Adv Config Power Interface (ACPI) 1.0a
- DMI 2.2-compliant
- *Maximum internal disk capacity¹³:*
 SCSI: 1.2TB (4 disks x 300GB)
 SATA: 500GB (2 disks x 250GB), 1TB with optional ServRAID 7i (4 disks x 250GB)

SECURITY

- U-bolt anchoring feature (U-bolt is optional; supports optional padlock)
- Security slot (for attachment of optional cable lock such as Kensington cable lock)
- Cover key lock
- Cover tamper detect switch
- Secure fixed DASD
- Power-on password
- Administrator password
- Boot sequence control
- Boot without keyboard or mouse
- Diskette boot inhibit and write-protect
- Disable mouse
- Diskette, disk, serial port, parallel port I/O control
- Secure access openings
- VPD stored in EEPROM
- Write protection control for EEPROM
- IBM Security Solutions

LIMITED WARRANTY³

- ✦ **3 year parts and labor**
- ✦ **International Warranty Service³**
- ✦ **On site, 8 am through 5 pm, Mon through Fri excluding holidays, next business day response time**
- ✦ **On site warranty service upgrade options⁷ available as ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>**
- ✦ **24x7¹⁴ toll-free support for warranty issues during the warranty period¹**

Xeon 3.4GHz/1MB L2 Cache Proc Upgrade 13N0674

Xeon 3.6GHz/1MB L2 Cache Proc Upgrade 13N0675

Xeon 3.0GHz/2MB L2 Cache Proc Upgrade 25R8900

Xeon 3.2GHz/2MB L2 Cache Proc Upgrade 25R8901

Xeon 3.4GHz/2MB L2 Cache Proc Upgrade 13N0676

Xeon 3.6GHz/2MB L2 Cache Proc Upgrade 13N0677

Xeon 3.8GHz/2MB L2 Cache Proc Upgrade 13N0678

1GB PC2-3200 (2x512MB) CL3 ECC DDR2-SDRAM Double Rank 73P2865

2GB PC2-3200 (2x1GB) CL3 ECC DDR2-SDRAM Double Rank 73P2877

4GB PC2-3200 (2x2GB) CL3 ECC DDR2-SDRAM Double Rank 73P4792

4GB PC2-3200 (2x2GB) CL3 ECC DDR2-SDRAM Single Rank 32P0724

IBM 73.4GB 10K rpm Ultra320 SCSI HDD 32P0725

IBM 146GB 10K rpm Ultra320 SCSI HDD 32P0799

IBM 300GB 10K rpm Ultra320 SCSI HDD 73P8003

IBM 160GB 7.2K rpm SATA-150 HDD 73P8006

IBM 250GB 7.2K rpm SATA-150 HDD 13N2455

IBM 5Ux20D Tower-to-Rack Conversion Kit 18R9993

1.44MB Diskette Drive 1" Black Bezel 2-mode

Other options at ibm.com/pc/us/accessories

IBM® Type-GAV-model	Processor & GHz ¹	L2	Memory	Disk & rpm	Disk controllers	Optical	Graphics adapter and memory	FireWire	Slots x bays	Preload ¹⁷	Available date		
6223-72y-72U 1	x Xeon™3.8GHz	2MB	2x1GB	80GB	7.2K	SATA,U320	DVD/CD-RW	Quadro® FX 1400	128MB	1394	6x6	XP Pro	Nov 2005
6223-73y-73U 1	x Xeon 3.8GHz	2MB	2x1GB	80GB	7.2K	SATA,U320	DVD/CD-RW	ATI® FireGL™ V7100	256MB	1394	6x6	XP Pro	Nov 2005
6223-75y-75U 1	x Xeon 3.8GHz	2MB	2x1GB	80GB	7.2K	SATA,U320	DVD/CD-RW	Quadro NVS 280	64MB	1394	6x6	XP Pro	Nov 2005
6223-76y-76U 1	x Xeon 3.8GHz	2MB	2x1GB	73GB	10K	SATA,U320	DVD/CD-RW	ATI FireGL V7100	256MB	1394	6x6	RHEL3	Nov 2005
6223-78y-78U 2	x Xeon 3.8GHz	2MB	2x1GB	73GB	10K	SATA,U320	DVD/CD-RW	Wildcat™ Realizm®800	640MB	1394	6x6	XP Pro	Nov 2005

Positioning Processor **1 or 2 x Intel Xeon at up to 3.8GHz with 800MHz (FSB) & Extended Memory 64 Technology (EM64T)**
 L2 cache **1MB or 2MB** standard and maximum / at processor speed
 Processor upgrade Implementation up to two Xeon Processors (same speed/cache size)
 Systemboard contains two Intel 604-pin micro-PGA2 ZIF sockets, six DIMM slots, six slots (one PCI Express, three PCI-X, 2 PCI), and integrated dual-channel SCSI, integrated SATA and gigabit ethernet

Memory - std / max **1GB or 2GB** std / 16GB^{13,21} max / two slots used / four slots available / **PC2-3200 400MHz** registered ECC DDR2-SDRAM DIMMs / six DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank]

Memory - features 2-way memory interleave / dual-channel / **Error Checking and Correcting (ECC)** / single rank memory kits available to allow maximum utilization of system resources

Graphics controller (one of following) (see IntelliStation Pro Graphics page for full graphics specifications)
 • **Performance 2D: NVIDIA® Quadro NVS280 2D 64MB PCI Express x16**
 • **Advanced 3D: NVIDIA Quadro FX 1400 3D 128MB PCI Express x16**
 • **High-Advanced 3D: ATI FireGL V7100 256MB PCI Express x16**
 • **Extreme 3D: 3DLabs® Wildcat Realizm 800 640MB PCI Express x16**

SATA controller SATA-150 controller (150MB/sec / integrated in ICH5R / two connectors on planar / supports SATA HostRAID)
 SCSI controller **Adaptec® 7902 / dual-channel Ultra320 SCSI controller** (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X / HostRAID supports **RAID0(striping) & 1 (mirroring)**

SCSI channels and cables Two 16-bit channels (one internal and one external) / *Internal channel:* one 3-drop 16-bit 68-pin LVD SCSI cable from systemboard to internal disks bays; *External channel:* Optionally available 1-drop 16-bit 68-pin LVD SCSI cable from systemboard to rear external 68-pin connector (option part number 24P7973)

Cables **SATA models:** Two SATA cables (1 drop)
SCSI models: One or two SCSI cables (listed above), **ALL:** one 2-drop EIDE cable (to optical)

Disk - features **Some:** 80GB / SATA-150 / 7200 rpm / 9.0 ms seek; **Some:** 73.0GB Ultra320 SCSI / 10K rpm / 4.7 ms; **All:** S.M.A.R.T.⁵

Rack support 5U⁴ rack mount support via tower-to-rack kit option
 Chipset **Intel E7525 chipset** / E7525 MCH (Memory Controller Hub) for PCI-Express x16(vid), Broadcom, PXH, ICH5R / PXH BUS A supports Adaptec 7902, 2 64-bit/100MHz PCI-X slots (5 & 6), BUS B supports one 64bit/133MHz PCI-X slot (4) / ICH5R for two 32-bit/33MHz PCI slots (slots 2 & 3), 1394a, SATA, 4xUSB(2.0), Low Pin Count Interface / NS PC87366 Super I/O off LPC interface

Gigabit ethernet One gigabit 10/100/1000 ethernet controller / Broadcom BCM5721 / full gigabit ethernet MAC and PHY layer functions / chip on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / Alert Standard Format 2.0 / one rear RJ-45 port

Diskette / Optical **Diskette:** optional / **Optical:** CD-RW/DVD-ROM Combo

IEEE 1394(FireWire) FireWire on planar / 1394a, 400Mbps, 6-pin port on rear, 4-pin port on front

Audio AC - 97 Audio, ADI1981B via ICH5r / internal speaker (use of audio line out requires powered speakers)

Rear ports Four USB (Ver 2.0), two 9-pin serial, parallel, keyboard, mouse, ethernet, audio line in, audio line out, mic in / 6-pin 1394

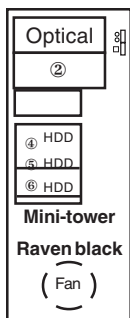
Front ports Two USB (Ver 2.0), audio line out (stereo), mic in / 4-pin 1394

Systems mgmt Monitoring and alerting of thermal, fans, and voltage faults / Winbond® W791D

Keyboard / mouse IBM 104-key keyboard (6-pin PS/2) / IBM three button mouse (6-pin PS/2 conn)

Cooling fans Five variable speed fans (1 PCI, 1 HDD, 2 Fr, 1 PS) / not redundant or hot-swap

Power supply 530 watts / universal / auto sensing / built-in overload and surge protection



Bay ① 5.25", HH 1.6", access, optical
 Bay ② 5.25", HH 1.6", access, open
 Bay ③ 3.5", SL 1", access, open
 Bay ④ 3.5", SL 1", no access, disk
 Bay ⑤ 3.5", SL 1", no access, open
 Bay ⑥ 3.5", SL 1", no access, open

Slot 1: fullsize, PCI Express x16 (std vid)
 Slot 2: half-size, 32-bit 33MHz, PCI (5v)*
 Slot 3: half-size, 32-bit 33MHz, PCI (5v)
 Slot 4: fullsize, 64-bit 133MHz, PCI-X 1.0 (3.3v)
 Slot 5: fullsize, 64-bit 100MHz, PCI-X 1.0**(3.3v)
 Slot 6: fullsize, 64-bit 100MHz, PCI-X 1.0 (3.3v)

* - Not available w/ Wildcat Realizm models
 ** - Must be used if installing ServerRAID 6i+

Xeon 3.0GHz/2MB L2 Cache Proc Upgrade	25R8900
Xeon 3.2GHz/2MB L2 Cache Proc Upgrade	25R8901
Xeon 3.4GHz/2MB L2 Cache Proc Upgrade	13N0676
Xeon 3.6GHz/2MB L2 Cache Proc Upgrade	13N0677
Xeon 3.8GHz/2MB L2 Cache Proc Upgrade	13N0678
1GB PC2-3200 (2x512MB) CL3 ECC DDR2-SDRAM Double Rank	73P2865
2GB PC2-3200 (2x1GB) CL3 ECC DDR2-SDRAM Double Rank	73P2866
4GB PC2-3200 (2x2GB) CL3 ECC DDR2-SDRAM Double Rank	73P2877
4GB PC2-3200 (2x2GB) CL3 ECC DDR2-SDRAM Single Rank	73P4792
IBM 73.4GB 10K rpm Ultra320 SCSI HDD	32P0724
IBM 146GB 10K rpm Ultra320 SCSI HDD	32P0725
IBM 300GB 10K rpm Ultra320 SCSI HDD	32P0799
IBM 160GB 7.2K rpm SATA-150 HDD	73P8003
IBM 250GB 7.2K rpm SATA-150 HDD	73P8006
IBM 5Ux20D Tower-to-Rack Conversion Kit	13N2455
1.44MB Diskette Drive 1" Black Bezel 2-mode	18R9993

Other options at ibm.com/pc/us/accessories

- **Maximum internal disk capacity¹³:**
 SCSI: 1.2TB (4 disks x 300GB)
 SATA: 500GB (2 disks x 250GB), 1TB with optional ServRAID 7i (4 disks x 250GB)
- Removable left side panel
- BIOS Setup Utility via F1 at startup
- Adaptec Configuration Utility near startup by pressing CTRL+C
- Product Recovery Program via F11 at startup
- Adv Config Power Interface (ACPI) 1.0a
- DMI 2.2-compliant

- Metal cage for disk bays 4,5,6 rotates out of chassis
- Two front stabilizing feet
- Handle grip on top
- H 18.5" x W 8.5" x D 19.5"
- H 450mm x W 216mm x D 496mm
- 36 lb to 50 lb (16.3kg to 22.6kg)

SECURITY

- U-bolt anchoring feature (U-bolt is optional; supports optional padlock)
- Security slot (for attachment of optional cable lock such as Kensington cable lock)
- Cover key lock
- Cover tamper detect switch
- Secure fixed DASD
- Power-on password
- Administrator password
- Boot sequence control
- Boot without keyboard or mouse
- Diskette boot inhibit and write-protect
- Disable mouse
- Diskette, disk, serial port, parallel I/O control
- Secure access openings
- VPD stored in EEPROM
- Write protection control for EEPROM
- IBM Security Solutions

Choice of preinstalled OS:

Windows® XP Professional¹⁷ (32-bit); Red Hat® Enterprise Linux WS 3 (32-bit)

- Device Drivers and IBM Enhanced Diagnostics CD
- IBM IntelliStation Documentation CD
- Disk-to-Disk Recovery (in service partition)

LIMITED WARRANTY³

- **3 year parts and labor**
- **International Warranty Service³**
- **On site, 8 am through 5 pm, Mon through Fri excluding holidays, next business day response time**
- **On site warranty service upgrade options⁷ available as ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>**
- **24x7¹⁴ toll-free support for warranty issues during the warranty period¹**

IBM® Type-GAV-model	Processor & GHz ¹	L2	Memory	Disk & rpm	Disk controllers	Optical	Graphics adapter	FireWire bays	Slots x Preload ¹⁷	Available date
6223-3BU	1 x Xeon™3.0GHz	2MB	2x512MB	160GB ² SATA 7.2K	SATA,U320	Combo	Quadro® FX1400 128MB	1394 6x6	XP 32	May 2006
6223-4BU	1 x Xeon	3.2GHz	2MB 2x1GB	160GB SATA 7.2K	SATA,U320	Combo	Quadro NVS 285 64MB	1394 6x6	XP 32	May 2006
6223-5BU	1 x Xeon	3.4GHz	2MB 2x1GB	160GB SATA 7.2K	SATA,U320	Combo	Quadro FX1400 128MB	1394 6x6	XP 64	May 2006
6223-5CU	2 x Xeon	3.4GHz	2MB 2x1GB	73GB SCSI 10K	SATA,U320	Combo	Quadro FX 3500 256MB	1394 6x6	XP 64	May 2006
6223-6BU	1 x Xeon	3.6GHz	2MB 2x1GB	160GB SATA 7.2K	SATA,U320	Combo	Quadro NVS 285 64MB	1394 6x6	XP 64	May 2006
6223-6CU	1 x Xeon	3.6GHz	2MB 2x1GB	73GB SCSI 10K	SATA,U320	Combo	Quadro FX1400 128MB	1394 6x6	XP 64	May 2006
6223-6DU	2 x Xeon	3.6GHz	2MB 2x1GB	73GB SCSI 10K	SATA,U320	Combo	Quadro FX1400 128MB	1394 6x6	RH4 U1	May 2006
6223-7BU	1 x Xeon	3.8GHz	2MB 2x1GB	160GB SATA 7.2K	SATA,U320	Combo	Quadro FX 3500 256MB	1394 6x6	XP 64	May 2006
6223-7CU	1 x Xeon	3.8GHz	2MB 2x1GB	73GB SCSI 10K	SATA,U320	Combo	Quadro FX 3500 256MB	1394 6x6	RH4 U1	May 2006
6223-7DU	2 x Xeon	3.8GHz	2MB 2x1GB	73GB SCSI 15K	SATA,U320	Combo	Quadro FX 4500 512MB	1394 6x6	XP 64	May 2006

Positioning Processor L2 cache Processor upgrade Implementation **Powerful multi-processor workstation with Intel® Extended Memory 64 Technology 1 or 2 x Intel Xeon at up to 3.8GHz with 800MHz (FSB) & Extended Memory 64 Technology (EM64T) 1MB or 2MB standard and maximum / at processor speed 2-way SMP / up to two Xeon Processors (same speed/cache size) Systemboard contains two Intel 604-pin micro-PGA2 ZIF sockets, six DIMM slots, six slots (one PCI Express, three PCI-X, 2 PCI), and integrated dual-channel SCSI, integrated SATA and gigabit ethernet**

Memory - std / max **1GB or 2GB std / 16GB^{13,21} max / two slots used / four slots available / PC2-3200 400MHz registered ECC DDR2-SDRAM DIMMs / six DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank]**

Memory - features **2-way memory interleave / dual-channel / Error Checking and Correcting (ECC) / single rank memory kits available to allow maximum utilization of system resources**

Graphics controller (one of following) (see IntelliStation Pro Graphics page for full graphics specifications) **• Performance 2D: NVIDIA® Quadro NVS 285 64MB PCI Express x16 • Advanced 3D: NVIDIA Quadro FX 1400 128MB PCI Express x16 • High-Advanced 3D: NVIDIA Quadro FX 3500 256MB PCI Express x16 • Extreme 3D: NVIDIA Quadro FX 4500 512MB PCI Express x16**

SATA controller SCSI controller **SATA-150 controller (150MB/sec / integrated in ICH5R / two connectors on planar / supports SATA HostRAID Adaptec® 7902 / dual-channel Ultra320 SCSI controller (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X / HostRAID supports RAID0(striping) & 1 (mirroring)**

SCSI channels and cables **Two 16-bit channels (one internal and one external) / Internal channel: one 3-drop 16-bit 68-pin LVD SCSI cable from systemboard to internal disks bays; External channel: Optionally available 1-drop 16-bit 68-pin LVD SCSI cable from systemboard to rear external 68-pin connector (option part number 24P7973)**

Cables **SATA models: Two SATA cables (1 drop) SCSI models: One or two SCSI cables (listed above), ALL: one 2-drop EIDE cable (to optical)**

Disk - features **Some: 80GB / SATA-150 / 7200 rpm / 9.0 ms seek; Some: 73.0GB Ultra320 SCSI / 10K rpm / 4.7 ms; All: S.M.A.R.T.⁵**

Rack support Chipset **5U⁴ rack mount support via tower-to-rack kit option Intel E7525 chipset / E7525 MCH (Memory Controller Hub) for PCI-Express x16(vid), Broadcom, PXH, ICH5R / PXH BUS A supports Adaptec 7902, 2 64-bit/100MHz PCI-X slots (5 & 6), BUS B supports one 64bit/133MHz PCI-X slot (4) / ICH5R for two 32-bit/33MHz PCI slots (slots 2 & 3), 1394a, SATA, 4xUSB(2.0), Low Pin Count Interface / NS PC87366 Super I/O off LPC interface**

Gigabit ethernet **One gigabit 10/100/1000 ethernet controller / Broadcom BCM5721 / full gigabit ethernet MAC and PHY layer functions / chip on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / Alert Standard Format 2.0 / one rear RJ-45 port**

Diskette / Optical **Diskette: optional / Optical: CD-RW/DVD-ROM Combo**

IEEE 1394(FireWire) **FireWire on planar / 1394a, 400Mbps, 6-pin port on rear, 4-pin port on front**

Audio **AC - 97 Audio, ADI1981B via ICH5r / internal speaker (use of audio line out requires powered speakers)**

Rear ports **Four USB (Ver 2.0), two 9-pin serial, parallel, keyboard, mouse, ethernet, audio line in, audio line out, mic in / 6-pin 1394**

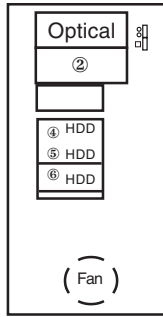
Front ports **Two USB (Ver 2.0), audio line out (stereo), mic in / 4-pin 1394**

Systems mgmt **Monitoring and alerting of thermal, fans, and voltage faults / Winbond® W791D**

Keyboard / mouse **IBM 104-key keyboard (6-pin PS/2) / IBM three button mouse (6-pin PS/2 conn)**

Cooling fans **Five variable speed fans (1 PCI, 1 HDD, 2 Fr, 1 PS) / not redundant or hot-swap**

Power supply **530 watts / universal / auto sensing / built-in overload and surge protection**



Bay ① 5.25", HH 1.6", access, optical
 Bay ② 5.25", HH 1.6", access, open
 Bay ③ 3.5", SL 1", access, open
 Bay ④ 3.5", SL 1", no access, disk
 Bay ⑤ 3.5", SL 1", no access, open
 Bay ⑥ 3.5", SL 1", no access, open

Slot 1: fullsize, PCI Express x16 (std vid)
 Slot 2: half-size, 32-bit 33MHz, PCI (5v)*
 Slot 3: half-size, 32-bit 33MHz, PCI (5v)
 Slot 4: fullsize, 64-bit 133MHz, PCI-X 1.0 (3.3v)
 Slot 5: fullsize, 64-bit 100MHz, PCI-X 1.0**(3.3v)
 Slot 6: fullsize, 64-bit 100MHz, PCI-X 1.0 (3.3v)

* - Not available w/ NVIDIA Quadro FX 4500 models
 ** - Must be used if installing ServerRAID 6i+

Xeon 3.0GHz/2MB L2 Cache Proc Upgrade	40K2515
Xeon 3.2GHz/2MB L2 Cache Proc Upgrade	40K2516
Xeon 3.4GHz/2MB L2 Cache Proc Upgrade	40K2517
Xeon 3.6GHz/2MB L2 Cache Proc Upgrade	40K2518
Xeon 3.8GHz/2MB L2 Cache Proc Upgrade	40K2519
1GB PC2-3200 (2x512MB) CL3 ECC DDR2-SDRAM Double Rank	73P2865
2GB PC2-3200 (2x1GB) CL3 ECC DDR2-SDRAM Double Rank	73P2866
4GB PC2-3200 (2x2GB) CL3 ECC DDR2-SDRAM Double Rank	73P2877
4GB PC2-3200 (2x2GB) CL3 ECC DDR2-SDRAM Single Rank	73P4792
IBM 73.4GB 10K rpm Ultra320 SCSI HDD	32P0724
IBM 146GB 10K rpm Ultra320 SCSI HDD	32P0725
IBM 300GB 10K rpm Ultra320 SCSI HDD	32P0799
IBM 160GB 7.2K rpm SATA-150 HDD	73P8003
IBM 250GB 7.2K rpm SATA-150 HDD	73P8006
IBM 5Ux20D Tower-to-Rack Conversion Kit	13N2455
1.44MB Diskette Drive 1" Black Bezel 2-mode	18R9993
Other options at ibm.com/pc/us/accessories	

- Maximum internal disk capacity¹³:
 SCSI: 1.2TB (4 disks x 300GB)
 SATA: 500GB (2 disks x 250GB), 1TB with optional ServRAID 7i (4 disks x 250GB)
- Removable left side panel
- BIOS Setup Utility via F1 at startup
- Adaptec Configuration Utility near startup by pressing CTRL+C
- Product Recovery Program via F11 at startup
- Adv Config Power Interface (ACPI) 1.0a
- DMI 2.2-compliant
- Metal cage for disk bays 4,5,6 rotates out of chassis
- Two front stabilizing feet
- Handle grip on top
- H 18.5" x W 8.5" x D 19.5"
- H 450mm x W 216mm x D 496mm
- 36 lb to 50 lb (16.3kg to 22.6kg)

SECURITY

- U-bolt anchoring feature (U-bolt is optional; supports optional padlock)
- Security slot (for attachment of optional cable lock such as Kensington cable lock)
- Cover key lock
- Cover tamper detect switch
- Secure fixed DASD
- Power-on password
- Administrator password
- Boot sequence control
- Boot without keyboard or mouse
- Diskette boot inhibit and write-protect
- Disable mouse
- Diskette, disk, serial port, parallel port I/O control
- Secure access openings
- VPD stored in EEPROM
- Write protection control for EEPROM
- IBM Security Solutions

Choice of Preinstalled¹⁷ OS:

- Windows® XP Pro x64 Edition (32-/64-bit); Red Hat® Enterprise Linux 4 WS (32-/64-bit)
- Device Drivers CD
- IBM IntelliStation Documentation CD
- Disk-to-Disk Recovery (in service partition)

LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am through 5 pm, Mon through Fri excluding holidays, next business day response time
- On site warranty service upgrade options⁷ available as ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period¹

See footnotes for important warranty information

IBM IntelliStation® Z Pro models (6865) - withdrawn

Type-model	Standard disk (rpm) ms seek / disk interface CD-ROM	Intel® Processor MHz¹ / Upgrade	Write-back L2 cache std / max KB / KB	Memory in MB; std/max¹³ 100MHz	SVGA controller; memory std / max (MB)	Bus slots P=PCI avail PCI/ISA=av A=AGP av	Total bays	Chipset Preload¹⁷	Available date	
7 slot x 7 bay; PCI/ISA/AGP; Stealth Gray										
⌘ 6865-20U	4.5GB² (7200) 7.5ms / Ultra Wide SCSI 32X-14X⁴ CD-ROM	1 x Xeon™ 450/100	SMP via 2nd Xeon	512/512 450MHz in SEC	128/ 2G SDRAM ECC	Millennium G200 AGP adapter 8/16MB WRAM	PCI=4 PCI/ISA=1 AGP=0	7 bays 3 used 4 empty	440GX Ethernet Windows NT 4.0	Oct 1998
⌘ 6865-21U	9.1GB (10K) 5.4ms / Wide Ultra2 SCSI 32X-14X CD-ROM	1 x Xeon 450/100	SMP via 2nd Xeon	512/512 450MHz in SEC	256/ 2G SDRAM ECC	Millennium G200 AGP adapter 8/16MB WRAM	PCI=4 PCI/ISA=1 AGP=0	7 bays 3 used 4 empty	440GX Ethernet Windows NT 4.0	Oct 1998
⌘ 6865-22U	9.1GB (10K) 5.4ms / Wide Ultra2 SCSI 32X-14X CD-ROM	SMP via 2 x Xeon 450/100	None	512/512 450MHz in SEC	256/ 2G SDRAM ECC	Millennium G200 AGP adapter 8/16MB WRAM	PCI=4 PCI/ISA=1 AGP=0	7 bays 3 used 4 empty	440GX Ethernet Windows NT 4.0	Oct 1998
⌘ 6865-25U	9.1GB (10K) 5.4ms / Wide Ultra2 SCSI 32X-14X CD-ROM	1 x Xeon 450/100	SMP via 2nd Xeon	512/512 450MHz in SEC	256/ 2G SDRAM ECC	3D Pro 3400 PCI adapter 32/32 MGRAM	PCI=3 PCI/ISA=1 AGP=1	7 bays 3 used 4 empty	440GX Ethernet Windows NT 4.0	Oct 1998
⌘ 6865-26U	9.1GB (10K) 5.4ms / Wide Ultra2 SCSI 32X-14X CD-ROM	1 x Xeon 450/100	SMP via 2nd Xeon	512/512 450MHz in SEC	256/ 2G SDRAM ECC	3D Pro 3400 + Geo Acceler 32/32M SGRAM	PCI=2 PCI/ISA=1 AGP=1	7 bays 3 used 4 empty	440GX Ethernet Windows NT 4.0	Oct 1998
⌘ 6865-27U	9.1GB (10K) 5.4ms / Wide Ultra2 SCSI 32X-14X CD-ROM	SMP via 2 x Xeon 450/100	None	512/512 450MHz in SEC	256/ 2G SDRAM ECC	3D Pro 3400 + Geo Acceler 32/32M SGRAM	PCI=2 PCI/ISA=1 AGP=1	7 bays 3 used 4 empty	440GX Ethernet Windows NT 4.0	Oct 1998
⌘ 6865-28U for AAP	<i>no disk</i> 32X-14X CD-ROM	1 x Xeon 450/100	SMP via 2nd Xeon	512/512 450MHz in SEC	256/ 2G SDRAM ECC	<i>None</i>	PCI=4 PCI/ISA=1 AGP=1	7 bays 2 used 5 empty	440GX Ethernet <i>No OS</i>	Oct 1998
IBM 450MHz Xeon Processor Upgrade			20L0240	128MB 100MHz ECC SDRAM DIMM (registered)			20L0256			
6.4GB Deskstar EIDE disk			01K1279	256MB 100MHz ECC SDRAM DIMM (registered)			01K1132			
6.4GB 7200 rpm EIDE disk			01K1329	512MB 100MHz ECC SDRAM DIMM (registered)			20L0257			
8.4GB Deskstar EIDE disk			01K1316	Matrox Millennium G200 AGP Graphics Adapter			10L7127			
9.1GB 7200 rpm EIDE disk			01K1330	Intergraph Intense 3D Pro 3400 Graphics Adapter			02K3460			
10.1GB 7200 rpm GXP EIDE disk			20L0548	Intergraph Intense 3D 3400 Geometry Accelerator			02K3461			
4.5GB 7200 rpm Wide Ultra SCSI disk			01K1327	All models: Maximum internal SCSI disk capacity¹³: 81.9GB via the following configurations: Four 18.2GB 10K rpm Wide Ultra2 SCSI disks + One 9.1GB 10K rpm Wide Ultra2 SCSI disk						
9.1GB 7200 rpm Wide Ultra SCSI disk			01K1328							
18.2GB 7200 rpm Wide Ultra SCSI disk			01K1323							
9.1GB 10000 rpm Wide Ultra2 SCSI disk			20L0539							
18.2GB 10000 rpm Wide Ultra2 SCSI disk			20L0540							
Windows NT Preload¹⁷		Ready to Configure CD-ROM								
Windows NT® Workstation 4.0 (SP3) Internet Explorer 4.0 IBM Welcome Center - IBM Utilities - Online Books Ready to install: - ConfigSafe for Windows NT 4.0 - IBM Universal Management Agent - IBM Manageability Tools - DMI Service Provider - DMI BIOS Instrumentation - IBM PC System Monitor Instrumentation - IBM AssetCare Serial Number Information - Norton AntiVirus™ for Windows NT - Hummingbird "Try and Buy" Suite CD-ROM - Ready to Configure CD-ROM - Free license for Lotus SmartSuite® CD-ROM - Product Recovery CD-ROM (preloads only) - IBM ViaVoice 98 Office CD-ROM - IBM Diagnostics CD-ROM - Access to IBM HomePage Creator		All models ship with a CD with drivers for Windows® 95, Windows 98 and Windows NT and various utilities. Includes: - IBM Universal Management Agent - IBM Global Network Dialer - ConfigSafe for NT 4.0 - Client Services for Netfinity - PC-Doctor for Windows NT 2.0.136 - Tivoli Lightweight Client Framework 1.2 - Diskette Factory - Device drivers for each subsystem - Utilities and applications on NT preload - Intel LANDesk® Client Manager 3.0 Authorized Assembler Program models AAP model(s) contain no hard disk. No preload or operating system license is included. - Hummingbird "Try and Buy" Suite CD-ROM - Ready to Configure CD-ROM - IBM ViaVoice 98 Office CD-ROM - Free license for Lotus SmartSuite CD-ROM (via 800 number) - IBM Enhanced Diagnostics CD-ROM								
C: is 2GB as FAT16 Remainder is unformatted										
Eth = Intel 10/100 ethernet chip; 10BaseT and 100BaseTX; Alert on LAN NT4 = Windows NT Workstation 4.0 preinstalled All models have Wide Ultra2 SCSI Adaptec AHA-2940U2W PCI Adapter; single channel SpeedFlex™ ⌘ Withdrawn from marketing										

WARRANTY SERVICE SUPPORT³

- ↪ 3 year parts warranty
- ↪ 1 year labor warranty
- ↪ International Warranty Service³
- ↪ 1st year: on site, 8 am - 5 pm, Mon - Fri coverage, 2nd business day response time
- ↪ 2nd/3rd year: parts exchange only, call 1-800-772-2227
- ↪ On site warranty upgrade options:
 - Next day response⁹ Mon-Fri 8-5
 - 4 hour response⁷, 7 day x 24 hr
- ↪ Post warranty: on site options above
- ↪ IBM SystemXtra®
- ↪ 24 hour / 7 day telephone, electronic, Internet (www.pc.ibm.com) support

IBM IntelliStation® Z Pro (6865) - withdrawn

IBM® IntelliStation® Z Pro

Type	6865	
Processor / MHz	One or two Intel® Pentium® II Xeon™ 450/100MHz¹ / 16 KB instruction + 16 KB data L1 cache	
Implementation	Processor and L2 cache in Single Edge Contact (SEC) cartridge in protective metal case / SEC plugged into Intel Slot 2	
Processor upgrade	SMP via second identical processor / upgrade via SEC into motherboard Intel Slot 2 CPU connector / MPS 1.4	
L2 cache	512 KB std / 512 KB max / ECC / full speed of processor / 4 way set associative / write-back / integrated in SEC	
Avail / withdrawn date	October 1998 / withdrawn March 1999 or June 1999	
Mem - std / max / type	128MB or 256MB std / 2GB max¹³ / Error Checking and Correction (ECC)	
Memory - sockets	4 sockets / 3 available (all have Error Checking and Correcting memory controller)	
Memory - features	SDRAM / 100 MHz / four 168 pin gold-plated DIMM 3.3 volt sockets / PC100-compliant / hardware scrubbing of ECC errors	
Memory - support	Supports registered SDRAM ECC DIMMs only (128, 256, 512MB)	
Graphics controller	Matrox® Millennium G200 (2D and value 3D), Intergraph® Intense 3D Pro 3400 (advanced 3D), or Intergraph Intense 3D Pro 3400 with Geometry and Lighting Accelerator (GA) (ultimate 3D)	
Graphics - type	Matrox Millennium G200 / AGP-2x 533MB/sec adapter	Intense 3D Pro 3400 / PCI adapter / 32MB std / 32MB max
Graphics - memory	8MB std / 16MB max / 142MHz, 128-bit SGRAM	16MB frame buffer (125MHz SDRAM) and
Graphics - features	Sideband addressing / split transactions 250 MHz RAMDAC / MGA-G200 128-bit DualBus chip Max 2D resolution of 1920x1200 in 24-bit color at 80Hz	16MB texture memory (SGRAM) Optional or std geometry accelerator (3D Pro 3400 GA) Max resolution of 1280x1024 at 16.7 million colors at 85Hz
Architecture - chip set	Intel 440GX AGPset / PIIX4E for EIDE (Ultra DMA/33), ISA Bridge, USB (82443GX PAC, 82371EB, 82093AA APIC) National Semiconductor® PC87307A Super I/O for diskette, parallel, serial, keyboard, mouse	
Bus slots	PCI 2.1 (33MHz, 32-bit), Accelerated Graphics Port (66MHz; AGP-2x; 533MB/sec), and ISA slots (8.33MHz) / see below	
Disk	None (AAP model) or one Wide Ultra or Ultra2 SCSI / SMART ⁵	
SCSI controller	Adaptec® AHA-2940U2W / PCI adapter / Wide Ultra2 SCSI / single channel with SpeedFlex™ (allows two electronically isolated SCSI bus segments; an Ultra2 80MB/sec and a Ultra 40MB/sec segment) / supports 15 devices on all 4 connectors	
SCSI connectors	<i>Internal:</i> ① 68-pin High-Density Ultra2 (used by 5 drop LVD cable to SCSI disk), ② 68-pin High-Density Ultra, ③ 50-pin High-Density Ultra; <i>External:</i> ④ 68-pin High-Density Ultra2 (on back of adapter) / only use Ultra devices on Port B	
Cables	SCSI: 5 drop Internal 16 bit LVD cable on port A; IDE: one 2 drop IDE cable (one drop to CD-ROM)	
EIDE disk controller	Enhanced IDE busmaster (PIIX4E) / Ultra DMA/33 (ATA-33) support / two connectors on planar	
CD-ROM	32X-14X⁶ CD-ROM / CAV (ATAPI) / bootable / 128KB buffer / 80ms average seek	
Diskette drive	3.5" 1.44 MB diskette drive / 1 drop cable	
Ethernet controller	Intel EtherExpress PRO/100B / PCI 82558 ethernet chip on planar / PCI bus 10BaseT and 100BaseTX / RJ45 UTP connector / Wake on LAN® / Alert on LAN	
LCCM support	LANClient Control Manager™ enabled / Wake on LAN / Setup over LAN / Hybrid RPL / DHCP/BOOTP / software image download	
Systems mgmt cntrl	LM81 compatible (Analog Devices® ADM9240) / hardware chip to monitor temperature, fan speeds, voltage, system cover removal / I ² C	
Audio	Crystal CS4235 chip on planar / stereo / ISA bus / FM Synthesis / int speaker	
Audio connectors	Stereo line in / mic in / line out (all in back) / software volume control	
Microphone	Headset with noise canceling microphone	
Serial / parallel / USB	<i>Ser:</i> Two 9 pin / 115 Kbps <i>Par:</i> One (EPP, ECP) / IEEE 1284 <i>USB:</i> Two ports	
Keyboard / Mouse	104 key (rubber dome) keyboard / keyboard extender / IBM 3 button mouse	
Power supply	330 watts / universal / auto-sensing / Wake on LAN	
	 <p>Bay ① 5.25", HH 1.6", access, std CD-ROM Bay ② 5.25", HH 1.6", access, open Bay ③ 3.5", SL 1", access, open Bay ④ 3.5", SL 1", access, std diskette Bay ⑤ 3.5", SL 1", no access, open (disk only) Bay ⑥ 3.5", SL 1", no access, open (disk only) Bay ⑦ 3.5", SL 1", no access, std disk (disk only)</p> <p>any two bays can be Half Height</p> <p>Slot 1: fullsize, 32 bit AGP (3.3v) - used by AGP graphics adapter (some models) Slot 2: fullsize, 32 bit PCI 2.1 (5v) Slot 3: fullsize, 32 bit PCI 2.1 (5v) - used by SCSI adapter Slot 4: fullsize, 32 bit PCI 2.1 (5v) Slot 5: fullsize, 32 bit PCI 2.1 (5v) - used by geometry accelerator (some models) Slot 6: fullsize, 32 bit PCI 2.1 (5v) - used by PCI graphics adapter (some models) Slot 7: fullsize, 16 bit ISA or 32 bit PCI 2.1 (5v)</p> <p>Mini tower; Stealth gray color</p>	<p>SECURITY</p> <ul style="list-style-type: none"> - Cover key lock (in rear) - Cover tamper detect switch - Secure fixed disk - Serial EEPROM with write protect - Power-on password - Administrator password - Keyboard/mouse password - Wake-Up on LAN password prompt - Boot sequence control - Boot without keyboard or mouse - Diskette boot inhibit - Disable mouse - Disable external SCSI port - Diskette write-protect - Diskette I/O control - Hard disk I/O control - Serial/parallel port I/O control - Secure access openings - Secure removable media - VPD stored in EEPROM - Write protection for EEPROM <p>Remotely readable DMI-compliant:</p> <ul style="list-style-type: none"> - System EEPROM on motherboard (info and serial no for CPU, riser, system unit, CD-ROM, diskette, empty blank fields); also can read/write with external RF unit - EEPROMs on DIMMs (component info, serial no) - Disk firmware (component info, serial no)
Alert on LAN™ - provides local or remote monitoring; immediate notification of system events such as chassis intrusion, disconnect, start up errors, even if powered off	The Setup Utility resides in flash memory; invoked by pressing F1 key during memory POST	Power management features:
Asset ID™.16 (RFID) - uses radio frequency (RF) technology for deployment, inventory, and security; includes EEPROM that can be accessed via DMI software through network or an external RF link such as hand-held RF read/write units; supports theft protection	Advanced Power Mgmt 1.2	- Configurable levels for system, CPU, and monitor including powering system and/or display off
SMART Reaction™ - automatic backup of disk	Support for DMI technology (includes MIF browser) with DMI Service Layer 2.0, DMI BIOS 2.1, and DMI software; DMI 2.0 compliant	- Wake Up on Ring (via modem) from off state
PC 97 compliant	Plug-and-Play 1.0a	- Wake Up on Alarm (scheduled time) from off state
DMI 2.0 compliant with DMI manageability chip	ISO 9241-3 capable	- Wake-on-LAN from off state
Wired for Management 1.1a	Vital Product Data support (type, model, serial, id) 7.87"W x 18.10"D x 19.37"H; 45 lbs max (shipped)	- PCI Wake Up from supported PCI devices
Adv Config and Power Interface (ACPI) 1.04	200 mm W x 460 mm D x 492 mm H; 20.4 kg	
	Several hardcopy publications; four stabilizing feet	
	512 KB SurePath BIOS (Flash over LAN support)	
	Supplier's Declaration available	
	Boot support for LS120, ZIP, CD-ROM, or DVD	Four variable speed fans (three in system (two in front; one in back) and one in power supply)

IBM IntelliStation® Z Pro - 1999 (6865) - withdrawn

Type-model	Standard disk (rpm) ms seek / disk interface CD-ROM	Intel® Processor MHz¹ / Upgrade	L2 cache Per CPU std / max KB / KB	Memory in MB; std/max¹³ 100MHz	SVGA controller; memory std / max (MB)	Bus slots P=PCI avail PCI/ISA=av A=AGP av	Total bays	Chipset Ethernet Preload¹⁷	Available date	
7 slot x 7 bay; PCI/ISA/AGP; Stealth Black										
ⓧ 6865-30U	9.1GB² (7200) 7.5ms / Wide Ultra2 SCSI 40X-17X CD-ROM	1 x Pentium® III Xeon™ 500/100	SMP via 2nd Proc	512 / 512 full speed in SEC	128/ 2G SDRAM ECC	Millennium G200 AGP 2X adapter 8/16MB WRAM	PCI=4 PCI/ISA=1 AGP=0	7 bays 3 used 4 empty	440GX Ethernet Windows NT 4.0	Mar 1999
ⓧ 6865-36U	9.1GB (10K) 6.0ms / Wide Ultra2 SCSI 40X-17X CD-ROM	1 x Pentium III Xeon 500/100	SMP via 2nd Proc	512 / 512 full speed in SEC	256/ 2G SDRAM ECC	Wildcat 4000 RA Wildcat 4000 GA 88/88MB SDRAM	PCI=3 PCI/ISA=1 AGP=0	7 bays 3 used 4 empty	440GX Ethernet Windows NT 4.0	Mar 1999
ⓧ 6865-38U for AAP	<i>no disk</i> Wide Ultra2 SCSI 40X-17X CD-ROM	1 x Pentium III Xeon 500/100	SMP via 2nd Proc	512 / 512 full speed in SEC	256/ 2G SDRAM ECC	<i>None</i>	PCI=4 PCI/ISA=1 AGP=0	7 bays 2 used 5 empty	440GX Ethernet Windows NT 4.0	Mar 1999
ⓧ 6865-40U	9.1GB (7200) 7.5ms / Wide Ultra2 SCSI 40X-17X CD-ROM	1 x Pentium III Xeon 550/100	SMP via 2nd Proc	512 / 512 full speed in SEC	128/ 2G SDRAM ECC	Millennium G200 AGP 2X adapter 8/16MB WRAM	PCI=4 PCI/ISA=1 AGP=0	7 bays 3 used 4 empty	440GX Ethernet Windows NT 4.0	May 1999
ⓧ 6865-43U	13.5GB (7200) 9.0ms / EIDE / ATA-33 40X-17X CD-ROM	SMP via 2 x Pentium III Xeon 550/100	None	512 / 512 full speed in SEC	256/ 2G SDRAM ECC	Millennium G200 AGP 2X adapter 8/16MB WRAM	PCI=5 PCI/ISA=1 AGP=0	7 bays 3 used 4 empty	440GX Ethernet Windows NT 4.0	May 1999
ⓧ 6865-45U	9.1GB (10K) 6.0ms / Wide Ultra2 SCSI 40X-17X CD-ROM	1 x Pentium III Xeon 550/100	SMP via 2nd Proc	512 / 512 full speed in SEC	256/ 2G SDRAM ECC	IBM Fire GL1¹¹ AGP 2X adapter 32/32MB SGRAM	PCI=4 PCI/ISA=1 AGP=0	7 bays 3 used 4 empty	440GX Ethernet Windows NT 4.0	May 1999
ⓧ 6865-46U	9.1GB (10K) 6.0ms / Wide Ultra2 SCSI 40X-17X CD-ROM	1 x Pentium III Xeon 550/100	SMP via 2nd Proc	512 / 512 full speed in SEC	256/ 2G SDRAM ECC	Wildcat 4000 RA Wildcat 4000 GA 88/88MB SDRAM	PCI=3 PCI/ISA=1 AGP=0	7 bays 3 used 4 empty	440GX Ethernet Windows NT 4.0	May 1999
ⓧ 6865-48U for AAP	<i>no disk</i> Wide Ultra2 SCSI 40X-17X CD-ROM	1 x Pentium III Xeon 550/100	SMP via 2nd Proc	512 / 512 full speed in SEC	256/ 2G SDRAM ECC	<i>None</i>	PCI=4 PCI/ISA=1 AGP=0	7 bays 2 used 5 empty	440GX Ethernet Windows NT 4.0	May 1999
ⓧ 6865-41U	9.1GB (7200) 7.5ms / Wide Ultra2 SCSI 40X-17X CD-ROM	1 x Pentium III Xeon 550/100	SMP via 2nd Proc	512 / 512 full speed in SEC	128/ 2G SDRAM ECC	Millennium G400 AGP 2X adapter 16/16MB WRAM	PCI=4 PCI/ISA=1 AGP=0	7 bays 3 used 4 empty	440GX Ethernet Windows NT 4.0	July 1999
ⓧ 6865-42U	9.1GB (10K) 6.0ms / Wide Ultra2 SCSI 40X-17X CD-ROM	SMP via 2 x Pentium III Xeon 550/100	None	512 / 512 full speed in SEC	256/ 2G SDRAM ECC	Millennium G400 AGP 2X adapter 16/16MB WRAM	PCI=4 PCI/ISA=1 AGP=0	7 bays 3 used 4 empty	440GX Ethernet Windows NT 4.0	July 1999
ⓧ 6865-49U for AAP	<i>no disk</i> Wide Ultra2 SCSI 40X-17X CD-ROM	1 x Pentium III Xeon 550/100	SMP via 2nd Proc	512/512 full speed in SEC	0 / 2GB SDRAM ECC	<i>None</i>	PCI=4 PCI/ISA=1 AGP=0	7 bays 2 used 5 empty	440GX Ethernet Windows NT 4.0	Oct 1999

IBM 500MHz/512KB L2 Pentium III Second Processor	33L5059
IBM 550MHz/512KB L2 Pentium III Second Processor	33L5060
6.4GB 7200 rpm EIDE disk	01K1329
9.1GB 7200 rpm EIDE disk	01K1330
10.1GB 7200 rpm EIDE disk	33L4958
13.5GB 7200 rpm EIDE disk	33L5043
9.1GB 7200 rpm Wide Ultra2 SCSI disk	20L0553
18.2GB 7200 rpm Wide Ultra2 SCSI disk	20L0554
9.1GB 10000 rpm Wide Ultra2 SCSI disk	20L0539
18.2GB 10000 rpm Wide Ultra2 SCSI disk	20L0540

128MB 100MHz ECC SDRAM DIMM (registered)	20L0256
256MB 100MHz ECC SDRAM DIMM (registered)	01K1132
512MB 100MHz ECC SDRAM DIMM (registered)	20L0257
Matrox Millennium G400 AGP Graphics Adapter	33L5137
IBM Fire GL1 Graphics Adapter	33L5032

All models: Maximum internal SCSI disk capacity¹³:
91.0GB via the following configuration:
Five 18.2GB 10K rpm Wide Ultra2 SCSI disks

Windows NT Preload¹⁷

Windows NT® Workstation 4.0 (SP4)
IBM Welcome Center
Ready to install:

- ConfigSafe®
- IBM Universal Management Agent™
- IBM Manageability Tools
- DMI Service Provider
- DMI BIOS Instrumentation
- IBM PC System Monitor Instrumentation
- IBM AssetCare Serial Number Information
- Norton AntiVirus™ for Windows NT
- Hummingbird "Try and Buy" Suite CD-ROM
- Ready to Configure CD-ROM
- Free license for Lotus SmartSuite® CD-ROM
- Product Recovery CD-ROM (preloads only)
- IBM ViaVoice 98 Office CD-ROM
- IBM Diagnostics CD-ROM
- Access to IBM HomePage Creator

C: is 2GB as FAT16
Remainder is unformatted

Ready to Configure CD-ROM

All models ship with a CD with drivers for Windows® 98 and Windows NT and various utilities.
Includes:

- IBM Global Network Dialer
- ConfigSafe for NT 4.0
- Client Services for Netfinity
- PC-Doctor for Windows NT 2.0.136
- Tivoli Lightweight Client Framework 1.2
- Device drivers for each subsystem
- Utilities and applications on NT preload
- Intel LANdesk® Client Manager 3.0

Authorized Assembler Program models

AAP model(s) contain no hard disk.
No preload or operating system license is included.

- Hummingbird "Try and Buy" Suite CD-ROM
- Ready to Configure CD-ROM
- IBM ViaVoice 98 Office CD-ROM
- Free license for Lotus SmartSuite CD-ROM
- IBM Enhanced Diagnostics CD-ROM

WARRANTY SERVICE SUPPORT³

- ↪ 3 year parts warranty
- ↪ 1 year labor warranty
- ↪ International Warranty Service³
- ↪ 1st year: on site, 8 am - 5 pm, Mon - Fri coverage, 2nd business day response time
- ↪ 2nd/3rd year: parts exchange only, call 1-800-772-2227
- ↪ On site warranty upgrade options:
 - Next day response¹⁴ Mon-Fri 8-5
 - 4 hour response⁷, 7 day x 24 hr
- ↪ Post warranty: on site options above
- ↪ IBM SystemXtra®
- ↪ 24 hour / 7 day telephone, electronic, Internet (www.pc.ibm.com) support

Ethernet = Intel 10/100 ethernet chip; 10BaseT and 100BaseTX; Alert on LAN
All models (except 43U) have Wide Ultra2 SCSI Adaptec AHA-2940U2W PCI Adapter
ⓧ = Models announced September 14, 1999
ⓧ = Withdrawn from marketing

IBM IntelliStation® Z Pro - 1999 (6865) - withdrawn

IBM® IntelliStation® Z Pro

Type	6865	
Processor / MHz	One or two Intel® Pentium® III Xeon™ 500 or 550MHz¹ / 100MHz front side bus	
Implementation	Processor and L2 cache in Single Edge Contact (SEC) cartridge in protective metal case / SEC plugged into Intel Slot 2	
Processor upgrade	SMP via second identical processor / upgrade via SEC into motherboard Intel Slot 2 CPU connector / MPS 1.4	
L2 cache	512KB std / 512KB max / ECC / full speed of processor / 4 way set associative / write-back / integrated in SEC	
Avail / withdrawn date	March 1999 or May 1999 or July or September 1999 / September 1999 or November 1999 or February 2000 or May 2000	
Mem - std / max / type	128MB or 256MB std / 2GB max¹³ / Error Checking and Correction (ECC)	
Memory - sockets	4 sockets / 3 available (all have Error Checking and Correcting memory controller)	
Memory - features	SDRAM / 100MHz / four 168 pin gold-plated DIMM 3.3 volt sockets / PC100-compliant / hardware scrubbing of ECC errors	
Memory - support	Supports registered SDRAM ECC DIMMs only (128, 256, 512MB)	
Graphics controller	Millennium G200-D or G400 (performance 2D), IBM Fire GL1 (perform 2D/3D), or Intergraph 3D Wildcat 4000 RA w/ Geometry Accelerator GA (extreme 3D)	Intergraph® 3D Wildcat 4000 RA / 32-bit 33MHz PCI 2.1 adapter / 16MB 128-bit 143MHz SDRAM (frame buffer) and 64MB 128-bit 143MHz SDRAM (texture memory) / 2D and 3D engine
	Matrox® Millennium G200-D / AGP 2X adp / 8MB std / 16MB max / 142MHz SGRAM / Sideband addressing / split transactions / 250MHz RAMDAC / 128-bit DualBus chip / Max 2D resolution of 1920x1200 in 24-bit color at 80Hz	IBM Fire GL1 / AGP 2X adapter / Sideband-capable / split transactions / 32MB std / 32MB max / SGRAM / 250MHz RAMDAC / Max resolution of 1600x1200 at 85Hz or 1920x1200 at 75Hz
	Matrox Millennium G400 / AGP 2X adapter / 16MB std / 16MB max / 166MHz SGRAM / sideband addressing / 250MHz RAMDAC / 256-bit DualBus chip / max 2D resolution of 2048x1536 / supports 1280x1024x16.7 million at 100Hz	
Architecture - chip set	Intel 440GX AGPset / PIIX4E for EIDE (Ultra DMA/33), ISA Bridge, USB (82443GX PAC, 82371EB, 82093AA APIC) National Semiconductor® PC87307A Super I/O for diskette, parallel, serial, keyboard, mouse	
Bus slots	PCI 2.1 (33MHz, 32-bit), Accelerated Graphics Port (66MHz; AGP 2X; 533MB/sec), and ISA slots (8MHz) / see below	
Disk	None (AAP model), one EIDE, or one Ultra2 SCSI / SMART ⁵	
SCSI controller	<i>Some models:</i> Adaptec® AHA-2940U2W / PCI adapter / Wide Ultra2 SCSI / single channel with SpeedFlex™ (allows two isolated SCSI bus segments; an Ultra2 80MB/sec and a Ultra 40MB/sec segment) / supports 15 devices on all 4 connectors	
SCSI connectors	<i>Internal:</i> ① 68-pin High-Density Ultra2 (used by 5 drop LVD cable to SCSI disk), ② 68-pin High-Density Ultra, ③ 50-pin High-Density Ultra; <i>External:</i> ④ 68-pin High-Density Ultra2 (on back of adapter) / only use Ultra devices on Port B	
Cables	<i>SCSI:</i> 5 drop Internal 16-bit LVD cable on port A; <i>IDE:</i> one 2 drop IDE cable (one drop to CD-ROM)	
EIDE disk controller	Enhanced IDE busmaster (PIIX4E) / Ultra DMA/33 (ATA-33) support / two connectors on planar	
CD-ROM	40X-17X® CD-ROM / CAV (ATAPI) / bootable / 128KB buffer / 90ms avg access	<p style="text-align: center;">SECURITY</p> <ul style="list-style-type: none"> - Cover key lock (in rear) - Cover tamper detect switch - Secure fixed disk - Serial EEPROM with write protect - Power-on password - Administrator password - Keyboard/mouse password - Wake-Up on LAN password prompt - Boot sequence control - Boot without keyboard or mouse - Diskette boot inhibit - Disable mouse - Disable external SCSI port - Diskette write-protect - Diskette I/O control - Hard disk I/O control - Serial/parallel port I/O control - Secure access openings - Secure removable media - VPD stored in EEPROM - Write protection for EEPROM
Diskette drive	3.5" 1.44MB diskette drive / 1 drop cable	
Ethernet controller	Intel EtherExpress PRO/100B / PCI 82558 ethernet chip on planar / PCI bus 10BaseT and 100BaseTX / RJ45 UTP connector / Wake on LAN® / Alert on LAN	
LCCM support	LANClient Control Manager® enabled / Wake on LAN / Setup over LAN / Hybrid RPL / DHCP/BOOTP / software image download	
Systems mgmt cntrl	LM81-compatible (Analog Devices ADM9240) / hardware chip to monitor temperature, fan speeds, voltage, system cover removal / I ² C	
Audio	Crystal CS4235 chip on planar / stereo / ISA bus / FM Synthesis / int speaker	
Audio connectors	Stereo line in / mic in / line out (all in back) / software volume control	
Microphone	Headset with noise canceling microphone	
Serial / parallel / USB	<i>Ser:</i> Two 9 pin / 115 Kbps <i>Par:</i> One (EPP, ECP) / IEEE 1284 <i>USB:</i> Two ports	
Keyboard / mouse	104 key (rubber dome) keyboard / keyboard extender / IBM 3 button mouse	
Cooling fans	Four variable speed fans (two in front, one in back, one in power supply)	
Power supply	330 watts / universal / auto-sensing / Wake on LAN	
	 <p>Bay ① 5.25", HH 1.6", access, std CD-ROM Bay ② 5.25", HH 1.6", access, open Bay ③ 3.5", SL 1", access, open Bay ④ 3.5", SL 1", access, std diskette Bay ⑤ 3.5", SL 1", no access, open (disk only) Bay ⑥ 3.5", SL 1", no access, open (disk only) Bay ⑦ 3.5", SL 1", no access, std disk (disk only)</p> <p>any two bays can be Half Height</p> <p>Slot 1: fullsize, 32-bit AGP (3.3v) - used by AGP graphics adapter Slot 2: fullsize, 32-bit PCI 2.1 (5v) - used by Wildcat 4000 RA adapter (some models) Slot 3: fullsize, 32-bit PCI 2.1 (5v) - used by SCSI adapter (some models) Slot 4: fullsize, 32-bit PCI 2.1 (5v) Slot 5: fullsize, 32-bit PCI 2.1 (5v) Slot 6: fullsize, 32-bit PCI 2.1 (5v) Slot 7: fullsize, 16-bit ISA or 32 bit PCI 2.1 (5v)</p>	<p>Remotely readable DMI-compliant:</p> <ul style="list-style-type: none"> - System EEPROM on motherboard (info and serial no for CPU, riser, system unit, CD-ROM, diskette, empty blank fields); also can read/write with external RF unit - EEPROMs on DIMMs (component info, serial no) - Disk firmware (component info, serial no) <p>Power management features:</p> <ul style="list-style-type: none"> - Configurable levels for system, CPU, and monitor including powering system and/or display off - Wake Up on Ring (via modem) from off state - Wake Up on Alarm (scheduled time) from off state - Wake-on-LAN from off state - PCI Wake Up from supported PCI devices <p>Four variable speed fans (three in system (two in front; one in back) and one in power supply)</p>
Alert on LAN™ - provides local or remote monitoring; immediate notification of system events such as chassis intrusion, disconnect, start up errors, even if powered off	The Setup Utility resides in flash memory; invoked by pressing F1 key during memory POST	
Asset ID™.16 (RFID) - uses radio frequency (RF) technology for deployment, inventory, and security; includes EEPROM that can be accessed via DMI software through network or an external RF link such as hand-held RF read/write units; supports theft protection	Advanced Power Mgmt 1.2	
SMART Reaction™ - automatic backup of disk	Support for DMI technology (includes MIF browser) with DMI Service Layer 2.0, DMI BIOS 2.1, and DMI software; DMI 2.0 compliant	
PC 97 compliant	Plug-and-Play 1.0a	
DMI 2.0 compliant with DMI manageability chip	ISO 9241-3 capable	
Wired for Management 1.1a	Vital Product Data support (type, model, serial, id)	
Adv Config and Power Interface (ACPI) 1.04	7.87"W x 18.10"D x 19.37"H; 45 lbs max (shipped)	
Universal Management Agent support	200 mm W x 460 mm D x 492 mm H; 20.4 kg	
	Several hardcopy publications; four stabilizing feet	
	512KB SurePath BIOS (Flash over LAN support)	
	Supplier's Declaration available	
	Boot support for LS120, ZIP, CD-ROM, or DVD	

IBM IntelliStation® Z Pro (6866) - withdrawn

Type-model	Standard disk (rpm) ms read seek / inter CD-ROM ⁶	Intel® Processor MHz ¹ ; 2-way SMP support	Write-back L2 cache standard	Rambus memory; std MB / type; memory card; devices / RIMMs	Graphics controller in AGP Pro110 slot; adapter memory std / max ¹³	Total bus slots available	Total bays	Ethernet / SCSI Chip set Preload ¹⁷	Avail- able date
Mini Tower; 7 slot x 9 bay; Stealth Black - US models									
6866-11U	9.1GB ² (10K) 5 ms / Ultra160 48X-20X ⁴ CD-ROM	1 x Pentium® III Xeon™ 667/133	SMP via 2nd Proc	256KB full spd	256MB / PC600 4 slot mem card Two 8D RIMMs	Millennium G400 AGP 4X adapter 16/16MB SGRAM	PCI=6 AGP 110=0	3 used 6 empty	eth / SCSI Feb 840 / NT 4.0 2000
6866-14U	9.1GB (10K) 5 ms / Ultra160 48X-20X CD-ROM	1 x Pentium III Xeon 667/133	SMP via 2nd Proc	256KB full spd	256MB / PC600 8 slot mem card Two 8D RIMMs	ELSA™ Gloria II AGP 4X adapter 64/64MB SDRAM	PCI=6 AGP 110=0	3 used 6 empty	eth / SCSI Feb 840 / NT 4.0 2000
6866-15U	9.1GB (10K) 5 ms / Ultra160 48X-20X CD-ROM	1 x Pentium III Xeon 667/133	SMP via 2nd Proc	256KB full spd	256MB / PC600 4 slot mem card Two 8D RIMMs	IBM Fire GL1 ¹¹ AGP 2X adapter 32/32MB SGRAM	PCI=6 AGP 110=0	3 used 6 empty	eth / SCSI Feb 840 / NT 4.0 2000
6866-24U	9.1GB (10K) 5 ms / Ultra160 48X-20X CD-ROM	1 x Pentium III Xeon 733/133	SMP via 2nd Proc	256KB full spd	256MB / PC600 8 slot mem card Two 8D RIMMs	ELSA Gloria II AGP 4X adapter 64/64MB SDRAM	PCI=6 AGP 110=0	3 used 6 empty	eth / SCSI Feb 840 / NT 4.0 2000
6866-25U	9.1GB (10K) 5 ms / Ultra160 48X-20X CD-ROM	1 x Pentium III Xeon 733/133	SMP via 2nd Proc	256KB full spd	256MB / PC600 4 slot mem card Two 8D RIMMs	IBM Fire GL1 AGP 2X adapter 32/32MB SGRAM	PCI=6 AGP 110=0	3 used 6 empty	eth / SCSI Feb 840 / NT 4.0 2000
6866-16U	18.2GB (10K) 5 ms / Ultra160 48X-20X CD-ROM	1 x Pentium III Xeon 667/133	SMP via 2nd Proc	256KB full spd	256MB / PC600 8 slot mem card Two 8D RIMMs	Wildcat 4110 AGP 2X adapter 128/128MB SDRAM	PCI=6 AGP 110=0	3 used 6 empty	eth / SCSI Feb 840 / NT 4.0 2000
6866-21U	9.1GB (10K) 5 ms / Ultra160 48X-20X CD-ROM	1 x Pentium III Xeon 733/133	SMP via 2nd Proc	256KB full spd	256MB / PC600 4 slot mem card Two 8D RIMMs	Millennium G400 AGP 4X adapter 16/16MB SGRAM	PCI=6 AGP 110=0	3 used 6 empty	eth / SCSI Feb 840 / NT 4.0 2000
6866-26U	18.2GB (10K) 5 ms / Ultra160 48X-20X CD-ROM	1 x Pentium III Xeon 733/133	SMP via 2nd Proc	256KB full spd	512MB / PC600 8 slot mem card Two 16D RIMMs	Wildcat 4110 AGP 2X adapter 128/128MB SGRAM	PCI=6 AGP 110=0	3 used 6 empty	eth / SCSI Feb 840 / NT 4.0 2000
6866-27U	18.2GB (10K) 5 ms / Ultra160 48X-20X CD-ROM	SMP via 2 x Pentium III Xeon 733/133	None	256KB full spd	512MB / PC600 8 slot mem card Two 16D RIMMs	Wildcat 4110 AGP 2X adapter 128/128MB SGRAM	PCI=6 AGP 110=0	3 used 6 empty	eth / SCSI Feb 840 / NT 4.0 2000
6866-30U	9.1GB (10K) 5 ms / Ultra160 48X-20X CD-ROM	1 x Pentium III Xeon 800EB/133	SMP via 2nd Proc	256KB full spd	256MB / PC600 4 slot mem card Two 8D RIMMs	Millennium G400 AGP 4X adapter 16/16MB SGRAM	PCI=6 AGP 110=0	3 used 6 empty	eth / SCSI Feb 840 / NT 4.0 2000
6866-31U	18.2GB (10K) 5 ms / Ultra160 48X-20X CD-ROM	1 x Pentium III Xeon 800EB/133	SMP via 2nd Proc	256KB full spd	512MB / PC600 8 slot mem card Two 16D RIMMs	Wildcat 4110 AGP 2X adapter 128/128MB SGRAM	PCI=6 AGP 110=0	3 used 6 empty	eth / SCSI Feb 840 / NT 4.0 2000
6866-19U for AAP	<i>no disk</i> 48X-20X CD-ROM	1 x Pentium III Xeon 667/133	SMP via 2nd Proc	256KB full spd	<i>None</i> 4 slot mem card	<i>None</i>	PCI=6 AGP 110=1	2 used 7 empty	eth / SCSI Feb 840 / No OS 2000
6866-29U for AAP	<i>no disk</i> 48X-20X CD-ROM	1 x Pentium III Xeon 733/133	SMP via 2nd Proc	256KB full spd	<i>None</i> 4 slot mem card	<i>None</i>	PCI=6 AGP 110=1	2 used 7 empty	eth / SCSI Feb 840 / No OS 2000
6866-38U for AAP	<i>no disk</i> 48X-20X CD-ROM	1 x Pentium III Xeon 800EB/133	SMP via 2nd Proc	256KB full spd	<i>None</i> 4 slot mem card	<i>None</i>	PCI=6 AGP 110=1	2 used 7 empty	eth / SCSI Feb 840 / No OS 2000
6866-40U	9.1GB (10K) 5 ms / Ultra160 48X-20X CD-ROM	1 x Pentium III Xeon 866/133	SMP via 2nd Proc	256KB full spd	256MB / PC600 4 slot mem card Two 8D RIMMs	Millennium G400 AGP 4X adapter 16/16MB SGRAM	PCI=6 AGP 110=0	3 used 6 empty	eth / SCSI Apr 840 / NT 4.0 2000
6866-41U	18.2GB (10K) 5 ms / Ultra160 48X-20X CD-ROM	1 x Pentium III Xeon 866/133	SMP via 2nd Proc	256KB full spd	512MB / PC600 8 slot mem card Two 16D RIMMs	Wildcat 4110 AGP 2X adapter 128/128MB SGRAM	PCI=6 AGP 110=0	3 used 6 empty	eth / SCSI Apr 840 / NT 4.0 2000
6866-48U for AAP	<i>no disk</i> 48X-20X CD-ROM	1 x Pentium III Xeon 866/133	SMP via 2nd Proc	256KB full spd	<i>None</i> 4 slot mem card	<i>None</i>	PCI=6 AGP 110=1	2 used 7 empty	eth / SCSI Apr 840 / No OS 2000

<p>Windows NT Preload¹⁷</p> <p>Windows NT® Workstation 4.0 (SP5) ConfigSafe for Windows NT Access IBM Other utilities, drivers, and applications - Free license for Lotus® SmartSuite® Millennium - Free license for Lotus Notes® Client Software Selections CD-ROM - Norton AntiVirus™ (OEM edition) - CoSession Remote 32 - IBM Update Connector™ - IBM Internet Connection - IBM Universal Manageability Services - IBM UM Desktop Extensions - PC-Doctor Windows NT Product Recovery CD-ROM Device Drivers and Diagnostics CD-ROM - C: is 2GB as FAT16 - Remainder of disk is unformatted</p>	<p>Options</p> <p>Xeon Pentium III 667MHz Second Proc 10K2339 Xeon Pentium III 733MHz Second Proc 10K3800 Xeon Pentium III 800MHz Second Proc 10K3801 Xeon Pentium III 866MHz Second Proc 10K3811 64MB 600MHz ECC RDRAM (4 Dev) 33L3093 128MB 600MHz ECC RDRAM (8 Dev) 33L3095 256MB 600MHz ECC RDRAM (16 Dev) 33L3097 64MB 800MHz ECC RDRAM (4 Dev) 20L0274 128MB 800MHz ECC RDRAM (8 Dev) 20L0275 256MB 800MHz ECC RDRAM (16 Dev) 20L0277 IBM IDE 8X DVD-ROM (black) 33L5016 IBM IDE ReWritable CD-RW (black) 33L5005 250MB Internal ZIP Drive (black) 00N8078 18.2GB 7200 rpm Wide Ultra2 SCSI disk 20L0554 18.2GB 10000 rpm Wide Ultra2 SCSI 00N8072 IBM Rack Mount Kit 10L7006</p> <p>Visit www.ibm.com/options for a complete list of compatible options</p>	<p>WARRANTY SERVICE SUPPORT³</p> <p>↪ 3 year parts and labor warranty ↪ International Warranty Service³ ↪ On site, 8 am through 5 pm, Mon through Fri excluding holidays, next business day response time ↪ On site warranty upgrade option: • 4 hour response¹⁴, 7 day x 24 hr ↪ Post warranty on site options: • Next day response¹⁴, Mon-Fri 8-5 • 4 hour response¹⁴, 7 day x 24 hr ↪ IBM SystemXtra® ↪ 24 hour x 7 day telephone, electronic, and Internet support</p>
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All trademarks are the property of their respective owners
Models announced January 25 or March 20, 2000

No warranties are expressed or implied in this summary
(6866 - Page 1 of 2) © IBM Corp. January 2001

IBM IntelliStation® Z Pro (6866) - withdrawn

IBM® IntelliStation® Z Pro					
Type	6866				
Processor(s)	One or two Intel® Pentium® III Xeon™ 667, 733, or 800EB, or 866MHz / 133MHz Front Side Bus				
Implementation	Processor and L2 cache in Single Edge Contact Cartridge (SECC) in protective metal case / plugged into Intel Slot 2				
Processor upgrade	2-way SMP via identical processor / upgrade via second SECC into second motherboard Slot 2 connector / MPS 1.4				
L2 cache	256KB std and max / ECC / at processor speed / 8-way set associative / write-back / integrated in SECC2				
Avail / withdrawn date	February 2000 or April 2000 / some withdrawn June 2000; others November 2000				
Memory	256 or 512MB std / two or four RDRAM (Rambus) channels / 32 devices max each channel / 840 supports 4GB max ¹³ <i>Some:</i> 4 slot memory card with two RDRAM channels and max of 4x256MB=1GB / C-RIMMs required in empty slots <i>Some:</i> 8 slot memory card with four RDRAM channels and max of 8x256MB=2GB) / 82803 Memory Repeater Hub (MRH-R) converts each channel into two channels (2x2=4 channels total) / C-RIMMs req in empty sockets; except channel 3 and 4 can be totally empty if channel 3 is not used ECC memory controller and RIMMs / 184-pin gold-plated RIMM sockets / supports PC600 or PC800 RIMMs (not PC700) / all installed RIMMs must be same speed (PC600 or PC800) and installed in pairs across channels / 2.5v				
Graphics controller	Matrox® Millennium G400 (performance 2D), IBM Fire GL1¹¹ or ELSA™ Gloria II (advanced 3D), or Intense3D® Wildcat 4110 AGP Adapter (extreme 3D)				
	<table border="1"> <tr> <td>IBM Fire GL1 / AGP 2X adapter / sideband-capable 32MB std / 32MB max / 256-bit 100MHz SGRAM 2D and OpenGL 3D engine / 250MHz RAMDAC / DDC2B</td> <td>ELSA Gloria II / AGP 4X adapter / 64MB 128-bit 110MHz SDRAM std and max / 350MHz RAMDAC / 2048x1536 at 75Hz / NVIDIA™ Quadro controller / 256-bit QuadPipe rendering engine</td> </tr> <tr> <td colspan="2">Intense3D Wildcat 4110 AGP Adapter / AGP 2X adapter / 64MB 128-bit 143MHz SDRAM (frame buffer) and 64MB 64-bit 143MHz SDRAM (texture memory) / 2D and 3D engine / DB-15 and DVI-I ports (same image if both used)</td> </tr> </table>	IBM Fire GL1 / AGP 2X adapter / sideband-capable 32MB std / 32MB max / 256-bit 100MHz SGRAM 2D and OpenGL 3D engine / 250MHz RAMDAC / DDC2B	ELSA Gloria II / AGP 4X adapter / 64MB 128-bit 110MHz SDRAM std and max / 350MHz RAMDAC / 2048x1536 at 75Hz / NVIDIA™ Quadro controller / 256-bit QuadPipe rendering engine	Intense3D Wildcat 4110 AGP Adapter / AGP 2X adapter / 64MB 128-bit 143MHz SDRAM (frame buffer) and 64MB 64-bit 143MHz SDRAM (texture memory) / 2D and 3D engine / DB-15 and DVI-I ports (same image if both used)	
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Architecture (chipset)	Intel 840 chip set / Accelerated Hub Architecture / 266MB/sec I/O channel / 82840 Memory Controller Hub (MCH) / 82803AA Memory Repeater Hub (MRH-R) / 82806 PCI Controller Hub (P64H) for 64-bit PCI slots and SCSI controller / 82801AA I/O Controller Hub (ICH) for 32-bit PCI slots, ATA-66 EIDE, USB, Low Pin Count interface / 82802AC Firmware Hub / NS 87363 Super I/O for diskette, parallel, serial, keyboard, mouse off Low Pin Count interface				
Form factor / bus	Extended ATX / slots on planar (no riser) / PCI and AGP Pro 1.1a (AGP Pro 110; 66MHz; AGP 4X; 1GB/sec) / see below				
Rack mountable	Rack mountable via optional mounting kit				
Disk	None (AAP models) or one Ultra160 SCSI / S.M.A.R.T. ⁵				
SCSI controller	Adaptec® AIC-7899 / dual channel Ultra160 SCSI controller (160MB/sec) / on planar / 64-bit PCI bus				
SCSI connectors	<i>Internal Port A:</i> 68 pin (attaches 6-drop cable to SCSI disk); <i>External Port B:</i> 68 pin SCSI port on rear (connected by 1-drop 16-bit LVD cable to connector on planar)				
IDE cables	One 2-drop IDE ATA-33 cable (for CD-ROM)				
EIDE disk controller	Enhanced IDE / ATA-66 and PIO modes 0-4 with 2 channel, 4 device support / integrated in I/O Controller Hub (ICH)				
CD-ROM / diskette	48X-20X⁶ CD-ROM , CAV (ATAPI), bootable / 3.5" 1.44MB diskette drive				
Ethernet controller	Intel EtherExpress™ PRO/100 / 82559 ethernet chip on planar / PCI bus / 10BaseT and 100BaseTX / RJ45 UTP connector / Wake on LAN® / Alert on LAN 2				
Systems mgmt cntrl	Temperature sensors, fan-speed monitor, chassis-intrusion detector, power supply and CPU voltage monitor, and power-switch bypass / AD1025				
Audio	SoundMAX™ integrated digital audio / software-based (done by Pentium and ICH) / AC '97 interface / AD1881 codec (analog mixing, A-to-D and D-to-A conversion)				
Audio connectors	Line in with active pre-amp / mic in / line out (all 3.5mm; all in back)				
Audio features	Internal speaker with automatic jack sense switching / software volume control				
Microphone	None				
Ports	<i>MIDI/Joystick:</i> One <i>Ser:</i> Two 9-pin <i>Par:</i> One <i>USB:</i> Two ports (Vers 1.1)				
Security chip	Integrated IBM Security Chip / soldered on motherboard				
Keyboard / mouse	104 key keyboard / keyboard extender / IBM ScrollPoint™ II mouse (3 button)				
Power supply	490 watts / universal / auto-sensing / Wake on LAN				
	<table border="1"> <tr> <td>  </td> <td> Bay ① 5.25", HH 1.6", access, open Bay ② 5.25", HH 1.6", access, std CD-ROM Bay ③ 3.5", SL 1", access, diskette Bay ④ 3.5", SL 1", no access, open (disk only) [Bay 4, 5, and 6 can support two HH 1.6" disks] Bay ⑤ 3.5", SL 1", no access, open (disk only) Bay ⑥ 3.5", SL 1", no access, open (disk only) Bay ⑦ 3.5", SL 1", no access, open (disk only) [Bay 7, 8, and 9 can support two HH 1.6" disks] Bay ⑧ 3.5", SL 1", no access, open (disk only) Bay ⑨ 3.5", SL 1", no access, std disk (disk only) </td> </tr> <tr> <td>Mini tower; Stealth black color</td> <td> Slot 1: full, 32-bit 4X AGP Pro 110 (universal) Slot 4: full, 32-bit 33MHz PCI 2.2 (5v) - used by AGP graphics adapter Slot 5: full, 32-bit 33MHz PCI 2.2 (5v) - 4110 models can not use slot 2 Slot 6: full 64-bit 66MHz PCI 2.2 (3.3v) Slot 2: full, 32-bit 33MHz PCI 2.2 (5v) Slot 7: full, 64-bit 66MHz PCI 2.2 (3.3v) Slot 3: full, 32-bit 33MHz PCI 2.2 (5v) </td> </tr> </table>		Bay ① 5.25", HH 1.6", access, open Bay ② 5.25", HH 1.6", access, std CD-ROM Bay ③ 3.5", SL 1", access, diskette Bay ④ 3.5", SL 1", no access, open (disk only) [Bay 4, 5, and 6 can support two HH 1.6" disks] Bay ⑤ 3.5", SL 1", no access, open (disk only) Bay ⑥ 3.5", SL 1", no access, open (disk only) Bay ⑦ 3.5", SL 1", no access, open (disk only) [Bay 7, 8, and 9 can support two HH 1.6" disks] Bay ⑧ 3.5", SL 1", no access, open (disk only) Bay ⑨ 3.5", SL 1", no access, std disk (disk only)	Mini tower; Stealth black color	Slot 1: full, 32-bit 4X AGP Pro 110 (universal) Slot 4: full, 32-bit 33MHz PCI 2.2 (5v) - used by AGP graphics adapter Slot 5: full, 32-bit 33MHz PCI 2.2 (5v) - 4110 models can not use slot 2 Slot 6: full 64-bit 66MHz PCI 2.2 (3.3v) Slot 2: full, 32-bit 33MHz PCI 2.2 (5v) Slot 7: full, 64-bit 66MHz PCI 2.2 (3.3v) Slot 3: full, 32-bit 33MHz PCI 2.2 (5v)
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	<table border="1"> <tr> <td> SECURITY CHIP - Provides electronic digital signature and secure key storage - Can sign each e-mail with a digital signature (1024-bit) so receiving party can verify sender - Public Key Infrastructure (PKI) for more secure e-mail, web access and Internet transactions, and Secure Sockets Layer (SSL) for encryption/decryption capabilities (128-bit encryption) - Uses User Verification Manager software available from IBM web site </td> <td> OTHER STANDARD FEATURES The Setup Utility resides in flash memory; invoked by pressing F1 key during memory POST ESC for fast POST; F12 for network boot at startup Plug-and-Play 1.0a; ISO 9241-3 capable Vital Product Data support (type, model, serial, id) 8.5"W x 23.9"D x 17.3"H; 75 lbs maximum 216 mm W x 606 mm D x 440 mm H; 34 kg max Several hardcopy publications 512KB BIOS (Flash over LAN support) Supplier's Declaration available Four fans (one for adapters, two for processor/memory/disk, one in power supply) </td> </tr> </table>	SECURITY CHIP - Provides electronic digital signature and secure key storage - Can sign each e-mail with a digital signature (1024-bit) so receiving party can verify sender - Public Key Infrastructure (PKI) for more secure e-mail, web access and Internet transactions, and Secure Sockets Layer (SSL) for encryption/decryption capabilities (128-bit encryption) - Uses User Verification Manager software available from IBM web site	OTHER STANDARD FEATURES The Setup Utility resides in flash memory; invoked by pressing F1 key during memory POST ESC for fast POST; F12 for network boot at startup Plug-and-Play 1.0a; ISO 9241-3 capable Vital Product Data support (type, model, serial, id) 8.5"W x 23.9"D x 17.3"H; 75 lbs maximum 216 mm W x 606 mm D x 440 mm H; 34 kg max Several hardcopy publications 512KB BIOS (Flash over LAN support) Supplier's Declaration available Four fans (one for adapters, two for processor/memory/disk, one in power supply)		
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	Maximum internal SCSI disk capacity¹³: 127.4GB (6 x 18.2GB 7200 or 10K rpm and 1 x 18.2GB 7200 rpm)				

IBM IntelliStation® Z Pro (6866) - Summer and Fall 2000 - withdrawn

Type-model	Disk rpm interface CD-ROM ⁶	Intel® Processor MHz ¹ ; 2-way SMP support	Rambus memory; std MB / type / memory card; qty and devices on RIMMs	Graphics controller in AGP Pro110 slot; adapter memory std	Total bus slots available	Total bays	SCSI / chip set Preload ¹⁷	Avail- able date
Mini Tower; 7 slot x 9 bay; Stealth Black - US models								
6866-34U	9.1GB ² 10K Ultra160 48X-20X CD-ROM	1 x Pentium® III Xeon™ 800/133	512MB / PC600 / 8 slot Two 16D RIMMs	ELSA™ Gloria II AGP 4X / 64MB	PCI=6 AGP 110=0	3 used 6 empty	SCSI / 840 NT 4.0	Jun 2000
6866-44U	9.1GB 10K Ultra160 48X-20X CD-ROM	1 x Pentium III Xeon 866/133	512MB / PC600 / 8 slot Two 16D RIMMs	ELSA Gloria II AGP 4X / 64MB	PCI=6 AGP 110=0	3 used 6 empty	SCSI / 840 NT 4.0	Jun 2000
6866-50U	9.1GB 10K Ultra160 48X-20X CD-ROM	1 x Pentium III Xeon 933/133	256MB / PC600 / 4 slot Two 8D RIMMs	Millennium G400 AGP 4X / 16MB	PCI=6 AGP 110=0	3 used 6 empty	SCSI / 840 NT 4.0	Jun 2000
6866-54U	9.1GB 10K Ultra160 48X-20X CD-ROM	1 x Pentium III Xeon 933/133	512MB / PC600 / 8 slot Two 16D RIMMs	ELSA Gloria II AGP 4X / 64MB	PCI=6 AGP 110=0	3 used 6 empty	SCSI / 840 NT 4.0	Jun 2000
6866-56U	18.2GB 10K Ultra160 48X-20X CD-ROM	1 x Pentium III Xeon 933/133	512MB / PC600 / 8 slot Two 16D RIMMs	Wildcat 4110 AGP 2X / 128MB	PCI=5 AGP 110=0	3 used 6 empty	SCSI / 840 NT 4.0	Jun 2000
6866-58U	18.2GB 10K Ultra160 48X-20X CD-ROM	1 x Pentium III Xeon 933/133	512MB / PC600 / 8 slot Two 16D RIMMs	Wildcat 4210 AGP 2X / 256MB	PCI=4 AGP 110=0	3 used 6 empty	SCSI / 840 NT 4.0	Jun 2000
6866-5AU	9.1GB 10K Ultra160 48X-20X CD-ROM	1 x Pentium III Xeon 866/133	256MB / PC600 / 4 slot Two 8D RIMMs	Millennium G450 AGP 4X / 16MB	PCI=6 AGP 110=0	3 used 6 empty	SCSI / 840 2000 or NT	Oct 2000
6866-5BU	18.2GB 10K Ultra160 48X-20X CD-ROM	1 x Pentium III Xeon 866/133	512MB / PC600 / 8 slot Two 16D RIMMs	Wildcat 4110 AGP 2X / 128MB	PCI=5 AGP 110=0	3 used 6 empty	SCSI / 840 2000 or NT	Oct 2000
6866-5CU	9.1GB 10K Ultra160 48X-20X CD-ROM	1 x Pentium III Xeon 866/133	512MB / PC600 / 8 slot Two 16D RIMMs	nVidia Quadro2 AGP 4X / 32MB	PCI=6 AGP 110=0	3 used 6 empty	SCSI / 840 2000 or NT	Oct 2000
6866-6AU	18.2GB 10K Ultra160 48X-20X CD-ROM	1 x Pentium III Xeon 933/133	256MB / PC600 / 4 slot Two 8D RIMMs	Millennium G450 AGP 4X / 16MB	PCI=6 AGP 110=0	3 used 6 empty	SCSI / 840 2000 or NT	Oct 2000
6866-6BU	18.2GB 10K Ultra160 48X-20X CD-ROM	1 x Pentium III Xeon 933/133	512MB / PC600 / 8 slot Two 16D RIMMs	nVidia Quadro2 AGP 2X / 32MB	PCI=6 AGP 110=0	3 used 6 empty	SCSI / 840 2000 or NT	Oct 2000
6866-6CU	18.2GB 10K Ultra160 48X-20X CD-ROM	1 x Pentium III Xeon 933/133	512MB / PC600 / 8 slot Two 16D RIMMs	Wildcat 4110 AGP 2X / 128MB	PCI=5 AGP 110=0	3 used 6 empty	SCSI / 840 2000 or NT	Oct 2000
6866-6DU	18.2GB 10K Ultra160 48X-20X CD-ROM	1 x Pentium III Xeon 933/133	512MB / PC600 / 8 slot Two 16D RIMMs	Wildcat 4210 AGP 2X / 256MB	PCI=4 AGP 110=0	3 used 6 empty	SCSI / 840 2000 or NT	Oct 2000
6866-60U	18.2GB 10K Ultra160 48X-20X CD-ROM	1 x Pentium III Xeon 1.0GHz ¹ /133	256MB / PC600 / 8 slot Two 8D RIMMs	Millennium G450 AGP 4X / 16MB	PCI=6 AGP 110=0	3 used 6 empty	SCSI / 840 2000 or NT	Oct 2000
6866-64U	18.2GB 10K Ultra160 48X-20X CD-ROM	1 x Pentium III Xeon 1.0GHz/133	512MB / PC600 / 8 slot Two 16D RIMMs	nVidia Quadro2 AGP 4X / 32MB	PCI=6 AGP 110=0	3 used 6 empty	SCSI / 840 2000 or NT	Oct 2000
6866-68U	36.4GB 10K Ultra160 48X-20X CD-ROM	1 x Pentium III Xeon 1.0GHz/133	512MB / PC600 / 8 slot Two 16D RIMMs	Wildcat 4210 AGP 2X / 256MB	PCI=4 AGP 110=0	3 used 6 empty	SCSI / 840 2000 or NT	Oct 2000
6866-69U	18.2GB 10K Ultra160 48X-20X CD-ROM	1 x Pentium III Xeon 1.0GHz/133	512MB / PC600 / 8 slot Two 16D RIMMs	IBM Fire GL2 AGP 4X / 64MB	PCI=6 AGP 110=0	3 used 6 empty	SCSI / 840 2000 or NT	Oct 2000
6866-4RU	<i>no disk</i> Ultra160 48X-20X CD-ROM	1 x Pentium III Xeon 866/133	256MB / PC600 / 8 slot Two 8D RIMMs	Millennium G450 AGP 4X / 16MB	PCI=6 AGP 110=0	2 used 7 empty	SCSI / 840 DOS 2K	Oct 2000
6866-5RU	<i>no disk</i> Ultra160 48X-20X CD-ROM	1 x Pentium III Xeon 933/133	256MB / PC600 / 8 slot Two 8D RIMMs	Millennium G450 AGP 4X / 16MB	PCI=6 AGP 110=0	2 used 7 empty	SCSI / 840 DOS 2K	Oct 2000
6866-6PU	<i>no disk</i> Ultra160 48X-20X CD-ROM	1 x Pentium III Xeon 1.0GHz/133	256MB / PC600 / 8 slot Two 8D RIMMs	Millennium G450 AGP 4X / 16MB	PCI=6 AGP 110=0	2 used 7 empty	SCSI / 840 DOS 2K	Oct 2000

- ⇒ 9.1GB Ultra160 SCSI 10000 rpm disk is 5ms average read seek time, SMART⁵
- ⇒ 18.2GB Ultra160 SCSI 10000 rpm is 5ms average read seek time, SMART
- ⇒ 18.2GB Ultra160 SCSI 10000 rpm is 5.5ms average read seek time, SMART

Windows NT Preload ¹⁷	Options	WARRANTY SERVICE SUPPORT ^{*,3}
Windows NT® Workstation 4.0 (SP5) ConfigSafe for Windows NT Access IBM Other utilities, drivers, and applications - Free license for Lotus® SmartSuite® Millennium - Free license for Lotus Notes® Client ◇ Software Selections CD-ROM ◇ Windows NT Product Recovery CD-ROM ◇ Device Drivers and Diagnostics CD-ROM	Xeon Pentium III 800MHz Second Proc 10K3801 Xeon Pentium III 866MHz Second Proc 10K3811 Xeon Pentium III 933MHz Second Proc 10K3812 Xeon Pentium III 1GHz Second Proc 34L5274 64MB 600MHz ECC RDRAM (4 Dev) 33L3093 128MB 600MHz ECC RDRAM (8 Dev) 33L3095 256MB 600MHz ECC RDRAM (16 Dev) 33L3097 64MB 800MHz ECC RDRAM (4 Dev) 20L0274 128MB 800MHz ECC RDRAM (8 Dev) 20L0275 256MB 800MHz ECC RDRAM (16 Dev) 20L0277 IBM IDE 9.4GB DVD-RAM (black) 10K3651 IBM IDE ReWritable CD-RW (black) 33L5005 250MB Internal ZIP Drive (black) 00N8078 18.2GB 7200 rpm Ultra160 SCSI disk 00N8205 18.2GB 10000 rpm Ultra160 SCSI 00N8208 36.4GB 7200 rpm Ultra160 SCSI 00N8206 36.4GB 10000 rpm Ultra160 SCSI 00N8209 IBM Rack Mount Kit 10L7006	⇒ 3 year parts and labor warranty ⇒ International Warranty Service ³ ⇒ On site, 8 am through 5 pm, Mon through Fri excluding holidays, next business day response time ⇒ On site warranty service upgrade options: • 4 hour response, 7 day x 24 hr ⁷ ⇒ Post warranty maintenance services available ⇒ 24 hour x 7 day telephone, electronic, and Internet support
Windows 2000 Professional Preload¹⁷ Windows 2000 Professional - Free license for Lotus® SmartSuite® Millennium - Free license for Lotus Notes® Client ◇ Device Drivers and Diagnostics CD-ROM ◇ Software Selections CD-ROM ◇ Windows 2000 Product Recovery CD-ROM ◇ Windows NT 4.0 (SP6) Product Recovery CD-ROM	Visit www.ibm.com/options for a complete list of compatible options	

* For a copy of IBM's Statement of Limited Warranty, call 1-800-772-2227

US models announced June 6 or October 10, 2000

Models withdrawn from marketing effective November 2000 or May 2001 or October 2001

No warranties are expressed or implied in this summary

(6866R - Page 1 of 2) © IBM Corp. October 2001

IBM IntelliStation® Z Pro (6866) - Summer and Fall 2000 - withdrawn

IBM® IntelliStation® Z Pro

Type	6866	
Processor(s)	One or two Intel® Pentium® III Xeon™ 800, 866, or 933MHz¹ or 1.0B GHz¹ / 133MHz Front Side Bus	
Implementation	Processor and L2 cache in Single Edge Contact Cartridge (SECC) in protective metal case / plugged into Intel Slot 2	
Processor upgrade	2-way SMP via identical processor / upgrade via second SECC into second motherboard Slot 2 connector / MPS 1.4	
L2 cache	256KB std and max / ECC / at processor speed / 8-way set associative / write-back / integrated in SECC2	
Avail / withdrawn date	June 2000 or October 2000 / November 2000 or May 2001 or October 2001	
Memory	256 or 512MB std / two or four RDRAM (Rambus) channels / 32 devices max each channel / 840 supports 4GB max¹³ <i>Some:</i> 4 slot memory card with two RDRAM channels and max of 4x256MB=1GB / C-RIMMs required in empty slots <i>Some:</i> 8 slot memory card with four RDRAM channels and max of 8x256MB=2GB) / 82803 Memory Repeater Hub (MRH-R) converts each channel into two channels (2x2=4 channels total) / C-RIMMs req in empty sockets; except channel 3 and 4 can be totally empty if channel 3 is not used ECC memory controller and RIMMs / 184-pin gold-plated RIMM sockets / supports PC600 or PC800 RIMMs (not PC700) / all installed RIMMs must be same speed (PC600 or PC800) and installed in pairs across channels / 2.5v	
Graphics controller	Matrox® Millennium G400 or G450 (performance 2D), or ELSA™ Gloria II or nVidia™ Quadro2 MXR (advanced 3D), or Intense3D® Wildcat 4110 AGP Adapter (extreme 2D), or Intense3D Wildcat 4210 AGP Adapter (extreme 3D)	
	Intense3D Wildcat 4110 AGP Adapter / AGP 2X adapter / 64MB 128-bit 143MHz SDRAM (frame buffer) and 64MB 64-bit 143MHz SDRAM (texture memory) / 2D and 3D engine / DB-15 and DVI-I ports (same image if both used)	ELSA Gloria II / AGP 4X adapter / 64MB 128-bit 110MHz SDRAM std and max / 350MHz RAMDAC / 2048x1536 at 75Hz / NVIDIA™ Quadro controller / 256-bit QuadPipe rendering engine / DB-15 analog connector
	Intense3D Wildcat 4210 AGP Adapter / AGP 2X adapter / 128MB 256-bit 143MHz SDRAM (frame buffer) and 128MB 128-bit 143MHz SDRAM (texture memory) / 2D and 3D engine / two DVI-I ports (dual monitor for W2000; single for NT)	
Architecture (chipset)	Intel 840 chip set / Accelerated Hub Architecture / 266MB/sec I/O channel / 82840 Memory Controller Hub (MCH) / 82803AA Memory Repeater Hub (MRH-R) / 82806 PCI Controller Hub (P64H) for 64-bit PCI slots and SCSI controller / 82801AA I/O Controller Hub (ICH) for 32-bit PCI slots, ATA-66 EIDE, USB, Low Pin Count interface / 82802AC Firmware Hub / NS 87363 Super I/O for diskette, parallel, serial, keyboard, mouse off Low Pin Count interface	
Form factor / bus	Extended ATX / slots on planar (no riser) / PCI and AGP Pro 1.1a (AGP Pro 110; 66MHz; AGP 4X; 1GB/sec) / see below	
Rack mountable	Rack mountable via optional mounting kit	
SCSI controller	Adaptec® AIC-7899 / dual channel Ultra160 SCSI controller (160MB/sec) / on planar / 64-bit PCI bus	
SCSI connectors	<i>Internal Port A:</i> 68 pin (attaches 6-drop cable to SCSI disk); <i>External Port B:</i> 68 pin SCSI port on rear (connected by 1-drop 16-bit LVD cable to connector on planar)	
IDE cables	One 2-drop IDE ATA-33 cable (for CD-ROM)	
EIDE disk controller	Enhanced IDE / ATA-66 and PIO modes 0-4 with 2 channel, 4 device support / integrated in I/O Controller Hub (ICH) / S.M.A.R.T. ⁵ disks	
CD-ROM / diskette	48X-20X⁶ CD-ROM , CAV (ATAPI), bootable / 3.5" 1.44MB diskette drive	
Ethernet controller	Intel EtherExpress™ PRO/100 / 82559 ethernet chip on planar / PCI bus / 10BaseT and 100BaseTX / RJ45 UTP connector / Wake on LAN® / Alert on LAN 2	
Systems mgmt cntrl	Temperature sensors, fan-speed monitor, chassis-intrusion detector, power supply and CPU voltage monitor, and power-switch bypass / AD1025	
Audio	SoundMAX™ integrated digital audio / software-based (done by Pentium and ICH) / AC '97 interface / AD1881 codec (analog mixing, A-to-D and D-to-A conversion)	
Audio connectors	Line in with active pre-amp / mic in / line out (all 3.5mm; all in back)	
Audio features	Internal speaker with automatic jack sense switching / software volume control	
Microphone	None	
Ports	MIDI/Joystick: One <i>Ser:</i> Two 9-pin <i>Par:</i> One <i>USB:</i> Two ports (Vers 1.1)	
Security chip	Integrated IBM Security Chip / soldered on motherboard	
Keyboard / mouse	104 key keyboard / keyboard extender / IBM ScrollPoint™ II mouse (3 button)	
Power supply	490 watts / universal / auto-sensing / Wake on LAN	
	 <p>Bay ① 5.25", HH 1.6", access, open Bay ② 5.25", HH 1.6", access, std CD-ROM Bay ③ 3.5", SL 1", access, diskette Bay ④ 3.5", SL 1", no access, open (disk only) [Bay 4, 5, and 6 can support two HH 1.6" disks] Bay ⑤ 3.5", SL 1", no access, open (disk only) Bay ⑥ 3.5", SL 1", no access, open (disk only) Bay ⑦ 3.5", SL 1", no access, open (disk only) [Bay 7, 8, and 9 can support two HH 1.6" disks] Bay ⑧ 3.5", SL 1", no access, open (disk only) Bay ⑨ 3.5", SL 1", no access, std disk (disk only)</p> <p>Slot 1: full, 32-bit 4X AGP Pro110 (universal) Slot 3: full, 32-bit 33MHz PCI 2.2 (5v) - used by AGP graphics adapter Slot 4: full, 32-bit 33MHz PCI 2.2 (5v) - 4110 models can not use slot 2 Slot 5: full, 32-bit 33MHz PCI 2.2 (5v) - 4210 models can not use slot 2 or 3 Slot 6: full 64-bit 66MHz PCI 2.2 (3.3v) Slot 2: full, 32-bit 33MHz PCI 2.2 (5v) Slot 7: full, 64-bit 66MHz PCI 2.2 (3.3v)</p>	<p>SECURITY</p> <ul style="list-style-type: none"> - Cover key lock and U-bolt support - Cover tamper detect switch - Secure fixed DASD - Serial EEPROM with write protect - Power-on password - Administrator password - Keyboard/mouse password - Wake Up on LAN password prompt - Boot sequence control - Boot without keyboard or mouse - Diskette boot inhibit - Disable mouse - Disable external SCSI port - Diskette write-protect - Diskette, disk, serial port, parallel port I/O control - Secure access openings - Secure removable media - VPD stored in EEPROM - Write protection control for EEPROM - Barcode labels on most components - IBM Security Solutions <p><i>Maximum internal SCSI disk capacity¹³:</i> 254.8GB (6 x 36.4GB 7200 or 10K rpm and 1 x 36.4GB 7200 rpm)</p> <p>SYSTEMS MANAGEMENT</p> <ul style="list-style-type: none"> • Asset ID™ (RFID)¹⁶ • Alert on LAN™ 2 • Universal Manageability Services and Universal Manageability (UM) Desktop Extensions enabled • LANClient Control Manager™ enabled • SMART Reaction™.5 II • PC 99-compliant • DMI 2.0-compliant • Common Information Model (CIM) 2.2 • Asset Information Chip (EEPROM) • Wired for Management 2.0 • ACPI 1.0 • Advanced Power Management 1.2 • Wake on LAN support • Alternate Boot Sequence • RPL, DHCP, and PXE 2.0 support • Setup on LAN, Flash on LAN • Wake on Alarm • System Management BIOS Version 2.3 • Systems Migration Assistant support
	<p>SECURITY CHIP</p> <ul style="list-style-type: none"> - Provides electronic digital signature and secure key storage - Can sign each e-mail with a digital signature (1024-bit) so receiving party can verify sender - Public Key Infrastructure (PKI) for more secure e-mail, web access and Internet transactions, and Secure Sockets Layer (SSL) for encryption/decryption capabilities (128-bit encryption) - Uses User Verification Manager software available from IBM web site 	<p>OTHER STANDARD FEATURES</p> <p>The Setup Utility resides in flash memory; invoked by pressing F1 key during memory POST</p> <p>ESC for fast POST; F12 for network boot at startup</p> <p>Plug-and-Play 1.0a; ISO 9241-3 capable</p> <p>Vital Product Data support (type, model, serial, id)</p> <p>8.5"W x 23.9"D x 17.3"H; 75 lbs maximum</p> <p>216 mm W x 606 mm D x 440 mm H; 34 kg max</p> <p>Several hardcopy publications</p> <p>512KB BIOS (Flash over LAN support)</p> <p>Four fans (one for adapters, two for processor/memory/disk, one in power supply); five fans on I3D 4110 and 4210 models</p>

IBM IntelliStation® Z Pro (6894) - withdrawn

IBM® Type-model	Qty x Processor	L3 cache Mem	Disk and rpm	SCSI adapter	CD-RW	Graphics adapter and memory	Slots x bays	Preload ¹⁷	Available date
6894-10X	2 x Itanium 800	2MB 2GB	18.2GB ² Ultra160 10K	39160	CD-RW	Millennium G450 16MB	8x9 None		Jun 2001
6894-12X	2 x Itanium 800	2MB 2GB	36.4GB Ultra160 10K	39160	CD-RW	NVIDIA™ Quadro2 Pro 64MB	8x9 None		Jun 2001
6894-14X	2 x Itanium 800	2MB 2GB	18.2GB Ultra160 10K	39160	CD-RW	Millennium G450 16MB	8x9	Windows® XP 64-bit	Oct 2001
6894-16X	2 x Itanium 800	2MB 2GB	36.4GB Ultra160 10K	39160	CD-RW	NVIDIA Quadro2 Pro 64MB	8x9	Windows XP 64-bit	Oct 2001

Processor **2 x Intel® Itanium™ 800MHz¹ with 266MHz frontside bus** (double pumped 133MHz)
 L1 and L2 cache 32KB L1 cache / 96KB L2 cache / on die of Itanium / at processor speed
 L3 cache **2MB L3 cache** / inside Itanium cartridge / at processor speed
 Implementation One Processor Board with two Socket M 418-pin LIF sockets / both sockets used by Itanium PAC418 (418-pin array cartridge) processor and caches / each Itanium powered by one Power Pod on Processor Board / systemboard contains one Processor Board slot, two Memory Board slots, seven PCI slots, one AGP slot, one I/O Board slot, and 460GX chip set
 SMP support 2-way SMP via identical processor / all models ship with both processors

Memory - std / max **2GB std** / 16GB max¹³ / registered SDRAM PC100 3.3v / Error Checking and Correction (ECC) controller and DIMMs
 Memory - features Two Memory Boards standard each with eight 168-pin DIMM sockets / ships standard with four DIMMs on one Memory Board for four-way interleaving / must install four identical DIMMs at a time / adding DIMMs on second Memory Board enables Card to Card (C2C) interleaving

Graphics controller (one of following)

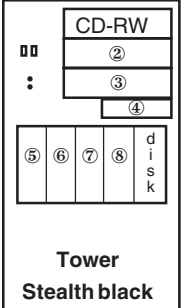
- **Matrox® Millennium G450** (high-perf 2D) / AGP 4X adapter / Matrox MGA G450C GPU / 16MB 150MHz SDRAM / dual RAMDAC [300/136MHz] / dual head: 1920x1440x16M at 75Hz and 1280x1024x16M at 75Hz / two DB-15 connectors
- **NVIDIA Quadro2 Pro** (advanced 3D) / AGP 4X adapter / NV15GL 250MHz GPU / 64MB 200MHz DDR-SDRAM / 350MHz RAMDAC / single head: 1600x1200x16M at 85Hz / DB-15 and DVI-I connectors (same image if both used)

IDE disk controller Enhanced IDE busmaster / ATA-33 / controller in IFB (I/O Firmware Bridge) off the PXB / two connectors on planar
 SCSI disk controller Adaptec® ASC-39160 / Ultra160 SCSI (LVD 160MB/sec) / two channel / 64-bit 66MHz PCI adapter
 SCSI connectors Two 68-pin internal (Channel A and B) / one 50-pin internal (Chan A) / two 0.8mm VHDCI 68-pin external (Chan A and B)
 Cables One 5-drop 16-bit LVD SCSI cable, one 2-drop EIDE cable (attached to CD-RW), and one 2-drop EIDE (unconnected)
 Disk - features 18.2 or 36.4GB Ultra160 SCSI / 10K rpm / 5.5 ms read seek / S.M.A.R.T.⁵

Rack support None
 Architecture / chipset **Intel 460GX chip set** / 82460GX includes 82461GX System Address Controller (SAC), 82462GX System Data Controller (SDC), 82463 Memory Address Controller (MAC), 82464GX Memory Data Controller (MDC), 82465GX Graphics eXpansion Bus (GXB), 82466GX Wide eXpansion Bus (WXB), 82467NX PCI eXpansion Bus (PXB), 82468GX I/O Firmware Bridge (IFB), 82802AC Firmware Hub (FWH), 82064AA Programmable Interrupt Device (PID)

I/O Board and ports I/O Board in proprietary connector / contains controllers for hardware monitor (ADM1024e), 10/100 ethernet, audio, USB (Version 1.1), two channel IDE, chassis intrusion, LPC47M142 Super I/O (serial, keyboard, mouse, USB)
 Rear external ports Serial (9-pin), keyboard, mouse, two USB, ethernet (RJ-45), two disabled audio ports (no parallel port)
 Front ports Two USB, audio line in, audio line out
 Ethernet Intel 82559 10/100 ethernet / support for Wake on LAN®, Alert on LAN™ 2, Preboot eXecution Environment (PXE)
 CD-RW / diskette 12X/8X/32X⁶ CD-RW / no diskette drive support
 Audio Soft audio AC '97 v2.1 controller / Cirrus Logic CS4281 PCI audio-codec controller and CS4297A stereo audio codec
 Systems mgmt Monitoring and alerting of thermal, fans, and voltage faults

Keyboard / mouse IBM 104-key keyboard / IBM three-button mouse
 Cooling fans Four cooling zones / 6 fans / processor zone with two 120mm fans / memory zone with one 80mm fan / I/O zone with one 92mm fan and one 60mm fan / exhaust zone with one 80mm fans / variable speed fans / not redundant or hot-swap
 Power supply 800 watts / swings out from right side on door / universal / auto sensing / two internal 80mm fans

 <p>Bay ① 5.25", HH 1.6", access, CD-RW Bay ② 5.25", HH 1.6", access, open Bay ③ 5.25", HH 1.6", access, open Bay ④ 3.5", SL 1", access, open Bay ⑤ 3.5", SL 1", no access, open Bay ⑥ 3.5", SL 1", no access, open Bay ⑦ 3.5", SL 1", no access, open Bay ⑧ 3.5", SL 1", no access, open Bay ⑨ 3.5", SL 1", no access, disk (Bays 5 to 9 accepts three 1.6 HH disks)</p>	<p>SOFTWARE¹⁷</p> <ul style="list-style-type: none"> - 10X/12X: No operating system or preloaded software included - 14X/16X: Preloaded with Microsoft® Windows® XP 64-bit Edition ◆ 14X/16X: Microsoft Windows XP 64-bit Edition Product Recovery CD ◆ All: Enhanced Diagnostics CD-ROM - All: Compatible with Linux® OS and Microsoft® Windows® XP 64-bit Edition 	<p>SECURITY</p> <ul style="list-style-type: none"> • Cover key lock • Cover tamper detect switch • Secure fixed DASD • Power-on password • Administrator password • Keyboard/mouse password • Boot sequence control • Boot without keyboard or mouse • Diskette boot inhibit and write-protect • Disable mouse • Disk, serial port I/O control • Secure access openings • VPD stored in EEPROM • Write protection control for EEPROM 																											
	<p>OPTIONS</p> <table border="0"> <tr><td>1GB (4 x 256MB) PC100 ECC SDRAM RDIMM Kit</td><td>33L3258</td></tr> <tr><td>2GB (4 x 512MB) PC100 ECC SDRAM RDIMM Kit</td><td>33L3260</td></tr> <tr><td>4GB (4 x 1GB) PC100 ECC SDRAM RDIMM Kit</td><td>33L3262</td></tr> <tr><td>IBM IDE 12X/8X/32X Max⁴ CD-RW (black)</td><td>10K3785</td></tr> <tr><td>IBM 18.2GB 10K Ultra160 SCSI HDD</td><td>00N8208</td></tr> <tr><td>IBM 36.4GB 10K Ultra160 SCSI HDD</td><td>00N8209</td></tr> <tr><td>IBM Netfinity Gigabit Ethernet Adapter</td><td>19K4401</td></tr> <tr><td>PCI Ultra160 SCSI Adapter (Adaptec 39160)</td><td>19K4646</td></tr> <tr><td>IBM G96 19" FST (17.9" viewable) Monitor (black)</td><td>65494AN</td></tr> <tr><td>IBM P96 19" FD (17.9" viewable) Monitor (black)</td><td>655163N</td></tr> <tr><td>IBM P260 21" FD (19.8" viewable) Monitor (black)</td><td>655263N</td></tr> <tr><td>IBM P76 17" FD (16" viewable) Monitor (black)</td><td>655063N</td></tr> <tr><td>IBM T85A 18.1" TFT Flat Panel Monitor (black)</td><td>9519AG1</td></tr> <tr><td>Radial Arm</td><td>19K4464</td></tr> </table>	1GB (4 x 256MB) PC100 ECC SDRAM RDIMM Kit	33L3258	2GB (4 x 512MB) PC100 ECC SDRAM RDIMM Kit	33L3260	4GB (4 x 1GB) PC100 ECC SDRAM RDIMM Kit	33L3262	IBM IDE 12X/8X/32X Max ⁴ CD-RW (black)	10K3785	IBM 18.2GB 10K Ultra160 SCSI HDD	00N8208	IBM 36.4GB 10K Ultra160 SCSI HDD	00N8209	IBM Netfinity Gigabit Ethernet Adapter	19K4401	PCI Ultra160 SCSI Adapter (Adaptec 39160)	19K4646	IBM G96 19" FST (17.9" viewable) Monitor (black)	65494AN	IBM P96 19" FD (17.9" viewable) Monitor (black)	655163N	IBM P260 21" FD (19.8" viewable) Monitor (black)	655263N	IBM P76 17" FD (16" viewable) Monitor (black)	655063N	IBM T85A 18.1" TFT Flat Panel Monitor (black)	9519AG1	Radial Arm	19K4464
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See footnotes for important warranty information
 US models announced May 29 or October 16, 2001; withdrawn effective July 2002 or September 2002

IBM IntelliStation[®] M Pro models - Fall 1997 (6898) - withdrawn

Type-model	Disk: std (rpm) - max internal ms seek / disk interface CD-ROM [®] interface Controllers	CPU MHz ¹ / Upgrade	Write-thru L2 cache std / max KB / KB	Memory in MB; std/max ¹³ 66 MHz	SVGA controller; memory std / max	Bus slots P=PCI avail I=ISA avail A=AGP av	Total bays	Std features	Estimated Reseller Price*	Avail date
6 slot x 6 bay; PCI/ISA/AGP; Stealth Gray										
6898-10U	4.2GB ² std (5400) - 27.3G 10ms/EIDE / ATA-33 24 x CD-ROM / EIDE EIDE / 2 x Wide Ultra SCSI	1 x Pentium [®] II 233/66 MHz	SMP via 2nd Pent II	512/512 117MHz in SEC Non-ECC	32 / 512 SDRAM ECC	3Dlabs [®] PERMEDIA [®] 2 AGP adapter 8 / 8 SGRAM	PCI=3 PCI/ISA=1 ISA=1 AGP=0	6 bays 3 used 3 empty	440LX UU/L/A/Eth Windows NT 4.0 RTC CD	\$2499 Nov 1997
6898-11U	4.2GB std (5400) - 27.3G 10ms / EIDE / ATA-33 24 x CD-ROM / EIDE EIDE / 2 x Wide Ultra SCSI	1 x Pentium II 266/66 MHz	SMP via 2nd Pent II	512/512 133MHz in SEC Non-ECC	64 / 512 SDRAM ECC	3Dlabs PERMEDIA 2 AGP Adapter 8 / 8 SGRAM	PCI=3 PCI/ISA=1 ISA=1 AGP=0	6 bays 3 used 3 empty	440LX UU/L/A/Eth Windows NT 4.0 RTC CD	2797 [♣] Nov 1997
6898-12U	6.4GB std (5400) - 27.3G 9.5ms / EIDE / ATA-33 24 x CD-ROM / EIDE EIDE / 2 x Wide Ultra SCSI	1 x Pentium II 300/66 MHz	SMP via 2nd Pent II	512/512 150MHz in SEC ECC	64 / 512 SDRAM ECC	3Dlabs PERMEDIA 2 AGP Adapter 8 / 8 SGRAM	PCI=3 PCI/ISA=1 ISA=1 AGP=0	6 bays 3 used 3 empty	440LX UU/L/A/Eth Windows NT 4.0 RTC CD	3079 [♣] Dec 1997
6898-13U	4.5GB std (7200) - 22.7G 9ms / Wide Ultra SCSI 24 x CD-ROM / EIDE EIDE / 2 x Wide Ultra SCSI	1 x Pentium II 300/66 MHz	SMP via 2nd Pent II	512/512 150MHz in SEC Non-ECC	128/512 SDRAM ECC	3Dlabs PERMEDIA 2 AGP Adapter 8 / 8 SGRAM	PCI=3 PCI/ISA=1 ISA=1 AGP=0	6 bays 3 used 3 empty	440LX UU/L/A/Eth Windows NT 4.0 RTC CD	3616 [♣] Jan 1998
6898-14U	4.5GB std (7200) - 22.7G 9ms / Wide Ultra SCSI 24 x CD-ROM / EIDE EIDE / 2 x Wide Ultra SCSI	1 x Pentium II 300/66 MHz	SMP via 2nd Pent II	512/512 150MHz in SEC ECC	128/512 SDRAM ECC	Intergraph [®] Intense 3D/4T 16MB SDRAM 4MB SGRAM	PCI=2 PCI/ISA=1 ISA=1 AGP=1	6 bays 3 used 3 empty	440LX UU/L/A/Eth Windows NT 4.0 RTC CD	5085 [♣] Nov 1997
6898-18U for AAP	<i>no disk</i> 24 x CD-ROM / EIDE EIDE / 2 x Wide Ultra SCSI	1 x Pentium II 266/66	SMP via 2nd Pent II	512/512 133MHz Non-ECC	32/512 SDRAM ECC	<i>None</i>	PCI=3 PCI/ISA=1 ISA=1;A=1	6 bays 2 used 4 empty	440LX UU/L/A/Eth RTC CD	2740 [♣] Nov 1997
6898-19U for AAP	<i>no disk</i> 24 x CD-ROM / EIDE EIDE / 2 x Wide Ultra SCSI	1 x Pentium II 300/66	SMP via 2nd Pent II	512/512 150MHz ECC	32 / 512 SDRAM ECC	<i>None</i>	PCI=3 PCI/ISA=1 ISA=1;A=1	6 bays 2 used 4 empty	440LX UU/L/A/Eth RTC CD	2966 [♣] Nov 1997
6898-22U	6.4GB std (7200) - 27.3G 9.5ms / EIDE / ATA-33 24 x CD-ROM / EIDE EIDE / 2 x Wide Ultra SCSI	1 x Pentium II 333/66 MHz	SMP via 2nd Pent II	512/512 166MHz in SEC ECC	64 / 512 SDRAM ECC	3Dlabs PERMEDIA 2 AGP Adapter 8 / 8 SGRAM	PCI=3 PCI/ISA=1 ISA=1 AGP=0	6 bays 3 used 3 empty	440LX UU/L/A/Eth Windows NT 4.0 RTC CD	3418 [♣] Mar 1998
6898-24U	9.1GB ² std (10,000) - 22.7G 8.2ms / Wide Ultra SCSI 24 x CD-ROM / EIDE EIDE / 2 x Wide Ultra SCSI	1 x Pentium II 333/66 MHz	SMP via 2nd Pent II	512/512 166MHz in SEC ECC	128/512 SDRAM ECC	Intergraph Intense 3D/4T 16MB SDRAM 4MB SGRAM	PCI=2 PCI/ISA=1 ISA=1 AGP=1	6 bays 3 used 3 empty	440LX UU/L/A/Eth Windows NT 4.0 RTC CD	5961 [♣] Mar 1998
6898-28U for AAP	<i>no disk</i> 24 x CD-ROM / EIDE EIDE / 2 x Wide Ultra SCSI	1 x Pentium II 333/66	SMP via 2nd Pent II	512/512 166MHz ECC	64 / 512 SDRAM ECC	<i>None</i>	PCI=3 PCI/ISA=1 ISA=1;A=1	6 bays 2 used 4 empty	440LX UU/L/A/Eth RTC CD	3334 [♣] Mar 1998

Windows NT Preload¹⁷

Windows NT[®] Workstation 4.0 (SP3)
Windows Internet Explorer 3.02
Microsoft NetMeeting
ConfigSafe for Windows NT 4.0
IBM AntiVirus for Windows NT
IBM ClientCare Setup
- DMI Service Provider
- DMI BIOS Instrumentation
- IBM PC System Monitor Instrumentation
- IBM AssetCare Serial Number Information
IBM RTC CD-ROM Setup Utility
IBM Product Registration
IBM Utilities for Windows 95/NT 4.0
Online Books
Device drivers for each subsystem

- Hummingbird "Try and Buy" Suite CD-ROM
- Exceed 5.1.3
- Exceed 3D 5.1.3
- NFS Maestro Solo 5.1.3
- Intel LANDesk 3.0 for Windows NT CD-ROM
- Internet Explorer 4.0 CD-ROM
- Ready to Configure CD-ROM
- Free license for Lotus SmartSuite 97 CD-ROM
- Windows NT Workstation 4.0 CD-ROM
- Access to IBM HomePage Creator

Ready to Configure CD-ROM¹⁷

All models ship with a CD with drivers for OS/2, Windows[®] 95, and Windows NT and various utilities.
Includes:
- ConfigSafe for NT 4.0
- Client Services for Netfinity 5.0
- IBM VoiceType Simply Speaking Gold 3.5
- PC-Doctor for Windows NT 2.0.121
- Tivoli Lightweight Client Framework
- Diskette Factory
- Device drivers for each subsystem
- Utilities and applications on NT preload

Supported Memory and Options

32MB SDRAM ECC DIMM	04K0073
64MB SDRAM ECC DIMM	04K0074
128MB SDRAM ECC DIMM	04K0075
256MB EDO ECC DIMM	76H0269
Adaptec ARO-1130CA PCI RAIDport	Adaptec
233MHz Pentium II	Retail
266MHz Pentium II	Retail
Netfinity 300MHz Pentium II	10L5886
Netfinity 333MHz Pentium II	01K8025
Intergraph Intense3D Pro2200/GA Geometry Accelerator	Retail

Open Bay

Open bay model contains no hard disk. No preload or operating system license is included.
- Hummingbird "Try and Buy" Suite CD-ROM
- Exceed 5.1.3
- Exceed 3D 5.1.3
- NFS Maestro Solo 5.1.3
- Intel LANDesk 3.0 for Windows NT CD-ROM
- Ready to Configure CD-ROM
- Free license for Lotus SmartSuite 97 CD-ROM (via 800 number)

WARRANTY SERVICE SUPPORT




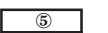
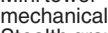
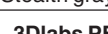
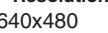
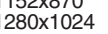

- ↪ 3 year parts warranty³
- ↪ 1 year labor warranty
- ↪ International Warranty Service³
- ↪ 1st year: on site, 8 am - 5 pm, Mon - Fri coverage, 2nd business day response time
- ↪ 2nd/3rd year: parts exchange only, call 1-800-772-2227
- ↪ On site warranty upgrade options¹⁴:
 - ① Next day, on site, Mon-Fri 8-5
 - ② Same day, on site, 7 day x 24 hr
- ↪ Post warranty: on site options above
- ↪ IBM SystemXtra[™]
- ↪ 24 hour / 7 day telephone, electronic, Internet (www.pc.ibm.com) support

A = CS4236 FM synthesis audio chip
Eth = Intel 10/100 ethernet chip; 10BaseT and 100BaseTX
L = LAN Client Control Manager (LCCM) enabled
NT4 = Windows NT Workstation 4.0 preinstalled
RTC CD = ReadyTo Configure CD-ROM
UU = Two Universal Serial Bus (USB) port
Wide Ultra SCSI = Adaptec AHA-7895; dual channel Wide Ultra SCSI
♣ = Price decrease effective April 27, 1998

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* Prices are estimated reseller prices and subject to change without notice; actual prices may vary

No warranties are expressed or implied in this summary
(IS1097 - Page 1 of 2) © IBM Corp. October 1998

IBM® IntelliStation™ M Pro

Type (code name)	6898		
Processor(s)	Intel® Pentium® II 233/66, 266/66, 300/66, or 333MHz¹ / MMX™ technology / 16KB ins + 16KB data L1 cache		
Implementation	Processor and L2 cache in Single Edge Contact (SEC) cartridge in protective metal case / SEC plugged into Intel Slot 1		
Processor upgrade	SMP via second identical processor / upgrade via SEC into motherboard Intel® Slot 1 CPU connector / MPS 1.4		
L2 cache	512KB std / 512KB max / non-ECC for 233, 266MHz; ECC for 300, 333MHz / 1/2 speed of processor / integrated in SEC		
Avail / withdrawn date	November 1997, December 1997, or January 1998 / October 1998		
Mem - std / max / type	32MB, 64MB, or 128MB std / 512MB max ¹³ / Error Checking and Correction (ECC)		
Memory - sockets	4 sockets / 3 available (all have Error Checking and Correcting memory controller)		
Memory - features	SDRAM / 66MHz / four 168 pin gold-plated DIMM 3.3 volt sockets / DIMMs can have a max height of 2.5"		
Memory - support	Supports SDRAM ECC DIMMs (32,64,128MB) or EDO ECC DIMMs (256MB) / can not mix EDO and SDRAM DIMMs		
Graphics controller	3Dlabs® Permedia® 2, Intergraph® Intense 3D Pro2200/4T, (or Intergraph Intense 3D Pro2200/GA for AAP models)		
Graphics - type	3Dlabs / Permedia 2 / 2D/3D acc / AGP-1x 266MB/s adapter	Intense 3D Pro2200/4T / 2D/3D accelerator / PCI adapter	
Graphics - memory	8MB std/max SGRAM / 230MHz RAMDAC / sideband address	16MB SDRAM buffer and 4MB SGRAM texture memory	
Graphics - features	VESA DPMS, DDC1, DDC2B / 64-bit OpenGL, Direct3D, 3D Studio MAX, QuickDraw 3D, DirectDraw Color space conversion / XY scaling / chroma-keying Texture mapping / 3D rendering / z buffering	VESA DPMS, DDC2B / onboard VGA / fogging OpenGL, Direct3D, QuickDraw 3D, DirectDraw Color space conversion / alpha blending / 32-bit textures Hardware accelerated 3D gouraud shading and Z buffering	
Bus slots	PCI 2.1 (33MHz), Accelerated Graphics Port (66MHz; AGP-2x; 533MB/sec), and ISA slots (8.33MHz) / see below		
Architecture - chip set	Intel 440LX AGPset / PIIX4 for EIDE (Ultra DMA/33), ISA Bridge, USB / National Semiconductor PC87307 Super I/O for diskette, parallel, serial, keyboard, mouse		
Disk	None, 4.2GB² or 6.4GB EIDE (Ultra DMA/33), or 4.5GB or 9.1GB Wide Ultra SCSI / SMART⁵		
SCSI controller	Adaptec® AHA-7895 / dual channel Wide UltraSCSI controller / on planar / PCI 2.1		
SCSI connectors	Channel A: 68 pin (attaches 4 drop cable to SCSI disk); Channel B: 50 pin and 68 pin / 68 pin cable std to external SCSI port (all mod)		
RAID option	Supports Adaptec ARO™-1130CA PCI RAIDport™ adapter (RAID 0, 1) / installs in PCI slot / uses 7895 controller and connectors		
Cables - SCSI and IDE	SCSI model: 4 drop 16-bit cable on Channel A; 16-bit cable to ext port on Channel B; one 2 drop IDE cable (CD-ROM)		
EIDE disk controller	EIDE and AAP models: Two 2 drop IDE cables (one for disk; one for CD-ROM) and both SCSI cables Enhanced IDE busmaster (PIIX4) / Ultra DMA/33 (ATA-33) support / two connectors on planar		
CD-ROM	24X⁶ max CD-ROM / CAV (ATAPI) / bootable		
Diskette drive	3.5" 1.44MB diskette drive / 1 drop cable		
Ethernet controller	Intel EtherExpress PRO/100B / PCI 82557 ethernet chip on planar / 10BaseT and 100BaseTX / PCI bus / RJ45 UTP connector / Wake-on-LAN		
Wake-on-LAN	Standard on all models with integrated ethernet controller		
LCCM	LAN Client Control Manager enabled / Wake-on-LAN / Setup-on-LAN / POST/BIOS update over LAN / Hybrid RPL / DHCP/BOOTP		
Systems mgmt cntrl	National Semiconductor® LM78 compatible / hardware chip to monitor temperature, front fan speed, voltage, system cover removal / ISA		
Audio	Crystal CS4236B chip on planar / stereo / ISA bus / FM Synthesis / int speaker		
Audio connectors	Stereo line in / mic in / line out (all in back) / software volume control		
Serial / parallel / USB	Ser: Two 9 pin / 115Kbps Par: One (EPP, ECP) / IEEE 1284 USB: Two ports		
Infrared	None		
Preloaded software ⁷	N/A (if no disk), or Windows NT® Workstation 4.0 All include Ready to Configure CD-ROM (device drivers and utilities) All include Windows NT Workstation 4.0 CD-ROM		
Keyboard / Mouse	104 key (rubber dome) keyboard / keyboard extender / IBM 3 button mouse		
Power supply	330 watts / universal / manual switch / Power Factor Corrected / Wake-on-LAN		
 Bay ①	5.25", HH 1.6", access, std CD-ROM		
 Bay ②	5.25", HH 1.6", access, open		
 Bay ③	3.5", SL 1", access, open		
 Bay ④	3.5", SL 1", access, std diskette		
 Bay ⑤	3.5", SL 1", no access, open (disk only)		
 Bay ⑥	3.5", SL 1", no access, std disk (disk only)		
 Slot 1	fullsize, 32-bit AGP (3.3v) - used by Permedia 2 adapter (some models)		
 Slot 2	fullsize, 32-bit PCI 2.1 (3.3v/5v) - supports optional Adaptec RAIDport 1130CA		
 Slot 3	fullsize, 32-bit PCI 2.1 (3.3v/5v) - used by Intergraph 3D (some models)		
 Slot 4	fullsize, 32-bit PCI 2.1 (3.3v/5v)		
 Slot 5	fullsize, 16-bit ISA or 32-bit PCI 2.1 (3.3v/5v)		
 Slot 6	fullsize, 16-bit ISA		
Mini tower mechanical;			
Stealth gray color			
3Dlabs PERMEDIA GRAPHICS MODES (2D)			
Resolution	Frame Rate Hz (non-interlaced)	Memory required	Max colors
640x480	60 to 100Hz	N/A	16.7 mil
800x600	60 to 100Hz	N/A	16.7 mil
1024x768	60 to 100Hz	N/A	16.7 mil
1152x870	60 to 100Hz	N/A	16.7 mil
1280x1024	60 to 100Hz	N/A	16.7 mil
1600x1200	60 to 75Hz	N/A	16.7 mil
INTERGRAPH GRAPHICS MODES (2D)			
640x480	60 I, 60, 72, 75, 85	N/A	16.7 mil
800x600	60 I, 60, 72, 75, 85	N/A	16.7 mil
1024x768	60 I, 60, 72, 75, 85	N/A	16.7 mil
1152x864	60 I, 60, 72, 75, 85	N/A	16.7 mil
1280x960	60 I, 60, 75	N/A	16.7 mil
1280x1024	60 I, 60, 75	N/A	16.7 mil
OTHER STANDARD FEATURES			
The Setup Utility resides in flash memory; invoked by pressing F1 key during memory POST			
Plug-and-Play 1.0a			
Vital Product Data support (type, model, serial, id)			
7.87"W x 17.52"D x 19.37"H; 33 lbs			
200 mm W x 445 mm D x 492 mm H; 15 kg			
Advanced Power Mgmt 1.2; ISO 9241-3 capable			
Adv Config and Power Interface (ACPI) support			
Several hardcopy publications			
256KB SurePath™ BIOS (Flash over LAN support)			
Support for DMI technology (includes MIF browser)			
with DMI Service Layer 2.0, DMI BIOS 2.0, and DMI software; DMI 2.0 compliant			
Supplier's Declaration available			
Wired for Management 1.0 compliant			
SECURITY			
- Chassis-intrusion detection			
- Cover key lock (in rear)			
- U-Bolt support			
- Power-on password			
- Admin passd (in security EEPROM)			
- Boot sequence control (in security EEPROM on motherboard)			
- Diskette boot inhibit			
- Boot without keyboard/mouse/diskette			
- Diskette write protect			
- Diskette and disk I/O control			
- Serial/parallel I/O control			
- Unattended start-up (network)			
- Secure removable media			
- Wake-up on LAN (Dual Mode)			
- Mouse disable			
- Laser-etched 22 digit serial number on processor and memory (stored in EEPROMs)			
- Barcode labels on most components (match laser-etched and EEPROM serial numbers)			
Remotely readable DMI-compliant:			
- System EEPROM on motherboard (info and serial no for CPU, riser, system unit, CD-ROM, diskette, five blank fields)			
- EEPROMs on DIMMs (component info, serial no)			
- Disk firmware (component info, serial no)			
Maximum internal SCSI disk capacity¹³: 22.7GB (2 x 9.1GB plus 1 x 4.5GB)			
Maximum internal ESDI disk capacity¹³: 27.3GB (3 x 9.1GB)			
Power and System management features:			
- Three configurable levels for system, CPU, and monitor including powering system and/or display off			
- Wake Up on Ring (via modem) from off state			
- Wake Up on Alarm (scheduled time) from off state			
- Wake-on-LAN from off state			
- PCI Wake Up from supported PCI devices			

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I = Interlaced

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(IS1097 - Page 2 of 2) © IBM Corp. October 1998

IBM IntelliStation® Z Pro models (6899) - withdrawn

Type-model	Diskette drive Disk: std-max internal ms seek / disk interface CD-ROM ⁶ /interface	CPU MHz / Upgrade	Write-back L2 cache std / max KB / KB	Memory in MB; std/max ¹³ all 60 ns	SVGA controller; memory std / max	Total bus slots; 2 or 3 used	Total bays	Std features	Retail Price ¹	Available date
7 slot x 6 bay; PCI/ISA; Gray										
⌘ 6899-10U	1.44 MB diskette 2.1 GB std - 13.2 GB max 8.5 ms / Wide Ultra SCSI 16 x CD-ROM / EIDE	1 x Pentium Pro 200/66	<i>SMP via 2nd PPro; OverDrive[®] in future</i>	256/256 in PPro	32 / 1G EDO ECC	Matrox [®] Millennium PCI Adap 4 / 8 WRAM	PCI=4 PCI/ISA=1 ISA=2 Total=7	6 bays 3 used 3 empty	U//CD/L/Eth Windows NT 4.0 RTC CD	\$2430 [⌘] Mar 1997
⌘ 6899-12U	1.44 MB diskette 4.5 GB std - 13.2 GB max 8.0 ms / Wide Ultra SCSI 16 x CD-ROM / EIDE	1 x Pentium Pro 200/66	<i>SMP via 2nd PPro; OverDrive[®] in future</i>	256/256 in PPro	64 / 1G EDO ECC	Matrox Millennium PCI Adap 4 / 8 WRAM	PCI=4 PCI/ISA=1 ISA=2 Total=7	6 bays 3 used 3 empty	U//CD/L/Eth Windows NT 4.0 RTC CD	3054 [⌘] Mar 1997
⌘ 6899-14U	1.44 MB diskette 4.5 GB std - 13.2 GB max 8.0 ms / Wide Ultra SCSI 16 x CD-ROM / EIDE	1 x Pentium Pro 200/66	<i>SMP via 2nd PPro; OverDrive[®] in future</i>	256/256 in PPro	64 / 1G EDO ECC	Intergraph [®] Intense 3D 16 MB SDRAM 4 MB SGRAM	PCI=4 PCI/ISA=1 ISA=2 Total=7	6 bays 3 used 3 empty	U//CD/L/Eth Windows NT 4.0 RTC CD	4181 [⌘] Mar 1997
⌘ 6899-16U	1.44 MB diskette 4.5 GB std - 13.2 GB max 8.0 ms / Wide Ultra SCSI 16 x CD-ROM / EIDE	1 x Pentium Pro 200/66	<i>SMP via 2nd PPro; OverDrive[®] in future</i>	256/256 in PPro	128 / 1G EDO ECC	Intergraph Intense 3D 16 MB SDRAM 4 MB SGRAM	PCI=4 PCI/ISA=1 ISA=2 Total=7	6 bays 3 used 3 empty	U//CD/L/Eth Windows NT 4.0 RTC CD	4803 [⌘] Mar 1997
⌘ 6899-17U	1.44 MB diskette 4.5 GB std - 13.2 GB max 8.0 ms / Wide Ultra SCSI 16 x CD-ROM / EIDE	1 x Pentium Pro 200/66	<i>SMP via 2nd PPro; OverDrive[®] in future</i>	512/512 in PPro	128 / 1G EDO ECC	Intergraph Intense 3D 16 MB SDRAM 4 MB SGRAM	PCI=4 PCI/ISA=1 ISA=2 Total=7	6 bays 3 used 3 empty	U//CD/L/Eth Windows NT 4.0 RTC CD	5763 [⌘] Mar 1997
⌘ 6899-26U	1.44 MB diskette 4.5 GB std - 13.2 GB max 8.0 ms / Wide Ultra SCSI 16 x CD-ROM / EIDE	2 x Pentium Pro 200/66	<i>OverDrive in future</i>	256/256 in PPro	128 / 1G EDO ECC	Intergraph Intense 3D 16 MB SDRAM 4 MB SGRAM	PCI=4 PCI/ISA=1 ISA=2 Total=7	6 bays 3 used 3 empty	U//CD/L/Eth Windows NT 4.0 RTC CD	5763 [⌘] Mar 1997
⌘ 6899-18U for Auth Assmblr Program	1.44 MB diskette <i>no disk</i> Wide Ultra SCSI 16 x CD-ROM / EIDE	1 x Pentium Pro 200/66	<i>SMP via 2nd PPro; OverDrive[®] in future</i>	256/256 in PPro	32 / 1G EDO ECC	<i>None</i>	PCI=4 PCI/ISA=1 ISA=2 Total=7	6 bays 2 used 4 empty	U//CD/L/Eth RTC CD	2147 [⌘] Mar 1997

Windows NT Workstation Preload ¹⁷	Ready to Configure CD-ROM	Open Bay (18U)
<p>Windows[®] NT Workstation 4.0 ConfigSafe for Windows NT 4.0 DMI for Windows NT DMI for Windows NT BIOS Instrumentation IBM AntiVirus for Windows NT IBM IDE Disk Monitor for Windows 95/NT IBM PC System Monitor for Windows NT IBM Product Registration IBM Welcome Center IBM Utilities for Windows 95/NT 4.0 Online Books Device Drivers for each subsystem - Hummingbird "Try and Buy" Suite CD-ROM Exceed 5.1.3 Exceed 3D 5.1.3 NFS Maestro Solo 5.1.3 - Intel LANDesk 3.0 for Windows NT CD-ROM - Ready to Configure CD-ROM - Free license for Lotus[®] SmartSuite CD-ROM - Windows NT Workstation 4.0 CD-ROM</p> <p>Supported Memory and CPU Options</p> <p>16 MB EDO ECC Au 60 ns 3.3v 76H0278 32 MB EDO ECC Au 60 ns 3.3v 76H0279 64 MB EDO ECC Au 60 ns 3.3v 76H0280 128 MB EDO ECC Au 60 ns 3.3v 76H0281 256 MB EDO ECC Au 60 ns 3.3v 76H0269 SMP 200 MHz / 256 KB Upgrade 94G6175 SMP 200 MHz / 512 KB Upgrade 94G6463</p>	<p>All models ship with a CD with drivers for OS/2, Windows 95, and Windows NT and various utilities.</p> <p>ConfigSafe for Windows NT 4.0 (and Win 95) CoSession Remote 32 for Windows 95/NT 4.0 CoSession Remote Host for Win 95 CoSession Remote Viewer for Win 95 Crystal Audio for Windows NT (and Win 95, OS/2) DMI for Windows NT (and Win 95, OS/2) DMI for Windows NT BIOS Instrumentation (and Win 95, OS/2) IBM AntiVirus for Windows NT (and Win 95, OS/2) CPU Thermal Monitor for Windows NT 4.0 IBM IDE Disk Monitor for Windows 95/NT (and OS/2) IBM PC QAPLUS/PRO Diagnostics IBM PC QAPLUS/WIN-WIN Diagnostics IBM PC Supplemental Diagnostics IBM Product Registration IBM Utilities for Windows 95/NT 4.0 Intel EtherExpress Pro/100 Driver Intel Ethernet Flash Refresh Utility Intergraph 3D Graphics for Windows NT 3.51, 4.0 Matrox Millennium Graphics Drivers Multiprocessor Upgrade for Windows NT Online Books TME 10 NetFinity for Windows NT (and Win 95, OS/2) Bus Mastering IDE/SMART for Windows NT IBM PC System Monitor for OS/2 Infrared for Win 95, OS/2 Infrared Mode Selection for Windows 95 Infrared PDA Connect for Windows 95 Busmastering IDE/SMART for OS/2 IBM Diskette Factory for RTC IBM RTC CD-ROM Setup Utility RTC CD Overview Help Files</p>	<p>Open bay model contains no hard disk. No preload or operating system license is included.</p> <ul style="list-style-type: none"> - Hummingbird "Try and Buy" Suite CD-ROM Exceed 5.1.3 Exceed 3D 5.1.3 NFS Maestro Solo 5.1.3 - Intel LANDesk 3.0 for Windows NT CD-ROM - Ready to Configure CD-ROM - Free license for Lotus SmartSuite CD-ROM (via 800 number).
<p>WARRANTY SERVICE SUPPORT³</p> <ul style="list-style-type: none"> ↔ 3 year parts warranty ↔ 1 year labor warranty ↔ International warranty ↔ 1st year: on site, 8 am - 5 pm, Mon - Fri coverage, 2nd business day response time ↔ 2nd/3rd year: parts exchange only, call 1-800-772-2227 ↔ On site warranty upgrade options¹⁴: <ul style="list-style-type: none"> Ⓢ Next day, on site, Mon-Fri 8-5 Ⓢ Same day, on site, 7 day x 24 hr ↔ Post warranty: on site options above ↔ 24 hour / 7 day telephone, bulletin board, fax, electronic, Internet (http://www.pc.ibm.com) support 		
<p>256 = (italic) write-back L2 cache CD = 16 x maximum speed CD-ROM CAV (ATAPI); bootable Eth = Intel EtherExpress Pro/100B PCI Adapter I = Infrared port to 1.2 Mbps (requires Infrared cable 75H7987) L = Lan Client Control Manager (LCCM) enabled NT4 = Windows NT Workstation 4.0 preinstalled RTC CD = ReadyTo Configure CD-ROM U = One Universal Serial Bus (USB) port Wide Ultra SCSI = Adaptec AHA-2940UW UltraSCSI PCI Adapter</p> <p>↔ 16 x CD-ROM can use PIO Mode 4 (16.6), Multi-Word DMA 1 (13.33), or Single-Word DMA 2 (8.33); PIO Mode 0 (3.3 MB/sec) used on preload; bootable ↔ Stealth Gray displays are available to match the Stealth Gray of the IntelliStation Z Pro. Stealth Gray displays include the 9516 TFT LCD Color Monitor, P70 (6554-6E3), P200 (6555-7E3), and P201 (6555-8E3) Ⓢ Models announced March 18, 1997; withdrawn effective January 27, 1998 ⌘ Price decrease effective October 22, 1997</p>		

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Note 1: Dealer prices will vary; ⌘ = Withdrawn from marketing

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(IS397 - Page 1 of 2) Compiled by Roger Dodson, IBM. July 1998

IBM IntelliStation Z Pro (6899) - withdrawn

IBM® IntelliStation™ Z Pro

Type (code name)	6899 (Avenger)		
Processor / MHz	1 x Pentium Pro 200/66 MHz (P6S) or 2 x Pentium Pro 200/66 MHz (P6S) / thermal sensors under each processor		
L2 cache - std / max	256 KB std/max or 512 KB std/max integrated in Pentium Pro / write-back / 4 way set associative		
Processor upgrade	SMP via second Pentium Pro / add second same speed CPU to open 387 pin ZIF socket (Intel® Socket 8) and VRM		
OverDrive upgrade	Future Intel® Pentium Pro OverDrive® processor (P6T)		
Avail / withdrawn date	March 1997 / January 1998		
Mem - std / max / type	32 MB, 64 MB, or 128 MB std / 1 GB max ¹³ / Error Checking and Correction (ECC)		
Memory - sockets	4 sockets / 2 or 3 available (all have Error Checking and Correcting memory controller)		
Memory - features	EDO / 60 ns / four 168 pin gold-plated DIMM 3.3 volt sockets / DIMMs can have a max height of 1.2"		
Memory - support	Supports EDO ECC DIMMs (16,32,64,128, 256 MB) or EDO non-parity DIMMs (16,32,64,128 MB) / mixing ECC/NP gives NP		
Graphics controller	Matrox® MGA Millennium, Intergraph® Intense 3D Pro1000/T, (or none on Model 18U for Authorized Assembler Program)		
Graphics - type	Matrox / MGA Millennium / SVGA 64 bit acceltr / PCI adapter	Intergraph / Intense 3D / 3D accelerator / PCI adapter	
Graph - memory	4 MB std / 8 MB max (WRAM 20 ns) / 220 MHz RAMDAC	16 MB SDRAM buffer and 4 MB SGRAM texture memory	
Graph - features	VESA DPMS, DDC1, DDC2B, Auto Refresh Rate Utility On the fly resolution and color depth switching Hardware zoom / virtual desktop / panlock / DirectDraw Hardware accelerated 3D gouraud shading and Z buffering	VESA DPMS, DDC2B / onboard VGA / OpenGL / fogging 810,000 3D triangles per second / 24 bit double buffering Color space conversion / alpha blending / 32 bit textures 24 or 32 bit Z buffer / optional hardware geometry accelertn	
Bus slots	PCI 2.1 (33 MHz) and ISA slots (see below) / 3 PCI slots use DEC 21152 PCI-to-PCI bridge chip		
Architecture - chip set	IBM Pulsar planar with Intel Natoma (440FX) chipset / PIIX3 for EIDE, ISA Bridge, USB / National Semiconductor PC87308 Super I/O for diskette, parallel, serial, keyboard, mouse, infrared		
Disk	None, 2.1 GB Wide Ultra SCSI (8.5 ms / 5400 rpm), or 4.5 GB Wide Ultra SCSI (8.0 ms / 7200 rpm) / SMART ⁵ and PFA		
SCSI disk controller	Adaptec® AHA-2940UW UltraSCSI / PCI adapter supports one channel and 15 devices / 16 bit int, 8 bit int, and 16 bit ext conn.		
SCSI cable	4 drop 16 bit 68 pin cable standard / one drop to std SCSI disk		
EIDE disk controller	Enhanced IDE busmaster / PIO modes 0 to 4 or DMA Modes 0 to 2 / two connectors on planar / one 2 drop cable standard		
CD-ROM	16 x max CD-ROM CAV (ATAPI) / bootable		
Diskette drive	3.5" 1.44 MB diskette drive / 1 drop cable	Maximum internal SCSI disk capacity ¹³ : 13.2 GB (4.51 GB in bays 3 and 6 plus 2.1 GB in bays 4 and 5)	
LAN Adapter	Intel EtherExpress Pro/100B Adapter with Wake-on-LAN / RJ-45 UTP connector / PCI adapter / RPL and DHCP/BOOTP		
Wake-on-LAN	Supported on all models with standard ethernet adapter		
LCCM	Lan Client Control Manager enabled / Wake-on-LAN / Setup-on-LAN / Flash-on-LAN / Hybrid RPL / DHCP/BOOTP		
Audio	Sound Blaster™ Pro compatible / wavetable synthesis / Crystal Semiconductors™ CS4236		
Audio connectors	Stereo line in / microphone in / stereo line/headphone out (all in back) / no hardware volumn control (use software)		
Serial / parallel port	Serial: two 9 pin / 115 Kbps max speed / 16550A / non-DMA; Parallel: one bidirectional (EPP, ECP) / IEEE 1284		
Universal Serial Bus	One USB port / 12 Mbps / supports 127 devices		
Infrared	Infrared port (on back) requiring optional Infrared Dongle cable; part number 75H7987 / IrDA 1.1 / 115 Kbps or 1.2 Mbps		
Preloaded software	N/A (if no disk), or Windows NT Workstation 4.0 All include Ready to Configure CD-ROM (device drivers and utilities) All include a free license for Lotus SmartSuite CD-ROM (via 800 number) All include Windows NT Workstation 4.0 CD-ROM		1. Cover key lock, 2. U-Bolt support 3. Diskette write inhibit 4. Serial/parallel port inhibit 5. Power-on password; 6. Administrator passwd 7. Boot sequence control 8. Boot w/o keyboard/mouse/diskette 9. Disk disable, 10. Diskette disable 11. Unattended start-up (network) 12. Secure removable media; 13. Mouse disable 14. Wake-up on LAN password prompt
Keyboard / Mouse	104 key (rubber dome) keyboard / IBM 3 button mouse (400 dpi)		
Power supply	200 watts / universal / manual switch / Wake-on-LAN support		
Mini tower mechanical Stealth gray color		Bay ① 3.5", SL 1", access, std diskette	SECURITY 11. Unattended start-up (network) 12. Secure removable media; 13. Mouse disable 14. Wake-up on LAN password prompt
		Bay ② 5.25", HH 1.6", access, std CD-ROM	
		Bay ③ 5.25", HH 1.6", access, open	
		Bay ④ 3.5", HH 1.6", no access, open	
		Bay ⑤ 3.5", SL 1", no access, open (disk only)	
		Bay ⑥ 3.5", SL 1", no access, std disk (disk only) - bay in top back of system	
		Slot 1: halfsize, 32 bit PCI 2.1 (3.3v/5v), primary - used by Adaptec SCSI adapter	
Slot 2: varies, 16 bit ISA fullsize or 32 bit PCI 2.1 halfsize (3.3v/5v), primary - used by Matrox Millennium (some models)			
Slot 3: fullsize, 16 bit ISA			
Slot 4: fullsize, 16 bit ISA			
Slot 5: fullsize, 32 bit PCI 2.1 (3.3v/5v), secondary - used by Intergraph Intense 3D (some models)			
Slot 6: fullsize, 32 bit PCI 2.1 (3.3v/5v), coprocessor			
Slot 7: fullsize, 32 bit PCI 2.1 (3.3v/5v), secondary - used by EtherExpress			
MATROX MILLENNIUM GRAPHICS MODES			
Resolution	Frame Rate Hz (non-interlaced)	Memory required	Max colors
640 x 480	60 to 200 Hz	4 MB	16.7 mil
800 x 600	60 to 200 Hz	4 MB	16.7 mil
1024 x 768	60 to 120 Hz	4 MB	16.7 mil
1280 x 1024	60 to 110 Hz	4 MB	16.7 mil
1600 x 1200	60 to 85 Hz	4 MB	65,536
1600 x 1200	60 to 85 Hz	8 MB	16.7 mil
INTERGRAPH INTENSE 3D GRAPHICS MODES			
640 x 480	60, 72, 75, 85	N/A	16.7 mil
800 x 600	60, 72, 75, 85	N/A	16.7 mil
1024 x 768	60, 70, 75, 85	N/A	16.7 mil
1152 x 864	60, 70, 75, 85	N/A	16.7 mil
1280 x 960	60, 75	N/A	16.7 mil
1280 x 1024	60, 75	N/A	16.7 mil
OTHER STANDARD FEATURES			
The Setup Utility resides in flash memory; invoked by pressing F1 key during memory POST			
Plug-and-Play 1.0a; Vital Product Data support			
7.48"W x 17.13"D x 17.13"H; 28.5 lbs			
Advanced Power Mgmt 1.2; ISO 9241-3 capable			
Several hardcopy publications			
256 KB SurePath™ BIOS (Flash over LAN support)			
Support for DMI technology (includes MIF browser) with DMI Service Layer 1.1, DMI BIOS 2.0, and DMI software			
Thermal sensors under each processor socket			
Supplier's Declaration available			
IntelliStation Proven program			
Power and System management features:			
- Three configurable levels for system, CPU, and monitor including powering system and/or display off			
- Wake Up on Ring (via modem) from off state			
- Wake Up on Alarm (scheduled time) from off state			
- Wake-on-LAN (from LAN) from off state			
WARRANTY SERVICE SUPPORT³			
⇒ 3 year parts warranty			
⇒ 1 year labor warranty			
⇒ International warranty			
⇒ 1st year: on site, 8 am - 5 pm, Mon - Fri coverage, 2nd business day response time			
⇒ 2nd/3rd year: parts exchange only, call 1-800-772-2227			
⇒ On site warranty upgrade options:			
① Next day, on site, Mon-Fri 8-5			
② Same day, on site, 7 day x 24 hr			
⇒ Post warranty: on site options above			
⇒ 24 hour / 7 day telephone, electronic, Internet (http://www.pc.ibm.com) support			

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IBM® Type-GAV-model	Processor & GHz ¹	L2	Memory	Disk & rpm	Disk controllers	Optical	Graphics adapter	FireWire	Slots x bays	Preload ¹⁷	Available date	
9228-62U	1 x Xeon™M5130	2.0GHz	4MB	2x512MB	160GB ² SATA 7.2K	SATA	DVD	Quadro® FX550	1394	6x7	XP 64	Aug 2006
9228-72U	1 x Xeon 5140	2.33GHz	4MB	2x512MB	160GB SATA 7.2K	SATA	DVD	Quadro NVS 285	1394	6x7	XP 64	Aug 2006
9228-74U	1 x Xeon 5140	2.33GHz	4MB	2x512MB	160GB SATA 7.2K	SATA	DVD	Quadro FX550	1394	6x7	XP 64	Aug 2006
9228-76U	1 x Xeon 5140	2.33GHz	4MB	2x512MB	160GB SATA 7.2K	SATA	DVD	Quadro FX 1500	1394	6x7	XP 32	Aug 2006
9228-82U	1 x Xeon 5150	2.66GHz	4MB	4x512MB	73GB SAS 15K	SAS/SATA	DVD	Quadro FX 3500	1394	6x7	XP 64	Aug 2006
9228-84U	1 x Xeon 5150	2.66GHz	4MB	4x512MB	160GB SATA 7.2K	SATA	Combo	Quadro FX1500	1394	6x7	RH4 U3	Aug 2006
9228-86U	1 x Xeon 5150	2.66GHz	4MB	4x512MB	160GB SATA 7.2K	SATA	Combo	Quadro NVS 285	1394	6x7	XP 64	Aug 2006
9228-92U	1 x Xeon 5160	3.0GHz	4MB	4x512MB	160GB SATA 7.2K	SATA	Combo	Quadro FX1500	1394	6x7	XP 64	Aug 2006
9228-94U	1 x Xeon 5160	3.0GHz	4MB	4x512MB	73GB SAS 15K	SAS/SATA	Combo	Quadro FX 3500	1394	6x7	RH4 U3	Aug 2006
9228-96U	2 x Xeon 5160	3.0GHz	4MB	4x512MB	73GB SAS 15K	SAS/SATA	Combo	Quadro FX 3500	1394	6x7	XP 32	Aug 2006
9228-98U	2 x Xeon 5160	3.0GHz	4MB	4x512MB	73GB SAS 15K	SAS/SATA	Combo	Quadro FX 4500	1394	6x7	XP 64	Aug 2006

Positioning Processor L2 cache Processor upgrade Implementation
Powerful dual-core, dual-socket workstation with Intel® Extended Memory 64 Technology 1 or 2 x Intel Xeon at up to 3.0GHz with 1333MHz FSB Dual Core & Extended Memory 64 Technology (EM64T) 4MB standard and maximum / at processor speed 2-way SMP / up to two Xeon Processors (same speed/cache size) Systemboard contains two Intel LGA771 sockets, eight DIMM slots, six slots (three PCI Express, two PCI-X, one PCI), and integrated SAS, integrated SATA and gigabit ethernet

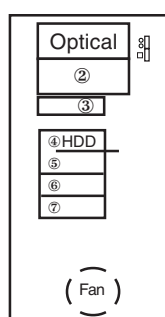
Memory - std / max **1GB or 2GB std / 32GB^{13,21} max / two slots used / six slots available / PC2-5300 667MHz FBD 240-pin ECC DDR2-SDRAM DIMMs / eight DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank]**
 Memory - features 2-way memory interleave / quad-channel / **Fully Buffered Error Checking and Correcting (ECC)** / DIMM sparing / DIMM mirroring / single rank memory kits available to allow maximum utilization of system resources
 Graphics controller (one of following) (see IntelliStation Pro Graphics page for full graphics specifications)
 • Performance 2D: NVIDIA® Quadro NVS 285 128MB PCI Express x16
 • Entry 3D: NVIDIA Quadro FX 550 128MB PCI Express x16
 • Advanced 3D: NVIDIA Quadro FX 1500 128MB PCI Express x16
 • High-Advanced 3D: NVIDIA Quadro FX 3500 256MB PCI Express x16
 • Extreme 3D: NVIDIA Quadro FX 4500 512MB PCI Express x16

SATA controller SAS/SATA controller SATA-300 controller (3Gb/s) / provided by ESB2E / four connectors on systemboard
LSI Logic® 1064e (1.5/3Gb/s) / four port SAS/SATA controller / daughter card / PCI-Express / supports RAID 0, 1 & 1E
 Cables Disk - features **SATA models:** Four SATA cables (1 drop), **SAS models:** Four SAS cables (1 drop), **ALL:** one 2-drop EIDE cable (to optical) **Some:** 160GB / SATA-300 / 7200 rpm / 9.0 ms seek; **Some:** 73.0GB SAS / 15K rpm / 3.5 ms seek; **All:** S.M.A.R.T.⁵ / Simplexwap

Rack support Chipset 5U⁴ rack mount support via tower-to-rack kit option
Intel 5000X chipset / Intel Memory Controller Hub (MCH) provides one PCI-Express x16 slot with 16x links (video) / Enterprise South Brige (ESB2E) provides: one PCI-Express slot x8 with 4x/0x links (flexible slot width) and one PCI-Express slot x16 with 4x/8x links (flexible slot width, SLI video), two 64bit/133MHz PCI-X slots, one 32bit/33MHz PCI slot, 1394a, SATA, IDE ethernet, audio, USB(2.0) / Winbond® PC8374 Super I/O off LPC (low pin count) interface

Gigabit ethernet One gigabit 10/100/1000 ethernet controller / Broadcom® BCM5752 / full gigabit ethernet MAC and PHY layer functions / chip on planar / PCI-Express / full duplex / Wake on LAN® / Alert Standard Format 2.0 / one rear RJ-45 port / Integrated TPM
 Diskette / Optical IEEE 1394(FireWire) Audio Rear ports Front ports Systems mgmt **Diskette:** optional / **Optical:** Some: CD-RW/DVD-ROM Combo; Some: DVD-ROM FireWire on planar / 1394a, 400Mbps, 6-pin port on rear, 4-pin port on front AC - 97 Audio, ADI1981HD via ESB2 / high definition / internal speaker (use of audio line out requires powered speakers) Four USB (Ver 2.0), one 9-pin serial, parallel, keyboard, mouse, ethernet, audio line in, audio line out, mic in / 6-pin 1394 Two USB (Ver 2.0), audio line out (stereo), mic in / 4-pin 1394 Monitoring and alerting of thermal, fans, and voltage faults / diagnostic LEDs (CPU, DIMMs, slots and fans)

Keyboard / mouse IBM 104-key keyboard (6-pin PS/2) / IBM three button mouse (6-pin PS/2 conn)
 Cooling fans Up to eight variable speed fans (1-2 CPU, 1 I/O, 1 Rear, 1 HDD, 1 Front, 1 PS, 0-1 video card) / not redundant or hot-swap
 Power supply 815 watts / universal / auto sensing / built-in overload and surge protection



Bay ① 5.25", HH 1.6", access, optical
 Bay ② 5.25", HH 1.6", access, open
 Bay ③ 3.5", SL 1", access, optional floppy
 Bay ④ 3.5", SL 1", simplexwap, disk
 Bay ⑤ 3.5", SL 1", simplexwap, open
 Bay ⑥ 3.5", SL 1", simplexwap, open
 Bay ⑦ 3.5", SL 1", simplexwap, open

Slot 1: fullsize, PCI Express x16 (std vid)
 Slot 2: fullsize, PCI Express x8-x4/0 lanes*
 Slot 3: fullsize, PCI Express x16-x4/8 lanes (SLI vid)
 Slot 4: fullsize, 64-bit 133MHz, PCI-X 1.0 (3.3v)
 Slot 5: fullsize, 64-bit 133MHz, PCI-X 1.0** (3.3v)
 Slot 6: fullsize, 32-bit 33MHz, PCI 1.0 (5v)
 * - Not available w/ NVIDIA Quadro FX 4500 models

- Xeon 5130 2.0GHz/4MB L2 Cache Proc Upgrade 40K1243
- Xeon 5140 2.33GHz/4MB L2 Cache Proc Upgrade 40K1244
- Xeon 5150 2.66GHz/4MB L2 Cache Proc Upgrade 40K1245
- Xeon 5160 3.0GHz/4MB L2 Cache Proc Upgrade 40K1246
- 1GB PC2-5300 (2x512MB) ECC FBD DDR2-SDRAM 39M5782
- 2GB PC2-5300 (2x1GB) ECC FBD DDR2-SDRAM 39M5785
- 4GB PC2-5300 (2x2GB) ECC FBD DDR2-SDRAM 39M5791
- 8GB PC2-5300 (2x4GB) ECC FBD DDR2-SDRAM 39M5797
- SAS/SATA Interface Card 39Y6985
- IBM 73.4GB 15K rpm SAS HDD 40K1049
- IBM 146GB 15K rpm SAS HDD 40K1050
- IBM 300GB 10K rpm SAS HDD 40K1047
- IBM 160GB 7.2K rpm SATA-300 HDD 39M4504
- IBM 250GB 7.2K rpm SATA-300 HDD 39M4508
- IBM 500GB 7.2K rpm SATA-300 HDD 39M4514
- IBM 5Ux20D Tower-to-Rack Conversion Kit 39Y9707

Other options at ibm.com/pc/us/accessories

- Maximum internal disk capacity¹³: SAS: 1.2TB (4 disks x 300GB) SATA: 2TB (4 disks x 500GB)
- Removable left side panel
- BIOS Setup Utility via F1 at startup
- LSI Configuration Utility near startup by pressing CTRL+C
- Product Recovery Program via F11 at startup
- Adv Config Power Interface (ACPI) 1.0a
- DMI 2.2-compliant

- Metal cage for disk bays 4, 5, 6, 7 rotates out of chassis
- Two front stabilizing feet
- Handle grip on top
- H 18.7" x W 8.5" x D 19.7"
- H 469mm x W 216mm x D 500mm
- 46 lb to 50 lb (20.9kg to 22.6kg)

SECURITY

- U-bolt anchoring feature (U-bolt is optional; supports optional padlock)
- Security slot (for attachment of optional cable lock such as Kensington cable lock)
- Cover key lock
- Cover tamper detect switch
- Secure fixed DASD
- Power-on password
- Administrator password
- Boot sequence control
- Boot without keyboard or mouse
- Diskette boot inhibit and write-protect
- Disable mouse
- Diskette, disk, serial port, parallel port I/O control
- Secure access openings
- VPD stored in EEPROM
- Write protection control for EEPROM
- IBM Security Solutions

Choice of Preinstalled¹⁷ OS: Windows® XP Pro x64 Edition (32-/64-bit); Red Hat® Enterprise Linux 4 WS (64-bit)

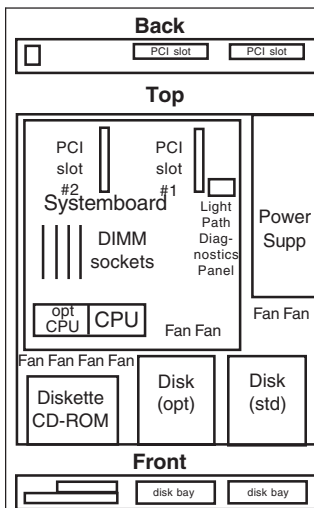
- ◆ Device Drivers CD
- ◆ IBM IntelliStation Documentation CD
- Disk-to-Disk Recovery (in service partition)

LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am through 5 pm, Mon through Fri excluding holidays, next business day response time
- On site warranty service upgrade options⁷ available as ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period⁴

IBM IntelliStation® R Pro (6851) - withdrawn

IBM® Type-model	Qty x Processor	Memory	Disk	Disk Controller	CD	Graphics	Video in standard	Ethernet	Mech	Slots x bays	OS ¹⁷	Available date
6851-10U	1 x Pentium® III 1.13GHz/133	256MB	20.4GB ²	EIDE	CD	Matrox G200 MMS	NTSC	2 x 10/100	1U rack	2x4	DOS	July 2001
6851-11U	1 x Pentium III 1.13GHz/133	256MB	18.2GB	Ultra160	CD	Matrox G200 MMS	NTSC	2 x 10/100	1U rack	2x4	DOS	July 2001
6851-20U	1 x Pentium III 1.26GHz/133	256MB	20.4GB	EIDE	CD	Matrox G200 MMS	NTSC	2 x 10/100	1U rack	2x4	DOS	Aug 2001
6851-21U	1 x Pentium III 1.26GHz/133	256MB	18.2GB	Ultra160	CD	Matrox G200 MMS	NTSC	2 x 10/100	1U rack	2x4	DOS	Aug 2001
Processor Upgrade	Intel® Pentium® III 1.13 or 1.26GHz¹ with 133MHz frontside bus 1.13GHz models can be upgraded to 1.26GHz											
SMP support Implementation	2-way SMP via identical processor / both VRMs integrated on planar Processor and L2 cache in Flip-Chip Pin Grid Array (FC-PGA2) / two Intel PGA370 sockets / terminator in empty socket											
L2 cache	512KB std and max / ECC / full speed											
Memory - std / max	256MB std / 4GB max ¹³ / Error Checking and Correcting (ECC) memory controller / 4 sockets / 3 available											
Memory - features	SDRAM / 133MHz / ECC registered DIMMs / 168-pin gold-plated DIMM 3.3 volt sockets / PC133-compliant											
Graphics controller	<ul style="list-style-type: none"> • Matrox® G200 MMS / four monitor support implemented via 2 proprietary LFH-60 connectors on back of adapter / two std cables attach to each LFH-60 connector / one cable has two DB-15 analog connectors / another cable has two DB-15 analog connectors and a composite video-in RCA connector / 32-bit PCI adapter / 32MB (8MB per monitor) SGRAM / 250MHz RAMDAC / integrated TV tuner (CATV tuner in) / supports NTSC video standard / max of 1920x1200 • Disabled by BIOS: SVGA / PCI bus / S3® Savage4Pro / 8MB SDRAM std and max / DDC2B / on planer 											
SCSI disk controller	<i>All:</i> Adaptec® AIC-7892 / Wide Ultra160 SCSI (LVD 160MB/sec) / single channel / 64-bit PCI / integrated on planar											
SCSI connectors	<i>All:</i> Internal 68-pin connector / no external SCSI connector											
IDE controller	<i>All:</i> Enhanced IDE / ATA-33 / two connectors on planar											
Cabling	<i>x0U:</i> one 2-drop IDE cable to two disk bays (one used) <i>x1U:</i> one 2-drop 16-bit LVD cable from internal 68-pin SCSI connector to SCSI disk bays (one used)											
Disk	<i>All:</i> one 1-drop IDE cable to standard CD-ROM <i>x0U:</i> 20.4GB ATA-100, 7200 rpm, 8.7ms read, S.M.A.R.T. ⁵ / <i>x1U:</i> 18.2GB Ultra160 SCSI, 10K rpm, 5.2ms read, S.M.A.R.T.											
Architecture and chipsets	ServerWorks® ServerSet III LE chip set / NB6635 North Bridge 3.0LE (the North Bridge has two peer PCI buses: (1) PCI Bus 0, 32-bit 33MHz, South Bridge, Super I/O, graphics, 2 x ethernet; (2) PCI Bus 1, 64-bit 33MHz, SCSI controller, two 64-bit PCI slots) / IB6566 OSB4 rev B2 South Bridge for IDE, USB, ISA bus for Service Processor and Super I/O National Semiconductor® PC97317VUL (diskette, parallel, serial, keyboard, mouse)											
Mechanical Control Panel	EIA 19" Rack (1U⁴) / rack-mount only / supported in IBM NetBAY™ Rack products (rack requires vented front door) Front indicators/switches include Power, Reset, Console Select, Power LED and Fault/info LED											
Ethernet controllers	2 x Intel 82559 ethernet controllers / on planar / 10BaseT, 100BaseTX / full duplex / 32-bit PCI bus / redundant ethernet capability and load balancing support through the connection of both ethernet ports to the same LAN segment / two RJ-45 connectors on rear / supports PXE 2.0 Boot Agent / Wake on LAN® support											
CD-ROM / diskette	24X-10X ⁶ CD-ROM, CAV (ATAPI), bootable, IDE / 3.5" 1.44MB diskette drive											
Systems mgmt Diagnostics	<i>No support:</i> Advanced System Mgmt Processor / on planar / PowerPC 403GA™ / monitors temp, fans, and power supply Light Path Diagnostics™ (LED lights indicate failing component) and on-board diagnostics (via PC-Doctor in BIOS)											
Audio Ports	16-bit audio / PCI adapter / microphone in / stereo line in / stereo line out / speaker out (2 watts) / joystick port (no MIDI) <i>Serial:</i> One 9-pin (jumper selectable for COM1/Mgmt Processor shared, COM2, or Mgmt Processor); <i>Parallel:</i> none; <i>USB:</i> Two ports (Version 1.1); <i>Mgmt:</i> Two RS485 ports (RJ-45) for systems mgmt											
Console interconnect	Cable Chain Technology is not implemented / output port used for attachment of keyboard and mouse via standard KVM console cable (the video connector is disabled) / KVM console cable has PS/2 mouse female connector, keyboard female connector, and DB-15 VGA connector											
Security	Power-on password / administrator password / unattended boot / selectable boot / systems mgmt security (user log-in password, read-only or read/write access, dial back) / unattended start mode											
Software	DOS 2000 license included / includes Device and Application CD-ROM and Matrox G200 CD-ROM						Pentium III 1.13GHz/133MHz/512KB Proc Upg Pentium III 1.26GHz/133MHz/512KB Proc Upg			25P2835 25P2836		
Keyboard / mouse	104-key keyboard (black) / 3-button mouse (black)						128MB SDRAM ECC DIMM 133MHz (RDIMM)			10K0018		
Cooling fans	Eight fans (four for processor(s) and planar, two for disk(s) and planar, two for power supply)						256MB SDRAM ECC DIMM 133MHz (RDIMM)			10K0020		
Power supply	200 watt / universal / auto-sensing / auto-restart support						512MB SDRAM ECC DIMM 133MHz (RDIMM)			10K0022		
KVM extender ¹⁸	Monitor, keyboard, mouse, and speakers can be located 500 feet from system via a 3rd party rack mounted KVM extender / contact AMuletHotkey® at amulet-hotkey.com, Wey Technologies® at www.weych.com, Paragon® at paragonav.com						1GB SDRAM ECC DIMM 133MHz (RDIMM)			33L3326		
							40GB ATA-100 EIDE HDD (Model 10X)			22P7157		
							36.4GB 10K Ultra160 SCSI HDD (Model x1U)			00N8209		
							73.4GB 10K Ultra160 SCSI HDD (Model x1U)			06P5752		
							18.2GB 15K Ultra160 SCSI HDD (Model x1U)			19K0658		
							IBM P260 (19.8" viewable) FD Monitor (black)			655263N		



Bay ① 3.5", UltraSlim 0.8", access, std diskette
 Bay ② 5.25", UltraSlim 0.8", access, std CD-ROM
 Bay ③ 3.5", SL 1", access, std disk
 Bay ④ 3.5", SL 1", access, open

Slot 1: fullsize, 64-bit 33MHz PCI 2.2 (5v) - used by graphics adptr
 Slot 2: halfsize, 64-bit 33MHz PCI 2.2 (5v) - used by sound adapter

- ⇒ Stealth black
- ⇒ H 1.72" (1U) x W 17.3" x D 25.7"
- ⇒ 26 to 28.4 lbs (minimum to maximum configuration)
- ⇒ Setup Program is available by pressing F1 at startup
- ⇒ PC-Doctor diagnostics is available by pressing F2 at startup
- ⇒ SCSISelect near startup by pressing CTRL+A
- ⇒ PXE Bullet Agent near startup by pressing CTRL+S
- ⇒ DMI 2.1 and Wired for Management 1.1a-compliant
- ⇒ Includes rack mounting kit
- ⇒ Includes two line cords (9 ft 110v cable with NEMA plug and 9 ft universal interrack HV cable with IEC plug)
- ⇒ Predictive Failure Analysis® on processor(s), voltage regulator modules, memory, fans, power supply, and disk options

All models: Maximum internal disk capacity¹³ (model dependent):
 146.8GB with two 73.4GB SL SCSI disks or
 80GB with two 40GB EIDE disks / supports 15K rpm SCSI disks

LIMITED WARRANTY³

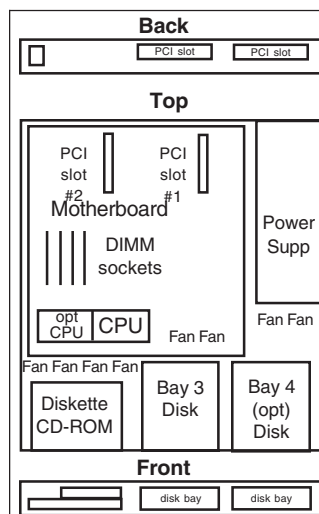
- ⇒ 3 year parts and labor
- ⇒ International Warranty Service³
- ⇒ On site warranty all 3 years
- ⇒ All cities in all states
- ⇒ 8 am-5 pm, Mon-Fri coverage
- ⇒ Next business day average response time
- ⇒ 3 year on site warranty service upgrade options:⁷
 - Mon-Fri coverage, 4 hour average response time
 - 24 hr x 7 day coverage, 4 hour average response time
- ⇒ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information
 US models announced on June 26, 2001 or August 28, 2001; withdrawn effective April 2002 or July 2002

IBM IntelliStation® R Pro - withdrawn

IBM® Type-model	Qty x Processor	Memory	Disk	Disk Controller	CD	Graphics	Video in standard	Ethernet	Mech	Slots x bays	OS ⁷	Available date
8654-55X	1 x Pentium® III 1GHz ¹ /133	256MB	20.4GB ²	EIDE	CD	QuadPI/TVN	NTSC	2 x 10/100	1U ⁴ rack 2x4	DOS lics	Mar 2001	
8654-56X	1 x Pentium III 1GHz/133	256MB	18.2GB	Ultra160	CD	QuadPI/TVN	NTSC	2 x 10/100	1U rack 2x4	DOS lics	Mar 2001	

Processor SMP support Implementation L2 cache	Intel® Pentium® III 1GHz with 133MHz Front Side Bus 2-way SMP via identical processor / both VRMs integrated on planar Processor and L2 cache in Flip-Chip Pin Grid Array (FC-PGA) / two Intel PGA370 sockets / terminator in empty socket 256KB std and max / ECC / full speed
Memory - std / max Memory - sockets Memory - features	256MB std / 4GB max ¹³ / Error Checking and Correcting (ECC) memory controller 4 sockets / 3 available SDRAM / 133MHz / ECC DIMMs / 168-pin gold-plated DIMM 3.3 volt sockets / PC133-compliant
Graphics controller	<ul style="list-style-type: none"> • Matrox® G200 QuadPI/TVN / four monitor support implemented via 2 proprietary LFH-60 connectors on back of adapter / two std cables attach to each LFH-60 connector/ one cable has two DB-15 analog connectors / another cable has two DB-15 analog connectors and a composite video-in RCA connector / 32-bit PCI adapter / 32MB (8MB per monitor) SGRAM / 250MHz RAMDAC / 128-bit DualBus / CATV tuner in / supports NTSC video standard / max resolution of 1920 x1200 • <i>Disabled by BIOS / SVGA / PCI bus / S3® Savage4Pro / 8MB SDRAM std and max / DDC2B / on planar</i>
Architecture / chipsets	ServerWorks® ServerSet III LE chip set / NB6635 North Bridge 3.0LE (the North Bridge has two peer PCI buses: PCI Bus 0, 32-bit 33MHz, IB6566 South Bridge, two ethernet controllers, graphics controller); PCI Bus 1, 64-bit 33MHz, SCSI controller, two 64-bit PCI slots) / IB6566 South Bridge for IDE, USB, ISA bus for Service Processor and Super I/O National Semiconductor® PC97317VUL (diskette, parallel, serial, keyboard, mouse)
Mechanical Control Panel	EIA 19" Rack (1U⁴) / rack-mount only / supported in IBM NetBAY™ Rack products (rack requires vented front door) Front indicators/switches include Power, Reset, Console Select (not implemented) , Power LED and Fault/info LED
Disk SCSI controller SCSI connectors Cables	20GB EIDE ATA-100 7200 rpm (limited to ATA-33 by cabling) or 18.2GB Ultra160 SCSI 10K RPM / S.M.A.R.T. ⁵ Adaptec® AIC-7982 / single channel Ultra 160 SCSI adapter (LVD 160MB/sec) / on planar <i>Internal:</i> 68 pin; <i>External:</i> None <i>SCSI models:</i> 2-drop 16-bit LVD cable from internal conn to disk; 1-drop IDE ATA-33 cable from Pri IDE conn to CD-ROM <i>EIDE models:</i> 2-drop IDE ATA-33 cable from Pri IDE conn to disk; 1-drop IDE ATA-33 cable from Sec IDE conn to CD
EIDE disk controller	Enhanced IDE / ATA-66 and PIO modes 0-4 with 2 channel, 4 device support / integrated in Reliance Open South Bridge
CD-ROM / diskette	<i>CD:</i> 24X-10X ⁶ CD-ROM; CAV (ATAPI); bootable; IDE (no analog audio output) / <i>Diskette:</i> 3.5" 1.44MB diskette drive
Ethernet controllers	2 x Intel 82559 ethernet controllers / on planar / 10BaseT, 100BaseTX / full duplex / 32-bit PCI bus / redundant ethernet capability and load balancing support through the connection of both ethernet ports to the same LAN segment / two RJ-45 connectors on rear / supports PXE 2.0 Boot Agent / no Wake on LAN® support
Systems mgmt Diagnostics	Advanced System Mgmt Processor / on planar / monitors temperature, fans, and power supply Light-Path Diagnostics™ (LED lights indicate failing component) and on-board diagnostics (via PC-Doctor in BIOS)
Audio	16-bit audio / PCI adapter / microphone in / stereo line in / stereo line out / speaker out (2 watts) / MIDI/joystick port
Ports	<i>Serial:</i> One 9-pin (jumper selectable for Com1/Mgmt Processor shared, Com2, or Mgmt Processor); <i>Parallel:</i> none; <i>USB:</i> Two ports (Version 1.1); <i>Mgmt:</i> Two RS485 ports (RJ-45) for systems mgmt
Console interconnect	Cable Chain Technology is not implemented / output port used for attachment of keyboard and mouse via standard KVM console cable (the video connector is disabled) / KVM console cable has PS/2 mouse female connector, keyboard female connector, and DB-15 VGA connector
Security	Power-on password / administrator password / unattended boot / selectable boot / systems mgmt security (user log-in password, read-only or read/write access, dial back) / unattended start mode
Software Keyboard / mouse Cooling fans Power supply	DOS 2000 license included / includes Device and Application CD-ROM and Matrox G200 CD-ROM 104-key keyboard (black) / 3-button mouse (black) Eight fans (four for processor(s) and planar, two for disk(s) and planar, two for power supply) 200 watt / universal / auto-sensing / auto-restart support
KVM extender ¹⁸	Monitor, keyboard, mouse, and speakers can be located 250M from system via a 3rd party rack mounted KVM extender / contact AMuletHotkey® at amulet-hotkey.com, Wey Technologies® at www.weych.ch, Paragon® at www.paragonav.com



- Bay ① 3.5", UltraSlim 0.8", access, std diskette
- Bay ② 5.25", UltraSlim 0.8", access, std CD-ROM
- Bay ③ 3.5", SL 1", access, disk
- Bay ④ 3.5", SL 1", access, open

Slot 1: fullsize, 64-bit 33MHz PCI 2.1 (5v) - graphics adapter
Slot 2: halfsize, 64-bit 33MHz PCI 2.1 (5v) - sound adapter

- ❖ Stealth black
- ❖ H 1.72" (1U) x W 17.3" x D 25.7"
- ❖ 22 to 28 lbs (minimum to maximum configuration)
- ❖ Setup Program is available by pressing F1 at startup
- ❖ PC-Doctor diagnostics is available by pressing F2 at startup
- ❖ SCSISelect near startup by pressing CTRL+A
- ❖ PXE Bullet Agent near startup by pressing CTRL+S
- ❖ DMI 2.1, Wired for Management 1.1a
- ❖ Includes rack mounting kit
- ❖ Includes two line cords (9 ft 110v cable with NEMA plug and 9 ft universal interrack HV cable with IEC plug)
- ❖ Predictive Failure Analysis® on processor(s), voltage regulator modules, memory, fans, power supply, and disk options

All models: Max int disk capacity¹³:
72.8GB with two 36.4GB SL SCSI disks

LIMITED WARRANTY*³

- ⇨ 3 year parts and labor warranty
- ⇨ International Warranty Service³
- ⇨ On site, 8 am through 5 pm, Mon through Fri excluding holidays, next business day response time⁹
- ⇨ On site warranty service upgrade options:
 - 4 hour response, 9-5 M-F¹⁴ (ServicePac® part number 41L2736)
 - 4 hour response, 7 day x 24 hr¹⁴ (ServicePac part number 30L9185)
- ⇨ Post warranty maintenance services available
- ⇨ 24 hour x 7 day telephone, electronic, and Internet support

* For a copy of IBM's Statement of Limited Warranty, call 1-800-772-2227
US models withdrawn effective October 2001

No warranties are expressed or implied in this summary
(8654) © IBM Corp. October 2001

IBM IntelliStation® Pro AGP Graphics Guide

xREF by eServer Field Skills and Education Team

Graphics Adapter	NVIDIA® Quadro® NVS 280	NVIDIA Quadro4 580 XGL	NVIDIA Quadro FX 500	NVIDIA Quadro4 980 XGL	NVIDIA Quadro FX 1100	NVIDIA Quadro FX 3000	NVIDIA Quadro FX 4000
Category	Performance2D	Entry 3D	Advanced 3D	Advanced 3D	Advanced 3D	High-Adv3D	Extreme3D
Total Memory	64MB	64MB	128MB	128MB	128MB	256MB	256MB
Memory Type	200MHz DDR-SDRAM	275MHz DDR-SDRAM	243MHz DDR-SDRAM	325MHz DDR-SDRAM	325MHz DDR-SDRAM	425MHz DDR-SDRAM	500MHz GDDR3SDRAM
RAMDAC Detail	Dual 350Mhz	Dual 350Mhz	Dual 350Mhz	Dual 350Mhz	Dual 400MHz	Dual 400MHz	Dual 400MHz
Graphics Pipeline	64-bit	128-bit	128-bit	128-bit	128-bit	256-bit	256-bit
Supported Bus	AGP 8X	AGP 8X	AGP 8X	AGP 8X	AGP 8X	AGP 8X	AGP 8X
Maximum Displays	Two	Two	Two Analog One Digital	Two	Two	Two	Two
Supported Displays Analog - Digital CRT - Flat Panel -	Yes Yes Yes	Yes Yes Yes	Yes Yes Yes	Yes Yes Yes	Yes Yes Yes	Yes Yes Yes	Yes Yes Yes
Max Analog Resolution	2048x1536x32 @ 60Hz	2048x1536x32 @ 60Hz	2048x1536x32 @ 75 Hz	2048x1536x32 @ 60Hz	2048x1536x32 @ 85 Hz	2048x1536x32 @ 85Hz	2048x1536x32 @ 85Hz
Max Digital Resolution	1280x1024x32 @ 60Hz	1280x1024x32 @ 60Hz	1600x1200x32 @ 60Hz	1600x1200x32 @ 60Hz 3840x2400x32 @ 24Hz	1600x1200x32 @ 60Hz 2048x1536x32 @ 41Hz 3840x2400x32 @ 24Hz	1600x1200x32 @ 60Hz 3840x2400x32 @ 48Hz	2048x1536x32 @ 60Hz 3840x2400x32 @ 48Hz
Connectors	OneL FH60	OneL FH60	One DVI-I to 3-pin stereo, One VGA	Two DVI-I, One 3-pin stereo	Two DVI-I, One 3-pin stereo	*Two DVI-I, One 3-pin stereo	*Two DVI-I, One 3-pin stereo
Cables Included	One L FH-to-Dual/DB-15 cable included	One L FH-to-Dual/DB-15 cable included	One DVI-I -to- DB-15 cable included	Two DVI-I -to- DB-15 cables included	Two DVI-I -to- DB-15 cables included	Two DVI-I -to- DB-15 cables included	Two DVI-I -to- DB-15 cables included
Other	L FH-to-Dual DVI-I optional	L FH-to-Dual DVI-I optional				*One single-link DVI-I and One dual-link DVI-I	*Two dual-link DVI-I and One dual-link DVI-I

NOTE: Four-head and/or TV-in graphics adapters available by special bid

See footnotes for important warranty information
This page was last updated on Nov 4, 2005

(IntelliStation-Graphics-A) © IBM Corp. November 2005

IBM IntelliStation® Pro PCI Express Graphics Guide

xREF by STG Field Skills and Education Team

Graphics Adapter	NVIDIA® Quadro® NVS280	NVIDIA Quadro NVS 285	ATI® FireGL™ V3100	NVIDIA Quadro FX 550	NVIDIA Quadro FX 1300	NVIDIA Quadro FX 1400	NVIDIA Quadro FX 1500	ATI FireGL V7100	NVIDIA Quadro FX 3400	NVIDIA Quadro FX 3500	3Dlabs® Wildcat™ Realizm® 800	NVIDIA Quadro FX 4500	NVIDIA Quadro FX 4500 x2
Category	Performance2D	Performance2D	Entry 3D	Entry 3D	Advanced 3D	Advanced 3D	Advanced 3D	High-Adv3D	High-Adv3D	High-Adv3D	Extreme3D	Extreme3D	Ultra High Performance3D
Total Memory	64MB	64/128MB	128MB	128MB	128MB	128MB	256MB	256MB	256MB	256MB	640MB	512MB	512MB per GPU
Memory Type	200MHz DDRSDRAM	275MHz DDRSDRAM	391MHz DDRSDRAM	400MHz GDDR3SDRAM	275MHz DDRSDRAM	300MHz DDRSDRAM	625MHz GDDR3SDRAM	475MHz GDDR3SDRAM	450MHz DDRSDRAM	660MHz DDR3SDRAM	475MHz GDDR3SDRAM	525MHz GDDR3SDRAM	525MHz GDDR3SDRAM
RAMDAC Detail	Dual 350Mhz	Dual 350Mhz	Dual 400MHz	Dual 400MHz	Dual 400MHz	Dual 350MHz	Dual 400MHz	Dual 400MHz	Dual 400MHz	Dual 400MHz	Dual 400MHz	Dual 400MHz	Dual 400MHz
Graphics Pipeline	64-bit	64-bit	128-bit	128-bit	256-bit	256-bit	256-bit	256-bit	256-bit	256-bit	256-bit	256-bit	256-bit
Supported Bus	PCI Express x16	PCI Express x16	PCI Express x16	PCI Express x16	PCI Express x16	PCI Express x16	PCI Express x16	PCI Express x16	PCI Express x16	PCI Express x16	PCI Express x16	PCI Express x16	PCI Express x16
Maximum Displays	Two	Two	Two	Two	Two	Two	Two	Two	Two	Two	Two	Two	Four
Supported Displays													
Analog -	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Digital CRT -	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Flat Panel -	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Max Analog Resolution	2048x1536x32 @ 75Hz	2048x1536x32 @ 75Hz	2048x1536x32 @ 60 Hz	2048x1536x32 @ 85 Hz	2048x1536x32 @ 85 Hz	2048x1536x32 @ 60 Hz	2048x1536x32 @ 75 Hz	2048x1536x32 @ 85 Hz	2048x1536x32 @ 75 Hz	2048x1536x32 @ 75 Hz	2048x1536x32 @ 60 Hz	2048x1536x32 @ 85 Hz	2048x1536x32 @ 85 Hz
Max Digital Resolution	1280x1024x32 @ 60Hz	1600x1200x32 @ 60Hz	1600x1200x32 @ 60 Hz	1600x1200x32 @ 60 Hz	1600x1200x32 @ 60 Hz	1600x1200x32 @ 60 Hz	1920x1200x32 @ 60 Hz	2560x1600x32 @ 60 Hz	1920x1200x32 @ 60 Hz	1920x1200x32 @ 60 Hz	2456x1536x32 @ 60 Hz	2560x1600x32 @ 60 Hz	2560x1600x32 @ 60 Hz
							3840x2400x32 @ 24 Hz	3840x2400x32 @ 24Hz	3840x2400x32 @ 24 Hz	3840x2400x32 @ 24 Hz	3840x2400x32 @ 24 Hz	3840x2400x32 @ 24 Hz	3840x2400x32 @ 24 Hz
Connectors	One DMS-59	One DMS-59	One DVI-I, One VGA,	Two DVI-I,	Two DVI-I, One 3-pin stereo	Two DVI-I, One 3-pin stereo	Two DVI-I, One HD-out	Two DVI-I, One 3-pin stereo	Two DVI-I, One 3-pin stereo	Two DVI-I, One 3-pin stereo	Two DVI-I, One 3-pin stereo	Two DVI-I, One 3-pin stereo	Four DVI-I, Two 3-pin stereo
Cables Included	One DMS-59-to-Dual DB-15 cable included	One DMS-59-to-Dual DB-15 cable included	One DVI-I -to- DB-15 cable included	Two DVI-I -to- DB-15 cables included	Two DVI-I -to- DB-15 cables included	Two DVI-I -to- DB-15 cables included	Two DVI-I -to- DB-15 cables included	Two DVI-I -to- DB-15 cables included	Two DVI-I -to- DB-15 cables included	Two DVI-I -to- DB-15 cables included	Two DVI-I -to- DB-15 cables included	Two DVI-I -to- DB-15 cables included	Two DVI-I -to- DB-15 cables included
Other	DMS-59-to-dual DVI-I option	DMS-59-to-dual DVI-I option		Two single-link DVI-I	Two single-link DVI-I	Two single-link DVI-I	Two dual-link DVI-I	One single-link DVI-I and One dual-link DVI-I	One single-link DVI-I and One dual-link DVI-I	Two dual-link DVI-I	Two dual-link DVI-I	Two dual-link DVI-I	Four dual-link DVI-I

NOTE: Four-head and/or TV-in graphics adapters available by special bid

See footnotes for important warranty information

This page was last updated on May 11, 2006

(IntelliStation-Graphics-B) © IBM Corp. December 2006

IBM® Machine Type	Model	Processor	Speed/Core	L2 Cache	FSB MHz	Memory	Disk	Disk controller	Maximum Capacity	Slots x bays	Hard disk bays	Ethernet	Available date
8486 - E1x		Celeron® D 326	2.53GHz	256KB	533	256MB	80GB	SATA	500GB	4 x 5	2 fixed	Gigabit	Sep 2005
8486 - E2x		Celeron D 326	2.53GHz	256KB	533	512MB	80GB	SATA	500GB	4 x 5	2 fixed	Gigabit	Sep 2005
8486 - E3x		Pentium® 4 521	2.8GHz/SC	1MB	800	512MB	80GB	SATA	500GB	4 x 5	2 fixed	Gigabit	Sep 2005
8486 - E4x		Pentium 4 531	3.0GHz/SC	1MB	800	512MB	80GB	SATA	500GB	4 x 5	2 fixed	Gigabit	Sep 2005
8486 - E5x		Pentium 4 541	3.2GHz/SC	1MB	800	512MB	80GB	SATA	500GB	4 x 5	2 fixed	Gigabit	Sep 2005
8486 - E6x		Pentium 4 551	3.4GHz/SC	1MB	800	512MB	80GB	SATA	500GB	4 x 5	2 fixed	Gigabit	Sep 2005
8486 - E7x		Pentium D 820	2.8GHz/DC	2x1MB	800	512MB	80GB	SATA	500GB	4 x 5	2 fixed	Gigabit	Oct 2005

Positioning Processor(s) *Uniprocessor, entry server designed to meet small business needs and budgets*
Intel® Pentium 4 up to 3.4GHz Single Core 800MHz FSB / Pentium D 2.8GHz Dual Core 800MHz FSB / Intel Celeron D 2.53GHz 533MHz FSB / All Optimized for Extended Memory 64 Technology (EM64T)
 L2 cache **1MB** std on Pentium 4 / **2x1MB** std on Pentium D / **256KB** std and max on Celeron / ECC / full speed
 Implementation Motherboard contains one LGA-775 socket, four DIMM sockets, four slots(1 PCI Express x8, 1 PCI Express x1, 2 PCI), integrated SATA and Gigabit Ethernet.
 SMP support No SMP support / no processor upgrade

Memory **256MB or 512MB / 8GB¹³ max / four 184-pin gold-plated DIMM sockets / one socket used / PC2-4200 533MHz ECC DDR2-SDRAM / All Error Checking and Correcting (ECC) / DIMMs and ECC memory controller / industry std / unbuffered /**

SCSI disk controller None standard / Ultra320 SCSI controller2 (LVD 320MB/sec) optional for tape backup
 IDE disk controller Enhanced IDE / ATA-100 / integrated in I/O Controller Hub / one connector on planar
 SATA disk controller Dual channel SATA controller (1.5GB/sec) / supports 2 drives standard
 Cables One 2-drop EIDE cables (to CD-ROM) / one 1-drop SATA cable per installed hard disk
 Disk 80GB SATA / 7,200 rpm / 9.0 ms seek / S.M.A.R.T.
 RAID Controller None standard / ServeRAID 7t controller optional

Rack support None
 Bus slots (see below) One PCI E bus / one 64-bit PCI-E x8 slot / one 64-bit PCI-E x1 / two 32-bit 33MHz 5v PCI 2.2 slots
 Chipset **Intel E7230 chipset** / Memory Controller Hub (MCH) / I/O Controller Hub (ICH-7) for PCI 2.2, ATA-100 EIDE, ethernet MAC, USB, Low Pin Count Interface / Firmware Hub / SMSC® LPC47M192 Super I/O for diskette, parallel, serial, keyboard, mouse

Ethernet 10/100/1000 gigabit / Broadcom 5721 / on planar / full duplex / PHY and MAC layers / Preboot eXecution Environment (PXE) / Wake on LAN®

CD-ROM / diskette *Some: CD-ROM: 48X-20X⁶ CD-ROM, IDE; some: CDRW/DVD-ROM Combo:48X/32X/48X/16X⁶ / None standard*
 Ports *Front: two USB (Ver 2.0); Back: two serial (9-pin), parallel, two USB (Ver 2.0), keyboard, mouse, ethernet (RJ-45), monitor (analog DB-15)*

Diagnostics Diagnostic LEDs / error LEDs for fans and memory / server diagnostic programs stored on IBM Enhanced Diagnostics CD
 Systems mgmt None

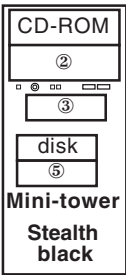
Graphics controller AT® RN50(ES1000) / 16MB SDRAM std/max / on planar / analog 15-pin / up to 1024 x 768 x 32 bit @85Hz

Security Optional U-Bolt support via knockout / power-on password / boot sequence control / operation without keyboard/mouse/display

Software **ServerGuide™** (CD-based automated network OS installation and configuration tool) included and IBM Director (system hardware mgmt software) optional

Keyboard / mouse IBM 101 key keyboard / IBM mouse (both black)
 Cooling fans Three variable speed fans (cpu heatsink, rear, power supply) / not redundant / not hot-swap
 Power supply 310 watts / universal / manual switching / Automatic Server Restart (ASR) / not hot-swap /no redundancy / cooling fan in power supply (variable speed)

- 512MB PC2-4200 CL3 ECC DDR2 RoHS 30R5148
 - 2x1GB PC2-4200 CL3 ECC DDR2 RoHS 30R5149
 - 2x2GB PC2-4200 CL3 ECC DDR2 RoHS 30R5150
 - IBM 80GB SATA-150 (7.2K) simple-swap HDD 39M4500
 - IBM 160GB SATA-150 (7.2K) simple-swap HDD 39M4504
 - IBM 250GB SATA-150 (7.2K) simple-swap HDD 39M4508
 - IBM 500GB SATA-150 (7.2K) simple-swap HDD 39M4514
 - 48X/32X/48X/16X Max⁶ CD-RW/DVD (black) 32R2905
 - IBM Multi-burner Plus 32R2906
 - IBM USB Portable Diskette Drive 05K9276
 - 36/72GB DDS/5 Internal Tape Drive 71P9145
 - VXA-2 Tape Drive 59P6746
 - IBM 20/40GB TR7 Internal Tape Drive 48P7042
 - IBM ServeRAID-7t SATA Controller 71P8648
 - IBM Ultra320 SCSI Controller2 13N2249
- Other options at ibm.com/pc/us/accessories



Bay ① 5.25", HH 1.6", access, CD-ROM
 Bay ② 5.25", HH 1.6", access, open (no disk)
 Bay ③ 3.5", SL 1", access, open
 Bay ④ 3.5", SL 1", access, std disk
 Bay ⑤ 3.5", SL 1", access, open

Slot 1: fullsize, 64-bit PCI-E x8 (4GBps)
 Slot 2: fullsize, 64-bit PCI-E x1 (500MBps)
 Slot 3: fullsize, 32-bit 33MHz, PCI 2.2 (5v)
 Slot 4: fullsize, 32-bit 33MHz, PCI 2.2 (5v)

- ❖ Removable left side panel
- ❖ Configuration/Setup Utility (in flash memory) invoked by pressing F1 at startup
- ❖ Advanced Configuration Power Interface (ACPI) 1.0
- ❖ Device Drivers and Diagnostics CD-ROM included
- ❖ Four stabilizing feet
- ❖ H 16.8" x W 8" x D 19.4"
- ❖ H 427mm x W 203mm x D 493mm
- ❖ 36 to 45.8 pounds (16.3 to 20.8kg)
- ❖ BTU Output:
 Minimum: 379 Btu/hr (111 watts)
 Maximum: 853 Btu/hr (250 watts)

LIMITED WARRANTY³
 ⇨ 1 year parts and labor
 ⇨ International Warranty Service³
 ⇨ On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
 ⇨ On site service upgrade options (in eligible locations):⁷
 • 3 year IOR 24x7, 2 hr avg response (ServicePac part num 41W9318)
 • 3 year IOR 24x7, 4 hr avg response (ServicePac part num 41W9317)
 • 3 year IOR 9x5, 4 hr avg response (ServicePac part num 41W9316)
 • 3 year IOR 9x5, NBD response (ServicePac part num 41W9315)
 ⇨ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
 ⇨ 24x7¹⁴ toll-free support for warranty issues during the warranty period⁵

IBM® Machine Type	Model	Processor	Speed/Core	L2 Cache	FSB MHz	Memory	Disk	Disk controller	Maximum Capacity	Slots x bays	Hard disk bays	Ethernet	Available date
8486 - EAx		Celeron® D 331	2.66GHz	256KB	533	512MB	80GB	SATA	500GB	4 x 5	2 fixed	Gigabit	Feb 2006
8486 - EBx		Celeron D 331	2.66GHz	256KB	533	512MB	80GB	SATA	500GB	4 x 5	2 fixed	Gigabit	Feb 2006
8486 - ECx		Pentium® 4 521	2.8GHz/SC	1MB	800	512MB	80GB	SATA	500GB	4 x 5	2 fixed	Gigabit	Feb 2006
8486 - EDx		Pentium 4 631	3.0GHz/SC	2MB	800	512MB	80GB	SATA	500GB	4 x 5	2 fixed	Gigabit	Feb 2006
8486 - EEx		Pentium 4 631	3.0GHz/SC	2MB	800	512MB	80GB	SATA	500GB	4 x 5	2 fixed	Gigabit	Feb 2006
8486 - EFx		Pentium 4 641	3.2GHz/SC	2MB	800	512MB	80GB	SATA	500GB	4 x 5	2 fixed	Gigabit	Feb 2006
8486 - EGx		Pentium D 920	2.8GHz/DC	4MB	800	512MB	80GB	SATA	500GB	4 x 5	2 fixed	Gigabit	Feb 2006
8486 - EHx		Pentium D 920	2.8GHz/DC	4MB	800	512MB	80GB	SATA	500GB	4 x 5	2 fixed	Gigabit	Feb 2006
8486 - EJx		Pentium D 930	3.0GHz/DC	4MB	800	512MB	80GB	SATA	500GB	4 x 5	2 fixed	Gigabit	Feb 2006
8486 - EKx		Pentium D 930	3.0GHz/DC	4MB	800	512MB	80GB	SATA	500GB	4 x 5	2 fixed	Gigabit	Mar 2006

Positioning Processor(s) *Uniprocessor, entry server designed to meet small business needs and budgets*
Intel® Pentium 4 up to 3.2GHz Single-Core 800MHz FSB / Pentium D up to 3.0GHz Dual-Core 800MHz FSB / Intel Celeron D 2.66GHz 533MHz FSB / All Optimized for Extended Memory 64 Technology (EM64T)
 L2 cache **1 or 2MB** std on Pentium 4 / **4MB** std on Pentium D / **256KB** std and max on Celeron / ECC / full-speed
 Implementation Motherboard contains one LGA-775 socket, four DIMM sockets, four slots(1 PCI Express x8, 1 PCI Express x1, 2 PCI), integrated SATA and Gigabit Ethernet.
 SMP support No SMP support / no processor upgrade

Memory **512MB / 8GB¹³ max** / four 184-pin gold-plated DIMM sockets / one socket used / **PC2-4200 533MHz ECC DDR2-SDRAM / All Error Checking and Correcting (ECC)** / DIMMs and ECC memory controller / industry std / unbuffered /

SCSI disk controller None standard / Ultra320 SCSI controller2 (LVD 320MB/sec) optional for tape backup
 IDE disk controller Enhanced IDE / ATA-100 / integrated in I/O Controller Hub / one connector on planar
 SATA disk controller Dual channel SATA controller (1.5GB/sec) / supports 2 drives standard
 Cables One 2-drop EIDE cables (to CD-ROM) / one 1-drop SATA cable per installed hard disk
 Disk 80GB SATA / 7,200 rpm / 9.0 ms seek / S.M.A.R.T.
 RAID Controller None standard / ServeRAID 7t controller optional

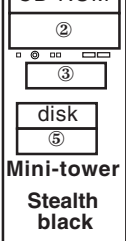
Rack support None
 Bus slots (see below) One PCI Express® bus / one 64-bit PCIe™ x8 slot / one 64-bit PCIe x1 / two 32-bit 33MHz 5v PCI 2.2 slots
 Chipset **Intel E7230 chipset** / Memory Controller Hub (MCH) / I/O Controller Hub (ICH-7) for PCI 2.2, ATA-100 EIDE, ethernet MAC, USB, Low Pin Count Interface / Firmware Hub / **SMSC® LPC47M192** Super I/O for diskette, parallel, serial, keyboard, mouse

Ethernet 10/100/1000 gigabit / Broadcom® 5721 / on planar / full-duplex / PHY and MAC layers / Preboot eXecution Environment (PXE) / Wake on LAN®
 CD-ROM / diskette Ports *Some: CD-ROM: 48X-20X⁶ CD-ROM, IDE; some: CDRW/DVD-ROM Combo:48X/32X/48X/16X⁶ / None standard*
Front: two USB (Ver 2.0); Back: two serial (9-pin), parallel, two USB (Ver 2.0), keyboard, mouse, ethernet (RJ-45), monitor (analog DB-15)
 Diagnostics Diagnostic LEDs / error LEDs for fans and memory / server diagnostic programs stored on IBM Enhanced Diagnostics CD
 Systems mgmt None

Graphics controller AT® RN50(ES1000) / 16MB SDRAM std/max / on planar / analog 15-pin / up to 1024 x 768 x 32 bit @100Hz

Security Optional U-Bolt support via knockout / power-on password / boot sequence control / operation without keyboard/mouse/display

Software	ServerGuide™ (CD-based automated network OS installation and configuration tool) included and IBM Director (system hardware mgmt software) optional	512MB PC2-4200 CL3 ECC DDR2 RoHS 2x1GB PC2-4200 CL3 ECC DDR2 RoHS 2x2GB PC2-4200 CL3 ECC DDR2 RoHS IBM 80GB SATA-150 (7.2K) simple-swap HDD IBM 160GB SATA-150 (7.2K) simple-swap HDD IBM 250GB SATA-150 (7.2K) simple-swap HDD IBM 500GB SATA-150 (7.2K) simple-swap HDD 48X/32X/48X/16X Max ⁶ CD-RW/DVD (black) IBM Multi-burner Plus IBM USB Portable Diskette Drive 36/72GB DDS/5 Internal Tape Drive VXA-2 Tape Drive IBM 20/40GB TR7 Internal Tape Drive IBM ServeRAID-7t SATA Controller IBM Ultra320 SCSI Controller2 IBM Ultra320 SCSI Controller2	30R5148 30R5149 30R5150 39M4500 39M4504 39M4508 39M4514 32R2905 32R2906 40K1692 71P9145 59P6746 48P7042 71P8648 13N2249
Keyboard / mouse	IBM 101 key keyboard / IBM mouse (both black)		
Cooling fans	Three variable speed fans (cpu heatsink, rear, power supply) / not redundant / not hot-swap		
Power supply	310 watts / universal / manual switching / Automatic Server Restart (ASR) / not hot-swap /no redundancy / cooling fan in power supply (variable speed)		



Mini-tower Stealth black

Bay ① 5.25", HH 1.6", access, CD-ROM
 Bay ② 5.25", HH 1.6", access, open (no disk)
 Bay ③ 3.5", SL 1", access, open
 Bay ④ 3.5", SL 1", access, std disk
 Bay ⑤ 3.5", SL 1", access, open

Slot 1: fullsize, 64-bit PCI-E x8 (4GBps)
 Slot 2: fullsize, 64-bit PCI-E x1 (500MBps)
 Slot 3: fullsize, 32-bit 33MHz, PCI 2.2 (5v)
 Slot 4: fullsize, 32-bit 33MHz, PCI 2.2 (5v)

- ❖ Removable left side panel
- ❖ Configuration/Setup Utility (in flash memory) invoked by pressing F1 at startup
- ❖ Advanced Configuration Power Interface (ACPI) 1.0
- ❖ Device Drivers and Diagnostics CD-ROM included
- ❖ Four stabilizing feet
- ❖ H 16.8" x W 8" x D 19.4"
- ❖ H 427mm x W 203mm x D 493mm
- ❖ 36 to 45.8 pounds (16.3 to 20.8kg)
- ❖ BTU Output:
 - Minimum: 379 Btu/hr (111 watts)
 - Maximum: 853 Btu/hr (250 watts)

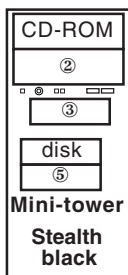
LIMITED WARRANTY³

- ⇨ 1 year parts and labor
- ⇨ International Warranty Service³
- ⇨ On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- ⇨ On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 24x7, 2 hr avg response (ServicePac part num 41W9318)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 41W9316)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 41W9317)
 - 3 year IOR 9x5, NBD response (ServicePac part num 41W9315)
- ⇨ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ⇨ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information

IBM® Machine Type	Model	Processor	Speed/Core	L2 Cache	FSB MHz	Memory	Disk	Disk controller	Maximum Capacity	Slots x bays	Hard disk bays	Ethernet	Available date
8486 - ELX		Pentium® 4 631	3.0GHz/SC	2MB	800	1 x 512MB	160GB	SATA	1TB	4 x 5	2 fixed	Gigabit	June 2006
8486 - EMX		Pentium 4 631	3.0GHz/SC	2MB	800	1 x 512MB	80GB	SATA	1TB	4 x 5	2 fixed	Gigabit	June 2006
8486 - ENX		Pentium 4 651	3.4GHz/SC	2MB	800	1 x 512MB	80GB	SATA	1TB	4 x 5	2 fixed	Gigabit	June 2006
8486 - E8X		Pentium D 930	3.0GHz/DC	4MB	800	2 x 512MB	80GB	SATA	1TB	4 x 5	2 fixed	Gigabit	June 2006

Positioning Processor(s)	<i>Uniprocessor, entry server designed to meet small business needs and budgets</i>												
L2 cache Implementation	Intel® Pentium 4 up to 3.4GHz Single-Core 800MHz FSB / Pentium D up to 3.0GHz Dual-Core 800MHz FSB / Intel Celeron D 2.66GHz 533MHz FSB / All Optimized for Extended Memory 64 Technology (EM64T) 1 or 2MB std on Pentium 4 / 4MB std on Pentium D / 256KB std and max on Celeron / ECC / full-speed												
SMP support	Motherboard contains one LGA-775 socket, four DIMM sockets, four slots(1 PCI Express x8, 1 PCI Express x1, 2 PCI), integrated SATA and Gigabit Ethernet.												
Memory	No SMP support / no processor upgrade												
SCSI disk controller	None standard / Ultra320 SCSI controller2 (LVD 320MB/sec) optional for tape backup												
IDE disk controller	Enhanced IDE / ATA-100 / integrated in I/O Controller Hub / one connector on planar												
SATA disk controller	Dual channel SATA controller (1.5GB/sec) / supports 2 drives standard												
Cables	One 2-drop EIDE cables (to CD-ROM) / one 1-drop SATA cable per installed hard disk												
Disk	80 or 160GB SATA / 7,200 rpm / 9.0 ms seek / S.M.A.R.T.												
RAID Controller	None standard / ServeRAID 7i controller optional												
Rack support	None												
Bus slots (see below)	One PCI Express® bus / one 64-bit PCIe™ x8 slot / one 64-bit PCIe x1 / two 32-bit 33MHz 5v PCI 2.2 slots												
Chipset	Intel E7230 chipset / Memory Controller Hub (MCH) / I/O Controller Hub (ICH-7) for PCI 2.2, ATA-100 EIDE, ethernet MAC, USB, Low Pin Count Interface / Firmware Hub / SMSC® LPC47M192 Super I/O for diskette, parallel, serial, keyboard, mouse												
Ethernet	10/100/1000 gigabit / Broadcom® 5721 / on planar / full-duplex / PHY and MAC layers / Preboot eXecution Environment (PXE) / Wake on LAN®												
CD-ROM / diskette	Some: CD-ROM: 48X-20X® CD-ROM, IDE; some: CDRW/DVD-ROM Combo:48X/32X/48X/16X® / None standard												
Ports	Front: two USB (Ver 2.0); Back: two serial (9-pin), parallel, two USB (Ver 2.0), keyboard, mouse, ethernet (RJ-45), monitor (analog DB-15)												
Diagnostics	Diagnostic LEDs / error LEDs for fans and memory / server diagnostic programs stored on IBM Enhanced Diagnostics CD												
Systems mgmt	None												
Graphics controller	ATI® RN50(ES1000) / 16MB SDRAM std/max / on planar / analog 15-pin / up to 1024 x 768 x 32 bit @100Hz												
Security	Optional U-Bolt support via knockout / power-on password / boot sequence control / operation without keyboard/mouse/display												
Software	ServerGuide™ (CD-based automated network OS installation and configuration tool) included and IBM Director (system hardware mgmt software) optional					512MB PC2-4200 CL3 ECC DDR2 RoHS 2x1GB PC2-4200 CL3 ECC DDR2 RoHS 2x2GB PC2-4200 CL3 ECC DDR2 RoHS IBM 80GB SATA-150 (7.2K) simple-swap HDD IBM 160GB SATA-150 (7.2K) simple-swap HDD IBM 250GB SATA-150 (7.2K) simple-swap HDD IBM 500GB SATA-150 (7.2K) simple-swap HDD 48X/32X/48X/16X Max® CD-RW/DVD (black)					30R5148 30R5149 30R5150 39M4500 39M4504 39M4508 39M4514 32R2905 32R2906 40K1692 71P9145 59P6746 48P7042 71P8648 13N2249		
Keyboard / mouse	IBM 101 key keyboard / IBM mouse (both black)												
Cooling fans	Three variable speed fans (cpu heatsink, rear, power supply) / not redundant / not hot-swap												
Power supply	310 watts / universal / manual switching / Automatic Server Restart (ASR) / not hot-swap /no redundancy / cooling fan in power supply (variable speed)												



Bay ① 5.25", HH 1.6", access, CD-ROM
 Bay ② 5.25", HH 1.6", access, open (no disk)
 Bay ③ 3.5", SL 1", access, open
 Bay ④ 3.5", SL 1", access, std disk
 Bay ⑤ 3.5", SL 1", access, open

Slot 1: fullsize, 64-bit PCI-E x8 (4GBps)
 Slot 2: fullsize, 64-bit PCI-E x1 (500MBps)
 Slot 3: fullsize, 32-bit 33MHz, PCI 2.2 (5v)
 Slot 4: fullsize, 32-bit 33MHz, PCI 2.2 (5v)

- ✦ Removable left side panel
- ✦ Configuration/Setup Utility (in flash memory) invoked by pressing F1 at startup
- ✦ Advanced Configuration Power Interface (ACPI) 1.0
- ✦ Device Drivers and Diagnostics CD-ROM included
- ✦ Four stabilizing feet
- ✦ H 17.24" x W 8.07" x D 19.57"
- ✦ H 438mm x W 205mm x D 497mm
- ✦ 30.86 to 37.48 pounds (14 to 17kg)
- ✦ BTU Output:
 - Minimum: 326 Btu/hr (96 watts)
 - Maximum: 1024 Btu/hr (300 watts)

LIMITED WARRANTY³

- ⇨ 1 year parts and labor
- ⇨ International Warranty Service³
- ⇨ On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- ⇨ On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 24x7, 2 hr avg response (ServicePac part num 41W9318)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 41W9317)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 41W9316)
 - 3 year IOR 9x5, NBD response (ServicePac part num 41W9315)
- ⇨ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ⇨ 24x7¹⁴ toll-free support for warranty issues during the warranty period⁵

See footnotes for important warranty information

IBM® Appliance Server Type-model	Qty x Processor	Memory	Disk	SCSI controller	Mechanical	Slots x bays	10/100 ethernet	Type	Windows Powered OS	Available date
8654-1YX	1 x Pentium® III 800	256MB	9.1GB ² 10K	Ultra160	1U rack	2x4	2 x ethernet	Appliance Server	Preload	Nov 2000
8654-5DX	1 x Pentium III 1GHz ¹	256MB	18.2GB 10K	Ultra160	1U rack	2x4	2 x ethernet	Appliance Server	Preload	Jun 2001

Positioning Point solution appliance server; Microsoft® Windows®-based Web hosting appliance with plug in convenience
Processor Intel® Pentium® III 800MHz¹ or 1GHz¹ with 133MHz Front Side Bus
SMP support 2-way SMP via identical processor (1YX only upgrade to second 800MHz; 5DX only upgrade to second 1GHz)
Implementation Processor and L2 cache in Flip-Chip Pin Grid Array (FC-PGA) / two Intel PGA370 sockets / terminator in empty socket
L2 cache 256KB std and max / ECC / full speed

Memory 256MB std / 1YX: 1GB max¹³; 5DX: 2GB max¹³ / 4 sockets / 3 available / Error Checking and Correcting (ECC) memory controller / SDRAM / 133MHz / ECC DIMMs / 168-pin gold-plated DIMM 3.3 volt sockets / PC133-compliant

Disk 9.1GB or 18.2GB Ultra160 SCSI / 10K rpm 10K-4 / 5.5 ms average read seek time / 2.99ms average latency
SCSI disk controller Adaptec® AIC-7892 / Wide Ultra160 SCSI (LVD 160MB/sec) / single channel / 64-bit PCI / integrated on motherboard
SCSI connectors Internal 68-pin (attaches 1-drop cable to SCSI backplane); no external SCSI connector
IDE controller Enhanced IDE / two connectors on planar / one 1-drop IDE cable to CD-ROM / ATA-66

Chipset ServerWorks® ServerSet III LE chip set / NB6635 North Bridge 3.0LE (the North Bridge has two peer PCI buses: PCI Bus 0, 32-bit 33MHz, IB6566 South Bridge, two ethernet controllers, graphics controller); PCI Bus 1, 64-bit 33MHz, SCSI controller, two 64-bit PCI slots) / IB6566 South Bridge for IDE, USB, ISA bus for Service Processor and Super I/O National Semiconductor® PC97317VUL (diskette, parallel, serial, keyboard, mouse)

Mechanical EIA 19" Rack (1U⁴) / rack-mount only / supported in IBM NetBAY™ Rack products (rack requires vented front door)
Control Panel Front indicators/switches include Power, Reset, Console Select, Power LED and Fault/info LED

Ethernet controllers 2 x Intel 82559 ethernet controllers / on planar / 10BaseT, 100BaseTX / full duplex / 32-bit PCI bus / redundant ethernet capability and load balancing support through the connection of both ethernet ports to the same LAN segment / two RJ-45 connectors on rear / supports PXE 2.0 Boot Agent / no Wake on LAN® support

CD-ROM / diskette 24X-10X⁶ CD-ROM, CAV (ATAPI), bootable, IDE / 3.5" 1.44MB diskette drive
Rear ports Serial: one 9-pin; Parallel: none; USB: two ports (Version 1.1); Adv Sys Mgmt: two RJ-45 ports
Ports and cable Keyboard, video (DB-15), and mouse port on a standard breakout cable (2 meters length on 1YX; 1 foot length on 5DX) which plugs into the console-out port

Console interconnect 5DX only: supports daisy chaining via console in and out ports / system-to-system interconnect cable (10 inch, 245mm) is standard / daisy chain connection to adjacent server / supports large rack deployments of daisy chained servers / chain functions with multiple server (not contiguous in chain) outage

Systems mgmt Integrated IBM Advanced System Management Processor / on planar / provides remote console and mgmt / allows diagnostic, reset, POST, and auto recovery functions / monitors temperature, fans, and power supply

Diagnostics Light Path Diagnostics™ (LED lights indicate failing component) and on-board diagnostics (via PC-Doctor in BIOS)

Graphics controller SVGA / PCI bus / S3® Savage4Pro (on planar) / 8MB SDRAM std and max / DDC2B

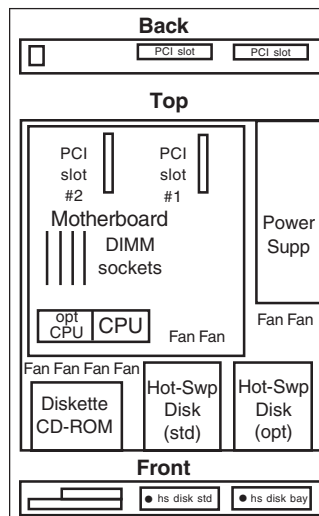
Security Power-on password / administrator password / system owner's name / unattended boot / selectable boot / systems mgmt security (user log-in password, read-only or read/write access, dial back) / unattended start mode

Software⁹ Preloaded and optimally tuned with Windows Powered OS and appliance software stack, Microsoft Internet Information Services 5.0, Netfinity Web Server Accelerator V2, IBM Director (agent only), Universal Manageability (UM) Server Extensions, Advanced Appliance Configuration Utility

Keyboard / mouse None standard
Cooling fans Eight fans (four for processor(s) and planar, two for disk(s) and planar, two for power supply)

Power supply 200 watt / universal / auto-sensing / auto-restart support
Prerequisites Remote management console (client workstation), rack cabinet

Pentium III 800MHz/133/256KB Proc Upgrade	10K2338
Pentium III 1GHz/133/256KB Proc Upgrade	10K0053
128MB SDRAM ECC DIMM 133MHz RDIMM	33L3142
256MB SDRAM ECC DIMM 133MHz RDIMM	33L3144
512MB SDRAM ECC DIMM 133MHz RDIMM	33L3146
1GB SDRAM ECC DIMM 133MHz RDIMM	33L3152
9.1GB 10K-4 Ultra160 SCSI Hot-Swap SL HDD	37L7204
18.2GB 10K-4 Ultra160 SCSI Hot-Swap SL HDD	37L7205
36.4GB 10K-4 Ultra160 SCSI Hot-Swap SL HDD	37L7206
Netfinity® Gigabit Ethernet Adapter	34L0301
Netfinity Rack (with perf door and side panels)	9306910
NetBAY 1 x 4 Console Switch	09N4290
NetBAY 2 x 8 Console Switch	09N4291



Bay ① 3.5", UltraSlim 0.8", access, std diskette
 Bay ② 5.25", UltraSlim 0.8", access, std CD-ROM
 Bay ③ 3.5", SL 1", access, std hot-swap disk
 Bay ④ 3.5", SL 1", access, open for hot-swap disk

- Slot 1: fullsize, 64-bit 33MHz PCI 2.1 (5v)
 Slot 2: halfsize, 64-bit 33MHz PCI 2.1 (5v)
- ◇ Stealth black
 - ◇ H 1.72" (1U) x W 17.3" x D 25.7"
 - ◇ 44 to 62 lbs (minimum to maximum configuration)
 - ◇ Setup Program is available by pressing F1 at startup
 - ◇ PC-Doctor diagnostics is available by pressing F2 at startup
 - ◇ SCSISelect near startup by pressing CTRL+A
 - ◇ PXE Bullet Agent near startup by pressing CTRL+S
 - ◇ DMI 2.1, Wired for Management 1.1a
 - ◇ Includes rack mounting kit
 - ◇ One line cord
 - ◇ Predictive Failure Analysis® on processor(s), voltage regulator modules, memory, fans, power supply, and disk options

All models: Max int disk capacity:
 72.8GB with two 36.4GB SL SCSI disks

LIMITED WARRANTY³

- ⇨ 3 year parts and labor
- ⇨ International Warranty Service³
- ⇨ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time
- ⇨ 3 year on site warranty service upgrade options: (in eligible locations):⁷
 - 9 hour coverage, Mon-Fri excluding holidays, next business day response time
 - 9 hour coverage, Mon-Fri excluding holidays, 4 hour response
 - 24 hr x 7 day coverage, 4 hour response time
- ⇨ 24 hour x 7 day¹⁴ telephone, electronic, and Internet support

See footnotes for important warranty information
 • = Hot-swap but no software support
 US models withdrawn effective December 2001 or May 2002

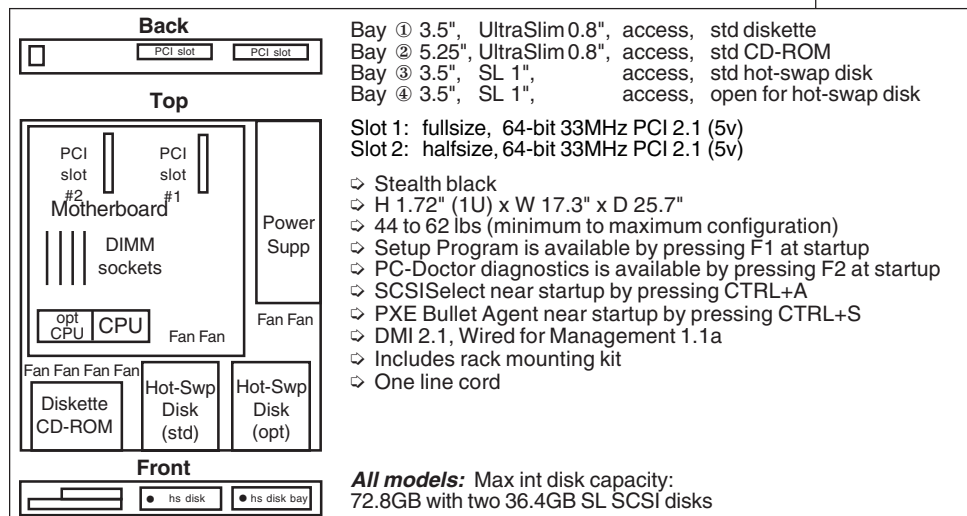
IBM® Appliance Server Type-model	Processor	Memory	Disk	Disk controller	Mechanical	Slots x bays	Hot-swap disk bays	10/100 ethernet	Type	Windows® Powered OS	Available date
8672-25X	Celeron™ 800MHz ¹	256MB	20.4GB ²	EIDE	1U rack	2x4	None	2 x ethernet	Appliance Server	Preload	Jun 2001

Positioning	<i>Point solution appliance server; Microsoft® Windows®-based Web hosting appliance with plug in convenience</i>																																																
Processor	Intel® Celeron 800MHz¹ with 100MHz Front Side Bus																																																
L2 cache	128KB std and max / ECC / at processor speed																																																
SMP support	No SMP support																																																
Processor upgrade	None supported																																																
Implementation	Motherboard contains one Intel PGA370 socket (370-pin Flip-Chip Pin Grid Array (FC-PGA)), one integrated VRM, three DIMM sockets, two PCI slots, and integrated ethernet																																																
Memory - std / max	256MB std / 1.5GB max ¹³																																																
Memory - sockets	3 sockets / 2 available / ECC (Error Checking and Correcting) DIMMs and ECC memory controller																																																
Memory - features	SDRAM / 133MHz / three 168-pin gold-plated DIMM 3.3 volt sockets / PC133-compliant																																																
Memory - support	Supports unbuffered SDRAM ECC DIMMs																																																
SCSI disk controller	None																																																
IDE disk controller	Enhanced IDE busmaster / ATA-100 support / two connectors on planar																																																
Cables	Two 2-drop EIDE cables (one cable to CD-ROM, one 80-conductor cable to EIDE disk bays)																																																
Disk - features	20.4GB EIDE / ATA-100 / 7200 rpm / 8.7 ms average read seek time / S.M.A.R.T. ⁵																																																
Chipset	VIA® Apollo Pro133A chip set / VT82C694X North Bridge (memory controller, PCI 2.2 32-bit 33MHz controller) / VT82C686B South Bridge (IDE ATA-100, USB, diskette, serial, keyboard, mouse, ISA bus for flash BIOS)																																																
Mechanical	EIA 19" Rack (1U⁴) / rack-mount only / supported in IBM NetBAY™ Rack products (rack requires vented front door)																																																
Control Panel	Front indicators/switches include Power, Power LED, Reset, and System Error LED																																																
Ethernet controllers	2 x Intel 82550 ethernet controllers / on planar / 10BaseT, 100BaseTX / full duplex / 32-bit PCI bus / two RJ-45 connectors on rear / supports PXE 2.0 Boot Agent / Alert on LAN™ 2 support / Wake on LAN® support																																																
CD-ROM / diskette	24X-10X ⁶ CD-ROM, CAV (ATAPI), bootable, IDE / 3.5" 1.44MB diskette drive																																																
Rear ports	<i>Serial</i> : one 9-pin; <i>Parallel</i> : none; <i>USB</i> : two ports (Version 1.1); <i>Mgmt</i> : none; keyboard; mouse; DB-15 graphics																																																
Console interconnects	No system-to-system interconnect cable (separate keyboard, video, mouse ports on back)																																																
Systems mgmt	WinBond® W83791D / on planar / monitors system and processor temperature, fan speed and failure, and voltages																																																
Diagnostics	Diagnostics via PC-Doctor on a standard IBM Enhanced Diagnostics CD (diskette can be created)																																																
Graphics controller	SVGA / PCI bus / S3® Savage4Pro (on planar) / 8MB SDRAM std and max / DDC2B / analog 15-pin D-shell																																																
Security	Power-on password / administrator password / unattended boot / selectable boot / unattended start mode																																																
Software ⁹	<p>Preloaded and optimally tuned with Microsoft® Windows® 2000 for Web Hosting (Windows Powered), IBM Advanced Appliance Configuration Utility, IBM Director 2.2 with UM Services, IBM WebServer Accelerator, simple mail client for alerting, Microsoft Server Appliance Kit, Microsoft Internet Information Services 5.0, Front Page server extensions, bandwidth management by Web site</p>																																																
Keyboard / mouse	None standard																																																
Cooling fans	Six fans (two for processor, memory, halfsize PCI; two for left disk and fullsize PCI; two for power supply) / all variable speed / redundant cooling on single fan failure (other fans increase speed)																																																
Power supply	200 watt / universal / auto-sensing / not redundant / not hot-swap / Automatic Server Restart (ASR) support																																																
Prerequisites	Monitor, keyboard, mouse, rack with perforated door, disk (some models)																																																
	<p style="text-align: center;">OPTIONS</p> <table border="0"> <tr> <td>128MB SDRAM ECC DIMM 133MHz</td> <td>33L3081</td> </tr> <tr> <td>256MB SDRAM ECC DIMM 133MHz</td> <td>33L3083</td> </tr> <tr> <td>512MB SDRAM ECC DIMM 133MHz</td> <td>33L3085</td> </tr> <tr> <td>20.4GB ATA-100 EIDE HDD</td> <td>19K4461</td> </tr> <tr> <td>40GB ATA-100 EIDE HDD</td> <td>22P7157</td> </tr> <tr> <td>IBM Netfinity® Rack (with perforated door/panels)</td> <td>9306910</td> </tr> <tr> <td>IBM NetBAY 42 Enterprise Rack</td> <td>930842S</td> </tr> <tr> <td>IBM Console Switch (1 x 4 port)</td> <td>09N4290</td> </tr> <tr> <td>IBM Console Switch (2 x 8 port)</td> <td>09N4291</td> </tr> <tr> <td>IBM 7 foot K/M/V Cable</td> <td>09N4293</td> </tr> <tr> <td>IBM Console Cable Set (12 foot)</td> <td>94G7447</td> </tr> <tr> <td>IBM Two-Button Mouse</td> <td>28L3673</td> </tr> <tr> <td>IBM 84-key Space Saver Cost Reduced Keybrd</td> <td>28L3644</td> </tr> <tr> <td>IBM Preferred Keyboard (black)</td> <td>28L3621</td> </tr> <tr> <td>IBM E51 (13.8" viewable) Color Monitor(black)</td> <td>633347N</td> </tr> <tr> <td>IBM Smart-UPS Model 1400RMB</td> <td>94G6674</td> </tr> <tr> <td>IBM Smart-UPS Model 3000RMB</td> <td>94G6676</td> </tr> <tr> <td>IBM T54A 15" Flat Panel Color Monitor (black)</td> <td>9511AG1</td> </tr> <tr> <td>IBM T540 15" Flat Panel Color Monitor (black)</td> <td>9511AG4</td> </tr> </table>											128MB SDRAM ECC DIMM 133MHz	33L3081	256MB SDRAM ECC DIMM 133MHz	33L3083	512MB SDRAM ECC DIMM 133MHz	33L3085	20.4GB ATA-100 EIDE HDD	19K4461	40GB ATA-100 EIDE HDD	22P7157	IBM Netfinity® Rack (with perforated door/panels)	9306910	IBM NetBAY 42 Enterprise Rack	930842S	IBM Console Switch (1 x 4 port)	09N4290	IBM Console Switch (2 x 8 port)	09N4291	IBM 7 foot K/M/V Cable	09N4293	IBM Console Cable Set (12 foot)	94G7447	IBM Two-Button Mouse	28L3673	IBM 84-key Space Saver Cost Reduced Keybrd	28L3644	IBM Preferred Keyboard (black)	28L3621	IBM E51 (13.8" viewable) Color Monitor(black)	633347N	IBM Smart-UPS Model 1400RMB	94G6674	IBM Smart-UPS Model 3000RMB	94G6676	IBM T54A 15" Flat Panel Color Monitor (black)	9511AG1	IBM T540 15" Flat Panel Color Monitor (black)	9511AG4
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See footnotes for important warranty information
 US model withdrawn effective May 2002

IBM® Appliance Server		SCSI							Available	
Type-model	Qty x Processor	Memory	Disk	controller	Mechanical	Slots x bays	Type	Preload	date	
8654-1XX	1 x Pentium® III 800	256MB	9.1GB ² 10K	Ultra160	1U rack	2 slots x 4 bays	Appliance Server	TurboLinux	Nov 2000	
8654-5CX	1 x Pentium III 1GHz	256MB	18.2GB 10K	Ultra160	1U rack	2 slots x 4 bays	Appliance Server	Red Hat® Linux® 6.2	Jun 2001	
Positioning		<i>Point solution appliance server; Linux®-based Web hosting appliance with plug in convenience</i>								
Processor		Intel® Pentium® III 800MHz¹ or 1GHz¹ with 133MHz Front Side Bus								
SMP support		<i>5CX only: 2-way SMP via identical processor (1XX supports a second processor but no Linux support)</i>								
Implementation		Processor and L2 cache in Flip-Chip Pin Grid Array (FC-PGA) / two Intel PGA370 sockets / terminator in empty socket								
L2 cache		256KB std and max / ECC / full speed								
Memory		256MB std / 1XX: 1GB max ¹³ ; 5CX: 2GB max ¹³ / 4 sockets / 3 available / Error Checking and Correcting (ECC) memory controller / SDRAM / 133MHz / ECC DIMMs / 168-pin gold-plated DIMM 3.3 volt sockets / PC133-compliant								
Disk		9.1GB or 18.2GB Ultra160 SCSI / 10K rpm 10K-4 / 5.5 ms average read seek time / 2.99ms average latency								
SCSI disk controller		Adaptec® AIC-7892 / Wide Ultra160 SCSI (LVD 160MB/sec) / single channel / 64-bit PCI / integrated on motherboard								
SCSI connectors		Internal 68-pin (attaches 1-drop cable to SCSI backplane); no external SCSI connector								
IDE controller		Enhanced IDE / two connectors on planar / one 1-drop IDE cable to CD-ROM / ATA-66								
Architecture / chipsets		ServerWorks® ServerSet III LE chip set / NB6635 North Bridge 3.0LE (the North Bridge has two peer PCI buses: PCI Bus 0, 32-bit 33MHz, IB6566 South Bridge, two ethernet controllers, graphics controller); PCI Bus 1, 64-bit 33MHz, SCSI controller, two 64-bit PCI slots) / IB6566 South Bridge for IDE, USB, ISA bus for Service Processor and Super I/O National Semiconductor® PC97317VUL (diskette, parallel, serial, keyboard, mouse)								
Mechanical		EIA 19" Rack (1U⁴) / rack-mount only / supported in IBM NetBAY™ Rack products (rack requires vented front door)								
Control Panel		Front indicators/switches include Power, Reset, Console Select, Power LED and Fault/info LED								
Ethernet controllers		2 x Intel 82559 ethernet controllers / on planar / 10BaseT, 100BaseTX / full duplex / 32-bit PCI bus / redundant ethernet capability and load balancing support through the connection of both ethernet ports to the same LAN segment / two RJ-45 connectors on rear / supports PXE 2.0 Boot Agent / no Wake on LAN® support								
CD-ROM / diskette		24X-10X ⁶ CD-ROM; CAV (ATAPI); bootable; IDE / 3.5" 1.44MB diskette drive								
Rear ports		<i>Serial:</i> one 9-pin; <i>Parallel:</i> none; <i>USB:</i> two ports (no support); <i>Adv Sys Mgmt:</i> two RJ-45 ports (no support)								
Ports and cable		Keyboard, video (DB-15), and mouse port on a standard breakout cable (2 meters length on 1XX; 1 foot length on 5CX) which plugs into the console-out port								
Console interconnect		<i>5CX only:</i> supports daisy chaining via console in and out ports / system-to-system interconnect cable (10 inch, 245mm) is standard / daisy chain connection to adjacent server / supports large rack deployments of daisy chained servers / chain functions with multiple server (not contiguous in chain) outage								
Systems mgmt		<i>No support under preload:</i> Integrated IBM Advanced System Management Processor / on planar / provides remote console and mgmt / allows diagnostic, reset, POST, and auto recovery functions / monitors temp, fans, and pwr supply								
Diagnostics		Light Path Diagnostics™ (LED lights indicate failing component) and on-board diagnostics (via PC-Doctor in BIOS)								
Graphics controller		SVGA / PCI bus / S3® Savage4Pro (on planar) / 8MB SDRAM std and max / DDC2B								
Security		Power-on password / administrator password / system owner's name / unattended boot / selectable boot / systems mgmt security (user log-in password, read-only or read/write access, dial back) / unattended start mode								
Software ⁹		1XX: Preloaded and optimally tuned with TurboLinux® 6.05, IBM HTTP Server 1.3.12, Appliance System Management, Advanced Appliance Configuration Utility						Pentium III 1GHz/133/256KB Proc Upgrade		10K0053
		5CX: Preloaded and optimally tuned with Red Hat Linux 6.2, IBM Advanced Appliance Configuration Utility 2.0, IBM Director 2.2, simple mail client for alerting, Mailing List Management, PHP Support, IBM HTTP Server, external Web page support						128MB SDRAM ECC DIMM 133MHz RDIMM		33L3142
								256MB SDRAM ECC DIMM 133MHz RDIMM		33L3144
								512MB SDRAM ECC DIMM 133MHz RDIMM		33L3146
								1GB SDRAM ECC DIMM 133MHz RDIMM		33L3152
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								Netfinity Rack (with perf door and side panels)		9306910
								NetBay 1 x 4 Console Switch		09N4290
								NetBay 2 x 8 Console Switch		09N4291
Keyboard / mouse		None standard								
Cooling fans		Eight fans (four for processor(s) and planar, two for disk(s) and planar, two for power supply)								
Power supply		200 watt / universal / auto-sensing / auto-restart support								
Prerequisites		Remote management console (client workstation), rack cabinet								



LIMITED WARRANTY³

- ⇨ 3 year parts and labor
- ⇨ International Warranty Service³
- ⇨ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time
- ⇨ 3 year on site warranty service upgrade options: (in eligible locations):⁷
 - 9 hour coverage, Mon-Fri excluding holidays, next business day response time
 - 9 hour coverage, Mon-Fri excluding holidays, 4 hour response
 - 24 hr x 7 day coverage, 4 hour response time
- ⇨ 24 hour x 7 day¹⁴ telephone, electronic, and Internet support

See footnotes for important warranty information
 • = Hot-swap but no software support
 US models withdrawn effective December 2001 or May 2002

IBM® Appliance Server Type-model	Processor	Memory	Disk	Disk controller	Mechanical	Slots x bays	Hot-swap disk bays	Type	Preload	Available date
8672-24X	Celeron™ 800MHz ¹	256MB	20.4GB ²	EIDE	1U rack	2x4	None	Appliance Server	Red Hat® Linux® 6.2	Jun 2001

Positioning	<i>Point solution appliance server; Linux®-based Web hosting appliance with plug in convenience</i>																																															
Processor	Intel® Celeron 800MHz¹ with 100MHz Front Side Bus																																															
L2 cache	128KB std and max / ECC / at processor speed																																															
SMP support	No SMP support																																															
Processor upgrade	None supported																																															
Implementation	Motherboard contains one Intel PGA370 socket (370-pin Flip-Chip Pin Grid Array (FC-PGA)), one integrated VRM, three DIMM sockets, two PCI slots, and integrated ethernet																																															
Memory - std / max	256MB std / 1.5GB max ¹³																																															
Memory - sockets	3 sockets / 2 available / ECC (Error Checking and Correcting) DIMMs and ECC memory controller																																															
Memory - features	SDRAM / 133MHz / three 168-pin gold-plated DIMM 3.3 volt sockets / PC133-compliant																																															
Memory - support	Supports unbuffered SDRAM ECC DIMMs																																															
SCSI disk controller	None																																															
IDE disk controller	Enhanced IDE busmaster / ATA-100 support / two connectors on planar																																															
Cables	Two 2-drop EIDE cables (one cable to CD-ROM, one 80-conductor cable to EIDE disk bays)																																															
Disk - features	20.4GB EIDE / ATA-100 / 7200 rpm / 8.7 ms average read seek time / S.M.A.R.T. ⁵																																															
Chipset	VIA® Apollo Pro133A chip set / VT82C694X North Bridge (memory controller, PCI 2.2 32-bit 33MHz controller) / VT82C686B South Bridge (IDE ATA-100, USB, diskette, serial, keyboard, mouse, ISA bus for flash BIOS)																																															
Mechanical	EIA 19" Rack (1U⁴) / rack-mount only / supported in IBM NetBAY™ Rack products (rack requires vented front door)																																															
Control Panel	Front indicators/switches include Power, Power LED, Reset, and System Error LED																																															
Ethernet controllers	2 x Intel 82550 ethernet controllers / on planar / 10BaseT, 100BaseTX / full duplex / 32-bit PCI bus / two RJ-45 connectors on rear / supports PXE 2.0 Boot Agent / Alert on LAN™ 2 support / Wake on LAN® support																																															
CD-ROM / diskette	24X-10X⁶ CD-ROM, CAV (ATAPI), bootable, IDE / 3.5" 1.44MB diskette drive																																															
Rear ports	<i>Serial</i> : one 9-pin; <i>Parallel</i> : none; <i>USB</i> : two ports (no support); <i>Mgmt</i> : none; keyboard; mouse; DB-15 graphics																																															
Console interconnects	No system-to-system interconnect cable (separate keyboard, video, mouse ports on back)																																															
Systems mgmt	WinBond® W83791D / on planar / monitors system and processor temperature, fan speed and failure, and voltages																																															
Diagnostics	Diagnostics via PC-Doctor on a standard IBM Enhanced Diagnostics CD (diskette can be created)																																															
Graphics controller	SVGA / PCI bus / S3® Savage4Pro (on planar) / 8MB SDRAM std and max / DDC2B / analog 15-pin D-shell																																															
Security	Power-on password / administrator password / unattended boot / selectable boot / unattended start mode																																															
Software ⁹	Preloaded and optimally tuned with Red Hat Linux 6.2, IBM Advanced Appliance Configuration Utility 2.0, IBM Director 2.2, simple mail client for alerting, Mailing List Management, PHP Support, IBM HTTP Server, external Web page support																																															
Keyboard / mouse	None standard																																															
Cooling fans	Six fans (two for processor, memory, halfsize PCI; two for left disk and fullsize PCI; two for power supply) / all variable speed / redundant cooling on single fan failure (other fans increase speed)																																															
Power supply	200 watt / universal / auto-sensing / not redundant / not hot-swap / Automatic Server Restart (ASR) support																																															
Prerequisites	Monitor, keyboard, mouse, rack with perforated door, disk (some models)																																															
	<p style="text-align: center;">OPTIONS</p> <table border="0"> <tr> <td>128MB SDRAM ECC DIMM 133MHz</td> <td>33L3081</td> </tr> <tr> <td>256MB SDRAM ECC DIMM 133MHz</td> <td>33L3083</td> </tr> <tr> <td>512MB SDRAM ECC DIMM 133MHz</td> <td>33L3085</td> </tr> <tr> <td>20.4GB ATA-100 EIDE HDD</td> <td>19K4461</td> </tr> <tr> <td>40GB ATA-100 EIDE HDD</td> <td>22P7157</td> </tr> <tr> <td>IBM Netfinity® Rack (with perforated door/panels)</td> <td>9306910</td> </tr> <tr> <td>IBM NetBAY42 Enterprise Rack</td> <td>930842S</td> </tr> <tr> <td>IBM Console Switch (1 x 4 port)</td> <td>09N4290</td> </tr> <tr> <td>IBM Console Switch (2 x 8 port)</td> <td>09N4291</td> </tr> <tr> <td>IBM 7 foot K/M/V Cable</td> <td>09N4293</td> </tr> <tr> <td>IBM Console Cable Set (12 foot)</td> <td>94G7447</td> </tr> <tr> <td>IBM Two-Button Mouse</td> <td>28L3673</td> </tr> <tr> <td>IBM 84-key Space Saver Cost Reduced Keybrd</td> <td>28L3644</td> </tr> <tr> <td>IBM Preferred Keyboard (black)</td> <td>28L3621</td> </tr> <tr> <td>IBM E51 (13.8" viewable) Color Monitor(black)</td> <td>633347N</td> </tr> <tr> <td>IBM Smart-UPS Model 1400RMB</td> <td>94G6674</td> </tr> <tr> <td>IBM Smart-UPS Model 3000RMB</td> <td>94G6676</td> </tr> <tr> <td>IBM T54A 15" Flat Panel Color Monitor (black)</td> <td>9511AG1</td> </tr> <tr> <td>IBM T540 15" Flat Panel Color Monitor (black)</td> <td>9511AG4</td> </tr> </table>										128MB SDRAM ECC DIMM 133MHz	33L3081	256MB SDRAM ECC DIMM 133MHz	33L3083	512MB SDRAM ECC DIMM 133MHz	33L3085	20.4GB ATA-100 EIDE HDD	19K4461	40GB ATA-100 EIDE HDD	22P7157	IBM Netfinity® Rack (with perforated door/panels)	9306910	IBM NetBAY42 Enterprise Rack	930842S	IBM Console Switch (1 x 4 port)	09N4290	IBM Console Switch (2 x 8 port)	09N4291	IBM 7 foot K/M/V Cable	09N4293	IBM Console Cable Set (12 foot)	94G7447	IBM Two-Button Mouse	28L3673	IBM 84-key Space Saver Cost Reduced Keybrd	28L3644	IBM Preferred Keyboard (black)	28L3621	IBM E51 (13.8" viewable) Color Monitor(black)	633347N	IBM Smart-UPS Model 1400RMB	94G6674	IBM Smart-UPS Model 3000RMB	94G6676	IBM T54A 15" Flat Panel Color Monitor (black)	9511AG1	IBM T540 15" Flat Panel Color Monitor (black)	9511AG4
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Bay ① 3.5", UltraSlim 0.8", access, std diskette
 Bay ② 5.25", UltraSlim 0.8", access, std CD-ROM
 Bay ③ 3.5", SL 1", access, std disk
 Bay ④ 3.5", SL 1", access, open for disk

Slot 1: fullsize, 32-bit 33MHz PCI 2.1 (5v)
 Slot 2: halfsize, 32-bit 33MHz PCI 2.1 (5v)

- ❖ Stealth black
- ❖ H 1.72" (1U) x W 17.3" x D 25.7"
- ❖ 26 to 28.4 lbs (minimum to maximum configuration)
- ❖ Setup Utility is available by pressing F1 at startup
- ❖ PXE Boot Agent Utility near startup by pressing CTRL+S
- ❖ DMI 2.1, Wired for Management (WfM) 2.0-compliant
- ❖ Includes rack mounting kit
- ❖ Vital Product Data (VPD) info in nonvolatile memory
- ❖ Predictive Failure Analysis® (PFA) on disks

All models: Max int disk capacity: 80GB with two 40GB EIDE disks

LIMITED WARRANTY³

- 3 year parts / 1 year labor
- International Warranty Service³
- 1st year: on site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- 2nd/3rd year: parts exchange only, call 1-800-772-2227
- 3 year on site warranty service upgrade options (in eligible locations):⁷
 - 9 hour coverage, Mon-Fri excluding holidays, next business day response time
 - 9 hour coverage, Mon-Fri excluding holidays, 4 hour response
 - 24 hr x 7 day coverage, 4 hour response time
- 24 hour x 7 day¹⁴ telephone, electronic, and Internet support

See footnotes for important warranty information
 US model withdrawn effective May 2002

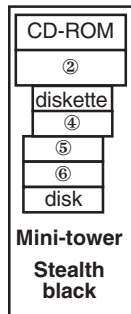
IBM® Network Attached Storage (NAS) appliance	Type-model	Qty x Processor(s)	Memory	Disks	SCSI controller	Mechanical	Slots x bays (6 hot-swap)	10/100 ethernet	Windows Type	Available OS	Powered OS
8658-33Y	1 x Pentium® III 800	256MB	3 x 36.4GB Ultra160	ServerRAID-4L	Tower	5 slots x 10 bays	2 x ethernet	NAS	Preload	Oct 2000	
8658-3XY	2 x Pentium III 800	1GB	6 x 36.4GB Ultra160	ServerRAID-4H	5U rack	5 slots x 10 bays	4 x ethernet	NAS	Preload	Nov 2000	

Intel® processor(s) L2 cache Implementation SMP support	One or two Pentium® III 800EB MHz¹ with 133MHz Front Side Bus 256KB std and max / ECC / at processor speed / processor and L2 cache in Single Edge Cartridge (SECC2) Motherboard contains two Intel Slot 1 connectors for SECC2 cartridges (open Slot 1 used by terminator), one VRM socket (one VRM integrated), four DIMM sockets, PCI slots, and integrated subsystems 2-way SMP via second identical 800MHz processor / upgrade via SECC2 into second Slot 1 CPU connector										
Memory - std / max Memory - sockets Memory - features	256MB or 1GB std / 2GB max (Windows Powered OS prevents addressing more than 2GB) 4 sockets / 3 available / ECC (all have Error Checking and Correcting (ECC) memory controller) / non-interleaved SDRAM / 133MHz / four 168-pin gold-plated sockets / PC133-compliant / supports registered SDRAM ECC DIMMs only										
SCSI disk controller	33Y: IBM ServerRAID-4L / Ultra160 SCSI (LVD 160MB/sec) / 64-bit PCI adapter / 1 channel (external/internal) / one 68-pin internal connector, one 68-pin VHDCI external connector / 16MB ECC cache / RAID 0, 1, 1E, 5E, 00, 10, 1E0, 50 / 16-bit 68-pin LVD cable from internal connector to backplane 3XY: IBM ServerRAID-4H / Ultra160 SCSI (LVD 160MB/sec) / 64-bit PCI adapter / 4 channels (2 external/internal, 2 external only) / two 68-pin internal connectors, four 68-pin VHDCI external connectors / 128MB ECC cache, battery-backed / RAID 0, 1, 1E, 5E, 00, 10, 1E0, 50 / 16-bit 68-pin LVD cable from internal connector to backplane All: Adaptec® AHA-7899 / Ultra160 SCSI (LVD 160MB/sec) / 64-bit PCI / on planar / 2 channels (both internal, no external) / two 68-pin internal connectors on planar										
IDE controller / cable Disk - capacity Disk - bays	Single Primary IDE (ROSB4) South Bridge / one connector on planar / one 1-drop IDE cable (CD-ROM) Three or six 36.4GB / 7200 rpm / Ultra160 SCSI / 7.0 ms or less average read seek time / 4.17 ms latency / one backplane Six hot-swap / 80-pin SCA-2 connectors / common tray with EXP300 and later servers										
Mechanical Rack support Bus slots (see below)	Tower or EIA 19" Rack (5U⁴) Rack systems supported in IBM NetfinityRacks / kit available to convert tower to rack (no rack to tower conversion) PCI 2.1 (33MHz) / dual peer PCI / 64-bit PCI (three PCI slots, SCSI controller) / 32-bit PCI (two PCI slots, graphics, ethernet, South Bridge) / no hot-swap slots										
Chip set	ServerWorks® ServerSet III™ LE chip set / NB6635 North Bridge 3.0LE / IB6566 South Bridge for IDE, USB, ISA bus for Service Processor and Super I/O National Semiconductor® PC97317VUL (diskette, parallel, serial, keyboard, mouse)										
Bays / available	(See diagram below): 10 bays / three 5.25" HH bays (1 used by CD-ROM) / one diskette bay / six hot-swap bays										
10/100 ethernet	All: AMD® Am79C975 / on planar / 10BaseT, 100BaseTX / full duplex / RJ-45 connector / 3 front LEDs 33Y: 1 x Netfinity 10/100 Ethernet Adapter 2 / 32-bit PCI adapter / full duplex / 82559 chip set / in Slot 1 3XY: 3 x Netfinity 10/100 Ethernet Adapter 2 / 32-bit PCI adapter / full duplex / 82559 chip set / in Slot 1, 2, 4										
CD-ROM / diskette Serial / parallel / USB Graphics controller	40X-17X° CD-ROM / multisession / IDE interface / 1.6" HH / bootable; <i>Diskette</i> : 3.5" 1.44MB diskette drive / dust cover <i>Serial</i> : Three 9-pin (one for Mgmt Processor) <i>Parallel</i> : One (EPP, ECP) / IEEE 1284 <i>USB</i> : Two ports (Version 1.1) SVGA / PCI 2.1 bus / S3® Savage4 (on planar) / 8MB SDRAM std/max / 1280x1024 at 16M colors at 100Hz / DDC2B										
Security	Power-on password / administrator password / system owner's name / hinged and lockable front door to cover disk bays, power button, and reset button (tower only) / unattended boot / selectable boot / systems mgmt security (user log-in password, read-only or read/write access, dial back) / unattended start mode										
Systems mgmt	Integrated Advanced System Mgmt Processor / on planar / provides remote console and mgmt / allows diagnostic, reset, POST, and auto recovery functions / monitors temperature, fans, and power supplies										
Diagnostics	Diagnostics LED Panel (under cover) / Light Path Diagnostics™ provides an LED map to failing component / system board error LEDs / diagnostics in ROM by pressing F2 at startup for PC-Doctor										
Software	Preloaded and optimally tuned with Windows Powered OS and appliance software stack, Netfinity Director 2.12 (agent only), Universal Manageability (UM) Server Extensions, ServerRAID Manager, Advanced Appliance Configuration Utility, Columbia Data Products Open Transaction Manager, Microsoft Services for Unix 2.0										
Keyboard / mouse Power supply	None Std: two 250 watt hot-swap; Max: three 250 watt hot-swap / redundant with two power supplies / worldwide / voltage-sensing / auto-restart / fans in each power supply										
Fans	Two (fan in rear, blower in front) / not hot-swap / PFA / fan failure signals Diagnostic LED and Mgmt Processor / fan in each power supply										
Prerequisites	Monitor, disk; rack model requires rack cabinet, mouse, kybd										

<p>Slot 1: fullsize, 32-bit 33MHz PCI 2.1 (5v), Bus A*</p> <p>Slot 2: fullsize, 32-bit 33MHz PCI 2.1 (5v), Bus A*</p> <p>Slot 3: fullsize, 64-bit 33MHz PCI 2.1 (5v), Bus B**</p> <p>Slot 4: fullsize, 64-bit 33MHz PCI 2.1 (5v), Bus B*</p> <p>Slot 5: fullsize, 64-bit 33MHz PCI 2.1 (5v), Bus B</p>	<p>Removable, easy release left/top side panel</p> <p>Quick release adapter slots (no screws)</p> <p>Rail system enables devices (CD-ROM, diskette, tape drives) to snap in and out without screws</p> <p>Configuration/Setup Utility invoked by pressing F1 at startup</p> <p>SCSISelect near startup by pressing CTRL+A</p> <p>Operator Information Panel (in front)</p> <p>Predictive failure analysis on disk options, memory, processors, VRMs, power supplies, and fans in conjunction with Netfinity Director can alert the system administrator of an imminent component failure</p> <p>Tower: H 16.8" x W 8.6" x D 26.0"</p> <p>Rack: H 8.6" x W 16.8" x D 24.8"</p> <p>55.7 to 82.7 pounds</p> <p>Stealth black color</p> <p>All non-hot-swaps bays use rails (no screws) for devices</p>	<p>LIMITED WARRANTY</p> <p>↔ 3 year parts and limited labor warranty³</p> <p>↔ International Warranty Service³</p> <p>↔ On site warranty all 3 years</p> <p>↔ All cities in all states</p> <p>↔ 8 am-5 pm, Mon-Fri coverage</p> <p>↔ Next business day average response time</p> <p>↔ On site warranty upgrade options (in eligible locations):</p> <ul style="list-style-type: none"> • 24 hr x 7 day coverage, 4 hour response⁷ time • 24 hr x 7 day coverage, 2 hour response⁷ time <p>↔ IBM Server Start Up Support</p> <p>↔ 24 hour x 7 day telephone¹⁴, electronic, and Internet support</p>
<p>Bay ① 3.5", SL 1", access, diskette</p> <p>Bay ② 3.5", SL 1", access, hot swap*</p> <p>Bay ③ 3.5", SL 1", access, hot swap*</p> <p>Bay ④ 3.5", SL 1", access, hot swap*</p> <p>Bay ⑤ 3.5", SL 1", access, hot swap*</p> <p>Bay ⑥ 3.5", SL 1", access, hot swap*</p> <p>Bay ⑦ 3.5", SL 1", access, hot swap*</p> <p>Bay ⑧ 5.25", HH 1.6" access, open</p> <p>Bay ⑨ 5.25", HH 1.6" access, open</p> <p>Bay ⑩ 5.25", HH 1.6" access, CD-ROM</p> <p>Bays 2 through 7 support 6 SL disks or 3 HH hot-swap disks via SCA-2 connectors; Bays 8 and 9 support 3.5" disks via Media Bay Conversion Kit</p>	<p>Rack or Tower (tower shown above)</p>	

IBM® Type-model	Processor	L2 cache	Memory	Disk	Disk controller	Mechanical	Slots x bays	Hot-swap disk bays	Ethernet	Available date
8481-11X	Celeron® 850/100	128KB	128MB	20.4GB ² 7200 rpm	EIDE	Mini Tower	5x7	None	10/100 ethernet	Sep 2001
8481-21X	Pentium® 1GHz/133	256KB	128MB	20.4GB 7200 rpm	EIDE	Mini Tower	5x7	None	10/100 ethernet	Sep 2001
8481-31X	Celeron 1.2GHz/100	256KB	128MB	20.4GB 7200 rpm	EIDE	Mini Tower	5x7	None	10/100 ethernet	Sep 2002
Positioning Processor	<i>Value Leader (VL); uniprocessor, entry server designed to meet small business needs and budgets</i>									
L2 cache	Intel® Celeron 850MHz or 1.2GHz with 100MHz frontside bus or Intel Pentium® III 1.0GHz with 133MHz frontside bus Celeron 850MHz: 128KB std and max / ECC / at processor speed Celeron 1.2GHz: 256KB std and max / ECC / at processor speed Pentium III: 256KB std and max / ECC / at processor speed									
Implementation	Processor and L2 cache in Flip-Chip Pin Grid Array (FC-PGA or FC-PGA2) Motherboard contains one Intel PGA370 socket, one integrated VRM, three DIMM sockets, three PCI slots, connector for two-slot PCI extender board, one AGP slot, and integrated ethernet									
Processor upgrade SMP support	All models can be upgraded to Pentium III 1.0, 1.13, or 1.26GHz No SMP support									
Memory	128MB standard / 1.5GB maximum 3 sockets / 2 available / ECC (Error Checking and Correcting) DIMMs and ECC memory controller / PC133-compliant / SDRAM / 133MHz / unbuffered DIMMs (UDIMM) / CAS Latency 3 (CL3) / three 168-pin gold-plated DIMM 3.3 v sockets									
SCSI disk controller	None									
IDE disk controller	Enhanced IDE busmaster / ATA-66/100 support / two connectors on planar									
Cables	Two 2-drop EIDE cables (one cable to CD-ROM, one cable to EIDE disk)									
Disk - features	20.4GB EIDE / ATA-100 / 7200 rpm / less than 9.0 ms average read seek time / S.M.A.R.T.									
Rack support	4U ⁴ rack mount support via tower-to-rack kit option in an industry standard 19-inch rack									
Architecture / chipsets	VIA® Apollo Pro133T chip set / VT82C694T North Bridge (memory controller, PCI 2.2 32-bit 33MHz controller, AGP 4X) / VIA VT82C686B South Bridge (IDE ATA-100, USB, diskette, parallel, serial, keyboard, mouse)									
100/10Mbps ethernet	Intel 82550 / on planar / 10BaseT, 100BaseTX / full duplex / 32-bit 33MHz PCI bus / support for Wake on LAN®									
CD-ROM / diskette	48X-20X ⁶ CD-ROM, CAV (ATAPI), bootable, IDE / <i>Diskette</i> : 3.5" 1.44MB diskette drive									
Ports	<i>Back</i> : two 9-pin serial, two USB (Version 1.1), parallel, keyboard, mouse									
Audio	Integrated digital audio / AC97 interface / SoundBlaster Pro-compatible									
Audio connectors	<i>Back</i> : microphone jack, line-in, line-out, MIDI/game port									
Speaker	One internal speaker / requires externally powered speakers for stereo sound									
Diagnostics	POST and server diagnostic programs stored on IBM Enhanced Diagnostics CD									
Systems mgmt	Monitoring and alerting of memory, thermal, or voltage faults / support for Wake on LAN, Alert on LAN™ 2, PXE									
Graphics controller	SVGA / ATI Rage XL / AGP 2X adapter / 8MB SGRAM std and max / 230MHz RAMDAC / DPMS and DDC2B-compliant / 60Hz to 85Hz vertical refresh / analog 15-pin D-Sub connector									
Security	Cover key lock / U-bolt support / power-on password / boot sequence control / operation without keybd and mouse / chassis intrusion protection									
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director (system hardware mgmt software), and others				Pentium III 1.0GHz/256KB Proc Upg Pentium III 1.13GHz/512KB Proc Upg Pentium III 1.26GHz/512KB Proc Upg				32P0650 32P0651 32P0652	
Keyboard / mouse	IBM 101-key keyboard / IBM 2-button mouse				128MB SDRAM ECC 133MHz unbuffered DIMM 256MB SDRAM ECC 133MHz unbuffered DIMM 512MB SDRAM ECC 133MHz unbuffered DIMM				33L3081 33L3083 33L3085	
Cooling fans	Celeron: three fans (power supply, front, rear) Pentium III: four fans (power supply, front, rear, fansink) All: not redundant or hot-swap / fans full-speed except for variable-speed fan in power supply				IBM 4Ux20D Tower-to-Rack Kit IBM 40GB ATA-100 EIDE HDD IBM 80GB ATA-100 EIDE HDD				09N4300 22P7157 09N4226	
Power supply	330 watts / universal / auto switch / Automatic Server Restart (ASR) / not redundant or hot-swap / cooling fan in power supply				IBM T540 15" Flat Panel Monitor (black) IBM 12X/8X/32X ⁶ CD-RW (black) American Power Conversion Smart-UPS 1000				9511AG4 10K3785 94G3135	
Other options at ibm.com/pc/us/accessories										

Slot fullsize, AGP 4X, 25 watt (3.3v) - used by standard AGP graphics adptr
 Slot 1: fullsize, 32-bit 33MHz, PCI 2.2 (5v)
 Slot 2: fullsize, 32-bit 33MHz, PCI 2.2 (5v) - slot has Alert on LAN 2 support
 Slot 3: fullsize, 32-bit 33MHz, PCI 2.2 (5v)
 Slot 4: fullsize, 32-bit 33MHz, PCI 2.2 (5v) - on two-slot PCI extender board
 Slot 5: fullsize, 32-bit 33MHz, PCI 2.2 (5v) - on two-slot PCI extender board



Bay ① 5.25", HH 1.6", access, CD-ROM
 Bay ② 5.25", HH 1.6", access, open
 Bay ③ 3.5", SL 1", access, diskette
 Bay ④ 3.5", SL 1", access, open
 Bay ⑤ 3.5", SL 1", access, open
 Bay ⑥ 3.5", SL 1", access, open
 Bay ⑦ 3.5", SL 1", access, disk (some)

Maximum internal IDE disk capacity:
240GB (3 disks x 80GB)

Metal cage for disk bays 5,6,7 rotate out of chassis for easy access for cabling backplane or working with disks

- Two front stabilizing feet
- Handle grip on top
- H 18.5" x W 6.5" x D 20.0"
- H 470mm x W 165mm x D 508mm
- 35 to 43 pounds (15.9 to 19.5kg)

- Removable left side panel
- Configuration/Setup Utility (in flash memory) invoked by pressing F1 at startup
- SCSISelect near startup by pressing CTRL+A (SCSI models)
- Adv Config Power Interface (ACPI) 1.0
- ISO 9241-3 capable

LIMITED WARRANTY³

- 1 year parts and labor
- International Warranty Service³
- On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- On site warranty service upgrade options (in eligible locations):⁷
 - 1 year IOR 9x5, Next Business Day (ServicePac® part number 69P9382)
 - 1 year IOR 9x5, 4 hr ave response (ServicePac part number 69P9383)
 - 1 year IOR 24x7, 4 hr ave response (ServicePac part number 69P9384)
 - 1 year IOR 24x7, 2 hr ave response (ServicePac part number 69P9385)
 - 3 year IOR 9x5, Next Business Day (ServicePac part number 69P9509)
 - 3 year IOR 9x5, 4 hr ave response (ServicePac part number 69P9510)
 - 3 year IOR 24x7, 4 hr ave response (ServicePac part number 69P9511)
 - 3 year IOR 24x7, 2 hr ave response (ServicePac part number 69P9515)
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information
 US models withdrawn effective June 2002 or January 2003 (previously announced August 28, 2001)

IBM® Type-model	Processor	Memory	Disk	Tape	Disk controller	Mechanical	Slots x bays	Hot-swap disk bays	ethernet	Available date
8478-10X	Celeron™ 667/66	128MB	None	None	Ultra160, EIDE	Mini Tower	5 slots x 7 bays	None	10/100 ethernet	Oct 2000
8478-11X	Celeron 667/66	64MB	15GB	None	EIDE	Mini Tower	5 slots x 7 bays	None	10/100 ethernet	Oct 2000
8478-12X	Celeron 667/66	64MB	15GB	Tape	EIDE	Mini Tower	5 slots x 7 bays	None	10/100 ethernet	Oct 2000
8478-40X	Pentium® III 800/133	128MB	None	None	Ultra160, EIDE	Mini Tower	5 slots x 7 bays	None	10/100 ethernet	Oct 2000
8478-41X	Pentium III 800/133	64MB	15GB	None	EIDE	Mini Tower	5 slots x 7 bays	None	10/100 ethernet	Oct 2000
8478-50X	Pentium III 866/133	128MB	None	None	Ultra160, EIDE	Mini Tower	5 slots x 7 bays	None	10/100 ethernet	Oct 2000
8478-51X	Pentium III 866/133	64MB	15GB	None	EIDE	Mini Tower	5 slots x 7 bays	None	10/100 ethernet	Oct 2000

Intel® processor **Celeron 667MHz¹ with 66MHz Front Side Bus or Pentium® III 800EB or 866MHz¹ with 133MHz Front Side Bus**
 L2 cache **Celeron: 128KB** std and max / ECC / at processor speed; **Pentium III: 256KB** std and max / ECC / at processor speed
 All: Processor and L2 cache in Flip-Chip Pin Grid Array (FC-PGA)
 Implementation Motherboard contains one Intel PGA370 socket, one integrated VRM, three DIMM sockets, three PCI slots, connector for two slot PCI extender board, one AGP slot, and integrated ethernet
 SMP support **No SMP** support

Memory - std / max **64MB or 128MB** std / 1.5GB max
 Memory - sockets 3 sockets / 2 available / ECC (Error Checking and Correcting) DIMMs and ECC memory controller
 Memory - features **SDRAM / 133MHz** / three 168-pin gold-plated DIMM 3.3 volt sockets / PC133-compliant
 Memory - support Supports unbuffered SDRAM ECC DIMMs

SCSI disk controller *Some models:* **Adaptec® 29160LP / single channel Wide Ultra160 SCSI** (LVD 160MB/sec) / 64-bit 33MHz PCI adapter (in a 32-bit slot) / one channel with up to 15 device support
 SCSI connectors *SCSI models:* One 68-pin internal SCSI connector / one 0.8mm VHDCI 68-pin external SCSI connector
 RAID support Supports optional PCI RAID adapters
 IDE disk controller Enhanced IDE busmaster / ATA-66 support (ATA-100 on later models) / two connectors on planar
 Cables *SCSI models:* one 5-drop 16-bit LVD SCSI cable, one 2-drop EIDE cable (connected to CD-ROM)
EIDE models: two 2-drop EIDE cables (one cable to CD-ROM, one cable to EIDE disk)
Some models: 15GB EIDE / ATA-100 / 7200 rpm / 8.7 ms average read seek time / S.M.A.R.T.
 Disk - features
 Tape drive 12X: 10/20GB TR5 Internal IDE Tape Drive

Rack support 4U⁴ rack mount support via tower-to-rack kit option
 Architecture / chipsets **VIA® Apollo Pro133A chip set** / VT82C694X North Bridge (memory controller, PCI 2.2 32-bit 33MHz controller, AGP 4X) / VIA VT82C686A or 686B South Bridge (IDE ATA-66 [686B is ATA-100], USB, diskette, parallel, serial, keyboard, mouse)

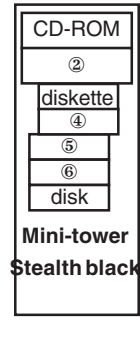
100/10Mbps ethernet Intel 82559 / on planar / 10BaseT, 100BaseTX / full duplex / 32-bit 33MHz PCI bus / support for Wake on LAN®
 CD-ROM / diskette 48X-20X⁶ CD-ROM / CAV (ATAPI) / bootable / IDE *Diskette:* 3.5" 1.44MB diskette drive
 External ports *Serial:* Two 9 pin; *Parallel:* One (EPP, ECP) / IEEE 1284; *USB:* Two (Ver 1.1); keyboard, DB-15 analog video, mouse, audio line in, audio line out, microphone in
 Diagnostics POST and server diagnostic programs are stored on the IBM Enhanced Diagnostics CD
 Systems mgmt Monitoring and alerting of memory, thermal, or voltage faults / support for Wake on LAN, Alert on LAN™ 2, Preboot eExecution Environment (PXE)

Graphics controller SVGA / S3 Savage4 LT / AGP 4X adapter / 8MB SDRAM std and max / DPMS and DDC2B-compliant / 60Hz to 85Hz vertical refresh / 15-pin D-Sub connector

Security Cover key lock / U-Bolt support / power-on password / boot sequence control / operation without kybd and mouse / chassis intrusion protection

Software	ServerGuide™ (CD-based automated network OS installation and configuration tool), Norton AntiVirus™, and APC PowerChute Plus / includes IBM Director (system hardware mgmt software) and many utilities	Pentium III 800MHz/256KB Proc Upg Pentium III 866MHz/256KB Proc Upg 64MB SDRAM ECC 133MHz unbuffered DIMM 128MB SDRAM ECC 133MHz unbuffered DIMM 256MB SDRAM ECC 133MHz unbuffered DIMM 512MB SDRAM ECC 133MHz unbuffered DIMM	21P9539 10K3818 33L3079 33L3081 33L3083 33L3085
Keyboard / mouse	IBM 101-key keyboard / IBM 2-button mouse	IBM 4Ux20D Tower-to-Rack Kit	09N4300
Cooling fans	Three cooling fans (power supply, front, rear) / not redundant or hot-swap / fans have two speeds	IBM 20.4GB ATA-100 EIDE HDD IBM 30GB ATA-100 EIDE HDD	19K4461 00N8203
Power supply	330 watts / universal / auto switch / Automatic Server Restart (ASR) / not redundant or hot-swap / cooling fan in power supply	IBM 9.1GB 7200rpm Ultra160 SCSI HDD IBM 18.2GB 7200rpm Ultra160 SCSI HDD IBM 36.4GB 7200rpm Ultra160 SCSI HDD IBM 9.1GB 10K Ultra160 SCSI HDD IBM 18.2GB 10K Ultra160 SCSI HDD IBM 36.4GB 10K Ultra160 SCSI HDD	00N8204 00N8205 00N8206 00N8207 00N8208 00N8209

Slot fullsize, AGP 4X, 25 watt (3.3v) - used by standard AGP graphics adptr
 Slot 1: fullsize, 32-bit 33MHz, PCI 2.2 (5v)
 Slot 2: fullsize, 32-bit 33MHz, PCI 2.2 (5v) - slot has Alert on LAN 2 support
 Slot 3: fullsize, 32-bit 33MHz, PCI 2.2 (5v) - used by SCSI adapter
 Slot 4: fullsize, 32-bit 33MHz, PCI 2.2 (5v) - on two-slot PCI extender board
 Slot 5: fullsize, 32-bit 33MHz, PCI 2.2 (5v) - on two-slot PCI extender board



Bay ① 5.25", HH 1.6", access, CD-ROM
 Bay ② 5.25", HH 1.6", access, open or tape
 Bay ③ 3.5", SL 1", access, diskette
 Bay ④ 3.5", SL 1", access, open
 Bay ⑤ 3.5", SL 1", access, open
 Bay ⑥ 3.5", SL 1", access, open
 Bay ⑦ 3.5", SL 1", access, disk (some)

Maximum internal SCSI disk capacity:
145.6GB (4 disks x 36.4GB)

- Removable left side panel
- Configuration/Setup Utility (in flash memory) invoked by pressing F1 at startup
- SCSISelect near startup by pressing CTRL+A
- Adv Config Power Interface (ACPI) 1.0
- ISO 9241-3 capable

Metal cage for disk bays 5,6,7 rotate out of chassis for easy access for cabling backplane or working with disks
 Two front stabilizing feet
 Handle grip on top
 H 18.5" x W 6.5" x D 20.0"
 H 470mm x W 165mm x D 508mm
 35 to 43 pounds (15.9 to 19.5kg)

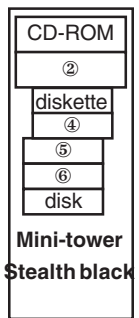
LIMITED WARRANTY

- ↪ 3 year parts / 1 year labor limited warranty³
- ↪ International Warranty Service³
- ↪ 1st year: on site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- ↪ 2nd/3rd year: parts exchange only, call 1-800-772-2227
- ↪ On site warranty upgrade options (in eligible locations):
 - 24 hr x 7 day coverage, 4 hour response⁷ time (21P2021)
 - 9 hour coverage, Mon-Fri excluding holidays, next business day response⁷ time (21P2022)
- ↪ IBM Server Start Up Support
- ↪ 24 hour x 7 day telephone¹⁴, electronic, and Internet support

IBM® Type-model	Processor	Memory	Disk	Tape	Disk controller	Mechanical	Slots x bays	Hot-swap disk bays	Ethernet	Available date
8478-20X	Celeron™ 733/66	128MB	None	None	Ultra160, EIDE	Mini Tower	5 slots x 7 bays	None	10/100 ethernet	Mar 2001
8478-21X	Celeron 733/66	64MB	20.4GB	None	EIDE	Mini Tower	5 slots x 7 bays	None	10/100 ethernet	Mar 2001
8478-22X	Celeron 733/66	64MB	15GB	Tape	EIDE	Mini Tower	5 slots x 7 bays	None	10/100 ethernet	Mar 2001
8478-30X	Celeron™ 800/100	128MB	None	None	Ultra160, EIDE	Mini Tower	5 slots x 7 bays	None	10/100 ethernet	May 2001
8478-31X	Celeron 800/100	64MB	20.4GB	None	EIDE	Mini Tower	5 slots x 7 bays	None	10/100 ethernet	May 2001
8478-60X	Pentium® III 933/133	128MB	None	None	Ultra160, EIDE	Mini Tower	5 slots x 7 bays	None	10/100 ethernet	Mar 2001
8478-61X	Pentium III 933/133	64MB	20.4GB	None	EIDE	Mini Tower	5 slots x 7 bays	None	10/100 ethernet	Mar 2001
8478-70X	Pentium III 1GHz/133	128MB	None	None	Ultra160, EIDE	Mini Tower	5 slots x 7 bays	None	10/100 ethernet	Mar 2001
8478-71X	Pentium III 1GHz/133	64MB	20.4GB	None	EIDE	Mini Tower	5 slots x 7 bays	None	10/100 ethernet	Mar 2001

Intel® processor	Celeron 733MHz¹ with 66MHz Front Side Bus or Celeron 800MHz² with 100MHz Front Side Bus or Pentium® III 933MHz¹ or 1GHz with 133MHz Front Side Bus									
L2 cache	<i>Celeron:</i> 128KB std and max / ECC / at processor speed <i>Pentium III:</i> 256KB std and max / ECC / at processor speed <i>All:</i> Processor and L2 cache in Flip-Chip Pin Grid Array (FC-PGA) / all upgradable via options below									
Implementation	Motherboard contains one Intel PGA370 socket, one integrated VRM, three DIMM sockets, three PCI slots, connector for two slot PCI extender board, one AGP slot, and integrated ethernet									
SMP support	No SMP support									
Memory - std / max	64MB or 128MB std / 1.5GB max									
Memory - sockets	3 sockets / 2 available / ECC (Error Checking and Correcting) DIMMs and ECC memory controller									
Memory - features	SDRAM / 133MHz / three 168-pin gold-plated DIMM 3.3 volt sockets / PC133-compliant									
Memory - support	Supports unbuffered SDRAM ECC DIMMs									
SCSI disk controller	<i>Some models:</i> Adaptec® 29160LP / single channel Wide Ultra160 SCSI (LVD 160MB/sec) / 64-bit 33MHz PCI adapter (in a 32-bit slot) / one channel with up to 15 device support									
SCSI connectors	<i>SCSI models:</i> One 68-pin internal SCSI connector / one 0.8mm VHDCI 68-pin external SCSI connector									
RAID support	Supports optional PCI RAID adapters									
IDE disk controller	Enhanced IDE busmaster / ATA-66 support (ATA-100 on later models) / two connectors on planar									
Cables	<i>SCSI models:</i> one 5-drop 16-bit LVD SCSI cable, one 2-drop EIDE cable (connected to CD-ROM) <i>EIDE models:</i> two 2-drop EIDE cables (one cable to CD-ROM, one cable to EIDE disk)									
Disk - features	<i>Some models:</i> 15GB or 20.4GB EIDE / ATA-100 / 7200 rpm / 8.7 ms average read seek time / S.M.A.R.T.									
Tape drive	<i>Model 22X:</i> 10/20GB TR5 Internal IDE Tape Drive									
Rack support	4U ⁴ rack mount support via tower-to-rack kit option in an industry standard 19-inch rack									
Architecture / chipsets	VIA® Apollo Pro133A chip set / VT82C694X North Bridge (memory controller, PCI 2.2 32-bit 33MHz controller, AGP 4X) / VIA VT82C686B South Bridge (IDE ATA-100, USB, diskette, parallel, serial, keyboard, mouse)									
100/10Mbps ethernet	Intel 82559 / on planar / 10BaseT, 100BaseTX / full duplex / 32-bit 33MHz PCI bus / support for Wake on LAN®									
CD-ROM / diskette	48X-20X ⁶ CD-ROM / CAV (ATAPI) / bootable / IDE <i>Diskette:</i> 3.5" 1.44MB diskette drive									
External ports	<i>Serial:</i> Two 9 pin; <i>Parallel:</i> One (EPP, ECP) / IEEE 1284; <i>USB:</i> Two (Ver 1.1); keyboard, DB-15 analog video; mouse; audio line in; audio line out; microphone in									
Diagnostics	POST and server diagnostic programs stored on IBM Enhanced Diagnostics CD									
Systems mgmt	Monitoring and alerting of memory, thermal, or voltage faults / support for Wake on LAN, Alert on LAN™ 2, Preboot eXecution Environment (PXE)									
Graphics controller	SVG A / S3 Savage4 LT / AGP 4X adapter / 8MB SDRAM std and max / DPMS and DDC2B-compliant / 60Hz to 85Hz vertical refresh / analog 15-pin D-Sub connector									
Security	Cover key lock / U-Bolt support / power-on password / boot sequence control / operation without kybd and mouse / chassis intrusion protection									
Software	ServerGuide™ (CD-based automated network OS installation and configuration tool), Norton AntiVirus™, and APC PowerChute Plus / includes IBM Director (system hardware mgmt software) and many utilities									
Keyboard / mouse	IBM 101-key keyboard / IBM 2-button mouse									
Cooling fans	Three cooling fans (power supply, front, rear) / not redundant or hot-swap / fans have two speeds									
Power supply	330 watts / universal / auto switch / not redundant or hot-swap / cooling fan in power supply									

- Slot fullsize, AGP 4X, 25 watt (3.3v) - used by standard AGP graphics adptr
- Slot 1: fullsize, 32-bit 33MHz, PCI 2.2 (5v)
- Slot 2: fullsize, 32-bit 33MHz, PCI 2.2 (5v) - slot has Alert on LAN 2 support
- Slot 3: fullsize, 32-bit 33MHz, PCI 2.2 (5v) - used by SCSI adapter
- Slot 4: fullsize, 32-bit 33MHz, PCI 2.2 (5v) - on two-slot PCI extender board
- Slot 5: fullsize, 32-bit 33MHz, PCI 2.2 (5v) - on two-slot PCI extender board



- Bay ① 5.25", HH 1.6", access, CD-ROM
- Bay ② 5.25", HH 1.6", access, open or tape
- Bay ③ 3.5", SL 1", access, diskette
- Bay ④ 3.5", SL 1", access, open
- Bay ⑤ 3.5", SL 1", access, open
- Bay ⑥ 3.5", SL 1", access, open
- Bay ⑦ 3.5", SL 1", access, disk (some)

Maximum internal SCSI disk capacity:
145.6GB (4 disks x 36.4GB)

- Removable left side panel
- Configuration/Setup Utility (in flash memory) invoked by pressing F1 at startup
- SCSISelect near startup by pressing CTRL+A
- Adv Config Power Interface (ACPI) 1.0
- ISO 9241-3 capable

- Metal cage for disk bays 5,6,7 rotate out of chassis for easy access for cabling backplane or working with disks
- Two front stabilizing feet
- Handle grip on top
- H 18.5" x W 6.5" x D 20.0"
- H 470mm x W 165mm x D 508mm
- 35 to 43 pounds (15.9 to 19.5kg)

LIMITED WARRANTY³

- ↪ 3 year parts / 1 year labor
- ↪ International Warranty Service³
- ↪ 1st year: on site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- ↪ 2nd/3rd year: parts exchange only, call 1-800-772-2227
- ↪ 3 year on site warranty service upgrade options (in eligible locations):⁷
 - 9 hour coverage, Mon-Fri excluding holidays, next business day response time (ServicePac® part number 21P2021)
 - 24 hr x 7 day coverage, 4 hour response time (ServicePac part number 21P2022)
- ↪ IBM Server Start Up Support
- ↪ 24 hour x 7 day¹⁴ telephone, electronic, and internet support

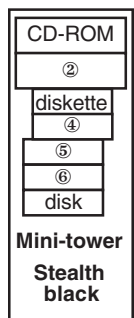
* For a copy of IBM's Statement of Limited Warranty, call 1-800-772-2227
US models announced May 22, 2001; withdrawn effective December 2001

No warranties are expressed or implied in this summary
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IBM® Type-model	Processor	L2 cache	Memory	Disk	Disk controller	Mechanical	Slots x bays	Hot-swap disk bays	Ethernet	Available date
8479-10X	Celeron® 850/100	128KB	128MB	None	Ultra160, EIDE	Mini Tower	5x7	None	10/100 ethernet	Aug 2001
8479-11X	Celeron 850/100	128KB	128MB	20.4GB	EIDE	Mini Tower	5x7	None	10/100 ethernet	Aug 2001
8479-31X	Celeron 1GHz/100	128KB	128MB	20.4GB	EIDE	Mini Tower	5x7	None	10/100 ethernet	Feb 2002
8479-40X	Pentium® 1GHz/133	256KB	128MB	None	Ultra160, EIDE	Mini Tower	5x7	None	10/100 ethernet	Aug 2001
8479-41X	Pentium 1GHz/133	256KB	128MB	20.4GB	EIDE	Mini Tower	5x7	None	10/100 ethernet	Aug 2001
8479-50X	Pentium III 1.13/133	512KB	128MB	None	Ultra160, EIDE	Mini Tower	5x7	None	10/100 ethernet	Aug 2001
8479-51X	Pentium III 1.13/133	512KB	128MB	20.4GB	EIDE	Mini Tower	5x7	None	10/100 ethernet	Aug 2001
8479-60X	Pentium III 1.26/133	512KB	128MB	None	Ultra160, EIDE	Mini Tower	5x7	None	10/100 ethernet	Aug 2001
8479-61X	Pentium III 1.26/133	512KB	128MB	20.4GB	EIDE	Mini Tower	5x7	None	10/100 ethernet	Aug 2001

Positioning Processor	<i>Uniprocessor, entry server designed to meet small business needs and budgets</i>									
L2 cache	Intel® Celeron 850MHz or 1GHz with 100MHz frontside bus or Intel Pentium® III 1.0, 1.13, or 1.26GHz with 133MHz frontside bus									
Implementation	Celeron: 128KB std and max / ECC / at processor speed Pentium III: 256KB or 512KB std and max / ECC / at processor speed All: Processor and L2 cache in Flip-Chip Pin Grid Array (FC-PGA or FC-PGA2)									
Processor upgrade SMP support	Motherboard contains one Intel PGA370 socket, one integrated VRM, three DIMM sockets, three PCI slots, connector for two-slot PCI extender board, one AGP slot, and integrated ethernet All models can be upgraded to Pentium III 1.0, 1.13, or 1.26GHz No SMP support									
Memory	128MB standard / 1.5GB maximum 3 sockets / 2 available / ECC (Error Checking and Correcting) DIMMs and ECC memory controller / PC133-compliant / SDRAM / 133MHz / unbuffered DIMMs (UDIMM) / CAS Latency 3 (CL3) / three 168-pin gold-plated DIMM 3.3 v sockets									
SCSI disk controller	<i>Some models: Adaptec® 29160LP / single channel Wide Ultra160 SCSI (LVD 160MB/sec) / 64-bit 33MHz PCI adapter (in a 32-bit slot) / one channel with up to 15 device support</i>									
SCSI connectors	SCSI models: One 68-pin internal SCSI connector / one 0.8mm VHDCI 68-pin external SCSI connector (not supported)									
RAID support	Supports optional PCI RAID adapters									
IDE disk controller	Enhanced IDE busmaster / ATA-66/100 support / two connectors on planar									
Cables	SCSI models: one 5-drop 16-bit LVD SCSI cable, one 2-drop EIDE cable (connected to CD-ROM) EIDE models: two 2-drop EIDE cables (one cable to CD-ROM, one cable to EIDE disk)									
Disk - features	<i>Some models: 20.4GB EIDE / ATA-100 / 7200 rpm / 8.7 ms average read seek time / S.M.A.R.T.</i>									
Rack support Architecture / chipsets	4U ⁴ rack mount support via tower-to-rack kit option in an industry standard 19-inch rack VIA® Apollo Pro133T chip set / VT82C694T North Bridge (memory controller, PCI 2.2 32-bit 33MHz controller, AGP 4X) / VIA VT82C686B South Bridge (IDE ATA-100, USB, diskette, parallel, serial, keyboard, mouse)									
100/10Mbps ethernet CD-ROM / diskette	Intel 82550 / on planar / full duplex / 32-bit 33MHz PCI bus / support for PXE, Wake on LAN®, and Alert on LAN 2 48X-20X ⁶ CD-ROM, CAV (ATAPI), bootable, IDE / Diskette: 3.5" 1.44MB diskette drive									
Ports	Back: two 9-pin serial, two USB (Version 1.1), parallel, keyboard, mouse									
Audio	Integrated digital audio / AC97 interface / SoundBlaster Pro-compatible									
Audio connectors	Back: microphone jack, line-in, line-out, MIDI/game port									
Speaker	One internal speaker / requires externally powered speakers for stereo sound									
Diagnostics	POST and server diagnostic programs stored on IBM Enhanced Diagnostics CD									
Systems mgmt	Monitoring and alerting of memory, thermal, or voltage faults / support for Wake on LAN, Alert on LAN™ 2, PXE									
Graphics controller	SVGA / ATI Rage XL / AGP 2X adapter / 8MB SGRAM std and max / 230MHz RAMDAC / DPMS and DDC2B-compliant / 60Hz to 85Hz vertical refresh / analog 15-pin D-Sub connector									
Security	Cover key lock / U-bolt support / power-on password / boot sequence control / operation without keybd and mouse / chassis intrusion protection									
Software	ServerGuide™ (CD-based automated network OS installation and configuration tool), Norton AntiVirus™, and APC PowerChute Plus / includes IBM Director (system hardware mgmt software) and many utilities									
Keyboard / mouse	IBM 101-key keyboard / IBM 2-button mouse									
Cooling fans	Celeron: three fans (power supply, front, rear) Pentium III: four fans (power supply, front, rear, fansink) All: not redundant or hot-swap / fans full-speed except for variable-speed fan in power supply									
Power supply	330 watts / universal / auto switch / Automatic Server Restart (ASR) / not redundant or hot-swap / cooling fan in power supply									

Slot	fullsize, AGP 4X, 25 watt (3.3v) - used by standard AGP graphics adptr
Slot 1:	fullsize, 32-bit 33MHz, PCI 2.2 (5v)
Slot 2:	fullsize, 32-bit 33MHz, PCI 2.2 (5v) - slot has Alert on LAN 2 support
Slot 3:	fullsize, 32-bit 33MHz, PCI 2.2 (5v) - used by SCSI adapter (some models)
Slot 4:	fullsize, 32-bit 33MHz, PCI 2.2 (5v) - on two-slot PCI extender board
Slot 5:	fullsize, 32-bit 33MHz, PCI 2.2 (5v) - on two-slot PCI extender board



Bay ① 5.25", HH 1.6", access, CD-ROM
 Bay ② 5.25", HH 1.6", access, open
 Bay ③ 3.5", SL 1", access, diskette
 Bay ④ 3.5", SL 1", access, open
 Bay ⑤ 3.5", SL 1", access, open
 Bay ⑥ 3.5", SL 1", access, open
 Bay ⑦ 3.5", SL 1", access, disk (some)

Metal cage for disk bays 5,6,7 rotate out of chassis for easy access for cabling backplane or working with disks

- Two front stabilizing feet
- Handle grip on top
- H 18.5" x W 6.5" x D 20.0"
- H 470mm x W 165mm x D 508mm
- 35 to 43 pounds (15.9 to 19.5kg)

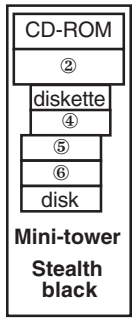
Maximum internal IDE disk capacity:
180GB (3 disks x 60GB)
 Maximum internal SCSI disk capacity:
293.6GB (4 disks x 73.4GB)

- Removable left side panel
- Configuration/Setup Utility (in flash memory) invoked by pressing F1 at startup
- SCSISelect near startup by pressing CTRL+A (SCSI models)
- Adv Config Power Interface (ACPI) 1.0
- ISO 9241-3 capable

LIMITED WARRANTY³

- ↪ 3 year parts / 1 year labor
- ↪ International Warranty Service³
- ↪ 1st year: on site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- ↪ 2nd/3rd year: parts exchange only, call 1-800-772-2227
- ↪ 3 year on site warranty service upgrade options (in eligible locations):⁷
 - 9 hour coverage, Mon-Fri excluding holidays, next business day response time (ServicePac® 21P2021)
 - 9 hour coverage, Mon-Fri excluding holidays, 4 hour response time (ServicePac 21P2023)
 - 24 hr x 7 day coverage, 4 hour response time (ServicePac 21P2022)
 - 24 hr x 7 day coverage, 2 hour response time (ServicePac 21P2094)
- ↪ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

IBM® Type-model	Processor	L2 cache	FSB MHz	Memory	Disk	Disk controller	Extender board controllers	PCI slots x bays	Hot-swap disk bays	Ethernet	Available date	
8480-93X	Celeron®	1.8	128KB	400	256MB	40GB ² EIDE 7200 rpm	EIDE	Graphics	5 x 7	None (fixed)	Gigabit	Dec 2002
8480-94X	Celeron	1.8	128KB	400	128MB	40GB EIDE 7200 rpm	EIDE	Graphics	5 x 7	None (fixed)	Gigabit	Feb 2003
8480-95X	Celeron	2.0	128KB	400	128MB	40GB EIDE 7200 rpm	EIDE	Graphics	5 x 7	None (fixed)	Gigabit	July 2003
Positioning	<i>Value Leader (VL); uniprocessor, entry server designed to meet small business needs and budgets</i>											
Processor(s)	Intel® Celeron at 1.8GHz or 2.0GHz with 400MHz frontside bus (FSB)											
L2 cache	128KB std and max / ECC / full speed											
Implementation	Motherboard contains one mPGA478 socket (processor/L2 cache in FC-PGA2), two DIMM sockets, three PCI slots, one AGP slot, ethernet controller, connector for extender board (two PCI slots and graphics controller)											
SMP support	No SMP support / no processor upgrade											
Memory	256MB / 2GB¹³ max / two 184-pin gold-plated DIMM sockets / one socket used / PC2100 266MHz ECC DDR-SDRAM / Error Checking and Correcting (ECC) DIMMs and ECC memory controller / industry std / unbuffered / CAS Latency 2.5 (CL2.5)											
SCSI disk controller	None standard											
IDE disk controller	Enhanced IDE / ATA-100 / integrated in I/O Controller Hub / two connectors on planar											
Cables	Two 2-drop EIDE cables (one cable uses one drop to CD-ROM, other cable uses one drop to disk)											
Disk	40GB EIDE / ATA-100 / 7200 rpm / 9.0 ms average read seek / S.M.A.R.T.											
Rack support	4U ⁴ rack mount support via tower-to-rack kit option											
Bus slots (see below)	One PCI bus / five 32-bit 33MHz PCI 2.2 slots / one AGP 4X slot (not used) / no hot-swap Active™ PCI slots											
Chipset	Intel 845E chipset / 82845E Memory Controller Hub (MCH) / 82801DB I/O Controller Hub (ICH4) for PCI 2.2 bus, ATA-100 EIDE, ethernet MAC, USB, Low Pin Count Interface / Firmware Hub / SMSC® LPC47M102 Super I/O for diskette, parallel, serial, keyboard, mouse											
Ethernet	10/100/1000 gigabit / Broadcom® BCM 5702 or 5705 / on planar / PCI 2.2 32-bit 33MHz / full duplex / PHY and MAC layers / Preboot eXecution Environment (PXE) / Wake on LAN® / Alert Standard Format 1.0											
CD-ROM / diskette	CD-ROM: 48X-20X ⁶ CD-ROM, IDE / Diskette: 3.5" 1.44MB diskette drive											
Ports	Front: none; Back: two serial (9-pin), parallel, two USB (Ver 2.0), keyboard, mouse, ethernet (RJ-45), monitor (analog DB-15), microphone-in (mono), line-in (stereo), line-out (stereo)											
Diagnostics	Diagnostic LEDs / error LEDs for fans and memory / server diagnostic programs stored on IBM Enhanced Diagnostics CD											
Systems mgmt cntrl	Winbond® W83791 / chip on planar / monitors system and processor temperature, fan speed and failure, and voltages / support for optional Remote Supervisor Adapter (provides continuous health monitoring and control)											
Graphics controller	SVGA / ATI® RageXL / on extender board / 4MB SDRAM std/max / PCI 2.2 32-bit 33MHz / analog 15-pin D-Sub conn											
Security	Mechanical side panel key lock / optional U-Bolt support via knockout / power-on password / boot sequence control / operation without keyboard/mouse / cover tamper detect switch											
Software	ServerGuide™ (CD-based automated network OS installation and configuration tool), IBM Director (system hardware mgmt software) and many utilities											
Keyboard / mouse	IBM 101 key keyboard / IBM mouse (both black)											
Cooling fans	Three fans (fansink, rear, pwr supply) / not redundant / not hot-swap / full speed / 340 watts / universal / auto switch /											
Power supply	Automatic Server Restart (ASR) / not hot-swap / no redundancy / cooling fan in power supply (variable spd)											
	<ul style="list-style-type: none"> 256MB PC2100 CL2.5 ECC DDR UDIMM 512MB PC2100 CL2.5 ECC DDR UDIMM 1GB PC2100 CL2.5 ECC DDR UDIMM IBM 80GB 7200 rpm EIDE ATA-100 HDD 40X/12X/40X Max⁶ CD-RW internal (black) IBM Remote Supervisor Adapter (PCI adapter) IBM 4Ux20D Tower-to-Rack Kit IBM PCI Ultra160 SCSI Adapter IBM ServeRAID-4Lx Ultra160 SCSI Controller IBM 20/40GB TR7 Internal Tape Drive IBM 40/80GB DLT1 Internal Half-High Tape Drive IBM E54 (13.8" viewable) Color Monitor (black) IBM T541 15" Flat Panel Color Monitor (black) IBM NetBAY11 Standard Rack Cabinet <p>Other options at ibm.com/pc/us/accessories</p>											
	<p style="text-align: center;">LIMITED WARRANTY³</p> <ul style="list-style-type: none"> ↔ 1 year parts and labor ↔ International Warranty Service³ ↔ On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time ↔ On site service upgrade options (in eligible locations):⁷ <ul style="list-style-type: none"> • 3 year IOR 24x7, 2 hr avg response (ServicePac part num 69P9512) • 3 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9511) • 3 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9510) • 3 year IOR 9x5, NBD response (ServicePac part num 69P9509) ↔ 24x7¹⁴ toll-free support for warranty issues during the warranty period³ 											
Slot 1: fullsize, 32-bit 33MHz, PCI 2.2 (5v)	↔ Removable left side panel											
Slot 2: fullsize, 32-bit 33MHz, PCI 2.2 (5v)	↔ Configuration/Setup Utility (in flash memory) invoked by pressing F1 at startup											
Slot 3: fullsize, 32-bit 33MHz, PCI 2.2 (5v)	↔ Advanced Configuration Power Interface (ACPI) 1.0											
Slot 4: fullsize, 32-bit 33MHz, PCI 2.2 (5v)**	↔ Device Drivers and Diagnostics CD-ROM included											
Slot 5: fullsize, 32-bit 33MHz, PCI 2.2 (5v)**	↔ Four stabilizing feet											
Slot: fullsize, 32-bit AGP 4X (1.5v)	↔ Handle grip on top											
** on two-slot PCI extender board	↔ H 18.5" x W 6.5" x D 20.0"											
	↔ H 470mm x W 165mm x D 508mm											
	↔ 35 to 42 pounds (15.9 to 19.1kg)											
Bay ① 5.25", HH 1.6", access, CD-ROM												
Bay ② 5.25", HH 1.6", access, open (no disk)												
Bay ③ 3.5", SL 1", access, diskette												
Bay ④ 3.5", SL 1", access, open												
Bay ⑤ 3.5", SL 1", access, open												
Bay ⑥ 3.5", SL 1", access, open												
Bay ⑦ 3.5", SL 1", access, std disk (some)												
↔ Metal cage for disk bays 5,6,7 rotate out of chassis for easy access for cabling backplane or working with disks												
↔ Predictive Failure Analysis on disk(s) with IBM Director can alert the administrator of an imminent component failure												
	Maximum internal IDE disk capacity: 240GB ¹³ (3 disks x 80GB)											



See footnotes for important warranty information

(X205VL) © IBM Corp. December 2002

US models announced November 19, 2002, February 18, 2003 and July 1, 2003

US models withdrawn effective March 25, 2003 (93X), August 29, 2003 (94X), and May 28, 2004 (95X)

IBM® Type-model	Processor	GHz ¹	L2 cache	FSB MHz	Memory	Disk	Disk controller	Extender board controllers	PCI slots x bays	Hot-swap disk bays	Ethernet	Available date
8480-42X	Pentium® 4	2.67	512KB	533	256MB	36.4GB ² Ultra160 10K	Ultra160	Graphics, SCSI	5 x 7	None (fixed)	Gigabit	Feb 2003
8480-4AX	Pentium 4	2.67	512KB	533	256MB	None	Ultra160	Graphics, SCSI	5 x 7	3 hot-swap	Gigabit	Feb 2003
8480-43X	Pentium 4	2.67	512KB	533	256MB	40GB EIDE 7200 rpm	EIDE	Graphics	5 x 7	None (fixed)	Gigabit	Feb 2003
8480-52X	Pentium 4	2.8	512KB	533	256MB	36.4GB Ultra160 10K	Ultra160	Graphics, SCSI	5 x 7	None (fixed)	Gigabit	Feb 2003
8480-5AX	Pentium 4	2.8	512KB	533	256MB	None	Ultra160	Graphics, SCSI	5 x 7	3 hot-swap	Gigabit	Feb 2003
8480-53X	Pentium 4	2.8	512KB	533	256MB	40GB EIDE 7200 rpm	EIDE	Graphics	5 x 7	None (fixed)	Gigabit	Feb 2003
8480-62X	Pentium 4	3.06	512KB	533	256MB	36.4GB Ultra160 10K	Ultra160	Graphics, SCSI	5 x 7	None (fixed)	Gigabit	Sep 2003
8480-6AX	Pentium 4	3.06	512KB	533	256MB	None	Ultra160	Graphics, SCSI	5 x 7	3 hot-swap	Gigabit	Sep 2003
8480-63X	Pentium 4	3.06	512KB	533	256MB	40GB EIDE 7200 rpm	EIDE	Graphics	5 x 7	None (fixed)	Gigabit	Sep 2003

Positioning	<i>An extremely affordable, uni-processor server that delivers value and availability for small and medium businesses</i>											
Processor(s)	Intel® Pentium 4 at 2.67 to 3.06GHz with 533MHz frontside bus (FSB)											
L2 cache	512KB standard and maximum / ECC / full speed											
Implementation	Systemboard contains one mPGA478 socket (processor/L2 cache in FC-PGA2), two DIMM sockets, three PCI slots, one AGP slot, ethernet controller, connector for extender board (two PCI slots, graphics controller, some have SCSI controller)											
SMP support	No SMP support / no processor upgrade											
Memory	256MB / 2GB¹³ max / two 184-pin gold-plated DIMM sockets / one socket used / PC2100 266MHz ECC DDR-SDRAM / Error Checking and Correcting (ECC) DIMMs and ECC memory controller / industry std / unbuffered / CAS Latency 2.5 (CL2.5)											
SCSI disk controller	<i>SCSI models: Adaptec® AHA-7892 / single channel Ultra160 SCSI controller (160MB/sec) / controller on extender board / 32-bit 33MHz PCI 2.1 / one 68-pin internal connector on extender board / no external SCSI connector</i>											
SCSI connectors	<i>Enhanced IDE / ATA-100 / integrated in I/O Controller Hub / two connectors on planar</i>											
IDE disk controller	<i>SCSI fixed disk models: one 5-drop 16-bit LVD SCSI cable, one 2-drop EIDE cable</i>											
Cables	<i>SCSI hot-swap models: one 1-drop 16-bit LVD SCSI cable (extender board to SCSI backplane), one 2-drop EIDE cable</i>											
Disk - features	<i>EIDE models: two 2-drop EIDE cables (one cable uses one drop to CD-ROM, other cable uses one drop to disk)</i>											
Rack support	4U ⁴ rack mount support via tower-to-rack kit option											
Bus slots (see below)	One PCI bus / five 32-bit 33MHz PCI 2.2 slots / one AGP 4X slot (not used) / no hot-swap Active™ PCI slots											
Chipset	Intel 845E chipset / 82845E Memory Controller Hub (MCH) / 82801DB I/O Controller Hub (ICH4) for PCI 2.2 bus, ATA-100 EIDE, ethernet MAC, USB, Low Pin Count Interface / Firmware Hub / SMSC® LPC47M102 Super I/O for diskette, parallel, serial, keyboard, mouse											
Ethernet	10/100/1000 gigabit / Broadcom® BCM 5702 / on planar / PCI 2.2 32-bit 33MHz / full duplex / PHY and MAC layers / Preboot eXecution Environment (PXE) / Wake on LAN® / Alert Standard Format 1.0											
CD-ROM / diskette	<i>CD-ROM: 48X-20X⁶ CD-ROM, IDE / Diskette: 3.5" 1.44MB diskette drive</i>											
Ports	<i>Front: (none); Back: two serial (9-pin), parallel, two USB (Ver 2.0), keyboard, mouse, ethernet (RJ-45), monitor (analog DB-15), microphone-in (mono), line-in (stereo), line-out (stereo)</i>											
Diagnostics	Diagnostic LEDs / error LEDs for fans and memory / server diagnostic programs stored on IBM Enhanced Diagnostics CD											
Systems mgmt cntrl	Winbond® W83791 / chip on planar / monitors system and processor temperature, fan speed and failure, and voltages / support for optional Remote Supervisor Adapter (provides continuous health monitoring and control)											
Graphics controller	SVGA / ATI® RageXL / on extender board / 4MB SDRAM std/max / PCI 2.2 32-bit 33MHz / analog 15-pin D-Sub conn											
Security	Mechanical side panel key lock (locks hot-swap disks on hot-swap models) / optional U-Bolt support via knockout / power-on password / boot sequence control / operation without keyboard/mouse / cover tamper detect switch											
Software	ServerGuide™ (CD-based automated network OS installation and configuration tool), IBM Director (system hardware mgmt software) and many utilities											
Keyboard / mouse	IBM 101 key keyboard / IBM mouse (both black)											
Cooling fans	<i>Fixed disk models: three fans (fansink, rear, pwr supply)</i> <i>Hot-swap models: four fans (fansink, two rear, pwr supply)</i> <i>All: not redundant / not hot-swap / variable speed</i>											
Power supply	340 watts / universal / auto switch / Automatic Server Restart (ASR) / not hot-swap / no redundancy / cooling fan in power supply (variable spd)											

<p>Slot 1: fullsize, 32-bit 33MHz, PCI 2.2 (5v)</p> <p>Slot 2: fullsize, 32-bit 33MHz, PCI 2.2 (5v)</p> <p>Slot 3: fullsize, 32-bit 33MHz, PCI 2.2 (5v)</p> <p>Slot 4: fullsize, 32-bit 33MHz, PCI 2.2 (5v)**</p> <p>Slot 5: fullsize, 32-bit 33MHz, PCI 2.2 (5v)**</p> <p>Slot: fullsize, 32-bit AGP 4X (1.5v)</p> <p>** on two-slot PCI extender board</p>	<ul style="list-style-type: none"> ✦ Removable left side panel ✦ Configuration/Setup Utility (in flash memory) invoked by pressing F1 at startup ✦ SCSISelect near startup by pressing CTRL+A ✦ Adv Config Power Interface (ACPI) 1.0 ✦ Device Drivers and Diagnostics CD-ROM included ✦ Four stabilizing feet ✦ Handle grip on top ✦ H 18.5" x W 6.5" x D 20.0" ✦ H 470mm x W 165mm x D 508mm ✦ 35 to 42 pounds (15.9 to 19.1kg) 	<p>LIMITED WARRANTY³</p> <ul style="list-style-type: none"> ⇨ 1 year parts and labor ⇨ International Warranty Service³ ⇨ On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time ⇨ On site service upgrade options (in eligible locations):⁷ <ul style="list-style-type: none"> • 3 year IOR 9x5, NBD response (ServicePac part num 69P9509) • 3 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9510) • 3 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9511) • 3 year IOR 24x7, 2 hr avg response (ServicePac part num 69P9512) ⇨ Other ServicePac options at http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf ⇨ 24x7¹⁴ toll-free support for warranty issues during the warranty period⁵
<p>Bay ① 5.25", HH 1.6", access, CD-ROM</p> <p>Bay ② 5.25", HH 1.6", access, open (no disk)</p> <p>Bay ③ 3.5", SL 1", access, diskette</p> <p>Bay ④ 3.5", SL 1", access, open</p> <p>Bay ⑤ 3.5", SL 1", access, open</p> <p>Bay ⑥ 3.5", SL 1", access, open</p> <p>Bay ⑦ 3.5", SL 1", access, std disk (some)</p> <p>⇨ <i>Fixed disk models: metal cage for disk bays 5,6,7 rotate out of chassis for easy access for cabling backplane or working with disks</i></p> <p>⇨ Predictive Failure Analysis on disk(s) with IBM Director can alert the administrator of an imminent component failure</p>	<p>Maximum internal SCSI disk capacity¹³: 587.2GB (4 disks x 148.6GB)</p> <p>Maximum internal IDE disk capacity¹³: 240GB (3 disks x 80GB)</p>	

IBM @server™ xSeries™ 206 - withdrawn

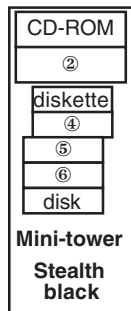
xREF by eServer Field Skills Enablement Team

For GAV systems, lowercase "x" should be replaced with a country-specific code.

IBM® Machine Type	GAV model	Processor	GHz ¹	L2 cache	FSB MHz	Memory	Disk	Disk controller	Maximum Capacity	PCI slots x bays	Hard disk bays	Ethernet	Available date
8482	1Mx	11X	Pentium 4®	2.8	1MB	800	512MB	None	SCSI	440.4GB	5 x 7	3 hot-swap	Gigabit Apr 2004
8482	1Rx	14X	Pentium 4	2.8	1MB	800	512MB	36.4GB U320	SCSI	587.2GB	5 x 7	4 fixed	Gigabit Apr 2004
8482	1Sx	15X	Pentium 4	2.8	1MB	800	256MB	None	SATA	320GB	5 x 7	2 simple-swap	Gigabit Apr 2004
8482	2Mx	21X	Pentium 4	3.0	1MB	800	512MB	None	SCSI	440.4GB	5 x 7	3 hot-swap	Gigabit Apr 2004
8482	2Rx	24X	Pentium 4	3.0	1MB	800	512MB	36.4GB U320	SCSI	587.2GB	5 x 7	4 fixed	Gigabit Apr 2004
8482	2Sx	25X	Pentium 4	3.0	1MB	800	256MB	None	SATA	320GB	5 x 7	2 simple-swap	Gigabit Apr 2004
8482	9Mx	91X	Celeron®	2.4	128KB	800	256MB	80GB SATA	SATA	320GB	5 x 7	2 simple-swap	Gigabit Apr 2004
8482	3Mx	31X	Pentium 4	3.2	1MB	800	512MB	None	SCSI	440.4GB	5 x 7	3 hot-swap	Gigabit Jun 2004
8482	3Rx	34X	Pentium 4	3.2	1MB	800	512MB	36.4GB U320	SCSI	587.2GB	5 x 7	4 fixed	Gigabit Jun 2004
8482	3Sx	35X	Pentium 4	3.2	1MB	800	256MB	None	SATA	320GB	5 x 7	2 simple-swap	Gigabit Jun 2004

Positioning	<i>uniprocessor, entry server designed to meet small business needs and budgets</i>												
Processor(s)	Intel® Pentium 4 2.8, 3.0, or 3.2GHz with 800MHz frontside bus (FSB) or Celeron at 2.4GHz												
L2 cache	Up to 1MB std and max / ECC / full speed												
Implementation	Motherboard contains one m478 PGA socket (processor/L2 cache in FC-PGA2), four DIMM sockets, three PCI slots, one AGP slot, ethernet controller, connector for extender board (two PCI slots and graphics controller)												
SMP support	No SMP support / no processor upgrade												
Memory	256MB or 512MB / 4GB ¹³ max / four 184-pin gold-plated DIMM sockets / one socket used / PC3200 supported in all models / PC2700 333MHz ECC DDR-SDRAM (models 1xx and 2xx) / PC3200 400MHz ECC DDR-SDRAM (models 3xx) / All Error Checking and Correcting (ECC) / DIMMs and ECC memory controller / industry std / unbuffered / CAS Latency 2.5 (CL2.5) / apart from single-DIMM configurations, memory must be added in matched pairs [a bank]												
SCSI disk controller	<i>Some: single channel Ultra320 SCSI controller (LVD 320MB/sec)</i>												
IDE disk controller	Enhanced IDE / ATA-100 / integrated in I/O Controller Hub / one connector on planar												
SATA disk controller	<i>Some: dual channel SATA-150 controller (150MB/sec)</i>												
Cables	One 2-drop EIDE cables (to CD-ROM) / <i>Some: one 5-drop LVD SCSI cable / Some: two 1-drop SATA cables</i>												
Disk	<i>Some: 36.4GB U320 SCSI / 10,000 rpm / 4.7 ms seek / Some: 80GB SATA / 7,200 rpm / 9.0 ms / All: S.M.A.R.T.</i>												
RAID Controller	IBM ServeRAID™ 7e (RAID 0 or 1) / on planar / supports SATA or SCSI interface / supports ServeRAID 6i+ controller												
Rack support	4U ⁴ rack mount support via tower-to-rack kit option												
Bus slots (see below)	One PCI bus / three 32-bit 33MHz 5v PCI 2.2 slots / two 64-bit 66MHz 3.3v PCI-X slots / no hot-swap Active™ PCI slots												
Chipset	Intel E7210 chipset / Memory Controller Hub (MCH) / I/O Controller Hub (ICH-S) for PCI 2.2 and PCI-X bus, ATA-100 EIDE, ethernet MAC, USB, Low Pin Count Interface / Firmware Hub / SMSC® LPC47M192 Super I/O for diskette, parallel, serial, keyboard, mouse												
Ethernet	10/100/1000 gigabit / Intel Kenai II / on planar / full duplex / PHY and MAC layers / Preboot eXecution Environment (PXE) / Wake on LAN® / Alert Standard Format 2.0												
CD-ROM / diskette	<i>CD-ROM: 48X-20X⁶ CD-ROM, IDE / Diskette: 3.5" 1.44MB diskette drive</i>												
Ports	<i>Front: two USB (Ver 2.0); Back: two serial (9-pin), parallel, two USB (Ver 2.0), keyboard, mouse, ethernet (RJ-45), monitor (analog DB-15)</i>												
Diagnostics	Diagnostic LEDs / error LEDs for fans and memory / server diagnostic programs stored on IBM Enhanced Diagnostics CD												
Systems mgmt cntrl	Monitors system and processor temperature, fan speed and failure, and voltages / support for optional Remote Supervisor Adapter II (provides continuous health monitoring and control)												
Graphics controller	SVGA / ATI® 7000M / 16MB SDRAM std/max / PCI 2.2 32-bit 33MHz / on planar / analog 15-pin D-Sub conn				256MB PC2700 CL2.5 ECC DDR UDIMM				06P4053				
					512MB PC2700 CL2.5 ECC DDR UDIMM				06P4054				
					1GB PC2700 CL2.5 ECC DDR UDIMM				06P4055				
Security	Mechanical side panel key lock / optional U-Bolt support via knockout / power-on password / boot sequence control / operation without keyboard/mouse / cover tamper detect switch				256MB PC3200 CL2.5 ECC DDR UDIMM				06P4049				
					512MB PC3200 CL2.5 ECC DDR UDIMM				06P4050				
					1GB PC3200 CL2.5 ECC DDR UDIMM				06P4051				
					IBM 80GB 7200 rpm simple-swap SATA-150 HDD				73P8002				
					IBM 36.4GB 10000 rpm hot-swap U320 HDD				32P0726				
					32X/10X/40X/16X Max ⁶ CD-RW/DVD (black)				22P6973				
					IBM Remote Supervisor Adapter II (PCI adapter)				59P2984				
					IBM 4Ux20D Tower-to-Rack Kit				09N4300				
					IBM ServeRAID-6i+ Controller				13N2190				
					IBM ServeRAID-7T Controller				71P8648				
					IBM 20/40GB TR7 Internal Tape Drive				48P7042				
					IBM 40/80GB DLT1 Internal Half-High Tape Drive				24P2398				
					IBM NetBAY11 Standard Rack Cabinet				9306110				
Software	ServerGuide™ (CD-based automated network OS installation and configuration tool), IBM Director (system hardware mgmt software) and many utilities												
Keyboard / mouse	IBM 101 key keyboard / IBM mouse (both black)												
Cooling fans	Three fans (fansink, rear, pwr supply) plus additional fan on SCSI models / not redundant / not hot-swap												
Power supply	340 watts / universal / auto switch / Automatic Server Restart (ASR) / not hot-swap / no redundancy / cooling fan in power supply (variable speed)												
	Other options at ibm.com/pc/us/accessories												

- Slot 1: fullsize, 64-bit 66MHz, PCI-X (3.3v)
- Slot 2: fullsize, 64-bit 66MHz, PCI-X (3.3v)
- Slot 3: fullsize, 32-bit 33MHz, PCI 2.2 (5v)
- Slot 4: fullsize, 32-bit 33MHz, PCI 2.2 (5v)
- Slot 5: fullsize, 32-bit 33MHz, PCI 2.2 (5v)



- Bay ① 5.25", HH1.6", access, CD-ROM
- Bay ② 5.25", HH1.6", access, open (no disk)
- Bay ③ 3.5", SL 1", access, diskette
- Bay ④ 3.5", SL 1", access, open
- Bay ⑤ 3.5", SL 1", access (some), open
- Bay ⑥ 3.5", SL 1", access (some), open
- Bay ⑦ 3.5", SL 1", access (some), std disk (some)

- Metal cage for disk bays 5,6,7 rotate out of chassis for easy access for cabling backplane or working with disks
- Predictive Failure Analysis on disk(s) with IBM Director can alert the administrator of an imminent component failure

- Removable left side panel
- Configuration/Setup Utility (in flash memory) invoked by pressing F1 at startup
- Advanced Configuration Power Interface (ACPI) 1.0
- Device Drivers and Diagnostics CD-ROM included
- Four stabilizing feet
- Handle grip on top
- H 17.25" x W 6.5" x D 19.0"
- H 448mm x W 165mm x D 483mm
- 35 to 42 pounds (15.9 to 19.1kg)

Maximum SATA capacity:
320GB¹³ (2 disks x 160GB)
Maximum hot-swap SCSI capacity:
439.2GB¹³ (3 disks x 146.4GB)
Maximum fixed SCSI capacity:
585.6GB¹³ (4 disks x 146.4GB)

LIMITED WARRANTY³

- 1 year parts and labor
- International Warranty Service³
- On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 24x7, 2 hr avg response (ServicePac part num 69P9512)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9511)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9510)
 - 3 year IOR 9x5, NBD response (ServicePac part num 69P9509)
- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period⁵

See footnotes for important warranty information

US models announced March 16, 2004 (1xx, 2xx) or June 8, 2004 (3xx)

⌘ = Models Withdrawn December 30, 2004

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IBM eServer™ xSeries™ 206 - withdrawn

xREF by eServer Field Skills Enablement Team

For GAV systems, lowercase "v" should be replaced with a country-specific code.

IBM® Machine Type	GAV model	Processor	GHz	L2 cache	FSB MHz	Memory	Disk	Disk controller	Maximum Capacity	PCI slots x bays	Hard disk bays	Ethernet	Available date
8482 - 4My -41x		Pentium 4® EM64T	3.2	1MB	800	512MB	None	SCSI	440.4GB	5 x 7	3 hot-swap	Gigabit	Aug 2004
8482 - 4Ry -44x		Pentium 4 EM64T	3.2	1MB	800	512MB	36.4GB U320	SCSI	587.2GB	5 x 7	4 fixed	Gigabit	Aug 2004
8482 - 4Ry -45x		Pentium 4 EM64T	3.2	1MB	800	256MB	None	SATA	500GB	5 x 7	2 simple-swap	Gigabit	Aug 2004

Positioning	<i>Uniprocessor, entry server designed to meet small business needs and budgets</i>												
Processor(s)	Intel® Pentium 4 3.2Ghz with 800MHz frontside bus Optimized for Extended Memory 64 Technology (EM64T)												
L2 cache	Up to 1MB std and max / ECC / full speed												
Implementation	Motherboard contains one m478 PGA socket (processor/L2 cache in FC-PGA2), four DIMM sockets, three 33MHz PCI slots, two 66MHz PCI slots, ethernet controller												
SMP support	No SMP support / no processor upgrade												
Memory	256MB or 512MB / 4GB ¹³ max / four 184-pin gold-plated DIMM sockets / one socket used / PC3200 400MHz ECC DDR-SDRAM / All Error Checking and Correcting (ECC) / DIMMs and ECC memory controller / industry std / unbuffered / CAS Latency 3 (CL3) / apart from single-DIMM configurations, memory must be added in matched pairs [a bank]												
SCSI disk controller	4My & 4Ry: Adaptec® 7901 single channel Ultra320 SCSI controller (LVD 320MB/sec)												
IDE disk controller	Enhanced IDE / ATA-100 / integrated in I/O Controller Hub / one connector on planar												
SATA disk controller	4Sy: single channel SATA-150 controller (150MB/sec) / supports 2 drives standard / supports 4 drives with adapter												
Cables	One 2-drop EIDE cables (to CD-ROM) / 4My & 4Ry: one 5-drop LVD SCSI cable / 4Sy: one 2-drop SATA cable												
Disk	4Ry: 36.4GB U320 SCSI / 10,000 rpm / 4.7 ms seek / S.M.A.R.T.												
RAID Controller	IBM ServeRAID™ 7e (RAID 0 or 1) / on planar / supports SATA or SCSI interface / supports ServeRAID 6i+ controller												
Rack support	4U ⁴ rack mount support via tower-to-rack kit option												
Bus slots (see below)	One PCI bus / three 32-bit 33MHz 5v PCI 2.2 slots / two 64-bit 66MHz 3.3v PCI-X slots / no hot-swap Active™ PCI slots												
Chipset	Intel E7210 chipset / Memory Controller Hub (MCH) / I/O Controller Hub (ICH-S) for PCI 2.2 and PCI-X bus, ATA-100 EIDE, ethernet MAC, USB, Low Pin Count Interface / Firmware Hub / SMSC® LPC47M192 Super I/O for diskette, parallel, serial, keyboard, mouse												
Ethernet	10/100/1000 gigabit / Intel Kenai II / on planar / full duplex / PHY and MAC layers / Preboot eXecution Environment (PXE) / Wake on LAN® / Alert Standard Format 2.0												
CD-ROM / diskette	CD-ROM: 48X-20X ⁶ CD-ROM, IDE / Diskette: 3.5" 1.44MB diskette drive												
Ports	Front: two USB (Ver 2.0); Back: two serial (9-pin), parallel, two USB (Ver 2.0), keyboard, mouse, ethernet (RJ-45), monitor (analog DB-15), microphone-in (mono), line-in (stereo), line-out (stereo)												
Diagnostics	Diagnostic LEDs / error LEDs for fans and memory / server diagnostic programs stored on IBM Enhanced Diagnostics CD												
Systems mgmt	Monitors system and processor temperature, fan speed and failure, and voltages / support for optional Remote Supervisor Adapter II (provides continuous health monitoring and control)												
Graphics controller	SVGA / ATI® Radeon™ 7000M / 16MB SDRAM std/max / on planar / analog 15-pin												
Security	Mechanical side panel key lock / optional U-Bolt support via knockout / power-on password / boot sequence control / operation without keyboard/mouse / cover tamper detect switch / ASF 2.0												
Software	ServerGuide™ (CD-based automated network OS installation and configuration tool), IBM Director (system hardware mgmt software) and many utilities												
Keyboard / mouse	IBM 101 key keyboard / IBM mouse (both black)												
Cooling fans	Three fans (fansink, rear, pwr supply) plus additional fan on SCSI models / not redundant / not hot-swap												
Power supply	340 watts / universal / auto switch / Automatic Server Restart (ASR) / not hot-swap / no redundancy / cooling fan in power supply (variable speed)												
											256MB PC3200 CL3 ECC DDR UDIMM	06P4049	
											512MB PC3200 CL3 ECC DDR UDIMM	06P4050	
											1GB PC3200 CL3 ECC DDR UDIMM	06P4051	
											IBM 80GB SATA-150 (7.2K) simple-swap HDD	73P8002	
											IBM 160GB SATA-150 (7.2K) simple-swap HDD	73P8003	
											IBM 250GB SATA-150 (7.2K) simple-swap HDD	73P8006	
											IBM 36.4GB 10K hot-swap U320 HDD	32P0726	
											IBM 73.4GB 10K hot-swap U320 HDD	32P0724	
											IBM 146.8GB 10K hot-swap U320 HDD	32P0725	
											IBM 36.4GB 15K hot-swap U320 HDD	90P1318	
											IBM 73.4GB 15K hot-swap U320 HDD	90P1319	
											32X/10X/40X/16X Max ⁶ CD-RW/DVD (black)	22P6973	
											IBM Remote Supervisor Adapter II (PCI adapter)	59P2984	
											IBM 4Ux20D Tower-to-Rack Kit	09N4300	
											IBM ServeRAID-6i+ Controller	13N2190	
											IBM ServeRAID-7t SATA Controller	71P8648	
											IBM 20/40GB TR7 Internal Tape Drive	48P7042	
											IBM 40/80GB DLT1 Internal Half-High Tape Drive	24P2398	
	Other options at ibm.com/pc/us/accessories												

<p>Slot 1: fullsize, 64-bit 66MHz, PCI-X (3.3v)</p> <p>Slot 2: fullsize, 64-bit 66MHz, PCI-X (3.3v)</p> <p>Slot 3: fullsize, 32-bit 33MHz, PCI 2.2 (5v)</p> <p>Slot 4: fullsize, 32-bit 33MHz, PCI 2.2 (5v)</p> <p>Slot 5: fullsize, 32-bit 33MHz, PCI 2.2 (5v)</p>	<p>Bay ① 5.25", HH1.6", access, CD-ROM</p> <p>Bay ② 5.25", HH1.6", access, open (no disk)</p> <p>Bay ③ 3.5", SL 1", access, diskette</p> <p>Bay ④ 3.5", SL 1", access, open</p> <p>Bay ⑤ 3.5", SL 1", access (some), open</p> <p>Bay ⑥ 3.5", SL 1", access (some), open</p> <p>Bay ⑦ 3.5", SL 1", access (some), std disk (some)</p>	<ul style="list-style-type: none"> ✦ Removable left side panel ✦ Configuration/Setup Utility (in flash memory) invoked by pressing F1 at startup ✦ Advanced Configuration Power Interface (ACPI) 1.0 ✦ Device Drivers and Diagnostics CD-ROM included ✦ Four stabilizing feet ✦ Handle grip on top ✦ H 17.25" x W 6.5" x D 19.0" ✦ H 448mm x W 165mm x D 483mm ✦ 35 to 42 pounds (15.9 to 19.1kg) 	<p>LIMITED WARRANTY³</p> <ul style="list-style-type: none"> ↪ 1 year parts and labor ↪ International Warranty Service³ ↪ On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time ↪ On site service upgrade options (in eligible locations):⁷ <ul style="list-style-type: none"> • 3 year IOR 24x7, 2 hr avg response (ServicePac part num 69P9512) • 3 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9511) • 3 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9510) • 3 year IOR 9x5, NBD response (ServicePac part num 69P9509) ↪ Other ServicePac options at http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf ↪ 24x7¹⁴ toll-free support for warranty issues during the warranty period⁵
<p>CD-ROM</p> <p>②</p> <p>diskette</p> <p>④</p> <p>⑤</p> <p>⑥</p> <p>disk</p> <p>Mini-tower</p> <p>Stealth black</p>	<ul style="list-style-type: none"> ✦ Metal cage for disk bays 5,6,7 rotate out of chassis for easy access for cabling backplane or working with disks ✦ Predictive Failure Analysis on disk(s) with IBM Director can alert the administrator of an imminent component failure 	<p>Maximum SATA capacity: 500GB¹³ (2 disks x 250GB) w/ optional ServeRAID 7t (4 disks x 1TB)</p> <p>Maximum hot-swap SCSI capacity: 439.2GB¹³ (3 disks x 146.4GB)</p> <p>Maximum fixed SCSI capacity: 585.6GB¹³ (4 disks x 146.4GB)</p>	

See footnotes for important warranty information

For GAV systems, lowercase "y" should be replaced with a country-specific code.

IBM® Machine Type	GAV-model	Processor / Speed	L2 cache	FSB MHz	Memory	Disk/Disk controller	Maximum Capacity	PCI slots x bays	Hard disk bays	Power Supply	Ethernet	Available date
8485/8490	10y-10x	Pentium® 4 531 3.0GHz ¹	1MB	800	512MB	80GB/SATA	1.0TB	4 x 7	4 fixed	1x400W	Gigabit	Oct 2005
8485/8490	12y-12x	Pentium 4 531 3.0GHz	1MB	800	256MB	None/SATA	1.0TB	4 x 7	4 simple-swap	1x400W	Gigabit	Oct 2005
8485/8490	1Ay-1Ax	Pentium 4 630 3.0GHz	2MB	800	512MB	None/SATA	1.0TB	4 x 7	4 simple-swap	1x400W	Gigabit	Oct 2005
8485/8490	20y-20x	Pentium 4 640 3.0GHz	2MB	800	512MB	80GB/SATA	1.0TB	4 x 7	4 fixed	1x400W	Gigabit	Oct 2005
8485/8490	2Ay-2Ax	Pentium 4 640 3.2GHz	2MB	800	512MB	None/SATA	1.0TB	4 x 7	4 simple-swap	1x400W	Gigabit	Oct 2005
8485/8490	3Ay-3Ax	Pentium 4 650 3.2GHz	2MB	800	2x512MB	None/SAS/SATA	1.2TB	6 x 7	4 hot-swap	1x400W	Gigabit	Oct 2005
8485/8490	3By-3Bx	Pentium 4 650 3.2GHz	2MB	800	1GB	None/SAS/SATA	1.2TB	6 x 7	4 hot-swap	2x430W	Gigabit	Oct 2005
8485/8490	70y-70x	Pentium D 820 2.8GHz	2x1MB	800	1GB	None/SAS/SATA	1.2TB	6 x 7	4 hot-swap	2x430W	Gigabit	Oct 2005
8485/8490	7Ay-7Ax	Pentium D 820 2.8GHz	2x1MB	800	512MB	None/SATA	1.0TB	4 x 7	4 simple-swap	1x400W	Gigabit	Oct 2005
8485/8490	80y-80x	Pentium D 830 3.0GHz	2x1MB	800	1GB	None/SAS/SATA	1.2TB	6 x 7	4 hot-swap	2x430W	Gigabit	Oct 2005
8485/8490	8Ay-8Ax	Pentium D 830 3.0GHz	2x1MB	800	512MB	None/SAS/SATA	1.2TB	6 x 7	4 hot-swap	1x400W	Gigabit	Oct 2005

Positioning Processor(s) *Single socket, entry server for small and medium size business' and distributed enterprises*
Intel® Pentium 4 up to 3.4GHz Single Core 800MHz FSB / Pentium D up to 3.0GHz Dual Core 800MHz FSB / All Optimized for Extended Memory 64 Technology (EM64T)
 L2 cache **Up to 2MB** std on Pentium 4 / **2x1MB** std on Pentium D
 Implementation Motherboard contains one LGA-775 socket, four DIMM sockets, some: four slots(1 PCI Express x8, 1 PCI Express x1, 2 PCI) some: six slots(1 PCI Express x8, 1 PCI Express x1, 2 PCI, 2 PCI-X), integrated SATA and Gigabit Ethernet.
 SMP support No SMP support / no processor upgrade

Memory **512MB or 1GB** std / 8GB¹³ max / four 184-pin gold-plated DIMM sockets / one or two socket used / **PC2-4200 533MHz ECC DDR2-SDRAM / All Error Checking and Correcting (ECC)** / DIMMs and ECC memory controller / industry std / unbuffered

SAS disk controller Integrated SAS controller / supports SAS or SATA drives
 IDE disk controller Enhanced IDE / ATA-100 / integrated in I/O Controller Hub / one connector on planar
 SATA disk controller Four channel SATA controller (3.0GB/sec) / supports 4 drives standard
 Cables One 2-drop EIDE cables (to CD-ROM) / one 1-drop SATA cable per installed hard disk
 Disk Some: 80GB SATA / 7,200 rpm / 9.0 ms seek / S.M.A.R.T.
 RAID Controller IBM ServeRAID™ 8e (RAID 0, 1) / on planar / supports SATA or SAS interface

Rack support 5U⁴ rack mount support via tower-to-rack kit option
 Bus slots (see below) All: one PCI-E bus / one 64-bit PCI-E x8 / one 64-bit PCI-E x1/ two 32-bit 33MHz 5v PCI 2.2 slots / some: two 64-bit 66MHz 3.3v PCI-X slots / no hot-swap Active™ PCI slots
 Chipset **Intel E7230 chipset** / Memory Controller Hub (MCH) / I/O Controller Hub (ICH7R) for PCI 2.2, ATA-100 EIDE, ethernet MAC, USB, Low Pin Count Interface / Firmware Hub / SMCSC® LPC47M192 Super I/O for diskette, parallel, serial, keyboard, mouse

Ethernet 10/100/1000 gigabit / Broadcom 5721 / on planar / full duplex / PHY and MAC layers / Preboot eXecution Environment (PXE) / Wake on LAN®
 CD-ROM / diskette Ports **CD-ROM:** 48X-20X⁶ CD-ROM, IDE / None standard
Front: two USB (2.0); **Back:** two serial (9-pin), parallel, two USB (2.0), keyboard, mouse, ethernet (RJ45) and monitor
 Diagnostics Diagnostic LEDs / error LEDs for fans and memory / server diagnostic programs stored on IBM Enhanced Diagnostics CD
 Systems mgmt Mini-baseboard management controller / IPMI 1.5 / monitors system and processor temperature, fan speed and failure, and voltages / **secure remote power on/off / support for optional Remote Supervisor Adapter II**

Graphics controller ATI® RN50(ES1000) / 16MB SDRAM std/max / on planar / analog 15-pin / up to 1024x768x32bit@85Hz

Security	Mechanical side panel key lock / U-Bolt Tie-down capability/ power-on password / boot sequence control / operation without keyboard/mouse	512MB PC2-4200 CL3 ECC DDR2RoHS 2GB(2x1GB) PC2-4200 CL3 ECC DDR2 RoHS 4GB(2x2GB) PC2-4200 CL3 ECC DDR2 RoHS IBM 80GB SATA (7.2K) simple-swap HDD IBM 160GB SATA (7.2K) simple-swap HDD IBM 250GB SATA (7.2K) simple-swap HDD IBM 500GB SATA (7.2K) simple-swap HDD 80GB Hot-Swap SATA HDD 160GB Hot-Swap SATA HDD 250GB Hot-Swap SATA HDD 73GB 10K 3.5" SAS Hot-Swap HDD 146GB 10K 3.5" SAS Hot-Swap HDD 300GB 10K 3.5" SAS Hot-Swap HDD 36GB 15K 3.5" SAS Hot-Swap HDD 73GB 15K 3.5" SAS Hot-Swap HDD 48X/32X/48X/16X Max® CD-RW/DVD-ROM Combo (black) IBM Remote Supervisor Adapter II (PCI adapter) IBM 5Ux20D Tower-to-Rack Kit IBM ServeRAID-7i SATA Integrated Controller	30R5148 30R5149 30R5150 39M4500 39M4504 39M4508 39M4518 39M4522 39M4526 26K5709 26K5710 26K5711 26K5697 26K5698 32R2905 59P2984 39R9361 71P8648
Software	ServerGuide™ (CD-based automated network OS installation and configuration tool), ServeRAID™ (RAID management), IBM Director (system hardware management software) and many utilities		
Keyboard / mouse	Optional		
Cooling fans	Three fans (fansink, rear, pwr supply) plus additional fan on SAS models / not redundant / not hot-swap		
Power supply	Some: 400W / not hot-swap / no redundancy / some: 430W / hot-swap / redundant / all: universal / auto switch / Automatic Server Restart (ASR) / cooling fan in power supply (variable speed)	IBM 5Ux20D Tower-to-Rack Kit IBM ServeRAID-7i SATA Integrated Controller Other options at ibm.com/pc/us/accessories	

All:
 Slot 1: fullsize, 64-bit PCI-E x8 (4GBps)
 Slot 2: fullsize, 64-bit PCI-E x1 (500MBps)
 Slot 3: fullsize, 32-bit 33MHz, PCI 2.2 (5v)
 Slot 4: fullsize, 32-bit 33MHz, PCI 2.2 (5v)
 Some:
 Slot 5: fullsize, 64-bit 66MHz, PCI-X (3.3v)
 Slot 6: fullsize, 64-bit 66MHz, PCI-X (3.3v)

Bay ① 5.25", HH 1.6", access, CD-ROM
 Bay ② 5.25", HH 1.6", access, open (no disk)
 Bay ③ 3.5", SL 1", access, open
 Bay ④ 3.5", SL 1", access, open
 Bay ⑤ 3.5", SL 1", access, open
 Bay ⑥ 3.5", SL 1", access, open
 Bay ⑦ 3.5", SL 1", access, std disk (some)

Mini-tower
Stealth black

- Predictive Failure Analysis on disk(s) with IBM Director can alert the administrator of an imminent component failure
- Redundant power supplies standard in some models

LIMITED WARRANTY³

- 1 year parts and labor standard 8485 MTM
- 3 year parts and labor standard 8490 MTM
- International Warranty Service³
- On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 24x7, 2 hr avg response (ServicePac part num 69P9512)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9511)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9510)
 - 3 year IOR 9x5, NBD response (ServicePac part num 69P9509)
- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

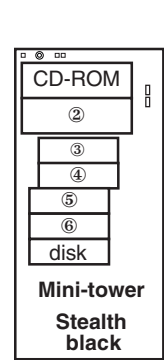
Maximum SATA capacity:
2TB¹³ (4 disks x 500GB)
Maximum hot-swap SAS capacity:
1.2TB¹³ (4 disks x 300GB)

IBM eServer™ xSeries™ 206m

xREF by eServer Field Skills and Education Team

For GAV systems, lowercase "y" should be replaced with a country-specific code.

IBM® Machine Type	GAV-model	Processor / Speed	L2 cache	FSB MHz	Memory	Disk/Disk controller	Maximum PCI slots Capacity	x bays	Hard disk bays	Power Supply	Ethernet	Available date
8485/8490	A2y-A2x	Pentium® 4 521	2.8GHz ¹	1MB	800	512MB	None/SATA	1.0TB	4 x 7	4 simple-swap	1x400W Gigabit	Feb 2006
8485/8490	B2y-B2x	Pentium 4 631	3.0GHz	2MB	800	512MB	None/SATA	1.0TB	4 x 7	4 simple-swap	1x400W Gigabit	Feb 2006
8485/8490	G2y-G2x	Pentium D 920	2.8GHz	4MB	800	512MB	None/SATA	1.0TB	4 x 7	4 simple-swap	1x400W Gigabit	Feb 2006
8485/8490	H2y-H2x	Pentium D 930	3.0GHz	4MB	800	512MB	None/SAS/SATA	1.0TB	6 x 7	4 hot-swap	1x400W Gigabit	Feb 2006
8485/8490	J2y-J2x	Pentium D 940	3.2GHz	4MB	800	2x512MB	None/SAS/SATA	1.0TB	6 x 7	4 hot-swap	1x400W Gigabit	Feb 2006
8485/8490	J4y-J4x	Pentium D 940	3.2GHz	4MB	800	2x512MB	None/SAS/SATA	1.2TB	6 x 7	4 hot-swap	1x400W Gigabit	Feb 2006
Positioning	Single socket, entry server for small and medium size business' and distributed enterprises											
Processor(s)	Intel® Pentium 4 up to 3.0GHz Single-Core 800MHz FSB / Pentium D up to 3.2GHz Dual-Core 800MHz FSB / All Optimized for Extended Memory 64 Technology (EM64T)											
L2 cache Implementation	1 or 2MB std on Pentium 4 / 4MB std on Pentium D											
SMP support	Motherboard contains one LGA-775 socket, four DIMM sockets, some: four slots(1 PCI Express x8, 1 PCI Express x1, 2 PCI) some: six slots(1 PCI Express x8, 1 PCI Express x1, 2 PCI, 2 PCI-X), integrated SATA and Gigabit Ethernet.											
Memory	512MB or 1GB std / 8GB ¹³ max / four 184-pin gold-plated DIMM sockets / one or two socket used / PC2-4200 533MHz ECC DDR2-SDRAM / All Error Checking and Correcting (ECC) / DIMMs and ECC memory controller / industry std / unbuffered											
SAS disk controller	Integrated SAS controller / supports SAS or SATA drives											
IDE disk controller	Enhanced IDE / ATA-100 / integrated in I/O Controller Hub / one connector on planar											
SATA disk controller	Four channel SATA controller (3.0GB/sec) / supports 4 drives standard											
Cables	One 2-drop EIDE cables (to CD-ROM) / one 1-drop SATA cable per installed hard disk											
Disk	Some: 80GB SATA / 7,200 rpm / 9.0 ms seek / S.M.A.R.T.											
RAID Controller	IBM ServeRAID™ 8e (RAID 0, 1) / on planar / supports SATA or SAS interface											
Rack support	5U ⁴ rack mount support via tower-to-rack kit option											
Bus slots (see below)	All: one PCI Express® bus / one 64-bit PCIe™ x8 / one 64-bit PCIe x1/ two 32-bit 33MHz 5v PCI 2.2 slots / some: two 64-bit 66MHz 3.3v PCI-X slots / no hot-swap Active™ PCI slots											
Chipset	Intel E7230 chipset / Memory Controller Hub (MCH) / I/O Controller Hub (ICH7R) for PCI 2.2, ATA-100 EIDE, ethernet MAC, USB, Low Pin Count Interface / Firmware Hub / SMC® LPC47M192 Super I/O for diskette, parallel, serial, keyboard, mouse											
Ethernet	10/100/1000 gigabit / Broadcom® 5721 / on planar / full-duplex / PHY and MAC layers / Preboot eXecution Environment (PXE) / Wake on LAN®											
CD-ROM / diskette Ports	CD-ROM: 48X-20X ⁶ CD-ROM, IDE / None standard Front: two USB (2.0); Back: two serial (9-pin), parallel, two USB (2.0), keyboard, mouse, ethernet (RJ45) and monitor											
Diagnostics	Diagnostic LEDs / error LEDs for fans and memory / server diagnostic programs stored on IBM Enhanced Diagnostics CD											
Systems mgmt	Mini-baseboard management controller / IPMI 1.5 / monitors system and processor temperature, fan speed and failure, and voltages / secure remote power on/off / support for optional Remote Supervisor Adapter II											
Graphics controller	ATI® RN50(ES1000) / 16MB SDRAM std/max / on planar / analog 15-pin / up to 1024x768x32bit@85Hz											
Security	Mechanical side panel key lock / U-Bolt Tie-down capability/ power-on password / boot sequence control / operation without keyboard/mouse											
Software	ServerGuide™ (CD-based automated network OS installation and configuration tool), ServeRAID™ (RAID management), IBM Director (system hardware management software) and many utilities											
Keyboard / mouse	Optional											
Cooling fans	Three fans (fansink, rear, pwr supply) plus additional fan on SAS models / not redundant / not hot-swap											
Power supply	Some: 400W / not hot-swap / no redundancy / some: 430W / hot-swap / redundant / all: universal / auto switch / Automatic Server Restart (ASR) / cooling fan in power supply (variable speed)											
	<ul style="list-style-type: none"> 512MB PC2-4200 CL3 ECC DDR2RoHS 30R5148 2GB(2x1GB) PC2-4200 CL3 ECC DDR2 RoHS 30R5149 4GB(2x2GB) PC2-4200 CL3 ECC DDR2 RoHS 30R5150 IBM 80GB SATA (7.2K) simple-swap HDD 39M4500 IBM 160GB SATA (7.2K) simple-swap HDD 39M4504 IBM 250GB SATA (7.2K) simple-swap HDD 39M4508 IBM 500GB SATA (7.2K) simple-swap HDD 39M4514 80GB Hot-Swap SATA HDD 39M4518 160GB Hot-Swap SATA HDD 39M4522 250GB Hot-Swap SATA HDD 39M4526 73GB 10K 3.5" SAS Hot-Swap HDD 40K1039 146GB 10K 3.5" SAS Hot-Swap HDD 40K1040 300GB 10K 3.5" SAS Hot-Swap HDD 40K1041 36GB 15K 3.5" SAS Hot-Swap HDD 40K1042 73GB 15K 3.5" SAS Hot-Swap HDD 40K1043 48X/32X/48X/16X Max⁸ CD-RW/DVD-ROM Combo (black) 32R2905 IBM Remote Supervisor Adapter II (PCI adapter) 59P2984 IBM 5Ux20D Tower-to-Rack Kit 39R9361 IBM ServeRAID-7i SATA Integrated Controller 71P8648 <p>Other options at ibm.com/pc/us/accessories</p>											



- All:
- Slot 1: fullsize, 64-bit PCI-E x8 (4GBps)
 - Slot 2: fullsize, 64-bit PCI-E x1 (500MBps)
 - Slot 3: fullsize, 32-bit 33MHz, PCI 2.2 (5v)
 - Slot 4: fullsize, 32-bit 33MHz, PCI 2.2 (5v)
- Some:
- Slot 5: fullsize, 64-bit 66MHz, PCI-X (3.3v)
 - Slot 6: fullsize, 64-bit 66MHz, PCI-X (3.3v)
- Bay ① 5.25", HH 1.6", access, CD-ROM
 - Bay ② 5.25", HH 1.6", access, open (no disk)
 - Bay ③ 3.5", SL 1", access, open
 - Bay ④ 3.5", SL 1", access, std disk (some)
 - Bay ⑤ 3.5", SL 1", access, open
 - Bay ⑥ 3.5", SL 1", access, open
 - Bay ⑦ 3.5", SL 1", access, open

- ◆ Removable left side panel
- ◆ Configuration/Setup Utility (in flash memory) invoked by pressing F1 at startup
- ◆ Advanced Configuration Power Interface (ACPI) 1.0
- ◆ Device Drivers and Diagnostics CD-ROM included
- ◆ Four stabilizing feet
- ◆ H 17.25" x W 8.5" x D 21.25"
- ◆ H 448mm x W 215.9mm x D 539.75mm
- ◆ 36 to 45.8 pounds (16.3 to 20.8kg)

Maximum SATA capacity:
1TB¹³ (4 disks x 250GB)
Maximum hot-swap SAS capacity:
1.2TB¹³ (4 disks x 300GB)

LIMITED WARRANTY³

- ⌚ 1 year parts and labor standard 8485 MTM
- ⌚ 3 year parts and labor standard 8490 MTM
- ⌚ International Warranty Service³
- ⌚ On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- ⌚ On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 24x7, 2 hr avg response (ServicePac part num 69P9512)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9511)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9510)
 - 3 year IOR 9x5, NBD response (ServicePac part num 69P9509)
- ⌚ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ⌚ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information

For GAV systems, lowercase "y" should be replaced with a country-specific code.

IBM® Machine Type	GAV-model	Processor / Speed	L2 cache	FSB MHz	Memory	Disk/Disk controller	Maximum Capacity	PCI slots x bays	Hard disk bays	Power Supply	Ethernet	Available date
8485/8490	B4y-B4x	Pentium® 4 631 3.0GHz	2MB	800	1x512MB	1x160GB/SATA	2.0TB	4 x 7	4	simple-swap	1x400W Gigabit	May 2006
8485/8490	B6y-B6x	Pentium 4 631 3.0GHz	2MB	800	2x512MB	2x160GB/SATA	2.0TB	4 x 7	4	simple-swap	1x400W Gigabit	May 2006
8485/8490	F2y-F2x	Pentium 4 661 3.6GHz	2MB	800	1x512MB	None/SATA	2.0TB	4 x 7	4	simple-swap	1x400W Gigabit	May 2006
8485/8490	F4y-F4x	Pentium 4 661 3.6GHz	2MB	800	2x512MB	None/SAS/SATA	1.2TB	6 x 7	4	hot-swap	1x400W Gigabit	May 2006
8485/8490	H4y-H4x	Pentium D 930 3.0GHz	4MB	800	2x512MB	2x250GB/SATA	2.0TB	4 x 7	4	simple-swap	1x400W Gigabit	May 2006
8485/8490	H6y-H6x	Pentium D 930 3.0GHz	4MB	800	2x512MB	None/SAS/SATA	1.2TB	6 x 7	4	hot-swap	2x430W Gigabit	May 2006
8485/8490	H8y-H8x	Pentium D 930 3.0GHz	4MB	800	2x512MB	None/SAS/SATA	1.2TB	6 x 7	4	hot-swap	2x430W Gigabit	May 2006
8485/8490	K2y-K2x	Pentium D 950 3.4GHz	4MB	800	2x512MB	None/SAS/SATA	1.2TB	6 x 7	4	hot-swap	2x430W Gigabit	May 2006

Positioning Processor(s) *Single socket, entry server for small and medium size business' and distributed enterprises*
Intel® Pentium 4 up to 3.6GHz Single-Core 800MHz FSB / Pentium D up to 3.4GHz Dual-Core 800MHz FSB / All Optimized for Extended Memory 64 Technology (EM64T)
 L2 cache **2MB** std on Pentium 4 / **4MB** std on Pentium D
 Implementation Motherboard contains one LGA-775 socket, four DIMM sockets, some: four slots(1 PCI Express x8, 1 PCI Express x1, 2 PCI) some: six slots(1 PCI Express x8, 1 PCI Express x1, 2 PCI, 2 PCI-X), integrated SATA and Gigabit Ethernet.
 SMP support No SMP support / no processor upgrade

Memory **512MB or 1GB** std / 8GB¹³ max / four 184-pin gold-plated DIMM sockets / one or two socket used / **PC2-4200 533MHz ECC DDR2-SDRAM / All Error Checking and Correcting (ECC)** / DIMMs and ECC memory controller / industry std / unbuffered

SAS disk controller Integrated SAS controller / supports SAS or SATA drives
 IDE disk controller Enhanced IDE / ATA-100 / integrated in I/O Controller Hub / one connector on planar
 SATA disk controller Four channel SATA controller (3.0GB/sec) / supports 4 drives standard
 Cables One 2-drop EIDE cables (to CD-ROM) / one 1-drop SATA cable per installed hard disk
 Disk Some: 160GB SATA; some: 250GB SATA / 7,200 rpm / 9.0 ms seek / S.M.A.R.T.
 RAID Controller IBM ServeRAID™ 8e (RAID 0, 1) / on planar / supports SATA or SAS interface

Rack support 5U⁴ rack mount support via tower-to-rack kit option
 Bus slots (see below) All: one PCI Express® bus / one 64-bit PCIe™ x8 / one 64-bit PCIe x1/ two 32-bit 33MHz 5v PCI 2.2 slots / some: two 64-bit 66MHz 3.3v PCI-X slots / no hot-swap Active™ PCI slots
 Chipset **Intel E7230 chipset** / Memory Controller Hub (MCH) / I/O Controller Hub (ICH7R) for PCI 2.2, ATA-100 EIDE, ethernet MAC, USB, Low Pin Count Interface / Firmware Hub / SMSC® LPC47M192 Super I/O for diskette, parallel, serial, keyboard, mouse

Ethernet 10/100/1000 gigabit / Broadcom® 5721 / on planar / full-duplex / PHY and MAC layers / Preboot eXecution Environment (PXE) / Wake on LAN®
 CD-ROM / diskette *CD-ROM: 48X-20X⁶ CD-ROM, IDE / None standard*
 Ports *Front: two USB (2.0); Back: two serial (9-pin), parallel, two USB (2.0), keyboard, mouse, ethernet (RJ45) and monitor*
 Diagnostics Diagnostic LEDs / error LEDs for fans and memory / server diagnostic programs stored on IBM Enhanced Diagnostics CD
 Systems mgmt Mini-baseboard management controller / IPMI 1.5 / monitors system and processor temperature, fan speed and failure, and voltages / **secure remote power on/off / support for optional Remote Supervisor Adapter II**

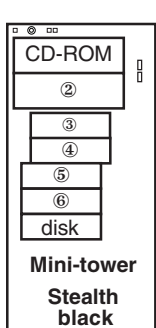
Graphics controller AT® RN50(ES1000) / 16MB SDRAM std/max / on planar / analog 15-pin / up to 1024x768x32bit@85Hz

Security Mechanical side panel key lock / U-Bolt Tie-down capability/ power-on password / boot sequence control / operation without keyboard/mouse
 Software **ServerGuide™** (CD-based automated network OS installation and configuration tool), **ServeRAID™** (RAID management), IBM Director (system hardware management software) and many utilities

- 512MB PC2-4200 CL3 ECC DDR2RoHS
- 2GB(2x1GB) PC2-4200 CL3 ECC DDR2 RoHS
- 4GB(2x2GB) PC2-4200 CL3 ECC DDR2 RoHS
- IBM 80GB SATA (7.2K) simple-swap HDD
- IBM 160GB SATA (7.2K) simple-swap HDD
- IBM 250GB SATA (7.2K) simple-swap HDD
- IBM 500GB SATA (7.2K) simple-swap HDD
- 80GB Hot-Swap SATA HDD
- 160GB Hot-Swap SATA HDD
- 250GB Hot-Swap SATA HDD
- 73GB 10K 3.5" SAS Hot-Swap HDD
- 146GB 10K 3.5" SAS Hot-Swap HDD
- 300GB 10K 3.5" SAS Hot-Swap HDD
- 36GB 15K 3.5" SAS Hot-Swap HDD
- 73GB 15K 3.5" SAS Hot-Swap HDD
- 48X/32X/48X/16X Max® CD-RW/DVD-ROM Combo (black)
- IBM Remote Supervisor Adapter II (PCI adapter)
- IBM 5Ux20D Tower-to-Rack Kit
- IBM ServeRAID-7L SATA Integrated Controller

Keyboard / mouse Optional
 Cooling fans Three fans (fansink, rear, pwr supply) plus additional fan on SAS models / not redundant / not hot-swap
 Power supply Some: 400W / not hot-swap / no redundancy / some: 430W / hot-swap / redundant / all: universal / auto switch / Automatic Server Restart (ASR) / cooling fan in power supply (variable speed)

Other options at ibm.com/pc/us/accessories



- All:
- Slot 1: fullsize, 64-bit PCI-E x8 (4GBps)
 - Slot 2: fullsize, 64-bit PCI-E x1 (500MBps)
 - Slot 3: fullsize, 32-bit 33MHz, PCI 2.2 (5v)
 - Slot 4: fullsize, 32-bit 33MHz, PCI 2.2 (5v)
- Some:
- Slot 5: fullsize, 64-bit 66MHz, PCI-X (3.3v)
 - Slot 6: fullsize, 64-bit 66MHz, PCI-X (3.3v)
- Bay ① 5.25", HH 1.6", access, CD-ROM
 Bay ② 5.25", HH 1.6", access, open (no disk)
 Bay ③ 3.5", SL 1", access, open
 Bay ④ 3.5", SL 1", access, std disk (some)
 Bay ⑤ 3.5", SL 1", access, open
 Bay ⑥ 3.5", SL 1", access, open
 Bay ⑦ 3.5", SL 1", access, open

- ✦ Removable left side panel
- ✦ Configuration/Setup Utility (in flash memory) invoked by pressing F1 at startup
- ✦ Advanced Configuration Power Interface (ACPI) 1.0
- ✦ Device Drivers and Diagnostics CD-ROM included
- ✦ Four stabilizing feet
- ✦ H 17.25" x W 8.5" x D 21.25"
- ✦ H 448mm x W 215.9mm x D 539.75mm
- ✦ 36 to 45.8 pounds (16.3 to 20.8kg)

Maximum SATA capacity:
 2TB¹³ (4 disks x 500GB)
 Maximum hot-swap SAS capacity:
 1.2TB¹³ (4 disks x 300GB)

- ✦ Predictive Failure Analysis on disk(s) with IBM Director can alert the administrator of an imminent component failure
- ✦ Redundant power supplies standard in some models

LIMITED WARRANTY³

- ✦ 1 year parts and labor standard 8485 MTM
- ✦ 3 year parts and labor standard 8490 MTM
- ✦ International Warranty Service³
- ✦ On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- ✦ On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 24x7, 2 hr avg response (ServicePac part num 69P9512)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9511)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9510)
 - 3 year IOR 9x5, NBD response (ServicePac part num 69P9509)
- ✦ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ✦ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

IBM® Machine Type	Machine model	Processor / Speed	L2 cache	FSB MHz	Memory	Disk/Disk controller	Maximum Capacity	PCI slots x bays	Hard disk bays	Power Supply	Ethernet	Available date
8485/8490	14U	Pentium® 4 531 3.0GHz ¹	1MB	800	1x512MB	None/SAS/SATA	1.2TB	6 x 7	4 hot-swap	1x400W	Gigabit	Sep 2006
8485/8490	16U	Pentium 4 531 3.0GHz	1MB	800	1x512MB	1x160GB/SATA	2.0TB	4 x 7	4 simple-swap	1x400W	Gigabit	Sep 2006
8485/8490	72U	Pentium D 820 2.8GHz	2MB	800	1x512MB	None/SAS/SATA	1.2TB	6 x 7	4 hot-swap	1x400W	Gigabit	Sep 2006
8485/8490	74U	Pentium D 820 2.8GHz	2MB	800	2x512MB	2x250GB/SATA	2.0TB	4 x 7	4 simple-swap	1x400W	Gigabit	Sep 2006
8485/8490	JAU	Pentium D 945 3.4GHz	4MB	800	2x512MB	None/SAS/SATA	1.2TB	6 x 7	4 hot-swap	2x430W	Gigabit	Sep 2006

Positioning Single socket, entry server for small and medium size business' and distributed enterprises

Processor(s) Intel® Pentium 4 up to 3.0GHz Single-Core 800MHz FSB / Pentium D up to 3.4GHz Dual-Core 800MHz FSB / All Optimized for Extended Memory 64 Technology (EM64T)

L2 cache 1MB std on Pentium 4 / 2 or 4MB std on Pentium D

Implementation Motherboard contains one LGA-775 socket, four DIMM sockets, some: four slots(1 PCI Express x8, 1 PCI Express x1, 2 PCI) some: six slots(1 PCI Express x8, 1 PCI Express x1, 2 PCI, 2 PCI-X), integrated SATA and Gigabit Ethernet.

SMP support No SMP support / no processor upgrade

Memory 512MB or 1GB std / 8GB¹³ max / four 184-pin gold-plated DIMM sockets / one or two socket used / PC2-4200 533MHz ECC DDR2-SDRAM / All Error Checking and Correcting (ECC) / DIMMs and ECC memory controller / industry std / unbuffered

SAS disk controller Integrated SAS controller / supports SAS or SATA drives

IDE disk controller Enhanced IDE / ATA-100 / integrated in I/O Controller Hub / one connector on planar

SATA disk controller Four channel SATA controller (3.0GB/sec) / supports 4 drives standard

Cables One 2-drop EIDE cables (to CD-ROM) / one 1-drop SATA cable per installed hard disk

Disk Some: 160GB SATA; some: 250GB SATA / 7,200 rpm / 9.0 ms seek / S.M.A.R.T.

RAID Controller IBM ServeRAID™ 8e (RAID 0, 1) / on planar / supports SATA or SAS interface

Rack support 5U⁴ rack mount support via tower-to-rack kit option

Bus slots (see below) All: one PCI Express® bus / one 64-bit PCIe™ x8 / one 64-bit PCIe x1/ two 32-bit 33MHz 5v PCI 2.2 slots / some: two 64-bit 66MHz 3.3v PCI-X slots / no hot-swap Active™ PCI slots

Chipset Intel E7230 chipset / Memory Controller Hub (MCH) / I/O Controller Hub (ICH7R) for PCI 2.2, ATA-100 EIDE, ethernet MAC, USB, Low Pin Count Interface / Firmware Hub / SMSC® LPC47M192 Super I/O for diskette, parallel, serial, keyboard, mouse

Ethernet 10/100/1000 gigabit / Broadcom® 5721 / on planar / full-duplex / PHY and MAC layers / Preboot eXecution Environment (PXE) / Wake on LAN®

Optical / diskette Some: 48X-20X⁶ CD-ROM, IDE; Some: 48X-32X-48X-16X⁶ CD-RW/DVD-ROM, IDE / None standard

Ports Front: two USB (2.0); Back: two serial (9-pin), parallel, two USB (2.0), keyboard, mouse, ethernet (RJ45) and monitor

Diagnostics Diagnostic LEDs / error LEDs for fans and memory / server diagnostic programs stored on IBM Enhanced Diagnostics CD

Systems mgmt Mini-baseboard management controller / IPMI 1.5 / monitors system and processor temperature, fan speed and failure, and voltages / secure remote power on/off / support for optional Remote Supervisor Adapter II

Graphics controller ATI® RN50(ES1000) / 16MB SDRAM std/max / on planar / analog 15-pin / up to 1024x768x32bit@85Hz

Security Mechanical side panel key lock / U-Bolt Tie-down capability/ power-on password / boot sequence control / operation without keyboard/mouse

Software ServerGuide™ (CD-based automated network OS installation and configuration tool), ServeRAID™ (RAID management), IBM Director (system hardware management software) and many utilities

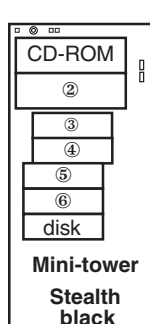
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- 39M4522
- 39M4526
- 40K1039
- 40K1040
- 40K1041
- 40K1042
- 40K1043
- 32R2905
- 59P2984
- 39R9361
- 71P8648

Keyboard / mouse Optional

Cooling fans Three fans (fansink, rear, pwr supply) plus additional fan on SAS models / not redundant / not hot-swap

Power supply Some: 400W / not hot-swap / no redundancy / some: 430W / hot-swap / redundant / all: universal / auto switch / Automatic Server Restart (ASR) / cooling fan in power supply (variable speed)

Other options at ibm.com/pc/us/accessories



All:

- Slot 1: fullsize, 64-bit PCI-E x8 (4GBps)
- Slot 2: fullsize, 64-bit PCI-E x1 (500MBps)
- Slot 3: fullsize, 32-bit 33MHz, PCI 2.2 (5v)
- Slot 4: fullsize, 32-bit 33MHz, PCI 2.2 (5v)

Some:

- Slot 5: fullsize, 64-bit 66MHz, PCI-X (3.3v)
- Slot 6: fullsize, 64-bit 66MHz, PCI-X (3.3v)

Bay ① 5.25", HH 1.6", access, CD-ROM

Bay ② 5.25", HH 1.6", access, open (no disk)

Bay ③ 3.5", SL 1", access, open

Bay ④ 3.5", SL 1", access, std disk (some)

Bay ⑤ 3.5", SL 1", access, open

Bay ⑥ 3.5", SL 1", access, open

Bay ⑦ 3.5", SL 1", access, open

Predictive Failure Analysis on disk(s) with IBM Director can alert the administrator of an imminent component failure
 Redundant power supplies standard in some models

- ✦ Removable left side panel
 - ✦ Configuration/Setup Utility (in flash memory) invoked by pressing F1 at startup
 - ✦ Advanced Configuration Power Interface (ACPI) 1.0
 - ✦ Device Drivers and Diagnostics CD-ROM included
 - ✦ Four stabilizing feet
 - ✦ H 17.25" x W 8.5" x D 21.25"
 - ✦ H 448mm x W 215.9mm x D 539.75mm
 - ✦ 36 to 45.8 pounds (16.3 to 20.8kg)
- Maximum SATA capacity:
 2TB¹³ (4 disks x 500GB)
 Maximum hot-swap SAS capacity:
 1.2TB¹³ (4 disks x 300GB)

LIMITED WARRANTY³

- ↪ 1 year parts and labor standard 8485 MTM
- ↪ 3 year parts and labor standard 8490 MTM
- ↪ International Warranty Service³
- ↪ On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- ↪ On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 24x7, 2 hr avg response (ServicePac part num 69P9512)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9511)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9510)
 - 3 year IOR 9x5, NBD response (ServicePac part num 69P9509)
- ↪ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ↪ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

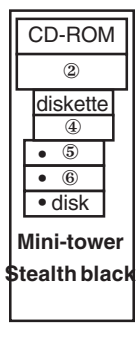
IBM @server xSeries 220 (Spring 2001) - withdrawn

IBM® Type-model	Qty x Processor	Memory	Disk	SCSI controller	Mechanical	Slots x bays	Hot-swap disk bays	Ethernet	Available date
8645-51X	1 x Pentium® III 1GHz/133	128MB	None	Ultra160	Mini Tower	5 slots x 7 bays	None	10/100 ethernet	Mar 2001
8645-52X	1 x Pentium III 1GHz/133	128MB	18.2GB	Ultra160	Mini Tower	5 slots x 7 bays	None	10/100 ethernet	Mar 2001
8645-5AX	1 x Pentium III 1GHz/133	128MB	None	Ultra160	Mini Tower	5 slots x 7 bays	3 hot-swap	10/100 ethernet	Mar 2001

Intel® processor(s) L2 cache Implementation SMP support	1 x Pentium® III 1GHz with 133MHz Front Side Bus 256KB std and max / ECC / at processor speed / processor and L2 cache in Flip-Chip Pin Grid Array (FC-PGA) Motherboard contains two Intel PGA370 sockets (one used and one with terminator), two VRM sockets (one used and one empty), four DIMM sockets, five PCI slots, and integrated subsystems 2-way SMP via second identical processor / upgrade via FC-PGA into second PGA370 socket (370-pin ZIF sockets)		
Memory - std / max Memory - sockets Memory - features Memory - support	128MB std / 4GB max 4 sockets / 3 available / ECC (Error Checking and Correcting) DIMMs and ECC memory controller SDRAM / 133MHz / four 168-pin gold-plated DIMM 3.3 volt sockets / PC133-compliant Supports registered SDRAM ECC DIMMs		
SCSI disk controller SCSI connectors RAID support IDE disk controller Cables	Adaptec® AHA-7892 / single channel Wide Ultra160 SCSI controller (160MB/sec) / on planar / 64-bit 33MHz PCI 2.1 One 68-pin internal connector / no external SCSI connector Supports optional PCI RAID adapters Enhanced IDE busmaster / Ultra DMA/33 (ATA-33) support / one connector on planar <i>Non hot-swap models:</i> 5-drop 16-bit LVD SCSI cable <i>Hot-swap models:</i> 2-drop 16-bit LVD SCSI cable (planar connector to SCSI backplane) <i>All:</i> one 2-drop IDE cable (one drop to CD-ROM)		
Disk - features	<i>Some models:</i> 18.2GB Wide Ultra160 SCSI / 10K rpm / 5.2ms average read seek time		
Rack support Bus slots (see below) Architecture / chipsets	4U ⁴ rack mount support via tower-to-rack kit option PCI 2.1 (33MHz) / dual peer PCI / 64-bit PCI (three PCI slots, SCSI controller) / 32-bit PCI (two PCI slots, graphics, ethernet, South Bridge, USB) ServerWorks® ServerSet III LE chip set / NB6635 North Bridge 3.0LE / IB6566 South Bridge for IDE, USB, ISA bus for Super I/O National Semiconductor® PC97317VUL (diskette, parallel, serial, keyboard, mouse)		
100/10Mbps ethernet CD-ROM / diskette External ports Diagnostics Systems mgmt cntrl	Intel 82559 / on planar / 10BaseT, 100BaseTX / full duplex / 32-bit 33MHz PCI bus / RJ-45 connector / no support for Wake on LAN® / supports Wake on LAN via optional adapter with 3-wire cable to planar 48X-20X ⁶ CD-ROM / CAV (ATAPI) / bootable / IDE <i>Diskette:</i> 3.5" 1.44MB diskette drive <i>Serial:</i> Two 9 pin; <i>Parallel:</i> One (EPP, ECP) / IEEE 1284; <i>USB:</i> Two (Ver 1.1); keyboard, DB-15 analog video, mouse Diagnostic LEDs / error LEDs for processor(s), DIMM(s), Voltage Regulator Module(s), and fan connectors Two ADM1024 chips / monitors processor temperature, fan speeds, and voltage / support for optional Remote Supervisor Adapter (provides continuous health monitoring and control)		
Graphics controller	SVGA / S3 Savage4 LT / on planar / 8MB SDRAM std and max / 32-bit PCI / DPMS and DDC2B compliant / 60Hz to 160Hz vertical refresh; 16.7 million colors at 1600x1200 / 15-pin D-Sub connector		
Security	Cover key lock / U-Bolt support / power-on password / boot sequence control / operation without kybd and mouse		
Software	ServerGuide™ (CD-based automated network OS installation and configuration tool), IBM Director (system hardware mgmt software) and many utilities, Norton AntiVirus™, APC PowerChute Plus	Pentium III 1GHz/256KB Proc Upg 128MB SDRAM ECC DIMM 133MHz RDIMM 256MB SDRAM ECC DIMM 133MHz RDIMM 512MB SDRAM ECC DIMM 133MHz RDIMM 1GB SDRAM ECC DIMM 133MHz RDIMM IBM 9.1GB 10K Ultra160 SCSI HDD (not hot-swap) IBM 18.2GB 10K Ultra160 SCSI HDD (not hot-swap) IBM 36.4GB 10K Ultra160 SCSI HDD (not hot-swap) IBM 9.1GB 15K Ultra160 SCSI Hot-Swap HDD IBM 18.2GB 15K Ultra160 SCSI Hot-Swap HDD IBM 36.4GB 10K-4 Ultra160 SCSI Hot-Swap HDD IBM Remote Supervisor Adapter (PCI adapter) IBM 4Ux20D Tower-to-Rack Kit IBM Netfinity ServeRAID-4L Ultra160 SCSI Controller	10K0051 33L3142 33L3144 33L3146 33L3152 00N8207 00N8208 00N8209 19K0655 19K0656 37L7206 09N7585 09N4300 37L6091
BIOS Keyboard / mouse Cooling fans Power supply	2MB in Flash EEPROM IBM 101 key keyboard / IBM Enhanced mouse Three cooling fans (power supply, front, rear) / not redundant / variable speed front and rear fans 330 watts / universal / auto switch / Automatic Server Restart (ASR) / no redundancy / cooling fan in power supply		

Slot 1: fullsize, 32-bit 33MHz, PCI 2.1 (5v)
Slot 2: fullsize, 32-bit 33MHz, PCI 2.1 (5v)
Slot 3: fullsize, 64-bit 33MHz, PCI 2.1 (5v)
Slot 4: fullsize, 64-bit 33MHz, PCI 2.1 (5v)
Slot 5: fullsize, 64-bit 33MHz, PCI 2.1 (5v)

Maximum internal SCSI disk capacity:
145.6GB (4 disks x 36.4GB)



Bay ① 5.25", HH1.6", access, CD-ROM
Bay ② 5.25", HH1.6", access, open (no disk)
Bay ③ 3.5", SL 1", access, diskette
Bay ④ 3.5", SL 1", access, open
Bay ⑤ 3.5", SL 1", access, open
Bay ⑥ 3.5", SL 1", access, open
Bay ⑦ 3.5", SL 1", access, std disk

Metal cage for disk bays 5,6,7 rotate out of chassis for easy access for cabling backplane or working with disks

- Four stabilizing feet
- Handle grip on top
- H 18.5" x W 6.5" x D 20.0"
- H 470mm x W 165mm x D 508mm
- 35 to 43 pounds (15.9 to 19.5kg)

- Removable left side panel
- Configuration/Setup Utility (in flash memory) invoked by pressing F1 at startup
- SCSISelect near startup by pressing CTRL+A
- Diagnostics (PC-Doctor) by pressing F2 at startup
- Alt+F1 at startup for optional system partition
- Adv Config Power Interface (ACPI) 1.0
- ISO 9241-3 capable

LIMITED WARRANTY³

- ↪ 3 year parts / 1 year labor
- ↪ International Warranty Service³
- ↪ 1st year: on site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- ↪ 2nd/3rd year: parts exchange only, call 1-800-772-2227
- ↪ 3 year on site warranty service upgrade options (in eligible locations):⁷
 - 24 hr x 7 day coverage, 4 hour average response time (ServicePac[®] part number 21P2022)
 - 9 hour coverage, Mon-Fri excluding holidays, next business day response time (ServicePac part number 21P2023)
- ↪ IBM Server Start Up Support
- ↪ 24 hour x 7 day¹⁴ telephone, electronic, and Internet support

* For a copy of IBM's Statement of Limited Warranty, call 1-800-772-2227

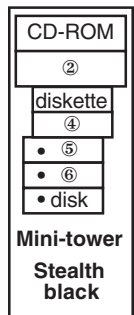
No warranties are expressed or implied in this summary (X220S) © IBM Corp. November 2001

• = Hot-swap bays in some models
US models withdrawn effective December 2001

IBM® Type-model	Qty x Processor	L2 cache	Memory	Disk	SCSI controller	Mechanical	Slots x bays	Hot-swap disk bays	Ethernet	Available date
8646-21X	1 x Pentium® III 1GHz/133	256KB	128MB	None	Ultra160	Mini Tower	5 slots x 7 bays	None	10/100	Aug 2001
8646-2AX	1 x Pentium III 1GHz/133	256KB	256MB	None	Ultra160	Mini Tower	5 slots x 7 bays	3 hot-swap	10/100	Aug 2001
8646-31X	1 x Pentium III 1.13/133	512KB	128MB	None	Ultra160	Mini Tower	5 slots x 7 bays	None	10/100	Aug 2001
8646-3AX	1 x Pentium III 1.13/133	512KB	256MB	None	Ultra160	Mini Tower	5 slots x 7 bays	3 hot-swap	10/100	Aug 2001
8646-41X	1 x Pentium III 1.26/133	512KB	128MB	None	Ultra160	Mini Tower	5 slots x 7 bays	None	10/100	Aug 2001
8646-4AX	1 x Pentium III 1.26/133	512KB	256MB	None	Ultra160	Mini Tower	5 slots x 7 bays	3 hot-swap	10/100	Aug 2001
8646-51X	1 x Pentium III 1.4/133	512KB	128MB	None	Ultra160	Mini Tower	5 slots x 7 bays	None	10/100	Feb 2002
8646-5AX	1 x Pentium III 1.4/133	512KB	256MB	None	Ultra160	Mini Tower	5 slots x 7 bays	3 hot-swap	10/100	Feb 2002

Positioning	<i>High-availability, dual processor capable server at a value price; leading technologies offer affordable power</i>										
Processor(s)	1 x Intel® Pentium® III 1.0, 1.13, 1.26, or 1.4GHz with 133MHz frontside bus										
L2 cache	256KB or 512KB std and max / ECC / at processor speed / processor and L2 cache in Flip-Chip Pin Grid Array (FC-PGA2)										
Implementation	Motherboard contains two Intel PGA370 sockets (one used and one with terminator), two VRM sockets (one used and one empty), four DIMM sockets, five PCI slots, and integrated subsystems										
Processor upgrade	Processor upgrades to 1.13, 1.26, or 1.4GHz supported										
SMP support	2-way SMP via second identical processor / upgrade via FC-PGA2 into second PGA370 socket (370-pin ZIF sockets)										
Memory - std / max	128MB or 256MB std / 4GB max										
Memory - sockets	4 sockets / 3 available / ECC (Error Checking and Correcting) DIMMs and ECC memory controller										
Memory - features	SDRAM / 133MHz / four 168-pin gold-plated DIMM 3.3 volt sockets / PC133-compliant										
Memory - support	Supports registered SDRAM ECC DIMMs										
SCSI disk controller	Adaptec® AHA-7892 / single channel Wide Ultra160 SCSI controller (160MB/sec) / on planar / 64-bit 33MHz PCI 2.1										
SCSI connectors	One 68-pin internal connector / no external SCSI connector										
RAID support	Supports optional PCI RAID adapters										
IDE disk controller	Enhanced IDE busmaster / Ultra DMA/33 (ATA-33) support / one connector on planar										
Cables	<i>Non hot-swap models:</i> 5-drop 16-bit LVD SCSI cable <i>Hot-swap models:</i> 2-drop 16-bit LVD SCSI cable (planar connector to SCSI backplane) <i>All:</i> one 2-drop IDE cable (one drop to CD-ROM)										
Disk - features	No disk standard / only supports SCSI (not IDE) disks										
Rack support	4U ⁴ rack mount support via tower-to-rack kit option										
Bus slots (see below)	Dual peer PCI / PCI 2.1 / 32-bit 33MHz (South Bridge, ethernet, graphics, two PCI slots) / 64-bit 33MHz (three PCI slots, SCSI controller)										
Architecture / chipsets	ServerWorks® ServerSet III LE chip set / NB6635 North Bridge 3.0LE / IB6566 South Bridge for IDE, USB, ISA bus for Super I/O National Semiconductor® PC97317VUL (diskette, parallel, serial, keyboard, mouse)										
10/100 ethernet	Intel 82550 / on planar / 10BaseT, 100BaseTX / full duplex / RJ-45 connector / support for Wake on LAN®										
CD-ROM / diskette	48X-20X ⁶ CD-ROM / CAV (ATAPI) / bootable / IDE <i>Diskette:</i> 3.5" 1.44MB diskette drive										
Rear ports	Two 9-pin serial, two USB (Version 1.1), parallel, keyboard, mouse, ethernet, DB-15 analog video										
Diagnostics	Diagnostic LEDs / error LEDs for processor(s), DIMM(s), Voltage Regulator Module(s), and fan connectors										
Systems mgmt cntrl	Two ADM1024 chips / monitors processor temperature, fan speeds, and voltage / support for optional Remote Supervisor Adapter (provides continuous health monitoring and control)										
Graphics controller	SVGA / S3 Savage4 LT / on planar / 8MB SDRAM std and max / 32-bit PCI / analog 15-pin D-Sub connector					Pentium III 1.0GHz/133MHz/256KB Proc Upg Pentium III 1.13GHz-S/133MHz/512KB Proc Upg Pentium III 1.26GHz-S/133MHz/512KB Proc Upg Pentium III 1.4GHz-S/133MHz/512KB Proc Upg					
Security	Cover key lock / U-Bolt support / power-on password / boot sequence control / operation without kybd/mouse					128MB SDRAM ECC DIMM 133MHz RDIMM 256MB SDRAM ECC DIMM 133MHz RDIMM 512MB SDRAM ECC DIMM 133MHz RDIMM 1GB SDRAM ECC DIMM 133MHz RDIMM					
Software	ServerGuide™ (CD-based automated network OS installation and configuration tool), IBM Director (system hardware mgmt software) and many utilities, Norton AntiVirus™, APC PowerChute Plus					33L3326 33L3326 00N8209 06P5752 37L7206 06P5756 09N7585 09N4300 37L6091					
BIOS	2MB in Flash EEPROM					IBM 36.4GB 10K Ultra160 SCSI HDD (not hot-swap) IBM 73.2GB 10K Ultra160 SCSI Hot-Swap HDD IBM 36.4GB 10K-4 Ultra160 SCSI Hot-Swap HDD IBM 73.2GB 10K Ultra160 SCSI Hot-Swap HDD					
Keyboard / mouse	IBM 101 key keyboard / IBM Enhanced mouse					IBM Remote Supervisor Adapter (PCI adapter) IBM 4Ux20D Tower-to-Rack Kit IBM Netfinity ServeRAID-4L Ultra160 SCSI Controller					
Cooling fans	Four cooling fans (power supply, air baffle, rear, fansink) / not redundant / variable speed front and rear fans					Other options at ibm.com/pc/us/accessories					
Power supply	330 watts / universal / auto switch / Automatic Server Restart (ASR) / no redundancy / cooling fan in power supply										

Slot 1: fullsize, 32-bit 33MHz, PCI 2.1 (5v)	<i>Maximum internal SCSI disk capacity: 293.6GB (4 disks x 73.4GB)</i>
Slot 2: fullsize, 32-bit 33MHz, PCI 2.1 (5v)	
Slot 3: fullsize, 64-bit 33MHz, PCI 2.1 (5v)	
Slot 4: fullsize, 64-bit 33MHz, PCI 2.1 (5v)	
Slot 5: fullsize, 64-bit 33MHz, PCI 2.1 (5v)	



- Bay ① 5.25", HH 1.6", access, CD-ROM
- Bay ② 5.25", HH 1.6", access, open (no disk)
- Bay ③ 3.5", SL 1", access, diskette
- Bay ④ 3.5", SL 1", access, open
- Bay ⑤ 3.5", SL 1", access, open
- Bay ⑥ 3.5", SL 1", access, open
- Bay ⑦ 3.5", SL 1", access, std disk

Metal cage for disk bays 5,6,7 rotate out of chassis for easy access for cabling backplane or working with disks

- Four stabilizing feet
- Handle grip on top
- H 18.5" x W 6.5" x D 20.0"
- H 470mm x W 165mm x D 508mm
- 35 to 43 pounds (15.9 to 19.5kg)

- Removable left side panel
- Configuration/Setup Utility (in flash memory) invoked by pressing F1 at startup
- SCSI Select near startup by pressing CTRL+A
- Diagnostics (PC-Doctor) by pressing F2 at startup
- Alt+F1 at startup for optional system partition
- Adv Config Power Interface (ACPI) 1.0
- ISO 9241-3 capable

LIMITED WARRANTY³

- ↪ 3 year parts / 1 year labor
- ↪ International Warranty Service³
- ↪ 1st year: on site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- ↪ 2nd/3rd year: parts exchange only, call 1-800-772-2227
- ↪ 3 year on site warranty service upgrade options (in eligible locations):⁷
 - 9 hour coverage, Mon-Fri excluding holidays, next business day response time (ServicePac® 21P2021)
 - 9 hour coverage, Mon-Fri excluding holidays, 4 hour response time (ServicePac 21P2023)
 - 24 hr x 7 day coverage, 4 hour response time (ServicePac 21P2022)
 - 24 hr x 7 day coverage, 2 hour response time (ServicePac 21P2094)
- ↪ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information

US models announced February 12, 2002 or August 28, 2001

↪ US models withdrawn effective March 2002, July 2002, or January 2003

• = Hot-swap bays in some models

IBM Type-model	Processor	GHz ¹	L2 cache	FSB MHz	Memory	Disk	Disk controller	Hot-swap disk bays	PCI slots x bays	Power supply number and type	Ethernet	Available date
8647-22X	1 x Xeon.	2.0	512KB	400	256MB	36.4GB ² Ultra320 10K	Ultra320	None (4 fixed)	6 x 7	One fixed	Gigabit	Dec 2002
8647-2AX	1 x Xeon	2.0	512KB	400	512MB	None (open)	Ultra320	6 hot-swap	6 x 9	One fixed	Gigabit	Dec 2002
8647-32X	1 x Xeon	2.4B	512KB	533	256MB	36.4GB Ultra320 10K	Ultra320	None (4 fixed)	6 x 7	One fixed	Gigabit	Dec 2002
8647-3AX	1 x Xeon	2.4B	512KB	533	512MB	None (open)	Ultra320	6 hot-swap	6 x 9	One fixed	Gigabit	Dec 2002
8647-3BX	1 x Xeon	2.4B	512KB	533	512MB	None (open)	Ultra320	6 hot-swap	6 x 9	Two redundant	Gigabit	Dec 2002

Positioning Processor(s) SMP - L2 cache Implementation *Performance and data protection at an affordable price*
1 x Intel Xeon at 2.0 or 2.4B GHz with 400 or 533MHz frontside bus (FSB) / Hyper-Threading technology
2-way SMP / up to two Xeon Processors (same speed/cache size) / **512KB** std and max / at processor speed
 Systemboard contains two Intel 604-pin micro-PGA ZIF sockets, four DIMM slots, seven slots (one PCI 2.2, four PCI-X, one Mini PCI [used by graphics], one unavailable AGP), and integrated SCSI and ethernet

Memory **256MB or 512MB** std / 8GB¹³ max / two slots used / two slots available / **PC2100** 266MHz CL2.5 registered 184-pin ECC DDR-SDRAM DIMMs / four DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / **Error Checking and Correcting (ECC)** via **16-bit Checksum Chipkill**. (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips)

IDE disk controller Enhanced IDE busmaster / ATA-100 / integrated in I/O Controller Hub 4 / two connectors on planar
 SCSI disk controller **LSI Logic 53C1030 / dual channel Ultra320 SCSI controller** (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X / supports **RAID-1 mirroring** (Embedded Mirroring) / shared with optional IBM ServeRAID. -5i Controller for low-cost RAID 0, 1, 1E, 5, 00, 10, 1E0, 50 (installed only in Slot 4)

SCSI channels and cables Two 16-bit channels (one internal and one external) / *Internal channel*: Fixed disk models: one 4-drop 16-bit 68-pin LVD SCSI cable from systemboard to internal disks bays; Hot-swap models: one 1-drop 16-bit 68-pin LVD SCSI cable to 6-bay backplane; *External channel*: cable available as option pn 32P8164 from systemboard to rear external 68-pin connector

Cables One SCSI cable (listed above), one 2-drop EIDE cable (to CD-ROM)
 Disk - features *Some*: 36.4GB Ultra320 SCSI / 10K rpm / 4.7 ms average read seek / S.M.A.R.T.⁵

Rack support 4U⁴ rack mount support via tower-to-rack kit option
 Bus slots (see below) Four 64-bit 100MHz PCI-X 1.0 / one PCI 2.2 / one Mini PCI / one AGP 8X (not available) / no hot-swap Active. PCI slots
 Chipset **Intel E7505 chipset** / E7505 MCH (Memory Controller Hub) for AGP 8X slot, P64H2, ICH4 / P64H2 for two PCI-X buses (Bus A for slots 2 and 3 and ethernet controller; Bus B for slots 4 and 5 and SCSI controller) / I/O Controller Hub (ICH4) for PCI 2.2 bus (one slot and one Mini PCI slot), ATA-100 EIDE, USB, Low Pin Count Interface / NS PC87366 Super I/O off LPC interface

Ethernet One gigabit 10/100/1000 ethernet controller / Broadcom BCM5703i / full gigabit ethernet MAC and PHY layer functions / chip on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN / Alert Standard Format 1.0 / one rear RJ-45 port
 CD-ROM / diskette drive *CD-ROM*: 48X-20X⁶ CD-ROM, IDE / *Diskette*: 3.5" 1.44MB diskette drive

Ports *Front*: two USB (Ver 2.0); *Back*: two USB (Ver 2.0), two serial (9-pin), parallel, keyboard, mouse, ethernet (RJ-45), monitor (analog DB-15), microphone-in (mono), line-in (stereo), line-out (stereo)

Diagnostics Diagnostic LEDs / error LEDs for fans and memory / server diagnostic programs stored on IBM Enhanced Diagnostics CD
 Systems mgmt cntrl Winbond: W791D / chip on planar / monitors system and processor temperature, fan speed and failure, and voltages / **support for optional Remote Supervisor Adapter** (provides continuous health monitoring and control)

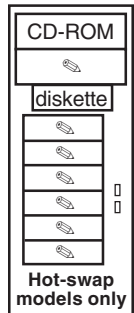
Graphics controller SVGA / ATI® RageXL / on Mini PCI adapter / 8MB SDRAM std and max / PCI 2.2 32-bit 33MHz / analog 15-pin D-Sub conn

Security Mechanical side panel key lock (locks hot-swap disks on hot-swap models) / optional U-Bolt support via knockout / power-on password / boot sequence control / operation without keyboard/mouse / security slot (for opt cable lock)
 Xeon DP 2.0GHz/400/512KB L2 Cache Proc Upg 59P5112
 Xeon DP 2.4B GHz/533/512KB L2 Cache Proc Upg 59P5108
 256MB PC2100 CL2.5 ECC DDR-SDRAM 33L5037
 512MB PC2100 CL2.5 ECC DDR-SDRAM 33L5038
 1GB PC2100 CL2.5 ECC DDR-SDRAM DIMM 33L5039
 2GB PC2100 CL2.5 ECC DDR-SDRAM DIMM 33L5040

Software **ServerGuide**. (CD-based automated network OS installation and configuration tool), IBM Director (system hardware mgmt software) and many utilities
 IBM 73.4GB 10K Ultra320 SCSI 68-pin (not hot-swp) 32P0724
 IBM 146GB 10K Ultra320 SCSI 68-pin (not hot-swp) 32P0725
 IBM 36.4GB 15K Ultra320 SCSI Hot-Swap SL HDD 06P5776
 IBM 73GB 10K Ultra320 SCSI Hot-Swap SL HDD 32P0727
 IBM 146GB 10K Ultra320 SCSI Hot-Swap SL HDD 32P0728
 40X/12X/40X Max⁶ CD-RW internal (black) 22P6976
 IBM Remote Supervisor Adapter (PCI adapter) 09N7585
 IBM 4U Extended Depth Tower-to-Rack Kit 59P4817
 IBM ServeRAID-5i Controller (adapter for Slot 4) 25P3492
 IBM T541 15" Flat Panel Color Monitor (black) 9512AB1
 Other options at ibm.com/pc/us/accessories

Keyboard / mouse IBM 101 key keyboard / IBM mouse (both black, 6-pin PS/2)
 Cooling fans Four / three for processor(s), memory, and disk bays / one power supply cage fan (even in dual power supply model)
 All: not redundant / not hot-swap / all variable speed
 Power supply(s) *Some*: one 425 watt std and max / not hot-swap
 3BX: two 350 watt std and max / hot-swap / redundant
 All: universal / voltage-sensing / Automatic Server Restart (ASR) / cooling fan in power supply(s) (variable spd)

- Slot 1: half-length, 32-bit 33MHz, PCI 2.2 (5v)
- Slot 2: fullsize, 64-bit 100MHz, PCI-X 1.0 (3.3v)
- Slot 3: fullsize, 64-bit 100MHz, PCI-X 1.0 (3.3v)
- Slot 4: fullsize, 64-bit 100MHz, PCI-X 1.0* (3.3v) extended*
- Slot 5: fullsize, 64-bit 100MHz, PCI-X 1.0 (3.3v)
- Slot 6: Mini PCI type III, 32-bit 33MHz (5v) - used graphics
- Slot: fullsize, AGP 8X Pro50 (1.5v) - unavailable
- * Extended slot for opt IBM ServeRAID-5i



- Bay 5.25", HH 1.6", access, CD-ROM
- Bay 5.25", HH 1.6", access, open
- Bay 3.5", SL 1", access, diskette
- Hot-swap models 2AX, 3AX, and 3BX:*
- Six bays 3.5", SL 1", access, hot-swp
- Fixed disk models 22X and 32X:*
- Bay 3.5", SL 1", no access, not hot-swap
- Bay 3.5", SL 1", no access, not hot-swap
- Bay 3.5", SL 1", no access, not hot-swap
- Bay 3.5", SL 1", no access, not hot-swap
- Maximum internal SCSI disk capacity¹³:*
- Fixed: 587.2GB (4 disks x 146.8GB)
- Hot-swap: 880.8GB (6 disks x 146.8GB)

- ☛ Raven black color
- ☛ Removable left side panel
- ☛ Configuration/Setup Utility invoked by pressing F1 at startup
- ☛ BIOS Setup Utility via F1 at startup
- ☛ LSI Configuration Utility near startup by pressing CTRL+C
- ☛ DMI 2.2-compliant
- ☛ Adv Config Power Interface (ACPI) 1.0a
- ☛ Device Driver and IBM Enhanced Diagnostics CD-ROM included
- ☛ Four stabilizing feet
- ☛ Handle grip on top
- ☛ H 18.4" x W 6.5" x D 26.0"
- ☛ H 467mm x W 165mm x D 660mm
- ☛ 44 to 57 pounds (20 to 25.8kg)
- ☛ *Fixed disk models*: metal cage for disk bays 4,5,6,7 rotate out of chassis for easy access for cabling
- ☛ Predictive Failure Analysis on disk(s) with IBM Director can alert the administrator of an imminent component failure

LIMITED WARRANTY³

- ☛ 1 year parts and labor
- ☛ International Warranty Service³
- ☛ On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- ☛ On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 9x5, NBD response (ServicePac part num 96P2248)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 96P2249)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 96P2250)
 - 3 year IOR 24x7, 2 hr avg response (ServicePac part num 96P2251)
- ☛ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

IBM® Type-model	Processor	GHz¹	L2 cache	FSB MHz	Memory	Disk	Disk controller	Hot-swap disk bays	PCI slots x bays	Power supply number and type	Ethernet	Available date
8647-42X	1 x Xeon™	2.67	512KB	533	256MB	36.4GB² Ultra320 10K	Ultra320	None (4 fixed)	6 x 7	One fixed	Gigabit	Feb 2003
8647-4AX	1 x Xeon	2.67	512KB	533	512MB	None (open-bay)	Ultra320	6 hot-swap	6 x 9	One fixed	Gigabit	Feb 2003
8647-4BX	1 x Xeon	2.67	512KB	533	512MB	None (open-bay)	Ultra320	6 hot-swap	6 x 9	Two redundant	Gigabit	Feb 2003
8647-52X	1 x Xeon	2.8B	512KB	533	256MB	36.4GB Ultra320 10K	Ultra320	None (4 fixed)	6 x 7	One fixed	Gigabit	Feb 2003
8647-5AX	1 x Xeon	2.8B	512KB	533	512MB	None (open-bay)	Ultra320	6 hot-swap	6 x 9	One fixed	Gigabit	Feb 2003
8647-5BX	1 x Xeon	2.8B	512KB	533	512MB	None (open-bay)	Ultra320	6 hot-swap	6 x 9	Two redundant	Gigabit	Feb 2003

Processor(s) SMP - L2 Cache Implementation **1 x Intel® Xeon at 2.67 or 2.8B GHz with 533MHz frontside bus (FSB) / Hyper-Threading technology 2-way SMP / up to two Xeon Processors (same speed/cache size) / 512KB** std and max / at processor speed Systemboard contains two Intel 604-pin micro-PGA ZIF sockets, four DIMM slots, seven slots (one PCI 2.2, four PCI-X, one Mini PCI [used by graphics], one unavailable AGP), and integrated SCSI and ethernet

Memory **256MB or 512MB** std / 8GB¹³ max / two slots used / two slots available / **PC2100** 266MHz CL2.5 registered 184-pin ECC DDR-SDRAM DIMMs / four DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / **Error Checking and Correcting (ECC)** via **16-bit Checksum Chipkill™** (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips)

IDE disk controller Enhanced IDE busmaster / ATA-100 / integrated in I/O Controller Hub 4 / two connectors on planar
 SCSI disk controller **LSI Logic® 53C1030 / dual channel Ultra320 SCSI controller** (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X / supports **RAID-1 mirroring** (Embedded Mirroring) / shared with optional IBM ServeRAID™-5i Controller for low-cost RAID 0, 1, 1E, 5, 00, 10, 1E0, 50 (installed only in Slot 4) Two 16-bit channels (one internal and one external) / *Internal channel:* Fixed disk models: one 4-drop 16-bit 68-pin LVD SCSI cable from systemboard to internal disks bays; Hot-swap models: one 1-drop 16-bit 68-pin LVD SCSI cable to 6-bay backplane; *External channel:* cable available as option pn 32P8164 from systemboard to rear external 68-pin connector
 SCSI channels and cables One SCSI cable (listed above), one 2-drop EIDE cable (to CD-ROM)
 Cables Some: 36.4GB Ultra320 SCSI / 10K rpm / 4.7 ms average read seek / S.M.A.R.T.⁵
 Disk - features

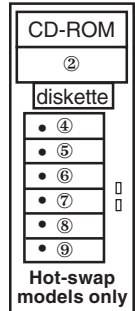
Rack support 4U⁴ rack mount support via tower-to-rack kit option
 Bus slots (see below) **Four 64-bit 100MHz PCI-X 1.0 / one Mini PCI / one AGP 8X (not available) / no hot-swap Active™ PCI slots**
 Chipset **Intel E7505 chipset / E7505 MCH (Memory Controller Hub) for AGP 8X slot, P64H2, ICH4 / P64H2 for two PCI-X buses (Bus A for slots 2 and 3 and ethernet controller; Bus B for slots 4 and 5 and SCSI controller) / I/O Controller Hub (ICH4) for PCI 2.2 bus (one slot and one Mini PCI slot), ATA-100 EIDE, USB, Low Pin Count Interface / NS PC87366 Super I/O off LPC interface**

Ethernet One gigabit 10/100/1000 ethernet controller / Broadcom BCM5703i / full gigabit ethernet MAC and PHY layer functions / chip on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / Alert Standard Format 1.0 / one rear RJ-45 port
 CD-ROM / diskette drive **CD-ROM: 48X-20X⁶ CD-ROM, IDE / Diskette: 3.5" 1.44MB diskette drive**
 Ports *Front:* two USB (Ver 2.0); *Back:* two USB (Ver 2.0), two serial (9-pin), parallel, keyboard, mouse, ethernet (RJ-45), monitor (analog DB-15), microphone-in (mono), line-in (stereo), line-out (stereo)
 Diagnostics Diagnostic LEDs / error LEDs for fans and memory / server diagnostic programs stored on IBM Enhanced Diagnostics CD
 Systems mgmt cntrl Winbond® W791D / chip on planar / monitors system and processor temperature, fan speed and failure, and voltages / **support for optional Remote Supervisor Adapter** (provides continuous health monitoring and control)

Graphics controller SVGA / ATI® RageXL / on Mini PCI adapter / 8MB SDRAM std and max / PCI 2.2 32-bit 33MHz / analog 15-pin D-Sub conn

Security	Software	Keyboard / mouse	Cooling fans	Power supply(s)
Mechanical side panel key lock (locks hot-swap disks on hot-swap models) / optional U-Bolt support via knockout / power-on password / boot sequence control / operation without keyboard/mouse / security slot (for opt cable lock)	ServerGuide™ (CD-based automated network OS installation and configuration tool), IBM Director (system hardware mgmt software) and many utilities	IBM 101 key keyboard / IBM mouse (both black, 6-pin PS/2)	Four / three for processor(s), memory, and disk bays / one power supply cage fan (even in dual power supply model) All: not redundant / not hot-swap / all variable speed	Some: one 425 watt std and max / not hot-swap 3BX: two 350 watt std and max / hot-swap / redundant All: universal / voltage-sensing / Automatic Server Restart (ASR) / cooling fan in power supply(s) (variable spd)
Xeon 2.67GHz/533/512KB L2 Cache Proc Upg 24P7861 Xeon 2.8B GHz/533/512KB L2 Cache Proc Upg 24P8054 256MB PC2100 CL2.5 ECC DDR-SDRAM 33L5037 512MB PC2100 CL2.5 ECC DDR-SDRAM 33L5038 1GB PC2100 CL2.5 ECC DDR-SDRAM DIMM 33L5039 2GB PC2100 CL2.5 ECC DDR-SDRAM DIMM 33L5040 IBM 73.4GB 10K Ultra320 SCSI 68-pin (not hot-swp) 32P0724 IBM 146GB 10K Ultra320 SCSI 68-pin (not hot-swp) 32P0725 IBM 36.4GB 15K Ultra320 SCSI Hot-Swap SL HDD 06P5776 IBM 73GB 10K Ultra320 SCSI Hot-Swap SL HDD 32P0727 IBM 146GB 10K Ultra320 SCSI Hot-Swap SL HDD 32P0728 40X/12X/40X Max⁶ CD-RW internal (black) 22P6976 IBM Remote Supervisor Adapter (PCI adapter) 09N7585 IBM 4U Extended Depth Tower-to-Rack Kit 59P4817 IBM ServeRAID-5i Controller (adapter for Slot 4) 25P3492 IBM T541 15" Flat Panel Color Monitor (black) 9512AB1 Other options at ibm.com/pc/us/accessories				

- Slot 1: fullsize, 32-bit 33MHz, PCI 2.2 (5v)
 - Slot 2: fullsize, 64-bit 100MHz, PCI-X 1.0 (3.3v)
 - Slot 3: fullsize, 64-bit 100MHz, PCI-X 1.0 (3.3v)
 - Slot 4: fullsize, 64-bit 100MHz, PCI-X 1.0* (3.3v) extended*
 - Slot 5: fullsize, 64-bit 100MHz, PCI-X 1.0 (3.3v)
 - Slot 6: Mini PCI type III, 32-bit 33MHz (5v) - used graphics
 - Slot: fullsize, AGP 8X Pro50 (1.5v) - unavailable
- * Extended slot for opt IBM ServeRAID-5i



Bay ① 5.25", HH 1.6", access, CD-ROM
 Bay ② 5.25", HH 1.6", access, open
 Bay ③ 3.5", SL 1", access, diskette
 Hot-swap models 4AX, 4BX, 5AX, and 5BX:
 Six bays ④ to ⑨ 3.5", SL 1", access, hot-swap
 Fixed disk models 42X and 52X:
 Bay ④ 3.5", SL 1", no access, not hot-swap
 Bay ⑤ 3.5", SL 1", no access, not hot-swap
 Bay ⑥ 3.5", SL 1", no access, not hot-swap
 Bay ⑦ 3.5", SL 1", no access, not hot-swap
 Bay ⑧ 3.5", SL 1", no access, not hot-swap
 Bay ⑨ 3.5", SL 1", no access, not hot-swap
 Maximum internal SCSI disk capacity¹³:
 Fixed: 587.2GB (4 disks x 146.8GB)
 Hot-swap: 880.8GB (6 disks x 146.8GB)

- ◆ Raven black color
- ◆ Removable left side panel
- ◆ Configuration/Setup Utility invoked by pressing F1 at startup
- ◆ BIOS Setup Utility via F1 at startup
- ◆ LSI Configuration Utility near startup by pressing CTRL+C
- ◆ DMI 2.2-compliant
- ◆ Adv Config Power Interface (ACPI) 1.0a
- ◆ Device Driver and IBM Enhanced Diagnostics CD-ROM included
- ◆ Four stabilizing feet
- ◆ Handle grip on top
- ◆ H 18.4" x W 6.5" x D 26.0"
- ◆ H 467mm x W 165mm x D 660mm
- ◆ 44 to 57 pounds (20 to 25.8kg)
- ◆ Fixed disk models: metal cage for disk bays 4,5,6,7 rotate out of chassis for easy access for cabling
- ◆ Predictive Failure Analysis on disk(s) with IBM Director can alert the administrator of an imminent component failure

LIMITED WARRANTY³

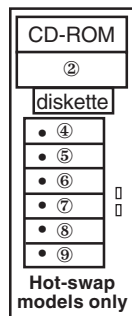
- ⇒ 1 year parts and labor
- ⇒ International Warranty Service³
- ⇒ On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- ⇒ On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 9x5, NBD response (ServicePac® part num 96P2248)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 96P2249)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 96P2250)
 - 3 year IOR 24x7, 2 hr avg response (ServicePac part num 96P2251)
- ⇒ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information
 US models announced February 18, 2003; withdrawn effective May 28, 2004
 • = Hot-swap bays in some models

IBM® Type-model	Processor	L2 cache	FSB MHz	Memory	Disk	Disk controller	Hot-swap disk bays	PCI slots x bays	Power supply number and type	Ethernet	Available date
8647-62X	1 x Xeon™	3.06	512KB	533	256MB	36.4GB ² Ultra320 10K	Ultra320	None (4 fixed)	6 x 7	One fixed	Gigabit Jul 2003
8647-6AX	1 x Xeon	3.06	512KB	533	512MB	None (open-bay)	Ultra320	6 hot-swap	6 x 9	One fixed	Gigabit Jul 2003
8647-6BX	1 x Xeon	3.06	512KB	533	512MB	None (open-bay)	Ultra320	6 hot-swap	6 x 9	Two redundant	Gigabit Jul 2003

Processor(s) SMP - L2 Cache Implementation	1 x Intel® Xeon at 3.06 GHz with 533MHz frontside bus (FSB) / Hyper-Threading technology 2-way SMP / up to two Xeon Processors (same speed/cache size) / 512KB std and max / at processor speed Systemboard contains two Intel 604-pin micro-PGA ZIF sockets, four DIMM slots, seven slots (one PCI 2.2, four PCI-X, one Mini PCI [used by graphics], one unavailable AGP), and integrated SCSI and ethernet										
Memory	256MB or 512MB std / 8GB ¹³ max / two slots used / two slots available / PC2100 266MHz CL2.5 registered 184-pin ECC DDR-SDRAM DIMMs / four DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips)										
IDE disk controller SCSI disk controller	Enhanced IDE busmaster / ATA-100 / integrated in I/O Controller Hub 4 / two connectors on planar LSI Logic® 53C1030 / dual channel Ultra320 SCSI controller (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X / supports RAID-1 mirroring (Embedded Mirroring) / shared with optional IBM ServeRAID™-5i Controller for low-cost RAID 0, 1, 1E, 5, 00, 10, 1E0, 50 (installed only in Slot 4) Two 16-bit channels (one internal and one external) / <i>Internal channel</i> : Fixed disk models: one 4-drop 16-bit 68-pin LVD SCSI cable from systemboard to internal disks bays; Hot-swap models: one 1-drop 16-bit 68-pin LVD SCSI cable to 6-bay backplane; <i>External channel</i> : cable available as option pn 32P8164 from systemboard to rear external 68-pin connector										
SCSI channels and cables	One SCSI cable (listed above), one 2-drop EIDE cable (to CD-ROM)										
Cables Disk - features	<i>Some</i> : 36.4GB Ultra320 SCSI / 10K rpm / 4.7 ms average read seek / S.M.A.R.T. ⁵										
Rack support Bus slots (see below) Chipset	4U ⁴ rack mount support via tower-to-rack kit option Four 64-bit 100MHz PCI-X 1.0 / one PCI 2.2 / one Mini PCI / one AGP 8X (not available) / no hot-swap Active™ PCI slots Intel E7505 chipset / E7505 MCH (Memory Controller Hub) for AGP 8X slot, P64H2, ICH4 / P64H2 for two PCI-X buses (Bus A for slots 2 and 3 and ethernet controller; Bus B for slots 4 and 5 and SCSI controller) / I/O Controller Hub (ICH4) for PCI 2.2 bus (one slot and one Mini PCI slot), ATA-100 EIDE, USB, Low Pin Count Interface / NS PC87366 Super I/O off LPC interface										
Ethernet	One gigabit 10/100/1000 ethernet controller / Broadcom BCM5703i / full gigabit ethernet MAC and PHY layer functions / chip on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / Alert Standard Format 1.0 / one rear RJ-45 port										
CD-ROM / diskette Ports	<i>CD-ROM</i> : 48X-20X ⁶ CD-ROM, IDE / <i>Diskette</i> : 3.5" 1.44MB diskette drive <i>Front</i> : two USB (Ver 2.0); <i>Back</i> : two USB (Ver 2.0), two serial (9-pin), parallel, keyboard, mouse, ethernet (RJ-45), monitor (analog DB-15), microphone-in (mono), line-in (stereo), line-out (stereo)										
Diagnostics Systems mgmt cntrl	Diagnostic LEDs / error LEDs for fans and memory / server diagnostic programs stored on IBM Enhanced Diagnostics CD Winbond® W791D / chip on planar / monitors system and processor temperature, fan speed and failure, and voltages / support for optional Remote Supervisor Adapter (provides continuous health monitoring and control)										
Graphics controller	SVGA / ATI® RageXL / on Mini PCI adapter / 8MB SDRAM std and max / PCI 2.2 32-bit 33MHz / analog 15-pin D-Sub conn										
Security	Mechanical side panel key lock (locks hot-swap disks on hot-swap models) / optional U-Bolt support via knockout / power-on password / boot sequence control / operation without keyboard/mouse / security slot (for opt cable lock)										
Software	ServerGuide™ (CD-based automated network OS installation and configuration tool), IBM Director (system hardware mgmt software) and many utilities										
Keyboard / mouse Cooling fans	IBM 101 key keyboard / IBM mouse (both black, 6-pin PS/2) Four / three for processor(s), memory, and disk bays / one power supply cage fan (even in dual power supply model) <i>All</i> : not redundant / not hot-swap / all variable speed										
Power supply(s)	<i>Some</i> : one 425 watt std and max / not hot-swap <i>6BX</i> : two 514 watt std and max / hot-swap / redundant <i>All</i> : universal / voltage-sensing / Automatic Server Restart (ASR) / cooling fan in power supply(s) (variable spd)										

Slot 1: half-length, 32-bit 33MHz, PCI 2.2 (5v)
Slot 2: fullsize, 64-bit 100MHz, PCI-X 1.0 (3.3v)
Slot 3: fullsize, 64-bit 100MHz, PCI-X 1.0 (3.3v)
Slot 4: fullsize, 64-bit 100MHz, PCI-X 1.0* (3.3v) extended*
Slot 5: fullsize, 64-bit 100MHz, PCI-X 1.0 (3.3v)
Slot 6: Mini PCI type III, 32-bit 33MHz (5v) - used graphics
Slot: fullsize, AGP 8X Pro50 (1.5v) - unavailable
* Extended slot for opt IBM ServeRAID-5i



Bay ① 5.25", HH 1.6", access, CD-ROM
Bay ② 5.25", HH 1.6", access, open
Bay ③ 3.5", SL 1", access, diskette
Hot-swap models 6AX and 6BX:
Six bays ④ to ⑨ 3.5", SL 1", access, hot-swp
Fixed disk models 62X:
Bay ④ 3.5", SL 1", no access, not hot-swap
Bay ⑤ 3.5", SL 1", no access, not hot-swap
Bay ⑥ 3.5", SL 1", no access, not hot-swap
Bay ⑦ 3.5", SL 1", no access, not hot-swap
Maximum internal SCSI disk capacity¹³:
Fixed: 587.2GB (4 disks x 146.8GB)
Hot-swap: 880.8GB (6 disks x 146.8GB)

- ◆ Raven black color
- ◆ Removable left side panel
- ◆ Configuration/Setup Utility invoked by pressing F1 at startup
- ◆ BIOS Setup Utility via F1 at startup
- ◆ LSI Configuration Utility near startup by pressing CTRL+C
- ◆ DMI 2.2-compliant
- ◆ Adv Config Power Interface (ACPI) 1.0a
- ◆ Device Driver and IBM Enhanced Diagnostics CD-ROM included
- ◆ Four stabilizing feet
- ◆ Handle grip on top
- ◆ H 18.4" x W 6.5" x D 26.0"
- ◆ H 467mm x W 165mm x D 660mm
- ◆ 44 to 57 pounds (20 to 25.8kg)
- ◆ Fixed disk models: metal cage for disk bays 4,5,6,7 rotate out of chassis for easy access for cabling
- ◆ Predictive Failure Analysis on disk(s) with IBM Director can alert the administrator of an imminent component failure

LIMITED WARRANTY³

- ⇒ 1 year parts and labor
- ⇒ International Warranty Service³
- ⇒ On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- ⇒ On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 9x5, NBD response (ServicePac® part num 96P2248)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 96P2249)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 96P2250)
 - 3 year IOR 24x7, 2 hr avg response (ServicePac part num 96P2251)
- ⇒ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information

US models announced July 1, 2003; withdrawn effective May 28, 2004

• = Hot-swap bays in some models

IBM® Type-model	Processor	GHz ¹	L2 cache	FSB MHz	Memory	Disk	Disk controller	Hot-swap disk bays	PCI slots x bays	Power supply number and type	Ethernet	Available date	
8649-42X	1 x Xeon™	2.67	512KB	533	512MB	36.4GB ²	Ultra320 10K	Ultra320	None (4 fixed)	6 x 7	One fixed	Gigabit	Feb 2004
8649-4AX	1 x Xeon	2.67	512KB	533	512MB	None (open-bay)	Ultra320	6 hot-swap	6 x 9	One fixed	Gigabit	Feb 2004	
8649-4BX	1 x Xeon	2.67	512KB	533	512MB	None (open-bay)	Ultra320	6 hot-swap	6 x 9	Two redundant	Gigabit	Feb 2004	
8649-52X	1 x Xeon	2.8B	512KB	533	512MB	36.4GB	Ultra320 10K	Ultra320	None (4 fixed)	6 x 7	One fixed	Gigabit	Feb 2004
8649-5AX	1 x Xeon	2.8B	512KB	533	512MB	None (open-bay)	Ultra320	6 hot-swap	6 x 9	One fixed	Gigabit	Feb 2004	
8649-5BX	1 x Xeon	2.8B	512KB	533	512MB	None (open-bay)	Ultra320	6 hot-swap	6 x 9	Two redundant	Gigabit	Feb 2004	
8649-62X	1 x Xeon	3.06	512KB	533	512MB	36.4GB	Ultra320 10K	Ultra320	None (4 fixed)	6 x 7	One fixed	Gigabit	Feb 2004
8649-6AX	1 x Xeon	3.06	512KB	533	512MB	None (open-bay)	Ultra320	6 hot-swap	6 x 9	One fixed	Gigabit	Feb 2004	
8649-6BX	1 x Xeon	3.06	512KB	533	512MB	None (open-bay)	Ultra320	6 hot-swap	6 x 9	Two redundant	Gigabit	Feb 2004	

Processor(s) **1 x Intel® Xeon up to 3.06 GHz with 533MHz frontside bus (FSB)** / Hyper-Threading technology
 SMP - L2 Cache **2-way SMP** / up to two Xeon Processors (same speed/cache size) / **512KB** std and max / at processor speed
 Implementation Systemboard contains two Intel 604-pin micro-PGA ZIF sockets, four DIMM slots, seven slots (one PCI 2.2, four PCI-X, one Mini PCI [used by graphics], one unavailable AGP), and integrated SCSI and ethernet

Memory **512MB** std / 8GB¹³ max / two slots used / two slots available / **PC2100** 266MHz CL2.5 registered 184-pin ECC DDR-SDRAM DIMMs / four DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / **Error Checking and Correcting (ECC)** via **16-bit Checksum Chipkill™** (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips) available on 512MB and greater DIMMs

IDE disk controller Enhanced IDE busmaster / ATA-100 / integrated in I/O Controller Hub 4 / two connectors on planar
 SCSI disk controller **LSI Logic® 53C1030 / dual channel Ultra320 SCSI controller** (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X / supports **RAID-1 mirroring** (Embedded Mirroring) / shared with optional IBM ServeRAID™-5i Controller for low-cost RAID 0, 1, 1E, 5, 00, 10, 1E0, 50 (installed only in Slot 4) Two 16-bit channels (one internal and one external) / *Internal channel:* Fixed disk models: one 4-drop 16-bit 68-pin LVD SCSI cable from systemboard to internal disks bays; Hot-swap models: one 1-drop 16-bit 68-pin LVD SCSI cable to 6-bay backplane; *External channel:* cable available as option pn 24P7929 from systemboard to rear external 68-pin connector

SCSI channels and cables One SCSI cable (listed above), one 2-drop EIDE cable (to CD-ROM)
 Cables *Some:* 36.4GB Ultra320 SCSI / 10K rpm / 4.7 ms average read seek / S.M.A.R.T.⁵

Rack support 4U⁴ rack mount support via tower-to-rack kit option
 Bus slots (see below) Four 64-bit 100MHz PCI-X 1.0 / one PCI 2.2 / one Mini PCI / one AGP 8X (not available) / no hot-swap Active™ PCI slots
 Chipset **Intel E7505 chipset** / E7505 MCH (Memory Controller Hub) for AGP 8X slot, P64H2, ICH4 / P64H2 for two PCI-X buses (Bus A for slots 2 and 3 and ethernet controller; Bus B for slots 4 and 5 and SCSI controller) / I/O Controller Hub (ICH4) for PCI 2.2 bus (one slot and one Mini PCI slot), ATA-100 EIDE, USB, Low Pin Count Interface / NS PC87366 Super I/O off LPC interface

Ethernet One gigabit 10/100/1000 ethernet controller / Broadcom BCM5703i / full gigabit ethernet MAC and PHY layer functions / chip on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / Alert Standard Format 1.0 / one rear RJ-45 port
 CD-ROM / diskette *CD-ROM:* 48X-20X⁶ CD-ROM, IDE / *Diskette:* 3.5" 1.44MB diskette drive
 Ports *Front:* two USB (Ver 2.0); *Back:* two USB (Ver 2.0), two serial (9-pin), parallel, keyboard, mouse, ethernet (RJ-45), monitor (analog DB-15), microphone-in (mono), line-in (stereo), line-out (stereo)
 Diagnostics Diagnostic LEDs / error LEDs for fans and memory / server diagnostic programs stored on IBM Enhanced Diagnostics CD
 Systems mgmt cntrl Winbond® W791D / chip on planar / monitors system and processor temperature, fan speed and failure, and voltages / **support for optional Remote Supervisor Adapter II** (provides continuous health monitoring and control)

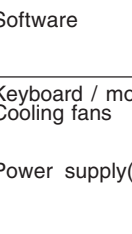
Graphics controller SVGA / ATI® RageXL / on Mini PCI adapter / 8MB SDRAM std and max / PCI 2.2 32-bit 33MHz / analog 15-pin D-Sub conn

Security Mechanical side panel key lock (locks hot-swap disks on hot-swap models) / optional U-Bolt support via knockout / power-on password / boot sequence control / operation without keyboard/mouse / security slot (for opt cable lock)
 Xeon 2.67 GHz/533/512KB L2 Cache Proc Upg 24P7861
 Xeon 2.80 GHz/533/512KB L2 Cache Proc Upg 24P8054
 Xeon 3.06 GHz/533/512KB L2 Cache Proc Upg 24P8122
 2x256MB PC2100 CL2.5 ECC non-Chipkill DIMM Kit 73P2868
 512MB PC2100 CL2.5 ECC DDR-SDRAM 33L5038

Software **ServerGuide™** (CD-based automated network OS installation and configuration tool), IBM Director (system hardware mgmt software) and many utilities
 1GB PC2100 CL2.5 ECC DDR-SDRAM DIMM 33L5039
 2GB PC2100 CL2.5 ECC DDR-SDRAM DIMM 33L5040
 IBM 73.4GB 10K Ultra320 SCSI 68-pin (not hot-swp) 32P0724
 IBM 146GB 10K Ultra320 SCSI 68-pin (not hot-swp) 32P0725
 IBM 36.4GB 15K Ultra320 SCSI Hot-Swap SL HDD 06P5776
 IBM 73GB 10K Ultra320 SCSI Hot-Swap SL HDD 32P0727
 IBM 146GB 10K Ultra320 SCSI Hot-Swap SL HDD 32P0728
 40X/12X/40X Max⁶ CD-RW internal (black) 22P6976
 IBM Remote Supervisor Adapter II (PCI adapter) 59P2984
 IBM 4U Extended Depth Tower-to-Rack Kit 59P4817
 IBM ServeRAID-5i Controller (adapter for Slot 4) 25P3492
 IBM ServeRAID-6i Controller (adapter for Slot 4) 71P8595
 Other options at ibm.com/pc/us/accessories

Keyboard / mouse IBM 101 key keyboard / IBM mouse (both black, 6-pin PS/2)
 Cooling fans up to six / three for processor(s), memory, and disk bays / two power supply cage fans (three in dual power supply model)
 All: not redundant / not hot-swap / all variable speed
 Some: one 425 watt std and max / not hot-swap
 xBX: two 514 watt std and max / hot-swap / redundant
 All: universal / voltage-sensing / Automatic Server Restart (ASR) / cooling fan in power supply(s) (variable spd)

Slot 1: half-length, 32-bit 33MHz, PCI 2.2 (5v)
 Slot 2: fullsize, 64-bit 100MHz, PCI-X 1.0 (3.3v)
 Slot 3: fullsize, 64-bit 100MHz, PCI-X 1.0 (3.3v)
 Slot 4: fullsize, 64-bit 100MHz, PCI-X 1.0* (3.3v) extended*
 Slot 5: fullsize, 64-bit 100MHz, PCI-X 1.0 (3.3v)
 Slot 6: Mini PCI type III, 32-bit 33MHz (5v) - used graphics
 Slot: fullsize, AGP 8X Pro50 (1.5v) - unavailable
 * Extended slot for opt IBM ServeRAID-5i



Bay ① 5.25", HH 1.6", access, CD-ROM
 Bay ② 5.25", HH 1.6", access, open
 Bay ③ 3.5", SL 1", access, diskette
Hot-swap models 6AX and 6BX:
 Six bays ④ to ⑥ 3.5", SL 1", access, hot-swp
Fixed disk models 62X:
 Bay ④ 3.5", SL 1", no access, not hot-swap
 Bay ⑤ 3.5", SL 1", no access, not hot-swap
 Bay ⑥ 3.5", SL 1", no access, not hot-swap
 Bay ⑦ 3.5", SL 1", no access, not hot-swap
 Bay ⑧ 3.5", SL 1", no access, not hot-swap
 Bay ⑨ 3.5", SL 1", no access, not hot-swap
Maximum internal SCSI disk capacity¹³:
 Fixed: 587.2GB (4 disks x 146.8GB)
 Hot-swap: 880.8GB (6 disks x 146.8GB)

- ◆ Raven black color
- ◆ Removable left side panel
- ◆ Configuration/Setup Utility invoked by pressing F1 at startup
- ◆ BIOS Setup Utility via F1 at startup
- ◆ LSI Configuration Utility near startup by pressing CTRL+C
- ◆ DMI 2.2-compliant
- ◆ Adv Config Power Interface (ACPI) 1.0a
- ◆ Device Driver and IBM Enhanced Diagnostics CD-ROM included
- ◆ Four stabilizing feet
- ◆ Handle grip on top
- ◆ H 18.4" x W 6.5" x D 26.0"
- ◆ H 467mm x W 165mm x D 660mm
- ◆ 44 to 57 pounds (20 to 25.8kg)
- ◆ Fixed disk models: metal cage for disk bays 4,5,6,7 rotate out of chassis for easy access for cabling
- ◆ Predictive Failure Analysis on disk(s) with IBM Director can alert the administrator of an imminent component failure

LIMITED WARRANTY³

- ⇒ 1 year parts and labor
- ⇒ International Warranty Service³
- ⇒ On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- ⇒ On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 9x5, NBD response (ServicePac® part num 96P2248)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 96P2249)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 96P2250)
 - 3 year IOR 24x7, 2 hr avg response (ServicePac part num 96P2251)
- ⇒ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ⇒ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

IBM® Type-GAV-model	Processor	L2 Cache	FSB MHz	Memory	Disk	Disk controller	Hot-swap disk bays	PCI slots x bays	Power supply number and type	Ethernet	Available date
8648-00y-00x	1 x Xeon™	2.8 GHz	1MB	800	512MB	80GB ² SATA 7200	SATA	3 simple-swap	6 x 7	One fixed	Gigabit Sept 2004
8648-0Ay-0Ax	1 x Xeon	2.8 GHz	1MB	800	512MB	None (open-bay)	Ultra320	6 hot-swap	6 x 9	One fixed	Gigabit Sept 2004
8648-0By-0Bx	1 x Xeon	2.8 GHz	1MB	800	512MB	None (open-bay)	Ultra320	6 hot-swap	6 x 9	Two redundant	Gigabit Sept 2004
8648-10Y-10x	1 x Xeon	3.0 GHz	1MB	800	512MB	80GB SATA 7200	SATA	3 simple-swap	6 x 7	One fixed	Gigabit Sept 2004
8648-1AY-1Ax	1 x Xeon	3.0 GHz	1MB	800	512MB	None (open-bay)	Ultra320	6 hot-swap	6 x 9	One fixed	Gigabit Sept 2004
8648-1BY-1Bx	1 x Xeon	3.0 GHz	1MB	800	512MB	None (open-bay)	Ultra320	6 hot-swap	6 x 9	Two redundant	Gigabit Sept 2004
8648-20Y-20x	1 x Xeon	3.2 GHz	1MB	800	512MB	80GB SATA 7200	SATA	3 simple-swap	6 x 7	One fixed	Gigabit Sept 2004
8648-2AY-2Ax	1 x Xeon	3.2 GHz	1MB	800	512MB	None (open-bay)	Ultra320	6 hot-swap	6 x 9	One fixed	Gigabit Sept 2004
8648-2BY-2Bx	1 x Xeon	3.2 GHz	1MB	800	512MB	None (open-bay)	Ultra320	6 hot-swap	6 x 9	Two redundant	Gigabit Sept 2004

Processor(s) SMP - L2 Cache Implementation: **1 x Intel® Xeon up to 3.2 GHz with 800MHz frontside bus (FSB) / EM64T / 1MB L2 ECC Cache / Hyper-Threading technology** / up to two Xeon Processors (same speed/cache size) / **1MB** std and max / at processor speed
 Systemboard contains two Intel 604-pin micro-PGA ZIF sockets, six DIMM slots, six slots (3 PCI-X, 2 PCI, 1 PCI Express x16)

Memory: **512MB** std / 16GB¹³ max (16GB maximum can be achieved when 4GB DIMMs are supported, 12GB is the maximum with less than 4GB DIMMs) / two slots used / four slots available / **PC2-3200** 400MHz ECC DDR2-SDRAM DIMMs / Six 240 pin gold-conductor slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / **Error Checking and Correcting (ECC)** via **16-bit Checksum Chipkill™** (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips) available on 1GB (2x512) DIMM Kit and greater

SATA disk controller: Dual Channel SATA-150 controller (150MB/sec / two connectors on planar / supports ServerRAID™ 7e
 SCSI disk controller: **Adaptec® 7902 / dual channel Ultra320 SCSI controller** (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X / ServeRAID 7e supports **RAID-0 & 1 mirroring** / Two 16-bit channels (one internal and one external) / *Internal channel:* Hot-swap models: one 1-drop 16-bit 68-pin LVD SCSI cable to 6-bay backplane; *External channel:* cable available as option pn 24P7929 from systemboard to rear external 68-pin connector

Cables RAID Controller: One SCSI cable (listed above), two one-drop SATA, one 2-drop EIDE cable (to CD-ROM), IBM ServeRAID 7e (RAID 0 Or 1) / on planar / supports SATA or SCSI interface / supports ServeRAID 6i+ controller

Mechanical Bus slots (see below) Chipset: **4U⁴ Tower** (rack mount support via tower-to-rack kit option)
 One PCI-Express / three 64-bit (one 133MHz, 2 100MHz) PCI-X 1.0 / two 32-bit/33MHz / no hot-swap Active™ PCI slots
Intel E7250 chipset / E7525 MCH (Memory Controller Hub) for PCI-Express x16(vid), Broadcom, PXH, ICH5R / PXH BUS A supports Adaptec 7902, 2 64bit/100MHz PCI-X slots (5 & 6), BUS B supports one 64bit/133MHz PCI-X slot (4) / ICH5R for two 32-bit/33MHz PCI slots (slots 2 & 3), video, SATA, 4xUSB(2.0), Low Pin Count Interface / NS PC87366 Super I/O off LPC interface

Ethernet: One gigabit 10/100/1000 ethernet controller / Broadcom 5721 / full gigabit ethernet MAC and PHY layer functions / chip on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / Alert Standard Format 2.0 / one rear RJ-45 port
 CD-ROM / diskette Ports: **CD-ROM:** 48X-20X⁶ CD-ROM, IDE / **Diskette:** 3.5" 1.44MB diskette drive
Front: two USB (Ver 2.0); *Back:* two USB (Ver 2.0), two serial (9-pin), parallel, keyboard, mouse, ethernet (RJ-45), monitor (analog DB-15)

Diagnostics Systems mgmt cntrl: Diagnostic LEDs / error LEDs for fans and memory / server diagnostic programs stored on IBM Enhanced Diagnostics CD
 Winbond® W791D / chip on planar / monitors system and processor temperature, fan speed and failure, and voltages / **support for optional Remote Supervisor Adapter II** (provides continuous health monitoring and control)

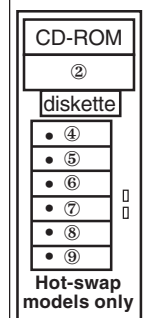
Graphics controller: SVGA / ATI® Radeon™ 7000M on Planar / 16MB SDRAM std and max / 15 pin connector
 Security: Mechanical side panel key lock (locks hot-swap disks on hot-swap models) / optional U-Bolt support via knockout / power-on password / boot sequence control / operation without keyboard/mouse / security slot (for opt cable lock)

Software: **ServerGuide™** (CD-based automated network OS installation and configuration tool), IBM Director (system hardware mgmt software) and many utilities

Xeon 2.80 GHz/800/1MB L2 Cache EM64TProc Upg	13N0671
Xeon 3.00 GHz/800/1MB L2 Cache EM64TProc Upg	13N0672
Xeon 3.2 GHz/800/1MB L2 Cache EM64TProc Upg	13N0673
512MB (2x256) PC2-3200 ECC DDR2	73P3523
1GB (2x512) PC2-3200 ECC DDR2	73P3522
1GB (2x512) PC2-3200 ECC DDR2 ChipK DIMM Kit	73P2865
2GB (2x1GB) PC2-3200 ECC DDR2 DIMM Kit	73P2866
IBM 80GB SATA-150 (7.2K) simple-swap HDD	73P8002
IBM 160GB SATA-150 (7.2K) simple-swap HDD	73P8003
IBM 250GB SATA-150 (7.2K) simple-swap HDD	73P8006
IBM 36.4GB 15K Ultra320 SCSI Hot-Swap SL HDD	06P5776
IBM 73GB 10K Ultra320 SCSI Hot-Swap SL HDD	32P0727
IBM 146GB 10K Ultra320 SCSI Hot-Swap SL HDD	32P0728
40X/12X/40X Max ⁶ CD-RW internal (black)	22P6976
IBM Remote Supervisor Adapter II (PCI adapter)	53P2984
IBM 4U Extended Depth Tower-to-Rack Kit	26K6095
IBM ServeRAID-6i+ controller (adapter for Slot 5)	13N2190
IBM ServeRAID 7t SATA controller	71P8648

Other options at ibm.com/pc/us/accessories

Slot 1: fullsize, PCI-Express x16 (3.3v)*
 Slot 2: fullsize, 32-bit/33MHz, PCI (5v)
 Slot 3: fullsize, 32-bit/33MHz, PCI (5v)
 Slot 4: fullsize, 64-bit 133MHz, PCI-X 1.0 (3.3v)
 Slot 5: fullsize, 64-bit 100MHz, PCI-X 1.0 (3.3v)**
 Slot 6: fullsize, 64-bit 100MHz, PCI-X 1.0 (3.3v)
 * support only for x8 adapters
 ** slot for opt IBM ServeRAID-6i+



Bay ① 5.25", HH 1.6", access, CD-ROM
 Bay ② 5.25", HH 1.6", access, open
 Bay ③ 3.5", SL 1", access, diskette
Hot-swap models:
 Six bays ④ to ⑨ 3.5", SL 1", access, hot-swap
Simple-swap models: 2 std, 2 avail (up to 4 SATA HDDs maybe added with ServeRAID 7t controller)
 Bay ④ 3.5", SL 1", simple-swap
 Bay ⑤ 3.5", SL 1", simple-swap
 Bay ⑥ 3.5", SL 1", simple-swap
 Bay ⑦ 3.5", SL 1", fixed
Maximum internal disk capacity¹³:
 SATA: 500GB (2 disks x 250GB); 1TB (4 disks x 250GB) w/ ServeRAID 7t
 SCSI: 880.8GB (6 disks x 146.8GB)

- ◆ Raven black color
- ◆ Removable left side panel
- ◆ Configuration/Setup Utility invoked by pressing F1 at startup
- ◆ BIOS Setup Utility via F1 at startup
- ◆ Adaptec Configuration Utility near startup by pressing CTRL+I
- ◆ DMI 2.2-compliant
- ◆ Adv Config Power Interface (ACPI) 1.0a
- ◆ Device Driver and IBM Enhanced Diagnostics CD-ROM included
- ◆ Four stabilizing feet
- ◆ Handle grip on top
- ◆ H 18.4" x W 6.5" x D 25.9"
- ◆ H 467mm x W 165mm x D 658mm
- ◆ 44 to 57 pounds (20 to 25.8kg)
- ◇ Fixed disk models: metal cage for disk bays 4,5,6,7 rotate out of chassis for easy access for cabling
- ◇ Predictive Failure Analysis on disk(s) with IBM Director can alert the administrator of an imminent component failure

LIMITED WARRANTY³

- ⇒ 1 year parts and labor
- ⇒ International Warranty Service³
- ⇒ On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- ⇒ On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 9x5, NBD response (ServicePac® part num 96P2248)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 96P2249)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 96P2250)
 - 3 year IOR 24x7, 2 hr avg response (ServicePac part num 96P2251)
- ⇒ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ⇒ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

IBM® Type-GAV-model	Processor	L2 GHz¹ cache	FSB MHz	Memory	Disk	Disk controller	Hot-swap disk bays	PCI slots x bays	Power supply number and type	Ethernet	Available date
8648-40Y-40x	1 x Xeon™	3.0	2MB	800	512MB	80GB² SATA 7200	SATA	3 simple-swap	6 x 7	One fixed	Gigabit Mar 2005
8648-44Y-4Ax	1 x Xeon	3.0	2MB	800	512MB	None (open-bay)	Ultra320	6 hot-swap	6 x 9	One fixed	Gigabit Mar 2005
8648-4By-4Bx	1 x Xeon	3.0	2MB	800	512MB	None (open-bay)	Ultra320	6 hot-swap	6 x 9	Two redundant	Gigabit Mar 2005
8648-50Y-50x	1 x Xeon	3.2	2MB	800	512MB	80GB SATA 7200	SATA	3 simple-swap	6 x 7	One fixed	Gigabit Mar 2005
8648-5AY-5Ax	1 x Xeon	3.2	2MB	800	512MB	None (open-bay)	Ultra320	6 hot-swap	6 x 9	One fixed	Gigabit Mar 2005
8648-5BY-5Bx	1 x Xeon	3.2	2MB	800	512MB	None (open-bay)	Ultra320	6 hot-swap	6 x 9	Two redundant	Gigabit Mar 2005
8648-60Y-60x	1 x Xeon	3.4	2MB	800	512MB	80GB SATA 7200	SATA	3 simple-swap	6 x 7	One fixed	Gigabit Mar 2005
8648-6AY-6Ax	1 x Xeon	3.4	2MB	800	512MB	None (open-bay)	Ultra320	6 hot-swap	6 x 9	One fixed	Gigabit Mar 2005
8648-6BY-6Bx	1 x Xeon	3.4	2MB	800	512MB	None (open-bay)	Ultra320	6 hot-swap	6 x 9	Two redundant	Gigabit Mar 2005
Processor(s) 1 x Intel® Xeon up to 3.4 GHz with 800MHz frontside bus (FSB) / EM64T / 2MB L2 ECC Cache / Hyper-Threading technology SMP - L2 Cache Implementation 2-way SMP / up to two Xeon Processors (same speed/cache size) / 2MB std and max / at processor speed Systemboard contains two Intel 604-pin micro-PGA ZIF sockets, six DIMM slots, six slots (3 PCI-X, 2 PCI, 1 PCI Express x16)											
Memory 512MB std / 16GB¹³ max (16GB maximum can be achieved when 4GB DIMMs are supported, 12GB is the maximum with less than 4GB DIMMs) / two slots used / four slots available / PC2-3200 400MHz ECC DDR2-SDRAM DIMMs / Six 240 pin gold-conductor slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips) available on 1GB (2x512) DIMM Kit and greater											
SATA disk controller Dual Channel SATA-150 controller (150MB/sec / two connectors on planar / supports ServeRAID™ 7e SCSI disk controller Adaptec® 7902 / dual channel Ultra320 SCSI controller (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X / ServeRAID 7e supports RAID-0 & 1 mirroring / Two 16-bit channels (one internal and one external) / Internal channel: Hot-swap models: one 1-drop 16-bit 68-pin LVD SCSI cable to 6-bay backplane; External channel: cable available as option pn 24P7929 from systemboard to rear external 68-pin connector											
Cables One SCSI cable (listed above), two one-drop SATA, one 2-drop EIDE cable (to CD-ROM), RAID Controller IBM ServeRAID 7e (RAID 0 Or 1) / on planar / supports SATA or SCSI interface / supports ServeRAID 6i+ controller											
Mechanical 4U⁴ Tower (rack mount support via tower-to-rack kit option) Bus slots (see below) One PCI-Express / three 64-bit (one 133MHz, 2 100MHz) PCI-X 1.0 / two 32-bit/33MHz / no hot-swap Active™ PCI slots Chipset Intel E7525 chipset / E7525 MCH (Memory Controller Hub) for PCI-Express x16(vid), Broadcom, PXH, ICH5R / PXH BUS A supports Adaptec 7902, 2 64bit/100MHz PCI-X slots (5 & 6), BUS B supports one 64bit/133MHz PCI-X slot (4) / ICH5R for two 32-bit/33MHz PCI slots (slots 2 & 3), video, SATA, 4xUSB(2.0), Low Pin Count Interface / NS PC87366 Super I/O off LPC interface											
Ethernet One gigabit 10/100/1000 ethernet controller / Broadcom 5721 / full gigabit ethernet MAC and PHY layer functions / chip on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / Alert Standard Format 2.0 / one rear RJ-45 port CD-ROM / diskette Ports CD-ROM: 48X-20X* CD-ROM, IDE / Diskette: 3.5" 1.44MB diskette drive Front: two USB (Ver 2.0); Back: two USB (Ver 2.0), two serial (9-pin), parallel, keyboard, mouse, ethernet (RJ-45), monitor (analog DB-15)											
Diagnostics Diagnostic LEDs / error LEDs for fans and memory / server diagnostic programs stored on IBM Enhanced Diagnostics CD Systems mgmt cntrl Winbond® W791D / chip on planar / monitors system and processor temperature, fan speed and failure, and voltages / support for optional Remote Supervisor Adapter II (provides continuous health monitoring and control) Graphics controller SVGA / ATI® Radeon™ 7000M on Planar / 16MB SDRAM std and max / 15 pin connector											
Security Mechanical side panel key lock (locks hot-swap disks on hot-swap models) / optional U-Bolt support via knockout / power-on password / boot sequence control / operation without keyboard/mouse / security slot (for opt cable lock)											
Software ServerGuide™ (CD-based automated network OS installation and configuration tool), IBM Director (system hardware mgmt software) and many utilities											
Keyboard / mouse IBM 101 key keyboard / IBM mouse (both black, 6-pin PS/2) Cooling fans Up to six / three for processor(s), memory, and disk bays / two power supply cage fans (three in dual power supply model) All: not redundant / not hot-swap / all variable speed Power supply(s) Some: one 530 watt std and max / not hot-swap xBx: two 514 watt std and max / hot-swap / redundant All: universal / voltage-sensing / Automatic Server Restart (ASR) / cooling fan in power supply(s) (variable spd)											

Slot 1: fullsize, PCI-Express x16 (3.3v)*
 Slot 2: fullsize, 32-bit/33MHz, PCI (5v)
 Slot 3: fullsize, 32-bit/33MHz, PCI (5v)
 Slot 4: fullsize, 64-bit 133MHz, PCI-X 1.0 (3.3v)
 Slot 5: fullsize, 64-bit 100MHz, PCI-X 1.0 (3.3v)**
 Slot 6: fullsize, 64-bit 100MHz, PCI-X 1.0 (3.3v)
 * support only for x8 adaptors
 ** slot for opt IBM ServeRAID-6i+

Bay ① 5.25", HH 1.6", access, CD-ROM
 Bay ② 5.25", HH 1.6", access, open
 Bay ③ 3.5", SL 1", access, diskette
Hot-swap models:
 Six bays ④ to ⑨ 3.5", SL 1", access, hot-swap
Simple-swap models: 2 std, 2 avail (up to 4 SATA HDDs maybe added with ServeRAID 7t controller)
 Bay ④ 3.5", SL 1", simple-swap
 Bay ⑤ 3.5", SL 1", simple-swap
 Bay ⑥ 3.5", SL 1", simple-swap
 Bay ⑦ 3.5", SL 1", fixed

Maximum internal disk capacity¹³:
 SATA: 500GB (2 disks x 250GB); 1TB (4 disks x 250GB) w/ ServeRAID 7t
 SCSI: 880.8GB (6 disks x 146.8GB)

Xeon 3.0 GHz/800/2MB L2 Cache EM64TProc Upg	25R8900
Xeon 3.2 GHz/800/2MB L2 Cache EM64TProc Upg	25R8901
Xeon 3.4 GHz/800/2MB L2 Cache EM64TProc Upg	13N0676
512MB (2x256) PC2-3200 ECC DDR2	73P3523
1GB (2x512) PC2-3200 ECC DDR2	73P3522
1GB (2x512) PC2-3200 ECC DDR2 ChipK DIMM Kit	73P2865
2GB (2x1GB) PC2-3200 ECC DDR2 DIMM Kit	73P2866
IBM 80GB SATA-150 (7.2K) simple-swap HDD	73P8002
IBM 160GB SATA-150 (7.2K) simple-swap HDD	73P8003
IBM 250GB SATA-150 (7.2K) simple-swap HDD	73P8006
IBM 36.4GB 15K Ultra320 SCSI Hot-Swap SL HDD	06P5776
IBM 73GB 10K Ultra320 SCSI Hot-Swap SL HDD	32P0727
IBM 146GB 10K Ultra320 SCSI Hot-Swap SL HDD	32P0728
40X/12X/40X Max⁶ CD-RW internal (black)	22P6976
IBM Remote Supervisor Adapter II (PCI adapter)	59P2984
IBM 4U Extended Depth Tower-to-Rack Kit	26K6095
IBM ServeRAID-6i+ controller (adapter for Slot 5)	13N2190
IBM ServeRAID 7t SATA controller	71P8648

Other options at ibm.com/pc/us/accessories

LIMITED WARRANTY³

- 1 year parts and labor
- International Warranty Service³
- On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 9x5, NBD response (ServicePac® part num 96P2248)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 96P2249)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 96P2250)
 - 3 year IOR 24x7, 2 hr avg response (ServicePac part num 96P2251)
- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

IBM® Type-GAV-model	Processor	L2 GHz¹ cache	FSB MHz	Memory	Disk	Disk controller	Hot-swap disk bays	PCI slots x bays	Power supply number and type	Ethernet	Available date
8648-32U-32x	1 x Xeon™	2.8	2MB	800	512MB	80GB² SATA 7200	SATA	4 simple-swap	6 x 7	One fixed	Gigabit Sep 2005
8648-34U-34x	1 x Xeon	2.8	2MB	800	512MB	None (open-bay)	Ultra320	6 hot-swap	6 x 9	One fixed	Gigabit Sep 2005
8648-36U-36x	1 x Xeon	2.8	2MB	800	512MB	None (open-bay)	Ultra320	6 hot-swap	6 x 9	Two redundant	Gigabit Sep 2005
8648-E3U-E3x	1 x Xeon	2.8	2MB	800	2GB	None (open-bay)	Ultra320	6 hot-swap	6 x 9	One fixed	Gigabit Sep 2005
8648-E5U-E5x	1 x Xeon	2.8	2MB	800	2GB	None (open-bay)	Ultra320	6 hot-swap	6 x 9	Two redundant	Gigabit Sep 2005
8648-E7U-E7x	1 x Xeon	3.2	2MB	800	2GB	None (open-bay)	Ultra320	6 hot-swap	6 x 9	Two redundant	Gigabit Sep 2005

Processor(s) SMP - L2 Cache Implementation **1 x Intel® Xeon up to 3.4 GHz with 800MHz frontside bus (FSB) / EM64T / 2MB L2 ECC Cache / Hyper-Threading technology** / up to two Xeon Processors (same speed/cache size) / **2MB** std and max / at processor speed
Systemboard contains two Intel 604-pin micro-PGA ZIF sockets, six DIMM slots, six slots (3 PCI-X, 2 PCI, 1 PCI Express x16)

Memory **512MB** std / 16GB¹³ max (16GB maximum can be achieved when 4GB DIMMs are supported, 12GB is the maximum with less than 4GB DIMMs) / two slots used / four slots available / **PC2-3200** 400MHz ECC DDR2-SDRAM DIMMs / Six 240 pin gold-conductor slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / **Error Checking and Correcting (ECC)** via **16-bit Checksum Chipkill™** (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips) available on 1GB (2x512) DIMM Kit and greater

SATA disk controller Dual Channel SATA-150 controller (150MB/sec / two connectors on planar / supports ServerRAID™ 7e
SCSI disk controller **Adaptec® 7902 / dual channel Ultra320 SCSI controller** (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X / ServeRAID 7e supports **RAID-0 & 1 mirroring** / Two 16-bit channels (one internal and one external) / *Internal channel:* Hot-swap models: one 1-drop 16-bit 68-pin LVD SCSI cable to 6-bay backplane; *External channel:* cable available as option pn 24P7929 from systemboard to rear external 68-pin connector

Cables One SCSI cable (listed above), two one-drop SATA, one 2-drop EIDE cable (to CD-ROM),
RAID Controller IBM ServeRAID 7e (RAID 0 Or 1) / on planar / supports SATA or SCSI interface / supports ServeRAID 6i+ controller

Mechanical 4U⁴ Tower (rack mount support via tower-to-rack kit option)
Bus slots (see below) One PCI-Express / three 64-bit (one 133MHz, 2 100MHz) PCI-X 1.0 / two 32-bit/33MHz / no hot-swap Active™ PCI slots
Chipset **Intel E7250 chipset** / E7525 MCH (Memory Controller Hub) for PCI-Express x16(vid), Broadcom, PXH, ICH5R / PXH BUS A supports Adaptec 7902, 2 64bit/100MHz PCI-X slots (5 & 6), BUS B supports one 64bit/133MHz PCI-X slot (4) / ICH5R for two 32-bit/33MHz PCI slots (slots 2 & 3), video, SATA, 4xUSB(2.0), Low Pin Count Interface / NS PC87366 Super I/O off LPC interface

Ethernet One gigabit 10/100/1000 ethernet controller / Broadcom 5721 / full gigabit ethernet MAC and PHY layer functions / chip on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / Alert Standard Format 2.0 / one rear RJ-45 port
CD-ROM / diskette *CD-ROM:* 48X-20X[®] CD-ROM, IDE / *Diskette:* 3.5" 1.44MB diskette drive
Ports *Front:* two USB (Ver 2.0); *Back:* two USB (Ver 2.0), two serial (9-pin), parallel, keyboard, mouse, ethernet (RJ-45), monitor (analog DB-15)

Diagnostics Diagnostic LEDs / error LEDs for fans and memory / server diagnostic programs stored on IBM Enhanced Diagnostics CD
Systems mgmt cntrl Winbond® W791D / chip on planar / monitors system and processor temperature, fan speed and failure, and voltages / **support for optional Remote Supervisor Adapter II** (provides continuous health monitoring and control)
Graphics controller SVGA / ATI® Radeon™ 7000M on Planar / 16MB SDRAM std and max / 15 pin connector

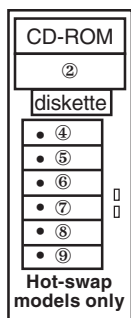
Security Mechanical side panel key lock (locks hot-swap disks on hot-swap models) / optional U-Bolt support via knockout / power-on password / boot sequence control / operation without keyboard/mouse / security slot (for opt cable lock)
Xeon 2.8 GHz/800/2MB L2 Cache EM64TProc Upg 40K2500
Xeon 3.0 GHz/800/2MB L2 Cache EM64TProc Upg 40K2515
Xeon 3.2 GHz/800/2MB L2 Cache EM64TProc Upg 40K2516
Xeon 3.4 GHz/800/2MB L2 Cache EM64TProc Upg 40K2517

Software **ServerGuide™** (CD-based automated network OS installation and configuration tool), IBM Director (system hardware mgmt software) and many utilities
512MB (2x256) PC2-3200 ECC DDR2 39M5818
1GB (2x512) PC2-3200 ECC DDR2 39M5821
2GB (2x1GB) PC2-3200 ECC DDR2 DIMM Kit 39M5809

Keyboard / mouse IBM 101 key keyboard / IBM mouse (both black, 6-pin PS/2)
Cooling fans Up to six / three for processor(s), memory, and disk bays / two power supply cage fans (three in dual power supply model)
All: not redundant / not hot-swap / all variable speed
IBM 80GB SATA-150 (7.2K) simple-swap HDD 40K6864
IBM 160GB SATA-150 (7.2K) simple-swap HDD 40K6868
IBM 250GB SATA-150 (7.2K) simple-swap HDD 40K6872
IBM 36.4GB 15K Ultra320 SCSI Hot-Swap SL HDD 30R5096
IBM 73GB 10K Ultra320 SCSI Hot-Swap SL HDD 40K1023
IBM 146GB 10K Ultra320 SCSI Hot-Swap SL HDD 40K1024

Power supply(s) *Some:* one 530 watt std and max / not hot-swap
Some: two 514 watt std and max / hot-swap / redundant
All: universal / voltage-sensing / Automatic Server Restart (ASR) / cooling fan in power supply(s) (variable spd)
IBM Remote Supervisor Adapter II (PCI adapter) 59P2984
IBM 4U Extended Depth Tower-to-Rack Kit 26K6095
IBM ServeRAID-6i+ controller (adapter for Slot 5) 13N2190
IBM ServeRAID 7i SATA controller 71P8648

- Slot 1: fullsize, PCI-Express x16 (3.3v)*
- Slot 2: fullsize, 32-bit/33MHz, PCI (5v)
- Slot 3: fullsize, 32-bit/33MHz, PCI (5v)
- Slot 4: fullsize, 64-bit 133MHz, PCI-X 1.0 (3.3v)
- Slot 5: fullsize, 64-bit 100MHz, PCI-X 1.0 (3.3v)**
- Slot 6: fullsize, 64-bit 100MHz, PCI-X 1.0 (3.3v)
- * support only for x8 adaptors
- ** slot for opt IBM ServeRAID-6i+



Bay ① 5.25", HH 1.6", access, CD-ROM
Bay ② 5.25", HH 1.6", access, open
Bay ③ 3.5", SL 1", access, diskette

Hot-swap models:
Six bays ④ to ⑨ 3.5", SL 1", access, hot-swp
Simple-swap models: 2 std, 2 avail (up to 4 SATA HDDs maybe added with ServeRAID 7i controller)
Bay ④ 3.5", SL 1", simple-swap
Bay ⑤ 3.5", SL 1", simple-swap
Bay ⑥ 3.5", SL 1", simple-swap
Bay ⑦ 3.5", SL 1", fixed

Maximum internal disk capacity¹³:
SATA: 500GB (2 disks x 250GB); 1TB (4 disks x 250GB) w/ ServeRAID 7i
SCSI: 880.8GB (6 disks x 146.8GB)

Other options at ibm.com/pc/us/accessories

LIMITED WARRANTY³

- ⇒ 1 year parts and labor
- ⇒ International Warranty Service³
- ⇒ On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- ⇒ On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 9x5, NBD response (ServicePac® part num 96P2248)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 96P2249)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 96P2250)
 - 3 year IOR 24x7, 2 hr avg response (ServicePac part num 96P2251)
- ⇒ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ⇒ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information
• = Hot-swap bays in some models

IBM® Type-GAV-model	Processor	L2 GHz¹ cache	FSB MHz	Memory	Disk	Disk controller	Hot-swap disk bays	PCI slots x bays	Power supply number and type	Ethernet	Available date
8488-32U-32x	1 x Xeon™	2.8	2MB	800	512MB	80GB² SATA 7200	SATA	4 simple-swap	6 x 7	One fixed	Gigabit Sep 2005
8488-34U-34x	1 x Xeon	2.8	2MB	800	512MB	None (open-bay)	Ultra320	6 hot-swap	6 x 9	One fixed	Gigabit Sep 2005
8488-36U-36x	1 x Xeon	2.8	2MB	800	512MB	None (open-bay)	Ultra320	6 hot-swap	6 x 9	Two redundant	Gigabit Sep 2005

Processor(s) SMP - L2 Cache Implementation **1 x Intel® Xeon up to 3.4 GHz with 800MHz frontside bus (FSB) / EM64T / 2MB L2 ECC Cache / Hyper-Threading technology 2-way SMP / up to two Xeon Processors (same speed/cache size) / 2MB std and max / at processor speed**
Systemboard contains two Intel 604-pin micro-PGA ZIF sockets, six DIMM slots, six slots (3 PCI-X, 2 PCI, 1 PCI Express x16)

Memory **512MB std / 16GB¹³ max (16GB maximum can be achieved when 4GB DIMMs are supported, 12GB is the maximum with less than 4GB DIMMs) / two slots used / four slots available / PC2-3200 400MHz ECC DDR2-SDRAM DIMMs / Six 240 pin gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips) available on 1GB (2x512) DIMM Kit and greater**

SATA disk controller Dual Channel SATA-150 controller (150MB/sec / two connectors on planar / supports ServeRAID™ 7e
SCSI disk controller **Adaptec® 7902 / dual channel Ultra320 SCSI controller (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X / ServeRAID 7e supports RAID-0 & 1 mirroring / Two 16-bit channels (one internal and one external) / Internal channel: Hot-swap models: one 1-drop 16-bit 68-pin LVD SCSI cable to 6-bay backplane; External channel: cable available as option pn 24P7929 from systemboard to rear external 68-pin connector**

Cables RAID Controller One SCSI cable (listed above), two one-drop SATA, one 2-drop EIDE cable (to CD-ROM),
IBM ServeRAID 7e (RAID 0 Or 1) / on planar / supports SATA or SCSI interface / supports ServeRAID 6i+ controller

Mechanical Bus slots (see below) Chipset **4U⁴ Tower (rack mount support via tower-to-rack kit option) One PCI-Express / three 64-bit (one 133MHz, 2 100MHz) PCI-X 1.0 / two 32-bit/33MHz / no hot-swap Active™ PCI slots Intel E7520 chipset / E7525 MCH (Memory Controller Hub) for PCI-Express x16(vid), Broadcom, PXH, ICH5R / PXH BUS A supports Adaptec 7902, 2 64bit/100MHz PCI-X slots (5 & 6), BUS B supports one 64bit/133MHz PCI-X slot (4) / ICH5R for two 32-bit/33MHz PCI slots (slots 2 & 3), video, SATA, 4xUSB(2.0), Low Pin Count Interface / NS PC87366 Super I/O off LPC interface**

Ethernet One gigabit 10/100/1000 ethernet controller / Broadcom 5721 / full gigabit ethernet MAC and PHY layer functions / chip on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / Alert Standard Format 2.0 / one rear RJ-45 port

CD-ROM / diskette Ports **CD-ROM: 48X-20X⁵ CD-ROM, IDE / Diskette: 3.5" 1.44MB diskette drive Front: two USB (Ver 2.0); Back: two USB (Ver 2.0), two serial (9-pin), parallel, keyboard, mouse, ethernet (RJ-45), monitor (analog DB-15)**

Diagnostics Systems mgmt cntrl Diagnostic LEDs / error LEDs for fans and memory / server diagnostic programs stored on IBM Enhanced Diagnostics CD
Winbond® W791D / chip on planar / monitors system and processor temperature, fan speed and failure, and voltages / support for optional Remote Supervisor Adapter II (provides continuous health monitoring and control)

Graphics controller SVGA / ATI® Radeon™ 7000M on Planar / 16MB SDRAM std and max / 15 pin connector

Security Mechanical side panel key lock (locks hot-swap disks on hot-swap models) / optional U-Bolt support via knockout / power-on password / boot sequence control / operation without keyboard/mouse / security slot (for opt cable lock)

Software **ServerGuide™** (CD-based automated network OS installation and configuration tool), IBM Director (system hardware mgmt software) and many utilities

Keyboard / mouse IBM 101 key keyboard / IBM mouse (both black, 6-pin PS/2)

Cooling fans Up to six / three for processor(s), memory, and disk bays / two power supply cage fans (three in dual power supply model)

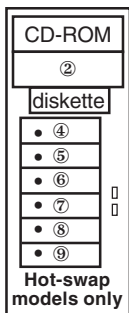
Power supply(s) Not redundant / not hot-swap / all variable speed / One 530 watt std and max / not hot-swap / universal / voltage-sensing / Automatic Server Restart (ASR) / cooling fan in power supply(s) (variable spd)

Xeon 2.8 GHz/800/2MB L2 Cache EM64TProc Upg 40K2500
Xeon 3.0 GHz/800/2MB L2 Cache EM64TProc Upg 40K2515
Xeon 3.2 GHz/800/2MB L2 Cache EM64TProc Upg 40K2516
Xeon 3.4 GHz/800/2MB L2 Cache EM64TProc Upg 40K2517
512MB (2x256) PC2-3200 ECC DDR2 73P3523
1GB (2x512) PC2-3200 ECC DDR2 39M5818
1GB (2x512) PC2-3200 ECC DDR2 ChipK DIMM Kit 39M5821
2GB (2x1GB) PC2-3200 ECC DDR2 DIMM Kit 39M5809
IBM 80GB SATA-150 (7.2K) simple-swap HDD 40K6864
IBM 160GB SATA-150 (7.2K) simple-swap HDD 40K6868
IBM 250GB SATA-150 (7.2K) simple-swap HDD 40K6872
IBM 36.4GB 15K Ultra320 SCSI Hot-Swap SL HDD 30R5096
IBM 73GB 10K Ultra320 SCSI Hot-Swap SL HDD 40K1023
IBM 146GB 10K Ultra320 SCSI Hot-Swap SL HDD 40K1024
48X/32X/48X Max⁶ CD-RW internal (black) 22P7042
IBM Remote Supervisor Adapter II (PCI adapter) 59P2984
IBM 4U Extended Depth Tower-to-Rack Kit 26K6095
IBM ServeRAID-6i+ controller (adapter for Slot 5) 13N2190
IBM ServeRAID 7i SATA controller 71P8648

Other options at ibm.com/pc/us/accessories

- Slot 1: fullsize, PCI-Express x16 (3.3v)*
- Slot 2: fullsize, 32-bit/33MHz, PCI (5v)
- Slot 3: fullsize, 32-bit/33MHz, PCI (5v)
- Slot 4: fullsize, 64-bit 133MHz, PCI-X 1.0 (3.3v)
- Slot 5: fullsize, 64-bit 100MHz, PCI-X 1.0 (3.3v)**
- Slot 6: fullsize, 64-bit 100MHz, PCI-X 1.0 (3.3v)

* support only for x8 adaptors
** slot for opt IBM ServeRAID-6i+



Bay ① 5.25", HH 1.6", access, CD-ROM
Bay ② 5.25", HH 1.6", access, open
Bay ③ 3.5", SL 1", access, diskette

Hot-swap models:
Six bays ④ to ⑨ 3.5", SL 1", access, hot-swp
Simple-swap models: 2 std, 2 avail(up to 4 SATA HDDs maybe added with ServeRAID 7i controller)
Bay ④ 3.5", SL 1", simple-swap
Bay ⑤ 3.5", SL 1", simple-swap
Bay ⑥ 3.5", SL 1", simple-swap
Bay ⑦ 3.5", SL 1", fixed

Maximum internal disk capacity¹³:
SATA: 500GB (2 disks x 250GB); 1TB (4 disks x 250GB) w/ ServeRAID 7i
SCSI: 880.8GB (6 disks x 146.8GB)

- ◇ Raven black color
- ◇ Removable left side panel
- ◇ Configuration/Setup Utility invoked by pressing F1 at startup
- ◇ BIOS Setup Utility via F1 at startup
- ◇ Adaptec Configuration Utility near startup by pressing CTRL+H
- ◇ DMI 2.2-compliant
- ◇ Adv Config Power Interface (ACPI) 1.0a
- ◇ Device Driver and IBM Enhanced Diagnostics CD-ROM included
- ◇ Four stabilizing feet
- ◇ Handle grip on top
- ◇ H 18.4" x W 6.5" x D 25.9"
- ◇ H 467mm x W 165mm x D 658mm
- ◇ 44 to 57 pounds (20 to 25.8kg)
- ◇ Fixed disk models: metal cage for disk bays 4,5,6,7 rotate out of chassis for easy access for cabling
- ◇ Predictive Failure Analysis on disk(s) with IBM Director can alert the administrator of an imminent component failure

LIMITED WARRANTY³

- ⇒ 1 year parts and labor
- ⇒ International Warranty Service³
- ⇒ On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- ⇒ On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 9x5, NBD response (ServicePac® part num 96P2248)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 96P2249)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 96P2250)
 - 3 year IOR 24x7, 2 hr avg response (ServicePac part num 96P2251)
- ⇒ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ⇒ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information
• = Hot-swap bays in some models

IBM® Type-GAV-model	Processor	L2 GHz¹ cache	FSB MHz	Memory	Disk	Disk controller	Hot-swap disk bays	PCI slots x bays	Power supply number and type	Ethernet	Available date
8448-B2U-B2x 1 x Xeon	3.0	2MB	800	512MB	80GB SATA 7200	SATA	4 simple-swap	6 x 7	One fixed	Gigabit	Apr 2006
8448-B4U-B4x 1 x Xeon	3.0	2MB	800	512MB	None (open-bay)	Ultra320	6 hot-swap	6 x 9	One fixed	Gigabit	Apr 2006
8448-B6U-B6x 1 x Xeon	3.0	2MB	800	512MB	None (open-bay)	Ultra320	6 hot-swap	6 x 9	Two redundant	Gigabit	Apr 2006

Processor(s) SMP - L2 Cache Implementation **1 x Intel® Xeon up to 3.4 GHz with 800MHz frontside bus (FSB) / EM64T / 2MB L2 ECC Cache / Hyper-Threading technology 2-way SMP / up to two Xeon Processors (same speed/cache size) / 2MB std and max / at processor speed**
Systemboard contains two Intel 604-pin micro-PGA ZIF sockets, six DIMM slots, six slots (3 PCI-X, 2 PCI, 1 PCI Express x16)

Memory **512MB std / 16GB¹³ max (16GB maximum can be achieved when 4GB DIMMs are supported, 12GB is the maximum with less than 4GB DIMMs) / two slots used / four slots available / PC2-3200 400MHz ECC DDR2-SDRAM DIMMs / Six 240 pin gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips) available on 1GB (2x512) DIMM Kit and greater**

SATA disk controller Dual Channel SATA-150 controller (150MB/sec / two connectors on planar / supports ServeRAID™ 7e
SCSI disk controller **Adaptec® 7902 / dual channel Ultra320 SCSI controller (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X / ServeRAID 7e supports RAID-0 & 1 mirroring / Two 16-bit channels (one internal and one external) / Internal channel: Hot-swap models: one 1-drop 16-bit 68-pin LVD SCSI cable to 6-bay backplane; External channel: cable available as option pn 24P7929 from systemboard to rear external 68-pin connector**

Cables RAID Controller One SCSI cable (listed above), two one-drop SATA, one 2-drop EIDE cable (to CD-ROM),
IBM ServeRAID 7e (RAID 0 Or 1) / on planar / supports SATA or SCSI interface / supports ServeRAID 6i+ controller

Mechanical Bus slots (see below) Chipset **4U⁴ Tower (rack mount support via tower-to-rack kit option) One PCI-Express / three 64-bit (one 133MHz, 2 100MHz) PCI-X 1.0 / two 32-bit/33MHz / no hot-swap Active™ PCI slots Intel E7520 chipset / E7525 MCH (Memory Controller Hub) for PCI-Express x16(vid), Broadcom, PXH, ICH5R / PXH BUS A supports Adaptec 7902, 2 64bit/100MHz PCI-X slots (5 & 6), BUS B supports one 64bit/133MHz PCI-X slot (4) / ICH5R for two 32-bit/33MHz PCI slots (slots 2 & 3), video, SATA, 4xUSB(2.0), Low Pin Count Interface / NS PC87366 Super I/O off LPC interface**

Ethernet One gigabit 10/100/1000 ethernet controller / Broadcom 5721 / full gigabit ethernet MAC and PHY layer functions / chip on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / Alert Standard Format 2.0 / one rear RJ-45 port

CD-ROM / diskette Ports **CD-ROM: 48X-20X⁶ CD-ROM, IDE / Diskette: 3.5" 1.44MB diskette drive Front: two USB (Ver 2.0); Back: two USB (Ver 2.0), two serial (9-pin), parallel, keyboard, mouse, ethernet (RJ-45), monitor (analog DB-15)**

Diagnostics Systems mgmt cntrl Diagnostic LEDs / error LEDs for fans and memory / server diagnostic programs stored on IBM Enhanced Diagnostics CD
Winbond® W791D / chip on planar / monitors system and processor temperature, fan speed and failure, and voltages / support for optional Remote Supervisor Adapter II (provides continuous health monitoring and control)

Graphics controller SVGA / ATI® Radeon™ 7000M on Planar / 16MB SDRAM std and max / 15 pin connector

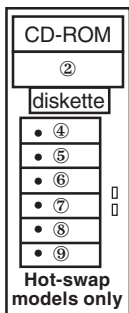
Security Mechanical side panel key lock (locks hot-swap disks on hot-swap models) / optional U-Bolt support via knockout / power-on password / boot sequence control / operation without keyboard/mouse / security slot (for opt cable lock)

Software **ServerGuide™ (CD-based automated network OS installation and configuration tool), IBM Director (system hardware mgmt software) and many utilities**

Xeon 2.8 GHz/800/2MB L2 Cache EM64TProc Upg	40K2500
Xeon 3.0 GHz/800/2MB L2 Cache EM64TProc Upg	40K2515
Xeon 3.2 GHz/800/2MB L2 Cache EM64TProc Upg	40K2516
Xeon 3.4 GHz/800/2MB L2 Cache EM64TProc Upg	40K2517
512MB (2x256) PC2-3200 ECC DDR2	73P3523
1GB (2x512) PC2-3200 ECC DDR2	39M5818
1GB (2x512) PC2-3200 ECC DDR2 ChipK DIMM Kit	39M5821
2GB (2x1GB) PC2-3200 ECC DDR2 DIMM Kit	39M5809
IBM 80GB SATA-150 (7.2K) simple-swap HDD	40K6864
IBM 160GB SATA-150 (7.2K) simple-swap HDD	40K6868
IBM 250GB SATA-150 (7.2K) simple-swap HDD	40K6872
IBM 36.4GB 15K Ultra320 SCSI Hot-Swap SL HDD	30R5096
IBM 73GB 10K Ultra320 SCSI Hot-Swap SL HDD	40K1023
IBM 146GB 10K Ultra320 SCSI Hot-Swap SL HDD	40K1024
48X/32X/48X Max ⁶ CD-RW internal (black)	22P7042
IBM Remote Supervisor Adapter II (PCI adapter)	59P2984
IBM 4U Extended Depth Tower-to-Rack Kit	26K6095
IBM ServeRAID-6i+ controller (adapter for Slot 5)	13N2190
IBM ServeRAID 7i SATA controller	71P8648

- Slot 1: fullsize, PCI-Express x16 (3.3v)*
- Slot 2: fullsize, 32-bit/33MHz, PCI (5v)
- Slot 3: fullsize, 32-bit/33MHz, PCI (5v)
- Slot 4: fullsize, 64-bit 133MHz, PCI-X 1.0 (3.3v)
- Slot 5: fullsize, 64-bit 100MHz, PCI-X 1.0 (3.3v)**
- Slot 6: fullsize, 64-bit 100MHz, PCI-X 1.0 (3.3v)

* support only for x8 adaptors
** slot for opt IBM ServeRAID-6i+



- Bay ① 5.25", HH 1.6", access, CD-ROM
- Bay ② 5.25", HH 1.6", access, open
- Bay ③ 3.5", SL 1", access, diskette
- Hot-swap models: Six bays ④ to ⑨ 3.5", SL 1", access, hot-sw
- Simple-swap models: 2 std, 2 avail(up to 4 SATA HDDs maybe added with ServeRAID 7i controller)
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- Bay ⑤ 3.5", SL 1", simple-swap
- Bay ⑥ 3.5", SL 1", simple-swap
- Bay ⑦ 3.5", SL 1", fixed

Maximum internal disk capacity¹³:
SATA: 500GB (2 disks x 250GB); 1TB (4 disks x 250GB) w/ ServeRAID 7i
SCSI: 880.8GB (6 disks x 146.8GB)

Other options at ibm.com/pc/us/accessories

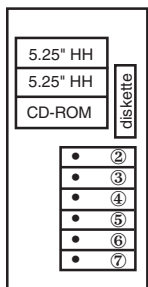
LIMITED WARRANTY³

- ⇒ 1 year parts and labor
- ⇒ International Warranty Service³
- ⇒ On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- ⇒ On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 9x5, NBD response (ServicePac® part num 96P2248)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 96P2249)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 96P2250)
 - 3 year IOR 24x7, 2 hr avg response (ServicePac part num 96P2251)
- ⇒ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ⇒ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information
• = Hot-swap bays in some models

IBM® Type-model	Qty x Processor	Memory	Disk	SCSI controller	Mechanical	Slots x bays	Hot -swap disk bays	Ethernet	Available date
8658-61Y	1 x Pentium® III 1GHz ¹ 133	128MB	None	2 x Ultra160	Tower	5 slots x 10 bays	6 hot-swap	10/100 ethernet	Oct 2000
8658-6RY	1 x Pentium III 1GHz/133	128MB	None	2 x Ultra160	5U rack	5 slots x 10 bays	6 hot-swap	10/100 ethernet	Oct 2000

Intel® processor(s) L2 cache Implementation SMP support Processor upgrades	1 x Pentium® III 1GHz¹ with 133MHz Front Side Bus 256KB std and max / ECC / at processor speed / processor and L2 cache in Single Edge Cartridge (SECC2) Motherboard contains two Intel Slot 1 connectors for SECC2 cartridges (open Slot 1 used by terminator), one VRM socket (one VRM integrated), four DIMM sockets, PCI slots, and integrated subsystems 2-way SMP via second identical processor / upgrade via SECC2 into second Slot 1 CPU connector Models with 800EB and 866MHz can not upgrade to 933MHz								
Memory - std / max Memory - sockets Memory - features	128MB std / 4GB max 4 sockets / 3 available / ECC (all have Error Checking and Correcting (ECC) memory controller) / non-interleaved SDRAM / 133MHz / four 168-pin gold-plated sockets / PC133-compliant / supports registered SDRAM ECC DIMMs only								
SCSI disk controller SCSI channels IDE controller / cable	Adaptec® AHA-7899 / dual channel Wide Ultra160 SCSI controller (LVD 160MB/sec) / Ultra 160/m / on planar / 64-bit PCI / supports IBM ServeRAID adapters (no hardware RAID standard) Two internal 16-bit channels / both internal (no external) <i>SCSI Channel A:</i> 16-bit 68-pin LVD cable from controller to backplane <i>Channel B:</i> 16-bit 68-pin interface (not used) Single Primary IDE (ROSB4) South Bridge / one connector on planar / one 1 drop IDE cable (CD-ROM)								
Disk - capacity Disk - bays	None standard / supports 7200-10000 rpm disks / 1 backplane Six hot-swap / 80-pin SCA-2 connectors / common tray with EXP200 and later systems like Netfinity and xSeries systems							All models: Max int disk capacity: 218.4GB ² with six 36.4GB SL disks	
Mechanical Rack support Bus slots (see below) Chip set Bays / available	Tower or EIA 19" Rack (5U⁴) Rack systems supported in IBM NetfinityRacks / kit available to convert tower to rack (no rack to tower conversion) PCI 2.1 (33MHz) / dual peer PCI / 64-bit PCI (three PCI slots, SCSI controller) / 32-bit PCI (two PCI slots, graphics, ethernet, South Bridge) / no hot-swap slots ServerWorks® ServerSet III™ LE chip set / NB6635 North Bridge 3.0LE / IB6566 South Bridge for IDE, USB, ISA bus for Service Processor and Super I/O National Semiconductor® PC97317VUL (diskette, parallel, serial, keyboard, mouse) (See diagram below): 10 bays / three 5.25" HH bays (1 used by CD-ROM) / one diskette bay / six hot-swap bays								
10/100 ethernet CD-ROM / diskette Serial / parallel / USB Graphics controller	AMD® Am79C975 / on planar / 10BaseT, 100BaseTX / full duplex / RJ-45 connector / 3 front LEDs 40X-17X ⁶ CD-ROM / multisession / IDE interface / 1.6" HH / bootable; <i>Diskette:</i> 3.5" 1.44MB diskette drive / dust cover <i>Serial:</i> Three 9-pin (one for Mgmt Processor) <i>Parallel:</i> One (EPP, ECP) / IEEE 1284 <i>USB:</i> Two ports (Version 1.1) SVGA / PCI 2.1 bus / S3® Savage4 (on planar) / 8MB SDRAM std/max / 1280x1024 at 16M colors at 100Hz / DDC2B								
Security	Power-on password / administrator password / system owner's name / hinged and lockable front door to cover disk bays, power button, and reset button (tower only) / unattended boot / selectable boot / systems mgmt security (user log-in password, read-only or read/write access, dial back) / unattended start mode								
Systems mgmt Diagnostics Software	Netfinity Advanced System Mgmt Processor / on planar / provides remote console and mgmt / allows diagnostic, reset, POST, and auto recovery functions / monitors temperature, fans, and power supplies / rear knockout for planar to RJ-11 cable (from optional Sys Mgmt Proc Interconnect Cable Kit) Diagnostics LED Panel (under cover) / Light Path Diagnostics™ provides an LED map to failing component / system board error LEDs / diagnostics in ROM by pressing F2 at startup for PC-Doctor ServerGuide™ (CD-ROM installation and configuration utilities), AntiVirus software, APC PowerChute Plus, IBM Director, others								
Keyboard / mouse Power supply	Tower only: IBM 101-key keyboard / IBM mouse (both black) Std: one 250 watt hot-swap; Max: three 250 watt hot-swap with optional Exp Kit 37L6881 / redundant with two power supplies / worldwide / voltage-sensing / auto-restart / fans in each power supply			Pentium III 1GHz/133MHz/256KB Proc Upg 19K4640 128MB SDRAM ECC DIMM 133MHz RDIMM II 33L3123 256MB SDRAM ECC DIMM 133MHz RDIMM II 33L3125 512MB SDRAM ECC DIMM 133MHz RDIMM II 33L3127 1GB SDRAM ECC DIMM 133MHz RDIMM II 33L3129 Netfinity 5Ux24D Tower-to-Rack Kit 37L6858 Netfinity 250W Hot-Swap Redundant Pwr Supply 33L3760					
Fans	Two (fan in rear, blower in front) / not hot-swap / PFA / fan failure signals Diagnostic LED and Mgmt Processor / fan in each power supply			Netfinity Media Bay Conversion Kit 10K2340 Hot-Swap Power Supply Expansion Kit (3 conn) 37L6881 18.2GB 15K rpm Ultra160 SCSI Hot-Swap HDD 19K0656 Sys Mgmt Proc Interconnect Cable Kit 03K9309					
Prerequisites	Monitor, disk, network operating system, keybd/mouse (rack)								

Slot 1: fullsize, 32-bit 33MHz PCI 2.1 (5v), Bus A Slot 2: fullsize, 32-bit 33MHz PCI 2.1 (5v), Bus A Slot 3: fullsize, 64-bit 33MHz PCI 2.1 (5v), Bus B Slot 4: fullsize, 64-bit 33MHz PCI 2.1 (5v), Bus B Slot 5: fullsize, 64-bit 33MHz PCI 2.1 (5v), Bus B	<ul style="list-style-type: none"> ➤ Removable, easy release left/top side panel ➤ Quick release adapter slots (no screws) ➤ Rail system enables devices (CD-ROM, diskette, tape drives) to snap in and out without screws ➤ Configuration/Setup Utility invoked by pressing F1 at startup ➤ SCSISelect near startup by pressing CTRL+A ➤ Operator Information Panel (in front) ➤ Predictive failure analysis on disk options, memory, processors, VRMs, power supplies, and fans in conjunction with Netfinity Director can alert the system administrator of an imminent component failure ➤ Tower: H 16.8" x W 8.6" x D 26.0" ➤ Rack: H 8.6" x W 16.8" x D 24.8" ➤ 55.7 to 82.7 pounds ➤ Stealth black color ➤ All non-hot-swaps bays use rails (no screws) for devices 	<p align="center">LIMITED WARRANTY³</p> <ul style="list-style-type: none"> ➤ 3 year parts and labor ➤ International Warranty Service³ ➤ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷ ➤ 3 year on site warranty service upgrade options (in eligible locations):⁷ <ul style="list-style-type: none"> • 24 hr x 7 day coverage, 4 hour response time • 24 hr x 7 day coverage, 2 hour response time ➤ IBM Server Start Up Support ➤ 24 hour x 7 day¹⁴ telephone, electronic, and internet support
 <p>Bay ① 3.5", SL 1", access, diskette Bay ② 3.5", SL 1", access, hot swap Bay ③ 3.5", SL 1", access, hot swap Bay ④ 3.5", SL 1", access, hot swap Bay ⑤ 3.5", SL 1", access, hot swap Bay ⑥ 3.5", SL 1", access, hot swap Bay ⑦ 3.5", SL 1", access, hot swap Bay ⑧ 5.25", HH 1.6" access, open Bay ⑨ 5.25", HH 1.6" access, open Bay ⑩ 5.25", HH 1.6" access, CD-ROM</p> <p>Bays 2 through 7 support 6 SL disks or 3 HH hot-swap disks via SCA-2 connectors; Bays 8 and 9 support 3.5" disks via Media Bay Conversion Kit</p>	<p>Rack or Tower (tower shown above)</p>	

* For a copy of IBM's Statement of Limited Warranty, call 1-800-772-2227
 • = Hot-swap
 US model withdrawn effective December 2001
 No warranties are expressed or implied in this summary (X230) © IBM Corp. November 2001

IBM® Type-model	Qty x Processor	L2 cache	Memory	Disk	SCSI controller	Mechanical	Slots x bays (hot-swap)	Power supply	Ethernet	Available date
8668-11X	1 x Pentium® III 1.0GHz/133	256KB	256MB	None	2 x Ultra160	Tower	5x10 (6 hot-swap)	1 pwr supp	10/100	Jul 2001
8668-1RX	1 x Pentium III 1.0GHz/133	256KB	256MB	None	2 x Ultra160	5U rack	5x10 (6 hot-swap)	1 pwr supp	10/100	Jul 2001
8668-21X	1 x Pentium III 1.13GHz/133	512KB	256MB	None	2 x Ultra160	Tower	5x10 (6 hot-swap)	1 pwr supp	10/100	Jul 2001
8668-22X	1 x Pentium III 1.13GHz/133	512KB	256MB	None	2 x Ultra160	Tower	5x10 (6 hot-swap)	2 hot-swap	10/100	Jun 2001
8668-2RX	1 x Pentium III 1.13GHz/133	512KB	256MB	None	2 x Ultra160	5U rack	5x10 (6 hot-swap)	1 pwr supp	10/100	Jul 2001
8668-2SX	1 x Pentium III 1.13GHz/133	512KB	256MB	None	2 x Ultra160	5U rack	5x10 (6 hot-swap)	2 hot-swap	10/100	Jun 2001

Positioning Processor(s) *Universal server; right blend of price and performance; easy-to-manage departmental server for hardworking businesses*
 1 x Intel® Pentium® III 1.0 or 1.13GHz with 133MHz frontside bus / upgrade to 1.26GHz supported
 L2 cache **256KB** or **512KB** std and max / ECC / at processor speed / processor and L2 cache in Flip Chip Pin Grid Array (FC-PGA2)
 Implementation Motherboard contains two Intel PGA370 sockets, four DIMM sockets, five PCI slots, and integrated subsystems
 SMP support **2-way SMP** via second identical processor / upgrade via FC-PGA2 into second PGA370 socket

Memory **256MB std / 4GB max**¹³ / 4 sockets / 2 available / **ECC** (all have Error Checking and Correcting (ECC) memory controller) / matched pairs required / two-way interleaving / **SDRAM / 133MHz** / four 168-pin gold-plated sockets / PC133-compliant / supports registered SDRAM ECC DIMMs only

SCSI disk controller **Adaptec® AHA-7899 / dual channel Wide Ultra160 SCSI controller** (LVD 160MB/sec) / Ultra 160/m / on planar / 64-bit PCI / supports IBM ServeRAID™ adapters (no hardware RAID standard)

SCSI channels Two internal 16-bit channels / both internal (no external)
SCSI Channel A: 16-bit 68-pin LVD cable from controller to backplane; *Channel B:* 16-bit 68-pin interface (not used)

IDE controller / cable Single Primary IDE South Bridge / one connector on planar / one 1-drop IDE cable (CD-ROM)
 Disk - capacity **None standard** / supports 7200-15000 rpm disks / one backplane
 Disk - bays Six hot-swap / 80-pin SCA-2 connectors / three additional hot-swap disk bays with Kit 33L5050

Mechanical **Tower or EIA 19" Rack (5U⁴)**
 Rack support Rack systems supported in IBM NetBAY™ Racks / kit available to convert tower to rack (no rack to tower conversion)
 Bus slots (See below) three peer PCI buses / no hot-swap Active™ PCI slots
 Chip set **ServerWorks® HE-SL chip set** / NB6576 North Bridge for CIOB and PCI A (slot, graphics, south bridge) / NB6555 Champion I/O Bridge (CIOB) for PCI Bus B (slots, ethernet) and C (slots, SCSI) / IB6566 South Bridge for IDE, USB, ISA bus for Super I/O National Semiconductor® PC97317VUL (diskette, serial, keyboard, mouse)
 Bays (See diagram below): 10 bays / three 5.25" HH bays (1 used by CD-ROM) / one diskette bay / six hot-swap bays

10/100 ethernet Intel 82550 / on planar / 10BaseT, 100BaseTX, 100BaseFX / full duplex / supports Wake on LAN® and Alert on LAN™ 2
 CD-ROM / diskette 48X-20X⁶ CD-ROM / multisession / IDE interface / 1.6" HH / bootable; *Diskette:* 3.5" 1.44MB diskette drive / dust cover
 Rear ports *Serial:* three 9-pin (one disabled); *USB:* two ports (Ver 1.1); keyboard; mouse; no parallel port; *Adv Sys Mgmt:* two RJ-45
 Graphics controller SVGA / PCI 2.2 bus / S3® Savage4 (on planar) / 8MB SDRAM std/max / 1280x1024 at 16M colors at 100Hz / 15-pin D-shell

Security Power-on password / administrator password / hinged and lockable front door to cover disk bays, power button, and reset button (tower only) / unattended boot / selectable boot

Systems mgmt Integrated system management processor (Hitachi® H8S2148) / on planar using SMBus / monitors temperature, fans, voltage, and power supplies / support for optional IBM Remote Supervisor Adapter with 20-pin connector on planar for continuous power (no external power required)

Diagnostics **Diagnostics LED Panel** (under cover) / Light Path Diagnostics™ provides an LED map to failing component / system board error LEDs / diagnostics in ROM by pressing F2 at startup for PC-Doctor

Software **ServerGuide™** (CD-ROM installation and configuration utilities), AntiVirus software, IBM Director, others

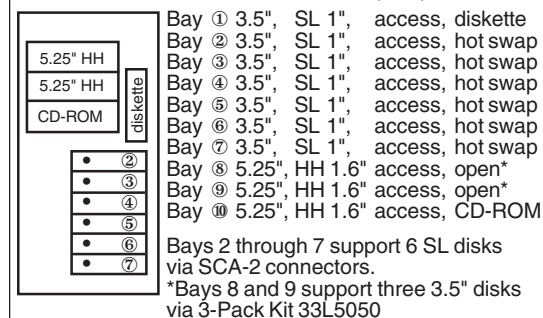
Keyboard / mouse	<i>Tower only:</i> IBM 101-key keyboard / IBM mouse (both black)	Pentium III 1GHz/133MHz/256KB Proc Upg	24P3511
Power supply	<i>Some:</i> std: one 385 watt / not hot-swap or redundant; max: three 250 watt hot-swap with optional Kit 24P3513 and requires three new 250 watt power supplies <i>Some:</i> two 250 watt hot-swap; supports third without Kit <i>All:</i> redundant with two 250 w power supplies / worldwide / voltage-sensing / auto-restart / fan in each power supply	Pentium III 1.13GHz-S/133MHz/512KB Proc Upg Pentium III 1.26GHz-S/133MHz/512KB Proc Upg 128MB SDRAM ECC DIMM 133MHz RDIMM 256MB SDRAM ECC DIMM 133MHz RDIMM 512MB SDRAM ECC DIMM 133MHz RDIMM 1GB SDRAM ECC DIMM 133MHz RDIMM 5Ux24D Tower-to-Rack Kit II	24P3512 25P2600 33L3320 33L3322 33L3324 33L3326 21P9593

Fans Two fans (front and rear), multispeed / not hot-swap / PFA / fan failure signals Diagnostic LED and mgmt processor / fan in each power supply / fan on each Pentium III processor
 Prerequisites Monitor, disk, network operating system, keybd/mouse (rack)

All models: Max int disk capacity: 660.6GB² with nine 73.6GB SL disks with 3-Pack Ultra160 Hot-Swap Expansion Kit

Netfinity® 250W Hot-Swap Redundant Pwr Supply	33L3760
Netfinity Media Bay Conversion Kit	10K2340
Hot-Swap Power Conversion Kit (3 connectors)	24P3513
3-Pack Ultra160 Hot-Swap Expansion Kit	33L5050
Remote Supervisor Adapter	09N7585
36.4GB 10K-4 Ultra160 SCSI Hot-Swap SL HDD	37L7206
IBM T540 15" Flat Panel Monitor (black)	9511AG4

- Slot 1: fullsize, 32-bit 33MHz PCI 2.2 (5v), Bus A
- Slot 2: fullsize, 64-bit 33MHz PCI 2.2 (5v), Bus B
- Slot 3: fullsize, 64-bit 33MHz PCI 2.2 (5v), Bus B
- Slot 4: fullsize, 64-bit 66MHz PCI 2.2 (3.3v), Bus C
- Slot 5: fullsize, 64-bit 66MHz PCI 2.2 (3.3v), Bus C



- Removable, easy release left/top side panel
- Quick release adapter slots (no screws)
- Rail system enables devices (CD-ROM, diskette, tape drives) to snap in and out without screws
- Configuration/Setup Utility invoked by pressing F1 at startup
- SCSISelect near startup by pressing CTRL+A
- Operator Information Panel (in front)
- Predictive failure analysis on disk options, memory, processors, VRMs, power supplies, and fans in conjunction with IBM Director can alert the system administrator of an imminent component failure
- Tower: H 16.8" x W 8.6" x D 26.0"
- Rack: H 8.6" x W 16.8" x D 24.8"
- 55.7 to 82.7 pounds
- Stealth black color
- All non-hot-swaps bays use rails (no screws) for devices

LIMITED WARRANTY³

- 3 year parts and labor
- **International Warranty Service³**
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- 3 year on site warranty service upgrade options (in eligible locations):⁷
 - 9 hr coverage, Mon-Fri excluding holidays, 4 hr response time
 - 24 hr x 7 day coverage, 4 hour average response time
 - 24 hr x 7 day coverage, 2 hour average response time
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

Rack or Tower (tower shown above)

See footnotes for important warranty information
 US models announced June 26, 2001; US models withdrawn effective March 2002 or June 2002
 • = Hot-swap

IBM® Type-model	Qty x Processor	L2 cache	Memory	Disk	SCSI controller	Mechanical	Slots x bays (hot-swap)	Power supply	Ethernet	Available date
8668-41X	1 x Pentium® III 1.26GHz/133	512KB	256MB	None	2 x Ultra160	Tower	5x10 (6 hot-swap)	1 pwr supp	10/100	Aug 2001
8668-42X	1 x Pentium III 1.26GHz/133	512KB	256MB	None	2 x Ultra160	Tower	5x10 (6 hot-swap)	2 hot-swap	10/100	Aug 2001
8668-4RX	1 x Pentium III 1.26GHz/133	512KB	256MB	None	2 x Ultra160	5U rack	5x10 (6 hot-swap)	1 pwr supp	10/100	Aug 2001
8668-4SX	1 x Pentium III 1.26GHz/133	512KB	256MB	None	2 x Ultra160	5U rack	5x10 (6 hot-swap)	2 hot-swap	10/100	Aug 2001

Positioning Processor(s) *Universal server; right blend of price and performance; easy-to-manage departmental server for hardworking businesses*
1 x Intel® Pentium® III 1.26GHz-S with 133MHz frontside bus
 L2 cache **512KB** std and max / ECC / at processor speed / processor and L2 cache in Flip Chip Pin Grid Array (FC-PGA2)
 Implementation Motherboard contains two Intel PGA370 sockets, four DIMM sockets, five PCI slots, and integrated subsystems
 SMP support **2-way SMP** via second identical processor / upgrade via FC-PGA2 into second PGA370 socket

Memory **256MB std / 4GB max¹³ / 4 sockets / 2 available / ECC** (all have Error Checking and Correcting (ECC) memory controller) / matched pairs required / two-way interleaving / **SDRAM / 133MHz** / four 168-pin gold-plated sockets / PC133-compliant / supports registered SDRAM ECC DIMMs only

SCSI disk controller **Adaptec® AHA-7899 / dual channel Wide Ultra160 SCSI controller** (LVD 160MB/sec) / Ultra 160/m / on planar / 64-bit PCI / supports IBM ServeRAID™ adapters (no hardware RAID standard)
 SCSI channels Two internal 16-bit channels / both internal (no external)
SCSI Channel A: 16-bit 68-pin LVD cable from controller to backplane; *Channel B:* 16-bit 68-pin interface (not used)
 IDE controller / cable Single Primary IDE South Bridge / one connector on planar / one 1-drop IDE cable (CD-ROM)
 Disk - capacity **None standard** / supports 7200-15000 rpm disks / one backplane
 Disk - bays Six hot-swap / 80-pin SCA-2 connectors / three additional hot-swap disk bays with Kit 33L5050

Mechanical **Tower or EIA 19" Rack (5U⁴)**
 Rack support Rack systems supported in IBM NetBAY™ Racks / kit available to convert tower to rack (no rack to tower conversion)
 Bus slots (See below) three peer PCI buses / no hot-swap Active™ PCI slots
 Chip set **ServerWorks® HE-SL chip set** / NB6576 North Bridge for CIOB and PCI A (slot, graphics, south bridge) / NB6555 Champion I/O Bridge (CIOB) for PCI Bus B (slots, ethernet) and C (slots, SCSI) / IB6566 South Bridge for IDE, USB, ISA bus for Super I/O National Semiconductor® PC97317VUL (diskette, serial, keyboard, mouse)
 Bays (See diagram below): 10 bays / three 5.25" HH bays (1 used by CD-ROM) / one diskette bay / six hot-swap bays

10/100 ethernet Intel 82550 / on planar / 10BaseT, 100BaseTX, 100BaseFX / full duplex / supports Wake on LAN® and Alert on LAN™ 2
 CD-ROM / diskette 48X-20X® CD-ROM / multisession / IDE interface / 1.6" HH / bootable; *Diskette:* 3.5" 1.44MB diskette drive / dust cover
 Rear ports *Serial:* three 9-pin (one disabled); *USB:* two ports (Ver 1.1); keyboard; mouse; no parallel port; *Adv Sys Mgmt:* two RJ-45
 Graphics controller SVGA / PCI 2.2 bus / S3® Savage4 (on planar) / 8MB SDRAM std/max / 1280x1024 at 16M colors at 100Hz / 15-pin D-shell

Security Power-on password / administrator password / hinged and lockable front door to cover disk bays, power button, and reset button (tower only) / unattended boot / selectable boot

Systems mgmt **IBM integrated system management processor (ISMP)** / Hitachi® H8S2148 / on planar using SMBus / monitors temperature, fans, voltage, and power supplies / support for optional IBM Remote Supervisor Adapter with 20-pin connector on planar for continuous power (no external power required)

Diagnostics **Diagnostics LED Panel** (under cover) / Light Path Diagnostics™ provides an LED map to failing component / system board error LEDs / diagnostics in ROM by pressing F2 at startup for PC-Doctor

Software **ServerGuide™** (CD-ROM installation and configuration utilities), AntiVirus software, IBM Director, others

Keyboard / mouse *Tower only:* IBM 101-key keyboard / IBM mouse (both black)
 Power supply *Some:* std: one 385 watt / not hot-swap or redundant; max: three 250 watt hot-swap with optional Kit 24P3513 and requires three new 250 watt power supplies
Some: two 250 watt hot-swap; supports third without Kit
All: redundant with two 250 w power supplies / worldwide / voltage-sensing / auto-restart / fan in each power supply

Fans Two fans (front and rear), multispeed / not hot-swap / PFA / fan failure signals Diagnostic LED and mgmt processor / fan in each power supply / fan on each Pentium III processor
 Prerequisites Monitor, disk, network operating system, keybd/mouse (rack)
All models: Max int disk capacity: 660.6GB² with nine 73.6GB SL disks with 3-Pack Ultra160 Hot-Swap Expansion Kit

Slot 1: fullsize, 32-bit 33MHz PCI 2.2 (5v), Bus A
 Slot 2: fullsize, 64-bit 33MHz PCI 2.2 (5v), Bus B
 Slot 3: fullsize, 64-bit 33MHz PCI 2.2 (5v), Bus B
 Slot 4: fullsize, 64-bit 66MHz PCI 2.2 (3.3v), Bus C
 Slot 5: fullsize, 64-bit 66MHz PCI 2.2 (3.3v), Bus C

Bay ① 3.5", SL 1", access, diskette
 Bay ② 3.5", SL 1", access, hot-swap
 Bay ③ 3.5", SL 1", access, hot-swap
 Bay ④ 3.5", SL 1", access, hot-swap
 Bay ⑤ 3.5", SL 1", access, hot-swap
 Bay ⑥ 3.5", SL 1", access, hot-swap
 Bay ⑦ 3.5", SL 1", access, hot-swap
 Bay ⑧ 5.25", HH 1.6" access, open*
 Bay ⑨ 5.25", HH 1.6" access, open*
 Bay ⑩ 5.25", HH 1.6" access, CD-ROM

Bays 2 through 7 support 6 SL disks via SCA-2 connectors.
 * Bays 8 and 9 support three 3.5" disks via 3-Pack Kit 33L5050

Rack or Tower (tower shown above)

- Removable, easy release left/top side panel
- Quick release adapter slots (no screws)
- Rail system enables devices (CD-ROM, diskette, tape drives) to snap in and out without screws
- Configuration/Setup Utility invoked by pressing F1 at startup
- SCSISelect near startup by pressing CTRL+A
- Operator Information Panel (in front)
- Predictive failure analysis on disk options, memory, processors, VRMs, power supplies, and fans in conjunction with IBM Director can alert the system administrator of an imminent component failure
- Tower: H 16.8" x W 8.6" x D 26.0"
- Rack: H 8.6" x W 16.8" x D 24.8"
- 55.7 to 82.7 pounds
- Stealth black color
- All non-hot-swaps bays use rails (no screws) for devices

LIMITED WARRANTY³

- **3 year parts and labor**
- **International Warranty Service³**
- **On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷**
- **3 year on site warranty service upgrade options (in eligible locations):⁷**
 - 9 hr coverage, Mon-Fri excluding holidays, 4 hr response time
 - 24 hr x 7 day coverage, 4 hour average response time
 - 24 hr x 7 day coverage, 2 hour average response time
- **24x7¹⁴ toll-free support for warranty issues during the warranty period³**

IBM® Type-model	Qty x Processor	L2 cache	Memory	Disk	SCSI controller	Mechanical	Slots x bays (hot-swap)	Power supply	Ethernet	Available date
8668-24X	1 x Pentium® III 1.13GHz	512KB	256MB	None	2 x Ultra160	Tower	5x10 (6 hot-swap)	2 hot-swap	10/100	Dec 2001
8668-2TX	1 x Pentium III 1.13GHz	512KB	256MB	None	2 x Ultra160	5U rack	5x10 (6 hot-swap)	2 hot-swap	10/100	Dec 2001
8668-44X	1 x Pentium III 1.26GHz	512KB	256MB	None	2 x Ultra160	Tower	5x10 (6 hot-swap)	2 hot-swap	10/100	Dec 2001
8668-4TX	1 x Pentium III 1.26GHz	512KB	256MB	None	2 x Ultra160	5U rack	5x10 (6 hot-swap)	2 hot-swap	10/100	Dec 2001
8668-54X	1 x Pentium III 1.4GHz	512KB	256MB	None	2 x Ultra160	Tower	5x10 (6 hot-swap)	2 hot-swap	10/100	Feb 2002
8668-5TX	1 x Pentium III 1.4GHz	512KB	256MB	None	2 x Ultra160	5U rack	5x10 (6 hot-swap)	2 hot-swap	10/100	Feb 2002

Positioning Processor(s) **1 x Intel® Pentium® III 1.13, 1.26, or 1.4GHz-S with 133MHz frontside bus** / passive heat sink
 L2 cache **512KB** std and max / ECC / at processor speed / processor and L2 cache in Flip Chip Pin Grid Array (FC-PGA2)
 Implementation Motherboard contains two Intel PGA370 sockets, four DIMM sockets, five PCI slots, and integrated subsystems
 SMP support **2-way SMP** via second identical processor / upgrade via FC-PGA2 into second PGA370 socket

Memory **256MB std / 4GB max¹³ / 4 sockets / 2 available / ECC** (all have Error Checking and Correcting (ECC) memory controller) / matched pairs required / two-way interleaving / **SDRAM / 133MHz** / four 168-pin gold-plated sockets / PC133-compliant / supports registered SDRAM ECC DIMMs only

SCSI disk controller **Adaptec® AHA-7899 / dual channel Wide Ultra160 SCSI controller** (LVD 160MB/sec) / Ultra160 / on planar / 64-bit PCI / supports IBM ServeRAID™ adapters (no hardware RAID standard)

SCSI channels Two internal 16-bit channels / both internal (no external)
 SCSI Channel A: 16-bit 68-pin LVD cable from controller to backplane; Channel B: 16-bit 68-pin interface (not used)

IDE controller / cable Single Primary IDE South Bridge / one connector on planar / one 1-drop IDE cable (CD-ROM)

Disk - capacity **None standard** / supports 7200-15000 rpm disks / one backplane
 Disk - bays Six hot-swap / 80-pin SCA-2 connectors / three additional hot-swap disk bays with Kit 33L5050

Mechanical **Tower or EIA 19" Rack (5U⁴)**
 Rack systems supported in IBM NetBAY™ Racks / kit available to convert tower to rack (no rack to tower conversion)
 Rack slots supported in IBM NetBAY™ Racks / kit available to convert tower to rack (no rack to tower conversion)
 Bus slots (See below) three peer PCI buses / no hot-swap Active™ PCI slots
 Chip set **ServerWorks® HE-SL chip set** / NB6576 North Bridge for CIOB and PCI A (slot, graphics, south bridge) / NB6555 Champion I/O Bridge (CIOB) for PCI Bus B (slots, ethernet) and C (slots, SCSI) / IB6566 South Bridge for IDE, USB, ISA bus for Super I/O National Semiconductor® PC97317VUL (diskette, serial, keyboard, mouse)

Bays (See diagram below): 10 bays / three 5.25" HH bays (1 used by CD-ROM) / one diskette bay / six hot-swap bays

10/100 ethernet Intel 82550 / on planar / 10BaseT, 100BaseTX, 100BaseFX / full duplex / supports Wake on LAN® and Alert on LAN™ 2
 CD-ROM / diskette 48X-20X CD-ROM / multisession / IDE interface / 1.6" HH / bootable; Diskette: 3.5" 1.44MB diskette drive / dust cover
 Rear ports Serial: three 9-pin (one disabled); USB: two ports (Vers 1.1); keyboard; mouse; no parallel port; Adv Sys Mgmt: two RJ-45
 Graphics controller SVGA / PCI 2.2 bus / S3® Savage4 (on planar) / 8MB SDRAM std/max / 1280x1024 at 16M colors at 100Hz / 15-pin D-shell

Security Power-on password / administrator password / hinged and lockable front door to cover disk bays, power button, and reset button (tower only) / unattended boot / selectable boot

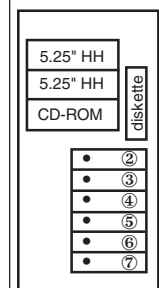
Systems mgmt **IBM integrated system management processor (ISMP)** / Hitachi® H8S2148 / on planar using SMBus / monitors temperature, fans, voltage, and power supplies / support for optional IBM Remote Supervisor Adapter with 20-pin connector on planar for continuous power (no external power required)

Diagnostics **Diagnostics LED Panel** (under cover) / Light Path Diagnostics™ provides an LED map to failing component / system board error LEDs / diagnostics in ROM by pressing F2 at startup for PC-Doctor

Software	ServerGuide™ (CD-ROM installation and configuration utilities), AntiVirus software, IBM Director, others	22P1997 22P1998 48P7467 33L3320 33L3322 33L3324 33L3326 06P5755 06P5756 10K2340 33L5050 33L3760 09N7585 21P9593
Keyboard / mouse	Tower only: IBM 101-key kybrd / IBM mouse (both black)	Pentium III 1.13GHz-S/133MHz/512KB Proc Upg Pentium III 1.26GHz-S/133MHz/512KB Proc Upg Pentium III 1.4GHz-S/133MHz/512KB Proc Upg 128MB SDRAM ECC DIMM 133MHz RDIMM 256MB SDRAM ECC DIMM 133MHz RDIMM 512MB SDRAM ECC DIMM 133MHz RDIMM 1GB SDRAM ECC DIMM 133MHz RDIMM 36.4GB 10K Ultra160 SCSI Hot-Swap SL HDD 73.4GB 10K Ultra160 SCSI Hot-Swap SL HDD Netfinity Media Bay Conversion Kit 3-Pack Ultra160 Hot-Swap Expansion Kit Netfinity® 250W Hot-Swap Redundant Pwr Supply Remote Supervisor Adapter 5Ux24D Tower-to-Rack Kit II Other options at ibm.com/pc/us/accessories
Power supply	Std: two 250 watt hot-swap / max: three / redundant / worldwide / voltage-sensing / auto-restart	
Fans	Four fans (two front and two rear), multispeed / hot-swap / redundant / PFA / fan failure signals Diagnostic LED and mgmt processor / fan in each power supply	
Prerequisites	Monitor, disk, network operating system, rack models require keyboard and mouse	

All models: Max int disk capacity: 660.6GB² with nine 73.6GB SL disks with 3-Pack Ultra160 Hot-Swap Expansion Kit

- Slot 1: fullsize, 32-bit 33MHz PCI 2.2 (5v), Bus A
- Slot 2: fullsize, 64-bit 33MHz PCI 2.2 (5v), Bus B
- Slot 3: fullsize, 64-bit 33MHz PCI 2.2 (5v), Bus B
- Slot 4: fullsize, 64-bit 66MHz PCI 2.2 (3.3v), Bus C
- Slot 5: fullsize, 64-bit 66MHz PCI 2.2 (3.3v), Bus C



- Bay ① 3.5", SL 1", access, diskette
- Bay ② 3.5", SL 1", access, hot-swap
- Bay ③ 3.5", SL 1", access, hot-swap
- Bay ④ 3.5", SL 1", access, hot-swap
- Bay ⑤ 3.5", SL 1", access, hot-swap
- Bay ⑥ 3.5", SL 1", access, hot-swap
- Bay ⑦ 3.5", SL 1", access, hot-swap
- Bay ⑧ 5.25", HH 1.6" access, open**
- Bay ⑨ 5.25", HH 1.6" access, open**
- Bay ⑩ 5.25", HH 1.6" access, CD-ROM

Bays 2 through 7 support 6 SL disks via SCA-2 connectors.
 **Bays 8 and 9 support three 3.5" disks via 3-Pack Kit 33L5050

- Removable, easy release left/top side panel
- Quick release adapter slots (no screws)
- Rail system enables devices (CD-ROM, diskette, tape drives) to snap in and out without screws
- Configuration/Setup Utility invoked by pressing F1 at startup
- SCSISelect near startup by pressing CTRL+A
- Operator Information Panel (in front)
- Predictive failure analysis on disk options, memory, processors, VRMs, power supplies, and fans in conjunction with IBM Director can alert the system administrator of an imminent component failure
- Tower: H 17.3" x W 8.6" x D 27.6"
- Rack: H 8.6" x W 16.8" x D 27.1"
- 55.7 to 82.7 pounds
- Stealth black color
- All non-hot-swaps bays use rails (no screws) for devices

LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- 3 year on site warranty service upgrade options (in eligible locations):⁷
 - 9 hour coverage, Mon-Fri excluding holidays, 4 hour average response (ServicePac® part num 21P2083)
 - 24 hr x 7 day coverage, 4 hour average response (ServicePac part number 21P2084)
 - 24 hr x 7 day coverage, 2 hour average response (ServicePac part number 21P2085)
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information

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• = Hot-swap
 US models announced on November 27, 2001, or February 12, 2002
 US models withdrawn effective June 2002 or September 2002

IBM® Type-model	Qty x Processor	L2 cache	Memory	Memory type	Disk	SCSI controller	Mechanical	Slots x bays (hot-swap bays)	Power supply	Ethernet	Available date
8671-11X	1 x Xeon® 1.8GHz ¹	512KB	256MB	ECC	None	2 x Ultra320	Tower 6x10	(6 hot-swap std; 9 max)	1 fixed	Gigabit	Jun 2002
8671-1AX	1 x Xeon 1.8GHz	512KB	512MB	Chipkill™	None	2 x Ultra320	Tower 6x10	(6 hot-swap std; 9 max)	2 hot-swap	Gigabit	Jun 2002
8671-21X	1 x Xeon 2.0GHz	512KB	256MB	ECC	None	2 x Ultra320	Tower 6x10	(6 hot-swap std; 9 max)	1 fixed	Gigabit	Jun 2002
8671-2AX	1 x Xeon 2.0GHz	512KB	512MB	Chipkill	None	2 x Ultra320	Tower 6x10	(6 hot-swap std; 9 max)	2 hot-swap	Gigabit	Jun 2002
8671-31X	1 x Xeon 2.2GHz	512KB	256MB	ECC	None	2 x Ultra320	Tower 6x10	(6 hot-swap std; 9 max)	1 fixed	Gigabit	Jun 2002
8671-3AX	1 x Xeon 2.2GHz	512KB	512MB	Chipkill	None	2 x Ultra320	Tower 6x10	(6 hot-swap std; 9 max)	2 hot-swap	Gigabit	Jun 2002
8671-41X	1 x Xeon 2.4GHz	512KB	256MB	ECC	None	2 x Ultra320	Tower 6x10	(6 hot-swap std; 9 max)	1 fixed	Gigabit	Jun 2002
8671-4AX	1 x Xeon 2.4GHz	512KB	512MB	Chipkill	None	2 x Ultra320	Tower 6x10	(6 hot-swap std; 9 max)	2 hot-swap	Gigabit	Jun 2002
Positioning	<i>Universal server; two-way server using the Xeon DP processor to provide power and performance at an affordable price</i>										
Processor(s)	1 x Intel® Xeon™ Processor 1.8, 2.0, 2.2 or 2.4GHz with 400MHz frontside bus / Hyper-Threading technology										
L2 cache	512KB / on die of processor / at processor speed (no L3 cache)										
SMP support	2-way SMP / up to two Xeon Processors DP (same speed/cache size)										
Implementation	Systemboard contains two Intel 603-pin micro-PGA ZIF sockets, six memory gold-connector DIMM slots, six PCI slots (two hot-swap Active™ PCI slots), and integrated SCSI, ethernet, graphics										
Memory	256 or 512MB std / 12GB ¹³ max / two slots used / four slots available / PC2100 266MHz registered 184-pin ECC DDR-SDRAM DIMMs / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / memory bus runs at 2x100MHz / 256MB models: Error Checking and Correcting (ECC) / corrects single-bit errors and detects 2-bit errors / 512MB models: Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips) / Chipkill requires all 256MB or higher x4 DIMMs										
SCSI disk controller	LSI Logic® 53C1030 / dual channel Ultra320 SCSI controller (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X / supports RAID-1 mirroring with up to one hot-spare disk / shared with optional IBM ServeRAID™-6i Controller for low-cost RAID 0, 1, 1E, 5, 00, 10, 1E0, 50 (installed only in Slot 4)										
SCSI channels	Two 16-bit channels / SCSI Channel A: 16-bit 68-pin LVD cable from controller to backplane; Channel B: 16-bit 68-pin interface for Bay 8 and 9 (may require a cable) or with optional 3-Pack Kit (cable included); supports external SCSI devices via external SCSI knockout in rear (cable req 32P8164) or via opt ServeRAID adapter with external connector(s)										
IDE controller / cable	Enhanced IDE ATA-100 controller in CSB5 South Bridge / one connector on planar / one 1-drop IDE cable (CD-ROM)										
Disk - capacity	None standard / supports 7200-15000 rpm disks / one backplane / all disk bays Ultra320-enabled										
Disk - bays	Six hot-swap / 80-pin SCA-2 connectors / three additional hot-swap bays with Kit 33P2751 for up to nine 15K rpm disks										
Mechanical	Tower / conversion to or EIA 19" Rack (5U ⁴) via optional kit for support in IBM NetBAY™ Racks										
Chipset	ServerWorks® Grand Champion™ 4.0 LE / CMIC LE Host Bridge (memory controller and I/O Bridge) / two CIOB-X2 I/O Bridges (IMB2 bus to Host Bridge for PCI-X 1.0 Bus B with slots 2, 3, 4 and Ultra320 and ethernet controllers; IMB2 bus to Host Bridge for PCI-X 1.0 Bus C with slots 5 and 6) / CSB5 South Bridge (Thin IMB to Host Bridge for PCI 2.2 bus A with slot 1 and graphics controller, EIDE, USB, SMBus, LPC bus to Super I/O) / NS PC87417 Super I/O										
Ethernet controller	10/100/1000 gigabit / Broadcom® BCM 5703 / on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / Alert Standard Format										
CD-ROM / diskette	48X-20X ⁶ CD-ROM / IDE / 1.6" HH; <i>Diskette:</i> 3.5" 1.44MB diskette drive / dust cover										
Rear ports	<i>Rear:</i> two USB (Vers 1.1), keyboard, mouse, parallel, serial (9-pin), graphics (DB-15), ethernet (RJ-45), two RJ-45 (sys mgmt)										
Front port / graphics	<i>Front:</i> one USB (Vers 1.1); <i>Graphics:</i> SVGA / ATI® Rage XL / on planar / 8MB SDRAM std/max / 32-bit 33MHz PCI 2.2 Bus										
Security	Power-on password / administrator password / hinged and lockable front door to cover disk bays, power button, and reset button / unattended boot / selectable boot										
Systems mgmt	IBM Integrated system management processor (ISMP) / H8S2148 / on planar / provides system and environmental monitoring such as temp, optional disks, fans, power supp / supports optional Remote Supervisor Adapter with 20-pin connector on planar for continuous power (no ext pwr reqd)										
Diagnosics	Light Path Diagnostics™ panel providing LED map to failing part (under side cover) / Information LED Panel in front										
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director, others										
Keyboard / mouse	IBM 101-key keyboard / IBM mouse (both black)										
Power supply	x1X: std: one 560 watt / not hot-swap or redundant max: two 560 watt with optional Upgrade Kit 33P2753 xAX: std: two 560W / hot-swap / redundant All: voltage-sensing / auto-restart / fan in each power supply										
Fans	Four fans and two blowers / variable speed / hot-swap / redundant / PFA / fan in each power supply										

<p>Slot 1: full, 32-bit 33MHz 5v PCI 2.2, Bus A Slot 2: full, 64-bit 100MHz 3.3v PCI-X, not hot, Bus B Slot 3: full, 64-bit 100MHz 3.3v PCI-X, not hot, Bus B Slot 4: full, 64-bit 100MHz 3.3v PCI-X, not hot, Bus B* Slot 5: full, 64-bit 133MHz 3.3v PCI-X, hot-swap, Bus C Slot 6: full, 64-bit 133MHz 3.3v PCI-X, hot-swap, Bus C * Extended slot for opt IBM ServeRAID-5i Controller</p> <p>Bay ① 3.5", SL 1", access, diskette Bay ② 3.5", SL 1", access, hot-swap Bay ③ 3.5", SL 1", access, hot-swap Bay ④ 3.5", SL 1", access, hot-swap Bay ⑤ 3.5", SL 1", access, hot-swap Bay ⑥ 3.5", SL 1", access, hot-swap Bay ⑦ 3.5", SL 1", access, hot-swap Bay ⑧ 5.25", HH 1.6" access, open** Bay ⑨ 5.25", HH 1.6" access, open** Bay ⑩ 5.25", HH 1.6" access, CD-ROM</p> <p>Bays 2 through 7 support 6 SL disks via SCA-2 connectors. **Bays 8 and 9 support three 3.5" disks via 3-Pack Kit 33P2751</p> <p style="text-align: center;">Tower</p>	<ul style="list-style-type: none"> ➤ Quick release adapter slots (no screws) ➤ Configuration/Setup Utility invoked by pressing F1 at startup ➤ LSI Logic Configuration Utility near startup by pressing CTRL+C ➤ Diagnostics (PC-Doctor™) by pressing F2 at startup ➤ ACPI 2.0-compliant ➤ Operator Information Panel (in front) ➤ Predictive failure analysis on disk options, memory, processors, VRMs, power supplies, and fans in conjunction with IBM Director can alert the system administrator of an imminent component failure ➤ Tower: H 17.31" x W 8.5" x D 27.6" H 440mm x W 216mm x D 700mm ➤ 74 to 101 lbs / 33.5 to 45.8 kg ➤ Stealth black color <p style="text-align: center;">All models: Max int disk capacity: 1.321TB² with nine 146.8GB SL disks with 3-Pack Ultra160 Hot-Swap Expansion Kit</p>	<p style="text-align: center;">LIMITED WARRANTY³</p> <ul style="list-style-type: none"> ➤ 3 year parts and labor ➤ International Warranty Service³ ➤ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷ ➤ 3 year on site warranty service upgrade options (in eligible locations):⁷ <ul style="list-style-type: none"> • 9 hour coverage, Mon-Fri excluding holidays, 4 hour average response (ServicePac® part num 21P2083) • 24 hr x 7 day coverage, 4 hour average response (ServicePac part number 21P2084) • 24 hr x 7 day coverage, 2 hour average response (ServicePac part number 21P2085) ➤ 24x7¹⁴ toll-free support for warranty issues during the warranty period³
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See footnotes for important warranty information • = Hot-swap (X235A) © IBM Corp. December 2003
US models announced June 11, 2002; withdrawn effective January 2003, March 2003, April 29, 2003 (31X, 3AX), and May 28, 2004 (41X, 4AX)

IBM® Type-model	Qty x Processor	L2 cache	L3 cache	Memory	Disk	SCSI controller	Mechanical	Slots x bays (hot-swap bays)	Power supply	Ethernet	Available date
8671-61X	1 x Xeon®	2.67GHz	512KB	0MB	512MB	None	2 x Ultra320 Tower	6x10 (6 hot-swap std; 9 max)	560W fixed	Gigabit	Mar 2003
8671-6AX	1 x Xeon	2.67GHz	512KB	0MB	512MB	None	2 x Ultra320 Tower	6x10 (6 hot-swap std; 9 max)	560W hot	Gigabit	Mar 2003
8671-71X	1 x Xeon	2.8BGHz	512KB	0MB	512MB	None	2 x Ultra320 Tower	6x10 (6 hot-swap std; 9 max)	560W fixed	Gigabit	Mar 2003
8671-7AX	1 x Xeon	2.8BGHz	512KB	0MB	512MB	None	2 x Ultra320 Tower	6x10 (6 hot-swap std; 9 max)	560W hot	Gigabit	Mar 2003
8671-81X	1 x Xeon	3.06GHz	512KB	0MB	512MB	None	2 x Ultra320 Tower	6x10 (6 hot-swap std; 9 max)	660W fixed	Gigabit	May 2003
8671-8AX	1 x Xeon	3.06GHz	512KB	0MB	512MB	None	2 x Ultra320 Tower	6x10 (6 hot-swap std; 9 max)	660W hot	Gigabit	May 2003
8671-G1X	1 x Xeon	3.2GHz	512KB	1MB	1GB	None	2 x Ultra320 Tower	6x10 (6 hot-swap std; 9 max)	660W fixed	Gigabit	Nov 2003
8671-GAX	1 x Xeon	3.2GHz	512KB	1MB	1GB	None	2 x Ultra320 Tower	6x10 (6 hot-swap std; 9 max)	660W hot	Gigabit	Nov 2003

Positioning *Universal server; two-way server using the Xeon processor to provide power and performance at an affordable price*
Processor(s) Up to 1 x Intel® Xeon™ Processor 3.2 GHz with 533MHz frontside bus / Hyper-Threading technology
L2 cache 512KB / all models / on die of processor / at processor speed
L3 cache Up to 1MB / available on some models / on die of processor / at processor speed
SMP support 2-way SMP / up to two Xeon Processors (same speed/cache size)
Implementation Systemboard contains two Intel 603-pin micro-PGA ZIF sockets, six memory gold-connector DIMM slots, six PCI slots (two hot-swap Active™ PCI slots), and integrated SCSI, ethernet, graphics

Memory 512MB std / 12GB max / two slots used / four slots available
PC2100 266MHz registered 184-pin ECC DDR-SDRAM DIMMs
 DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / memory bus runs at 2x100MHz / **Error Checking and Correcting (ECC)** via 16-bit Checksum Chipkill™ (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips) / Chipkill requires all 256MB or higher x4 DIMMs

SCSI disk controller LSI Logic® 53C1030 / dual channel Ultra320 SCSI controller (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X / supports RAID-1 mirroring with up to one hot-spare disk / shared with optional IBM ServeRAID™-6i Controller for low-cost RAID 0, 1, 1E, 5, 00, 10, 1E0, 50 (installed only in Slot 4)

SCSI channels Two 16-bit channels / SCSI Channel A: 16-bit 68-pin LVD cable from controller to backplane; Channel B: 16-bit 68-pin interface for Bay 8 and 9 (may require a cable) or with optional 3-Pack Kit (cable included); supports external SCSI devices via external SCSI knockout in rear (cable req 32P8164) or via opt ServeRAID adapter with external connector(s)

IDE controller / cable Enhanced IDE ATA-100 controller in CSB5 South Bridge / one connector on planar / one 1-drop IDE cable (CD-ROM)
Disk - capacity None standard / supports 7200-15000 rpm disks / one backplane / all disk bays Ultra320-enabled
Disk - bays Six hot-swap / 80-pin SCA-2 connectors / three additional hot-swap bays with Kit 33P2751 for up to nine 15K rpm disks

Mechanical Tower / conversion to or EIA 19" Rack (5U⁴) via optional kit for support in IBM NetBAY™ Racks
Chipset ServerWorks® Grand Champion™ 4.0 LE / CMIC LE Host Bridge (memory controller and I/O Bridge) / two CIOB-X2 I/O Bridges (IMB2 bus to Host Bridge for PCI-X 1.0 Bus B with slots 2, 3, 4 and Ultra320 and ethernet controllers; IMB2 bus to Host Bridge for PCI-X 1.0 Bus C with slots 5 and 6) / CSB5 South Bridge (Thin IMB to Host Bridge for PCI 2.2 bus A with slot 1 and graphics controller, EIDE, USB, SMBus, LPC bus to Super I/O) / NS PC87417 Super I/O

Ethernet controller 10/100/1000 gigabit / Broadcom® BCM 5703 / on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / Alert Standard Format
CD-ROM / diskette 48X-20X⁶ CD-ROM / IDE / 1.6" HH; Diskette: 3.5" 1.44MB diskette drive / dust cover
Rear ports Rear: two USB (Vers 1.1), keyboard, mouse, parallel, two serial (9-pin), graphics (DB-15), ethernet (RJ-45), two RJ-45 (sys mgmt)
Front port / graphics Front: one USB (Vers 1.1); Graphics: SVGA / ATI® Rage XL / on planar / 8MB SDRAM std/max / 32-bit 33MHz PCI 2.2 Bus

Security Power-on password / administrator password / hinged and lockable front door to cover disk bays, power button, and reset button / unattended boot / selectable boot

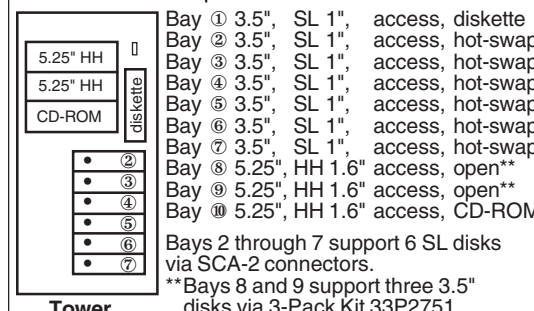
Systems mgmt IBM Integrated system management processor (ISMP) / H8S2148 / on planar / provides system and environmental monitoring such as temp, optional disks, fans, power supp / supports optional Remote Supervisor Adapter with 20-pin connector on planar for continuous power (no ext pwr reqd)
Diagnostics Light Path Diagnostics™ panel providing LED map to failing part (under side cover) / Information LED Panel in front
Software ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director, others

Keyboard / mouse IBM 101-key keyboard / IBM mouse (both black)
Power supply 8AX, GAX: std/max: two/two 660 watt All: voltage-sensing / auto-restart / fan in each
 81X, G1X: std/max: one/two 660 watt
 xAX: std/max: two/two 560 watt
 Rest: std/max: one/two 560 watt

Fans Four fans and two blowers / variable speed / hot-swap / redundant / PFA / fan in each power supply

Xeon 2.67GHz/512KB L2 Cache Proc Upg	71P8966
Xeon 2.8BGHz/512KB L2 Cache Proc Upg	71P8967
Xeon 3.06GHz/512KB L2 Cache Proc Upg	02R1988
Xeon 3.2GHZ/512KB L2/1MB L3 Proc Upg	23K4523
512MB PC2100 CL2.5 ECC DDR-SDRAM DIMM	33L5038
1GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM	33L5039
2GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM	33L5040
IBM ServeRAID-6i Controller (adapter for slot 4)	71P8595
IBM Remote Supervisor Adapter II (PCI adapter)	59P2984
IBM T541 15" Flat Panel Color Monitor (black)	9512AB1
36.4GB 15K-2 80 Ultra320 SCSI Hot-Swap SL HDD	06P5776
3-Pack Ultra320 Hot-Swap Expansion Kit	33P2751
IBM 560W Hot-Swap Power Upgrade Kit*	02R1874
IBM 660W Hot-Swap Power Upgrade Kit (3.06 Only)	02R2015
*Not backward compatible with 400Mhz FSB x235	

Slot 1: full, 32-bit 33MHz 5v PCI 2.2, Bus A
 Slot 2: full, 64-bit 100MHz 3.3v PCI-X, not hot, Bus B
 Slot 3: full, 64-bit 100MHz 3.3v PCI-X, not hot, Bus B
 Slot 4: full, 64-bit 100MHz 3.3v PCI-X, not hot, Bus B*
 Slot 5: full, 64-bit 133MHz 3.3v PCI-X, hot-swap, Bus C
 Slot 6: full, 64-bit 133MHz 3.3v PCI-X, hot-swap, Bus C
 * Extended slot for opt IBM ServeRAID-5i Controller



- Quick release adapter slots (no screws)
 - Configuration/Setup Utility invoked by pressing F1 at startup
 - LSI Logic Configuration Utility near startup by pressing CTRL+C
 - Diagnostics (PC-Doctor™) by pressing F2 at startup
 - ACPI2.0-compliant
 - Operator Information Panel (in front)
 - Predictive failure analysis on disk options, memory, processors, VRMs, power supplies, and fans in conjunction with IBM Director can alert the system administrator of an imminent component failure
 - Tower: H 17.31" x W 8.5" x D 27.6"
 - 74 to 101 pounds
 - Stealth black color
- All models: Max int disk capacity: 1.321TB² with nine 146.8GB SL disks with 3-Pack Ultra160 Hot-Swap Expansion Kit

LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- 3 year on site warranty service upgrade options (in eligible locations):⁷
 - 9 hour coverage, Mon-Fri excluding holidays, 4 hour average response (ServicePac® part num 21P2083)
 - 24 hr x 7 day coverage, 4 hour average response (ServicePac part number 21P2084)
 - 24 hr x 7 day coverage, 2 hour average response (ServicePac part number 21P2085)
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

IBM® Type-model	Qty x Processor	L2 cache	L3 cache	Memory	Disk	SCSI controller	Mechanical	Slots x bays (hot-swap bays)	Power supply	Ethernet	Available date
8671-K1X	1 x Xeon®	2.67GHz	512KB	0MB	512MB	None	2 x Ultra320 Tower	6x10 (6 hot-swap std; 9 max)	560W fixed	Gigabit	Jan 2004
8671-KAX	1 x Xeon	2.67GHz	512KB	0MB	512MB	None	2 x Ultra320 Tower	6x10 (6 hot-swap std; 9 max)	560W hot	Gigabit	Jan 2004
8671-L1X	1 x Xeon	2.8BGHz	512KB	0MB	512MB	None	2 x Ultra320 Tower	6x10 (6 hot-swap std; 9 max)	560W fixed	Gigabit	Jan 2004
8671-LAX	1 x Xeon	2.8BGHz	512KB	0MB	512MB	None	2 x Ultra320 Tower	6x10 (6 hot-swap std; 9 max)	560W hot	Gigabit	Jan 2004
8671-M1X	1 x Xeon	3.06GHz	512KB	0MB	512MB	None	2 x Ultra320 Tower	6x10 (6 hot-swap std; 9 max)	660W fixed	Gigabit	Jan 2004
8671-MAX	1 x Xeon	3.06GHz	512KB	0MB	512MB	None	2 x Ultra320 Tower	6x10 (6 hot-swap std; 9 max)	660W hot	Gigabit	Jan 2004

These models ship standard with **Non-Chipkill DIMMs**. Chipkill is **optionally available** with purchase of 512MB DIMMs or higher.

Positioning Processor(s)	<i>Universal server; two-way server using the Xeon processor to provide power and performance at an affordable price</i>
L2 cache	Up to 1 x Intel® Xeon™ Processor 3.06 GHz with 533MHz frontside bus / Hyper-Threading technology
L3 cache	512KB / all models / on die of processor / at processor speed
SMP support	1MB / available on some models / on die of processor / at processor speed
Implementation	2-way SMP / up to two Xeon Processors (same speed/cache size) Systemboard contains two Intel 603-pin micro-PGA ZIF sockets, six memory gold-connector DIMM slots, six PCI slots (two hot-swap Active™ PCI slots), and integrated SCSI, ethernet, graphics

Memory	512MB std / 12GB max / two slots used / four slots available PC2100 266MHz registered 184-pin ECC DDR-SDRAM DIMMs DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / memory bus runs at 2x100MHz / Error Checking and Correcting (ECC) (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2-through 8-bit errors contained in two chips) / 16-bit Checksum Chipkill™ optionally available , requiring 512MB DIMMs
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SCSI disk controller	LSI Logic® 53C1030 / dual channel Ultra320 SCSI controller (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X / supports RAID-1 mirroring with up to one hot-spare disk / shared with optional IBM ServeRAID™-6i Controller for low-cost RAID 0, 1, 1E, 5, 00, 10, 1E0, 50 (installed only in Slot 4)
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SCSI channels	Two 16-bit channels / <i>SCSI Channel A</i> : 16-bit 68-pin LVD cable from controller to backplane; <i>Channel B</i> : 16-bit 68-pin interface for Bay 8 and 9 (may require a cable) or with optional 3-Pack Kit (cable included); supports external SCSI devices via external SCSI knockout in rear (cable req 32P8164) or via opt ServeRAID adapter with external connector(s)
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IDE controller / cable	Enhanced IDE ATA-100 controller in CSB5 South Bridge / one connector on planar / one 1-drop IDE cable (CD-ROM)
Disk - capacity	None standard / supports 7200-15000 rpm disks / one backplane / all disk bays Ultra320-enabled
Disk - bays	Six hot-swap / 80-pin SCA-2 connectors / three additional hot-swap bays with Kit 33P2751 for up to nine 15K rpm disks

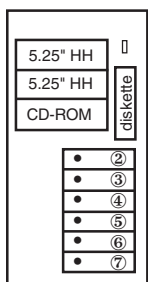
Mechanical	Tower / conversion to or EIA 19" Rack (5U ⁴) via optional kit for support in IBM NetBAY™ Racks
Chipset	ServerWorks® Grand Champion™ 4.0 LE / CMIC LE Host Bridge (memory controller and I/O Bridge) / two CIOB-X2 I/O Bridges (IMB2 bus to Host Bridge for PCI-X 1.0 Bus B with slots 2, 3, 4 and Ultra320 and ethernet controllers; IMB2 bus to Host Bridge for PCI-X 1.0 Bus C with slots 5 and 6) / CSB5 South Bridge (Thin IMB to Host Bridge for PCI 2.2 bus A with slot 1 and graphics controller, EIDE, USB, SMBus, LPC bus to Super I/O) / NS PC87417 Super I/O

Ethernet controller	10/100/1000 gigabit / Broadcom® BCM 5703 / on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / Alert Standard Format
CD-ROM / diskette	48X-20X ⁶ CD-ROM / IDE / 1.6" HH; <i>Diskette</i> : 3.5" 1.44MB diskette drive / dust cover
Rear ports	Rear: two USB (Vers 1.1), keyboard, mouse, parallel, two serial (9-pin), graphics (DB-15), ethernet (RJ-45), two RJ-45 (sys mgmt)
Front port / graphics	Front: one USB (Vers 1.1); <i>Graphics</i> : SVGA / ATI® Rage XL / on planar / 8MB SDRAM std/max / 32-bit 33MHz PCI 2.2 Bus

Security	Power-on password / administrator password / hinged and lockable front door to cover disk bays, power button, and reset button / unattended boot / selectable boot
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Systems mgmt	IBM Integrated system management processor (ISMP) / H8S2148 / on planar / provides system and environmental monitoring such as temp, optional disks, fans, power supp / supports optional Remote Supervisor Adapter with 20-pin connector on planar for continuous power (no ext pwr reqd)	Xeon 2.67GHz/512KB L2 Cache Proc Upg	71P8966
Diagnostics	Light Path Diagnostics™ panel providing LED map to failing part (under side cover) / Information LED Panel in front	Xeon 2.8BGHz/512KB L2 Cache Proc Upg	71P8967
		Xeon 3.06GHz/512KB L2 Cache Proc Upg	02R1988
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director, others	2x256MB PC2100 Non-Chipkill DDR-SDRAM Kit	73P2868
		512MB PC2100 CL2.5 ECC DDR-SDRAM DIMM	33L5038
Keyboard / mouse	IBM 101-key keyboard / IBM mouse (both black)	1GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM	33L5039
		2GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM	33L5040
Power supply	MAX: std/max: two/two 660 watt M1X: std/max: one/two 660 watt xAX: std/max: two/two 560 watt Rest: std/max: one/two 560 watt	IBM ServeRAID-6i Controller (adapter for slot 4)	71P8595
		IBM Remote Supervisor Adapter II (PCI adapter)	59P2984
Fans	Four fans and two blowers / variable speed / hot-swap / redundant / PFA / fan in each power supply	IBM T541 15" Flat Panel Color Monitor (black)	9512AB1
		36.4GB 15K-2 80 Ultra320 SCSI Hot-Swap SL HDD	06P5776
		3-Pack Ultra320 Hot-Swap Expansion Kit	33P2751
		IBM 560W Hot-Swap Power Upgrade Kit*	02R1874
		IBM 660W Hot-Swap Power Upgrade Kit (3.06 Only)	02R2015
		Other options at ibm.com/pc/us/accessories	
		*Not backward compatible with 400Mhz FSB x235	

Slot 1: full, 32-bit 33MHz 5v PCI 2.2, Bus A
 Slot 2: full, 64-bit 100MHz 3.3v PCI-X, not hot, Bus B
 Slot 3: full, 64-bit 100MHz 3.3v PCI-X, not hot, Bus B
 Slot 4: full, 64-bit 100MHz 3.3v PCI-X, not hot, Bus B*
 Slot 5: full, 64-bit 133MHz 3.3v PCI-X, hot-swap, Bus C
 Slot 6: full, 64-bit 133MHz 3.3v PCI-X, hot-swap, Bus C
 * Extended slot for opt IBM ServeRAID-5i Controller



Bay ① 3.5", SL 1", access, diskette
 Bay ② 3.5", SL 1", access, hot-swap
 Bay ③ 3.5", SL 1", access, hot-swap
 Bay ④ 3.5", SL 1", access, hot-swap
 Bay ⑤ 3.5", SL 1", access, hot-swap
 Bay ⑥ 3.5", SL 1", access, hot-swap
 Bay ⑦ 3.5", SL 1", access, hot-swap
 Bay ⑧ 5.25", HH 1.6" access, open**
 Bay ⑨ 5.25", HH 1.6" access, open**
 Bay ⑩ 5.25", HH 1.6" access, CD-ROM

Bays 2 through 7 support 6 SL disks via SCA-2 connectors.
 **Bays 8 and 9 support three 3.5" disks via 3-Pack Kit 33P2751

- Quick release adapter slots (no screws)
- Configuration/Setup Utility invoked by pressing F1 at startup
- LSI Logic Configuration Utility near startup by pressing CTRL+C
- Diagnostics (PC-Doctor™) by pressing F2 at startup
- ACPI2.0-compliant
- Operator Information Panel (in front)
- Predictive failure analysis on disk options, memory, processors, VRMs, power supplies, and fans in conjunction with IBM Director can alert the system administrator of an imminent component failure
- Tower: H 17.31" x W 8.5" x D 27.6"
- 74 to 101 pounds
- Stealth black color

All models: Max int disk capacity:
 1.321TB² with nine 146.8GB SL disks with 3-Pack Ultra160 Hot-Swap Expansion Kit

LIMITED WARRANTY³

- **3 year parts and labor**
- **International Warranty Service³**
- **On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷**
- **3 year on site warranty service upgrade options (in eligible locations):⁷**
 - **9 hour coverage, Mon-Fri excluding holidays, 4 hour average response (ServicePac® part num 21P2083)**
 - **24 hr x 7 day coverage, 4 hour average response (ServicePac part number 21P2084)**
 - **24 hr x 7 day coverage, 2 hour average response (ServicePac part number 21P2085)**
- **24x7¹⁴ toll-free support for warranty issues during the warranty period³**

IBM® Type-model	Qty x Processor	L2 cache	Memory	Disk	SCSI controller	Mechanical	Slots x bays (hot-swap bays)	Power supply	Ethernet	Available date
8841-01y-01x	1 x Xeon® 2.8GHz	1MB	512MB	None	2 x Ultra320	Tower	6x10 (6 hot-swap std; 9 max)	1 x 670W hot-swap	2xGigabit	Aug 2004
8841-11y-11x	1 x Xeon 3.0GHz	1MB	1GB	None	2 x Ultra320	Tower	6x10 (6 hot-swap std; 9 max)	1 x 670W hot-swap	2xGigabit	Aug 2004
8841-21y-21x	1 x Xeon 3.2GHz	1MB	1GB	None	2 x Ultra320	Tower	6x10 (6 hot-swap std; 9 max)	1 x 670W hot-swap	2xGigabit	Aug 2004
8841-31y-31x	1 x Xeon 3.4GHz	1MB	1GB	None	2 x Ultra320	Tower	6x10 (6 hot-swap std; 9 max)	1 x 670W hot-swap	2xGigabit	Aug 2004
8841-32y-32x	1 x Xeon 3.4GHz	1MB	1GB	None	2 x Ultra320	Tower	6x10 (6 hot-swap std; 9 max)	2 x 670W hot-swap	2xGigabit	Aug 2004
8841-41y-41x	1 x Xeon 3.6GHz	1MB	1GB	None	2 x Ultra320	Tower	6x10 (6 hot-swap std; 9 max)	1 x 670W hot-swap	2xGigabit	Aug 2004
Positioning	<i>Universal server; two-way server using the Xeon processor to provide power and performance at an affordable price</i>									
Processor	Up to 1 x Intel® Xeon™ Processor 2.8, 3.0, 3.2, 3.4, 3.6 GHz with 800MHz frontside bus / Extended Memory 64 Technology (EM64T) / Simultaneous Multi-threading (SMT) / Hyper-Threading technology /									
L2 cache	1MB / all models / on die of processor / at processor speed									
SMP support	2-way SMP / up to two Xeon Processors (same speed/cache size)									
Implementation	Systemboard contains two Intel 604-pin micro-PGA ZIF sockets, eight memory gold-connector DIMM slots, six PCI slots (one hot-swap Active™ PCI slots), and integrated SCSI, ethernet, graphics									
Memory	512MB or 1MB std / 16GB max / two slots used / six slots available / PC2-3200 400MHz registered 240-pin ECC DDR2-SDRAM DIMMs / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / memory bus runs at 2x200MHz / Error Checking and Correcting (ECC) (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips) / Active Memory™ : memory mirroring, online-spare memory / 16-bit Checksum Chipkill™ optionally available , requiring 512MB DIMMs or greater									
SCSI disk controller	Adaptec AIC 7902 / dual channel Ultra320 SCSI controller (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X / HostRAID supports RAID-0, 1 mirroring with up to one hot-spare disk / optional IBM ServeRAID™-7k Controller for low-cost RAID 0, 1, 1E, 1E0, 5, 00, 10, 50 (installed on internal connector)									
SCSI channels	Two 16-bit channels / <i>SCSI Channel B</i> : 16-bit 68-pin LVD cable from controller to backplane; <i>Channel A</i> : 16-bit 68-pin interface for Bay 8 and 9 (may require a cable) or with optional 3-Pack Kit (cable included); supports external SCSI devices via external SCSI knockout in rear (cable req 24P7973) or via opt ServeRAID adapter with external connector(s)									
IDE controller / cable	Enhanced IDE ATA-100 controller in ICH5R South Bridge / one connector on planar / one 1-drop IDE cable (CD-ROM)									
Disk - capacity	None std / supports 7200-15000 rpm disks / one backplane / all disk bays Ultra320-enabled									
Disk - bays	Six hot-swap / 80-pin SCA-2 connectors / three additional hot-swap bays with Kit 33P2751 for up to nine 15K rpm disks									
Mechanical	Tower / conversion to EIA 19" Rack (5U ⁴) via optional kit for support in IBM NetBAY™ Racks (13N0956)									
Slots	Two PCI-Express (one hot-plug), three PCI-X 64-bit (one 133MHz and two 100MHz), one 32-bit/33MHz slot									
Chipset (see below)	Intel E7520 chipset / Intel E7520 Memory Controller Hub (MCH): PXH, ICH5R, Dual Broadcom ethernet, two PCI-Express x8 slots (slots 2 & 3) / PXH: Bus A, two 64-bit/100MHz PCI-X slots (slots 4 & 5), Adaptec SCSI Bus B, one 64-bit/133MHz Hot-Plug slot (slot 6) / ICH5R: one 32-bit/33MHz slot (slot 1), ATI video, EIDE, USB, SMBus, LPC bus to Super I/O / NS PC87417 Super I/O									
Ethernet controller	Dual 10/100/1000 gigabit / Broadcom® BCM 5721 / on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / Alert Standard Format (2.0) / IPMI (1.5)									
CD-ROM / diskette	48X-20X ⁶ CD-ROM / IDE / 1.6" HH; <i>Diskette</i> : 3.5" 1.44MB diskette drive / dust cover									
Rear ports	Rear: two USB (Vers 2.0), keyboard, mouse, parallel, one serial (9-pin), graphics (DB-15), two ethernet (RJ-45), RJ-45 (sys mgmt)									
Front port / graphics	Front: one USB (Vers 2.0); <i>Graphics</i> : SVGA / ATI® Radeon™ 7000M / on planar / 16MB DDR std/max / 32-bit/33MHz PCI 2.2									
Security	Power-on password / administrator password / hinged and lockable front door to cover disk bays, power button, and reset button / unattended boot / selectable boot									
Systems mgmt	IBM Integrated system management processor (ISMP) / H8S2148 / on planar / provides system and environmental monitoring such as temp, optional disks, fans, power supp / supports opt. Remote Supervisor Adapter II Slimline with 20-pin connector on planar for continuous power (std on 32y) (no ext pwr reqd)					Xeon 2.8GHz/1MB L2 Cache Proc Upg Xeon 3.4GHz/1MB L2 Cache Proc Upg Xeon 3.6GHz/1MB L2 Cache Proc Upg 512MB (2x256) PC2-3200 CL3 ECC DDR2 non-Chipk 1GB (2x512) PC2-3200 CL3 ECC DDR2 non-Chipk 1GB (2x512) PC2-3200 CL3 ECC DDR2 RDIMM 2GB (2x1GB) PC2-3200 CL3 ECC DDR2 RDIMM 73.4GB 10K Ultra320 SCSI Hot-Swap SL HDD 146.4GB 10K Ultra320 SCSI Hot-Swap SL HDD 36.4GB 15K Ultra320 SCSI Hot-Swap SL HDD 73.4GB 15K Ultra320 SCSI Hot-Swap SL HDD IBM ServeRAID-7k Controller IBM Remote Supervisor Adapter II Slimline IBM T541 15" Flat Panel Color Monitor (black) 3-Pack Ultra320 Hot-Swap Expansion Kit IBM 670W Hot-Swap Power Upgrade Kit (NA) Other options at www.ibm.com/pc/us/accessories				
Diagnostics	Light Path Diagnostics™ panel providing LED map to failing part (under side cover) / Information LED Panel in front					13N0681 13N0684 13N0685 73P3523 73P3522 73P2865 73P2866 32P0727 32P0728 06P5776 32P0735 71K8642 73P9341 9512AB1 33P2751 25K9560				
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director, others									
Keyboard / mouse	IBM 101-key keyboard / IBM mouse (both black)									
Power supply	std/max: one/two 670 watt / voltage-sensing / auto-restart / Fan in each std/max: four/six/ two fans (front), two fans on planar, (Opt) two fans (rear) / variable speed / hot-swap / redundant with optional rear fans / PFA / fan in each power supply									
Fans										

<p>Slot 1: half-length, 32-bit 33MHz 5v PCI 2.2, Bus A Slot 2: full, PCI-Express x8, Bus B Slot 3: full, PCI-Express x8, Bus C Slot 4: full, 64-bit 100MHz 3.3v PCI-X, Bus D Slot 5: full, 64-bit 100MHz 3.3v PCI-X, Bus D Slot 6: full, 64-bit 133MHz 3.3v PCI-X, hot-swap, Bus E</p> <p>Bay ① 3.5", SL 1", access, diskette Bay ② 3.5", SL 1", access, hot-swap Bay ③ 3.5", SL 1", access, hot-swap Bay ④ 3.5", SL 1", access, hot-swap Bay ⑤ 3.5", SL 1", access, hot-swap Bay ⑥ 3.5", SL 1", access, hot-swap Bay ⑦ 3.5", SL 1", access, hot-swap Bay ⑧ 5.25", HH 1.6" access, open** Bay ⑨ 5.25", HH 1.6" access, open** Bay ⑩ 5.25", HH 1.6" access, CD-ROM</p> <p>Bays 2 through 7 support 6 SL disks via SCA-2 connectors. **Bays 8 and 9 support three 3.5" disks via 3-Pack Kit 33P2751</p> <p>Tower</p>	<ul style="list-style-type: none"> ➤ Quick release adapter slots (no screws) ➤ Configuration/Setup Utility invoked by pressing F1 at startup ➤ Adaptec Configuration Utility near startup by pressing CTRL+I ➤ Diagnostics (PC-Doctor™) by pressing F2 at startup ➤ ACPI2.0-compliant ➤ Operator Information Panel (in front) ➤ Predictive failure analysis on disk options, memory, processors, VRMs, power supplies, and fans in conjunction with IBM Director can alert the system administrator of an imminent component failure ➤ Tower: H 17.31" x W 8.5" x D 27.6" ➤ 74 to 101 pounds ➤ Stealth black color <p><i>All models:</i> Max int disk capacity: 1.2TB² with nine 146.4GB SL disks with 3-Pack Ultra 160 Hot-Swap Expansion Kit</p>	<p>LIMITED WARRANTY³</p> <ul style="list-style-type: none"> ➤ 3 year parts and labor ➤ International Warranty Service³ ➤ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷ ➤ 3 year on site warranty service upgrade options (in eligible locations):⁷ <ul style="list-style-type: none"> • 9 hour coverage, Mon-Fri excluding holidays, 4 hour average response (ServicePac[®] part num 21P2083) • 24 hr x 7 day coverage, 4 hour average response (ServicePac part number 21P2084) • 24 hr x 7 day coverage, 2 hour average response (ServicePac part number 21P2085) ➤ 24x7¹⁴ toll-free support for warranty issues during the warranty period³
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See footnotes for important warranty information

• = Hot-swap

IBM® Type-model	Qty x Processor	L2 cache Memory	Disk	SCSI controller	Mechanical	Slots x bays (hot-swap bays)	Power supply	Ethernet	Available date
8841-05U-05x	1 x Xeon® 2.8GHz	2MB 1GB	None	2 x Ultra320	Tower	6x10 (6 hot-swap std; 9 max)	1 x 670W hot-swap	2xGigabit	Sep 2005
8841-15y-15x	1 x Xeon 3.0GHz	2MB 1GB	None	2 x Ultra320	Tower	6x10 (6 hot-swap std; 9 max)	1 x 670W hot-swap	2xGigabit	Mar 2005
8841-25y-25x	1 x Xeon 3.2GHz	2MB 1GB	None	2 x Ultra320	Tower	6x10 (6 hot-swap std; 9 max)	1 x 670W hot-swap	2xGigabit	Mar 2005
8841-35y-35x	1 x Xeon 3.4GHz	2MB 1GB	None	2 x Ultra320	Tower	6x10 (6 hot-swap std; 9 max)	1 x 670W hot-swap	2xGigabit	Mar 2005
8841-45y-45x	1 x Xeon 3.6GHz	2MB 1GB	None	2 x Ultra320	Tower	6x10 (6 hot-swap std; 9 max)	1 x 670W hot-swap	2xGigabit	Mar 2005
8841-16y-16x	1 x Xeon 3.0GHz	2MB 1GB	None	2 x Ultra320	Tower	6x10 (6 hot-swap std; 9 max)	1 x 670W hot-swap	2xGigabit	Mar 2005
8841-E1y-E1x	1 x Xeon 3.0GHz	2MB 1GB	3x73.4GB	2 x Ultra320	Tower	6x10 (6 hot-swap std; 9 max)	1 x 670W hot-swap	2xGigabit	Mar 2005
8841-55U-55x	1 x Xeon 3.8GHz	2MB 1GB	None	2 x Ultra320	Tower	6x10 (6 hot-swap std; 9 max)	1 x 670W hot-swap	2xGigabit	Sep 2005

Positioning
Processor
L2 cache
SMP support
Implementation

Universal server; two-way server using the Xeon processor to provide power and performance at an affordable price
Up to **1 x Intel® Xeon™ Processor 2.8, 3.0, 3.2, 3.4, 3.6, 3.8 GHz** with 800MHz frontside bus / **Extended Memory 64 Technology (EM64T)** / **Simultaneous Multi-threading (SMT)** / Hyper-Threading technology / **2MB** / all models / on die of processor / at processor speed
2-way SMP / up to two Xeon Processors (same speed/cache size)
Systemboard contains two Intel 604-pin micro-PGA ZIF sockets, eight memory gold-connector DIMM slots, six PCI slots (one hot-swap Active™ PCI slots), and integrated SCSI, ethernet, graphics

Memory
1GB std / 16GB max / two slots used / six slots available / **PC2-3200** 400MHz registered 240-pin ECC **DDR2-SDRAM** DIMMs / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / memory bus runs at 2x200MHz / **Error Checking and Correcting (ECC)** (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips) / **Active Memory™: memory mirroring, online-spare memory**

SCSI disk controller
Adaptec AIC 7902 / dual channel Ultra320 SCSI controller (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X / **HostRAID** supports **RAID-0, 1 mirroring** with up to one hot-spare disk / optional IBM ServeRAID™-7k Controller for low-cost RAID 0, 1, 1E, 1E0, 5, 00, 10, 50 (installed on internal connector)

SCSI channels
Two 16-bit channels / *SCSI Channel B:* 16-bit 68-pin LVD cable from controller to backplane; *Channel A:* 16-bit 68-pin interface for Bay 8 and 9 (may require a cable) or with optional 3-Pack Kit (cable included); supports external SCSI devices via external SCSI knockout in rear (cable req 24P7973) or via opt ServeRAID adapter with external connector(s)

IDE controller / cable
Disk - capacity
Disk - bays
Enhanced IDE ATA-100 controller in ICH5R South Bridge / one connector on planar / one 1-drop IDE cable (CD-ROM)
None std / supports 7200-15000 rpm disks / one backplane / all disk bays Ultra320-enabled
Six hot-swap / 80-pin SCA-2 connectors / three additional hot-swap bays with Kit 33P2751 for up to nine 15K rpm disks

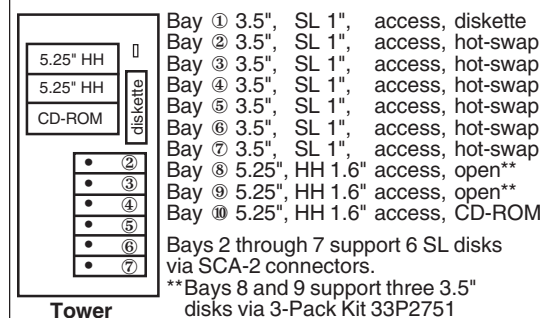
Mechanical
Slots
Chipset (see below)
Tower / conversion to EIA 19" Rack (5U⁴) via optional kit for support in IBM NetBAY™ Racks (13N0956)
Two PCI-Express (one hot-plug), three PCI-X 64-bit (one 133MHz and two 100MHz), one 32-bit/33MHz slot
Intel E7520 chipset / Intel E7520 Memory Controller Hub (MCH): PXH, ICH5R, Dual Broadcom ethernet, two PCI-Express x8 slots (slots 2 & 3) / PXH: Bus A, two 64-bit/100MHz PCI-X slots (slots 4 & 5), Adaptec SCSI Bus B, one 64-bit/133MHz Hot-Plug slot (slot 6) / ICH5R: one 32-bit/33MHz slot (slot 1), ATI video, EIDE, USB, SMBus, LPC bus to Super I/O / NS PC87417 Super I/O

Ethernet controller
CD-ROM / diskette
Rear ports
Front port / graphics
Security
Dual 10/100/1000 gigabit / Broadcom® BCM 5721 / on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / Alert Standard Format (2.0) / IPMI (1.5)
48X-20X⁶ CD-ROM / IDE / 1.6" HH; *Diskette:* 3.5" 1.44MB diskette drive / dust cover
Rear: two USB (Vers 2.0), keyboard, mouse, parallel, **two** serial (9-pin), graphics (DB-15), two ethernet (RJ-45), RJ-45 (sys mgmt)
Front: one USB (Vers 2.0); *Graphics:* SVGA / ATI® Radeon™ 7000M / on planar / 16MB DDR std/max / 32-bit/33MHz PCI 2.2
Power-on password / administrator password / hinged and lockable front door to cover disk bays, power button, and reset button / unattended boot / selectable boot

Systems mgmt
Diagnostics
Software
Keyboard / mouse
Power supply
Fans
IBM Integrated system management processor (ISMP) / H8S2148 / on planar / provides system and environmental monitoring such as temp, optional disks, fans, power supp / supports opt. Remote Supervisor Adapter II Slimline with 20-pin connector on planar for continuous power (std on 32y) (no ext pwr reqd)
Light Path Diagnostics™ panel providing LED map to failing part (under side cover) / Information LED Panel in front
ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director, others
IBM 101-key keyboard / IBM mouse (both black)
std/max: one/two 670 watt / voltage-sensing / auto-restart /
Fan in each std/max: four/six/ two fans (front), two fans on planar, (Opt) two fans (rear) / variable speed / hot-swap / redundant with optional rear fans / PFA / fan in each power supply

Xeon 2.8GHz/2MB L2 Cache Proc Upg	40K2503
Xeon 3.0GHz/2MB L2 Cache Proc Upg	40K2504
Xeon 3.2GHz/2MB L2 Cache Proc Upg	40K2505
Xeon 3.4GHz/2MB L2 Cache Proc Upg	40K2506
Xeon 3.6GHz/2MB L2 Cache Proc Upg	40K2507
Xeon 3.8GHz/2MB L2 Cache Proc Upg	40K2508
512MB (2x256) PC2-3200 CL3 ECC DDR2 non-Chipk	73P3523
1GB (2x512) PC2-3200 CL3 ECC DDR2 non-Chipk	39M5818
1GB (2x512) PC2-3200 CL3 ECC DDR2 RDIMM	39M5821
2GB (2x1GB) PC2-3200 CL3 ECC DDR2 RDIMM	39M5809
73.4GB 10K Ultra320 SCSI Hot-Swap SSL HDD	40K1023
146.4GB 10K Ultra320 SCSI Hot-Swap SSL HDD	40K1024
73.4GB 15K Ultra320 SCSI Hot-Swap SSL HDD	30R5097
IBM ServeRAID-7k Controller	71K8642
IBM Remote Supervisor Adapter II Slimline	73P9341
3-Pack Ultra320 Hot-Swap Expansion Kit	33P2751
IBM 670W Hot-Swap Power Upgrade Kit (NA)	25K9560
Other options at www.ibm.com/pc/us/accessories	

Slot 1: half-length, 32-bit 33MHz 5v PCI 2.2, Bus A
Slot 2: full, PCI-Express x4, Bus B
Slot 3: full, PCI-Express x4, Bus C
Slot 4: full, 64-bit 100MHz 3.3v PCI-X, Bus D
Slot 5: full, 64-bit 100MHz 3.3v PCI-X, Bus D
Slot 6: full, 64-bit 133MHz 3.3v PCI-X, hot-swap, Bus E



- Quick release adapter slots (no screws)
- Configuration/Setup Utility invoked by pressing F1 at startup
- Adaptec Configuration Utility near startup by pressing CTRL+I
- Diagnostics (PC-Doctor™) by pressing F2 at startup
- ACPI 2.0-compliant
- Operator Information Panel (in front)
- Predictive failure analysis on disk options, memory, processors, VRMs, power supplies, and fans in conjunction with IBM Director can alert the system administrator of an imminent component failure
- Tower: H 17.31" x W 8.5" x D 27.6"
- 74 to 101 pounds
- Stealth black color

All models: Max int disk capacity: 1.8TB² with six 300GB Ultra160 or Ultra320 SCSI hot-swap slimline HDDs

LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- 3 year on site warranty service upgrade options (in eligible locations):⁷
 - 9 hour coverage, Mon-Fri excluding holidays, 4 hour average response (ServicePac[®] part num 21P2083)
 - 24 hr x 7 day coverage, 4 hour average response (ServicePac part number 21P2084)
 - 24 hr x 7 day coverage, 2 hour average response (ServicePac part number 21P2085)
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information

• = Hot-swap

IBM® Type-model	Qty x Processor	L2 cache	Memory	Disk	SCSI controller	Mechanical	Slots x bays (hot-swap bays)	Power supply	Ethernet	Available date
8841-0RU-0Rx	1 x Xeon® 2.8GHz	2MB	1GB	None	2 x Ultra320	Tower	6x10 (6 hot-swap std; 9 max)	1 x 670W hot-swap	2xGigabit	Apr 2006
8841-1RU-1Rx	1 x Xeon 3.0GHz	2MB	1GB	None	2 x Ultra320	Tower	6x10 (6 hot-swap std; 9 max)	1 x 670W hot-swap	2xGigabit	Apr 2006
8841-1SU-1Sx	1 x Xeon 3.0GHz	2MB	1GB	None	2 x Ultra320	Tower	6x10 (6 hot-swap std; 9 max)	1 x 670W hot-swap	2xGigabit	Apr 2006
8841-2RU-2Rx	1 x Xeon 3.2GHz	2MB	1GB	None	2 x Ultra320	Tower	6x10 (6 hot-swap std; 9 max)	1 x 670W hot-swap	2xGigabit	Apr 2006
8841-3RU-3Rx	1 x Xeon 3.4GHz	2MB	1GB	None	2 x Ultra320	Tower	6x10 (6 hot-swap std; 9 max)	1 x 670W hot-swap	2xGigabit	Apr 2006
8841-4RU-4Rx	1 x Xeon 3.6GHz	2MB	1GB	None	2 x Ultra320	Tower	6x10 (6 hot-swap std; 9 max)	1 x 670W hot-swap	2xGigabit	Apr 2006
8841-5RU-5Rx	1 x Xeon 3.8GHz	2MB	1GB	None	2 x Ultra320	Tower	6x10 (6 hot-swap std; 9 max)	1 x 670W hot-swap	2xGigabit	Apr 2006

Positioning Universal server; two-way server using the Xeon processor to provide power and performance at an affordable price
Processor Up to 1 x Intel® Xeon™ Processor 2.8, 3.0, 3.2, 3.4, 3.6, 3.8 GHz with 800MHz frontside bus / **Extended Memory 64 Technology (EM64T)** / **Simultaneous Multi-threading (SMT)** / Hyper-Threading technology / **2MB** / all models / on die of processor / at processor speed
L2 cache **2-way SMP** / up to two Xeon Processors (same speed/cache size)
SMP support Systemboard contains two Intel 604-pin micro-PGA ZIF sockets, eight memory gold-connector DIMM slots,
Implementation six PCI slots (one hot-swap Active™ PCI slots), and integrated SCSI, ethernet, graphics

Memory **1GB** std / 16GB max / two slots used / six slots available / **PC2-3200** 400MHz registered 240-pin ECC **DDR2**-SDRAM DIMMs / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / memory bus runs at 2x200MHz / **Error Checking and Correcting (ECC)** (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips) / **Active Memory™: memory mirroring, online-spare memory**

SCSI disk controller **Adaptec AIC 7902 / dual channel Ultra320 SCSI controller** (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X / **HostRAID** supports **RAID-0, 1 mirroring** with up to one hot-spare disk / optional IBM ServeRAID™-7k Controller for low-cost RAID 0, 1, 1E, 1E0, 5, 00, 10, 50 (installed on internal connector)

SCSI channels Two 16-bit channels / **SCSI Channel B:** 16-bit 68-pin LVD cable from controller to backplane; **Channel A:** 16-bit 68-pin interface for Bay 8 and 9 (may require a cable) or with optional 3-Pack Kit (cable included); supports external SCSI devices via external SCSI knockout in rear (cable req 24P7973) or via opt ServeRAID adapter with external connector(s)

IDE controller / cable Enhanced IDE ATA-100 controller in ICH5R South Bridge / one connector on planar / one 1-drop IDE cable (CD-ROM)

Disk - capacity None std / supports 7200-15000 rpm disks / one backplane / all disk bays Ultra320-enabled

Disk - bays Six hot-swap / 80-pin SCA-2 connectors / three additional hot-swap bays with Kit 33P2751 for up to nine 15K rpm disks

Mechanical Tower / conversion to EIA 19" Rack (5U⁴) via optional kit for support in IBM NetBAY™ Racks (13N0956)

Slots Two PCI-Express (one hot-plug), three PCI-X 64-bit (one 133MHz and two 100MHz), one 32-bit/33MHz slot

Chipset (see below) **Intel E7520 chipset** / Intel E7520 Memory Controller Hub (MCH): PXH, ICH5R, Dual Broadcom ethernet, two PCI-Express x8 slots (slots 2 & 3) / PXH: Bus A, two 64-bit/100MHz PCI-X slots (slots 4 & 5), Adaptec SCSI Bus B, one 64-bit/133MHz Hot-Plug slot (slot 6) / ICH5R: one 32-bit/33MHz slot (slot 1), ATI video, EIDE, USB, SMBus, LPC bus to Super I/O / NS PC87417 Super I/O

Ethernet controller **Dual 10/100/1000 gigabit** / Broadcom® BCM 5721 / on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / Alert Standard Format (2.0) / IPMI (1.5)

CD-ROM / diskette 48X-20X® CD-ROM / IDE / 1.6" HH; **Diskette:** 3.5" 1.44MB diskette drive / dust cover

Rear ports Rear: two USB (Vers 2.0), keyboard, mouse, parallel, **two** serial (9-pin), graphics (DB-15), two ethernet (RJ-45), RJ-45 (sys mgmt)

Front port / graphics Front: one USB (Vers 2.0); **Graphics:** SVGA / ATI® Radeon™ 7000M / on planar / 16MB DDR std/max / 32-bit/33MHz PCI 2.2

Security Power-on password / administrator password / hinged and lockable front door to cover disk bays, power button, and reset button / unattended boot / selectable boot

Xeon 2.8GHz/2MB L2 Cache Proc Upg	40K2503
Xeon 3.0GHz/2MB L2 Cache Proc Upg	40K2504
Xeon 3.2GHz/2MB L2 Cache Proc Upg	40K2505
Xeon 3.4GHz/2MB L2 Cache Proc Upg	40K2506
Xeon 3.6GHz/2MB L2 Cache Proc Upg	40K2507
Xeon 3.8GHz/2MB L2 Cache Proc Upg	40K2508
512MB (2x256) PC2-3200 CL3 ECC DDR2 non-Chipk	73P3523
1GB (2x512) PC2-3200 CL3 ECC DDR2 non-Chipk	39M5818
1GB (2x512) PC2-3200 CL3 ECC DDR2 RDIMM	39M5821
2GB (2x1GB) PC2-3200 CL3 ECC DDR2 RDIMM	39M5809
73.4GB 10K Ultra320 SCSI Hot-Swap SSL HDD	40K1023
146.4GB 10K Ultra320 SCSI Hot-Swap SSL HDD	40K1024
73.4GB 15K Ultra320 SCSI Hot-Swap SSL HDD	30R5097
IBM ServeRAID-7k Controller	71K8642
IBM Remote Supervisor Adapter II Slimline	73P9341
3-Pack Ultra320 Hot-Swap Expansion Kit	33P2751
IBM 670W Hot-Swap Power Upgrade Kit (NA)	25K9560

Other options at www.ibm.com/pc/us/accessories

Systems mgmt **IBM Integrated system management processor (ISMP)** / H8S2148 / on planar / provides system and environmental monitoring such as temp, optional disks, fans, power supp / supports opt. Remote Supervisor Adapter II Slimline with 20-pin connector on planar for continuous power (**std on 32y**) (no ext pwr reqd)

Diagnostics **Light Path Diagnostics™** panel providing LED map to failing part (under side cover) / Information LED Panel in front

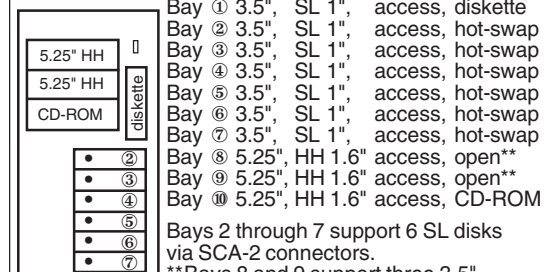
Software **ServerGuide™** (CD-ROM installation and configuration utilities), IBM Director, others

Keyboard / mouse IBM 101-key keyboard / IBM mouse (both black)

Power supply std/max: one/two 670 watt / voltage-sensing / auto-restart /

Fans Fan in each std/max: four/six/ two fans (front), two fans on planar, (Opt) two fans (rear) / variable speed / hot-swap / redundant with optional rear fans / PFA / fan in each power supply

- Slot 1: half-length, 32-bit 33MHz 5v PCI 2.2, Bus A
- Slot 2: full, PCI-Express x4, Bus B
- Slot 3: full, PCI-Express x4, Bus C
- Slot 4: full, 64-bit 100MHz 3.3v PCI-X, Bus D
- Slot 5: full, 64-bit 100MHz 3.3v PCI-X, Bus D
- Slot 6: full, 64-bit 133MHz 3.3v PCI-X, hot-swap, Bus E



- Quick release adapter slots (no screws)
- Configuration/Setup Utility invoked by pressing F1 at startup
- Adaptec Configuration Utility near startup by pressing CTRL+I
- Diagnostics (PC-Doctor™) by pressing F2 at startup
- ACPI2.0-compliant
- Operator Information Panel (in front)
- Predictive failure analysis on disk options, memory, processors, VRMs, power supplies, and fans in conjunction with IBM Director can alert the system administrator of an imminent component failure
- Tower: H 17.31" x W 8.5" x D 27.6"
- 74 to 101 pounds
- Stealth black color

All models: Max int disk capacity: 1.8TB² with six 300GB Ultra160 or Ultra320 SCSI hot-swap slimline HDDs

LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- 3 year on site warranty service upgrade options (in eligible locations):⁷
 - 9 hour coverage, Mon-Fri excluding holidays, 4 hour average response (ServicePac® part num 21P2083)
 - 24 hr x 7 day coverage, 4 hour average response (ServicePac part number 21P2084)
 - 24 hr x 7 day coverage, 2 hour average response (ServicePac part number 21P2085)
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

IBM® Type-model	Qty x Processor	Memory	Disk	SCSI controller	Mechanical	Slots x bays	Hot-swap disk bays	Ethernet	Available date
8664-81Y	1 x Pentium® III 1GHz/133	256MB	None	2 x Wide Ultra2	Tower	5 slots x 10 bays	6 hot-swap	10/100 ethernet	Oct 2000
8664-8RY	1 x Pentium III 1GHz/133	256MB	None	2 x Wide Ultra2	5U rack	5 slots x 10 bays	6 hot-swap	10/100 ethernet	Oct 2000
Intel® processor(s)	1 x Pentium® III 1GHz' with 133MHz Front Side Bus								
L2 cache	256KB std and max / ECC / at processor speed / processor and L2 cache in Single Edge Cartridge (SECC2)								
Implementation	Processor Complex contains two Intel Slot 1 connectors for SECC2 cartridges (open Slot 1 used by terminator), two VRM sockets (one used), four DIMM sockets, and Reliance CNB3.0LE North Bridge								
SMP support	2-way SMP via second identical processor / upgrade via SECC2 into second Slot 1 CPU connector								
Memory - std / max	256MB std / 4GB max								
Memory - sockets	4 sockets / 3 available / ECC / (all have Error Checking and Correcting (ECC) memory controller) / non-interleaved								
Memory - features	SDRAM / 133MHz / four 168-pin gold-plated DIMM 3.3 volt sockets / PC133-compliant								
Memory - support	Supports registered SDRAM ECC DIMMs only (128, 256, 512MB, and 1GB)								
SCSI disk controller	Adaptec® AHA-7897 / dual channel Wide Ultra2 SCSI controller (LVD 80MB/sec) / on planar / 64-bit PCI / two channels (one internal/one external) / supports IBM ServeRAID adapters (no hardware RAID standard)								
SCSI channels	SCSI Channel A: 16-bit 68-pin LVD cable from controller to backplane SCSI Channel B: 16-bit 68-pin interface (hardwired) to external SCSI port (.8mm VHDCI connector)								
Extra SCSI cable	Includes a terminated 2-drop 16-bit Ultra SCSI non-LVD cable for optional SCSI devices in open 5.25" bays								
IDE controller / cable	Single Primary IDE (ROSB4) South Bridge / one connector on planar / one 1 drop IDE cable (CD-ROM)								
Disk - capacity	None standard / supports 7200-15000 rpm disks / 1 backplane								
Disk - bays	Six hot-swap / no trays included (disks ship w/ trays) / 80-pin SCA-2 connectors / common tray with 8500R and EXP300								
Mechanical	Tower or EIA 19" Rack (5U)								
Rack support	Rack systems supported in IBM NetfinityRacks / kit available to convert tower to rack (no rack to tower conversion)								
Bus slots (see below)	PCI 2.1 (33MHz) / dual peer PCI / Active PCI™ with hot-swap PCI slots (hot replace, hot upgrade, hot expansion) / 64-bit PCI (three hot-swap PCI slots, SCSI controller) / 32-bit PCI (two PCI slots, graphics, ethernet, South Bridge)								
Chip set	ServerWorks® ServerSet 3.0LE chip set / North Bridge (CNB3.0LE) / South Bridge (ROSB4) for IDE, USB, ISA bus for Service Processor and Super I/O National Semiconductor® PC97317VUL (diskette, parallel, serial, keyboard, mouse)								
Bays / available	(See diagram below): 10 bays / three 5.25" HH bays (1 used by CD-ROM) / one diskette bay / six hot-swap bays								
10/100 ethernet	AMD® Am79C975 / on planar / 10BaseT, 100BaseTX / full duplex / RJ-45 connector / 3 front LEDs								
CD-ROM / diskette	40X-17X® CD-ROM / multisession / IDE interface / 1.6" HH / bootable; <i>Diskette:</i> 3.5" 1.44MB diskette drive / dust cover								
Serial / parallel / USB	<i>Serial:</i> Three 9-pin (one for Mgmt Processor) <i>Parallel:</i> One (EPP, ECP) / IEEE 1284 <i>USB:</i> Two ports								
Graphics controller	SVGA / PCI 2.1 bus / S3® Trio64 3D (on planar) / 4MB SGRAM std/max / up to 1280x1024 at 64K colors at 85Hz / DDC2B								
Security	Power-on password / administrator password / system owner's name / hinged and lockable front door to cover disk bays, power button, and reset button (tower only) / unattended boot / selectable boot / systems mgmt security (user log-in password, read-only or read/write access, dial back) / unattended start mode								
Systems mgmt	Integrated Advanced System Mgmt Processor / on planar / provides remote console and mgmt / allows diagnostic, reset, POST, and auto recovery functions / monitors temperature, fans, and power supplies								
Diagnostics	Daignostics LED Panel (under cover) / Light Path Diagnostics™ provides an LED map to failing component / systemboard error LEDs / diagnostics in ROM by pressing F2 at startup for PC-Doctor								
Software	ServerGuide™ (CD-ROM installation and configuration utilities), AntiVirus software, APC PowerChute Plus, IBM Director, others								
Keyboard / mouse	Tower only: IBM 101-key keyboard / IBM mouse (both black)								
Power supply	Std: two 250 watt hot-swap; Max: three 250 watt hot-swap / redundant with two power supplies / worldwide / voltage-sensing / auto-restart / fans in each power supply								
Fans	Three redundant, hot-swap fans / easy removal / PFA / fan failure signals Diagnostic LED and Mgmt Processor / power supply fans								
Keyboard / mouse						Pentium III 1GHz/133MHz/256KB Proc Upg		19K4640	
Power supply						128MB SDRAM ECC DIMM 133MHz (registered)		33L3058	
						256MB SDRAM ECC DIMM 133MHz (registered)		33L3060	
						512MB SDRAM ECC DIMM 133MHz (registered)		33L3062	
						1GB SDRAM ECC DIMM 133MHz (registered)		33L3064	
						Netfinity 5Ux24D Tower-to-Rack Kit		37L6858	
						Netfinity 250W Hot-Swap Redundant Pwr Supply		33L3760	
						36.4GB 10K-4 Ultra160 SCSI Hot-swap SL HDD		37L7206	
						9.1GB 15K-rpm Ultra160 SCSI Hot-swap SL HDD		19K0655	
						18.2GB 15K-rpm Ultra160 Hot-swap SL HDD		19K0656	

All models: Max int disk capacity: 218.4GB² with six 36.4GB SL disks

<p>Slot 1: fullsize, 32-bit PCI 2.1 (5v), Bus A Slot 2: fullsize, 32-bit PCI 2.1 (5v), Bus A Slot 3: fullsize, 64-bit PCI 2.1 (5v), Hot-swap, Bus B Slot 4: fullsize, 64-bit PCI 2.1 (5v), Hot-swap, Bus B Slot 5: fullsize, 64-bit PCI 2.1 (5v), Hot-swap, Bus B</p> <p>Bay ① 3.5", SL 1", access, diskette Bay ② 3.5", SL 1", access, hot swap Bay ③ 3.5", SL 1", access, hot swap Bay ④ 3.5", SL 1", access, hot swap Bay ⑤ 3.5", SL 1", access, hot swap Bay ⑥ 3.5", SL 1", access, hot swap Bay ⑦ 3.5", SL 1", access, hot swap Bay ⑧ 5.25", HH 1.6" access, CD-ROM Bay ⑨ 5.25", HH 1.6" access, open Bay ⑩ 5.25", HH 1.6" access, open</p> <p>Bays 2 through 7 support 6 SL disks or 3 HH hot-swap disks via SCA-2 connectors</p> <p>Rack or Tower (tower shown above)</p>	<ul style="list-style-type: none"> ➤ Removable, easy release left/top side panel ➤ Quick release adapter slots (no screws) ➤ New rail system enables devices (CD-ROM, diskette, tape drives) to snap in and out without screws ➤ Configuration/Setup Utility invoked by pressing F1 at startup ➤ SCSISelect near startup by pressing CTRL+A ➤ Operator Information Panel (in front) ➤ Predictive failure analysis on disk options, memory, processors, VRMs, power supplies, and fans in conjunction with Netfinity Manager can alert the system administrator of an imminent component failure ➤ Tower: H 16.8" x W 8.6" x D 26.0" ➤ Rack: H 8.6" x W 16.8" x D 24.8" ➤ 55.7 to 82.7 pounds ➤ Stealth black color ➤ All non-hot-swaps bays use rails (no screws) for devices 	<p>LIMITED WARRANTY³</p> <ul style="list-style-type: none"> ➤ 3 year parts and labor ➤ International Warranty Service³ ➤ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time ➤ 3 year on site warranty service upgrade options (in eligible locations):⁷ <ul style="list-style-type: none"> • 24 hr x 7 day coverage, 4 hour response time • 24 hr x 7 day coverage, 2 hour response time ➤ IBM Server Start Up Support ➤ 24 hour x 7 day¹⁴ telephone, electronic, and Internet support
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* For a copy of IBM's Statement of Limited Warranty, call 1-800-772-2227
 US models withdrawn effective March 2002
 • = Hot-swap

No warranties are expressed or implied in this summary
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IBM® Type-model	Qty x Processor	L2 cache	Memory	ECC	Disk	SCSI controller	Mechanical	Slots x bays	Ethernet	Available date
8665-61Y	1 x Pentium III Xeon 700/100	1MB	512MB	Chipkill™	None	2 x Wide Ultra2	Tower	6 x14 (10 hot-swap)	10/100	Mar 2001
8665-71Y	1 x Pentium III Xeon 700/100	2MB	512MB	Chipkill	None	2 x Wide Ultra2	Tower	6 x14 (10 hot-swap)	10/100	Mar 2001
8665-81Y	1 x Pentium III Xeon 900/100	2MB	512MB	Chipkill	None	2 x Wide Ultra2	Tower	6 x14 (10 hot-swap)	10/100	Apr 2001
8665-6RY	1 x Pentium III Xeon 700/100	1MB	512MB	Chipkill	None	2 x Wide Ultra2	8U ⁴ rack	6 x14 (10 hot-swap)	10/100	Mar 2001
8665-7RY	1 x Pentium III Xeon 700/100	2MB	512MB	Chipkill	None	2 x Wide Ultra2	8U rack	6 x14 (10 hot-swap)	10/100	Mar 2001
8665-8RY	1 x Pentium III Xeon 900/100	2MB	512MB	Chipkill	None	2 x Wide Ultra2	8U rack	6 x14 (10 hot-swap)	10/100	Apr 2001
Processor(s)	1 x Intel® Pentium® III Xeon™ 700 or 900MHz with 100MHz frontside bus									
L2 cache	1MB or 2MB / full speed									
Implementation	Each processor with ECC L2 cache integrated in Single Edge Contact (SEC) cartridge in Intel Slot 2									
Processor upgrade(s)	4-way SMP / to four identical Pentium III Xeon Slot 2 (SC330) processors /									
Mechanical	Each processor has one VRM / Processor Board has one Memory Board slot, six PCI slots, four Intel Slot 2 slots, four VRM slots (all removable as a slide out Shuttle for easy serviceability)									
Mem - std / max / type	512MB std / 16GB¹³ max / Chipkill™ multibit error correction using ind std ECC DIMMs (fixes 1 to 4-bit errors on same chip and detects 1- through 8-bit errors contained in two chips) / Chipkill performed by memory controller and firmware									
Memory - sockets	One Memory Board std and max / 16 sockets / 12 available (four 128MB DIMMs standard) / 4-way memory interleave									
Memory - support	SDRAM / 100MHz / sixteen 168-pin gold-plated DIMM 3.3 volt sockets / PC100-compliant / requires 4 identical DIMMs supports registered SDRAM ECC DIMMs only (128, 256, 512MB, and 1GB)									
SCSI controller	Adaptec® AIC-7896 / no integrated RAID controller									
SCSI channels	Two Wide Ultra2 SCSI channels (LVDS 80MB/sec) / each channel supports 15 devices / backplane supports Ultra160									
Cache / bus	No cache / PCI Bus C 32-bit 33MHz / controller on Input/Output Board									
Connectors and cabling	<i>Channel A:</i> one 0.8mm VHDCI external SCSI connector <i>Channel B:</i> 68-pin internal connector on power backplane with 16-bit LVD cable to one hot-swap backplane									
Additional cables	16-bit LVD cable on second backplane connector left unconnected at other end (requires Ultra160 SCSI Repeater Card to connect both backplanes into a single channel 10-bay configuration) / one 2-drop 16-bit LVD SCSI cable included to support devices in two left bays									
IDE controller / cabling	Enhanced IDE controller / one 1-drop IDE cable from one IDE connector to CD-ROM									
Mechanical	EIA 19" rack (8U⁴) or tower									
Rack / conversion	Rack systems supported in IBM NetBAY™ rack products / kits available to convert rack to tower or tower to rack									
Architecture / chip set	ServerWorks® ServerSet III HE / CNB20HE North Bridge (PCI 2.2 and memory controller) / CIOB I/O Bridge (Frontside Bus interface from PCI bus to North Bridge) / OSB4 South Bridge (EIDE, ISA Bridge, USB, SMBus, IOAPIC) / three peer PCI 2.1 buses (A: 64-bit 66MHz, B: 64-bit 33MHz, C: 32-bit 33MHz) / NS PC97317VUL Super I/O									
Active™ PCI slots	4 hot-swap PCI slots¹⁰ with power and attention indicator lights (optical sensors control power to slot) / Active PCI via hot replace, hot upgrade, hot expansion (see below for details)									
Bays	14 bays total: 10 hot-swap disk bays / three 5.25" HH bays (1 used by CD) / one 3.5" SL bay (diskette)									
Ethernet controller	AMD® Am79C975 / on PCI Bus C / 10BaseT, 100BaseTX / full duplex / RJ-45 connector / 3 LEDs									
CD-ROM / diskette drv	CD-ROM: 48X-20X ⁶ CD-ROM / IDE (ATAPI) / 1.6" HH / bootable; <i>Diskette drive:</i> 3.5" 1.44 MB diskette drive / dust cover									
Rear ports	<i>Serial:</i> three 9-pin (one for Mgmt Processor); <i>Parallel:</i> one 25-pin; <i>USB:</i> two Ver 1.1; keyboard; mouse; <i>Adv Sys Mgmt:</i> two RJ-45									
Graphics controller	SVGA / PCI Bus C / S3® Trio-3D (on Input/Output Board) / 4MB SGRAM std/max / up to 1024x768 at 256 colors at 85Hz									
Security	Power-on password / administrator password / selectable boot / secure mode (disables keyboard and mouse) / systems mgmt security (user log-in password, read-only or read/write access, dial back) / unattended start mode									
Systems management	Advanced System Mgmt Processor (service processor) / on planar / provides remote console and mgmt / power on/off system / monitors temperature, disks, fans, power supply					128MB SDRAM 100MHz ECC DIMM (register) 33L3113 256MB SDRAM 100MHz ECC DIMM (register) 33L3115 512MB SDRAM 100MHz ECC DIMM (register) 33L3117 1GB SDRAM 100MHz ECC DIMM (register) 33L3119 2GB SDRAM 100MHz ECC Kit (4x512MB) 33L3147				
Diagnostics	Light Path Diagnostics™ Panel providing LED map to failing part (under top cover) / Information LED Panel in front									
Software	ServerGuide™ (CD-ROM installation and configuration utilities), Norton AntiVirus, APC PowerChute Plus / includes IBM Director™ and others									
Keyboard / mouse	<i>Tower only:</i> IBM 101-key keyboard / IBM mouse (both black)									
Power supply	<i>Std:</i> two 250 watt hot-swap; <i>Max:</i> four 250 watt hot-swap / three provide N+1 redundancy for typical config / tool-free install / universal (voltage sensing) / fans in each power supply / PFA									
Fans	Four logical fans / seven hot-swap redundant fans (3 in disk area, 2 in slot area, 2 in CPU area) / variable speed / PFA / fan failure signals Diagnostic LED and Mgmt Processor / plus fan in each power supply									

<p>↳ Tower dim: H 15.7" x W 19" x D 28"; 88 to 123 lbs</p> <p>↳ Rack dim: H 13.8" x W 17.3" x D 27.6"; 88 to 123 lbs</p> <p>↳ Black color</p> <p>↳ ACPI 1.0</p> <p>↳ Orange components and labels indicate hot-swap options</p> <p>↳ Suppliers Declaration</p> <p>↳ Vital Product Data</p> <p>↳ Backup BIOS</p> <p><i>Split backplane:</i> 5 SL 3.5" bays in each backplane (HH bays not supported)</p> <p>Disks not supported in 5.25" bays</p> <p>Maximum internal disk capacity: 364GB² with ten 36.4GB SL hot-swap SCSI disks</p>	<p>Slot 1: full, 64-bit 66MHz 3.3v PCI, not hot, Bus A</p> <p>Slot 2: full, 64-bit 66MHz 3.3v PCI, not hot, Bus A</p> <p>Slot 3: full, 64-bit 33MHz 5v PCI, hot-swap, Bus B</p> <p>Slot 4: full, 64-bit 33MHz 5v PCI, hot-swap, Bus B</p> <p>Slot 5: full, 64-bit 33MHz 5v PCI, hot-swap, Bus B</p> <p>Slot 6: full, 64-bit 33MHz 5v PCI, hot-swap, Bus B</p> <p>↳ Setup Program is available by pressing F1 at startup; Diagnostics (PC-Doctor) by pressing F2 at startup; CTRL+A for SCSISelect Utility</p> <p>↳ Removeable top cover</p> <p>↳ Access adapters, memory, CPUs from top</p> <p>↳ Predictive Failure Analysis⁸: alerts generated by Adv System Mgmt Processor for IBM Director for DIMM(s), processor(s), VRM(s), power supply(s), disk(s), and fans</p>	<p>LIMITED WARRANTY³</p> <p>↳ 3 year parts and labor</p> <p>↳ International Warranty Service³</p> <p>↳ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷</p> <p>↳ 3 year on site warranty service upgrade options (in eligible locations)⁷:</p> <ul style="list-style-type: none"> • 24 hr x 7 day coverage, 4 hour response time (ServicePac® part number 30L9187) • 24 hr x 7 day coverage, 2 hour response time (ServicePac part number 31L2723) <p>↳ 24x7¹⁴ toll-free support for warranty issues during the warranty period³</p>
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See footnotes for important warranty information
 • = Hot-swap
 US models withdrawn effective January 13, 2003

IBM® Type-model	Qty x Processor	L3 cache	Memory	ECC memory features	Disk	SCSI controller	Mechanical	Slots x bays	Hot-swap disk bays (std/max)	Ethernet	Available date
8685-11X	1 x Xeon™ MP 1.4GHz	512KB	512MB	Hot Spare/Chipkill™	None	2 x Ultra160	Tower	7 x10 (16 bays max)	6/12	Gigabit	Jun 2002
8685-1RX	1 x Xeon MP 1.4GHz	512KB	512MB	Hot Spare/Chipkill	None	2 x Ultra160	7U ⁴ rack	7 x10 (16 bays max)	6/12	Gigabit	Jun 2002
8685-21X	1 x Xeon MP 1.5GHz	512KB	1GB	Hot Spare/Chipkill	None	2 x Ultra160	Tower	7 x10 (16 bays max)	6/12	Gigabit	Jun 2002
8685-2RX	1 x Xeon MP 1.5GHz	512KB	1GB	Hot Spare/Chipkill	None	2 x Ultra160	7U rack	7 x10 (16 bays max)	6/12	Gigabit	Jun 2002
8685-31X	1 x Xeon MP 1.6GHz	1MB	1GB	Hot Spare/Chipkill	None	2 x Ultra160	Tower	7 x10 (16 bays max)	6/12	Gigabit	Jun 2002
8685-3RX	1 x Xeon MP 1.6GHz	1MB	1GB	Hot Spare/Chipkill	None	2 x Ultra160	7U rack	7 x10 (16 bays max)	6/12	Gigabit	Jun 2002
Positioning Processors	Intel Xeon Processor MP system loaded with X-Architecture™ high availability features like Hot Spare Memory technology										
L2 cache	1 x Intel® Xeon™ Processor MP 1.4, 1.5, or 1.6GHz ¹ with 400MHz frontside bus / Hyper-Threading technology										
L3 cache	256KB / on die of processor / at processor speed										
Processor upgrade Implementation	512KB or 1MB / on die of processor / at processor speed										
Memory	4-way SMP / up to four Xeon Processors MP (same speed/cache size)										
SCSI disk controller	System board contains four Intel 603-pin micro-PGA ZIF sockets, one memory board slot, six Active™ PCI-X slots, one PCI slot, and integrated SCSI, ethernet, graphics										
SCSI connectors	Adaptec® AIC-7899 / Wide Ultra160 SCSI (LVD 160MB/sec) / two channel / 64-bit 66MHz PCI 2.2 / integrated on planar										
IDE controller / cabling	Channel B: 68-pin connector on planar to SCSI backplane (one-drop 16-bit LVD cable) / Channel A: 68-pin connector on planar for optional one-drop 16-bit LVD cable (32P8164) to rear 0.8mm VHDCI connector										
Disk - capacity	Enhanced IDE ATA-100 controller in CSB5 South Bridge / one one-drop IDE cable from IDE controller to CD-ROM										
Disk - bays	None standard / supports up to 15,000 rpm disks / 80-pin SCA-2 connectors										
Mechanical Rack / conversion Architecture / chipset	Std: six hot-swap disk bays; max: six additional bays (via a SCSI backplane) with optional Upgrade Kit; All: Ultra320-enabled										
Slots (Active™ PCI-X)	EIA 19" rack (7U ⁴) or tower / tower models have hinged and lockable front door, side panels, casters										
Ethernet controller	Rack systems supported in IBM NetBAY™ racks / kit available to convert tower to rack (use NetBAY11 for rack to tower)										
CD-ROM / diskette	ServerWorks® Grand Champion™ 4.0 HE / CMIC Host Bridge (Memory Controller and I/O Bridge) and five REMCs / two CIOB-X I/O Bridges (IMB bus to Host Bridge, one with two PCI-X buses C and D, other with one PCI-X bus B and ethernet and one PCI 2.2 bus for SCSI / CSB5 South Bridge (Thin IMB to Host Bridge, one PCI 2.2 bus A, EIDE, USB, SMBus, IOAPIC, LPC bus to Super I/O) / five peer PCI buses / NS PC87417 Super I/O (diskette, keyboard, mouse)										
Rear ports	Six hot-swap PCI-X 1.0 slots ¹⁰ available with power and attention indicator lights (optical sensors control power to slot) / hot replace, hot upgrade, hot expansion / separated by insulative plastic dividers / 3.3 volt or universal										
Graphics controller	10/100/1000 gigabit ethernet / Broadcom® BCM 5703 / on PCI Bus B / full duplex / Wake on LAN® / Alert Standard Format 1.0										
Security	CD-ROM: 48X-20X ⁶ CD-ROM, IDE (ATAPI), 1.6" HH, bootable / Diskette drive: 3.5" 1.44 MB diskette drive, dust cover										
Systems management	Four USB (Vers 1.1), one serial (9-pin), keyboard (PS/2), mouse (PS/2), ethernet (RJ-45), graphics (DB-15), two RJ-45 (for integrated system management processor) / no parallel port										
Diagnostics	SVGA / ATI® Rage XL / on planar / 8MB SDRAM std/max / up to 1280x1024 at 85Hz / 32-bit 33MHz PCI 2.2 Bus A										
Software	Power-on password / administrator password / hinged and lockable front door to cover disk bays, power button, and reset button (tower only) / unattended boot / selectable boot										
Keyboard / mouse	IBM integrated system management processor (ISMP) / H8S2148 / on planar / provides system and environmental monitoring such as temp, optional disks, fans, power supplies / supports optional Remote Supervisor Adapter with 20-pin connector on planar for continuous power (no external power req)										
Power supply	Light Path Diagnostics™ panel providing LED map to failing part (under top cover) / Information LED Panel in front										
Fans	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director, and others										
	Tower only: IBM 103-key keyboard / IBM mouse (both black)										
	Std: two 370 watt hot-swap; Max: four 370 watt hot-swap / redundant with four power supplies / tool-free install / universal (voltage sensing) / fans in each power supply / PFA										
	Nine hot-swap redundant fans / plus fan in each power supply / variable speed / PFA / fan failure signals diagnostic LED										
	256MB PC1600 ECC DDR SDRAM RDIMM 33L3281										
	512MB PC1600 ECC DDR SDRAM RDIMM 33L3283										
	1GB PC1600 ECC DDR SDRAM RDIMM 33L3285										
	Xeon MP 1.4GHz/512KB L3 Cache Proc Upg 59P5111										
	Xeon MP 1.5GHz/512KB L3 Cache Proc Upg 59P5106										
	Xeon MP 1.6GHz/1MB L3 Cache Proc Upg 59P5107										
	6-pack Ultra320 Hot-Swap Expansion Kit 32P8163										
	370 watt Hot-Swap Redundant Power Supply 31P6133										
	IBM 7U x 26D Tower-to-Rack Conversion Kit III 32P1474										
	IBM External SCSI Interface Kit (for rear SCSI) 32P8164										
	Media Bay Cable Kit (2-drop SCSI to HH bays) 10K2340										
	IBM ServeRAID™-4H Ultra160 SCSI Adapter 37L6889										
	IBM 36.4GB 15K Ultra160 SCSI Hot-Swap SL 06P5768										
	IBM 73.4GB 10K Ultra160 SCSI Hot-Swap SL 06P5756										
	IBM Remote Supervisor Adapter (PCI adapter) 09N7585										
	IBM T541 15" Flat Panel Color Monitor (black) 9512AB1										
	Other options at ibm.com/pc/us/accessories										

<p>↻ Tower dim: H15.5" x W17.6" x D29.8"; 104 to 150 lb</p> <p>↻ Rack dim: H12.0" x W17.6" x D27.7"; 104 to 150 lb</p> <p>Bay ① 3.5", SL 1", access, diskette</p> <p>Bay ② 5.25", HH 1.6" access, CD-ROM</p> <p>Bay ③ 5.25", HH 1.6" access, open*</p> <p>Bay ④ 5.25", HH 1.6" access, open*</p> <p>Bays 5 to 10 (six bays): standard 3.5" SL 1" hot-swap disk bays</p> <p>Bays 11 to 16 (six bays): optional 3.5" SL 1" hot-swap disk bays</p>	<p>Slot 1: 32-bit 33MHz 5v PCI, not hot-swap, Bus A; primarily for optional Remote Supervisor Adp</p> <p>Slot 2: full, 64-bit 100MHz 3.3v PCI-X, hot-swap, Bus B</p> <p>Slot 3: full, 64-bit 100MHz 3.3v PCI-X, hot-swap, Bus B</p> <p>Slot 4: full, 64-bit 100MHz 3.3v PCI-X, hot-swap, Bus C</p> <p>Slot 5: full, 64-bit 100MHz 3.3v PCI-X, hot-swap, Bus C</p> <p>Slot 6: full, 64-bit 100MHz 3.3v PCI-X, hot-swap, Bus D</p> <p>Slot 7: full, 64-bit 100MHz 3.3v PCI-X, hot-swap, Bus D</p> <p>↻ Setup Program is available by pressing F1 at startup; Diagnostics (PC-Doctor) by pressing F2 at startup; CTRL+A for SCSISelect Utility</p> <p>↻ Removeable top cover</p> <p>↻ Access adapters, memory, CPUs from top</p> <p>↻ Predictive Failure Analysis®: alerts generated by mgmt processor for IBM Director for DIMM(s), processor(s), VRM(s), power supply(s), disk(s), and fans</p> <p>Maximum internal disk capacity: 880GB² with twelve 73.4GB SL hot-swap SCSI disks</p>	<p>LIMITED WARRANTY³</p> <p>↻ 3 year parts and labor</p> <p>↻ International Warranty Service³</p> <p>↻ On site, 8 am-5 pm, Mon-Fri coverage excluding holidays, next business day response time⁷</p> <p>↻ 3 year on site warranty service upgrade options:⁷</p> <ul style="list-style-type: none"> • Mon-Fri coverage, 4 hour response time (ServicePac® part number 41L2738) • 24 hr x 7 day coverage, 4 hour response time (ServicePac part number 30L9187) • 24 hr x 7 day coverage, 2 hour response time (ServicePac part number 31L2723) <p>↻ 24x7¹⁴ toll-free support for warranty issues during the warranty period³</p>
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See footnotes for important warranty information (X255) © IBM Corp. August 2002

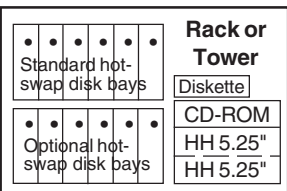
• = Hot-swap

US models announced June 11, 2002; withdrawn effective February 28, 2003

IBM eServer™ xSeries™ 255 (November 2002) - withdrawn xREF by eServer Field Skills Enablement Team

IBM® Type-model	Qty x Processor	L3 cache	Memory	ECC memory features	Disk	SCSI controller	Mechanical	Slots x bays	Hot-swap disk bays (std/max)	Ethernet	Available date
8685-41X	1 x Xeon™ MP 1.5GHz	1MB	512MB	Hot Spare/Chipkill™	None	2 x Ultra160	Tower	7 x10 (16 bays max)	6/12	Gigabit	Nov 2002
8685-4RX	1 x Xeon MP 1.5GHz	1MB	512MB	Hot Spare/Chipkill	None	2 x Ultra160	7U ⁴ rack	7 x10 (16 bays max)	6/12	Gigabit	Nov 2002
8685-51X	1 x Xeon MP 1.9GHz	1MB	1GB	Hot Spare/Chipkill	None	2 x Ultra160	Tower	7 x10 (16 bays max)	6/12	Gigabit	Nov 2002
8685-5RX	1 x Xeon MP 1.9GHz	1MB	1GB	Hot Spare/Chipkill	None	2 x Ultra160	7U rack	7 x10 (16 bays max)	6/12	Gigabit	Nov 2002
8685-61X	1 x Xeon MP 2.0GHz	2MB	1GB	Hot Spare/Chipkill	None	2 x Ultra160	Tower	7 x10 (16 bays max)	6/12	Gigabit	Nov 2002
8685-6RX	1 x Xeon MP 2.0GHz	2MB	1GB	Hot Spare/Chipkill	None	2 x Ultra160	7U rack	7 x10 (16 bays max)	6/12	Gigabit	Nov 2002

Positioning	<i>Intel Xeon Processor MP system loaded with X-Architecture™ high availability features like Hot Spare Memory technology</i>										
Processors	1 x Intel® Xeon™ Processor MP 1.5, 1.9, or 2.0GHz¹ with 400MHz frontside bus / Hyper-Threading technology										
L2 cache	512KB / on die of processor / at processor speed										
L3 cache	1MB or 2MB / on die of processor / at processor speed										
Processor upgrade	4-way SMP / up to four Xeon Processors MP (same speed/cache size)										
Implementation	Systemboard contains four Intel 603-pin micro-PGA ZIF sockets, one memory board slot, six Active™ PCI-X slots, one PCI slot, and integrated SCSI, ethernet, graphics										
Memory	512MB or 1GB std / 24GB ¹³ max / two slots used / ten slots available / PC1600 200MHz registered 184-pin ECC DDR-SDRAM DIMMs / one memory-board slot with 12 DIMM gold-connector slots / DIMMs must be installed in matched pairs or quads [a bank] / 2- or 4-way memory interleave / Hot Spare Memory (activated by failure of a pair or quad of DIMMs [a bank]; reqs additional memory matching failed bank) / Active Memory™ via memory mirroring (memory mirroring supported with any OS) / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips)										
SCSI disk controller	Adaptec® AIC-7899 / Wide Ultra160 SCSI (LVD 160MB/sec) / two channel / 64-bit 66MHz PCI 2.2 / integrated on planar										
SCSI connectors	<i>Channel B:</i> 68-pin connector on planar to SCSI backplane (one-drop 16-bit LVD cable) / <i>Channel A:</i> 68-pin connector on planar for optional one-drop 16-bit LVD cable (32P8164) to rear 0.8mm VHDCI connector										
IDE controller / cabling	Enhanced IDE ATA-100 controller in CSB5 South Bridge / one one-drop IDE cable from IDE controller to CD-ROM										
Disk - capacity	None standard / supports up to 15,000 rpm disks / 80-pin SCA-2 connectors										
Disk - bays	<i>Std:</i> six hot-swap disk bays; <i>max:</i> six additional bays (via a SCSI backplane) with optional Upgrade Kit; <i>All:</i> Ultra320-enabled										
Mechanical	EIA 19" rack (7U⁴) or tower / tower models have hinged and lockable front door, side panels, casters										
Rack / conversion	Rack systems supported in IBM NetBAY™ racks / kit available to convert tower to rack (use NetBAY11 for rack to tower)										
Architecture / chipset	ServerWorks® Grand Champion™ 4.0 HE / CMIC Host Bridge (Memory Controller and I/O Bridge) and five REMCs / two CIOB-X I/O Bridges (IMB bus to Host Bridge, one with two PCI-X buses C and D, other with one PCI-X bus B and ethernet and one PCI 2.2 bus for SCSI / CSB5 South Bridge (Thin IMB to Host Bridge, one PCI 2.2 bus A, EIDE, USB, SMBus, IOAPIC, LPC bus to Super I/O) / five peer PCI buses / NS PC87417 Super I/O (diskette, keyboard, mouse)										
Slots (Active™ PCI-X)	Six hot-swap PCI-X 1.0 slots ¹⁰ available with power and attention indicator lights (optical sensors control power to slot) / hot replace, hot upgrade, hot expansion / separated by insulative plastic dividers / 3.3 volt or universal										
Ethernet controller	10/100/1000 gigabit ethernet / Broadcom® BCM 5703 / on PCI Bus B / full duplex / Wake on LAN® / Alert Standard Format 1.0										
CD-ROM / diskette	<i>CD-ROM:</i> 48X-20X ⁶ CD-ROM, IDE (ATAPI), 1.6" HH, bootable / <i>Diskette drive:</i> 3.5" 1.44 MB diskette drive, dust cover										
Rear ports	Four USB (Vers 1.1), one serial (9-pin), keyboard (PS/2), mouse (PS/2), ethernet (RJ-45), graphics (DB-15), two RJ-45 (for integrated system management processor) / no parallel port										
Graphics controller	SVGA / ATI® Rage XL / on planar / 8MB SDRAM std/max / up to 1280x1024 at 85Hz / 32-bit 33MHz PCI 2.2 Bus A										
Security	Power-on password / administrator password / hinged and lockable front door to cover disk bays, power button, and reset button (tower only) / unattended boot / selectable boot										
Systems management	IBM integrated system management processor (ISMP) / H8S2148 / on planar / provides system and environmental monitoring such as temp, optional disks, fans, power supplies / supports optional Remote Supervisor Adapter with 20-pin connector on planar for continuous power (no external power req)										
Diagnostics	Light Path Diagnostics™ panel providing LED map to failing part (under top cover) / Information LED Panel in front										
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director, and others										
Keyboard / mouse	<i>Tower only:</i> IBM 103-key keyboard / IBM mouse (both black)										
Power supply	<i>Std:</i> two 370 watt hot-swap; <i>Max:</i> four 370 watt hot-swap / redundant with four power supplies / tool-free install / universal (voltage sensing) / fans in each power supply / PFA										
Fans	Nine hot-swap redundant fans / plus fan in each power supply / variable speed / PFA / fan failure signals diagnostic LED										
	512MB PC1600 ECC DDR SDRAM RDIMM					33L3283					
	1GB PC1600 ECC DDR SDRAM RDIMM					33L3285					
	2GB PC1600 ECC DDR SDRAM RDIMM					33L3287					
	Xeon MP 1.5GHz/1MB L3 Cache Proc Upg					59P6815					
	Xeon MP 1.9GHz/1MB L3 Cache Proc Upg					59P6816					
	Xeon MP 2.0GHz/2MB L3 Cache Proc Upg					59P6817					
	6-pack Ultra320 Hot-Swap Expansion Kit					32P8163					
	370 watt Hot-Swap Redundant Power Supply					31P6133					
	IBM 7U x 26D Tower-to-Rack Conversion Kit III					32P1474					
	IBM External SCSI Interface Kit (for rear SCSI)					32P8164					
	Media Bay Cable Kit (2-drop SCSI to HH bays)					10K2340					
	IBM ServeRAID™-4H Ultra160 SCSI Adapter					37L6889					
	IBM 36.4GB 15K Ultra160 SCSI Hot-Swap SL					06P5768					
	IBM 73.4GB 10K Ultra160 SCSI Hot-Swap SL					06P5756					
	IBM Remote Supervisor Adapter (PCI adapter)					09N7585					
	IBM T541 15" Flat Panel Color Monitor (black)					9512AB1					
	Other options at ibm.com/pc/us/accessories										

<p>↻ Tower dim: H15.5" x W17.6" x D29.8"; 104 to 150 lb</p> <p>↻ Rack dim: H12.0" x W17.6" x D27.7"; 104 to 150 lb</p>  <p>Bay ① 3.5", SL 1", access, diskette</p> <p>Bay ② 5.25", HH 1.6" access, CD-ROM</p> <p>Bay ③ 5.25", HH 1.6" access, open*</p> <p>Bay ④ 5.25", HH 1.6" access, open*</p> <p>Bays 5 to 10 (six bays): standard 3.5" SL 1" hot-swap disk bays</p> <p>Bays 11 to 16 (six bays): optional 3.5" SL 1" hot-swap disk bays</p>	<p>Slot 1: 32-bit 33MHz 5v PCI, not hot-swap, Bus A; primarily for optional Remote Supervisor Adp</p> <p>Slot 2: full, 64-bit 100MHz 3.3v PCI-X, hot-swap, Bus B</p> <p>Slot 3: full, 64-bit 100MHz 3.3v PCI-X, hot-swap, Bus B</p> <p>Slot 4: full, 64-bit 100MHz 3.3v PCI-X, hot-swap, Bus C</p> <p>Slot 5: full, 64-bit 100MHz 3.3v PCI-X, hot-swap, Bus C</p> <p>Slot 6: full, 64-bit 100MHz 3.3v PCI-X, hot-swap, Bus D</p> <p>Slot 7: full, 64-bit 100MHz 3.3v PCI-X, hot-swap, Bus D</p> <p>↻ Setup Program is available by pressing F1 at startup; Diagnostics (PC-Doctor) by pressing F2 at startup; CTRL+A for SCSISelect Utility</p> <p>↻ Removeable top cover</p> <p>↻ Access adapters, memory, CPUs from top</p> <p>↻ Predictive Failure Analysis®: alerts generated by mgmt processor for IBM Director for DIMM(s), processor(s), VRM(s), power supply(s), disk(s), and fans</p> <p>Maximum internal disk capacity: 880GB² with twelve 73.4GB SL hot-swap SCSI disks</p>	<p>LIMITED WARRANTY³</p> <p>↻ 3 year parts and labor</p> <p>↻ International Warranty Service³</p> <p>↻ On site, 8 am-5 pm, Mon-Fri coverage excluding holidays, next business day response time⁷</p> <p>↻ On site service upgrade options (in eligible locations):⁷</p> <ul style="list-style-type: none"> • 3 year IOR 9x5, 4 hr avg response (ServicePac® part num 41L2738) • 3 year IOR 24x7, 2 hr avg resp (ServicePac part num 31L2723) • 5 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9223) • Other ServicePac options at ibm.com/services/its/us/source/wamomxeu.pdf <p>↻ 24x7¹⁴ toll-free support for warranty issues during the warranty period³</p>
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See footnotes for important warranty information

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• = Hot-swap

US models announced November 5, 2002; withdrawn effective September 26, 2003

IBM® Type-model	Qty x Processor	L3 cache	Memory	ECC memory features	Disk	SCSI controller	Mechanical	Slots x disk bays (std/max)	Ethernet	Available date
8685-71X	1 x Xeon™ MP 2.0GHz	1MB	512MB	Hot Spare/Chipkill™	None	2 x Ultra160	Tower	7 x10	6/12 Gigabit	Jun 2003
8685-7RX	1 x Xeon MP 2.0GHz	1MB	512MB	Hot Spare/Chipkill	None	2 x Ultra160	Rack	7 x10	6/12 Gigabit	Jun 2003
8685-72X	2 x Xeon MP 2.0GHz	1MB	1GB	Hot Spare/Chipkill	None	2 x Ultra160	Tower	7 x10	6/12 Gigabit	Nov 2003
8685-73X	2 x Xeon MP 2.0GHz	1MB	3GB	Hot Spare/Chipkill	2 x 36.4GB 10K	2 x Ultra160	Tower	7 x10	6/12 Gigabit	Nov 2003
8685-81X	1 x Xeon MP 2.5GHz	1MB	1GB	Hot Spare/Chipkill	None	2 x Ultra160	Tower	7 x10	6/12 Gigabit	Jun 2003
8685-8RX	1 x Xeon MP 2.5GHz	1MB	1GB	Hot Spare/Chipkill	None	2 x Ultra160	Rack	7 x10	6/12 Gigabit	Jun 2003
8685-91X	1 x Xeon MP 2.8GHz	2MB	1GB	Hot Spare/Chipkill	None	2 x Ultra160	Tower	7 x10	6/12 Gigabit	Jun 2003
8685-9RX	1 x Xeon MP 2.8GHz	2MB	1GB	Hot Spare/Chipkill	None	2 x Ultra160	Rack	7 x10	6/12 Gigabit	Jun 2003

Processors	1 or 2 x Intel® Xeon™ Processor MP 2.0, 2.5, or 2.8GHz¹ with 400MHz frontside bus / Hyper-Threading technology									
L2 cache	512KB / on die of processor / at processor speed									
L3 cache	1MB or 2MB / on die of processor / at processor speed									
Processor upgrade Implementation	4-way SMP / up to four Xeon Processors MP (same speed/cache size) Systemboard contains four Intel 603-pin micro-PGA ZIF sockets, one memory board slot, six Active™ PCI-X slots, one PCI slot, and integrated SCSI, ethernet, graphics									
Memory	Up to 3GB std / 24GB¹³ max / two (or six on 73X) slots used / ten (or six) slots available / PC1600 200MHz registered 184-pin ECC DDR-SDRAM DIMMs / one memory-board std with 12 DIMM gold-connector slots / DIMMs must be installed in matched pairs or quads [a bank] / 2- or 4-way memory interleave / Hot Spare Memory (activated by failure of a pair or quad of DIMMs [a bank]; reqs additional memory matching failed bank) / Active Memory™ via memory mirroring (memory mirroring supported with any OS) / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips)									
SCSI disk controller	Adaptec® AIC-7899 / Wide Ultra160 SCSI (LVD 160MB/sec) / two channel / 64-bit 66MHz PCI 2.2 / integrated on planar									
SCSI connectors	Channel B: 68-pin connector on planar to SCSI backplane (one-drop 16-bit LVD cable) / Channel A: 68-pin connector on planar for optional one-drop 16-bit LVD cable (32P8164) to rear 0.8mm VHDCI connector									
IDE controller / cabling	Enhanced IDE ATA-100 controller in CSB5 South Bridge / one one-drop IDE cable from IDE controller to CD-ROM									
Disk - capacity	None (or two) standard / supports up to 15,000 rpm disks / 80-pin SCA-2 connectors									
Disk - bays	Std: six hot-swap disk bays; max: six additional bays (via a SCSI backplane) with optional Upgrade Kit; All: Ultra320-enabled									
Mechanical	EIA 19" rack (7U⁴) or tower / tower models have hinged and lockable front door, side panels, casters									
Rack / conversion	Rack systems supported in IBM NetBAY™ racks / kit available to convert tower to rack (use NetBAY11 for rack to tower)									
Architecture / chipset	ServerWorks® Grand Champion™ 4.0 HE / CMIC Host Bridge (Memory Controller and I/O Bridge) and five REMCs / two CIOB-X I/O Bridges (IMB bus to Host Bridge, one with two PCI-X buses C and D, other with one PCI-X bus B and ethernet and one PCI 2.2 bus for SCSI) / CSB5 South Bridge (Thin IMB to Host Bridge, one PCI 2.2 bus A, EIDE, USB, SMBus, IOAPIC, LPC bus to Super I/O) / five peer PCI buses / NS PC87417 Super I/O (diskette, keyboard, mouse)									
Slots (Active™ PCI-X)	Six hot-swap PCI-X 1.0 slots¹⁰ available with power and attention indicator lights (optical sensors control power to slot) / hot replace, hot upgrade, hot expansion / separated by insulative plastic dividers / 3.3 volt or universal									
Ethernet controller	10/100/1000 gigabit ethernet / Broadcom® BCM 5703 / on PCI Bus B / full duplex / Wake on LAN® / Alert Standard Format 1.0									
CD-ROM / diskette	CD-ROM: 48X-20X⁶ CD-ROM, IDE (ATAPI), 1.6" HH, bootable / Diskette drive: 3.5" 1.44 MB diskette drive, dust cover									
Rear ports	Four USB (Vers 1.1), one serial (9-pin), keyboard (PS/2), mouse (PS/2), ethernet (RJ-45), graphics (DB-15), two RJ-45 (for integrated system management processor) / no parallel port									
Graphics controller	SVGA / ATI® Rage XL / on planar / 8MB SDRAM std/max / up to 1280x1024 at 85Hz / 32-bit 33MHz PCI 2.2 Bus A									
Security	Power-on password / administrator password / hinged and lockable front door to cover disk bays, power button, and reset button (tower only) / unattended boot / selectable boot									
Systems management	IBM integrated system management processor (ISMP) / H8S2148 / on planar / provides system and environmental monitoring such as temp, optional disks, fans, power supplies / supports optional Remote Supervisor Adapter with 20-pin connector on planar for continuous power (no external power req)					512MB PC1600 ECC DDR SDRAM RDIMM 33L3283 1GB PC1600 ECC DDR SDRAM RDIMM 33L3285 2GB PC1600 ECC DDR SDRAM RDIMM 33L3287 Xeon MP 2.0GHz/1MB L3 Cache Proc Upg 73P8805 Xeon MP 2.5GHz/1MB L3 Cache Proc Upg 73P8806 Xeon MP 2.8GHz/2MB L3 Cache Proc Upg 73P8807 6-pack Ultra320 Hot-Swap Expansion Kit 32P8163 370 watt Hot-Swap Redundant Power Supply 31P6133 IBM 7U x 26D Tower-to-Rack Conversion Kit III 32P1474 IBM External SCSI Interface Kit (for rear SCSI) 32P8164 Media Bay Cable Kit (2-drop SCSI to HH bays) 10K2340 IBM ServeRAID™-4H Ultra160 SCSI Adapter 37L6889 IBM 36.4GB 10K Ultra160 SCSI Hot-Swap SL 06P5755 IBM 73.4GB 10K Ultra160 SCSI Hot-Swap SL 06P5756 IBM Remote Supervisor Adapter II 59P2984 IBM T541 15" Flat Panel Color Monitor (black) 9512AB1 Other options at ibm.com/pc/us/accessories				
Diagnostics	Light Path Diagnostics™ panel providing LED map to failing part (under top cover) / Information LED Panel in front									
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director, and others									
Keyboard / mouse	Tower only: IBM 103-key keyboard / IBM mouse (both black)									
Power supply	Std: two 370 watt hot-swap; Max: four 370 watt hot-swap / redundant with four power supplies / tool-free install / universal (voltage sensing) / fans in each power supply / PFA									
Fans	Nine hot-swap redundant fans / plus fan in each power supply / variable speed / PFA / fan failure signals diagnostic LED									

◊ Tower dim: H15.5" x W17.6" x D29.8"; 104 to 150 lb
◊ Rack dim: H12.0" x W17.6" x D27.7"; 104 to 150 lb

	Rack or Tower Diskette CD-ROM HH 5.25" HH 5.25"
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Bay ① 3.5", SL 1", access, diskette
 Bay ② 5.25", HH 1.6" access, CD-ROM
 Bay ③ 5.25", HH 1.6" access, open*
 Bay ④ 5.25", HH 1.6" access, open*
 Bays 5 to 10 (six bays): standard 3.5" SL 1" hot-swap disk bays
 Bays 11 to 16 (six bays): optional 3.5" SL 1" hot-swap disk bays

Slot 1: 32-bit 33MHz 5v PCI, not hot-swap, Bus A; primarily for optional Remote Supervisor Adp
 Slot 2: full, 64-bit 100MHz 3.3v PCI-X, hot-swap, Bus B
 Slot 3: full, 64-bit 100MHz 3.3v PCI-X, hot-swap, Bus B
 Slot 4: full, 64-bit 100MHz 3.3v PCI-X, hot-swap, Bus C
 Slot 5: full, 64-bit 100MHz 3.3v PCI-X, hot-swap, Bus C
 Slot 6: full, 64-bit 100MHz 3.3v PCI-X, hot-swap, Bus D
 Slot 7: full, 64-bit 100MHz 3.3v PCI-X, hot-swap, Bus D

◊ Setup Program is available by pressing F1 at startup; Diagnostics (PC-Doctor) by pressing F2 at startup; CTRL+A for SCSISelect Utility
 ◊ Removeable top cover
 ◊ Access adapters, memory, CPUs from top
 ◊ Predictive Failure Analysis®: alerts generated by mgmt processor for IBM Director for DIMM(s), processor(s), VRM(s), power supply(s), disk(s), and fans
 Maximum internal disk capacity: 880GB² with twelve 73.4GB SL hot-swap SCSI disks

LIMITED WARRANTY³

◊ 3 year parts and labor
 ◊ International Warranty Service³
 ◊ On site, 8 am-5 pm, Mon-Fri coverage excluding holidays, next business day response time⁷
 ◊ On site service upgrade options (in eligible locations):⁷

- 3 year IOR 9x5, 4 hr avg resp. (ServicePac® part num 41L2738)
- 3 year IOR 24x7, 2 hr avg resp (ServicePac part num 31L2723)
- 5 year IOR 9x5, 4 hr avg resp. (ServicePac part num 69P9223)

◊ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
 ◊ 24x7¹⁴ toll-free support for warranty issues during the warranty period⁸

See footnotes for important warranty information • = Hot-swap
US models announced June 2003 or November 2003

◊ Models withdrawn from marketing effective March 2004 (72X, 73X) and June 29, 2004 (81X, 8RX, 91X, 9RX)

IBM® Type-model	Qty x Processor	L3 cache	Memory	ECC memory features	Disk	SCSI controller	Mechanical	Slots x disk bays (std/max)	Ethernet	Available date
8685-A1X	1 x Xeon™ MP 2.2GHz	2MB	512MB	Hot Spare/Chipkill™	None	2 x Ultra160	Tower	7 x10	6/12 Gigabit	Mar 2004
8685-ARX	1 x Xeon MP 2.2GHz	2MB	512MB	Hot Spare/Chipkill	None	2 x Ultra160	Rack	7 x10	6/12 Gigabit	Mar 2004
8685-B1X	1 x Xeon MP 2.7GHz	2MB	1GB	Hot Spare/Chipkill	None	2 x Ultra160	Tower	7 x10	6/12 Gigabit	Mar 2004
8685-BRX	1 x Xeon MP 2.7GHz	2MB	1GB	Hot Spare/Chipkill	None	2 x Ultra160	Rack	7 x10	6/12 Gigabit	Mar 2004
8685-C1X	1 x Xeon MP 3.0GHz	4MB	1GB	Hot Spare/Chipkill	None	2 x Ultra160	Tower	7 x10	6/12 Gigabit	Mar 2004
8685-CRX	1 x Xeon MP 3.0GHz	4MB	1GB	Hot Spare/Chipkill	None	2 x Ultra160	Rack	7 x10	6/12 Gigabit	Mar 2004
8685-7EX	2 x Xeon MP 2.0 GHz	1MB	4GB	Hot Spare/Chipkill	3 x 73GB - 10k	2 x Ultra160	Tower	7 x10	6/12 Gigabit	Nov 2004

Processors **1 x Intel® Xeon™ Processor MP 2.0, 2.2, 2.7, or 3.0GHz¹** with 400MHz frontside bus / Hyper-Threading technology
 L2 cache **512KB** / on die of processor / at processor speed
 L3 cache **1MB, 2MB or 4MB** / on die of processor / at processor speed
 Processor upgrade Implementation **4-way SMP** / up to four Xeon Processors MP (same speed/cache size)
 Systemboard contains four Intel 603-pin micro-PGA ZIP sockets, one memory board slot, six Active™ PCI-X slots, one PCI slot, and integrated SCSI, ethernet, graphics

Memory Up to **4GB** std / 24GB¹³ max / 512 & 1GB: two slots used / 4GB: 4 slots used / twelve slots / **PC1600** 100MHz registered 184-pin ECC DDR-SDRAM DIMMs / one memory-board std with 12 DIMM gold-connector slots / DIMMs must be installed in matched pairs or quads [a bank] / 2- or 4-way memory interleave / **Hot Spare Memory** (activated by failure of a pair or quad of DIMMs [a bank]; reqs additional memory matching failed bank) / **Active Memory™ via memory mirroring** (memory mirroring supported with any OS) / **Error Checking and Correcting (ECC)** via **16-bit Checksum Chipkill™** (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips)

SCSI disk controller Adaptec® AIC-7899 / Wide Ultra160 SCSI (LVD 160MB/sec) / two channel / 64-bit 66MHz PCI 2.2 / integrated on planar
 SCSI connectors **Channel B:** 68-pin connector on planar to SCSI backplane (one-drop 16-bit LVD cable) / **Channel A:** 68-pin connector on planar for optional one-drop 16-bit LVD cable (32P8164) to rear 0.8mm VHDCI connector
 IDE controller / cabling Enhanced IDE ATA-100 controller in CSB5 South Bridge / one one-drop IDE cable from IDE controller to CD-ROM
 Disk - capacity **7EX:** 3 x 73GB - 10K / supports up to 15,000 rpm disks / 80-pin SCA-2 connectors
 Disk - bays **Std:** six hot-swap disk bays; **max:** six additional bays (via a SCSI backplane) with optional Upgrade Kit; **All:** Ultra320-enabled

Mechanical **EIA 19" rack (7U⁴) or tower** / tower models have hinged and lockable front door, side panels, casters
 Rack / conversion Rack systems supported in IBM NetBAY™ racks / kit available to convert tower to rack (use NetBAY11 for rack to tower)
 Architecture / chipset **ServerWorks® Grand Champion™ 4.0 HE** / CMIC Host Bridge (Memory Controller and I/O Bridge) and five REMCs / two CIOB-X I/O Bridges (IMB bus to Host Bridge, one with two PCI-X buses C and D, other with one PCI-X bus B and ethernet and one PCI 2.2 bus for SCSI) / CSB5 South Bridge (Thin IMB to Host Bridge, one PCI 2.2 bus A, EIDE, USB, SMBus, IOAPIC, LPC bus to Super I/O) / five peer PCI buses / NS PC87417 Super I/O (diskette, keyboard, mouse)
 Slots (Active™ PCI-X) Six hot-swap PCI-X 1.0 slots¹⁰ available with power and attention indicator lights (optical sensors control power to slot) / **hot replace, hot upgrade, hot expansion** / separated by insulative plastic dividers / 3.3 volt or universal

Ethernet controller 10/100/1000 gigabit ethernet / Broadcom® BCM 5703 / on PCI Bus B / full duplex / Wake on LAN® / Alert Standard Format 1.0
 CD-ROM / diskette **CD-ROM:** 48X-20X⁶ CD-ROM, IDE (ATAPI), 1.6" HH, bootable / **Diskette drive:** 3.5" 1.44 MB diskette drive, dust cover
 Rear ports Four USB (Vers 1.1), one serial (9-pin), keyboard (PS/2), mouse (PS/2), ethernet (RJ-45), graphics (DB-15), two RJ-45 (for integrated system management processor) / no parallel port
 Graphics controller SVGA / ATI® Rage XL / on planar / 8MB SDRAM std/max / up to 1280x1024 at 85Hz / 32-bit 33MHz PCI 2.2 Bus A

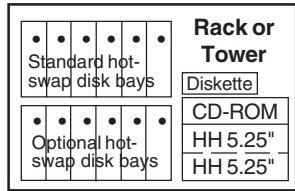
Security Power-on password / administrator password / hinged and lockable front door to cover disk bays, power button, and reset button (tower only) / unattended boot / selectable boot

Systems management **IBM integrated system management processor (ISMP)** / H8S2148 / on planar / provides system and environmental monitoring such as temp, optional disks, fans, power supplies / supports optional Remote Supervisor Adapter with 20-pin connector on planar for continuous power (no external power req)
 Diagnostics **Light Path Diagnostics™** panel providing LED map to failing part (under top cover) / Information LED Panel in front
 Software **ServerGuide™** (CD-ROM installation and configuration utilities), IBM Director, and others

Keyboard / mouse **Tower only:** IBM 103-key keyboard / IBM mouse (both black)
 Power supply **Std:** two 370 watt hot-swap; **Max:** four 370 watt hot-swap / redundant with four power supplies / tool-free install / universal (voltage sensing) / fans in each power supply / PFA
 Fans **Nine hot-swap redundant fans** / plus fan in each power supply / variable speed / PFA / fan failure signals diagnostic LED

512MB PC1600 ECC DDR SDRAM RDIMM	33L3283
1GB PC1600 ECC DDR SDRAM RDIMM	33L3285
2GB PC1600 ECC DDR SDRAM RDIMM	33L3287
Xeon MP 2.0GHz/1MB L3 Cache Proc Upg	73P8805
Xeon MP 2.5GHz/1MB L3 Cache Proc Upg	73P8806
Xeon MP 2.8GHz/2MB L3 Cache Proc Upg	73P8807
6-pack Ultra320 Hot-Swap Expansion Kit	32P8163
370 watt Hot-Swap Redundant Power Supply	31P6133
IBM 7U x 26D Tower-to-Rack Conversion Kit III	32P1474
IBM External SCSI Interface Kit (for rear SCSI)	32P8164
Media Bay Cable Kit (2-drop SCSI to HH bays)	10K2340
IBM ServeRAID™-4H Ultra160 SCSI Adapter	37L6889
IBM 36.4GB 10K Ultra160 SCSI Hot-Swap SL	06P5755
IBM 73.4GB 10K Ultra160 SCSI Hot-Swap SL	06P5756
IBM Remote Supervisor Adapter II	59P2984
IBM T541 15" Flat Panel Color Monitor (black)	9512AB1
Other options at ibm.com/pc/us/accessories	

- ⊖ Tower dim: H15.5" x W17.6" x D29.8"; 104 to 150 lb
- ⊖ Rack dim: H12.0" x W17.6" x D27.7"; 104 to 150 lb
- Slot 1: 32-bit 33MHz 5v PCI, not hot-swap, Bus A; primarily for optional Remote Supervisor Adp
- Slot 2: full, 64-bit 100MHz 3.3v PCI-X, hot-swap, Bus B
- Slot 3: full, 64-bit 100MHz 3.3v PCI-X, hot-swap, Bus B
- Slot 4: full, 64-bit 100MHz 3.3v PCI-X, hot-swap, Bus C
- Slot 5: full, 64-bit 100MHz 3.3v PCI-X, hot-swap, Bus C
- Slot 6: full, 64-bit 100MHz 3.3v PCI-X, hot-swap, Bus D
- Slot 7: full, 64-bit 100MHz 3.3v PCI-X, hot-swap, Bus D



- ⊖ Black color
- ⊖ ACPI 1.0
- ⊖ Orange components and labels indicate hot-swap options
- ⊖ Vital Product Data
- ⊖ Backup BIOS
- ⊖ Setup Program is available by pressing F1 at startup; **Diagnostics (PC-Doctor)** by pressing F2 at startup; CTRL+A for SCSISelect Utility
- ⊖ Removeable top cover
- ⊖ Access adapters, memory, CPUs from top
- ⊖ Predictive Failure Analysis®: alerts generated by mgmt processor for IBM Director for DIMM(s), processor(s), VRM(s), power supply(s), disk(s), and fans

Bay ① 3.5", SL 1", access, diskette
 Bay ② 5.25", HH 1.6" access, CD-ROM
 Bay ③ 5.25", HH 1.6" access, open*
 Bay ④ 5.25", HH 1.6" access, open*
 Bays 5 to 10 (six bays): standard 3.5" SL 1" hot-swap disk bays
 Bays 11 to 16 (six bays): optional 3.5" SL 1" hot-swap disk bays

Maximum internal disk capacity: 880GB² with twelve 73.4GB SL hot-swap SCSI disks

LIMITED WARRANTY³

- ⊖ 3 year parts and labor
- ⊖ International Warranty Service³
- ⊖ On site, 8 am-5 pm, Mon-Fri coverage excluding holidays, next business day response time⁷
- ⊖ On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 9x5, 4 hr avg response (ServicePac® part num 41L2738)
 - 3 year IOR 24x7, 2 hr avg resp (ServicePac part num 31L2723)
 - 5 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9223)
- ⊖ <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ⊖ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

IBM® Type-model	Qty x Processor	L2 cache	Memory	DIMM slots	Memory Cards	Disks	SCSI controller	Mechanical	Slots x bays	Hot-swap pwr supplies	Warranty (yrs.)	Available date
8865-11Y	1 x Xeon™ MP 3.16GHz	1MB	2GB(2x1GB)	4	One	None	SAS	Tower	6x12	2 x775W	3	Sep 2005
8865-12Y	1 x Xeon™ MP 3.16GHz	1MB	1GB(2x512MB)	4	One	None	SAS	Tower	6x12	2 x775W	3	Sep 2005
8865-1RY	1 x Xeon™ MP 3.16GHz	1MB	2GB(2x1GB)	4	One	None	SAS	7U Rack	6x12	2 x775W	3	Sep 2005
8865-1SY	1 x Xeon™ MP 3.16GHz	1MB	1GB(2x512MB)	4	One	None	SAS	7U Rack	6x12	2 x775W	3	Sep 2005
8865-21Y	1 x Xeon™ MP 3.66GHz	1MB	2GB(2x1GB)	4	One	None	SAS	Tower	6x12	2 x775W	3	Sep 2005
8865-2RY	1 x Xeon™ MP 3.66GHz	1MB	2GB(2x1GB)	4	One	None	SAS	7U Rack	6x12	2 x775W	3	Sep 2005
8865-E1Y	2 x Xeon™ MP 3.66GHz	1MB	4GB(4x1GB)	8	Two	None	SAS	Tower	6x12	2 x775W	3	Sep 2005
8865-E2Y	1 x Xeon™ MP 3.16GHz	1MB	1GB(2x512MB)	8	Two	None	SAS	7U Rack	6x12	2 x775W	3	Sep 2005

Processors	One or two 64-bit Intel® Xeon™ Processor MP 3.16 or 3.66GHz² with 667MHz frontside bus std / NetBurst™ / Extended Memory 64 Technology™ (EM64T) / Hyper-Threading technology																																
L2 cache	1MB / on die of processor / at processor speed / Xcel4™ Dynamic Server Cache																																
Processor upgrade Implementation	4-way SMP / up to four Xeon Processors MP (same speed/cache size) System board contains four Intel 604-pin micro-PGA4 ZIF sockets, one memory board slot, six Active™ PCI-X 2.0 slots, integrated Serial Attach SCSI (SAS), ethernet, and graphics																																
Active Memory™	Up to 4GB std / 64GB max ^{12,13} (with 4GB DIMMs) using high-capacity memory card / one memory board standard with 4 DIMM gold-connector slots / DIMMs must be installed in matched pairs / PC2-3200 400MHz registered 240-pin DDR2-SDRAM RDIMMs / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ / Memory ProteXion™ (redundant bit steering) and Memory Mirroring™ and Hot-swap (non-OS specific) / Hot-add (supported only with Microsoft® Windows™ Server 2003™)																																
SAS disk controller	ALL: Adaptec® AIC-9410 / Dual-channel Serial Attached SCSI (SAS) 3.0GHz (3GB/sec) / 64-bit 266MHz PCI-X 2.0																																
SAS connectors	Dual channel Controller wired to dual SAS backplanes																																
SAS cabling	Hot-swap bays connect to integrated SAS controller through SAS expander, 1 cable for each of the 2 SAS backplanes																																
IDE controller / cabling	Enhanced IDE ATA-33 controller in CSB6 South Bridge																																
Disk - capacity	Max: 3.6TB-10k / supports up to 15,000 rpm disks																																
Disk - bays	Up to Twelve 3.5" hot-swap bays / Six standard converged tray / 80-pin SCA-2 connectors / One FH (or 2 HH) Tape Drive Bays																																
Mechanical	EIA 19" rack models (7U⁴) x 28" deep / supported in NetBAY™ Racks (such as NetBAY42 SR, NetBAY42 ER)																																
Chipset	IBM XA-64e™ 3rd Generation chipset / IBM Integrated Processor/Memory Controller (improved performance from earlier models) / 2 IBM PCI-X 2.0 Host Bridges / 1 supports adapter PCI 33MHz and 66MHz, slot for optional ServerRAID 8i (inc. graphics), ServerWorks® CSB6 South Bridge (IDE, USB, bus for Super I/O NS 87417 [diskette, keyboard, mouse]), Dual Port Broadcom 5704, and 2 PCI-X 2.0 slots / Host Bridge supports 4 PCI-X 2.0 slots																																
I/O Slots	Six total Active™ PCI-X 2.0 64-bit slots available with power and attention indicator lights (optical sensors control power to slot) / hot replace, hot upgrade, hot expansion / separated by insulative plastic dividers, all slots supported up to 266MHz																																
CD-ROM / diskette	IBM 24X Max SlimLine CD-ROM, IDE (ATAPI), 1.6" HH, bootable / 3.5" 1.44 MB diskette drive																																
Ethernet	Broadcom® 5704 10/100/1000 dual ethernet / on systemboard / 64-bit 266Mhz PCI-X 2.0 / Wake on LAN® / Alert on LAN™ 2																																
Graphics controller	SVGA / ATI® Radeon Mobility 7000 / on planar / 16MB SDRAM std/max / 32-bit 33MHz PCI 2.2 bus																																
Ports	Rear: RSA ethernet, RSA serial, two USB (Ver 2.0), keyboard, mouse, analog DB-15 graphics, two ethernet, std. serial, RS-485 / Front: USB (Ver 2.0)																																
Security	Power-on and administrator passwords / unattended boot / selectable boot																																
Systems management	BMC standard / Remote Supervisor Adapter II slimline (optional) / PCI adapter / includes 10/100 ethernet, RJ-11, and serial connectors / provides remote console and mgmt / power on/off system / monitors power status, op system, temperature, disks, fans, power supplies																																
Diagnostics	Drop-down Light Path Diagnostics / primary indicator on information panel with LEDs associated with failing components / IBM Real Time Diagnostics (operated through IBM Director) available even while server running																																
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director, and others																																
Keyboard / mouse	Rack model: none standard / Tower model: IBM 104-key keyboard (PS/2) / IBM 3-button optical mouse (PS/2)																																
Power supplies	Std: two 775 watt hot-swap / redundant with three power supplies (N+1) / worldwide / voltage-sensing / auto-restart / rear accessible fans in each power supply / PFA																																
Cooling fans	Eight hot-swap, redundant, multi-speed fans / One cooling fan in each power supply filler when power supply is not installed / PFA / failure signals Diagnostic LED and mgmt processor																																
Options	<table border="0"> <tr> <td>1GB PC2-3200 CL3 ECC RDIMM (2x512MB)</td> <td>73P2865</td> <td>IBM ServeRAID 6M U320 256MB Adapter</td> <td>02R0988</td> </tr> <tr> <td>2GB PC2-3200 CL3 ECC RDIMM (2x1GB)</td> <td>73P2866</td> <td>IBM 73.4GB 10K 3.5" SAS Hot-swap HDD</td> <td>26K5709</td> </tr> <tr> <td>4GB PC2-3200 CL3 ECC RDIMM (2x2GB)</td> <td>73P2867</td> <td>IBM 146GB 10K 3.5" SAS Hot-Swap HDD</td> <td>26K5710</td> </tr> <tr> <td>Active Memory 4-slot Expansion Card</td> <td>13M7409</td> <td>IBM 300GB 10K 3.5" SAS Hot-Swap HDD</td> <td>26K5711</td> </tr> <tr> <td>Xeon MP 3.16GHz/1MB L2 Cache Proc Upg</td> <td>13N0694</td> <td>Remote Supervisor Adapter II Slimline</td> <td>59P2984</td> </tr> <tr> <td>Xeon MP 3.66GHz/1MB L2 Cache Proc Upg</td> <td>13N0695</td> <td>SAS 3.5" 6-drive Backplane</td> <td>13M7864</td> </tr> <tr> <td>775 watt Hot-Swap Power Supply (WW)</td> <td>13M7415</td> <td>IBM 73.4GB 15K 3.5" SAS Hot-swap HDD</td> <td>26K5698</td> </tr> <tr> <td>IBM ServeRAID™-8i SA-SCSI Adapter</td> <td>13N2227</td> <td>IBM 146GB 15K 3.5" SAS Hot-Swap HDD</td> <td>26K5699</td> </tr> </table>	1GB PC2-3200 CL3 ECC RDIMM (2x512MB)	73P2865	IBM ServeRAID 6M U320 256MB Adapter	02R0988	2GB PC2-3200 CL3 ECC RDIMM (2x1GB)	73P2866	IBM 73.4GB 10K 3.5" SAS Hot-swap HDD	26K5709	4GB PC2-3200 CL3 ECC RDIMM (2x2GB)	73P2867	IBM 146GB 10K 3.5" SAS Hot-Swap HDD	26K5710	Active Memory 4-slot Expansion Card	13M7409	IBM 300GB 10K 3.5" SAS Hot-Swap HDD	26K5711	Xeon MP 3.16GHz/1MB L2 Cache Proc Upg	13N0694	Remote Supervisor Adapter II Slimline	59P2984	Xeon MP 3.66GHz/1MB L2 Cache Proc Upg	13N0695	SAS 3.5" 6-drive Backplane	13M7864	775 watt Hot-Swap Power Supply (WW)	13M7415	IBM 73.4GB 15K 3.5" SAS Hot-swap HDD	26K5698	IBM ServeRAID™-8i SA-SCSI Adapter	13N2227	IBM 146GB 15K 3.5" SAS Hot-Swap HDD	26K5699
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<p>LIMITED WARRANTY³</p> <ul style="list-style-type: none"> ↪ 3 year parts and labor ↪ International Warranty Service³ ↪ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷ ↪ On site service upgrade options (in eligible locations):⁷ <ul style="list-style-type: none"> • 3 year IOR 24x7, 4 hr avg response (ServicePac part num 96P2253) • 3 year IOR 24x7, 2 hr avg response (ServicePac part num 96P2254) • 4 year IOR 9x5, NBD response (ServicePac part num 96P2255) • 5 year IOR 9x5, NBD response (ServicePac part num 69P2259) ↪ Other ServicePac options at http://www.ibm.com/services/us/its/pdf/wamomxueu.pdf ↪ 24x7¹⁴ toll-free support for warranty issues during the warranty period³ 	<p>Bay ① 3.5", SL 1", access, diskette Bay ② 5.25", HH 1.6" access, CD-ROM Bay ③ 5.25", HH 1.6" access, open* Bay ④ 5.25", HH 1.6" access, open* Bays 5 to 10 (six bays): standard 3.5" SL 1" hot-swap disk bays Bays 11 to 16 (six bays): optional 3.5" SL 1" hot-swap disk bays</p> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p style="text-align: center;">Light Path Diag 7U⁴ Rack or Tower</p> <p style="text-align: center;">Removable Processor Board Tray</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">• Opt disk</td> <td style="width: 33%;">• Opt disk</td> <td style="width: 33%;">Floppy Drive</td> </tr> <tr> <td>• Opt disk</td> <td>• Opt disk</td> <td>CD-ROM</td> </tr> <tr> <td>• Opt disk</td> <td>• Opt disk</td> <td>Full High Tape Bay</td> </tr> <tr> <td>• Opt disk</td> <td>• Opt disk</td> <td>or 2 Half High Bays</td> </tr> <tr> <td>• Opt disk</td> <td>• Opt disk</td> <td></td> </tr> <tr> <td>• Opt disk</td> <td>• Opt disk</td> <td></td> </tr> </table> </div> <ul style="list-style-type: none"> ↪ Stealth black color ↪ Tool-free serviceability ↪ Tower Dimensions: H15.5" x W18.2" x D30"(762mm) ↪ Tower Weight: 149 to 180lbs; 67.6 to 81.7Kg ↪ Rack Dimensions: H12" x W17.5" x D28.2" ↪ Rack Dimensions: H306mm x W444mm x D715mm ↪ Rack Weight: 144 to 158lbs; 65.4 to 71.7Kg ↪ Access adapters, fans, and memory from top ↪ Access processors and systemboard from front ↪ Access power supplies from back ↪ Setup Program by pressing F1 at startup ↪ Diagnostics (PC-Doctor) by pressing F2 at startup ↪ SCSISelect by pressing Ctrl+A at startup ↪ Drop Down Light Path Diagnostics (level 2 diagnostic panel) for outside view of potential problem without removing cover ↪ Predictive Failure Analysis® alerts on disks, power supplies, memory, processors, VRMs, and fans with IBM Director 	• Opt disk	• Opt disk	Floppy Drive	• Opt disk	• Opt disk	CD-ROM	• Opt disk	• Opt disk	Full High Tape Bay	• Opt disk	• Opt disk	or 2 Half High Bays	• Opt disk	• Opt disk		• Opt disk	• Opt disk		<p>BTU Output: Ship Config: 2,006 Btu/hr (588 watts) Full Config: 6,346 Btu/hr (1860 watts)</p>
• Opt disk	• Opt disk	Floppy Drive																		
• Opt disk	• Opt disk	CD-ROM																		
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• Opt disk	• Opt disk	or 2 Half High Bays																		
• Opt disk	• Opt disk																			
• Opt disk	• Opt disk																			
<p>All models: Maximum internal disk capacity: 3.6TB with 12x 300GB² hot-swap SAS disks</p>																				

IBM® Type-model	Processor	Memory	Disk	Disk controller	Mechanical	Slots x bays	Hot-swap disk bays	Ethernet	Available date
8672-21X	Celeron™ 800/100	128MB	None	Ultra160	1U ⁴ rack	2 slots x 4 bays	None	2 x 10/100 ethernet	Jun 2001
8672-22X	Celeron 800/100	128MB	20.4GB ²	EIDE ATA-100	1U rack	2 slots x 4 bays	None	2 x 10/100 ethernet	Jun 2001
8672-51X	Celeron 950/100	128MB	None	Ultra160	1U rack	2 slots x 4 bays	None	2 x 10/100 ethernet	Feb 2002
8672-52X	Celeron 950/100	128MB	20.4GB	EIDE ATA-100	1U rack	2 slots x 4 bays	None	2 x 10/100 ethernet	Feb 2002
8672-81X	Pentium® III 1GHz/133	256MB	None	Ultra160	1U rack	2 slots x 4 bays	None	2 x 10/100 ethernet	Jun 2001
8672-82X	Pentium III 1GHz/133	256MB	20.4GB	EIDE ATA-100	1U rack	2 slots x 4 bays	None	2 x 10/100 ethernet	Jun 2001

Processor **Intel® Celeron 800 or 950MHz with 100MHz frontside bus or Intel Pentium® III 1GHz with 133MHz frontside bus**
 L2 cache *Celeron:* **128KB** std and max / ECC / at processor speed
Pentium III: **256KB** std and max / ECC / at processor speed
 SMP support **No SMP** support
 Processor upgrade Implementation None supported
 Motherboard contains one Intel PGA370 socket (370-pin Flip-Chip Pin Grid Array (FC-PGA)), one integrated VRM, three DIMM sockets, two PCI slots, and integrated ethernet

Memory - std / max **128MB or 256MB** std / 1.5GB max¹³
 Memory - sockets 3 sockets / 2 available / **ECC** (Error Checking and Correcting) DIMMs and ECC memory controller
 Memory - features **SDRAM / 133MHz** / three 168-pin gold-plated DIMM 3.3 volt sockets / PC133-compliant
 Memory - support Supports unbuffered SDRAM ECC DIMMs

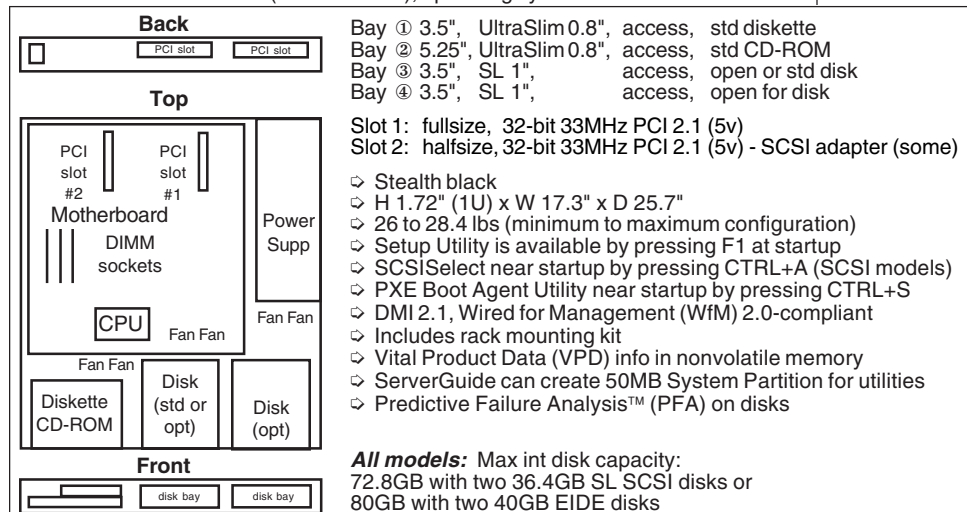
SCSI disk controller *Some models:* **Adaptec® 29160LP / single channel Wide Ultra160 SCSI** (LVD 160MB/sec) / 64-bit 33MHz PCI adapter (in a 32-bit slot) / one channel with up to 15 device support
 SCSI connectors *SCSI models:* One 68-pin internal SCSI connector / one 0.8mm VHDCI 68-pin external SCSI connector (not supported)
 IDE disk controller Enhanced IDE busmaster / ATA-100 support / two connectors on planar
 Cables *SCSI models:* one 2-drop 16-bit LVD SCSI cable, one 1-drop 40-conductor EIDE cable (connected to CD-ROM)
EIDE models: two 2-drop EIDE cables (one cable to CD-ROM, one 80-conductor cable to EIDE disk bays)
 Disk - features *EIDE:* 20.4GB ATA-100, 7200 rpm, 8.7ms read, S.M.A.R.T.⁵

Architecture / chipsets **VIA® Apollo Pro133A chip set** / VT82C694X North Bridge (memory controller, PCI 2.2 32-bit 33MHz controller) / VT82C686B South Bridge (IDE ATA-100, USB, diskette, serial, keyboard, mouse, ISA bus for flash BIOS)
 Mechanical **EIA 19" Rack (1U⁴)** / rack-mount only / supported in IBM NetBAY™ Rack products (such as NetBAY42 SR, NetBAY42 ER)
 Control Panel Front indicators/switches include Power, Power LED, Reset, and System Error LED

Ethernet controllers **2 x Intel 82550** ethernet controllers / on planar / 10BaseT, 100BaseTX / full duplex / 32-bit PCI bus / two RJ-45 connectors on rear / supports PXE 2.0 Boot Agent / Alert on LAN™ 2 support / Wake on LAN® support
 CD-ROM / diskette **24X-10X⁶ CD-ROM**; CAV (ATAPI); bootable; IDE / 3.5" 1.44MB diskette drive
 Rear ports *Serial:* one 9-pin; *Parallel:* none; *USB:* two ports (Version 1.1); *Mgmt:* none; keyboard; mouse; DB-15 graphics
 Console interconnects No system-to-system interconnect cable (separate keyboard, video, mouse ports on back)

Systems mgmt WinBond® W83791D / on planar / monitors system and processor temperature, fan speed and failure, and voltages
 Diagnostics Diagnostics via PC-Doctor on a standard IBM Enhanced Diagnostics CD (diskette can be created)

		OPTIONS	
Graphics controller	SVGA / PCI bus / S3® Savage4Pro (on planar) / 8MB SDRAM std and max / DDC2B / analog 15-pin D-shell		
Security	Power-on password / administrator password / unattended boot / selectable boot / unattended start mode	128MB SDRAM ECC DIMM 133MHz 256MB SDRAM ECC DIMM 133MHz 512MB SDRAM ECC DIMM 133MHz	33L3081 33L3083 33L3085
Software ⁹	ServerGuide™ (CD-based automated network OS installation and configuration tool), Norton AntiVirus™, and APC PowerChute Plus / includes IBM Director (system hardware mgmt software) and many utilities	40GB ATA-100 EIDE HDD 18.2GB 10K Ultra160 SCSI HDD 36.4GB 10K Ultra160 SCSI HDD 18.2GB 15K Ultra160 SCSI HDD	22P7157 00N8208 00N8209 19K0658
Keyboard / mouse	None standard	ServeRAID-4Lx Ultra160 SCSI Adapter	06P5740
Cooling fans	Six fans (two for processor, memory, halfsize PCI; two for left disk and fullsize PCI; two for power supply) / all variable speed / redundant cooling on single fan failure (other fans increase speed)	ServeRAID-4Mx Ultra160 SCSI Adapter Netfinity FAST500 Host Adapter IBM FASiT500 Storage Server	06P5736 00N6881 35521RU
Power supply	200 watt / universal / auto-sensing / not redundant / not hot-swap / Automatic Server Restart (ASR) support	IBM Netfinity Gigabit Ethernet Adapter IBM NetBAY42 Standard Rack (SR) IBM NetBAY42 Enterprise Rack (ER)	19K4401 9306420 930842S
Prerequisites	Monitor, keyboard, mouse, rack with perforated door, disk (some models), operating system	IBM T540 15" Flat Panel Color Monitor (black) Other options at ibm.com/pc/us/accessories	9511AG4



LIMITED WARRANTY³

- ↔ 3 year parts / 1 year labor
- ↔ International Warranty Service³
- ↔ 1st year: on site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- ↔ 2nd/3rd year: parts exchange only, call 1-800-772-2227
- ↔ 3 year on site warranty service upgrade options (in eligible locations):⁷
 - 9 hour coverage, Mon-Fri excluding holidays, next business day response time (ServicePac® 21P2079)
 - 9 hour coverage, Mon-Fri excluding holidays, 4 hour response time (ServicePac 21P2080)
 - 24 hr x 7 day coverage, 4 hour response time (ServicePac 21P2081)
 - 24 hr x 7 day coverage, 2 hour response time (ServicePac 21P2082)
- ↔ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

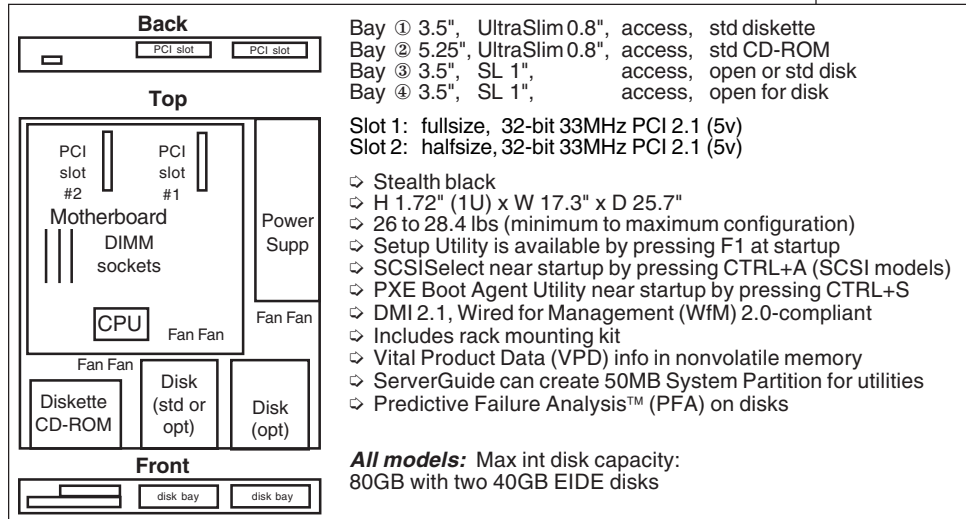
See footnotes for important warranty information
 US models announced on May 22, 2001, or February 12, 2002
 US models withdrawn effective May, September, or October 2002

IBM @server™ xSeries™ 300 (DC power model) - withdrawn xREF by eServer Field Skills Enablement Team

IBM® Type-model	Processor	Memory	Disk	Disk controller	Mechanical	Slots x bays	Hot-swap disk bays	Ethernet	Power supply	Available date
8672-2AX	Celeron™ 800Mhz ¹	128MB	20.4GB ²	EIDE ATA-100	1U ⁴ rack	2 slots x 4 bays	None	2 x 10/100	DC power	Sept 2001

DC power models are designed for network infrastructures requiring network equipment to support DC power environments

Positioning	<i>A compact yet expandable ultra-thin 1U server that is remarkably affordable</i>																																																																																					
Processor	Intel® Celeron 800MHz with 100MHz frontside bus																																																																																					
L2 cache	128KB std and max / ECC / at processor speed																																																																																					
SMP support	No SMP support																																																																																					
Processor upgrade	None supported																																																																																					
Implementation	Motherboard contains one Intel PGA370 socket (370-pin Flip-Chip Pin Grid Array (FC-PGA)), one integrated VRM, three DIMM sockets, two PCI slots, and integrated ethernet																																																																																					
Memory - std / max	128MB or 256MB std / 1.5GB max ¹³																																																																																					
Memory - sockets	3 sockets / 2 available / ECC (Error Checking and Correcting) DIMMs and ECC memory controller																																																																																					
Memory - features	SDRAM / 133MHz / three 168-pin gold-plated DIMM 3.3 volt sockets / PC133-compliant																																																																																					
Memory - support	Supports unbuffered SDRAM ECC DIMMs																																																																																					
SCSI disk controller	None																																																																																					
IDE disk controller	Enhanced IDE busmaster / ATA-100 support / two connectors on planar																																																																																					
Cables	Two 2-drop EIDE cables (one cable to CD-ROM, one 80-conductor cable to EIDE disk bays)																																																																																					
Disk - features	20.4GB EIDE / ATA-100 / 7200 rpm / 8.7 ms average read seek time / S.M.A.R.T.																																																																																					
Architecture / chipsets	VIA® Apollo Pro133A chip set / VT82C694X North Bridge (memory controller, PCI 2.2 32-bit 33MHz controller) / VT82C686B South Bridge (IDE ATA-100, USB, diskette, serial, keyboard, mouse, ISA bus for flash BIOS)																																																																																					
Mechanical	EIA 19" Rack (1U⁴) / rack-mount only / supported in IBM NetBAY™ Rack products (rack requires vented front door)																																																																																					
Control Panel	Front indicators/switches include Power, Power LED, Reset, and System Error LED																																																																																					
Ethernet controllers	2 x Intel 82550 ethernet controllers / on planar / 10BaseT, 100BaseTX / full duplex / 32-bit PCI bus / two RJ-45 connectors on rear / supports PXE 2.0 Boot Agent / Alert on LAN™ 2 support / Wake on LAN® support																																																																																					
CD-ROM / diskette	24X-10X⁵ CD-ROM ; CAV (ATAPI); bootable; IDE / 3.5" 1.44MB diskette drive																																																																																					
Rear ports	<i>Serial</i> : one 9-pin; <i>Parallel</i> : none; <i>USB</i> : two ports (Version 1.1); <i>Mgmt</i> : none; keyboard; mouse; DB-15 graphics																																																																																					
Console interconnects	No system-to-system interconnect cable (separate keyboard, video, mouse ports on back)																																																																																					
Systems mgmt	WinBond® W83791D / on planar / monitors system and processor temperature, fan speed and failure, and voltages																																																																																					
Diagnostics	Diagnostics via PC-Doctor on a standard IBM Enhanced Diagnostics CD (diskette can be created)																																																																																					
Graphics controller	SVGA / PCI bus / S3® Savage4Pro (on planar) / 8MB SDRAM std and max / DDC2B / analog 15-pin D-shell																																																																																					
Security	Power-on password / administrator password / unattended boot / selectable boot / unattended start mode																																																																																					
Software ⁹	ServerGuide™ (CD-based automated network OS installation and configuration tool), Norton AntiVirus™, and APC PowerChute Plus / includes IBM Director (system hardware mgmt software) and many utilities																																																																																					
Keyboard / mouse	None standard																																																																																					
Cooling fans	Six fans (two for processor, memory, halfsize PCI; two for left disk and fullsize PCI; two for power supply) / all variable speed / redundant cooling on single fan failure (other fans increase speed)																																																																																					
Power supply	200 watt (-48 to -60 V dc [direct current]) / auto-sensing / supports dual input sources (two power sources) / not redundant / not hot-swap / auto-restart support																																																																																					
Prerequisites	Appropriate dc power source and customer supplied wiring, monitor, keyboard, mouse, rack with perforated door, operating system																																																																																					
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LIMITED WARRANTY³

- ↪ 3 year parts / 1 year labor
- ↪ International Warranty Service³
- ↪ 1st year: on site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- ↪ 2nd/3rd year: parts exchange only, call 1-800-772-2227
- ↪ 3 year on site warranty service upgrade options (in eligible locations):⁷
 - 9 hour coverage, Mon-Fri excluding holidays, next business day response time
 - 9 hour coverage, Mon-Fri excluding holidays, 4 hour response
 - 24 hr x 7 day coverage, 4 hour response time
 - 24 hr x 7 day coverage, 2 hour response time
- ↪ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information
 US model announced August 28, 2001; withdrawn effective February 28, 2003

IBM Type-model	Qty x Processor	L2 cache	FSB MHz	Memory	Memory type	Disk	Disk controller	Disk bays	Mechanical	Slots x bays	Ethernet	Limited warranty ³	Available date
8673-92X	Pentium 4 1.8GHz	512KB	400	256MB	ECC	40GB ² EIDE	ATA-100	2 fixed	1U ⁴ rack	2x4	2 x Gigabit	1 year	Aug 2002
8673-12X	Pentium 4 2.0GHz	512KB	400	256MB	ECC	40GB EIDE	ATA-100	2 fixed	1U rack	2x4	2 x Gigabit	1 year	Aug 2002
8673-13X	Pentium 4 2.0GHz	512KB	400	256MB	ECC	18.2GB SCSI	Ultra160	2 fixed	1U rack	2x4	2 x Gigabit	1 year	Aug 2002
8673-42X	Pentium 4 2.4GHz	512KB	533	256MB	ECC	40GB EIDE	ATA-100	2 fixed	1U rack	2x4	2 x Gigabit	1 year	Oct 2002
8673-43X	Pentium 4 2.4GHz	512KB	533	256MB	ECC	18.2GB SCSI	Ultra160	2 fixed	1U rack	2x4	2 x Gigabit	1 year	Oct 2002
8673-62X	Pentium 4 2.67GHz	512KB	533	256MB	ECC	40GB EIDE	ATA-100	2 fixed	1U rack	2x4	2 x Gigabit	1 year	Oct 2002
8673-63X	Pentium 4 2.67GHz	512KB	533	256MB	ECC	18.2GB SCSI	Ultra160	2 fixed	1U rack	2x4	2 x Gigabit	1 year	Oct 2002

Positioning *A highly affordable, uni-processor, 1U rack-optimized server*
Processor(s) **Intel Pentium 4 at 1.8 or 2.0GHz¹** with 400MHz frontside bus (FSB) or **2.4 or 2.67GHz** with 533MHz frontside bus (FSB)
L2 cache **512KB** / on die of processor / at processor speed (no L3 cache)
SMP support No SMP support
Implementation Systemboard contains one Intel mPGA478B socket (with Pentium 4 FC-PGA2 and heatsink), four memory DIMM slots, connector for one PCI-X slot, riser for one PCI-X slot, and integrated chipset, two EIDE connectors, ethernet, and graphics

Memory **256MB** std / 4GB max¹³ / one slot used / three slots available / **PC2100** 266MHz registered 184-pin ECC DDR-SDRAM DIMMs / four DIMM gold-connector slots on systemboard / memory bus runs at 2 x 133MHz / **Error Checking and Correcting (ECC)** memory controller

SCSI disk controller *SCSI models:* **Adaptec 29160LP / single channel Wide Ultra160 SCSI** (LVD 160MB/sec) / 64-bit 66MHz PCI adapter / one channel with up to 15 device support
SCSI connectors *SCSI models:* On adapter: one 68-pin SCSI connector
IDE disk controller Enhanced IDE busmaster / ATA-100 support / two connectors on systemboard
Cables *SCSI models:* one 2-drop 16-bit LVD SCSI cable, one 1-drop 40-conductor EIDE cable (connected to CD-ROM)
EIDE models: one 2-drop EIDE cable (to CD-ROM and disk), one 1-drop EIDE cable (to second disk bay)
Disk - features *SCSI:* 18.2GB Ultra160 SCSI, 10K rpm, 5.2ms read seek; *EIDE:* 40GB ATA-100, 7200 rpm, 8.7ms read; *All:* S.M.A.R.T.⁵

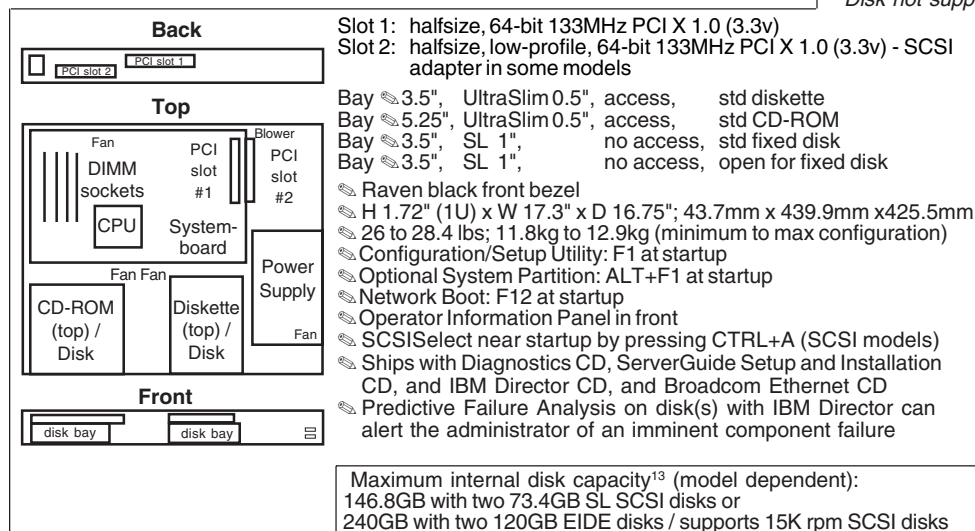
Mechanical Architecture / chipsets **EIA 19" Rack (1U⁴)** / rack-mount only / supports 16.75" deep racks for telco and colocation implementations
ServerWorks Grand Champion. SL / CMIC-SL (Super Lite) Host Bridge (memory controller and I/O Bridge) / one CIOB-X2 I/O Bridge (IMB bus to Host Bridge for PCI-X Bus A with slots and PCI-X Bus B with dual ethernet) / CSB5 South Bridge (Thin IMB to Host Bridge for PCI 2.2-based graphics controller, EIDE, USB, LPC bus to Super I/O) / National Semiconductor: PC87414 Super I/O chip (serial, keyboard, mouse, diskette)
Bus slots (See below) two available PCI-X 1.0 / no hot-swap Active. PCI slots

Ethernet controllers Two gigabit 10/100/1000 ethernet ports / Broadcom BCM5703 / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-X 64-bit 100MHz Bus B / full duplex / PXE / Wake on LAN / Alert Standard Format 1.0 / two rear RJ-45 ports
CD-ROM / diskette 24X-10X⁶ CD-ROM / IDE; *Diskette:* 3.5" 1.44MB diskette drive / dust cover
Rear ports *Rear:* serial (9-pin), two ethernet (RJ-45), keyboard, mouse, analog DB-15 monitor / no parallel port
Front ports / graphics *Front:* two USB (Vers 1.1); *Graphics:* SVGA / ATI: Rage XL / on planar / 8MB SDRAM std/max / 32-bit 33MHz PCI 2.2 bus
Console interconnects No system-to-system interconnect cable (separate keyboard, video, mouse ports on back)

Systems mgmt WinBond[®] W83791D / on planar / monitors system and processor temperature, fan speed and failure, and voltages
Diagnostics Diagnostics via PC-Doctor on a standard IBM Enhanced Diagnostics CD (diskette can be created) / support for optional Remote Supervisor Adapter with 20-pin conn on planar for continuous power (no external power required)

Security Power-on password / administrator password / unattended boot / selectable boot / unattended start mode
Software **ServerGuide.** (CD-ROM installation and configuration utilities), IBM Director[™], and others
 256MB PC2100 CL2.5 ECC DDR-SDRAM DIMM 33L5037
 512MB PC2100 CL2.5 ECC DDR-SDRAM DIMM 33L5038
 1GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM 33L5039
 120GB ATA-100 EIDE HDD (7200 rpm)* 09N4231
 18.2GB 15K Ultra160 SCSI SL 68-pin HDD* 06P5765
 36.4GB 15K Ultra160 SCSI SL 68-pin HDD* 06P5766
 73.4GB 10K Ultra160 SCSI SL 68-pin HDD* 06P5752
 Remote Supervisor Adapter 09N7585
 ServeRAID[™]-4Lx Ultra160 SCSI Adapter 06P5740
 IBM T541 15" Flat Panel Color Monitor (black) 9512AB1
 IBM NetBAY25 Standard Rack 9306250
 IBM NetBAY42 Enterprise Rack 930842S
 IBM ACT Local Console Manager 1735L04
 Other options at ibm.com/pc/us/accessories
 * Disk not supported in all x305 systems

Cooling fans Five fans (three fans for system, one blower in rear, one on power supply) / variable speed / not redundant or hot-swap
Power supply 200 watt / universal / auto-sensing / auto-restart support
Prerequisites Monitor, keyboard, mouse, rack, operating system / supports IBM ACT CAT-5 chaining solutions



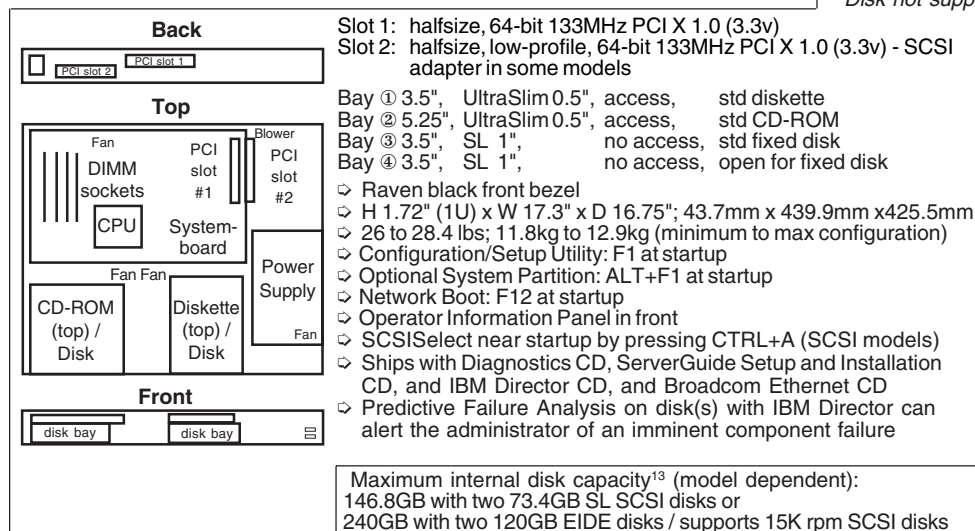
LIMITED WARRANTY³

- 1 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 9x5, NBD avg response (ServicePac part num 69P9505)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9506)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9507)
 - 3 year IOR 24x7, 2 hr avg response (ServicePac part num 69P9508)
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information (X305A) . IBM Corp. December 2002
 US models announced August 20, 2002 and October 15, 2002
 US models withdrawn effective February 28, 2003, May 29, 2003, September 26, 2003, or December 30, 2003 (62X, 63X)

IBM® Type-model	Qty x Processor	L2 cache	FSB MHz	Memory	Memory type	Disk	Disk controller	Disk bays	Mechanical	Slots x bays	Ethernet	Limited warranty ³	Available date	
8673-72X	Pentium 4	2.8BGHz	512KB	533	256MB	ECC	40GB EIDE	ATA-100	2 fixed	1U rack	2x4	2 x Gigabit	1 year	May2003
8673-73X	Pentium 4	2.8BGHz	512KB	533	256MB	ECC	18.2GB SCSI	Ultra160	2 fixed	1U rack	2x4	2 x Gigabit	1 year	May2003
8673-82X	Pentium 4	3.06GHz	512KB	533	256MB	ECC	40GB EIDE	ATA-100	2 fixed	1U rack	2x4	2 x Gigabit	1 year	Sep 2003
8673-83X	Pentium 4	3.06GHz	512KB	533	256MB	ECC	36.4GB SCSI	Ultra160	2 fixed	1U rack	2x4	2 x Gigabit	1 year	Sep 2003

Positioning	<i>A highly affordable, uni-processor, 1U rack-optimized server</i>												
Processor(s)	Intel® Pentium 4 up to 2.8BGHz¹ with 533MHz frontside bus (FSB)												
L2 cache	512KB / on die of processor / at processor speed (no L3 cache)												
SMP support	No SMP support												
Implementation	Systemboard contains one Intel mPGA478B socket (with Pentium 4 FC-PGA2 and heatsink), four memory DIMM slots, connector for one PCI-X slot, riser for one PCI-X slot, and integrated chipset, two EIDE connectors, ethernet, and graphics												
Memory	256MB std / 4GB max ¹³ / one slot used / three slots available / PC2100 266MHz registered 184-pin ECC DDR-SDRAM DIMMs / four DIMM gold-connector slots on systemboard / memory bus runs at 2 x 133MHz / Error Checking and Correcting (ECC) memory controller												
SCSI disk controller	<i>SCSI models:</i> Adaptec® 29160LP / single channel Wide Ultra160 SCSI (LVD 160MB/sec) / 64-bit 66MHz PCI adapter / one channel with up to 15 device support												
SCSI connectors	<i>SCSI models:</i> On adapter: one 68-pin SCSI connector												
IDE disk controller	Enhanced IDE busmaster / ATA-100 support / two connectors on systemboard												
Cables	<i>SCSI models:</i> one 2-drop 16-bit LVD SCSI cable, one 1-drop 40-conductor EIDE cable (connected to CD-ROM)												
Disk - features	<i>EIDE models:</i> one 2-drop EIDE cable (to CD-ROM and disk), one 1-drop EIDE cable (to second disk bay) <i>SCSI:</i> 18.2GB/36.4GB Ultra160 SCSI, 10K rpm, 5.2ms read seek; <i>EIDE:</i> 40GB ATA-100, 7200 rpm, 8.7ms read; <i>All:</i> S.M.A.R.T. ⁵												
Mechanical Architecture / chipsets	EIA 19" Rack (1U*) / rack-mount only / supports 16.75" deep racks for telco and colocation implementations ServerWorks® Grand Champion™ SL / CMIC-SL (Super Lite) Host Bridge (memory controller and I/O Bridge) / one CIOB-X2 I/O Bridge (IMB bus to Host Bridge for PCI-X Bus A with slots and PCI-X Bus B with dual ethernet) / CSB5 South Bridge (Thin IMB to Host Bridge for PCI 2.2-based graphics controller, EIDE, USB, LPC bus to Super I/O) / National Semiconductor® PC87414 Super I/O chip (serial, keyboard, mouse, diskette)												
Bus slots	(See below) two available PCI-X 1.0 / no hot-swap Active™ PCI slots												
Ethernet controllers	Two gigabit 10/100/1000 ethernet ports / Broadcom® BCM5703 / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-X 64-bit 100MHz Bus B / full duplex / PXE / Wake on LAN® / Alert Standard Format 1.0 / two rear RJ-45 ports												
CD-ROM / diskette	24X-10X ⁶ CD-ROM / IDE; <i>Diskette:</i> 3.5" 1.44MB diskette drive / dust cover												
Rear ports	<i>Rear:</i> serial (9-pin), two ethernet (RJ-45), keyboard, mouse, analog DB-15 monitor / no parallel port												
Front ports / graphics	<i>Front:</i> two USB (Vers 1.1); <i>Graphics:</i> SVGA / ATI® Rage XL / on planar / 8MB SDRAM std/max / 32-bit 33MHz PCI 2.2 bus												
Console interconnects	No system-to-system interconnect cable (separate keyboard, video, mouse ports on back)												
Systems mgmt	WinBond® W83791D / on planar / monitors system and processor temperature, fan speed and failure, and voltages												
Diagnostics	Diagnostics via PC-Doctor on a standard IBM Enhanced Diagnostics CD (diskette can be created) / support for optional Remote Supervisor Adapter with 20-pin conn on planar for continuous power (no external power required)												
Security	Power-on password / administrator password / unattended boot / selectable boot / unattended start mode												
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director™, and others												
Cooling fans	Five fans (three fans for system, one blower in rear, one on power supply) / variable speed / not redundant or hot-swap												
Power supply	200 watt / universal / auto-sensing / auto-restart support												
Prerequisites	Monitor, keyboard, mouse, rack, operating system / supports IBM ACT CAT-5 chaining solutions												
	256MB PC2100 CL2.5 ECC DDR-SDRAM DIMM33L5037 512MB PC2100 CL2.5 ECC DDR-SDRAM DIMM33L5038 1GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM 33L5039 120GB ATA-100 EIDE HDD (7200 rpm)* 09N4231 18.2GB 15K Ultra160 SCSI SL 68-pin HDD* 06P5765 36.4GB 15K Ultra160 SCSI SL 68-pin HDD* 06P5766 73.4GB 10K Ultra160 SCSI SL 68-pin HDD* 06P5752 Remote Supervisor Adapter 09N7585 ServeRAID™-4Lx Ultra160 SCSI Adapter 06P5740 IBM T541 15" Flat Panel Color Monitor (black) 9512AB1 IBM NetBAY25 Standard Rack 9306250 IBM NetBAY42 Enterprise Rack 930842S IBM ACT Local Console Manager 1735L04 Other options at ibm.com/pc/us/accessories * Disk not supported in all x305 systems												



LIMITED WARRANTY³

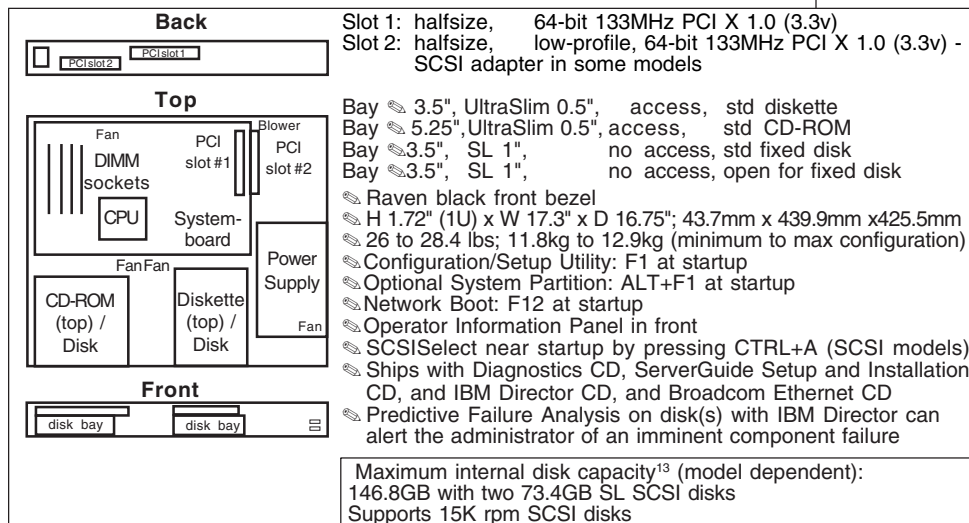
- 1 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 9x5, NBD avg response (ServicePac® part num 69P9505)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9506)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9507)
 - 3 year IOR 24x7, 2 hr avg response (ServicePac part num 69P9508)
- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information
 US models announced May 13, 2003 or September 9, 2003

IBM Type-model	Processor	Memory	Disk	Disk controller	Mechanical	Slots x bays	Hot-swap disk bays	Ethernet	Power supply	Available date
8673-4AX	Pentium 4 2.4Ghz ¹	256MB	36.4GB ²	Ultra 160	1U ⁴ rack	2 slots x 4 bays	None	2 x Gigabit	DC power	Mar 2003

DC power models are designed for network infrastructures requiring network equipment to support DC power environments

Positioning	<i>A compact yet expandable ultra-thin 1U server that is remarkably affordable</i>									
Processor	Intel® Pentium 4 2.4Ghz with 533MHz frontside bus									
L2 cache	512KB / on die of processor / at processor speed (no L3 cache)									
SMP support	No SMP support									
Processor upgrade	None supported									
Implementation	Systemboard contains one Intel mPGA478B socket (with Pentium 4 FC-PGA2 and heatsink), four memory DIMM slots, connector for one PCI-X slot, riser for one PCI-X slot, and integrated chipset, two EIDE connectors, ethernet, and graphics									
Memory - std / max	256MB std / 4GB max ¹³									
Memory - sockets	4 sockets / 3 available / ECC (Error Checking and Correcting) DDR DIMMs and ECC memory controller									
Memory - features	PC2100 266MHz registered 184-pin gold-plated DIMM									
Memory - support	Supports unbuffered SDRAM ECC DIMMs / mixing of memory sizes									
SCSI disk controller	Adaptec 29160LP / single channel Wide Ultra160 SCSI (LVD 160MB/sec) / 64-bit 66MHz PCI adapter / 15 device									
SCSI Connectors	On adapter: one 68-pin SCSI connector / one 0.8mm VHDCI 68-pin external connector									
Cables	one 2-drop 16-bit LVD SCSI cable, one 1-drop 40-conductor EIDE cable (connected to CD-ROM)									
Disk - features	36.4GB Ultra160 SCSI, 10K rpm, 5.2ms read seek									
Architecture / chipsets	ServerWorks Grand Champion. SL / CMIC-SL (Super Lite) Host Bridge (memory controller and I/O Bridge) / one CIOB-X2 I/O Bridge (IMB bus to Host Bridge for PCI-X Bus A with slots and PCI-X Bus B with dual ethernet) / CSB5 South Bridge (Thin IMB to Host Bridge for PCI 2.2-based graphics controller, EIDE, USB, LPC bus to Super I/O) / National Semiconductor PC87414 Super I/O chip (serial, keyboard, mouse, diskette)									
Mechanical	EIA 19" Rack (1U⁴) / rack-mount only / supported in IBM NetBAY. Rack products (rack requires vented front door)									
Ethernet controllers	Two gigabit 10/100/1000 ethernet ports / Broadcom BCM5703 / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-X 64-bit 100MHz Bus B / full duplex / PXE / Wake on LAN / Alert Standard Format 1.0 / two rear RJ-45 ports									
CD-ROM / diskette	24X-10X ⁶ CD-ROM / IDE; <i>Diskette</i> : 3.5" 1.44MB diskette drive / dust cover									
Rear ports	<i>Rear</i> : serial (9-pin), two ethernet (RJ-45), keyboard, mouse, analog DB-15 monitor / no parallel port									
Front ports/graphics	<i>Front</i> : two USB (Vers 1.1); <i>Graphics</i> : SVGA / ATI Rage XL / on planar / 8MB SDRAM std/max / 32-bit 33MHz PCI 2.2 bus									
Console interconnects	No system-to-system interconnect cable (separate keyboard, video, mouse ports on back)									
Systems mgmt	WinBond® W83791D / on planar / monitors system and processor temperature, fan speed and failure, and voltages									
Diagnostics	Diagnostics via PC-Doctor on a standard IBM Enhanced Diagnostics CD (diskette can be created)									
Graphics controller	SVGA / PCI bus / ATI Rage XL (on planar) / 8MB SDRAM std and max / DDC2B / analog 15-pin D-shell									
Security	Power-on password / administrator password / unattended boot / selectable boot / unattended start mode									
Software ⁹	ServerGuide . (CD-ROM installation and configuration utilities), IBM Director. , and others									
Keyboard / mouse	None standard									
Cooling fans	Five fans (three fans for system, one blower in rear, one on power supply) / variable speed / not redundant or hot-swap									
Power supply	200 watt (-48 to -60 V dc [direct current]) / auto-sensing / supports dual input sources (two power sources) / not redundant / not hot-swap / auto-restart support									
Prerequisites	Appropriate dc power source and customer supplied wiring, monitor, keyboard, mouse, rack with perforated door, operating system									
	OPTIONS									
	256MB PC2100 CL2.5 ECC DDR-SDRAM DIMM 33L5037									
	512MB PC2100 CL2.5 ECC DDR-SDRAM DIMM 33L5038									
	1GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM 33L5039									
	18.2GB 15K Ultra160 SCSI SL 68-pin HDD 06P5765									
	36.4GB 10K Ultra160 SCSI SL 68-pin HDD 06P5751									
	36.4GB 15K Ultra160 SCSI SL 68-pin HDD 06P5766									
	73.4GB 10K Ultra160 SCSI SL 68-pin HDD 06P5752									
	Remote Supervisor Adapter 09N7585									
	ServeRAID™-4Lx Ultra160 SCSI Adapter 06P5740									
	IBM T541 15" Flat Panel Color Monitor (black) 9512AB1									
	IBM NetBAY25 Standard Rack 9306250									
	IBM NetBAY42 Enterprise Rack 930842S									
	NetBAY ACT Local Console Manager 1735L04									
	Other options at ibm.com/pc/us/accessories									



LIMITED WARRANTY³

- 1 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 9x5, NBD avg response (ServicePac part num 69P9505)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9506)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9507)
 - 3 year IOR 24x7, 2 hr avg response (ServicePac part num 69P9508)
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information
 US model announced February 18, 2003

Models withdrawn from marketing effective March 2004

IBM @server™ xSeries™ 306 - withdrawn

xREF by eServer Field Skills Enablement Team

For GAV systems, lowercase "x" should be replaced with a country-specific code.

IBM® Machine Type	GAV model	Processor	L2 cache	FSB MHz	Memory	Disk	Disk controller	Disk bays	Mechanical	Slots x bays	Ethernet	Ltd warr ³	Available date
8836	1Mx 11X	Pentium 4® 2.8GHz	1MB	800	512MB	36.4GB SCSI	Ultra320	2 fixed	1U ⁴ rack	2x4	Dual Gb	1 yr	Apr 2004
8836	1Sx 15X	Pentium 4 2.8GHz	1MB	800	512MB	open bay	SATA	2 simple-swap	1U rack	2x4	Dual Gb	1 yr	Apr 2004
8836	2Mx 21X	Pentium 4 3.0GHz	1MB	800	512MB	36.4GB SCSI	Ultra320	2 fixed	1U rack	2x4	Dual Gb	1 yr	Apr 2004
8836	2Sx 25X	Pentium 4 3.0GHz	1MB	800	512MB	open bay	SATA	2 simple-swap	1U rack	2x4	Dual Gb	1 yr	Apr 2004
8836	3Mx 31X	Pentium 4 3.2GHz	1MB	800	512MB	36.4GB SCSI	Ultra320	2 fixed	1U rack	2x4	Dual Gb	1 yr	Jun 2004
8836	3Sx 35X	Pentium 4 3.2GHz	1MB	800	512MB	open bay	SATA	2 simple-swap	1U rack	2x4	Dual Gb	1 yr	Jun 2004

Positioning Processor(s) **A highly affordable, uni-processor, 1U rack-optimized server**
Intel® Pentium 4 up to 3.2GHz¹ with 800MHz frontside bus (FSB)
 L2 cache **1MB** / on die of processor / at processor speed (no L3 cache)
 SMP support No SMP support
 Implementation Systemboard contains one Intel mPGA478B socket (with Pentium 4 FC-PGA2 and heatsink), four memory DIMM slots, riser for two PCI-X slots, and integrated chipset, one EIDE connector, two SATA connectors, ethernet, and graphics

Memory **512MB** std / 4GB max¹³ / one slot used / three slots available / **PC2700** 333MHz (1xx, 2xx) or **PC3200** 400MHz (3xx) registered 184-pin ECC DDR-SDRAM DIMMs / four DIMM gold-connector slots on systemboard / memory bus runs at 2 x 166MHz / **Error Checking and Correcting (ECC)** memory controller / PC3200 memory supported in all models

SCSI disk controller *SCSI models:* **Adaptec® chipset / single channel Wide Ultra320 SCSI** (LVD 320MB/sec) / on PCI adapter / one channel with up to 15 device support / Integrated Raid 7e (Raid 0-1)

SCSI connectors *SCSI models:* On PCI adapter: one 68-pin SCSI connector
 IDE disk controller Enhanced IDE busmaster / ATA-100 support / one connector on systemboard
 Cables *SCSI models:* one 2-drop 16-bit LVD SCSI cable, one 1-drop EIDE cable (connected to CD-ROM)
SATA models: two 1-drop SATA cables, one 1-drop EIDE cable (connected to CD-ROM)

Disk - features *SCSI:* 36.4GB Ultra320 SCSI, 10K rpm, 4.7ms read seek, S.M.A.R.T.⁵; *SATA:* open bay;

Mechanical **EIA 19" Rack (1U⁴)** / rack-mount only
 Architecture / chipsets **Intel E7210 chipset** / Memory Controller Hub (MCH) / I/O Controller Hub (ICH-S) for PCI 2.2 and PCI-X bus, ATA-100 EIDE, ethernet MAC, USB, Low Pin Count Interface / Firmware Hub / SMSC® LPC47M192 Super I/O for diskette, parallel, serial, keyboard, mouse

Bus slots (See below) two available PCI-X 1.0 66MHz / no hot-swap Active™ PCI slots

Ethernet controllers Two gigabit 10/100/1000 ethernet ports / Intel Kenai II / two full gigabit ethernet MAC and PHY layer functions / on planar / port one is CSA, port two is PCI 2.2 / full duplex / PXE / Wake on LAN® / Alert Standard Format 2.0 / two rear RJ-45 ports

CD-ROM / diskette **24X-10X⁶ CD-ROM / IDE; Diskette:** 3.5" 1.44MB diskette drive / dust cover

Rear ports *Rear:* serial (9-pin), two ethernet (RJ-45), keyboard, mouse, analog DB-15 monitor / no parallel port / two USB (Vers 2.0)

Front ports / graphics *Front:* two USB (Vers 2.0); *Graphics:* SVGA / ATI® Radeon 7000 / on planar / 18MB DDR SDRAM std/max / 32-bit 33MHz PCI 2.2 bus

Console interconnects No system-to-system interconnect cable (separate keyboard, video, mouse ports on back)

Systems mgmt On planar / monitors system and processor temperature, fan failure, and voltages
 Diagnostics Diagnostics via PC-Doctor on a standard IBM Enhanced Diagnostics CD (diskette can be created) / support for optional Remote Supervisor Adapter with 20-pin conn on planar for continuous power (no external power required)

Security Power-on password / administrator password / unattended boot / selectable boot / unattended start mode

Software **ServerGuide™** (CD-ROM installation and configuration utilities), IBM Director™, and others

Cooling fans Six fans (four fans for system, two on power supply) / variable speed / not redundant or hot-swap 300 watt

Power supply / universal / auto-sensing / auto-restart support

Prerequisites Monitor, keyboard, mouse, rack, operating system

256MB PC2700 CL2.5 ECC DDR-SDRAM DIMM	06P4053
512MB PC2700 CL2.5 ECC DDR-SDRAM DIMM	06P4054
1GB PC2700 CL2.5 ECC DDR-SDRAM DIMM	06P4055
1GB PC3200 CL2.5 ECC DDR-SDRAM DIMM	06P4051
80GB SATA simple-swap HDD (7200 rpm)*	73P8002
160GB SATA simple-swap HDD (7200 rpm)*	73P8003
36.4GB 10K Ultra320 SCSI SL 68-pin HDD*	32P0723
73.4GB 10K Ultra320 SCSI SL 68-pin HDD*	32P0724
146.4GB 10K Ultra320 SCSI SL 68-pin HDD*	32P0725
Remote Supervisor Adapter II	59P2984
ServeRAID™-6i+ Ultra320 SCSI Adapter	13N2190
ServeRAID-7T SATA Controller	71P8648
IBM NetBAY25 Standard Rack	9306250
IBM NetBAY42 Enterprise Rack	930842S
IBM ACT Local Console Manager	1735L04

Other options at ibm.com/pc/us/accessories
 * Disk not supported in all x306 systems

Back

Slot 1: 3/4 size, 64-bit 66MHz PCI X 1.0 (3.3v)
 Slot 2: half size, low-profile, 64-bit 66MHz PCI X 1.0 (3.3v)

Top

Bay ① 5.25", UltraSlim 0.5", access, std CD-ROM
 Bay ② 3.5", UltraSlim 0.5", access, std diskette
 Bay ③ 3.5", SL 1", no access, std fixed disk
 Bay ④ 3.5", SL 1", no access, open for fixed disk

⊖ Raven black front bezel
 ⊖ H 1.72" (1U) x W 17.3" x D 20"; 43.7mm x 439.9mm x 508mm
 ⊖ 26 to 28 lbs; 11.8kg to 12.7kg (minimum to max configuration)
 ⊖ Configuration/Setup Utility: F1 at startup
 ⊖ Network Boot: F12 at startup
 ⊖ Operator Information Panel in front
 ⊖ SCSISelect near startup by pressing CTRL+A (SCSI models)
 ⊖ Ships with Diagnostics CD, ServerGuide Setup and Installation CD
 ⊖ Predictive Failure Analysis on disk(s) with IBM Director can alert the administrator of an imminent component failure

Front

Maximum internal disk capacity¹³ (model dependent):
 292.8GB with two 146.4GB SL SCSI disks or
 320GB with two 160GB EIDE disks / up to 15K rpm SCSI disks

LIMITED WARRANTY³

- ↪ 1 year parts and labor
- ↪ International Warranty Service³
- ↪ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- ↪ On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 9x5, NBD avg response (ServicePac® part num 69P9505)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9506)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9507)
 - 3 year IOR 24x7, 2 hr avg response (ServicePac part num 69P9508)
- ↪ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ↪ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

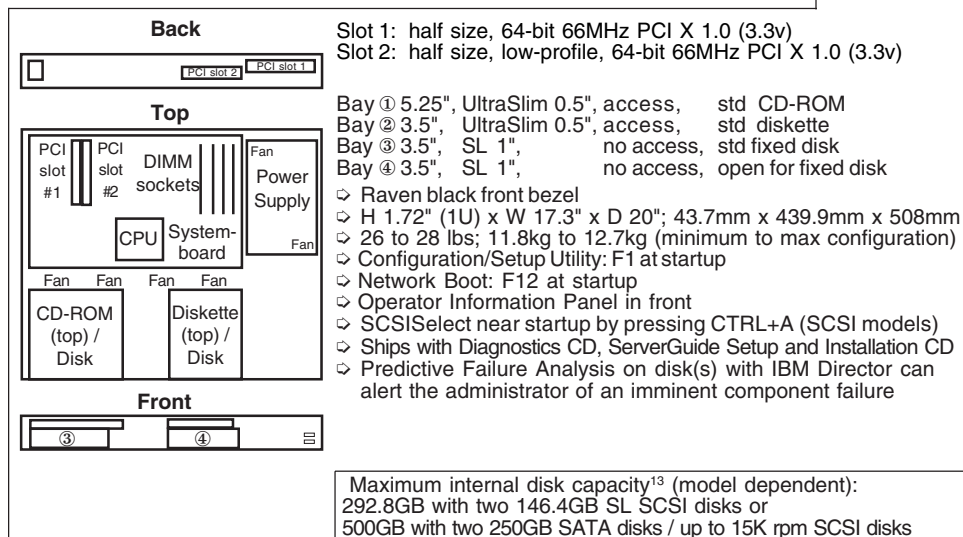
See footnotes for important warranty information
 US models announced March 16, 2004 (1xx, 2xx) and June 8, 2004 (3xx)

IBM @server™ xSeries™ 306 - withdrawn

xREF by eServer Field Skills and Education Team

For GAV systems, lowercase "v" should be replaced with a country-specific code.

IBM® Machine Type	GAV model	Processor	L2 cache	FSB MHz	Memory	Disk	Disk controller	Disk bays	Mechanical	Slots x bays	Ethernet	Ltd warr ³	Available date
8836 - 4My	-41x	Pentium 4® 3.2GHz	1MB	800	512MB	36.4GB	SCSI Ultra320	2 fixed	1U ⁴ rack	2x4	Dual Gb	1 yr	Aug 2004
8836 - 4Sy	-45x	Pentium 4 3.2GHz	1MB	800	512MB	open bay	SATA	2 simple-swap	1U rack	2x4	Dual Gb	1 yr	Aug 2004
8836 - 5My	-51x	Pentium 4 3.4GHz	1MB	800	512MB	36.4GB	SCSI Ultra320	2 fixed	1U ⁴ rack	2x4	Dual Gb	1 yr	Jan 2005
8836 - 5Sy	-55x	Pentium 4 3.4GHz	1MB	800	512MB	open bay	SATA	2 simple-swap	1U ⁴ rack	2x4	Dual Gb	1 yr	Jan 2005
Positioning	A highly affordable, uni-processor, 1U rack-optimized server												
Processor(s)	Intel® Pentium 4 at 3.2GHz ¹ & 3.4GHz with 800MHz FSB optimized for Extended Memory 64 Technology(EM64T)												
L2 cache	1MB min and max / at processor speed / ECC												
SMP support	No SMP support												
Implementation	Systemboard contains one Intel PGA604 socket (with Pentium 4 FC-PGA2 and heatsink), four memory DIMM slots, two PCI-X slots, and integrated chipset, one EIDE connector, two SATA connectors, dual ethernet, and graphics												
Memory	512MB std / 4GB max ¹³ / one slot used / three slots available / PC3200 400MHz registered 184-pin ECC DDR-SDRAM DIMMs / four DIMM gold-connector slots on systemboard / memory bus runs at 2 x 200MHz / Error Checking and Correcting (ECC) memory controller												
SCSI disk controller	SCSI models: Adaptec® 7901 chipset / single channel Wide Ultra320 SCSI (LVD 320MB/sec) / on PCI adapter / one channel with up to 15 device support / Integrated Raid 7e (Raid 0-1) / 68 pin connector on PCI adapter												
SATA disk controller	SATA-150 controller (150MB/sec) / on planar / one connector on systemboard / Integrated Raid 7e (Raid 0-1)												
Cables	Enhanced IDE busmaster / ATA-100 support / one connector on systemboard												
Disk - features	SCSI models: one 2-drop 16-bit LVD SCSI cable, one 1-drop EIDE cable (connected to CD-ROM) SATA models: two 1-drop SATA cables, one 1-drop EIDE cable (connected to CD-ROM) SCSI: 36.4GB Ultra320 SCSI, 10K rpm, 4.7ms read seek, S.M.A.R.T. ⁵ ; SATA: open bay, simple swap												
Mechanical Architecture / chipsets	EIA 19" Rack (1U ⁴) / rack-mount only Intel E7210 chipset / Memory Controller Hub (MCH) / I/O Controller Hub (ICH-S) for PCI 2.2 and PCI-X bus, ATA-100 EIDE, ethernet MAC, USB, Low Pin Count Interface / Firmware Hub / SMSC® LPC47M192 Super I/O for diskette, parallel, serial, keyboard, mouse												
Bus slots	(See below) two available PCI-X 1.0 66MHz / no hot-swap Active™ PCI slots / half-length												
Ethernet controllers	Dual Gigabit 10/100/1000 ethernet ports / Intel Kenai II / two full gigabit ethernet MAC and PHY layer functions / integrated / port one is CSA, port two is PCI 2.2 / full duplex / PXE / Wake on LAN® / Alert Standard Format 2.0 / Rear RJ-45 ports (2)												
CD-ROM / diskette	24X-10X ⁶ CD-ROM Slim/ IDE; Diskette: 3.5" 1.44MB diskette drive / dust cover												
Rear ports	Rear: serial (9-pin), two ethernet (RJ-45), keyboard, mouse, analog DB-15 monitor / no parallel port / two USB (Vers 2.0)												
Front ports / Graphics	Front: two USB (Vers 2.0) SVGA / ATI® Radeon™ 7000 / on planar / 16MB DDR SDRAM std/max												
Console interconnects	No system-to-system interconnect cable (separate keyboard, video, mouse ports on back)												
Systems mgmt Diagnostics	On planar / monitors system and processor temperature, fan failure, and voltages Diagnostic LEDs/ Error LEDs for fans and memory/ Diagnostics via PC-Doctor on a standard IBM Enhanced Diagnostics CD (diskette can be created) / support for optional Remote Supervisor Adapter II with 20-pin conn on planar for continuous power (no external power required)												
Security	Power-on password / administrator password / unattended boot / selectable boot / unattended start mode / Secure Remote pwr on/off via ASF 2.0												
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director™, and others												
Cooling fans	Six fans (four fans for system, two on power supply) / variable speed / not redundant or hot-swap 300 watt / universal / auto-sensing / auto-restart support												
Power supply Prerequisites	Monitor, keyboard, mouse, rack, operating system												
											256MB PC3200 CL3 ECC DDR-SDRAM DIMM	06P4049	
											512MB PC3200 CL3 ECC DDR-SDRAM DIMM	06P4050	
											1GB PC3200 CL3 ECC DDR-SDRAM DIMM	06P4051	
											80GB SATA simple-swap HDD (7200 rpm)	73P8002	
											160GB SATA simple-swap HDD (7200 rpm)	73P8003	
											250GB SATA simple-swap HDD (7200 rpm)	73P8006	
											36.4GB 10K Ultra320 SCSI SL 68-pin HDD	32P0723	
											73.4GB 10K Ultra320 SCSI SL 68-pin HDD	32P0724	
											146.4GB 10K Ultra320 SCSI SL 68-pin HDD	32P0725	
											36.4GB 15K Ultra320 SCSI SL 68-pin HDD	32P0784	
											73.4GB 15K Ultra320 SCSI SL 68-pin HDD	32P0785	
											Remote Supervisor Adapter II	59P2984	
											ServeRAID™-6i+ Ultra320 SCSI Adapter	13N2190	
											ServeRAID-7i SATA Controller	71P8648	
											IBM NetBAY25 Standard Rack	9306250	
											Other options avail at www.ibm.com/pc/us/accessories		



LIMITED WARRANTY³

- ↪ 1 year parts and labor
- ↪ International Warranty Service³
- ↪ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- ↪ On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 9x5, NBD avg response (ServicePac[®] part num 69P9505)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9506)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9507)
 - 3 year IOR 24x7, 2 hr avg response (ServicePac part num 69P9508)
- ↪ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ↪ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information
 ↪ = Models announced January 18, 2005

For GAV systems, lowercase "v" should be replaced with a country-specific code.

IBM® Machine Type	GAV model	Processor / Speed	L2 cache	FSB MHz	Memory	Disk controller	Disk bays	Mechanical	Slots x bays	Ethernet	Ltd warr ³	Available date
8849/8491	10y-10x	Pentium® 4 531 3.0GHz	1MB	800	512MB	SATA	2 simple-swap	1U ⁴ rack	2x3	Dual Gb	1/3yr	Oct 2005
8849/8491	1Ay-Ax	Pentium 4 531 3.0GHz	1MB	800	512MB	SAS/SATA	2 hot-swap	1U rack	2x3	Dual Gb	1/3yr	Oct 2005
8849/8491	20y-20x	Pentium D 830 3.0GHz	2x1MB	800	1GB	SAS/SATA	2 hot-swap	1U rack	2x3	Dual Gb	1/3yr	Oct 2005
8849/8491	30y-30x	Pentium 4 640 3.2GHz	2MB	800	512MB	SATA	2 simple-swap	1U rack	2x3	Dual Gb	1/3yr	Oct 2005
8849/8491	3Ay-3Ax	Pentium 4 640 3.2GHz	2MB	800	512MB	SAS/SATA	2 hot-swap	1U rack	2x3	Dual Gb	1/3yr	Oct 2005
8849/8491	40y-40x	Pentium 4 650 3.4GHz	2MB	800	512MB	SAS/SATA	2 hot-swap	1U rack	2x3	Dual Gb	1/3yr	Oct 2005
8849/8491	50y-50x	Pentium 4 660 3.6GHz	2MB	800	512MB	SAS/SATA	2 hot-swap	1U rack	2x3	Dual Gb	1/3yr	Oct 2005

Positioning *A highly affordable, uni-processor, 1U rack-optimized server*
 Processor(s) **Intel® Pentium 4 up to 3.6GHz Single Core 800MHz FSB / Pentium D 3.0GHz Dual Core 800MHz FSB / All Optimized for Extended Memory 64 Technology (EM64T)**
 L2 cache **Up to 2MB std on Pentium 4 / 2x1MB std on Pentium D / ECC / full speed**
 SMP support **No SMP support**
 Implementation **Motherboard contains one LGA-775 socket, four DIMM sockets, integrated SATA or SAS/SATA, Dual Gigabit Ethernet and two slots: some: (1 PCI Express x8, 1 PCI-X) some: (2 PCI-X)**

Memory **512MB std / 8GB¹³ max / four 184-pin gold-plated DIMM sockets / one socket used / PC2-4200 533MHz ECC DDR2-SDRAM / All Error Checking and Correcting (ECC) / DIMMs and ECC memory controller / industry std / unbuffered**

SCSI disk controller **SAS models: Adaptec® 9405 chipset / single channel / on planar / Integrated Raid 8e (Raid 0 or 1)**
 SATA disk controller **SATA models: Integrated Intel controller / two-channel / on planar / Integrated Raid 8e (Raid 0 or 1)**
 IDE disk controller **Enhanced IDE busmaster / ATA-100 support / one connector on systemboard**
 Cables **SAS models: one 1-drop EIDE cable (connected to CD-ROM)**
SATA models: two 1-drop SATA cables, one 1-drop EIDE cable (connected to CD-ROM)
 Disk **None standard**

Mechanical Architecture / chipsets **EIA 22" Rack (1U⁴) / rack-mount only**
Intel E7210 chipset / Memory Controller Hub (MCH) / I/O Controller Hub (ICH-S) for PCI 2.2 and PCI-X bus, ATA-100 EIDE, ethernet MAC, USB, Low Pin Count Interface / Firmware Hub / SMSC® LPC47M192 Super I/O for diskette, parallel, serial, keyboard, mouse
 Bus slots **(See below) two available PCI-X 1.0 100MHz or one 64-bit PCI-E x8 and one PCI-X 1.0 100MHz / no hot-swap Active™ PCI slots /**

Ethernet controllers **Dual Gigabit 10/100/1000 ethernet ports / Broadcom 5721 / two full gigabit ethernet MAC and PHY layer functions / integrated / port one is CSA, port two is PCI 2.2 / full duplex / PXE / Wake on LAN® / Rear RJ-45 ports (2)**

CD-ROM / diskette **24X-10X⁶ CD-ROM Slim/ IDE; Diskette: none**
 Rear ports **Rear: serial (9-pin), two ethernet (RJ-45), keyboard, mouse, analog DB-15 monitor / no parallel port / two USB (Vers 2.0)**
 Front ports / Graphics **Front: two USB (Vers 2.0)**
ATI® RN50(ES1000) / 16MB SDRAM std/max / on planar / analog 15-pin / up to 1024x768x32bit@85Hz

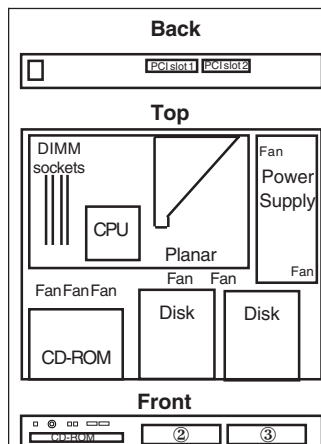
Console interconnects **No system-to-system interconnect cable (separate keyboard, video, mouse ports on back)**
 Systems mgmt **Mini-baseboard management controller / IPMI 1.5 / monitors system and processor temperature, fan failure, and voltages**

Diagnostics **Diagnostic LEDs/ Error LEDs for fans and memory/ Diagnostics via PC-Doctor on a standard IBM Enhanced Diagnostics CD (diskette can be created) / support for optional Remote Supervisor Adapter II with 20-pin conn on planar for continuous power (no external power required)**

Security **Power-on password / administrator password / unattended boot / selectable boot / unattended start mode / secure remote power on / off via IPMI 1.5**
 Software **ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director™ and others**

Cooling fans **Seven fans (five fans for system, two on power supply) / variable speed / not redundant or hot-swap**
 Power supply **350 watt / universal / auto-sensing / auto-restart support**
 Prerequisites **Monitor, keyboard, mouse, rack**

- 512MB PC2-4200 CL3 ECC DDR2RoHS 30R5148
- 2GB(2x1GB) PC2-4200 CL3 ECC DDR2 RoHS 30R5149
- 4GB(2x2GB) PC2-4200 CL3 ECC DDR2 RoHS 30R5150
- IBM 80GB SATA (7.2K) simple-swap HDD 39M4500
- IBM 160GB SATA (7.2K) simple-swap HDD 39M4504
- IBM 250GB SATA (7.2K) simple-swap HDD 39M4508
- 80GB Hot-Swap SATA HDD 39M4518
- 160GB Hot-Swap SATA HDD 39M4522
- 250GB Hot-Swap SATA HDD 39M4526
- 73GB 10K 3.5" SAS Hot-Swap HDD 26K5709
- 146GB 10K 3.5" SAS Hot-Swap HDD 26K5710
- 300GB 10K 3.5" SAS Hot-Swap HDD 26K5711
- 36GB 15K 3.5" SAS Hot-Swap HDD 26K5697
- 73GB 15K 3.5" SAS Hot-Swap HDD 26K5698
- 146GB 15K 3.5" SAS Hot-Swap HDD 26K5699
- IBM Remote Supervisor Adapter II (PCI adapter) 59P2984
- IBM ServeRAID-7i SATA Integrated Controller 71P8648



- Some:
 Slot 1: 3/4 length, full height, 64-bit 100MHz PCI X 1.0 (3.3v)
 Slot 2: half length, low-profile, 64-bit 100MHz PCI X 1.0 (3.3v)
 Some:
 Slot 1: 3/4 length, full height, 64-bit 100MHz PCI X 1.0 (3.3v)
 Slot 2: half length, low-profile, PCI-E x8
 Bay ① 5.25", UltraSlim 0.5", access, std CD-ROM
 Bay ② 3.5", SL 1", access, open for fixed disk
 Bay ③ 3.5", SL 1", access, open for fixed disk
- ❖ Raven black front bezel
 - ❖ H 1.75" (1U) x W 17.3" x D 22"; 43mm x 440mm x 559mm
 - ❖ 24.25 to 30 lbs; 11kg to 12.7kg (minimum to max configuration)
 - ❖ Configuration/Setup Utility: F1 at startup
 - ❖ Network Boot: F12 at startup
 - ❖ Operator Information Panel in front
 - ❖ Ships with Diagnostics CD, ServerGuide Setup and Installation CD
 - ❖ Predictive Failure Analysis on disk(s) with IBM Director can alert the administrator of an imminent component failure

Other options at ibm.com/pc/us/accessories

LIMITED WARRANTY³

- ❖ 1 year parts and labor standard 8849 MTM
- ❖ 3 year parts and labor standard 8491 MTM
- ❖ International Warranty Service³
- ❖ On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- ❖ On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 9x5, NBD avg response (ServicePac part num 69P9505)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9506)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9507)
 - 3 year IOR 24x7, 2 hr response (ServicePac part num 69P9508)
- ❖ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ❖ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

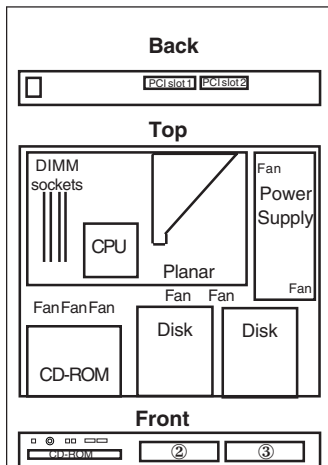
Maximum internal disk capacity¹³ (model dependent):
 600GB with two 300GB SAS disks or 500GB with two 250GB SATA disks

See footnotes for important warranty information

For GAV systems, lowercase "v" should be replaced with a country-specific code.

IBM® Machine Type	GAV model	Processor / Speed	L2 cache	FSB MHz	Memory	Disk controller	Disk bays	Mechanical	Slots x bays	Ethernet	Ltd warr ³	Available date
8849/8491	B2y-B2x	Pentium® 4 631 3.0GHz	2MB	800	512MB	SATA	2 simple-swap	1U ⁴ rack	2x3	Dual Gb	1/3yr	Feb 2006
8849/8491	G2y-G2x	Pentium D 920 2.8GHz	4MB	800	1GB	SATA	2 simple-swap	1U rack	2x3	Dual Gb	1/3yr	Feb 2006
8849/8491	G4y-G4x	Pentium D 920 2.8GHz	4MB	800	1GB	SAS/SATA	2 hot-swap	1U rack	2x3	Dual Gb	1/3yr	Feb 2006
8849/8491	H2y-H2x	Pentium D 930 3.0GHz	4MB	800	1GB	SATA	2 simple-swap	1U rack	2x3	Dual Gb	1/3yr	Feb 2006
8849/8491	H4y-H4x	Pentium D 930 3.0GHz	4MB	800	1GB	SAS/SATA	2 hot-swap	1U rack	2x3	Dual Gb	1/3yr	Feb 2006
8849/8491	J2y-J2x	Pentium D 940 3.2GHz	4MB	800	1GB	SAS/SATA	2 hot-swap	1U rack	2x3	Dual Gb	1/3yr	Feb 2006
Positioning	A highly affordable, uni-processor, 1U rack-optimized server											
Processor(s)	Intel® Pentium 4 up to 3.0GHz Single-Core 800MHz FSB / Pentium D up to 3.2GHz Dual-Core 800MHz FSB / All Optimized for Extended Memory 64 Technology (EM64T)											
L2 cache	2MB std on Pentium 4 / 4MB std on Pentium D / ECC / full speed											
SMP support	No SMP support											
Implementation	Motherboard contains one LGA-775 socket, four DIMM sockets, integrated SATA or SAS/SATA, Dual Gigabit Ethernet and two slots: some: (1 PCI Express® x8, 1 PCI-X) some: (2 PCI-X)											
Memory	512MB or 1GB std / 8GB ¹³ max / four 184-pin gold-plated DIMM sockets / one socket used / PC2-4200 533MHz ECC DDR2-SDRAM / All Error Checking and Correcting (ECC) / DIMMs and ECC memory controller / industry std / unbuffered											
SCSI disk controller	SAS models: Adaptec® 9405 chipset / single-channel / on planar / Integrated Raid 8e (Raid 0 or 1)											
SATA disk controller	SATA models: Integrated Intel controller / two-channel / on planar / Integrated Raid 8e (Raid 0 or 1)											
IDE disk controller	Enhanced IDE busmaster / ATA-100 support / one connector on systemboard											
Cables	SAS models: one 1-drop EIDE cable (connected to CD-ROM)											
	SATA models: two 1-drop SATA cables, one 1-drop EIDE cable (connected to CD-ROM)											
Disk	None standard											
Mechanical Architecture / chipsets	EIA 22" Rack (1U ⁴) / rack-mount only Intel E7230 chipset / Memory Controller Hub (MCH) / I/O Controller Hub (ICH-S) for PCI 2.2 and PCI-X bus, ATA-100 EIDE, ethernet MAC, USB, Low Pin Count Interface / Firmware Hub / SMSC® LPC47M192 Super I/O for diskette, parallel, serial, keyboard, mouse											
Bus slots	(See below) two available PCI-X 1.0 100MHz or one 64-bit PCIe™ x8 and one PCI-X 1.0 100MHz / no hot-swap Active™ PCI slots /											
Ethernet controllers	Dual-Gigabit 10/100/1000 ethernet ports / Broadcom® 5721 / two full gigabit ethernet MAC and PHY layer functions / integrated / port one is CSA, port two is PCI 2.2 / full duplex / PXE / Wake on LAN® / Rear RJ-45 ports (2)											
CD-ROM / diskette	24X-10X ⁶ CD-ROM Slim/ IDE; Diskette: none											
Rear ports	Rear: serial (9-pin), two ethernet (RJ-45), keyboard, mouse, analog DB-15 monitor / no parallel port / two USB (Vers 2.0)											
Front ports / Graphics	Front: two USB (Vers 2.0) ATI® RN50(ES1000) / 16MB SDRAM std/max / on planar / analog 15-pin / up to 1024x768x32bit@85Hz											
Console interconnects	No system-to-system interconnect cable (separate keyboard, video, mouse ports on back)											
Systems mgmt	Mini-baseboard management controller / IPMI 1.5 / monitors system and processor temperature, fan failure, and voltages											
Diagnostics	Diagnostic LEDs/ Error LEDs for fans and memory/ Diagnostics via PC-Doctor on a standard IBM Enhanced Diagnostics CD (diskette can be created) / support for optional Remote Supervisor Adapter II with 20-pin conn on planar for continuous power (no external power required)											
Security	Power-on password / administrator password / unattended boot / selectable boot / unattended start mode / secure remote power on / off via IPMI 1.5											
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director™ and others											
Cooling fans	Seven fans (five fans for system, two on power supply) / variable speed / not redundant or hot-swap											
Power supply	350 watt / universal / auto-sensing / auto-restart support											
Prerequisites	Monitor, keyboard, mouse, rack											

Other options at ibm.com/pc/us/accessories



- Some:
- Slot 1: 3/4 length, full height, 64-bit 100MHz PCI X 1.0 (3.3v)
 - Slot 2: half length, low-profile, 64-bit 100MHz PCI X 1.0 (3.3v)
- Some:
- Slot 1: 3/4 length, full height, 64-bit 100MHz PCI X 1.0 (3.3v)
 - Slot 2: half length, low-profile, PCIe x8
- Bay ① 5.25", UltraSlim 0.5", access, std CD-ROM
 - Bay ② 3.5", SL 1", access, open for fixed disk
 - Bay ③ 3.5", SL 1", access, open for fixed disk
- ❖ Raven black front bezel
 - ❖ H 1.75" (1U) x W 17.3" x D 22"; 43mm x 440mm x 559mm
 - ❖ 24.25 to 30 lbs; 11kg to 12.7kg (minimum to max configuration)
 - ❖ Configuration/Setup Utility: F1 at startup
 - ❖ Network Boot: F12 at startup
 - ❖ Operator Information Panel in front
 - ❖ Ships with Diagnostics CD, ServerGuide Setup and Installation CD
 - ❖ Predictive Failure Analysis on disk(s) with IBM Director can alert the administrator of an imminent component failure

Maximum internal disk capacity¹³ (model dependent):
600GB with two 300GB SAS disks or 500GB with two 250GB SATA disks

LIMITED WARRANTY³

- ❖ 1 year parts and labor standard 8849 MTM
- ❖ 3 year parts and labor standard 8491 MTM
- ❖ International Warranty Service³
- ❖ On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- ❖ On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 9x5, NBD avg response (ServicePac part num 69P9505)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9506)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9507)
 - 3 year IOR 24x7, 2 hr response (ServicePac part num 69P9508)
- ❖ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ❖ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information

IBM eServer™ xSeries™ 306m

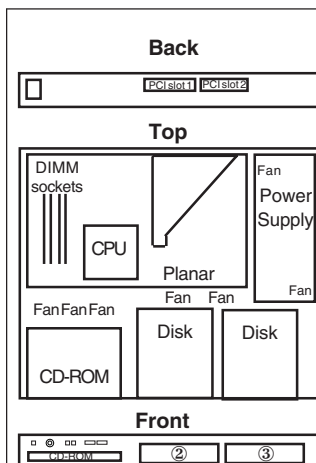
xREF by eServer Field Skills and Education Team

For GAV systems, lowercase "v" should be replaced with a country-specific code.

IBM® Machine Type	GAV model	Processor / Speed	L2 cache	FSB MHz	Memory	Disk controller	Disk bays	Mechanical	Slots x bays	Ethernet	Ltd warr ³	Available date	
8849/8491	K2y-K2x	Pentium® D 950	3.4GHz/DC	4MB	800	2 x 512MB	SATA	2 simple-swap	1U ⁴ rack	2x3	Dual GB	1/3yr	May 2006
8849/8491	K4y-K4x	Pentium D 950	3.4GHz/DC	4MB	800	2 x 512MB	SAS/SATA	2 hot-swap	1U rack	2x3	Dual GB	1/3yr	May 2006
8849/8491	94y-94x	Pentium D 960	3.6GHz/DC	4MB	800	2 x 512MB	SAS/SATA	2 hot-swap	1U rack	2x3	Dual GB	1/3yr	May 2006

Positioning	<i>A highly affordable, uni-processor, 1U rack-optimized server</i>											
Processor(s)	Intel® Pentium D up to 3.6GHz Dual-Core 800MHz FSB / All Optimized for Extended Memory 64 Technology (EM64T)											
L2 cache	4MB std on Pentium D / ECC / full speed											
SMP support	No SMP support											
Implementation	Motherboard contains one LGA-775 socket, four DIMM sockets, integrated SATA or SAS/SATA, Dual Gigabit Ethernet and two slots: some: (1 PCI Express® x8, 1 PCI-X) some: (2 PCI-X)											
Memory	1GB std / 8GB¹³ max / four 184-pin gold-plated DIMM sockets / two sockets used / PC2-4200 533MHz ECC DDR2-SDRAM / All Error Checking and Correcting (ECC) / DIMMs and ECC memory controller / industry std / unbuffered											
SCSI disk controller	SAS models: Adaptec® 9405 chipset / single-channel / on planar / Integrated Raid 8e (Raid 0 or 1)											
SATA disk controller	SATA models: Integrated Intel controller / two-channel / on planar / Integrated Raid 8e (Raid 0 or 1)											
IDE disk controller	Enhanced IDE busmaster / ATA-100 support / one connector on systemboard											
Cables	SAS models: one 1-drop EIDE cable (connected to CD-ROM) SATA models: two 1-drop SATA cables, one 1-drop EIDE cable (connected to CD-ROM)											
Disk	None standard											
Mechanical Architecture / chipsets	EIA 22" Rack (1U⁴) / rack-mount only Intel E7230 chipset / Memory Controller Hub (MCH) / I/O Controller Hub (ICH-S) for PCI 2.2 and PCI-X bus, ATA-100 EIDE, ethernet MAC, USB, Low Pin Count Interface / Firmware Hub / SMSC® LPC47M192 Super I/O for diskette, parallel, serial, keyboard, mouse											
Bus slots	(See below) two available PCI-X 1.0 100MHz or one 64-bit PCIe™ x8 and one PCI-X 1.0 100MHz / no hot-swap Active™ PCI slots /											
Ethernet controllers	Dual-Gigabit 10/100/1000 ethernet ports / Broadcom® 5721 / two full gigabit ethernet MAC and PHY layer functions / integrated / port one is CSA, port two is PCI 2.2 / full duplex / PXE / Wake on LAN® / Rear RJ-45 ports (2)											
CD-ROM / diskette	24X-10X ⁶ CD-ROM Slim/ IDE; <i>Diskette</i> : none											
Rear ports	<i>Rear</i> : serial (9-pin), two ethernet (RJ-45), keyboard, mouse, analog DB-15 monitor / no parallel port / two USB (Vers 2.0)											
Front ports / Graphics	<i>Front</i> : two USB (Vers 2.0) ATI® RN50(ES1000) / 16MB SDRAM std/max / on planar / analog 15-pin / up to 1024x768x32bit@85Hz											
Console interconnects	No system-to-system interconnect cable (separate keyboard, video, mouse ports on back)											
Systems mgmt	Mini-baseboard management controller / IPMI 1.5 / monitors system and processor temperature, fan failure, and voltages											
Diagnostics	Diagnostic LEDs/ Error LEDs for fans and memory/ Diagnostics via PC-Doctor on a standard IBM Enhanced Diagnostics CD (diskette can be created) / support for optional Remote Supervisor Adapter II with 20-pin conn on planar for continuous power (no external power required)											
Security	Power-on password / administrator password / unattended boot / selectable boot / unattended start mode / secure remote power on / off via IPMI 1.5											
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director™ and others											
Cooling fans	Seven fans (five fans for system, two on power supply) / variable speed / not redundant or hot-swap											
Power supply	350 watt / universal / auto-sensing / auto-restart support											
Prerequisites	Monitor, keyboard, mouse, rack											

Other options at ibm.com/pc/us/accessories



- Some:
- Slot 1: 3/4 length, full height, 64-bit 100MHz PCI X 1.0 (3.3v)
 - Slot 2: half length, low-profile, 64-bit 100MHz PCI X 1.0 (3.3v)
- Some:
- Slot 1: 3/4 length, full height, 64-bit 100MHz PCI X 1.0 (3.3v)
 - Slot 2: half length, low-profile, PCIe x8
- Bay ① 5.25", UltraSlim 0.5", access, std CD-ROM
 - Bay ② 3.5", SL 1", access, open for fixed disk
 - Bay ③ 3.5", SL 1", access, open for fixed disk
- ❖ Raven black front bezel
 - ❖ H 1.75" (1U) x W 17.3" x D 22"; 43mm x 440mm x 559mm
 - ❖ 24.25 to 30 lbs; 11kg to 12.7kg (minimum to max configuration)
 - ❖ Configuration/Setup Utility: F1 at startup
 - ❖ Network Boot: F12 at startup
 - ❖ Operator Information Panel in front
 - ❖ Ships with Diagnostics CD, ServerGuide Setup and Installation CD
 - ❖ Predictive Failure Analysis on disk(s) with IBM Director can alert the administrator of an imminent component failure

Maximum internal disk capacity¹³ (model dependent):
600GB with two 300GB SAS disks or 500GB with two 250GB SATA disks

LIMITED WARRANTY³

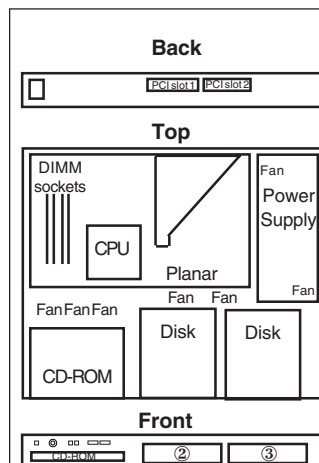
- ❖ 1 year parts and labor standard 8849 MTM
- ❖ 3 year parts and labor standard 8491 MTM
- ❖ International Warranty Service³
- ❖ On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- ❖ On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 9x5, NBD avg response (ServicePac part num 69P9505)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9506)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9507)
 - 3 year IOR 24x7, 2 hr response (ServicePac part num 69P9508)
- ❖ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ❖ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

IBM® Machine Type model	Processor / Speed	L2 cache	FSB MHz	Memory	Disk controller	Disk bays	Mechanical	Slots x bays	Ethernet	Ltd warr ³	Available date
8849/8491 FAU	Pentium® D 915 2.8GHz/DC	4MB	800	2 x 512MB	SATA	2 simple-swap	1U ⁴ rack	2x3	Dual GB	1/3yr	Sep 2006
8849/8491 JAU	Pentium D 945 3.4GHz/DC	4MB	800	2 x 512MB	SATA	2 simple-swap	1U rack	2x3	Dual GB	1/3yr	Sep 2006
8849/8491 JBX	Pentium D 945 3.4GHz/DC	4MB	800	2 x 512MB	SAS/SATA	2 hot-swap	1U rack	2x3	Dual GB	1/3yr	Sep 2006

Positioning	<i>A highly affordable, uni-processor, 1U rack-optimized server</i>										
Processor(s)	Intel® Pentium D up to 3.4GHz Dual-Core 800MHz FSB / All Optimized for Extended Memory 64 Technology (EM64T)										
L2 cache	4MB std on Pentium D / ECC / full speed										
SMP support	No SMP support										
Implementation	Motherboard contains one LGA-775 socket, four DIMM sockets, integrated SATA or SAS/SATA, Dual Gigabit Ethernet and two slots: some: (1 PCI Express® x8, 1 PCI-X) some: (2 PCI-X)										
Memory	1GB std / 8GB¹³ max / four 184-pin gold-plated DIMM sockets / two sockets used / PC2-4200 533MHz ECC DDR2-SDRAM / All Error Checking and Correcting (ECC) / DIMMs and ECC memory controller / industry std / unbuffered										
SCSI disk controller	SAS models: Adaptec® 9405 chipset / single-channel / on planar / Integrated Raid 8e (Raid 0 or 1)										
SATA disk controller	SATA models: Integrated Intel controller / two-channel / on planar / Integrated Raid 8e (Raid 0 or 1)										
IDE disk controller	Enhanced IDE busmaster / ATA-100 support / one connector on systemboard										
Cables	SAS models: one 1-drop EIDE cable (connected to CD-ROM)										
	SATA models: two 1-drop SATA cables, one 1-drop EIDE cable (connected to CD-ROM)										
Disk	None standard										
Mechanical Architecture / chipsets	EIA 22" Rack (1U⁴) / rack-mount only Intel E7230 chipset / Memory Controller Hub (MCH) / I/O Controller Hub (ICH-S) for PCI 2.2 and PCI-X bus, ATA-100 EIDE, ethernet MAC, USB, Low Pin Count Interface / Firmware Hub / SMSC® LPC47M192 Super I/O for diskette, parallel, serial, keyboard, mouse										
Bus slots	(See below) two available PCI-X 1.0 100MHz or one 64-bit PCIe™ x8 and one PCI-X 1.0 100MHz / no hot-swap Active™ PCI slots /										
Ethernet controllers	Dual-Gigabit 10/100/1000 ethernet ports / Broadcom® 5721 / two full gigabit ethernet MAC and PHY layer functions / integrated / port one is CSA, port two is PCI 2.2 / full duplex / PXE / Wake on LAN® / Rear RJ-45 ports (2)										
CD-ROM / diskette	24X-10X ⁶ CD-ROM Slim/ IDE; <i>Diskette</i> : none										
Rear ports	Rear: serial (9-pin), two ethernet (RJ-45), keyboard, mouse, analog DB-15 monitor / no parallel port / two USB (Vers 2.0)										
Front ports / Graphics	Front: two USB (Vers 2.0) ATI® RN50(ES1000) / 16MB SDRAM std/max / on planar / analog 15-pin / up to 1024x768x32bit@85Hz										
Console interconnects	No system-to-system interconnect cable (separate keyboard, video, mouse ports on back)										
Systems mgmt	Mini-baseboard management controller / IPMI 1.5 / monitors system and processor temperature, fan failure, and voltages										
Diagnostics	Diagnostic LEDs/ Error LEDs for fans and memory/ Diagnostics via PC-Doctor on a standard IBM Enhanced Diagnostics CD (diskette can be created) / support for optional Remote Supervisor Adapter II with 20-pin conn on planar for continuous power (no external power required)										
Security	Power-on password / administrator password / unattended boot / selectable boot / unattended start mode / secure remote power on / off via IPMI 1.5										
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director™ and others										
Cooling fans	Seven fans (five fans for system, two on power supply) / variable speed / not redundant or hot-swap										
Power supply	350 watt / universal / auto-sensing / auto-restart support										
Prerequisites	Monitor, keyboard, mouse, rack										

512MB PC2-4200 CL3 ECC DDR2RoHS	30R5148
2GB(2x1GB) PC2-4200 CL3 ECC DDR2 RoHS	30R5149
4GB(2x2GB) PC2-4200 CL3 ECC DDR2 RoHS	30R5150
IBM 80GB SATA (7.2K) simple-swap HDD	39M4500
IBM 160GB SATA (7.2K) simple-swap HDD	39M4504
IBM 250GB SATA (7.2K) simple-swap HDD	39M4508
80GB Hot-Swap SATA HDD	39M4518
160GB Hot-Swap SATA HDD	39M4522
250GB Hot-Swap SATA HDD	39M4526
73GB 10K 3.5" SAS Hot-Swap HDD	40K1039
146GB 10K 3.5" SAS Hot-Swap HDD	40K1040
300GB 10K 3.5" SAS Hot-Swap HDD	40K1041
36GB 15K 3.5" SAS Hot-Swap HDD	40K1042
73GB 15K 3.5" SAS Hot-Swap HDD	40K1043
146GB 15K 3.5" SAS Hot-Swap HDD	40K1044
IBM Remote Supervisor Adapter II (PCI adapter)	59P2984
IBM ServeRAID-7i SATA Integrated Controller	71P8648

Other options at ibm.com/pc/us/accessories



- Some:
- Slot 1: 3/4 length, full height, 64-bit 100MHz PCI X 1.0 (3.3v)
 - Slot 2: half length, low-profile, 64-bit 100MHz PCI X 1.0 (3.3v)
- Some:
- Slot 1: 3/4 length, full height, 64-bit 100MHz PCI X 1.0 (3.3v)
 - Slot 2: half length, low-profile, PCIe x8
- Bay ① 5.25", UltraSlim 0.5", access, std CD-ROM
 - Bay ② 3.5", SL 1", access, open for fixed disk
 - Bay ③ 3.5", SL 1", access, open for fixed disk
- ❖ Raven black front bezel
 - ❖ H 1.75" (1U) x W 17.3" x D 22"; 43mm x 440mm x 559mm
 - ❖ 24.25 to 30 lbs; 11kg to 12.7kg (minimum to max configuration)
 - ❖ Configuration/Setup Utility: F1 at startup
 - ❖ Network Boot: F12 at startup
 - ❖ Operator Information Panel in front
 - ❖ Ships with Diagnostics CD, ServerGuide Setup and Installation CD
 - ❖ Predictive Failure Analysis on disk(s) with IBM Director can alert the administrator of an imminent component failure

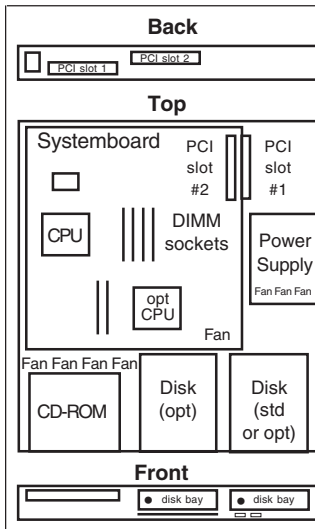
Maximum internal disk capacity¹³ (model dependent):
600GB with two 300GB SAS disks or 500GB with two 250GB SATA disks

LIMITED WARRANTY³

- ❖ 1 year parts and labor standard 8849 MTM
- ❖ 3 year parts and labor standard 8491 MTM
- ❖ International Warranty Service³
- ❖ On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- ❖ On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 9x5, NBD avg response (ServicePac part num 69P9505)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9506)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9507)
 - 3 year IOR 24x7, 2 hr response (ServicePac part num 69P9508)
- ❖ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ❖ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

IBM® Type-model	Qty x Processor	Proc. Speed	L2 Cache	Memory	Memory type	Disk	Disk controller	Hot-swap or fixed disk bays	Slots x bays	Limited warranty ³	Available date
8835-21X	1 x Opteron™ 240	1.4Ghz ¹	1MB	1GB	Chipkill	None (open)	Ultra320	2 hot-swap	2x3	2 x Gigabit Ethernet	1 year Oct 2003
8835-22X	1 x Opteron 240	1.4Ghz	1MB	1GB	Chipkill	80GB ² EIDE	EIDE	2 fixed	2x3	2 x Gigabit Ethernet	1 year Oct 2003
8835-31X	1 x Opteron 242	1.6Ghz	1MB	1GB	Chipkill	None (open)	Ultra320	2 hot-swap	2x3	2 x Gigabit Ethernet	1 year Oct 2003
8835-32X	1 x Opteron 242	1.6Ghz	1MB	1GB	Chipkill	80GB ² EIDE	EIDE	2 fixed	2x3	2 x Gigabit Ethernet	1 year Oct 2003
8835-51X	1 x Opteron 246	2.0Ghz	1MB	1GB	Chipkill	None (open)	Ultra320	2 hot-swap	2x3	2 x Gigabit Ethernet	1 year Oct 2003
8835-52X	1 x Opteron 246	2.0Ghz	1MB	1GB	Chipkill	80GB ² EIDE	EIDE	2 fixed	2x3	2 x Gigabit Ethernet	1 year Oct 2003
8835-5DX	2 x Opteron 246	2.0Ghz	1MB	2GB	Chipkill	36.4GB 10K	Ultra320	2 hot-swap	2x3	2 x Gigabit Ethernet	1 year Oct 2003
Processor(s)	Up to 2 x AMD® Opteron™ 246 with 800Mhz HyperTransport technology / 64-bit x86 Instruction set / 32-bit compatible										
L2 cache	1MB / on die of processor / at processor speed (no L3 cache)										
SMP support Implementation	2-way SMP / up to two Opteron Processors (same speed/cache size required) Systemboard contains two AMD Socket 940 micro-PGA ZIF sockets, six memory DIMM slots, two 64-bit 100Mhz PCI-X slots, integrated SCSI, ethernet, graphics / AMD Opteron HyperLink bus interface										
Memory	Up to 2GB std / 12GB max ¹³ (when 2GB DIMMs become available) / four slots enabled with uni-processor, six with dual / two slots used (four slots used in 5DX model) / four slots available (two avail. in 5DX) / PC2700 333MHz registered 184-pin ECC DDR-SDRAM DIMMs / six DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / memory bus runs at 2 x 100MHz / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips)										
SCSI disk controller	All (not used on EIDE models): LSI Logic® 53C1020 / Ultra320 SCSI controller (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X Bus B / supports RAID-1 mirroring (Embedded Mirroring) with two SCSI disks in front bays / one 16-bit internal channel / 16-bit 68-pin LVD cable from systemboard to backplane for two disks / no external connector										
IDE controller / cable	All: Enhanced IDE ATA-100 controller in CSB5 South Bridge / two connectors on planar / one 1-drop IDE cable (CD-ROM) EIDE models: One 2-drop EIDE cable to two disk bays (primary) / one 1-drop EIDE cable to CD-ROM (secondary)										
Disk - capacity	SCSI models: 36.4GB supports up to 15000 rpm disks; EIDE models: 80GB / 7200 rpm / ATA-100 / 8.7ms seek										
Disk - bays	SCSI models: two hot-swap / 80-pin SCA-2 connectors / filler panels in each disk bay / all disk bays Ultra320-enabled										
Mechanical Architecture / chipsets	EIA 19" Rack (1U ⁴) / rack-mount only / supported in 26" deep racks such as the IBM NetBAY™ Rack products AMD® 8131 PCI-X Bridge Chip providing two PCI-X bridges running at 100MHz (bridge A for SCSI and Ethernet; bridge B for PCI-X expansion slots) / 8111 I/O HyperTransport Bridge Chip supporting a 200 Mhz double-pumped HyperTransport clock (PCI, AC '97, Ethernet, SMBus, USB, EIDE, LPC to BIOS and Super I/O) / National Semiconductor® PC87366 Super I/O chip										
Bus slots	(See below) two available PCI-X 1.0 / no hot-swap Active™ PCI slots										
Ethernet controllers	Two gigabit 10/100/1000 ethernet ports / Broadcom BCM5704 / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-X 64-bit 100MHz Bus B / full duplex / Wake on LAN® / Alert Standard Format 1.0 / two rear RJ-45 ports										
CD-ROM/diskette/kbd Rear ports	24X-10X ⁵ CD-ROM / IDE / Diskette and keyboard: none (USB diskette and keyboard optional); legacy not supported Rear: two USB (Vers 1.1), serial (9-pin), two ethernet (RJ-45) / parallel port not supported										
Front ports / graphics Console interconnects	Front: two USB (Vers 1.1); Graphics: SVGA / ATI® Rage XL / on planar / 8MB SDRAM std/max / 32-bit 33MHz PCI 2.2 Bus A C2T Interconnect™ cabling not supported / NetBay Local Console Manager (LCM), NetBay Remote Console Manager (RCM), and USB Conversion Option (UCO) are supported										
Systems mgmt	Standard MS-9549 QLogic system management / connector on planar / optional Remote Supervisor Adapter II card not supported							Opteron 240 Processor Upgrade		24P8189	
Diagnosics	Diagnositic LEDs for fans, memory DIMMs and processors only / Light Path Diagnostics not supported							Opteron 242 Processor Upgrade		24P8190	
Security	Power-on password / administrator password / unattended boot / selectable boot / unattended start mode							Opteron 246 Processor Upgrade		13N0700	
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director™, and others							512MB PC2700 CL2.5 ECC DDR-SDRAM RDIMM		73P2266	
Cooling fans	Eight fans (five for system, three inside power supply) / variable speed / not redundant or hot-swap							1GB PC2700 CL2.5 ECC DDR-SDRAM RDIMM		73P2267	
Power supply Prerequisites	411 watt / universal / auto-sensing / auto-restart support Monitor, keyboard, mouse, rack, disk (some), operating sys							2GB PC2700 CL2.5 ECC DDR-SDRAM RDIMM		73P2269	
								80GB ATA-100 EIDE HDD*		09N4226	
								120GB ATA-100 EIDE HDD*		09N4231	
								36.4GB 15K Ultra320 SCSI Hot-Swap SL HDD*		32P0734	
								73.4GB 15K Ultra320 SCSI Hot-Swap SL HDD*		32P0735	
								IBM TotalStorage FC2-133 Host Bus Adapter		24P0960	
								IBM ServeRAID-6M SCSI (256MB Cache)		02R0988	
								USB Portable Diskette Drive		05K9276	
								NetBAY ACT Local Console Manager (LCM)		1735L04	
								NetBAY Remote Console Manager (RCM)		1735R16	
								1.5M USB Conversion Option		73P5832	

* Disk not supported in all e325 systems



Slot 1: half-length, 64-bit 100MHz PCI X 1.0 (3.3v); Bus C
Slot 2: full-length, 64-bit 100MHz PCI X 1.0 (3.3v); Bus C

Bay ① 5.25", UltraSlim 0.5", access, std CD-ROM
Bay ② 3.5", SL 1", access, std fixed or hot-swap disk
Bay ③ 3.5", SL 1", access, open for fixed or hot-swap disk

- Stealth black color front bezel
- Utility tray in front slides out from under middle bay (USB devices)
- H 1.72" (1U) x W 17.3" x D 25.7"; 43.7mm x 439.9mm x 653.3mm
- 26 to 32 lbs; 11.8kg to 14.6kg (minimum to max configuration)
- Configuration/Setup Utility: F1 at startup
- System Partition Boot: ALT+F1 at startup
- Network Boot: F12 at startup
- Operator Information Panel in front
- LSI Logic Configuration Utility: CTRL+C at startup
- Includes one line cord (9 ft universal interrack HV cable with IEC plug)
- Predictive Failure Analysis® on processor(s), voltage regulator modules, memory, fans, power supply, and disk options

Maximum internal disk capacity¹³ (model dependent):
293.6GB with two 146.8GB SL SCSI disks or
240GB with two 120GB EIDE disks

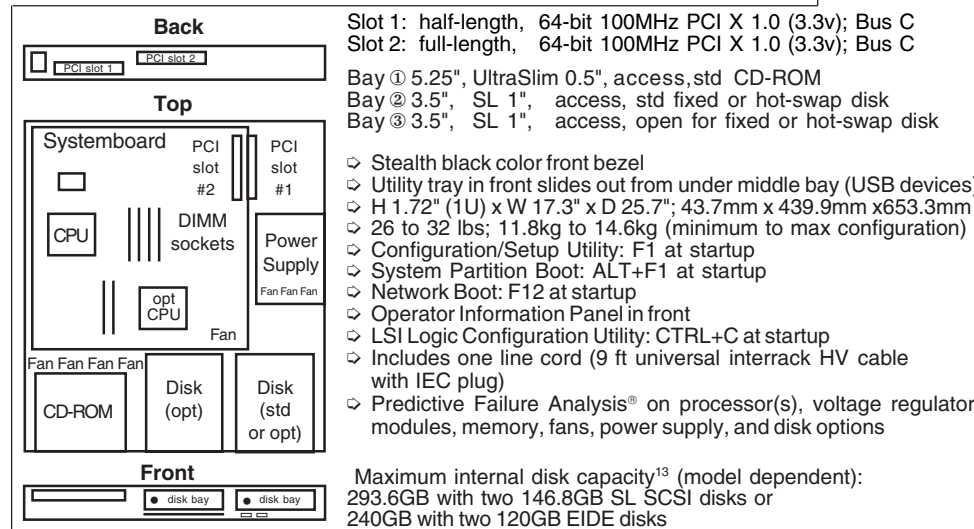
LIMITED WARRANTY³

- 1 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- On site service upgrade options (in eligible locations):⁷
 - 1 year IOR 9x5, 4 hr avg response (ServicePac® part num 69P9399)
 - 2 year IOR 24x7, 4 hr avg response (ServicePac part num 96P2119)
 - 2 year IOR 24x7, 2 hr avg response (ServicePac part num 96P2120)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9507)
 - 3 year IOR 9x5, NBD response (ServicePac part num 69P9506)
- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information
• = Hot-swap in some models
US models announced August 5, 2003

IBM® Type-model	Qty x Processor	Proc. Speed	L2 Cache	Memory	Memory type	Disk	Disk controller	Hot-swap or fixed disk bays	Slots x bays	Ethernet	Limited warranty ³	Available date
8835-61X	1 x Opteron™ 248	2.2Ghz ¹	1MB	1GB	Chipkill	None (open)	Ultra320	2 hot-swap	2x3	2 x Gigabit	1 year	Jan 2004
8835-62X	1 x Opteron 248	2.2Ghz	1MB	1GB	Chipkill	80GB ² EIDE	EIDE	2 fixed	2x3	2 x Gigabit	1 year	Jan 2004
8835-71X	1 x Opteron 250	2.4Ghz	1MB	1GB	Chipkill	None (open)	Ultra320	2 hot-swap	2x3	2 x Gigabit	1 year	Jun 2004
8835-72X	1 x Opteron 250	2.4Ghz	1MB	1GB	Chipkill	80GB EIDE	EIDE	2 fixed	2x3	2 x Gigabit	1 year	Jun 2004

Processor(s) L2 cache SMP support Implementation	Up to 2 x AMD® Opteron™ 248 with 800Mhz HyperTransport technology / 64-bit x86 Instruction set / 32-bit compatible 1MB / on die of processor / at processor speed (no L3 cache) 2-way SMP / up to two Opteron Processors (same speed/cache size required) Systemboard contains two AMD Socket 940 micro-PGA ZIF sockets, six memory DIMM slots, two 64-bit 100Mhz PCI-X slots, integrated SCSI, ethernet, graphics / AMD Opteron HyperLink bus interface		
Memory	1GB std / 12GB max ¹³ / four slots enabled with uni-processor, six with dual / two slots used / four slots available / PC2700 333MHz registered 184-pin ECC DDR-SDRAM DIMMs / six DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / memory bus runs at 2 x 100MHz / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2-bit through 8-bit errors contained in two chips)		
SCSI disk controller	<i>All (not used on EIDE models): LSI Logic® 53C1020 / Ultra320 SCSI controller</i> (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X Bus B / supports RAID-1 mirroring (Embedded Mirroring) with two SCSI disks in front bays / one 16-bit internal channel / 16-bit 68-pin LVD cable from systemboard to backplane for two disks / no external connector		
IDE controller / cable	<i>All: Enhanced IDE ATA-100 controller in CSB5 South Bridge / two connectors on planar / one 1-drop IDE cable (CD-ROM) EIDE models: One 2-drop EIDE cable to two disk bays (primary) / one 1-drop EIDE cable to CD-ROM (secondary)</i>		
Disk - capacity Disk - bays	<i>SCSI models: 36.4GB supports up to 15000 rpm disks; EIDE models: 80GB / 7200 rpm / ATA-100 / 8.7ms seek</i> <i>SCSI models: two hot-swap / 80-pin SCA-2 connectors / filler panels in each disk bay / all disk bays Ultra320-enabled</i>		
Mechanical Architecture / chipsets	EIA 19" Rack (1U⁴) / rack-mount only / supported in 26" deep racks such as the IBM NetBAY™ Rack products AMD® 8131 PCI-X Bridge Chip providing two PCI-X bridges running at 100Mhz (bridge A for SCSI and Ethernet; bridge B for PCI-X expansion slots) / 8111 I/O HyperTransport Bridge Chip supporting a 200 Mhz double-pumped HyperTransport clock (PCI, AC '97, Ethernet, SMBus, USB, EIDE, LPC to BIOS and Super I/O) / National Semiconductor® PC87366 Super I/O chip		
Bus slots	(See below) two available PCI-X 1.0 / no hot-swap Active™ PCI slots		
Ethernet controllers	Two gigabit 10/100/1000 ethernet ports / Broadcom BCM5704 / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-X 64-bit 100MHz Bus B / full duplex / Wake on LAN® / Alert Standard Format 1.0 / two rear RJ-45 ports		
CD-ROM/diskette/kbd Rear ports Front ports / graphics Console interconnects	24X-10X ⁶ CD-ROM / IDE / <i>Diskette and keyboard: none</i> (USB diskette and keyboard optional); legacy not supported <i>Rear:</i> two USB (Vers 1.1), serial (9-pin), two ethernet (RJ-45) / parallel port not supported <i>Front:</i> two USB (Vers 1.1); <i>Graphics:</i> SVGA / ATI® Rage XL / on planar / 8MB SDRAM std/max / 32-bit 33MHz PCI 2.2 Bus A C2T Interconnect™ cabling not supported / NetBay Local Console Manager (LCM), NetBay Remote Console Manager (RCM), and USB Conversion Option (UCO) are supported		
Systems mgmt	Standard MS-9549 QLogic system management / connector on planar / Remote Supervisor Adapter II card not supported	Opteron 248 Processor Upgrade Opteron 250 Processor Upgrade	13N0701 13N0702
Diagnostics	Diagnostic LEDs for fans, memory DIMMs and processors only / Light Path Diagnostics not supported	512MB PC2700 CL2.5 ECC DDR-SDRAM RDIMM 1GB PC2700 CL2.5 ECC DDR-SDRAM RDIMM 2GB PC2700 CL2.5 ECC DDR-SDRAM RDIMM	73P2266 73P2267 73P2268
Security	Power-on password / administrator password / unattended boot / selectable boot / unattended start mode	80GB ATA-100 EIDE HDD* 120GB ATA-100 EIDE HDD*	09N4226 09N4231
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director™, and others	36.4GB 15K Ultra320 SCSI Hot-Swap SL HDD* 73.4GB 15K Ultra320 SCSI Hot-Swap SL HDD* IBM TotalStorage FC2-133 Host Bus Adapter IBM ServeRAID-6M SCSI (256MB Cache) USB Portable Diskette Drive NetBAY ACT Local Console Manager (LCM)	32P0734 32P0735 24P0960 02R0988 05K9276 1735L04
Cooling fans	Eight fans (five for system, three inside power supply) / variable speed / not redundant or hot-swap	NetBAY Remote Console Manager (RCM) 1.5M USB Conversion Option	1735R16 73P5832
Power supply Prerequisites	411 watt / universal / auto-sensing / auto-restart support Monitor, keyboard, mouse, rack, disk (some), operating sys		



LIMITED WARRANTY³

- 1 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- On site service upgrade options (in eligible locations):⁷
 - 1 year IOR 9x5, 4 hr avg response (ServicePac® part num 69P9399)
 - 2 year IOR 24x7, 4 hr avg response (ServicePac part num 96P2119)
 - 2 year IOR 24x7, 2 hr avg response (ServicePac part num 96P2120)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9507)
 - 3 year IOR 9x5, NBD response (ServicePac part num 69P9506)
- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information
• = Hot-swap in some models
US models announced January 2004 (61X, 62X), and May 25, 2004 (71X, 72X) (X325B) © IBM Corp. January 2004

IBM® Type-GAV	Qty x Processor	Proc. Speed	L2 Cache	Memory	Memory type	Disk	Disk controller	Hot-swap or fixed disk bays	Slots x bays	Ethernet	Limited warranty ³	Available date
8848-51Y	1 x Opteron™ 246	2.0Ghz ¹	1MB	1GB	Chipkill	None (open)	Ultra320	2 hot-swap	2x3	2 x Gigabit	1 year	Sept 2004
8848-52Y	1 x Opteron 246	2.0Ghz	1MB	1GB	Chipkill	80GB ² SATA	SATA	2 fixed	2x3	2 x Gigabit	1 year	Sept 2004
8848-61Y	1 x Opteron 248	2.2Ghz	1MB	1GB	Chipkill	None (open)	Ultra320	2 hot-swap	2x3	2 x Gigabit	1 year	Sept 2004
8848-62Y	1 x Opteron 248	2.2Ghz	1MB	1GB	Chipkill	80GB SATA	SATA	2 fixed	2x3	2 x Gigabit	1 year	Sept 2004
8848-71Y	1 x Opteron 250	2.4Ghz	1MB	1GB	Chipkill	None (open)	Ultra320	2 hot-swap	2x3	2 x Gigabit	1 year	Sept 2004
8848-72Y	1 x Opteron 250	2.4Ghz	1MB	1GB	Chipkill	80GB SATA	SATA	2 fixed	2x3	2 x Gigabit	1 year	Sept 2004
8848-81Y	1 x Opteron 252	2.6Ghz	1MB	1GB	Chipkill	None (open)	Ultra320	2 hot-swap	2x3	2 x Gigabit	1 year	Mar 2005
8848-82Y	1 x Opteron 252	2.6Ghz	1MB	1GB	Chipkill	80GB SATA	SATA	2 fixed	2x3	2 x Gigabit	1 year	Mar 2005

Processor(s) **Up to 2 x AMD® Opteron™ 246, 248, 250, 252** with 800Mhz HyperTransport technology / 64-bit x86 Instruction set / 32-bit compatible
 L2 cache **1MB** / ECC / on die of processor / at processor speed (no L3 cache)
 SMP support **2-way SMP** / up to two Opteron Processors (same speed/cache size required)
 Implementation Systemboard contains two AMD Socket 940 micro-PGA ZIF sockets, eight memory DIMM slots, two 64-bit 133/100Mhz PCI-X slots, integrated SATA or SCSI, ethernet, graphics / AMD Opteron HyperLink bus interface

Memory **1GB** std / 16GB max¹³ / four slots enabled with uni-processor, eight with dual / two slots used / six slots available / **PC2700** or **PC3200** registered 184-pin ECC DDR-SDRAM DIMMs / eight DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / memory bus runs at 2 x 100MHz / **Chipkill™** supported

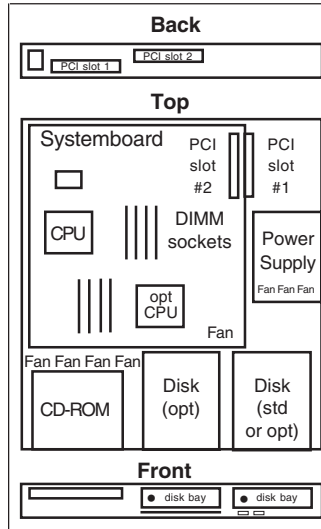
SCSI disk controller *All (not used on SATA models): LSI Logic® 53C1020 / Ultra320 SCSI controller* (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X Bus B / supports **RAID-1 mirroring** (Embedded Mirroring) with two SCSI disks in front bays / one 16-bit internal channel / 16-bit 68-pin LVD cable from systemboard to backplane for two disks / no external connector
 SATA controller/cable *All: SATA-150 controller / two connectors on planar / two 1-drop cables / 1 IDE*
 Disk - capacity *SCSI models: open; SATA models: 80GB / 7200 rpm / ATA-100 / 9.0ms seek*
 Disk - bays *SCSI models: two hot-swap / 80-pin SCA-2 connectors / filler panels in each disk bay / all disk bays Ultra320-enabled, supports 15k drives*

Mechanical Architecture/chipsets **EIA 19" Rack (1U⁴)** / rack-mount only / supported in 26" deep racks such as the IBM NetBAY™ Rack products
AMD® 8131 PCI-X Bridge Chip providing two PCI-X bridges running at 100Mhz (bridge A for SCSI and Ethernet; bridge B for PCI-X expansion slots) / **8111 I/O HyperTransport Bridge Chip** supporting a 200 Mhz double-pumped HyperTransport clock (PCI, AC '97, Ethernet, SMBus, USB, SATA, IDE, LPC to BIOS and Super I/O) / National Semiconductor® PC87366 Super I/O chip
 Bus slots (See detail below) two available PCI-X 1.0 / 1 full-length, 1 Half / 133MHz if using single adapter, 100MHz with 2 adaptors / no hot-swap Active™ PCI slots

Ethernet controllers Two gigabit 10/100/1000 ethernet ports / Broadcom BCM5704C / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-X 64-bit 100MHz Bus B / full duplex / Wake on LAN® / Alert Standard Format 1.0 / two rear RJ-45 ports
 Optical/diskette/kbd Rear ports *24X-10X⁵ CD-ROM / IDE / Diskette and keyboard: none (USB diskette and keyboard optional); legacy not supported*
 Front ports / graphics *Rear: two USB (Vers 1.1), serial (9-pin), two ethernet (RJ-45) / parallel port not supported*
 Console interconnects *Front: two USB (Vers 1.1); Graphics: SVGA / ATI® Rage XL / on planar / 8MB SDRAM std/max / 32-bit 33MHz PCI 2.2*
C2T Interconnect™ cabling not supported / NetBay Local Console Manager (LCM), NetBay Remote Console Manager (RCM), and USB Conversion Option (UCO) are supported

Systems mgmt	Standard MS-9549 QLogic system management / connector on planar / Remote Supervisor Adapter II optional	Opteron 246 Processor Upgrade Opteron 248 Processor Upgrade Opteron 250 Processor Upgrade Opteron 252 Processor Upgrade	13N0705 13N0706 13N0702 13N0703
Diagnostics	Diagnostic LEDs for fans, memory DIMMs and processors only / Light Path Diagnostics not supported	2GB PC2700 CL2.5 ECC DDR-SDRAM kit 1GB PC3200 CL3 ECC DDR-SDRAM kit 80GB SATA-150 7.2k HDD* 160GB SATA-150 7.2k HDD*	73P2269 73P3233 25R6902 25R6903
Security	Power-on password / administrator password / unattended boot / selectable boot / unattended start mode	36.4GB 15K Ultra320 SCSI Hot-Swap SL HDD* 73.4GB 15K Ultra320 SCSI Hot-Swap SL HDD*	32P0734 32P0735
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director™, and others	IBM TotalStorage FC2-133 Host Bus Adapter IBM ServeRAID-6M SCSI (256MB Cache) USB Portable Diskette Drive NetBAY ACT Local Console Manager (LCM) NetBAY Remote Console Manager (RCM) 1.5M USB Conversion Option	24P0960 02R0988 05K9276 1735L04 1735R16 73P5832
Cooling fans	Eight fans (five for system, three inside power supply) / variable speed / not redundant or hot-swap		
Power supply	411 watt / universal / auto-sensing / auto-restart support		
Prerequisites	Monitor, keyboard, mouse, rack, disk (some), operating sys,		

* Disk not supported in all e325 systems



Slot 1: half-length, 64-bit 133/100MHz PCI X 1.0 (3.3v); Bus C
 Slot 2: full-length, 64-bit 133/100MHz PCI X 1.0 (3.3v); Bus C

Bay ① 5.25", UltraSlim 0.5", access, std CD-ROM
 Bay ② 3.5", SL 1", access, std fixed or hot-swap disk
 Bay ③ 3.5", SL 1", access, open for fixed or hot-swap disk

- ▷ Stealth black color front bezel
- ▷ Utility tray in front slides out from under middle bay (USB devices)
- ▷ H 1.72" (1U) x W 17.3" x D 25.7"; 43.7mm x 439.9mm x 653.3mm
- ▷ 26 to 32 lbs; 11.8kg to 14.6kg (minimum to max configuration)
- ▷ Configuration/Setup Utility: F1 at startup
- ▷ System Partition Boot: ALT+F1 at startup
- ▷ Network Boot: F12 at startup
- ▷ Operator Information Panel in front
- ▷ LSI Logic Configuration Utility: CTRL+C at startup
- ▷ Includes one line cord (9 ft universal interrack HV cable with IEC plug)
- ▷ Predictive Failure Analysis® on processor(s), voltage regulator modules, memory, fans, power supply, and disk options

Maximum internal disk capacity¹³ (model dependent):
 293.6GB with two 146.8GB SL SCSI disks or
 320GB with two 160GB EIDE disks

LIMITED WARRANTY³

- ▷ 1 year parts and labor
- ▷ International Warranty Service³
- ▷ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- ▷ On site service upgrade options (in eligible locations):⁷
 - 1 year IOR 9x5, 4 hr avg response (ServicePac® part num 69P9399)
 - 2 year IOR 24x7, 4 hr avg response (ServicePac part num 96P2119)
 - 2 year IOR 24x7, 2 hr avg response (ServicePac part num 96P2120)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9507)
 - 3 year IOR 9x5, NBD response (ServicePac part num 69P9505)
- ▷ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ▷ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information

• = Hot-swap in some models

◀ = Models announced February 2005

IBM® Type-GAV	Qty x Processor/Core	Speed	L2 Cache	Memory	Disk / Controller	Disk bays	Slots x bays	Ethernet	Limited warranty ³	Available date
7969 - 46y-46x	1 x Opteron®265/DC	1.8GHz ¹	2MB	2x512MB Chipkill	80GB/SATA	2 fixed	2x3	Dual Gigabit	1 year	Oct 2005
7969 - 55y-55x	1 x Opteron 270/DC	2.0GHz	2MB	2x512MB Chipkill	none/Ultra320	2 hot-swap	2x3	Dual Gigabit	1 year	Oct 2005
7969 - 56y-56x	1 x Opteron 270/DC	2.0GHz	2MB	2x512MB Chipkill	80GB/SATA	2 fixed	2x3	Dual Gigabit	1 year	Oct 2005
7969 - 65y-65x	1 x Opteron 275/DC	2.2GHz	2MB	2x512MB Chipkill	none/Ultra320	2 hot-swap	2x3	Dual Gigabit	1 year	Oct 2005
7969 - 66y-66x	1 x Opteron 275/DC	2.2GHz	2MB	2x512MB Chipkill	80GB/SATA	2 fixed	2x3	Dual Gigabit	1 year	Oct 2005
7969 - 67y-67x	2 x Opteron 275/DC	2.2GHz	2x2MB	4x1GB Chipkill	2x36GB/Ultra320	2 hot-swap	2x3	Dual Gigabit	1 year	Oct 2005
7969 - 68y-68x	2 x Opteron 275/DC	2.2GHz	2x2MB	4x1GB Chipkill	80GB/SATA	2 fixed	2x3	Dual Gigabit	1 year	Oct 2005
7969 - 75y-75x	1 x Opteron 280/DC	2.4GHz	2MB	2x512MB Chipkill	none/Ultra320	2 hot-swap	2x3	Dual Gigabit	1 year	Oct 2005
7969 - 76y-76x	1 x Opteron 280/DC	2.4GHz	2MB	2x512MB Chipkill	80GB/SATA	2 fixed	2x3	Dual Gigabit	1 year	Oct 2005
7969 - 81y-81x	1 x Opteron 252/SC	2.6GHz	1MB	2x512MB Chipkill	none/Ultra320	2 hot-swap	2x3	Dual Gigabit	1 year	Oct 2005
7969 - 82y-82x	1 x Opteron 252/SC	2.6GHz	1MB	2x512MB Chipkill	80GB/SATA	2 fixed	2x3	Dual Gigabit	1 year	Oct 2005
7969 - 91y-91x	1 x Opteron 254/SC	2.8GHz	1MB	2x512MB Chipkill	none/Ultra320	2 hot-swap	2x3	Dual Gigabit	1 year	Oct 2005
7969 - 92y-92x	1 x Opteron 254/SC	2.8GHz	1MB	2x512MB Chipkill	80GB/SATA	2 fixed	2x3	Dual Gigabit	1 year	Oct 2005

Positioning Processor(s) **Entry 2-way rack server for compute-intensive applications and dual core computing at an attractive price**
Up to 2 x AMD® Opteron™ 280 Dual Core or 254 Single Core / 800Mhz HyperTransport technology / Simultaneously supports 32-bit and 64-bit computing

L2 cache **1MB** / per core / at processor speed (no L3 cache)

SMP support **2-way SMP** / up to two Opteron Processors (same speed/cache size required)

Implementation Systemboard contains two AMD Socket 940 micro-PGA ZIF sockets, eight memory DIMM slots, integrated SATA or SCSI, ethernet, graphics, one PCI-E x8 and one 64-bit 133/100MHz PCI-X (option to convert PCI-X slot to second PCI-E x8)

Memory **1GB** std / 16GB max¹³ / four slots enabled with uni-processor, eight with dual / two slots used / six slots available / **PC3200** registered 184-pin ECC DDR-SDRAM DIMMs / eight DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / memory bus runs at 2 x 100MHz / **Chipkill™** supported

SCSI disk controller *All (not used on SATA models):* **LSI Logic® 53C1020 / Ultra320 SCSI controller** (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X Bus B / supports **RAID-1 mirroring** (Embedded Mirroring) with two SCSI disks in front bays / one 16-bit internal channel / 16-bit 68-pin LVD cable from systemboard to backplane for two disks / no external connector

SATA controller/cable *All:* SATA-150 controller / two connectors on planar / two 1-drop cables / 1 IDE

Disk - capacity *SCSI models:* some: open some: 36GB; *SATA models:* 80GB / 7200 rpm / 9.0ms seek

Disk - bays *SCSI models:* two hot-swap / 80-pin SCA-2 connectors / filler panels in each disk bay / all disk bays Ultra320-enabled, supports 15k drives

Mechanical Architecture/chipsets **EIA 19" Rack (1U⁴)** / rack-mount only / supported in 26" deep racks such as the IBM NetBAY™ Rack products **ServerWorks HT2000 System I/O controller** connects to the processor sub-system via a 16x Hyper Transport Bus at 1GHz and provides PCI-E, PCI-X and Dual Gigabit Ethernet / **ServerWorks HT1000 South Bridge** interfaces system I/O to the HT2000 via a 8x Hyper Transport bus and provides PCI-X, SATA 2.0, USB 2.0, ATA 100 IDE, SMB, IOAPIC, Event Timer, Watchdog Timer, Interrupt controller and LPCI

Bus slots (See detail below) one full-length PCI-X 1.0 and one half length PCI-E x8 / option to convert PCI-X slot to PCI-E x8 / no hot-swap Active™ PCI slots

Ethernet controllers Two gigabit 10/100/1000 ethernet ports / Broadcom BCM5780 / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / two rear RJ-45 ports

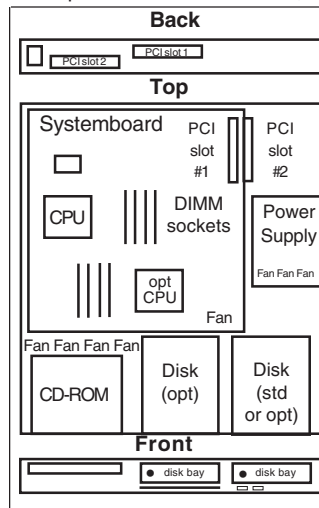
Optical/diskette/kbd 24X-10X⁶ CD-ROM / IDE / *Diskette and keyboard:* none (USB diskette and keyboard optional); legacy not supported

Rear ports *Rear:* two USB (Vers 2.0), serial (9-pin), two ethernet (RJ-45) / parallel port not supported

Front ports / graphics *Front:* two USB (Vers 2.0); *Graphics:* SVGA / ATI® RN50b / on planar / 16MB SDRAM std/max / 1024x768x32bit@85Hz

Console interconnects C2T Interconnect™ cabling not supported / NetBay Local Console Manager (LCM), NetBay Remote Console Manager (RCM), and USB Conversion Option (UCO) are supported

Systems mgmt	Standard MS-9549 QLogic system management / IPMI 1.5 compliant / connector on planar / Remote Supervisor Adapter II optional	Opteron 252 Processor Upgrade Opteron 254 Processor Upgrade Opteron 265 Processor Upgrade Opteron 270 Processor Upgrade Opteron 275 Processor Upgrade Opteron 280 Processor Upgrade	13N0703 32R2215 32R2021 25R8960 32R2023 25R8966 39M5800
Diagnostics	Diagnostic LEDs for fans, memory DIMMs and processors / PFA / Light Path Diagnostics not supported	1GB PC3200 CL3 ECC DDR-SDRAM kit 2GB PC3200 CL3 ECC DDR-SDRAM kit 80GB SATA-150 7.2k HDD 160GB SATA-150 7.2k HDD	39M5803 39M4503 25R6903 90P1319
Security	Power-on password / administrator password / Secure Power On/Off / unattended boot / selectable boot / unattended start mode / text console redirect via serial over LAN	146GB 15K Ultra320 SCSI Hot-Swap HDD 146.4GB 10K Ultra320 SCSI Hot-Swap SL HDD 300GB 10K Ultra320 SCSI Hot-Swap SL HDD	40K1028 40K1024 40K1025
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director™, and others	IBM TotalStorage FC2-133 Host Bus Adaptor IBM ServeRAID-6M SCSI (256MB Cache) USB Portable Diskette Drive	24P0960 02R0988 05K9276
Cooling fans	Eight fans (five for system, three inside power supply) / Calibrated Vector Cooling™ / variable speed / not redundant / not hot-swap		
Power supply	411 watt / universal / auto-sensing / auto-restart support		
Prerequisites	Monitor, keyboard, mouse, rack, disk (some), os		



Slot 1: full-length, 64-bit 133/100MHz PCI X 1.0 (3.3v) std. / full-length, PCI-E x8 option
 Slot 2: half-length, PCI-E x8

Bay ① 5.25", UltraSlim 0.5", access, std CD-ROM
 Bay ② 3.5", SL 1", access, std fixed or hot-swap disk
 Bay ③ 3.5", SL 1", access, open for fixed or hot-swap disk

- ❖ Stealth black color front bezel
- ❖ Utility tray in front slides out from under middle bay (USB devices)
- ❖ H 1.72" (1U) x W 17.3" x D 25.7"; 43.7mm x 439.9mm x 653.3mm
- ❖ 26 to 32 lbs; 11.8kg to 14.6kg (minimum to max configuration)
- ❖ Configuration/Setup Utility: F1 at startup
- ❖ System Partition Boot: ALT+F1 at startup
- ❖ Network Boot: F12 at startup
- ❖ Operator Information Panel in front
- ❖ LSI Logic Configuration Utility: CTRL+C at startup
- ❖ Includes one line cord (9 ft universal interrack HV cable with IEC plug)
- ❖ Predictive Failure Analysis® on processor(s), voltage regulator modules, memory, fans, power supply, and disk options

Maximum internal disk capacity¹³ (model dependent):
 600GB with two 300GB SL SCSI disks or
 320GB with two 160GB SATA disks

LIMITED WARRANTY³

1 year parts and labor
 International Warranty Service³
 On site, 8 am - 5 pm, Mon - Fri
 coverage excluding holidays,
 next business day response time⁷
 On site service upgrade options
 (in eligible locations):⁷

- 1 year IOR 9x5, 4 hr avg response (ServicePac® partnum 69P9399)
- 2 year IOR 24x7, 4 hr avg response (ServicePac partnum 96P2119)
- 2 year IOR 24x7, 2 hr avg response (ServicePac partnum 96P2120)
- 3 year IOR 24x7, 4 hr avg response (ServicePac partnum 69P9507)
- 3 year IOR 9x5, NBD response (ServicePac partnum 69P9505)

Other ServicePac options at
www.ibm.com/services/us/its/pdf/wamomxeu.pdf
 24x7¹⁴ toll-free support for warranty
 issues during the warranty period³

IBM® Type-GAV	Qty x Processor/Core	Speed	L2 Cache	Memory	Disk / Controller	Disk bays	Slots x bays	Ethernet	Limited warranty ³	Available date
7969 - 85y-85x	1 x Opteron®285/DC	2.6GHz ¹	2MB	2x512MB Chipkill	none/Ultra320	2 hot-swap	2x3	Dual Gigabit	1 year	Apr 2006
7969 - 86y-86x	1 x Opteron 285/DC	2.6GHz	2MB	2x512MB Chipkill	80GB/SATA	2 fixed	2x3	Dual Gigabit	1 year	Apr 2006

Positioning Processor(s)	Entry 2-way rack server for compute-intensive applications and dual core computing at an attractive price Up to 2 x AMD® Opteron™ 285 Dual Core or 254 Single Core / 800Mhz HyperTransport technology / Simultaneously supports 32-bit and 64-bit computing									
L2 cache	1MB / per core / at processor speed (no L3 cache)									
SMP support	2-way SMP / up to two Opteron Processors (same speed/cache size required)									
Implementation	Systemboard contains two AMD Socket 940 micro-PGA ZIF sockets, eight memory DIMM slots, integrated SATA or SCSI, ethernet, graphics, one PCI-E x8 and one 64-bit 133/100Mhz PCI-X (option to convert PCI-X slot to second PCI-E x8)									
Memory	1GB std / 16GB max ¹³ / four slots enabled with uni-processor, eight with dual / two slots used / six slots available / PC3200 registered 184-pin ECC DDR-SDRAM DIMMs / eight DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / memory bus runs at 2 x 100MHz / Chipkill™ supported									
SCSI disk controller	All (not used on SATA models): LSI Logic® 53C1020 / Ultra320 SCSI controller (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X Bus B / supports RAID-1 mirroring (Embedded Mirroring) with two SCSI disks in front bays / one 16-bit internal channel / 16-bit 68-pin LVD cable from systemboard to backplane for two disks / no external connector									
SATA controller/cable	All: SATA-150 controller / two connectors on planar / two 1-drop cables / 1 IDE									
Disk - capacity	SCSI models: some: open some: 36GB; SATA models: 80GB / 7200 rpm / 9.0ms seek									
Disk - bays	SCSI models: two hot-swap / 80-pin SCA-2 connectors / filler panels in each disk bay / all disk bays Ultra320-enabled, supports 15k drives									
Mechanical Architecture/chipsets	EIA 19" Rack (1U ⁴) / rack-mount only / supported in 26" deep racks such as the IBM NetBAY™ Rack products ServerWorks HT2000 System I/O controller connects to the processor sub-system via a 16x Hyper Transport Bus at 1GHz and provides PCI-E, PCI-X and Dual Gigabit Ethernet / ServerWorks HT1000 South Bridge interfaces system I/O to the HT2000 via a 8x Hyper Transport bus and provides PCI-X, SATA 2.0, USB 2.0, ATA 100 IDE, SMB, IOAPIC, Event Timer, Watchdog Timer, Interrupt controller and LPC1									
Bus slots	(See detail below) one full-length PCI-X 1.0 and one half length PCI-E x8 / option to convert PCI-X slot to PCI-E x8 / no hot-swap Active™ PCI slots									
Ethernet controllers	Two gigabit 10/100/1000 ethernet ports / Broadcom BCM5780 / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / two rear RJ-45 ports									
Optical/diskette/kbd	24X-10X ⁶ CD-ROM / IDE / Diskette and keyboard: none (USB diskette and keyboard optional); legacy not supported									
Rear ports	Rear: two USB (Vers 2.0), serial (9-pin), two ethernet (RJ-45) / parallel port not supported									
Front ports / graphics	Front: two USB (Vers 2.0); Graphics: SVGA / ATI® RN50b / on planar / 16MB SDRAM std/max / 1024x768x32bit@85Hz									
Console interconnects	C2T Interconnect™ cabling not supported / NetBay Local Console Manager (LCM), NetBay Remote Console Manager (RCM), and USB Conversion Option (UCO) are supported									
Systems mgmt	Standard MS-9549 QLogic system management / IPMI 1.5 compliant / connector on planar / Remote Supervisor Adapter II optional					Opteron 254 Processor Upgrade Opteron 265 Processor Upgrade Opteron 275 Processor Upgrade Opteron 285 Processor Upgrade				
Diagnostics	Diagnostic LEDs for fans, memory DIMMs and processors / PFA / Light Path Diagnostics not supported					1GB PC3200 CL3 ECC DDR-SDRAM kit 2GB PC3200 CL3 ECC DDR-SDRAM kit 80GB SATA-150 7.2k HDD 160GB SATA-150 7.2k HDD				
Security	Power-on password / administrator password / Secure Power On/Off / unattended boot / selectable boot / unattended start mode / text console redirect via serial over LAN					25R6903 90P1319 40K1028 40K1024 40K1025				
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director™, and others					IBM TotalStorage FC2-133 Host Bus Adapter IBM ServeRAID-6M SCSI (256MB Cache) USB Portable Diskette Drive				
Cooling fans	Eight fans (five for system, three inside power supply) / Calibrated Vector Cooling™ / variable speed / not redundant / not hot-swap					24P0960 02R0988 05K9276				
Power supply	411 watt / universal / auto-sensing / auto-restart support									
Prerequisites	Monitor, keyboard, mouse, rack, disk (some), os									

Slot 1: full-length, 64-bit 133/100MHz PCI X 1.0 (3.3v) std. / full-length, PCI-E x8 option
Slot 2: half-length, PCI-E x8

Bay ① 5.25", UltraSlim 0.5", access, std CD-ROM
Bay ② 3.5", SL 1", access, std fixed or hot-swap disk
Bay ③ 3.5", SL 1", access, open for fixed or hot-swap disk

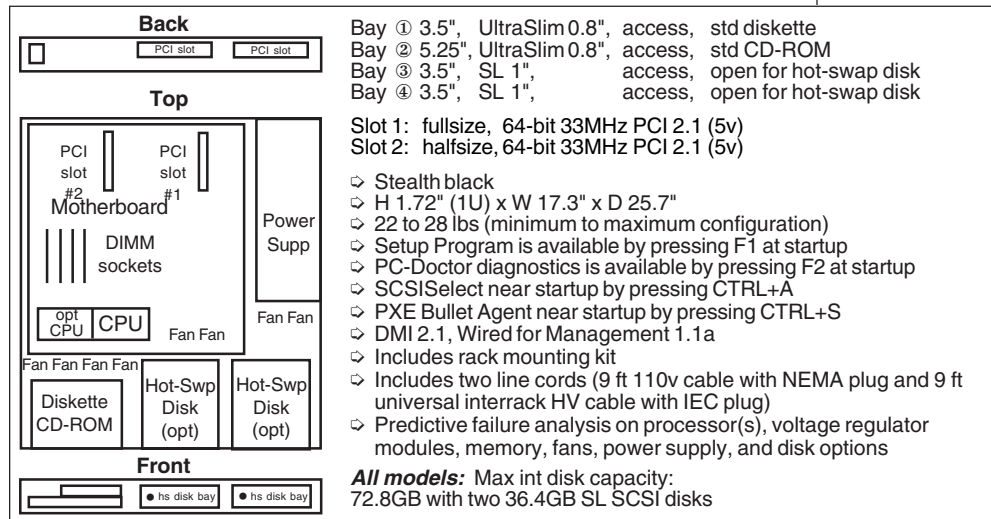
- ❖ Stealth black color front bezel
- ❖ Utility tray in front slides out from under middle bay (USB devices)
- ❖ H 1.72" (1U) x W 17.3" x D 25.7"; 43.7mm x 439.9mm x 653.3mm
- ❖ 26 to 32 lbs; 11.8kg to 14.6kg (minimum to max configuration)
- ❖ Configuration/Setup Utility: F1 at startup
- ❖ System Partition Boot: ALT+F1 at startup
- ❖ Network Boot: F12 at startup
- ❖ Operator Information Panel in front
- ❖ LSI Logic Configuration Utility: CTRL+C at startup
- ❖ Includes one line cord (9 ft universal interrack HV cable with IEC plug)
- ❖ Predictive Failure Analysis® on processor(s), voltage regulator modules, memory, fans, power supply, and disk options

Maximum internal disk capacity¹³ (model dependent):
600GB with two 300GB SL SCSI disks or
320GB with two 160GB SATA disks

LIMITED WARRANTY³

- ❖ 1 year parts and labor
- ❖ International Warranty Service³
- ❖ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- ❖ On site service upgrade options (in eligible locations):⁷
 - 1 year IOR 9x5, 4 hr avg response (ServicePac® partnum 69P9399)
 - 2 year IOR 24x7, 4 hr avg response (ServicePac partnum 96P2119)
 - 2 year IOR 24x7, 2 hr avg response (ServicePac partnum 96P2120)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac partnum 69P9507)
 - 3 year IOR 9x5, NBD response (ServicePac partnum 69P9505)
- ❖ Other ServicePac options at www.ibm.com/services/us/its/pdf/wamomxeu.pdf
- ❖ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

IBM® Type-model	Qty x Processor	Memory	Disk	SCSI controller	Mechanical	Slots x bays	Hot-swap disk bays	Ethernet	Available date
8654-11Y	1 x Pentium® III 800/133	256MB	None	Ultra160	1U rack	2 slots x 4 bays	2 hot-swap	2 x 10/100 ethernet	Oct 2000
8654-31Y	1 x Pentium III 866/133	256MB	None	Ultra160	1U rack	2 slots x 4 bays	2 hot-swap	2 x 10/100 ethernet	Oct 2000
8654-41Y	1 x Pentium III 933/133	256MB	None	Ultra160	1U rack	2 slots x 4 bays	2 hot-swap	2 x 10/100 ethernet	Nov 2000
8654-51Y	1 x Pentium III 1GHz/133	256MB	None	Ultra160	1U rack	2 slots x 4 bays	2 hot-swap	2 x 10/100 ethernet	Nov 2000
Processor SMP support Implementation L2 cache		Intel® Pentium® III 800EB, 866, 933MHz or 1GHz / 133MHz Front Side Bus 2-way SMP via identical processor / both VRMs integrated on planar Processor and L2 cache in Flip-Chip Pin Grid Array (FC-PGA) / two Intel PGA370 sockets / terminator in empty socket 256KB std and max / ECC / full speed							
Memory - std / max Memory - sockets Memory - features		256MB std / 4GB max / Error Checking and Correcting (ECC) memory controller 4 sockets / 3 available SDRAM / 133MHz / ECC DIMMs / 168-pin gold-plated DIMM 3.3 volt sockets / PC133-compliant							
SCSI disk controller SCSI connectors RAID support IDE controller		Adaptec® AIC-7892 / Wide Ultra160 SCSI (LVD 160MB/sec) / single channel / 64-bit PCI / integrated on motherboard Internal 68-pin (attaches 1-drop cable to SCSI backplane); no external SCSI connector No hardware RAID standard / supports optional ServeRAID PCI adapter (see below) Enhanced IDE / two connectors on planar / one 1-drop IDE cable to CD-ROM / ATA-66							
Architecture / chipsets		ServerWorks® ServerSet III LE chip set / NB6635 North Bridge 3.0LE (the North Bridge has two peer PCI buses: PCI Bus 0, 32-bit 33MHz, IB6566 South Bridge, two ethernet controllers, graphics controller); PCI Bus 1, 64-bit 33MHz, SCSI controller, two 64-bit PCI slots) / IB6566 South Bridge for IDE, USB, ISA bus for Service Processor and Super I/O National Semiconductor® PC97317VUL (diskette, parallel, serial, keyboard, mouse)							
Mechanical Control Panel		EIA 19" Rack (1U⁴) / rack-mount only / supported in IBM Netfinity Rack products (rack requires vented front door) Front indicators/switches include Power, Reset, Console Select, Power LED and Fault/info LED							
Ethernet controllers		2 x Intel 82559 ethernet controllers / on planar / 10BaseT, 100BaseTX / full duplex / 32-bit PCI bus / redundant ethernet capability and load balancing support through the connection of both ethernet ports to the same LAN segment / two RJ-45 connectors on rear / supports PXE 2.0 Boot Agent / no Wake on LAN® support							
CD-ROM / diskette Rear ports Console interconnects		24X-10X[®] CD-ROM; CAV (ATAPI); bootable; IDE / 3.5" 1.44MB diskette drive Serial: one 9-pin; Parallel: none; USB: two ports (Version 1.1); Adv Sys Mgmt: two RJ-45 ports System-to-system interconnect cable (10 inch, 245mm) is standard / daisy chain connection to adjacent server / supports large rack deployments of daisy chained servers / chain functions with multiple server (not contiguous in chain) outage / one Cable Chain Technology Cable Kit required at end of chain (a cable with separate keyboard, mouse, monitor connectors)							
Systems mgmt		Netfinity Advanced System Mgmt Processor / on planar / provides remote console and mgmt / allows diagnostic, reset, POST, and auto recovery functions / monitors temperature, fans, and power supply							
Diagnostics		Light Path Diagnostics (LED lights indicate failing component) and on-board diagnostics (via PC-Doctor in BIOS)							
Graphics controller		SVGA / PCI bus / S3® Savage4Pro (on planar) / 8MB SDRAM std and max / DDC2B				Pentium III 800/133MHz/256KB Proc Upg 10K3810 Pentium III 866/133MHz/256KB Proc Upg 10K3806 Pentium III 933/133MHz/256KB Proc Upg 10K0052 Pentium III 1GHz/133MHz/256KB Proc Upg 10K0053			
Security		Power-on password / administrator password / unattended boot / selectable boot / systems mgmt security (user log-in password, read-only or read/write access, dial back) / unattended start mode				128MB SDRAM ECC DIMM 133MHz (RDIMM II) 33L3142 256MB SDRAM ECC DIMM 133MHz (RDIMM II) 33L3144 512MB SDRAM ECC DIMM 133MHz (RDIMM II) 33L3146			
Software		ServerGuide™ (CD-ROM installation and configuration utilities), AntiVirus software, APC PowerChute Plus, IBM Director, others				1GB SDRAM ECC DIMM 133MHz (RDIMM II) 33L3152 9.1GB 10K-4 Ultra 160 SCSI Hot-Swap SL HDD 37L7204 18.2GB 10K-4 Ultra 160 SCSI Hot-Swap SL HDD 37L7205 36.4GB 10K-4 Ultra 160 SCSI Hot-Swap SL HDD 37L7206 ServeRAID-4L Ultra 160 SCSI Adapter 37L6091 ServeRAID-4M Ultra 160 SCSI Adapter 37L6080			
Keyboard / mouse Cooling fans		None standard Eight fans (four for processor(s) and planar, two for disk(s) and planar, two for power supply)				Netfinity Rack (with perforated door and side panels) 9306910 Netfinity Rack Front Door Kit 06P6010 xSeries Cable Chain Technology Cable Kit (contains 2 meter breakout cable and 2 meter interconnect chaining cable) 06P4792			
Power supply Prerequisites		200 watt / universal / auto-sensing / auto-restart support Monitor, keyboard, mouse, rack, SCSI disk, operating system, one Cable Chain Technology (C2T) Console Cable Kit per chain of servers							

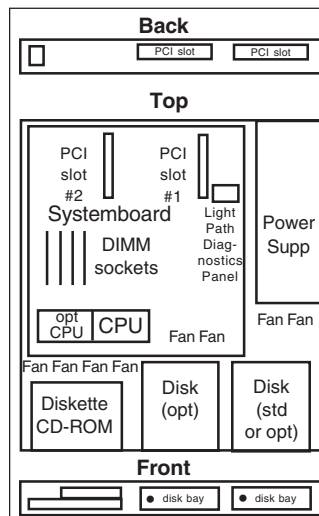


LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time
- 3 year on site warranty service upgrade options (in eligible locations):⁷
 - 24 hr x 7 day coverage, 4 hour response time
 - 24 hr x 7 day coverage, 2 hour response time
- IBM Server Start Up Support
- 24 hour x 7 day¹⁴ telephone, electronic, and Internet support

* For a copy of IBM's Statement of Limited Warranty, call 1-800-772-2227
 • = Hot-swap
 US models withdrawn from marketing effective May 2001 or December 2001
 No warranties are expressed or implied in this summary (X330) © IBM Corp. November 2001

IBM® Type-model	Qty x Processor	Memory	Disk	Disk controller	Mechanical	Slots x bays	Hot-swap or fixed disk bays	Ethernet	Available date
8674-11X	1 x Pentium® III 1.13GHz/133	256MB	None	Ultra160	1U rack	2 slots x 4 bays	2 hot-swap	2 x 10/100	Jul 2001
8674-12X	1 x Pentium III 1.13GHz/133	256MB	20.4GB ² EIDE	EIDE	1U rack	2 slots x 4 bays	2 fixed	2 x 10/100	Jul 2001
8674-13X	1 x Pentium III 1.13GHz/133	256MB	18.2GB Ultra160	Ultra160	1U rack	2 slots x 4 bays	2 fixed	2 x 10/100	Jul 2001
Positioning	<i>Rack-optimized 1U server for demanding e-business applications</i>								
Processor	Intel® Pentium® III 1.13GHz-S with 133MHz frontside bus / supports upgrade to 1.26GHz								
SMP support	2-way SMP via identical processor / both VRMs integrated on planar								
Implementation	Processor and L2 cache in Flip-Chip Pin Grid Array (FC-PGA2) / two Intel PGA370 sockets / terminator in empty socket								
L2 cache	512KB std and max / ECC / full speed								
Memory	256MB std / 4GB max / Error Checking and Correcting (ECC) memory controller / 4 sockets / 3 available SDRAM / 133MHz / ECC registered DIMMs / 168-pin gold-plated DIMM 3.3 volt sockets / PC133-compliant								
SCSI disk controller	<i>All:</i> Adaptec® AIC-7892 / Wide Ultra160 SCSI (LVD 160MB/sec) / single channel / 64-bit PCI / integrated on planar								
SCSI connectors	<i>All:</i> Internal 68-pin connector / no external SCSI connector								
IDE controller	<i>All:</i> Enhanced IDE / ATA-33 / two connectors on planar								
Cabling	<i>11X:</i> one 1-drop 16-bit LVD cable from internal 68-pin SCSI connector to hot-swap SCSI backplane <i>12X:</i> one 2-drop IDE cable to two disk bays (one used) <i>13X:</i> one 2-drop 16-bit LVD cable from internal 68-pin SCSI connector to SCSI disk bays (one used)								
Disk	<i>All:</i> one 1-drop IDE cable to standard CD-ROM <i>12X:</i> 20.4GB ATA-100, 8.7ms read, S.M.A.R.T.; <i>13X:</i> 18.2GB Ultra160 SCSI, 10K rpm, 5.2ms read seek, S.M.A.R.T.								
Architecture / chipsets	ServerWorks® ServerSet III LE chip set / NB6635 North Bridge 3.0LE (the North Bridge has two peer PCI buses: (1) PCI Bus 0, 32-bit 33MHz, South Bridge, Super I/O, graphics, 2 x ethernet; (2) PCI Bus 1, 64-bit 33MHz, SCSI controller, two 64-bit PCI slots) / IB6566 OSB4 rev B2 South Bridge for IDE, USB, ISA bus for Service Processor and Super I/O National Semiconductor® PC97317VUL (diskette, parallel, serial, keyboard, mouse)								
Mechanical	EIA 19" Rack (1U⁴) / rack-mount only / supported in IBM NetBAY™ Rack products (rack requires vented front door)								
Control Panel	Front indicators/switches include Power, Reset, Console Select, Power LED and Fault/info LED								
Ethernet controllers	2 x Intel 82559 ethernet controllers / on planar / 10BaseT, 100BaseTX / full duplex / 32-bit PCI bus / redundant ethernet capability and load balancing support through the connection of both ethernet ports to the same LAN segment / two RJ-45 connectors on rear / supports PXE 2.0 Boot Agent / Wake on LAN [®] support								
CD-ROM / diskette	24X-10X[®] CD-ROM, CAV (ATAPI) , bootable, IDE / 3.5" 1.44MB diskette drive								
Rear ports	<i>Serial:</i> one 9-pin; <i>Parallel:</i> none; <i>USB:</i> two ports (Version 1.1); <i>Adv Sys Mgmt:</i> two RJ-45 ports								
Console interconnects	System-to-system interconnect cable (10 inch, 245mm) is standard (Keyboard Video Mouse (KVM) chaining cable) / daisy chain connection to adjacent server / supports large rack deployments of daisy chained servers / chain functions with multiple server (not contiguous in chain) outage / one Cable Chain Technology Cable Kit required at end of chain (a cable with separate keyboard, mouse, monitor connectors)								
Systems mgmt	Advanced System Mgmt Processor / on planar / PowerPC 403GA™ / provides remote console and mgmt / allows diagnostic, reset, POST, and auto recovery functions / monitors temperature, fans, and power supply / support for optional Remote Supervisor Adapter with 20-pin connector on planar for continuous power (no external power required)								
Diagnostics	Light Path Diagnostics™ (LED lights indicate failing component) and on-board diagnostics (via PC-Doctor in BIOS)								
Graphics controller	SVGA / PCI bus / S3® Savage4Pro (on planar) / 8MB SDRAM std and max / DDC2B			Pentium III 1.13GHz-S/133MHz/512KB Proc Upg			25P2835		
Security	Power-on password / administrator password / unattended boot / selectable boot / systems mgmt security (user log-in password, read-only or read/write access, dial back) / unattended start mode			Pentium III 1.26GHz-S/133MHz/512KB Proc Upg			25P2836		
Software	ServerGuide™ (CD-ROM installation and configuration utilities), AntiVirus software, IBM Director™, and others			128MB SDRAM ECC DIMM 133MHz (RDIMM)			10K0018		
Keyboard / mouse	None standard			256MB SDRAM ECC DIMM 133MHz (RDIMM)			10K0022		
Cooling fans	Eight fans (four for processor(s) and planar, two for disk(s) and planar, two for power supply)			1GB SDRAM ECC DIMM 133MHz (RDIMM)			33L3326		
Power supply	200 watt / universal / auto-sensing / auto-restart support			40GB ATA-100 EIDE HDD*			22P7157		
Prerequisites	Monitor, keyboard, mouse, rack, disk, operating system, one Cable Chain Technology (C2T) Console Cable Kit per chain of servers			36.4GB 10K-4 Ultra160 SCSI Hot-Swap SL HDD*			37L7206		
				36.4GB 10K Ultra160 SCSI HDD*			00N8209		
				Remote Supervisor Adapter			09N7585		
				ServeRAID-4Mx Ultra160 SCSI Adapter			06P5736		
				IBM T540 15" Flat Panel Monitor (black)			9511AG4		
				xSeries Cable Chain Technology Cable Kit (contains 2 meter breakout cable and 2 meter KVM chaining cable)			06P4792		
				* Disk not supported in all x330 systems					



- Bay ① 3.5", UltraSlim 0.8", access, std diskette
- Bay ② 5.25", UltraSlim 0.8", access, std CD-ROM
- Bay ③ 3.5", SL 1", access, open for fixed or hot-swap disk
- Bay ④ 3.5", SL 1", access, open for fixed or hot-swap disk

- Slot 1: fullsize, 64-bit 33MHz PCI 2.2 (5v)
- Slot 2: halfsize, 64-bit 33MHz PCI 2.2 (5v)

- Stealth black
- H 1.72" (1U) x W 17.3" x D 25.7"
- 26 to 28.4 lbs (minimum to maximum configuration)
- Setup Program is available by pressing F1 at startup
- PC-Doctor diagnostics is available by pressing F2 at startup
- SCSISelect near startup by pressing CTRL+A
- PXE Bullet Agent near startup by pressing CTRL+S
- DMI 2.1 and Wired for Management 1.1a-compliant
- Includes rack mounting kit
- Includes two line cords (9 ft 110v cable with NEMA plug and 9 ft universal interrack HV cable with IEC plug)
- Predictive Failure Analysis[®] on processor(s), voltage regulator modules, memory, fans, power supply, and disk options

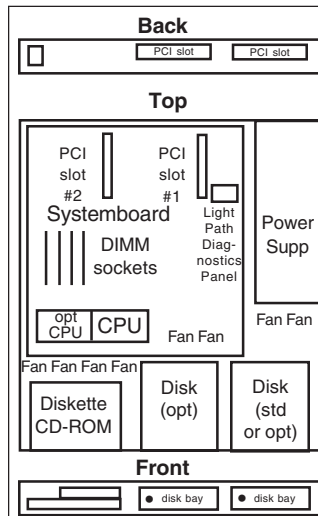
All models: Maximum internal disk capacity (model dependent):
146.8GB with two 73.4GB SL SCSI disks or
80GB with two 40GB EIDE disks / supports 15K rpm SCSI disks

LIMITED WARRANTY³

- ⇒ 3 year parts and labor
- ⇒ International Warranty Service³
- ⇒ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- ⇒ 3 year on site warranty service upgrade options (in eligible locations):⁷
 - Mon-Fri coverage, 4 hour response time
 - 24 hr x 7 day coverage, 4 hour response time
- ⇒ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information
• = Hot-swap in some models
US models withdrawn effective January 13, 2003

IBM® Type-model	Qty x Processor	Memory	Disk	Disk controller	Mechanical	Slots x bays	Hot-swap or fixed disk bays	Ethernet	Available date
8674-31X	1 x Pentium® III 1.26GHz/133	256MB	None	Ultra160	1U rack	2x4	2 hot-swap	2 x 10/100	Aug 2001
8674-32X	1 x Pentium III 1.26GHz/133	256MB	20.4GB ² EIDE	EIDE	1U rack	2x4	2 fixed	2 x 10/100	Aug 2001
8674-33X	1 x Pentium III 1.26GHz/133	256MB	18.2GB Ultra160	Ultra160	1U rack	2x4	2 fixed	2 x 10/100	Aug 2001
Positioning	<i>Rack-optimized 1U server for demanding e-business applications</i>								
Processor	Intel® Pentium® III 1.26GHz-S with 133MHz frontside bus								
SMP support	2-way SMP via identical processor / both VRMs integrated on planar								
Implementation	Processor and L2 cache in Flip-Chip Pin Grid Array (FC-PGA2) / two Intel PGA370 sockets / terminator in empty socket								
L2 cache	512KB std and max / ECC / full speed								
Memory	256MB std / 4GB max / Error Checking and Correcting (ECC) memory controller / 4 sockets / 3 available								
	SDRAM / 133MHz / ECC registered DIMMs / 168-pin gold-plated DIMM 3.3 volt sockets / PC133-compliant								
SCSI disk controller	All: Adaptec® AIC-7892 / Wide Ultra160 SCSI (LVD 160MB/sec) / single channel / 64-bit PCI / integrated on planar								
SCSI connectors	All: Internal 68-pin connector / no external SCSI connector								
IDE controller	All: Enhanced IDE / ATA-33 / two connectors on planar								
Cabling	31X: one 1-drop 16-bit LVD cable from internal 68-pin SCSI connector to hot-swap SCSI backplane 32X: one 2-drop IDE cable to two disk bays (one used) 33X: one 2-drop 16-bit LVD cable from internal 68-pin SCSI connector to SCSI disk bays (one used)								
Disk	All: one 1-drop IDE cable to standard CD-ROM 32X: 20.4GB ATA-100, 8.7ms read, S.M.A.R.T.; 33X: 18.2GB Ultra160 SCSI, 10K rpm, 5.2ms read seek, S.M.A.R.T.								
Architecture / chipsets	ServerWorks® ServerSet III LE chip set / NB6635 North Bridge 3.0LE (the North Bridge has two peer PCI buses: (1) PCI Bus 0, 32-bit 33MHz, South Bridge, Super I/O, graphics, 2 x ethernet; (2) PCI Bus 1, 64-bit 33MHz, SCSI controller, two 64-bit PCI slots) / IB6566 OSB4 rev B2 South Bridge for IDE, USB, ISA bus for Service Processor and Super I/O National Semiconductor® PC97317VUL (diskette, parallel, serial, keyboard, mouse)								
Mechanical	EIA 19" Rack (1U⁴) / rack-mount only / supported in IBM NetBAY™ Rack products (rack requires vented front door)								
Control Panel	Front indicators/switches include Power, Reset, Console Select, Power LED and Fault/info LED								
Ethernet controllers	2 x Intel 82559 ethernet controllers / on planar / 10BaseT, 100BaseTX / full duplex / 32-bit PCI bus / redundant ethernet capability and load balancing support through the connection of both ethernet ports to the same LAN segment / two RJ-45 connectors on rear / supports PXE 2.0 Boot Agent / Wake on LAN [®] support								
CD-ROM / diskette	24X-10X ⁶ CD-ROM, CAV (ATAPI), bootable, IDE / 3.5" 1.44MB diskette drive								
Rear ports	Serial: one 9-pin; Parallel: none; USB: two ports (Version 1.1); Adv Sys Mgmt: two RJ-45 ports								
Console interconnects	C2T Interconnect™ cable (10 inch, 245mm) is standard (Keyboard Video Mouse (KVM) chaining cable) / daisy chain connection to adjacent server / supports large rack deployments of daisy chained servers / chain functions with multiple server (not contiguous in chain) outage / one Cable Chain Technology Cable Kit required at end of chain (a cable with separate keyboard, mouse, monitor connectors)								
Systems mgmt	Advanced System Mgmt processor / on planar / PowerPC 403GA™ / provides remote console and mgmt / allows diagnostic, reset, POST, and auto recovery functions / monitors temperature, fans, and power supply / support for optional Remote Supervisor Adapter with 20-pin connector on planar for continuous power (no external power required)								
Diagnostics	Light Path Diagnostics™ (LED lights indicate failing component) and on-board diagnostics (via PC-Doctor in BIOS)								
Graphics controller	SVGA / PCI bus / S3® Savage4Pro (on planar) / 8MB SDRAM std and max / DDC2B			Pentium III 1.26GHz-S/133MHz/512KB Proc Upg		25P2836			
Security	Power-on password / administrator password / unattended boot / selectable boot / systems mgmt security (user log-in password, read-only or read/write access, dial back) / unattended start mode			128MB SDRAM ECC DIMM 133MHz (RDIMM)		10K0018			
Software	ServerGuide™ (CD-ROM installation and configuration utilities), AntiVirus software, IBM Director™, and others			256MB SDRAM ECC DIMM 133MHz (RDIMM)		10K0020			
Keyboard / mouse	None standard			512MB SDRAM ECC DIMM 133MHz (RDIMM)		10K0022			
Cooling fans	Eight fans (four for processor(s) and planar, two for disk(s) and planar, two for power supply)			1GB SDRAM ECC DIMM 133MHz (RDIMM)		33L3326			
Power supply	200 watt / universal / auto-sensing / auto-restart support			40GB ATA-100 EIDE HDD*		22P7157			
Prerequisites	Monitor, keyboard, mouse, rack, disk, operating system, one Cable Chain Technology (C2T) Console Cable Kit per chain of servers			36.4GB 10K-4 Ultra160 SCSI Hot-Swap SL HDD*		37L7206			
				36.4GB 10K Ultra160 SCSI HDD*		00N8209			
				Remote Supervisor Adapter		09N7585			
				ServeRAID™-4Lx Ultra160 SCSI Adapter		06P5740			
				ServeRAID-4Mx Ultra160 SCSI Adapter		06P5736			
				IBM T540 15" Flat Panel Monitor (black)		9511AG4			
				xSeries Cable Chain Technology Cable Kit (contains 2 meter breakout cable and 2 meter KVM chaining cable)		06P4792			
				* Disk not supported in all x330 systems					



Bay ① 3.5", UltraSlim 0.8", access, std diskette
 Bay ② 5.25", UltraSlim 0.8", access, std CD-ROM
 Bay ③ 3.5", SL 1", access, open for fixed or hot-swap disk
 Bay ④ 3.5", SL 1", access, open for fixed or hot-swap disk

Slot 1: fullsize, 64-bit 33MHz PCI 2.2 (5v)
 Slot 2: halfsize, 64-bit 33MHz PCI 2.2 (5v)

- Stealth black
- H 1.72" (1U) x W 17.3" x D 25.7"
- 26 to 28.4 lbs (minimum to maximum configuration)
- Setup Program is available by pressing F1 at startup
- PC-Doctor diagnostics is available by pressing F2 at startup
- SCSISelect near startup by pressing CTRL+A
- PXE Bullet Agent near startup by pressing CTRL+S
- DMI 2.1 and Wired for Management 1.1a-compliant
- Includes rack mounting kit
- Includes two line cords (9 ft 110v cable with NEMA plug and 9 ft universal interrack HV cable with IEC plug)
- Predictive Failure Analysis[®] on processor(s), voltage regulator modules, memory, fans, power supply, and disk options

All models: Maximum internal disk capacity (model dependent):
 146.8GB with two 73.4GB SL SCSI disks or
 80GB with two 40GB EIDE disks / supports 15K rpm SCSI disks

LIMITED WARRANTY³

- ⇒ 3 year parts and labor
- ⇒ International Warranty Service³
- ⇒ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- ⇒ 3 year on site warranty service upgrade options (in eligible locations):⁷
 - Mon-Fri coverage, 4 hour response time
 - 24 hr x 7 day coverage, 4 hour response time
- ⇒ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information
 • = Hot-swap in some models
 US models withdrawn effective January 13, 2003

IBM® Type-model	Qty x Processor	Memory	Disk	Disk controller	Mechanical	Slots x bays	Hot -swap or fixed disk bays	Ethernet	Available date
8674-41X	1 x Pentium® III 1.4GHz/133	256MB	None	Ultra160	1U rack	2x4	2 hot-swap	2 x 10/100	Feb 2002
8674-42X	1 x Pentium III 1.4GHz/133	256MB	40GB ² EIDE	EIDE	1U rack	2x4	2 fixed	2 x 10/100	Feb 2002
8674-43X	1 x Pentium III 1.4GHz/133	256MB	18.2GB Ultra160	Ultra160	1U rack	2x4	2 fixed	2 x 10/100	Feb 2002
Positioning	<i>Rack-optimized 1U server for demanding e-business applications</i>								
Processor	Intel® Pentium® III 1.4GHz-S with 133MHz frontside bus								
SMP support	2-way SMP via identical processor / both VRMs integrated on planar								
Implementation	Processor and L2 cache in Flip-Chip Pin Grid Array (FC-PGA2) / two Intel PGA370 sockets / terminator in empty socket								
L2 cache	512KB std and max / ECC / full speed								
Memory	256MB std / 4GB max / Error Checking and Correcting (ECC) memory controller / 4 sockets / 3 available / SDRAM / 133MHz / ECC registered DIMMs / 168-pin gold-plated DIMM 3.3 volt sockets / PC133-compliant								
SCSI disk controller	All: Adaptec® AIC-7892 / Wide Ultra160 SCSI (LVD 160MB/sec) / single channel / 64-bit PCI / integrated on planar								
SCSI connectors	All: Internal 68-pin connector / no external SCSI connector								
IDE controller	All: Enhanced IDE / ATA-33 / two connectors on planar								
Cabling	41X: one 1-drop 16-bit LVD cable from internal 68-pin SCSI connector to hot-swap SCSI backplane 42X: one 2-drop IDE cable to two disk bays (one used) 43X: one 2-drop 16-bit LVD cable from internal 68-pin SCSI connector to SCSI disk bays (one used)								
Disk	All: one 1-drop IDE cable to standard CD-ROM 42X: 40GB ATA-100, 7200rpm, 8.7ms read; 43X: 18.2GB Ultra160 SCSI, 10K rpm, 5.2ms read seek; All: S.M.A.R.T. ⁵								
Architecture / chipsets	ServerWorks® ServerSet III LE chip set / NB6635 North Bridge 3.0LE (the North Bridge has two peer PCI buses: (1) PCI Bus 0, 32-bit 33MHz, South Bridge, Super I/O, graphics, 2 x ethernet; (2) PCI Bus 1, 64-bit 33MHz, SCSI controller, two 64-bit PCI slots) / IB6566 OSB4 rev B2 South Bridge for IDE, USB, ISA bus for Service Processor and Super I/O National Semiconductor® PC97317VUL (diskette, parallel, serial, keyboard, mouse)								
Mechanical Control Panel	EIA 19" Rack (1U*) / rack-mount only / supported in IBM NetBAY™ Rack products (such as NetBAY42 SR, NetBAY42 ER) Front indicators/switches include Power, Reset, Console Select, Power LED and Fault/info LED								
Ethernet controllers	2 x Intel 82559 ethernet controllers / on planar / 10BaseT, 100BaseTX / full duplex / 32-bit PCI bus / redundant ethernet capability and load balancing support through the connection of both ethernet ports to the same LAN segment / two RJ-45 connectors on rear / supports PXE 2.0 Boot Agent / Wake on LAN™ support								
CD-ROM / diskette	24X-10X ⁶ CD-ROM, CAV (ATAPI), bootable, IDE / 3.5" 1.44MB diskette drive								
Rear ports	Serial: one 9-pin; Parallel: none; USB: two ports (Version 1.1); Adv Sys Mgmt: two RJ-45 ports								
Console interconnects	C2T Interconnect™ cable (10 inch, 245mm) is standard (Keyboard Video Mouse (KVM) chaining cable) / daisy chain connection to adjacent server / supports large rack deployments of daisy chained servers / chain functions with multiple server (not contiguous in chain) outage / one Cable Chain Technology Cable Kit required at end of chain (a cable with separate keyboard, mouse, monitor connectors)								
Systems mgmt	Advanced System Mgmt processor / on planar / PowerPC 403GA™ / provides remote console and mgmt / allows diagnostic, reset, POST, and auto recovery functions / monitors temperature, fans, and power supply / support for optional Remote Supervisor Adapter with 20-pin connector on planar for continuous power (no external power required)								
Diagnostics	Light Path Diagnostics™ (LED lights indicate failing component) and on-board diagnostics (via PC-Doctor in BIOS)								
Graphics controller	SVGA / PCI bus / S3® Savage4Pro (on planar) / 8MB SDRAM std and max / DDC2B			Pentium III 1.4GHz-S/133MHz/512KB Proc Upg			48P7466		
Security	Power-on password / administrator password / unattended boot / selectable boot / systems mgmt security (user log-in password, read-only or read/write access, dial back) / unattended start mode			128MB SDRAM ECC DIMM 133MHz (RDIMM)			10K0018		
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director™, and others			256MB SDRAM ECC DIMM 133MHz (RDIMM)			10K0020		
Keyboard / mouse	None standard			512MB SDRAM ECC DIMM 133MHz (RDIMM)			10K0022		
Cooling fans	Eight fans (four for processor(s) and planar, two for disk(s) and planar, two for power supply)			1GB SDRAM ECC DIMM 133MHz (RDIMM)			33L3326		
Power supply	200 watt / universal / auto-sensing / auto-restart support			40GB ATA-100 EIDE HDD**			22P7157		
Prerequisites	Monitor, keyboard, mouse, rack, disk, operating system, one Cable Chain Technology (C2T) Console Cable Kit per chain of servers			73.4GB 10K-4 Ultra160 SCSI Hot-Swap SL HDD**			06P5756		
				73.4GB 10K Ultra160 SCSI HDD**			06P5752		
				Remote Supervisor Adapter			09N7585		
				ServeRAID™-4Lx Ultra160 SCSI Adapter			06P5740		
				ServeRAID-4Mx Ultra160 SCSI Adapter			06P5736		
				IBM T540 15" Flat Panel Monitor (black)			9511AG4		
				xSeries Cable Chain Technology Cable Kit (contains 2 meter breakout cable and 2 meter KVM chaining cable)			06P4792		
				* Disk not supported in all x330 systems					

Back

PCI slot PCI slot

Top

PCI slot #2 PCI slot #1

Systemboard Light Path Diagnostics Panel

DIMM sockets Power Supp

opt CPU CPU Fan Fan Fan Fan

Fan Fan Fan Fan Disk (opt) Disk (std or opt)

Front

disk bay disk bay

Bay ① 3.5", UltraSlim 0.8", access, std diskette

Bay ② 5.25", UltraSlim 0.8", access, std CD-ROM

Bay ③ 3.5", SL 1", access, open for fixed or hot-swap disk

Bay ④ 3.5", SL 1", access, open for fixed or hot-swap disk

Slot 1: fullsize, 64-bit 33MHz PCI 2.2 (5v)

Slot 2: halfsize, 64-bit 33MHz PCI 2.2 (5v)

- ❖ Stealth black
- ❖ H 1.72" (1U) x W 17.3" x D 25.7"
- ❖ 26 to 28.4 lbs (minimum to maximum configuration)
- ❖ Setup Program is available by pressing F1 at startup
- ❖ PC-Doctor diagnostics is available by pressing F2 at startup
- ❖ SCSISelect near startup by pressing CTRL+A
- ❖ PXE Bullet Agent near startup by pressing CTRL+S
- ❖ DMI 2.1 and Wired for Management 1.1a-compliant
- ❖ Includes rack mounting kit
- ❖ Includes two line cords (9 ft 110v cable with NEMA plug and 9 ft universal interrack HV cable with IEC plug)
- ❖ Predictive Failure Analysis™ on processor(s), voltage regulator modules, memory, fans, power supply, and disk options

All models: Maximum internal disk capacity (model dependent):
146.8GB with two 73.4GB SL SCSI disks or
80GB with two 40GB EIDE disks / supports 15K rpm SCSI disks

LIMITED WARRANTY³

- ⇒ 3 year parts and labor
- ⇒ International Warranty Service³
- ⇒ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- ⇒ 3 year on site warranty service upgrade options (in eligible locations):⁷
 - 9 hour coverage, Mon-Fri excluding holidays, 4 hour average response (ServicePac® part num 21P2072)
 - 24 hr x 7 day coverage, 4 hour average response (ServicePac part number 21P2073)
 - 24 hr x 7 day coverage, 2 hour average response (ServicePac part number 21P2074)
- ⇒ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

IBM® Type-model	Qty x Processor	L3 cache	Memory	Memory technology	Disk	Disk controller	Mechanical	Slots x bays	Hot-swap or fixed disk bays	Ethernet	Operating System	Available date
8675-4MX	1 x Pentium® III 1.4GHz	32MB	512MB	MXT/Chipkill	None	Ultra160	1U rack	2x4	2 hot-swap	2 x 10/100	None	Feb 2002

Positioning	<i>An ultradense, 2-way, high-performance server designed for increased availability and lower costs</i>											
Processor	1 x Intel® Pentium® III 1.4GHz-S with 133MHz frontside bus											
SMP support	2-way SMP via identical processor / both VRMs integrated on planar											
Implementation	Processor and L2 cache in Flip-Chip Pin Grid Array (FC-PGA2) / two Intel PGA370 sockets / terminator in empty socket											
L2 cache	512KB std and max / ECC / full speed											
L3 cache	32MB std and max / 8MB checksum / ECC / DDR-SDRAM / on planar / part of ServerSet III HE chipset											
Memory	512MB std / 4GB max / 4 sockets / 2 available / DIMMs must be installed in matched pairs / 2-way interleaving / SDRAM / 133MHz / ECC registered DIMMs / 168-pin gold-plated DIMM 3.3 volt sockets / PC133-compliant											
Memory - MXT	Memory eXpansion Technology (MXT): technology can double amount of usable memory via compression/decompression in hardware (not software) with the memory controller											
Memory - errors	Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ (corrects 1, 2, 3, or 4-bit errors on same chip and detects 1- through 8-bit errors contained in two chips)											
SCSI disk controller	Adaptec® AIC-7892 / Wide Ultra160 SCSI (LVD 160MB/sec) / single channel / 64-bit 66MHz PCI / integrated on planar											
SCSI connectors	Internal 68-pin connector / no external SCSI connector											
SCSI cabling	One 1-drop 16-bit LVD cable from internal 68-pin SCSI connector to hot-swap SCSI backplane											
IDE controller	Enhanced IDE / ATA-33 / two connectors on planar / one 1-drop IDE cable to standard CD-ROM											
Disk	None standard											
Architecture / chipsets	ServerWorks® ServerSet III HE / CNB30HE North Bridge NB6636-PO1 (memory controller with MXT, 16-bit Checksum Chipkill, and L3 cache controller) / CIOB I/O Bridge (Frontside Bus interface from North Bridge to PCI buses) / two peer PCI 2.2 buses (A: 64-bit 66MHz, B: 64-bit 33MHz) / IB6566 OSB4 rev PO5 South Bridge for IDE, USB, ISA bus for Service Processor and Super I/O National Semiconductor® PC97317VUL (diskette, serial, keyboard, mouse)											
Mechanical	EIA 19" Rack (1U⁴) / rack-mount only / supported in IBM NetBAY™ Rack products (rack requires vented front door)											
Control Panel	Front indicators/switches include Power, Reset, Console Select, Power LED and Fault/info LED											
10/100 ethernet	2 x Intel 82559 ethernet controllers / on planar / 10BaseT, 100BaseTX / full duplex / 32-bit PCI bus / redundant ethernet capability and load balancing support through the connection of both ethernet ports to the same LAN segment / two RJ-45 connectors on rear / supports PXE 2.0 Boot Agent / Alert on LAN™ 2 and Wake on LAN® support											
CD-ROM / diskette	24X-10X ⁶ CD-ROM, CAV (ATAPI), bootable, IDE / 3.5" 1.44MB diskette drive											
Serial / parallel / USB	Serial: one 9-pin; Parallel: none; USB: two ports (Version 1.1); Mgmt: two RS485 ports for systems management											
Console interconnects	C2T Interconnect™ cable (10 inch, 245mm) is standard (C2T chaining cable) / daisy chain connection to adjacent server / supports large rack deployments of daisy chained servers / two C2T ports in rear / chain functions with multiple server (not contiguous in chain) outage / one Cable Chain Technology Cable Kit required at end of chain (a cable with separate keyboard, mouse, monitor connectors [a KVM cable])											
Systems mgmt	Advanced System Mgmt processor / on planar / PowerPC 403GA™ / provides remote console and mgmt / allows diagnostic, reset, POST, and auto recovery functions / monitors temperature, fans, and power supply / support for optional Remote Supervisor Adapter with 20-pin connector on planar for continuous power (no external power required)											
Diagnostics	Light Path Diagnostics™ (LED lights indicate failing component) and on-board diagnostics (via PC-Doctor in BIOS)											
Graphics controller	SVGA / PCI bus / S3® Savage4Pro (on planar) / 8MB SDRAM std and max / DDC2B			Pentium III 1.4GHz/133MHz/512KB Proc Upg						48P7466		
Security	Power-on password / administrator password / unattended boot / selectable boot / unattended start mode			256MB SDRAM ECC DIMM 133MHz (RDIMM)						33L3322		
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director, and others			512MB SDRAM ECC DIMM 133MHz (RDIMM)						33L3324		
Keyboard / mouse	None standard			1GB SDRAM ECC DIMM 133MHz (RDIMM)						33L3326		
Cooling fans	Eight variable speed fans (four for processor(s) and planar, two for disk(s) and planar, two for power supply)			36.4GB 10K-4 Ultra160 SCSI Hot-Swap SL HDD						37L7206		
Power supply	200 watt / universal / auto-sensing / auto-restart support			73.4GB 10K Ultra160 SCSI Hot-Swap SL HDD						06P5756		
Prerequisites	Monitor, keyboard, mouse, rack, disk, operating system, one Cable Chain Technology (C2T) Console Cable Kit per chain of servers			18.2GB 15K Ultra160 SCSI Hot-Swap SL HDD						19K0656		
				Remote Supervisor Adapter						09N7585		
				ServeRAID™-4Lx Ultra160 SCSI Adapter						06P5740		
				ServeRAID-4Mx Ultra160 SCSI Adapter						06P5736		
				IBM T540 15" Flat Panel Monitor (black)						9511AG4		
				xSeries Cable Chain Technology Cable Kit (contains 2 meter breakout cable and 2 meter KVM chaining cable) 06P4792								
				Other options at ibm.com/pc/us/accessories								

<p>Back</p> <p>PCI slot PCI slot</p> <p>Top</p> <p>PCI slot #2 PCI slot #1</p> <p>Systemboard</p> <p>DIMM sockets</p> <p>Light Path Diagnostics Panel</p> <p>Power Supp</p> <p>Fan Fan</p> <p>Fan Fan Fan Fan</p> <p>Fan Fan</p> <p>Diskette CD-ROM</p> <p>Disk (opt)</p> <p>Disk (opt)</p> <p>Front</p> <p>disk bay disk bay</p>	<p>Bay ① 3.5", UltraSlim 0.8", access, std diskette</p> <p>Bay ② 5.25", UltraSlim 0.8", access, std CD-ROM</p> <p>Bay ③ 3.5", SL 1", access, open for hot-swap disk</p> <p>Bay ④ 3.5", SL 1", access, open for hot-swap disk</p> <p>Slot 1: fullsize, 64-bit 66MHz PCI 2.2 (3.3v)</p> <p>Slot 2: halfsize, 64-bit 33MHz PCI 2.2 (5v)</p> <ul style="list-style-type: none"> ⊕ Stealth black front bezel ⊕ H 1.72" (1U) x W 17.3" x D 25.7" ⊕ 26 to 28.4 lbs (minimum to maximum configuration) ⊕ Setup Program is available by pressing F1 at startup ⊕ PC-Doctor diagnostics is available by pressing F2 at startup ⊕ SCSISelect near startup by pressing CTRL+A ⊕ PXE Bullet Agent near startup by pressing CTRL+S ⊕ DMI 2.1 and Wired for Management 1.1a-compliant ⊕ Includes rack mounting kit ⊕ Includes two line cords (9 ft 110v cable with NEMA plug and 9 ft universal interrack HV cable with IEC plug) ⊕ Predictive Failure Analysis® on processor(s), voltage regulator modules, memory, fans, power supply, and disk options <p>Maximum internal disk capacity (model dependent): 146.8GB with two 73.4GB SL SCSI disks / supports 15K rpm SCSI disks</p>	<p>LIMITED WARRANTY³</p> <ul style="list-style-type: none"> ⇒ 3 year parts and labor ⇒ International Warranty Service³ ⇒ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷ ⇒ 3 year on site warranty service upgrade options (in eligible locations):⁷ <ul style="list-style-type: none"> • Mon-Fri coverage, 4 hour response time (ServicePac® part num 21P2072) • 24 hr x 7 day coverage, 4 hour response time (ServicePac part num 21P2073) • 24 hr x 7 day coverage, 2 hour response time (ServicePac part num 21P2074) ⇒ 24x7¹⁴ toll-free support for warranty issues during the warranty period³
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See footnotes for important warranty information
 • = Hot-swap bays
 US model announced February 12, 2002; withdrawn effective January 13, 2003
 (X330MXT) © IBM Corp. February 2002

IBM @server™ xSeries™ 330 (DC power models) - withdrawn xREF by eServer Field Skills Enablement Team

IBM® Type-model	Qty x Processor	Memory	Ultra160 SCSI disk	Disk controller	Mechanical	Slots x bays	Hot-swap bays	Ethernet	Power supply	NEBS-3 compliant	Available date
8674-3AX	1 x Pentium® III 1.26GHz ¹	256MB	None	Ultra160	1U ⁴ rack	2x4	2 hot-swap	2 x 10/100	DC power	No	Sept 2001
8674-N1X	2 x Pentium III 1.26GHz	1GB	2 x 18.2GB ²	Ultra160	1U rack	2x4	2 hot-swap	2 x 10/100	DC power	NEBS-3	Mar 2002

DC power models are designed for network infrastructures requiring network equipment to support DC power environments

Positioning	<i>Model N1X is Network Equipment Building System (NEBS) level 3-compliant for telecommunications carrier environments</i>																																						
Processor	1 or 2 x Intel® Pentium® III 1.26GHz-S with 133MHz frontside bus																																						
SMP support	2-way SMP via identical processor / both VRMs integrated on planar																																						
Implementation	Processor and L2 cache in Flip-Chip Pin Grid Array (FC-PGA2) / two Intel PGA370 sockets / terminator in empty socket																																						
L2 cache	512KB std and max / ECC / full speed																																						
Memory	256MB or 1GB std / 4GB max ¹³ / Error Checking and Correcting (ECC) memory controller / 4 sockets / 3AX with 256MB : 3 sockets available; N1X with 1GB : 0 sockets available (standard with four x 256MB DIMMs) / SDRAM / 133MHz / PC133-compliant / ECC registered DIMMs / 168-pin gold-plated DIMM 3.3 volt sockets																																						
SCSI disk controller	Adaptec® AIC-7892 / Wide Ultra160 SCSI (LVD 160MB/sec) / single channel / 64-bit PCI / integrated on planar																																						
SCSI connectors	Internal 68-pin connector / no external SCSI connector																																						
SCSI cabling	One 1-drop 16-bit LVD cable from internal 68-pin SCSI connector to hot-swap SCSI backplane																																						
IDE controller / cabling	Enhanced IDE / ATA-33 / two connectors on planar / one 1-drop IDE cable to standard CD-ROM																																						
Disk	3AX : none; N1X : 18.2GB Ultra160 SCSI / 10K rpm / 5.5 ms average read seek time / 2.99ms average latency																																						
Architecture / chipsets	ServerWorks® ServerSet III LE chip set / NB6635 North Bridge 3.0LE (the North Bridge has two peer PCI buses: (1) PCI Bus 0, 32-bit 33MHz, South Bridge, Super I/O, graphics, 2 x ethernet; (2) PCI Bus 1, 64-bit 33MHz, SCSI controller, two 64-bit PCI slots) / IB6566 OSB4 rev B2 South Bridge for IDE, USB, ISA bus for Service Processor and Super I/O National Semiconductor® PC97317VUL (diskette, parallel, serial, keyboard, mouse)																																						
Mechanical	EIA 19" Rack (1U⁴) / rack-mount only / supported in IBM NetBAY™ Rack products (rack requires vented front door)																																						
Control Panel	Front indicators/switches include Power, Reset, Console Select, Power LED and Fault/info LED																																						
Ethernet controllers	2 x Intel 82559 ethernet controllers / on planar / 10BaseT, 100BaseTX / full duplex / 32-bit PCI bus / redundant ethernet capability and load balancing support through the connection of both ethernet ports to the same LAN segment / two RJ-45 connectors on rear / supports PXE 2.0 Boot Agent / Wake on LAN® support																																						
CD-ROM / diskette	24X-10X® CD-ROM, CAV (ATAPI), bootable, IDE / 3.5" 1.44MB diskette drive																																						
Rear ports	<i>Serial</i> : one 9-pin; <i>Parallel</i> : none; <i>USB</i> : two ports (Version 1.1); <i>Adv Sys Mgmt</i> : two RJ-45 ports																																						
Console interconnects	System-to-system interconnect cable (10 inch, 245mm) is standard (Keyboard Video Mouse (KVM) chaining cable) / daisy chain connection to adjacent server / supports large rack deployments of daisy chained servers / chain functions with multiple server (not contiguous in chain) outage / one Cable Chain Technology Cable Kit required at end of chain (a cable with separate keyboard, mouse, monitor connectors)																																						
Systems mgmt	Advanced System Mgmt Processor / on planar / PowerPC 403GA™ / provides remote console and mgmt / allows diagnostic, reset, POST, and auto recovery functions / monitors temperature, fans, and power supply / support for optional Remote Supervisor Adapter with 20-pin connector on planar for continuous power (no external power required)																																						
Diagnostics	Light Path Diagnostics™ (LED lights indicate failing component) and on-board diagnostics (via PC-Doctor in BIOS)																																						
Graphics controller	SVGA / PCI bus / S3® Savage4Pro (on planar) / 8MB SDRAM std and max / DDC2B																																						
Security	Power-on password / administrator password / unattended boot / selectable boot / unattended start mode																																						
OS support	Windows® NT 4.0 Server, Windows 2000 Server and Adv Server; Linux®: Red Hat, TurboLinux, SuSE, Caldera eServer																																						
Software	ServerGuide™ (CD-ROM installation and configuration utilities), AntiVirus software, IBM Director™, and others																																						
Keyboard / mouse	None standard																																						
Cooling fans	Eight fans (four for processor(s) and planar, two for disk(s) and planar, two for power supply)																																						
Power supply	200 watt (-48 to -60 V dc [direct current]) / auto-sensing / supports dual input sources (two power sources) / not redundant / not hot-swap / auto-restart support																																						
Prerequisites	Appropriate dc power source and customer supplied wiring, monitor, keyboard, mouse, rack, disk, operating system, one Cable Chain Technology (C2T) Console Cable Kit per chain of servers																																						
	<table border="0"> <tr> <td>Pentium III 1.26GHz-S/133MHz/512KB Proc Upg</td> <td>25P2836</td> </tr> <tr> <td>128MB SDRAM ECC DIMM 133MHz (RDIMM)</td> <td>10K0018</td> </tr> <tr> <td>256MB SDRAM ECC DIMM 133MHz (RDIMM)</td> <td>10K0020</td> </tr> <tr> <td>512MB SDRAM ECC DIMM 133MHz (RDIMM)</td> <td>10K0022</td> </tr> <tr> <td>1GB SDRAM ECC DIMM 133MHz (RDIMM)</td> <td>33L3326</td> </tr> <tr> <td>36.4GB 10K-4 Ultra 160 SCSI Hot-Swap SL HDD**</td> <td>37L7206</td> </tr> <tr> <td>73.4GB 10K Ultra 160 SCSI Hot-Swap SL HDD**</td> <td>06P5756</td> </tr> <tr> <td colspan="2"><i>** only supported in Model 3AX;</i></td> </tr> <tr> <td colspan="2"><i>Model N1X does not support any disk options</i></td> </tr> <tr> <td>Remote Supervisor Adapter***</td> <td>09N7585</td> </tr> <tr> <td>ServeRAID-4Lx Ultra 160 SCSI Adapter***</td> <td>06P5740</td> </tr> <tr> <td colspan="2"><i>*** NEBS-3 compliance not assured with these adapters</i></td> </tr> <tr> <td>xSeries Cable Chain Technology Cable Kit (contains 2 meter breakout cable and 2 meter KVM chaining cable)</td> <td>06P4792</td> </tr> <tr> <td colspan="2">Other options at ibm.com/pc/us/accessories</td> </tr> </table>											Pentium III 1.26GHz-S/133MHz/512KB Proc Upg	25P2836	128MB SDRAM ECC DIMM 133MHz (RDIMM)	10K0018	256MB SDRAM ECC DIMM 133MHz (RDIMM)	10K0020	512MB SDRAM ECC DIMM 133MHz (RDIMM)	10K0022	1GB SDRAM ECC DIMM 133MHz (RDIMM)	33L3326	36.4GB 10K-4 Ultra 160 SCSI Hot-Swap SL HDD**	37L7206	73.4GB 10K Ultra 160 SCSI Hot-Swap SL HDD**	06P5756	<i>** only supported in Model 3AX;</i>		<i>Model N1X does not support any disk options</i>		Remote Supervisor Adapter***	09N7585	ServeRAID-4Lx Ultra 160 SCSI Adapter***	06P5740	<i>*** NEBS-3 compliance not assured with these adapters</i>		xSeries Cable Chain Technology Cable Kit (contains 2 meter breakout cable and 2 meter KVM chaining cable)	06P4792	Other options at ibm.com/pc/us/accessories	
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512MB SDRAM ECC DIMM 133MHz (RDIMM)	10K0022																																						
1GB SDRAM ECC DIMM 133MHz (RDIMM)	33L3326																																						
36.4GB 10K-4 Ultra 160 SCSI Hot-Swap SL HDD**	37L7206																																						
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Other options at ibm.com/pc/us/accessories																																							

<p>Back</p> <p>Bay ① 3.5", UltraSlim 0.8", access, std diskette Bay ② 5.25", UltraSlim 0.8", access, std CD-ROM Bay ③ 3.5", SL 1", access, open for hot-swap disk Bay ④ 3.5", SL 1", access, open for hot-swap disk</p> <p>Top</p> <p>Slot 1: fullsize, 64-bit 33MHz PCI 2.2 (5v) Slot 2: halfsize, 64-bit 33MHz PCI 2.2 (5v)</p> <p>Stealth black H 1.72" (1U) x W 17.3" x D 25.7" 26 to 28.4 lbs (minimum to maximum configuration) Setup Program is available by pressing F1 at startup PC-Doctor diagnostics is available by pressing F2 at startup SCSISelect near startup by pressing CTRL+A PXE Bullet Agent near startup by pressing CTRL+S DMI 2.1 and Wired for Management 1.1a-compliant Includes rack mounting kit Predictive Failure Analysis® on processor(s), voltage regulator modules, memory, fans, power supply, and disk options</p> <p>Front</p> <p>3AX only: Maximum internal disk capacity: 146.8GB with two 73.4GB SL SCSI disks / supports 15K rpm SCSI disks N1X only: Maximum internal disk capacity¹³: 36.4GB with two 18.2GB SL SCSI disks</p>	<p>LIMITED WARRANTY³</p> <ul style="list-style-type: none"> ⇒ 3 year parts and labor ⇒ International Warranty Service³ ⇒ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time ⇒ 3 year on site warranty service upgrade options (in eligible locations):⁷ <ul style="list-style-type: none"> • 9 hour coverage, Mon-Fri excluding holidays, 4 hour response time (ServicePac® part number 21P2072) • 24 hr x 7 day coverage, 4 hour response time (ServicePac part number 21P2073) • 24 hr x 7 day coverage, 2 hour response time (ServicePac part number 21P2074) ⇒ 24x7¹⁴ toll-free support for warranty issues during the warranty period⁵
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See footnotes for important warranty information

(X330DC) © IBM Corp. March 2002

• = Hot-swap

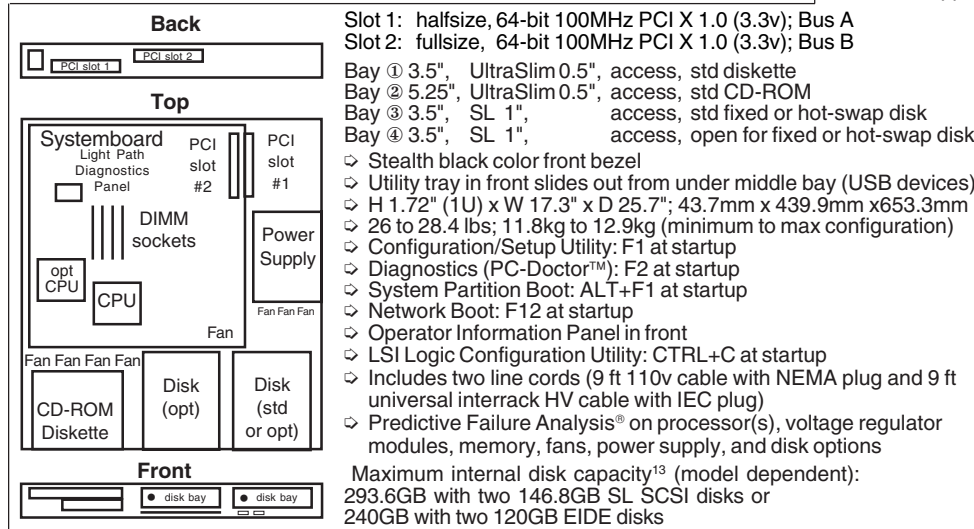
US models announced August 2001 and March 2002; withdrawn effective February 28, 2003

IBM® Type-model	Qty x Processor	L2 cache	FSB MHz	Memory	Memory type	Disk	Disk controller	Hot-swap or fixed disk bays	Slots x bays	Ethernet	Limited warranty ³	Available date
8830-61X	1 x Xeon™ 2.4GHz	512KB	400 [⚡]	512MB	Chipkill™	None (open)	Ultra320	2 hot-swap	2x4	2 x Gigabit	1 year	Aug 2002
8830-62X	1 x Xeon 2.4GHz	512KB	400 [⚡]	512MB	Chipkill	40GB ² EIDE	EIDE	2 fixed	2x4	2 x Gigabit	1 year	Aug 2002
8830-81X	1 x Xeon 2.8GHz	512KB	400 [⚡]	512MB	Chipkill	None (open)	Ultra320	2 hot-swap	2x4	2 x Gigabit	1 year	Nov 2002
8830-82X	1 x Xeon 2.8GHz	512KB	400 [⚡]	512MB	Chipkill	40GB ² EIDE	EIDE	2 fixed	2x4	2 x Gigabit	1 year	Nov 2002

Positioning	<i>A highly manageable, ultra-dense 1U, 2-way server that delivers performance computing in space-constrained environments</i>											
Processor(s)	1 x Intel® Xeon 2.4 or 2.8GHz¹ with 400MHz frontside bus / Hyper-Threading technology											
L2 cache	512KB / on die of processor / at processor speed (no L3 cache)											
SMP support	2-way SMP / up to two Xeon Processors (same speed/cache size)											
Implementation	Systemboard contains two Intel 603-pin micro-PGA ZIF sockets, four memory DIMM slots, connector for one PCI-X slot, riser for one PCI-X slot, and integrated SCSI, ethernet, graphics											
Memory	512MB std / 8GB max ¹³ / two slots used / two slots available / PC2100 266MHz registered 184-pin ECC DDR-SDRAM DIMMs / four DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / memory bus runs at 2 x 100MHz / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips)											
SCSI disk controller	<i>All (not used on EIDE models): LSI Logic® 53C1020 / Ultra320 SCSI controller (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X Bus B / supports RAID-1 mirroring (Embedded Mirroring) with two SCSI disks in front bays / one 16-bit internal channel / 16-bit 68-pin LVD cable from systemboard to backplane for two disks / no external connector</i>											
IDE controller / cable	<i>All: Enhanced IDE ATA-100 controller in CSB5 South Bridge / two connectors on planar / one 1-drop IDE cable (CD-ROM) EIDE models: One 2-drop EIDE cable to two disk bays / one 1-drop EIDE cable to CD-ROM</i>											
Disk - capacity	<i>SCSI models: none standard / supports up to 15000 rpm disks; EIDE models: 40GB / 7200 rpm / ATA-100 / 8.7ms seek</i>											
Disk - bays	<i>SCSI models: two hot-swap / 80-pin SCA-2 connectors / filler panels in each disk bay / all HD bays Ultra320-enabled</i>											
Mechanical Architecture / chipsets	EIA 19" Rack (1U⁴) / rack-mount only / supported in 26" deep racks such as the IBM NetBAY™ Rack products ServerWorks® Grand Champion™ 4.0 LE / CMIC LE Host Bridge (memory controller and I/O Bridge) / one CIOB-X2 I/O Bridge (IMB2 bus to Host Bridge for PCI-X Bus A with slot 1 and dual ethernet and PCI-X Bus B with slot 2 and Ultra320 / CSB5 South Bridge (Thin IMB to Host Bridge for PCI 2.2 Bus C with graphics controller, EIDE, USB, SMBus, LPC bus to Super I/O) / National Semiconductor® PC87417 Super I/O chip											
Bus slots	(See below) two available PCI-X 1.0 / no hot-swap Active™ PCI slots											
Ethernet controllers	Two gigabit 10/100/1000 ethernet ports / Broadcom BCM5703 / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-X 64-bit 100MHz Bus A / full duplex / Wake on LAN® / Alert Standard Format 1.0 / two rear RJ-45 ports											
CD-ROM / diskette	24X-10X ⁶ CD-ROM / IDE; <i>Diskette: 3.5" 1.44MB diskette drive / dust cover</i>											
Rear ports	<i>Rear: one USB (Vers 1.1), C2T in, C2T out, serial (9-pin), two ethernet (RJ-45), one RS-485 (sys mgmt) / no parallel port</i>											
Front ports / graphics	<i>Front: two USB (Vers 1.1); Graphics: SVGA / ATI® Rage XL / on planar / 8MB SDRAM std/max / 32-bit 33MHz PCI 2.2 bus</i>											
Console interconnects	C2T Interconnect™ cable (10 inch, 245mm) is standard (Keyboard Video Mouse (KVM) chaining cable) / one Cable Chain Technology Cable Kit required at end of chain (a cable with separate keyboard, mouse, monitor connectors)											
Systems mgmt	IBM Integrated system management processor (ISMP) / H8S2148 / on planar / provides system and environmental monitoring such as temp, memory, optional disks, fans, power supply / support for optional Remote Supervisor Adapter with 20-pin conn on planar for continuous pwr (no ext pwr req)											
Diagnostics	Light Path Diagnostics™ (LED lights indicate failing component) and on-board diagnostics (via PC-Doctor in BIOS)											
Security	Power-on password / administrator password / unattended boot / selectable boot / unattended start mode											
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director™, and others											
Cooling fans	Eight fans (five for system, three on power supply) / variable speed / not redundant or hot-swap											
Power supply	332 watt / universal / auto-sensing / auto-restart support											
Prerequisites	Monitor, keyboard, mouse, rack, disk (some), operating sys, one Cable Chain Technology (C2T) Kit per chain of servers or NetBAY ACT CAT-5 chaining solutions											

Xeon 2.4GHz/512KB L2 Cache Proc Upg	59P5102
Xeon 2.8GHz/512KB L2 Cache Proc Upg	02R8958
Xeon 2.8GHz/512KB L2 Cache Proc Upg	73P6382
512MB PC2100 CL2.5 ECC DDR-SDRAM DIMM	33L5038
1GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM	33L5039
2GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM	33L5040
80GB ATA-100 EIDE HDD*	09N4226
36.4GB 15K Ultra320 SCSI Hot-Swap SL HDD*	06P5776
73.4GB 10K-4 Ultra160 SCSI Hot-Swap SL HDD*	06P5756
Remote Supervisor Adapter	09N7585
xSeries Cable Chain Technology Cable Kit (2 meter breakout cable and 2 meter KVM chaining cable)	06P4792
NetBAY ACT Local Console Manager	1735L04

* Disk not supported in all x335 systems



LIMITED WARRANTY³

- 1 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 9x5, NBD response (ServicePac® part num 69P9505)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9506)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9507)
 - 3 year IOR 24x7, 2 hr avg response (ServicePac part num 69P9508)
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information (X335A) © IBM Corp. December 2002

• = Hot-swap in some models
 US models announced on August 20, 2002 and November 19, 2002; withdrawn effective September 26, 2003
 ⚡ 533Mhz FSB models may use 400Mhz FSB processors. 400Mhz FSB models may not use 533Mhz FSB processors.

IBM Type-model	Qty x Processor	L2 cache	Memory	Memory type	Disk	Disk controller	Hot-swap or fixed disk bays	Mech-anical	Slots x bays	Ethernet	Limited warranty ³	Available date	
8676-41X	1 x Xeon	2.0GHz	512KB	512MB	Chipkill	None (open)	Ultra320	2 hot-swap	1U ⁴ rack	2x4	2 x Gigabit	3 year	Aug 2002
8676-42X	1 x Xeon	2.0GHz	512KB	512MB	Chipkill	40GB ² EIDE	EIDE	2 fixed	1U rack	2x4	2 x Gigabit	3 year	Aug 2002
8676-61X	1 x Xeon	2.4GHz	512KB	512MB	Chipkill	None (open)	Ultra320	2 hot-swap	1U rack	2x4	2 x Gigabit	3 year	Aug 2002
8676-62X	1 x Xeon	2.4GHz	512KB	512MB	Chipkill	40GB EIDE	EIDE	2 fixed	1U rack	2x4	2 x Gigabit	3 year	Aug 2002

Positioning Processor(s) *A highly manageable, ultra-dense 1U, 2-way server that delivers performance computing in space-constrained environments*
L2 cache **1 x Intel Xeon 2.0 or 2.4GHz¹** with 400MHz frontside bus / Hyper-Threading technology
SMP support **2-way SMP** / up to two Xeon Processors (same speed/cache size)
Implementation Systemboard contains two Intel 603-pin micro-PGA ZIF sockets, four memory DIMM slots, connector for one PCI-X slot, riser for one PCI-X slot, and integrated SCSI, ethernet, graphics

Memory **512MB** std / 8GB max¹³ / two slots used / two slots available / **PC2100** 266MHz registered 184-pin ECC DDR-SDRAM DIMMs / four DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / memory bus runs at 2 x 100MHz / **Error Checking and Correcting (ECC)** via **16-bit Checksum Chipkill**. (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips)

SCSI disk controller *All (not used on EIDE models): LSI Logic 53C1020 / Ultra320 SCSI controller (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X Bus B / supports RAID-1 mirroring (Embedded Mirroring) with two SCSI disks in front bays / one 16-bit internal channel / 16-bit 68-pin LVD cable from systemboard to backplane for two disks/ no external connector*
IDE controller / cable *All: Enhanced IDE ATA-100 controller in CSB5 South Bridge / two connectors on planar / one 1-drop IDE cable (CD-ROM) EIDE models: One 2-drop EIDE cable to two disk bays / one 1-drop EIDE cable to CD-ROM*
Disk - capacity *SCSI models: none standard / supports up to 15000 rpm disks; EIDE models: 40GB / 7200 rpm / ATA-100 / 8.7ms seek*
Disk - bays *SCSI models: two hot-swap / 80-pin SCA-2 connectors / filler panels in each disk bay / all disk bays Ultra320-enabled*

Mechanical Architecture / chipsets **EIA 19" Rack (1U⁴)** / rack-mount only / supported in 26" deep racks such as the IBM NetBAY. Rack products **ServerWorks Grand Champion. 4.0 LE / CMIC LE** Host Bridge (memory controller and I/O Bridge) / one CIOB-X2 I/O Bridge (IMB2 bus to Host Bridge for PCI-X Bus A with slot 1 and dual ethernet and PCI-X Bus B with slot 2 and Ultra320 / CSB5 South Bridge (Thin IMB to Host Bridge for PCI 2.2 Bus C with graphics controller, EIDE, USB, SMBus, LPC bus to Super I/O) / National Semiconductor PC87417 Super I/O chip
Bus slots (See below) two available PCI-X 1.0 / no hot-swap Active. PCI slots

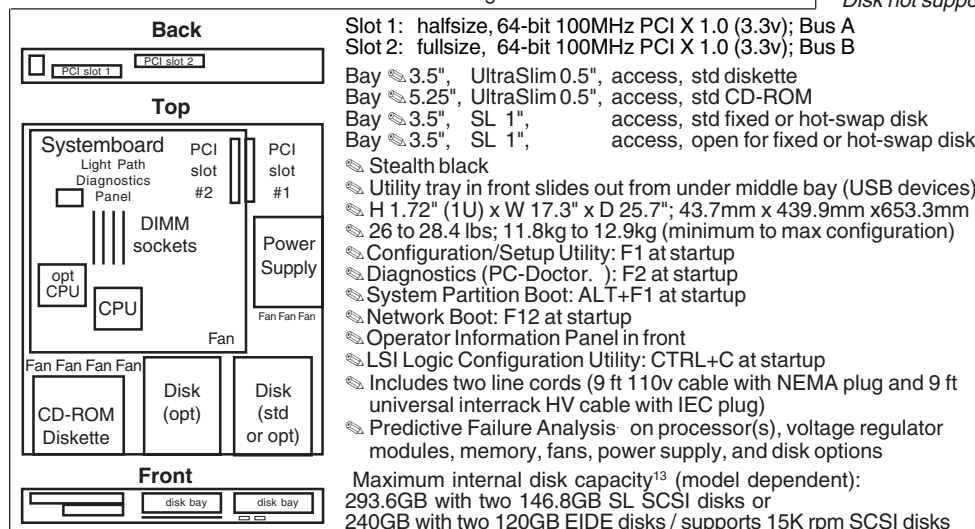
Ethernet controllers Two gigabit 10/100/1000 ethernet ports / Broadcom BCM5703 / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-X 64-bit 100MHz Bus A / full duplex / Wake on LAN / Alert Standard Format 1.0 / two rear RJ-45 ports
CD-ROM / diskette 24X-10X⁶ CD-ROM / IDE; Diskette: 3.5" 1.44MB diskette drive / dust cover
Rear ports Rear: one USB (Vers 1.1), C2T in, C2T out, serial (9-pin), two ethernet (RJ-45), one RS-485 (sys mgmt) / no parallel port
Front ports / graphics Front: two USB (Vers 1.1); Graphics: SVGA / ATI Rage XL / on planar / 8MB SDRAM std/max / 32-bit 33MHz PCI 2.2 bus
Console interconnects C2T Interconnect™ cable (10 inch, 245mm) is standard (Keyboard Video Mouse (KVM) chaining cable) / one Cable Chain Technology Cable Kit required at end of chain (a cable with separate keyboard, mouse, monitor connectors)

Systems mgmt **IBM integrated system management processor (ISMP)** / H8S2148 / on planar / provides system and environmental monitoring such as temp, memory, optional disks, fans, power supply / support for optional Remote Supervisor Adapter with 20-pin conn on planar for continuous pwr (no ext pwr req)

Diagnostics	Security	Software	Cooling fans	Power supply Prerequisites
Light Path Diagnostics. (LED lights indicate failing component) and on-board diagnostics (via PC-Doctor in BIOS)	Power-on password / administrator password / unattended boot / selectable boot / unattended start mode	ServerGuide. (CD-ROM installation and configuration utilities), IBM Director™, and others	Eight fans (five for system, three on power supply) / variable speed / not redundant or hot-swap	332 watt / universal / auto-sensing / auto-restart support Monitor, keyboard, mouse, rack, disk (some), operating sys, one Cable Chain Technology (C2T) Kit per chain of servers or NetBAY ACT CAT-5 chaining solutions

Xeon DP 2.0GHz/512KB L2 Cache Proc Upg	59P5100
Xeon DP 2.4GHz/512KB L2 Cache Proc Upg	59P5102
512MB PC2100 CL2.5 ECC DDR-SDRAM DIMM	33L5038
1GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM	33L5039
2GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM	33L5040
80GB ATA-100 EIDE HDD*	09N4226
36.4GB 15K Ultra320 SCSI Hot-Swap SL HDD*	06P5776
Remote Supervisor Adapter	09N7585
ServeRAID™-4Mx Ultra160 SCSI Adapter	06P5736
IBM T541 15" Flat Panel Color Monitor (black)	9512AB1
xSeries Cable Chain Technology Cable Kit (2 meter breakout cable and 2 meter KVM chaining cable)	06P4792
NetBAY ACT Local Console Manager	1735L04

* Disk not supported in all x335 systems



LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- 3 year on site warranty service upgrade options (in eligible locations):⁷
 - 9 hour coverage, Mon-Fri excluding holidays, 4 hour average response (ServicePac part number 21P2072)
 - 24 hr x 7 day coverage, 4 hour average response (ServicePac part number 21P2073)
 - 24 hr x 7 day coverage, 2 hour average response (ServicePac part number 21P2074)
- Other ServicePac options at ibm.com/services/its/us/source/wamomxeu.pdf
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information (X335C) . IBM Corp. August 2002
 = Hot-swap in some models
 US models announced August 20, 2002; withdrawn effective April 29, 2003 (41X, 42X) or December 30, 2003 (61X, 62X)

IBM @server™ xSeries™ 335 (8676) - November 2002 - with. xREF by eServer Field Skills Enablement Team

IBM® Type-model	Qty x Processor	L2 cache	FSB MHz	Memory	Memory type	Disk	Disk controller	Hot-swap or fixed disk bays	Slots x bays	Ethernet	Limited warranty ³	Available date
8676-71X	1 x Xeon™ 2.6GHz	512KB	400 MHz	512MB	Chipkill™	None (open)	Ultra320	2 hot-swap	2x4	2 x Gigabit	3 year	Aug 2002
8676-72X	1 x Xeon 2.6GHz	512KB	400 MHz	512MB	Chipkill	40GB ² EIDE	EIDE	2 fixed	2x4	2 x Gigabit	3 year	Aug 2002
8676-81X	1 x Xeon 2.8GHz	512KB	400 MHz	512MB	Chipkill	None (open)	Ultra320	2 hot-swap	2x4	2 x Gigabit	3 year	Nov 2002
8676-82X	1 x Xeon 2.8GHz	512KB	400 MHz	512MB	Chipkill	40GB ² EIDE	EIDE	2 fixed	2x4	2 x Gigabit	3 year	Nov 2002

Positioning A highly manageable, ultra-dense 1U, 2-way server that delivers performance computing in space-constrained environments
Processor(s) 1 x Intel® Xeon 2.6 or 2.8GHz¹ with 400MHz frontside bus / Hyper-Threading technology
L2 cache 512KB / on die of processor / at processor speed (no L3 cache)
SMP support Implementation 2-way SMP / up to two Xeon Processors (same speed/cache size)
 Systemboard contains two Intel 603-pin micro-PGA ZIF sockets, four memory DIMM slots, connector for one PCI-X slot, riser for one PCI-X slot, and integrated SCSI, ethernet, graphics

Memory 512MB std / 8GB max¹³ / two slots used / two slots available / PC2100 266MHz registered 184-pin ECC DDR-SDRAM DIMMs / four DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / memory bus runs at 2 x 100MHz / **Error Checking and Correcting (ECC)** via 16-bit Checksum Chipkill™ (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips)

SCSI disk controller All (not used on EIDE models): LSI Logic® 53C1020 / Ultra320 SCSI controller (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X Bus B / supports RAID-1 mirroring (Embedded Mirroring) with two SCSI disks in front bays / one 16-bit internal channel / 16-bit 68-pin LVD cable from systemboard to backplane for two disks / no external connector
IDE controller / cable All: Enhanced IDE ATA-100 controller in CSB5 South Bridge / two connectors on planar / one 1-drop IDE cable (CD-ROM) EIDE models: One 2-drop EIDE cable to two disk bays / one 1-drop EIDE cable to CD-ROM
Disk - capacity SCSI models: none standard / supports up to 15000 rpm disks; EIDE models: 40GB / 7200 rpm / ATA-100 / 8.7ms seek
Disk - bays SCSI models: two hot-swap / 80-pin SCA-2 connectors / filler panels in each disk bay / all disk bays Ultra320-enabled

Mechanical Architecture / chipsets EIA 19" Rack (1U⁴) / rack-mount only / supported in 26" deep racks such as the IBM NetBAY™ Rack products ServerWorks® Grand Champion™ 4.0 LE / CMIC LE Host Bridge (memory controller and I/O Bridge) / one CIOB-X2 I/O Bridge (IMB2 bus to Host Bridge for PCI-X Bus A with slot 1 and dual ethernet and PCI-X Bus B with slot 2 and Ultra320 / CSB5 South Bridge (Thin IMB to Host Bridge for PCI 2.2 Bus C with graphics controller, EIDE, USB, SMBus, LPC bus to Super I/O) / National Semiconductor® PC87417 Super I/O chip
Bus slots (See below) two available PCI-X 1.0 / no hot-swap Active™ PCI slots

Ethernet controllers Two gigabit 10/100/1000 ethernet ports / Broadcom BCM5703 / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-X 64-bit 100MHz Bus A / full duplex / Wake on LAN® / Alert Standard Format 1.0 / two rear RJ-45 ports
CD-ROM / diskette 24X-10X⁶ CD-ROM / IDE; Diskette: 3.5" 1.44MB diskette drive / dust cover
Rear ports Rear: one USB (Vers 1.1), C2T in, C2T out, serial (9-pin), two ethernet (RJ-45), one RS-485 (sys mgmt) / no parallel port
Front ports / graphics Front: two USB (Vers 1.1); Graphics: SVGA / ATI® Rage XL / on planar / 8MB SDRAM std/max / 32-bit 33MHz PCI 2.2 bus
Console interconnects C2T Interconnect™ cable (10 inch, 245mm) is standard (Keyboard Video Mouse (KVM) chaining cable) / one Cable Chain Technology Cable Kit required at end of chain (a cable with separate keyboard, mouse, monitor connectors)

Systems mgmt IBM Integrated system management processor (ISMP) / H8S2148 / on planar / provides system and environmental monitoring such as temp, memory, optional disks, fans, power supply / support for optional Remote Supervisor Adapter with 20-pin conn on planar for continuous pwr (no ext pwr req)

Diagnostics Light Path Diagnostics™ (LED lights indicate failing component) and on-board diagnostics (via PC-Doctor in BIOS)

Security Power-on password / administrator password / unattended boot / selectable boot / unattended start mode

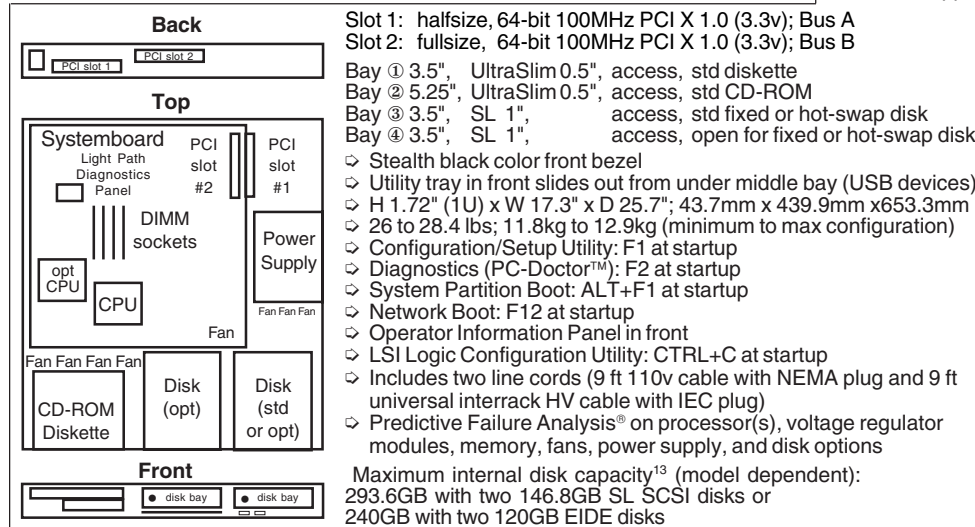
Software ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director™, and others

Cooling fans Eight fans (five for system, three on power supply) / variable speed / not redundant or hot-swap

Power supply Prerequisites 332 watt / universal / auto-sensing / auto-restart support
 Monitor, keyboard, mouse, rack, disk (some), operating sys, one Cable Chain Technology (C2T) Kit per chain of servers or NetBAY ACT CAT-5 chaining solutions

Xeon 2.6GHz/512KB L2 Cache Proc Upg	02R8957
Xeon 2.8GHz/512KB L2 Cache Proc Upg	02R8958
Xeon 2.8BGHz/512KB L2 Cache Proc Upg	73P6382
512MB PC2100 CL2.5 ECC DDR-SDRAM RDIMM	33L5038
1GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM	33L5039
2GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM	33L5040
80GB ATA-100 EIDE HDD*	09N4226
36.4GB 15K Ultra320 SCSI Hot-Swap SL HDD*	06P5776
Remote Supervisor Adapter	09N7585
ServeRAID™-4Mx Ultra160 SCSI Adapter	06P5736
xSeries Cable Chain Technology Cable Kit (2M breakout cable and 2M KVM chaining cable)	06P4792
NetBAY ACT Local Console Manager	1735L04

* Disk not supported in all x335 systems



LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 9x5, 4 hr avg response (ServicePac® part num 21P2072)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 21P2073)
 - 3 year IOR 24x7, 2 hr avg response (ServicePac part num 21P2074)
 - 4 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9244)
 - 5 year IOR 9x5, NBD response (ServicePac part num 69P9246)
- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information (X335D) © IBM Corp. November 2002
 • = Hot-swap in some models
 Models withdrawn effective September 2003 or March 2004
 ⚡ 533Mhz FSB models may use 400Mhz FSB processors but 400Mhz FSB models may not use 533Mhz FSB processors.

IBM eServer™ xSeries™ 335 (8676) - February 2003 - withdrawn

xREF by eServer Field Skills Enablement Team

IBM® Type-model	Qty x Processor	L2 cache	L3 cache	Memory	Memory type	Disk	Disk controller	Power Supply	Disk bays	Slots x bays	Ethernet	Limited warranty ³	Available date
8676-11X	1 x Xeon 2.8B GHz	512KB	0MB	512MB	Chipkill	None (open)	Ultra320	332W	2 hot-swap	2x4	2 x Gigabit	3 year	May 2003
8676-12X	1 x Xeon 2.8B GHz	512KB	0MB	512MB	Chipkill	40GB ² EIDE	EIDE	332W	2 fixed	2x4	2 x Gigabit	3 year	May 2003
8676-21X	1 x Xeon 3.06 GHz	512KB	0MB	512MB	Chipkill	None (open)	Ultra320	332W	2 hot-swap	2x4	2 x Gigabit	3 year	Apr 2003
8676-22X	1 x Xeon 3.06 GHz	512KB	0MB	512MB	Chipkill	40GB ² EIDE	EIDE	332W	2 fixed	2x4	2 x Gigabit	3 year	May 2003
8676-G1X	1 x Xeon 3.2 GHz	512KB	1MB	1GB	Chipkill	None (open)	Ultra320	332W	2 hot-swap	2x4	2 x Gigabit	3 year	Nov 2003
8676-G2X	1 x Xeon 3.2 GHz	512KB	1MB	1GB	Chipkill	80GB ² EIDE	EIDE	411W	2 fixed	2x4	2 x Gigabit	3 year	Nov 2003

Positioning *A highly manageable, ultra-dense 1U, 2-way server that delivers performance computing in space-constrained environments*

Processor(s) Up to **1 x Intel® Xeon 3.2GHz¹** with 533MHz ² frontside bus / Hyper-Threading technology

Cache **512KB L2 cache** on all models / **1MB L3 cache** on some models / on die of processor / at processor speed

SMP support **2-way SMP** / up to two Xeon Processors (same speed/cache size)

Implementation Systemboard contains two Intel 603-pin micro-PGA ZIF sockets, four memory DIMM slots, connector for one PCI-X slot, riser for one PCI-X slot, and integrated SCSI, ethernet, graphics

Memory **512MB or 1GB** std / 8GB max¹³ / two slots used / two slots available / **PC2100** 266MHz registered 184-pin ECC DDR-SDRAM DIMMs / four DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / memory bus runs at 2 x 100MHz / **Error Checking and Correcting (ECC)** via **16-bit Checksum Chipkill™** (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips)

SCSI disk controller *All (not used on EIDE models): LSI Logic® 53C1020 / Ultra320 SCSI controller (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X Bus B / supports RAID-1 mirroring (Embedded Mirroring) with two SCSI disks in front bays / one 16-bit internal channel / 16-bit 68-pin LVD cable from systemboard to backplane for two disks / no external connector*

IDE controller / cable *All: Enhanced IDE ATA-100 controller in CSB5 South Bridge / two connectors on planar / one 1-drop IDE cable (CD-ROM) EIDE models: One 2-drop EIDE cable to two disk bays / one 1-drop EIDE cable to CD-ROM*

Disk - capacity *SCSI models: none standard / supports up to 15000 rpm disks; EIDE models: 40GB / 7200 rpm / ATA-100 / 8.7ms seek*

Disk - bays *SCSI models: two hot-swap / 80-pin SCA-2 connectors / filler panels in each disk bay / all disk bays Ultra320-enabled*

Mechanical **EIA 19" Rack (1U⁴)** / rack-mount only / supported in 26" deep racks such as the IBM NetBAY™ Rack products

Architecture / chipsets **ServerWorks® Grand Champion™ 4.0 LE** / CMIC LE Host Bridge (memory controller and I/O Bridge) / one CIOB-X2 I/O Bridge (IMB2 bus to Host Bridge for PCI-X Bus A with slot 1 and dual ethernet and PCI-X Bus B with slot 2 and Ultra320 / CSB5 South Bridge (Thin IMB to Host Bridge for PCI 2.2 Bus C with graphics controller, EIDE, USB, SMBus, LPC bus to Super I/O) / National Semiconductor® PC87417 Super I/O chip

Bus slots (See below) two available PCI-X 1.0 / no hot-swap Active™ PCI slots

Ethernet controllers Two gigabit 10/100/1000 ethernet ports / Broadcom BCM5703 / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-X 64-bit 100MHz Bus A / full duplex / Wake on LAN® / Alert Standard Format 1.0 / two rear RJ-45 ports

CD-ROM / diskette 24X-10X⁵ CD-ROM / IDE; *Diskette: 3.5" 1.44MB diskette drive / dust cover*

Rear ports *Rear: one USB (Vers 1.1), C2T in, C2T out, serial (9-pin), two ethernet (RJ-45), one RS-485 (sys mgmt) / no parallel port*

Front ports / graphics *Front: two USB (Vers 1.1); Graphics: SVGA / ATI® Rage XL / on planar / 8MB SDRAM std/max / 32-bit 33MHz PCI 2.2 bus*

Console interconnects C2T Interconnect™ cable (10 inch, 245mm) is standard (Keyboard Video Mouse (KVM) chaining cable) / one Cable Chain Technology Cable Kit required at end of chain (a cable with separate keyboard, mouse, monitor connectors)

Systems mgmt **IBM Integrated system management processor (ISMP) / H8S2148** / on planar / provides system and environmental monitoring such as temp, memory, optional disks, fans, power supply / support for optional Remote Supervisor Adapter

Diagnostics **Light Path Diagnostics™** (LED lights indicate failing component) and on-board diagnostics (via PC-Doctor in BIOS)

Security Power-on password / administrator password / unattended boot / selectable boot / unattended start mode

Software **ServerGuide™** (CD-ROM installation and configuration utilities), IBM Director™, and others

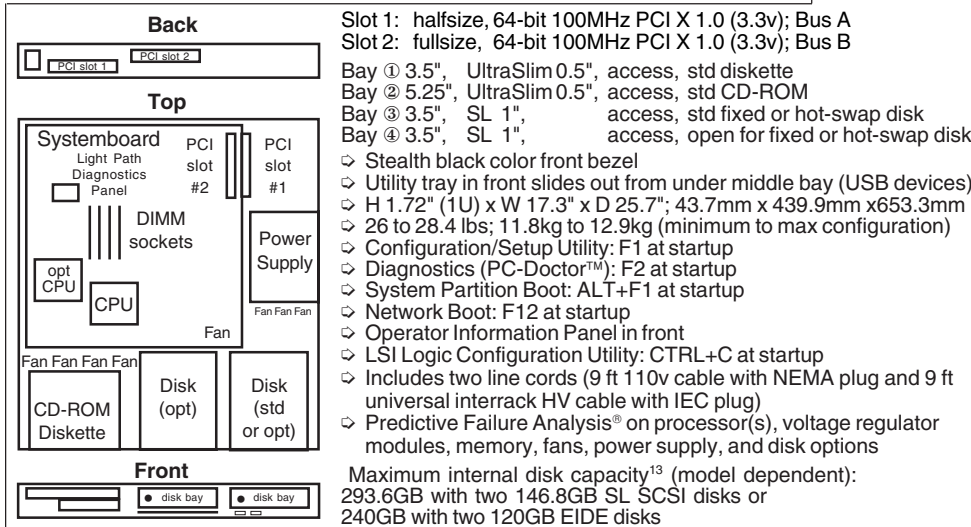
Cooling fans Eight fans (five for system, three on power supply) / variable speed / not redundant or hot-swap

Power supply 332 or 411 watt fixed / universal / auto-sensing / auto-restart

Prerequisites Monitor, keyboard, mouse, rack, disk (some), operating sys, one Cable Chain Technology (C2T) Kit per chain of servers or NetBAY ACT CAT-5 chaining solutions

Xeon 2.8BGHz/512KB L2 Cache Proc Upg	73P6382
Xeon 3.06GHz/512KB L2 Cache Proc Upg	02R8959
Xeon 3.2GHz/512KB L2/1MB L3 Proc Upg	13N0661
512MB PC2100 CL2.5 ECC DDR-SDRAM RDIMM	33L5038
1GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM	33L5039
2GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM	33L5040
80GB ATA-100 EIDE HDD*	09N4226
36.4GB 15K Ultra320 SCSI Hot-Swap SL HDD*	06P5776
Remote Supervisor Adapter	09N7585
ServeRAID™-4Mx Ultra160 SCSI Adapter	06P5736
xSeries Cable Chain Technology Cable Kit	06P4792
NetBAY ACT Local Console Manager	1735L04

* Disk not supported in all x335 systems



LIMITED WARRANTY³

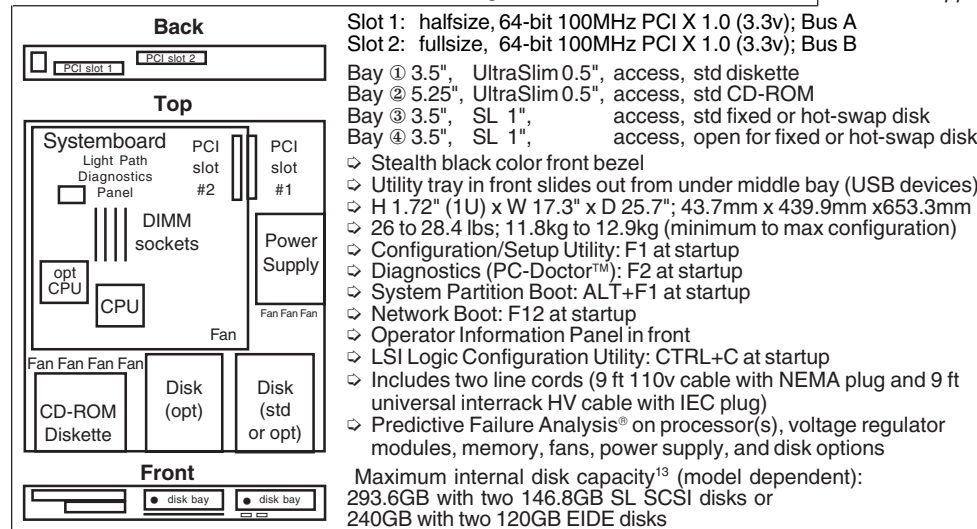
- 3 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 9x5, 4 hr avg response (ServicePac® part num 21P2072)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 21P2073)
 - 3 year IOR 24x7, 2 hr avg response (ServicePac part num 21P2074)
 - 4 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9244)
 - 5 year IOR 9x5, NBD response (ServicePac part num 69P9246)
- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information • = Hot-swap in some models
¹ US models announced April 15, 2003; previous models on February 18, 2003
² Models withdrawn from marketing effective March 2004
³ 533Mhz FSB models may use 400Mhz FSB processors but 400Mhz FSB models may not use 533Mhz FSB processors.

IBM® Type-model	Qty x Processor	L2 cache	L3 cache	Memory	Memory type	Disk	Disk controller	Power Supply	Disk bays	Slots x bays	Ethernet	Limited warranty ³	Available date
8676-L1X	1 x Xeon 2.8B GHz	512KB	0MB	512MB	ECC	None (open)	Ultra320	332W	2 hot-swap	2x4	2 x Gigabit	3 year	Jan 2004
8676-L2X	1 x Xeon 2.8B GHz	512KB	0MB	512MB	ECC	40GB ² EIDE	EIDE	332W	2 fixed	2x4	2 x Gigabit	3 year	Jan 2004
8676-M1X	1 x Xeon 3.06 GHz	512KB	0MB	512MB	ECC	None (open)	Ultra320	332W	2 hot-swap	2x4	2 x Gigabit	3 year	Jan 2004
8676-M2X	1 x Xeon 3.06 GHz	512KB	0MB	512MB	ECC	40GB ² EIDE	EIDE	332W	2 fixed	2x4	2 x Gigabit	3 year	Jan 2004

These models ship standard with **Non-Chipkill DIMMs**. Chipkill is **optionally available** with purchase of 512MB DIMMs or higher.

Positioning	<i>A highly manageable, ultra-dense 1U, 2-way server that delivers performance computing in space-constrained environments</i>																																						
Processor(s)	Up to 1 x Intel® Xeon 3.06GHz¹ with 533MHz ² frontside bus / Hyper-Threading technology																																						
Cache	512KB L2 cache on all models / 1MB L3 cache on some models / on die of processor / at processor speed																																						
SMP support	2-way SMP / up to two Xeon Processors (same speed/cache size)																																						
Implementation	Systemboard contains two Intel 603-pin micro-PGA ZIF sockets, four memory DIMM slots, connector for one PCI-X slot, riser for one PCI-X slot, and integrated SCSI, ethernet, graphics																																						
Memory	512MB std / 8GB max ¹³ / two slots used / two slots available / PC2100 266MHz registered 184-pin ECC DDR-SDRAM DIMMs / four DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / memory bus runs at 2 x 100MHz / Error Checking and Correcting (ECC) (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips) / 16-bit Checksum Chipkill™ optionally available with 512MB or greater DIMMs																																						
SCSI disk controller	<i>All (not used on EIDE models): LSI Logic® 53C1020 / Ultra320 SCSI controller (LVD 320MB/sec) on planar / 64-bit 100MHz PCI-X Bus B / supports RAID-1 mirroring (Embedded Mirroring) with two SCSI disks in front bays / one 16-bit internal channel / 16-bit 68-pin LVD cable from systemboard to backplane for two disks / no external connector</i>																																						
IDE controller / cable	<i>All: Enhanced IDE ATA-100 controller in CSB5 South Bridge / two connectors on planar / one 1-drop IDE cable (CD-ROM) EIDE models: One 2-drop EIDE cable to two disk bays / one 1-drop EIDE cable to CD-ROM</i>																																						
Disk - capacity	<i>SCSI models: none standard / supports up to 15000 rpm disks; EIDE models: 40GB / 7200 rpm / ATA-100 / 8.7ms seek</i>																																						
Disk - bays	<i>SCSI models: two hot-swap / 80-pin SCA-2 connectors / filler panels in each disk bay / all disk bays Ultra320-enabled</i>																																						
Mechanical	EIA 19" Rack (1U⁴) / rack-mount only / supported in 26" deep racks such as the IBM NetBAY™ Rack products																																						
Architecture / chipsets	ServerWorks® Grand Champion™ 4.0 LE / CMIC LE Host Bridge (memory controller and I/O Bridge) / one CIOB-X2 I/O Bridge (IMB2 bus to Host Bridge for PCI-X Bus A with slot 1 and dual ethernet and PCI-X Bus B with slot 2 and Ultra320 / CSB5 South Bridge (Thin IMB to Host Bridge for PCI 2.2 Bus C with graphics controller, EIDE, USB, SMBus, LPC bus to Super I/O) / National Semiconductor® PC87417 Super I/O chip																																						
Bus slots	(See below) two available PCI-X 1.0 / no hot-swap Active™ PCI slots																																						
Ethernet controllers	Two gigabit 10/100/1000 ethernet ports / Broadcom BCM5703 / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-X 64-bit 100MHz Bus A / full duplex / Wake on LAN® / Alert Standard Format 1.0 / two rear RJ-45 ports																																						
CD-ROM / diskette	24X-10X ⁶ CD-ROM / IDE; <i>Diskette: 3.5" 1.44MB diskette drive / dust cover</i>																																						
Rear ports	<i>Rear: one USB (Vers 1.1), C2T in, C2T out, serial (9-pin), two ethernet (RJ-45), one RS-485 (sys mgmt) / no parallel port</i>																																						
Front ports / graphics	<i>Front: two USB (Vers 1.1); Graphics: SVGA / ATI® Rage XL / on planar / 8MB SDRAM std/max / 32-bit 33MHz PCI 2.2 bus</i>																																						
Console interconnects	C2T Interconnect™ cable (10 inch, 245mm) is standard (Keyboard Video Mouse (KVM) chaining cable) / one Cable Chain Technology Cable Kit required at end of chain (a cable with separate keyboard, mouse, monitor connectors)																																						
Systems mgmt	IBM Integrated system management processor (ISMP) / H8S2148 / on planar / provides system and environmental monitoring such as temp, memory, optional disks, fans, power supply / support for optional Remote Supervisor Adapter																																						
Diagnostics	Light Path Diagnostics™ (LED lights indicate failing component) and on-board diagnostics (via PC-Doctor in BIOS)																																						
Security	Power-on password / administrator password / unattended boot / selectable boot / unattended start mode																																						
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director™, and others																																						
Cooling fans	Eight fans (five for system, three on power supply) / variable speed / not redundant or hot-swap																																						
Power supply	332 or 411 watt fixed / universal / auto-sensing / auto-restart																																						
Prerequisites	Monitor, keyboard, mouse, rack, disk (some), operating sys, one Cable Chain Technology (C2T) Kit per chain of servers or NetBAY ACT CAT-5 chaining solutions																																						
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LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 9x5, 4 hr avg response (ServicePac® part num 21P2072)
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 - 3 year IOR 24x7, 2 hr avg response (ServicePac part num 21P2074)
 - 4 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9244)
 - 5 year IOR 9x5, NBD response (ServicePac part num 69P9246)
- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information

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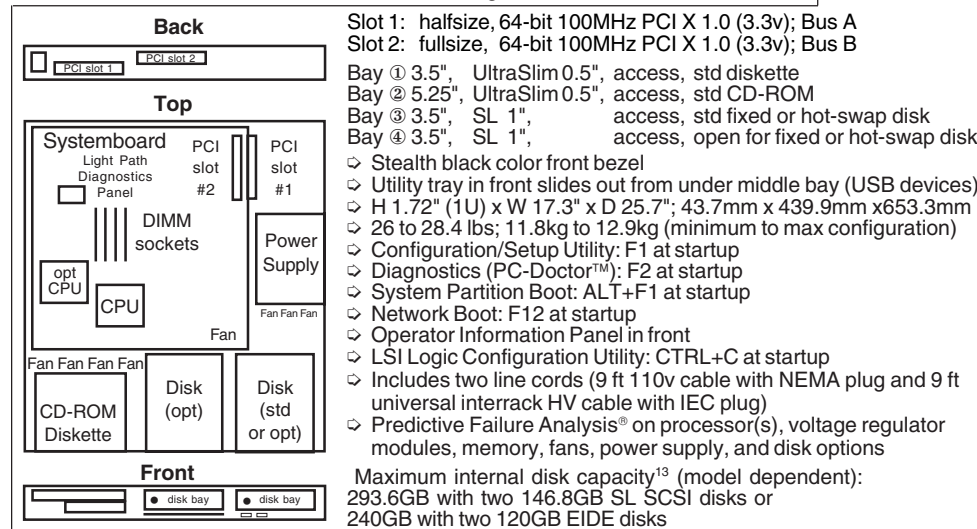
• = Hot-swap in some models

US models announced January 20, 2004

² 533Mhz FSB models may use 400Mhz FSB processors but 400Mhz FSB models may not use 533Mhz FSB processors.

IBM® Type-model	Qty x Processor	L2 cache	L3 cache	Memory	Memory type	Disk	Disk controller	Power Supply	Disk bays	Slots x bays	Ethernet	Limited warranty ³	Available date
8676-J1X	1 x Xeon 3.2 GHz	512KB	2MB	1GB	Chipkill	None (open)	Ultra320	332W	2 hot-swap	2x4	2 x Gigabit	3 year	Feb 2004
8676-J2X	1 x Xeon 3.2 GHz	512KB	2MB	1GB	Chipkill	80GB ² EIDE	EIDE	411W	2 fixed	2x4	2 x Gigabit	3 year	Feb 2004

Positioning	<i>A highly manageable, ultra-dense 1U, 2-way server that delivers performance computing in space-constrained environments</i>																															
Processor(s)	1 x Intel® Xeon 3.2GHz¹ with 533MHz ² frontside bus / Hyper-Threading technology																															
Cache	512KB L2 cache on all models / 2MB L3 cache / on die of processor / at processor speed																															
SMP support	2-way SMP / up to two Xeon Processors (same speed/cache size)																															
Implementation	Systemboard contains two Intel 603-pin micro-PGA ZIF sockets, four memory DIMM slots, connector for one PCI-X slot, riser for one PCI-X slot, and integrated SCSI, ethernet, graphics																															
Memory	1GB std / 8GB max ¹³ / two slots used / two slots available / PC2100 266MHz registered 184-pin ECC DDR-SDRAM DIMMs / four DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / memory bus runs at 2 x 100MHz / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips)																															
SCSI disk controller	<i>All (not used on EIDE models): LSI Logic® 53C1020 / Ultra320 SCSI controller</i> (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X Bus B / supports RAID-1 mirroring (Embedded Mirroring) with two SCSI disks in front bays / one 16-bit internal channel / 16-bit 68-pin LVD cable from systemboard to backplane for two disks / no external connector																															
IDE controller / cable	<i>All: Enhanced IDE ATA-100 controller in CSB5 South Bridge / two connectors on planar / one 1-drop IDE cable (CD-ROM) EIDE models: One 2-drop EIDE cable to two disk bays / one 1-drop EIDE cable to CD-ROM</i>																															
Disk - capacity	<i>SCSI models: none standard / supports up to 15000 rpm disks; EIDE models: 40GB / 7200 rpm / ATA-100 / 8.7ms seek</i>																															
Disk - bays	<i>SCSI models: two hot-swap / 80-pin SCA-2 connectors / filler panels in each disk bay / all disk bays Ultra320-enabled</i>																															
Mechanical	EIA 19" Rack (1U⁴) / rack-mount only / supported in 26" deep racks such as the IBM NetBAY™ Rack products																															
Architecture / chipsets	ServerWorks® Grand Champion™ 4.0 LE / CMIC LE Host Bridge (memory controller and I/O Bridge) / one CIOB-X2 I/O Bridge (IMB2 bus to Host Bridge for PCI-X Bus A with slot 1 and dual ethernet and PCI-X Bus B with slot 2 and Ultra320 / CSB5 South Bridge (Thin IMB to Host Bridge for PCI 2.2 Bus C with graphics controller, EIDE, USB, SMBus, LPC bus to Super I/O) / National Semiconductor® PC87417 Super I/O chip																															
Bus slots	(See below) two available PCI-X 1.0 / no hot-swap Active™ PCI slots																															
Ethernet controllers	Two gigabit 10/100/1000 ethernet ports / Broadcom BCM5703 / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-X 64-bit 100MHz Bus A / full duplex / Wake on LAN® / Alert Standard Format 1.0 / two rear RJ-45 ports																															
CD-ROM / diskette	24X-10X ⁶ CD-ROM / IDE; <i>Diskette: 3.5" 1.44MB diskette drive / dust cover</i>																															
Rear ports	<i>Rear: one USB (Vers 1.1), C2T in, C2T out, serial (9-pin), two ethernet (RJ-45), one RS-485 (sys mgmt) / no parallel port</i>																															
Front ports / graphics	<i>Front: two USB (Vers 1.1); Graphics: SVGA / ATI® Rage XL / on planar / 8MB SDRAM std/max / 32-bit 33MHz PCI 2.2 bus</i>																															
Console interconnects	C2T Interconnect™ cable (10 inch, 245mm) is standard (Keyboard Video Mouse (KVM) chaining cable) / one Cable Chain Technology Cable Kit required at end of chain (a cable with separate keyboard, mouse, monitor connectors)																															
Systems mgmt	IBM Integrated system management processor (ISMP) / H8S2148 / on planar / provides system and environmental monitoring such as temp, memory, optional disks, fans, power supply / support for optional Remote Supervisor Adapter with 20-pin conn on planar for continuous pwr (no ext pwr req)																															
Diagnostics	Light Path Diagnostics™ (LED lights indicate failing component) and on-board diagnostics (via PC-Doctor in BIOS)																															
Security	Power-on password / administrator password / unattended boot / selectable boot / unattended start mode																															
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director™, and others																															
Cooling fans	Eight fans (five for system, three on power supply) / variable speed / not redundant or hot-swap																															
Power supply	332 or 411 watt fixed / universal / auto-sensing / auto-restart																															
Prerequisites	Monitor, keyboard, mouse, rack, disk (some), operating sys, one Cable Chain Technology (C2T) Kit per chain of servers or NetBAY ACT CAT-5 chaining solutions																															
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LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 9x5, 4 hr avg response (ServicePac® part num 21P2072)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 21P2073)
 - 3 year IOR 24x7, 2 hr avg response (ServicePac part num 21P2074)
 - 4 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9244)
 - 5 year IOR 9x5, NBD response (ServicePac part num 69P9246)
- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information

● = Hot-swap in some models

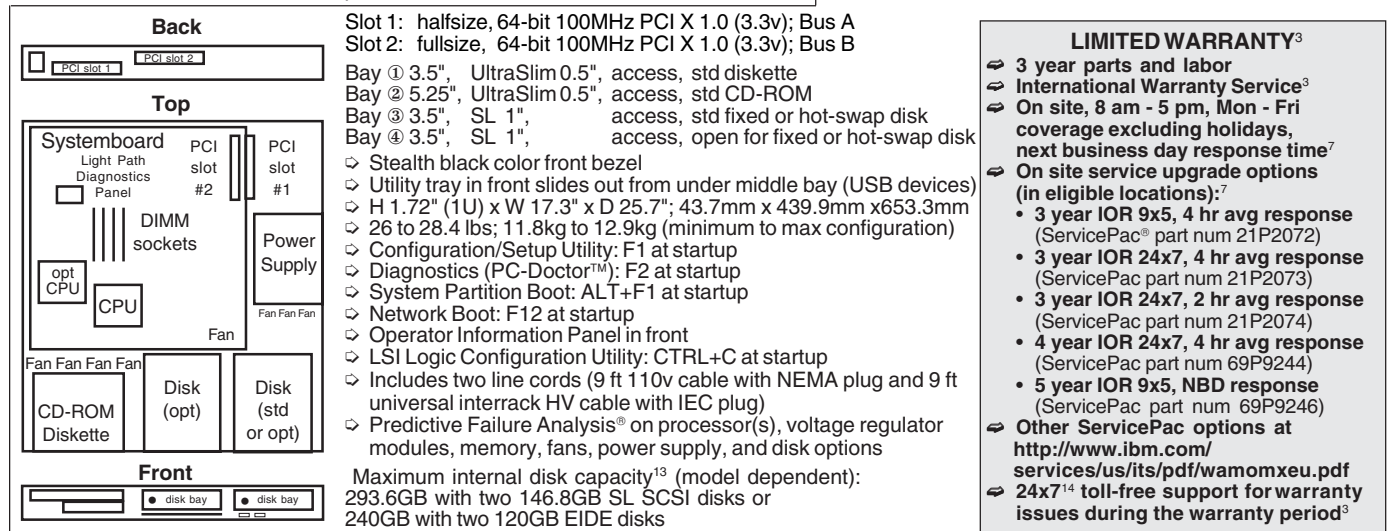
Ⓜ US model announced February 17, 2004

⚡ 533Mhz FSB models may use 400Mhz FSB processors but 400Mhz FSB models may not use 533Mhz FSB processors.

IBM® Type-model	Qty x Processor	L2 cache	FSB MHz	Memory	Memory type	Disk	Disk controller	Hot-swap or fixed disk bays	Slots x bays	Ethernet	Limited warranty ³	Available date
8676-1AX	1 x Xeon 2.8B GHz	512KB	533	512MB	Chipkill	None (open)	Ultra320	2 hot-swap	2x4	2 x Gigabit	3 year	Mar 2003

DC power models are designed for network infrastructures requiring network equipment to support DC power environments

Positioning	<i>A highly manageable, ultra-dense 1U, 2-way server that delivers performance computing in space-constrained environments</i>																																									
Processor(s)	1 x Intel® Xeon 2.8BGHz¹ with 533MHz frontside bus / Hyper-Threading technology																																									
L2 cache	512KB / on die of processor / at processor speed (no L3 cache)																																									
SMP support	2-way SMP / up to two Xeon Processors (same speed/cache size)																																									
Implementation	Systemboard contains two Intel 603-pin micro-PGA ZIF sockets, four memory DIMM slots, connector for one PCI-X slot, riser for one PCI-X slot, and integrated SCSI, ethernet, graphics																																									
Memory	512MB std / 8GB max ¹³ / two slots used / two slots available / PC2100 266MHz registered 184-pin ECC DDR-SDRAM DIMMs / four DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / memory bus runs at 2 x 100MHz / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips)																																									
SCSI disk controller	<i>All (not used on EIDE models): LSI Logic® 53C1020 / Ultra320 SCSI controller (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X Bus B / supports RAID-1 mirroring (Embedded Mirroring) with two SCSI disks in front bays / one 16-bit internal channel / 16-bit 68-pin LVD cable from systemboard to backplane for two disks / no external connector</i>																																									
IDE controller / cable	<i>All: Enhanced IDE ATA-100 controller in CSB5 South Bridge / two connectors on planar / one 1-drop IDE cable (CD-ROM) EIDE models: One 2-drop EIDE cable to two disk bays / one 1-drop EIDE cable to CD-ROM</i>																																									
Disk - capacity	<i>SCSI models: none standard / supports up to 15000 rpm disks; EIDE models: 40GB / 7200 rpm / ATA-100 / 8.7ms seek</i>																																									
Disk - bays	<i>SCSI models: two hot-swap / 80-pin SCA-2 connectors / filler panels in each disk bay / all disk bays Ultra320-enabled</i>																																									
Mechanical Architecture / chipsets	EIA 19" Rack (1U⁴) / rack-mount only / supported in 26" deep racks such as the IBM NetBAY™ Rack products ServerWorks® Grand Champion™ 4.0 LE / CMIC LE Host Bridge (memory controller and I/O Bridge) / one CIOB-X2 I/O Bridge (IMB2 bus to Host Bridge for PCI-X Bus A with slot 1 and dual ethernet and PCI-X Bus B with slot 2 and Ultra320 / CSB5 South Bridge (Thin IMB to Host Bridge for PCI 2.2 Bus C with graphics controller, EIDE, USB, SMBus, LPC bus to Super I/O) / National Semiconductor® PC87417 Super I/O chip																																									
Bus slots	(See below) two available PCI-X 1.0 / no hot-swap Active™ PCI slots																																									
Ethernet controllers	Two gigabit 10/100/1000 ethernet ports / Broadcom BCM5703 / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-X 64-bit 100MHz Bus A / full duplex / Wake on LAN® / Alert Standard Format 1.0 / two rear RJ-45 ports																																									
CD-ROM / diskette	24X-10X ⁶ CD-ROM / IDE; <i>Diskette: 3.5" 1.44MB diskette drive / dust cover</i>																																									
Rear ports	<i>Rear: one USB (Vers 1.1), C2T in, C2T out, serial (9-pin), two ethernet (RJ-45), one RS-485 (sys mgmt) / no parallel port</i>																																									
Front ports / graphics	<i>Front: two USB (Vers 1.1); Graphics: SVGA / ATI® Rage XL / on planar / 8MB SDRAM std/max / 32-bit 33MHz PCI 2.2 bus</i>																																									
Console interconnects	C2T Interconnect™ cable (10 inch, 245mm) is standard (Keyboard Video Mouse (KVM) chaining cable) / one Cable Chain Technology Cable Kit required at end of chain (a cable with separate keyboard, mouse, monitor connectors)																																									
Systems mgmt	IBM Integrated system management processor (ISMP) / H8S2148 / on planar / provides system and environmental monitoring such as temp, memory, optional disks, fans, power supply / support for optional Remote Supervisor Adapter with 20-pin conn on planar for continuous pwr (no ext pwr req)																																									
Diagnostics	Light Path Diagnostics™ (LED lights indicate failing component) and on-board diagnostics (via PC-Doctor in BIOS)																																									
Security	Power-on password / administrator password / unattended boot / selectable boot / unattended start mode																																									
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director™, and others																																									
Cooling fans	Eight fans (five for system, three on power supply) / variable speed / not redundant or hot-swap																																									
Power supply	332 watt (-48 to -60 V dc [direct current]) / auto-sensing / supports dual input sources (two power sources) / not redundant / not hot-swap / auto-restart support																																									
Prerequisites	Monitor, keyb., mouse, rack, disk, operating sys, one C2T Kit per chain of servers or NetBAY ACT CAT-5																																									
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See footnotes for important warranty information

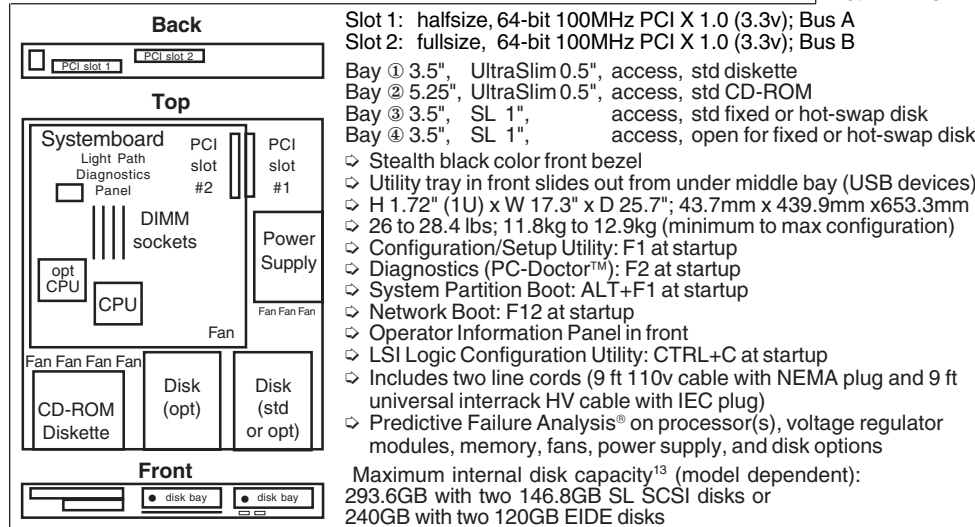
• = Hot-swap

® US models announced February 18, 2003

IBM® Type-model	Qty x Processor	L2 cache	FSB MHz	Memory	Memory type	Disk	Disk controller	Hot-swap or fixed disk bays	Slots x bays	Ethernet	Limited warranty ³	Available date
8676-LAX	1 x Xeon 2.8B GHz	512KB	533	512MB	Chipkill	None (open)	Ultra320	2 hot-swap	2x4	2 x Gigabit	3 year	Jan 2004

DC power models are designed for network infrastructures requiring network equipment to support DC power environments

Positioning	<i>A highly manageable, ultra-dense 1U, 2-way server that delivers performance computing in space-constrained environments</i>											
Processor(s)	1 x Intel® Xeon 2.8BGHz¹ with 533MHz frontside bus / Hyper-Threading technology											
L2 cache	512KB / on die of processor / at processor speed (no L3 cache)											
SMP support	2-way SMP / up to two Xeon Processors (same speed/cache size)											
Implementation	Systemboard contains two Intel 603-pin micro-PGA ZIF sockets, four memory DIMM slots, connector for one PCI-X slot, riser for one PCI-X slot, and integrated SCSI, ethernet, graphics											
Memory	512MB std / 8GB max ¹³ / two slots used / two slots available / PC2100 266MHz registered 184-pin ECC DDR-SDRAM DIMMs / four DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / memory bus runs at 2 x 100MHz / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips). Chipkill available on DIMMs of 512MB or greater only.											
SCSI disk controller	<i>All (not used on EIDE models): LSI Logic® 53C1020 / Ultra320 SCSI controller (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X Bus B / supports RAID-1 mirroring (Embedded Mirroring) with two SCSI disks in front bays / one 16-bit internal channel / 16-bit 68-pin LVD cable from systemboard to backplane for two disks / no external connector</i>											
IDE controller / cable	<i>All: Enhanced IDE ATA-100 controller in CSB5 South Bridge / two connectors on planar / one 1-drop IDE cable (CD-ROM) EIDE models: One 2-drop EIDE cable to two disk bays / one 1-drop EIDE cable to CD-ROM</i>											
Disk - capacity	<i>SCSI models: none standard / supports up to 15000 rpm disks; EIDE models: 40GB / 7200 rpm / ATA-100 / 8.7ms seek</i>											
Disk - bays	<i>SCSI models: two hot-swap / 80-pin SCA-2 connectors / filler panels in each disk bay / all disk bays Ultra320-enabled</i>											
Mechanical Architecture / chipsets	EIA 19" Rack (1U⁴) / rack-mount only / supported in 26" deep racks such as the IBM NetBAY™ Rack products ServerWorks® Grand Champion™ 4.0 LE / CMIC LE Host Bridge (memory controller and I/O Bridge) / one CIOB-X2 I/O Bridge (IMB2 bus to Host Bridge for PCI-X Bus A with slot 1 and dual ethernet and PCI-X Bus B with slot 2 and Ultra320 / CSB5 South Bridge (Thin IMB to Host Bridge for PCI 2.2 Bus C with graphics controller, EIDE, USB, SMBus, LPC bus to Super I/O) / National Semiconductor® PC87417 Super I/O chip											
Bus slots	(See below) two available PCI-X 1.0 / no hot-swap Active™ PCI slots											
Ethernet controllers	Two gigabit 10/100/1000 ethernet ports / Broadcom BCM5703 / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-X 64-bit 100MHz Bus A / full duplex / Wake on LAN® / Alert Standard Format 1.0 / two rear RJ-45 ports											
CD-ROM / diskette	24X-10X ⁶ CD-ROM / IDE; <i>Diskette: 3.5" 1.44MB diskette drive / dust cover</i>											
Rear ports	<i>Rear: one USB (Vers 1.1), C2T in, C2T out, serial (9-pin), two ethernet (RJ-45), one RS-485 (sys mgmt) / no parallel port</i>											
Front ports / graphics	<i>Front: two USB (Vers 1.1); Graphics: SVGA / ATI® Rage XL / on planar / 8MB SDRAM std/max / 32-bit 33MHz PCI 2.2 bus</i>											
Console interconnects	C2T Interconnect™ cable (10 inch, 245mm) is standard (Keyboard Video Mouse (KVM) chaining cable) / one Cable Chain Technology Cable Kit required at end of chain (a cable with separate keyboard, mouse, monitor connectors)											
Systems mgmt	IBM Integrated system management processor (ISMP) / H8S2148 / on planar / provides system and environmental monitoring such as temp, memory, optional disks, fans, power supply / support for optional Remote Supervisor Adapter with 20-pin conn on planar for continuous pwr (no ext pwr req)											
Diagnostics	Light Path Diagnostics™ (LED lights indicate failing component) and on-board diagnostics (via PC-Doctor in BIOS)											
Security	Power-on password / administrator password / unattended boot / selectable boot / unattended start mode											
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director™, and others											
Cooling fans	Eight fans (five for system, three on power supply) / variable speed / not redundant or hot-swap											
Power supply	332 watt (-48 to -60 V dc [direct current]) / auto-sensing / supports dual input sources (two power sources) / not redundant / not hot-swap / auto-restart support											
Prerequisites	Monitor, keyb., mouse, rack, disk, operating sys, one C2T Kit per chain of servers or NetBAY ACT CAT-5											
	OPTIONS											
	Xeon 2.8BGHz/512KB L2 Cache Proc Upg 73P6382											
	2x256MB PC2100 CL2.5 non-Chipkill DIMM 73P2868											
	512MB PC2100 CL2.5 ECC DDR-SDRAM DIMM 33L5038											
	1GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM 33L5039											
	2GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM 33L5040											
	36.4GB 15K Ultra320 SCSI Hot-Swap SL HDD 06P5776											
	Remote Supervisor Adapter 09N7585											
	ServeRAID™-4Mx Ultra160 SCSI Adapter 06P5736											
	Cable Chain Technology (C2T) Cable Kit (2 meter breakout cable and 2 meter KVM chaining cable) 06P4792											
	NetBAY ACT Local Console Manager 1735L04											



LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 9x5, 4 hr avg response (ServicePac® part num 21P2072)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 21P2073)
 - 3 year IOR 24x7, 2 hr avg response (ServicePac part num 21P2074)
 - 4 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9244)
 - 5 year IOR 9x5, NBD response (ServicePac part num 69P9246)
- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information

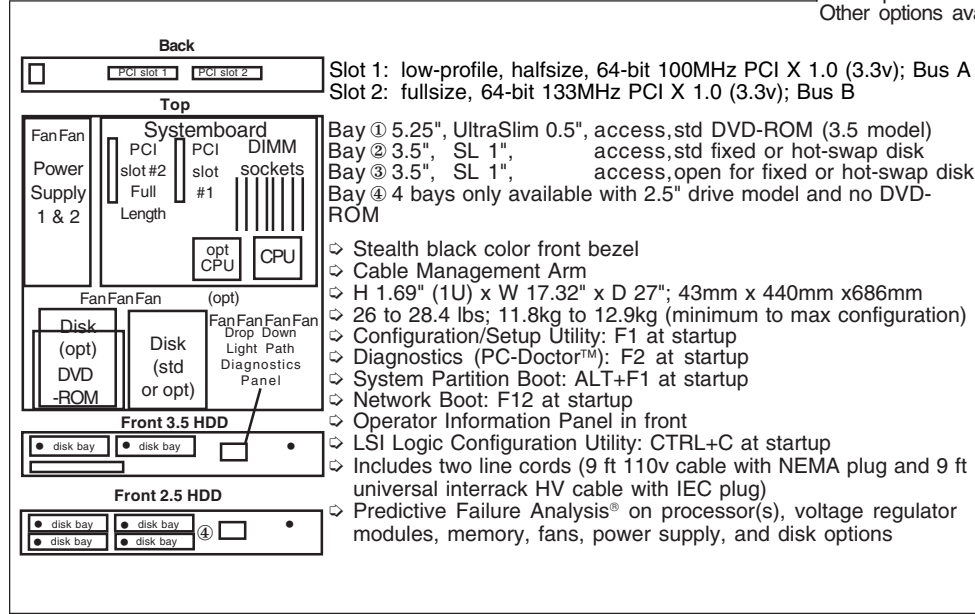
• = Hot-swap

US models announced January 20, 2004

IBM® Type-GAV-model	Qty x Processor	L2 cache	Memory	Memory type	Disk	Disk controller	Power Supply	Disk bays	Slots x bays	Ethernet	Limited warranty ³	Available date
8837-01y-01x	1 x Xeon® 2.8GHz	1MB	512MB	std	None (open 3.5)	Ultra320	585W	2 hot-swap	2x3	2 x Gigabit	3 year	Oct 2004
8837-02y-02x	1 x Xeon 2.8GHz	1MB	512MB	std	None (open 3.5)	SATA	585W	2 simple-sp	2x3	2 x Gigabit	3 year	Oct 2004
8837-11y-11x	1 x Xeon 3.0GHz	1MB	1GB	std	None (open 3.5)	Ultra320	585W	2 hot-swap	2x3	2 x Gigabit	3 year	Oct 2004
8837-41y-41x	1 x Xeon 3.6GHz	1MB	1GB	std	None (open 3.5)	Ultra320	585W	2 hot-swap	2x3	2 x Gigabit	3 year	Oct 2004
8837-4Ay-4Ax	1 x Xeon 3.6GHz	1MB	1GB	std	None (open 2.5)	Ultra320	585W	4 hot-swap	2x4	2 x Gigabit	3 year	Oct 2004
8837-42y-42x	1 x Xeon 3.6GHz	1MB	1GB	std	None (open 3.5)	SATA	585W	2 simple-sp	2x3	2 x Gigabit	3 year	Oct 2004
Positioning	A highly manageable, ultra-dense 1U, 2-way server that delivers performance computing in space-constrained environments											
Processor(s)	1 x Intel® Xeon 2.8, 3.0, 3.2, 3.4, 3.6GHz with 800MHz / 1MB L2 Cache / Extended Memory 64 Technology (EM64T)											
Cache	1MB L2 cache on all models / on die of processor / at processor speed / ECC											
SMP support	2-way SMP / up to two Xeon Processors (same speed/cache size)											
Implementation	Systemboard contains two Intel 604 pin micro-PGA ZIF sockets, eight DIMM slots, two PCI-X slots (one full length 133MHz, one low-profile 100MHz) and integrated SCSI, dual GB ethernet, graphics											
Memory	512MB or 1GB std / 16GB max ¹³ / 8 slots (6 avail) / PC2-3200 400MHz registered 240-pin ECC DDR2-SDRAM DIMMs / eight DIMM gold-conductor slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / Active Memory™ : online spare and memory mirror / ability to support Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ ; corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips; optional on some 1GB (2x512) and greater DIMMS											
SCSI disk controller	LSI Logic® 53C1020 / Ultra320 SCSI controller (LVD 320MB/sec) / on planar / supports RAID-1 mirroring (Embedded Mirroring) with two SCSI disks in front bays / one 16-bit internal channel / no external connector											
SATA disk Controller	Enhanced SATA-150 (150MB/sec) controller / two connectors on planar / two one-drop cables											
IDE controller / cable	one 1-drop EIDE cable to DVD-ROM											
Disk - MAX capacity	SCSI 3.5 : 292GB with two 146GB HDD SCSI 2.5 : four 2.5" 73GB HDD SATA : 500GB with two 250GB HDD											
Disk - bays	SCSI : two hot-swap or four 2.5" hot-swap / 80-pin SCA-2 connectors SATA : 2 simple-swap											
Mechanical Architecture / chipsets	EIA 19" Rack (1U*) / rack-mount only / supported in 26" deep racks such as the IBM NetBAY™ Rack products Intel E7520 / Intel Memory Controller Hub (MCH) / 3 PCI buses (one 64bit/133MHz PCI-X1.0, one 64bit/100MHz PCI-X1.0, and 32bit/33MHz PCI) / Intel PCI-X Bridge (supports 133MHz PCI-X slots 1 & 2, LSI Logic 53C1020) / ICH5R South Bridge (Thin IMB to Host Bridge for graphics controller, EIDE, USB, SMBus, LPC bus to Super I/O) / National PC87427 Super I/O (supports legacy components; keyboard, mouse, serial)											
Bus slots	(See below) two available PCI-X 1.0 / no hot-swap Active™ PCI slots / optional full-length PCI-Express x8 Riser Avail											
Ethernet controllers	Two gigabit 10/100/1000 ethernet ports / Broadcom BCM5721 / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / Alert Standard Format 2.0 / two rear RJ-45 ports											
DVD-ROM / diskette	Some : DVD-ROM / IDE; Diskette : none											
Rear ports	Rear : Two USB (2.0), serial (9-pin), video, two ethernet (RJ-45), one RJ-45 (sys mgmt) / mouse ps2 / keyboard ps2											
Graphics	SVGA / ATI® 7000m / on planar / 16MB SDRAM std/max / 32-bit 33MHz PCI 2.2 bus											
Systems mgmt	IBM Baseboard Management Controller (BMC) / H8S2168 / on planar / provides system and environmental monitoring such as temp, memory, optional disks, fans, power supply / support for optional Remote Supervisor Adapter II Slimline with 20-pin conn on planar for continuous pwr (no ext pwr req)											
Diagnostics	Drop down light path diagnostics Pull out Front panel (LED lights indicate failing component)											
Security	Power-on password / administrator password / unattended boot / selectable boot / unattended start mode											
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director™, and others											
Cooling fans	seven-nine fans / variable speed / hot-swap / redundant											
Power supply	585 watt hot-swap (second Opt)/ universal / auto sensing / auto re-start											
Prerequisites	Monitor, keyboard, mouse, rack, disk (some), operating sys											

Xeon 3.2GHz/1MB L2 Proc Upg	13N0663
Xeon 3.6GHz/1MB L2 Proc Upg	13N0665
512MB (2x256)PC2-3200 CL3 ECC DDR2 RDIMM	73P3523
1GB (2x512)PC2-3200 CL3 ECC DDR2 ChipKill	73P2865
2GB (2x1GB)PC2-3200 CL3 ECC DDR2 ChipKill	73P2866
80GB SATA 7.2K Simple Swap HDD	73P8002
160GB SATA 7.2K Simple Swap HDD	73P8003
73GB 10K Ultra320 SCSI Hot-Swap SL HDD	90P1305
36.4GB 10K Ultra320 SCSI Hot-Swap 2.5" HDD	32P0796
ServeRAID 6i+ adaptor	13N2190
Remote Supervisor Adapter II slimline	73P9341
Second 585W Power supply	90P5280
PCI-Express x8 full-length riser card	22R9293

Other options available at www.ibm.com/pc/us/accessories



LIMITED WARRANTY³

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- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 9x5, 4 hr avg response (ServicePac® part num 21P2072)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 21P2073)
 - 3 year IOR 24x7, 2 hr avg response (ServicePac part num 21P2074)
 - 4 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9244)
 - 5 year IOR 9x5, NBD response (ServicePac part num 69P9246)
- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information
• = Hot-swap in some models

IBM® Type-GAV-model	Qty x Processor	L2 cache	Memory	Disk	Disk controller	Optical	Power Supply	Disk bays	Slots x bays	Ethernet	Limited warranty ³	Available date
8837-15y-15x	1 x Xeon® 3.0GHz	2MB	1GB	None (open 3.5)	Ultra320	DVD	585W	2 hot-swap	2x3	2 x Gigabit	3 year	Mar 2005
8837-1Vy-1Vx	1 x Xeon 3.0GHz	2MB	1GB	None (open 2.5)	Ultra320	None	585W	4 hot-swap	2x4	2 x Gigabit	3 year	Mar 2005
8837-16y-16x	1 x Xeon 3.0GHz	2MB	1GB	None (open 3.5)	SATA	DVD	585W	2 simple-sp	2x3	2 x Gigabit	3 year	Mar 2005
8837-25y-25x	1 x Xeon 3.2GHz	2MB	1GB	None (open 3.5)	Ultra320	DVD	585W	2 hot-swap	2x3	2 x Gigabit	3 year	Mar 2005
8837-35y-35x	1 x Xeon 3.4GHz	2MB	1GB	None (open 3.5)	Ultra320	DVD	585W	2 hot-swap	2x3	2 x Gigabit	3 year	Mar 2005
8837-3Vy-3Vx	1 x Xeon 3.4GHz	2MB	1GB	None (open 2.5)	Ultra320	None	585W	4 hot-swap	2x4	2 x Gigabit	3 year	Mar 2005
8837-36y-36x	1 x Xeon 3.4GHz	2MB	1GB	None (open 3.5)	SATA	DVD	585W	2 simple-sp	2x3	2 x Gigabit	3 year	Mar 2005
8837-45y-45x	1 x Xeon 3.6GHz	2MB	1GB	None (open 3.5)	Ultra320	DVD	585W	2 hot-swap	2x3	2 x Gigabit	3 year	Mar 2005
8837-E1y-E1x	1 x Xeon 3.0GHz	2MB	2GB	None (open 3.5)	Ultra320	DVD	585W	2 hot-swap	2x3	2 x Gigabit	3 year	Mar 2005
8837-E2y-E2x	1 x Xeon 3.0GHz	2MB	2GB	None (open 2.5)	Ultra320	None	585W	4 hot-swap	2x4	2 x Gigabit	3 year	Mar 2005

Positioning Processor(s) Cache SMP support Implementation
A highly manageable, ultra-dense 1U, 2-way server that delivers performance computing in space-constrained environments
1 x Intel® Xeon 3.0, 3.2, 3.4, 3.6GHz with 800MHz / 2MB L2 Cache / Extended Memory 64 Technology (EM64T)
2MB L2 cache on all models / on die of processor / at processor speed / ECC
2-way SMP / up to two Xeon Processors (same speed/cache size)
 Systemboard contains two Intel 604 pin micro-PGA ZIF sockets, eight DIMM slots, two PCI-X slots (one full length 133MHz, one low-profile 100MHz) and integrated SCSI or SATA, dual GB ethernet, graphics

Memory **1GB** std / 16GB max¹³ / 8 slots (6 avail) / **PC2-3200** 400MHz registered 240-pin ECC DDR2-SDRAM DIMMs / eight DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / **Active Memory™**: online spare and memory mirror / **Error Checking and Correcting (ECC)**

SCSI disk controller **LSI Logic® 53C1020 / Ultra320 SCSI controller** (LVD 320MB/sec) / on planar / supports **RAID-1 mirroring** (Embedded Mirroring) with two SCSI disks in front bays / one 16-bit internal channel / no external connector
 SATA disk Controller Enhanced SATA-150 (150MB/sec) controller / two connectors on planar / two one-drop cables
 IDE controller / cable Disk - MAX capacity one 1-drop EIDE cable to DVD-ROM
SCSI 3.5: 292GB with two 146GB HDD **SCSI 2.5:** four 2.5" 73GB HDD **SATA:** 500GB with two 250GB HDD
SCSI: two hot-swap or four 2.5" hot-swap / 80-pin SCA-2 connectors **SATA:** 2 simple-swap

Mechanical Architecture / chipsets **EIA 19" Rack (1U⁴)** / rack-mount only / supported in 26" deep racks such as the IBM NetBAY™ Rack products
Intel E7520 / Intel Memory Controller Hub (MCH) / 3 PCI buses (one 64bit/133MHz PCI-X1.0, one 64bit/100MHz PCI-X1.0, and 32bit/33MHz PCI) / Intel PCI-X Bridge (supports 133MHz PCI-X slots 1 & 2, LSI Logic 53C1020) / ICH5R South Bridge (Thin IMB to Host Bridge for graphics controller, EIDE, USB, SMBus, LPC bus to Super I/O) / National PC87427 Super I/O (supports legacy components; keyboard, mouse, serial)
 Bus slots (See below) two available PCI-X 1.0 / no hot-swap Active™ PCI slots / optional full-length PCI-Express x8 Riser Avail
 Ethernet controllers Two gigabit 10/100/1000 ethernet ports / Broadcom BCM5721 / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / Alert Standard Format 2.0 / two rear RJ-45 ports
Some: DVD-ROM / IDE; *Diskette:* none
 Rear ports **Rear:** Two USB (2.0), serial (9-pin), video, two ethernet (RJ-45), one RJ-45 (sys mgmt) / mouse ps2 / keyboard ps2
 Graphics SVGA / ATI® 7000m / on planar / 16MB SDRAM std/max / 32-bit 33MHz PCI 2.2 bus

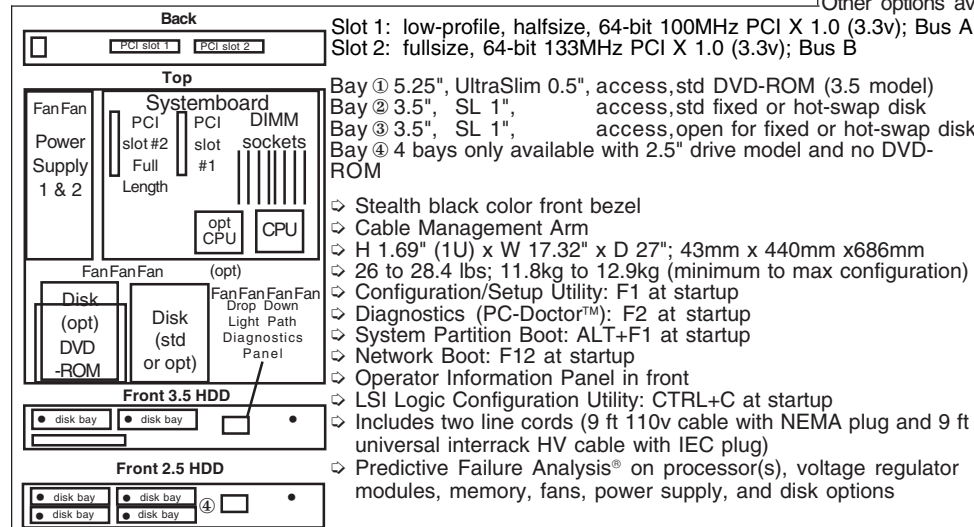
Systems mgmt **IBM Baseboard Management Controller (BMC)** / H8S2168 / on planar / provides system and environmental monitoring such as temp, memory, optional disks, fans, power supply / support for optional Remote Supervisor Adapter II Slimline with 20-pin conn on planar for continuous pwr (no ext pwr req)

Diagnostics **Drop down light path diagnostics** Pull out Front panel (LED lights indicate failing component)

Security Power-on password / administrator password / unattended boot / selectable boot / unattended start mode

Software **ServerGuide™** (CD-ROM installation and configuration utilities), IBM Director™, and others

Xeon 3.2GHz/2MB L2 Proc Upg	25R8905
Xeon 3.6GHz/2MB L2 Proc Upg	13N0667
512MB (2x256)PC2-3200 CL3 ECC DDR2 RDIMM	73P3523
1GB (2x512)PC2-3200 CL3 ECC DDR2 ChipKill	73P2865
2GB (2x1GB)PC2-3200 CL3 ECC DDR2 ChipKill	73P2866
80GB SATA 7.2K Simple Swap HDD	73P8002
160GB SATA 7.2K Simple Swap HDD	73P8003
73GB 10K Ultra320 SCSI Hot-Swap SL HDD	90P1305
36.4GB 10K Ultra320 SCSI Hot-Swap 2.5" HDD	32P0796
ServeRAID 6i+ adaptor	13N2190
Remote Supervisor Adapter II slimline	73P9341
Second 585W Power supply	90P5280
PCI-Express x8 full-length riser card	22R9293
Other options available at www.ibm.com/pc/us/accessories	



LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 9x5, 4 hr avg response (ServicePac® part num 21P2072)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 21P2073)
 - 3 year IOR 24x7, 2 hr avg response (ServicePac part num 21P2074)
 - 4 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9244)
 - 5 year IOR 9x5, NBD response (ServicePac part num 69P9246)
- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

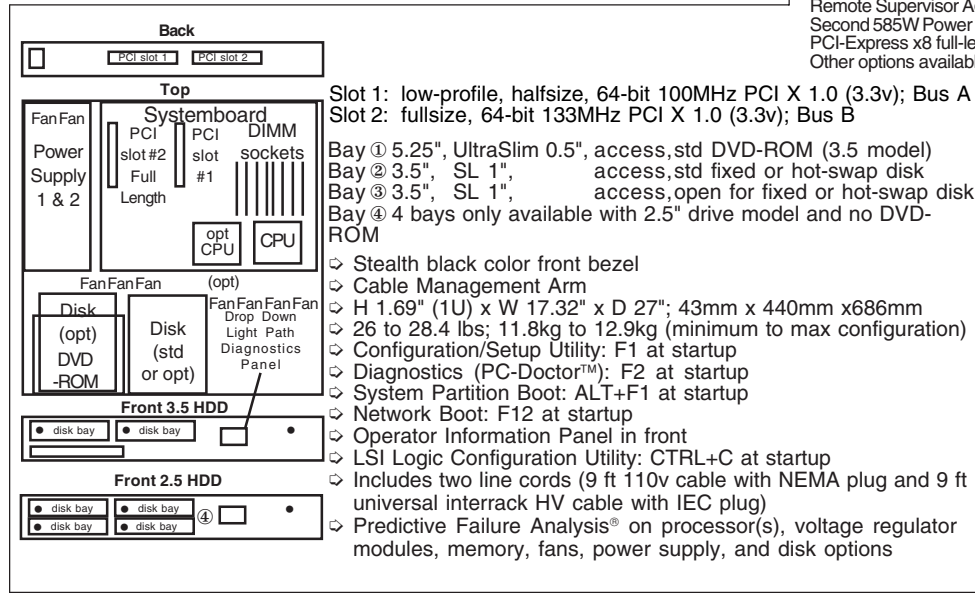
See footnotes for important warranty information
 • = Hot-swap in some models

IBM® Type-GAV-model	Qty x Processor/Core	L2 cache	Memory	Disk	Disk controller	Optical	Power Supply	Disk bays	Slots x bays	Ethernet	Limited warranty ³	Available date
8837-05U-05x	1 x Xeon™ 2.8GHz/SC	2MB	1GB	None(open 3.5)	Ultra320	DVD	585W	2 hot-swap	2x3	2 x Gigabit	3 year	Sep 2005
8837-0WU-0Wx	1 x Xeon 2.8GHz/SC	2MB	1GB	None(open 2.5)	Ultra320	None	585W	4 hot-swap	2x3	2 x Gigabit	3 year	Sep 2005
8837-06U-06x	1 x Xeon 2.8GHz/SC	2MB	1GB	None(open 3.5)	SATA	DVD	585W	2 simple-swap	2x3	2 x Gigabit	3 year	Sep 2005
8837-55U-55x	1 x Xeon 3.8GHz/SC	2MB	1GB	None(open 3.5)	Ultra320	DVD	585W	2 hot-swap	2x3	2 x Gigabit	3 year	Sep 2005
8837-5VU-5Vx	1 x Xeon 3.8GHz/SC	2MB	1GB	None(open 2.5)	Ultra320	None	585W	4 hot-swap	2x3	2 x Gigabit	3 year	Sep 2005
8837-56U-56x	1 x Xeon 3.8GHz/SC	2MB	1GB	None(open 3.5)	SATA	DVD	585W	2 simple-swap	2x3	2 x Gigabit	3 year	Sep 2005
8837-E4U-E4x	1 x Xeon 2.8GHz/SC	2MB	1GB	None(open 3.5)	Ultra320	DVD	585W	2 hot-swap	2x3	2 x Gigabit	3 year	Sep 2005
8837-E5U-E5x	1 x Xeon 3.8GHz/SC	2MB	1GB	None(open 3.5)	Ultra320	DVD	2x585W	2 hot-swap	2x3	2 x Gigabit	3 year	Sep 2005
8837-D1U-D1x	1 x Xeon 2.8GHz/DC	2x2MB	2GB	None(open 3.5)	Ultra320	DVD	585W	2 hot-swap	2x3	2 x Gigabit	3 year	Nov 2005
8837-DAU-DAx	1 x Xeon 2.8GHz/DC	2x2MB	2GB	None(open 2.5)	Ultra320	DVD	585W	4 hot-swap	2x3	2 x Gigabit	3 year	Nov 2005
8837-1RU-1Rx	1 x Xeon 3.0GHz/SC	2MB	1GB	None(open 2.5)	Ultra320	DVD	585W	4 hot-swap	2x3	2 x Gigabit	3 year	April 2006

Positioning Processor(s)	A highly manageable, ultra-dense 1U, 2-way server that delivers performance computing in space-constrained environments Intel® Xeon Processor up to 3.8GHz Single Core 800MHz FSB / Xeon Processor 2.8GHz Dual Core 800MHz FSB / All Optimized for Extended Memory 64 Technology (EM64T) / Hyper-Threading	
Cache	2MB L2 Cache std on Single Core / 2x2MB L2 Cache std on Dual Core / on die of processor / at processor speed / ECC	
SMP support Implementation	2-way SMP / up to two Xeon Processors (same speed/cache size) Systemboard contains two Intel 604 pin micro-PGA ZIF sockets, eight DIMM slots, two PCI-X slots (one full length 133MHz, one low-profile 100MHz) and integrated SCSI or SATA, dual GB ethernet, graphics	
Memory	1GB std / 16GB max ¹³ / 8 slots (6 avail) / PC2-3200 400MHz registered 240-pin ECC DDR2-SDRAM DIMMs / eight DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / Active Memory™ : online spare and memory mirror / Error Checking and Correcting (ECC)	
SCSI disk controller	LSI Logic® 53C1020 / Ultra320 SCSI controller (LVD 320MB/sec) / on planar / supports RAID-1 mirroring (Embedded Mirroring) with two SCSI disks in front bays / one 16-bit internal channel / no external connector	
SATA disk Controller	Enhanced SATA-150 (150MB/sec) controller / two connectors on planar / two one-drop cables	
IDE controller / cable	one 1-drop EIDE cable to DVD-ROM	
Disk - MAX capacity	SCSI 3.5: 292GB with two 146GB HDD SCSI 2.5: four 2.5" 73GB HDD SATA: 500GB with two 250GB HDD	
Disk - bays	SCSI: two hot-swap or four 2.5" hot-swap / 80-pin SCA-2 connectors SATA: 2 simple-swap	
Mechanical Architecture / chipsets	EIA 19" Rack (1U⁴) / rack-mount only / supported in 26" deep racks such as the IBM NetBAY™ Rack products Intel E7520 / Intel Memory Controller Hub (MCH) / 3 PCI buses (one 64bit/133MHz PCI-X1.0, one 64bit/100MHz PCI-X1.0, and 32bit/33MHz PCI) / Intel PCI-X Bridge (supports 133MHz PCI-X slots 1 & 2, LSI Logic 53C1020) / ICH5R South Bridge (Thin IMB to Host Bridge for graphics controller, EIDE, USB, SMBus, LPC bus to Super I/O) / National PC87427 Super I/O (supports legacy components; keyboard, mouse, serial)	
Bus slots	(See below) two available PCI-X 1.0 / no hot-swap Active™ PCI slots / optional full-length PCI-Express x8 Riser Avail	
Ethernet controllers	Two gigabit 10/100/1000 ethernet ports / Broadcom BCM5721 / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / Alert Standard Format 2.0 / two rear RJ-45 ports	
DVD-ROM / diskette	Some: DVD-ROM / IDE; Diskette: none	
Rear ports	Rear: Two USB (2.0), serial (9-pin), video, two ethernet (RJ-45), one RJ-45 (sys mgmt) / mouse ps2 / keyboard ps2	
Graphics	SVGA / ATI® 7000m / on planar / 16MB SDRAM std/max / 32-bit 33MHz PCI 2.2 bus	
Systems mgmt	IBM Baseboard Management Controller (BMC) / H8S2168 / on planar / provides system and environmental monitoring such as temp, memory, optional disks, fans, power supply / support for optional Remote Supervisor Adapter II Slimline with 20-pin conn on planar for continuous pwr (no ext pwr req)	
Diagnostics	Drop down light path diagnostics Pull out Front panel (LED lights indicate failing component)	
Security	Power-on password / administrator password / unattended boot / selectable boot / unattended start mode	
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director™, and others	
Cooling fans	Calibrated Vektored Cooling™ / Std: seven fans; Max: nine / variable speed / hot-swap / redundant	
Power supply	585 watt hot-swap (second Opt)/ universal / auto sensing / auto re-start	
Prerequisites	Monitor, keyboard, mouse, rack, disk (some), operating sys	

Xeon 2.8GHz SC 2MB L2 Proc Upg	40K2509
Xeon 2.8GHz DC 4MB L2 Proc Upg	40K2501
Xeon 3.0GHz SC 2MB L2 Proc Upg	40K2510
Xeon 3.2GHz SC 2MB L2 Proc Upg	40K2511
Xeon 3.4GHz SC 2MB L2 Proc Upg	40K2512
Xeon 3.6GHz SC 2MB L2 Proc Upg	40K2513
Xeon 3.8GHz SC 2MB L2 Proc Upg	40K2514
512MB (2x256)PC2-3200 CL3 ECC DDR2 RDIMM	73P3523
1GB (2x512)PC2-3200 CL3 ECC DDR2 ChipKill	39M5821
(2x1GB)PC2-3200 CL3 ECC DDR2 ChipKill	39M5809
80GB SATA 7.2K Simple Swap HDD	73P8002
160GB SATA 7.2K Simple Swap HDD	73P8003
73GB 10K Ultra320 SCSI Hot-Swap SL HDD	90P1305
36.4GB 10K Ultra320 SCSI Hot-Swap 2.5" HDD	32P0796
ServeRAID 6i+ adaptor	13N2190
Remote Supervisor Adapter II slimline	73P9341
Second 585W Power supply	90P5280
PCI-Express x8 full-length riser card	22R9293

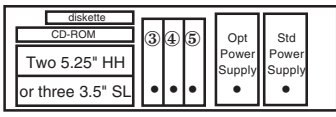
Other options available at www.ibm.com/pc/us/accessories



LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 9x5, 4 hr avg response (ServicePac® part num 21P2072)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 21P2073)
 - 3 year IOR 24x7, 2 hr avg response (ServicePac part num 21P2074)
 - 4 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9244)
 - 5 year IOR 9x5, NBD response (ServicePac part num 69P9246)
- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

IBM® Type-model	Qty x Processor	Memory	Disk	SCSI controller	Mechanical	Slots x bays	Hot -swap disk bays	Ethernet	Available date
8656-6RY	1 x Pentium® III 1GHz/133	128MB	None	2 x Ultra160	3U rack	5 slots x 7 bays	3 hot-swap	10/100 ethernet	Oct 2000
Intel® processor(s) L2 cache Implementation	1 x Pentium® III 1GHz¹ with 133MHz Front Side Bus 256KB std and max / ECC / at processor speed / processor and L2 cache in Single Edge Cartridge (SECC2) Motherboard contains two Intel Slot 1 connectors for SECC2 cartridges (open Slot 1 used by terminator), one VRM socket (one VRM integrated), four DIMM sockets, PCI slots, and integrated subsystems								
SMP support	2-way SMP via second identical processor / upgrade via SECC2 into second Slot 1 CPU connector								
Memory - std / max Memory - sockets Memory - features Memory - support	128MB std / 4GB max 4 sockets / 3 available / ECC / (all have Error Checking and Correcting (ECC) memory controller) / non-interleaved SDRAM / 133MHz / four 168-pin gold-plated DIMM 3.3 volt sockets / PC133-compliant Supports registered SDRAM ECC DIMMs only (128, 256, 512MB, and 1GB)								
SCSI disk controller	Adaptec® AHA-7899 / dual channel Wide Ultra160 SCSI controller (LVD 160MB/sec) / Ultra 160/m / on planar / 64-bit PCI / no hardware RAID standard								
SCSI channels	Two internal 16-bit channels / both internal (no external) <i>SCSI Channel A:</i> 16-bit 68-pin LVD cable from controller to backplane <i>Channel B:</i> 16-bit 68-pin interface (not used)								
IDE controller / cable	Single Primary IDE / one connector on planar / one 1 drop IDE cable (CD-ROM)								
Disk - capacity	None standard / supports 7200-10000 rpm disks / 1 backplane / SAF-TE 1.0-compliant								
Disk - bays	Three hot-swap / 80-pin SCA-2 connectors / common tray with EXP300 and later systems								
Mechanical Rack support Bus slots (see below)	EIA 19" Rack (3U⁴) x 26-inch deep Rack systems supported in IBM Netfinity Racks PCI 2.1 (33MHz) / dual peer PCI / 64-bit PCI (three PCI slots, SCSI controller) / 32-bit PCI (two PCI slots, graphics, ethernet, South Bridge)							<i>All models: Max int disk capacity: 218.4GB² with six 36.4GB SL disks</i>	
Chip set	ServerWorks® ServerSet III LE chip set / NB6635 North Bridge 3.0LE / IB6566 South Bridge for IDE, USB, ISA bus for Service Processor and Super I/O National Semiconductor® PC97317VUL (diskette, parallel, serial, keyboard, mouse)								
Bays / available Status LEDs	(See diagram below): 7 bays / three hot-swap bays Operator Information Panel (in front) / includes power-on, disk, ethernet, information, system error								
10/100 ethernet CD-ROM / diskette Serial / parallel / USB Graphics controller	AMD® Am79C975 / on planar / 10BaseT, 100BaseTX / full duplex / RJ-45 connector / 2 front LEDs 24X-10X ⁶ CD-ROM / multisession / IDE interface / bootable; <i>Diskette:</i> 3.5" 1.44MB diskette drive <i>Serial:</i> Three 9-pin (one for Mgmt Processor) <i>Parallel:</i> One (EPP, ECP) / IEEE 1284 <i>USB:</i> Two ports (Version 1.1) SVGA / PCI 2.1 bus / S3® Savage4 (on planar) / 8MB SDRAM std/max / 1280x1024 at 16M colors at 100Hz / DDC2B								
Security	Power-on password / administrator password / system owner's name / hinged bezel to cover disk bays, power button, and reset button / unattended boot / selectable boot / systems mgmt security (user log-in password, read-only or read/write access, dial back) / unattended start mode								
Systems management	Integrated Advanced System Mgmt Processor / on planar / provides remote console and mgmt / allows diagnostic, reset, POST, and auto recovery functions / monitors temperature, fans, and power supplies / rear knockout for planar to RJ-11 cable (from optional Sys Mgmt Proc Interconnect Cable Kit)								
Diagnostics	Diagnostics LED Panel (under cover) / Light Path Diagnostics™ provides an LED map to failing component / system board error LEDs / diagnostics in ROM by pressing F2 at startup for PC-Doctor								
Software	ServerGuide™ (CD-ROM installation and config utilities), AntiVirus software, APC PowerChute Plus, IBM Director, others								
Upgradeable EEPROMs	BIOS (remote), diagnostics (remote), and Mgmt Processor on motherboard can be upgraded								
Keyboard / mouse Power supply	None standard <i>Std:</i> one 270 watt hot-swap; <i>Max:</i> two 270 watt hot-swap / front access / redundant with two power supplies / worldwide / voltage-sensing / auto-restart / fans in each power supply					Pentium III 1GHz/133MHz/256KB Proc Upg 19K4640 128MB SDRAM ECC DIMM 133MHz (RDIMM II) 33L3123 256MB SDRAM ECC DIMM 133MHz (RDIMM II) 33L3125 512MB SDRAM ECC DIMM 133MHz (RDIMM II) 33L3127 1GB SDRAM ECC DIMM 133MHz (RDIMM II) 33L3129 Netfinity 270W Hot-Swap Redundant Pwr Supply 37L6880 Netfinity 3-Pack Ultra160 Hot-Swap Exp Kit 33L5050 18.2GB 15K-rpm Ultra160 SCSI Hot-Swap HDD 19K0656 18.2GB 10K-4 Ultra160 SCSI Hot-Swap SL HDD 37L7205 36.4GB 10K-4 Ultra160 SCSI Hot-Swap SL HDD 37L7206 Sys Mgmt Proc Interconnect Cable Kit 03K9309			
Fans	Three (two in middle, one in rear) / hot-swap / redundant (any single fan can fail while maintaining cooling) / PFA / fan failure signals Diagnostic LED and Mgmt Processor / fan in each power supply								
Prerequisites	Monitor, disk, network oper system, keyboard, mouse, rack								

<p>Slot 1: fullsize, 32-bit 33MHz PCI 2.1 (5v), Bus A Slot 2: fullsize, 32-bit 33MHz PCI 2.1 (5v), Bus A Slot 3: fullsize, 64-bit 33MHz PCI 2.1 (5v), Bus B Slot 4: fullsize, 64-bit 33MHz PCI 2.1 (5v), Bus B Slot 5: fullsize, 64-bit 33MHz PCI 2.1 (5v), Bus B</p>  <p>Bay ① 3.5", US 0.8", access, diskette Bay ② 3.5", US 0.8", access, CD-ROM Bay ③ 3.5", SL 1", access, hot swap Bay ④ 3.5", SL 1", access, hot swap Bay ⑤ 3.5", SL 1", access, hot swap Bay ⑥ 5.25", HH 1.6", access* Bay ⑦ 5.25", HH 1.6", access*</p> <p>Bays 6 through 7 support two HH devices or an optional Netfinity 3-Pack Ultra 160 Hot-Swap Expansion Kit to convert these two bays into three hot-swap disk bays</p>	<ul style="list-style-type: none"> ⇨ Rail system enables devices (CD-ROM, diskette, tape drives) to snap in and out without screws ⇨ Configuration/Setup Utility invoked by pressing F1 at startup ⇨ SCSISelect near startup by pressing CTRL+A ⇨ Several hardcopy publications ⇨ Predictive failure analysis on disk options, memory, processors, VRMs, power supplies, and fans in conjunction with Netfinity Director can alert the system administrator of an imminent component failure ⇨ Rack: H 5.25" x W 16.3" x D 26.0" ⇨ 44 to 62 pounds ⇨ Stealth black color ⇨ Two 5.25" bays use rails (no screws) for devices 	<p>LIMITED WARRANTY³</p> <ul style="list-style-type: none"> ⇨ 3 year parts and labor ⇨ International Warranty Service³ ⇨ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷ ⇨ 3 year on site warranty service upgrade options (in eligible locations):⁷ <ul style="list-style-type: none"> • 24 hr x 7 day coverage, 4 hour response time • 24 hr x 7 day coverage, 2 hour response time ⇨ IBM Server Start Up Support ⇨ 24 hour x 7 day¹⁴ telephone, electronic, and internet support
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* For a copy of IBM's Statement of Limited Warranty, call 1-800-772-2227
 • = Hot-swap
 US model withdrawn effective December 2001
 No warranties are expressed or implied in this summary
 (X340) © IBM Corp. November 2001

IBM® Type-model	Qty x Processor	L2 cache	Memory	Disk	SCSI controller	Mechanical	Slots x bays (hot-swap)	Power supply	Ethernet	Available date
8669-1RX	1 x Pentium® III 1.0GHz/133	256KB	256MB	None	2 x Ultra160	3U rack	5x7 (3 hot-swap)	1 hot-swap	10/100	Jun 2001
8669-2RX	1 x Pentium III 1.13GHz/133	512KB	256MB	None	2 x Ultra160	3U rack	5x7 (3 hot-swap)	1 hot-swap	10/100	Jun 2001
8669-4RX	1 x Pentium III 1.26GHz/133	512KB	256MB	None	2 x Ultra160	3U rack	5x7 (3 hot-swap)	1 hot-swap	10/100	Aug 2001
8669-5RX	1 x Pentium III 1.4GHz/133	512KB	256MB	None	2 x Ultra160	3U rack	5x7 (3 hot-swap)	1 hot-swap	10/100	Mar 2002

Positioning Processor(s) *Rack-optimized 3U server engineered for business-critical reliability and 2-way scalability*
1 x Intel® Pentium® III 1.0, 1.13, 1.26, 1.4GHz with 133MHz frontside bus / upgrade from slower to faster proc supported
 L2 cache **256KB or 512KB** std and max / ECC / at processor speed / processor and L2 cache in Flip Chip Pin Grid Array (FC-PGA2)
 Implementation Motherboard contains two Intel PGA370 sockets, four DIMM sockets, five PCI slots, and integrated subsystems
 SMP support **2-way SMP** via second identical proc (1 to 1.26GHz supported) / upgrade via FC-PGA2 into second PGA370 socket

Memory **256MB std / 4GB¹³ max** / 4 sockets / 2 available / **ECC** (all have Error Checking and Correcting (ECC) memory controller) / matched pairs required / two-way interleaving / **SDRAM / 133MHz** / four 168-pin gold-plated sockets / PC133-compliant / supports registered SDRAM ECC DIMMs only

SCSI disk controller **Adaptec® AHA-7899 / dual channel Wide Ultra160 SCSI controller** (LVD 160MB/sec) / Ultra 160/m / on planar / 64-bit PCI / supports IBM ServeRAID™ adapters (no hardware RAID standard)

SCSI channels Two internal 16-bit channels / both internal (no external)

IDE controller / cable Single Primary IDE South Bridge / one connector on planar / one 1-drop IDE cable (CD-ROM)

Disk - capacity **None standard** / supports 7200-15000 rpm disks / one backplane

Disk - bays Three hot-swap / 80-pin SCA-2 connectors / three additional hot-swap disk bays with Kit 33L5050

Mechanical **EIA 19" Rack (3U*) x 26-inch deep**

Rack support Rack systems supported in IBM NetBAY™ Racks (such as NetBAY42 SR, NetBay42 ER) / no rack to tower conversion

Bus slots (See below) three peer PCI / no hot-swap Active™ PCI slots

Chipset **ServerWorks® HE-SL chipset** / NB6576 North Bridge for CIOB and PCI A (slot, graphics, south bridge) / NB6555 Champion I/O Bridge (CIOB) for PCI Bus B (slots, ethernet) and C (slots, SCSI) / IB6566 South Bridge for IDE, USB, ISA bus for Super I/O National Semiconductor® PC97317VUL (diskette, serial, keyboard, mouse)

Bays (See diagram below): 7 bays / two 5.25" HH bays (Kit converts to 3 HS) / one diskette bay / 3 HS bays

Status LEDs **Operator Information Panel** (in front) / includes power-on, disk, ethernet, information, system error

10/100 ethernet Intel 82550 / on planar / 10BaseT, 100BaseTX, 100BaseFX / full duplex / supports Wake on LAN® and Alert on LAN™ 2

CD-ROM / diskette 24X-10X⁶ CD-ROM / multisession / IDE interface / bootable; *Diskette*: 3.5" 1.44MB diskette drive / dust cover

Rear ports *Serial*: three 9-pin (one disabled); *USB*: two ports (Version 1.1); keyboard; mouse; no parallel port; *Adv Sys Mgmt*: two RJ-45

Graphics controller SVGA / PCI 2.1 bus / S3® Savage4 (on planar) / 8MB SDRAM std/max / 1280x1024 at 16M colors at 100Hz / 15-pin D-shell

Security Power-on password / administrator password / unattended boot / selectable boot

Systems mgmt **IBM integrated system management processor** (ISMP) / Hitachi® H8S2148 / on planar using SMBus / monitors temperature, fans, voltage, and power supplies / support for optional IBM Remote Supervisor Adapter with 20-pin connector on planar for continuous power (no external power required)

Diagnostics **Diagnostics LED Panel** (under cover) / **Light Path Diagnostics™** provides an LED map to failing component / system board error LEDs / diagnostics in ROM by pressing F2 at startup for PC-Doctor™

Software **ServerGuide™** (CD-ROM installation and configuration utilities), AntiVirus software, IBM Director, others

Keyboard / mouse None (since rack-based)

Power supply *Std*: one 270 watt hot-swap; *Max*: two 270 watt hot-swap / **front access** / redundant with two power supplies / worldwide / voltage-sensing / auto-restart / fans in each power supply

Fans Three (two in middle, one in rear) / multispeed / **hot-swap** / redundant (any single fan can fail while maintaining cooling) / PFA / fan failure signals Diagnostic LED and Mgmt Processor / fan in each power supply / fan on each Pentium III processor

Prerequisites Monitor, disk, network operating system, rack, keyboard, mouse

All models: Max int disk capacity:
 440.4GB² with six 73.6GB SL disks with
 3-Pack Ultra160 Hot-Swap Expansion Kit

Pentium III 1GHz/133MHz/256KB Proc Upg	24P3511
Pentium III 1.13GHz-S/133MHz/512KB Proc Upg	24P3512
Pentium III 1.26GHz-S/133MHz/512KB Proc Upg	25P2600
Pentium III 1.4GHz-S/133MHz/512KB Proc Upg	48P7467
128MB SDRAM ECC DIMM 133MHz RDIMM	33L3320
256MB SDRAM ECC DIMM 133MHz RDIMM	33L3322
512MB SDRAM ECC DIMM 133MHz RDIMM	33L3324
1GB SDRAM ECC DIMM 133MHz RDIMM	33L3326
Netfinity® 270W Hot-Swap Redundant Pwr Supp	37L6880
3-Pack Ultra160 Hot-Swap Expansion Kit	33L5050
Remote Supervisor Adapter	09N7585
IBM ServeRAID™-4Mx Ultra160 SCSI PCI Adptr	06P5736
18.2GB 15K rpm Ultra160 SCSI Hot-Swap HDD	19K0656
36.4GB 10K-4 Ultra160 SCSI Hot-Swap SL HDD	37L7206
73.4GB 10K-4 Ultra160 SCSI Hot-Swap SL HDD	06P5756
IBM T540 15" Flat Panel Monitor (black)	9511AG4
Other options at ibm.com/pc/us/accessories	

- Slot 1: fullsize, 32-bit 33MHz PCI 2.1 (5v), Bus A
- Slot 2: fullsize, 64-bit 33MHz PCI 2.1 (5v), Bus B
- Slot 3: fullsize, 64-bit 33MHz PCI 2.1 (5v), Bus B
- Slot 4: fullsize, 64-bit 66MHz PCI 2.1 (3.3v), Bus C
- Slot 5: fullsize, 64-bit 66MHz PCI 2.1 (3.3v), Bus C



3U Rack

- Bay ① 3.5", US 0.8", access, diskette
- Bay ② 3.5", US 0.8", access, CD-ROM
- Bay ③ 3.5", SL 1", access, hot-swap
- Bay ④ 3.5", SL 1", access, hot-swap
- Bay ⑤ 3.5", SL 1", access, hot-swap
- Bay ⑥ 5.25", HH 1.6", access*
- Bay ⑦ 5.25", HH 1.6", access*

Bays 6 through 7 support two HH devices or an optional 3-Pack Ultra160 Hot-Swap Expansion Kit 33L5050 to convert these two bays into three hot-swap disk bays

- Rail system enables devices (CD-ROM, diskette, tape drives) to snap in and out without screws
- Configuration/Setup Utility invoked by pressing F1 at startup
- SCSISelect near startup by pressing CTRL+A
- PC-Doctor diagnostics by pressing F2 at startup
- Several hardcopy publications
- Predictive Failure Analysis® on disk options, memory, processors, VRMs, power supplies, and fans in conjunction with IBM Director can alert the system administrator of an imminent component failure
- Rack: H 5.25" x W 16.3" x D 26.0"
- 44 to 62 pounds
- Stealth black color
- Two 5.25" bays use rails (no screws) for devices

LIMITED WARRANTY³

- **3 year parts and labor**
- **International Warranty Service³**
- **On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷**
- **3 year on site warranty service upgrade options (in eligible locations):⁷**
 - **9 hr coverage, Mon-Fri excluding holidays, 4 hr response time (ServicePac® 21P2077)**
 - **24 hr x 7 day coverage, 4 hour average response time (ServicePac 21P2078)**
 - **24 hr x 7 day coverage, 2 hour average response time (ServicePac 21P2093)**
- **24x7¹⁴ toll-free support for warranty issues during the warranty period³**

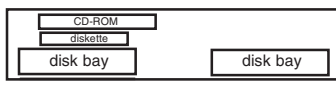
See footnotes for important warranty information

US models announced on June 26 and August 7, 2001, and February 12, 2002

US models withdrawn effective March, June, September, or October 2002

• = Hot-swap (HS)

IBM® Type-model	Qty x Processor	L2 cache	Memory	Ultra160 SCSI disk	SCSI controller	Mechanical	Slots x bays	Fixed disk bays	Alarm Panel	Power supply	Compliant	Available date
8827-14X	2 x Pentium® III 1.26GHz	512KB	2GB	1 x 36.4GB ² 10K	2 x Ultra160	2U ⁴ rack	6x4	2 fixed	Yes	DC power	NEBS-3	Apr 2002
<p>DC power models are designed for network infrastructures requiring network equipment to support DC power environments</p>												
Positioning	Network Equipment Building System (NEBS) level 3-compliant for telecommunications carrier-grade environments											
Processor(s)	2 x Intel® Pentium® III 1.26GHz-S with 133MHz frontside bus											
L2 cache	512KB std and max / ECC / at processor speed / processor and L2 cache in Flip Chip Pin Grid Array (FC-PGA2)											
Implementation	Motherboard contains two Intel PGA370 sockets, six DIMM sockets, two PCI riser connectors, and integrated subsystems											
SMP support	2-way SMP via second identical processor is standard											
Memory	2GB std / 6GB ¹³ max / 6 sockets / 4 available (ships with two 1GB DIMMs) / Error Checking and Correcting (ECC) memory controller / matched pairs required / two-way interleaving / SDRAM / 133MHz / six 168-pin gold-plated sockets / PC133-compliant / supports registered SDRAM ECC DIMMs only											
SCSI disk controller	Adaptec® AHA-7899W / dual channel Wide Ultra160 SCSI controller (LVD 160MB/sec) / on planar / 64-bit PCI											
SCSI channels	SCSI Channel A: external 16-bit .8mm VHDCI 68-pin external connector (no cables) SCSI Channel B: one internal 16-bit 68-pin LVD cable from controller to two-bay disk drive carrier											
SCSI disk	1 x 36GB Ultra160 SCSI, 10K rpm, 4.9ms read seek, S.M.A.R.T. ⁵											
SCSI disk bays	Two fixed disk bays (not hot-swap) in disk drive carrier that slides out from front											
IDE controller / cable	EIDE ATA-33 controller in South Bridge / one connector on planar / one 1-drop IDE cable (to CD-ROM)											
Mechanical	EIA 19" Rack (2U ⁴) x 20-inch deep											
Rack support	Designed for installation in a two-post, 19" rack unit only (not supported in IBM NetBAY™ Racks) / ships with rack mount kit (See below) three full height full length 64-bit 33MHz slots / three low-profile half length 64-bit 66MHz PCI slots / PCI 2.2 / peer PCI buses / no hot-swap Active™ PCI slots											
PCI bus slots												
Chipset	ServerWorks® III HE-SL chipset / CNB20HE-SL North Bridge for CIOB and PCI A 32-bit 33MHz (graphics, ethernet, South Bridge) / NB6555 Champion I/O Bridge (CIOB20) for PCI Bus B (slots, SCSI) and C (slots) / CSB5 South Bridge for EIDE, USB, LPC bus for Super I/O National Semiconductor PC8741 (diskette, serial, keyboard) and Baseboard Management Controller											
Bays	(See diagram below): 4 bays / two disk bays (not hot-swap) / one CD-ROM bay / one diskette bay											
10/100 ethernet	2 x Intel 82550 / on planar / full duplex / supports Wake on LAN®, PXE 2.0 Boot Agent, Adapter Fault Tolerance Failover											
CD-ROM / diskette	24X-10X ⁶ CD-ROM / multisession / IDE interface / bootable; Diskette: 3.5" 1.44MB diskette drive / dust cover											
Rear ports	Two USB ports (Version 1.1); RJ-45 serial; PS/2 keyboard; two RJ-45 ethernet; DB-15 graphics; 68-pin SCSI; DB-15 male connector for front panel alarm relay contacts / no parallel port / mouse connects to USB port (or keyboard port with standard Y-splitter cable)											
Graphics controller	SVGA / PCI bus / ATI® Rage XL (on planar) / 8MB SDRAM std/max / 1600x1280 at 16M colors at 85Hz / 15-pin D-shell											
Security	Power-on password / admin password / unattended boot / selectable boot / boot without keyboard / diskette write protect											
Alarm panel	External alarm panel in front bezel provides 24x7 surveillance of critical, major and minor errors and power outages / four alarm panel LEDs: power alarm fault, critical alarm fault, major alarm fault, minor alarm fault											
Status LEDs	Operator Information Panel (in front) / includes switches (NMI, power, reset) and status LEDs (NIC, disk, main power)											
Systems mgmt	Integrated service processor (Baseboard Management Controller) / on planar / failures or thresholds in fans, memory, processors, temperature, voltage, and power supplies activate alarm panel LEDs /											
Diagnostics	LED diagnostics and on-board diagnostics providing an LED map to a failing component											
OS support	Red Hat Linux® 7.1											
Software ship group	Resource CD (CD-ROM installation and configuration utilities, Intel Server Control server management software, Product Guide), PC-Doctor™ diagnostics diskette, and IBM Director (on separate CD)											
Keyboard / mouse	None (since rack-based)				512MB SDRAM ECC DIMM 133MHz RDIMM				33L3324			
Power supply	Std: two; max: two / accessible from rear / 350 watt (-48 to -60 V dc [direct current]) / supports dual input sources (two power sources) / redundant / hot-swap / auto-restart support				1GB SDRAM ECC DIMM 133MHz RDIMM				33L3326			
Fans	Four fans / multispeed / not hot-swap / not redundant / fan failure signals front panel alarm LED / fan in each power supply / fan on each Pentium III processor				36.4GB 10K Ultra160 SCSI SL HDD				06P5751			
Prerequisites	Appropriate dc power source and customer supplied wiring, monitor, keyboard, mouse, rack, operating system				IBM E54 (13.8" viewable) FST Monitor (black)				633147N			
					IBM Sleek Two-Button Mouse (black)				28L3673			
					IBM 84-key Space Saver Keyboard (black)				28L3644			
					Other options at ibm.com/pc/us/accessories							

<p>Slot 1: fullsize, 64-bit 33MHz PCI 2.2 (5v), Bus B</p> <p>Slot 2: fullsize, 64-bit 33MHz PCI 2.2 (5v), Bus B</p> <p>Slot 3: fullsize, 64-bit 33MHz PCI 2.2 (5v), Bus B</p> <p>Slot 4: low-profile, 64-bit 66MHz PCI 2.2 (3.3v), Bus C</p> <p>Slot 5: low-profile, 64-bit 66MHz PCI 2.2 (3.3v), Bus C</p> <p>Slot 6: low-profile, 64-bit 66MHz PCI 2.2 (3.3v), Bus C</p>	<p>➤ Raven black color (front bezel)</p> <p>➤ Configuration/Setup Utility invoked by pressing F2 at startup</p> <p>➤ SCSISelect near startup by pressing CTRL+A</p> <p>➤ PC-Doctor™ diagnostics on diskette</p> <p>➤ Several hardcopy publications</p> <p>➤ H 3.5" x W 17.5" x D 20.0"</p> <p>➤ H 89 mm x W 445 mm x D 508 mm</p> <p>➤ 34 to 37 pounds (15.4 to 16.8 kg)</p> <p>➤ IPMI 1.5 and WfM 2.0-compliant</p>	<p>LIMITED WARRANTY³</p> <p>↔ 1 year parts and labor</p> <p>↔ International Warranty Service³</p> <p>↔ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷</p> <p>↔ 1 year on site warranty service upgrade options (in eligible locations):⁷</p> <ul style="list-style-type: none"> • 9 hr coverage, Mon-Fri excluding holidays, 4 hr response time (No ServicePac® part number) • 24 hr x 7 day coverage, 4 hour average response time (No ServicePac part number) • 24 hr x 7 day coverage, 2 hour average response time (No ServicePac part number) <p>↔ 24x7¹⁴ toll-free support for warranty issues during the warranty period³</p>
 <p>2U Rack</p> <p>Bay ① 3.5", 0.5", access, std diskette</p> <p>Bay ② 3.5", 0.5", access, std CD-ROM</p> <p>Bay ③ 3.5", SL 1", no access, std disk</p> <p>Bay ④ 3.5", SL 1", no access, optional disk</p>	<p>All models: Max int disk capacity: 72.8GB² with two 36.4GB SL disks</p>	

See footnotes for important warranty information
US model announced March 19, 2002

IBM® Type-model	Qty x Processor	L2 cache Memory	Ultra320 SCSI disk	SCSI controller	Mechanical	Slots x Disk Bays	Alarm Panel	Power supply	Compliant	Available date
8847-14X	2 x Pentium® Xeon 2.4GHz	512KB 1GB	1 x 73.4GB ² 10K	2 x Ultra320	2U ⁴ rack	6x3 2 HS	Yes	DC power	NEBS-3	Jul 2004
8847-24X	2 x Pentium Xeon 2.4GHz	512KB 2GB	1 x 146.8GB 10K	2 x Ultra320	2U rack	6x3 2 HS	Yes	DC power	NEBS-3	Jul 2004

DC power models are designed for network infrastructures requiring network equipment to support DC power environments

Positioning	<i>Network Equipment Building System (NEBS) level 3-compliant for telecommunications carrier-grade environments</i>									
Processor(s)	2 x Intel® Pentium® Xeon 2.4GHz with 533MHz frontside bus									
L2 cache	512KB std and max / ECC / at processor speed / processor and L2 cache in Flip Chip Pin Grid Array (FC-PGA2)									
Implementation	Motherboard contains two Intel Socket 604 INT3/FCPGA, six DIMM sockets, two PCI riser connectors, and integrated SMP support									
SMP support	via second identical processor is standard									
Memory	Up to 2GB std / 12GB¹³ max / 266MHz SDRAM / Six 168-pin sockets / Two sockets used / Four sockets available / ships with two 512 GB or 1GB DIMMs / Error Checking and Correcting (ECC) memory controller / matched pairs required / two-way interleaving / optional 2GB upgrade kit available by special bid									
SCSI disk controller	Adaptec® AIC-7902W / dual channel Wide Ultra320 SCSI controller (LVD 320MB/sec) / on planar / 64-bit PCI									
SCSI channels	SCSI Channel A: external 16-bit .8mm VHDCI 68-pin external connector (no cables) SCSI Channel B: one internal 16-bit 68-pin LVD cable from controller to two-bay disk drive carrier									
SCSI disk	1 x 73.4GB or 146.8GB Ultra320 SCSI, 10K rpm, 4.9ms read seek, S.M.A.R.T. ⁵									
SCSI disk bays	Two fixed disk bays (not hot-swap) in disk drive carrier that slides out from front									
IDE controller / cable	EIDE ATA-66 controller in South Bridge / one connector on planar / one 1-drop IDE cable (to CD-ROM)									
Mechanical	EIA 19" Rack (2U⁴) x 20-inch deep									
Rack support	Designed for installation in a two-post, 19" rack unit only (not supported in IBM NetBAY™ Racks) / ships with rack mount kit									
PCI bus slots	(See below) three full height full length 64-bit 133MHz slots / three low-profile half length 64-bit 66MHz PCI slots / PCI 2.2 / peer PCI buses / no hot-swap Active™ PCI slots									
Chipset	Intel® E7501 chipset / E7501 MCH North Bridge for CIOB and PCI A 64-bit 33MHz (graphics, ethernet, South Bridge) / P64Hz PCI Bus B (slots, SCSI) and C (slots) / ICH3-S South Bridge for EIDE, USB, LPC bus for Super I/O National Semiconductor PC87417 (serial, keyboard) and Baseboard Management Controller									
Bays	(See diagram below): 3 bays / two disk bays (hot-swap) / one CD-ROM bay									
10/100 ethernet	2 x Intel 82546 / on planar / full duplex / supports Wake on LAN®, PXE 2.0 Boot Agent, Adapter Fault Tolerance Failover									
CD-ROM / diskette	24X-10X ⁶ CD-ROM / multisession / IDE interface / bootable									
Rear ports	Two USB ports (Version 1.1); RJ-45 serial; PS/2 keyboard; two RJ-45 ethernet; DB-15 graphics; 68-pin SCSI; DB-15 male connector for front panel alarm relay contacts / no parallel port / mouse connects to USB port (or keyboard port with standard Y-splitter cable)									
Graphics controller	SVGA / PCI bus / ATI® Rage XL (on planar) / 8MB SDRAM std/max / 1600x1280 at 16M colors at 85Hz / 15-pin D-shell									
Security	Power-on password / admin password / unattended boot / selectable boot / boot without keyboard									
Alarm panel	External alarm panel in front bezel provides 24x7 surveillance of critical, major and minor errors and power outages / four alarm panel LEDs: power alarm fault, critical alarm fault, major alarm fault, minor alarm fault									
Status LEDs	Operator Information Panel (in front) / includes switches (NMI, power, reset) and status LEDs (NIC, disk, main power)									
Systems mgmt	Integrated service processor (Baseboard Management Controller) / on planar / failures or thresholds in fans, memory, processors, temperature, voltage, and power supplies activate alarm panel LEDs /									
Diagnostics	LED diagnostics and on-board diagnostics providing an LED map to a failing component									
OS support	Microsoft Windows 2000, Windows 2003 Advanced Server / Red Hat AS 2.1 / SLES									
Software ship group	Resource CD (CD-ROM installation and configuration utilities, Intel Server Control server management software, Product Guide)									
Keyboard / mouse	None (since rack-based)					2GB PC2100 DDR ECC RDIMM Memory Kit 73P4126				
Power supply	Std: one (14X) or two (24X); max: two / accessible from rear					Other options available via special Bid				
Fans	480 watt (-48 to -60 V dc [direct current]) / supports dual input sources (two power sources) / redundant / hot-swap / auto-restart support									
Prerequisites	Four fans / multispeed / not hot-swap / not redundant / fan failure signals front panel alarm LED / fan in each power supply / fan on each Pentium III processor Appropriate DC power source and customer supplied wiring, monitor, keyboard, mouse, rack, operating system									

<p>Slot 1: fullsize, 64-bit 64MHz PCI-X (5v), Bus B Slot 2: fullsize, 64-bit 64MHz PCI-X (5v), Bus B Slot 3: fullsize, 64-bit 64MHz PCI-X (5v), Bus B Slot 4: low-profile, 64-bit 133MHz PCI-X (3.3v), Bus C Slot 5: low-profile, 64-bit 133MHz PCI-X (3.3v), Bus C Slot 6: low-profile, 64-bit 133MHz PCI-X (3.3v), Bus C</p> <p style="text-align: center;">2U Rack</p> <p>Bay ② 3.5", 0.5", access, std CD-ROM Bay ③ 3.5", SL 1", no access, std disk Bay ④ 3.5", SL 1", no access, optional disk</p>	<ul style="list-style-type: none"> ⇨ Raven black color (front bezel) ⇨ Configuration/Setup Utility invoked by pressing F2 at startup ⇨ SCSISelect near startup by pressing CTRL+A ⇨ PC-Doctor™ diagnostics on diskette ⇨ Several hardcopy publications ⇨ H 3.45" x W 17.14" x D 20.0" ⇨ H 87.6 mm x W 435.3 mm x D 508 mm ⇨ 34 to 37 pounds (15.4 to 16.8 kg) 	<p style="text-align: center;">LIMITED WARRANTY³</p> <ul style="list-style-type: none"> ⇨ 3/3 year parts and labor ⇨ International Warranty Service³ ⇨ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷ ⇨ 2 year on site warranty service upgrade options (in eligible locations):⁷ <ul style="list-style-type: none"> • 9 hr coverage, Mon-Fri excluding holidays, 4 hr response time 96P2122 • 24 hr x 7 day coverage, 4 hour average response time 96P2123 • 24 hr x 7 day coverage, 2 hour average response time 96P2124 ⇨ 24x7¹⁴ toll-free support for warranty issues during the warranty period³
<p><i>All models:</i> Max int disk capacity: 293.6GB² with two 146.8GB SL disks</p>		

See footnotes for important warranty information

US model announced June 15, 2004

⇨ Model withdrawn from marketing effective April 2005

IBM Type-model	Qty x Processor	L2 cache	Memory	Memory type	Disk	SCSI controller	Mechanical	Slots x bays (hot-swap bays)	Power supply	Ethernet	Available date
8670-11X	1 x Xeon	2.0GHz	512KB	512MB	Chipkill	None	2 x Ultra320 2U ⁴ rack 5x8	(6 hot-swap)	1 x hot-swap	2 x Gigabit	Jul 2002
8670-21X	1 x Xeon	2.2GHz	512KB	512MB	Chipkill	None	2 x Ultra320 2U rack 5x8	(6 hot-swap)	1 x hot-swap	2 x Gigabit	Jul 2002
8670-31X	1 x Xeon	2.4GHz	512KB	512MB	Chipkill	None	2 x Ultra320 2U rack 5x8	(6 hot-swap)	1 x hot-swap	2 x Gigabit	Jul 2002

Positioning *A rack-dense 2-way server delivering high availability, scalability and expandability for application-serving Web environments*
Processor(s) **1 x Intel Xeon. Processor 2.0, 2.2, or 2.4GHz²** with 400MHz frontside bus / Hyper-Threading technology
L2 cache
SMP support
Implementation Systemboard contains two Intel 603-pin micro-PGA ZIF sockets, four memory DIMM slots, two low-profile PCI-X slots, slot for standard PCI riser card (with two PCI-X slots and one PCI slot), and integrated SCSI, ethernet, graphics

Memory **512MB** std / 8GB max¹³ / two slots used / two slots available / two total power supplies required when using 2GB DIMMs **PC2100** 266MHz registered 184-pin ECC DDR-SDRAM DIMMs / four DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / memory bus runs at 2 x 100MHz / **Error Checking and Correcting (ECC)** via **16-bit Checksum Chipkill**. (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips)

SCSI disk controller **LSI Logic 53C1030 / dual channel Ultra320 SCSI controller** (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X / supports **RAID-1 mirroring** (Embedded Mirroring) with up to one hot-spare disk / shared with optional IBM ServeRAID. -6i Controller for low-cost RAID 0, 1, 1E, 5, 00, 10, 1E0, 50 (installed only in Slot 2)

SCSI channels Two 16-bit channels (one internal and one external) / **SCSI Channel A:** 16-bit 68-pin LVD cable from systemboard to backplane for six disks; **Channel B:** 16-bit 68-pin interface to support external SCSI devices via external SCSI 0.8mm VHDCI connector / supports optional ServeRAID adapters with external connector(s)

IDE controller / cable Enhanced IDE ATA-100 controller in CSB5 South Bridge / one connector on planar / one 1-drop IDE cable (CD-ROM)
Disk - capacity None standard / supports 7200-15000 rpm disks / one backplane
Disk - bays Six hot-swap / 80-pin SCA-2 connectors / filler panels installed in each disk bay / all disk bays Ultra320-enabled

Mechanical **EIA 19" Rack (2U⁴)** / rack-mount only / supported in IBM NetBAY. Rack products / no rack to tower conversion
Chipset **ServerWorks Grand Champion. 4.0 LE** / CMIC LE Host Bridge (memory controller and I/O Bridge) / two CIOB-X2 I/O Bridges (IMB2 bus to Host Bridge for PCI Bus A with low profile slots 1, 2, and Ultra320 and ethernet controllers; IMB2 bus to Host Bridge for PCI Bus B with slots 3 and 4 on riser card) / CSB5 South Bridge (Thin IMB to Host Bridge for PCI 2.2 bus C with slot 5 (on riser card) and graphics controller, EIDE, USB, SMBus, LPC bus to Super I/O) / NS PC87417 Super I/O
Bus slots (See below) Four available PCI-X 1.0 / one available PCI 2.2 32-bit 33MHz slot / no hot-swap Active. PCI slots

Ethernet controller Two gigabit 10/100/1000 ethernet ports (dual port) / Intel 82546EB / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN / Alert Standard Format 1.0 / two RJ-45 ports in rear

CD-ROM / diskette 24X-10X⁶ CD-ROM / IDE; *Diskette:* 3.5" 1.44MB diskette drive / dust cover
Rear ports *Rear:* two USB (Vers 1.1), keyboard, mouse, serial (9-pin), graphics (DB-15), two ethernet (RJ-45), two RJ-45 (sys mgmt) / no parallel port

Front port / graphics *Front:* one USB (Vers 1.1); *Graphics:* SVGA / ATI Rage XL / on planar / 8MB SDRAM std/max / 32-bit 33MHz PCI 2.2 bus

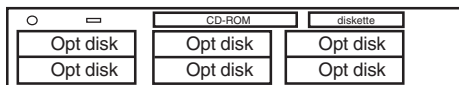
Security Power-on password / administrator password / unattended boot / selectable boot sequence

Systems mgmt **IBM Integrated system management processor (ISMP)** / H8S2148 / on planar / provides system and environmental monitoring such as temp, optional disks, fans, power supp / supports optional Remote Supervisor Adapter with 20-pin connector on riser for continuous power (no ext power reqd)
Diagnostics **Light Path Diagnostics.** panel providing LED map to failing part (under top cover) / Information LED Panel in front
Software **ServerGuide.** (CD-ROM installation and configuration utilities), IBM Director systems mgmt, others

Keyboard / mouse None standard (because rack-based)
Power supply *Std:* one 350 watt / hot-swap; *Max:* two 350 watt / hot-swap / *All:* rear access / redundant with two power supplies / worldwide / voltage-sensing / auto-restart

Fans *Std:* five fans; *Max:* eight (three fans with optional second power supply) / redundant with eight fans installed; *All:* variable speed / hot-swap / PFA
Prerequisites Monitor, keyboard, mouse, SCSI disk, rack

<p>Slot 1: low-profile, 64-bit 100MHz 3.3v PCI-X, not hot, Bus A Slot 2: low-profile, 64-bit 100MHz 3.3v PCI-X, not hot, Bus A* Slot 3: full, 64-bit 133MHz 3.3v PCI-X, not hot-swap, Bus B Slot 4: full, 64-bit 133MHz 3.3v PCI-X, not hot-swap, Bus B Slot 5: half, 32-bit 33MHz 5v PCI 2.2, not hot-swap, Bus C** * Extended slot for optional IBM ServeRAID-5i Controller ** Primarily for optional Remote Supervisor Adapter</p>	<p>Quick release adapter slots (no screws) Configuration/Setup Utility: F1 at startup Diagnostics (PC-Doctor.): F2 at startup System Partition Boot: ALT+F1 at startup Network Boot: F12 at startup LSI Logic Configuration Utility: CTRL+C at startup Front indicators LEDs: Power-on LED, SCSI bus activity LED, system identification LED, information LED, and system-error LED Predictive failure analysis on disk options, memory, processors, VRMs, power supplies, and fans in conjunction with IBM Director can alert the system administrator of an imminent component failure Rack: H 3.36" x W 17.5" x D 27.5" H 85.4mm x W 443.6mm x D 698mm 44 to 62 lbs / 21.09 to 28.12 kg Stealth black color</p>	<p>LIMITED WARRANTY³ 3 year parts and labor International Warranty Service³ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷ 3 year on site warranty service upgrade options (in eligible locations):⁷ • 9 hr coverage, Mon-Fri excluding holidays, 4 hr response time (ServicePac 21P2077) • 24 hr x 7 day coverage, 4 hour average response time (ServicePac 21P2078) • 24 hr x 7 day coverage, 2 hour average response time (ServicePac 21P2093) • Other ServicePac options at ibm.com/services/its/us/source/wamomxeu.pdf 24x7¹⁴ toll-free support for warranty issues during the warranty period³</p>
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- Bay 3.5", 0.5", access, std diskette
- Bay 5.25", 0.5", access, std CD-ROM
- Bay 3.5", SL 1", access, hot-swap, open for disk
- Bay 3.5", SL 1", access, hot-swap, open for disk
- Bay 3.5", SL 1", access, hot-swap, open for disk
- Bay 3.5", SL 1", access, hot-swap, open for disk
- Bay 3.5", SL 1", access, hot-swap, open for disk
- Bay 3.5", SL 1", access, hot-swap, open for disk

Bays 3 through 8 support six SL disks via SCA-2 connectors

All models: Max int disk capacity: 880.0GB² with six 146.8GB SL disks

See footnotes for important warranty information = Hot-swap (X345A) . IBM Corp. July 2002
 US models announced July 16, 2002
 US models withdrawn effective January 2003 (21X), April 29, 2003 (11X) or December 30, 2003 (31X)

IBM® Type-model	Qty x Processor	L2 Cache	L3 Cache	Memory	Disk	SCSI controller	Form Factor	Slots x bays (hot-swap bays)	Power supply	Ethernet	Available date
8670-51X	1 x Xeon™ 2.67GHz	512KB	0MB	512MB	None	2 x Ultra320	2U ⁴	5x8 (6 hot-swap)	1 x 350W hot-swap	2 x Gigabit	Feb 2003
8670-61X	1 x Xeon 2.8BGHz	512KB	0MB	512MB	None	2 x Ultra320	2U	5x8 (6 hot-swap)	1 x 350W hot-swap	2 x Gigabit	Feb 2003
8670-71X	1 x Xeon 3.06GHz	512KB	0MB	512MB	None	2 x Ultra320	2U	5x8 (6 hot-swap)	1 x 512W hot-swap	2 x Gigabit	May 2003
8670-91X	1 x Xeon 3.06GHz	512KB	1MB	512MB	None	2 x Ultra320	2U	5x8 (6 hot-swap)	1 x 512W hot-swap	2 x Gigabit	Aug 2003
8670-G1X	1 x Xeon 3.2GHz	512KB	1MB	1GB	None	2 x Ultra320	2U	5x8 (6 hot-swap)	1 x 512W hot-swap	2 x Gigabit	Nov 2003
Positioning	A rack-dense 2-way server delivering high availability, scalability and expandability for application-serving Web environments										
Processor(s)	Up to 1 x Intel® Xeon™ Processor 3.2GHz with 533MHz frontside bus / Hyper-Threading technology										
L2/L3 cache	512KB L2 Cache / Up to 1MB L3 Cache / Both on die of processor / Both at processor speed										
SMP support	2-way SMP / up to two Xeon Processors (same speed/cache size)										
Implementation	Systemboard contains two Intel 603-pin micro-PGA ZIF sockets, four memory DIMM slots, two low-profile PCI-X slots, slot for standard PCI riser card (with two PCI-X slots and one PCI slot), and integrated SCSI, ethernet, graphics										
Memory	512MB or 1GB std / 8GB max / two slots used / two slots available / two total power supplies required when using 2GB DIMMs PC2100 266MHz registered 184-pin ECC DDR-SDRAM DIMMs / four DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / memory bus runs at 2 x 133MHz / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips)										
SCSI disk controller	LSI Logic® 53C1030 / dual channel Ultra320 SCSI controller (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X / supports RAID-1 mirroring (Embedded Mirroring) with up to one hot-spare disk /										
SCSI channels	shared with optional IBM ServeRAID™-6i Controller for low-cost RAID 0, 1, 1E, 5, 00, 10, 1E0, 50 (installed only in Slot 2) backplane for six disks; Channel B: 16-bit 68-pin interface to support external SCSI devices via external SCSI 0.8mm VHDCI connector / supports optional ServeRAID adapters with external connector(s)										
IDE controller / cable	Enhanced IDE ATA-100 controller in CSB5 South Bridge / one connector on planar / one 1-drop IDE cable (CD-ROM)										
Disk - capacity	None standard / supports 7200-15000 rpm disks / one backplane										
Disk - bays	Six hot-swap / 80-pin SCA-2 connectors / filler panels installed in each disk bay / all disk bays Ultra320-enabled										
Mechanical	EIA 19" Rack (2U ⁴) / rack-mount only / supported in IBM NetBAY™ Rack products / no rack to tower conversion										
Chipset	ServerWorks® Grand Champion™ 4.0 LE / CMIC LE Host Bridge (memory controller and I/O Bridge) / two CIOB-X2 I/O Bridges (IMB2 bus to Host Bridge for PCI Bus A with low profile slots 1, 2, and Ultra320 and ethernet controllers; IMB2 bus to Host Bridge for PCI Bus B with slots 3 and 4 on riser card) / CSB5 South Bridge (Thin IMB to Host Bridge for PCI 2.2 bus C with slot 5 (on riser card) and graphics controller, EIDE, USB, SMBus, LPC bus to Super I/O) / NS PC87417 Super I/O										
Bus slots	(See below) Four available PCI-X 1.0 / one available PCI 2.2 32-bit 33MHz slot / no hot-swap Active™ PCI slots										
Ethernet controller	Two gigabit 10/100/1000 ethernet ports (dual port) / Intel 82546EB / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / Alert Standard Format 1.0 / two RJ-45 ports in rear										
CD-ROM / diskette	24X-10X CD-ROM / IDE; Diskette: 3.5" 1.44MB diskette drive / dust cover										
Rear ports	Rear: two USB (Vers 1.1), keyboard, mouse, serial (9-pin), graphics (DB-15), two ethernet (RJ-45), two RJ-45 (sys mgmt) / no parallel port										
Front port / graphics	Front: one USB (Vers 1.1); Graphics: SVGA / ATI® Rage XL / on planar / 8MB SDRAM std/max / 32-bit 33MHz PCI 2.2 bus										
Security	Power-on password / administrator password / unattended boot / selectable boot sequence										
Systems mgmt	IBM Integrated system management processor (ISMP) / H8S2148 / on planar / provides system and environmental monitoring such as temp, optional disks, fans, power supp / supports optional Remote Supervisor Adapter with 20-pin connector on riser for continuous power (no ext power reqd)								Xeon 2.67GHz/512KB L2 Cache Proc Upg	71P8966	
Diagnosics	Light Path Diagnostics™ panel providing LED map to failing part (under top cover) / Information LED Panel in front								Xeon 2.8BGHz/512KB L2 Cache Proc Upg	71P8967	
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director systems mgmt, others								Xeon 3.06Ghz/512KB L2 Cache Proc Upg	02R1988	
Keyboard / mouse	None standard (because rack-based)								Xeon 3.06Ghz/512KB L2/1MB L3 Cache Proc Upg	88P9677	
Power supply	Std/Max: one/two 350 or 514 watt hot-swap								Xeon 3.2Ghz/512KB L2/1MB L3 Cache Proc Upg	23K4523	
Fans	All: rear access / redundant with two power supplies / worldwide / voltage-sensing / auto-restart								1GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM	33L5039	
Prerequisites	Std: five fans; Max: eight (three fans with optional second power supply) / redundant with eight fans installed; All: variable speed / hot-swap / PFA								2GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM*	33L5040	
	Monitor, keyboard, mouse, SCSI disk, rack								IBM ServeRAID-6i Controller (adapter for slot 2)	71P8595	
									IBM Remote Supervisor Adapter II (PCI adapter)	59P2984	
									73.4GB 10K-5 80 Ultra320 SCSI Hot-Swap SL HDD	32P0727	
									146.8GB 10K-5 80 Ultra320 SCSI Hot-Swap SL HDD	32P0728	
									350W Hot-Swap Power Supply (with three fans)*	59P4057	
									514W Hot-Swap Power Supply (3.06Ghz+ Only)*	74P4965	
									NetBAY Local Console Manager	1735L04	
									NetBAY Remote Console Manager	1735R16	
									Other options at ibm.com/pc/us/accessories		
									*additional power supply required when installing 33L5040		

Slot 1: low-profile, 64-bit 100MHz 3.3v PCI-X, not hot, Bus A
 Slot 2: low-profile, 64-bit 100MHz 3.3v PCI-X, not hot, Bus A*
 Slot 3: full, 64-bit 133MHz 3.3v PCI-X, not hot-swap, Bus B
 Slot 4: full, 64-bit 133MHz 3.3v PCI-X, not hot-swap, Bus B
 Slot 5: half, 32-bit 33MHz 5v PCI 2.2, not hot-swap, Bus C**
 * Extended slot for optional IBM ServeRAID-5i Controller
 ** Primarily for optional Remote Supervisor Adapter

2U Rack

Bay ① 3.5", 0.5", access, std diskette
 Bay ② 5.25", 0.5", access, std CD-ROM
 Bay ③ 3.5", SL 1", access, hot-swap, open for disk
 Bay ④ 3.5", SL 1", access, hot-swap, open for disk
 Bay ⑤ 3.5", SL 1", access, hot-swap, open for disk
 Bay ⑥ 3.5", SL 1", access, hot-swap, open for disk
 Bay ⑦ 3.5", SL 1", access, hot-swap, open for disk
 Bay ⑧ 3.5", SL 1", access, hot-swap, open for disk

Bays 3 through 8 support six SL disks via SCA-2 connectors

Quick release adapter slots (no screws)
 Configuration/Setup Utility: F1 at startup
 Diagnostics (PC-Doctor™): F2 at startup
 System Partition Boot: ALT+F1 at startup
 Network Boot: F12 at startup
 LSI Logic Configuration Utility: CTRL+C at startup
 Front indicators LEDs: Power-on LED, SCSI bus activity LED, system identification LED, information LED, and system-error LED
 Predictive failure analysis on disk options, memory, processors, VRMs, power supplies, and fans in conjunction with IBM Director can alert the system administrator of an imminent component failure
 Rack: H 3.36" x W 17.5" x D 27.5"
 44 to 62 pounds
 Stealth black color

All models: Max int disk capacity: 880.0GB² with six 146.8GB SL disks

LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- 3 year on site warranty service upgrade options (in eligible locations):⁷
 - 9 hr coverage, Mon-Fri excluding holidays, 4 hr response time (ServicePac[®] 21P2077)
 - 24 hr x 7 day coverage, 4 hour average response time (ServicePac 21P2078)
 - 24 hr x 7 day coverage, 2 hour average response time (ServicePac 21P2093)
- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

IBM® Type-model	Qty x Processor	L2 Cache	L3 Cache	Memory	Disk	SCSI controller	Form Factor	Slots x bays (hot-swap bays)	Power supply	Ethernet	Available date
8670-K1X	1 x Xeon™ 2.67GHz	512KB	0MB	512MB	None	2 x Ultra320	2U ⁴	5x8 (6 hot-swap)	1 x 350W hot-swap	2 x Gigabit	Jan 2004
8670-L1X	1 x Xeon 2.8BGHz	512KB	0MB	512MB	None	2 x Ultra320	2U	5x8 (6 hot-swap)	1 x 350W hot-swap	2 x Gigabit	Jan 2004
8670-M1X	1 x Xeon 3.06GHz	512KB	0MB	512MB	None	2 x Ultra320	2U	5x8 (6 hot-swap)	1 x 512W hot-swap	2 x Gigabit	Jan 2004
8670-F1X	1 x Xeon 3.06GHz	512KB	1MB	512MB	None	2 x Ultra320	2U	5x8 (6 hot-swap)	1 x 512W hot-swap	2 x Gigabit	Jan 2004

These models ship standard with **Non-Chipkill DIMMs**. Chipkill is **optionally available** with purchase of 512MB DIMMs or higher.

Positioning	<i>A rack-dense 2-way server delivering high availability, scalability and expandability for application-serving Web environments</i>										
Processor(s)	Up to 1 x Intel® Xeon™ Processor 3.06Ghz with 533MHz frontside bus / Hyper-Threading technology										
L2/L3 cache	512KB L2 Cache / Up to 1MB L3 Cache / Both on die of processor / Both at processor speed										
SMP support	2-way SMP / up to two Xeon Processors (same speed/cache size)										
Implementation	Systemboard contains two Intel 603-pin micro-PGA ZIF sockets, four memory DIMM slots, two low-profile PCI-X slots, slot for standard PCI riser card (with two PCI-X slots and one PCI slot), and integrated SCSI, ethernet, graphics										
Memory	512MB std / 8GB max / two slots used / two slots available / two total power supplies required when using 2GB DIMMs / PC2100 266MHz registered 184-pin ECC DDR-SDRAM DIMMs / four DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / memory bus runs at 2 x 133MHz / Error Checking and Correcting (ECC) (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips) / 16-bit Checksum Chipkill™ optionally available on 512MB and greater DIMMs										
SCSI disk controller	LSI Logic® 53C1030 / dual channel Ultra320 SCSI controller (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X / supports RAID-1 mirroring (Embedded Mirroring) with up to one hot-spare disk / shared with optional IBM ServeRAID™-6i Controller for low-cost RAID 0, 1, 1E, 5, 00, 10, 1E0, 50 (installed only in Slot 2)										
SCSI channels	Two 16-bit channels (one internal and one external) / <i>SCSI Channel A</i> : 16-bit 68-pin LVD cable from systemboard to backplane for six disks; <i>Channel B</i> : 16-bit 68-pin interface to support external SCSI devices via external SCSI 0.8mm VHDCI connector / supports optional ServeRAID adapters with external connector(s)										
IDE controller / cable	Enhanced IDE ATA-100 controller in CSB5 South Bridge / one connector on planar / one 1-drop IDE cable (CD-ROM)										
Disk - capacity	None standard / supports 7200-15000 rpm disks / one backplane										
Disk - bays	Six hot-swap / 80-pin SCA-2 connectors / filler panels installed in each disk bay / all disk bays Ultra320-enabled										
Mechanical	EIA 19" Rack (2U⁴) / rack-mount only / supported in IBM NetBAY™ Rack products / no rack to tower conversion										
Chipset	ServerWorks® Grand Champion™ 4.0 LE / CMIC LE Host Bridge (memory controller and I/O Bridge) / two CIOB-X2 I/O Bridges (IMB2 bus to Host Bridge for PCI Bus A with low profile slots 1, 2, and Ultra320 and ethernet controllers; IMB2 bus to Host Bridge for PCI Bus B with slots 3 and 4 on riser card) / CSB5 South Bridge (Thin IMB to Host Bridge for PCI 2.2 bus C with slot 5 (on riser card) and graphics controller, EIDE, USB, SMBus, LPC bus to Super I/O) / NS PC87417 Super I/O										
Bus slots	(See below) Four available PCI-X 1.0 / one available PCI 2.2 32-bit 33MHz slot / no hot-swap Active™ PCI slots										
Ethernet controller	Two gigabit 10/100/1000 ethernet ports (dual port) / Intel 82546EB / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / Alert Standard Format 1.0 / two RJ-45 ports in rear										
CD-ROM / diskette	24X-10X® CD-ROM / IDE; <i>Diskette</i> : 3.5" 1.44MB diskette drive / dust cover										
Rear ports	Rear: two USB (Vers 1.1), keyboard, mouse, serial (9-pin), graphics (DB-15), two ethernet (RJ-45), two RJ-45 (sys mgmt) / no parallel port										
Front port / graphics	Front: one USB (Vers 1.1); <i>Graphics</i> : SVGA / ATI® Rage XL / on planar / 8MB SDRAM std/max / 32-bit 33MHz PCI 2.2 bus										
Security	Power-on password / administrator password / unattended boot / selectable boot sequence										
Systems mgmt	IBM Integrated system management processor (ISMP) / H8S2148 / on planar / provides system and environmental monitoring such as temp, optional disks, fans, power supp / supports optional Remote Supervisor Adapter with 20-pin connector on riser for continuous power (no ext power reqd)								Xeon 2.67GHz/512KB L2 Cache Proc Upg	71P8966	
Diagnostics	Light Path Diagnostics™ panel providing LED map to failing part (under top cover) / Information LED Panel in front								Xeon 2.8BGHz/512KB L2 Cache Proc Upg	71P8967	
									Xeon 3.06Ghz/512KB L2 Cache Proc Upg	02R1988	
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director systems mgmt, others								Xeon 3.06Ghz/512KB L2/1MB L3 Cache Proc Upg	88P9677	
									2x256MB PC2100 CL2.5 ECC Non-Chipkill RDIMMs	73P2868	
Keyboard / mouse	None standard (because rack-based)								1GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM	33L5039	
									2GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM*	33L5040	
Power supply	Std/Max: one/two 350 or 514 watt hot-swap								IBM ServeRAID-6i Controller (adapter for slot 2)	71P8595	
									IBM Remote Supervisor Adapter II (PCI adapter)	59P2984	
Fans	All: rear access / redundant with two power supplies / worldwide / voltage-sensing / auto-restart								73.4GB 10K-5 80 Ultra320 SCSI Hot-Swap SL HDD	32P0277	
									146.8GB 10K-5 80 Ultra320 SCSI Hot-Swap SL HDD	32P0728	
Prerequisites	All: variable speed / hot-swap / PFA								350W Hot-Swap Power Supply (with three fans)*	59P4057	
									514W Hot-Swap Power Supply (3.06Ghz+ Only)*	74P4965	
									NetBAY Local Console Manager	1735L04	
									NetBAY Remote Console Manager	1735R16	
									Other options at ibm.com/pc/us/accessories		
									*additional power supply required when installing 33L5040		

<p>Slot 1: low-profile, 64-bit 100MHz 3.3v PCI-X, not hot, Bus A</p> <p>Slot 2: low-profile, 64-bit 100MHz 3.3v PCI-X, not hot, Bus A*</p> <p>Slot 3: full, 64-bit 133MHz 3.3v PCI-X, not hot-swap, Bus B</p> <p>Slot 4: full, 64-bit 133MHz 3.3v PCI-X, not hot-swap, Bus B</p> <p>Slot 5: half, 32-bit 33MHz 5v PCI 2.2, not hot-swap, Bus C**</p> <p>* Extended slot for optional IBM ServeRAID-5i Controller</p> <p>** Primarily for optional Remote Supervisor Adapter</p>	<p>Quick release adapter slots (no screws)</p> <p>Configuration/Setup Utility: F1 at startup</p> <p>Diagnostics (PC-Doctor™): F2 at startup</p> <p>System Partition Boot: ALT+F1 at startup</p> <p>Network Boot: F12 at startup</p> <p>LSI Logic Configuration Utility: CTRL+C at startup</p> <p>Front indicators LEDs: Power-on LED, SCSI bus activity LED, system identification LED, information LED, and system-error LED</p> <p>Predictive failure analysis on disk options, memory, processors, VRMs, power supplies, and fans in conjunction with IBM Director can alert the system administrator of an imminent component failure</p> <p>Rack: H 3.36" x W 17.5" x D 27.5"</p> <p>44 to 62 pounds</p> <p>Stealth black color</p>	<p>LIMITED WARRANTY³</p> <p>↪ 3 year parts and labor</p> <p>↪ International Warranty Service³</p> <p>↪ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷</p> <p>↪ 3 year on site warranty service upgrade options (in eligible locations):⁷</p> <ul style="list-style-type: none"> • 9 hr coverage, Mon-Fri excluding holidays, 4 hr response time (ServicePac[®] 21P2077) • 24 hr x 7 day coverage, 4 hour average response time (ServicePac 21P2078) • 24 hr x 7 day coverage, 2 hour average response time (ServicePac 21P2093) <p>↪ Other ServicePac options at http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf</p> <p>↪ 24x7¹⁴ toll-free support for warranty issues during the warranty period³</p>
<p style="text-align: center;">2U Rack</p>		
<p>Bay ① 3.5", 0.5", access, std diskette</p> <p>Bay ② 5.25", 0.5", access, std CD-ROM</p> <p>Bay ③ 3.5", SL 1", access, hot-swap, open for disk</p> <p>Bay ④ 3.5", SL 1", access, hot-swap, open for disk</p> <p>Bay ⑤ 3.5", SL 1", access, hot-swap, open for disk</p> <p>Bay ⑥ 3.5", SL 1", access, hot-swap, open for disk</p> <p>Bay ⑦ 3.5", SL 1", access, hot-swap, open for disk</p> <p>Bay ⑧ 3.5", SL 1", access, hot-swap, open for disk</p> <p>Bays 3 through 8 support six SL disks via SCA-2 connectors</p>		
<p>All models: Max int disk capacity: 880.0GB² with six 146.8GB SL disks</p>		

IBM® Type-model	Qty x Processor	L2 Cache	L3 Cache	Memory	Disk	SCSI controller	Form Factor	Slots x bays (hot-swap bays)	Power supply	Ethernet	Available date
8670-J1X	1 x Xeon™ 3.2GHz	512KB	2MB	1GB	None	2 x Ultra320	2U ⁴	5x8 (6 hot-swap)	1 x 512W hot-swap	2 x Gigabit	Feb 2004

Positioning
Processor(s)
L2/L3 cache
SMP support
Implementation

A rack-dense 2-way server delivering high availability, scalability and expandability for application-serving Web environments
1 x Intel® Xeon™ Processor 3.2GHz with 533MHz frontside bus / Hyper-Threading technology
512KB L2 Cache / 2MB L3 Cache / Both on die of processor / Both at processor speed
2-way SMP / up to two Xeon Processors (same speed/cache size)
 Systemboard contains two Intel 603-pin micro-PGA ZIF sockets, four memory DIMM slots, two low-profile PCI-X slots, slot for standard PCI riser card (with two PCI-X slots and one PCI slot), and integrated SCSI, ethernet, graphics

Memory

1GB std / 8GB max / two slots used / two slots available / two total power supplies required when using 2GB DIMMs
PC2100 266MHz registered 184-pin ECC DDR-SDRAM DIMMs / four DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / memory bus runs at 2 x 133MHz / **Error Checking and Correcting (ECC)** via **16-bit Checksum Chipkill™** (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips)

SCSI disk controller

LSI Logic® 53C1030 / dual channel Ultra320 SCSI controller (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X / supports **RAID-1 mirroring** (Embedded Mirroring) with up to one hot-spare disk / shared with optional IBM ServeRAID™-6i Controller for low-cost RAID 0, 1, 1E, 5, 00, 10, 1E0, 50 (installed only in Slot 2)

SCSI channels

Two 16-bit channels (one internal and one external) / *SCSI Channel A:* 16-bit 68-pin LVD cable from systemboard to backplane for six disks; *Channel B:* 16-bit 68-pin interface to support external SCSI devices via external SCSI 0.8mm VHDCI connector / supports optional ServeRAID adapters with external connector(s)

IDE controller / cable
Disk - capacity
Disk - bays

Enhanced IDE ATA-100 controller in CSB5 South Bridge / one connector on planar / one 1-drop IDE cable (CD-ROM)
 None standard / supports 7200-15000 rpm disks / one backplane
 Six hot-swap / 80-pin SCA-2 connectors / filler panels installed in each disk bay / all disk bays Ultra320-enabled

Mechanical
Chipset

EIA 19" Rack (2U⁴) / rack-mount only / supported in IBM NetBAY™ Rack products / no rack to tower conversion
ServerWorks® Grand Champion™ 4.0 LE / CMIC LE Host Bridge (memory controller and I/O Bridge) / two CIOB-X2 I/O Bridges (IMB2 bus to Host Bridge for PCI Bus A with low profile slots 1, 2, and Ultra320 and ethernet controllers; IMB2 bus to Host Bridge for PCI Bus B with slots 3 and 4 on riser card) / CSB5 South Bridge (Thin IMB to Host Bridge for PCI 2.2 bus C with slot 5 (on riser card) and graphics controller, EIDE, USB, SMBus, LPC bus to Super I/O) / NS PC87417 Super I/O

Bus slots

(See below) Four available PCI-X 1.0 / one available PCI 2.2 32-bit 33MHz slot / no hot-swap Active™ PCI slots

Ethernet controller

Two gigabit 10/100/1000 ethernet ports (dual port) / Intel 82546EB / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / Alert Standard Format 1.0 / two RJ-45 ports in rear

CD-ROM / diskette
Rear ports

24X-10X CD-ROM / IDE; *Diskette:* 3.5" 1.44MB diskette drive / dust cover
 Rear: two USB (Vers 1.1), keyboard, mouse, serial (9-pin), graphics (DB-15), two ethernet (RJ-45), two RJ-45 (sys mgmt) / no parallel port

Front port / graphics

Front: one USB (Vers 1.1); *Graphics:* SVGA / ATI® Rage XL / on planar / 8MB SDRAM std/max / 32-bit 33MHz PCI 2.2 bus

Security

Power-on password / administrator password / unattended boot / selectable boot sequence

Systems mgmt

IBM Integrated system management processor (ISMP) / H8S2148 / on planar / provides system and environmental monitoring such as temp, optional disks, fans, power supp / supports optional Remote Supervisor Adapter with 20-pin connector on riser for continuous power (no ext power reqd)

Diagnosics

Light Path Diagnostics™ panel providing LED map to failing part (under top cover) / Information LED Panel in front

Software

ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director systems mgmt, others

Xeon 3.2GHz/512KB L2/2MB L3 Cache Proc Upg	13N0682
2x256MB PC2100 CL2.5 ECC Non-Chipkill RDIMMs	73P2868
1GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM	33L5039
2GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM*	33L5040
IBM ServeRAID-6i Controller (adapter for slot 2)	71P8595
IBM Remote Supervisor Adapter II (PCI adapter)	59P2984
73.4GB 10K-5 80 Ultra320 SCSI Hot-Swap SL HDD	32P0727
146.8GB 10K-5 80 Ultra320 SCSI Hot-Swap SL HDD	32P0728
514W Hot-Swap Power Supply*	74P4965
NetBAY Local Console Manager	1735L04
NetBAY Remote Console Manager	1735R16
Other options at ibm.com/pc/us/accessories	
*additional power supply required when installing 33L5040	

Keyboard / mouse
Power supply

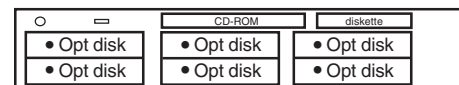
None standard (because rack-based)
Std/Max: one/two 514 watt hot-swap
All: rear access / redundant with two power supplies / worldwide / voltage-sensing / auto-restart

Fans

Std: five fans; *Max:* eight (three fans with optional second power supply) / redundant with eight fans installed;
All: variable speed / hot-swap / PFA

Prerequisites

Monitor, keyboard, mouse, SCSI disk, rack

<p>Slot 1: low-profile, 64-bit 100MHz 3.3v PCI-X, not hot, Bus A Slot 2: low-profile, 64-bit 100MHz 3.3v PCI-X, not hot, Bus A* Slot 3: full, 64-bit 133MHz 3.3v PCI-X, not hot-swap, Bus B Slot 4: full, 64-bit 133MHz 3.3v PCI-X, not hot-swap, Bus B Slot 5: half, 32-bit 33MHz 5v PCI 2.2, not hot-swap, Bus C** * Extended slot for optional IBM ServeRAID-5i Controller ** Primarily for optional Remote Supervisor Adapter</p>	<p>Quick release adapter slots (no screws) Configuration/Setup Utility: F1 at startup Diagnostics (PC-Doctor™): F2 at startup System Partition Boot: ALT+F1 at startup Network Boot: F12 at startup LSI Logic Configuration Utility: CTRL+C at startup Front indicators LEDs: Power-on LED, SCSI bus activity LED, system identification LED, information LED, and system-error LED Predictive failure analysis on disk options, memory, processors, VRMs, power supplies, and fans in conjunction with IBM Director can alert the system administrator of an imminent component failure Rack: H 3.36" x W 17.5" x D 27.5" 44 to 62 pounds Stealth black color</p>	<p>LIMITED WARRANTY³ 3 year parts and labor International Warranty Service³ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷ 3 year on site warranty service upgrade options (in eligible locations):⁷ 9 hr coverage, Mon-Fri excluding holidays, 4 hr response time (ServicePac[®] 21P2077) 24 hr x 7 day coverage, 4 hour average response time (ServicePac 21P2078) 24 hr x 7 day coverage, 2 hour average response time (ServicePac 21P2093) Other ServicePac options at http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf 24x7¹⁴ toll-free support for warranty issues during the warranty period³</p>
 <p>2U Rack</p> <p>Bay ① 3.5", 0.5", access, std diskette Bay ② 5.25", 0.5", access, std CD-ROM Bay ③ 3.5", SL 1", access, hot-swap, open for disk Bay ④ 3.5", SL 1", access, hot-swap, open for disk Bay ⑤ 3.5", SL 1", access, hot-swap, open for disk Bay ⑥ 3.5", SL 1", access, hot-swap, open for disk Bay ⑦ 3.5", SL 1", access, hot-swap, open for disk Bay ⑧ 3.5", SL 1", access, hot-swap, open for disk</p> <p>Bays 3 through 8 support six SL disks via SCA-2 connectors</p>		<p><i>All models:</i> Max int disk capacity: 880.0GB² with six 146.8GB SL disks</p>

See footnotes for important warranty information
 US model announced February 17, 2004

• = Hot-swap

IBM® Type-GAV-model	Qty x Processor	L2 Cache	Memory	Disk	SCSI controller	Form Factor	Slots x bays (hot-swap bays)	Power supply	Ethernet	Available date
8840-01y-01U	1 x Xeon™ 2.8GHz	1MB	512MB	None	2 x Ultra320	2U ⁴	4x8 (6 hot-swap)	1 x 625W hot-swap	2 x Gigabit	Aug 2004
8840-11y-11U	1 x Xeon 3.0GHz	1MB	1GB	None	2 x Ultra320	2U	4x8 (6 hot-swap)	1 x 625W hot-swap	2 x Gigabit	Aug 2004
8840-41y-41U	1 x Xeon 3.6GHz	1MB	1GB	None	2 x Ultra320	2U	4x8 (6 hot-swap)	1 x 625W hot-swap	2 x Gigabit	Aug 2004
Positioning	A rack-dense 2-way server delivering high availability, scalability and expandability for application-serving Web environments									
Processor	1 x Intel® Xeon™ Processor 2.8, 3.0, 3.2, 3.4, 3.6GHz with 800MHz frontside bus / Optimized for Extended Memory 64 Technology (EM64T) / Hyper-Threading technology / Simultaneous multi-threaded (SMT)									
L2 cache	1MB L2 Cache / on die of processor / at processor speed									
SMP support	2-way SMP / up to two Xeon Processors (same speed/cache size)									
Implementation	Systemboard contains two Intel PGA604 micro-PGA ZIF sockets, eight memory DIMM slots, two low-profile PCI-X (100MHz) slots, two full-length PCI-X (133MHz) slots, and integrated SCSI, dual GB ethernet, graphics									
Memory	512MB or 1GB std / 16GB ¹³ max / two slots used / six slots available / DIMMs / PC2-3200 DDR2 400MHz registered 240-pin ECC DDR2-SDRAM DIMMs / eight DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / Active Memory™: Memory mirroring, hot-spare memory / Error Checking and Correcting (ECC) / optional 16-bit Checksum Chipkill™ corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips,									
SCSI disk controller	Adaptec® AIC-7902 / dual channel Ultra320 SCSI controller (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X / supports RAID-0 and 1 with up to one hot-spare disk / optional IBM ServeRAID™-7k Adaptor for low-cost RAID 0, 1, 1E, 5, 00, 10, 1E0, 50 (installed on reserved internal connector)									
SCSI channels	Two 16-bit channels (one internal and one external) / SCSI Channel B: 16-bit 68-pin LVD cable from systemboard to backplane for six disks; Channel A: 16-bit 68-pin interface to support external SCSI devices via external SCSI 0.8mm VHDCI connector / supports optional ServeRAID adapters with external connector(s) for external devices									
IDE controller/cable	Enhanced IDE ATA-100 controller in ICH5 South Bridge / one connector on planar / one 1-drop IDE cable (CD-ROM)									
Disk - capacity	None standard / supports 7200-15000 rpm disks / one backplane									
Disk - bays	Six hot-swap / 80-pin SCA-2 connectors / filler panels installed in each disk bay / all disk bays Ultra320-enabled									
Mechanical	EIA 19" Rack (2U ⁴) / rack-mount only / supported in IBM NetBAY™ Rack products / no rack to tower conversion									
Chipset	Intel E7520 / Memory Controller Hub (MCH) / Intel I/O Controller Hub 5 (ICH5) / Two Intel PCI-X Hubs (133MHz PCI-X slots 3 & 4) / Intel Dodson I/O Processor (supports 100MHz PCI-X slots 1 & 2, Adaptec AIC-7902 and optional ServeRAID 7k Adapter / ICH5 South Bridge (Thin IMB to Host Bridge for graphics controller, EIDE, USB, SMBus, LPC bus to Super I/O) / LPC-SIO 8742x Super I/O									
Bus slots	(See below) Four available PCI-X 1.0 / no hot-swap Active™ PCI slots									
Ethernet controller	Two gigabit 10/100/1000 ethernet ports / Two Broadcom® 5721 / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / Alert Standard Format 2.0 / two RJ-45 ports in rear									
Optical / diskette	8X-24X ⁶ DVD-ROM / IDE; Diskette: 3.5" 1.44MB diskette drive / dust cover									
Front & Rear ports	Front: one USB (Vers 2.0) Rear: two USB (Vers 2.0), keyboard, mouse, serial (9-pin), graphics (DB-15), two ethernet (RJ-45), two RJ-45 (sys mgmt) / no parallel port									
Graphics	SVGA / ATI® Radeon™ 7000m / on planar / 16MB DDR SDRAM std/max / 32-bit 33MHz PCI 2.2 bus									
Security	Power-on password / administrator password / unattended boot / selectable boot sequence									
Systems mgmt	IBM Baseboard Management Controller (BMC) / H8S2168 / on planar / provides system and environmental monitoring such as temp, optional disks, fans, power supp / supports optional Remote Supervisor Adapter II slimline with reserved connector for continuous power (no ext power reqd)					Xeon 2.8GHz 800MHz/1MB L2 Proc Upg Xeon 3.0GHz 800MHz/1MB L2 Proc Upg Xeon 3.2GHz 800MHz/1MB L2 Proc Upg Xeon 3.4GHz 800MHz/1MB L2 Proc Upg Xeon 3.6GHz 800MHz/1MB L2 Proc Upg				
Diagnostics	Drop down light path diagnostics panel providing LED map to failing part (located on front panel)					512MB(2x256)PC2-3200 CL3 ECC DDR2 Non-Chkp Kit 73P3523 1GB(2x512)PC2-3200 CL3 ECC DDR2 Non-Chkp Kit 73P3522 2GB(2x1GB)PC2-3200 CL3 ECC DDR2-SDRAM 73P2866				
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director systems mgmt, others					IBM ServeRAID-7k Adapter 71P8642 IBM Remote Supervisor Adapter II Slim 73P9341 73.4GB 10K Ultra320 SCSI Hot-Swap SL HDD 90P1305 146.8GB 10K Ultra320 SCSI Hot-Swap SL HDD 90P1306 625W (N. America) Hot-Swap Power Supply 26K5097 NetBAY Local Console Manager 1735L04 NetBAY Remote Console Manager 1735R16				
Keyboard / mouse	None standard (because rack-based)									
Power supply	Std/Max: one/two 625 watt hot-swap / rear access / auto restart / redundant with two power supplies / auto-sensing									
Fans	Calibrated Vectored Cooling™ Std: six fans; Max: twelve (six fans with optional second power supply) / redundant with twelve fans installed; All: variable speed / hot-swap / PFA					Other options at ibm.com/pc/us/accessories				
Prerequisites	Monitor, keyboard, mouse, SCSI disk, rack									

<p>Slot 1: low-profile, 64-bit 100MHz 3.3v PCI-X, non hot, Bus A</p> <p>Slot 2: low-profile, 64-bit 100MHz 3.3v PCI-X non hot, Bus A</p> <p>Slot 3: full, 64-bit 133MHz 3.3v PCI-X, not hot-swap, Bus B*</p> <p>Slot 4: full, 64-bit 133MHz 3.3v PCI-X, not hot-swap, Bus B*</p> <p>*slots 3 & 4 riser may be replaced with PCI-Express riser</p> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> </div> <p>Bay ① 3.5", 0.5", access, slim diskette</p> <p>Bay ② 5.25", 0.5", access, slim DVD-ROM</p> <p>Bay ③ 3.5", SL 1", access, hot-swap, open for disk</p> <p>Bay ④ 3.5", SL 1", access, hot-swap, open for disk</p> <p>Bay ⑤ 3.5", SL 1", access, hot-swap, open for disk</p> <p>Bay ⑥ 3.5", SL 1", access, hot-swap, open for disk</p> <p>Bay ⑦ 3.5", SL 1", access, hot-swap, open for disk</p> <p>Bay ⑧ 3.5", SL 1", access, hot-swap, open for disk</p> <p>Bays 3 through 8 support six SL disks; or 1 DDS5 Tape drive (2 slots used, additional PCI SCSI adaptor req) via SCA-2 connectors</p>	<p>Quick release adapter slots (no screws)</p> <p>Configuration/Setup Utility: F1 at startup</p> <p>Diagnostics (PC-Doctor™): F2 at startup</p> <p>System Partition Boot: ALT+F1 at startup</p> <p>Network Boot: F12 at startup</p> <p>Front indicators LEDs: Power-on LED, SCSI bus activity LED, system identification LED, information LED, and system-error LED</p> <p>Predictive failure analysis on disk options, memory, processors, VRMs, power supplies, and fans in conjunction with IBM Director can alert the system administrator of an imminent component failure</p> <p>Rack: H 3.36" x W 17.5" x D 27.5" (H 85.4mm x W 443.6mm x D 698mm)</p> <p>46.5 to 62 pounds</p> <p>Stealth black color</p>	<p>LIMITED WARRANTY³</p> <ul style="list-style-type: none"> ⇨ 3 year parts and labor ⇨ International Warranty Service³ ⇨ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷ ⇨ 3 year on site warranty service upgrade options (in eligible locations):⁷ <ul style="list-style-type: none"> • 9 hr coverage, Mon-Fri excluding holidays, 4 hr response time (ServicePac[®] 21P2077) • 24 hr x 7 day coverage, 4 hour average response time (ServicePac 21P2078) • 24 hr x 7 day coverage, 2 hour average response time (ServicePac 21P2093) ⇨ Other ServicePac options at http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf ⇨ 24x7¹⁴ toll-free support for warranty issues during the warranty period³
<p>All models: Max int disk capacity: 880.0GB² with six 146.8GB SL disks</p>		

See footnotes for important warranty information

• = Hot-swap

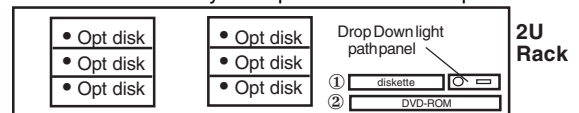
IBM® Type-GAV-model	Qty x Processor	L2 Cache Memory	Disk	SCSI controller	Form Factor	Slots x bays (hot-swap bays)	Power supply	Ethernet	Available date
8840-15y-15U	1 x Xeon™ 3.0GHz	2MB 1GB	None	2 x Ultra320	2U ⁴	4x8 (6 hot-swap)	1 x 625W hot-swap	2 x Gigabit	Mar 2005
8840-16y-16U	1 x Xeon 3.0GHz	2MB 1GB	None	2 x Ultra320	2U	4x8 (6 hot-swap)	2 x 625W hot-swap	2 x Gigabit	Mar 2005
8840-25y-25U	1 x Xeon 3.2GHz	2MB 1GB	None	2 x Ultra320	2U	4x8 (6 hot-swap)	1 x 625W hot-swap	2 x Gigabit	Mar 2005
8840-35y-35U	1 x Xeon 3.4GHz	2MB 1GB	None	2 x Ultra320	2U	4x8 (6 hot-swap)	1 x 625W hot-swap	2 x Gigabit	Mar 2005
8840-36y-36U	1 x Xeon 3.4GHz	2MB 1GB	None	2 x Ultra320	2U	4x8 (6 hot-swap)	2 x 625W hot-swap	2 x Gigabit	Mar 2005
8840-45y-45U	1 x Xeon 3.6GHz	2MB 1GB	None	2 x Ultra320	2U	4x8 (6 hot-swap)	1 x 625W hot-swap	2 x Gigabit	Mar 2005
8840-E1y-E1U	1 x Xeon 3.0GHz	2MB 1GB	3x73.4GB	2 x Ultra320	2U	4x8 (6 hot-swap)	1 x 625W hot-swap	2 x Gigabit	Mar 2005
Positioning Processor	A rack-dense 2-way server delivering high availability, scalability and expandability for application-serving Web environments 1 x Intel® Xeon™ Processor 2.8, 3.0, 3.2, 3.4, 3.6GHz with 800MHz frontside bus / Optimized for Extended Memory 64 Technology (EM64T) / Hyper-Threading technology / Simultaneous multi-threaded (SMT)								
L2 cache	2MB L2 Cache / on die of processor / at processor speed								
SMP support Implementation	2-way SMP / up to two Xeon Processors (same speed/cache size) Systemboard contains two Intel PGA604 micro-PGA ZIF sockets, eight memory DIMM slots, two low-profile PCI-X (100MHz) slots, two full-length PCI-X (133MHz) slots, and integrated SCSI, dual GB ethernet, graphics								
Memory	1GB std / 16GB¹³ max / two slots used / six slots available / DIMMs / PC2-3200 DDR2 400MHz registered 240-pin ECC DDR2-SDRAM DIMMs / eight DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / Active Memory™ : Memory mirroring, hot-spare memory / Error Checking and Correcting (ECC) / optional 16-bit Checksum Chipkill™ corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips,								
SCSI disk controller	Adaptec® AIC-7902 / dual channel Ultra320 SCSI controller (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X / supports RAID-0 and 1 with up to one hot-spare disk / optional IBM ServeRAID™-7k Adaptor for low-cost RAID 0, 1, 1E, 5, 00, 10, 1E0, 50 (installed on reserved internal connector)								
SCSI channels	Two 16-bit channels (one internal and one external) / <i>SCSI Channel B</i> : 16-bit 68-pin LVD cable from systemboard to backplane for six disks; <i>Channel A</i> : 16-bit 68-pin interface to support external SCSI devices via external SCSI 0.8mm VHDCI connector / supports optional ServeRAID adapters with external connector(s) for external devices								
IDE controller/cable	Enhanced IDE ATA-100 controller in ICH5 South Bridge / one connector on planar / one 1-drop IDE cable (CD-ROM)								
Disk - capacity	None standard / supports 7200-15000 rpm disks / one backplane								
Disk - bays	Six hot-swap / 80-pin SCA-2 connectors / filler panels installed in each disk bay / all disk bays Ultra320-enabled								
Mechanical Chipset	EIA 19" Rack (2U⁴) / rack-mount only / supported in IBM NetBAY™ Rack products / no rack to tower conversion Intel E7520 / Memory Controller Hub (MCH) / Intel I/O Controller Hub 5 (ICH5) / Two Intel PCI-X Hubs (133MHz PCI-X slots 3 & 4) / Intel Dodson I/O Processor (supports 100MHz PCI-X slots 1 & 2, Adaptec AIC-7902 and optional ServeRAID 7k Adapter / ICH5 South Bridge (Thin IMB to Host Bridge for graphics controller, EIDE, USB, SMBus, LPC bus to Super I/O) / LPC-SIO 8742x Super I/O								
Bus slots	(See below) Four available PCI-X 1.0 / no hot-swap Active™ PCI slots								
Ethernet controller	Two gigabit 10/100/1000 ethernet ports / Two Broadcom® 5721 / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / Alert Standard Format 2.0 / two RJ-45 ports in rear								
Optical / diskette	8X-24X⁶ DVD-ROM / IDE; <i>Diskette</i> : 3.5" 1.44MB diskette drive / dust cover								
Front & Rear ports	<i>Front</i> : one USB (Vers 2.0) <i>Rear</i> : two USB (Vers 2.0), keyboard, mouse, serial (9-pin), graphics (DB-15), two ethernet (RJ-45), two RJ-45 (sys mgmt) / no parallel port								
Graphics	SVGA / ATI® Radeon™ 7000m / on planar / 16MB DDR SDRAM std/max / 32-bit 33MHz PCI 2.2 bus								
Security	Power-on password / administrator password / unattended boot / selectable boot sequence								
Systems mgmt	IBM Baseboard Management Controller (BMC) / H8S2168 / on planar / provides system and environmental monitoring such as temp, optional disks, fans, power supp / supports optional Remote Supervisor Adapter II slimline with reserved connector for continuous power (no ext power reqd)								25R8908 25R8902 25R8903 13N0686 13N0687 13N0689
Diagnostics	Drop down light path diagnostics panel providing LED map to failing part (located on front panel)								512MB(2x256)PC2-3200CL3ECCDDR2Non-Chpk Kit 1GB(2x512)PC2-3200CL3ECCDDR2Non-Chpk Kit
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director systems mgmt, others								73P3522 73P2866 71P8642 73P9341
Keyboard / mouse	None standard (because rack-based)								IBM Remote Supervisor Adapter II Slim
Power supply	<i>Std/Max</i> : one/two 625 watt hot-swap / rear access / auto restart / redundant with two power supplies / auto-sensing								73.4GB 10K Ultra320 SCSI Hot-Swap SL HDD 146.8GB 10K Ultra320 SCSI Hot-Swap SL HDD 625W (N. America) Hot-Swap Power Supply
Fans	Calibrated Vectored Cooling™ <i>Std</i> : six fans; <i>Max</i> : twelve (six fans with optional second power supply) / redundant with twelve fans installed; <i>All</i> : variable speed / hot-swap / PFA								NetBAY Local Console Manager NetBAY Remote Console Manager Other options at ibm.com/pc/us/accessories
Prerequisites	Monitor, keyboard, mouse, SCSI disk, rack								
Slot 1: low-profile, 64-bit 100MHz 3.3v PCI-X, non hot, Bus A	Quick release adapter slots (no screws)								<p>LIMITED WARRANTY³</p> <ul style="list-style-type: none"> 3 year parts and labor International Warranty Service³ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷ 3 year on site warranty service upgrade options (in eligible locations):⁷ <ul style="list-style-type: none"> 9 hr coverage, Mon-Fri excluding holidays, 4 hr response time (ServicePac[®] 21P2077) 24 hr x 7 day coverage, 4 hour average response time (ServicePac 21P2078) 24 hr x 7 day coverage, 2 hour average response time (ServicePac 21P2093) Other ServicePac options at http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf 24x7¹⁴ toll-free support for warranty issues during the warranty period³
Slot 2: low-profile, 64-bit 100MHz 3.3v PCI-X non hot, Bus A	Configuration/Setup Utility: F1 at startup								
Slot 3: full, 64-bit 133MHz 3.3v PCI-X, not hot-swap, Bus B*	Diagnostics (PC-Doctor™): F2 at startup								
Slot 4: full, 64-bit 133MHz 3.3v PCI-X, not hot-swap, Bus B*	System Partition Boot: ALT+F1 at startup								
*slots 3 & 4 riser may be replaced with PCI-Express riser	Network Boot: F12 at startup								
	Front indicators LEDs: Power-on LED, SCSI bus activity LED, system identification LED, information LED, and system-error LED								
	Predictive failure analysis on disk options, memory, processors, VRMs, power supplies, and fans in conjunction with IBM Director can alert the system administrator of an imminent component failure								
	Rack: H 3.36" x W 17.5" x D 27.5" (H 85.4mm x W 443.6mm x D 698mm)								
	46.5 to 62 pounds								
	Stealth black color								
	All models: Max int disk capacity: 880.0GB ² with six 146.8GB SL disks								
	<p>2U Rack</p> <p>Bay ① 3.5", 0.5", access, slim diskette</p> <p>Bay ② 5.25", 0.5", access, slim DVD-ROM</p> <p>Bay ③ 3.5", SL 1", access, hot-swap, open for disk</p> <p>Bay ④ 3.5", SL 1", access, hot-swap, open for disk</p> <p>Bay ⑤ 3.5", SL 1", access, hot-swap, open for disk</p> <p>Bay ⑥ 3.5", SL 1", access, hot-swap, open for disk</p> <p>Bay ⑦ 3.5", SL 1", access, hot-swap, open for disk</p> <p>Bay ⑧ 3.5", SL 1", access, hot-swap, open for disk</p> <p>Bays 3 through 8 support six SL disks; or 1 DDS5 Tape drive (2 slots used, additional PCI SCSI adaptor req) via SCA-2 connectors</p>								

See footnotes for important warranty information

• = Hot-swap

IBM® Type-GAV-model	Qty x Processor/Core	L2 Cache	Memory	Disk	SCSI controller	Form Factor	Slots x bays (hot-swap bays)	Power supply	Ethernet	Available date
8840-05y-05U	1 x Xeon™ 2.8GHz/SC	2MB	1GB	None	2 x Ultra320	2U ⁴	4x8 (6 hot-swap)	1 x 625W hot-swap	2 x Gigabit	Sep 2005
8840-E3y-E3U	1 x Xeon 2.8GHz/SC	2MB	1GB	None	2 x Ultra320	2U	4x8 (6 hot-swap)	1 x 625W hot-swap	2 x Gigabit	Sep 2005
8840-E4y-E4U	1 x Xeon 3.4GHz/SC	2MB	1GB	None	2 x Ultra320	2U	4x8 (6 hot-swap)	2 x 625W hot-swap	2 x Gigabit	Sep 2005
8840-55y-55U	1 x Xeon 3.8GHz/SC	2MB	1GB	None	2 x Ultra320	2U	4x8 (6 hot-swap)	1 x 625W hot-swap	2 x Gigabit	Sep 2005
8840-D1y-D1U	1 x Xeon 2.8GHz/DC	2x2MB	2GB	None	2 x Ultra320	2U	4x8 (6 hot-swap)	1 x 625W hot-swap	2 x Gigabit	Oct 2005
8840-1Ry-1RU	1 x Xeon 3.0GHz/SC	2MB	1GB	None	2 x Ultra320	2U	4x8 (6 hot-swap)	1 x 625W hot-swap	2 x Gigabit	Apr 2006
Positioning	A rack-dense 2-way server delivering high availability, scalability and expandability for application-serving Web environments									
Processor	Intel® Xeon™ Processor up to 3.8GHz Single Core 800MHz FSB / Xeon Processor 2.8GHz Dual Core 800MHz FSB / All Optimized for Extended Memory 64 Technology (EM64T) / Hyper-Threading / Simultaneous multi-threaded									
L2 cache	2MB L2 Cache std on Single Core / 2x2MB L2 Cache std on Dual Core / on die of processor / at processor speed									
SMP support	2-way SMP / up to two Xeon Processors (same speed/cache size)									
Implementation	Systemboard contains two Intel PGA604 micro-PGA ZIF sockets, eight memory DIMM slots, two low-profile PCI-X (100MHz) slots, two full-length PCI-X (133MHz) slots, and integrated SCSI, dual GB ethernet, graphics									
Memory	1GB or 2GB std / 16GB ¹³ max / two slots used / six slots available / DIMMs / PC2-3200 DDR2 400MHz registered 240-pin ECC DDR2-SDRAM DIMMs / eight DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / Active Memory™; Memory mirroring, hot-spare memory / Error Checking and Correcting (ECC) / optional 16-bit Checksum Chipkill™ corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips,									
SCSI disk controller	Adaptec® RAID-7902 / dual channel Ultra320 SCSI controller (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X / supports RAID-0 and 1 with up to one hot-spare disk / optional IBM ServeRAID™-7k Adaptor for low-cost RAID 0, 1, 1E, 5, 00, 10, 1E0, 50 (installed on reserved internal connector)									
SCSI channels	Two 16-bit channels (one internal and one external) / SCSI Channel B: 16-bit 68-pin LVD cable from systemboard to backplane for six disks; Channel A: 16-bit 68-pin interface to support external SCSI devices via external SCSI 0.8mm VHDCI connector / supports optional ServeRAID adapters with external connector(s) for external devices									
IDE controller/cable	Enhanced IDE ATA-100 controller in ICH5 South Bridge / one connector on planar / one 1-drop IDE cable (CD-ROM)									
Disk - capacity	None standard / supports 7200-15000 rpm disks / one backplane									
Disk - bays	Six hot-swap / 80-pin SCA-2 connectors / filler panels installed in each disk bay / all disk bays Ultra320-enabled									
Mechanical	EIA 19" Rack (2U ⁴) / rack-mount only / supported in IBM NetBAY™ Rack products / no rack to tower conversion									
Chipset	Intel E7520 / Memory Controller Hub (MCH) / Intel I/O Controller Hub 5 (ICH5) / Two Intel PCI-X Hubs (133MHz PCI-X slots 3 & 4) / Intel Dodson I/O Processor (supports 100MHz PCI-X slots 1 & 2, Adaptec AIC-7902 and optional ServeRAID 7k Adapter / ICH5 South Bridge (Thin IMB to Host Bridge for graphics controller, EIDE, USB, SMBus, LPC bus to Super I/O) / LPC-SIO 8742x Super I/O									
Bus slots	(See below) Four available PCI-X 1.0 / no hot-swap Active™ PCI slots									
Ethernet controller	Two gigabit 10/100/1000 ethernet ports / Two Broadcom® 5721 / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / Alert Standard Format 2.0 / two RJ-45 ports in rear									
Optical / diskette	8X-24X ⁶ DVD-ROM / IDE; Diskette: 3.5" 1.44MB diskette drive / dust cover									
Front & Rear ports	Front: one USB (Vers 2.0) Rear: two USB (Vers 2.0), keyboard, mouse, serial (9-pin), graphics (DB-15), two ethernet (RJ-45), two RJ-45 (sys mgmt) / no parallel port									
Graphics	SVGA / ATI® Radeon™ 7000m / on planar / 16MB DDR SDRAM std/max / 32-bit 33MHz PCI 2.2 bus									
Security	Power-on password / administrator password / unattended boot / selectable boot sequence									
Systems mgmt	IBM Baseboard Management Controller (BMC) / H8S2168 / on planar / provides system and environmental monitoring such as temp, optional disks, fans, power supp / supports optional Remote Supervisor Adapter II slimline with reserved connector for continuous power (no ext power reqd)					Xeon 2.8GHz SC 800MHz/2MB L2 Proc Upg			40K2503	
						Xeon 2.8GHz DC 800MHz/4MB L2 Proc Upg			40K2502	
						Xeon 3.0GHz SC 800MHz/2MB L2 Proc Upg			40K2504	
						Xeon 3.2GHz SC 800MHz/2MB L2 Proc Upg			40K2505	
						Xeon 3.4GHz SC 800MHz/2MB L2 Proc Upg			40K2506	
						Xeon 3.6GHz SC 800MHz/2MB L2 Proc Upg			40K2507	
						Xeon 3.8GHz SC 800MHz/2MB L2 Proc Upg			40K2508	
Diagnostics	Drop down light path diagnostics panel providing LED map to failing part (located on front panel)					512MB(2x256)/PC2-3200 CL3 ECC DDR2 Non-Chpk Kit 73P3523			40K2503	
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director systems mgmt, others					1GB(2x512)/PC2-3200 CL3 ECC DDR2 Non-Chpk Kit			39M5818	
						2GB(2x1GB)/PC2-3200 CL3 ECC DDR2-SDRAM			39M5809	
						4GB(2x2GB)/PC2-3200 CL3 ECC DDR2-SDRAM			39M5815	
Keyboard / mouse	None standard (because rack-based)					IBM ServeRAID-7k Adapter			71P8642	
Power supply	Std/Max: one/two 625 watt hot-swap / rear access / auto restart / redundant with two power supplies / auto-sensing					IBM Remote Supervisor Adapter II Slim			73P9341	
						73.4GB 10K Ultra320 SCSI Hot-Swap SL HDD			40K1023	
Fans	Calibrated Vectored Cooling™ Std: six fans; Max: twelve (six fans with optional second power supply) / redundant with twelve fans installed; All: variable speed / hot-swap / PFA					146.8GB 10K Ultra320 SCSI Hot-Swap SL HDD			40K1024	
						625W (N. America) Hot-Swap Power Supply			26K5097	
						NetBAY Local Console Manager			1735L04	
Prerequisites	Monitor, keyboard, mouse, SCSI disk, rack					NetBAY Remote Console Manager			1735R16	
						Other options at ibm.com/pc/us/accessories				

Slot 1: low-profile, 64-bit 100MHz 3.3v PCI-X, non hot, Bus A
 Slot 2: low-profile, 64-bit 100MHz 3.3v PCI-X non hot, Bus A
 Slot 3: full, 64-bit 133MHz 3.3v PCI-X, not hot-swap, Bus B*
 Slot 4: full, 64-bit 133MHz 3.3v PCI-X, not hot-swap, Bus B*
 *slots 3 & 4 riser may be replaced with PCI-Express riser



Bay ① 3.5", 0.5", access, slim diskette
 Bay ② 5.25", 0.5", access, slim DVD-ROM
 Bay ③ 3.5", SL 1", access, hot-swap, open for disk
 Bay ④ 3.5", SL 1", access, hot-swap, open for disk
 Bay ⑤ 3.5", SL 1", access, hot-swap, open for disk
 Bay ⑥ 3.5", SL 1", access, hot-swap, open for disk
 Bay ⑦ 3.5", SL 1", access, hot-swap, open for disk
 Bay ⑧ 3.5", SL 1", access, hot-swap, open for disk
 Bays 3 through 8 support six SL disks; or 1 DDS5 Tape drive (2 slots used, additional PCI SCSI adaptor req'd) via SCA-2 connectors

- Quick release adapter slots (no screws)
- Configuration/Setup Utility: F1 at startup
- Diagnostics (PC-Doctor™): F2 at startup
- System Partition Boot: ALT+F1 at startup
- Network Boot: F12 at startup
- Front indicators LEDs: Power-on LED, SCSI bus activity LED, system identification LED, information LED, and system-error LED
- Predictive failure analysis on disk options, memory, processors, VRMs, power supplies, and fans in conjunction with IBM Director can alert the system administrator of an imminent component failure
- Rack: H 3.36" x W 17.5" x D 27.5" (H 85.4mm x W 443.6mm x D 698mm)
- 46.5 to 62 pounds
- Stealth black color

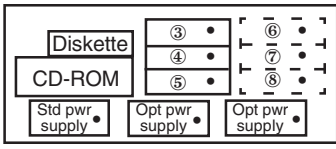
All models: Max int disk capacity: 1.8TB² with six 300GB SL disks

LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- 3 year on site warranty service upgrade options (in eligible locations):⁷
 - 9 hr coverage, Mon-Fri excluding holidays, 4 hr response time (ServicePac™ 21P2077)
 - 24 hr x 7 day coverage, 4 hour average response time (ServicePac 21P2078)
 - 24 hr x 7 day coverage, 2 hour average response time (ServicePac 21P2093)
- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information

• = Hot-swap

IBM® Type-model	Qty x Processor	L2 cache	Memory	Disk	SCSI controller	Slots x bays	Bays max	HS power supplies	Ethernet	Mechanical	Available date	
8682-4RY	1 x Pentium III Xeon 700MHz	1MB	512MB	None	2 x Ultra160	6x5 (3HS)	8 (6HS)	1 (3 max)	10/100	4U ⁴ rack	Mar 2001	
8682-5RY	1 x Pentium III Xeon 700MHz	2MB	512MB	None	2 x Ultra160	6x5 (3HS)	8 (6HS)	1 (3 max)	10/100	4U rack	Mar 2001	
8682-6RY	1 x Pentium III Xeon 900MHz	2MB	512MB	None	2 x Ultra160	6x5 (3HS)	8 (6HS)	1 (3 max)	10/100	4U rack	Apr 2001	
Processor(s)	1 x Intel® Pentium® III Xeon™ 700 or 900MHz with 100MHz frontside bus											
L2 cache	1MB std and max / at processor speed or 2MB std and max / at processor speed											
Implementation	Motherboard contains four Intel Slot 2 connectors for SECC cartridges (fourth Slot 2 occupied by terminator), PCI slots, one slot for Memory Board, and integrated subsystems / all VRMs integrated in processors											
SMP support	4-way SMP via identical processors / upgrade via SECC into Slot 2 CPU connectors											
Mem - std / max / type	512MB std / 16GB max¹³ / Chipkill™ multibit error correction using ind std ECC DIMMs (fixes 1 to 4-bit errors on same chip and detects 1- through 8-bit errors contained in two chips) / Chipkill performed by memory controller and firmware											
Memory - sockets	One Memory Board std and max / 16 sockets / 12 available (four 128MB DIMMs standard) / 4-way memory interleave											
Memory - support	SDRAM / 100MHz / sixteen 168-pin gold-plated DIMM 3.3 volt sockets / PC100-compliant / requires 4 identical DIMMs Supports registered SDRAM ECC DIMMs only (128, 256, 512MB, and 1GB)											
SCSI disk controller	Adaptec® AHA-7899 / dual channel Wide Ultra160 SCSI controller (LVD 160MB/sec) / Ultra 160/m / on planar / 64-bit PCI / no hardware RAID standard											
SCSI channels	Two 16-bit channels / both internal or one internal with one external / <i>Channel A:</i> 16-bit 68-pin LVD cable from controller to backplane / <i>Channel B:</i> internal 16-bit connector to use internally or can attach standard bulkhead LVD cable through punch out for external connector											
Extra SCSI cable	Includes a 16-bit LVD SCSI cable for external SCSI devices via an external 0.8mm VHDCI connector											
IDE controller / cable	Single Primary IDE / one connector on planar / one 1-drop IDE cable (CD-ROM)											
Disk - bays	Hot-swap (HS) / 3 bays std / 6 max / 80-pin SCA-2 connectors / common tray with EXP300 and later systems											
Mechanical	EIA 19" Rack (4U⁴)											
Rack support	Supported in IBM NetBAY™ Racks											
Architecture	Three peer PCI 2.2 buses / Bus A: 32-bit 33MHz (1 PCI slot, ethernet, graphics, South Bridge, Mgmt Processor daughtercard) / Bus B: 64-bit 66MHz (3 PCI slots) / Bus C: 64-bit 33MHz (2 PCI slots, SCSI controller)											
Slots (Active™ PCI)	(See below) 6 hot-swap PCI slots ¹⁰ available / hot replace, hot upgrade, hot expansion											
Chip set	ServerWorks® ServerSet 2.0HE chip set / NB6536 North Bridge 2.0HE / NB6555IO Bridge 2.0 (Inter Module Bus with two 16-bit links to 6536) / IB6566 South Bridge for IDE, USB, ISA bus for Service Processor and Super I/O National Semiconductor® PC97317VUL (diskette, parallel, serial, keyboard, mouse)											
Bays / available	(See diagram below): 5 bays / three hot-swap disk bays standard (option for three additional hot-swap disk bays)											
Status LEDs	Operator Information Panel (in front) / includes power-on, disk, ethernet, information, system error											
10/100 ethernet	AMD® Am79C975 / on planar / 10BaseT, 100BaseTX / full duplex / RJ-45 connector / 2 front LEDs											
CD-ROM / diskette	48X-20X ⁶ CD-ROM / multisession / IDE interface / bootable; <i>Diskette:</i> 3.5" 1.44MB diskette drive / dust cover											
Serial / parallel / USB	<i>Serial:</i> Three 9-pin (one for Mgmt Processor) <i>Parallel:</i> One <i>USB:</i> Two ports (Version 1.1) <i>Adv Sys Mgmt:</i> Two RJ-45 SVGA / PCI 2.1 bus / S3 [®] Savage4 (on planar) / 8MB SDRAM std/max / 1280x1024 at 16M colors at 100Hz / DDC2B											
Graphics controller												
Security	Power-on password / administrator password / hinged bezel to cover power button and reset button / unattended boot / selectable boot / systems mgmt security (user log-in password, read-only or read/write access, dial back) / unattended start mode											
Systems management	Advanced System Mgmt Processor / on daughtercard / ISA bus proprietary connector / provides remote console and mgmt / allows diagnostic, reset, POST, and auto recovery functions / monitors temp, fans, and power supplies											
Diagnostics	Diagnostics LED Panel Light Path Diagnostics™ (under cover) / provides an LED map to failing component / motherboard error LEDs / diagnostics in ROM by pressing F2 at startup for PC-Doctor											
Software	ServerGuide™ (installation and configuration utilities), Anti-Virus software, APC PowerChute Plus, IBM Director, others											
Keyboard / mouse	None standard											
Power supply	<i>Std:</i> one 270 watt hot-swap; <i>Max:</i> three 270 watt hot-swap / front access / redundant with two power supplies in most cases; redundancy with three in all cases / auto-restart											
Fans	Six (four for disks, memory, PCI; two for processors) / hot-swap / redundant (any single fan can fail while maintaining cooling / PFA / fan failure signals Diagnostic LED and Mgmt Processor / fan in each power supply											
Prerequisites	Monitor, disk, operating system, keyboard, mouse, rack											
Slot 1:	fullsize, 32-bit 33MHz PCI (5v), hot-swap, Bus A	<ul style="list-style-type: none"> ✦ Rail system enables CD-ROM and diskette to snap in and out without screws ✦ Configuration/Setup Utility invoked by pressing F1 at startup ✦ SCSISelect near startup by pressing CTRL+A ✦ Several hardcopy publications ✦ Predictive Failure Analysis® on disk options, memory, processors, power supplies, and fans in conjunction with IBM Director can alert the system administrator of an imminent component failure ✦ Rack: H 7.0" x W 19.0" x D 28.0" ✦ 62 to 77 pounds ✦ Stealth black color 									<p style="text-align: center;">LIMITED WARRANTY³</p> <ul style="list-style-type: none"> ✦ 3 year parts and labor ✦ International Warranty Service³ ✦ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time ✦ 3 year on site warranty service upgrade options (in eligible locations):⁷ <ul style="list-style-type: none"> • 24 hr x 7 day coverage, 4 hour response time • 24 hr x 7 day coverage, 2 hour response time ✦ 24x7¹⁴ toll-free support for warranty issues during the warranty period³ 	
Slot 2:	fullsize, 64-bit 66MHz PCI (3.3v), hot-swap, Bus B											
Slot 3:	fullsize, 64-bit 66MHz PCI (3.3v), hot-swap, Bus B											
Slot 4:	fullsize, 64-bit 66MHz PCI (3.3v), hot-swap, Bus B											
Slot 5:	fullsize, 64-bit 33MHz PCI (5v), hot-swap, Bus C											
Slot 6:	fullsize, 64-bit 33MHz PCI (5v), hot-swap, Bus C											
		<p><i>All models:</i> Max int disk capacity: 218.4GB² with six 36.4GB SL disks</p>										

See footnotes for important warranty information

US models withdrawn effective June 2002

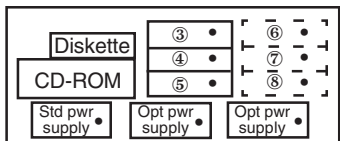
• = Hot-swap

IBM® Type-model	Qty x Processor	L2 cache	Memory	Disk	SCSI controller	Slots x bays	Bays max	HS power supplies	IXA support	Ethernet	Mechanical	Available date
8682-4AX	1 x Pentium III Xeon 700	1MB	512MB	None	2 x Ultra160	6x5 (3HS)	8 (6HS)	1 (3 max)	IXA	10/100	4U ⁴ rack	Jun 2001
8682-5AX	1 x Pentium III Xeon 700	2MB	512MB	None	2 x Ultra160	6x5 (3HS)	8 (6HS)	1 (3 max)	IXA	10/100	4U rack	Jun 2001

These xSeries 350 models support the Integrated xSeries Adapter for iSeries (IXA) option 1519-100 and should only be ordered when IXA applications are required. The IXA provides Windows users integration into iSeries platforms via a direct, high speed attachment.

Processor(s)	1 x Intel® Pentium® III Xeon™ 700MHz with 100MHz frontside bus											
L2 cache	1MB std and max / at processor speed or 2MB std and max / at processor speed											
Implementation	Motherboard contains four Intel Slot 2 connectors for SECC cartridges (fourth Slot 2 occupied by terminator), PCI slots, one slot for Memory Board, and integrated subsystems / all VRMs integrated in processors											
SMP support	4-way SMP via identical processors (700 or 900MHz) / upgrade via SECC into Slot 2 CPU connectors /											
Mem - std / max / type	512MB std / 16GB max¹³ / Chipkill™ multibit error correction using ind std ECC DIMMs (fixes 1 to 4-bit errors on same chip and detects 1- through 8-bit errors contained in two chips) / Chipkill performed by memory controller and firmware											
Memory - sockets	One Memory Board std and max / 16 sockets / 12 available (four 128MB DIMMs standard) / 4-way memory interleave											
Memory - support	SDRAM / 100MHz / sixteen 168-pin gold-plated DIMM 3.3 volt sockets / PC100-compliant / requires 4 identical DIMMs Supports registered SDRAM ECC DIMMs only (128, 256, 512MB, and 1GB)											
SCSI disk controller	Adaptec® AHA-7899 / dual channel Wide Ultra160 SCSI controller (LVD 160MB/sec) / 64-bit PCI / on planar /											
SCSI channels	Two 16-bit channels / both internal or one internal with one external / <i>Channel A:</i> 16-bit 68-pin LVD cable from controller to backplane / <i>Channel B:</i> internal 16-bit connector to use internally or can attach standard bulkhead LVD cable through punch out for external connector											
Extra SCSI cable	Includes a 16-bit LVD SCSI cable for external SCSI devices via an external 0.8mm VHDCI connector											
IDE controller / cable	Single Primary IDE / one connector on planar / one 1-drop IDE cable (CD-ROM)											
Disk - bays	Hot-swap (HS) / 3 bays std / 6 max / 80-pin SCA-2 connectors / common tray with EXP300 and later systems											
Mechanical	EIA 19" Rack (4U⁴) / supported in IBM NetBAY™ Racks											
Architecture	Three peer PCI 2.2 buses / Bus A: 32-bit 33MHz (1 PCI slot, ethernet, graphics, South Bridge, Mgmt Processor card) / Bus B: 64-bit 66MHz (3 PCI slots) / Bus C: 64-bit 33MHz (2 PCI slots, SCSI controller)											
Slots (Active™ PCI)	(See below) 6 hot-swap PCI slots ¹⁰ available / hot replace, hot upgrade, hot expansion											
IXA-compatible	Supports the Integrated xSeries Adapter for iSeries (IXA) option 1519-100											
Chip set	ServerWorks® ServerSet 2.0HE chip set / NB6536 North Bridge 2.0HE / NB6555IO Bridge 2.0 (Inter Module Bus with two 16-bit links to 6536) / IB6566 South Bridge for IDE, USB, ISA bus for Service Processor and Super I/O National Semiconductor® PC97317VUL (diskette, parallel, serial, keyboard, mouse)											
Bays / available	(See diagram below): 5 bays / three hot-swap disk bays standard (option for three additional hot-swap disk bays)											
10/100 ethernet	AMD® Am79C975 / on planar / 10BaseT, 100BaseTX / full duplex / RJ-45 connector / 2 front LEDs											
CD-ROM / diskette	48X-20X ⁶ CD-ROM / multisession / IDE interface / bootable; <i>Diskette:</i> 3.5" 1.44MB diskette drive / dust cover											
Serial / parallel / USB	<i>Serial:</i> Three 9-pin (one for Mgmt Processor) <i>Parallel:</i> One <i>USB:</i> Two ports (Version 1.1) <i>Adv Sys Mgmt:</i> Two RJ-45											
Graphics controller	SVGA / PCI 2.1 bus / S3® Savage4 (on planar) / 8MB SDRAM std/max / 1280x1024 at 16M colors at 100Hz / DDC2B											
Security	Power-on password / administrator password / hinged bezel to cover power button and reset button / unattended boot / selectable boot / unattended start mode											
Systems management	Advanced System Mgmt Processor / on daughtercard / ISA bus proprietary connector / provides remote console and mgmt / allows diagnostic, reset, POST, and auto recovery functions / monitors temp, fans, and power supplies											
Diagnostics	Diagnostics LED Panel Light Path Diagnostics™ (under cover) / provides an LED map to failing component / motherboard error LEDs / diagnostics in ROM by pressing F2 at startup for PC-Doctor											
Software	ServerGuide™ (installation and configuration utilities), Anti-Virus software, APC PowerChute Plus, IBM Director, others											
Keyboard / mouse	None standard											
Power supply	Std: one 270 watt hot-swap; Max: three 270 watt hot-swap / front access / redundant with two power supplies in most cases; redundancy with three in all cases / auto-restart											
Fans	Six (four for disks, memory, PCI; two for processors) / hot-swap / redundant (any single fan can fail while maintaining cooling / PFA / fan failure signals Diagnostic LED and Mgmt Processor / fan in each power supply											
Prerequisites	Monitor, disk, operating system, keyboard, mouse, rack											

- Slot 1: fullsize, 32-bit 33MHz PCI (5v), hot-swap, Bus A
- Slot 2: fullsize, 64-bit 66MHz PCI (3.3v), hot-swap, Bus B
- Slot 3: fullsize, 64-bit 66MHz PCI (3.3v), hot-swap, Bus B
- Slot 4: fullsize, 64-bit 66MHz PCI (3.3v), hot-swap, Bus B
- Slot 5: fullsize, 64-bit 33MHz PCI (5v), hot-swap, Bus C
- Slot 6: fullsize, 64-bit 33MHz PCI (5v), hot-swap, Bus C



- Bay ① 3.5", SL 1", access, diskette
- Bay ② 3.5", HH 1.6", access, CD-ROM
- Bay ③ 3.5", SL 1", access, hot swap
- Bay ④ 3.5", SL 1", access, hot swap
- Bay ⑤ 3.5", SL 1", access, hot swap
- *Bay ⑥, ⑦, ⑧ Optional 3-Pack for 3 SL 1.0" hot-swap disk bays (otherwise not usable)

- Rail system enables CD-ROM and diskette to snap in and out without screws
- Configuration/Setup Utility invoked by pressing F1 at startup
- SCSISelect near startup by pressing CTRL+A
- Several hardcopy publications
- Predictive Failure Analysis® on disk options, memory, processors, power supplies, and fans in conjunction with IBM Director can alert the system administrator of an imminent component failure
- Rack: H 7.0" x W 19.0" x D 28.0"
- 62 to 77 pounds
- Stealth black color

All models: Max int disk capacity: 218.4GB² with six 36.4GB SL disks

LIMITED WARRANTY³

- ↔ **3 year parts and labor**
- ↔ **International Warranty Service³**
- ↔ **On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time**
- ↔ **3 year on site warranty service upgrade options (in eligible locations):⁷**
 - 24 hr x 7 day coverage, 4 hour response time
 - 24 hr x 7 day coverage, 2 hour response time
- ↔ **24x7¹⁴ toll-free support for warranty issues during the warranty period³**

See footnotes for important warranty information
US models withdrawn effective June 2002
● = Hot-swap (HS)

IBM® Type-model	Qty x Processor	L3 cache	Memory	Disks	SCSI controller	Mechanical	Slots x bays	RXE Exp Ports	Hot-swap pwr supplies	Mgmt adapter	Available date
8686-1RX	1 x Xeon™ MP 1.4GHz	512KB	1GB Chipkill™	None	Ultra160	3U ⁴ rack	6x5	One	One (not redund)	PCI	Mar 2002
8686-2RX	2 x Xeon MP 1.5GHz	512KB	2GB Chipkill	2 x 36GB 10K	Ultra160	3U rack	6x5	One	Two redundant	PCI	Dec 2001
8686-3RX	2 x Xeon MP 1.6GHz	1MB	2GB Chipkill	2 x 36GB 10K	Ultra160	3U rack	6x5	One	Two redundant	PCI	Dec 2001

Positioning Processors L2 cache L3 cache Processor upgrade Implementation

Space efficient 4-way, 3U, rack-dense server with ground breaking Enterprise X-Architecture™ technology
1 or 2 x Intel® Xeon™ Processor MP 1.4, 1.5, or 1.6GHz with 400MHz frontside bus / Hyper-Threading technology
256KB / on die of processor / at processor speed
512KB or 1MB / on die of processor / at processor speed
4-way SMP / up to four Xeon Processors MP (same speed/cache size)
 Systemboard contains four Intel 603-pin micro-PGA ZIF sockets, one memory board slot, six Active™ PCI-X slots, and integrated SCSI, ethernet, graphics

Memory

1GB or 2GB std / 8GB max / two (1GB model) or four (2GB models) 512MB DIMMs installed / 1.7-inch tall / one memory board standard with 8 DIMM gold-connector slots / DIMMs must be installed in matched pairs / 128-bit simultaneous transfer from two DIMMs / PC1600 200MHz registered 184-pin DDR-SDRAM RDIMMs / **Error Checking and Correcting (ECC)** via **16-bit Checksum Chipkill™** (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips)

SCSI disk controller SCSI connectors SCSI cabling IDE controller / cabling Disk - capacity Disk - bays

Adaptec® AIC-7892 / Wide Ultra160 SCSI (LVD 160MB/sec) / single channel / 64-bit 33MHz PCI / integrated on planar Controller hard-wired to SCSI backplane (no cable) / no external SCSI connector
 One standard 16-bit LVD cable included for attaching an optional ServeRAID adapter to the three-bay backplane; SCSI RAID adapter 68-pin connector on systemboard for this cable to get signals to three-bay backplane
 Enhanced IDE ATA-33 controller in OSB4 South Bridge / one one-drop IDE cable from IDE controller to CD-ROM
1RX: none; **2RX/3RX:** two 36.4GB Ultra160 10K rpm disks / 4.9 ms average read seek / supports 15,000 rpm disks
 Three hot-swap bays / converged tray / 80-pin SCA-2 connectors

Mechanical

EIA 19" rack models (3U⁴) x 28" deep / supported in NetBAY™ Racks (such as NetBAY42 SR, NetBAY42 ER)

Chipset

IBM XA-32™ chipset / IBM Memory I/O Controller with two remote I/O ports (one to IBM PCI-X Host Bridge; one to RXE Expansion Port) / IBM PCI-X Host Bridge provides three peer PCI buses (two PCI-X 1.0, one PCI 2.2) / PCI 2.2 Bus 0 supports SCSI, graphics, ethernet, adapter slot with Remote Supervisor Adapter, and ServerWorks® OSB4 South Bridge (IDE, USB, ISA bus for Super I/O National Semiconductor® PC97317VUL [diskette, keyboard, mouse])

Slots (Active™ PCI-X)

Six hot-swap PCI-X 1.0 slots¹⁰ available with power and attention indicator lights (optical sensors control power to slot) / **hot replace, hot upgrade, hot expansion** / separated by insulative plastic dividers

RXE Expansion Port

One port to support up to 12 additional PCI-X slots via an optional IBM RXE-100 Remote Expansion Enclosure

CD-ROM / diskette Ethernet Graphics controller Ports

24X-10X⁹ CD-ROM / 3.5" 1.44MB diskette drive
 Intel 82559 10/100 ethernet controller / on systemboard / full duplex / 32-bit PCI / Wake on LAN® / Alert on LAN™ 2
 SVGA / S3® Savage4 LT / on systemboard / 8MB SDRAM std/max / up to 1280x1024 at 64K colors at 85Hz
Rear: RXE-100 Expansion Port (to connect optional RXE-100), RXE Management Port (to manage optional RXE-100), two USB (Ver 1.1), keyboard, mouse, analog DB-15 graphics, ethernet / no serial or parallel ports / **Front:** one USB (Ver 1.1)

Security

Power-on and administrator passwords / unattended boot / selectable boot

Systems management

Remote Supervisor Adapter / PCI adapter / includes 10/100 ethernet, RJ-11, and serial connectors / provides remote console and mgmt / power on/off system / monitors power status, op system, temperature, disks, fans, power supplies

Diagnostics

Light Path Diagnostics™ / primary indicator on information panel with LEDs associated with failing components / IBM Real Time Diagnostics (operated through IBM Director) available even while server running

Software

ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director, and others

Keyboard / mouse Power supplies

None standard (because rack-based)
Std: one or two 370 watt hot-swap; **Max:** three hot-swap / redundant with two power supplies (some configurations) / worldwide / voltage-sensing / auto-restart / fans in each power supply / PFA

Cooling fans

Six hot-swap, redundant, multi-speed fans / one additional fan in each power supply / PFA / fan failure signals Diagnostic LED and mgmt processor

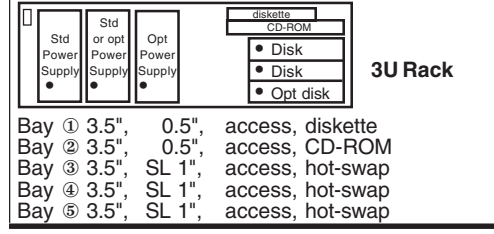
RXE-100 Remote Expansion Enclosure	86841RX
256MB PC1600 ECC DDR SDRAM RDIMM	33L3281
512MB PC1600 ECC DDR SDRAM RDIMM	33L3283
1GB PC1600 ECC DDR SDRAM RDIMM	33L3285
Xeon MP 1.4GHz/512KB L3 Cache Proc Upg	19K4638
Xeon MP 1.5GHz/512KB L3 Cache Proc Upg	19K4639
Xeon MP 1.6GHz/1MB L3 Cache Proc Upg	19K4647
370 watt Hot-Swap Redundant Power Supply	31P6108
IBM ServeRAID™-4Mx Ultra160 SCSI Adapter	06P5736
IBM 73.4GB 10K Ultra 160 SCSI Hot-Swap SL	06P5756
IBM NetBAY42 Standard Rack (SR)	9306420
IBM NetBAY42 Enterprise Rack (ER)	930842S
IBM T540 15" Flat Panel Color Monitor (black)	9511AG4
Other options at ibm.com/pc/us/accessories	

- Six available 3.3 volt Active PCI-X slots:
- Bus 2 (B) with two slots supports (slots 1, 2):
 - one fullsize, 64-bit, 133MHz PCI-X, hot-swap
 - or two fullsize, 64-bit, 100MHz PCI-X, hot-swap
 - or two fullsize, 64-bit, 66MHz PCI-X, hot-swap
 - or two fullsize, 64-bit, 66MHz PCI, hot-swap
 - or two fullsize, 64-bit, 33MHz PCI, hot-swap
 - Bus 1 (A) with four slots supports (slots 3, 4, 5, 6):
 - four fullsize, 64-bit, 66MHz PCI-X, hot-swap
 - or two fullsize, 64-bit, 66MHz PCI, hot-swap
 - or four fullsize, 64-bit, 33MHz PCI, hot-swap
 - Bus 0 with one slot supports:
 - only standard Remote Supervisor Adapter in halfsize, 64-bit 33MHz PCI, not hot-swap

- ◇ Dimensions: H5.25" x W17.4" x D27.6"
- ◇ Dimensions: H133.4mm x W442.0mm x D701mm
- ◇ Weight: 58.4 to 70lbs; 24.9 to 31.8kg
- ◇ Stealth black color
- ◇ Tool-free serviceability
- ◇ Access adapters, processors, memory, and systemboard from top
- ◇ Access power supplies and disks from front
- ◇ Setup Program by pressing F1 at startup
- ◇ Diagnostics (PC-Doctor) by pressing F2 at startup
- ◇ SCSISelect by pressing Ctrl+A at startup
- ◇ Top cover Light Path Diagnostics (level 2 diagnostic panel) for outside view of potential problem without removing cover
- ◇ Information LED panel, diagnostic LED panel, and component LEDs give visual indications of system well-being
- ◇ Predictive Failure Analysis® alerts on disks, power supplies, memory, processors, VRMs, and fans with IBM Director

LIMITED WARRANTY³

- ⇨ 3 year parts and labor
- ⇨ International Warranty Service³
- ⇨ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- ⇨ 3 year on site warranty service upgrade options (in eligible locations):⁷
 - Mon-Fri coverage, 4 hour response time (ServicePac® part number 96P2252)
 - 24 hr x 7 day coverage, 4 hour response time (ServicePac part number 96P2253)
 - 24 hr x 7 day coverage, 2 hour response time (ServicePac part number 96P2254)
- ⇨ 24x7¹⁴ toll-free support for warranty issues during the warranty period³



All models: Maximum internal disk capacity: 220.2GB with three 73.4GB² hot-swap SCSI disks

See footnotes for important warranty information
 US models announced November 27, 2001 or February 12, 2002
 US models withdrawn effective October 2002
 • = Hot-swap
 (X360A) © IBM Corp. October 2002

IBM® Type-model	Qty x Processor	L3 cache	Memory	Disks	SCSI controller	Mechanical	Slots x bays	RXE Exp Ports	Hot-swap pwr supplies	Mgmt adapter	Available date
8686-2RY	2 x Xeon™ MP 1.5GHz	512KB	2GB Chipkill™	None	Ultra160	3U ⁴ rack	6x5	One	Two redundant	PCI	Apr 2002
8686-3RY	2 x Xeon MP 1.6GHz	1MB	2GB Chipkill	None	Ultra160	3U rack	6x5	One	Two redundant	PCI	Apr 2002
Positioning	Space efficient 4-way, 3U, rack-dense server with ground breaking Enterprise X-Architecture™ technology										
Processors	2 x Intel® Xeon™ Processor MP 1.5 or 1.6GHz with 400MHz frontside bus / supports Hyper-Threading technology										
L2 cache	256KB / on die of processor / at processor speed										
L3 cache	512KB or 1MB / on die of processor / at processor speed										
Processor upgrade	4-way SMP / up to four Xeon Processors MP (same speed/cache size)										
Implementation	Systemboard contains four Intel 603-pin micro-PGA ZIF sockets, one memory board slot, six Active™ PCI-X slots, and integrated SCSI, ethernet, graphics										
Memory	2GB std / 8GB max / four 512MB DIMMs installed / four slots available / 1.7-inch tall / one memory board standard with 8 DIMM gold-connector slots / DIMMs must be installed in matched pairs / 128-bit simultaneous transfer from two DIMMs / PC1600 200MHz registered 184-pin DDR-SDRAM RDIMMs / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips)										
SCSI disk controller	Adaptec® AIC-7892 / Wide Ultra160 SCSI (LVD 160MB/sec) / single channel / 64-bit 33MHz PCI / integrated on planar										
SCSI connectors	Controller hard-wired to SCSI backplane (no cable) / no external SCSI connector										
SCSI cabling	One standard 16-bit LVD cable included for attaching an optional ServeRAID adapter to the three-bay backplane; SCSI RAID adapter 68-pin connector on systemboard for this cable to get signals to three-bay backplane										
IDE controller / cabling	Enhanced IDE ATA-33 controller in OSB4 South Bridge / one one-drop IDE cable from IDE controller to CD-ROM										
Disk - capacity	None standard										
Disk - bays	Three hot-swap bays / converged tray / 80-pin SCA-2 connectors										
Mechanical	EIA 19" rack models (3U ⁴) x 28" deep / supported in NetBAY™ Racks (such as NetBAY42 SR, NetBAY42 ER)										
Chipset	IBM XA-32™ chipset / IBM Memory I/O Controller with two remote I/O ports (one to IBM PCI-X Host Bridge; one to RXE Expansion Port) / IBM PCI-X Host Bridge provides three peer PCI buses (two PCI-X 1.0, one PCI 2.2) / PCI 2.2 Bus 0 supports SCSI, graphics, ethernet, adapter slot with Remote Supervisor Adapter, and ServerWorks® OSB4 South Bridge (IDE, USB, ISA bus for Super I/O National Semiconductor® PC97317VUL [diskette, keyboard, mouse])										
Slots (Active™ PCI-X)	Six hot-swap PCI-X 1.0 slots ¹⁰ available with power and attention indicator lights (optical sensors control power to slot) / hot replace, hot upgrade, hot expansion / separated by insulative plastic dividers										
RXE Expansion Port	One port to support up to 12 additional PCI-X slots via an optional IBM RXE-100 Remote Expansion Enclosure										
CD-ROM / diskette	24X-10X ⁶ CD-ROM / 3.5" 1.44MB diskette drive										
Ethernet	Intel 82559 10/100 ethernet controller / on systemboard / full duplex / 32-bit PCI / Wake on LAN® / Alert on LAN™ 2										
Graphics controller	SVGA / S3® Savage4 LT / on systemboard / 8MB SDRAM std/max / up to 1280x1024 at 64K colors at 85Hz										
Ports	Rear: RXE-100 Expansion Port (to connect optional RXE-100), RXE Management Port (to manage optional RXE-100), two USB (Ver 1.1), keyboard, mouse, analog DB-15 graphics, ethernet / no serial or parallel ports / Front: one USB (Ver 1.1)										
Security	Power-on and administrator passwords / unattended boot / selectable boot										
Systems management	Remote Supervisor Adapter / PCI adapter / includes 10/100 ethernet, RJ-11, and serial connectors / provides remote console and mgmt / power on/off system / monitors power status, op system, temperature, disks, fans, power supplies										
Diagnostics	Light Path Diagnostics™ / primary indicator on information panel with LEDs associated with failing components / IBM Real Time Diagnostics (operated through IBM Director) available even while server running										
Software	ServerGuide™ (CD-ROM installation and configuration utilities), AntiVirus software, IBM Director, and others										
Keyboard / mouse	None standard (because rack-based)										
Power supplies	Std: two 370 watt hot-swap; Max: three hot-swap / redundant with two power supplies (some configurations) / worldwide / voltage-sensing / auto-restart / fans in each power supply / PFA										
Cooling fans	Six hot-swap, redundant, multi-speed fans / one additional fan in each power supply / PFA / fan failure signals Diagnostic LED and mgmt processor										
<p>Six available 3.3 volt Active PCI-X slots:</p> <ul style="list-style-type: none"> • Bus 2 (B) with two slots supports (slots 1, 2): <ul style="list-style-type: none"> - one fullsize, 64-bit, 133MHz PCI-X, hot-swap - or two fullsize, 64-bit, 100MHz PCI-X, hot-swap - or two fullsize, 64-bit, 66MHz PCI-X, hot-swap - or two fullsize, 64-bit, 66MHz PCI, hot-swap - or two fullsize, 64-bit, 33MHz PCI, hot-swap • Bus 1 (A) with four slots supports (slots 3, 4, 5, 6): <ul style="list-style-type: none"> - four fullsize, 64-bit, 66MHz PCI-X, hot-swap - or two fullsize, 64-bit, 66MHz PCI, hot-swap - or four fullsize, 64-bit, 33MHz PCI, hot-swap • Bus 0 with one slot supports: <ul style="list-style-type: none"> - only standard Remote Supervisor Adapter in halfsize, 64-bit 33MHz PCI, not hot-swap <p> <input type="checkbox"/> Std Power Supply <input type="checkbox"/> Std or opt Power Supply <input type="checkbox"/> Opt Power Supply <input type="checkbox"/> diskette CD-ROM <input type="checkbox"/> Opt disk <input type="checkbox"/> Opt disk <input type="checkbox"/> Opt disk </p> <p>3U Rack</p> <p> Bay ① 3.5", 0.5", access, diskette Bay ② 3.5", 0.5", access, CD-ROM Bay ③ 3.5", SL 1", access, hot-swap Bay ④ 3.5", SL 1", access, hot-swap Bay ⑤ 3.5", SL 1", access, hot-swap </p> <p> <input type="checkbox"/> Dimensions: H5.25" x W17.4" x D27.6" <input type="checkbox"/> Dimensions: H133.4mm x W442.0mm x D701mm <input type="checkbox"/> Weight: 58.4 to 70lbs; 24.9 to 31.8kg <input type="checkbox"/> Stealth black color <input type="checkbox"/> Tool-free serviceability <input type="checkbox"/> Access adapters, processors, memory, and systemboard from top <input type="checkbox"/> Access power supplies and disks from front <input type="checkbox"/> Setup Program by pressing F1 at startup <input type="checkbox"/> Diagnostics (PC-Doctor) by pressing F2 at startup <input type="checkbox"/> SCSISelect by pressing Ctrl+A at startup <input type="checkbox"/> Top cover Light Path Diagnostics (level 2 diagnostic panel) for outside view of potential problem without removing cover <input type="checkbox"/> Information LED panel, diagnostic LED panel, and component LEDs give visual indications of system well-being <input type="checkbox"/> Predictive Failure Analysis® alerts on disks, power supplies, memory, processors, VRMs, and fans with IBM Director </p> <p>All models: Maximum internal disk capacity: 220.2GB with three 73.4GB² hot-swap SCSI disks</p>											
<p>OTHER OPTIONS:</p> <ul style="list-style-type: none"> RXE-100 Remote Expansion Enclosure 86841RX 256MB PC1600 ECC DDR SDRAM RDIMM 33L3281 512MB PC1600 ECC DDR SDRAM RDIMM 33L3283 1GB PC1600 ECC DDR SDRAM RDIMM 33L3285 Xeon MP 1.5GHz/512KB L3 Cache Proc Upg 19K4639 Xeon MP 1.6GHz/1MB L3 Cache Proc Upg 19K4647 370 watt Hot-Swap Redundant Power Supply 31P6108 IBM ServeRAID™-4Mx Ultra160 SCSI Adapter 06P5736 IBM 36.4GB 15K Ultra160 SCSI Hot-Swap SL 06P5768 IBM 73.4GB 10K Ultra160 SCSI Hot-Swap SL 06P5756 IBM NetBAY42 Standard Rack (SR) 9306420 IBM NetBAY42 Enterprise Rack (ER) 930842S IBM T540 15" Flat Panel Color Monitor (black) 9511AG4 <p>Other options at ibm.com/pc/us/accessories</p>											
<p>LIMITED WARRANTY³</p> <ul style="list-style-type: none"> ↔ 3 year parts and labor ↔ International Warranty Service³ ↔ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷ ↔ 3 year on site warranty service upgrade options (in eligible locations):⁷ <ul style="list-style-type: none"> • Mon-Fri coverage, 4 hour response time (ServicePac® part number 96P2252) • 24 hr x 7 day coverage, 4 hour response time (ServicePac part number 96P2253) • 24 hr x 7 day coverage, 2 hour response time (ServicePac part number 96P2254) ↔ 24x7¹⁴ toll-free support for warranty issues during the warranty period³ 											

See footnotes for important warranty information
 US models announced April 30, 2002
 US models withdrawn effective October 2002
 • = Hot-swap

IBM® Type-model	Qty x Processor	L3 cache	Memory	Disks	SCSI controller	Mechanical	Slots x bays	RXE Exp Ports	Hot-swap pwr supplies	Mgmt adapter	Available date
8686-4RX	1 x Xeon™ MP 1.4GHz	512KB	1GB Chipkill™	None	Ultra160	3U ⁴ rack	6x5	One	One (not redund)	PCI	Aug 2002
8686-5RX	2 x Xeon MP 1.5GHz	512KB	2GB Chipkill	None	Ultra160	3U rack	6x5	One	Two redundant	PCI	Aug 2002
8686-6RX	2 x Xeon MP 1.6GHz	1MB	2GB Chipkill	None	Ultra160	3U rack	6x5	One	Two redundant	PCI	Aug 2002

Positioning Processors L2 cache L3 cache Processor upgrade Implementation
Space efficient 4-way, 3U, rack-dense server with ground breaking Enterprise X-Architecture™ technology
1 or 2 x Intel® Xeon™ Processor MP 1.4, 1.5, or 1.6GHz¹ with 400MHz frontside bus / Hyper-Threading technology
256KB / on die of processor / at processor speed
512KB or 1MB / on die of processor / at processor speed
4-way SMP / up to four Xeon Processors MP (same speed/cache size)
 Systemboard contains four Intel 603-pin micro-PGA ZIF sockets, one memory board slot, six Active™ PCI-X slots, and integrated SCSI, ethernet, graphics

Memory
1GB or 2GB std / 8GB max¹³ / two (1GB model) or four (2GB models) 512MB DIMMs installed / 1.7-inch tall / one memory board standard with 8 DIMM gold-connector slots / DIMMs must be installed in matched pairs / 128-bit simultaneous transfer from two DIMMs / PC1600 200MHz registered 184-pin DDR-SDRAM RDIMMs / **Error Checking and Correcting (ECC)** via **16-bit Checksum Chipkill™** (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips)

SCSI disk controller SCSI connectors SCSI cabling IDE controller / cabling Disk - capacity Disk - bays
 Adaptec® AIC-7892 / Wide Ultra160 SCSI (LVD 160MB/sec) / single channel / 64-bit 33MHz PCI / integrated on planar Controller hard-wired to SCSI backplane (no cable) / no external SCSI connector
 One standard 16-bit LVD cable included for attaching an optional ServeRAID adapter to the three-bay backplane; SCSI RAID adapter 68-pin connector on systemboard for this cable to get signals to three-bay backplane
 Enhanced IDE ATA-33 controller in OSB4 South Bridge / one one-drop IDE cable from IDE controller to CD-ROM
 None standard / supports up to 15,000 rpm disks
 Three hot-swap bays / converged tray / 80-pin SCA-2 connectors

Mechanical
EIA 19" rack models (3U⁴) x 28" deep / supported in NetBAY™ Racks (such as NetBAY42 SR, NetBAY42 ER)

Chipset Slots (Active™ PCI-X) RXE Expansion Port
IBM XA-32™ chipset / IBM Memory I/O Controller (improved performance from earlier models) with two remote I/O ports (one to IBM PCI-X Host Bridge; one to RXE Expansion Port) / IBM PCI-X Host Bridge provides three peer PCI buses (two PCI-X 1.0, one PCI 2.2) / PCI 2.2 Bus 0 supports SCSI, graphics, ethernet, adapter slot with Remote Supervisor Adapter, and ServerWorks® OSB4 South Bridge (IDE, USB, ISA bus for Super I/O NS PC97317VUL [diskette, keyboard, mouse])
 Six hot-swap PCI-X 1.0 slots¹⁰ available with power and attention indicator lights (optical sensors control power to slot) / **hot replace, hot upgrade, hot expansion** / separated by insulative plastic dividers
One port to support up to 12 additional PCI-X slots via an optional IBM RXE-100 Remote Expansion Enclosure

CD-ROM / diskette Ethernet Graphics controller Ports
 24X-10X⁶ CD-ROM / 3.5" 1.44MB diskette drive
 Intel 82559 10/100 ethernet controller / on systemboard / full duplex / 32-bit PCI / Wake on LAN® / Alert on LAN™ 2
 SVGA / S3® Savage4 LT / on systemboard / 8MB SDRAM std/max / up to 1280x1024 at 64K colors at 85Hz
Rear: RXE-100 Expansion Port (to connect optional RXE-100), RXE Management Port (to manage optional RXE-100), two USB (Ver 1.1), keyboard, mouse, analog DB-15 graphics, ethernet / no serial or parallel ports / **Front:** one USB (Ver 1.1)

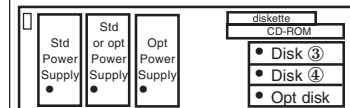
Security
 Power-on and administrator passwords / unattended boot / selectable boot

Systems management
Remote Supervisor Adapter / PCI adapter / includes 10/100 ethernet, RJ-11, and serial connectors / provides remote console and mgmt / power on/off system / monitors power status, op system, temperature, disks, fans, power supplies

Diagnostics
Light Path Diagnostics™ / primary indicator on information panel with LEDs associated with failing components / IBM Real Time Diagnostics (operated through IBM Director) available even while server running

Software		
ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director, and others	RXE-100 Remote Expansion Enclosure	86841RX
	256MB PC1600 ECC DDR SDRAM RDIMM	33L3281
	512MB PC1600 ECC DDR SDRAM RDIMM	33L3283
	1GB PC1600 ECC DDR SDRAM RDIMM	33L3285
	Xeon MP 1.4GHz/512KB L3 Cache Proc Upg	19K4638
	Xeon MP 1.5GHz/512KB L3 Cache Proc Upg	19K4639
	Xeon MP 1.6GHz/1MB L3 Cache Proc Upg	19K4647
	370 watt Hot-Swap Redundant Power Supply	31P6108
	IBM ServeRAID™-4Mx Ultra160 SCSI Adapter	06P5736
	IBM 73.4GB 10K Ultra 160 SCSI Hot-Swap SL	06P5756
	IBM NetBAY42 Standard Rack (SR)	9306420
	IBM Integrated xSeries Adapter for iSeries	1519100
	IBM T541 15" Flat Panel Color Monitor (black)	9512AB1
	Other options at ibm.com/pc/us/accessories	

- Six available 3.3 volt Active PCI-X slots:
- Bus 2 (B) with two slots supports (slots 1, 2):
 - one fullsize, 64-bit, 133MHz PCI-X, hot-swap
 - or two fullsize, 64-bit, 100MHz PCI-X, hot-swap
 - or two fullsize, 64-bit, 66MHz PCI-X, hot-swap
 - or two fullsize, 64-bit, 66MHz PCI, hot-swap
 - or two fullsize, 64-bit, 33MHz PCI, hot-swap
 - Bus 1 (A) with four slots supports (slots 3, 4, 5, 6):
 - four fullsize, 64-bit, 66MHz PCI-X, hot-swap
 - or two fullsize, 64-bit, 66MHz PCI, hot-swap
 - or four fullsize, 64-bit, 33MHz PCI, hot-swap
 - Bus 0 with one slot supports:
 - only for standard Remote Supervisor Adapter halfsize, 64-bit, 33MHz PCI, not hot-swap



3U Rack

- Bay ① 3.5", 0.5", access, diskette
- Bay ② 3.5", 0.5", access, CD-ROM
- Bay ③ 3.5", SL 1", access, hot-swap
- Bay ④ 3.5", SL 1", access, hot-swap
- Bay ⑤ 3.5", SL 1", access, hot-swap

- ◇ Dimensions: H5.25" x W17.4" x D27.6"
- ◇ Dimensions: H133.4mm x W442.0mm x D701mm
- ◇ Weight: 58.4 to 70lbs; 24.9 to 31.8kg
- ◇ Stealth black color
- ◇ Tool-free serviceability
- ◇ Access adapters, processors, memory, and systemboard from top
- ◇ Access power supplies and disks from front
- ◇ Setup Program by pressing F1 at startup
- ◇ Diagnostics (PC-Doctor) by pressing F2 at startup
- ◇ SCSISelect by pressing Ctrl+A at startup
- ◇ Top cover Light Path Diagnostics (level 2 diagnostic panel) for outside view of potential problem without removing cover
- ◇ Information LED panel, diagnostic LED panel, and component LEDs give visual indications of system well-being
- ◇ Predictive Failure Analysis® alerts on disks, power supplies, memory, processors, VRMs, and fans with IBM Director

All models: Maximum internal disk capacity: 220.2GB with three 73.4GB² hot-swap SCSI disks

LIMITED WARRANTY³

- ⇨ 3 year parts and labor
- ⇨ International Warranty Service³
- ⇨ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- ⇨ 3 year on site warranty service upgrade options (in eligible locations):⁷
 - Mon-Fri coverage, 4 hour response time (ServicePac® part number 96P2252)
 - 24 hr x 7 day coverage, 4 hour response time (ServicePac part number 96P2253)
 - 24 hr x 7 day coverage, 2 hour response time (ServicePac part number 96P2254)
- ⇨ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information
 • = Hot-swap

IBM eServer™ xSeries™ 360 (November 2002) - withdrawn xREF by eServer Field Skills Enablement Team

IBM® Type-model	Qty x Processor	L3 cache	Memory	Disks	SCSI controller	Mechanical	Slots x bays	RXE Exp Ports	Hot-swap pwr supplies	Mgmt adapter	Available date
8686-7RX	1 x Xeon™ MP 1.5GHz	1MB	1GB Chipkill™	None	Ultra160	3U ⁴ rack	6x5	One	One (not redund)	PCI	Dec 2002
8686-8RX	2 x Xeon MP 1.9GHz	1MB	2GB Chipkill	None	Ultra160	3U rack	6x5	One	Two redundant	PCI	Dec 2002
8686-9RX	2 x Xeon MP 2.0GHz	2MB	2GB Chipkill	None	Ultra160	3U rack	6x5	One	Two redundant	PCI	Dec 2002

Positioning *Space efficient 4-way, 3U, rack-dense server with ground breaking Enterprise X-Architecture™ technology*
 Processors **1 or 2 x Intel® Xeon™ Processor MP 1.5, 1.9, or 2.0GHz¹** with 400MHz frontside bus / Hyper-Threading technology
 L2 cache **512KB** / on die of processor / at processor speed
 L3 cache **1MB or 2MB** / on die of processor / at processor speed
 Processor upgrade **4-way SMP** / up to four Xeon Processors MP (same speed/cache size)
 Implementation Systemboard contains four Intel 603-pin micro-PGA ZIF sockets, one memory board slot, six Active™ PCI-X slots, and integrated SCSI, ethernet, graphics

Memory **1GB or 2GB** std / 16GB max^{12,13} / two (1GB model) or four (2GB models) 512MB DIMMs installed / 1.7-inch tall / one memory board standard with 8 DIMM gold-connector slots / DIMMs must be installed in matched pairs / 128-bit simultaneous transfer from two DIMMs / PC1600 200MHz registered 184-pin DDR-SDRAM RDIMMs / **Error Checking and Correcting (ECC)** via **16-bit Checksum Chipkill™** (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips)

SCSI disk controller Adaptec® AIC-7892 / Wide Ultra160 SCSI (LVD 160MB/sec) / single channel / 64-bit 33MHz PCI / integrated on planar
 SCSI connectors Controller hard-wired to SCSI backplane (no cable) / no external SCSI connector
 SCSI cabling One standard 16-bit LVD cable included for attaching an optional ServeRAID adapter to the three-bay backplane; SCSI RAID adapter 68-pin connector on systemboard for this cable to get signals to three-bay backplane
 IDE controller / cabling Enhanced IDE ATA-33 controller in OSB4 South Bridge
 Disk - capacity None standard / supports up to 15,000 rpm disks
 Disk - bays Three hot-swap bays / converged tray / 80-pin SCA-2 connectors

Mechanical **EIA 19" rack models (3U⁴) x 28" deep** / supported in NetBAY™ Racks (such as NetBAY42 SR, NetBAY42 ER)

Chipset **IBM XA-32™ chipset** / IBM Memory I/O Controller (improved performance from earlier models) with two remote I/O ports (one to IBM PCI-X Host Bridge; one to RXE Expansion Port) / IBM PCI-X Host Bridge provides three peer PCI buses (two PCI-X 1.0, one PCI 2.2) / PCI 2.2 Bus 0 supports SCSI, graphics, ethernet, adapter slot with Remote Supervisor Adapter, and ServerWorks® OSB4 South Bridge (IDE, USB, ISA bus for Super I/O NS PC97317VUL [diskette, keyboard, mouse])
 Slots (Active™ PCI-X) Six hot-swap PCI-X 1.0 slots¹⁰ available with power and attention indicator lights (optical sensors control power to slot) / **hot replace, hot upgrade, hot expansion** / separated by insulative plastic dividers
 RXE Expansion Port **One port to support up to 12 additional PCI-X slots via an optional IBM RXE-100 Remote Expansion Enclosure**

CD-ROM / diskette 24X-10X⁶ CD-ROM / 3.5" 1.44MB diskette drive
 Ethernet Intel 82559 10/100 ethernet controller / on systemboard / full duplex / 32-bit PCI / Wake on LAN® / Alert on LAN™ 2
 Graphics controller SVGA / S3® Savage4 LT / on systemboard / 8MB SDRAM std/max / up to 1280x1024 at 64K colors at 85Hz
 Ports Rear: RXE-100 Expansion Port (to connect optional RXE-100), RXE Management Port (to manage optional RXE-100), two USB (Ver 1.1), keyboard, mouse, analog DB-15 graphics, ethernet / no serial or parallel ports / Front: one USB (Ver 1.1)

Security Power-on and administrator passwords / unattended boot / selectable boot

Systems management **Remote Supervisor Adapter** / PCI adapter / includes 10/100 ethernet, RJ-11, and serial connectors / provides remote console and mgmt / power on/off system / monitors power status, op system, temperature, disks, fans, power supplies

Diagnostics **Light Path Diagnostics™** / primary indicator on information panel with LEDs associated with failing components / IBM Real Time Diagnostics (operated through IBM Director) available even while server running

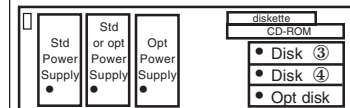
Software **ServerGuide™** (CD-ROM installation and configuration utilities), IBM Director, and others

Keyboard / mouse None standard (because rack-based)
 Power supplies Std: one or two 370 watt hot-swap; Max: three hot-swap / redundant with two power supplies (some configurations) / worldwide / voltage-sensing / auto-restart / fans in each power supply / PFA

Cooling fans Six hot-swap, redundant, multi-speed fans / one additional fan in each power supply / PFA / fan failure signals Diagnostic LED and mgmt processor

RXE-100 Remote Expansion Enclosure	86841RX
512MB PC1600 ECC DDR SDRAM RDIMM	33L3283
1GB PC1600 ECC DDR SDRAM RDIMM	33L3285
2GB PC1600 ECC DDR SDRAM RDIMM ¹²	33L3287
Xeon MP 1.5GHz/1MB L3 Cache Proc Upg	59P6815
Xeon MP 1.9GHz/1MB L3 Cache Proc Upg	59P6816
Xeon MP 2.0GHz/2MB L3 Cache Proc Upg	59P6817
370 watt Hot-Swap Redundant Power Supply	31P6108
IBM ServeRAID™-4Mx Ultra160 SCSI Adapter	06P5736
IBM 73.4GB 10K Ultra 160 SCSI Hot-Swap SL	06P5756
IBM NetBAY42 Standard Rack (SR)	9306420
IBM Integrated xSeries Adapter for iSeries	1519100
IBM T541 15" Flat Panel Color Monitor (black)	9512AB1
Other options at ibm.com/pc/us/accessories	

- Six available 3.3 volt Active PCI-X slots:
- Bus 2 (B) with two slots supports (slots 1, 2):
 - one fullsize, 64-bit, 133MHz PCI-X, hot-swap
 - or two fullsize, 64-bit, 100MHz PCI-X, hot-swap
 - or two fullsize, 64-bit, 66MHz PCI-X, hot-swap
 - or two fullsize, 64-bit, 66MHz PCI, hot-swap
 - or two fullsize, 64-bit, 33MHz PCI, hot-swap
 - Bus 1 (A) with four slots supports (slots 3, 4, 5, 6):
 - four fullsize, 64-bit, 66MHz PCI-X, hot-swap
 - or two fullsize, 64-bit, 66MHz PCI, hot-swap
 - or four fullsize, 64-bit, 33MHz PCI, hot-swap
 - Bus 0 with one slot supports:
 - only for standard Remote Supervisor Adapter halfsize, 64-bit, 33MHz PCI, not hot-swap



3U Rack

- Bay ① 3.5", 0.5", access, diskette
- Bay ② 3.5", 0.5", access, CD-ROM
- Bay ③ 3.5", SL 1", access, hot-swap
- Bay ④ 3.5", SL 1", access, hot-swap
- Bay ⑤ 3.5", SL 1", access, hot-swap

- ◇ Dimensions: H5.25" x W17.4" x D27.6"
- ◇ Dimensions: H133.4mm x W442.0mm x D701mm
- ◇ Weight: 58.4 to 70lbs; 24.9 to 31.8kg
- ◇ Stealth black color
- ◇ Tool-free serviceability
- ◇ Access adapters, processors, memory, and systemboard from top
- ◇ Access power supplies and disks from front
- ◇ Setup Program by pressing F1 at startup
- ◇ Diagnostics (PC-Doctor) by pressing F2 at startup
- ◇ SCSISelect by pressing Ctrl+A at startup
- ◇ Top cover Light Path Diagnostics (level 2 diagnostic panel) for outside view of potential problem without removing cover
- ◇ Information LED panel, diagnostic LED panel, and component LEDs give visual indications of system well-being
- ◇ Predictive Failure Analysis® alerts on disks, power supplies, memory, processors, VRMs, and fans with IBM Director

All models: Maximum internal disk capacity: 220.2GB with three 73.4GB² hot-swap SCSI disks

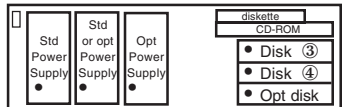
LIMITED WARRANTY³

- ⇐ 3 year parts and labor
- ⇐ International Warranty Service³
- ⇐ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- ⇐ On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 24x7, 4 hr avg response (ServicePac® part num 96P2253)
 - 3 year IOR 24x7, 2 hr avg response (ServicePac part num 96P2254)
 - 4 year IOR 9x5, NBD response (ServicePac part num 96P2255)
 - 5 year IOR 9x5, NBD response (ServicePac part num 96P2259)
 - Other ServicePac options at ibm.com/services/its/us/source/wamomxeu.pdf
- ⇐ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

• = Hot-swap

See footnotes for important warranty information

US models announced November 5, 2002; withdrawn effective September 26, 2003

IBM® Type-model	Qty x Processor	L3 cache	Memory	Disks	SCSI controller	Mechanical	Slots x bays	RXE Exp Ports	Hot-swap pwr supplies	Mgmt adapter	Available date
8686-1RQ	1 x Xeon™ MP 2.0GHz	1MB	1GB Chipkill™	None	Ultra160	3U ⁴ rack	6x5	One	One (not redund)	PCI	Jun 2003
8686-1SQ	2 x Xeon MP 2.0GHz	1MB	1GB Chipkill	None	Ultra160	3U rack	6x5	One	Two redundant	PCI	Nov 2003
8686-1TQ	2 x Xeon MP 2.0GHz	1MB	3GB Chipkill 2 x 36.4GB	10K	Ultra160	3U rack	6x5	One	Two redundant	PCI	Nov 2003
8686-2RQ	2 x Xeon MP 2.5GHz	1MB	2GB Chipkill	None	Ultra160	3U rack	6x5	One	Two redundant	PCI	Jun 2003
8686-3RQ	2 x Xeon MP 2.8GHz	2MB	2GB Chipkill	None	Ultra160	3U rack	6x5	One	Two redundant	PCI	Jun 2003
Processors	1 or 2 x Intel® Xeon™ Processor MP 2.0, 2.5, or 2.8GHz ¹ with 400MHz frontside bus / Hyper-Threading technology										
L2 cache	512KB / on die of processor / at processor speed										
L3 cache	1MB or 2MB / on die of processor / at processor speed										
Processor upgrade Implementation	4-way SMP / up to four Xeon Processors MP (same speed/cache size) Systemboard contains four Intel 603-pin micro-PGA ZIF sockets, one memory board slot, six Active™ PCI-X slots, and integrated SCSI, ethernet, graphics										
Memory	Up to 3GB std / 16GB max ^{12,13} / two (1GB model), four (2GB models) or six (3GB models) 512MB DIMMs installed / 1.7-inch tall / one memory board standard with 8 DIMM gold-connector slots / DIMMs must be installed in matched pairs / 128-bit simultaneous transfer from two DIMMs / PC1600 200MHz registered 184-pin DDR-SDRAM RDIMMs / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips)										
SCSI disk controller	Adaptec® AIC-7892 / Wide Ultra160 SCSI (LVD 160MB/sec) / single channel / 64-bit 33MHz PCI / integrated on planar										
SCSI connectors	Controller hard-wired to SCSI backplane (no cable) / no external SCSI connector										
SCSI cabling	One standard 16-bit LVD cable included for attaching an optional ServeRAID adapter to the three-bay backplane; SCSI RAID adapter 68-pin connector on systemboard for this cable to get signals to three-bay backplane										
IDE controller / cabling	Enhanced IDE ATA-33 controller in OSB4 South Bridge										
Disk - capacity	None standard / supports up to 15,000 rpm disks										
Disk - bays	Three hot-swap bays / converged tray / 80-pin SCA-2 connectors										
Mechanical	EIA 19" rack models (3U ⁴) x 28" deep / supported in NetBAY™ Racks (such as NetBAY42 SR, NetBAY42 ER)										
Chipset	IBM XA-32™ chipset / IBM Memory I/O Controller (improved performance from earlier models) with two remote I/O ports (one to IBM PCI-X Host Bridge; one to RXE Expansion Port) / IBM PCI-X Host Bridge provides three peer PCI buses (two PCI-X 1.0, one PCI 2.2) / PCI 2.2 Bus 0 supports SCSI, graphics, ethernet, adapter slot with Remote Supervisor Adapter, and ServerWorks® OSB4 South Bridge (IDE, USB, ISA bus for Super I/O NS PC97317VUL [diskette, keyboard, mouse])										
Slots (Active™ PCI-X)	Six hot-swap PCI-X 1.0 slots ¹⁰ available with power and attention indicator lights (optical sensors control power to slot) / hot replace, hot upgrade, hot expansion / separated by insulative plastic dividers										
RXE Expansion Port	One port to support up to 12 additional PCI-X slots via an optional IBM RXE-100 Remote Expansion Enclosure										
CD-ROM / diskette	24X-10X ⁶ CD-ROM / 3.5" 1.44MB diskette drive										
Ethernet	Intel 82559 10/100 ethernet controller / on systemboard / full duplex / 32-bit PCI / Wake on LAN® / Alert on LAN™ 2										
Graphics controller	SVGA / S3® Savage4 LT / on systemboard / 8MB SDRAM std/max / up to 1280x1024 at 64K colors at 85Hz										
Ports	Rear: RXE-100 Expansion Port (to connect optional RXE-100), RXE Management Port (to manage optional RXE-100), two USB (Ver 1.1), keyboard, mouse, analog DB-15 graphics, ethernet / no serial or parallel ports / Front: one USB (Ver 1.1)										
Security	Power-on and administrator passwords / unattended boot / selectable boot										
Systems management	Remote Supervisor Adapter / PCI adapter / includes 10/100 ethernet, RJ-11, and serial connectors / provides remote console and mgmt / power on/off system / monitors power status, op system, temperature, disks, fans, power supplies										
Diagnostics	Light Path Diagnostics™ / primary indicator on information panel with LEDs associated with failing components / IBM Real Time Diagnostics (operated through IBM Director) available even while server running										
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director, and others										
Keyboard / mouse	None standard (because rack-based)										
Power supplies	Std: one or two 370 watt hot-swap; Max: three hot-swap / redundant with two power supplies (some configurations) / worldwide / voltage-sensing / auto-restart / fans in each power supply / PFA										
Cooling fans	Six hot-swap, redundant, multi-speed fans / one additional fan in each power supply / PFA / fan failure signals Diagnostic LED and mgmt processor										
Six available 3.3 volt Active PCI-X slots:											
<ul style="list-style-type: none"> • Bus 2 (B) with two slots supports (slots 1, 2): <ul style="list-style-type: none"> - one fullsize, 64-bit, 133MHz PCI-X, hot-swap - or two fullsize, 64-bit, 100MHz PCI-X, hot-swap - or two fullsize, 64-bit, 66MHz PCI-X, hot-swap - or two fullsize, 64-bit, 66MHz PCI, hot-swap - or two fullsize, 64-bit, 33MHz PCI, hot-swap • Bus 1 (A) with four slots supports (slots 3, 4, 5, 6): <ul style="list-style-type: none"> - four fullsize, 64-bit, 66MHz PCI-X, hot-swap - or two fullsize, 64-bit, 66MHz PCI, hot-swap - or four fullsize, 64-bit, 33MHz PCI, hot-swap • Bus 0 with one slot supports: <ul style="list-style-type: none"> - only for standard Remote Supervisor Adapter halfsize, 64-bit, 33MHz PCI, not hot-swap 											
<ul style="list-style-type: none"> ◇ Dimensions: H5.25" x W17.4" x D27.6" ◇ Dimensions: H133.4mm x W442.0mm x D701mm ◇ Weight: 58.4 to 70lbs; 24.9 to 31.8kg ◇ Stealth black color ◇ Tool-free serviceability ◇ Access adapters, processors, memory, and systemboard from top ◇ Access power supplies and disks from front ◇ Setup Program by pressing F1 at startup ◇ Diagnostics (PC-Doctor) by pressing F2 at startup ◇ SCSISelect by pressing Ctrl+A at startup ◇ Top cover Light Path Diagnostics (level 2 diagnostic panel) for outside view of potential problem without removing cover ◇ Information LED panel, diagnostic LED panel, and component LEDs give visual indications of system well-being ◇ Predictive Failure Analysis® alerts on disks, power supplies, memory, processors, VRMs, and fans with IBM Director 											
 <p>3U Rack</p> <p>Bay ① 3.5", 0.5", access, diskette Bay ② 3.5", 0.5", access, CD-ROM Bay ③ 3.5", SL 1", access, hot-swap Bay ④ 3.5", SL 1", access, hot-swap Bay ⑤ 3.5", SL 1", access, hot-swap</p>											
<p>All models: Maximum internal disk capacity: 220.2GB with three 73.4GB² hot-swap SCSI disks</p>											
<p>LIMITED WARRANTY³</p> <ul style="list-style-type: none"> ⇐ 3 year parts and labor ⇐ International Warranty Service³ ⇐ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷ ⇐ On site service upgrade options (in eligible locations):⁷ <ul style="list-style-type: none"> • 3 year IOR 24x7, 4 hr avg response (ServicePac® part num 96P2253) • 3 year IOR 24x7, 2 hr avg response (ServicePac part num 96P2254) • 4 year IOR 9x5, NBD response (ServicePac part num 96P2255) • 5 year IOR 9x5, NBD response (ServicePac part num 96P2259) ⇐ Other ServicePac options at http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf ⇐ 24x7¹⁴ toll-free support for warranty issues during the warranty period³ 											

See footnotes for important warranty information • = Hot-swap
US models announced June 30, 2003 or November 11, 2003 (1SQ, 1TQ)
⊃ US models withdrawn effective December 30, 2003 (1SQ, 1TQ)

IBM® Type-model	Qty x Processor	L3 cache	Memory	DIMM slots	Disks	SCSI controller	Mechanical	Slots x bays	RXE Exp Ports	Hot-swap pwr supplies	Warranty (yrs.)	Available date					
8861-1RX	1 x Xeon™ MP 2.0GHz	1MB	1GB Chipkill™	8	None	Ultra320	3U ⁴ rack	6x8	One	One (not redund)	1	Dec 2003					
8862-1RX	1 x Xeon MP 2.0GHz	1MB	2GB Chipkill	8	None	Ultra320	3U rack	6x8	One	One (not redund)	3	Dec 2003					
8862-2RX	2 x Xeon MP 2.5GHz	1MB	2GB Chipkill	8	None	Ultra320	3U rack	6x8	One	Two redundant	3	Dec 2003					
8862-3RX	2 x Xeon MP 2.8GHz	2MB	2GB Chipkill	16	None	Ultra320	3U rack	6x8	One	Two redundant	3	Dec 2003					
Processors	1 or 2 x Intel® Xeon™ Processor MP 2.0, 2.5, or 2.8GHz ¹ with 400MHz frontside bus / Hyper-Threading technology																
L2 cache	512KB / on die of processor / at processor speed																
L3 cache	1MB or 2MB / on die of processor / at processor speed																
Processor upgrade Implementation	4-way SMP / up to four Xeon Processors MP (same speed/cache size) Systemboard contains four Intel 603-pin micro-PGA ZIF sockets, one memory board slot, six Active™ PCI/PCI-X slots, and integrated SCSI, ethernet, graphics																
Memory	Up to 2GB std / 32GB max using high-capacity memory card / two (1GB model) or four (2GB models) 512MB DIMMs installed / one memory board standard with 8 or 16 DIMM gold-connector slots / DIMMs must be installed in matched pairs / PC2100 200MHz registered 184-pin DDR-SDRAM RDIMMs / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ / With 16 DIMMs installed: Memory ProteXion™ (redundant bit steering) and Active Memory™ supporting Memory Mirroring™ (non-OS specific)																
SCSI disk controller	LSI Logic® 53C1030 / Wide Ultra320 SCSI (LVD 320MB/sec) / dual channel / 64-bit 100MHz PCI-X / integrated on planar / Supports Raid 0/1																
SCSI connectors	One internal and one external SCSI connector / internal controller wired to SCSI backplane																
SCSI cabling	One standard 16-bit LVD cable can be reattached to optional ServeRAID adapter from six-bay backplane instead of motherboard																
IDE controller / cabling	SCSI RAID adapter 68-pin connector on systemboard for this cable to get signals to six-bay backplane																
Disk - capacity	Enhanced IDE ATA-33 controller in CSB6 South Bridge																
Disk - bays	None standard / supports up to 15,000 rpm disks Six hot-swap bays / converged tray / 80-pin SCA-2 connectors																
Mechanical	EIA 19" rack models (3U⁴) x 28" deep / supported in NetBAY™ Racks (such as NetBAY42 SR, NetBAY42 ER)																
Chipset	IBM XA-32™ chipset / IBM Memory I/O Controller (improved performance from earlier models) / IBM PCI-X Host Bridges provide six peer PCI-X buses / PCI-X Bus 0 supports adapter slot with Remote Supervisor Adapter II (inc. graphics), and ServerWorks® CSB6 South Bridge (IDE, USB, bus for Super I/O NS 87417 [diskette, keyboard, mouse]) / PCI-X Bus 1 supports gigabit Ethernet, SCSI, and slot for optional ServeRAID adapter																
Slots (Active™ PCI-X)	Six total PCI-X slots (one unavailable) / 5 hot-swap PCI-X 1.0 slots ¹⁰ available with power and attention indicator lights (optical sensors control power to slot) / hot replace, hot upgrade, hot expansion / separated by insulative plastic dividers/bv																
RXE Expansion Port	One port to support up to 12 additional PCI-X slots via an optional IBM RXE-100 Remote Expansion Enclosure																
CD-ROM / diskette	24X-10X ⁶ CD-ROM / 3.5" 1.44MB diskette drive																
Ethernet	Broadcom® 5704 10/100/1000 dual ethernet / on systemboard / 64-bit 100Mhz PCI-X / Wake on LAN® / Alert on LAN™ 2																
Graphics controller	onboard graphics disabled / uses video on Remote Supervisor Adapter II																
Ports	Rear: RXE-100 Expansion Port (to connect optional RXE-100), RXE Management Port (to manage optional RXE-100), two USB (Ver 1.1), keyboard, mouse, analog DB-15 graphics, ethernet / one serial / no parallel ports / Front: one USB (Ver 1.1)																
Security	Power-on and administrator passwords / unattended boot / selectable boot																
Systems management	Remote Supervisor Adapter II / PCI adapter / includes 10/100 ethernet, RJ-11, and serial connectors / provides remote console and mgmt / power on/off system / monitors power status, op system, temperature, disks, fans, power supplies																
Diagnostics	Light Path Diagnostics™ / primary indicator on information panel with LEDs associated with failing components / IBM Real Time Diagnostics (operated through IBM Director) available even while server running																
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director, and others																
Keyboard / mouse	None standard (because rack-based)																
Power supplies	Std: one or two 950 watt hot-swap; Max: two hot-swap / redundant with two power supplies (some configurations) / worldwide / voltage-sensing / auto-restart / rear accessible fans in each power supply / PFA																
Cooling fans	Six hot-swap, redundant, multi-speed fans / one additional fan in each power supply / PFA / fan failure signals Diagnostic LED and mgmt processor																
<p>Six available 3.3 volt PCI/PCI-X slots:</p> <ul style="list-style-type: none"> • Buses 0-5 supports slots 1 - 6: <ul style="list-style-type: none"> - one fullsize, 64-bit, 33MHz PCI, hot-swap Standard Remote Supervisor Adapter installed - one fullsize, 64-bit, 100MHz PCI-X, hot-swap Optional ServeRAID adapter to install - one fullsize, 64-bit, 133MHz PCI-X, hot-swap Optional iSeries IXA adapter to install - three fullsize, 64-bit, 133MHz PCI-X, hot-swap 																	
<ul style="list-style-type: none"> ↳ Dimensions: H5.25" x W17.4" x D27.6" ↳ Dimensions: H133.4mm x W442.0mm x D701mm ↳ Weight: 63 to 83lbs; 28.6 to 37.6kg ↳ Stealth black color ↳ Tool-free serviceability ↳ Access adapters, processors, memory, and systemboard from top ↳ Access power supplies and disks from front ↳ Setup Program by pressing F1 at startup ↳ Diagnostics (PC-Doctor) by pressing F2 at startup ↳ SCSISelect by pressing Ctrl+A at startup ↳ Top cover Light Path Diagnostics (level 2 diagnostic panel) for outside view of potential problem without removing cover ↳ Information LED panel, diagnostic LED panel, and component LEDs give visual indications of system well-being ↳ Predictive Failure Analysis® alerts on disks, power supplies, memory, processors, VRMs, and fans with IBM Director 																	
<p>3U Rack</p> <table border="1"> <tr> <td>CD-ROM</td> <td>diskette</td> </tr> <tr> <td>• Opt disk</td> <td>• Opt disk</td> </tr> <tr> <td>• Opt disk</td> <td>• Opt disk</td> </tr> </table> <p>Bay ① 3.5", 0.5" access, std diskette Bay ② 5.25", 0.5" access, std CD-ROM Bay ③ 3.5", SL 1", access, hot-swap, open Bay ④ 3.5", SL 1", access, hot-swap, open Bay ⑤ 3.5", SL 1", access, hot-swap, open Bay ⑥ 3.5", SL 1", access, hot-swap, open Bay ⑦ 3.5", SL 1", access, hot-swap, open Bay ⑧ 3.5", SL 1", access, hot-swap, open</p>												CD-ROM	diskette	• Opt disk	• Opt disk	• Opt disk	• Opt disk
CD-ROM	diskette																
• Opt disk	• Opt disk																
• Opt disk	• Opt disk																
<p>512MB PC2100 ECC DDR SDRAM RDIMM 33L5038 1GB PC2100 ECC DDR SDRAM RDIMM 73P2031 2GB PC2100 ECC DDR SDRAM RDIMM¹² 33L5041 IBM x365Memory Upgrade Card 73P9710 Xeon MP 2.0GHz/1MB L3 Cache Proc Upg 73P7073 Xeon MP 2.5GHz/1MB L3 Cache Proc Upg 73P7074 Xeon MP 2.8GHz/2MB L3 Cache Proc Upg 73P7075 950 watt Hot-Swap Power Supply (WW) 73P7214 IBM ServeRAID™-4Mx Ultra160 SCSI Adapter 06P5736 IBM 73.4GB 15K Ultra320 SCSI Hot-Swap 32P0735 IBM Integrated xSeries Adapter for iSeries 1519100 IBM T541 15" Flat Panel Color Monitor (black) 9512AB1 RXE-100 Remote Expansion Enclosure 86841RX Other options at ibm.com/pc/us/accessories</p>																	
<p>LIMITED WARRANTY³</p> <ul style="list-style-type: none"> ↳ 1 or 3 year parts and labor ↳ International Warranty Service³ ↳ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷ ↳ On site service upgrade options (in eligible locations):⁷ <ul style="list-style-type: none"> • 3 year IOR 24x7, 4 hr avg response (30L9186 (8861) / 96P2253 (8862)) • 3 year IOR 24x7, 2 hr avg response (31L2722 (8861) / 96P2254 (8862)) • 4 year IOR 9x5, NBD response (69P9210 (8661) / 96P2255 (8862)) • 5 year IOR 9x5, NBD response (69P9214 (8661) / 69P2259 (8862)) ↳ Other ServicePac options at http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf ↳ 24x7¹⁴ toll-free support for warranty issues during the warranty period³ 																	
<p>All models: Maximum internal disk capacity: 878.4GB with six 146.8GB² hot-swap SCSI disks</p>																	

See footnotes for important warranty information
US models announced December 9, 2003

• = Hot-swap
↳ US models withdrawn effective May 28, 2004 (8662-2RX, 3RX)

IBM® Type-model	Qty x Processor	L3 cache	Memory	DIMM slots	Disks	SCSI controller	Mechanical	Slots x bays	RXE Exp Ports	Hot-swap pwr supplies	Warranty (yrs.)	Available date
8861-4RX	1 x Xeon™ MP 2.2GHz	2MB	1GB Chipkill™	8	None	Ultra320	3U ⁴ rack	6x8	One	One (not redund)	1	Mar 2004
8862-4RX	1 x Xeon MP 2.2GHz	2MB	2GB Chipkill	8	None	Ultra320	3U rack	6x8	One	One (not redund)	3	Mar 2004
8862-5RX	2 x Xeon MP 2.7GHz	2MB	2GB Chipkill	8	None	Ultra320	3U rack	6x8	One	Two redundant	3	Mar 2004
8862-6RX	2 x Xeon MP 3.0GHz	4MB	2GB Chipkill	8	None	Ultra320	3U rack	6x8	One	Two redundant	3	Mar 2004

Processors **1 or 2 x Intel® Xeon™ Processor MP 2.2, 2.7, or 3.0GHz¹** with 400MHz frontside bus / Hyper-Threading technology
 L2 cache **512KB** / on die of processor / at processor speed
 L3 cache **2MB or 4MB** / on die of processor / at processor speed
 Processor upgrade Implementation **4-way SMP** / up to four Xeon Processors MP (same speed/cache size)
 Systemboard contains four Intel 603-pin micro-PGA ZIF sockets, one memory board slot, six Active™ PCI/PCI-X slots, and integrated SCSI, ethernet, graphics

Memory Up to **2GB** std / 32GB max using high-capacity memory card / two (1GB model) or four (2GB models) 512MB DIMMs installed / one memory board standard with 8 DIMM gold-connector slots / DIMMs must be installed in matched pairs / PC2100 200MHz registered 184-pin DDR-SDRAM RDIMMs / **Error Checking and Correcting (ECC)** via **16-bit Checksum Chipkill™** / With 16 DIMMs installed: **Memory ProteXion™** (redundant bit steering) and **Active Memory™** supporting **Memory Mirroring™** (non-OS specific)

SCSI disk controller LSI Logic® 53C1030 / Wide Ultra320 SCSI (LVD 320MB/sec) / dual channel / 64-bit 100MHz PCI-X / integrated Raid 0/1
 SCSI connectors One internal and one external SCSI connector / internal controller wired to SCSI backplane
 SCSI cabling One standard 16-bit LVD cable can be reattached to optional ServeRAID adapter from six-bay backplane instead of motherboard SCSI RAID adapter 68-pin connector on systemboard for this cable to get signals to six-bay backplane
 IDE controller / cabling Enhanced IDE ATA-33 controller in CSB6 South Bridge
 Disk - capacity None standard / supports up to 15,000 rpm disks
 Disk - bays **Six** hot-swap bays / converged tray / 80-pin SCA-2 connectors

Mechanical **EIA 19" rack models (3U⁴) x 28" deep** / supported in NetBAY™ Racks (such as NetBAY42 SR, NetBAY42 ER)

Chipset **IBM XA-32™ chipset** / IBM Memory I/O Controller (improved performance from earlier models) / IBM PCI-X Host Bridges provide six peer PCI-X buses / PCI-X Bus 0 supports adapter slot with Remote Supervisor Adapter II (inc. graphics), and ServerWorks® CSB6 South Bridge (IDE, USB, bus for Super I/O NS 87417 [diskette, keyboard, mouse]) / PCI-X Bus 1 supports gigabit Ethernet, SCSI, and slot for optional ServeRAID adapter

Slots (Active™ PCI-X) Six total PCI-X slots (one unavailable) / 5 hot-swap PCI-X 1.0 slots¹⁰ available with power and attention indicator lights (optical sensors control power to slot) / hot replace, hot upgrade, hot expansion / separated by insulative plastic dividers
 RXE Expansion Port One port to support up to 12 additional PCI-X slots via an optional IBM RXE-100 Remote Expansion Enclosure

CD-ROM / diskette 24X-10X⁶ CD-ROM / 3.5" 1.44MB diskette drive
 Ethernet Broadcom® 5704 10/100/1000 dual ethernet / on systemboard / 64-bit 100Mhz PCI-X / Wake on LAN® / Alert on LAN™ 2
 Graphics controller onboard graphics disabled / uses video on Remote Supervisor Adapter II
 Ports Rear: RXE-100 Expansion Port (to connect optional RXE-100), RXE Management Port (to manage optional RXE-100), two USB (Ver 1.1), keyboard, mouse, analog DB-15 graphics, ethernet / one serial / one parallel ports / Front: one USB (Ver 1.1)

Security Power-on and administrator passwords / unattended boot / selectable boot

Systems management **Remote Supervisor Adapter II** / PCI adapter / includes 10/100 ethernet, RJ-11, and serial connectors / provides remote console and mgmt / power on/off system / monitors power status, op system, temperature, disks, fans, power supplies

Diagnostics **Light Path Diagnostics™** / primary indicator on information panel with LEDs associated with failing components / IBM Real Time Diagnostics (operated through IBM Director) available even while server running

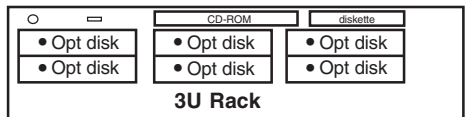
Software **ServerGuide™** (CD-ROM installation and configuration utilities), IBM Director, and others

Keyboard / mouse None standard (because rack-based)
 Power supplies Std: one or two 950 watt hot-swap; Max: two hot-swap / redundant with two power supplies (some configurations) / worldwide / voltage-sensing / auto-restart / rear accessible fans in each power supply / PFA

Cooling fans Six hot-swap, redundant, multi-speed fans / one additional fan in each power supply / PFA / fan failure signals Diagnostic LED and mgmt processor

512MB PC2100 ECC DDR SDRAM RDIMM	33L5038
1GB PC2100 ECC DDR SDRAM RDIMM	73P2031
2GB PC2100 ECC DDR SDRAM RDIMM ¹²	73P2030
IBM x365 Memory Upgrade Card	73P9710
Xeon MP 2.2GHz/2MB L3 Cache Proc Upg	13N0711
Xeon MP 2.7GHz/2MB L3 Cache Proc Upg	13N0712
Xeon MP 3.0GHz/4MB L3 Cache Proc Upg	13N0710
950 watt Hot-Swap Power Supply (WW)	73P7214
IBM ServeRAID™-6M Ultra320 SCSI Adapter	32P0033
IBM 73.4GB 15K Ultra320 SCSI Hot-Swap	32P0735
IBM Integrated xSeries Adapter for iSeries	1519100
IBM T541 15" Flat Panel Color Monitor (black)	9512AB1
RXE-100 Remote Expansion Enclosure	86841RX
Other options at ibm.com/pc/us/accessories	

- Six available 3.3 volt PCI/PCI-X slots:
- Buses 0-5 supports slots 1 - 6:
 - one fullsize, 64-bit, 33MHz PCI, hot-swap Standard Remote Supervisor Adapter installed
 - one fullsize, 64-bit, 100MHz PCI-X, hot-swap Optional ServeRAID adapter to install
 - one fullsize, 64-bit, 133MHz PCI-X, hot-swap Optional iSeries IXA adapter to install
 - three fullsize, 64-bit, 133MHz PCI-X, hot-swap



- Bay ① 3.5", 0.5", access, std diskette
- Bay ② 5.25", 0.5", access, std CD-ROM
- Bay ③ 3.5", SL 1", access, hot-swap, open
- Bay ④ 3.5", SL 1", access, hot-swap, open
- Bay ⑤ 3.5", SL 1", access, hot-swap, open
- Bay ⑥ 3.5", SL 1", access, hot-swap, open
- Bay ⑦ 3.5", SL 1", access, hot-swap, open
- Bay ⑧ 3.5", SL 1", access, hot-swap, open

- ◇ Dimensions: H5.25" x W17.4" x D27.6"
- ◇ Dimensions: H133.4mm x W442.0mm x D701mm
- ◇ Weight: 63 to 83lbs; 28.6 to 37.6kg
- ◇ Stealth black color
- ◇ Tool-free serviceability
- ◇ Access adapters, processors, memory, and systemboard from top
- ◇ Access power supplies and disks from front
- ◇ Setup Program by pressing F1 at startup
- ◇ Diagnostics (PC-Doctor) by pressing F2 at startup
- ◇ SCSISelect by pressing Ctrl+A at startup
- ◇ Top cover Light Path Diagnostics (level 2 diagnostic panel) for outside view of potential problem without removing cover
- ◇ Information LED panel, diagnostic LED panel, and component LEDs give visual indications of system well-being
- ◇ Predictive Failure Analysis® alerts on disks, power supplies, memory, processors, VRMs, and fans with IBM Director

All models: Maximum internal disk capacity: 878.4GB with six 146.8GB² hot-swap SCSI disks

LIMITED WARRANTY³

- ⇐ 1 or 3 year parts and labor
- ⇐ International Warranty Service³
- ⇐ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- ⇐ On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 24x7, 4 hr avg response (30L9186 (8861) / 96P2253 (8862))
 - 3 year IOR 24x7, 2 hr avg response (31L2722 (8861) / 96P2254 (8862))
 - 4 year IOR 9x5, NBD response (69P9210 (8661) / 96P2255 (8862))
 - 5 year IOR 9x5, NBD response (69P9214 (8661) / 69P2259 (8862))
- ⇐ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ⇐ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

IBM® Type-model	Qty x Processor	L2 cache	Memory	DIMM slots	Disks	SCSI controller	Mechanical	Slots x bays	Hot-swap pwr supplies	Warranty (yrs.)	Available date
8863-1RY	1 x Xeon™ MP 3.16GHz	1MB	2x1GB	4	None	SAS	3U ⁴ rack	6x7	1 x 1300	3	Apr 2005
8863-2RY	1 x Xeon MP 3.66GHz	1MB	2x1GB	4	None	SAS	3U rack	6x7	1 x 1300	3	Apr 2005
8863-3RY	1 x Xeon MP 7020 2.67GHz	2x1MB	2x1GB	4	None	SAS	3U rack	6x7	1 x 1300	3	Nov 2005
8863-4RY	1 x Xeon MP 7040 3.0GHz	2x2MB	2x1GB	4	None	SAS	3U rack	6x7	1 x 1300	3	Nov 2005
8863-E1Y	2 x Xeon MP 3.66GHz	1MB	4x1GB	8	3x36.4-10k	SAS w/ 8i	3U rack	6x7	2 x 1300	3	Jun 2005
8863-E5Y	2 x Xeon MP 3.66GHz	1MB	2x1GB	4	None	SAS	3U rack	6x7	2 x 1300	3	Aug 2005
8863-E6Y	2 x Xeon MP 3.16GHz	1MB	2x1GB	4	None	SAS	3U rack	6x7	2 x 1300	3	Sep 2005
8863-E7Y	4 x Xeon MP 3.66GHz	1MB	8x1GB	16	None	SAS w/ 8i	3U rack	6x7	2 x 1300	3	Sep 2005

Processors Up to two 64-bit Intel® Xeon™ Processor MP up to 3.66GHz¹ 667MHz FSB Single Core / one 64-bit Intel Xeon Processor MP up to 3.0GHz 667MHz FSB Dual Core / NetBurst™ / Extended Memory 64 Technology™ (EM64T) / Hyper-Threading 1 or 2 MB / per core / at processor speed / Xcel4v™ Dynamic Server Cache

L2 cache 4-way SMP / up to four Xeon Processors MP (same speed/cache size) / Dual Core Capable

Processor upgrade Implementation System board contains four Intel 604-pin micro-PGA4 ZIF sockets, one memory board slot, six Active™ PCI-X 2.0 slots, and integrated SCSI, ethernet, graphics

Active Memory™ Up to 4GB std / 64GB max using high-capacity memory card / one memory board standard with 4 DIMM gold-connector slots / DIMMs must be installed in matched pairs / PC2-3200 400MHz registered 240-pin DDR2-SDRAM RDIMMs / **Error Checking and Correcting (ECC)** via 16-bit Checksum Chipkill™ / With 16 DIMMs installed: **Memory ProteXion™** (redundant bit steering) and **Memory Mirroring™** and Hot-swap (non-OS specific) / Hot-add (supported only with Microsoft® Windows™ Server 2003™)

SCSI disk controller ALL: Adaptec® AIC-9410 / **Serial Attached SCSI (SAS)** 3.0GHz (3GB/sec) / 64-bit 266MHz PCI-X 2.0 E1X: ServeRaid 8i

SCSI connectors Controller wired to SAS backplane

SCSI cabling One standard SAS cable attached to six-bay backplane

IDE controller / cabling Enhanced IDE ATA-33 controller in CSB6 South Bridge

Disk - capacity E1x: 3 x 36.4GB-10k / supports up to 73GB 10K rpm disks

Disk - bays Six 2.5" hot-swap bays / converged tray / 80-pin SCA-2 connectors

Mechanical EIA 19" rack models (3U⁴) x 28" deep / supported in NetBAY™ Racks (such as NetBAY42 SR, NetBAY42 ER)

Chipset IBM XA-64e™ 3rd Generation chipset / Integrated Processor and Memory Controller / Supports EM64T / 2 IBM PCI-X 2.0 Host Bridges / Host Bridge One supports video, optional ServeRaid 8i, ServerWorks® CSB6 South Bridge (IDE, USB, bus for Super I/O NS 87417 [diskette, keyboard, mouse]), Dual Port Broadcom 5704, and 2 PCI-X 2.0 slots / Host Bridge Two supports 4 PCI-X 2.0 slots

Slots (Active™) Six total PCI-X 2.0 slots available with power and attention indicator lights (optical sensors control power to slot) / hot replace, hot upgrade, hot expansion / separated by insulative plastic dividers, all slots supported up to 266MHz

CD-ROM / diskette 8X⁶ Slim DVD-ROM / none

Ethernet Broadcom® 5704 10/100/1000 dual ethernet / on systemboard / 64-bit 266MHz PCI-X 2.0 / Wake on LAN® / Alert on LAN™ 2

Graphics controller SVGA / ATI® 7000m / on planar / 16MB SDRAM std/max / 32-bit 33MHz PCI 2.2 bus

Ports Rear: RSA ethernet, RSA serial, two USB (Ver 2.0), keyboard, mouse, analog DB-15 graphics, two ethernet, std. serial, RS-485 / Front: USB (Ver 2.0)

Security Power-on and administrator passwords / unattended boot / selectable boot

Systems management Remote Supervisor Adapter II Slimline (option) / PCI adapter / includes 10/100 ethernet, RJ-11, and serial connectors / provides remote console and mgmt / power on/off system / monitors power status, op system, temperature, disks, fans, power supplies

Diagnostics Drop down Light Path Diagnostics / primary indicator on information panel with LEDs associated with failing components / IBM Real Time Diagnostics (operated through IBM Director) available even while server running

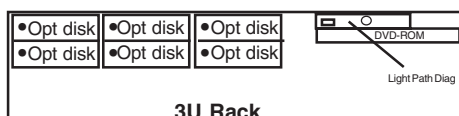
Software ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director

Keyboard / mouse	None standard (because rack-based)	2GB PC2-3200 CL3 ECC RDIMM (2x1GB)	73P2866
Power supplies	Std: one or two 1300 watt hot-swap; Max: two hot-swap / redundant with two power supplies (some configurations) / worldwide / voltage-sensing / auto-restart / PFA	4GB PC2-3200 CL3 ECC RDIMM (2x2GB)	73P2867
		8GB PC2-3200 CL3 ECC RDIMM (2x4GB)	30R5145
		Active Memory 4-slot Expansion Card	13M7409
		Xeon MP 3.16GHz/1MB L2 Cache Proc Upg	13N0694
		Xeon MP 3.66GHz/1MB L2 Cache Proc Upg	13N0695
		Xeon MP 7020 2.67GHz/2x1MB L2 Cache Proc Upg	25R8941
		Xeon MP 7040 3.0GHz/2x2MB L2 Cache Proc Upg	25R8942
		1300 watt Hot-Swap Power Supply (WW)	13M7413
		IBM ServeRAID™-8i SAS-SCSI Adapter	13N2227
		IBM ServeRAID 6M U320 256MB Adapter	02R0988
		IBM 36.4GB 10K 2.5" SAS Hot-swap HDD	26K5654
		IBM 73.4GB 10K 2.5" SAS Hot-Swap HDD	26K5655
		IBM Remote Supervisor Adapter II Slimline	73P9341
		Dual Core X3 upgrade kit (available 12/05)	39Y6580
		Other options at ibm.com/pc/us/accessories	

Six available 3.3 volt PCI-X 2.0 slots:

- Slot 1 - fullsize, 64-bit, 266MHz PCI-X, hot-swap
- Slot 2 - fullsize, 64-bit, 266MHz PCI-X, hot-swap
- Slot 3 - fullsize, 64-bit, 266MHz PCI-X, hot-swap
- Slot 4 - fullsize, 64-bit, 266MHz PCI-X, hot-swap
- Slot 5 - fullsize, 64-bit, 266MHz PCI-X, hot-swap
- Slot 6 - fullsize, 64-bit, 266MHz PCI-X, hot-swap

*exclusive slot available for ServeRAID 8i adapter



Bay	Size	Access	Hot-swap	Open
Bay ①	5.25", 0.5"	access, std		DVD-ROM
Bay ②	2.5", SL 1"	access, hot-swap		open
Bay ③	2.5", SL 1"	access, hot-swap		open
Bay ④	2.5", SL 1"	access, hot-swap		open
Bay ⑤	2.5", SL 1"	access, hot-swap		open
Bay ⑥	2.5", SL 1"	access, hot-swap		open
Bay ⑦	2.5", SL 1"	access, hot-swap		open

Max BTU Output:
 Ship Configuration: 1,086 Btu/hr (318 watts)
 Full Configuration: 5,200 Btu/hr (1524 watts)

- Dimensions: H5.25" x W17.4" x D27.6"
- Dimensions: H133.4mm x W442.0mm x D701mm
- Weight: 63 to 83lbs; 28.6 to 37.6kg
- Stealth black color
- Tool-free serviceability
- Access adapters, power supplies, processors, memory and systemboard from top
- Setup Program by pressing F1 at startup
- Diagnostics (PC-Doctor) by pressing F2 at startup
- SCSISelect by pressing Ctrl+A at startup
- Drop Down Light Path Diagnostics (level 2 diagnostic panel) for outside view of potential problem without removing cover
- Information LED panel, diagnostic LED panel, and component LEDs give visual indications of system well-being
- Predictive Failure Analysis® alerts on disks, power supplies, memory, processors, VRMs, and fans with IBM Director

LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 24x7, 4 hr avg response 96P2253
 - 3 year IOR 24x7, 2 hr avg response 96P2254
 - 4 year IOR 9x5, NBD response 96P2255
 - 5 year IOR 9x5, NBD response 69P2259
- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

All models: Maximum internal disk capacity: 440.4GB with six 73.4GB² hot-swap SAS disks

IBM® Type-model	Qty x Processor	L2 cache	Memory	Disk	SCSI controller	Mechanical	Slots x bays	Hot-swap pwr supplies	Mgmt adapter	Available date
8681-1RX	1 x Pentium III Xeon 700/100	1MB	512MB	None	2 x Wide Ultra2	8U ⁴ rack	12x4 (12 hs)	Three redundant	PCI	Mar 2001
8681-2RX	1 x Pentium III Xeon 700/100	2MB	512MB	None	2 x Wide Ultra2	8U rack	12x4 (12 hs)	Three redundant	PCI	Mar 2001
8681-3RX	1 x Pentium III Xeon 900/100	2MB	512MB	None	2 x Wide Ultra2	8U rack	12x4 (12 hs)	Three redundant	PCI	Apr 2001

Processor(s) **1 x Intel® Pentium® III Xeon™ 700 or 900MHz with 100MHz frontside bus**
 L2 cache **1MB or 2MB / full speed**
 Processor upgrade(s) **8-way SMP / up to eight Pentium III Xeon processors (same speed/cache size) / two 64-bit 100MHz processor buses**
 Features **Standard:** one Processor Board with four Intel Slot 2 sockets (one processor bus)
Maximum: two Processor Boards (second processor bus) / requires two Cache Coherency Filter Cards (reduces cache snoop bus traffic between two processor buses) / 'Mezzanine Exp Kit' has one Processor Board that requires 'Netfinity® 4X Accelerator Filter' containing two 1MB Cache Coherency Filter Cards (one for each Processor Board)

Memory - std / max **512MB / 32GB**
 Memory - std DIMMs **4 x 128MB DIMM**
 Memory - type **PC100-compliant 3.3v registered 168-pin SDRAM RDIMMs / 100MHz / gold connectors**
Error Checking and Correcting (ECC) memory and memory controller (Profusion Memory Controller MAC and DIB)
 Memory - cards **One Memory Card std (one memory bus) / two cards max (second memory bus) / each card has 16 sockets / 16GB max per card / second card supports two-way cache line interleaving**

SCSI disk controller **Adaptec® AIC-7897 / no integrated RAID controller**
 SCSI channels **Two Wide Ultra2 SCSI channels (LVDS 80MB/sec)**
 SCSI implementation **64-bit PCI / integrated on I/O Function Card**
 SCSI connectors **One 68-pin connector internal and one .8mm VHDCI connector external / each channel supports up to 15 devices**
 SCSI cabling **One 16-bit LVD cable to two bay backplane / one 16-bit LVD cable from controller to external 68-pin VHDCI connector**
 IDE controller / cabling **Enhanced IDE controller in PIIX4E / one one-drop IDE cable from IDE controller to CD-ROM**
 Disk - capacity **None / supports 10,000 rpm disks / converged tray is interchangeable with EXP200/300 and later Netfinity systems**
 Disk - bays **Hot-swap / no trays included (disks ship with trays) / 80-pin SCA-2 connectors**

All models: Maximum internal disk capacity: 72.8GB with two 36.4GB² HH Hot-swap SCSI disks

Mechanical **EIA 19" rack models (8U⁴) x 28" deep**
 Rack / conversion **Supported in NetBAY Enterprise Racks and current racks with extension options / kit available to convert rack to tower**

Architecture **Intel Profusion® chip set / one midplane (interconnects major buses and components) / four PCI 2.2 buses (four PB64) numbered 0, 4, 10, 13 to allow hot-swap of PCI-to-PCI bridge adapters**
 I/O Function Card **64-bit 33MHz PCI adapter / includes controllers for SVGA (32-bit PCI), SCSI, and PIIX4E (32-bit PCI Intel 82371AB for EIDE, ISA Bridge, USB) / Super I/O (NS PC97317VUL on 16-bit ISA) off PIIX4E**
 Slots (Active™ PCI) **12 hot-swap PCI slots¹⁰ available with power and attention indicator lights (optical sensors control power to slot) / Hot replace, hot upgrade, hot expansion / separated by insulative plastic dividers / PCI Hot-Plug Specification 1.0**

LAN adapter **No standard NIC controller or adapter**
 CD-ROM / Diskette **CD-ROM: 48X-20X⁵ CD-ROM / IDE interface off PIIX4E / 1.6" HH / bootable; Diskette drive: 3.5" 1.44MB / dust cover**
 Ports **Two 9-pin serial / one 25-pin parallel / two USB / one keyboard / one mouse / one SVGA (all in rear)**
 Graphics controller **SVGA / S3® Trio3D / integrated on I/O Function Card / 4MB SGRAM std/max / up to 1024x768 at 256 colors at 85Hz**

Security **Power-on and administrator passwords / mountable in an optional secure rack enclosure / selectable drive-startup / keyboard password / Advanced Remote Management security (user log-in password, read-only or read/write access, dial back)**

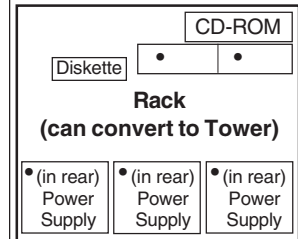
Systems management **Netfinity Advanced System Mgmt PCI Adapter (service processor) / PCI adapter / includes 10/100 ethernet, RJ-11, and serial connectors / provides remote console and mgmt / power on/off system / monitors power status, operating system, temperature, disks, fans, power supply / NS LM78 hardware monitor (voltage, temperature, fans)**

Diagnostics **Light Path Diagnostics™ / primary indicator on information panel with LEDs associated with failing components**
 LCD information panel **Intelligent front panel / two 16 character lines of status info**
 Software **ServerGuide™ - CD-ROM installation and configuration utilities, AntiVirus, and APC PowerChute Plus / includes IBM Director and others**

Netfinity 128MB SDRAM DIMM (registered) II	20L0245
Netfinity 256MB SDRAM DIMM (registered) II	20L0247
Netfinity 512MB SDRAM DIMM (registered) II	20L0249
Netfinity 1GB SDRAM DIMM (registered) II	33L3056
Netfinity 8500R Memory Card (16 sockets)	28L4454
Pentium III Xeon 700MHz/1MB Proc Upg	10K2330
Pentium III Xeon 700MHz/2MB Proc Upg	10K2166
Pentium III Xeon 900MHz/2MB Proc Upg	19K4637
Netfinity 8Ux28D Rack-to-Tower Conversn Kit	28L4705
NetBAY3E (3U pedestal on bottom)	36L9701
Netfinity Mezzanine Expansion Kit	10K2337
Netfinity 4X Accelerator Filter (two 1MB filters)	10K2335
Netfinity ServeRAID™-4H Ultra (160 SCSI Adptr)	37L6889
Sys Mgmt Proc Interconnect Kit	03K9309

Keyboard / mouse **None standard (since for rack)**
 Power supplies **Hot-swap / redundant / std and max: three 750 watt at 220v or 550 watts at 110v / universal (voltage sensing) / fans in each power supply / each has individual power cord / PFA**
 Fans **Nine fans / six hot-swap redundant (three fans in front for cpu area, three fans in middle for memory and adapter area) / one fan in each power supply / PFA / fan failure signals Diagnostic LED and mgmt processor**

- ↪ Dimensions: H14.0" x W17.3" x D29.4"; 147-170lbs
- ↪ Tool-free top, front, and rear access
- ↪ Access adapters from top
- ↪ Access memory, processors, and disks from front
- ↪ Access power supplies from rear
- ↪ Setup Program by pressing F1 at startup
- ↪ Diagnostics (PC-Doctor) by pressing F2 at startup
- ↪ Six power cords (9' each) included (three 110v and three 220v)



- ↪ Two 1.6" high HH 3.5" bays (both hot-swap)
- ↪ Stealth black color
- ↪ 4 removable handles
- ↪ (If convert to tower) supports up to three NetBAY3 units on bottom
- ↪ Wired for Mgmt 1.1a
- ↪ DMI 2.0, ACPI 1.0

- Slot 1: fullsize, 64-bit 33MHz PCI, hot-swap, Bus D
- Slot 2: fullsize, 64-bit 33MHz PCI, hot-swap, Bus D
- Slot 3: fullsize, 64-bit 33MHz PCI, hot-swap, Bus D
- Slot 4: fullsize, 64-bit 33MHz PCI, hot-swap, Bus D
- Slot 5: fullsize, 64-bit 33MHz PCI, hot-swap, Bus D
- Slot 6: fullsize, 64-bit 66MHz PCI, hot-swap, Bus C
- Slot 7: fullsize, 64-bit 66MHz PCI, hot-swap, Bus C
- Slot 8: fullsize, 64-bit 66MHz PCI, hot-swap, Bus B
- Slot 9: fullsize, 64-bit 66MHz PCI, hot-swap, Bus B
- Slot 10: fullsize, 64-bit 33MHz PCI, hot-swap, Bus A
- Slot 11: fullsize, 64-bit 33MHz PCI, hot-swap, Bus A
- Slot 12: fullsize, 64-bit 33MHz PCI, hot-swap, Bus A
- Slot*: fullsize, 64-bit 33MHz PCI, not hot-sw, Bus A
- Slot**: fullsize, 32-bit 33MHz PCI, not hot-sw, Bus A
- * used by I/O Function Card
- ** used by Advanced Remote Mgmt PCI Adapter
- ↪ Predictive Failure Analysis™ alerts on disks, power supplies, memory, processors, VRMs, and fans with IBM Director

LIMITED WARRANTY³

- ↪ 3 year parts and labor
- ↪ International Warranty Service³
- ↪ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- ↪ 3 year on site warranty service upgrade options (in eligible locations):⁷
 - 24 hr x 7 day coverage, 4 hour response time (ServicePac® part number 30L9187)
 - 24 hr x 7 day coverage, 2 hour response time (ServicePac part number 31L2723)
- ↪ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

IBM® Type-model	Qty x Processor	L3 cache	Memory	SCSI disks	SCSI controller	Mechanical	Slots x bays	Hot-swap slots	Hot-swap power supplies	Chipset	Operating system	Available date	
8683-1RX	1 x Itanium	733	2MB	1GB	2 x 36.4GB	2 x Ultra 160	7U ⁴ rack	8x4	8 hot-swap	4 redundant	460GX	None	July 2001
8683-2RX	1 x Itanium	800	4MB	1GB	2 x 36.4GB	2 x Ultra 160	7U rack	8x4	8 hot-swap	4 redundant	460GX	None	July 2001
8683-3RX	1 x Itanium	733	2MB	1GB	2 x 36.4GB	2 x Ultra 160	7U rack	8x4	8 hot-swap	4 redundant	460GX	Adv Server	Aug 2001
8683-4RX	1 x Itanium	800	4MB	1GB	2 x 36.4GB	2 x Ultra 160	7U rack	8x4	8 hot-swap	4 redundant	460GX	Adv Server	Aug 2001

Processor **1 x Intel® Itanium™ 733 or 800MHz** with 266MHz frontside bus (double pumped 133MHz)
 L1 and L2 cache 32KB L1 cache / 96KB L2 cache / on die of Itanium / at processor speed
 L3 cache **2MB or 4MB L3 cache** / inside Itanium cartridge / at processor speed
 Processor upgrade Implementation **4-way SMP** via identical processors
 One Processor Board with four Socket M 418-pin LIF sockets / one socket used by Itanium PAC418 (418-pin array cartridge) processor and caches / each Itanium powered by one Power Pod on Processor Board / system contains one Processor Board (4 sockets, SAC, SDC), two Memory Boards, one I/O Baseboard (slots, graphics, ethernet, SCSI, PXB, 3 x WXB), one Sideplane (connects I/O Baseboard to Processor Brd), one Legacy I/O Board (IFB, USB, FWH, Super I/O)

Memory - std / max **1GB std / 64GB max¹³** / registered SDRAM PC100 3.3v / Error Checking and Correction (ECC) controller and DIMMs
 Memory - features Two Memory Boards standard each with 32 168-pin DIMM sockets / ships standard with four DIMMs on one Memory Board for four-way interleaving / must install four identical DIMMs at a time / adding DIMMs on second Memory Board enables Card to Card (C2C) interleaving

SCSI disk controller QLogic® ISP12160A / no integrated RAID controller
 SCSI channels Two Ultra 160 (Ultra3) SCSI channels (LVDS 160MB/sec) / 64-bit 66MHz PCI / controller on I/O Baseboard
 SCSI implementation First channel to internal 2-port SCSI backplane for internal hot-swap disks (16-bit LVD cable to SCSI backplane) / second channel to one external .8mm VHDCI 68-pin connector (16-bit LVD cable from I/O Baseboard to ext connector)
 IDE controller Enhanced IDE busmaster / ATA-33 / controller in IFB off the PXB / two connectors on Legacy I/O Board
 IDE cabling One 1-drop IDE cable to LS-120 / one 1-drop IDE cable to CD-ROM
 Disks - capacity **2 x 36.4GB²** Ultra 160 SCSI / 7200 rpm / tray integrated on disk and unique to system
 Disk - bays Hot-swap / 80-pin SCA-2 connectors

Mechanical **EIA 19" rack models (7U⁴) x 28" deep**
 Rack / conversion Supported in IBM NetBAY™ Enterprise Racks or other NetBAY racks with extension options

Chipsets **Intel 460GX chipset** / 82460GX includes 82461GX System Address Controller (SAC), 82462GX System Data Controller (SDC), 82463 Memory Address Controller (MAC), 82464GX Memory Data Controller (MDC), 3 x 82466GX Wide eXpansion Bus (WXB), 82467NX PCI eXpansion Bus (PXB), 82468GX I/O Firmware Bridge (IFB), 82802AC Firmware Hub (FWH), 82064AA Programmable Interrupt Device (PID)
 Legacy I/O Board Legacy I/O Board in proprietary connector / contains controllers for hardware monitoring (BMC, ICMB), USB (Vers 1.1), two channel IDE, Firmware Hub (FWH), I/O Firmware Bridge (IFB), SMCS™ LPC47B27X Super I/O (two serial, parallel, kybrd, mouse)

Slots (Active™ PCI) Eight hot-swap PCI 2.2 slots¹¹ available with power and attention indicator lights (magnetic sensors control power to slot) / **hot replace, hot upgrade, hot expansion** / separated by insulative plastic dividers / PCI Hot-Plug Specification 1.0

10/100Mbps ethernet Intel 82559 (D101M) ethernet 10/100 controller on I/O Baseboard / full duplex / RJ-45 connector on rear
 LS-120 / CD-ROM *SuperDisk*: LS-120, primary IDE 0, 0.5" high, compatible w/ diskettes / CD-ROM: 24X-10X⁶, secondary IDE 1, 0.5" high
 Ports Two 9-pin serial / one 25-pin parallel / two USB / one keyboard / one mouse / one analog DB-15 SVGA (all in rear)
 Graphics controller SVGA / ATI® RAGE XL / integrated on I/O Baseboard / 8MB SGRAM std/max

Security BIOS administrator and BIOS user passwords / mountable in an optional secure rack enclosure / selectable drive-startup

Systems management Three microcontrollers: (1) Baseboard Mgmt Controller (BMC), (2) Intelligent Chassis Management Bus Controller (ICMB), (3) Hot-Swap Controller (HSC) / provides remote console and mgmt / power on/off system / monitors power status, oper system, temp, disks, fans, power supplies / software utility (Intel Server Control) for mgmt required and supported by Intel

Diagnostics AMIDIagnostic utility on standard LS-120 diskette
 Front panel Switches, LEDs, LCD display with two lines of status info
 Software and CDs Diagnostic Diskette (LS-120), Utility CD, Publication CD, Installation Guide / *some*: Adv Server CD / no ServerGuide™

Keyboard / mouse None standard (since for rack)
 Power supplies *Std and max*: four 800 watt at 220v or 700 watts at 110v / **hot-swap / N+1 redundant** / universal (voltage sensing) / two individual 220v power cords to two connectors / PFA
 Fans **Fourteen fans / six hot-swap redundant** (four 172 mm and two 120 mm) / two fans in each pwr supp / variable spd / PFA

Operating system included on CD *1xx/2xx*: No operating system included;
3xx/4xx: Microsoft® Windows® Advanced Server, Limited Edition (LE); *All*: support for 64-bit Red Hat Linux®

1GB (4x256MB) ECC SDRAM RDIMM Kit	33L3258
2GB (4x512MB) ECC SDRAM RDIMM Kit	33L3260
4GB (4x1GB) PC100 ECC SDRAM RDIMM Kit	33L3262
Itanium 733MHz/2MB L3 Proc Upg	10K3815
Itanium 800MHz/4MB L3 Proc Upg	10K0050
System to PDU Power Cable (220V/10A)	00N7701

xSeries options:
 Visit ibm.com/pc/us/eserver/xseries/storage.html
 Configure your xSeries 380:
 Visit ibm.com/pc/us/eserver/xseries

LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time
- 3 year on site warranty service upgrade options (in eligible locations):⁷
 - 9 hr coverage, Mon-Fri excluding holidays, 4 hour average response time
 - 24 hr x 7 day coverage, 4 hour average response time
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³
- ServicePac[®] Warranty and Maintenance options at ibm.com/services/its/us/servicepac.html

Dimensions: H12.25" x W17.5" x D28.0"; 135-150lbs
 Access adapters from top (no tools required)
 Access power supplies from front (cust replaceable)
 Processor and memory upgrades (IBM service only)
 BIOS Setup Utility by pressing F2 at startup
 QLogic Setup Utility by pressing ALT+Q near startup
 EFI Boot Manager at startup

Rack (front)

Two 1.0" SL 3.5" disk bays (both hot-swap)
 Stealth black color
 4 removable handles
 Wired for Mgmt 2.0
 DMI 2.0 and ACPI 2.0-compliant

Slot: used by Legacy I/O Board, Bus A
 Slot 1: fullsize, 64-bit 33MHz PCI, no access, Bus A
 Slot 2: fullsize, 64-bit 33MHz PCI, no access, Bus A
 Slot 3: fullsize, 64-bit 66MHz PCI, hot-swap, Bus B
 Slot 4: fullsize, 64-bit 66MHz PCI, hot-swap, Bus C
 Slot 5: fullsize, 64-bit 66MHz PCI, hot-swap, Bus C
 Slot 6: fullsize, 64-bit 66MHz PCI, hot-swap, Bus D
 Slot 7: fullsize, 64-bit 66MHz PCI, hot-swap, Bus D
 Slot 8: fullsize, 64-bit 66MHz PCI, hot-swap, Bus E
 Slot 9: fullsize, 64-bit 66MHz PCI, hot-swap, Bus F
 Slot 10: fullsize, 64-bit 66MHz PCI, hot-swap, Bus G

Predictive Failure Analysis[®] alerts on disks, power supplies, memory, processors, Power Pods, and fans (enabled by Intel Server Control (ISC) software)
 SMBIOS-2.3 compliant

All models: Maximum internal disk capacity: 72.8GB with two 36.4GB² SL hot-swap SCSI disks

See footnotes for important warranty information
 US models announced on June 26 or August 28, 2001
 US models withdrawn effective September or October 2002
 • = Hot-swap

IBM® Type-model	Qty x Processor	L3 cache	Memory	SCSI disks	SCSI controller	Mechanical	Slots x bays	Hot-swap bays	Hot-swap power supplies	Chipset	Operating system	Available date
8834-21X	2 x Itanium 1.4Ghz	1.5MB	2GB	1 x 73.4GB	2 x Ultra320	2U ⁴ rack	3x2	2 hot-swap	2+1 redundant	E8870	None	Sep 2003
8834-32X	2 x Itanium 1.5Ghz	6.0MB	4GB	2 x 73.4GB	2 x Ultra320	2U ⁴ rack	3x2	2 hot-swap	2+1 redundant	E8870	None	Aug 2003

Positioning Processor *High-performance 2-way Intel Itanium 2 platform for floating point intensive 64-bit applications such as Linux clusters*
Up to 2 x Intel® Itanium 2™ 1.5Ghz with 400MHz frontside bus (double pumped 200MHz) / others avail. by special bid
L3 cache **Up to 6.0MB L3 cache** / inside Itanium 2 cartridge / at processor speed
Processor upgrade Not Available
Implementation Two Processor Board with two Socket K 418-pin LIF sockets / both sockets used by Itanium PAC418 (418-pin array cartridge) processor and caches / each Itanium powered by one Power Pod on Processor Board / system contains one Processor Board (2 sockets, SAC, SDC), two Memory Boards, one I/O Baseboard (slots, graphics, ethernet, SCSI, PXB, 3 x WXB), one Sideplane (connects I/O Baseboard to Processor Brd), one Legacy I/O Board (IFB, USB, FWH, Super I/O)

Memory - std / max **Up to 4GB std / 16GB max¹³** / 133Mhz 2.5V PC2100 ECC DDR SDRAM / Error Checking and Correction (ECC) /
Memory - features Two Memory Boards standard each with four 184-pin DIMM sockets / ships standard with four or eight 512MB DIMMs for four-way interleaving / must install four identical DIMMs at a time / adding DIMMs on second Memory Board enables Card to Card (C2C) interleaving

SCSI disk controller **LSI® 53C1030 LVD Ultra320 / integrated RAID-1 controller**
SCSI channels Two Ultra320 SCSI channels (LVDS 320MB/sec) / 64-bit 100MHz and 133MHz PCI / controller on I/O Baseboard
SCSI implementation First channel to internal 2-port SCSI backplane for internal hot-swap disks (16-bit LVD cable to SCSI backplane) / second channel to one external .8mm VHDCI 68-pin connector (16-bit LVD cable from I/O Baseboard to ext connector)
IDE controller Enhanced IDE busmaster / ATA-100 / one connector on Legacy I/O Board
IDE cabling One 1-drop IDE cable to DVD/CD-RW
Disks - capacity **1 or 2 x 73.4GB²** Ultra320 SCSI / 10000 rpm / tray integrated on disk
Disk - bays Hot-swap / 80-pin SCA-2 connectors

Mechanical Rack / conversion **EIA 19" rack models (2U⁴)**
 Supported in IBM NetBAY™ Enterprise Racks or other NetBAY racks with extension options

Chipsets **Intel E8870 chipset** / well-aligned system bus, memory and I/O / 6.5 GB/sec bandwidth / Intel Server Platform **SR870BH2** includes E8870 Scalable Node Controller (SNC), E8870DH DDR Memory Hub (DMH), E8870IO Server Input Output Hub (SIOH), E8870SP Scalability Port Switch (SPS), 82870P2 64-Bit PCI/PCI-X Controller (P64H2), 82801DB I/O Controller Hub (ICH4), 82802AC FirmWare Hub (FMH)

Legacy I/O Board Legacy I/O Board in proprietary connector / contains controllers for hardware monitoring (BMC, ICMB), USB (Vers 1.1), single channel IDE, FirmWare Hub (FWH), I/O Firmware Bridge (IFB), SMCS™ LPC47B272 Super I/O (one RJ-45 serial, no parallel, no keyboard, no mouse) / USB used for keyboard and mouse

Slots (PCI-X) Three PCI-X slots¹¹ available with power and attention indicator lights (magnetic sensors control power to slot) / separated by insulative plastic dividers / PCI Hot-Plug Specification 1.0

Ethernet Integrated Intel 82546EB 10/100/1000 dual port controller / full duplex / two RJ-45 connectors on rear
Optical / Ports 8X⁶ DVD/CD-RW Combo Drive / one RJ-45 serial / no parallel / four USB 1.1 (two front, two rear) / no keyboard / no mouse / two analog DB-15 SVGA (one front, one rear)
Graphics controller SVGA / ATI® RAGE XL / integrated on I/O Baseboard / 8MB SDRAM std/max

Security BIOS administrator and BIOS user passwords / mountable in an optional secure rack enclosure / selectable drive-startup

Systems management Three microcontrollers: (1) Baseboard Mgmt Controller (BMC), (2) Intelligent Chassis Management Bus Controller (ICMB), (3) Hot-Swap Controller (HSC) / provides remote console and mgmt / power on/off system / monitors power status, oper system, temp, disks, fans, power supplies / software utility (Intel Server Control) for mgmt required and supported

Diagnostics Intel Server Management 6.1 including integrated in-band and out-of-band remote management, event alerting and logging

Software and CDs Diagnostic Diskette, Utility CD, Publication CD, Installation Guide / no ServerGuide™ / no IBM Director™

Keyboard / mouse None standard / use optional USB
Power supplies Std/Max: two/three 350 watt **hot-swap N+1 redundant** / universal (voltage sensing) / two individual 220v power cords to two connectors / PFA

Fans **Six redundant fans** / variable speed / PFA / additional fans inside power supplies

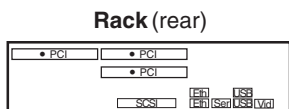
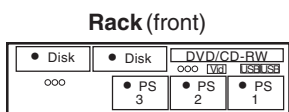
Operating system No operating system included / Supported OS include Itanium 2 64-bit OS from SuSE, Red Hat, and Microsoft

OPTIONS		
512MB PC2100 DDR ECC SDRAM RDIMM	33L5038	
1GB PC2100 DDR ECC SDRAM RDIMM	33L5039	
2GB PC2100 DDR ECC SDRAM RDIMM	33L5040	
IBM 73.4GB 10K Ultra320 SCSI HS SL HDD	32P0727	
IBM 146.8GB 10K Ultra320 SCSI HS SL HDD	32P0728	
IBM USB Space Saver Keyboard	22P5150	
NOTE: 3rd power supply available by special bid only		
NOTE: All other Itanium 2 processors available via special bid		

LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time
- 3 year on site warranty service upgrade options (in eligible locations):⁷
 - 9 hr coverage, Mon-Fri excluding holidays, 4 hour average response time
 - 24 hr x 7 day coverage, 4 hour average response time
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³
- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>

- Dimensions: H3.50" x W18.90" x D30.51"
H88.90mm x W480.00mm x D775.00mm
- Weight: 69.21 lbs (31.39 kg)
- Access adapters from top (no tools required)
- Access power supplies from front (cust replaceable)
- Processor and memory upgrades (IBM service only)
- BIOS Setup Utility by pressing F2 at startup



- Two 1.0" SL 3.5" disk bays (both hot-swap)
- Stealth black color
- Wired for Mgmt 2.0
- DMI 2.0 and ACPI 2.0-compliant

- Slot 1: Bottom Slot / Not hot-swap full length, 64-bit 133MHz PCI-X, accessible, Bus A
- Slot 2: Middle Slot, Back side / Not hot-swap half length, 64-bit 100MHz PCI-X, accessible, Bus B
- Slot 3: Top Slot / Not hot-swap full length, 64-bit 100MHz PCI-X, accessible, Bus B
- NOTE:** Slots cannot total more than 45 watts

- Predictive Failure Analysis® alerts on disks, power supplies, memory, processors, Power Pods, and fans (enabled by Intel Server Control (ISC) software)
- SMBIOS-2.3 compliant

All models: Maximum internal disk capacity: 293.6GB with two 146.8GB² SL hot-swap SCSI disks

See footnotes for important warranty information
 US models announced on July 1, 2003 or September 9, 2003
 • = Hot-swap

IBM® Type-model	Qty x Processor	L3 cache	L4 cache	Memory	Disk	SCSI controller	Mechanical	Slots x bays	SMP/RXE Exp Ports	Hot-swap pwr supplies	Mgmt adapter	Available date
8687-1RX	2 x Xeon™ 1.4GHz	512KB	32MB	2GB Chipkill™	None	2xUltra160	4U ⁴ rack	6x4	3/1	Two redundant	PCI	Apr 2002
8687-2RX	2 x Xeon 1.5GHz	512KB	32MB	2GB Chipkill	None	2xUltra160	4U rack	6x4	3/1	Two redundant	PCI	Apr 2002
8687-3RX	2 x Xeon 1.6GHz	1MB	32MB	2GB Chipkill	None	2xUltra160	4U rack	6x4	3/1	Two redundant	PCI	Apr 2002

Positioning *Up to 8-way power for high-end databases, server consolidation and mission-critical business applications*
 Processors **2 x Intel® Xeon™ Processor 1.4, 1.5, or 1.6GHz** with 400MHz frontside bus / supports Hyper-Threading technology
 L2 cache **256KB** each processor / on die of processor / at processor speed
 L3 cache **512KB or 1MB** each processor / on die of processor / at processor speed
 L4 cache **32MB XcelL4™ Server Accelerator Cache** (up to **64MB** with optional SMP Expansion Module) / 32MB in each SMP Expansion Module / ECC / 64-bit 400MHz bus from Cache and Scalability Controller
 Processor upgrade **4-way SMP** (up to **8-way SMP** with optional SMP Expansion Module)
 SMP Expansion Module **One SMP Expansion Module std** / two max / each contains four Intel 603-pin micro-PGA ZIF sockets for Xeon MP, 32MB L4 cache, sixteen DIMM sockets, three SMP Expansion Ports (second module connected via one or two SMP Expansion Ports) / each SMP Expansion Module activates one RXE Expansion Port (only one RXE Expansion Port supported)
 Additional boards One I/O Board (PCI-X Host Bridge, SCSI, ethernet, graphics, South Bridge, Super I/O, slot for Mgmt Adapter), one PCI Board (PCI-X Host Bridge, six PCI-X slots), one Midplane Board (connects SMP Exp Modules, I/O Board, PCI Board)

Memory **2GB** std / **16GB** max¹³ (up to **32GB** with optional SMP Expansion Module) / four 512MB DIMMs installed / 16 DIMM gold-connector slots / must install four identical DIMMs at same time / 4-way interleaving / PC133-compliant / 3.3v registered 168-pin SDRAM RDIMMs / 133MHz / **Error Checking and Correcting (ECC) and Chipkill™ via Memory ProteXion™** (1, 2, 3, or 4-bit errors on same chip; up to two chips at once; redundant bit steering) / **Active Memory™** via memory mirroring (memory mirroring supported with any OS)

SCSI disk controller Adaptec® AIC-7899W / Wide Ultra160 SCSI (LVD 160MB/sec) / dual channel / 64-bit 66MHz PCI / integrated on I/O Board
 SCSI implementation First channel to internal 2-port SCSI backplane for internal hot-swap disks (16-bit LVD cable to SCSI backplane) / second channel to one external .8mm VHDCI 68-pin connector (16-bit LVD cable from I/O Board to ext connector) / one standard (longer) 16-bit LVD cable included for attaching an optional ServeRAID adapter to the two-bay backplane
 IDE controller Enhanced IDE ATA-100 controller in South Bridge / one one-drop IDE cable to backplane for diskette and CD-ROM
 Disk - capacity/bays No disks standard / supports up to 15K rpm SCSI disks / two hot-swap bays / converged tray / 80-pin SCA-2 connectors

Mechanical **EIA 19" rack models (4U⁴)** x 28" deep / supported in NetBAY™ Racks (such as NetBAY42 SR, NetBAY42 ER)

Chipset **IBM XA-32™ chipset** / IBM Cache and Scalability Controller with L4 cache controller and three SMP Expansion Ports / IBM Memory I/O Controller with two remote I/O ports (each to a IBM PCI-X Host Bridge) / each IBM PCI-X Host Bridge provides three peer PCI buses / PCI 2.2 Bus E supports graphics, adapter slot with Remote Supervisor Adapter, VIA® 82C686B South Bridge (IDE ATA-100, USB, Super I/O PC97317VUL [keyboard, mouse]) / PCI 2.2 Bus F supports SCSI, ethernet / PCI-X Bus A, B, C, D support PCI-X slots / designed to the PCI-X 1.0 specification
 Slots (Active™ PCI-X) Six hot-swap PCI-X 1.0 slots¹⁰ available with power and attention indicator lights (optical sensors control power to slot) / **hot replace, hot upgrade, hot expansion** / separated by insulative plastic dividers
 RXE Expansion Port **One port to support up to 12 additional PCI-X slots via an optional IBM RXE-100 Remote Expansion Enclosure**

CD-ROM / diskette 24X-10X⁶ CD-ROM / 3.5" 1.44MB diskette drive / both removable from Ultrabay™ 2000 bays / supports CD-RW, DVD
 Ethernet Broadcom® 5700 10/100/1000 ethernet controller / on I/O Board / full duplex / 64-bit 66MHz PCI bus / Wake on LAN®
 Graphics controller SVGA / S3® Savage4 Pro / on I/O Board / 8MB SDRAM 125MHz std/max / up to 1280x1024 at 64K colors at 85Hz
 Ports Rear: RXE-100 Expansion Port (to connect optional RXE-100), RXE Management Port, two USB (Vers 1.1), keyboard, mouse, analog DB-15 graphics, ethernet / no serial or parallel ports / Front: one USB (Vers 1.1)

Security Power-on and administrator passwords / unattended boot / selectable boot

Systems mgmt **Remote Supervisor Adapter** / PCI adapter / includes 10/100 ethernet, RJ-11, and serial connectors / provides remote console and mgmt / power on/off system / monitors power status, op system, temperature, disks, fans, power supplies

Diagnostics **Light Path Diagnostics™** / primary indicator on information panel with LEDs associated with failing components / IBM Real Time Diagnostics (operated through IBM Director) available even while server running

Software **ServerGuide™** (CD-ROM installation and configuration utilities), IBM Director, and others

Keyboard / mouse None standard (because rack-based)
 Power supplies Std: two / hot-swap / 1050 watts at 220v or 550 watts at 110v / redundant at 220v with two power supplies / front access / worldwide / voltage-sensing / auto-restart / fans in each power supply / PFA

Cooling fans Four hot-swap, redundant, multi-speed fans / one additional fan in each power supply / PFA / fan failure signals Diagnostic LED and mgmt processor

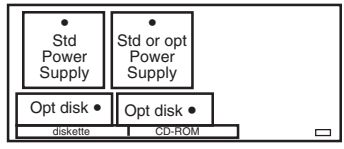
xSeries SMP Expansion Module	59P5188
512MB PC133 ECC SDRAM RDIMM	33L3324
1GB PC133 ECC SDRAM RDIMM	31P8300
Xeon MP 1.4GHz/512KB L3 Cache Proc Upg	32P8705
Xeon MP 1.5GHz/512KB L3 Cache Proc Upg	32P8706
Xeon MP 1.6GHz/1MB L3 Cache Proc Upg	32P8707
IBM 73.4GB 10K Ultra160 SCSI Hot-Swap	06P5756
IBM ServeRAID™-4H Ultra160 SCSI Adapter	37L6889
NetBAY11 Standard Rack Cabinet	9306110
8X/4X/24X Max CD-RW Ultrabay 2000	22P9101
IBM T540 15" Flat Panel Color Monitor (black)	9511AG4
Other options at ibm.com/pc/us/accessories	

Six available 3.3 volt Active PCI-X slots:
 Slot 1: fullsize, 64-bit 66MHz PCI-X, hot-swap Bus A
 Slot 2: fullsize, 64-bit 66MHz PCI-X, hot-swap Bus A
 Slot 3: fullsize, 64-bit 100MHz PCI-X, hot-swap, Bus B
 Slot 4: fullsize, 64-bit 100MHz PCI-X, hot-swap, Bus B
 Slot 5: fullsize, 64-bit 133MHz PCI-X, hot-swap, Bus C
 Slot 6: fullsize, 64-bit 133MHz PCI-X, hot-swap, Bus D
 Slot: used by Remote Supervisor Adp, 32-bit 33MHz

- ↳ Dimensions: H7.0" x W19.0" x D27.5"
- ↳ Dimensions: H178mm x W483mm x D699mm
- ↳ Max weight: 110 lbs; 50kg
- ↳ Stealth black color
- ↳ Tool-free serviceability
- ↳ Access processors, memory, adapters, and SMP Expansion Module from top
- ↳ Access power supplies and disks from front
- ↳ Setup Program by pressing F1 at startup
- ↳ Diagnostics (PC-Doctor) by pressing F2 at startup
- ↳ SCSISelect by pressing Ctrl+A at startup
- ↳ Information LED panel and front-accessible pull-out Light Path panel (1st and 2nd level diagnostics without removing cover)
- ↳ Predictive Failure Analysis® alerts on processors, XcelL4 Server Accelerator Cache, memory, fans, power supplies, and optional disks with IBM Director

LIMITED WARRANTY³

- ↳ 1 year parts and labor
- ↳ International Warranty Service³
- ↳ On site, 24 hr x 7 day coverage, same day response time⁷
- ↳ 1 year on site warranty service upgrade option (in eligible locations):⁷
 - 24 hr x 7 day coverage, 2 hour response time (No ServicePac available)
- ↳ Post warranty maintenance services available
- ↳ 24x7¹⁴ toll-free support for warranty issues during the warranty period³



Bay ① 3.5", 0.5", access, diskette (Ultrabay 2000)
 Bay ② 3.5", 0.5", access, CD-ROM (Ultrabay 2000)
 Bay ③ 3.5", SL 1", access, hot-swap
 Bay ④ 3.5", SL 1", access, hot-swap

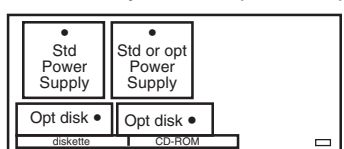
All models: Maximum internal disk capacity: 146.8GB with two 73.4GB² hot-swap SCSI disks

See footnotes for important warranty information
 US models announced March 12, 2002, withdrawn effective March 25, 2003
 • = Hot-swap

IBM® Type-model	Qty x Processor	SMP Exp Modules	L3 cache	L4 cache	Memory	Disk	SCSI controller	Mechanical	Slots x bays	Hot-swap pwr supplies	Mgmt adapter	Available date
8687-3RY	2 x Xeon™ 2.4GHz	One	None	32MB	2GB Chipkill™	None	2 x Ultra160	4U ⁴ rack	6x4	Two redundant	PCI	Aug 2002
8687-4RY	4 x Xeon 2.4GHz	Two	None	64MB	4GB Chipkill	None	2 x Ultra160	4U rack	6x4	Two redundant	PCI	Aug 2002
Positioning	<i>SMP power for high-end databases, server consolidation and mission-critical business applications</i>											
Processors	2 or 4 x Intel® Xeon™ Processor 2.4GHz¹ with 400MHz frontside bus / supports Hyper-Threading technology											
L2 cache	512KB each processor / on die of processor / at processor speed (optional Xeon MP has 256KB in each processor)											
L3 cache	None / on die of processor / at processor speed (optional Xeon has 512KB or 1MB in each processor)											
L4 cache	3RY: 32MB; 4RY: 64MB; All: Xcel4™ Server Accelerator Cache / 32MB in each SMP Expansion Module / ECC / 64-bit 400MHz bus from Cache and Scalability Controller											
Processor upgrade	3RY: 4-way SMP with two SMP Expansion Modules; All: models can be upgraded to Xeon MP processors to support up to 8-way SMP with two SMP Expansion Modules or up to 16-way SMP in the third quarter 2002 with two xSeries 440 systems											
SMP Expansion Modules	3RY: one std; 4RY: two std; All: two max / each contains four Intel 603-pin micro-PGA ZIF sockets for Xeon, 32MB L4 cache, sixteen DIMM sockets, three SMP Expansion Ports (second module connected via one or two SMP Expansion Ports) / each SMP Expansion Module activates one RXE Expansion Port (only one RXE Expansion Port supported)											
Additional boards	One I/O Board (PCI-X Host Bridge, SCSI, ethernet, graphics, South Bridge, Super I/O, slot for Mgmt Adapter), one PCI Board (PCI-X Host Bridge, six PCI-X slots), one Midplane Board (connects SMP Exp Modules, I/O Board, PCI Board)											
Memory	3RY: 2GB std with 4 x 512MB DIMMs / 16MB max ¹³ (up to 32GB with optional SMP Expansion Module) / 4RY: 4GB std with 8 x 512MB DIMMs (4 DIMMs in each SMP Exp Module) / 32GB max ¹³ / All: Each SMP Expansion Module has 16 DIMM gold-connector slots / must install four identical DIMMs at same time / 4-way interleaving / PC133-compliant / 3.3v registered 168-pin SDRAM RDIMMs / 133MHz / Error Checking and Correcting (ECC) and Chipkill™ via Memory ProteXion™ (1, 2, 3, or 4-bit errors on same chip; up to two chips at once; redundant bit steering) / Active Memory™ via memory mirroring (memory mirroring supported with any OS)											
SCSI disk controller	Adaptec® AIC-7899W / Wide Ultra160 SCSI (LVD 160MB/sec) dual channel / 64-bit 66MHz PCI / integrated on I/O Board											
SCSI implementation	First channel to internal 2-port SCSI backplane for internal hot-swap disks (16-bit LVD cable to SCSI backplane) / second channel to one external .8mm VHDCI 68-pin connector (16-bit LVD cable from I/O Board to ext connector) / one standard (longer) 16-bit LVD cable included for attaching an optional ServeRAID adapter to the two-bay backplane											
IDE controller	Enhanced IDE ATA-100 controller in South Bridge / one one-drop IDE cable to backplane for diskette and CD-ROM											
Disk - capacity/bays	No disks standard / supports up to 15K rpm SCSI disks / two hot-swap bays / converged tray / 80-pin SCA-2 connectors											
Mechanical	EIA 19" rack models (4U⁴) x 28" deep / supported in NetBAY™ Racks (such as NetBAY42 SR, NetBAY42 ER)											
Chipset	IBM XA-32™ chipset / IBM Cache and Scalability Controller with L4 cache controller and three SMP Expansion Ports / IBM Memory I/O Controller with two remote I/O ports (each to a IBM PCI-X Host Bridge) / each IBM PCI-X Host Bridge provides three peer PCI buses / PCI 2.2 Bus E supports graphics, adapter slot with Remote Supervisor Adapter, VIA® 82C686B South Bridge (IDE ATA-100, USB, Super I/O PC97317VUL [keyboard, mouse]) / PCI 2.2 Bus F supports SCSI, ethernet / PCI-X Bus A, B, C, D support PCI-X slots / designed to the PCI-X 1.0 specification											
Slots (Active™ PCI-X)	Six hot-swap PCI-X 1.0 slots ¹⁰ available with power and attention indicator lights (optical sensors control power to slot) / hot replace, hot upgrade, hot expansion / separated by insulative plastic dividers											
RXE Expansion Port	One port to support up to 12 additional PCI-X slots via an optional IBM RXE-100 Remote Expansion Enclosure											
CD-ROM / diskette	24X-10X ⁶ CD-ROM / 3.5" 1.44MB diskette drive / both removable from Ultrabay™ 2000 bays / supports CD-RW, DVD											
Ethernet	Broadcom® 5700 10/100/1000 ethernet controller / on I/O Board / full duplex / 64-bit 66MHz PCI bus / Wake on LAN®											
Graphics controller	SVGA / S3® Savage4 Pro / on I/O Board / 8MB SDRAM 125MHz std/max / up to 1280x1024 at 64K colors at 85Hz											
Ports	Rear: RXE-100 Expansion Port (to connect optional RXE-100), RXE Management Port, two USB (Vers 1.1), keyboard, mouse, analog DB-15 graphics, ethernet / no serial or parallel ports / Front: one USB (Vers 1.1)											
Security	Power-on and administrator passwords / unattended boot / selectable boot											
Systems mgmt	Remote Supervisor Adapter / PCI adapter / includes 10/100 ethernet, RJ-11, and serial connectors / provides remote console and mgmt / power on/off system / monitors power status, op system, temperature, disks, fans, power supplies											
Diagnostics	Light Path Diagnostics™ / primary indicator on information panel with LEDs associated with failing components / IBM Real Time Diagnostics (operated through IBM Director)											
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director, and others											
Keyboard / mouse	None standard (because rack-based)											
Power supplies	Std: two; max: two / hot-swap / 1050 watts at 220v or 550 watts at 110v / redundant at 220v with two power supplies / front access / worldwide / voltage-sensing / auto-restart / fans in each power supply / PFA											
Cooling fans	Four hot-swap, redundant, multi-speed fans / one additional fan in each power supply / PFA / fan failure signals Diagnostic LED and mgmt processor											

Six available 3.3 volt Active PCI-X slots:

Slot 1: fullsize, 64-bit 66MHz PCI-X, hot-swap Bus A	↳ Dimensions: H7.0" x W19.0" x D27.5"
Slot 2: fullsize, 64-bit 66MHz PCI-X, hot-swap Bus A	↳ Dimensions: H178mm x W483mm x D699mm
Slot 3: fullsize, 64-bit 100MHz PCI-X, hot-swap, Bus B	↳ Max weight: 110 lbs; 50kg
Slot 4: fullsize, 64-bit 100MHz PCI-X, hot-swap, Bus B	↳ Stealth black color
Slot 5: fullsize, 64-bit 133MHz PCI-X, hot-swap, Bus C	↳ Tool-free serviceability
Slot 6: fullsize, 64-bit 133MHz PCI-X, hot-swap, Bus D	↳ Access processors, memory, adapters, and SMP Expansion Module from top
Slot: used by Remote Supervisor Adp, 32-bit 33MHz	↳ Access power supplies and disks from front
	↳ Setup Program by pressing F1 at startup
	↳ Diagnostics (PC-Doctor) by pressing F2 at startup
	↳ SCSISelect by pressing Ctrl+A at startup
	↳ Information LED panel and front-accessible pull-out Light Path panel (1st and 2nd level diagnostics without removing cover)
	↳ Predictive Failure Analysis® alerts on processors, Xcel4 Server Accelerator Cache, memory, fans, power supplies, and opt disks with IBM Director



4U Rack

Bay ① 3.5", 0.5", access, diskette (Ultrabay 2000)

Bay ② 3.5", 0.5", access, CD-ROM (Ultrabay 2000)

Bay ③ 3.5", SL 1", access, hot-swap

Bay ④ 3.5", SL 1", access, hot-swap

Other options at ibm.com/pc/us/accessories

LIMITED WARRANTY³

- ↳ 1 year parts and labor
- ↳ International Warranty Service³
- ↳ On site, 24 hr x 7 day coverage, same day response time⁷
- ↳ 1 year on site warranty service upgrade option (in eligible locations):⁷
 - 24 hr x 7 day coverage, 2 hour response time (No ServicePac available)
- ↳ Post warranty maintenance services available
- ↳ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

All models: Maximum internal disk capacity: 146.8GB with two 73.4GB² hot-swap SCSI disks

• = Hot-swap
 See footnotes for important warranty information
 US models announced August 13, 2002; withdrawn effective September 26, 2003
 (X440B) © IBM Corp. August 2002

IBM® Type-model	Qty x Processor	L3 cache	L4 cache	Memory	Disk	SCSI controller	Mechanical	Slots x bays	SMP/RXE Exp Ports	Hot-swap pwr supplies	Mgmt adapter	Available date
8687-4RX	2 x Xeon™ MP 1.5GHz	1MB	32MB	2GB Chipkill™	None	2xUltra160	4U ⁴ rack	6x4	3/1	Two redundant	PCI	Nov 2002
8687-5RX	2 x Xeon MP 1.9GHz	1MB	32MB	2GB Chipkill	None	2xUltra160	4U rack	6x4	3/1	Two redundant	PCI	Nov 2002
8687-6RX	4 x Xeon MP 1.9GHz	1MB	32MB	4GB Chipkill	None	2xUltra160	4U rack	6x4	3/1	Two redundant	PCI	Nov 2002
8687-7RX	4 x Xeon MP 2.0GHz	2MB	32MB	2GB Chipkill	None	2xUltra160	4U rack	6x4	3/1	Two redundant	PCI	Nov 2002

Positioning *Up to 8-way power for high-end databases, server consolidation and mission-critical business applications*

Processors **2 or 4 x Intel® Xeon™ Processor MP 1.5, 1.9, or 2.0GHz¹** with 400MHz frontside bus / supports Hyper-Threading technology

L2 cache **512KB** each processor / on die of processor / at processor speed

L3 cache **1MB or 2MB** each processor / on die of processor / at processor speed

L4 cache **32MB XcelL4™ Server Accelerator Cache** (up to **64MB** with optional SMP Expansion Module) / 32MB in each SMP Expansion Module / ECC / 64-bit 400MHz bus from Cache and Scalability Controller

Processor upgrade **4-way SMP** (up to **8-way SMP** with optional SMP Expansion Module)

SMP Expansion Module **One SMP Expansion Module std** / two max / each contains four Intel 603-pin micro-PGA ZIF sockets for Xeon MP, 32MB L4 cache, sixteen DIMM sockets, three SMP Expansion Ports (second module connected via one or two SMP Expansion Ports) / each SMP Expansion Module activates one RXE Expansion Port (only one RXE Expansion Port supported)

Additional boards One I/O Board (PCI-X Host Bridge, SCSI, ethernet, graphics, South Bridge, Super I/O, slot for Mgmt Adapter), one PCI Board (PCI-X Host Bridge, six PCI-X slots), one Midplane Board (connects SMP Exp Modules, I/O Board, PCI Board)

Memory **2GB or 4GB std / 16GB max¹³** (up to **32GB** with optional SMP Expansion Module) / four DIMMs installed (512MB or 1GB) / 16 DIMM gold-connector slots / must install four identical DIMMs at same time / 4-way interleaving / PC133-compliant / 3.3v registered 168-pin SDRAM RDIMMs / 133MHz / **Error Checking and Correcting (ECC) and Chipkill™ via Memory ProteXion™** (1, 2, 3, or 4-bit errors on same chip; up to two chips at once; redundant bit steering) / **Active Memory™** via memory mirroring (memory mirroring supported with any OS)

SCSI disk controller Adaptec® AIC-7899W / Wide Ultra160 SCSI (LVD 160MB/sec) / dual channel / 64-bit 66MHz PCI / integrated on I/O Board

SCSI implementation First channel to internal 2-port SCSI backplane for internal hot-swap disks (16-bit LVD cable to SCSI backplane) / second channel to one external .8mm VHDCI 68-pin connector (16-bit LVD cable from I/O Board to ext connector) / one standard (longer) 16-bit LVD cable included for attaching an optional ServeRAID adapter to the two-bay backplane

IDE controller Enhanced IDE ATA-100 controller in South Bridge / one one-drop IDE cable to backplane for diskette and CD-ROM

Disk - capacity/bays No disks standard / supports up to 15K rpm SCSI disks / two hot-swap bays / converged tray / 80-pin SCA-2 connectors

Mechanical **EIA 19" rack models (4U⁴)** x 28" deep / supported in NetBAY™ Racks (such as NetBAY42 SR, NetBAY42 ER)

Chipset **IBM XA-32™ chipset** / IBM Cache and Scalability Controller with L4 cache controller and three SMP Expansion Ports / IBM Memory I/O Controller with two remote I/O ports (each to a IBM PCI-X Host Bridge) / each IBM PCI-X Host Bridge provides three peer PCI buses / PCI 2.2 Bus E supports graphics, adapter slot with Remote Supervisor Adapter, VIA® 82C686B South Bridge (IDE ATA-100, USB, Super I/O PC97317VUL [keyboard, mouse]) / PCI 2.2 Bus F supports SCSI, ethernet / PCI-X Bus A, B, C, D support PCI-X slots / designed to the PCI-X 1.0 specification

Slots (Active™ PCI-X) Six hot-swap PCI-X 1.0 slots¹⁰ available with power and attention indicator lights (optical sensors control power to slot) / **hot replace, hot upgrade, hot expansion** / separated by insulative plastic dividers

RXE Expansion Port **One port to support up to 12 additional PCI-X slots via an optional IBM RXE-100 Remote Expansion Enclosure**

CD-ROM / diskette 24X-10X⁶ CD-ROM / 3.5" 1.44MB diskette drive / both removable from Ultrabay™ 2000 bays / supports CD-RW, DVD

Ethernet Broadcom® 5700 10/100/1000 ethernet controller / on I/O Board / full duplex / 64-bit 66MHz PCI bus / Wake on LAN®

Graphics controller SVGA / S3® Savage4 Pro / on I/O Board / 8MB SDRAM 125MHz std/max / up to 1280x1024 at 64K colors at 85Hz

Ports Rear: RXE-100 Expansion Port (to connect optional RXE-100), RXE Management Port, two USB (Vers 1.1), keyboard, mouse, analog DB-15 graphics, ethernet / no serial or parallel ports / Front: one USB (Vers 1.1)

Security Power-on and administrator passwords / unattended boot / selectable boot

Systems mgmt **Remote Supervisor Adapter** / PCI adapter / includes 10/100 ethernet, RJ-11, and serial connectors / provides remote console and mgmt / power on/off system / monitors power status, op system, temperature, disks, fans, power supplies

Diagnostics **Light Path Diagnostics™** / primary indicator on information panel with LEDs associated with failing components / IBM Real Time Diagnostics (operated through IBM Director) available even while server running

Software **ServerGuide™** (CD-ROM installation and configuration utilities), IBM Director, and others

Keyboard / mouse None standard (because rack-based)

Power supplies Std: two; max: two / hot-swap / 1050 watts at 220v or 550 watts at 110v / redundant at 220v with two power supplies / front access / worldwide / voltage-sensing / auto-restart / fans in each power supply / PFA

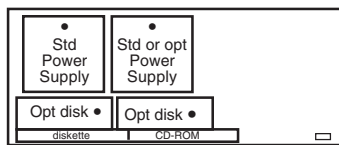
Cooling fans Four hot-swap, redundant, multi-speed fans / one additional fan in each power supply / PFA

xSeries SMP Expansion Module	59P5188
512MB PC133 ECC SDRAM RDIMM	33L3324
1GB PC133 ECC SDRAM RDIMM	31P8300
Xeon MP 1.5GHz/1MB L3 Cache Proc Upg	59P5171
Xeon MP 1.9GHz/1MB L3 Cache Proc Upg	59P5172
Xeon MP 2.0GHz/2MB L3 Cache Proc Upg	59P5173
IBM 73.4GB 10K Ultra160 SCSI Hot-Swap	06P5756
IBM ServeRAID™-4H Ultra160 SCSI Adapter	37L6889
8X/4X/24X Max CD-RW Ultrabay 2000	22P9101
IBM T540 15" Flat Panel Color Monitor (black)	9511AG4
Other options at ibm.com/pc/us/accessories	

Six available 3.3 volt Active PCI-X slots:

- Slot 1: fullsize, 64-bit 66MHz PCI-X, hot-swap Bus A
 - Slot 2: fullsize, 64-bit 66MHz PCI-X, hot-swap Bus A
 - Slot 3: fullsize, 64-bit 100MHz PCI-X, hot-swap, Bus B
 - Slot 4: fullsize, 64-bit 100MHz PCI-X, hot-swap, Bus B
 - Slot 5: fullsize, 64-bit 133MHz PCI-X, hot-swap, Bus C
 - Slot 6: fullsize, 64-bit 133MHz PCI-X, hot-swap, Bus D
- Slot: used by Remote Supervisor Adp, 32-bit 33MHz

- Dimensions: H7.0" x W19.0" x D27.5"
- Dimensions: H178mm x W483mm x D699mm
- Max weight: 110 lbs; 50kg
- Stealth black color
- Tool-free serviceability
- Access processors, memory, adapters, and SMP Expansion Module from top
- Access power supplies and disks from front
- Setup Program by pressing F1 at startup
- Diagnostics (PC-Doctor) by pressing F2 at startup
- SCSISelect by pressing Ctrl+A at startup
- Information LED panel and front-accessible pull-out Light Path panel (1st and 2nd level diagnostics without removing cover)
- Predictive Failure Analysis™ alerts on processors, XcelL4 Server Accelerator Cache, memory, fans, power supplies, and optional disks with IBM Director



4U Rack

- Bay ① 3.5", 0.5", access, diskette (Ultrabay 2000)
- Bay ② 3.5", 0.5", access, CD-ROM (Ultrabay 2000)
- Bay ③ 3.5", SL 1", access, hot-swap
- Bay ④ 3.5", SL 1", access, hot-swap

All models: Maximum internal disk capacity: 146.8GB with two 73.4GB² hot-swap SCSI disks

LIMITED WARRANTY³

- ↪ 1 year parts and labor
- ↪ International Warranty Service³
- ↪ On site, 24 hr x 7 day coverage, same day response time⁷
- ↪ 1 year on site warranty service upgrade option (in eligible locations):⁷
 - 24 hr x 7 day coverage, 2 hour response time (No ServicePac available)
- ↪ Post warranty maintenance services available
- ↪ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information
 US models announced November 5, 2002; withdrawn effective October 30, 2003
 • = Hot-swap

IBM eServer™ xSeries™ 440 (Dec 2002) - 8-way SMP -W/D

xREF by eServer Field Skills Enablement Team

IBM® Type-model	Qty x Processor	L3 cache	L4 cache	Memory	Disk	SCSI controller	Mechanical	Slots x bays	SMP/RXE Exp Ports	Hot-swap pwr supplies	Mgmt adapter	Available date
8687-1AX	2 x Xeon™ MP 1.4Ghz	512KB	32MB	0GB Chipkill™	None	2xUltra160	4U ⁴ rack	6x4	3/1	Two redundant	PCI	Jul 2002
8687-2AX	2 x Xeon MP 1.5Ghz	512KB	32MB	0GB Chipkill	None	2xUltra160	4U rack	6x4	3/1	Two redundant	PCI	Jul 2002
8687-3AX	2 x Xeon MP 1.6Ghz	1MB	32MB	0GB Chipkill	None	2xUltra160	4U rack	6x4	3/1	Two redundant	PCI	Jul 2002
8687-4AX	2 x Xeon MP 1.5Ghz	1MB	32MB	0GB Chipkill	None	2xUltra160	4U rack	6x4	3/1	Two redundant	PCI	Jan 2003
8687-5AX	2 x Xeon MP 1.9Ghz	1MB	32MB	0GB Chipkill	None	2xUltra160	4U rack	6x4	3/1	Two redundant	PCI	Jan 2003
8687-7AX	2 x Xeon MP 2.0Ghz	2MB	32MB	0GB Chipkill	None	2xUltra160	4U rack	6x4	3/1	Two redundant	PCI	Jan 2003
Processors	2 x Intel® Xeon™ Processor MP 1.5, 1.9, or 2.0GHz ¹ with 400MHz frontside bus / supports Hyper-Threading technology											
L2 cache	512KB each processor / on die of processor / at processor speed											
L3 cache	Up to 2MB each processor / on die of processor / at processor speed											
L4 cache	32MB XceL4™ Server Accelerator Cache (up to 64MB with optional SMP Expansion Module) / 32MB in each SMP Expansion Module / ECC / 64-bit 400MHz bus from Cache and Scalability Controller											
Processor upgrade	4-way SMP (up to 8-way SMP with optional SMP Expansion Module)											
SMP Expansion Module	One SMP Expansion Module std / two max / each contains four Intel 603-pin micro-PGA ZIF sockets for Xeon MP, 32MB L4 cache, sixteen DIMM sockets, three SMP Expansion Ports (second module connected via one or two SMP Expansion Ports) / each SMP Expansion Module activates one RXE Expansion Port (only one RXE Expansion Port supported)											
Memory	0GB std / 16GB max (up to 32GB with optional SMP Expansion Module) / zero DIMMs installed / 16 DIMM gold-connector slots / must install four identical DIMMs at same time / 4-way interleaving / PC133-compliant / 3.3v registered 168-pin SDRAM RDIMMs / 133MHz / Error Checking and Correcting (ECC) and Chipkill™ via Memory ProteXion™ (1, 2, 3, or 4-bit errors on same chip; up to two chips at once; redundant bit steering) / Active Memory™ via memory mirroring (memory mirroring supported with any OS)											
SCSI disk controller	Adaptec® AIC-7899W / Wide Ultra160 SCSI (LVD 160MB/sec) / dual channel / 64-bit 66MHz PCI / integrated on I/O Board											
SCSI implementation	First channel to internal 2-port SCSI backplane for internal hot-swap disks (16-bit LVD cable to SCSI backplane) / second channel to one external .8mm VHDCI 68-pin connector (16-bit LVD cable from I/O Board to ext connector) / one standard (longer) 16-bit LVD cable included for attaching an optional ServeRAID adapter to the two-bay backplane											
IDE controller	Enhanced IDE ATA-100 controller in South Bridge / one one-drop IDE cable to backplane for diskette and CD-ROM											
Disk - capacity/bays	No disks standard / supports up to 15K rpm SCSI disks / two hot-swap bays / converged tray / 80-pin SCA-2 connectors											
Mechanical	EIA 19" rack models (4U ⁴) x 28" deep / supported in NetBAY™ Racks (such as NetBAY42 SR, NetBAY42 ER)											
Chipset	IBM XA-32™ chipset / IBM Cache and Scalability Controller with L4 cache controller and three SMP Expansion Ports / IBM Memory I/O Controller with two remote I/O ports (each to a IBM PCI-X Host Bridge) / each IBM PCI-X Host Bridge provides three peer PCI buses / PCI 2.2 Bus E supports graphics, adapter slot with Remote Supervisor Adapter, VIA® 82C686B South Bridge (IDE ATA-100, USB, Super I/O PC97317VUL [keyboard, mouse]) / PCI 2.2 Bus F supports SCSI, ethernet / PCI-X Bus A, B, C, D support PCI-X slots / designed to the PCI-X 1.0 specification											
Slots (Active™ PCI-X)	Six hot-swap PCI-X 1.0 slots ¹⁰ available with power and attention indicator lights (optical sensors control power to slot) / hot replace, hot upgrade, hot expansion / separated by insulative plastic dividers											
RXE Expansion Port	One port to support up to 12 additional PCI-X slots via an optional IBM RXE-100 Remote Expansion Enclosure											
CD-ROM / diskette	24X-10X ⁶ CD-ROM / 3.5" 1.44MB diskette drive / both removable from Ultrabay™ 2000 bays / supports CD-RW, DVD											
Ethernet	Broadcom® 5700 10/100/1000 ethernet controller / on I/O Board / full duplex / 64-bit 66MHz PCI bus / Wake on LAN®											
Graphics controller	SVGA / S3® Savage4 Pro / on I/O Board / 8MB SDRAM 125MHz std/max / up to 1280x1024 at 64K colors at 85Hz											
Ports	Rear: RXE-100 Expansion Port (to connect optional RXE-100), RXE Management Port, two USB (Vers 1.1), keyboard, mouse, analog DB-15 graphics, ethernet / no serial or parallel ports / Front: one USB (Vers 1.1)											
Security	Power-on and administrator passwords / unattended boot / selectable boot											
Systems mgmt	Remote Supervisor Adapter / PCI adapter / includes 10/100 ethernet, RJ-11, and serial connectors / provides remote console and mgmt / power on/off system / monitors power status, op system, temperature, disks, fans, power supplies											
Diagnostics	Light Path Diagnostics™ / primary indicator on information panel with LEDs associated with failing components / IBM Real Time Diagnostics (operated through IBM Director) available even while server running											
Software	IBM Director Extensions 3.1, APC® UPS software											
Keyboard / mouse	None standard (because rack-based)											
Power supplies	Std: two; max: two / hot-swap / 1050 watts at 220v or 550 watts at 110v / redundant at 220v with two power supplies / front access / worldwide / voltage-sensing / auto-restart / fans in each power supply / PFA											
Cooling fans	Four hot-swap, redundant, multi-speed fans / one additional fan in each power supply / PFA											
<p>- IBM Datacenter Solution: models certified with up to 8-way SMP</p> <p>- Prerequisite: Preload Kit for Microsoft® Windows® 2000 Datacenter Offerings</p>												
<p>Six available 3.3 volt Active PCI-X slots:</p> <ul style="list-style-type: none"> Slot 1: fullsize, 64-bit 66MHz PCI-X, hot-swap Bus A Slot 2: fullsize, 64-bit 66MHz PCI-X, hot-swap Bus A Slot 3: fullsize, 64-bit 100MHz PCI-X, hot-swap, Bus B Slot 4: fullsize, 64-bit 100MHz PCI-X, hot-swap, Bus B Slot 5: fullsize, 64-bit 133MHz PCI-X, hot-swap, Bus C Slot 6: fullsize, 64-bit 133MHz PCI-X, hot-swap, Bus D Slot: used by Remote Supervisor Adp, 32-bit 33MHz 												
<ul style="list-style-type: none"> Dimensions: H7.0" x W19.0" x D27.5" Dimensions: H178mm x W483mm x D699mm Max weight: 110 lbs; 50kg Stealth black color Tool-free serviceability Access processors, memory, adapters, and SMP Expansion Module from top Access power supplies and disks from front Setup Program by pressing F1 at startup Diagnostics (PC-Doctor) by pressing F2 at startup SCSISelect by pressing Ctrl+A at startup Information LED panel and front-accessible pull-out Light Path panel (1st and 2nd level diagnostics without removing cover) Predictive Failure Analysis® alerts on processors, XceL4 Server Accelerator Cache, memory, fans, power supplies, and optional disks with IBM Director 												
<p>4U Rack</p> 												
<p>Bay ① 3.5", 0.5", access, diskette (Ultrabay 2000)</p> <p>Bay ② 3.5", 0.5", access, CD-ROM (Ultrabay 2000)</p> <p>Bay ③ 3.5", SL 1", access, hot-swap</p> <p>Bay ④ 3.5", SL 1", access, hot-swap</p>												
<p>All models: Maximum internal disk capacity: 146.8GB with two 73.4GB² hot-swap SCSI disks</p>												
<p>LIMITED WARRANTY³</p> <ul style="list-style-type: none"> ↔ 1 year parts and labor ↔ International Warranty Service³ ↔ On site, 24 hr x 7 day coverage, same day response time⁷ ↔ 1 year on site warranty service upgrade option (in eligible locations):⁷ <ul style="list-style-type: none"> • 24 hr x 7 day coverage, 2 hour response time (No ServicePac available) ↔ Post warranty maintenance services available ↔ 24x7¹⁴ toll-free support for warranty issues during the warranty period³ 												

See footnotes for important warranty information

• = Hot-swap

(X440D8) © IBM Corp. December 2002

US models announced December 3, 2002

US models announced June 2002, withdrawn effective March 25, 2003 or October 30, 2003

IBM @server™ xSeries™ 440 (Dec 2002) - 16-way SMP - W/D xREF by eServer Field Skills Enablement Team

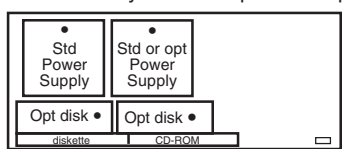
IBM® Type-model	Qty x Processor	L3 cache	L4 cache	Memory	Disk	SCSI controller	Mechanical	Slots x bays	SMP Exp Modules	Hot-swap pwr supplies	Mgmt adapter	Available date
8687-18X	8 x Xeon™ MP 1.4GHz	512KB	64MB	0GB Chipkill™	None	2xUltra160	4U ⁴ rack	6x4	Two	Two redundant	PCI	Jan 2003
8687-28X	8 x Xeon MP 1.5GHz	512KB	64MB	0GB Chipkill	None	2xUltra160	4U rack	6x4	Two	Two redundant	PCI	Jan 2003
8687-38X	8 x Xeon MP 1.6GHz	1MB	64MB	0GB Chipkill	None	2xUltra160	4U rack	6x4	Two	Two redundant	PCI	Jan 2003
8687-48X	8 x Xeon MP 1.5GHz	1MB	64MB	0GB Chipkill	None	2xUltra160	4U rack	6x4	Two	Two redundant	PCI	Feb 2003
8687-58X	8 x Xeon MP 1.9GHz	1MB	64MB	0GB Chipkill	None	2xUltra160	4U rack	6x4	Two	Two redundant	PCI	Feb 2003
8687-78X	8 x Xeon MP 2.0GHz	2MB	64MB	0GB Chipkill	None	2xUltra160	4U rack	6x4	Two	Two redundant	PCI	Feb 2003

- Models certified for 16-way SMP with Microsoft® Windows® 2000 Datacenter / Must be ordered in matched pairs to create a 16-way SMP solution; separate 8-way applications not supported

Processors	8 x Intel® Xeon™ Processor MP up to 2.0GHz¹ with 400MHz frontside bus / supports Hyper-Threading technology
L2 cache	256KB or 512KB each processor / on die of processor / at processor speed
L3 cache	512KB or 1MB each processor / on die of processor / at processor speed
L4 cache	64MB XcelL4™ Server Accelerator Cache (32MB in each SMP Expansion Module) / ECC / 64-bit 400MHz bus from Cache and Scalability Controller
Processor upgrade	16-way SMP with matched pair of 8-way servers
SMP Expansion Module	Two SMP Expansion Modules std / two max / each contains four Intel 603-pin micro-PGA ZIF sockets for Xeon MP, 32MB L4 cache, sixteen DIMM sockets, three SMP Expansion Ports (second module connected via one or two SMP Expansion Ports) / each SMP Expansion Module activates one RXE Expansion Port (only one RXE Expansion Port supported)
Memory	0GB std / 32GB max per chassis (up to 64GB per config) / zero DIMMs installed / 32 DIMM gold-connector slots (16 slots in each SMP Expansion Module) / must install four identical DIMMs at same time / 4-way interleaving / PC133-compliant / 3.3v registered 168-pin SDRAM RDIMMs / 133MHz / Active Memory™ with Error Checking and Correcting (ECC), Chipkill™, Memory ProteXion™ (1, 2, 3, or 4-bit errors on same chip; up to two chips at once; redundant bit steering) / via memory mirroring (memory mirroring supported with any OS)
SCSI disk controller	Adaptec® AIC-7899W / Wide Ultra160 SCSI (LVD 160MB/sec) / dual channel / 64-bit 66MHz PCI / integrated on I/O Board
SCSI implementation	First channel to internal 2-port SCSI backplane for internal hot-swap disks (16-bit LVD cable to SCSI backplane) / second channel to one external .8mm VHDCI 68-pin connector (16-bit LVD cable from I/O Board to ext connector) / one standard (longer) 16-bit LVD cable included for attaching an optional ServeRAID adapter to the two-bay backplane
IDE controller	Enhanced IDE ATA-100 controller in South Bridge / one one-drop IDE cable to backplane for diskette and CD-ROM
Disk - capacity/bays	No disks standard / supports up to 15K rpm SCSI disks / two hot-swap bays / converged tray / 80-pin SCA-2 connectors
Mechanical	EIA 19" rack models (4U⁴) x 28" deep / supported in NetBAY™ Racks (such as NetBAY42 SR, NetBAY42 ER)
Chipset	IBM XA-32™ chipset / IBM Cache and Scalability Controller with L4 cache controller and three SMP Expansion Ports / IBM Memory I/O Controller with two remote I/O ports (each to a IBM PCI-X Host Bridge) / each IBM PCI-X Host Bridge provides three peer PCI buses / PCI 2.2 Bus E supports graphics, adapter slot with Remote Supervisor Adapter, VIA® 82C686B South Bridge (IDE ATA-100, USB, Super I/O PC97317VUL [keyboard, mouse]) / PCI 2.2 Bus F supports SCSI, ethernet / PCI-X Bus A, B, C, D support PCI-X slots / designed to the PCI-X 1.0 specification
Slots (Active™ PCI-X)	Six hot-swap PCI-X 1.0 slots ¹⁰ available with power and attention indicator lights (optical sensors control power to slot) / hot replace, hot upgrade, hot expansion / separated by insulative plastic dividers
RXE Expansion Port	One port to support up to 12 additional PCI-X slots via an optional IBM RXE-100 Remote Expansion Enclosure
CD-ROM / diskette	24X-10X ⁶ CD-ROM / 3.5" 1.44MB diskette drive / both removable from Ultrabay™ 2000 bays / supports CD-RW, DVD
Ethernet	Broadcom® 5700 10/100/1000 ethernet controller / on I/O Board / full duplex / 64-bit 66MHz PCI bus / Wake on LAN®
Graphics controller	SVGA / S3® Savage4 Pro / on I/O Board / 8MB SDRAM 125MHz std/max / up to 1280x1024 at 64K colors at 85Hz
Ports	Rear: RXE-100 Expansion Port (to connect optional RXE-100), RXE Management Port, two USB (Vers 1.1), keyboard, mouse, analog DB-15 graphics, ethernet / no serial or parallel ports / Front: one USB (Vers 1.1)
Security	Power-on and administrator passwords / unattended boot / selectable boot
Systems mgmt	Remote Supervisor Adapter / PCI adapter / includes 10/100 ethernet, RJ-11, and serial connectors / provides remote console and mgmt / power on/off system / monitors power status, op system, temperature, disks, fans, power supplies
Diagnostics Software	Light Path Diagnostics™ / primary indicator on information panel with LEDs associated with failing components / APC® UPS software
Keyboard / mouse	None standard (because rack-based)
Power supplies	Std: two; max: two / hot-swap / 1050 watts at 220v or 550 watts at 110v / redundant at 220v with two power supplies / front access / worldwide / voltage-sensing / auto-restart / fans in each power supply / PFA
Cooling fans	Four hot-swap, redundant, multi-speed fans / one additional fan in each power supply / PFA
Cables	Three copper scalability cables (one 10", two 2.5M) / crossover ethernet cable
Prerequisites	IBM Preload Kit for Microsoft Windows 2000 Datacenter, 1-16 Processors

Six available 3.3 volt Active PCI-X slots:

- Slot 1: fullsize, 64-bit 66MHz PCI-X, hot-swap Bus A
- Slot 2: fullsize, 64-bit 66MHz PCI-X, hot-swap Bus A
- Slot 3: fullsize, 64-bit 100MHz PCI-X, hot-swap, Bus B
- Slot 4: fullsize, 64-bit 100MHz PCI-X, hot-swap, Bus B
- Slot 5: fullsize, 64-bit 133MHz PCI-X, hot-swap, Bus C
- Slot 6: fullsize, 64-bit 133MHz PCI-X, hot-swap, Bus D
- Slot: used by Remote Supervisor Adp, 32-bit 33MHz



4U Rack

Bay ① 3.5", 0.5", access, diskette (Ultrabay 2000)

Bay ② 3.5", 0.5", access, CD-ROM (Ultrabay 2000)

Bay ③ 3.5", SL 1", access, hot-swap

Bay ④ 3.5", SL 1", access, hot-swap

- ⊕ Dimensions: H7.0" x W19.0" x D27.5"
- ⊕ Dimensions: H178mm x W483mm x D699mm
- ⊕ Max weight: 110 lbs; 50kg
- ⊕ Stealth black color
- ⊕ Tool-free serviceability
- ⊕ Access processors, memory, adapters, and SMP Expansion Module from top
- ⊕ Access power supplies and disks from front
- ⊕ Setup Program by pressing F1 at startup
- ⊕ Diagnostics (PC-Doctor) by pressing F2 at startup
- ⊕ SCSISelect by pressing Ctrl+A at startup
- ⊕ Information LED panel and front-accessible pull-out Light Path panel (1st and 2nd level diagnostics without removing cover)

LIMITED WARRANTY³

- ⊕ 1 year parts and labor
- ⊕ International Warranty Service³
- ⊕ On site, 24 hr x 7 day coverage, same day response time⁷
- ⊕ 1 year on site warranty service upgrade option (in eligible locations):⁷
 - 24 hr x 7 day coverage, 2 hour response time (No ServicePac available)
- ⊕ Post warranty maintenance services available
- ⊕ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

All models: Maximum internal disk capacity: 146.8GB with two 73.4GB² hot-swap SCSI disks

IBM eServer™ xSeries™ 440 (Dec 2002) - ESX Server™ - W/D xREF by eServer Field Skills Enablement Team

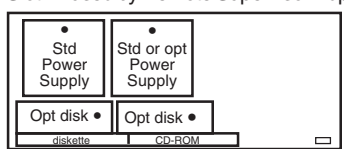
IBM® Type-model	Qty x Processor	L3 cache	L4 cache	Memory	Disk	SCSI controller	Mechanical	Slots x bays	SMP Exp Modules	Hot-swap pwr supplies	Mgmt adapter	Available date
8687-1VX	8 x Xeon™ MP 1.4GHz	512KB	64MB	4GB Chipkill™	None	2xUltra160	4U ⁴ rack	6x4	Two	Two redundant	PCI	Jan 2003
8687-2VX	8 x Xeon MP 1.5GHz	512KB	64MB	4GB Chipkill	None	2xUltra160	4U rack	6x4	Two	Two redundant	PCI	Jan 2003
8687-3VX	8 x Xeon MP 1.6GHz	1MB	64MB	4GB Chipkill	None	2xUltra160	4U rack	6x4	Two	Two redundant	PCI	Jan 2003
8687-4VX	8 x Xeon MP 1.5GHz	1MB	64MB	4GB Chipkill	None	2xUltra160	4U rack	6x4	Two	Two redundant	PCI	Feb 2003
8687-5VX	8 x Xeon MP 1.9GHz	1MB	64MB	4GB Chipkill	None	2xUltra160	4U rack	6x4	Two	Two redundant	PCI	Feb 2003
8687-7VX	8 x Xeon MP 2.0GHz	2MB	64MB	4GB Chipkill	None	2xUltra160	4U rack	6x4	Two	Two redundant	PCI	Feb 2003

- Models certified for 16-way with VMware™ ESX Server 1.5.1 / Must be ordered in matched pairs to create a 16-way solution

Processors	8 x Intel® Xeon™ Processor MP up to 2.0GHz¹ with 400MHz frontside bus / supports Hyper-Threading technology
L2 cache	256KB or 512KB each processor / on die of processor / at processor speed
L3 cache	Up to 2MB each processor / on die of processor / at processor speed
L4 cache	64MB XcelL4™ Server Accelerator Cache (32MB in each SMP Expansion Module) / ECC / 64-bit 400MHz bus from Cache and Scalability Controller
Processor upgrade	16-way with matched pair of 8-way servers
SMP Expansion Module	Two SMP Expansion Modules std / two max / each contains four Intel 603-pin micro-PGA ZIF sockets for Xeon MP, 32MB L4 cache, sixteen DIMM sockets, three SMP Expansion Ports (second module connected via one or two SMP Expansion Ports) / each SMP Expansion Module activates one RXE Expansion Port (only one RXE-100 supported per config)
Memory	4GB std / 32GB max¹³ per chassis (up to 16GB in each SMP Expansion Module) / eight 512MB DIMMs installed / 32 DIMM gold-connector slots (16 slots in each SMP Expansion Module) / must install four identical DIMMs at same time / 4-way interleaving / PC133-compliant / 3.3v registered 168-pin SDRAM RDIMMs / 133MHz / Active Memory™ with Error Checking and Correcting (ECC), Chipkill™, Memory ProteXion™ (1, 2, 3, or 4-bit errors on same chip; up to two chips at once; redundant bit steering) / via memory mirroring (memory mirroring supported with any OS)
SCSI disk controller	Adaptec® AIC-7899W / Wide Ultra160 SCSI (LVD 160MB/sec) / dual channel / 64-bit 66MHz PCI / integrated on I/O Board
SCSI implementation	First channel to internal 2-port SCSI backplane for internal hot-swap disks (16-bit LVD cable to SCSI backplane) / second channel to one external .8mm VHDCI 68-pin connector (16-bit LVD cable from I/O Board to ext connector) / one standard (longer) 16-bit LVD cable included for attaching an optional ServeRAID adapter to the two-bay backplane
IDE controller	Enhanced IDE ATA-100 controller in South Bridge / one one-drop IDE cable to backplane for diskette and CD-ROM
Disk - capacity/bays	No disks standard / supports up to 15K rpm SCSI disks / two hot-swap bays / converged tray / 80-pin SCA-2 connectors
Mechanical	EIA 19" rack models (4U⁴) x 28" deep / supported in NetBAY™ Racks (such as NetBAY42 SR, NetBAY42 ER)
Chipset	IBM XA-32™ chipset / IBM Cache and Scalability Controller with L4 cache controller and three SMP Expansion Ports / IBM Memory I/O Controller with two remote I/O ports (each to a IBM PCI-X Host Bridge) / each IBM PCI-X Host Bridge provides three peer PCI buses / PCI 2.2 Bus E supports graphics, adapter slot with Remote Supervisor Adapter, VIA® 82C686B South Bridge (IDE ATA-100, USB, Super I/O PC97317VUL [keyboard, mouse]) / PCI 2.2 Bus F supports SCSI, ethernet / PCI-X Bus A, B, C, D support PCI-X slots / designed to the PCI-X 1.0 specification
Slots (Active™ PCI-X)	Six hot-swap PCI-X 1.0 slots ¹⁰ available with power and attention indicator lights (optical sensors control power to slot) / hot replace, hot upgrade, hot expansion / separated by insulative plastic dividers
RXE Expansion Port	One port to support up to 12 additional PCI-X slots via an optional IBM RXE-100 Remote Expansion Enclosure
CD-ROM / diskette	24X-10X ⁶ CD-ROM / 3.5" 1.44MB diskette drive / both removable from Ultrabay™ 2000 bays / supports CD-RW, DVD
Ethernet	Broadcom® 5700 10/100/1000 ethernet controller / on I/O Board / full duplex / 64-bit 66MHz PCI bus / Wake on LAN®
Graphics controller	SVGA / S3® Savage4 Pro / on I/O Board / 8MB SDRAM 125MHz std/max / up to 1280x1024 at 64K colors at 85Hz
Ports	Rear: RXE-100 Expansion Port (to connect optional RXE-100), RXE Management Port, two USB (Vers 1.1), keyboard, mouse, analog DB-15 graphics, ethernet / no serial or parallel ports / Front: one USB (Vers 1.1)
Security	Power-on and administrator passwords / unattended boot / selectable boot
Systems mgmt	Remote Supervisor Adapter / PCI adapter / includes 10/100 ethernet, RJ-11, and serial connectors / provides remote console and mgmt / power on/off system / monitors power status, op system, temperature, disks, fans, power supplies
Diagnostics Software	Light Path Diagnostics™ / primary indicator on information panel with LEDs associated with failing components / None
Keyboard / mouse	None standard (because rack-based)
Power supplies	Std: two; max: two / hot-swap / 1050 watts at 220v or 550 watts at 110v / redundant at 220v with two power supplies / front access / worldwide / voltage-sensing / auto-restart / fans in each power supply / PFA
Cooling fans	Four hot-swap, redundant, multi-speed fans / one additional fan in each power supply / PFA
Cables	Three copper scalability cables (one 10", two 2.5M) / crossover ethernet cable
Prerequisites	VMware ESX Server 1.5 (16 processor license), monitor, keyboard, mouse, SCSI disk, rack

Six available 3.3 volt Active PCI-X slots:

- Slot 1: fullsize, 64-bit 66MHz PCI-X, hot-swap Bus A
- Slot 2: fullsize, 64-bit 66MHz PCI-X, hot-swap Bus A
- Slot 3: fullsize, 64-bit 100MHz PCI-X, hot-swap, Bus B
- Slot 4: fullsize, 64-bit 100MHz PCI-X, hot-swap, Bus B
- Slot 5: fullsize, 64-bit 133MHz PCI-X, hot-swap, Bus C
- Slot 6: fullsize, 64-bit 133MHz PCI-X, hot-swap, Bus D
- Slot: used by Remote Supervisor Adp, 32-bit 33MHz



4U Rack

Bay ① 3.5", 0.5", access, diskette (Ultrabay 2000)

Bay ② 3.5", 0.5", access, CD-ROM (Ultrabay 2000)

Bay ③ 3.5", SL 1", access, hot-swap

Bay ④ 3.5", SL 1", access, hot-swap

- ❖ Dimensions: H7.0" x W19.0" x D27.5"
- ❖ Dimensions: H178mm x W483mm x D699mm
- ❖ Max weight: 110 lbs; 50kg
- ❖ Stealth black color
- ❖ Tool-free serviceability
- ❖ Access processors, memory, adapters, and SMP Expansion Module from top
- ❖ Access power supplies and disks from front
- ❖ Setup Program by pressing F1 at startup
- ❖ Diagnostics (PC-Doctor) by pressing F2 at startup
- ❖ SCSI Select by pressing Ctrl+A at startup
- ❖ Information LED panel and front-accessible pull-out Light Path panel (1st and 2nd level diagnostics without removing cover)
- ❖ VMware ESX Server supports Windows NT 4.0, Windows 2000 Server, Windows 2000 Advanced Server, Red Hat Linux 7.1 or 7.2, SuSE 7.3

LIMITED WARRANTY³

- ⇨ 1 year parts and labor
- ⇨ International Warranty Service³
- ⇨ On site, 24 hr x 7 day coverage, same day response time⁷
- ⇨ 1 year on site warranty service upgrade option (in eligible locations):⁷
 - 24 hr x 7 day coverage, 2 hour response time (No ServicePac available)
- ⇨ Post warranty maintenance services available
- ⇨ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

All models: Maximum internal disk capacity: 146.8GB with two 73.4GB² hot-swap SCSI disks

IBM eServer™ xSeries™ 445 (4-way Xeon MP) - withdrawn

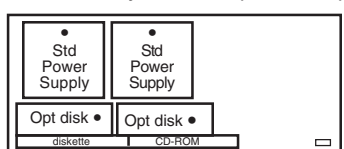
xREF by eServer Field Skills Enablement Team

IBM® Type-model	Qty x Processor	L3 cache	L4 cache	Memory	Disk	SCSI controller	Mechanical	Slots x bays	SMP/RXE Exp Ports	Hot-swap pwr supplies	Mgmt adapter	Available date
8870-1RX	2 x Xeon™ MP 2.0GHz	1MB	64MB	2GB Chipkill™	None	2xUltra320	4U ⁴ rack	6x4	3/1	Two redundant	PCI	Jul 2003
8870-2RX	2 x Xeon MP 2.5GHz	1MB	64MB	2GB Chipkill	None	2xUltra320	4U rack	6x4	3/1	Two redundant	PCI	Jul 2003
8870-4RX	4 x Xeon MP 2.8GHz	2MB	64MB	2GB Chipkill	None	2xUltra320	4U rack	6x4	3/1	Two redundant	PCI	Jul 2003
Positioning Processors	Up to 8-way (16-way two chassis) power for high-end databases, server consolidation and mission-critical business applications											
L3 cache	2 or 4 x Intel® Xeon™ Processor MP 2.0, 2.5, or 2.8GHz ¹ with 400MHz frontside bus / supports Hyper-Threading											
L4 cache	1MB or 2MB each processor / on die of processor / at processor speed											
Processor upgrade	64MB XcL4™ Server Accelerator Cache (up to 128MB with optional SMP Expansion Module) / 64MB in each SMP Expansion Module / ECC / 64-bit 400MHz bus from Cache and Scalability Controller											
SMP Expansion Module	4-way SMP (up to 8-way SMP with optional SMP Expansion Module)											
Additional boards	One SMP Expansion Module std / two max / each contains four Intel 603-pin micro-PGA ZIF sockets for Xeon MP, 64MB L4 cache, sixteen DIMM sockets, three SMP Expansion Ports (second module connected via one or two SMP Expansion Ports) / each SMP Expansion Module activates one RXE Expansion Port (one RXE Expansion Port supported)											
Memory	One I/O Board (PCI-X Host Bridge, SCSI, ethernet, graphics, South Bridge, Super I/O, slot for Mgmt Adapter), one PCI Board (PCI-X Host Bridge, six PCI-X slots), one Midplane Board (connects SMP Exp Modules, I/O Board, PCI Board)											
SCSI disk controller	2GB std / 32GB max ¹³ (up to 64GB per chassis using optional SMP Expansion Module) / four 512MB DIMMs installed / 16 DIMM gold-connector slots / must install two identical DIMMs at same time / 2-way interleaving / PC2100 DDR SDRAM / Error Checking and Correcting (ECC) and Chipkill™ via Memory ProteXion™ (1, 2, 3, or 4-bit errors on same chip; up to two chips at once; redundant bit steering) / Active Memory™ supporting hot-swap and hot-add (OS specific) and Memory Mirroring™ (non-OS specific)											
SCSI implementation	LSI Logic / Wide Ultra320 SCSI (LVD 32MB/sec) / dual channel / 64-bit 66MHz PCI / integrated RAID-1 on I/O Board											
IDE controller	First channel to internal 2-port SCSI backplane for internal hot-swap disks (16-bit LVD cable to SCSI backplane) / second channel to one external .8mm VHDCI 68-pin connector (16-bit LVD cable from I/O Board to ext connector) / one standard (longer) 16-bit LVD cable included for attaching an optional ServeRAID adapter to the two-bay backplane											
Disk - capacity/bays	Enhanced IDE ATA-100 controller in South Bridge / one one-drop IDE cable to backplane for diskette and CD-ROM											
Mechanical	No disks standard / supports up to 15K rpm SCSI disks / two hot-swap bays / converged tray / 80-pin SCA-2 connectors											
Chipset	EIA 19" rack models (4U ⁴) x 28" deep / supported in NetBAY™ Racks (such as NetBAY42 SR, NetBAY42 ER)											
Slots (Active™ PCI-X)	IBM XA-32™ 2nd Generation chipset / IBM Cache and Scalability Controller with L4 cache controller and three SMP Expansion Ports / IBM Memory I/O Controller with two remote I/O ports (each to a IBM PCI-X Host Bridge) / each IBM PCI-X Host Bridge provides three peer PCI buses / PCI 2.2 Bus E supports graphics, adapter slot with Remote Supervisor Adapter, VIA® 82C686B South Bridge (IDE ATA-100, USB, Super I/O PC97317VUL [keyboard, mouse]) / PCI 2.2 Bus F supports SCSI, ethernet / PCI-X Bus A, B, C, D support PCI-X slots / designed to the PCI-X 1.0 specification											
RXE Expansion Port	Six hot-swap PCI-X 1.0 slots ¹⁰ available with power and attention indicator lights (optical sensors control power to slot) / hot replace, hot upgrade, hot expansion / separated by insulative plastic dividers											
CD-ROM / diskette	One RXE-100 Remote Expansion Enclosure can be shared between two x445 4-way, 8-way, or 16-way xSeries 445 servers or attached alone. Both PCI-X 6-packs must be installed to support RIO sharing as each server will access six additional PCI-X slots.											
Ethernet	24X-8X ⁶ DVD-ROM / 3.5" 1.44MB diskette drive / both removable from Ultrabay 2000 bays / supports CD-RW, DVD											
Graphics controller	Dual Broadcom ⁸ 5704 10/100/1000 ethernet controller / on I/O Board / full duplex / 64-bit 66MHz PCI bus / Wake on LAN ⁹											
Ports	SVGA / ATI ⁹ Rage XL / on I/O Board / 8MB SDRAM std/max / up to 1280x1024 at 85Hz											
Security	Rear: RXE-100 Expansion Port (to connect optional RXE-100), RXE Management Port, two USB (Vers 1.1), keyboard, mouse, analog DB-15 graphics, ethernet / no serial or parallel ports / Front: one USB (Vers 1.1)											
Systems mgmt	Power-on and administrator passwords / unattended boot / selectable boot											
Diagnostics	Remote Supervisor Adapter / PCI adapter / includes 10/100 ethernet, RJ-11, and serial connectors / provides remote console and mgmt / power on/off system / monitors power status, op system, temperature, disks, fans, power supplies											
Software	Light Path Diagnostics™ / primary indicator on information panel with LEDs associated with failing components / IBM Real Time Diagnostics (operated through IBM Director) available even while server running											
Keyboard / mouse	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director, and others											
Power supplies	None standard (because rack-based)											
Cooling fans	Std: two; max: two / hot-swap / 1050 watts at 220v or 550 watts at 110v / redundant at 220v with two power supplies / front access / worldwide / voltage-sensing / auto-restart / fans in each power supply / PFA											
	Four hot-swap, redundant, multi-speed fans / one additional fan in each power supply / PFA / fan failure signals Diagnostic LED and mgmt processor											

Six available 3.3 volt Active PCI-X slots:

Slot 1: fullsize, 64-bit 66MHz PCI-X, hot-swap Bus A
 Slot 2: fullsize, 64-bit 66MHz PCI-X, hot-swap Bus A
 Slot 3: fullsize, 64-bit 100MHz PCI-X, hot-swap, Bus B
 Slot 4: fullsize, 64-bit 100MHz PCI-X, hot-swap, Bus B
 Slot 5: fullsize, 64-bit 133MHz PCI-X, hot-swap, Bus C
 Slot 6: fullsize, 64-bit 133MHz PCI-X, hot-swap, Bus D
 Slot: used by Remote Supervisor Adp, 32-bit 33MHz

- ↳ Dimensions: H7.0" x W19.0" x D27.5"
- ↳ Dimensions: H178mm x W483mm x D699mm
- ↳ Max weight: 110 lbs; 50kg
- ↳ Stealth black color
- ↳ Tool-free serviceability
- ↳ Access processors, memory, adapters, and SMP Expansion Module from top
- ↳ Access power supplies and disks from front
- ↳ Setup Program by pressing F1 at startup
- ↳ Diagnostics (PC-Doctor) by pressing F2 at startup
- ↳ SCSISelect by pressing Ctrl+A at startup
- ↳ Information LED panel and front-accessible pull-out Light Path panel (1st and 2nd level diagnostics without removing cover)
- ↳ Predictive Failure Analysis[®] alerts on processors, XcL4 Server Accelerator Cache, memory, fans, power supplies, and optional disks with IBM Director



4U Rack

Bay ① 3.5", 0.5", access, diskette (Ultrabay 2000)
 Bay ② 3.5", 0.5", access, CD-ROM (Ultrabay 2000)
 Bay ③ 3.5", SL 1", access, hot-swap
 Bay ④ 3.5", SL 1", access, hot-swap

All models: Maximum internal disk capacity: 293.6GB with two 146.8GB² hot-swap SCSI disks

LIMITED WARRANTY³

- ↳ 3 year parts and labor
- ↳ International Warranty Service³
- ↳ On site, 9 hr x 5 day coverage, next day response time⁷
- ↳ 3 year on site warranty service upgrade option (in eligible locations):⁷
 - 24 hr x 7 day coverage, 2 hour response time (No ServicePac available)
- ↳ Post warranty maintenance services available
- ↳ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information
 US models announced July 1, 2003; withdrawn effective May 28, 2004
 • = Hot-swap

IBM® Type-model	Qty x Processor	L3 cache	L4 cache	Memory	Disk	SCSI controller	Mechanical	Slots x bays	SMP/RXE Exp Ports	Hot-swap pwr supplies	Mgmt adapter	Available date
8870-3RY	2 x Xeon™ 3.0GHz	None	64MB	2GB Chipkill™	None	2xUltra320	4U ⁴ rack	6x4	3/1	Two redundant	PCI	Jul 2003
8870-4RY	4 x Xeon 3.0GHz	None	128MB	2GB Chipkill	None	2xUltra320	4U rack	6x4	3/1	Two redundant	PCI	Jul 2003
Positioning	<i>SMP power for high-end databases, server consolidation and mission-critical business applications</i>											
Processors	2 or 4 x Intel® Xeon™ Processor 3.0GHz¹ with 400MHz frontside bus / supports Hyper-Threading technology											
L2 cache	512KB each processor / on die of processor / at processor speed											
L4 cache	3RY: 64MB; 4RY: 128MB; All: XcL4™ Server Accelerator Cache /											
Processor upgrade	64MB in each SMP Expansion Module / ECC / 64-bit 400MHz bus from Cache and Scalability Controller 3RY: 4-way SMP with two SMP Expansion Modules; <i>All</i> : models can be upgraded to Xeon MP processors to support up to 8-way SMP with two SMP Expansion Modules or up to 16-way SMP with two xSeries 445 systems											
SMP Expansion Module	3RY: one std; 4RY: two std; All: two max / each contains four Intel 603-pin micro-PGA ZIF sockets for Xeon, 64MB L4 cache, sixteen DIMM sockets, three SMP Expansion Ports (second module connected via one or two SMP Expansion Ports) / each SMP Expansion Module activates one RXE Expansion Port (only one RXE Expansion Port supported)											
Additional boards	One I/O Board (PCI-X Host Bridge, SCSI, ethernet, graphics, South Bridge, Super I/O, slot for Mgmt Adapter), one PCI Board (PCI-X Host Bridge, six PCI-X slots), one Midplane Board (connects SMP Exp Modules, I/O Board, PCI Board)											
Memory	2GB std / 32GB max¹³ (up to 64GB per chassis using optional SMP Expansion Module) / four 512MB DIMMs installed / 16 DIMM gold-connector slots / must install two identical DIMMs at same time / 2-way interleaving / PC2100 DDR SDRAM / Error Checking and Correcting (ECC) and Chipkill™ via Memory ProteXion™ (1, 2, 3, or 4-bit errors on same chip; up to two chips at once; redundant bit steering) / Active Memory™ supporting hot-swap and hot-add (OS specific) and Memory Mirroring™ (non-OS specific)											
SCSI disk controller	LSI Logic / Wide Ultra320 SCSI (LVD 32MB/sec) / dual channel / 64-bit 66MHz PCI / integrated RAID-1 on I/O Board											
SCSI implementation	First channel to internal 2-port SCSI backplane for internal hot-swap disks (16-bit LVD cable to SCSI backplane) / second channel to one external .8mm VHDCI 68-pin connector (16-bit LVD cable from I/O Board to ext connector) / one standard (longer) 16-bit LVD cable included for attaching an optional ServeRAID adapter to the two-bay backplane											
IDE controller	Enhanced IDE ATA-100 controller in South Bridge / one one-drop IDE cable to backplane for diskette and CD-ROM											
Disk - capacity/bays	No disks standard / supports up to 15K rpm SCSI disks / two hot-swap bays / converged tray / 80-pin SCA-2 connectors											
Mechanical	EIA 19" rack models (4U⁴) x 28" deep / supported in NetBAY™ Racks (such as NetBAY42 SR, NetBAY42 ER)											
Chipset	IBM XA-32™ 2nd Generation chipset / IBM Cache and Scalability Controller with L4 cache controller and three SMP Expansion Ports / IBM Memory I/O Controller with two remote I/O ports (each to a IBM PCI-X Host Bridge) / each IBM PCI-X Host Bridge provides three peer PCI buses / PCI 2.2 Bus E supports graphics, adapter slot with Remote Supervisor Adapter, VIA® 82C686B South Bridge (IDE ATA-100, USB, Super I/O PC97317VUL [keyboard, mouse]) / PCI 2.2 Bus F supports SCSI, ethernet / PCI-X Bus A, B, C, D support PCI-X slots / designed to the PCI-X 1.0 specification											
Slots (Active™ PCI-X)	Six hot-swap PCI-X 1.0 slots ¹⁰ available with power and attention indicator lights (optical sensors control power to slot) / hot replace, hot upgrade, hot expansion / separated by insulative plastic dividers											
RXE Expansion Port	One RXE-100 Remote Expansion Enclosure can be shared between two x445 4-way, 8-way, or 16-way xSeries 445 servers or attached alone. Both PCI-X 6-packs must be installed to support RIO sharing as each server will access six additional PCI-X slots.											
CD-ROM / diskette	24X-8X⁶ DVD-ROM / 3.5" 1.44MB diskette drive / both removable from Ultrabay 2000 bays / supports CD-RW, DVD											
Ethernet	Dual Broadcom® 5704 10/100/1000 ethernet controller / on I/O Board / full duplex / 64-bit 66MHz PCI bus / Wake on LAN®											
Graphics controller	SVGA / ATI® Rage XL / on I/O Board / 8MB SDRAM std/max / up to 1280x1024 at 85Hz											
Ports	<i>Rear:</i> RXE-100 Expansion Port (to connect optional RXE-100), RXE Management Port, two USB (Vers 1.1), keyboard, mouse, analog DB-15 graphics, ethernet / no serial or parallel ports / <i>Front:</i> one USB (Vers 1.1)											
Security	Power-on and administrator passwords / unattended boot / selectable boot											
Systems mgmt	Remote Supervisor Adapter / PCI adapter / includes 10/100 ethernet, RJ-11, and serial connectors / provides remote console and mgmt / power on/off system / monitors power status, op system, temperature, disks, fans, power supplies											
Diagnostics	Light Path Diagnostics™ / primary indicator on information panel with LEDs associated with failing components / IBM Real Time Diagnostics (operated through IBM Director) available even while server running											
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director, and others											
Keyboard / mouse	None standard (because rack-based)											
Power supplies	<i>Std:</i> two; <i>max:</i> two / hot-swap / 1050 watts at 220v or 550 watts at 110v / redundant at 220v with two power supplies / front access / worldwide / voltage-sensing / auto-restart / fans in each power supply / PFA											
Cooling fans	Four hot-swap, redundant, multi-speed fans / one additional fan in each power supply / PFA / fan failure signals Diagnostic LED and mgmt processor											

xSeries SMP Expansion Module with two 3.0Ghz Xeon Processors	02R1871
512MB DDR PC2100 ECC SDRAM RDIMM	33L5038
1GB DDR PC2100 ECC SDRAM RDIMM	33L5039
2GB DDR PC2100 ECC SDRAM RDIMM	33L5040
IBM 73.4GB 10K Ultra160 SCSI Hot-Swap	06P5756
IBM ServeRAID™-6M Ultra320 SCSI Adapter	32P0033
IBM Remote Supervisor Adapter II-EXA	13N0382
NetBAY11 Standard Rack Cabinet	9306110
8X/4X/24X Max CD-RW Ultrabay 2000	22P9101
IBM T540 15" Flat Panel Color Monitor (black)	9511AG4
Other options at ibm.com/pc/us/accessories	

Six available 3.3 volt Active PCI-X slots:

Slot 1: fullsize, 64-bit 66MHz PCI-X, hot-swap Bus A
 Slot 2: fullsize, 64-bit 66MHz PCI-X, hot-swap Bus A
 Slot 3: fullsize, 64-bit 100MHz PCI-X, hot-swap, Bus B
 Slot 4: fullsize, 64-bit 100MHz PCI-X, hot-swap, Bus B
 Slot 5: fullsize, 64-bit 133MHz PCI-X, hot-swap, Bus C
 Slot 6: fullsize, 64-bit 133MHz PCI-X, hot-swap, Bus D
 Slot: used by Remote Supervisor Adp, 32-bit 33MHz

4U Rack

Bay ① 3.5", 0.5", access, diskette (Ultrabay 2000)
 Bay ② 3.5", 0.5", access, CD-ROM (Ultrabay 2000)
 Bay ③ 3.5", SL 1", access, hot-swap
 Bay ④ 3.5", SL 1", access, hot-swap

- ⊗ Dimensions: H7.0" x W19.0" x D27.5"
 - ⊗ Dimensions: H178mm x W483mm x D699mm
 - ⊗ Max weight: 110 lbs; 50kg
 - ⊗ Stealth black color
 - ⊗ Tool-free serviceability
 - ⊗ Access processors, memory, adapters, and SMP Expansion Module from top
 - ⊗ Access power supplies and disks from front
 - ⊗ Setup Program by pressing F1 at startup
 - ⊗ Diagnostics (PC-Doctor) by pressing F2 at startup
 - ⊗ SCSISelect by pressing Ctrl+A at startup
 - ⊗ Information LED panel and front-accessible pull-out Light Path panel (1st and 2nd level diagnostics without removing cover)
 - ⊗ Predictive Failure Analysis® alerts on processors, XcL4 Server Accelerator Cache, memory, fans, power supplies, and optional disks with IBM Director
- All models:** Maximum internal disk capacity: 293.6GB with two 146.8GB² hot-swap SCSI disks

LIMITED WARRANTY³

- ⊗ 3 year parts and labor
- ⊗ International Warranty Service³
- ⊗ On site, 9 hr x 5 day coverage, next day response time⁷
- ⊗ 1 year on site warranty service upgrade option (in eligible locations):⁷
 - 24 hr x 7 day coverage, 2 hour response time (No ServicePac available)
- ⊗ Post warranty maintenance services available
- ⊗ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

IBM eServer™ xSeries™ 445 (8-way Xeon MP) - withdrawn xREF by eServer Field Skills Enablement Team

IBM® Type-model	Qty x Processor	L3 cache	L4 cache	Memory	Disk	SCSI controller	Mechanical	Slots x bays	SMP/RXE Exp Ports	Hot-swap pwr supplies	Mgmt adapter	Available date
8870-11X	2 x Xeon™ MP 2.0GHz	1MB	64MB	2GB Chipkill™	None	2xUltra320	4U ⁴ rack	6x4	3/1	Two redundant	PCI	May 2004
8870-12X	2 x Xeon MP 2.2GHz	2MB	64MB	2GB Chipkill	None	2xUltra320	4U rack	6x4	3/1	Two redundant	PCI	Mar 2004
8870-22X	2 x Xeon MP 2.7GHz	2MB	64MB	2GB Chipkill	None	2xUltra320	4U rack	6x4	3/1	Two redundant	PCI	Mar 2004
8870-42X	4 x Xeon MP 3.0GHz	4MB	64MB	2GB Chipkill	None	2xUltra320	4U rack	6x4	3/1	Two redundant	PCI	Mar 2004
8870-3EX	2 x Xeon DP 3.0GHz	N/A	64MB	2GB Chipkill	None	2xUltra320	4U rack	6x4	3/1	Two redundant	PCI	Mar 2004
8870-4EX	4 x Xeon DP 3.0GHz	N/A	64MB	2GB Chipkill	None	2xUltra320	4U rack	6x4	3/1	Two redundant	PCI	Mar 2004

Positioning Processors **Up to 8-way (16-way two chassis) power for high-end databases, server consolidation and mission-critical business applications**
2 or 4 Intel® Xeon™ Processor DP or MP 2.0GHz - 3.0GHz¹ with 400MHz frontside bus / supports Hyper-Threading
 L3 cache **Up to 4MB** each processor (Xeon MP models only) / on die of processor / at processor speed
 L4 cache **64MB XcE⁴™ Server Accelerator Cache** (up to **128MB** with optional SMP Expansion Module) / 64MB in each SMP Expansion Module / ECC / 64-bit 400MHz bus from Cache and Scalability Controller
 Processor upgrade **4-way SMP** (up to **8-way SMP** with optional SMP Expansion Module, for Xeon MP models only)
 SMP Expansion Module **One SMP Expansion Module std** / two max, for Xeon MP models only / each contains four Intel 603-pin micro-PGA ZIF sockets for Xeon, 64MB L4 cache, sixteen DIMM sockets, three SMP Expansion Ports (second module connected via one or two SMP Expansion Ports) / each SMP Expansion Module activates one RXE Expansion Port (one RXE Expansion Port supported)
 Additional boards One I/O Board (PCI-X Host Bridge, SCSI, ethernet, graphics, South Bridge, Super I/O, slot for Mgmt Adapter), one PCI Board (PCI-X Host Bridge, six PCI-X slots), one Midplane Board (connects SMP Exp Modules, I/O Board, PCI Board)

Memory **2GB std / 32GB max¹³** (up to **64GB** per chassis using optional SMP Expansion Module) / four 512MB DIMMs installed / 16 DIMM gold-connector slots / must install two identical DIMMs at same time / 2-way interleaving / PC2100 DDR SDRAM / **Error Checking and Correcting (ECC)** and **Chipkill™** via **Memory ProteXion™** (1, 2, 3, or 4-bit errors on same chip; up to two chips at once; redundant bit steering) / **Active Memory™** supporting **hot-swap** and **hot-add** (OS specific) and **Memory Mirroring™** (non-OS specific)

SCSI disk controller LSI Logic / Wide Ultra320 SCSI (LVD 32MB/sec) / dual channel / 64-bit 66MHz PCI / **integrated RAID-1** on I/O Board
 SCSI implementation First channel to internal 2-port SCSI backplane for internal hot-swap disks (16-bit LVD cable to SCSI backplane) / second channel to one external .8mm VHDCI 68-pin connector (16-bit LVD cable from I/O Board to ext connector) / one standard (longer) 16-bit LVD cable included for attaching an optional ServeRAID adapter to the two-bay backplane
 IDE controller Enhanced IDE ATA-100 controller in South Bridge / one one-drop IDE cable to backplane for diskette and CD-ROM
 Disk - capacity/bays No disks standard / supports up to 15K rpm SCSI disks / two hot-swap bays / converged tray / 80-pin SCA-2 connectors

Mechanical **EIA 19" rack models (4U⁴)** x 28" deep / supported in NetBAY™ Racks (such as NetBAY42 SR, NetBAY42 ER)

Chipset **IBM XA-32™ 2nd Generation chipset** / IBM Cache and Scalability Controller with L4 cache controller and three SMP Expansion Ports / IBM Memory I/O Controller with two remote I/O ports (each to a IBM PCI-X Host Bridge) / each IBM PCI-X Host Bridge provides three peer PCI buses / PCI 2.2 Bus E supports graphics, adapter slot with Remote Supervisor Adapter, VIA® 82C686B South Bridge (IDE ATA-100, USB, Super I/O PC97317VUL [keyboard, mouse]) / PCI 2.2 Bus F supports SCSI, ethernet / PCI-X Bus A, B, C, D support PCI-X slots / designed to the PCI-X 1.0 specification
 Slots (Active™ PCI-X) Six hot-swap PCI-X 1.0 slots¹⁰ available with power and attention indicator lights (optical sensors control power to slot) / **hot replace, hot upgrade, hot expansion** / separated by insulative plastic dividers
 RXE Expansion Port One RXE-100 Remote Expansion Enclosure can be shared between two x445 4-way, 8-way, or 16-way xSeries 445 servers or attached alone. Both PCI-X 6-packs must be installed to support **RIO sharing** as each server will access six additional PCI-X slots.

CD-ROM / diskette **24X-8X⁶ DVD-ROM / 3.5" 1.44MB** diskette drive / both removable from Ultrabay 2000 bays / supports CD-RW, DVD
 Ethernet **Dual Broadcom³ 5704 10/100/1000** ethernet controller / on I/O Board / full duplex / 64-bit 66MHz PCI bus / Wake on LAN®
 Graphics controller **SVGA / ATI® Rage XL** / on I/O Board / 8MB SDRAM std/max / up to 1280x1024 at 85Hz
 Ports **Rear:** RXE-100 Expansion Port (to connect optional RXE-100), RXE Management Port, two USB (Vers 1.1), keyboard, mouse, analog DB-15 graphics, ethernet / no serial or parallel ports / **Front:** one USB (Vers 1.1)

Security Power-on and administrator passwords / unattended boot / selectable boot

Systems mgmt **Remote Supervisor Adapter II** / PCI adapter / includes 10/100 ethernet, RJ-11, and serial connectors / provides remote console and mgmt / power on/off system / monitors power status, op system, temperature, disks, fans, power supplies
 Diagnostics **Light Path Diagnostics™** / primary indicator on information panel with LEDs associated with failing components / IBM Real Time Diagnostics (operated through IBM Director) available even while server running

Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director, and others	xSeries SMP Expansion Module 1GB DDR PC2100 ECC SDRAM RDIMM 2GB DDR PC2100 ECC SDRAM RDIMM Xeon MP 2.2GHz/2MB L3 Cache Proc Upg Xeon MP 2.7GHz/2MB L3 Cache Proc Upg Xeon MP 3.0GHz/4MB L3 Cache Proc Upg IBM 73.4GB 10K Ultra160 SCSI Hot-Swap IBM ServeRAID™-6M Ultra320 SCSI Adapter IBM Remote Supervisor Adapter II-EXA NetBAY11 Standard Rack Cabinet 8X/4X/24X Max CD-RW Ultrabay 2000 IBM T540 15" Flat Panel Color Monitor (black) Other options at ibm.com/pc/us/accessories	02R1870 33L5039 33L5040 13N0723 13N0722 13N0721 06P5756 32P0033 13N0382 9306110 22P9101 9511AG4
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Keyboard / mouse None standard (because rack-based)
 Power supplies **Std:** two; **max:** two / hot-swap / 1050 watts at 220v or 550 watts at 110v / redundant at 220v with two power supplies / front access / worldwide / voltage-sensing / auto-restart / fans in each power supply / PFA
 Cooling fans Four hot-swap, redundant, multi-speed fans / one additional fan in each power supply / PFA / fan failure signals Diagnostic LED and mgmt processor

Six available 3.3 volt Active PCI-X slots:

Slot 1: fullsize, 64-bit 66MHz PCI-X, hot-swap Bus A
 Slot 2: fullsize, 64-bit 66MHz PCI-X, hot-swap Bus A
 Slot 3: fullsize, 64-bit 100MHz PCI-X, hot-swap, Bus B
 Slot 4: fullsize, 64-bit 100MHz PCI-X, hot-swap, Bus B
 Slot 5: fullsize, 64-bit 133MHz PCI-X, hot-swap, Bus C
 Slot 6: fullsize, 64-bit 133MHz PCI-X, hot-swap, Bus D
 Slot: used by Remote Supervisor Adp, 32-bit 33MHz

- ⊖ Dimensions: H7.0" x W19.0" x D27.5"
- ⊖ Dimensions: H178mm x W483mm x D699mm
- ⊖ Max weight: 110 lbs; 50kg
- ⊖ Stealth black color
- ⊖ Tool-free serviceability
- ⊖ Access processors, memory, adapters, and SMP Expansion Module from top
- ⊖ Access power supplies and disks from front
- ⊖ Setup Program by pressing F1 at startup
- ⊖ Diagnostics (PC-Doctor) by pressing F2 at startup
- ⊖ SCSISelect by pressing Ctrl+A at startup
- ⊖ Information LED panel and front-accessible pull-out Light Path panel (1st and 2nd level diagnostics without removing cover)
- ⊖ Predictive Failure Analysis® alerts on processors, XcE⁴ Server Accelerator Cache, memory, fans, power supplies, and optional disks with IBM Director

4U Rack

Bay ① 3.5", 0.5", access, diskette (Ultrabay 2000)
 Bay ② 3.5", 0.5", access, CD-ROM (Ultrabay 2000)
 Bay ③ 3.5", SL 1", access, hot-swap
 Bay ④ 3.5", SL 1", access, hot-swap

LIMITED WARRANTY³

- ⊖ 3 year parts and labor
- ⊖ International Warranty Service³
- ⊖ On site, 9 hr x 5 day coverage, next day response time⁷
- ⊖ 3 year on site warranty service upgrade option (in eligible locations):⁷
 - 24 hr x 7 day coverage, 2 hour response time (No ServicePac available)
- ⊖ Post warranty maintenance services available
- ⊖ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ⊖ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

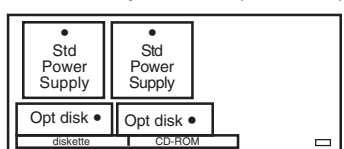
IBM @server™ xSeries™ 445 (8-way MS Datacenter#) - W/D xREF by eServer Field Skills Enablement Team

IBM® Type-model	Qty x Processor	L3 cache	L4 cache	Memory	Disk	SCSI controller	Mechanical	Slots x bays	SMP/RXE Exp Ports	Hot-swap pwr supplies	Mgmt adapter	Available date
8870-1AX	2 x Xeon™ MP 2.0GHz	1MB	64MB	0GB Chipkill™	None	2xUltra320	4U ⁴ rack	6x4	3/1	Two redundant	PCI	Jul 2003
8870-2AX	2 x Xeon MP 2.5GHz	1MB	64MB	0GB Chipkill	None	2xUltra320	4U rack	6x4	3/1	Two redundant	PCI	Jul 2003
8870-4AX	2 x Xeon MP 2.8GHz	2MB	64MB	0GB Chipkill	None	2xUltra320	4U rack	6x4	3/1	Two redundant	PCI	Jul 2003

Positioning Processors	Up to 8-way (16-way two chassis) power for high-end databases, server consolidation and mission-critical business applications											
L3 cache	2 or 4 x Intel® Xeon™ Processor MP 2.0, 2.5, or 2.8GHz ¹ with 400MHz frontside bus / supports Hyper-Threading											
L4 cache	1MB or 2MB each processor / on die of processor / at processor speed											
Processor upgrade	64MB XceL4™ Server Accelerator Cache (up to 128MB with optional SMP Expansion Module) / 64MB in each SMP Expansion Module / ECC / 64-bit 400MHz bus from Cache and Scalability Controller											
SMP Expansion Module	SMP Expansion Module standard / ready for adding additional processors (up to 8 total) and memory											
Additional boards	One SMP Expansion Module std / two max / each contains four Intel 603-pin micro-PGA ZIF sockets for Xeon MP, 64MB L4 cache, sixteen DIMM sockets, three SMP Expansion Ports (second module connected via one or two SMP Expansion Ports) / each SMP Expansion Module activates one RXE Expansion Port (one RXE Expansion Port supported)											
Memory	One I/O Board (PCI-X Host Bridge, SCSI, ethernet, graphics, South Bridge, Super I/O, slot for Mgmt Adapter), one PCI Board (PCI-X Host Bridge, six PCI-X slots), one Midplane Board (connects SMP Exp Modules, I/O Board, PCI Board)											
SCSI disk controller	0GB std / 64GB max ¹³ (uses standard SMP Expansion Module) / no DIMMs installed / 32 DIMM gold-connector slots / must install two identical DIMMs at same time / 2-way interleaving / PC2100 DDR SDRAM / Error Checking and Correcting (ECC) and Chipkill™ via Memory ProteXion™ (1, 2, 3, or 4-bit errors on same chip; up to two chips at once; redundant bit steering) / Active Memory™ supporting hot-swap and hot-add (OS specific) and Memory Mirroring™ (non-OS specific)											
SCSI implementation	LSI Logic / Wide Ultra320 SCSI (LVD 32MB/sec) / dual channel / 64-bit 66MHz PCI / integrated RAID-1 on I/O Board											
IDE controller	First channel to internal 2-port SCSI backplane for internal hot-swap disks (16-bit LVD cable to SCSI backplane) / second channel to one external .8mm VHDCI 68-pin connector (16-bit LVD cable from I/O Board to ext connector) / one standard (longer) 16-bit LVD cable included for attaching an optional ServeRAID adapter to the two-bay backplane											
Disk - capacity/bays	Enhanced IDE ATA-100 controller in South Bridge / one one-drop IDE cable to backplane for diskette and CD-ROM											
Mechanical	No disks standard / supports up to 15K rpm SCSI disks / two hot-swap bays / converged tray / 80-pin SCA-2 connectors											
Chipset	EIA 19" rack models (4U ⁴) x 28" deep / supported in NetBAY™ Racks (such as NetBAY42 SR, NetBAY42 ER)											
Slots (Active™ PCI-X)	IBM XA-32™ 2nd Generation chipset / IBM Cache and Scalability Controller with L4 cache controller and three SMP Expansion Ports / IBM Memory I/O Controller with two remote I/O ports (each to a IBM PCI-X Host Bridge) / each IBM PCI-X Host Bridge provides three peer PCI buses / PCI 2.2 Bus E supports graphics, adapter slot with Remote Supervisor Adapter, VIA® 82C686B South Bridge (IDE ATA-100, USB, Super I/O PC97317VUL [keyboard, mouse]) / PCI 2.2 Bus F supports SCSI, ethernet / PCI-X Bus A, B, C, D support PCI-X slots / designed to the PCI-X 1.0 specification											
RXE Expansion Port	Six hot-swap PCI-X 1.0 slots ¹⁰ available with power and attention indicator lights (optical sensors control power to slot) / hot replace, hot upgrade, hot expansion / separated by insulative plastic dividers											
CD-ROM / diskette	One RXE-100 Remote Expansion Enclosure can be shared between two x445 4-way, 8-way, or 16-way xSeries 445 servers or attached alone. Both PCI-X 6-packs must be installed to support RIO sharing as each server will access six additional PCI-X slots.											
Ethernet	24X-8X ⁶ DVD-ROM / 3.5" 1.44MB diskette drive / both removable from Ultrabay 2000 bays / supports CD-RW, DVD											
Graphics controller	Dual Broadcom® 5704 10/100/1000 ethernet controller / on I/O Board / full duplex / 64-bit 66MHz PCI bus / Wake on LAN®											
Ports	SVGA / ATI® Rage XL / on I/O Board / 8MB SDRAM std/max / up to 1280x1024 at 85Hz. Rear: RXE-100 Expansion Port (to connect optional RXE-100), RXE Management Port, two USB (Vers 1.1), keyboard, mouse, analog DB-15 graphics, ethernet / no serial or parallel ports / Front: one USB (Vers 1.1)											
Security	Power-on and administrator passwords / unattended boot / selectable boot											
Systems mgmt	Remote Supervisor Adapter / PCI adapter / includes 10/100 ethernet, RJ-11, and serial connectors / provides remote console and mgmt / power on/off system / monitors power status, op system, temperature, disks, fans, power supplies											
Diagnostics	Light Path Diagnostics™ / primary indicator on information panel with LEDs associated with failing components / IBM Real Time Diagnostics (operated through IBM Director) available even while server running											
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director, and others											
Keyboard / mouse	IBM Preload Kit for 1-8 Processors 48164BU											
Power supplies	None standard (because rack-based) Std: two; max: two / hot-swap / 1050 watts at 220v or 550 watts at 110v / redundant at 220v with two power supplies / front access / worldwide / voltage-sensing / auto-restart / fans in each power supply / PFA											
Cooling fans	IBM Software Subscription Update for Microsoft Windows Server Datacenter 2003 4816CBX											
	Microsoft Windows Server Datacenter 2003 33L5039											
	2GB DDR PC2100 ECC SDRAM RDIMM 33L5040											
	Xeon MP 2.0GHz/1MB L3 Cache Proc Upg 02R2062											
	Xeon MP 2.5GHz/1MB L3 Cache Proc Upg 02R2063											
	Xeon MP 2.8GHz/2MB L3 Cache Proc Upg 02R2064											
	IBM 73.4GB 10K Ultra160 SCSI Hot-Swap 06P5756											
	IBM ServeRAID™-4H Ultra160 SCSI Adapter 37L6889											
	Other options at ibm.com/pc/us/accessories											

Six available 3.3 volt Active PCI-X slots:

- Slot 1: fullsize, 64-bit 66MHz PCI-X, hot-swap Bus A
- Slot 2: fullsize, 64-bit 66MHz PCI-X, hot-swap Bus A
- Slot 3: fullsize, 64-bit 100MHz PCI-X, hot-swap, Bus B
- Slot 4: fullsize, 64-bit 100MHz PCI-X, hot-swap, Bus B
- Slot 5: fullsize, 64-bit 133MHz PCI-X, hot-swap, Bus C
- Slot 6: fullsize, 64-bit 133MHz PCI-X, hot-swap, Bus D
- Slot: used by Remote Supervisor Adp, 32-bit 33MHz



4U Rack

- Dimensions: H7.0" x W19.0" x D27.5"
- Dimensions: H178mm x W483mm x D699mm
- Max weight: 110 lbs; 50kg
- Stealth black color
- Tool-free serviceability
- Access processors, memory, adapters, and SMP Expansion Module from top
- Access power supplies and disks from front
- Setup Program by pressing F1 at startup
- Diagnostics (PC-Doctor) by pressing F2 at startup
- SCSISelect by pressing Ctrl+A at startup
- Information LED panel and front-accessible pull-out Light Path panel (1st and 2nd level diagnostics without removing cover)
- Predictive Failure Analysis® alerts on processors, XceL4 Server Accelerator Cache, memory, fans, power supplies, and optional disks with IBM Director

Bay ① 3.5", 0.5", access, diskette (Ultrabay 2000)
 Bay ② 3.5", 0.5", access, CD-ROM (Ultrabay 2000)
 Bay ③ 3.5", SL 1", access, hot-swap
 Bay ④ 3.5", SL 1", access, hot-swap

All models: Maximum internal disk capacity: 293.6GB with two 146.8GB² hot-swap SCSI disks

LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 9 hr x 5 day coverage, next day response time⁷
- 1 year on site warranty service upgrade option (in eligible locations):⁷
 - 24 hr x 7 day coverage, 2 hour response time (No ServicePac available)
- Post warranty maintenance services available
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

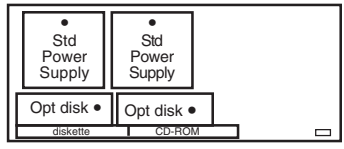
See footnotes for important warranty information • = Hot-swap (X445D8) © IBM Corp. July 2003
 US models announced July 1, 2003; withdrawn effective May 28, 2004
 # = Memory, HDDs and Preload Kit for Microsoft Windows 2000 or 2003 Datacenter Edition must be ordered as part of the IBM Datacenter Solution for these models.

IBM @server™ xSeries™ 445 (8-way MS Datacenter#) (3/04) xREF by eServer Field Skills Enablement Team

IBM® Type-model	Qty x Processor	L3 cache	L4 cache	Memory	Disk	SCSI controller	Mechanical	Slots x bays	SMP/RXE Exp Ports	Hot-swap pwr supplies	Mgmt adapter	Available date
8870-1BX	2 x Xeon™ MP 2.2GHz	2MB	64MB	0GB Chipkill™	None	2xUltra320	4U ⁴ rack	6x4	3/1	Two redundant	PCI	Mar 2004
8870-2BX	2 x Xeon MP 2.7GHz	2MB	64MB	0GB Chipkill	None	2xUltra320	4U rack	6x4	3/1	Two redundant	PCI	Mar 2004
8870-4BX	2 x Xeon MP 3.0GHz	4MB	64MB	0GB Chipkill	None	2xUltra320	4U rack	6x4	3/1	Two redundant	PCI	Mar 2004

Positioning Processors	Up to 8-way (16-way two chassis) power for high-end databases, server consolidation and mission-critical business applications											
L3 cache	2 x Intel® Xeon™ Processor MP 2.2, 2.7, or 3.0GHz ¹ with 400MHz frontside bus / supports Hyper-Threading											
L4 cache	2MB or 4MB each processor / on die of processor / at processor speed											
Processor upgrade	64MB XcelL4™ Server Accelerator Cache (up to 128MB with optional SMP Expansion Module) / 64MB in each SMP Expansion Module / ECC / 64-bit 400MHz bus from Cache and Scalability Controller											
SMP Expansion Module	SMP Expansion Module standard / ready for adding additional processors (up to 8 total) and memory											
Additional boards	One SMP Expansion Module std / two max / each contains four Intel 603-pin micro-PGA ZIF sockets for Xeon MP, 64MB L4 cache, sixteen DIMM sockets, three SMP Expansion Ports (second module connected via one or two SMP Expansion Ports) / each SMP Expansion Module activates one RXE Expansion Port (one RXE Expansion Port supported)											
Memory	One I/O Board (PCI-X Host Bridge, SCSI, ethernet, graphics, South Bridge, Super I/O, slot for Mgmt Adapter), one PCI Board (PCI-X Host Bridge, six PCI-X slots), one Midplane Board (connects SMP Exp Modules, I/O Board, PCI Board)											
SCSI disk controller	0GB std / 64GB max ¹³ (uses standard SMP Expansion Module) / no DIMMs installed / 32 DIMM gold-connector slots / must install two identical DIMMs at same time / 2-way interleaving / PC2100 DDR SDRAM / Error Checking and Correcting (ECC) and Chipkill™ via Memory ProteXion™ (1, 2, 3, or 4-bit errors on same chip; up to two chips at once; redundant bit steering) / Active Memory™ supporting hot-swap and hot-add (OS specific) and Memory Mirroring™ (non-OS specific)											
SCSI implementation	LSI Logic / Wide Ultra320 SCSI (LVD 32MB/sec) / dual channel / 64-bit 66MHz PCI / integrated RAID-1 on I/O Board											
IDE controller	First channel to internal 2-port SCSI backplane for internal hot-swap disks (16-bit LVD cable to SCSI backplane) / second channel to one external .8mm VHDCI 68-pin connector (16-bit LVD cable from I/O Board to ext connector) / one standard (longer) 16-bit LVD cable included for attaching an optional ServeRAID adapter to the two-bay backplane											
Disk - capacity/bays	Enhanced IDE ATA-100 controller in South Bridge / one one-drop IDE cable to backplane for diskette and CD-ROM											
Mechanical	No disks standard / supports up to 15K rpm SCSI disks / two hot-swap bays / converged tray / 80-pin SCA-2 connectors											
Chipset	EIA 19" rack models (4U ⁴) x 28" deep / supported in NetBAY™ Racks (such as NetBAY42 SR, NetBAY42 ER)											
Slots (Active™ PCI-X)	IBM XA-32™ 2nd Generation chipset / IBM Cache and Scalability Controller with L4 cache controller and three SMP Expansion Ports / IBM Memory I/O Controller with two remote I/O ports (each to a IBM PCI-X Host Bridge) / each IBM PCI-X Host Bridge provides three peer PCI buses / PCI 2.2 Bus E supports graphics, adapter slot with Remote Supervisor Adapter, VIA® 82C686B South Bridge (IDE ATA-100, USB, Super I/O PC97317VUL [keyboard, mouse]) / PCI 2.2 Bus F supports SCSI, ethernet / PCI-X Bus A, B, C, D support PCI-X slots / designed to the PCI-X 1.0 specification											
RXE Expansion Port	Six hot-swap PCI-X 1.0 slots ¹⁰ available with power and attention indicator lights (optical sensors control power to slot) / hot replace, hot upgrade, hot expansion / separated by insulative plastic dividers											
CD-ROM / diskette	One RXE-100 Remote Expansion Enclosure can be shared between two x445 4-way, 8-way, or 16-way xSeries 445 servers or attached alone. Both PCI-X 6-packs must be installed to support RIO sharing as each server will access six additional PCI-X slots.											
Ethernet	24X-8X ⁶ DVD-ROM / 3.5" 1.44MB diskette drive / both removable from Ultrabay 2000 bays / supports CD-RW, DVD											
Graphics controller	Dual Broadcom® 5704 10/100/1000 ethernet controller / on I/O Board / full duplex / 64-bit 66MHz PCI bus / Wake on LAN®											
Ports	SVGA / ATI® Rage XL / on I/O Board / 8MB SDRAM std/max / up to 1280x1024 at 85Hz. Rear: RXE-100 Expansion Port (to connect optional RXE-100), RXE Management Port, two USB (Vers 1.1), keyboard, mouse, analog DB-15 graphics, ethernet / no serial or parallel ports / Front: one USB (Vers 1.1)											
Security	Power-on and administrator passwords / unattended boot / selectable boot											
Systems mgmt	Remote Supervisor Adapter II / PCI adapter / includes 10/100 ethernet, RJ-11, and serial connectors / provides remote console and mgmt / power on/off system / monitors power status, op system, temperature, disks, fans, power supplies											
Diagnostics	Light Path Diagnostics™ / primary indicator on information panel with LEDs associated with failing components / IBM Real Time Diagnostics (operated through IBM Director) available even while server running											
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director, and others											
Keyboard / mouse	IBM Preload Kit for 1-8 Processors 48166BU											
Power supplies	None standard (because rack-based) Std: two; max: two / hot-swap / 1200 watts at 220v or 600 watts at 110v / redundant at 220v with two power supplies / front access / worldwide / voltage-sensing / auto-restart / fans in each power supply / PFA											
Cooling fans	IBM Software Subscription Update for Microsoft Windows Server Datacenter 2003 4816DBX											
	Microsoft Windows Server Datacenter 2003 33L5039											
	1GB DDR PC2100 ECC SDRAM RDIMM 33L5040											
	2GB DDR PC2100 ECC SDRAM RDIMM 33L5040											
	Xeon MP 2.2GHz/2MB L3 Cache Proc Upg 13N0723											
	Xeon MP 2.7GHz/2MB L3 Cache Proc Upg 13N0722											
	Xeon MP 3.0GHz/4MB L3 Cache Proc Upg 13N0721											
	IBM 73.4GB 10K Ultra160 SCSI Hot-Swap 06P5756											
	IBM ServeRAID™-4H Ultra160 SCSI Adapter 37L6889											
	Other options at ibm.com/pc/us/accessories											

Six available 3.3 volt Active PCI-X slots:
 Slot 1: fullsize, 64-bit 66MHz PCI-X, hot-swap Bus A
 Slot 2: fullsize, 64-bit 66MHz PCI-X, hot-swap Bus A
 Slot 3: fullsize, 64-bit 100MHz PCI-X, hot-swap, Bus B
 Slot 4: fullsize, 64-bit 100MHz PCI-X, hot-swap, Bus B
 Slot 5: fullsize, 64-bit 133MHz PCI-X, hot-swap, Bus C
 Slot 6: fullsize, 64-bit 133MHz PCI-X, hot-swap, Bus D
 Slot: used by Remote Supervisor Adp, 32-bit 33MHz



4U Rack

- Bay ① 3.5", 0.5", access, diskette (Ultrabay 2000)
- Bay ② 3.5", 0.5", access, CD-ROM (Ultrabay 2000)
- Bay ③ 3.5", SL 1", access, hot-swap
- Bay ④ 3.5", SL 1", access, hot-swap

- Dimensions: H7.0" x W19.0" x D27.5"
- Dimensions: H178mm x W483mm x D699mm
- Max weight: 110 lbs; 50kg
- Stealth black color
- Tool-free serviceability
- Access processors, memory, adapters, and SMP Expansion Module from top
- Access power supplies and disks from front
- Setup Program by pressing F1 at startup
- Diagnostics (PC-Doctor) by pressing F2 at startup
- SCSISelect by pressing Ctrl+A at startup
- Information LED panel and front-accessible pull-out Light Path panel (1st and 2nd level diagnostics without removing cover)
- Predictive Failure Analysis® alerts on processors, XcelL4 Server Accelerator Cache, memory, fans, power supplies, and optional disks with IBM Director

All models: Maximum internal disk capacity: 293.6GB with two 146.8GB² hot-swap SCSI disks

LIMITED WARRANTY³

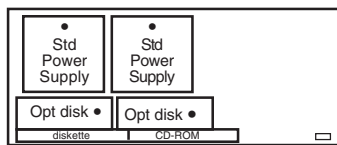
- ↻ 3 year parts and labor
- ↻ International Warranty Service³
- ↻ On site, 9 hr x 5 day coverage, next day response time⁷
- ↻ 1 year on site warranty service upgrade option (in eligible locations):⁷
 - 24 hr x 7 day coverage, 2 hour response time (No ServicePac available)
- ↻ Post warranty maintenance services available
- ↻ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ↻ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information (X445D8B) © IBM Corp. March 2004
 US models announced March 2, 2004 • = Hot-swap
 # = Memory, HDDs and Preload Kit for Microsoft Windows 2000 or 2003 Datacenter Edition must be ordered as part of the IBM Datacenter Solution for these models.

IBM® Type-model	Qty x Processor	L3 cache	L4 cache	Memory	Disk	SCSI controller	Mechanical	Slots x bays	SMP/RXE Exp Ports	Hot-swap pwr supplies	Mgmt adapter	Available date
8688-1RX	1 x Itanium 2™	900MHz	1.5MB	64MB	1GB Chipkill™	None	1xUltra320	4U ⁴ rack	6x2	0/1	Two redundant	PCI Mar 2003
8688-2RX	2 x Itanium 2™	1.0GHz	1.5MB	64MB	2GB Chipkill™	None	1xUltra320	4U ⁴ rack	6x2	0/1	Two redundant	PCI Mar 2003
8688-3RX	2 x Itanium 2™	1.0GHz	3.0MB	64MB	2GB Chipkill™	None	1xUltra320	4U ⁴ rack	6x2	0/1	Two redundant	PCI Mar 2003

Positioning	<i>Up to 4-way power for high-end databases, server consolidation and mission-critical business applications</i>											
Processors	1 or 2 x Intel® Itanium 2™ Processor 900Mhz or 1.0GHz with 400MHz frontside bus											
L2 cache	256KB each processor / on die of processor / at processor speed											
L3 cache	1.5MB or 3MB each processor / on die of processor / at processor speed											
L4 cache	64MB XceL4™ Server Accelerator Cache											
Processor upgrade	4-way SMP											
SMP Exp. Module	Not Applicable											
Additional boards	One I/O Board (PCI-X Host Bridge, SCSI, ethernet, graphics, South Bridge, Super I/O, slot for Mgmt Adapter), one PCI Board (PCI-X Host Bridge, six PCI-X slots), one Midplane Board (connects SMP Exp Modules, I/O Board, PCI Board)											
Memory	1GB or 2GB std / 40GB max when installing 2GB DIMMs into 20 slots / 28 DIMM gold-connector slots PC2100 266MHz registered 184-pin ECC DDR-SDRAM DIMMs / DIMMs must be installed in matched pairs [a bank] / 2-way interleaving / Active Memory™ with Error Checking and Correcting (ECC), Chipkill™, Memory ProteXion™ (1, 2, 3, or 4-bit errors on same chip; up to two chips at once; redundant bit steering) / via memory mirroring (memory mirroring supported with any OS) / Hot-add and Hot-swappable using Microsoft Windows Server 2003											
SCSI disk controller	LSI® 53C1030 / Ultra320 SCSI (LVD 320MB/sec) / dual channel RAID / 64-bit 66MHz PCI / integrated on I/O Board											
SCSI implementation	One channel backplane for internal hot-swap disks (16-bit LVD cable to SCSI backplane) / ServeRAID adapter and SCSI cable required if attaching external storage enclosures											
IDE controller	Enhanced IDE ATA-100 controller in South Bridge / one one-drop IDE cable to backplane for diskette and CD-ROM											
Disk - capacity/bays	No disks standard / supports up to 15K rpm SCSI disks / two hot-swap bays / converged tray / 80-pin SCA-2 connectors											
Mechanical	EIA 19" rack models (4U⁴) x 28" deep / supported in NetBAY™ Racks (such as NetBAY42 SR, NetBAY42 ER)											
Chipset	IBM XA-64™ chipset / IBM Cache and Scalability Controller with L4 cache controller / IBM Memory I/O Controller with two remote I/O ports (each to a IBM PCI-X Host Bridge) / each IBM PCI-X Host Bridge provides three peer PCI buses / PCI 2.2 Bus E supports graphics, adapter slot with Remote Supervisor Adapter, VIA® 82C686B South Bridge (IDE ATA-100, USB, Super I/O PC97317VUL [keyboard, mouse]) / PCI 2.2 Bus F supports SCSI, ethernet / PCI-X Bus A, B, C, D support PCI-X slots / designed to the PCI-X 1.0 specification											
Slots (Active™ PCI-X)	Six hot-swap PCI-X 1.0 slots ¹⁰ available with power and attention indicator lights (optical sensors control power to slot) / hot replace, hot upgrade, hot expansion / separated by insulative plastic dividers											
RXE Expansion Port	One port to support up to 12 additional PCI-X slots via an optional IBM RXE-100 Remote Expansion Enclosure											
CD-ROM / diskette	24X/10X/24X/8X ⁶ CD-RW/DVD-ROM Combo IV drive standard / two removable Ultrabay™ 2000 bays											
Ethernet	Dual Broadcom® 5704 10/100/1000 ethernet controller / on I/O Board / full duplex / 64-bit 66MHz PCI bus / Wake on LAN®											
Graphics controller	SVGA / S3® Savage4 Pro / on I/O Board / 8MB SDRAM 125MHz std/max / up to 1280x1024 at 64K colors at 85Hz											
Ports	<i>Rear:</i> RXE-100 Expansion Port (to connect optional RXE-100), RXE Management Port, two USB (Vers 1.1), analog DB-15 graphics, ethernet / no serial or parallel ports / <i>no keyboard or mouse</i> / <i>Front:</i> one USB (Vers 1.1)											
Security	Power-on and administrator passwords / unattended boot / selectable boot											
Systems mgmt	Remote Supervisor Adapter / PCI adapter / includes 10/100 ethernet, RJ-11, and serial connectors / provides remote console and mgmt / power on/off system / monitors power status, op system, temperature, disks, fans, power supplies											
Diagnostics	Light Path Diagnostics™ / primary indicator on information panel with LEDs associated with failing components / IBM Real Time Diagnostics (operated through IBM Director) available even while server running											
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director, and others											
Keyboard / mouse	None standard (because rack-based) / USB only											
Power supplies	Std: two; max: two / hot-swap / 1050 watts at 220v or 550 watts at 110v / redundant at 220v with two power supplies / front access / worldwide / voltage-sensing / auto-restart / fans in each power supply / PFA											
Cooling fans	Four hot-swap, redundant, multi-speed fans / one additional fan in each power supply / PFA											
	<ul style="list-style-type: none"> Itanium 2 900MHz/1.5MB L3 Cache Proc Upg 59P5103 Itanium 2 1.0GHz/1.5MB L3 Cache Proc Upg 59P5104 Itanium 2 2.0GHz/3.0MB L3 Cache Proc Upg 59P5105 512MB PC2100 CL2.5 ECC DDR-SDRAM RDIMM 33L5038 1GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM 33L5039 2GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM 33L5040 IBM 73.4GB 15K Ultra320 SCSI Hot-Swap 32P0735 IBM 146.8GB 10K Ultra320 SCSI Hot-Swap 32P0728 IBM ServerRAID™-4Mx Ultra160 SCSI Adapter 06P5736 NetXtreme Dual Port Gigabit Ethernet Adapter 31P6401 Removable 3.5" Diskette Drive Ultrabay 2000 08K9603 IBM T540 15" Flat Panel Color Monitor (black) 9511AG4 Other options at ibm.com/pc/us/accessories											

Six available 3.3 volt Active PCI-X slots:
 Slot 1: fullsize, 64-bit 66MHz PCI-X, hot-swap Bus A
 Slot 2: fullsize, 64-bit 66MHz PCI-X, hot-swap Bus A
 Slot 3: fullsize, 64-bit 100MHz PCI-X, hot-swap, Bus B
 Slot 4: fullsize, 64-bit 100MHz PCI-X, hot-swap, Bus B
 Slot 5: fullsize, 64-bit 133MHz PCI-X, hot-swap, Bus C
 Slot 6: fullsize, 64-bit 133MHz PCI-X, hot-swap, Bus D
 Slot: used by Remote Supervisor Adp, 32-bit 33MHz



4U Rack

- Bay ① 3.5", 0.5", access, open (Ultrabay 2000)
- Bay ② 3.5", 0.5", access, Combo (Ultrabay 2000)
- Bay ③ 3.5", SL 1", access, hot-swap
- Bay ④ 3.5", SL 1", access, hot-swap

- ↳ Dimensions: H7.0" x W19.0" x D27.5"
- ↳ Dimensions: H178mm x W483mm x D699mm
- ↳ Max weight: 110 lbs; 50kg
- ↳ Stealth black color
- ↳ Tool-free serviceability
- ↳ Access processors, memory, adapters, and SMP Expansion Module from top
- ↳ Access power supplies and disks from front
- ↳ Setup Program by pressing F1 at startup
- ↳ Diagnostics (PC-Doctor) by pressing F2 at startup
- ↳ SCSISelect by pressing Ctrl+A at startup
- ↳ Information LED panel and front-accessible pull-out Light Path panel (1st and 2nd level diagnostics without removing cover)
- ↳ Predictive Failure Analysis® alerts on processors, XceL4 Server Accelerator Cache, memory, fans, power supplies, and optional disks with IBM Director

All models: Maximum internal disk capacity: 293.6GB with two 146.8GB² hot-swap SCSI disks

LIMITED WARRANTY³

- ↳ 1 year parts and labor
- ↳ International Warranty Service³
- ↳ On site, 24 hr x 7 day coverage, same day response time⁷
- ↳ 1 year on site warranty service upgrade option (in eligible locations):⁷
 - 24 hr x 7 day coverage, 2 hour response time (ServicePac part numbers avail. May 2003)
- ↳ Post warranty maintenance services available
- ↳ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information

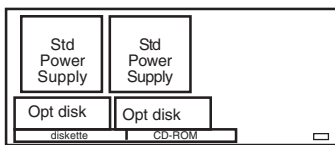
↳ US models announced April 29, 2003; withdrawn effective December 30, 2003

• = Hot-swap

IBM Type-model	Qty x Processor	L3 cache	L4 cache	Memory	Disk	SCSI controller	Mechanical	Slots x bays	SMP/RXE Exp Ports	Hot-swap pwr supplies	Mgmt adapter	Available date																										
8688-4RX	1 x Itanium 2.	1.3GHz	3.0MB	64MB	1GB Chipkill.	None	1xUltra320 4U ⁴ rack	6x2	0/1	Two redundant	PCI	Jul 2003																										
8688-5RX	2 x Itanium 2.	1.4GHz	4.0MB	64MB	2GB Chipkill.	None	1xUltra320 4U ⁴ rack	6x2	0/1	Two redundant	PCI	Jul 2003																										
8688-6RX	2 x Itanium 2.	1.5GHz	6.0MB	64MB	2GB Chipkill.	None	1xUltra320 4U ⁴ rack	6x2	0/1	Two redundant	PCI	Jul 2003																										
Positioning		Up to 4-way power for high-end databases, server consolidation and mission-critical business applications																																				
Processors		1 or 2 x Intel Itanium 2. Processor 1.3GHz, 1.4GHz or 1.5GHz with 400MHz frontside bus																																				
L2 cache		256KB each processor / on die of processor / at processor speed																																				
L3 cache		3MB, 4MB or 6MB each processor / on die of processor / at processor speed																																				
L4 cache		64MB XceL4. Server Accelerator Cache																																				
Processor upgrade		ECC / 64-bit 400MHz bus from Cache and Scalability Controller																																				
SMP Exp. Module		4-way SMP																																				
Additional boards		Not Applicable																																				
		One I/O Board (PCI-X Host Bridge, SCSI, ethernet, graphics, South Bridge, Super I/O, slot for Mgmt Adapter), one PCI Board (PCI-X Host Bridge, six PCI-X slots), one Midplane Board (connects SMP Exp Modules, I/O Board, PCI Board)																																				
Memory		1GB or 2GB std / 40GB max when installing 2GB DIMMs into 20 slots / 28 DIMM gold-connector slots PC2100 266MHz registered 184-pin ECC DDR-SDRAM DIMMs / DIMMs must be installed in matched pairs [a bank] / 2-way interleaving / Active Memory. with Error Checking and Correcting (ECC), Chipkill. , Memory ProteXion. (1, 2, 3, or 4-bit errors on same chip; up to two chips at once; redundant bit steering) / via memory mirroring (memory mirroring supported with any OS) / Hot-add and Hot-swappable using Microsoft Windows Server 2003																																				
SCSI disk controller		LSI 53C1030 / Ultra320 SCSI (LVD 320MB/sec) / dual channel RAID / 64-bit 66MHz PCI / integrated on I/O Board																																				
SCSI implementation		One channel backplane for internal hot-swap disks (16-bit LVD cable to SCSI backplane) / ServeRAID adapter and SCSI cable required if attaching external storage enclosures																																				
IDE controller		Enhanced IDE ATA-100 controller in South Bridge / one one-drop IDE cable to backplane for diskette and CD-ROM																																				
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Mechanical		EIA 19" rack models (4U ⁴) x 28" deep / supported in NetBAY. Racks (such as NetBAY42 SR, NetBAY42 ER)																																				
Chipset		IBM XA-64. chipset / IBM Cache and Scalability Controller with L4 cache controller / IBM Memory I/O Controller with two remote I/O ports (each to a IBM PCI-X Host Bridge) / each IBM PCI-X Host Bridge provides three peer PCI buses / PCI 2.2 Bus E supports graphics, adapter slot with Remote Supervisor Adapter, VIA 82C686B South Bridge (IDE ATA-100, USB, Super I/O PC97317VUL [keyboard, mouse]) / PCI 2.2 Bus F supports SCSI, ethernet / PCI-X Bus A, B, C, D support PCI-X slots / designed to the PCI-X 1.0 specification																																				
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CD-ROM / diskette		24X/10X/24X/8X ⁶ CD-RW/DVD-ROM Combo IV drive standard / two removable Ultrabay. 2000 bays																																				
Ethernet		Dual Broadcom 5704 10/100/1000 ethernet controller / on I/O Board / full duplex / 64-bit 66MHz PCI bus / Wake on LAN																																				
Graphics controller		SVGA / S3 Savage4 Pro / on I/O Board / 8MB SDRAM 125MHz std/max / up to 1280x1024 at 64K colors at 85Hz																																				
Ports		Rear: RXE-100 Expansion Port (to connect optional RXE-100), RXE Management Port, two USB (Vers 1.1), analog DB-15 graphics, ethernet / no serial or parallel ports / no keyboard or mouse / Front: one USB (Vers 1.1)																																				
Security		Power-on and administrator passwords / unattended boot / selectable boot																																				
Systems mgmt		Remote Supervisor Adapter / PCI adapter / includes 10/100 ethernet, RJ-11, and serial connectors / provides remote console and mgmt / power on/off system / monitors power status, op system, temperature, disks, fans, power supplies																																				
Diagnostics		Light Path Diagnostics. / primary indicator on information panel with LEDs associated with failing components / IBM Real Time Diagnostics (operated through IBM Director) available even while server running																																				
Software		ServerGuide. (CD-ROM installation and configuration utilities), IBM Director, and others																																				
Keyboard / mouse		None standard (because rack-based) / USB only																																				
Power supplies		Std: two; max: two / hot-swap / 1050 watts at 220v or 550 watts at 110v / redundant at 220v with two power supplies / front access / worldwide / voltage-sensing / auto-restart / fans in each power supply / PFA																																				
Cooling fans		Four hot-swap, redundant, multi-speed fans / one additional fan in each power supply / PFA																																				
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Six available 3.3 volt Active PCI-X slots:

- Slot 1: fullsize, 64-bit 66MHz PCI-X, hot-swap Bus A
 - Slot 2: fullsize, 64-bit 66MHz PCI-X, hot-swap Bus A
 - Slot 3: fullsize, 64-bit 100MHz PCI-X, hot-swap, Bus B
 - Slot 4: fullsize, 64-bit 100MHz PCI-X, hot-swap, Bus B
 - Slot 5: fullsize, 64-bit 133MHz PCI-X, hot-swap, Bus C
 - Slot 6: fullsize, 64-bit 133MHz PCI-X, hot-swap, Bus D
- Slot: used by Remote Supervisor Adp, 32-bit 33MHz



4U Rack

- Bay 1: 3.5", 0.5", access, open (Ultrabay 2000)
- Bay 2: 3.5", 0.5", access, Combo (Ultrabay 2000)
- Bay 3: 3.5", SL 1", access, hot-swap
- Bay 4: 3.5", SL 1", access, hot-swap

- ☛ Dimensions: H7.0" x W19.0" x D27.5"
- ☛ Dimensions: H178mm x W483mm x D699mm
- ☛ Max weight: 110 lbs; 50kg
- ☛ Stealth black color
- ☛ Tool-free serviceability
- ☛ Access processors, memory, adapters, and SMP Expansion Module from top
- ☛ Access power supplies and disks from front
- ☛ Setup Program by pressing F1 at startup
- ☛ Diagnostics (PC-Doctor) by pressing F2 at startup
- ☛ SCSISelect by pressing Ctrl+A at startup
- ☛ Information LED panel and front-accessible pull-out Light Path panel (1st and 2nd level diagnostics without removing cover)
- ☛ Predictive Failure Analysis: alerts on processors, XceL4 Server Accelerator Cache, memory, fans, power supplies, and optional disks with IBM Director

All models: Maximum internal disk capacity: 293.6GB with two 146.8GB² hot-swap SCSI disks

LIMITED WARRANTY³

- ☛ 1 year parts and labor
- ☛ International Warranty Service³
- ☛ On site, 24 hr x 7 day coverage, same day response time⁷
- ☛ 1 year on site warranty service upgrade option (in eligible locations):⁷
 - 24 hr x 7 day coverage, 2 hour response time (ServicePac part numbers avail. May 2003)
- ☛ Post warranty maintenance services available
- ☛ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information
US models announced July 1, 2003; withdrawn effective December 30, 2003
= Hot-swap

IBM® Type-model	Qty x Processor	L3 cache	L4 cache	Memory	Disk	SCSI controller	Mechanical	Slots x bays	SMP/RXE Exp Ports	Hot-swap pwr supplies	Mgmt adapter	Available date
8855-1AX	2 x Itanium 2™ 1.3GHz	3.0MB	64MB	0GB Chipkill™	None	2 x Ultra320 4U ⁴	rack	6x2	0/1	Two redundant	PCI	Dec 2003
8855-1RX	1 x Itanium 2 1.3GHz	3.0MB	64MB	1GB Chipkill	None	2 x Ultra320 4U	rack	6x2	0/1	Two redundant	PCI	Dec 2003
8855-2AX	2 x Itanium 2 1.4GHz	4.0MB	64MB	0GB Chipkill	None	2 x Ultra320 4U	rack	6x2	0/1	Two redundant	PCI	Dec 2003
8855-2RX	2 x Itanium 2 1.4GHz	4.0MB	64MB	2GB Chipkill	None	2 x Ultra320 4U	rack	6x2	0/1	Two redundant	PCI	Dec 2003
8855-3AX	2 x Itanium 2 1.5GHz	6.0MB	64MB	0GB Chipkill	None	2 x Ultra320 4U	rack	6x2	0/1	Two redundant	PCI	Dec 2003
8855-3RX	2 x Itanium 2 1.5GHz	6.0MB	64MB	2GB Chipkill	None	2 x Ultra320 4U	rack	6x2	0/1	Two redundant	PCI	Dec 2003

Positioning Processors *Up to 16-way power for high-end databases, server consolidation and mission-critical business applications*
2 x Intel® Itanium 2™ Processor 1.3GHz, 1.4GHz or 1.5GHz with 400MHz frontside bus
 L2 cache **256KB** each processor / on die of processor / at processor speed
 L3 cache **3MB, 4MB or 6MB** each processor / on die of processor / at processor speed
 L4 cache **64MB Xcel4™ Server Accelerator Cache**
 ECC / 64-bit 400MHz bus from Cache and Scalability Controller
 Processor upgrade **4-way SMP** per chassis
 SMP Exp. Module **Up to 16-way** using four x455 chassis / requires appropriate 8-way or 16-way kits
 Additional boards One I/O Board (PCI-X Host Bridge, SCSI, ethernet, graphics, South Bridge, Super I/O, slot for Mgmt Adapter), one PCI Board (PCI-X Host Bridge, six PCI-X slots), one Midplane Board (connects SMP Exp Modules, I/O Board, PCI Board)

Memory **1GB or 2GB** std (using 512MB DIMMs) / **56GB** max when installing 2GB DIMMs into 28 slots / 28 DIMM gold-connector slots **PC2100** 266MHz registered 184-pin ECC DDR-SDRAM DIMMs / DIMMs must be installed in matched pairs [a bank] / 2-way interleaving / **Active Memory™** with **Error Checking and Correcting (ECC), Chipkill™, Memory ProteXion™** (1, 2, 3, or 4-bit errors on same chip; up to two chips at once; redundant bit steering) / via memory mirroring (memory mirroring supported with any OS) / **Hot-add and Hot-swappable** using Microsoft Windows Server 2003

SCSI disk controller LSI® 53C1030 / Ultra320 SCSI (LVD 320MB/sec) / dual channel RAID / 64-bit 66MHz PCI / integrated on I/O Board
 SCSI implementation Two channel backplane for internal hot-swap disks (16-bit LVD cable to SCSI backplane) / ServeRAID adapter and SCSI cable required if attaching external storage enclosures
 IDE controller Enhanced IDE ATA-100 controller in South Bridge / one one-drop IDE cable to backplane for diskette and CD-ROM
 Disk - capacity/bays No disks standard / supports up to 15K rpm SCSI disks / two hot-swap bays / converged tray / 80-pin SCA-2 connectors

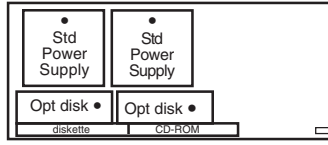
Mechanical **EIA 19" rack models (4U⁴)** x 28" deep / supported in NetBAY™ Racks (such as NetBAY42 SR, NetBAY42 ER)
 Chipset **IBM XA-64™ chipset** / IBM Cache and Scalability Controller with L4 cache controller / IBM Memory I/O Controller with two remote I/O ports (each to a IBM PCI-X Host Bridge) / each IBM PCI-X Host Bridge provides three peer PCI buses / PCI 2.2 Bus E supports graphics, adapter slot with Remote Supervisor Adapter, VIA® 82C686B South Bridge (IDE ATA-100, USB, Super I/O PC97317VUL [keyboard, mouse]) / PCI 2.2 Bus F supports SCSI, ethernet / PCI-X Bus A, B, C, D support PCI-X slots / designed to the PCI-X 1.0 specification
 Slots (Active™ PCI-X) **Six hot-swap PCI-X 1.0 slots¹⁰** available with power and attention indicator lights (optical sensors control power to slot) / **hot replace, hot upgrade, hot expansion** / separated by insulative plastic dividers
 RXE Expansion Port One RXE-100 Remote Expansion Enclosure can be shared between two x455 4-way, 8-way, or 16-way xSeries 455 servers or attached alone. Both PCI-X 6-packs must be installed to support **RIO sharing** as each server will access six additional PCI-X slots.

CD-ROM / diskette 24X/10X/24X/8X⁶ CD-RW/DVD-ROM Combo IV drive standard / two removable Ultrabay™ 2000 bays
 Ethernet Dual Broadcom® 5704 10/100/1000 ethernet controller / on I/O Board / full duplex / 64-bit 66MHz PCI bus / Wake on LAN®
 Graphics controller SVGA / ATI™ Rage XL / on I/O Board / 8MB SDRAM 125MHz std/max / up to 1280x1024 at 64K colors at 85Hz
 Ports *Rear:* RXE-100 Expansion Port (to connect optional RXE-100), RXE Management Port, two USB (Vers 1.1), analog DB-15 graphics, ethernet / no serial or parallel ports / *no keyboard or mouse* / *Front:* one USB (Vers 1.1)

Security Power-on and administrator passwords / unattended boot / selectable boot
 Systems mgmt **Remote Supervisor Adapter** / PCI adapter / includes 10/100 ethernet, RJ-11, and serial connectors / provides remote console and mgmt / power on/off system / monitors power status, op system, temperature, disks, fans, power supplies
 Diagnostics **Light Path Diagnostics™** / primary indicator on information panel with LEDs associated with failing components / IBM Real Time Diagnostics (operated through IBM Director) available even while server running
 Software **ServerGuide™** (CD-ROM installation and configuration utilities), IBM Director, and others

Keyboard / mouse	None standard (because rack-based) / USB only	Itanium 2 1.3GHz/3MB L3 Cache Proc Upg	73P7076
Power supplies	Std: two; max: two / hot-swap / 1050 watts at 220v or 550 watts at 110v / redundant at 220v with two power supplies / front access / worldwide / voltage-sensing / auto-restart / fans in each power supply / PFA	Itanium 2 1.4GHz/4MB L3 Cache Proc Upg	73P7077
Cooling fans	Four hot-swap, redundant, multi-speed fans / one additional fan in each power supply / PFA	Itanium 2 1.5GHz/6MB L3 Cache Proc Upg	73P7078
		512MB PC2100 CL2.5 ECC DDR SDRAM	33L5038
		1GB PC2100 CL2.5 ECC DDR SDRAM	33L5039
		2GB PC2100 CL2.5 ECC DDR SDRAM	33L5040
		IBM 73.4GB 15K Ultra320 SCSI Hot-Swap	32P0735
		IBM 146.8GB 10K Ultra320 SCSI Hot-Swap	32P0728
		IBM ServeRAID™ 6M Ultra320 256MB Cache	02R0988
		IBM RXE-100 Remote Storage Enclosure	86841RX
		4-way to 8-way Expansion Option	73P9911
		8-way to 16-way Supplemental Option	73P9715

Six available 3.3 volt Active PCI-X slots:
 Slot 1: fullsize, 64-bit 66MHz PCI-X, hot-swap Bus A
 Slot 2: fullsize, 64-bit 66MHz PCI-X, hot-swap Bus A
 Slot 3: fullsize, 64-bit 100MHz PCI-X, hot-swap, Bus B
 Slot 4: fullsize, 64-bit 100MHz PCI-X, hot-swap, Bus B
 Slot 5: fullsize, 64-bit 133MHz PCI-X, hot-swap, Bus C
 Slot 6: fullsize, 64-bit 133MHz PCI-X, hot-swap, Bus D
 Slot: used by Remote Supervisor Adp, 32-bit 33MHz



Bay ① 3.5", 0.5", access, open (Ultrabay 2000)
 Bay ② 3.5", 0.5", access, Combo (Ultrabay 2000)
 Bay ③ 3.5", SL 1", access, hot-swap
 Bay ④ 3.5", SL 1", access, hot-swap

- ☞ Dimensions: H7.0" x W19.0" x D27.5"
 - ☞ Dimensions: H178mm x W483mm x D699mm
 - ☞ Max weight: 120 lbs; 54.30kg
 - ☞ Stealth black color
 - ☞ Tool-free serviceability
 - ☞ Access processors, memory, adapters, and SMP Expansion Module from top
 - ☞ Access power supplies and disks from front
 - ☞ Setup Program by pressing F1 at startup
 - ☞ Diagnostics (PC-Doctor) by pressing F2 at startup
 - ☞ SCSISelect by pressing Ctrl+A at startup
 - ☞ Information LED panel and front-accessible pull-out Light Path panel (1st and 2nd level diagnostics without removing cover)
 - ☞ Predictive Failure Analysis® alerts on processors, Xcel4 Server Accelerator Cache, memory, fans, power supplies, and optional disks with IBM Director
- All models:** Maximum internal disk capacity: 293.6GB with two 146.8GB² hot-swap SCSI disks

LIMITED WARRANTY³

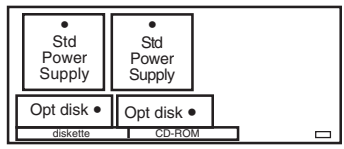
- ☞ 3 year parts and labor
- ☞ International Warranty Service³
- ☞ IBM On Site (IOR), 9-5 Next-Business-Day coverage⁷
- ☞ 3 year on site warranty service upgrade option (in eligible locations):⁷
 - 24 hr x 7 day coverage, 2 hour response time 96P2689
- ☞ Post warranty maintenance services available
- ☞ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ☞ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information
 US models announced November 11, 2003
 • = Hot-swap

IBM® Type-model	Qty x Processor	L3 cache	L4 cache	Memory	Disk	SCSI controller	Mechanical	Slots x bays	SMP/RXE Exp Ports	Hot-swap pwr supplies	Mgmt adapter	Available date
8855-4BY	4 x Itanium 2™ 1.5Ghz	4MB	64MB	2GB Chipkill™	None	2 x Ultra320 4U ⁴	rack	6x2	0/1	Two redundant	PCI	Dec 2004
8855-5BY	4 x Itanium 2 1.6Ghz	6MB	64MB	2GB Chipkill	None	2 x Ultra320 4U	rack	6x2	0/1	Two redundant	PCI	Dec 2004
8855-6BY	4 x Itanium 2 1.6Ghz	9MB	64MB	2GB Chipkill	None	2 x Ultra320 4U	rack	6x2	0/1	Two redundant	PCI	Dec 2004

Positioning Processors	Up to 16-way power for high-end databases, server consolidation and mission-critical business applications											
L2 cache	4 x Intel® Itanium 2™ Processor 1.5GHz or 1.6GHz with 400MHz frontside bus											
L3 cache	256KB each processor / on die of processor / at processor speed											
L4 cache	4MB, 6MB or 9MB each processor / on die of processor / at processor speed											
Processor upgrade	64MB Xcel4™ Server Accelerator Cache											
SMP Exp. Module	ECC / 64-bit 400MHz bus from Cache and Scalability Controller											
Additional boards	4-way SMP per chassis											
Memory	Up to 16-way using four x455 chassis / requires appropriate 8-way or 16-way kits											
SCSI disk controller	One I/O Board (PCI-X Host Bridge, SCSI, ethernet, graphics, South Bridge, Super I/O, slot for Mgmt Adapter), one PCI Board (PCI-X Host Bridge, six PCI-X slots), one Midplane Board (connects SMP Exp Modules, I/O Board, PCI Board)											
SCSI implementation	2GB std (using 2 x 1GB DIMMs)/ 56GB max when installing 2GB DIMMs into 28 slots / 28 DIMM gold-connector slots											
IDE controller	PC2100 266MHz registered 184-pin ECC DDR-SDRAM DIMMs / DIMMs must be installed in matched pairs [a bank] / 2-way interleaving / Active Memory™ with Error Checking and Correcting (ECC), Chipkill™, Memory ProteXion™ (1, 2, 3, or 4-bit errors on same chip; up to two chips at once; redundant bit steering) / via memory mirroring (memory mirroring supported with any OS) / Hot-add and Hot-swappable using Microsoft Windows Server 2003											
Disk - capacity/bays	LSI® 53C1030 / Ultra320 SCSI (LVD 320MB/sec) / dual channel RAID / 64-bit 66MHz PCI / integrated on I/O Board											
Mechanical	Two channel backplane for internal hot-swap disks (16-bit LVD cable to SCSI backplane) / ServeRAID adapter and SCSI cable required if attaching external storage enclosures											
Chipset	Enhanced IDE ATA-100 controller in South Bridge / one one-drop IDE cable to backplane for diskette and CD-ROM											
Slots (Active™ PCI-X)	No disks standard / supports up to 15K rpm SCSI disks / two hot-swap bays / converged tray / 80-pin SCA-2 connectors											
RXE Expansion Port	EIA 19" rack models (4U ⁴) x 28" deep / supported in NetBAY™ Racks (such as NetBAY42 SR, NetBAY42 ER)											
CD-ROM / diskette	IBM XA-64™ chipset / IBM Cache and Scalability Controller with L4 cache controller / IBM Memory I/O Controller with two remote I/O ports (each to a IBM PCI-X Host Bridge) / each IBM PCI-X Host Bridge provides three peer PCI buses / PCI 2.2 Bus E supports graphics, adapter slot with Remote Supervisor Adapter, VIA® 82C686B South Bridge (IDE ATA-100, USB, Super I/O PC97317VUL [keyboard, mouse]) / PCI 2.2 Bus F supports SCSI, ethernet / PCI-X Bus A, B, C, D support PCI-X slots / designed to the PCI-X 1.0 specification											
Ethernet	Six hot-swap PCI-X 1.0 slots ¹⁰ available with power and attention indicator lights (optical sensors control power to slot) / hot replace, hot upgrade, hot expansion / separated by insulative plastic dividers											
Graphics controller	One RXE-100 Remote Expansion Enclosure can be shared between two x455 4-way, 8-way, or 16-way xSeries 455 servers or attached alone. Both PCI-X 6-packs must be installed to support RIO sharing as each server will access six additional PCI-X slots.											
Ports	CD-RW/DVD-ROM Combo IV drive standard / two removable Ultrabay™ 2000 bays											
Security	Dual Broadcom® 5704 10/100/1000 ethernet controller / on I/O Board / full duplex / 64-bit 66MHz PCI bus / Wake on LAN®											
Systems mgmt	SVGA / ATI® Rage XL / on I/O Board / 8MB SDRAM 125MHz std/max / up to 1280x1024 at 64K colors at 85Hz											
Diagnostics	Rear: RXE-100 Expansion Port (to connect optional RXE-100), RXE Management Port, two USB (Vers 1.1), analog DB-15 graphics, ethernet / no serial or parallel ports / no keyboard or mouse / Front: one USB (Vers 1.1)											
Software	Power-on and administrator passwords / unattended boot / selectable boot											
Keyboard / mouse	Remote Supervisor Adapter / PCI adapter / includes 10/100 ethernet, RJ-11, and serial connectors / provides remote console and mgmt / power on/off system / monitors power status, op system, temperature, disks, fans, power supplies											
Power supplies	Light Path Diagnostics™ / primary indicator on information panel with LEDs associated with failing components / IBM Real Time Diagnostics (operated through IBM Director) available even while server running											
Cooling fans	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director, and others											
	None standard (because rack-based) / USB only											
	Std: two; max: two / hot-swap / 1050 watts at 220v or 550 watts at 110v / redundant at 220v with two power supplies / front access / worldwide / voltage-sensing / auto-restart / fans in each power supply / PFA											
	Four hot-swap, redundant, multi-speed fans / one additional fan in each power supply / PFA											

<p>Six available 3.3 volt Active PCI-X slots:</p> <p>Slot 1: fullsize, 64-bit 66MHz PCI-X, hot-swap Bus A</p> <p>Slot 2: fullsize, 64-bit 66MHz PCI-X, hot-swap Bus A</p> <p>Slot 3: fullsize, 64-bit 100MHz PCI-X, hot-swap, Bus B</p> <p>Slot 4: fullsize, 64-bit 100MHz PCI-X, hot-swap, Bus B</p> <p>Slot 5: fullsize, 64-bit 133MHz PCI-X, hot-swap, Bus C</p> <p>Slot 6: fullsize, 64-bit 133MHz PCI-X, hot-swap, Bus D</p> <p>Slot: used by Remote Supervisor Adp, 32-bit 33MHz</p>	<ul style="list-style-type: none"> ⊖ Dimensions: H6.9" x W17.3" x D28.1" ⊖ Dimensions: H175mm x W440mm x D713mm ⊖ Max weight: 120 lbs; 54.30kg ⊖ Stealth black color ⊖ Tool-free serviceability ⊖ Access processors, memory, adapters, and SMP Expansion Module from top ⊖ Access power supplies and disks from front ⊖ Setup Program by pressing F1 at startup ⊖ Diagnostics (PC-Doctor) by pressing F2 at startup ⊖ SCSISelect by pressing Ctrl+A at startup ⊖ Information LED panel and front-accessible pull-out Light Path panel (1st and 2nd level diagnostics without removing cover) ⊖ Predictive Failure Analysis® alerts on processors, Xcel4 Server Accelerator Cache, memory, fans, power supplies, and optional disks with IBM Director 	<p>LIMITED WARRANTY³</p> <ul style="list-style-type: none"> ⊖ 3 year parts and labor ⊖ International Warranty Service³ ⊖ IBM On Site (IOR), 9-5 Next-Business-Day coverage⁷ ⊖ 3 year on site warranty service upgrade option (in eligible locations):⁷ <ul style="list-style-type: none"> • 24 hr x 7 day coverage, 2 hour response time 96P2689 ⊖ Post warranty maintenance services available ⊖ Other ServicePac options at http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf ⊖ 24x7¹⁴ toll-free support for warranty issues during the warranty period³
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- Bay ① 3.5", 0.5", access, open (Ultrabay 2000)
- Bay ② 3.5", 0.5", access, Combo (Ultrabay 2000)
- Bay ③ 3.5", SL 1", access, hot-swap
- Bay ④ 3.5", SL 1", access, hot-swap

All models: Maximum internal disk capacity: 293.6GB with two 146.8GB² hot-swap SCSI disks

See footnotes for important warranty information
 • = Hot-swap

IBM® Type-model	Qty x Processor	L2 cache	L3 cache	Memory	DIMM slots	Disks	SCSI controller	Mechanical	Slots x bays	Hot-swap pwr supplies	Warranty (yrs.)	Available date
8872-1RY	2 x Xeon™ MP 2.83GHz	1MB	4MB	2x1GB	8	None	SAS	3U ⁴ rack	6x7	2 x 1300	3	Jun 2005
8872-2RY	2 x Xeon MP 3.0GHz	1MB	8MB	2x1GB	8	None	SAS	3U rack	6x7	2 x 1300	3	Jun 2005
8872-3RY	2 x Xeon MP 3.33GHz	1MB	8MB	2x1GB	8	None	SAS	3U rack	6x7	2 x 1300	3	Jun 2005
8872-5RY	2 x Xeon MP 7020 2.66GHz	2MB		2x1GB	8	None	SAS	3U rack	6x7	2 x 1300	3	Nov 2005
8872-6RY	2 x Xeon MP 7040 3.0GHz	2x2MB		2x1GB	8	None	SAS	3U rack	6x7	2 x 1300	3	Nov 2005

Processors Two 64-bit Intel® Xeon™ Processor MP up to 3.33GHz¹ 667MHz FSB Single Core / Two 64-bit Xeon Processor MP up to 3.0GHz 667MHz FSB Dual Core / NetBurst™ / Extended Memory 64 Technology™ (EM64T) / Hyper-Threading technology
L2 cache 1 or 2MB / per core / XceL4v™ Dynamic Server Cache (256MB per 4 CPUs starting at 8-way)
L3 cache 4 or 8MB / integrated / at processor speed
Processor upgrade 4-way SMP / up to four Xeon Processors (same speed/cache/core) per chassis / Dual Core Capable / up to 32-way (eight chassis interconnected)
Implementation System board contains four Intel 604-pin micro-PGA4 ZIF sockets, one memory board slot, six Active™ PCI-X 2.0 slots, and integrated Serial Attached SCSI, ethernet, graphics

Active Memory™ 2GB std / 64GB max per chassis using high-capacity memory card / 512GB max (eight chassis interconnect) / two memory cards standard (up to four) with 4 DIMM gold-connector slots each / DIMMs must be installed in matched pairs / PC2-3200 400MHz registered 240-pin DDR2-SDRAM RDIMMs / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ / Memory ProteXion™ (redundant bit steering) and Memory Mirroring™ and Hot-swap (non-OS specific) / Hot-add supported only with Microsoft® Windows™ Server 2003™

SCSI disk controller ALL: Adaptec® AIC-9410 / Serial Attached SCSI (SAS) 3.0GHz (3GB/sec) / 64-bit 266MHz PCI-X 2.0 / ServeRaid 8i optional with dedicated slot
SCSI connectors Controller wired to SAS backplane
SCSI cabling One standard SAS cable attached to six-bay backplane
IDE controller / cabling Enhanced IDE ATA-33 controller in CSB6 South Bridge
Disk - capacity None / supports up to 73GB 10,000 rpm disks
Disk - bays Six 2.5" hot-swap bays / converged tray / 80-pin SCA-2 connectors
Mechanical EIA 19" rack models (3U⁴) x 28" deep / supported in NetBAY™ Racks (such as NetBAY42 SR, NetBAY42 ER) / connect eight chassis (x460 or MXE-460) to achieve 32-way in 24U

Chipset IBM XA-64e™ 3rd Generation chipset / Integrated Processor and Memory Controller / Supports EM64T / Support for external scalability and memory control / 2 IBM PCI-X 2.0 Host Bridges / Host Bridge One supports video, optional ServeRaid 8i, ServerWorks® CSB6 South Bridge (IDE, USB, bus for Super I/O NS 87417 [diskette, keyboard, mouse]), Dual Port Broadcom 5704, and 2 PCI-X 2.0 slots / Host Bridge Two supports 4 PCI-X 2.0 slots

Slots (Active™) Six total PCI-X 2.0 slots available with power and attention indicator lights (optical sensors control power to slot) / hot replace, hot upgrade, hot expansion / separated by insulative plastic dividers, all slots supported up to 266MHz

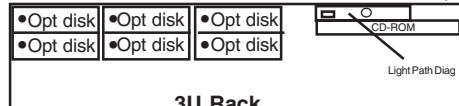
CD-ROM / diskette 8X⁶ Slim DVD-ROM / none
Ethernet Broadcom® 5704 10/100/1000 dual ethernet per chassis / on systemboard / 64-bit 266MHz PCI-X 2.0 / Wake on LAN® / Alert on LAN™ 2

Graphics controller SVGA / ATI® 7000M / on planar / 16MB SDRAM std/max / 32-bit 33MHz PCI 2.2 bus
Ports Rear: Three Scalability ports, RSA ethernet, RSA serial, two USB (Ver 2.0), keyboard, mouse, analog DB-15 graphics, two ethernet, std. serial, RS-485 / Front: One USB (Ver 2.0)

Security Power-on and administrator passwords / unattended boot / selectable boot
Systems management Remote Supervisor Adapter II slimline / PCI adapter / includes 10/100 ethernet, RJ-11, and serial connectors / provides remote console and mgmt / power on/off system / monitors power status, op system, temperature, disks, fans, power supplies

Diagnostics Drop down Light Path Diagnostics / primary indicator on information panel with LEDs associated with failing components / IBM Real Time Diagnostics (operated through IBM Director)

Software		
IBM ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director	2GB PC2-3200 CL3 ECC RDIMM (2x1GB)	73P2866
	4GB PC2-3200 CL3 ECC RDIMM (2x2GB)	73P2867
	8GB PC2-3200 CL3 ECC RDIMM (2x4GB)	30R5145
	Active Memory 4-slot Expansion Card	13M7409
	Xeon MP 2.83GHz/1MB L2 4MB L3 Proc Upg	13N0715
	Xeon MP 3.00GHz/1MB L2 8MB L3 Proc Upg	13N0714
	Xeon MP 7020 2.67GHz/2x1MB L2 4MB L3Proc Upg	25R8941
	Xeon MP 7040 3.0GHz/2x2MB L2 8MB L3 Proc Upg	25R8942
	Xeon MP 3.33GHz/1MB L2 8MB L3 Proc Upg	13N0713
	IBM ServeRAID™-8i SAS-SCSI Adapter	13N2227
	IBM ServeRAID 6M U320 256MB Adapter	02R0988
	IBM 36.4GB 10K 2.5" SAS Hot-swap HDD	26K5654
	IBM 73.4GB 10K 2.5" SAS Hot-Swap HDD	26K5655
	XpandOnDemand™ Scalability Cable - 2.3M	13M7414
	XpandOnDemand™ Scalability Cable - 2.9M	13M7416
	MXE-460 Modular Expansion Enclosure	8874-1RY
	Dual Core X3 upgrade kit (available 12/05)	39Y6580
	Other options at ibm.com/pc/us/accessories	

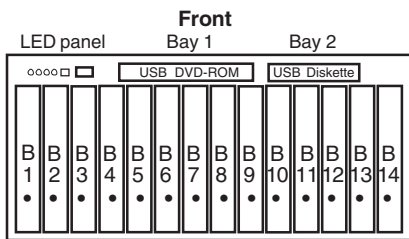
<p>8W = 2 x XpandOnDemand Scalability kits 2.3m 16W = 6 x XpandOnDemand Scalability kits 2.3m 32W = 8 x XpandOnDemand Scalability kits 2.3m + 4 x2.9m Six available 3.3 volt PCI-X 2.0 slots: Slot 1 - fullsize, 64-bit, 266MHzPCI-X, hot-swap Slot 2 - fullsize, 64-bit, 266MHzPCI-X, hot-swap Slot 3 - fullsize, 64-bit, 266MHzPCI-X, hot-swap Slot 4 - fullsize, 64-bit, 266MHzPCI-X, hot-swap Slot 5 - fullsize, 64-bit, 266MHzPCI-X, hot-swap Slot 6 - fullsize, 64-bit, 266MHzPCI-X, hot-swap *exclusive slot available for ServeRAID 8i adapter</p>  <p>3U Rack</p> <p>Bay ① 5.25", 0.5" access, std CD-ROM Bay ② 2.5", SL 1", access, hot-swap, open Bay ③ 2.5", SL 1", access, hot-swap, open Bay ④ 2.5", SL 1", access, hot-swap, open Bay ⑤ 2.5", SL 1", access, hot-swap, open Bay ⑥ 2.5", SL 1", access, hot-swap, open Bay ⑦ 2.5", SL 1", access, hot-swap, open</p> <p>Max BTU Output: Ship Configuration: 1,262 Btu/hr (370 watts) Full Configuration: 4,094 Btu/hr (1200 watts)</p>	<p>Dimensions: H5.05" x W17.32" x D28.15" Dimensions: H128.35mm x W440.0mm x D715mm Weight: 70 to 85lbs; 31.75 to 38.5kg Stealth black color Tool-free serviceability Access adapters, power supplies, processors, memory and systemboard from top Setup Program by pressing F1 at startup Diagnostics (PC-Doctor) by pressing F2 at startup SCSISelect by pressing Ctrl+A at startup Drop Down Light Path Diagnostics (level 2 diagnostic panel) for outside view of potential problem without removing cover Information LED panel, diagnostic LED panel, and component LEDs give visual indications of system well-being Predictive Failure Analysis® alerts on disks, power supplies, memory, processors, VRMs, and fans with IBM Director</p> <p>All models: Maximum internal disk capacity: 440.4GB with six 73.4GB² hot-swap SAS disks</p>	<p>LIMITED WARRANTY³</p> <p>↔ 3 year parts and labor ↔ International Warranty Service³ ↔ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷ ↔ On site service upgrade options (in eligible locations):⁷</p> <ul style="list-style-type: none"> • 3 year IOR 24x7, 4 hr avg response 96P2688 • 3 year IOR 24x7, 2 hr avg response 96P2689 • 4 year IOR 9x5, NBD response 96P2690 • 5 year IOR 9x5, NBD response 96P2694 <p>↔ Other ServicePac options at http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf ↔ 24x7¹⁴ toll-free support for warranty issues during the warranty period³</p>
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IBM BladeCenter® (withdrawn)

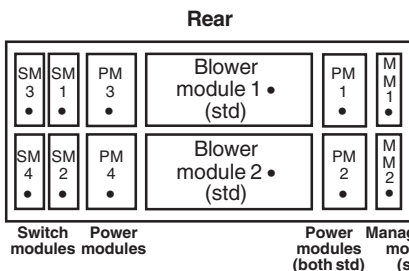
xREF by STG Field Skills and Education Team

IBM® Type-model	Supported Blades	Blade Servers std / max	Switch modules std / max	Switch modules (type)	Management modules std / max	Power modules std / max	Power Module Wattage	Blower modules std / max	Mechanical	Available date
8677-3XX	HS20/HS21/HS40/JS20/JS21/LS20/LS21**/LS41**	0 / 14	0 / 4	Enet, Fibre Ch, IB, OPM and CPM	1 / 2	2 / 4	2000W	2 / 2	7U ⁴ rack	Oct 2004
Positioning Description	Flexible, innovative design provides investment protection and reduces deployment costs Provides common resources shared by blade servers such as power, system management, cabling, ethernet management and expansion, external Fibre Channel storage switching and connectivity, and I/O (diskette drive, optical drive, and ports for USB, keyboard, video, mouse)									
Blade bays	Supports all blades and SCSI Storage Expansion Units / 14 hot-pluggable bays / front access									
Switch modules	Std: none; max: four / hot-swap / rear access / Gb Ethernet / Fibre Channel / InfiniBand / Optical Pass-thru / Copper Pass-thru									
Advanced Management Module (8677-3RX only)	Std: one on 3RX; max: two / hot-swap / rear access / comprehensive system management functions / PowerPC®440GP controller / communicates with integrated system management processor on each server blade / complete KVM switch local functionality / ports: DB-15 analog video port, Dual USB 2.0, Serial(RJ45), 10/100 ethernet remote management connection port / all ports shared by up to 14 blade servers									
Management Module (8677-3XX only)	Std: one on 3XX; max: one or two / hot-swap / rear access / comprehensive system management functions / PowerPC® 401 controller / communicates with integrated system management processor on each server blade / multiplexor for console connectivity / ports: DB-15 analog video port, PS/2 keyboard port, PS/2 mouse port, 10/100 ethernet remote management connection port / all ports shared by up to 14 blade servers									
Power modules	Std: two in bays 1 and 2 (two 9ft IEC 320-C13 to C14 or two IEC 320-C19 to C20 cables for intrarack power distribution); max: four / hot-swap / rear access / 2000 watts at 220v / both redundant to each other (N+N redundancy) / two std modules supply power to all modules and blade bays 1 through 6 / power for bays 7 through 14 requires two additional power modules in bays 3 and 4 (redundant to each other) / worldwide / voltage-sensing / auto-restart / no fans power module(s)									
Blower modules	Std: two; max: two / hot-swap / redundant / variable speed / rear access / up to 325 cubic ft per min (CFM) / front to back airflow									
Mechanical DVD / diskette / USB	EIA 19" rack models (7U⁴) x 28" deep / supported in NetBAY™ Racks (such as NetBAY42 ER, NetBAY42 SR) 3XX/3RX: 8X-24X ⁶ DVD-ROM / 3.5" 1.44MB diskette drive / one USB port (Version 1.1) / all USB interface / not removable / front access / shared by up to 14 blade servers / requests for CD-ROM, diskette drive, and USB port by pressing CD select button on server blade front panel									
Keyboard / mouse	None standard / provides KVM console support / requests for keyboard, mouse, and video by pressing the display button on server blade front panel / supports NetBAY ACT CAT5 chaining solutions									
Ports	Rear: keyboard (PS/2), mouse (PS/2), analog DB-15 graphics (on standard mgmt module) / no serial or parallel ports / Front: one USB (Version 1.1)									
Security	Login password for remote connection / secure socket layer (SSL) security for remote management access / recommended in rack environment providing security through lockable doors or other security measures									
Ethernet	One of the dual integrated gigabit ethernet controllers on each blade server connects to an optional GB Ethernet Switch Module (the second ethernet controller requires a second optional GB Ethernet Switch Module)									
Systems mgmt	Provides remote console and mgmt / power on/off blades/modules / monitors power status, operating system, temperature, disks, blowers, power modules / system diagnostic programs provided through IBM Director software									
System LED panel	System LED panel provides power-on, location, over-temperature, information, and system-error conditions									

Cisco Systems Fiber Intelligent Gigabit Ethernet Switch Module	32R1888	IBM Advanced Management Module	25R5778
Cisco Systems Gigabit Ethernet Switch Module	32R1892	IBM KVM/Redundant Management Module	48P7055
Nortel Networks Layer 2-7 Gigabit Ethernet Switch Module	32R1859	1U 17" Flat Panel Monitor Console Kit (with kybd/monitor)	17231UX
Brocade 10 port 4Gb SAN Switch Module	32R1813	2U 17" Flat Panel Monitor Console Kit (with kybd/monitor)	17232UX
Brocade 20 port 4Gb SAN Switch Module	32R1812	IBM BladeCenter 4-port GB Ethernet Switch Module	48P7054
Cisco Systems InfiniBand Switch Module for BladeCenter	32R1900	IBM BladeCenter 2-port Fibre Channel Switch Module	48P7062
NetBAY42 Enterprise Rack Cabinet	930842S	IBM 2-button mouse PS/2	28L3673
NetBAY42 Standard Rack Cabinet	9306420	IBM T115 15" Flat Panel Color Monitor (black)	494215U
NetBAY25 Standard Rack Cabinet	9306250	APC Smart-UPS 5000RMB (208V)	37L6861
IBM 2000W Power Supply Module (includes two modules)	26K4816	• Other options at ibm.com/pc/us/accessories	



- ↳ Dimensions: H12.0" x W17.5" x D28"
- ↳ Dimensions: H304.2mm x W444mm x D711.2mm
- ↳ Weight: 99 to 240 lb; 44.91 to 108.86kg
- ↳ Stealth black color bezel
- ↳ Tool-free customer serviceability
- ↳ Access server blades and SCSI Expansion Units from front
- ↳ Access modules from rear
- ↳ Midplane in center of system to interface for all major system components
- ↳ Predictive Failure Analysis® alerts on blowers, blade server memory, processor(s), and optional disk(s) with IBM Director



Switch module bay	Switch module function
1	Ethernet link 1 for all blade servers
2	Ethernet link 2 for all blade servers
3	Network connection 1 for all blade server I/O expansion options (Fibre Channel)
4	Network connection 2 for all blade server I/O expansion options (Fibre Channel)

LIMITED WARRANTY³

- ↳ 3 year parts and labor
- ↳ International Warranty Service³
- ↳ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- ↳ On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 24x7, 2 hr avg response (ServicePac® part num 21P2065)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 21P2085)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 41L2736)
 - 5 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9207)
 - 5 year IOR 24x7, 2 hr avg response (ServicePac part num 69P9209)
- ↳ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ↳ 24x7¹⁴ toll-free support for warranty issues during the warranty

IBM® Type-model	Supported Blades	Blade servers std/max	Switch modules std/max	Switch modules (type)	Management modules std/max	Power modules std/max	Power module Wattage	Blower modules std/max	Mechanical	Available date
8677-3RX**	HC10/HS12/HS20/HS21/HS21XM/HS22/HS40/JS12/JS20/JS21/LS20/LS21/LS22/LS41/LS42/QS20	0/14	0/4	SAS/Enet/FC/IB/OPM/CPM	1/2	2/4	2000W	2/2	7U ⁴ rack	Mar 2006
Positioning Description	Flexible, innovative design provides investment protection and reduces deployment costs Provides common resources shared by Blade servers such as power, system management, cabling, ethernet management and expansion, external storage, switching and connectivity, and I/O (diskette(some), optical drive(some), and ports for USB, keyboard, video, mouse)									
Blade bays	14 hot-swappable bays / front access / supports most Blade servers and all Blade expansion units									
Switch modules	Std/max: none/four / hot-swap / rear access / SAS / Gb Ethernet / Fibre Channel / InfiniBand / Optical & Copper Pass-thru									
Advanced Management module	Std/max: one/two / hot-swap / rear access / comprehensive system management functions / PowerPC®440GP controller / communicates with integrated system management processor on each server blade / complete KVM switch local functionality / ports: DB-15 analog video port, two USB 2.0, Serial(RJ45),10/100 ethernet remote management connection port / all ports shared by up to 14 Blade servers									
Power modules	Std/max: two/four in bays 1 and 2 (two 9ft IEC 320-C13 to C14 or two IEC 320-C19 to C20 cables for intrarack power distribution) / hot-swap / rear access / 2000W(3RX & 3SX) at 220v / 2320W(4SX) at 220v / both redundant to each other (N+N redundancy) / two std modules supply power to all modules and blade bays 1 through 6 / power for bays 7 through 14 requires two additional power modules in bays 3 and 4 (redundant to each other) / worldwide / voltage-sensing / auto-restart									
Blower modules	Std/max: two / hot-swap / redundant / variable speed / rear access / up to 325 cubic ft per min (CFM) / front to back airflow									
Mechanical DVD / diskette / USB	EIA 19" rack models (7U⁴) x 28" deep / supported in NetBAY™ Racks 3RX: 8X-24X ⁶ DVD-ROM / 3.5" 1.44MB diskette drive / one USB port (Version 1.1) / fixed / front access / shared by up to 14 Blade servers / requests for optical, diskette and USB port by pressing media select button on server blade front panel									
Keyboard / mouse	None standard / provides KVM console support / requests for keyboard, video and mouse by pressing the display button on server blade front panel / supports NetBAY ACT CAT5 chaining solutions									
Ports	Rear: two USB 2.0 (keyboard & mouse), DB-15 graphics, two RJ45 (Serial, 10/100 ethernet remote mgmt connection port) / all on Advanced Management module and shared by up to 14 Blade servers / no serial or parallel ports Front: one USB (3RX Version 1.1) (3SX & 4SX Version 2.0)									
Security	Login password for remote connection / secure socket layer (SSL) security for remote management access / recommended in rack environment providing security through lockable doors or other security measures									
Ethernet	One of the dual integrated gigabit ethernet controllers on each Blade server connects to an optional <i>Gigabit Ethernet Switch Module</i> (the second ethernet controller requires a second optional <i>Gigabit Ethernet Switch Module</i>)									
Systems mgmt	Provides remote console and mgmt / power on/off Blades/modules / monitors realtime power status, operating system, temperature, disks, blowers, power modules / system diagnostic programs provided through IBM Director software									
System LED panel	System LED panel provides power-on, location, over-temperature, information and system-error conditions									

Cisco Systems Fiber Intelligent Gigabit Ethernet Switch Module	32R1888	IBM Advanced Management Module	25R5778
Cisco Systems Gigabit Ethernet Switch Module	32R1892	IBM KVM/Redundant Management Module	48P7055
Nortel Networks Layer 2-7 Gigabit Ethernet Switch Module	32R1859	1U 17" Flat Panel Monitor Console Kit (with kybd/monitor)	17231UX
Brocade 10 port 4Gb SAN Switch Module	32R1813	2U 17" Flat Panel Monitor Console Kit (with kybd/monitor)	17232UX
Brocade 20 port 4Gb SAN Switch Module	32R1812	IBM BladeCenter 4-port GB Ethernet Switch Module	48P7054
Cisco Systems InfiniBand Switch Module for BladeCenter	32R1900	IBM BladeCenter 2-port Fibre Channel Switch Module	48P7062
NetBAY42 Enterprise Rack Cabinet	930842S	IBM 2-button mouse PS/2	28L3673
NetBAY42 Standard Rack Cabinet	9306420	IBM T115 15" Flat Panel Color Monitor (black)	494215U
IBM 2320W Power Supply Option (incl. two modules)(3SX & 4SX only)	46M0508	APC Smart-UPS 5000RMB (208V)	37L6861
IBM 2000W Power Supply Option (incl. two modules)(3RX only)	26K4816	Other options at ibm.com/products/us	

Front

Rear

- ↳ Dimensions: H12.0" x W17.5" x D28"
- ↳ Dimensions: H304.2mm x W444mm x D711.2mm
- ↳ Weight: 99 to 240 lb; 44.91 to 108.86kg
- ↳ Stealth black color bezel
- ↳ Tool-free customer serviceability
- ↳ Access server blades and SCSI Expansion Units from front
- ↳ Access modules from rear
- ↳ Midplane in center of system to interface for all major system components
- ↳ Predictive Failure Analysis® alerts on blowers, blade server memory, processor(s), and optional disk(s) with IBM Director

Switch Module	Switch Module function
1	Ethernet link 1 for all blade servers
2	Ethernet link 2 for all blade servers
3	Network connection 1 for all blade server I/O expansion options (Fibre Channel)
4	Network connection 2 for all blade server I/O expansion options (Fibre Channel)

LIMITED WARRANTY³

- ↳ **3 year parts and labor International Warranty Service³**
- ↳ **On site 8 am - 5 pm, Monday - Friday coverage excluding holidays, next business day response time⁷**
- ↳ **On site service upgrade options (in eligible locations):⁷**
- 3 year IOR 24x7, 4 hr avg response (ServicePac part num 51J8882)
- 3 year IOR 9x5, 4 hr avg response (ServicePac part num 61P7613)
- 3 year IOR 9x5, NBD response (ServicePac part num 51J8880)
- 4 year IOR 24x7, 4 hr avg response (ServicePac part num 51J8885)
- 4 year IOR 9x5, 4 hr avg response (ServicePac part num 51J8884)
- 5 year IOR 9x5, NBD response (ServicePac part num 51J8886)
- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ↳ **24x7¹² toll-free support for warranty issues during the warranty period³**

**Limitations
 HS21(4C) - up to 80W models only, HS21 XM (2C & 4C) - up to 80W models only
 LS21/41 - up to 68W models only, LS22/42 - except 115W models

IBM® Type-model	Supported Blades	Blade Servers std / max	Switch modules std / max	Switch modules (type)	Advanced Management modules std / max	Power modules std / max	Power Module Wattage	Blower modules std / max	Blower Mechanical	Available date
8852-4XX	HC10/HS12/HS20/HS21/HS21XM/HS22/JS12/JS20/JS21/JS22/JS23/JS43/LS20/LS21/LS22/LS40/LS41/LS42/QS21/QS22	0/14	0/4	SAS/Enet/FC/IB/OPM/CPM	1/2	2/4	2900W	2/2	9U ⁴ rack	Mar 2006
Positioning Description	Revolutionary design provides the most efficient infrastructure building block for adding scale and capacity Provides common resources shared by blade servers such as power, system management, cabling, ethernet management and expansion, external Fibre Channel switching and connectivity, and I/O									
Blade bays	Supports all blades and Blade Expansion Units / 14 hot-swappable bays / front access									
Switch modules	Std/max: none/ten / hot-swap / rear access / Gb Ethernet / Fibre Channel / InfiniBand / Optical Pass-thru / Copper Pass-thru									
Advanced Management Modules	Std/max: one/two / hot-swap / rear access / comprehensive system management functions / PowerPC®440GP controller / communicates with integrated system management processor on each server blade / complete KVM switch local functionality / ports: DB-15 analog video port, Dual USB 2.0, Serial(RJ45), 10/100 ethernet remote management connection port									
Power modules	Std: two; max: four / hot-swap / front access / 2900 watts at 220V / redundant within pair (N+N redundancy) / two std modules supply power to blade bays 1 through 7 and both AMMs, SMs 1 & 2, and all fans / two optional modules in bays 3 and 4 required if blade bays 8-14 or IO bays 5-10 used / worldwide / voltage-sensing / auto-restart / 3 fans per power module									
Blower modules	Std/max: two / hot-swap / redundant / variable speed / rear access / front to back airflow									
Mechanical	EIA 19" rack models (9U⁴) x 29" deep / supported in NetBAY™ Racks (such as NetBAY42 ER)									
Media Tray	4XX: DVD-ROM / two USB ports (Version 2.0) / Full Light Path Diagnostic panel / customer serviceable / front access / shared by all blade servers / requests for optical and USB port by pressing DVD select button on server blade front panel									
Keyboard / mouse	None standard / USB / provides KVM console support / requests for keyboard, mouse, and video by pressing the display button on server blade front panel / supports NetBAY ACT CAT5 chaining solutions									
Ports	Rear: two USB, two RJ45 (one ethernet and one serial), analog DB-15 graphics (on advanced mgmt module) / one serial aggregate for break out cable; Front: two USB (Media Tray)									
Security	Login password for remote connection / secure socket layer (SSL) security for remote management access / recommended in rack environment providing security through lockable doors or other security measures									
Ethernet	Dual integrated gigabit ethernet controllers on each blade connects to optional <i>GB Ethernet Switch Module</i>									
Systems management	Provides remote console and mgmt / power on/off/reset blades/modules / monitors power status, operating system, temperature, disks, blowers, power modules / system diagnostic programs provided through IBM Director software / Remote Deployment Manager									

1U 17" Flat Panel Monitor Console Kit (with kybd/monitor)	17231UX	BladeCenter H 2900W Power Module pair with Fan Packs	31R3335
2U 17" Flat Panel Monitor Console Kit (with kybd/monitor)	17232UX	IBM Advanced Management Module	25R5778
NetBAY ACT Local Console Manager (CAT5 KVM cabling)	1735L04	BladeCenter H Double 30A NEMA L6-30P (208V) 4.3M	25R5783
NetBAY ACT Remote Console Manager (CAT5 KVM cabling)	1735R16	BladeCenter H Dual 32A IEC 309 P+N+G/16A IEC 320-C20 (230V) 4.3M	25R5784
NetBAY ACT 250mm KVM Conversion Option	32P1636	BladeCenter H Triple 16A IEC 320-C20 (200-240V) 2.8M	25R5785
NetBAY ACT 1.5m KVM Conversion Option	32P1652	BladeCenter H Double 30A KSC 8305 (220V) 4.3M (Korea)	25R5811
Cisco Systems Fiber Intelligent Gigabit Ethernet Switch Module	32R1888	BladeCenter H Dual 32A AS/NZS 3112/16A IEC320-C20 (ANZ)	25R5812
Cisco Systems Gigabit Ethernet Switch Module	32R1892	BladeCenter H Serial Port Breakout Cable	25R5806
Nortel Networks Layer 2-7 Gigabit Ethernet Switch Module	32R1859	IBM BladeCenter 4-port GB Ethernet Switch Module	48P7054
Brocade 10 port 4Gb SAN Switch Module	32R1813	IBM BladeCenter 2-port Fibre Channel Switch Module	48P7062
Brocade 20 port 4Gb SAN Switch Module	32R1812		
Cisco Systems InfiniBand Switch Module for BladeCenter	32R1900		
NetBAY42 Enterprise Rack Cabinet		Other options at ibm.com/products/us Solutions available from IBM BladeCenter Alliance program partners	

Front

Rear

- ◇ Dimensions: H15.75" x W19" x D29"
- ◇ Dimensions: H400.05mm x W482.6mm x D766.6mm
- ◇ Weight: 90 to 350 lb; 40.82 to 158.8kg
- ◇ Stealth black color bezel
- ◇ Tool-free customer serviceability
- ◇ Access server blades, expansion units and power modules from front
- ◇ Access modules from rear
- ◇ Midplane in center of system to interface for all system components
- ◇ Predictive Failure Analysis® alerts on blowers, blade server memory, processor(s), and optional disk(s) with IBM Director

A • Advanced Management Module
B • Switch Module Bays 1 & 2 (dedicated ethernet)
C • Switch Module Bays 3 & 4 –OR– Bridge Slots
D • Dedicated Bridge Module Slots (up to 4)
E • Blowers (2)
F • High Speed Switch Module Bays (4)
G • Light Path Diagnostic Panel
H • Aggregated Serial Connector
I • Consolidated Redundant Power Inputs (2)

LIMITED WARRANTY³

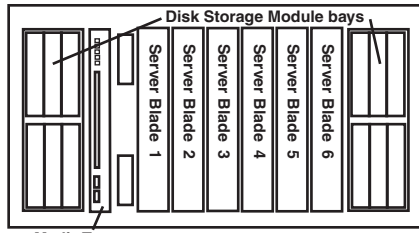
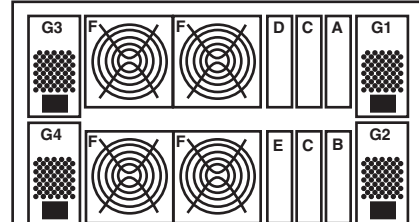
- ↪ **3 year parts and labor**
- ↪ **International Warranty Service³**
- ↪ **On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷**
- ↪ **On site service upgrade options (in eligible locations):⁷**
 - 3 year IOR 24x7, 2 hr avg response** (ServicePac® part num 21P2065)
 - 3 year IOR 24x7, 4 hr avg response** (ServicePac part num 21P2085)
 - 3 year IOR 9x5, 4 hr avg response** (ServicePac part num 41L2736)
 - 5 year IOR 9x5, 4 hr avg response** (ServicePac part num 69P9207)
 - 5 year IOR 24x7, 2 hr avg response** (ServicePac part num 69P9209)
- ↪ **Other ServicePac options at <http://www-1.ibm.com/services/us/its/pdf/wamomxeu.pdf>**
- ↪ **24x7¹⁴ toll-free support for warranty issues during the warranty period³**

IBM® Type-model	Supported Blades	Blade Servers std/max	Switch modules std/max	Switch modules (type)	Advanced			Blower modules std/max	Blower Mechanical	Available date	
					Storage modules std/max	Mgmt modules std/max	Power modules std/max				
8886-1MX	HC10/HS12/HS20/HS21/HS21XM/HS22/JS12/JS21/JS22/JS23/JS43/LS20/LS21/LS22/LS41/LS42/QS21/QS22	0/6	0/3	SAS/Enet/FC/IB/OPM/CPM	0/2	1/1	2/4	950/1450W	4/4	7U ⁴ rack	Dec 2007
8886-E1X ¹	HC10/HS12/HS20/HS21/HS21XM/HS22/JS12/JS21/JS22/JS23/JS43/LS20/LS21/LS22/LS41/LS42/QS21/QS22	0/6	1/3	SAS/Enet/FC/IB/OPM/CPM	1/2	1/1	4/4	950/1450W	4/4	7U rack	Dec 2007

Positioning Description	Greatly Improved BladeCenter Platform for Small Office Environment with Integrated Storage Provides common resources shared by blade servers such as power, system management, cabling, ethernet management and expansion, external Fibre Channel storage switching and connectivity, and I/O
Blade bays Switch modules Storage modules	Supports all blades and Blade Expansion Units / 6 hot-swappable bays / front access <i>Std/max:</i> none/ten / hot-swap / rear access / Gb Ethernet / Fibre Channel / InfiniBand / Optical Pass-thru / Copper Pass-thru <i>Std:</i> some: one; <i>max:</i> two / front access / 2 power supplies required per module / each module supports six hot-swap 3.5" SAS and SATA HDD's
Advanced Management Modules	<i>Std/max:</i> one / hot-swap / rear access / comprehensive system management functions / PowerPC®440GP controller / communicates with integrated system management processor on each server blade / complete KVM switch local functionality / ports: DB-15 analog video port, Dual USB 2.0, Serial(RJ45), 10/100 ethernet remote management connection port
Power modules	<i>Std:</i> two; <i>max:</i> four / hot-swap / rear access / 1450 watts at 220V / 950 watts at 110V / redundant within pair (N+N redundancy) / worldwide / voltage-sensing / auto-restart / 2 fans per power module / modules 1 and 2 standard / modules 3 and 4 required with 2nd Storage module installed
Blower modules	<i>Std/max:</i> four / hot-swap / redundant / variable speed / rear access / front to back airflow
Mechanical Media Tray	EIA 19" rack models (7U⁴) x 29" deep / supported in NetBAY™ Racks (such as NetBAY42 ER) 1MX&E1X: DVD-ROM / two USB ports (Version 2.0) / Full Light Path Diagnostic panel / customer serviceable / front access / shared by all blade servers / requests for optical and USB port by pressing DVD select button on server blade front panel

Keyboard / mouse	None standard / USB / provides KVM console support / requests for keyboard, mouse, and video by pressing the display button on server blade front panel / supports NetBAY ACT CAT5 chaining solutions
Ports	<i>Rear:</i> two USB, two RJ45 (one ethernet and one serial), analog DB-15 graphics (on advanced mgmt module) / one serial aggregate for break out cable; <i>Front:</i> two USB (Media Tray)
Security	Login password for remote connection / secure socket layer (SSL) security for remote management access / recommended in rack environment providing security through lockable doors or other security measures
Ethernet Systems management	Dual integrated gigabit ethernet controllers on each blade connects to optional GB Ethernet Switch Module Provides remote console and mgmt / power on/off/reset blades/modules / monitors power status, operating system, temperature, disks, blowers, power modules / system diagnostic programs provided through IBM Director software / Remote Deployment Manager
System LED panel	Provides power-on, location, over-temperature, information, and system-error conditions

Brocade 10-port Switch Module for IBM BladeCenter	32R1813	BladeCenter S 6-Disk Storage Module	43W3581
Cisco Systems 4Gb 10-port Fibre Channel Switch Module	39Y9284	BladeCenter S 950W/1450W Auto-Sensing Power Supplies 3 & 4	43W3582
QLogic 4Gb FC 10-port Full Fabric Switch	43W6724	BladeCenter S Serial Pass-thru module	43W3583
IBM BladeCenter SAS Connectivity Module	39Y9195	IBM DPI C19 PDU+C19 without line cord	39M2818
IBM BladeCenter Optical Pass-thru module	39Y9316	IBM DPI C19 3 Phase PDU+C19 with attached line cord	39M2819
IBM BladeCenter Copper Pass-thru module	39Y9320	DPI 60A Three Phase C19 Enterprise PDU with IEC309 3P+G (208V) fixed line cord	39Y8923
IBM BladeCenter PCI Expansion Unit 2	25K8373	DPI 60A Single Phase C19 Enterprise PDU w/o line cord	39Y8948
IBM BladeCenter PCI I/O Expansion Unit	43W6692		
750GB DP HS SATA HDD	43W7580		
IBM Server 73GB 15K SAS HS	43W7523		
IBM Server 146GB 15K SAS HS	43W7524		
300GB SAS 15K HS	43X0802		
500GB SATA2 HDD	39M4558		
		Other options at ibm.com/products/us Solutions available from IBM BladeCenter Alliance program partners	

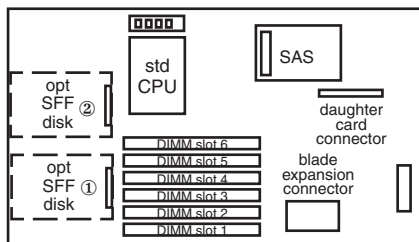
<p style="text-align: center;">Front</p>  <p style="text-align: center;">Rear</p> 	<ul style="list-style-type: none"> ◇ Dimensions: H12" x W17.5" x D28.9" ◇ Dimensions: H306.3mm x W440mm x D733.4mm ◇ Weight: 90 to 240 lb; 40.82 to 108.86kg ◇ Stealth black color bezel ◇ Tool-free customer serviceability ◇ Access server blades, battery backup units, media tray and storage modules from front ◇ Access AMM, expansion modules, blower and power modules from rear ◇ Midplane in center of system to interface for all system components ◇ Predictive Failure Analysis® alerts on blowers, blade server memory, processor(s), and optional disk(s) with IBM Director <p>A • Advanced Management Module B • Serial Module Bay C • I/O Module Bays 3 & 4 D • I/O Module Bay 1 - for ethernet switch E • I/O Module Bay 2 - for future use F • Blower Modules (4) std G • Power Module Slots - G1&G2 std / G3&G4 opt</p>	<p style="text-align: center;">LIMITED WARRANTY³</p> <ul style="list-style-type: none"> ⇒ 3 year parts and labor ⇒ International Warranty Service³ ⇒ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷ ⇒ On site service upgrade options (in eligible locations):⁷ <ul style="list-style-type: none"> 3 year IOR 24x7, 2 hr avg response (ServicePac® part num 46D3900) 3 year IOR 24x7, 4 hr avg response (ServicePac part num 46D3899) 3 year IOR 9x5, 4 hr avg response (ServicePac part num 46D3898) 5 year IOR 9x5, 4 hr avg response (ServicePac part num 46D3906) 5 year IOR 24x7, 2 hr avg response (ServicePac part num 46D3908) ⇒ Other ServicePac options at http://www-1.ibm.com/services/us/its/pdf/wamomxeu.pdf ⇒ 24x7¹⁴ toll-free support for warranty issues during the warranty period³
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See footnotes for important warranty information

¹ Express Model

IBM® Type-model	Processor	GHz¹ / Core / L2	FSB MHz	Watts	Memory	Disk controller	Disk bays	Expansion Units	I/O slots	Mechanical	Ethernet	Available date
8014-2Bx	1 x Core™ 2 Duo E6305	1.86/DC/2MB	1066	65W	2GB	SATA	2-fixed	BSE3/PEU3e	up to 2	single slot blade	Dual Gb	May 2008
8028-45x	1 x Xeon X3353	2.66/QC/12MB	1066	80W	2GB	SAS	2-hot-swap	BSE3/PEU3e	up to 2	single slot blade	Dual Gb	May 2008
Processor(s)	Intel® Xeon up to 2.83GHz with up to 1333MHz FSB / up to 12MB L2 / Quad or Dual-Core / Intel Core 2 Duo at 1.86GHz with 1066MHz FSB / 2MB L2 / Dual-Core / Intel Celeron at 1.86GHz with 1066MHz FSB / 512KB / Single-Core / All EM64T											
Implementation	Systemboard contains one Intel LGA771 socket, six DIMM slots, one High Speed Daughter Card connector, one I/O expansion option connector, integrated graphics, dual Gigabit ethernet and SATA or SAS											
Memory	512MB or 2GB std / 24GB¹³ max / one or two slots used / four or five slots available / on base blade / PC2-5300 667MHz 240-pin ECC DDR2-SDRAM VLP (Very Low-Profile) DIMMs / DIMMs must be installed in matched pairs for optimal performance / dual channel / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ and memory scrubbing											
SAS disk controller	LSI Logic® 1064E SAS controller / two port / 3.0Gb/sec / on interface card / PCI-Express / supports RAID-0 & 1											
SAS Disk bays	Two 2.5-inch Small Form Factor (SFF) hot-swap SAS or hot-swap Solid State Drives / Supports max of three hot-swap SFF SAS disks in optional Storage and I/O Expansion Unit											
SATA disk controller	Integrated into chipset / 3.0 Gb/sec / two port											
SATA Disk bays	Two 2.5-inch Small Form Factor (SFF) SATA internal fixed disk bays / supports HDD and SSD (fixed in 8014, hot-swap in 8028)											
External Storage	Support for IBM TotalStorage™ solutions											
Mechanical	Single-wide(30mm) / full-height / Supported in IBM BladeCenter											
Architecture/Chipset	Intel 5100 chipset / Memory Controller Hub and ICH9 / I/O Controller Hub provides: High Speed Daughter Card connector, BSE connector and LSI 1064E SAS / ICH9 provides: USB (2.0), ATI video, SATA, Legacy Daughter Card connector, Dual GB ethernet, LPC bus to NS PC87427 for Super I/O											
BUS slots	Standard PCI Express HBA slots via PEU3e Expansion Unit											
Ethernet	Dual Gigabit Ethernet controller / Broadcom® 5714S / two full gigabit ethernet MAC and PHY layer functions / chip on blade / PCI-Express / full duplex / Wake on LAN® / iSCSI / Serial over LAN / PXE 2.0 Boot agent / adapter fault tolerance / Load balancing or teaming / one of the dual controllers connects to an optional, supported Ethernet switch or <i>Optical Passthrough Module</i> (the second controller requires a second optional switch or OPM)											
Network Interface	One legacy connector or PCI-Express connector for I/O expansion options / requires same interface modules in bays 3 and 4 of BladeCenter / all blades in a single BladeCenter must contain the same expansion card (or no expansion card)											
DVD / diskette / USB Kybd / video / mouse	None / requests for DVD-ROM, diskette and USB port in BladeCenter by pressing media select button on front control panel											
Graphics controller	None / requests for keyboard, mouse, and video in BladeCenter by pressing the display button on front control panel											
Systems Mgmt	IBM Baseboard Management Controller (BMC) / H8S2166 / on blade / provides system and environmental monitoring, event recording, alert capability / RS-485 interface for intermanagement communication with BladeCenter Management module											
Diagnostics	Light Path Diagnostics™ (LED lights indicate failing component) and diagnostics via ROM based preboot DSA											
Security	No security intrusion protection / Power-on password / administrator password / unattended boot / selectable boot / unattended start mode											
Software ship group	Documentation CD, ServerGuide CD											
Cooling Fans	Uses cooling from BladeCenter / thermal sensors on each processor, BladeCenter modules and front panel											
Power supply(s)	Uses power module(s) in BladeCenter											
Prerequisites	Monitor, keyboard, mouse for setup; ethernet switch module, disk, BladeCenter, operating system											
	IBM 73GB 10K SAS 2.5" SFF Slim-HS HDD										43W7535	
	IBM 80GB 7200RPM SATA 2.5" NHS HDD										43W7640	
	IBM 15.8GB 2.5" Solid State Drive										43W7614	
	IBM 31.4GB 2.5" Solid State Drive										43W7618	
	IBM 31.4GB SATA 2.5" SFF Slim-HS SSD										43W7648	
	1GB (2x512) PC2-5300 CL5 ECC DDR2 RDIMM 667MHz Kit										39M5861	
	2GB (2x1GB) PC2-5300 CL5 ECC DDR2 RDIMM 667MHz Kit										39M5864	
	4GB (2x2GB) PC2-5300 CL5 ECC DDR2 RDIMM 667MHz Kit										46C0512	
	Other options at ibm.com/products/us											

Server blade (side view)



A control panel on top front of blade has following LEDs:
 Power good
 Blade location
 Over temperature
 Information
 General fault

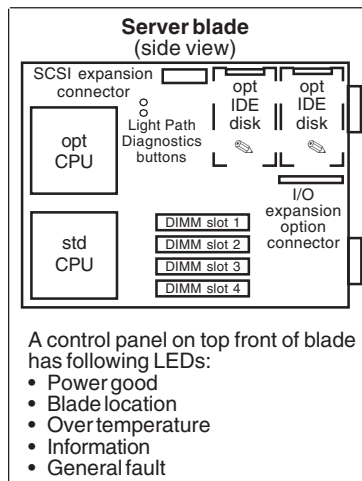
- ⊖ Stealth black front bezel
- ⊖ H 9.7" x W 1.14" x D 17.6"; H 24.5cm x W 2.9cm x D 44.6cm
- ⊖ 12 lbs; 5.4kg (max configuration)
- ⊖ Configuration/Setup Utility: F1 at startup
- ⊖ Diagnostics: F2 at startup
- ⊖ System Partition Boot: ALT+F1 at startup
- ⊖ Network Boot: F12 at startup
- ⊖ PXE Boot Agent Utility: Ctrl+S at startup
- ⊖ Blade control panel on each HS12 blade server provides media select button, keyboard/mouse/video select button, and indicators for blade error, information, location, disk activity, and power
- ⊖ Predictive Failure Analysis® alerts on memory, processor(s), and optional disk(s) with IBM Director

LIMITED WARRANTY³

- ⇒ 8014 MT - 1 year parts and labor
- ⇒ 8028 MT - 3 year parts and labor
- ⇒ International Warranty Service³
- ⇒ On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- ⇒ 8028 MT On site service upgrade options (in eligible locations):⁷
 - 4 year IOR 9x5, NBD response (ServicePac® part num 46V4568)
 - 4 year IOR 9x5, 4 hr avg response (ServicePac part num 46V4569)
 - 4 year IOR 24x7, 4 hr avg response (ServicePac part num 46V4570)
 - 4 year IOR 24x7, 2 hr avg response (ServicePac part num 46V4571)
- ⇒ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ⇒ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

Maximum internal disk capacity for each HS12 blade server¹³:
 292GB with two 146GB SAS disks (with BladeCenter Storage Expansion Unit 3 x 146GB for total of 730GB)

IBM Type-model	Qty x Processor ¹	Memory	Frontside Bus Mhz	Disk	Disk controller	Disk bays	SCSI support with optional stor exp unit	Slots x bays	Mechanical	Required chassis	Available date
8678-21X	1 x Xeon	2.0GHz 512MB	400Mhz	None (open)	EIDE	2 fixed	2 hot-swap	Ultra320	0x2 6U ⁴ blade	BladeCenter	Nov 2002
8678-41X	1 x Xeon	2.4GHz 512MB	400Mhz	None (open)	EIDE	2 fixed	2 hot-swap	Ultra320	0x2 6U blade	BladeCenter	Nov 2002
8678-51X	1 x Xeon	2.67GHz 512MB	400Mhz	None (open)	EIDE	2 fixed	2 hot-swap	Ultra320	0x2 6U blade	BladeCenter	Mar 2003
8678-61X	1 x Xeon	2.8GHz 512MB	400Mhz	None (open)	EIDE	2 fixed	2 hot-swap	Ultra320	0x2 6U blade	BladeCenter	Mar 2003
Positioning Processor(s)	<i>Ultra-dense, highly manageable modular computing platform with superior performance</i>										
L2 cache	1 x Intel Xeon 2.0 to 2.8GHz with 400 MHz frontside bus / Hyper-Threading technology / NetBurst. microarchitecture										
SMP support	512KB / on die of processor / at processor speed (no L3 cache)										
Implementation	2-way SMP / up to two Xeon Processors (same speed/cache size)										
Memory	Server blade contains two Intel 604-pin micro-PGA ZIF sockets, four memory DIMM slots, two IDE connectors, one SCSI expansion connector, one I/O expansion option connector, and integrated graphics and dual ethernet										
IDE controller	Enhanced IDE ATA-100 controller in CSB5 South Bridge / two connectors on planar / each supports one 2.5" IDE disk / no cable as IDE disk attaches to riser card and tray (included with option kit) / each IDE connector on separate bus										
IDE disk bays	Supports max of two IDE disks / space for only one IDE disk if an I/O expansion option installed [Fibre Channel]										
SCSI disk controller	None / supports optional SCSI Storage Expansion Unit (a blade occupying adjacent blade slot / connects to HS20 via one connector / LSI Logic 53C1020 Ultra320 SCSI controller [LVD 320MB/sec] / 64-bit 100MHz PCI-X Bus B from CIOB-X2 I/O Bridge (IMB2 bus to Host Bridge) / supports RAID-1 mirroring [Embedded Mirroring] with two hot-swap 3.5" one-inch high SL SCSI disks in front bays / one 16-bit internal channel / no cables or external connector)										
SCSI disk bays	Supports max of two hot-swap 3.5" SL Ultra320 SCSI disks in optional SCSI Storage Expansion Unit / 80-pin SCA-2 connectors / all SCSI bays Ultra320-enabled										
External storage	Support for IBM TotalStorage. solutions (including FASiT and NAS family of products)										
Mechanical	Supported in IBM BladeCenter (type 8677) / BladeCenter supported in 28" deep racks such as the IBM NetBAY. Rack products										
Architecture / chipsets	ServerWorks Grand Champion. 4.0 LE / CMIC LE Host Bridge (memory controller and I/O Bridge) / one CIOB-X2 I/O Bridge (IMB2 bus to Host Bridge) for two PCI-X Buses with Bus A for ethernet and Bus B for ethernet and the I/O expansion option connector / CSB5 South Bridge (Thin IMB to Host Bridge) for EIDE, USB, LPC bus to Super I/O, and PCI 2.2 Bus C with graphics controller / National Semiconductor PC87417 Super I/O chip										
Bus slots	No PCI or PCI-X slots (expansion via modules or network-interface option connector)										
Ethernet controllers	Two gigabit Ethernet controllers / Broadcom BCM5703 / on blade / two PCI-X 64-bit 100MHz buses / full duplex / Wake on LAN / Alert Standard Format 1.0 / teaming and failover support / one of the dual controllers connects to an optional, supported Ethernet switch or Optical Passthrough Module (the second controller requires a second optional switch or OPM)										
Network-interface	One connector for I/O expansion option (Fibre Channel Expansion Card) / requires same interface modules in bays 3 and 4 of BladeCenter / all blades in a single BladeCenter must contain the same expansion card (or no expansion card) / ethernet and serial I/O expansion cards planned for future release ²⁰										
CD / diskette / USB	None / requests for CD-ROM, diskette drive, and USB port in BladeCenter by pressing CD select button on front control panel										
Kybd / video / mouse	None / requests for keyboard, mouse, and video in BladeCenter by pressing the display button on front control panel										
Graphics	SVGA / ATI Rage XL / on blade / 8MB SDRAM std/max / 32-bit 33MHz PCI 2.2 bus										
Systems mgmt	IBM integrated system management processor (ISMP) / H8S2148 / on blade / provides system and environmental monitoring, event recording, alert capability / RS-485 interface for communication with BladeCenter management module						Xeon 2.0GHz/512KB L2 Cache Proc Upg			48P7060	
Diagnosics	Light Path Diagnostics. (LED lights indicate failing component) and on-board diagnostics (via PC-Doctor in BIOS)						Xeon 2.4GHz/512KB L2 Cache Proc Upg			48P7096	
Security	Power-on password / administrator password / unattended boot / selectable boot / unattended start mode						Xeon 2.67Ghz/512KB L2 Cache Proc Upg			73P5982	
Software ship group	Documentation CD, IBM Director 4.1 CD, Device Driver CD						Xeon 2.8Ghz/512KB L2 Cache Proc Upg			73P5983	
Cooling fans	Uses cooling from BladeCenter (type 8677) / thermal sensors on each processor and BladeCenter modules and front panel						512MB PC2100 CL2.5 ECC DDR-SDRAM DIMM			33L5038	
Power supply	Uses power module(s) in BladeCenter (type 8677)						1GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM			33L5039	
Prerequisites	Monitor, keyboard, mouse for setup; ethernet switch module, disk, BladeCenter (type 8677), operating system						2GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM			33L5040	
							IBM HS20 SCSI Storage Expansion Unit (blade)			48P7058	
							IBM HS20 Fibre Channel Expansion Card (with two ports; each port requires a FC Switch Module)			48P7061	
							IBM HS20 40GB ² 5400 rpm ATA-100 HDD			48P7063	
							36.4GB 15K Ultra160 SCSI Hot-Swap SL HDD*			06P5768	
							36.4GB 15K Ultra320 SCSI Hot-Swap SL HDD*			06P5776	
							73.4GB 10K Ultra160 SCSI Hot-Swap SL HDD*			06P5756	
							* Disk requires SCSI Storage Expansion Unit				



- Bay 3.5", 9.5mm, no front access, optional ThinkPad IDE disk
 - Bay 3.5", 9.5mm, no front access, optional ThinkPad IDE disk
 - Stealth black front bezel
 - H 9.7" x W 1.14" x D 17.6"
 - H 24.5cm x W 2.9cm x D 44.6cm
 - 12 lbs; 5.4kg (max configuration)
 - Configuration/Setup Utility: F1 at startup
 - Diagnostics (PC-Doctor.): F2 at startup
 - System Partition Boot: ALT+F1 at startup
 - Network Boot: F12 at startup
 - PXE Boot Agent Utility: Ctrl+S at startup
 - Blade control panel on each HS20 blade server provides media select button, keyboard/mouse/video select button, and indicators for blade error, information, location, disk activity, and power
 - Predictive Failure Analysis alerts on memory, processor(s), and optional disk(s) with IBM Director
- Maximum internal disk capacity for each HS20 blade server¹³:
- 80GB with two 40GB EIDE disks or
 - 293.6GB* with two 146.8GB SL SCSI disks

LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 24x7, 2 hr avg response (ServicePac part num 69P9519)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9518)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9517)
 - 5 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9525)
 - 5 year IOR 24x7, 2 hr avg response (ServicePac part num 69P9527)
 - Other ServicePac options at ibm.com/services/its/us/source/wamomxeu.pdf
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

IBM® Type-model	Processor GHz ¹	L2 cache	FSB MHz	Memory	Disk controller	Disk bays	SCSI Support with optional stor exp unit	slots x bays	Mechanical	Ethernet	Available date
8843-L1y-L1x	1 x Xeon™2	8LV1MB	800	512MB	None	Ultra320 2-fixed	2 Hot-swap Ultra320	0 x 2 7U blade	2 x Gigabit	Feb 2005	
8843-J1y-J1x	1 x Xeon	2.8LV 2MB	800	1GB	None	Ultra320 2-fixed	2 Hot-swap Ultra320	0 x 2 7U blade	2 x Gigabit	Feb 2005	
8843-M5y-M5x	1 x Xeon	3.0LV 2MB	800	1GB	None	Ultra320 2-fixed	2 Hot-swap Ultra320	0 x 2 7U blade	2 x Gigabit	Feb 2005	
8843-25y-25x	1 x Xeon	3.2 2MB	800	1GB	None	Ultra320 2-fixed	2 Hot-swap Ultra320	0 x 2 7U blade	2 x Gigabit	Mar 2005	
8843-E2y-E2x	1 x Xeon	3.2 2MB	800	2GB	36GB	Ultra320 2-fixed	2 Hot-swap Ultra320	0 x 2 7U blade	2 x Gigabit	Mar 2005	
8843-35y-35x	1 x Xeon	3.4 2MB	800	1GB	None	Ultra320 2-fixed	2 Hot-swap Ultra320	0 x 2 7U blade	2 x Gigabit	Mar 2005	
8843-45y-45x	1 x Xeon	3.6 2MB	800	1GB	None	Ultra320 2-fixed	2 Hot-swap Ultra320	0 x 2 7U blade	2 x Gigabit	Mar 2005	
8843-25y-25x	1 x Xeon	3.2 2MB	800	1GB	None	Ultra320 2-fixed	2 Hot-swap Ultra320	0 x 2 7U blade	2 x Gigabit	Mar 2005	
8843-05y-05x	1 x Xeon	2.8 2MB	800	1GB	36GB	Ultra320 2-fixed	2 Hot-swap Ultra320	0 x 2 7U blade	2 x Gigabit	Sep 2005	
8843-55y-55x	1 x Xeon	3.8 2MB	800	1GB	None	Ultra320 2-fixed	2 Hot-swap Ultra320	0 x 2 7U blade	2 x Gigabit	Sep 2005	
8843-E7y-E7x	1 x Xeon	2.8 2MB	800	512MB	None	Ultra320 2-fixed	2 Hot-swap Ultra320	0 x 2 7U blade	2 x Gigabit	Sep 2005	
8843-E9y-E9x	2 x Xeon	3.8 2x2MB	800	4GB	None	Ultra320 2-fixed	2 Hot-swap Ultra320	0 x 2 7U blade	2 x Gigabit	Sep 2005	

Processor(s)	1 or 2 x Intel® Xeon up to 3.8GHz with 800MHz frontside bus (FSB) / EM64T / 1-2MB L2 ECC Cache / Hyper-Threading technology / LIU, J1U and M5U: Features Low Voltage Processor for reduced heat output allowing greater rack population	
SMP - L2 Cache Implementation	2-way SMP / up to two Xeon Processors (same speed/cache size) / 1 or 2MB std and 4MB max / at processor speed	
Memory	512MB/1GB std / 16GB ¹³ max / two slots used / two slots available / PC2-3200 400MHz CL2.5 ECC DDR2-SDRAM DIMMs / four 240 pin gold-conductor slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / Chipkill™	
SCSI disk controller	LSI Logic® 53C1020 SCSI controller / Single channel Ultra320 SCSI controller (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X / supports RAID-1 & 1E mirroring / One 16-bit channel (one internal) / Internal channel: one 2-drop 16-bit 68-pin LVD SCSI cable	
SCSI Disk bays	Two 2.5-inch Small Form Factor (SFF) Ultra320 internal fixed disk bays / Supports max of two hot-swap 3.5" SL Ultra320 SCSI disks in optional SCSI Storage Expansion Unit (80-pin SCA-2 connectors; all SCSI bays Ultra320-enabled) / Support for IBM TotalStorage™ solutions (including FASTT and NAS family of products)	
External Storage		
Mechanical Architecture/Chipset	7U ⁴ Blade / Supported in IBM BladeCenter 8677-3XX or 8677-1XX/2XX (requires upgrade to 2000W power supply option 26K4816) Intel E7520 chipset / E7525 MCH (Memory Controller Hub) for PCI-Express bridge to PXH, ICH5R / PXH BUS supports PCI-X BUS / ICH5R supports USB (1.0) / LSI 1020 / Dual Broadcom 5704S / Low Pin Count Interface / NS PC87366 Super I/O off LPC interface	
BUS slots	No PCI or PCI-X slots (expansion via modules or network-interface option connector)	
Ethernet	Dual gigabit 10/100/1000 ethernet controller / Broadcom 5704S / two full gigabit ethernet MAC and PHY layer functions / chip on blade / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / PXE 2.0 Boot agent / Alert Standard Format 2.0 / Failover, adapter fault tolerance / Load balancing or teaming / one of the dual controllers connects to an optional, supported Ethernet switch or Optical Passthrough Module (the second controller requires a second optional switch or OPM)	
Network Interface	One connector for I/O expansion option / requires same interface modules in bays 3 and 4 of BladeCenter / all blades in a single BladeCenter must contain the same expansion card (or no expansion card) / ethernet and serial I/O expansion cards planned for future release ²⁰	
CD / Diskette / USB Kybd / video / mouse Graphics controller	None / requests for CD-ROM, diskette drive, and USB port in BladeCenter by pressing CD select button on front control panel None / requests for keyboard, mouse, and video in BladeCenter by pressing the display button on front control panel SVGA / ATI® Radeon™ 7000M on Planar / 16MB SDRAM std and max / 15 pin connector	
Systems Mgmt	IBM Baseboard Management Controller (BMC) / H8S2168 / on blade / provides system and environmental monitoring, event recording, alert capability / RS-485 interface for intermanagement communication with BladeCenter Management module	Xeon 2.8GHz/800/2MB L2 Cache EM64T Proc Upg 25R8878 Xeon 3.0GHz/800/2MB L2 Cache EM64T Proc Upg 25R8876 Xeon 3.2GHz/800/2MB L2 Cache EM64T Proc Upg 25R8877 Xeon 3.4GHz/800/2MB L2 Cache EM64T Proc Upg 13N0660 Xeon 3.6GHz/800/2MB L2 Cache EM64T Proc Upg 13N0696 Xeon 3.8GHz/800/2MB L2 Cache EM64T Proc Upg 13N0697
Diagnostics	Light Path Diagnostics™ (LED lights indicate failing component) and on-board diagnostics (via PC-Doctor in BIOS)	512MB (2x256) PC2-3200 ECC DDR2 73P3523 1GB (2x512) PC2-3200 CL3 ECC DDR2 39M5818 2GB (2x1GB) PC2-3200 CL3 ECC DDR2 RDIMM Kit 39M5809 4GB (2x2GB) PC2-3200 CL3 ECC DDR2 RDIMM Kit 39M5812 8GB (2x4GB) PC2-3200 CL3 ECC DDR2 RDIMM Kit 30R5145
Security	No security intrusion protection / Power-on password / administrator password / unattended boot / selectable boot / unattended start mode	IBM 36.4GB 10K Ultra320 SCSI 2.5" SFF NHS HDD 40K1037 IBM 73GB 10K Ultra320 SCSI 2.5" SFF NHS HDD 40K1038 BladeCenter SCSI Storage Exp Unit 26K4817 BladeCenter SFF Fibre Channel Exp Card 26K4841 BladeCenter SFF Gigabit Ethernet Exp Card 26K4842
Software ship group	Documentation CD, Broadcom CD	
Cooling Fans	Uses cooling from BladeCenter (types 8677, 8852 and 8720) / thermal sensors on each processor and BladeCenter modules and front panel	
Power supply(s) Prerequisites	Uses power module(s) in BladeCenter (types 8677, 8852 and 8720) Monitor, keyboard, mouse for setup; ethernet switch module, disk, BladeCenter (types 8677, 8852 and 8720), operating system	

Other options at ibm.com/pc/us/accessories

Server blade (side view)

- SCASI expansion connector
- opt CPU
- std CPU
- DIMM slot 1
- DIMM slot 2
- DIMM slot 3
- DIMM slot 4
- I/O expansion option connector

Bay ① 3.5", 9.5mm, no front access, optional 2.5-inch SFF SCSI disk
Bay ② 3.5", 9.5mm, no front access, optional 2.5-inch SFF SCSI disk

- Stealth black front bezel
- H 9.7" x W 1.14" x D 17.6"; H 24.5cm x W 2.9cm x D 44.6cm
- 12 lbs; 5.4kg (max configuration)
- Configuration/Setup Utility: F1 at startup
- Diagnostics (PC-Doctor™): F2 at startup
- System Partition Boot: ALT+F1 at startup
- Network Boot: F12 at startup
- PXE Boot Agent Utility: Ctrl+S at startup
- Blade control panel on each HS20 blade server provides media select button, keyboard/mouse/video select button, and indicators for blade error, information, location, disk activity, and power
- Predictive Failure Analysis® alerts on memory, processor(s), and optional disk(s) with IBM Director

Maximum internal disk capacity for each HS20 blade server¹³:
146GB with two 73GB SCSI disks (with BladeCenter SCSI Storage Expansion Unit 2 x 300GB for total of 746GB)

LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- On site service upgrade options (in eligible locations):⁷
 - 4 year IOR 9x5, NBD response (ServicePac® part num 69P9520)
 - 4 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9521)
 - 4 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9522)
 - 4 year IOR 24x7, 2 hr avg response (ServicePac part num 69P9523)
- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information

IBM® Type-model	Processor	L2 cache	FSB MHz	Memory	Disk controller	Diskbays	SCSI Support with optional stor exp unit	slots x bays	Mechanical	Ethernet	Available date		
8843-0Ry-0Rx	1 x Xeon™	2.8	2MB	800	1GB	36GB Ultra320	2-fixed	2	Hot-swap Ultra320	0 x 2	7U blade	2 x Gigabit	Mar 2006
8843-2Ry-2Rx	1 x Xeon	3.2	2MB	800	1GB	None Ultra320	2-fixed	2	Hot-swap Ultra320	0 x 2	7U blade	2 x Gigabit	Mar 2006
8843-3Ry-3Rx	1 x Xeon	3.4	2MB	800	1GB	None Ultra320	2-fixed	2	Hot-swap Ultra320	0 x 2	7U blade	2 x Gigabit	Mar 2006
8843-4Ry-4Rx	1 x Xeon	3.6	2MB	800	1GB	None Ultra320	2-fixed	2	Hot-swap Ultra320	0 x 2	7U blade	2 x Gigabit	Mar 2006
8843-5Ry-5Rx	1 x Xeon	3.8	2MB	800	1GB	None Ultra320	2-fixed	2	Hot-swap Ultra320	0 x 2	7U blade	2 x Gigabit	Mar 2006

Processor(s)	1 or 2 x Intel® Xeon up to 3.8GHz with 800MHz frontside bus (FSB) / EM64T / 1-2MB L2 ECC Cache / Hyper-Threading technology / LIU, JIU and M5U: Features Low Voltage Processor for reduced heat output allowing greater rack population	
SMP - L2 Cache Implementation	2-way SMP / up to two Xeon Processors (same speed/cache size) / 2MB std and max / at processor speed	
Memory	512MB/1GB std / 16GB ¹³ max / two slots used / two slots available / PC2-3200 400MHz CL2.5 ECC DDR2-SDRAM DIMMs / four 240 pin gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual-channel / Chipkill™	
SCSI disk controller	LSI Logic® 53C1020 SCSI controller / Single channel Ultra320 SCSI controller (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X / supports RAID-1 & 1E mirroring / One 16-bit channel (one internal) / <i>Internal channel:</i> one 2-drop 16-bit 68-pin LVD SCSI cable	
SCSI Disk bays	Two 2.5-inch Small Form Factor (SFF) Ultra320 internal fixed disk bays / Supports max of two hot-swap 3.5" SL Ultra320 SCSI disks in optional SCSI Storage Expansion Unit (80-pin SCA-2 connectors; all SCSI bays Ultra320-enabled) /	
External Storage	Support for IBM TotalStorage™ solutions (including FAST and NAS family of products)	
Mechanical Architecture/Chipset	7U ⁴ Blade / Supported in IBM BladeCenter 8677-3XX or 8677-1XX/2XX (requires upgrade to 2000W power supply option 26K4816) Intel E7520 chipset / E7525 MCH (Memory Controller Hub) for PCI-Express bridge to PXH, ICH5R / PXH BUS supports PCI-X BUS / ICH5R supports USB (1.0) / LSI 1020 / Dual Broadcom 5704S / Low Pin Count Interface / NS PC87366 Super I/O of LPC interface	
BUS slots	No PCI or PCI-X slots (expansion via modules or network-interface option connector)	
Ethernet	Dual gigabit 10/100/1000 ethernet controller / Broadcom 5704S / two full gigabit ethernet MAC and PHY layer functions / chip on blade / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / PXE 2.0 Boot agent / Alert Standard Format 2.0 / Failover, adapter fault tolerance / Load balancing or teaming / one of the dual controllers connects to an optional, supported Ethernet switch or <i>Optical Passthrough Module</i> (the second controller requires a second optional switch or OPM)	
Network Interface	One connector for I/O expansion option / requires same interface modules in bays 3 and 4 of BladeCenter / all blades in a single BladeCenter must contain the same expansion card (or no expansion card) / ethernet and serial I/O expansion cards planned for future release ²⁰	
CD / Diskette / USB Kybd / video / mouse Graphics controller	None / requests for CD-ROM, diskette drive, and USB port in BladeCenter by pressing CD select button on front control panel / requests for keyboard, mouse, and video in BladeCenter by pressing the display button on front control panel / SVGA / ATI® Radeon™ 7000M on Planar / 16MB SDRAM std and max / 15 pin connector	
Systems Mgmt	IBM Baseboard Management Controller (BMC) / H8S2168 / on blade / provides system and environmental monitoring, event recording, alert capability / RS-485 interface for intermanagement communication with BladeCenter Management module	Xeon 2.8GHz/800/2MB L2 Cache EM64T Proc Upg Xeon 3.0GHz/800/2MB L2 Cache EM64T Proc Upg Xeon 3.2GHz/800/2MB L2 Cache EM64T Proc Upg Xeon 3.4GHz/800/2MB L2 Cache EM64T Proc Upg Xeon 3.6GHz/800/2MB L2 Cache EM64T Proc Upg Xeon 3.8GHz/800/2MB L2 Cache EM64T Proc Upg
Diagnostics	Light Path Diagnostics™ (LED lights indicate failing component) and on-board diagnostics (via PC-Doctor in BIOS)	13N0660 13N0696 13N0697
Security	No security intrusion protection / Power-on password / administrator password / unattended boot / selectable boot / unattended start mode	73P3523 39M5818 39M5809 39M5812 30R5145
Software ship group	Documentation CD, Broadcom CD	IBM 36.4GB 10K Ultra320 SCSI 2.5" SFF NHS HDD IBM 73GB 10K Ultra320 SCSI 2.5" SFF NHS HDD
Cooling Fans	Uses cooling from BladeCenter (types 8677, 8852 and 8720) / thermal sensors on each processor and BladeCenter modules and front panel	BladeCenter SCSI Storage Exp Unit BladeCenter SFF Fibre Channel Exp Card BladeCenter SFF Gigabit Ethernet Exp Card
Power supply(s) Prerequisites	Uses power module(s) in BladeCenter (types 8677, 8852 and 8720) / Monitor, keyboard, mouse for setup; ethernet switch module, disk, BladeCenter (types 8677, 8852 and 8720, operating system	26K4817 26K4841 26K4842

Other options at ibm.com/pc/us/accessories

Server blade (side view)

- SCSi expansion connector
- opt CPU
- std CPU
- DIMM slot 1
- DIMM slot 2
- DIMM slot 3
- DIMM slot 4
- I/O expansion option connector

Bay ① 3.5", 9.5mm, no front access, optional 2.5-inch SFF SCSI disk
Bay ② 3.5", 9.5mm, no front access, optional 2.5-inch SFF SCSI disk

- Stealth black front bezel
- H 9.7" x W 1.14" x D 17.6"; H 24.5cm x W 2.9cm x D 44.6cm
- 12 lbs; 5.4kg (max configuration)
- Configuration/Setup Utility: F1 at startup
- Diagnostics (PC-Doctor™): F2 at startup
- System Partition Boot: ALT+F1 at startup
- Network Boot: F12 at startup
- PXE Boot Agent Utility: Ctrl+S at startup
- Blade control panel on each HS20 blade server provides media select button, keyboard/mouse/video select button, and indicators for blade error, information, location, disk activity, and power
- Predictive Failure Analysis® alerts on memory, processor(s), and optional disk(s) with IBM Director

Maximum internal disk capacity for each HS20 blade server¹³:
146GB with two 73GB SCSI disks (with BladeCenter SCSI Storage Expansion Unit 2 x 300GB for total of 746GB)

LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- On site service upgrade options (in eligible locations):⁷
 - 4 year IOR 9x5, NBD response (ServicePac® part num 69P9520)
 - 4 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9521)
 - 4 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9522)
 - 4 year IOR 24x7, 2 hr avg response (ServicePac part num 69P9523)
- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information

IBM BladeCenter® HS20 (7981)

xREF by STG Field Skills and Education Team

IBM® Type-model	Processor	GHz ¹	L2 cache	FSB MHz	Memory	Disk	Disk controller	Disk bays	SCSI Support w/ opt. storage exp unit	slots x bays	Mechanical	Ethernet	Available date
7981-2Fy	1 x Xeon™	1.67	2MB	667	1GB	Open	SAS	2-fixed	Not Supported	1 x 2	single blade	2 x Gigabit	Mar 2006
7981-3Fy	1 x Xeon	2.0	2MB	667	1GB	Open	SAS	2-fixed	Not Supported	1 x 2	single blade	2 x Gigabit	Mar 2006

Processor(s)	1 or 2 x Dual-Core Intel® Xeon LV up to 2.0 GHz with 667 MHz frontside bus (FSB) / 2MB L2 ECC Shared Advanced Transfer Cache Architecture / Features Ultra Low Voltage Processor (31 watt) with Enhanced Intel SpeedStep® Technology for reduced power consumption and heat output allowing greater rack population												
SMP - L2 Cache Implementation	2-way SMP / up to two Xeon LV Processors (same speed/cache size) / 2MB cache std and max / at processor speed Systemboard contains two Intel 478-pin micro-FCPGA ZIF sockets, four DIMM slots, one SCSI expansion connector, one I/O expansion option connector, integrated graphics and dual Gigabit ethernet												
Memory	1GB std / 16GB¹³ max / two slots used / two slots available / PC2-3200 400MHz CL2.5 ECC DDR2-SDRAM RDIMMs / four 240 pin gold-connector slots on systemboard / 2-way memory interleave / DIMMs must be installed in matched pairs [a bank] / dual-channel / Chipkill / hot-spare Memory and Memory Mirroring support												
Disk controller	LSI Logic® 1064 SAS controller on planar (3.0Gb/sec) / Dual Internal channels / supports RAID-0 & 1 mirroring												
Disk bays	Two 2.5-inch Small Form Factor (SFF) SAS internal fixed disk bays / 0GB Std / 146.8GB max												
External Storage	Support for IBM TotalStorage™ solutions (including DS and NAS family of products)												
Mechanical Architecture/Chipset	Single slot blade / Supported in IBM BladeCenter 8677, 8720, 8730, and 8852 Intel E7520 chipset / MCH (Memory Controller Hub) for high-speed memory and PCI-Express / PXH-V BUS supports PCI-E to PCI-X Bridge, dual GB Ethernet and 1 PCI-X bus segment for daughter card / ICH-S supports USB (1.0), on-blade service processor, PCI-X Bus Interface to LSI1064 and ATI Radeon 7000M / Dual Broadcom 5704S												
BUS slots	No external PCI or PCI-X slots (expansion via modules or network-interface option connector)												
Ethernet	Dual gigabit 10/100/1000 ethernet controller / Broadcom 5704S / two full gigabit ethernet MAC and PHY layer functions / chip on blade / PCI-X 64-bit 133MHz / full duplex / Wake on LAN® / PXE 2.0 Boot agent / Alert Standard Format 2.0 / Failover, adapter fault tolerance / Load balancing or teaming / one of the dual controllers connects to an optional, supported Ethernet switch or Optical Passthrough Module (the second controller requires a second optional switch or OPM)												
Network Interface	One connector for I/O expansion option / requires same interface modules in bays 3 and 4 of BladeCenter / all blades in a single BladeCenter must contain the same expansion card (or no expansion card) / ethernet and serial I/O expansion cards planned for future release²⁰												
DVD / Diskette / USB Kybd / video / mouse	None / requests for DVD-ROM, diskette drive, and USB port in BladeCenter by pressing select button on front control panel												
Graphics controller	None / requests for keyboard, mouse, and video in BladeCenter by pressing the display button on front control panel SVGA / ATI® Radeon™ 7000M on Planar / 16MB SDRAM std and max / 15 pin connector												
Systems Mgmt	IBM Baseboard Management Controller (BMC) / H8S2168 / on blade / provides system and environmental monitoring, event recording, alert capability / RS-485 interface for intermanagement communication with BladeCenter Management module										Dual-Core Intel Xeon Processor LV 1.67 GHz Proc Upg 25F8887		25F8888
Diagnostics	Light Path Diagnostics™ (LED lights indicate failing component) and on-board diagnostics (via PC-Doctor in BIOS)										Dual-Core Intel Xeon Processor LV 2.0 GHz Proc Upg 25R8888		39M5818
											1GB (2x512MB Kit) PC2-3200 CL3 ECC DDR2 SDRAM RDIMM 39M5809		39M5812
											2GB (2x1GB Kit) PC2-3200 CL3 ECC DDR2 SDRAM RDIMM 39M5812		30R5145
											4GB (2x2GB Kit) PC2-3200 CL3 ECC DDR2 SDRAM RDIMM 26K5776		26K5777
											8GB (2x4GB Kit) PC2-3200 CL3 ECC DDR2 SDRAM RDIMM 39R5812		39R5824
Security	No security intrusion protection / Power-on password / administrator password / unattended boot / selectable boot / unattended start mode										BladeCenter SFF Fibre Channel Exp Card 26K4841		IBM BladeCenter SFF Gigabit Ethernet Expansion Card 39R8624
Software ship group	Documentation CD, Broadcom CD										IBM BladeCenter SFF Gigabit Ethernet Expansion Card 26K4842		Other options at ibm.com/pc/us/accessories
Cooling Fans	Uses cooling from BladeCenter (types 8677, 8720, 8730, 8852) / thermal sensors on each processor and BladeCenter modules and front panel												
Power supply(s)	Uses power module(s) in BladeCenter (types 8677, 8720, 8730, 8852)												
Prerequisites	Monitor, keyboard, mouse for setup; ethernet switch module, disk, BladeCenter (types 8677, 8720, 8730, 8852) operating system												

Server blade (side view)

opt CPU
std CPU
DIMM slot 4
DIMM slot 3
DIMM slot 2
DIMM slot 1
expansion option connector
Light Path Diagnostics buttons

Bay ★ 2.5", 6.35cm, no front access
Bay ♀ 2.5", 6.35cm, no front access

Stealth black front bezel
H 9.7" x W 1.14" x D 17.6";
H 24.5cm x W 2.9cm x D 44.6cm
12 lbs; 5.4kg (max configuration)
Configuration/Setup Utility: F1 at startup
Diagnostics (PC-Doctor™): F2 at startup
System Partition Boot: ALT+F1 at startup
Network Boot: F12 at startup
PXE Boot Agent Utility: Ctrl+S at startup
Blade control panel on each HS20 blade server provides media select button, keyboard/mouse/video select button, and indicators for blade error, information, location, disk activity, and power
Predictive Failure Analysis® alerts on memory, processor(s), and optional disk(s) with IBM Director

Maximum internal disk capacity for each HS20 LV blade server¹³:
146GB with two 73GB SAS disks

LIMITED WARRANTY³

3 year parts and labor International Warranty Service³
On site, 8 am-5 pm,
Mon-Fri excluding holidays, next business day response time
On site service upgrade options (in eligible locations):⁷

- **4 year IOR 9x5, NBD response** (ServicePac® part num 69P9520)
- **4 year IOR 9x5, 4 hr avg response** (ServicePac part num 69P9521)
- **4 year IOR 24x7, 4 hr avg response** (ServicePac part num 69P9522)
- **4 year IOR 24x7, 2 hr avg response** (ServicePac part num 69P9523)

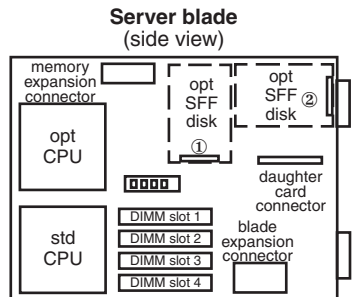
Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf> 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information

(HS20F) © IBM Corp. May 2006

IBM® Type-model	Processor	GHz¹	L2 Core	FSB cache	MHz	Watts	Memory	Disk controller	Disk bays	Expansion Units	I/O slots	Mechanical	Ethernet	Available date
8853-G1x	1 x Xeon™ E5405	2.0	QC	12MB	1333	80W	2GB	SAS	2-fixed	MIO/SIO/PCIEU	up to 2	single slot blade	2 x GB	Dec 2007
8853-G3x	1 x Xeon E5420	2.5	QC	12MB	1333	80W	2GB	SAS	2-fixed	MIO/SIO/PCIEU	up to 2	single slot blade	2 x GB	Dec 2007
8853-G4x	1 x Xeon E5430	2.66	QC	12MB	1333	80W	2GB	SAS	2-fixed	MIO/SIO/PCIEU	up to 2	single slot blade	2 x GB	Dec 2007
8853-G6x	1 x Xeon E5450	3.0	QC	12MB	1333	80W	2GB	SAS	2-fixed	MIO/SIO/PCIEU	up to 2	single slot blade	2 x GB	Dec 2007
8853-G7x	1 x Xeon X5460	3.16	QC	12MB	1333	120W	2GB	SAS	2-fixed	MIO/SIO/PCIEU	up to 2	single slot blade	2 x GB	Jan 2008
8853-EHx	2 x Xeon E5450	3.0	QC	12MB	1333	80W	4GB	SAS	2-fixed	MIO/SIO/PCIEU	up to 2	single slot blade	2 x GB	Dec 2007
8853-R2x	1 x Xeon X5260	3.33	DC	6MB	1333	80W	2GB	SAS	2-fixed	MIO/SIO/PCIEU	up to 2	single slot blade	2 x GB	Feb 2008

Processor(s)	Intel® Xeon up to 3.33GHz with 1333MHz FSB / 6MB L2 / Dual-Core / Intel Xeon up to 1.86GHz with 1066MHz FSB / 8MB L2 ECC Cache / Quad-Core / Intel Xeon up to 3.16GHz with 1333MHz FSB / 12MB L2 ECC Cache / Quad-Core / All EM64T / J1x and J2x feature Low Voltage processors for reduced heat and power consumption, allowing greater performance per watt																																																																																									
SMP - L2 Cache Implementation	2-way SMP / up to two Xeon Processors (same speed/cache size) / 6, 8 or 12MB std and max / ecc / at processor speed Systemboard contains two Intel LGA771 sockets, four DIMM slots, one High Speed Daughter Card connector, one I/O expansion option connector, integrated graphics and dual Gigabit ethernet																																																																																									
Memory	2 or 4GB std / 16GB ¹³ max / two slots used / two slots available / on base blade / PC2-5300 667MHz FBD 240-pin ECC DDR2-SDRAM DIMMs / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / ECC (corrects any x4 or x8 SDRAM device failure, detects all two wire faults on DIMMs, detects all permutations of two x4 DRAM failures, detects any two bits in error within 8 bytes of data, corrects any single bit error within 8 bytes of data) / memory sparing / Additional memory DIMMs can be added to each base HS21 with the Memory and I/O Expansion Unit, allowing up to 32GB of memory per blade																																																																																									
SAS disk controller	LSI Logic® 1064E SAS controller / two port / 300MB/sec / on planar / 64-bit PCI-Express / supports RAID-0 & 1 mirroring / two 29-pin SFF SAS cables																																																																																									
SAS Disk bays	Two 2.5-inch Small Form Factor (SFF) SAS internal fixed disk bays / Supports max of three hot-swap SFF SAS disks in optional Storage and I/O Expansion Unit																																																																																									
External Storage	Support for IBM TotalStorage™ solutions																																																																																									
Mechanical Architecture/Chipsset	Single slot blade / Supported in IBM BladeCenter (C3x & C4x supported in 8852, G7x supported in 8852, 8740, 8750 & 8886) Intel 5000P chipset / Intel Memory Controller Hub (MCH) provides PCI-Express bridge to Enterprise South Bridge 2(ESB2M), High Speed Daughter Card connector and BSE connector / ESB2M provides: USB (2.0), ATI video, Legacy Daughter Card connector, Dual GB ethernet, LSI 1064E SAS, LPC bus to NS PC87427 for Super I/O																																																																																									
BUS slots	No PCI or PCI-X slots (expansion via modules or network-interface option connector)																																																																																									
Ethernet	Dual gigabit ethernet controller / Broadcom® 5708S / two full gigabit ethernet MAC and PHY layer functions / chip on blade / PCI-Express / full duplex / TCP/IP Offload Engine (TOE) / Wake on LAN® / iSCSI / Serial over LAN / PXE 2.0 Boot agent / Alert Standard Format 2.0 / Failover, adapter fault tolerance / Load balancing or teaming / one of the dual controllers connects to an optional, supported Ethernet switch or <i>Optical Passthrough Module</i> (the second controller requires a second optional switch or OPM)																																																																																									
Network Interface	One legacy connector or PCI-Express connector for I/O expansion options / requires same interface modules in bays 3 and 4 of BladeCenter / all blades in a single BladeCenter must contain the same expansion card (or no expansion card)																																																																																									
DVD / diskette / USB	None / requests for DVD-ROM, diskette and USB port in BladeCenter by pressing media select button on front control panel																																																																																									
Kybd / video / mouse	None / requests for keyboard, mouse, and video in BladeCenter by pressing the display button on front control panel																																																																																									
Graphics controller	SVGA / ATI® ES1000 (RN50) on Planar / 16MB DDR std/max / 32-bit 33MHz PCI 2.2 bus																																																																																									
Systems Mgmt	IBM Baseboard Management Controller (BMC) / H8S2166 / on blade / provides system and environmental monitoring, event recording, alert capability / RS-485 interface for intermanagement communication with BladeCenter Management module																																																																																									
Diagnostics	Light Path Diagnostics™ (LED lights indicate failing component) and on-board diagnostics (via PC-Doctor in BIOS)																																																																																									
Security	No security intrusion protection / Power-on password / administrator password / unattended boot / selectable boot / unattended start mode																																																																																									
Software ship group	Documentation CD, Broadcom CD, ServerGuide CD																																																																																									
Cooling Fans	Uses cooling from BladeCenter / thermal sensors on each processor, BladeCenter modules and front panel																																																																																									
Power supply(s) Prerequisites	Uses power module(s) in BladeCenter Monitor, keyboard, mouse for setup; ethernet switch module, disk, BladeCenter, operating system																																																																																									
	<table border="0"> <tr> <td>Xeon L5310</td> <td>1.6GHz/1066/8MB L2 Cache</td> <td>EM64T Proc Upg</td> <td>43W1145</td> </tr> <tr> <td>Xeon L5320</td> <td>1.86GHz/1066/8MB L2 Cache</td> <td>EM64T Proc Upg</td> <td>43W6084</td> </tr> <tr> <td>Xeon X5355</td> <td>2.66 GHz/1333/8MB L2 Cache</td> <td>EM64T Proc Upg</td> <td>43W6088</td> </tr> <tr> <td>Xeon X5365</td> <td>3.0 GHz/1333/8MB L2 Cache</td> <td>EM64T Proc Upg</td> <td>43W6133</td> </tr> <tr> <td>Xeon E5405</td> <td>2.0 GHz/1333/12MB L2 Cache</td> <td>EM64T Proc Upg</td> <td>44T1716</td> </tr> <tr> <td>Xeon E5420</td> <td>2.5 GHz/1333/12MB L2 Cache</td> <td>EM64T Proc Upg</td> <td>44T1742</td> </tr> <tr> <td>Xeon E5430</td> <td>2.66 GHz/1333/12MB L2 Cache</td> <td>EM64T Proc Upg</td> <td>44T1724</td> </tr> <tr> <td>Xeon E5440</td> <td>2.83 GHz/1333/12MB L2 Cache</td> <td>EM64T Proc Upg</td> <td>44T1740</td> </tr> <tr> <td>Xeon E5450</td> <td>3.0 GHz/1333/12MB L2 Cache</td> <td>EM64T Proc Upg</td> <td>44T1728</td> </tr> <tr> <td>Xeon X5460</td> <td>3.16 GHz/1333/12MB L2 Cache</td> <td>EM64T Proc Upg</td> <td>44T1738</td> </tr> <tr> <td>Xeon X5260</td> <td>3.33 GHz/1333/6MB L2 Cache</td> <td>EM64T Proc Upg</td> <td>44T1792</td> </tr> <tr> <td>1GB (2x512)</td> <td>PC2-5300 CL5 ECC DDR2</td> <td>Chipkill FBD 667MHz Kit</td> <td>39M5782</td> </tr> <tr> <td>2GB (2x1GB)</td> <td>PC2-5300 CL5 ECC DDR2</td> <td>Chipkill FBD 667MHz Kit</td> <td>39M5785</td> </tr> <tr> <td>4GB (2x2GB)</td> <td>PC2-5300 CL5 ECC DDR2</td> <td>Chipkill FBD 667MHz Kit</td> <td>39M5791</td> </tr> <tr> <td>8GB (2x4GB)</td> <td>PC2-5300 CL5 ECC DDR2</td> <td>Chipkill FBD 667MHz Kit</td> <td>39M5797</td> </tr> <tr> <td></td> <td></td> <td>BladeCenter Storage and I/O Expansion Blade</td> <td>39R7563</td> </tr> <tr> <td></td> <td></td> <td>BladeCenter Memory and I/O Expansion Blade</td> <td>42C1600</td> </tr> <tr> <td></td> <td></td> <td>BladeCenter SFF Fibre Channel Expansion Card</td> <td>26K4841</td> </tr> <tr> <td></td> <td></td> <td>QLogic iSCSI Expansion Card for BladeCenter</td> <td>32R1923</td> </tr> </table>														Xeon L5310	1.6GHz/1066/8MB L2 Cache	EM64T Proc Upg	43W1145	Xeon L5320	1.86GHz/1066/8MB L2 Cache	EM64T Proc Upg	43W6084	Xeon X5355	2.66 GHz/1333/8MB L2 Cache	EM64T Proc Upg	43W6088	Xeon X5365	3.0 GHz/1333/8MB L2 Cache	EM64T Proc Upg	43W6133	Xeon E5405	2.0 GHz/1333/12MB L2 Cache	EM64T Proc Upg	44T1716	Xeon E5420	2.5 GHz/1333/12MB L2 Cache	EM64T Proc Upg	44T1742	Xeon E5430	2.66 GHz/1333/12MB L2 Cache	EM64T Proc Upg	44T1724	Xeon E5440	2.83 GHz/1333/12MB L2 Cache	EM64T Proc Upg	44T1740	Xeon E5450	3.0 GHz/1333/12MB L2 Cache	EM64T Proc Upg	44T1728	Xeon X5460	3.16 GHz/1333/12MB L2 Cache	EM64T Proc Upg	44T1738	Xeon X5260	3.33 GHz/1333/6MB L2 Cache	EM64T Proc Upg	44T1792	1GB (2x512)	PC2-5300 CL5 ECC DDR2	Chipkill FBD 667MHz Kit	39M5782	2GB (2x1GB)	PC2-5300 CL5 ECC DDR2	Chipkill FBD 667MHz Kit	39M5785	4GB (2x2GB)	PC2-5300 CL5 ECC DDR2	Chipkill FBD 667MHz Kit	39M5791	8GB (2x4GB)	PC2-5300 CL5 ECC DDR2	Chipkill FBD 667MHz Kit	39M5797			BladeCenter Storage and I/O Expansion Blade	39R7563			BladeCenter Memory and I/O Expansion Blade	42C1600			BladeCenter SFF Fibre Channel Expansion Card	26K4841			QLogic iSCSI Expansion Card for BladeCenter	32R1923
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		QLogic iSCSI Expansion Card for BladeCenter	32R1923																																																																																							



A control panel on top front of blade has following LEDs:
 Power good
 Blade location
 Over temperature
 Information
 General fault

- Stealth black front bezel
- H 9.7" x W 1.14" x D 17.6";
H 24.5cm x W 2.9cm x D 44.6cm
- 12 lbs; 5.4kg (max configuration)
- Configuration/Setup Utility: F1 at startup
- Diagnostics (PC-Doctor™): F2 at startup
- System Partition Boot: ALT+F1 at startup
- Network Boot: F12 at startup
- PXE Boot Agent Utility: Ctrl+S at startup
- Blade control panel on each HS21 blade server provides media select button, keyboard/mouse/video select button, and indicators for blade error, information, location, disk activity, and power
- Predictive Failure Analysis® alerts on memory, processor(s), and optional disk(s) with IBM Director

Bay ① 3.5", 9.5mm, no front access, optional 2.5-inch SFF SAS disk
 Bay ② 3.5", 9.5mm, no front access, optional 2.5-inch SFF SAS disk

Maximum internal disk capacity for each HS21 blade server¹³:
 292GB with two 146GB SAS disks (with BladeCenter Storage Expansion Unit 3 x 146GB for total of 730GB)

LIMITED WARRANTY³

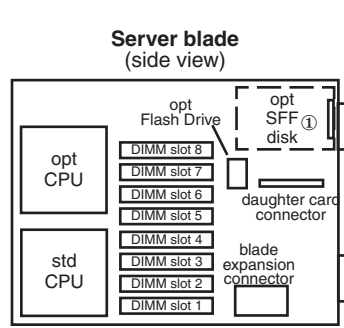
- **3 year parts and labor**
- **International Warranty Service³**
- **On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time**
- **On site service upgrade options (in eligible locations):⁷**
 - **4 year IOR 9x5, NBD response** (ServicePac® part num 69P9520)
 - **4 year IOR 9x5, 4 hr avg response** (ServicePac part num 69P9521)
 - **4 year IOR 24x7, 4 hr avg response** (ServicePac part num 69P9522)
 - **4 year IOR 24x7, 2 hr avg response** (ServicePac part num 69P9523)
- **Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>**
- **24x7¹⁴ toll-free support for warranty issues during the warranty period⁹**

IBM® Type-model	Processor	GHz¹	L2 Core	FSB cache	Watts	Disk Memory	Disk controller	Disk bays	Expansion Units	I/O slots	Mechanical	Ethernet	Available date
7995-G1x	1 x Xeon™ E5405	2.0	QC 12MB	1333	80W	1GB	SAS	1-fixed	SIO	up to 2	single slot blade	2 x GB	Dec 2007
7995-G3x	1 x Xeon E5420	2.5	QC 12MB	1333	80W	1GB	SAS	1-fixed	SIO	up to 2	single slot blade	2 x GB	Dec 2007
7995-G4x	1 x Xeon E5430	2.66	QC 12MB	1333	80W	1GB	SAS	1-fixed	SIO	up to 2	single slot blade	2 x GB	Dec 2007
7995-G6x	1 x Xeon E5450	3.0	QC 12MB	1333	80W	1GB	SAS	1-fixed	SIO	up to 2	single slot blade	2 x GB	Dec 2007
7995-EHx	2 x Xeon E5450	3.0	QC 12MB	1333	80W	4GB	SAS	1-fixed	SIO	up to 2	single slot blade	2 x GB	Dec 2007
7995-R2x	1 x Xeon X5260	3.33	DC 6MB	1333	80W	1GB	SAS	1-fixed	SIO	up to 2	single slot blade	2 x GB	Feb 2008

Processor(s)	Intel® Xeon up to 3.33GHz with 1333MHz FSB / 8MB L2 / Dual-Core / Intel Xeon up to 2.0GHz with 1333MHz FSB / 8MB L2 / Quad-Core / Intel Xeon up to 3.16GHz with 1333MHz FSB / 12MB L2 / Quad-Core / All EM64T												
SMP - L2 Cache Implementation	2-way SMP / up to two Xeon Processors (same speed/cache size) / 6, 8 or 12MB std and max / ecc / at processor speed Systemboard contains two Intel LGA771 sockets, four DIMM slots, one High Speed Daughter Card connector, one I/O expansion option connector, integrated graphics and dual Gigabit ethernet												
Memory	1, 2 or 4GB std / 32GB ¹³ max / two slots used / six slots available / on base blade / PC2-5300 667MHz FBD 240-pin ECC DDR2-SDRAM DIMMs / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / ECC (corrects any x4 or x8 SDRAM device failure, detects all two wire faults on DIMMs, detects all permutations of two x4 DRAM failures, detects any two bits in error within 8 bytes of data, corrects any single bit error within 8 bytes of data) / memory sparing / Additional memory DIMMs can be added to each base HS21 with the Memory and I/O Expansion Unit, allowing up to 32GB of memory per blade												
SAS disk controller	LSI Logic® 1064E SAS controller / two port / 300MB/sec / on planar / 64-bit PCI-Express / supports RAID-0 & 1 mirroring / one 29-pin SFF SAS cable												
SAS Disk bays	One 2.5-inch Small Form Factor (SFF) SAS internal fixed disk bays / Supports max of three hot-swap SFF SAS disks in optional Storage and I/O Expansion Unit												
Flash Storage External Storage	Dedicated USB-based slot on system planar for optional USB 2.0 flash memory card (IBM 4 or 8GB Modular Flash Drive) Support for IBM TotalStorage™ solutions												
Mechanical Architecture/Chipset	Single slot blade / Supported in IBM BladeCenter (G7x supported in 8852, 8740, 8750 & 8886) Intel 5000P chipset / Intel Memory Controller Hub (MCH) provides PCI-Express bridge to Enterprise South Bridge 2(ESB2M), High Speed Daughter Card connector and BSE connector / ESB2M provides: USB (2.0), ATI video, Legacy Daughter Card connector, Dual GB ethernet, LSI 1064E SAS, LPC bus to NS PC8742M for Super I/O												
BUS slots	No PCI or PCI-X slots (expansion via modules or network-interface option connector)												
Ethernet	Dual gigabit ethernet controller / Broadcom® 5708S / two full gigabit ethernet MAC and PHY layer functions / chip on blade / PCI-Express / full duplex / TCP/IP Offload Engine (TOE) / Wake on LAN® / iSCSI / Serial over LAN / PXE 2.0 Boot agent / Alert Standard Format 2.0 / Failover, adapter fault tolerance / Load balancing or teaming / one of the dual controllers connects to an optional, supported Ethernet switch or Optical Passthrough Module (the second controller requires a second optional switch or OPM)												
Network Interface	One legacy connector or PCI-Express connector for I/O expansion options / requires same interface modules in bays 3 and 4 of BladeCenter / all blades in a single BladeCenter must contain the same expansion card (or no expansion card)												
DVD / diskette / USB Kybd / video / mouse Graphics controller	None / requests for DVD-ROM, diskette and USB port in BladeCenter by pressing media select button on front control panel / requests for keyboard, mouse, and video in BladeCenter by pressing the display button on front control panel SVGA / ATI® ES1000 (RN50) on Planar / 16MB DDR std/max / 32-bit 33MHz PCI 2.2 bus												
Systems Mgmt	IBM Baseboard Management Controller (BMC) / H8S2166 / on blade / provides system and environmental monitoring, event recording, alert capability / RS-485 interface for intermanagement communication with BladeCenter Management module												
Diagnostics	Light Path Diagnostics™ (LED lights indicate failing component) and on-board diagnostics (via PC-Doctor in BIOS)												
Security	No security intrusion protection / Power-on password / administrator password / unattended boot / selectable boot / unattended start mode												
Software ship group	Documentation CD, Broadcom CD, ServerGuide CD												
Cooling Fans	Uses cooling from BladeCenter / thermal sensors on each processor, BladeCenter modules and front panel												
Power supply(s) Prerequisites	Uses power module(s) in BladeCenter Monitor, keyboard, mouse for setup; ethernet switch module, disk, BladeCenter, operating system												

Xeon L5310	1.6GHz/1333/8MB L2 Cache	EM64T Proc Upg	42C0571
Xeon L5320	1.86GHz/1333/8MB L2 Cache	EM64T Proc Upg	43W3917
Xeon L5335	2.0GHz/1333/8MB L2 Cache	EM64T Proc Upg	43W3944
Xeon E5405	2.0 GHz/1333/12MB L2 Cache	EM64T Proc Upg	43W3991
Xeon E5420	2.5 GHz/1333/12MB L2 Cache	EM64T Proc Upg	43W3993
Xeon E5430	2.66 GHz/1333/12MB L2 Cache	EM64T Proc Upg	43W3994
Xeon E5440	2.83 GHz/1333/12MB L2 Cache	EM64T Proc Upg	43W3995
Xeon E5450	3.0 GHz/1333/12MB L2 Cache	EM64T Proc Upg	43W3996
Xeon X5460	3.16 GHz/1333/12MB L2 Cache	EM64T Proc Upg	43W3997
Xeon X5260	3.33 GHz/1333/6MB L2 Cache	EM64T Proc Upg	43W4036
1GB (2x512) PC2-5300 CL5 ECC DDR2	Chipkill FBD 667MHz Kit		39M5782
2GB (2x1GB) PC2-5300 CL5 ECC DDR2	Chipkill FBD 667MHz Kit		39M5785
4GB (2x2GB) PC2-5300 CL5 ECC DDR2	Chipkill FBD 667MHz Kit		39M5791
8GB (2x4GB) PC2-5300 CL5 ECC DDR2	Chipkill FBD 667MHz Kit		39M5797
BladeCenter Storage and I/O Expansion Blade			39R7563
BladeCenter Memory and I/O Expansion Blade			42C1600
BladeCenter SFF Fibre Channel Expansion Card			26K4841
QLogic iSCSI Expansion Card for BladeCenter			32R1923
IBM 4GB Modular Flash Drive			39R8697
IBM 8GB Modular Flash Drive			43W3934

Other options at ibm.com/products/us



A control panel on top front of blade has following LEDs:
 Power good
 Blade location
 Over temperature
 Information
 General fault

- ◇ Stealth black front bezel
- ◇ H 9.7" x W 1.14" x D 17.6"; H 24.5cm x W 2.9cm x D 44.6cm
- ◇ 12 lbs; 5.4kg (max configuration)
- ◇ Configuration/Setup Utility: F1 at startup
- ◇ Diagnostics (PC-Doctor™): F2 at startup
- ◇ System Partition Boot: ALT+F1 at startup
- ◇ Network Boot: F12 at startup
- ◇ PXE Boot Agent Utility: Ctrl+S at startup
- ◇ Blade control panel on each HS21 blade server provides media select button, keyboard/mouse/video select button, and indicators for blade error, information, location, disk activity, and power
- ◇ Predictive Failure Analysis³ alerts on memory, processor(s), and optional disk(s) with IBM Director

Bay ① 2.5", no front access, optional 2.5-inch SFF SAS disk

Maximum internal disk capacity for each HS21 XM blade server¹³:
 146GB with one SAS disk (with BladeCenter Storage Expansion Unit 3 x 146GB for total of 438GB)

LIMITED WARRANTY³

- ⇒ 3 year parts and labor
- ⇒ International Warranty Service³
- ⇒ On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- ⇒ On site service upgrade options (in eligible locations):⁷
 - 4 year IOR 9x5, NBD response (ServicePac® part num 69P9520)
 - 4 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9521)
 - 4 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9522)
 - 4 year IOR 24x7, 2 hr avg response (ServicePac part num 69P9523)
- ⇒ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ⇒ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information

* Express Models

IBM® Type-model	Processor	GHz ¹	L3 Core cache	Watts	Memory	Disk controller	Disk bays	I/O slots	Mechanical	Ethernet	Available date
7870-1Mx*	2 x Xeon®X5560	2.8	4C 8MB	95W	6x4GB	SAS	2 hot-swap	up to 2	single slot blade	2 x Gb	Mar 2009
7870-2Mx*	2 x Xeon L5520	2.26	4C 8MB	60W	12x4GB	SAS	2 hot-swap	up to 2	single slot blade	2 x Gb	Mar 2009
7870-3Mx*	2 x Xeon X5570	2.93	4C 8MB	95W	12x4GB	SAS	2 hot-swap	up to 2	single slot blade	2 x Gb	Mar 2009
7870-5Mx*	2 x Xeon X5560	2.8	4C 8MB	95W	6x4GB	SAS	2 hot-swap	up to 2	single slot blade	2 x Gb	Mar 2009

Positioning Processor(s) *Two-socket, four-core high performance blade server for business and distributed enterprises*
Up to two Next Generation Intel® Xeon featuring Quick Path Interconnect(QPI) at up to 2.93GHz with 8MB L3 / 4 Core / with Intel Turbo Boost Technology and Hyper-Threading / up to 2.0GHz with 4MB L3 / 2 or 4 Core / Hyper-Threading
 L3 cache **4 or 8MB** std and max / at processor speed
 SMP **2-way SMP** / up to two Xeon Processors (same speed/cache size)

Implementation Systemboard contains two Socket B (LGA1366) sockets, twelve DIMM slots, one High Speed Daughter Card connector, one I/O expansion option connector, integrated graphics and dual Gigabit ethernet ports

Memory 2 or 4GB std / **48GB** max per processor(using 8GB DIMMs) / **PC3-10600 1333MHz VLP 240-pin ECC DDR3 SDRAM DIMMs** / twelve slots on base blade / ChipKill / memory mirroring

Disk Controller **LSI Logic® 1064E SAS controller / four port / 300MB/sec / on planar / 64-bit PCI-Express / supports RAID-0 & 1 /**
 Disk bays **Two 2.5-inch Small Form Factor (SFF)** hot swap disk bays / supports SAS, SATA or SSD SFF disks
 Flash Storage Dedicated USB-based slot on systemboard for optional Hypervisor USB key
 External Storage Support for IBM TotalStorage™ solutions

Mechanical Single slot blade / Supported in IBM BladeCenter E, S and H

Architecture/Chipset **Intel 5520 chipset** / Intel IO Hub provides PCI-Express bridge to: ICH10 South Bridge, High Speed Daughter Card connector and Legacy Daughter Card connector(CIOv), BCM5709S dual GbE, LSI 1064E SAS / ICH10 South Bridge provides: USB, PCI-Express and LPC bus to VSC452 for video and limited Super I/O
 BUS slots No PCI or PCI-X slots (expansion via modules or network-interface option connector)

Ethernet **Dual Gigabit Ethernet ports / Broadcom® 5709S / two full gigabit ethernet MAC and PHY layer functions / integrated / PCI-Express / full duplex / TCP/IP Offload Engine (TOE) / Wake on LAN® / iSCSI / Serial over LAN / PXE 2.0 / Failover, adapter fault tolerance / Load balancing / one of the dual controllers connects to an optional, supported Ethernet switch or Passthrough Module (the second controller requires a second optional switch or PM)**

Network Interface **One legacy connector or PCI-Express connector for I/O expansion options** / requires same interface modules in bays 3 and 4 of BladeCenter / all blades in a single BladeCenter must contain the same expansion card (or no expansion card)

Optical / diskette / USB Kybd / video / mouse None / requests for optical, diskette and USB port in BladeCenter by pressing media select button on front control panel
 Graphics controller None / requests for keyboard, video and mouse in BladeCenter by pressing the display button on front control panel
 SVGA / Matrox® G200e integrated in IMM on systemboard / 16MB DDR2-250MHz SDRAM std/max / 32-bit 33MHz PCI 2.2

Systems Mgmt **Integrated Management Module(IMM) / VSC452 / H8S2461 / integrated / provides system and environmental monitoring, event recording, alert capability / TPM 1.2 / ASR / SOL / IPMI 2.0 / RS-485 interface for intermanagement communication with BladeCenter Management module / remote supervision and cKVM standard**
 Diagnostics **Light Path Diagnostics™** (LED lights indicate failing component) and on-board diagnostics

Security No security intrusion protection / Trusted Platform Module(TPM) / Power-on password / administrator password / unattended boot / selectable boot / unattended start mode

Software ship group Documentation CD, Broadcom CD, ServerGuide CD

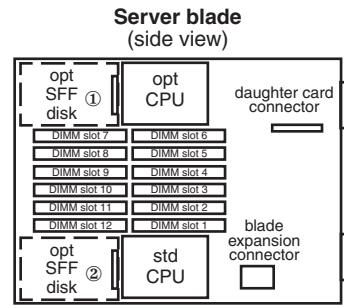
Cooling Uses cooling from BladeCenter / thermal sensors on each processor, BladeCenter modules and front panel

Power supply(s) Uses power module(s) in BladeCenter chassis

Prerequisites Monitor, keyboard, mouse for setup; ethernet switch module, disk, BladeCenter chassis, operating system

Xeon E5502 1.86GHz 80W 4.8GTs Proc Upg	43W5986
Xeon E5504 2.0GHz 80W 4.8GTs Proc Upg	44T1712
Xeon E5506 2.13GHz 80W 4.8GTs Proc Upg	43W5987
Xeon E5520 2.26GHz 80W 5.86Ts Proc Upg	44T1736
Xeon E5530 2.4GHz 80W 5.86Ts Proc Upg	44T1883
Xeon E5540 2.53GHz 80W 5.86Ts Proc Upg	44T1884
Xeon X5550 2.67GHz 95W 6.4GTs Proc Upg	44T1885
Xeon X5560 2.8GHz 95W 6.4GTs Proc Upg	44T1886
Xeon X5570 2.93GHz 95W 6.4GTs Proc Upg	44T1887
Xeon L5520 2.26GHz 60W 5.86GTs Proc Upg	46M0697
1GB (1x1GB) PC3-10600 CL9 ECC DDR3 1333MHz VLP RDIMM	44T1485
2GB (1x2GB) PC3-10600 CL9 ECC DDR3 1333MHz VLP RDIMM	44T1487
4GB (1x4GB) PC3-10600 CL9 ECC DDR3 1333MHz VLP RDIMM	44T1488
8GB (1x8GB) PC3-8500 CL7 ECC DDR3 1066MHz VLP RDIMM	44T1579
IBM 300GB 10K 6Gb SAS 2.5" SFF Slim-HS HDD	42D0637
IBM 31.4GB SSD 2.5" SFF Slim-HS HDD	43W7648
SAS Connectivity Card for IBM BladeCenter	43W4068
Ethernet Expansion Card for IBM BladeCenter	44W4475

Other options at ibm.com/products/us



- Stealth black front bezel
- H 9.7" x W 1.14" x D 17.6"; H 24.5cm x W 2.9cm x D 44.6cm
- 12 lbs; 5.4kg (max configuration)
- Configuration/Setup Utility: F1 at startup
- Diagnostics: F2 at startup
- System Partition Boot: ALT+F1 at startup
- Network Boot: F12 at startup
- PXE Boot Agent Utility: Ctrl+S at startup
- Blade control panel on each HS22 blade server provides media select button, keyboard/mouse/video select button and indicators for blade error, information,

Bay ① 2.5", hot swap, front access, optional 2.5-inch SFF SAS disk
 Bay ② 2.5", hot swap, front access, optional 2.5-inch SFF SAS disk

A control panel on front of blade has the following LEDs:
 Power
 Activity
 Location
 Information
 Fault

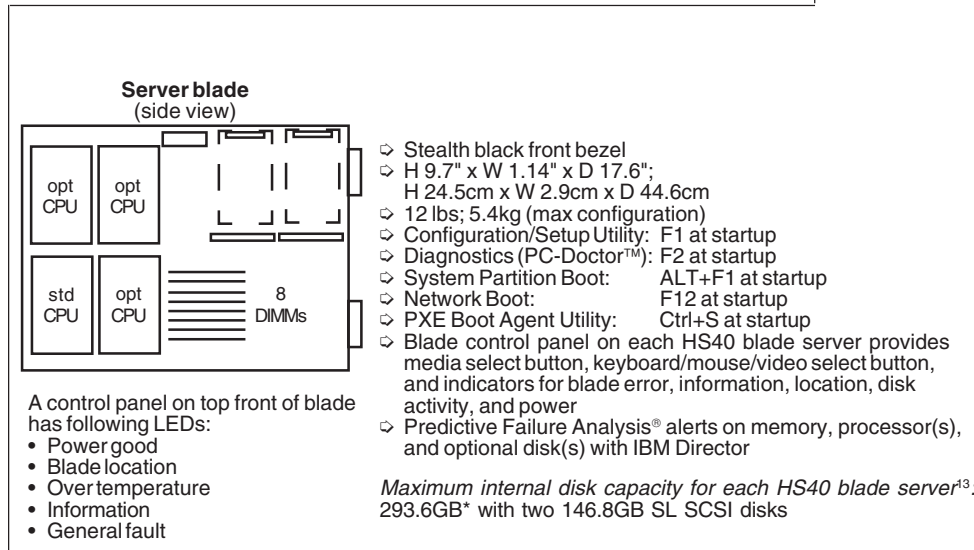
Maximum internal disk capacity for each HS22 blade server³: 600GB with two 300GB SAS disks

LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- On site service upgrade options (in eligible locations):⁷
 - 4 year IOR 9x5, NBD response (ServicePac® part num 69P9520)
 - 4 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9521)
 - 4 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9522)
 - 4 year IOR 24x7, 2 hr avg response (ServicePac part num 69P9523)
- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

IBM® Type-model	Qty x Processor ¹	L3 Cache Memory	Frontside Bus Mhz	Disk controller	Disk bays	SCSI support with optional expansion unit	Slots x bays	Mechanical	Required chassis	Available date
8839-41X	1 x Xeon™ 2.8GHz MP	2MB	400Mhz	None	None	2 hot-swap Ultra320	0x2	6U ⁴ blade	BladeCenter	Mar 2004

Positioning Processor(s) L2/L3 cache SMP support Implementation	<i>Ultra-dense, highly manageable modular computing platform with superior 4-way performance</i> 1 x Intel® Xeon 2.8GHz MP with 400MHz frontside bus / Hyper-Threading technology / NetBurst™ microarchitecture 512KB L2 Cache / 2MB L3 Cache / on die of processor / at processor speed 4-way SMP / up to four Xeon MP Processors (same speed/cache size) Server blade contains four Intel 604-pin micro-PGA ZIF sockets, eight memory DIMM slots, one SCSI expansion unit connector, two I/O expansion option connectors, integrated graphics and four ethernet ports																													
Memory	2GB std / 16GB max ¹³ / two slots used / six slots available / eight total slots PC2100 266MHz registered 184-pin ECC DDR-SDRAM DIMMs / eight DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / memory bus runs at 2 x 100MHz / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips) / memory can be mixed																													
SCSI disk controller	None / supports optional SCSI Storage Expansion Unit (a blade occupying adjacent blade slot / connects to HS40 via one connector / LSI Logic® 53C1020 Ultra320 SCSI controller [LVD 320MB/sec] / 64-bit 133MHz PCI-X Bus B from CIOB-ES I/O Bridge (IMB2 bus to Host Bridge) / supports RAID-1 mirroring [Embedded Mirroring] with two hot-swap 3.5" one-inch high SL SCSI disks in front bays / one 16-bit internal channel / no cables or external connector)																													
SCSI disk bays	Supports max of two hot-swap 3.5" SL Ultra320 SCSI disks in optional SCSI Storage Expansion Unit / 80-pin SCA-2 connectors / all SCSI bays Ultra320-enabled																													
External storage	Support for IBM TotalStorage™ solutions (including FASiT and NAS family of products)																													
Mechanical	Supported in IBM BladeCenter (type 8677) / BladeCenter supported in 28" deep racks such as the IBM NetBAY™ Rack products																													
Architecture / chipsets	ServerWorks® Grand Champion™ 4.0 LE / CMIC-LE5 Host Bridge (memory controller and I/O Bridge) / double slot one CIOB-X2 I/O Bridge (IMB2 bus to Host Bridge) for two PCI-X Buses with Bus A for ethernet and Bus B for ethernet and the I/O expansion option connector / CSB6 South Bridge (Thin IMB to Host Bridge) for EIDE, USB, LPC bus to Super I/O, and PCI 2.2 Bus C with graphics controller / National Semiconductor® PC87417 Super I/O chip																													
Bus slots	No PCI or PCI-X slots (expansion via modules or network-interface option connector)																													
Ethernet controllers	Four gigabit 10/100/1000 ethernet controllers / Intel 82545GM/82546EB / on blade / two PCI-X 64-bit 100MHz buses / full duplex / Wake on LAN® / Alert Standard Format 1.0 / teaming and failover support / one of the controllers connects to an optional 4-port GB Ethernet Switch Module (the second controller requires a second optional Ethernet Switch Module)																													
Network-interface	Two connectors for I/O expansion option / requires same interface modules in bays 3 and 4 of BladeCenter / all blades in a single BladeCenter must contain the same expansion card (or no expansion card)																													
CD / diskette / USB Kybd / video / mouse Graphics	None / requests for CD-ROM, diskette drive, and USB port in BladeCenter by pressing CD select button on front control panel None / requests for keyboard, mouse, and video in BladeCenter by pressing the display button on front control panel SVGA / ATI® Radeon 7000 / on blade / 16MB SDRAM std/max / 32-bit 33MHz PCI 2.2 bus																													
Systems mgmt	Intel integrated Baseboard Management Controller (BMC) / on blade / provides system and environmental monitoring, event recording, alert capability / RS-485 interface for communication with BladeCenter management module																													
Diagnostics	Light Path Diagnostics™ (LED lights indicate failing component) and on-board diagnostics (via PC-Doctor in BIOS)																													
Security	Power-on password / administrator password / unattended boot / selectable boot / unattended start mode																													
Software ship group	Documentation CD, IBM Director 4.1 CD, Device Driver CD																													
Cooling fans	Uses cooling from BladeCenter (type 8677) / thermal sensors on each processor and BladeCenter modules and front panel																													
Power supply Prerequisites	Uses power module(s) in BladeCenter (type 8677) Monitor, keyboard, mouse for setup; ethernet switch module, disk, BladeCenter (type 8677), operating system																													
	<table border="0"> <tr> <td>Xeon 2.8Ghz/2MB L3 Cache Proc Upg</td> <td>13N0653</td> </tr> <tr> <td>512MB PC2100 CL2.5 ECC DDR-SDRAM DIMM</td> <td>33L5038</td> </tr> <tr> <td>1GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM</td> <td>33L5039</td> </tr> <tr> <td>2GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM</td> <td>33L5040</td> </tr> <tr> <td>IBM HS40 SCSI Storage Expansion Unit (blade)</td> <td>26K4847</td> </tr> <tr> <td>IBM HS40 Fibre Channel Expansion Card (with two ports; each port requires a FC Switch Module)</td> <td>48P7061</td> </tr> <tr> <td>36.4GB 15K Ultra160 SCSI Hot-Swap SL HDD*</td> <td>06P5768</td> </tr> <tr> <td>36.4GB 15K Ultra320 SCSI Hot-Swap SL HDD*</td> <td>06P5776</td> </tr> <tr> <td>73.4GB 10K Ultra160 SCSI Hot-Swap SL HDD*</td> <td>06P5756</td> </tr> <tr> <td>146.8GB 10K Ultra320 SCSI Hot-Swap SL HDD*</td> <td>32P0728</td> </tr> </table> <p>* Disk requires SCSI Storage Expansion Unit</p>										Xeon 2.8Ghz/2MB L3 Cache Proc Upg	13N0653	512MB PC2100 CL2.5 ECC DDR-SDRAM DIMM	33L5038	1GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM	33L5039	2GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM	33L5040	IBM HS40 SCSI Storage Expansion Unit (blade)	26K4847	IBM HS40 Fibre Channel Expansion Card (with two ports; each port requires a FC Switch Module)	48P7061	36.4GB 15K Ultra160 SCSI Hot-Swap SL HDD*	06P5768	36.4GB 15K Ultra320 SCSI Hot-Swap SL HDD*	06P5776	73.4GB 10K Ultra160 SCSI Hot-Swap SL HDD*	06P5756	146.8GB 10K Ultra320 SCSI Hot-Swap SL HDD*	32P0728
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LIMITED WARRANTY³

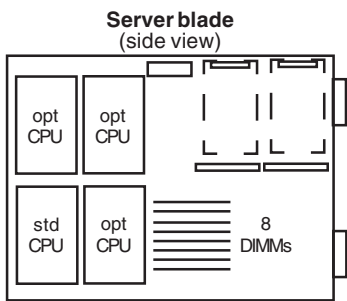
- 3 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 24x7, 2 hr avg response (ServicePac® part num 69P9519)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9518)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9517)
 - 5 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9525)
 - 5 year IOR 24x7, 2 hr avg response (ServicePac part num 69P9527)
 - Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period⁵

See footnotes for important warranty information

US model announced February 17, 2004; withdrawn effective June 29, 2004

IBM® Type-model	Qty x Processor ¹	L3 Cache Memory	Frontside Bus Mhz	Disk controller	Disk bays	SCSI support with optional expansion unit	Slots x bays	Mechanical	Required chassis	Available date
8839-51X	1 x Xeon™	2.2GHz MP 2MB 1GB	400Mhz	None	None	2 hot-swap Ultra320	0x2 7U ⁴ blade	BladeCenter	Mar 2004	
8839-61X	1 x Xeon™	2.7GHz MP 2MB 2GB	400Mhz	None	None	2 hot-swap Ultra320	0x2 7U ⁴ blade	BladeCenter	Mar 2004	
8839-71X	1 x Xeon™	3.0GHz MP 4MB 2GB	400Mhz	None	None	2 hot-swap Ultra320	0x2 7U ⁴ blade	BladeCenter	Mar 2004	

Positioning Processor(s) L2/L3 cache SMP support Implementation	<i>Ultra-dense, highly manageable modular computing platform with superior 4-way performance</i> 1 x Intel® Xeon MP up to 3.0GHz with 400MHz frontside bus / Hyper-Threading technology / NetBurst™ microarchitecture 512KB L2 Cache / Up to 4MB L3 Cache / on die of processor / at processor speed 4-way SMP / up to four Xeon MP Processors (same speed/cache size) Server blade contains four Intel 604-pin micro-PGA ZIF sockets, eight memory DIMM slots, one SCSI expansion unit connector, two I/O expansion option connectors, integrated graphics and four ethernet ports									
Memory	Up to 2GB std / 16GB max ¹³ / 51X: two slots used 61X/71X: four slots used / eight total slots PC2100 266MHz registered 184-pin ECC DDR-SDRAM DIMMs / eight DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / memory bus runs at 2 x 100MHz / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips) / memory can be mixed									
SCSI disk controller	None / supports optional SCSI Storage Expansion Unit (a blade occupying adjacent blade slot / connects to HS40 via one connector / LSI Logic® 53C1020 Ultra320 SCSI controller [LVD 320MB/sec] / 64-bit 133MHz PCI-X Bus B from CIOB-ES I/O Bridge (IMB2 bus to Host Bridge) / supports RAID-1 mirroring [Embedded Mirroring] with two hot-swap 3.5" one-inch high SL SCSI disks in front bays / one 16-bit internal channel / no cables or external connector)									
SCSI disk bays	Supports max of two hot-swap 3.5" SL Ultra320 SCSI disks in optional SCSI Storage Expansion Unit / 80-pin SCA-2 connectors / all SCSI bays Ultra320-enabled									
External storage	Support for IBM TotalStorage™ solutions (including FASiT and NAS family of products)									
Mechanical Architecture / chipsets	Supported in IBM BladeCenter (type 8677) / BladeCenter supported in 28" deep racks such as the IBM NetBAY™ Rack products ServerWorks® Grand Champion™ 4.0 LE / CMIC-LE5 Host Bridge (memory controller and I/O Bridge) / double slot one CIOB-X2 I/O Bridge (IMB2 bus to Host Bridge) for two PCI-X Buses with Bus A for ethernet and Bus B for ethernet and the I/O expansion option connector / CSB6 South Bridge (Thin IMB to Host Bridge) for EIDE, USB, LPC bus to Super I/O, and PCI 2.2 Bus C with graphics controller / National Semiconductor® PC87417 Super I/O chip									
Bus slots	No PCI or PCI-X slots (expansion via modules or network-interface option connector)									
Ethernet controllers	Four gigabit 10/100/1000 ethernet controllers / Intel 82545GM/82546EB / on blade / two PCI-X 64-bit 100MHz buses / full duplex / Wake on LAN® / Alert Standard Format 1.0 / teaming and failover support / one of the controllers connects to an optional 4-port GB Ethernet Switch Module (the second controller requires a second optional Ethernet Switch Module)									
Network-interface	One connector for I/O expansion option / requires same interface modules in bays 3 and 4 of BladeCenter / all blades in a single BladeCenter must contain the same expansion card (or no expansion card)									
CD / diskette / USB	None / requests for CD-ROM, diskette drive, and USB port in BladeCenter by pressing CD select button on front control panel									
Kybd / video / mouse Graphics	None / requests for keyboard, mouse, and video in BladeCenter by pressing the display button on front control panel SVGA / ATI® Radeon 7000 / on blade / 8MB SDRAM std/max / 32-bit 33MHz PCI 2.2 bus									
Systems mgmt	Intel integrated Baseboard Management Controller (BMC) / on blade / provides system and environmental monitoring, event recording, alert capability / RS-485 interface for communication with BladeCenter management module									
Diagnostics	Light Path Diagnostics™ (LED lights indicate failing component) and on-board diagnostics (via PC-Doctor in BIOS)									
Security	Power-on password / administrator password / unattended boot / selectable boot / unattended start mode									
Software ship group	Documentation CD, IBM Director 4.1 CD, Device Driver CD									
Cooling fans	Uses cooling from BladeCenter (types 8677, 8852 and 8720) / thermal sensors on each processor and BladeCenter modules and front panel									
Power supply Prerequisites	Uses power module(s) in BladeCenter (types 8677, 8852 and 8720) Monitor, keyboard, mouse for setup; ethernet switch module, disk, BladeCenter (types 8677, 8852 and 8720), operating system									
						Xeon 2.2Ghz/2MB L3 Cache Proc Upg 13N0656 Xeon 2.7Ghz/2MB L3 Cache Proc Upg 13N0655 Xeon 3.0Ghz/4MB L3 Cache Proc Upg 13N0654 512MB PC2100 CL2.5 ECC DDR-SDRAM DIMM 33L5038 1GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM 33L5039 2GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM 33L5040 IBM HS40 SCSI Storage Expansion Unit (blade) 26K4847 IBM HS40 Fibre Channel Expansion Card (with two ports; each port requires a FC Switch Module) 48P7061 36.4GB 15K Ultra160 SCSI Hot-Swap SL HDD* 06P5768 36.4GB 15K Ultra320 SCSI Hot-Swap SL HDD* 06P5776 73.4GB 10K Ultra160 SCSI Hot-Swap SL HDD* 06P5756 146.8GB 10K Ultra320 SCSI Hot-Swap SL HDD* 32P0728 * Disk requires SCSI Storage Expansion Unit				



A control panel on top front of blade has following LEDs:

- Power good
- Blade location
- Over temperature
- Information
- General fault

- ▷ Stealth black front bezel
 - ▷ H 9.7" x W 1.14" x D 17.6"; H 24.5cm x W 2.9cm x D 44.6cm
 - ▷ 12 lbs; 5.4kg (max configuration)
 - ▷ Configuration/Setup Utility: F1 at startup
 - ▷ Diagnostics (PC-Doctor™): F2 at startup
 - ▷ System Partition Boot: ALT+F1 at startup
 - ▷ Network Boot: F12 at startup
 - ▷ PXE Boot Agent Utility: Ctrl+S at startup
 - ▷ Blade control panel on each HS40 blade server provides media select button, keyboard/mouse/video select button, and indicators for blade error, information, location, disk activity, and power
 - ▷ Predictive Failure Analysis® alerts on memory, processor(s), and optional disk(s) with IBM Director
- Maximum internal disk capacity for each HS40 blade server¹³: 600GB* with two 300GB SL SCSI disks

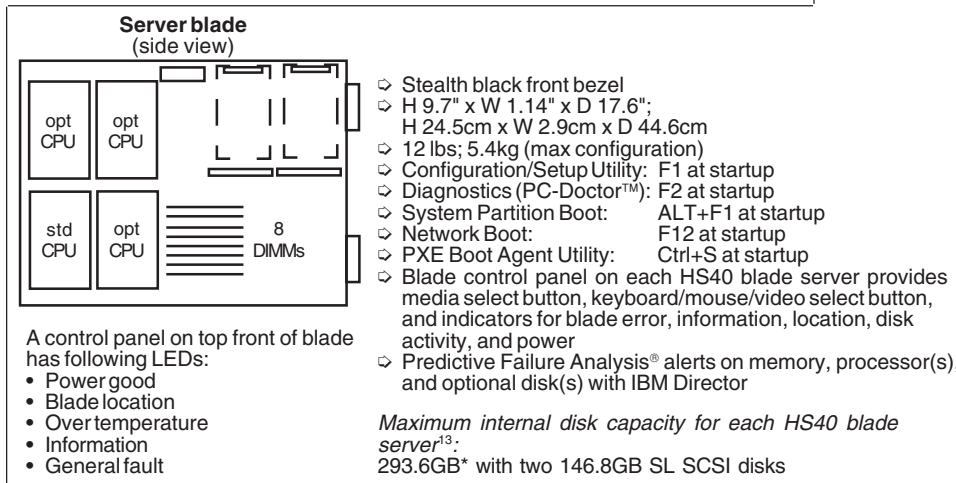
LIMITED WARRANTY³

- ↪ 3 year parts and labor
- ↪ International Warranty Service³
- ↪ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- ↪ On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 24x7, 2 hr avg response (ServicePac® part num 69P9519)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9518)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9517)
 - 5 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9525)
 - 5 year IOR 24x7, 2 hr avg response (ServicePac part num 69P9527)
 - Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ↪ 24x7¹⁴ toll-free support for warranty issues during the warranty period⁵

See footnotes for important warranty information
US models announced March 2, 2004

IBM® Type-model	Qty x Processor ¹	L3 Cache Memory	Frontside Bus Mhz	Disk controller	Disk bays	SCSI support with optional expansion unit	Slots x bays	Mechanical	Required chassis	Available date
8839-21X	1 x Xeon™ 2.0GHz MP	1MB 1GB	400Mhz	None	None	None	2 hot-swap Ultra320	0x2 7U ⁴ blade	BladeCenter	Apr 2004

Positioning Processor(s) L2/L3 cache SMP support Implementation	<i>Ultra-dense, highly manageable modular computing platform with superior 4-way performance</i> 1 x Intel® Xeon 2.0GHz MP with 400MHz frontside bus / Hyper-Threading technology / NetBurst™ microarchitecture 512KB L2 Cache / 1MB L3 Cache / on die of processor / at processor speed 4-way SMP / up to four Xeon Processors (same speed/cache size) Server blade contains four Intel 604-pin micro-PGA ZIF sockets, eight memory DIMM slots, one SCSI expansion connector, one I/O expansion option connector, and integrated graphics and dual ethernet																													
Memory	1GB std / 16GB max ¹³ / two slots used / six slots available / eight total slots PC2100 266MHz registered 184-pin ECC DDR-SDRAM DIMMs / eight DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / memory bus runs at 2 x 100MHz / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips) / memory can be mixed																													
SCSI disk controller	None / supports optional SCSI Storage Expansion Unit (a blade occupying adjacent blade slot / connects to HS40 via one connector / LSI Logic® 53C1020 Ultra320 SCSI controller [LVD 320MB/sec] / 64-bit 133MHz PCI-X Bus B from CIOB-ES I/O Bridge (IMB2 bus to Host Bridge) / supports RAID-1 mirroring [Embedded Mirroring] with two hot-swap 3.5" one-inch high SL SCSI disks in front bays / one 16-bit internal channel / no cables or external connector)																													
SCSI disk bays	Supports max of two hot-swap 3.5" SL Ultra320 SCSI disks in optional SCSI Storage Expansion Unit / 80-pin SCA-2 connectors / all SCSI bays Ultra320-enabled																													
External storage	Support for IBM TotalStorage™ solutions (including FASiT and NAS family of products)																													
Mechanical Architecture / chipsets	Supported in IBM BladeCenter (type 8677) / BladeCenter supported in 28" deep racks such as the IBM NetBAY™ Rack products ServerWorks® Grand Champion™ 4.0 LE / CMIC-LE5 Host Bridge (memory controller and I/O Bridge) / double slot one CIOB-X2 I/O Bridge (IMB2 bus to Host Bridge) for two PCI-X Buses with Bus A for ethernet and Bus B for ethernet and the I/O expansion option connector / CSB6 South Bridge (Thin IMB to Host Bridge) for EIDE, USB, LPC bus to Super I/O, and PCI 2.2 Bus C with graphics controller / National Semiconductor® PC87417 Super I/O chip																													
Bus slots	No PCI or PCI-X slots (expansion via modules or network-interface option connector)																													
Ethernet controllers	Four gigabit 10/100/1000 ethernet controllers / Intel 82545GM/82546EB / on blade / two PCI-X 64-bit 100MHz buses / full duplex / Wake on LAN® / Alert Standard Format 1.0 / teaming and failover support / one of the controllers connects to an optional 4-port GB Ethernet Switch Module (the second controller requires a second optional Ethernet Switch Module)																													
Network-interface	One connector for I/O expansion option / requires same interface modules in bays 3 and 4 of BladeCenter / all blades in a single BladeCenter must contain the same expansion card (or no expansion card)																													
CD / diskette / USB	None / requests for CD-ROM, diskette drive, and USB port in BladeCenter by pressing CD select button on front control panel																													
Kybd / video / mouse Graphics	None / requests for keyboard, mouse, and video in BladeCenter by pressing the display button on front control panel SVGA / ATI® Radeon 7000 / on blade / 8MB SDRAM std/max / 32-bit 33MHz PCI 2.2 bus																													
Systems mgmt	Intel integrated Baseboard Management Controller (BMC) / on blade / provides system and environmental monitoring, event recording, alert capability / RS-485 interface for communication with BladeCenter management module																													
Diagnostics	Light Path Diagnostics™ (LED lights indicate failing component) and on-board diagnostics (via PC-Doctor in BIOS)																													
Security	Power-on password / administrator password / unattended boot / selectable boot / unattended start mode																													
Software ship group	Documentation CD, IBM Director 4.1 CD, Device Driver CD																													
Cooling fans	Uses cooling from BladeCenter (type 8677) / thermal sensors on each processor and BladeCenter modules and front panel																													
Power supply Prerequisites	Uses power module(s) in BladeCenter (type 8677) Monitor, keyboard, mouse for setup; ethernet switch module, disk, BladeCenter (type 8677), operating system																													
	<table border="0"> <tr> <td>Xeon 2.0Ghz/1MB L3 Cache Proc Upg</td> <td>13N0651</td> </tr> <tr> <td>512MB PC2100 CL2.5 ECC DDR-SDRAM DIMM</td> <td>33L5038</td> </tr> <tr> <td>1GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM</td> <td>33L5039</td> </tr> <tr> <td>2GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM</td> <td>33L5040</td> </tr> <tr> <td>IBM HS40 SCSI Storage Expansion Unit (blade)</td> <td>26K4847</td> </tr> <tr> <td>IBM HS40 Fibre Channel Expansion Card (with two ports; each port requires a FC Switch Module)</td> <td>48P7061</td> </tr> <tr> <td>36.4GB 15K Ultra160 SCSI Hot-Swap SL HDD*</td> <td>06P5768</td> </tr> <tr> <td>36.4GB 15K Ultra320 SCSI Hot-Swap SL HDD*</td> <td>06P5776</td> </tr> <tr> <td>73.4GB 10K Ultra160 SCSI Hot-Swap SL HDD*</td> <td>06P5756</td> </tr> <tr> <td>146.8GB 10K Ultra320 SCSI Hot-Swap SL HDD*</td> <td>32P0728</td> </tr> </table> * Disk requires SCSI Storage Expansion Unit										Xeon 2.0Ghz/1MB L3 Cache Proc Upg	13N0651	512MB PC2100 CL2.5 ECC DDR-SDRAM DIMM	33L5038	1GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM	33L5039	2GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM	33L5040	IBM HS40 SCSI Storage Expansion Unit (blade)	26K4847	IBM HS40 Fibre Channel Expansion Card (with two ports; each port requires a FC Switch Module)	48P7061	36.4GB 15K Ultra160 SCSI Hot-Swap SL HDD*	06P5768	36.4GB 15K Ultra320 SCSI Hot-Swap SL HDD*	06P5776	73.4GB 10K Ultra160 SCSI Hot-Swap SL HDD*	06P5756	146.8GB 10K Ultra320 SCSI Hot-Swap SL HDD*	32P0728
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LIMITED WARRANTY³

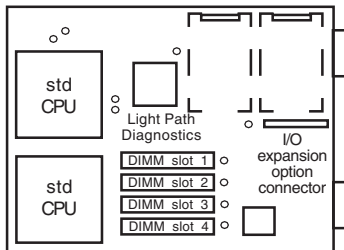
- 3 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 24x7, 2 hr avg response (ServicePac® part num 69P9519)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9518)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9517)
 - 5 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9525)
 - 5 year IOR 24x7, 2 hr avg response (ServicePac part num 69P9527)
 - Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period⁵

See footnotes for important warranty information
 US models announced April 20, 2004

IBM® Type-model	Qty x Processor	GHz¹ Core	L2 cache	Memory	Disk	Disk bays	Optional storage expansion unit	slots x bays	Mechanical	Ethernet	NEBS	Available date
8842-RTU	2 x PowerPC 970FX	2.2	SC 512KB	2GB	N/A	None	None	0 x 0	9.5mm blade	2 x Gigabit	Yes	May 2006

Positioning Processor(s) L2 Cache SMP support Implementation	The IBM BladeCenter server for reliability in mission-critical telecommunications environments 2 x IBM PowerPC™ 970FX up to 2.2GHz Single-Core / 64 bit 512KB L2 Cache 2-way SMP / with two PowerPC Processors (same speed/cache size) Server blade contains two IBM PowerPC microprocessors soldered to planar, four DIMM slots, PCI-X, EIDE controller, Fibre Channel expansion card support and dual Gigabit ethernet											
Memory	2GB std (2x1GB) / 8GB ¹³ max / two slots used / two slots available / PC-2700 333MHz CL2.5 ECC DDR-SDRAM DIMMs / four DIMM gold-connector slots / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual-channel											
IDE controller Disk bays External Storage	Enhanced IDE ATA-100 controller in AMD 8111 South Bridge None (HDDs not supported in NEBS environment) Support for IBM TotalStorage™ solutions (including FASTt and NAS family of products)											
Mechanical	Single-wide Blade / NEBS Support in IBM BladeCenter T											
Architecture/Chipset	IBM U3 Northbridge / AMD 8131 HyperTransport Tunnel and PCI-X Bridge / AMD 8111 Southbridge providing USB1.1 and IDE / Broadcom 5704S / NS PC87417 Super I/O off LPC interface											
BUS slots	No PCI or PCI-X slots (expansion via modules or network-interface option connector)											
Ethernet Controllers	Dual Gigabit 10/100/1000 ethernet controller / Broadcom® 5704S / two full gigabit ethernet MAC and PHY layer functions / chip on blade / PCI-X 64-bit 133MHz / full duplex / Wake on LAN™ / PXE 2.0 Boot agent / Alert Standard Format 2.0 / Failover, adapter fault tolerance / Load balancing or teaming / one of the dual controllers connects to an optional, supported Ethernet switch or Optical Passthrough Module (the second controller requires a second optional switch or OPM)											
Network Interface	One connector for I/O expansion option (Fibre Channel Expansion Card) / requires same interface modules in bays 3 and 4 of BladeCenter / all blades in a single BladeCenter must contain the same expansion card (or no expansion card)											
DVD / Diskette / USB Kybd / video / mouse Graphics controller	None / requests for DVD-ROM, diskette drive, and USB port in BladeCenter by pressing media select button on front control panel None None											
Systems Mgmt	IBM Integrated Service Processor / H82148 / IPMI 1.5 / on blade / provides system and environmental monitoring, event recording, alert capability / RS-485 interface for intermanagement communication with BladeCenter Management module / Cluster System Management						1GB PC-2700 ECC CL2.5 DDR RDIMM 2GB PC-2700 ECC CL2.5 DDR RDIMM IBM BladeCenter T Advanced Management Module IBM BladeCenter T Chassis (AC Version) IBM BladeCenter T Chassis (DC Version) IBM 1300W AC Power Supply (x2) IBM 1300W DC Power Supply (x2)			39M5839 39M5843 32R0835 87301RX 87201RX 32R0834 32R0833		
Diagnostics	Light Path Diagnostics (LED lights indicate failing component) and on-board diagnostics (via PC-Doctor in BIOS)											
Security	No security intrusion protection / Power-on password / administrator password / unattended boot / selectable boot / unattended start mode											
Software ship group	Documentation CD, IBM Director CD, Device Driver CD						Other options at ibm.com/pc/us/accessories					
Cooling Fans	Uses cooling from BladeCenter T (types 8730 and 8720) / thermal sensors on each processor and BladeCenter modules and front panel											
Power supply(s) Prerequisites	Uses power module(s) in BladeCenter T (types 8730 and 8720) Monitor, keyboard, mouse for setup; ethernet switch module, FCC expansion card, BladeCenter T(types 8730 and 8720), operating system											

Server blade (side view)



A control panel on top front of blade has following LEDs:

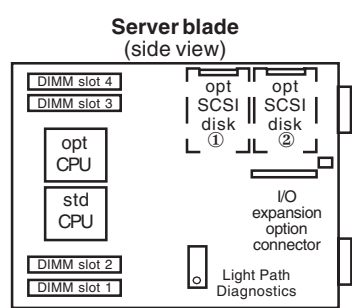
- Power good
- Blade location
- Over temperature
- Information
- General fault

- ◊ Stealth black front bezel
- ◊ H 9.7" x W 1.14" x D 17.6"; H 24.5cm x W 2.9cm x D 44.6cm
- ◊ 12 lbs; 5.4kg (max configuration)
- ◊ RTU 2-core 250W
- ◊ Configuration/Setup Utility: F1 at startup
- ◊ Diagnostics (PC-Doctor™): F2 at startup
- ◊ System Partition Boot: ALT+F1 at startup
- ◊ Network Boot: F12 at startup
- ◊ PXE Boot Agent Utility: Ctrl+S at startup
- ◊ Blade control panel on each JS20 blade server provides media select button, keyboard/mouse/video select button, and indicators for blade error, information, location, disk activity, and power
- ◊ Predictive Failure Analysis® alerts on memory, processor(s), and optional disk(s) with IBM Director

LIMITED WARRANTY³

- ◊ 3 year parts and labor
- ◊ International Warranty Service³
- ◊ On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- ◊ On site service upgrade options (in eligible locations):⁷
 - 4 year IOR 9x5, NBD response (ServicePac® part num 69P9520)
 - 4 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9521)
 - 4 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9522)
 - 4 year IOR 24x7, 2 hr avg response (ServicePac part num 69P9523)
- ◊ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ◊ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

IBM® Type-model	Qty x Processor ¹	Speed/Core	L2 Memory Cache	Disk controller	Disk bays	SCSI support	Slots x bays	Mechanical	Required chassis	Available date
8850-51U	1 x Opteron 246	2.0 GHz/SC	1GB 1MB	0MB SCSI	2 fixed	Two 2.5-inch SFF	0x2	7U ⁴ blade	BladeCenter	Apr 2005
8850-55U	1 x Opteron 270	2.0 GHz/DC	1GB 2MB	0MB SCSI	2 fixed	Two 2.5-inch SFF	0x2	7U blade	BladeCenter	Apr 2005
8850-65U	1 x Opteron 275	2.2 GHz/DC	1GB 2MB	0MB SCSI	2 fixed	Two 2.5-inch SFF	0x2	7U blade	BladeCenter	Jul 2005
8850-71U	1 x Opteron 250	2.4 GHz/SC	1GB 1MB	0MB SCSI	2 fixed	Two 2.5-inch SFF	0x2	7U blade	BladeCenter	Apr 2005
8850-81U	1 x Opteron 252	2.6 GHz/SC	2GB 1MB	0MB SCSI	2 fixed	Two 2.5-inch SFF	0x2	7U blade	BladeCenter	Apr 2005
Positioning Processor(s) L2/L3 Cache SMP support Implementation	Ultra-dense, low power, full performance modular computing platform with superior performance Up to 2 x AMD® Opteron / 280 Dual Core 2.4GHz / 254 Single Core 2.8GHz / simultaneously supports 32-bit and 64-bit computing 1MB L2 Cache per core, AMD Direct Connect Architecture ensures lower latency I/O 2-way SMP / up to two Opteron processors (same speed/cache size) Server blade contains two AMD 940 micro PGA ZIF sockets, four memory DIMM slots, two SCSI connectors, Myrinet and InfiniBand expansion card support, integrated graphics and dual ethernet									
Memory	1 or 2GB std / 16GB max¹³ / two slots used / two slots available PC3200 266MHz registered 184-pin ECC DDR VLP SDRAM RDIMMs / four DIMM gold-connector slots on systemboard DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips)									
IDE controller/bays SCSI disk controller	None One integrated / LSI Logic® 53C1020 Ultra320 SCSI controller [LVD 320MB/sec] / 64-bit 133MHz PCI-X Bus B / on planar / supports RAID-1 mirroring [Embedded Mirroring] with two non-hot-swap 2.5" / small form factor (SFF) drives / one 16-bit internal channel / no cables or external connector)									
SCSI disk bays	Supports max of two not hot-swap 2.5" SL Ultra320 SCSI disks 40-pin SCA-2 connectors / all SCSI bays Ultra320-enabled									
Other controllers External storage	Support for SFF or legacy Ethernet or Fibre Channel I/O cards, Myrinet or InfiniBand Expansion cards Support for IBM TotalStorage™ solutions (including FASTT and NAS family of products)									
Mechanical Architecture / chipsets	Supported in IBM BladeCenter / BladeCenter supported in 28" deep racks such as the IBM NetBAY™ Rack products / Alert Standard Format 1.0 / teaming and failover support / one of the dual controllers connects to an optional, supported Ethernet switch or <i>Passthrough Module</i> (the second controller requires a second optional switch or PM) AMD 8131 PCI-X Bridge Chip providing two PCI-X buses running at 600Mhz (bus A for SCSI and Ethernet, bus B for PCI-X expansion slots) / AMD 8111 HyperTransport Bridge Chip supporting a 200 Mhz double-pumped HyperTransport clock (PCI, SMBus, USB, LPC to BIOS and Super I/O) / National Semiconductor® PC87417 Super I/O chip									
Bus slots	No PCI or PCI-X slots (expansion via modules or network-interface option connector)									
Ethernet controllers	Two gigabit Ethernet controllers / Broadcom® BCM5704S / on blade / two PCI-X 64-bit 133MHz buses / full-duplex / Wake on LAN® / Alert Standard Format 1.0 / teaming and failover support / one of the dual controllers connects to an optional, supported Ethernet switch or <i>Passthrough Module</i> (the second controller requires a second optional switch or PM)									
Network-interface	One connector for I/O expansion option (Fibre Channel Expansion Card) / requires same interface modules in bays 3 and 4 of BladeCenter / all blades in a single BladeCenter must contain the same expansion card (or no expansion card) / ethernet and serial I/O expansion cards planned for future release ²⁰									
DVD / diskette / USB Kybd / video / mouse Graphics	None / requests for DVD-ROM, diskette drive, and USB port in BladeCenter by pressing media select button on front control panel None / requests for keyboard, mouse, and video in BladeCenter by pressing the display button on front control panel SVGA / ATI® Radeon Mobility 7000M / on blade / 16MB SDRAM std/max / 32-bit 33MHz PCI 2.2 bus									
Systems mgmt	IBM integrated system management processor (ISMP) / H8S2148 / on blade / provides system and environmental monitoring, event recording, alert capability / RS-485 interface for communication with BladeCenter management module					Low Power Opteron 246 Processor Upgrade 25R8891 Low Power Opteron 250 Processor Upgrade 25R8892 Low Power Opteron 252 Processor Upgrade 25R8893 Low Power Opteron 254 Processor Upgrade 25R8937 Low Power Opteron 270 Processor Upgrade 25R8894 Low Power Opteron 275 Processor Upgrade 25R8895 Low Power Opteron 280 Processor Upgrade 25R8896				
Diagnostics	Light Path Diagnostics™ (LED lights indicate failing component) and on-board diagnostics (via PC-Doctor in BIOS)					2GB (2x1GB kit) DDR-SDRAM VLP RDIMM 39M5849 4GB (2x2GB kit) DDR-SDRAM VLP RDIMM 39M5852 8GB (2x4GB kit) DDR-SDRAM VLP RDIMM 41Y2756 IBM 36.4GB SFF Non-hot-swap 10K SCSI HD 40K1037 IBM 73.4GB SFF Non-hot-swap 10K SCSI HD 40K1038				
Security	Power-on password / administrator password / unattended boot / selectable boot / unattended start mode					AMD Opteron LS20 Low Profile Handle 25R7748 BladeCenter SCSI Storage Exp Unit 26K4817 IBM SFF Fibre Channel Expansion Card 26K4841 IBM SFF Gigabit Ethernet Expansion Card 26K4842 IBM HS20 Fibre Channel Expansion Card 48P7061				
Software ship group	Documentation CD, IBM Director CD, Device Driver CD					Other options at ibm.com/pc/us/accessories				
Cooling fans	Uses cooling from BladeCenter (types 8677, 8852 and 8720) / thermal sensors on each processor and BladeCenter modules and front panel									
Power supply Prerequisites	Uses power module(s) in BladeCenter (types 8677, 8852 and 8720) Monitor, keyboard, mouse for setup; ethernet switch module, disk, BladeCenter (types 8677, 8852 and 8720), operating system									



- Bay ① 2.5", 9.5mm, no front access, optional SFF SCSI disk
 - Bay ② 2.5", 9.5mm, no front access, optional SFF SCSI disk
 - Stealth black front bezel
 - H 9.7" x W 1.14" x D 17.6"; H 24.5cm x W 2.9cm x D 44.6cm
 - 11 lbs; 5.0kg (max configuration)
 - Configuration/Setup Utility: F1 at startup
 - Diagnostics (PC-Doctor™): F2 at startup
 - System Partition Boot: ALT+F1 at startup
 - Network Boot: F12 at startup
 - PXE Boot Agent Utility: Ctrl+S at startup
 - Blade control panel on each LS20 blade server provides media select button, keyboard/mouse/video select button, and indicators for blade error, information, location, disk activity, and power
 - Predictive Failure Analysis® alerts on memory, processor(s), and optional disk(s) with IBM Director
- Maximum internal disk capacity for each LS20 blade server¹³: 146GB with two 73.4GB SFF SCSI disks

A control panel on top front of blade has following LEDs:

- Power good
- Blade location
- Over temperature
- Information
- General fault

LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 9x5, 4 hr avg response (ServicePac® part num 41C5906)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 41C5907)
 - 4 year IOR 9x5, 4 hr avg response (ServicePac part num 41C5908)
 - 4 year IOR 24x7, 4 hr avg response (ServicePac part num 41C5909)
 - 5 year IOR 9x5, 4 hr avg response (ServicePac part num 41C5910)
 - 5 year IOR 24x7, 4 hr avg response (ServicePac part num 41C5911)
- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information
US models announced May 3, 2005 and July 12, 2005

IBM® Type-model	Qty x Processor ¹	Speed/Core	L2 Memory Cache	Disk controller	Disk bays	SCSI support	Slots x bays	Mechanical	Required chassis	Available date
8850-56U	1 x Opteron 270	2.0 GHz/DC	1GB 2MB	0MB SCSI	2 fixed	Two 2.5-inch SFF	0x2	7U ⁴ blade	BladeCenter	Mar 2006
8850-66U	1 x Opteron 275	2.2 GHz/DC	1GB 2MB	0MB SCSI	2 fixed	Two 2.5-inch SFF	0x2	7U blade	BladeCenter	Mar 2006
8850-72U	1 x Opteron 250	2.4 GHz/SC	1GB 1MB	0MB SCSI	2 fixed	Two 2.5-inch SFF	0x2	7U blade	BladeCenter	Mar 2006
8850-76U	1 x Opteron 280	2.4 GHz/DC	1GB 2MB	0MB SCSI	2 fixed	Two 2.5-inch SFF	0x2	7U blade	BladeCenter	Mar 2006
8850-82U	1 x Opteron 250	2.6 GHz/SC	2GB 1MB	0MB SCSI	2 fixed	Two 2.5-inch SFF	0x2	7U blade	BladeCenter	Mar 2006
8850-92U	1 x Opteron 254	2.8 GHz/SC	2GB 1MB	0MB SCSI	2 fixed	Two 2.5-inch SFF	0x2	7U blade	BladeCenter	Mar 2006
Positioning Processor(s) L2/L3 Cache SMP support Implementation	Ultra-dense, low power, full performance modular computing platform with superior performance Up to 2 x AMD® Opteron / 280 Dual Core 2.4GHz / 254 Single Core 2.8GHz / simultaneously supports 32-bit and 64-bit computing DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel 1MB L2 Cache per core, AMD Direct Connect Architecture ensures lower latency I/O 2-way SMP / up to two Opteron processors (same speed/cache size) Server blade contains two AMD 940 micro PGA ZIF sockets, four memory DIMM slots, two SCSI connectors, integrated graphics and dual ethernet									
Memory	1 or 2GB std / 16GB max ¹³ / two slots used / two slots available PC3200 266MHz registered 184-pin ECC DDR VLP SDRAM RDIMMs / four DIMM gold-connector slots on systemboard DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips)									
IDE controller/bays SCSI disk controller	None One integrated / LSI Logic® 53C1020 Ultra320 SCSI controller [LVD 320MB/sec] / 64-bit 133MHz PCI-X Bus B / on planar / supports RAID-1 mirroring [Embedded Mirroring] with two non-hot-swap 2.5" / small form factor (SFF) drives / one 16-bit internal channel / no cables or external connector)									
SCSI disk bays	Supports max of two not hot-swap 2.5" SL Ultra320 SCSI disks 40-pin SCA-2 connectors / all SCSI bays Ultra320-enabled									
Other controllers External storage	Support for SFF or legacy Ethernet or Fibre Channel I/O cards Support for IBM TotalStorage™ solutions (including FASiT and NAS family of products)									
Mechanical Architecture / chipsets	Supported in IBM BladeCenter / BladeCenter supported in 28" deep racks such as the IBM NetBAY™ Rack products AMD 8131 PCI-X Bridge Chip providing two PCI-X buses running at 600Mhz (bus A for SCSI and Ethernet, bus B for PCI-X expansion slots) / AMD 8111 HyperTransport Bridge Chip supporting a 200 Mhz double-pumped HyperTransport clock (PCI, SMBus, USB, LPC to BIOS and Super I/O) / National Semiconductor® PC87417 Super I/O chip									
Bus slots	No PCI or PCI-X slots (expansion via modules or network-interface option connector)									
Ethernet controllers	Two gigabit Ethernet controllers / Broadcom® BCM5704S / on blade / two PCI-X 64-bit 133MHz buses / full-duplex / Wake on LAN® / Alert Standard Format 1.0 / teaming and failover support / one of the dual controllers connects to an optional, supported Ethernet switch or <i>Passthrough Module</i> (the second controller requires a second optional switch or PM)									
Network-interface	One connector for I/O expansion option (Fibre Channel Expansion Card) / requires same interface modules in bays 3 and 4 of BladeCenter / all blades in a single BladeCenter must contain the same expansion card (or no expansion card) / ethernet and serial I/O expansion cards planned for future release ²⁰									
DVD / diskette / USB Kybd / video / mouse Graphics	None / requests for DVD-ROM, diskette drive, and USB port in BladeCenter by pressing media select button on front control panel None / requests for keyboard, mouse, and video in BladeCenter by pressing the display button on front control panel SVGA / ATI® Radeon Mobility 7000M / on blade / 16MB SDRAM std/max / 32-bit 33MHz PCI 2.2 bus									
Systems mgmt	IBM integrated system management processor (ISMP) / H8S2148 / on blade / provides system and environmental monitoring, event recording, alert capability / RS-485 interface for communication with BladeCenter management module									
Diagnostics	Light Path Diagnostics™ (LED lights indicate failing component) and on-board diagnostics (via PC-Doctor in BIOS)									
Security	Power-on password / administrator password / unattended boot / selectable boot / unattended start mode									
Software ship group	Documentation CD, IBM Director CD, Device Driver CD									
Cooling fans	Uses cooling from BladeCenter (types 8677, 8852 and 8720) / thermal sensors on each processor and BladeCenter modules and front panel									
Power supply Prerequisites	Uses power module(s) in BladeCenter (types 8677, 8852 and 8720) Monitor, keyboard, mouse for setup; ethernet switch module, disk, BladeCenter (types 8677, 8852 and 8720), operating system									
	Low Power Opteron 250 Processor Upgrade Low Power Opteron 252 Processor Upgrade Low Power Opteron 254 Processor Upgrade Low Power Opteron 270 Processor Upgrade Low Power Opteron 275 Processor Upgrade Low Power Opteron 280 Processor Upgrade 2GB (2x1GB kit) DDR-SDRAM VLP RDIMM 4GB (2x2GB kit) DDR-SDRAM VLP RDIMM 8GB (2x4GB kit) DDR-SDRAM VLP RDIMM IBM 36.4GB SFF Non-hot-swap 10K SCSI HD IBM 73.4GB SFF Non-hot-swap 10K SCSI HD AMD Opteron LS20 Low Profile Handle BladeCenter SCSI Storage Exp Unit IBM SFF Fibre Channel Expansion Card IBM SFF Gigabit Ethernet Expansion Card IBM HS20 Fibre Channel Expansion Card								25R8892 25R8893 25R8937 25R8894 25R8895 25R8896 39M5849 39M5852 41Y2756 40K1037 40K1038 25R7748 26K4817 26K4841 26K4842 48P7061	

Server blade (side view)

Bay ① 2.5", 9.5mm, no front access, optional SFF SCSI disk
Bay ② 2.5", 9.5mm, no front access, optional SFF SCSI disk

- Stealth black front bezel
- H 9.7" x W 1.14" x D 17.6"; H 24.5cm x W 2.9cm x D 44.6cm
- 11 lbs; 5.0kg (max configuration)
- Configuration/Setup Utility: F1 at startup
- Diagnostics (PC-Doctor™): F2 at startup
- System Partition Boot: ALT+F1 at startup
- Network Boot: F12 at startup
- PXE Boot Agent Utility: Ctrl+S at startup
- Blade control panel on each LS20 blade server provides media select button, keyboard/mouse/video select button, and indicators for blade error, information, location, disk activity, and power
- Predictive Failure Analysis® alerts on memory, processor(s), and optional disk(s) with IBM Director

Maximum internal disk capacity for each LS20 blade server¹³: 146GB with two 73.4GB SFF SCSI disks

A control panel on top front of blade has following LEDs:

- Power good
- Blade location
- Over temperature
- Information
- General fault

LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 9x5, 4 hr avg response (ServicePac® part num 41C5906)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 41C5907)
 - 4 year IOR 9x5, 4 hr avg response (ServicePac part num 41C5908)
 - 4 year IOR 24x7, 4 hr avg response (ServicePac part num 41C5909)
 - 5 year IOR 9x5, 4 hr avg response (ServicePac part num 41C5910)
 - 5 year IOR 24x7, 4 hr avg response (ServicePac part num 41C5911)
- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information

IBM® Type-model	Qty x Processor ¹	Speed/Core	L2 Cache	Watts	Memory	Disk controller	Disk bays	Expansion Units	I/O slots	Mechanical	Ethernet	Available date
7971-51U	1 x Opteron 2216HE	2.4GHz/DC	2MB	68W	2GB	SAS	1 fixed	SIO/PCIEU	up to 2	single slot blade	2 x Gigabit	Oct 2006
7971-E1U	2 x Opteron 2216HE	2.4GHz/DC	2MB	95W	4GB	SAS	1 fixed	SIO/PCIEU	up to 2	single slot blade	2 x Gigabit	Dec 2006
7971-2TU	1 x Opteron 2210HE	1.8GHz/DC	2MB	45W	1GB	SAS	1 fixed	SIO/PCIEU	up to 2	single slot blade	2 x Gigabit	Feb 2007
7971-7AU	1 x Opteron 2220	2.8GHz/DC	2MB	95W	2GB	SAS	1 fixed	SIO/PCIEU	up to 2	single slot blade	2 x Gigabit	Feb 2007
7971-61U	1 x Opteron 2218HE	2.6GHz/DC	2MB	68W	2GB	SAS	1 fixed	SIO/PCIEU	up to 2	single slot blade	2 x Gigabit	Apr 2007
7971-8AU	1 x Opteron 2222	3.0GHz/DC	2MB	95W	2GB	SAS	1 fixed	SIO/PCIEU	up to 2	single slot blade	2 x Gigabit	Oct 2007

Positioning
Processor(s) *Ultra-dense, low power, dual socket, full performance modular computing platform with superior performance*
 Up to 2 x AMD Opteron 2000 Series Dual Core at up to 3.0GHz / simultaneously supports 32-bit and 64-bit computing
L2 Cache **1MB** L2 Cache per core, **AMD Direct Connect Architecture** ensures lower latency I/O
SMP support **2-way SMP** / up to two Opteron processors (same speed/cache size)
Implementation Systemboard contains two LGA 1207-pin sockets, eight DIMM slots, one Legacy Daughter Card connector, one Blade expansion connector, one HyperTransport Expansion connector, integrated graphics and Gigabit ethernet

Memory **1 or 2GB** std / 16GB max¹³ (32GB max with 4GB DIMMS*) / two slots used / six slots available
PC5300 667MHz registered 240-pin ECC DDR2 VLP SDRAM RDIMMs / eight DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / **Error Checking and Correcting (ECC)** via **16-bit Checksum Chipkill™** (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips), hardware scrubbing

IDE controller/bays None
SAS disk controller One integrated / LSI Logic® 1064 SAS controller 1.5/3Gb/sec / PCI-X 64-bit/133MHz / on planar / supports **RAID-1, 1E & 5** with fully populated Storage and I/O Expansion blade / no cables or external connector

SAS disk bays One non hot-swap 2.5" SFF SAS disk / Supports up to three hot-swap SFF SAS disks in optional Storage and I/O Expansion Unit
External storage Support for IBM TotalStorage™ solutions

Mechanical Single slot blade / Supported in IBM BladeCenter 8677, 8720, 8730 and 8852
Architecture/Chipsets **ServerWorks™ Chipset / HT2000 HyperTransport System I/O Controller** provides: PCI-Express bridge to Legacy Daughter Card connector and Blade Storage Expansion connector, PCI-X bridge to LSI 1064 SAS, HyperTransport bridge to HT1000 South Bridge / **HT1000 South Bridge** provides: USB(2.0), ATI video, Dual GB ethernet, LPC bus to Winbond PC87427 for Super I/O

Bus slots No PCI or PCI-X slots (expansion via modules or network-interface option connector)

Ethernet controllers Dual gigabit 10/100/1000 Ethernet controllers / Broadcom® BCM5706S / two full gigabit ethernet MAC and PHY layer functions / chip on blade / PCI-X 64-bit 133MHz bus / full-duplex / TCP/IP OffloadEngine (TOE) / Wake on LAN® / Serial over LAN / Alert Standard Format 1.0 / Load balancing or teaming / Failover, adapter fault tolerance / one of the dual controllers connects to an optional, supported Ethernet switch or *Passthrough Module* (the second controller requires a second optional switch or PM)
Network-interface **One legacy connector or PCI-Express connector for I/O expansion options** / requires same interface modules in bays 3 and 4 of BladeCenter / all blades in a single BladeCenter must contain the same expansion card (or no expansion card)

DVD / diskette / USB None / requests for DVD-ROM, diskette drive, and USB port in BladeCenter by pressing media select button on front control panel
Kybd / video / mouse None / requests for keyboard, mouse, and video in BladeCenter by pressing the display button on front control panel
Graphics SVGA / ATI® Radeon® RN50 on planar / 16MB DDR std/max / 32-bit 33MHz PCI 2.2 bus

Systems mgmt **IBM Baseboard Management Controller (BMC)** / H8S2166 / on blade / provides system and environmental monitoring, event recording, alert capability / RS-485 interface for intermanagement communication with BladeCenter Management module

Diagnostics **Light Path Diagnostics™** (LED lights indicate failing component) and on-board diagnostics (via PC-Doctor in BIOS)

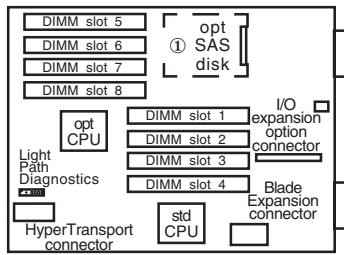
Security Power-on password / administrator password / unattended boot / selectable boot / unattended start mode

Software ship group Documentation CD, Device Driver CD, ServerGuide CD
Cooling fans Uses cooling from BladeCenter (types 8677, 8720, 8730, 8852) / thermal sensors on each processor and BladeCenter modules and front panel
 Uses power module(s) in BladeCenter (types 8677, 8720, 8730, 8852)

Power supply Monitor, keyboard, mouse for setup; ethernet switch module,
Prerequisites disk, BladeCenter (types 8677, 8720, 8730, 8852), operating system

Dual Core AMD Opteron Processor Model 2210 HE	40K1263
Dual Core AMD Opteron Processor Model 2212 HE	25F8898
Dual Core AMD Opteron Processor Model 2212	25F8831
Dual Core AMD Opteron Processor Model 2216 HE	25F8899
Dual Core AMD Opteron Processor Model 2218	25F8897
Dual Core AMD Opteron Processor Model 2218 HE	44E5246
Dual Core AMD Opteron Processor Model 2220	40K1264
Dual Core AMD Opteron Processor Model 2222	44F4946
1GB (2x512) PC2-5300 CL5 ECC DDR2 VLP RDIMM Kit	39M5861
2GB (2x1GB) PC2-5300 CL5 ECC DDR2 VLP RDIMM Kit	39M5864
4GB (2x2GB) PC2-5300 CL5 ECC DDR2 VLP RDIMM Kit	39M5867
8GB (2x4GB) PC2-4200 CL4 ECC DDR2 VLP RDIMM Kit*	39M5870
IBM 36GB NHS 2.5" SFF SAS HDD	26K5776
IBM 73GB NHS 2.5" SFF SAS HDD	26K5777
BladeCenter Storage and I/O Expansion Blade	39F7563
BladeCenter SFF Fibre Channel Expansion Card	26K4841
BladeCenter SFF Gigabit Ethernet Expansion Card	39F8624
Other options at ibm.com/pc/us/accessories	

Server blade
(side view)



Bay ① 2.5", 9.5mm, no front access, optional SFF SAS disk

A control panel on top front of blade has following LEDs:

- Power good
- Blade location
- Over temperature
- Information
- General fault

- Stealth black front bezel
- H 9.7" x W 1.14" x D 17.6"; H 24.5cm x W 2.9cm x D 44.6cm
- 11 lbs; 5.0kg (max configuration)
- Configuration/Setup Utility: F1 at startup
- Diagnostics (PC-Doctor™): F2 at startup
- Network Boot: F12 at startup
- PXE Boot Agent Utility: Ctrl+S at startup
- Blade control panel on each LS21 blade provides media select button, keyboard/mouse/video select button, and indicators for blade error, information, location, disk activity, and power
- Predictive Failure Analysis® alerts on memory, processor(s), and optional disk(s) with IBM Director

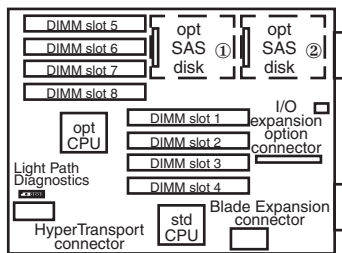
LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9517)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9518)
 - 4 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9521)
 - 4 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9522)
 - 5 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9525)
 - 5 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9526)
 - Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period⁸

IBM® Type-model	Qty x Processor ¹	Speed/Core	L2 Cache	Watts	Memory	Disk controller	Disk bays	Expansion Units	I/O slots	Mechanical	Ethernet	Available date
7901-3Qx	1 x Optron 2347 HE	1.9GHz/4C	2MB	79W	2GB	SAS	2 fixed	PCIEU/ PEU2	up to 2	single slot blade	2 x Gb	Sep 2008
7901-CQx	1 x Optron 2356	2.3GHz/4C	2MB	115W	2GB	SAS	2 fixed	PCIEU/ PEU2	up to 2	single slot blade	2 x Gb	Sep 2008
7901-EDx*	2 x Optron 2356	2.3GHz/4C	2MB	115W	8GB	SAS	2 fixed	PCIEU/ PEU2	up to 2	single slot blade	2 x Gb	Sep 2008

Positioning Processor(s)	Ultra-dense, dual-socket, up to six-core, modular computing platform with superior performance Up to 2 x AMD Optron 2000 Series / Six-Core at 2.6GHz / Four-Core up to 2.7GHz / simultaneously supports 32-bit and 64-bit computing											
L2 Cache	2MB or 3MB L2 Cache / AMD Direct Connect Architecture ensures lower latency I/O											
SMP support Implementation	2-way SMP / up to two Optron processors (same speed/cache size) Systemboard contains two LGA 1207-pin sockets, eight VLP DIMM slots, one Legacy Daughter Card connector, one Blade Expansion connector, one HyperTransport Expansion connector, integrated graphics, SAS and ethernet											
Memory	2x1GB or 4x2GB std / 64GB max ¹³ / two or four slots used / four or six slots available / PC2-5300 667MHz registered 240-pin ECC DDR2 VLP SDRAM RDIMMs (std) / PC2-6400 800MHz registered 240-pin ECC DDR2 VLP SDRAM RDIMMs (opt) / eight DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips), hardware scrubbing											
SAS disk controller SAS disk bays	LSI Logic®1064E SAS controller / 1.5/3.0 Gb/s / PCI-Express / on planar / supports RAID-1 / no cables or external connector Two fixed 2.5" SFF SAS disks											
External storage	Support for IBM TotalStorage™ solutions											
Mechanical Architecture/Chipsets	Single slot blade / Supported in IBM BladeCenter 8677**, 8852 and 8886 ServerWorks™ Chipset / HT2100 HyperTransport System I/O Controller provides: PCI-Express links to Blade Storage Expansion connector and PCI-Express Switch to SAS and Ethernet controllers, HyperTransport bridge to HT1000 South Bridge / HT 1000 South Bridge provides: Legacy Daughter Card connector via 64-bit PCI-X bus, USB, ATI video via 32-bit PCI bus, LPC bus to Winbond PC87427 for Super I/O											
Bus slots	No PCI or PCI-X slots (expansion via modules or network-interface option connector)											
Ethernet controllers	Dual Gigabit Ethernet ports / Broadcom® BCM5709S Gigabit Ethernet controller / two full gigabit ethernet MAC and PHY layer functions / integrated / PCI-Express / full-duplex / TCP/IP Offload Engine (TOE) / PXE 2.0 / Wake on LAN® / iSCSI / Serial over LAN / failover, adapter fault tolerance / load balancing / connects to optional, supported Ethernet switches or <i>Passthrough Modules</i> (requires a second optional switch or PM for failover)											
Network-interface	One legacy connector or PCI-Express connector for I/O expansion options / requires same interface modules in bays 3 and 4 of BladeCenter / all blades in a single BladeCenter must contain the same expansion card (or no expansion card)											
DVD / diskette / USB Kybd / video / mouse Graphics	None / requests for DVD-ROM, diskette drive, and USB port in BladeCenter by pressing media select button on front control panel None / requests for keyboard, mouse, and video in BladeCenter by pressing the display button on front control panel SVGA / ATI® Radeon® RN50 on planar / 16MB DDR std/max / 32-bit 33MHz PCI 2.2 bus											
Systems mgmt	IBM Baseboard Management Controller (BMC) / H8S2166 / on blade / provides system and environmental monitoring, event recording, alert capability / RS-485 interface for intermanagement communication with BladeCenter Management module						Four Core AMD Optron Processor Model 2347 HE			44X1542		
Diagnostics	Light Path Diagnostics™ (LED lights indicate failing component) and on-board diagnostics (via Preboot DSA)						Four Core AMD Optron Processor Model 2356			44R4961		
							Four Core AMD Optron Processor Model 2376 HE			46M6880		
Security	Power-on password / administrator password / unattended boot / selectable boot / unattended start mode						Six Core AMD Optron Processor Model 2435			49Y4747		
							2GB (2x1GB) PC2-5300 CL5 ECC DDR2 VLP RDIMM Kit			46C0522		
Software ship group	Documentation CD, Device Driver CD, ServerGuide CD						4GB (2x2GB) PC2-5300 CL5 ECC DDR2 VLP RDIMM Kit			46C0512		
							8GB (2x4GB) PC2-5300 CL4 ECC DDR2 VLP RDIMM Kit			46C7524		
Cooling fans	Uses cooling from BladeCenter (types 8677**, 8852 and 8886) / thermal sensors on each processor and BladeCenter modules and front panel						8GB (2x4GB) PC2-6400 CL4 ECC DDR2 VLP RDIMM Kit			46C7525		
							16GB (2x8GB) PC2-4200 CL5 ECC DDR2 VLP RDIMM Kit			44T1547		
Power supply Prerequisites	Uses power modules in BladeCenter (types 8677**, 8852 and 8886) Monitor, keyboard, mouse for setup; ethernet switch module, disk, BladeCenter (types 8677**, 8852 and 8886), operating system						IBM 73GB NHS 2.5" 10K SFF SAS HDD			26K5777		
							IBM 146GB NHS 2.5" 10K SFF SAS HDD			42D0241		
							IBM 73GB NHS 2.5" 15K SFF SAS HDD			43X0845		
							BladeCenter PCI Expansion Unit 2			25K8373		
							BladeCenter PCI-Express I/O Expansion Unit			43W4391		
							SAS Expansion Card for IBM BladeCenter			39Y9190		

Server blade (side view)



- ◇ Stealth black front bezel
- ◇ H 9.7" x W 1.14" x D 17.6"; H 24.5cm x W 2.9cm x D 44.6cm
- ◇ 11 lbs; 5.0kg (max configuration)
- ◇ Configuration/Setup Utility: F1 at startup
- ◇ Diagnostics: F2 at startup
- ◇ Network Boot: F12 at startup
- ◇ PXE Boot Agent Utility: Ctrl+S at startup
- ◇ Blade control panel on each blade provides media select button, keyboard/mouse/video select button, and indicators for blade error, information, location, disk activity, and power
- ◇ Predictive Failure Analysis® alerts on memory and processor(s)

Bay ① 2.5", 9.5mm, no front access, optional 2.5-inch SFF SAS disk
 Bay ② 2.5", 9.5mm, no front access, optional 2.5-inch SFF SAS disk

Maximum internal disk capacity for each LS22 blade server¹³:
 292GB with two 146GB SAS disks

Other options at ibm.com/products/us

LIMITED WARRANTY³

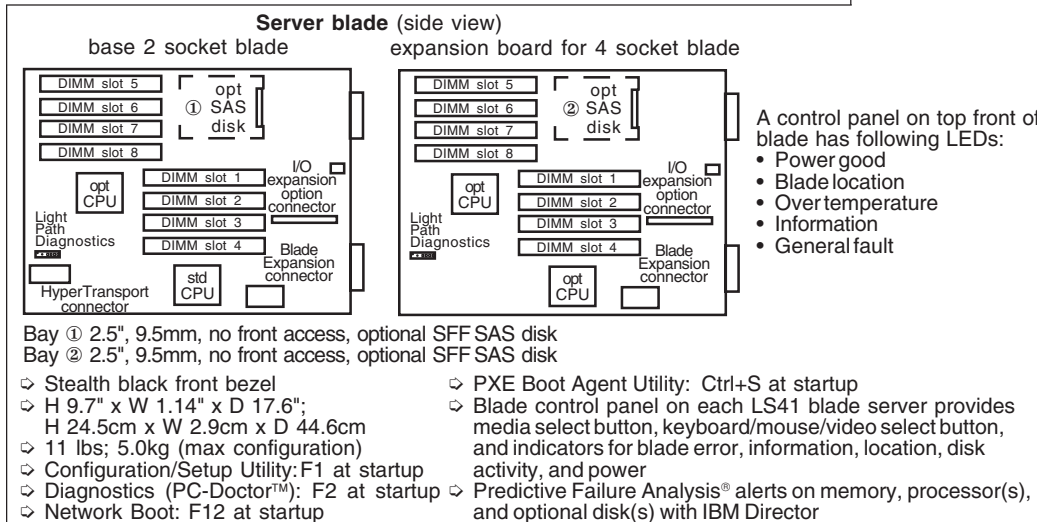
- ◇ 3 year parts and labor
- ◇ International Warranty Service³
- ◇ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- ◇ On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 9x5, 4 hr avg response (ServicePac® part num 40Y5980)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 40Y5981)
 - 4 year IOR 9x5, 4 hr avg response (ServicePac part num 40Y5984)
 - 4 year IOR 24x7, 4 hr avg response (ServicePac part num 40Y5985)
 - 5 year IOR 9x5, 4 hr avg response (ServicePac part num 40Y5988)
 - 5 year IOR 24x7, 4 hr avg response (ServicePac part num 40Y5989)
- ◇ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ◇ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information

** with 2000W power supply upgrade, * Express Models

IBM® Type-model	Qty x Processor ¹	Speed/Core	L2 Cache	Watts	Memory	Disk controller	Disk bays	Expansion Units	I/O slots	Mechanical	Ethernet	Available date
7972-51U	1 x Opteron 8216HE	2.4GHz/DC	2MB	68W	2GB	SAS	1 fixed	SIO/PCIEU	up to 2	single slot blade	2 x Gigabit	Oct 2006
7972-52U	2 x Opteron 8216HE	2.4GHz/DC	2MB	68W	4GB	SAS	2 fixed	SIO/PCIEU	up to 2	double slot blade	4 x Gigabit	Oct 2006
7972-6BU	2 x Opteron 8218	2.6GHz/DC	2MB	95W	4GB	SAS	2 fixed	SIO/PCIEU	up to 2	double slot blade	4 x Gigabit	Oct 2006
7972-E2U	4 x Opteron 8216HE	2.4GHz/DC	2MB	68W	16GB	SAS	2 fixed	SIO/PCIEU	up to 2	double slot blade	4 x Gigabit	Dec 2006

Positioning Processor(s) L2 Cache SMP support Implementation	Ultra-dense, low power, dual or quad socket, full performance modular computing platform with superior performance Up to 4 x AMD Opteron 8000 Series Dual Core at up to 2.6GHz / simultaneously supports 32-bit and 64-bit computing 1MB L2 Cache per core, AMD Direct Connect Architecture ensures lower latency I/O 2 or 4-way SMP / up to four Opteron processors (same speed/cache size) Systemboard contains up to four LGA1207-pin sockets, up to sixteen DIMM slots, up to two Legacy Daughter Card connectors, one Blade expansion connector, one HyperTransport Expansion connector, integrated graphics and Gigabit ethernet											
Memory	1, 2 or 4GB std / 16GB max ¹³ with double socket blade / 32 GB max ¹³ with quad socket blade / (32/64GB max with 4GB DIMMS*) two or four slots used / six or twelve slots available / PC5300 667MHz registered 240-pin ECC DDR2 VLP SDRAM RDIMMs / four DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips), hardware scrubbing											
SAS disk controller	Up to two integrated / LSI Logic® 1064 SAS controller 1.5/3Gb/sec / PCI-X 64-bit/133MHz / on planar / supports RAID 0, 1 / supports RAID-1, 1E & 5 with fully populated Storage and I/O Expansion blade / no cables or external connector											
SAS disk bays	Up to two non hot-swap 2.5" SFF SAS disks / Supports up to three hot-swap SFF SAS disks in optional Storage and I/O Expansion Unit											
External storage	Support for IBM TotalStorage™ solutions											
Mechanical Architecture/Chipsets	Single or double slot blade / Supported in IBM BladeCenter 8677, 8720, 8730 and 8852 ServerWorks™ Chipset / Up to two HT2000 HyperTransport System I/O Controllers providing: PCI-Express bridges to Legacy Daughter Card connectors and Blade Storage Expansion connector, PCI-X bridge to LSI 1064 SAS, HyperTransport bridge to HT1000 South Bridge / HT1000 South Bridge provides: USB(2.0), ATI video, Dual GB ethernet, LPC bus to Winbond PC87427 for Super I/O											
Bus slots	No PCI or PCI-X slots (expansion via modules or network-interface option connector)											
Ethernet controllers	Up to four gigabit Ethernet controllers / dual 10/100/1000 Ethernet controllers on single slot blade / Broadcom® BCM5706S / PCI-X 64-bit 133MHz bus / double socket blade adds Broadcom BCM5708S / dual10/100/1000 Ethernet controllers / PCI-Express / up to four full gigabit ethernet MAC and PHY layer functions / full-duplex / TCP/IP OffloadEngine (TOE) / iSCSI / Wake on LAN® / Serial over LAN / Alert Standard Format 2.0 / Failover, adapter fault tolerance / Remote Direct Memory Access (RDMA)											
Network-interface	Up to two legacy connector or PCI-Express connector for I/O expansion options / requires same interface modules in bays 3 and 4 of BladeCenter / all blades in a single BladeCenter must contain the same expansion card (or no expansion card)											
DVD / diskette / USB Kybd / video / mouse Graphics	None / requests for DVD-ROM, diskette drive, and USB port in BladeCenter by pressing media select button on front control panel None / requests for keyboard, mouse, and video in BladeCenter by pressing the display button on front control panel SVGA / ATI® Radeon® RN50 on planar / 16MB DDR std/max / 32-bit 33MHz PCI 2.2 bus											
Systems mgmt	IBM Baseboard Management Controller (BMC) / H8S2166 / on blade / provides system and environmental monitoring, event recording, alert capability / RS-485 interface for intermanagement communication with BladeCenter Management module						Dual Core AMD Opteron Processor Model 8212HE 25R8934 Dual Core AMD Opteron Processor Model 8212 25R8932 Dual Core AMD Opteron Processor Model 8216HE 25R8935 Dual Core AMD Opteron Processor Model 8218 25R8933 1GB (2x512) PC2-5300 CL5 ECC DDR2 VLP RDIMM Kit 39M5861 2GB (2x1GB) PC2-5300 CL5 ECC DDR2 VLP RDIMM Kit 39M5864 4GB (2x2GB) PC2-5300 CL5 ECC DDR2 VLP RDIMM Kit 39M5867 8GB (2x4GB) PC2-4200 CL4 ECC DDR2 VLP RDIMM Kit* 39M5870 IBM 36GB NHS 2.5" SFF SAS HDD 26K5776 IBM 73GB NHS 2.5" SFF SAS HDD 26K5777 BladeCenter Storage and I/O Expansion Blade 39R7563 BladeCenter SFF Fibre Channel Expansion Card 26K4841 BladeCenter SFF Gigabit Ethernet Expansion Card 39R8624 QLLogic iSCSI Expansion Card for BladeCenter 32R1923 QLLogic 4GB SFF Fibre Channel Expansion Card for BladeCenter 26R0890 Emulex 4GB SFF Fibre Channel Expansion Card for BladeCenter 39Y9186					
Diagnostics	Light Path Diagnostics™ (LED lights indicate failing component) and on-board diagnostics (via PC-Doctor in BIOS)											
Security	No security intrusion protection / Power-on password / administrator password / unattended boot / selectable boot / unattended start mode											
Software ship group	Documentation CD, Device Driver CD, ServerGuide CD											
Cooling fans	Uses cooling from BladeCenter (types 8677, 8720, 8730, 8852) / thermal sensors on each processor and BladeCenter modules and front panel											
Power supply Prerequisites	Uses power module(s) in BladeCenter (types 8677, 8720, 8730, 8852) Monitor, keyboard, mouse for setup; ethernet switch module, disk, BladeCenter (types 8677, 8720, 8730, 8852), operating system Other options at ibm.com/pc/us/accessories											



LIMITED WARRANTY³

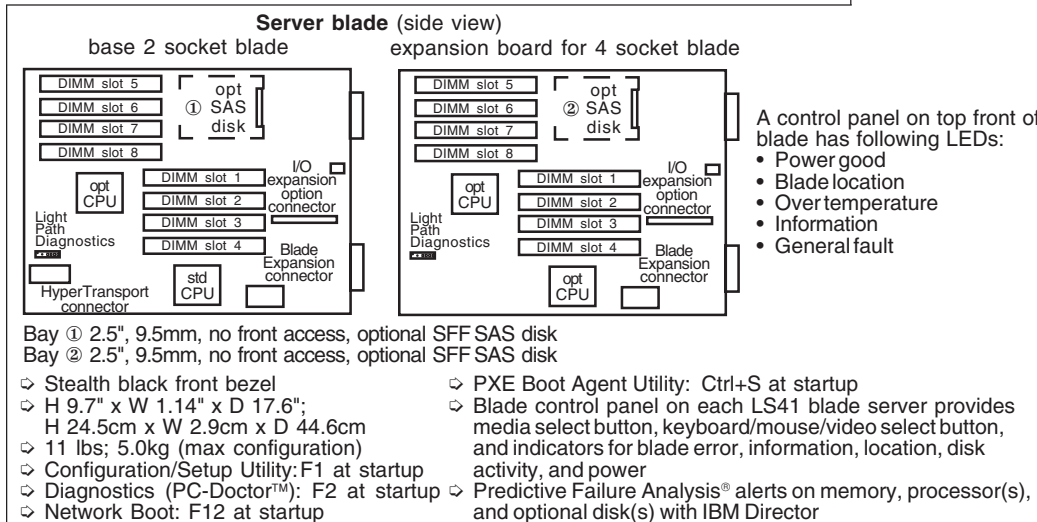
- ↔ 3 year parts and labor
- ↔ International Warranty Service³
- ↔ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- ↔ On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 9x5, 4 hr avg response (ServicePac® partnum 12x7014)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac partnum 12x7015)
 - 4 year IOR 9x5, 4 hr avg response (ServicePac partnum 12x7018)
 - 4 year IOR 24x7, 4 hr avg response (ServicePac partnum 12x7019)
 - 5 year IOR 9x5, 4 hr avg response (ServicePac partnum 12x7022)
 - 5 year IOR 24x7, 4 hr avg response (ServicePac partnum 12x7023)
- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ↔ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information

¹⁴4GB DIMMS support available December 2006

IBM® Type-model	Qty x Processor ¹	Speed/Core	L2 Cache	Watts	Memory	Disk controller	Disk bays	Expansion Units	I/O slots	Mechanical	Ethernet	Available date
7972-4TU	2 x Opteron 8214HE	2.2GHz/DC	2MB	68W	2GB	SAS	2 fixed	SIO/PCIEU	up to 2	double slot blade	4 x Gigabit	Feb 2007
7972-7BU	2 x Opteron 8220	2.8GHz/DC	2MB	95W	4GB	SAS	2 fixed	SIO/PCIEU	up to 2	double slot blade	4 x Gigabit	Feb 2007
7972-8BU	2 x Opteron 8222	3.0GHz/DC	2MB	95W	4GB	SAS	2 fixed	SIO/PCIEU	up to 2	double slot blade	4 x Gigabit	Oct 2007

Positioning Processor(s) L2 Cache SMP support Implementation	Ultra-dense, low power, dual or quad socket, full performance modular computing platform with superior performance Up to 4 x AMD Opteron 8000 Series Dual Core at up to 3.0GHz / simultaneously supports 32-bit and 64-bit computing 1MB L2 Cache per core, AMD Direct Connect Architecture ensures lower latency I/O 2 or 4-way SMP / up to four Opteron processors (same speed/cache size) Systemboard contains up to four LGA1207-pin sockets, up to sixteen DIMM slots, up to two Legacy Daughter Card connectors, one Blade expansion connector, one HyperTransport Expansion connector, integrated graphics and Gigabit ethernet											
Memory	1, 2 or 4GB std / 16GB max ¹³ with double socket blade / 32 GB max ¹³ with quad socket blade / (32/64GB max with 4GB DIMMS*) two or four slots used / six or twelve slots available / PC5300 667MHz registered 240-pin ECC DDR2 VLP SDRAM RDIMMs / four DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips), hardware scrubbing											
SAS disk controller	Up to two integrated / LSI Logic® 1064 SAS controller 1.5/3Gb/sec / PCI-X 64-bit/133MHz / on planar / supports RAID 0, 1 / supports RAID-1, 1E & 5 with fully populated Storage and I/O Expansion blade / no cables or external connector											
SAS disk bays	Up to two non hot-swap 2.5" SFF SAS disks / Supports up to three hot-swap SFF SAS disks in optional Storage and I/O Expansion Unit											
External storage	Support for IBM TotalStorage™ solutions											
Mechanical Architecture/Chipsets	Single or double slot blade / Supported in IBM BladeCenter 8677, 8720, 8730 and 8852 ServerWorks™ Chipset / Up to two HT2000 HyperTransport System I/O Controllers providing: PCI-Express bridges to Legacy Daughter Card connectors and Blade Storage Expansion connector, PCI-X bridge to LSI 1064 SAS, HyperTransport bridge to HT1000 South Bridge / HT1000 South Bridge provides: USB(2.0), ATI video, Dual GB ethernet, LPC bus to Winbond PC87427 for Super I/O											
Bus slots	No PCI or PCI-X slots (expansion via modules or network-interface option connector)											
Ethernet controllers	Up to four gigabit Ethernet controllers / dual 10/100/1000 Ethernet controllers on single slot blade / Broadcom® BCM5706S / PCI-X 64-bit 133MHz bus / double socket blade adds Broadcom BCM5708S / dual10/100/1000 Ethernet controllers / PCI-Express / up to four full gigabit ethernet MAC and PHY layer functions / full-duplex / TCP/IP OffloadEngine (TOE) / iSCSI / Wake on LAN® / Serial over LAN / Alert Standard Format 2.0 / Failover, adapter fault tolerance / Remote Direct Memory Access (RDMA)											
Network-interface	Up to two legacy connector or PCI-Express connector for I/O expansion options / requires same interface modules in bays 3 and 4 of BladeCenter / all blades in a single BladeCenter must contain the same expansion card (or no expansion card)											
DVD / diskette / USB Kybd / video / mouse Graphics	None / requests for DVD-ROM, diskette drive, and USB port in BladeCenter by pressing media select button on front control panel None / requests for keyboard, mouse, and video in BladeCenter by pressing the display button on front control panel SVGA / ATI® Radeon® RN50 on planar / 16MB DDR std/max / 32-bit 33MHz PCI 2.2 bus											
Systems mgmt	IBM Baseboard Management Controller (BMC) / H8S2166 / on blade / provides system and environmental monitoring, event recording, alert capability / RS-485 interface for intermanagement communication with BladeCenter Management module											
Diagnostics	Light Path Diagnostics™ (LED lights indicate failing component) and on-board diagnostics (via PC-Doctor in BIOS)											
Security	No security intrusion protection / Power-on password / administrator password / unattended boot / selectable boot / unattended start mode											
Software ship group	Documentation CD, Device Driver CD, ServerGuide CD											
Cooling fans	Uses cooling from BladeCenter (types 8677, 8720, 8730, 8852) / thermal sensors on each processor and BladeCenter modules and front panel											
Power supply Prerequisites	Uses power module(s) in BladeCenter (types 8677, 8720, 8730, 8852) Monitor, keyboard, mouse for setup; ethernet switch module, disk, BladeCenter (types 8677, 8720, 8730, 8852), operating system											
	Dual Core AMD Opteron Processor Model 8214HE Dual Core AMD Opteron Processor Model 8218HE Dual Core AMD Opteron Processor Model 8220 Dual Core AMD Opteron Processor Model 8222 1GB (2x512) PC2-5300 CL5 ECC DDR2 VLP RDIMM Kit 2GB (2x1GB) PC2-5300 CL5 ECC DDR2 VLP RDIMM Kit 4GB (2x2GB) PC2-5300 CL5 ECC DDR2 VLP RDIMM Kit 8GB (2x4GB) PC2-4200 CL4 ECC DDR2 VLP RDIMM Kit* IBM 36GB NHS 2.5" SFF SAS HDD IBM 73GB NHS 2.5" SFF SAS HDD BladeCenter Storage and I/O Expansion Blade BladeCenter SFF Fibre Channel Expansion Card BladeCenter SFF Gigabit Ethernet Expansion Card QLLogic iSCSI Expansion Card for BladeCenter QLLogic 4GB SFF Fibre Channel Expansion Card for BladeCenter Emulex 4GB SFF Fibre Channel Expansion Card for BladeCenter										40K1265 44E5247 44K1266 44R4951 39M5861 39M5864 39M5867 39M5870 26K5776 26K5777 39R7563 26K4841 39R8624 32R1923 26R0890 39Y9186	



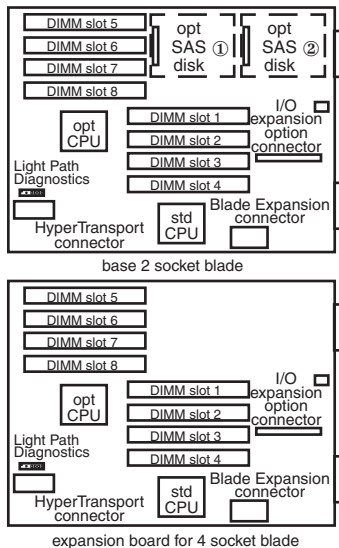
LIMITED WARRANTY³

- ↔ 3 year parts and labor
- ↔ International Warranty Service³
- ↔ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- ↔ On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 9x5, 4 hr avg response (ServicePac partnum 12x7014)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac partnum 12x7015)
 - 4 year IOR 9x5, 4 hr avg response (ServicePac partnum 12x7018)
 - 4 year IOR 24x7, 4 hr avg response (ServicePac partnum 12x7019)
 - 5 year IOR 9x5, 4 hr avg response (ServicePac partnum 12x7022)
 - 5 year IOR 24x7, 4 hr avg response (ServicePac partnum 12x7023)
- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ↔ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information

IBM® Type-model	Qty x Processor ¹	Speed/Core	L2 Cache	Watts	Memory	Disk controller	Disk bays	Expansion Units	I/O slots	Mechanical	Ethernet	Available date
7902-3QU	2 x Opteron 8347HE	1.9GHz/QC	2MB	79W	4GB	SAS	2 fixed	PCIEU/PEU2	up to 2	double slot blade	4 x Gb	Sep 2008
7902-CQU	2 x Opteron 8356	2.3GHz/QC	2MB	115W	4GB	SAS	2 fixed	PCIEU/PEU2	up to 2	double slot blade	4 x Gb	Sep 2008
7902-EDU*	4 x Opteron 8356	2.3GHz/QC	2MB	115W	16GB	SAS	2 fixed	PCIEU/PEU2	up to 2	double slot blade	4 x Gb	Sep 2008
7902-ESU	2 x Opteron 8384	2.7GHz/QC	2MB	75W	8GB	SAS	2 fixed	PCIEU/PEU2	up to 2	double slot blade	4 x Gb	Nov 2008
7902-EUU	4 x Opteron 8384	2.7GHz/QC	2MB	75W	16GB	SAS	2 fixed	PCIEU/PEU2	up to 2	double slot blade	4 x Gb	Nov 2008

Positioning Processor(s) L2 Cache SMP support Implementation	Ultra-dense, quad socket, full performance modular computing platform with superior performance Up to 4 x AMD Opteron 8000 Series Quad Core at up to 2.7GHz / simultaneously supports 32-bit and 64-bit computing 512KB L2 Cache per core, AMD Direct Connect Architecture ensures lower latency I/O 2 or 4-way SMP / up to four Opteron processors (same speed/cache size) Systemboards contain four LGA 1207-pin sockets, sixteen VLP DIMM slots, two Legacy Daughter Card connectors, one Blade Expansion connector, one HyperTransport Expansion connector, integrated graphics, SAS and ethernet											
Memory	4x1GB or 8x2GB std / 64GB max ¹³ / four or eight slots used / twelve or eight slots available / PC2-5300 667MHz registered 240-pin ECC DDR2 VLP SDRAM RDIMMs (std) / PC2-6400 800MHz registered 240-pin ECC DDR2 VLP SDRAM RDIMMs (opt) / four DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips), hardware scrubbing											
SAS disk controller	LSI Logic®1064E SAS controller / 1.5/3.0Gb/sec / PCI-Express / on planar / supports RAID-1 / no cables or external connector											
SAS disk bays	Two fixed 2.5" SFF SAS disks											
External storage	Support for IBM TotalStorage™ solutions											
Mechanical Architecture/Chipsets	Single or double slot blade / Supported in IBM BladeCenter 8677**, 8852 and 8886 ServerWorks™ Chipset / HT2100 HyperTransport System I/O Controller provides: PCI-Express links to Blade Storage Expansion connector and PCI-Express Switch to SAS and Ethernet controllers, HyperTransport bridge to HT1000 South Bridge / HT 1000 South Bridge provides: Legacy Daughter Card connector via 64-bit PCI-X bus, USB, ATI video via 32-bit PCI bus, LPC bus to Winbond PC87427 for Super I/O / HT 2000 HyperTransport System I/O Controller provides: Legacy Daughter Card connector via 64-bit PCI-X bus and PCI-Express link to Ethernet controller											
Bus slots	No PCI or PCI-X slots (expansion via modules or network-interface option connector)											
Ethernet controllers	Up to four Gigabit Ethernet ports / up to two Broadcom® BCM5709S Gigabit Ethernet controllers / up to four full gigabit ethernet MAC and PHY layer functions / integrated / PCI-Express / full-duplex / TCP/IP OffloadEngine (TOE) / PXE 2.0 / Wake on LAN® / iSCSI / Serial over LAN / failover, adapter fault tolerance / load balancing / connects to optional, supported Ethernet switches or <i>Passthrough Modules</i> (requires a second optional switch or PM for failover)											
Network-interface	Two legacy connectors for I/O expansion options / requires same interface modules in bays 3 and 4 of BladeCenter / all blades in a single BladeCenter must contain the same expansion card (or no expansion card)											
DVD / diskette / USB Kybd / video / mouse Graphics	None / requests for DVD-ROM, diskette drive, and USB port in BladeCenter by pressing media select button on front control panel None / requests for keyboard, mouse, and video in BladeCenter by pressing the display button on front control panel SVGA / ATI® Radeon® RN50 on planar / 16MB DDR std/max / 32-bit 33MHz PCI 2.2 bus											
Systems mgmt	IBM Baseboard Management Controller (BMC) / H8S2166 / on blade / provides system and environmental monitoring, event recording, alert capability / RS-485 interface for intermanagement communication with BladeCenter Management module										Quad Core AMD Opteron Processor Model 8347HE Quad Core AMD Opteron Processor Model 8356 LS42 Multi Processor Expansion Unit with 2 x 8380 processors LS42 Multi Processor Expansion Unit with 2 x 8384 processors	
Diagnostics	Light Path Diagnostics™ (LED lights indicate failing component) and on-board diagnostics (via Preboot DSA)										2GB (2x1GB) PC2-5300 CL5 ECC DDR2 VLP RDIMM Kit 4GB (2x2GB) PC2-5300 CL5 ECC DDR2 VLP RDIMM Kit 8GB (2x4GB) PC2-5300 CL4 ECC DDR2 VLP RDIMM Kit 8GB (2x4GB) PC2-6400 CL4 ECC DDR2 VLP RDIMM Kit	
Security	Power-on password / administrator password / unattended boot / selectable boot / unattended start mode										IBM 73GB NHS 2.5" 10K SFF SAS HDD IBM 146GB NHS 2.5" 10K SFF SAS HDD IBM 73GB NHS 2.5" 15K SFF SAS HDD	
Software ship group	Documentation CD, Device Driver CD, ServerGuide CD Uses cooling from BladeCenter (types 8677**, 8852 and 8886) / thermal sensors on each processor and BladeCenter modules and front panel Uses power modules in BladeCenter (types 8677**, 8852 and 8886) Monitor, keyboard, mouse for setup; ethernet switch module, disk, BladeCenter (types 8677**, 8852 and 8886), operating system										BladeCenter PCI Expansion Unit 2 BladeCenter PCI-Express I/O Expansion Unit	
Cooling fans	Other options at ibm.com/products/us											
Power supply Prerequisites												



- ◇ Stealth black front bezel
- ◇ H 9.7" x W 2.28" x D 17.6"
- ◇ H 24.5cm x W 5.8cm x D 44.6cm
- ◇ 25 lbs; 11kg (max configuration)
- ◇ Configuration/Setup Utility: F1 at startup
- ◇ Diagnostics: F2 at startup
- ◇ Network Boot: F12 at startup
- ◇ PXE Boot Agent Utility: Ctrl+S at startup
- ◇ Blade control panel on each blade provides media select button, keyboard/mouse/video select button, and indicators for blade error, information, location, disk activity, and power
- ◇ Predictive Failure Analysis® alerts on memory and processor(s)

Bay ① 2.5", 9.5mm, no front access, optional 2.5-inch SFF SAS disk
Bay ② 2.5", 9.5mm, no front access, optional 2.5-inch SFF SAS disk

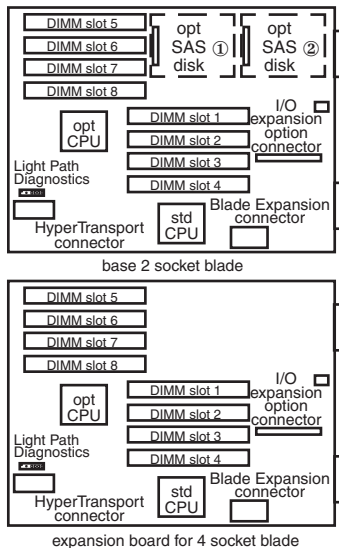
Maximum internal disk capacity for each LS42 blade server¹³:
292GB with two 146GB SAS disks

LIMITED WARRANTY³

- ⇒ 3 year parts and labor
- ⇒ International Warranty Service³
- ⇒ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- ⇒ On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 9x5, 4 hr avg response (ServicePac® part num 40Y5980)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 40Y5981)
 - 4 year IOR 9x5, 4 hr avg response (ServicePac part num 40Y5984)
 - 4 year IOR 24x7, 4 hr avg response (ServicePac part num 40Y5985)
 - 5 year IOR 9x5, 4 hr avg response (ServicePac part num 40Y5988)
 - 5 year IOR 24x7, 4 hr avg response (ServicePac part num 40Y5989)
- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ⇒ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

IBM® Type-model	Qty x Processor ¹	Speed/Core	L2 Cache	Watts	Memory	Disk controller	Disk bays	Expansion Units	I/O slots	Mechanical	Ethernet	Available date
7902-HVx	4 x Optron 8384	2.7GHz/4C	2MB	55W	16GB	SAS	2 fixed	PCIEU/PEU2	up to 2	double slot blade	4 x Gb	Mar 2009
7902-ELX*	2 x Optron 8376 HE	2.3GHz/4C	2MB	55W	8GB	SAS	2 fixed	PCIEU/PEU2	up to 2	single slot blade	2 x Gb	Mar 2009
7902-EMx*	4 x Optron 8376 HE	2.3GHz/4C	2MB	55W	16GB	SAS	2 fixed	PCIEU/PEU2	up to 2	double slot blade	4 x Gb	Mar 2009

Positioning Processor(s)	Ultra-dense, up to 4 socket, full performance modular computing platform with superior performance Up to 4 x AMD Optron 8000 Series / Six-Core at up to 2.6GHz / Four-Core at up to 2.7GHz / simultaneously supports 32-bit and 64-bit computing											
L2 Cache SMP support Implementation	512KB L2 Cache per core, AMD Direct Connect Architecture ensures lower latency I/O 2 or 4-way SMP / up to four Optron processors (same speed/cache size) Systemboards contain four LGA 1207-pin sockets, sixteen VLP DIMM slots, two Legacy Daughter Card connectors, one Blade Expansion connector, one HyperTransport Expansion connector, integrated graphics, SAS and ethernet											
Memory	4x1GB or 8x2GB std / 128GB max¹³ / four or eight slots used / twelve or eight slots available / PC2-5300 667MHz registered 240-pin ECC DDR2 VLP SDRAM RDIMMs (std) / PC2-6400 800MHz registered 240-pin ECC DDR2 VLP SDRAM RDIMMs (opt) / eight DIMM gold-connector slots on systemboard / eight DIMM gold-connector slots on multiprocessor expansion unit / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips), hardware scrubbing											
SAS disk controller SAS disk bays External storage	LSI Logic®1064E SAS controller / 1.5/3.0Gb/sec / PCI-Express / on planar / supports RAID-1 / no cables or external connector Two fixed 2.5" SFF SAS disks Support for IBM TotalStorage™ solutions											
Mechanical Architecture/Chipsets	Single or double slot blade / Supported in IBM BladeCenter 8677**, 8852 and 8886 / single-slot LS42 upgradeable to double-slot via multiprocessor expansion unit (MPE) ServerWorks™ Chipset / HT2100 HyperTransport System I/O Controller provides: PCI-Express links to Blade Storage Expansion connector and PCI-Express Switch to SAS and Ethernet controllers, HyperTransport bridge to HT1000 South Bridge / HT 1000 South Bridge provides: Legacy Daughter Card connector via 64-bit PCI-X bus, USB, ATI video via 32-bit PCI bus, LPC bus to Winbond PC87427 for Super I/O / HT 2000 HyperTransport System I/O Controller provides: Legacy Daughter Card connector via 64-bit PCI-X bus and PCI-Express link to Ethernet controller											
Bus slots	No PCI or PCI-X slots (expansion via modules or network-interface option connector)											
Ethernet controllers	Up to four Gigabit Ethernet ports / up to two Broadcom® BCM5709S Gigabit Ethernet controllers / up to four full gigabit ethernet MAC and PHY layer functions / integrated / PCI-Express / full-duplex / TCP/IP OffloadEngine (TOE) / PXE 2.0 / Wake on LAN® / iSCSI / Serial over LAN / failover, adapter fault tolerance / load balancing / connects to optional, supported Ethernet switches or <i>Passthrough Modules</i> (requires a second optional switch or PM for failover)											
Network-interface	Two legacy connectors for I/O expansion options / requires same interface modules in bays 3 and 4 of BladeCenter / all blades in a single BladeCenter must contain the same expansion card (or no expansion card)											
DVD / diskette / USB Kybd / video / mouse Graphics	None / requests for DVD-ROM, diskette drive, and USB port in BladeCenter by pressing media select button on front control panel None / requests for keyboard, mouse, and video in BladeCenter by pressing the display button on front control panel SVGA / ATI® Radeon® RN50 on planar / 16MB DDR std/max / 32-bit 33MHz PCI 2.2 bus											
Systems mgmt	IBM Baseboard Management Controller (BMC) / H8S2166 / on blade / provides system and environmental monitoring, event recording, alert capability / RS-485 interface for intermanagement communication with BladeCenter Management module											
Diagnostics	Light Path Diagnostics™ (LED lights indicate failing component) and on-board diagnostics (via Preboot DSA)											
Security	Power-on password / administrator password / unattended boot / selectable boot / unattended start mode											
Software ship group	Documentation CD, Device Driver CD, ServerGuide CD Uses cooling from BladeCenter (types 8677**, 8852 and 8886) / thermal sensors on each processor and BladeCenter modules and front panel Uses power modules in BladeCenter (types 8677**, 8852 and 8886)											
Cooling fans	Monitor, keyboard, mouse for setup; ethernet switch module, disk, BladeCenter (types 8677**, 8852 and 8886), operating system											
Power supply Prerequisites	LS42 Multi Processor Expansion Unit with 2 x 8431 processors 49Y4748 LS42 Multi Processor Expansion Unit with 2 x 8435 processors 49Y4749 LS42 Multi Processor Expansion Unit with 2 x 8380 processors 46M6817 LS42 Multi Processor Expansion Unit with 2 x 8384 processors 44X1685 LS42 Multi Processor Expansion Unit with 2 x 8374 HE processors 46M6885 LS42 Multi Processor Expansion Unit with 2 x 8376 HE processors 46M6890 2GB (2x1GB) PC2-5300 CL5 ECC DDR2 VLP RDIMM Kit 46C0522 4GB (2x2GB) PC2-5300 CL5 ECC DDR2 VLP RDIMM Kit 46C0512 8GB (2x4GB) PC2-5300 CL4 ECC DDR2 VLP RDIMM Kit 46C7524 8GB (2x4GB) PC2-6400 CL4 ECC DDR2 VLP RDIMM Kit 46C7525 16GB (2x8GB) PC2-4200 CL5 ECC DDR2 VLP RDIMM Kit 44T1547 IBM 73GB NHS 2.5" 10K SFF SAS HDD 26K5777 IBM 146GB NHS 2.5" 10K SFF SAS HDD 42D0421 IBM 73GB NHS 2.5" 15K SFF SAS HDD 43X0845 BladeCenter PCI Expansion Unit 2 25K8373 BladeCenter PCI-Express I/O Expansion Unit 43W4391											



- Stealth black front bezel
- H 9.7" x W 2.28" x D 17.6"
- H 24.5cm x W 5.8cm x D 44.6cm
- 25 lbs; 11kg (max configuration)
- Configuration/Setup Utility: F1 at startup
- Diagnostics: F2 at startup
- Network Boot: F12 at startup
- PXE Boot Agent Utility: Ctrl+S at startup
- Blade control panel on each blade provides media select button, keyboard/mouse/video select button, and indicators for blade error, information, location, disk activity, and power
- Predictive Failure Analysis® alerts on memory and processor(s)

Bay ① 2.5", 9.5mm, no front access, optional 2.5-inch SFF SAS disk
Bay ② 2.5", 9.5mm, no front access, optional 2.5-inch SFF SAS disk

Maximum internal disk capacity for each LS42 blade server¹³:
292GB with two 146GB SAS disks

LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 9x5, 4 hr avg response (ServicePac® part num 40Y5980)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 40Y5981)
 - 4 year IOR 9x5, 4 hr avg response (ServicePac part num 40Y5984)
 - 4 year IOR 24x7, 4 hr avg response (ServicePac part num 40Y5985)
 - 5 year IOR 9x5, 4 hr avg response (ServicePac part num 40Y5988)
 - 5 year IOR 24x7, 4 hr avg response (ServicePac part num 40Y5989)
- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information

** with 2000W power supply upgrade, * Express Models excludes 115W models

IBM® Type-model	Qty x Processor ¹	Memory	Frontside Bus Mhz	L3 Cache	Disk	Disk controller	Disk bays	SCSI support with optional stor exp unit	Slots x bays	Mech-anical	Required chassis	Available date
8832-GTX	1 x Xeon 3.2GHz	1GB	533Mhz	2MB	None	EIDE	2 fixed	2 HS Ultra320	0x2	8U ⁴ blade	BladeCenter T	Feb 2004
8832-9TX	1 x Xeon 2.4GHz	1GB	533Mhz	2MB	None	EIDE	2 fixed	2 HS Ultra320	0x2	8U ⁴ blade	BladeCenter T	Feb 2004

Positioning *Ultra-dense, highly manageable modular computing platform with superior performance*
Processor(s) **1 x Intel® Xeon 2.5 HGz or 3.2GHz** with 533MHz frontside bus / Hyper-Threading technology / NetBurst™ architecture
L2/L3 Cache **512KB L2 Cache / 0 - 2MB L3 Cache** / on die of processor / at processor speed
SMP support **2-way SMP** / up to two Xeon Processors (same speed/cache size)
Implementation Server blade contains two Intel 604-pin micro-PGA ZIF sockets, four memory DIMM slots, two IDE connectors, one SCSI expansion connector, one I/O expansion option connector, and integrated graphics and dual ethernet

Memory **1GB** std / 8GB max¹³ / two slots used / two slots available / **PC2100** 266MHz registered 184-pin ECC DDR-SDRAM DIMMs / four DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / memory bus runs at 2 x 100MHz / **Error Checking and Correcting (ECC)** via **16-bit Checksum Chipkill™** (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips)

IDE controller/bays Enhanced IDE ATA-100 controller in CSB6-U South Bridge / two connectors/buses on planar / each supports one 2.5" IDE disk / no cable as IDE disk attaches to riser card and tray (included with option kit) / Supports max of two IDE disks / space for only one IDE disk if an I/O expansion option installed [Fibre Channel] / **RAID-1 mirroring** standard
SCSI disk controller None / **supports optional SCSI Storage Expansion Unit** (a blade occupying adjacent blade slot / connects to HS20 via one connector / LSI Logic® 53C1020 Ultra320 SCSI controller [LVD 320MB/sec] / 64-bit 133MHz PCI-X Bus B from CIOB-ES I/O Bridge (IMB2 bus to Host Bridge) / supports **RAID-1 mirroring** [Embedded Mirroring] with two hot-swap 3.5" one-inch high SL SCSI disks in front bays / one 16-bit internal channel / no cables or external connector)
SCSI disk bays Supports max of two hot-swap 3.5" SL Ultra320 SCSI disks in optional SCSI Storage Expansion Unit / 80-pin SCA-2 connectors / **all SCSI bays Ultra320-enabled**
External storage Support for IBM TotalStorage™ solutions (including FASTT and NAS family of products)

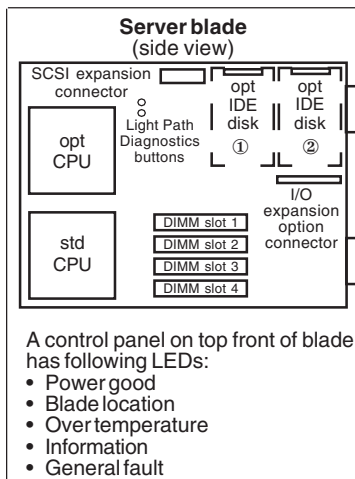
Mechanical Supported in IBM BladeCenter (type 8677) / BladeCenter supported in 28" deep racks such as the IBM NetBAY™ Rack products **ServerWorks® Grand Champion™ 4.0 LE** / CMIC LE Host Bridge (memory controller and I/O Bridge) / single slot one CIOBE-S I/O Bridge (IMB2 bus to Host Bridge) for two PCI-X Buses with Bus A for ethernet and Bus B for ethernet and the I/O expansion option connector / CSB6-U South Bridge (Thin IMB to Host Bridge) for EIDE, USB, LPC bus to Super I/O, and PCI 2.2 Bus C with graphics controller / National Semiconductor® PC87417 Super I/O chip No PCI or PCI-X slots (expansion via modules or network-interface option connector)

Ethernet controllers Two gigabit Ethernet controllers / Broadcom® BCM5704S / on blade / two PCI-X 64-bit 133MHz buses / full duplex / Wake on LAN® / Alert Standard Format 1.0 / teaming and failover support / one of the dual controllers connects to an optional, supported Ethernet switch or *Optical Passthrough Module* (the second controller requires a second optional switch or OPM)
Network-interface **One connector for I/O expansion option** (Fibre Channel Expansion Card) / requires same interface modules in bays 3 and 4 of BladeCenter / all blades in a single BladeCenter must contain the same expansion card (or no expansion card) / ethernet and serial I/O expansion cards planned for future release²⁰
CD / diskette / USB None / requests for CD-ROM, diskette drive, and USB port in BladeCenter by pressing CD select button on front control panel
Kybd / video / mouse None / requests for keyboard, mouse, and video in BladeCenter by pressing the display button on front control panel
Graphics SVGA / ATI® Rage XL / on blade / 8MB SDRAM std/max / 32-bit 33MHz PCI 2.2 bus

Systems mgmt **IBM integrated system management processor (ISMP)** / HS2148 / on blade / provides system and environmental monitoring, event recording, alert capability / RS-485 interface for communication with BladeCenter management module
Diagnostics **Light Path Diagnostics™** (LED lights indicate failing component) and on-board diagnostics (via PC-Doctor in BIOS)
Security Power-on password / administrator password / unattended boot / selectable boot / unattended start mode
Software ship group Documentation CD, IBM Director 4.1 CD, Device Driver CD
Cooling fans Uses cooling from BladeCenter (type 8720/30) / thermal sensors on each processor and BladeCenter modules and front panel
Power supply Uses power module(s) in BladeCenter (type 8677)
Prerequisites Monitor, keyboard, mouse for setup; ethernet switch module, disk, BladeCenter (type 8677), operating system

Xeon 3.2Ghz/512KB L2 / 1MB L3 Cache	13N0650
Proc Upg	
512MB PC2100 CL2.5 ECC DDR-SDRAM DIMM	33L5038
1GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM	33L5039
2GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM	33L5040
IBM HS20 SCSI Storage Expansion Unit (blade)	48P7058
IBM HS20 Fibre Channel Expansion Card (with two ports; each port requires a FC Switch Module)	48P7061
IBM HS20 40GB ² 5400 rpm ATA-100 HDD	48P7063
36.4GB 15K Ultra160 SCSI Hot-Swap SL HDD*	06P5768
36.4GB 15K Ultra320 SCSI Hot-Swap SL HDD*	06P5776
73.4GB 10K Ultra160 SCSI Hot-Swap SL HDD*	06P5756
146.8GB 10K Ultra320 SCSI Hot-Swap SL HDD*	32P0728

* Disk requires SCSI Storage Expansion Unit



Bay ① 3.5", 9.5mm, no front access, optional ThinkPad® IDE disk
 Bay ② 3.5", 9.5mm, no front access, optional ThinkPad IDE disk

- Stealth black front bezel
- H 9.7" x W 1.14" x D 17.6"
- H 24.5cm x W 2.9cm x D 44.6cm
- 12 lbs; 5.4kg (max configuration)
- Configuration/Setup Utility: F1 at startup
- Diagnostics (PC-Doctor™): F2 at startup
- System Partition Boot: ALT+F1 at startup
- Network Boot: F12 at startup
- PXE Boot Agent Utility: Ctrl+S at startup
- Blade control panel on each HS20 blade server provides media select button, keyboard/mouse/video select button, and indicators for blade error, information, location, disk activity, and power
- Predictive Failure Analysis® alerts on memory, processor(s), and optional disk(s) with IBM Director

Maximum internal disk capacity for each HS20 blade server¹³:
 80GB with two 40GB EIDE disks or
 293.6GB* with two 146.8GB SL SCSI disks

LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 24x7, 2 hr avg response (ServicePac® part num 69P9519)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9518)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9517)
 - 5 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9525)
 - 5 year IOR 24x7, 2 hr avg response (ServicePac part num 69P9527)
 - Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period⁵

IBM eServer BladeCenter™ HS20 Low Profile Handle

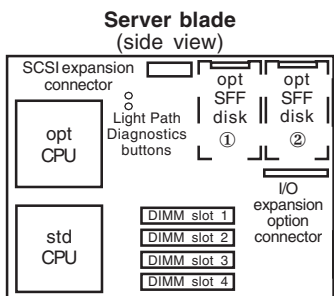
(8843) January 2005

xREF by eServer Field Skills and Education Team

IBM® Type-GAV	Processor	GHz¹	L2 cache	FSB MHz	Memory	Disk controller	Disk controller	Diskbays	SCSI Support with optional stor exp unit	slots x bays	Mechanical	Ethernet	Available date			
8843-LTy	1 x Xeon™	2.8	Low Volt	1MB	800	512MB	None	Ultra320	2-fixed	2	Hot-swap	Ultra320	0 x 2	7U⁴ blade	2 x Gigabit	Feb 2005
8843-4Ty	1 x Xeon	3.6	GHz	1MB	800	1GB	None	Ultra320	2-fixed	2	Hot-swap	Ultra320	0 x 2	7U⁴ blade	2 x Gigabit	Feb 2005

Processor(s)	1 x Intel® Xeon 2.8 Low Voltage or 3.6 GHz with 800MHz frontside bus (FSB) / EM64T / 1MB L2 ECC Cache / Hyper-Threading technology / Low Voltage Processors reduce heat output for increased rack density without increased cooling capacity												
SMP - L2 Cache Implementation	2-way SMP / up to two Xeon Processors (same speed/cache size) / 1MB std and max / at processor speed												
Memory	Systemboard contains two Intel 604-pin micro-PGA ZIF sockets, four DIMM slots, one SCSI expansion connector, one I/O expansion option connector, integrated graphics and dual Gigabit ethernet												
Memory	512MB/1GB std / 8GB¹³ max / two slots used / two slots available / PC2-3200 400MHz CL2.5 ECC DDR2-SDRAM DIMMs / four 240 pin gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel /												
SCSI disk controller	LSI Logic® 53C1020 SCSI controller / Single channel Ultra320 SCSI controller (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X / supports RAID-1 & 1E mirroring (supported in 32-bit legacy mode only) / One 16-bit channel (one internal) / Internal channel: one 2-drop 16-bit 68-pin LVD SCSI cable												
SCSI Disk bays	Two 2.5-inch Small Form Factor (SFF) Ultra320 internal fixed disk bays / Supports max of two hot-swap 3.5" SL Ultra320 SCSI disks in optional SCSI Storage Expansion Unit (80-pin SCA-2 connectors; all SCSI bays Ultra320-enabled) /												
External Storage	Support for IBM TotalStorage™ solutions (including FASTT and NAS family of products)												
Mechanical Architecture/Chipset	7U Blade / Supported in IBM BladeCenter T 8720-1XX or 8730-1XX												
BUS slots	Intel E7520 chipset / E7525 MCH (Memory Controller Hub) for PCI-Express bridge to PXH, ICH5R / PXH BUS supports PCI-X BUS / ICH5R supports USB (1.0) / LSI 1020 / Dual Broadcom 5704S / Low Pin Count Interface / NS PC87366 Super I/O off LPC interface												
Ethernet	No PCI or PCI-X slots (expansion via modules or network-interface option connector)												
Network Interface	Dual gigabit 10/100/1000 ethernet controller / Broadcom 5704S / two full gigabit ethernet MAC and PHY layer functions / chip on blade / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / PXE 2.0 Boot agent / Alert Standard Format 2.0 / Failover, adapter fault tolerance / Load balancing or teaming / one of the dual controllers connects to an optional, supported Ethernet switch or Optical Passthrough Module (the second controller requires a second optional switch or OPM)												
CD / Diskette / USB Kybd / video / mouse Graphics controller	One connector for I/O expansion option (Fibre Channel Expansion Card) / requires same interface modules in bays 3 and 4 of BladeCenter / all blades in a single BladeCenter must contain the same expansion card (or no expansion card) / ethernet and serial I/O expansion cards planned for future release²⁰												
Systems Mgmt	None / requests for CD-ROM, diskette drive, and USB port in BladeCenter by pressing CD select button on front control panel												
Diagnostics	None / requests for keyboard, mouse, and video in BladeCenter by pressing the display button on front control panel												
Security	SVGA / ATI® Radeon™ 7000M on Planar / 16MB SDRAM std and max / 15 pin connector												
Software ship group	IBM Baseboard Management Controller (BMC) / H8S2168 / on blade / provides system and environmental monitoring, event recording, alert capability / RS-485 interface for intermanagement communication with BladeCenter Management module												
Cooling Fans	Light Path Diagnostics™ (LED lights indicate failing component) and on-board diagnostics (via PC-Doctor in BIOS)												
Power supply(s) Prerequisites	No security intrusion protection / Power-on password / administrator password / unattended boot / selectable boot / unattended start mode												
	Documentation CD, Broadcom CD												
	Uses cooling from BladeCenter T (type 8720/30) / thermal sensors on each processor and BladeCenter modules and front panel												
	Uses power module(s) in BladeCenter T (type 8720/30)												
	Monitor, keyboard, mouse for setup; ethernet switch module, disk, BladeCenter (type 8677), operating system												
	Xeon 2.8 GHz/800/1MB Low Volt EM64T Proc Upg 13N0699												
	Xeon 3.6 GHz/800/1MB L2 Cache EM64T Proc Upg 13N0659												
	512MB (2x256) PC2-3200 ECC DDR2 73P3522												
	1GB (2x512) PC2-3200 CL3 ECC DDR2 73P3522												
	2GB (2x1GB) PC2-3200 ECC DDR2 ChipK RDIMM Kit 73P2866												
	4GB (2x2GB) PC2-3200 ECC DDR2 ChipK RDIMM Kit 73P2867												
	IBM 36.4GB 10K Ultra320 SCSI 2.5" SFF NHS HDD 90P1312												
	IBM 73GB 10K Ultra320 SCSI 2.5" SFF NHS HDD 90P1313												
	BladeCenter SCSI Storage Exp Unit 26K4817												
	BladeCenter SFF Fibre Channel Exp Card 26K4841												
	BladeCenter SFF Gigabit Ethernet Exp Card 26K4842												
	BladeCenter Optical Pass-thru Module 02R9080												
	BladeCenter SCSI Storage Expansion Unit 26K4817												
	17-inch Flat Panel Monitor Console Kit w/ US Kybd 17231UX												
	Other options at ibm.com/pc/us/accessories												

Bay ① 3.5", 9.5mm, no front access, optional 2.5-inch SFF SCSI disk
 Bay ② 3.5", 9.5mm, no front access, optional 2.5-inch SFF SCSI disk



- A control panel on top front of blade has following LEDs:
- Power good
 - Blade location
 - Over temperature
 - Information
 - General fault

- ◇ Stealth black front bezel
- ◇ H 9.7" x W 1.14" x D 17.6"; H 24.5cm x W 2.9cm x D 44.6cm
- ◇ 12 lbs; 5.4kg (max configuration)
- ◇ Configuration/Setup Utility: F1 at startup
- ◇ Diagnostics (PC-Doctor™): F2 at startup
- ◇ System Partition Boot: ALT+F1 at startup
- ◇ Network Boot: F12 at startup
- ◇ PXE Boot Agent Utility: Ctrl+S at startup
- ◇ Blade control panel on each HS20 blade server provides media select button, keyboard/mouse/video select button, and indicators for blade error, information, location, disk activity, and power
- ◇ Predictive Failure Analysis® alerts on memory, processor(s), and optional disk(s) with IBM Director

Maximum internal disk capacity for each HS20 blade server¹³: 146GB with two 73GB SCSI disks (with BladeCenter SCSI Storage Expansion Unit 2 x 146GB for total of 438GB)

LIMITED WARRANTY³

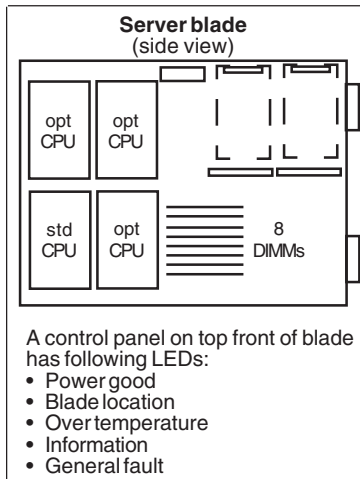
- ⇒ 3 year parts and labor
- ⇒ International Warranty Service³
- ⇒ On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- ⇒ On site service upgrade options (in eligible locations):⁷
 - 4 year IOR 9x5, NBD response (ServicePac® part num 69P9520)
 - 4 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9521)
 - 4 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9522)
 - 4 year IOR 24x7, 2 hr avg response (ServicePac part num 69P9523)
- ⇒ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ⇒ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information

(HS20Tb) © IBM Corp. January 2005

IBM® Type-model	Qty x Processor ¹	L3 Cache Memory	Frontside Bus Mhz	Disk controller	Disk bays	SCSI support with optional exp. unit	Slots x bays	Mechanical	Required chassis	Available date
8839-6TX	1 x Xeon™ 2.8GHz MP	2MB 2GB	400Mhz	None	None	None	2 H-S Ultra320	0x2 8U ⁴ blade	BladeCenter T	Mar 2004

Positioning Processor(s) L2/L3 cache SMP support Implementation	<i>Ultra-dense, highly manageable modular computing platform with superior 4-way performance</i> Up to 1 x Intel® Xeon 2.8GHz MP with 400MHz frontside bus / Hyper-Threading technology / NetBurst™ microarchitecture 512KB L2 Cache / 2MB L3 Cache / on die of processor / at processor speed 4-way SMP / up to four Xeon MP Processors (same speed/cache size) Server blade contains four Intel 604-pin micro-PGA ZIF sockets, four memory DIMM slots, one SCSI expansion connector, two I/O expansion option connector, integrated graphics and four ethernet ports																															
Memory	2GB std / 16GB max ¹³ / two slots used / six slots available / eight total slots PC2100 266MHz registered 184-pin ECC DDR-SDRAM DIMMs / four DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / memory bus runs at 2 x 100MHz / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips) / memory can be mixed																															
SCSI disk controller	None / supports optional SCSI Storage Expansion Unit (a blade occupying adjacent blade slot / connects to HS20 via one connector / LSI Logic® 53C1020 Ultra320 SCSI controller [LVD 320MB/sec] / 64-bit 133MHz PCI-X Bus B from CIOB-ES I/O Bridge (IMB2 bus to Host Bridge) / supports RAID-1 mirroring [Embedded Mirroring] with two hot-swap 3.5" one-inch high SL SCSI disks in front bays / one 16-bit internal channel / no cables or external connector)																															
SCSI disk bays	Supports max of two hot-swap 3.5" SL Ultra320 SCSI disks in optional SCSI Storage Expansion Unit / 80-pin SCA-2 connectors / all SCSI bays Ultra320-enabled																															
External storage	Support for IBM TotalStorage™ solutions (including FASiT and NAS family of products)																															
Mechanical	Supported in IBM BladeCenter (type 8677) / BladeCenter supported in 28" deep racks such as the IBM NetBAY™ Rack products																															
Architecture / chipsets	ServerWorks® Grand Champion™ 4.0 LE / CMIC-LE5 Host Bridge (memory controller and I/O Bridge) / one CIOB-X2 I/O Bridge (IMB2 bus to Host Bridge) for two PCI-X Buses with Bus A for ethernet and Bus B for ethernet and the I/O expansion option connector / CSB6 South Bridge (Thin IMB to Host Bridge) for EIDE, USB, LPC bus to Super I/O, and PCI 2.2 Bus C with graphics controller / National Semiconductor® PC87417 Super I/O chip																															
Bus slots	No PCI or PCI-X slots (expansion via modules or network-interface option connector)																															
Ethernet controllers	Four gigabit 10/100/1000 ethernet controllers / Intel 82545GM/82546EB / on blade / two PCI-X 64-bit 100MHz buses / full duplex / Wake on LAN® / Alert Standard Format 1.0 / teaming and failover support / one of the controllers connects to an optional 4-port GB Ethernet Switch Module (the second controller requires a second optional Ethernet Switch Module)																															
Network-interface	Two connectors for I/O expansion option (Fibre Channel Expansion Card) / requires same interface modules in bays 3 and 4 of BladeCenter / all blades in a single BladeCenter must contain the same expansion card (or no expansion card) / ethernet and serial I/O expansion cards planned for future release ²⁰																															
CD / diskette / USB Kybd / video / mouse Graphics	None / requests for CD-ROM, diskette drive, and USB port in BladeCenter by pressing CD select button on front control panel None / requests for keyboard, mouse, and video in BladeCenter by pressing the display button on front control panel SVGA / ATI® Radeon 7000 / on blade / 16MB SDRAM std/max / 32-bit 33MHz PCI 2.2 bus																															
Systems mgmt	Intel integrated Baseboard Management Controller (BMC) / on blade / provides system and environmental monitoring, event recording, alert capability / RS-485 interface for communication with BladeCenter management module																															
Diagnostics	Light Path Diagnostics™ (LED lights indicate failing component) and on-board diagnostics (via PC-Doctor in BIOS)																															
Security	Power-on password / administrator password / unattended boot / selectable boot / unattended start mode																															
Software ship group	Documentation CD, IBM Director 4.1 CD, Device Driver CD																															
Cooling fans	Uses cooling from BladeCenter (type 8677) / thermal sensors on each processor and BladeCenter modules and front panel																															
Power supply Prerequisites	Uses power module(s) in BladeCenter (type 8677) Monitor, keyboard, mouse for setup; ethernet switch module, disk, BladeCenter (type 8677), operating system																															
	<table border="0"> <tr> <td>Xeon 2.8Ghz/2MB L3 Cache Proc Upg</td> <td>13N0653</td> </tr> <tr> <td>512MB PC2100 CL2.5 ECC DDR-SDRAM DIMM</td> <td>33L5038</td> </tr> <tr> <td>1GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM</td> <td>33L5039</td> </tr> <tr> <td>2GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM</td> <td>33L5040</td> </tr> <tr> <td>IBM HS40 SCSI Storage Expansion Unit (blade)</td> <td>26K4847</td> </tr> <tr> <td>IBM HS40 Fibre Channel Expansion Card (with two ports; each port requires a FC Switch Module)</td> <td>48P7061</td> </tr> <tr> <td>IBM HS40 40GB² 5400 rpm ATA-100 HDD</td> <td>48P7063</td> </tr> <tr> <td>36.4GB 15K Ultra160 SCSI Hot-Swap SL HDD*</td> <td>06P5768</td> </tr> <tr> <td>36.4GB 15K Ultra320 SCSI Hot-Swap SL HDD*</td> <td>06P5776</td> </tr> <tr> <td>73.4GB 10K Ultra160 SCSI Hot-Swap SL HDD*</td> <td>06P5756</td> </tr> <tr> <td>146.8GB 10K Ultra320 SCSI Hot-Swap SL HDD*</td> <td>32P0728</td> </tr> </table> <p>* Disk requires SCSI Storage Expansion Unit</p>										Xeon 2.8Ghz/2MB L3 Cache Proc Upg	13N0653	512MB PC2100 CL2.5 ECC DDR-SDRAM DIMM	33L5038	1GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM	33L5039	2GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM	33L5040	IBM HS40 SCSI Storage Expansion Unit (blade)	26K4847	IBM HS40 Fibre Channel Expansion Card (with two ports; each port requires a FC Switch Module)	48P7061	IBM HS40 40GB ² 5400 rpm ATA-100 HDD	48P7063	36.4GB 15K Ultra160 SCSI Hot-Swap SL HDD*	06P5768	36.4GB 15K Ultra320 SCSI Hot-Swap SL HDD*	06P5776	73.4GB 10K Ultra160 SCSI Hot-Swap SL HDD*	06P5756	146.8GB 10K Ultra320 SCSI Hot-Swap SL HDD*	32P0728
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- Stealth black front bezel
 - H 9.7" x W 1.14" x D 17.6"; H 24.5cm x W 2.9cm x D 44.6cm
 - 12 lbs; 5.4kg (max configuration)
 - Configuration/Setup Utility: F1 at startup
 - Diagnostics (PC-Doctor™): F2 at startup
 - System Partition Boot: ALT+F1 at startup
 - Network Boot: F12 at startup
 - PXE Boot Agent Utility: Ctrl+S at startup
 - Blade control panel on each HS40 blade server provides media select button, keyboard/mouse/video select button, and indicators for blade error, information, location, disk activity, and power
 - Predictive Failure Analysis® alerts on memory, processor(s), and optional disk(s) with IBM Director
- Maximum internal disk capacity for each HS40 blade server¹³: 293.6GB* with two 146.8GB SL SCSI disks

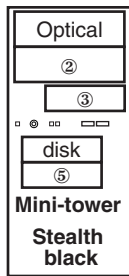
LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 24x7, 2 hr avg response (ServicePac® part num 69P9519)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9518)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9517)
 - 5 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9525)
 - 5 year IOR 24x7, 2 hr avg response (ServicePac part num 69P9527)
- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period⁵

See footnotes for important warranty information
US models announced February 17, 2004

IBM® Machine Type	Model	Proces-	Speed ¹ /Core	L2 Cache	Memory	Disk	Disk controller	Maximum Capacity	Optical	Slots x bays	Hard disk bays	Ethernet	Available date
4347 - 22U	Athlon® 3500+		2.2GHz/SC	512KB	1 x 512MB	80GB	SATA	1.5 TB	CD-ROM	4 x 5	2 fixed	Gigabit	Oct 2006
4347 - 42U	Opteron® 1210		1.8GHz/DC	2x1MB	1 x 512MB	80GB	SATA	1.5 TB	CD-ROM	4 x 5	2 fixed	Gigabit	Oct 2006
4347 - 44U	Opteron 1210		1.8GHz/DC	2x1MB	2 x 512MB	160GB	SATA	1.5 TB	CD-ROM	4 x 5	2 fixed	Gigabit	Oct 2006
4347 - 64U	Opteron 1214		2.2GHz/DC	2x1MB	2 x 512MB	160GB	SATA	1.5 TB	Combo	4 x 5	2 fixed	Gigabit	Oct 2006
4347 - 26U	Athlon 3500+		2.2GHz/SC	512KB	1 x 512MB	160GB	SATA	1.5 TB	CD-ROM	4 x 5	2 fixed	Gigabit	May 2007
4347 - 48U	Opteron 1210		1.8GHz/DC	2x1MB	2 x 512MB	160GB	SATA	1.5 TB	CD-ROM	4 x 5	2 fixed	Gigabit	May 2007
4347 - 82U	Opteron 1218		2.6GHz/DC	2x1MB	2 x 512MB	250GB	SATA	1.5 TB	Combo	4 x 5	2 fixed	Gigabit	June 2007

Positioning Processor(s)	<i>Uniprocessor, entry server designed to meet small business needs and budgets</i> Single-socket AMD® Opteron 1000 Series Dual-Core processor up to 2.6GHz or one Athlon up to 2.2GHz Single-Core												
L2 cache Implementation	2MB std on Opteron / 512KB std on Athlon / ECC / full speed Motherboard contains one AM2 socket, four DIMM sockets, four slots(2 PCI Express x8, 2 PCI), integrated SATA and Gigabit Ethernet.												
SMP support	No SMP support / no processor upgrade												
Memory	512MB or 1GB std / 8GB ¹³ max / four 240-pin gold-plated DIMM sockets / PC2-5300 667MHz ECC DDR2-SDRAM / All Error Checking and Correcting (ECC) / dual-channel / industry std / unbuffered												
SCSI disk controller	None standard / Ultra320 SCSI controller 2 (LVD 320MB/sec) optional for tape backup												
IDE disk controller	Enhanced IDE / ATA-100 / integrated in I/O Controller Hub / one connector on planar												
SATA disk controller	Dual channel SATA controller (1.5GB/sec) / integrated into I/O Controller Hub / supports up to two HDDs & one GoVault™ drive standard												
Cables	One 2-drop EIDE cable (to optical drive) / one 1-drop SATA cable per installed hard disk												
Disk	80, 160 or 250GB SATA / 7,200 rpm / 9.0 ms seek / S.M.A.R.T.												
RAID Controller	None standard / IBM SAS HBA Controller optional for RAID 0 & 1												
Rack support	None												
Bus slots (see below)	Two PCI-E x8 slots / two 32-bit 33MHz 5v PCI 2.2 slots												
Chipset	Nvidia® nForce™ Professional 2200 MCP / I/O Controller Hub provides: two PCI-Express x8 slots, two PCI 2.2 slots, ATA-100 EIDE, SATA, USB, Low Pin Count Interface / SST 49LF004A, 4Mbit Firmware Hub / Winbond® PC8374K Super I/O for diskette, parallel, serial												
Ethernet	10/100/1000 gigabit / Broadcom 5721 / on planar / full duplex / PHY and MAC layers / Preboot eXecution Environment (PXE) / Wake on LAN®												
Optical / diskette Ports	Some: CD-ROM: 48X-20X ⁶ CD-ROM, IDE; some: CDRW/DVD-ROM Combo: 48X/32X/48X/16X ⁶ , IDE Front: two USB(2.0); Back: one serial(9-pin), one parallel, four USB(2.0), ethernet(RJ-45), video(DB-15)												
Diagnostics	Diagnostic LEDs / error LEDs for fans and memory / server diagnostic programs stored on IBM Enhanced Diagnostics CD												
Systems mgmt	None												
Graphics controller	ATI® ES1000 / 16MB SDRAM std/max / on planar / analog 15-pin / up to 1024 x 768 x 32 bit @85Hz												
Security	Optional U-Bolt support via knockout / power-on password / boot sequence control / operation without keyboard/mouse/display												
Software	ServerGuide™ (CD-based automated network OS installation and configuration tool) included and IBM Director (system hardware mgmt software) standard					512MB PC2-5300 CL5 ECC DDR2 2x1GB PC2-5300 CL5 ECC DDR2 2x2GB PC2-5300 CL5 ECC DDR2 IBM 160GB SATA-150 (7.2K) simple-swap HDD IBM 250GB SATA-150 (7.2K) simple-swap HDD IBM 500GB SATA-150 (7.2K) simple-swap HDD IBM 750GB SATA-150 (7.2K) simple-swap HDD IBM 48x-20x CD-Rom Internal IDE Drive (black) 16x Max RAM-Read DVD-Rom Black Drive 48x/32x/48x/16x Max ⁶ CD-RW/DVD (black) IBM Multi-burner Plus IBM USB Portable Diskette Drive IBM GoVault 80GB (SATA) IBM 160/320GB VXA-3 Tape Drive (SCSI) IBM DDS/5 Tape Drive (SCSI) IBM ServeRAID 7t SATA Controller IBM SAS HBA Controller (for SATA RAID 0, 1) IBM Ultra320 SCSI Controller 2					41Y2726 41Y2729 41Y2732 39M4504 39M4508 39M4514 43W7572 39M6342 22P1999 32R2905 32R2906 40K1692 25R0006 25R0045 39M5656 39R8805 25R8060 39R8743		
Keyboard / mouse	Included / USB only												
Cooling fans	Three variable speed fans (cpu heatsink, front, power supply) / not redundant / not hot-swap												
Power supply	310 watts / universal / manual switching / Automatic Server Restart (ASR) / not hot-swap / no redundancy / cooling fan in power supply (variable speed)												



Bay ① 5.25", HH 1.6", access, optical
 Bay ② 5.25", HH 1.6", access, open (optical or tape)
 Bay ③ 3.5", SL 1", access, open
 Bay ④ 3.5", SL 1", access, std disk
 Bay ⑤ 3.5", SL 1", access, open

Slot 1: fullsize, PCI-E x8 (4GBps)
 Slot 2: fullsize, PCI-E x8 (4GBps)
 Slot 3: fullsize, 32-bit 33MHz, PCI 2.2 (5v)
 Slot 4: fullsize, 32-bit 33MHz, PCI 2.2 (5v)

- ◇ Removable left side panel
- ◇ Configuration/Setup Utility (in flash memory) invoked by pressing F1 at startup
- ◇ Advanced Configuration Power Interface (ACPI) 1.0
- ◇ Device Drivers and Diagnostics CD-ROM included
- ◇ Four stabilizing feet
- ◇ H 17.2" x W 8.1" x D 19.6"
- ◇ H 438mm x W 205mm x D 497mm
- ◇ 31 to 38 pounds (14 to 17kg)
- ◇ Maximum internal disk capacity¹³: 1.5TB with two 750GB SATA disks

Other options at ibm.com/products/us

LIMITED WARRANTY³

- ⇒ 1 year parts and labor
- ⇒ International Warranty Service³
- ⇒ On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- ⇒ On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 24x7, 2 hr avg response (ServicePac part num 41W9318)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 41W9317)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 41W9316)
 - 3 year IOR 9x5, NBD response (ServicePac part num 41W9315)
- ⇒ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ⇒ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

IBM [®] Machine Type	model	Processor / Speed	L2 cache	FSB MHz	Memory	Disk/Disk controller	Maximum Capacity	slots x bays	Hard disk bays	Power Supply	Ethernet	Available date		
4362/4363	22Y/2BY	Pentium [®] D 915	3.0GHz ¹	2x2MB	800	1x512MB	None/SATA	2.0TB	5 x 7	4	simple-swap	1x400W Gigabit	Nov 2006	
4362/4363	24Y/2DY	Pentium D 915	3.0GHz	2x2MB	800	2x512MB	None/SAS/SATA	2.0TB	5 x 7	4	hot-swap	1x400W Gigabit	Nov 2006	
4362/4363	32Y/3BY	Pentium D 945	3.4GHz	2x2MB	800	1x512MB	None/SATA	2.0TB	5 x 7	4	simple-swap	1x400W Gigabit	Nov 2006	
4362/4363	42Y/4BY	Xeon [®]	3040	1.86GHz	2MB	1066	1x512MB	None/SATA	2.0TB	5 x 7	4	simple-swap	1x400W Gigabit	Nov 2006
4362/4363	43Y/4CY	Xeon	3040	1.86GHz	2MB	1066	2x512MB	1x160GB/SATA	2.0TB	5 x 7	4	simple-swap	1x400W Gigabit	Nov 2006
4362/4363	44Y/4DY	Xeon	3040	1.86GHz	2MB	1066	2x512MB	None/SAS/SATA	2.0TB	5 x 7	4	hot-swap	1x400W Gigabit	Nov 2006
4362/4363	52Y/5BY	Xeon	3050	2.13GHz	2MB	1066	2x512MB	None/SATA	2.0TB	5 x 7	4	simple-swap	1x400W Gigabit	Nov 2006
4362/4363	56Y/5FY	Xeon	3050	2.13GHz	2MB	1066	2x512MB	None/SAS/SATA	2.0TB	5 x 7	4	hot-swap	2x430W Gigabit	Nov 2006
4362/4363	57Y/5GY	Xeon	3050	2.13GHz	2MB	1066	2x512MB	1x160GB/SATA	2.0TB	5 x 7	4	hot-swap	2x430W Gigabit	Nov 2006
4362/4363	62Y/6BY	Xeon	3060	2.4GHz	4MB	1066	2x512MB	None/SAS/SATA	2.0TB	5 x 7	4	hot-swap	1x400W Gigabit	Nov 2006
4362/4363	64Y/6DY	Xeon	3060	2.4GHz	4MB	1066	2x512MB	None/SAS/SATA	2.0TB	5 x 7	4	hot-swap	2x430W Gigabit	Nov 2006

Positioning Processor(s) *Single socket, entry server for small and medium size business' and distributed enterprises*
Intel[®] Pentium D up to 3.4GHz 800MHz FSB / Xeon up to 2.4GHz 1066 MHz FSB / All Dual-Core / All Optimized for Extended Memory 64 Technology (EM64T)

L2 cache Implementation **1MB** per core std on Pentium D / **2 or 4MB** std on Xeon
 Motherboard contains one LGA-775 socket, four DIMM sockets, two PCI Express slots, three PCI slots, SAS/SATA support, ATI video and Gigabit Ethernet.

SMP support No SMP support / no processor upgrade

Memory **512MB or 1GB** std / 8GB¹³ max / four 240-pin gold-plated DIMM sockets / one or two socket used / **PC2-5300 667MHz ECC DDR2-SDRAM / All Error Checking and Correcting (ECC)** / DIMMs and ECC memory controller / industry std / unbuffered

SAS/SATA controller **LSI Logic[®] 1064e** / daughter card / supports SAS or SATA drives / four-port / PCI-Express / **RAID 0,1**
 IDE controller Enhanced IDE / ATA-100 / integrated in I/O Controller Hub / one connector on planar
 SATA controller Four channel SATA controller (3.0GB/sec) / supports 4 drives standard / integrated
 Cables One 2-drop EIDE cables (to optical) / one 1-drop SATA cable per installed hard disk
 Disk Some: 160GB SATA / 7,200 rpm / 9.0 ms seek / S.M.A.R.T.

Rack support 5U⁴ rack mount support via tower-to-rack kit option
 Bus slots (see below) One PCI-E x8 / one PCI-E x1 / three 32-bit 33MHz 5v PCI 2.2 slots

Chipset **Intel 3010 chipset** / Memory Controller Hub (MCH) / I/O Controller Hub (ICH7R) for PCI 2.2, ATA-100 EIDE, ethernet MAC, USB, Low Pin Count Interface / Firmware Hub / **SMSC[®] SCH5017** Super I/O for diskette, parallel, serial, keyboard, mouse

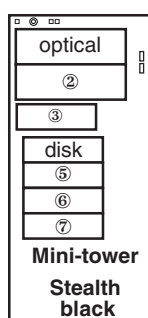
Ethernet 10/100/1000 gigabit / Broadcom[®] 5721 / on planar / full-duplex / PHY and MAC layers / Preboot eXecution Environment (PXE) / Wake on LAN[®]
 Optical / diskette Ports **4362 MTMs:** 48X-20X⁶ CD-ROM, IDE; **4363 MTMs:** 48X-32X-48X-16X⁶ CD-RW/DVD-ROM, IDE / None standard
 Front: two USB (2.0); Rear: two serial (9-pin), parallel, four USB (2.0), keyboard, mouse, ethernet (RJ45) and video
 Diagnostics Diagnostic LEDs / error LEDs for fans and memory / server diagnostic programs stored on IBM Enhanced Diagnostics CD
 Systems mgmt Mini-baseboard management controller / IPMI 1.5 / monitors system and processor temperature, fan speed and failure, and voltages / **secure remote power on/off / support for optional Remote Supervisor Adapter II**

Graphics controller ATI[®] ES1000(RN50) / 16MB SDRAM std/max / on planar / analog 15-pin / up to 1024x768x32bit@85Hz

Security Chassis intrusion detection / mechanical side panel key lock / U-Bolt Tie-down capability/power-on password / boot sequence control / operation without kybd/mouse
 Software **ServerGuide[™]** (CD-based automated network OS installation and configuration tool), IBM Director (system hardware management software) and many utilities

Keyboard / mouse Optional
 Cooling fans Three fans (fansink, rear, pwr supply) plus additional fan on SAS models / not redundant / not hot-swap
 Power supply Some: 400W / not hot-swap / no redundancy / some: 430W / hot-swap / redundant / all: universal / auto switch / Automatic Server Restart (ASR) / cooling fan in power supply (variable speed)

- 41Y2726
- 41Y2729
- 41Y2732
- 39M4500
- 39M4504
- 39M4508
- 39M4514
- 39M4518
- 39M4522
- 39M4526
- 39M4530
- 40K1039
- 40K1040
- 40K1041
- 40K1042
- 40K1043
- 40K1044
- 32P2906
- 39Y9566
- 42C8923
- 42C1312



Slot 1: fullsize, PCI-E x8 (4GBps)
 Slot 2: fullsize, PCI-E x1 (500MBps)
 Slot 3: fullsize, 32-bit 33MHz, PCI 2.2 (5v)
 Slot 4: fullsize, 32-bit 33MHz, PCI 2.2 (5v)
 Slot 5: fullsize, 32-bit 33MHz, PCI 2.2 (5v)

Bay ① 5.25", HH 1.6", access, optical
 Bay ② 5.25", HH 1.6", access, open (no disk)
 Bay ③ 3.5", SL 1", access, open
 Bay ④ 3.5", SL 1", access, std disk (some)
 Bay ⑤ 3.5", SL 1", access, open
 Bay ⑥ 3.5", SL 1", access, open
 Bay ⑦ 3.5", SL 1", access, open

Mini-tower
Stealth black

- ✦ Removable left side panel
- ✦ Configuration/Setup Utility (in flash memory) invoked by pressing F1 at startup
- ✦ Advanced Configuration Power Interface (ACPI) 1.0
- ✦ Device Drivers and Diagnostics CD-ROM included
- ✦ Four stabilizing feet
- ✦ H 17.25" x W 8.5" x D 21.25"
- ✦ H 448mm x W 215.9mm x D 539.75mm
- ✦ 36 to 56 pounds (16.3 to 25.2kg)

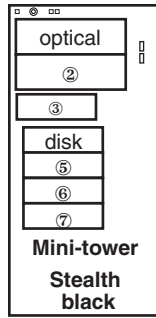
Maximum SATA capacity:
2TB¹³ (4 disks x 500GB)
 Maximum hot-swap SAS capacity:
1.2TB¹³ (4 disks x 300GB)

LIMITED WARRANTY³

- ⇨ 1 year parts and labor standard 4362 MTM
- ⇨ 3 year parts and labor standard 4363 MTM
- ⇨ International Warranty Service³
- ⇨ On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- ⇨ On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 24x7, 2 hr avg response (ServicePac part num 69P9512)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9511)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9510)
 - 3 year IOR 9x5, NBD response (ServicePac part num 69P9509)
- ⇨ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ⇨ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

IBM® Machine Type	Machine model	Processor / Speed	L2 cache	FSB MHz	Memory	Disk/Disk controller	Maximum Capacity	slots x bays	Hard disk bays	Power Supply	Ethernet	Available date
4362/4363	12Y/1BY	Pentium® 4 541 3.2GHz ¹	800	1MB	1x512MB	None/SATA	3.0TB	5 x 7	4	simple-swap 1x400W	Gb	Feb 2007
4362/4363	14Y/1DY	Pentium 4 541 3.2GHz	800	1MB	1x512MB	None/SAS/SATA	3.0TB	5 x 7	4	hot-swap 1x400W	Gb	Feb 2007
4362/4363	72Y/7BY	Xeon® 3210 2.13GHz	1066	8MB	2x1GB	None/SAS/SATA	3.0TB	5 x 7	4	hot-swap 1x400W	Gb	Feb 2007
4362/4363	74Y/7DY	Xeon 3210 2.13GHz	1066	8MB	2x1GB	None/SAS/SATA	3.0TB	5 x 7	4	hot-swap 2x430W	Gb	Feb 2007
4362/4363	82Y/8BY	Pentium E2160 1.8GHz	800	1MB	1x512MB	None/SATA	3.0TB	5 x 7	4	simple-swap 1x400W	Gb	Aug 2007
4362/4363	84Y/8DY	Pentium E2160 1.8GHz	800	1MB	2x512MB	None/SAS/SATA	3.0TB	5 x 7	4	hot-swap 1x400W	Gb	Aug 2007

Positioning Processor(s)	<i>Single socket, entry server for small and medium size business¹ and distributed enterprises</i> Intel® Pentium 4 up to 3.2GHz 800MHz FSB / Xeon up to 2.13GHz 1066 MHz FSB / Dual-Core / All Optimized for Extended Memory 64 Technology (EM64T)											
L2 cache Implementation	1MB per std on Pentium 4 / 8MB std on Xeon Motherboard contains one LGA-775 socket, four DIMM sockets, two PCI Express slots, three PCI slots, SAS/SATA support, ATI video and Gigabit Ethernet.											
SMP support	No SMP support / no processor upgrade											
Memory	512MB, 1GB or 2GB std / 8GB ¹³ max / four 240-pin gold-plated DIMM sockets / one or two socket used / PC2-5300 667MHz ECC DDR2-SDRAM / All Error Checking and Correcting (ECC) / DIMMs and ECC memory controller / industry std / unbuffered											
SAS/SATA controller IDE controller	LSI Logic® 1064e / daughter card / supports SAS or SATA drives / four-port / PCI-Express / RAID 0,1 Enhanced IDE / ATA-100 / integrated in I/O Controller Hub / one connector on planar											
SATA controller	Four channel SATA controller (3.0GB/sec) / supports 4 drives standard / integrated											
Cables	One 2-drop EIDE cables (to optical) / one 1-drop SATA cable per installed hard disk											
Disk	Some: 160GB SATA / 7,200 rpm / 9.0 ms seek / S.M.A.R.T.											
Rack support	5U ⁴ rack mount support via tower-to-rack kit option											
Bus slots (see below)	One PCI-E x8 / one PCI-E x1 / three 32-bit 33MHz 5v PCI 2.2 slots											
Chipset	Intel 3010 chipset / Memory Controller Hub (MCH) / I/O Controller Hub (ICH7R) for PCI 2.2, ATA-100 EIDE, ethernet MAC, USB, Low Pin Count Interface / Firmware Hub / SMSC® SCH5017 Super I/O for diskette, parallel, serial, keyboard, mouse											
Ethernet	10/100/1000 gigabit / Broadcom® 5721 / on planar / full-duplex / PHY and MAC layers / Preboot eXecution Environment (PXE) / Wake on LAN®											
Optical / diskette	4362 MTMs: 48X-20X ⁶ CD-ROM, IDE; 4363 MTMs: 48X-32X-48X-16X ⁶ CD-RW/DVD-ROM, IDE / None standard <i>Front:</i> two USB (2.0); <i>Rear:</i> two serial (9-pin), parallel, four USB (2.0), keyboard, mouse, ethernet (RJ45) and video											
Ports												
Diagnostics	Diagnostic LEDs / error LEDs for fans and memory / server diagnostic programs stored on IBM Enhanced Diagnostics CD											
Systems mgmt	Mini-baseboard management controller / IPMI 1.5 / monitors system and processor temperature, fan speed and failure, and voltages / secure remote power on/off / support for optional Remote Supervisor Adapter II											
Graphics controller	ATI® ES1000(RN50) / 16MB SDRAM std/max / on planar / analog 15-pin / up to 1024x768x32bit@85Hz											
Security	Chassis intrusion detection / mechanical side panel key lock / U-Bolt Tie-down capability/power-on password / boot sequence control / operation without kybd/mouse											
Software	ServerGuide™ (CD-based automated network OS installation and configuration tool), IBM Director (system hardware management software) and many utilities											
Keyboard / mouse	Optional											
Cooling fans	Three fans (fansink, rear, pwr supply) plus additional fan on SAS models / not redundant / not hot-swap											
Power supply	Some: 400W / not hot-swap / no redundancy / some: 430W / hot-swap / redundant / all: universal / auto switch / Automatic Server Restart (ASR) / cooling fan in power supply (variable speed)											



- Slot 1: fullsize, PCI-E x8 (4GBps)
- Slot 2: fullsize, PCI-E x1 (500MBps)
- Slot 3: fullsize, 32-bit 33MHz, PCI 2.2 (5v)
- Slot 4: fullsize, 32-bit 33MHz, PCI 2.2 (5v)
- Slot 5: fullsize, 32-bit 33MHz, PCI 2.2 (5v)
- Bay ① 5.25", HH 1.6", access, optical
- Bay ② 5.25", HH 1.6", access, open (no disk)
- Bay ③ 3.5", SL 1", access, open
- Bay ④ 3.5", SL 1", access, std disk (some)
- Bay ⑤ 3.5", SL 1", access, open
- Bay ⑥ 3.5", SL 1", access, open
- Bay ⑦ 3.5", SL 1", access, open

- ✧ Removable left side panel
- ✧ Configuration/Setup Utility (in flash memory) invoked by pressing F1 at startup
- ✧ Advanced Configuration Power Interface (ACPI) 1.0
- ✧ Device Drivers and Diagnostics CD-ROM included
- ✧ Four stabilizing feet
- ✧ H 17.25" x W 8.5" x D 21.25"
- ✧ H 448mm x W 215.9mm x D 539.75mm

Maximum SATA capacity:
3TB¹³ (4 disks x 750GB)
Maximum hot-swap SAS capacity:
1.2TB¹³ (4 disks x 300GB)

- ✧ Predictive Failure Analysis on disk(s) with IBM Director can alert the administrator of an imminent component failure
- ✧ Redundant power supplies standard in some models

LIMITED WARRANTY³

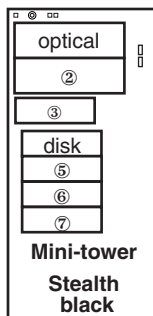
- 1 year parts and labor standard 4362 MTM
- 3 year parts and labor standard 4363 MTM
- International Warranty Service³
- On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 24x7, 2 hr avg response (ServicePac part num 69P9512)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9511)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9510)
 - 3 year IOR 9x5, NBD response (ServicePac part num 69P9509)
- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>

See footnotes for important warranty information

IBM® Machine Type	Machine model	Processor / Speed / Core	FSB MHz	L2 cache	Memory	Disk/Disk controller	Maximum Capacity	slots x bays	Hard disk bays	Power Supply	Ethernet	Available date
4367/4368	22Y	Core™ 2 Duo E4600 2.4GHz/DC	800	2MB	1x512MB	None/SATA	3.0TB	4 x 7	4 simple-swap	1x400W	Gb	Jan 2008
4367/4368	32Y	Xeon® E3110 3.0GHz/DC	1333	6MB	2x512MB	None/SATA	3.0TB	4 x 7	4 simple-swap	1x400W	Gb	Feb 2008
4367/4368	34Y	Xeon E3110 3.0GHz/DC	1333	6MB	2x512MB	None/SAS/SATA	3.0TB	4 x 7	4 hot-swap	1x400W	Gb	Feb 2008
4367/4368	42Y	Xeon X3320 2.5GHz/QC	1333	6MB	2x512MB	None/SAS/SATA	3.0TB	4 x 7	4 hot-swap	1x400W	Gb	Apr 2008

Positioning Processor(s)	<i>Single socket, entry server for small and medium size business' and distributed enterprises</i> Intel® Core 2 Duo up to 2.4GHz 800MHz FSB / Xeon up to 3.0GHz 1333MHz FSB / Dual-Core / Xeon up to 2.83GHz 1333MHz FSB / Quad-Core / All Optimized for Extended Memory 64 Technology (EM64T)											
L2 cache Implementation	2MB std on Core 2 Duo / 6 or 12MB std on Xeon Motherboard contains one LGA-775 socket, four DIMM sockets, two PCI Express slots, three PCI slots, SAS/SATA support, ATI video and Gigabit Ethernet.											
SMP support	No SMP support / no processor upgrade											
Memory	512MB or 1GB std / 8GB ¹³ max / four 184-pin gold-plated DIMM sockets / one or two socket used / PC2-5300 667MHz ECC DDR2-SDRAM / All Error Checking and Correcting (ECC) / DIMMs and ECC memory controller / industry std / unbuffered											
SAS/SATA controller	LSI Logic® 1064e / daughter card / supports SAS or SATA drives / four-port / PCI-Express / RAID 0,1											
SATA controller Cables Disk	Four channel SATA controller (3.0GB/sec) / supports 4 drives standard / integrated One 1-drop SATA cable per installed hard disk / one 1-drop SATA cable per installed optical drive None standard											
Rack support Bus slots (see below)	5U ⁴ rack mount support via tower-to-rack kit option One PCI-E x8 / one PCI-E x4 / two 32-bit 33MHz 5v PCI 2.2 slots / one optional 64-bit 133MHz PCI-X slot											
Chipset	Intel 3210 chipset / Memory Controller Hub (MCH) / I/O Controller Hub (ICH9R) for PCI 2.2, ethernet MAC, USB, Low Pin Count Interface / Firmware Hub / SMSC® SCH5027 Super I/O for diskette, parallel, serial, keyboard, mouse											
Ethernet	10/100/1000 gigabit / Broadcom® 5722 / on planar / full-duplex / PHY and MAC layers / Preboot eXecution Environment (PXE) / Wake on LAN®											
Optical / diskette Ports Diagnostics Systems mgmt	DVD-ROM, SATA / None standard <i>Front:</i> two USB (2.0); <i>Rear:</i> two serial (9-pin), parallel, four USB (2.0), ethernet (RJ45) and video Diagnostic LEDs / error LEDs for fans and memory / server diagnostic programs stored on IBM Enhanced Diagnostics CD Mini-baseboard management controller / IPMI 2.0 / monitors system and processor temperature, fan speed and failure, and voltages / secure remote power on/off / support for optional Remote Supervisor Adapter II											
Graphics controller	ATI® ES1000(RN50) / 64MB DDR2 SDRAM std/max / on planar / analog 15-pin / up to 1024x768x32bit@85Hz											
Security	Chassiss intrusion detection / mechanical side panel key lock / U-Bolt Tie-down capability/power-on password / boot sequence control / operation without kybd/mouse											
Software	ServerGuide™ (CD-based automated network OS installation and configuration tool), IBM Director (system hardware management software) and many utilities											
Keyboard / mouse Cooling fans	None standard Three fans (cpu, rear, pwr supply) plus additional fan on SAS models / not redundant / not hot-swap											
Power supply	Some: 400W / not hot-swap / no redundancy / some: 430W / hot-swap / redundant / all: universal / auto switch / Automatic Server Restart (ASR) / cooling fan in power supply (variable speed)											
	512MB PC2-5300 ECC DDR2 667MHz 2GB(2x1GB) PC2-5300 ECC DDR2 667MHz 4GB(2x2GB) PC2-5300 ECC DDR2 667MHz IBM 160GB SATA (7.2K) simple-swap HDD IBM 250GB SATA (7.2K) simple-swap HDD IBM 500GB SATA (7.2K) simple-swap HDD IBM 750GB SATA (7.2K) simple-swap HDD 160GB Hot-Swap SATA HDD 250GB Hot-Swap SATA HDD 500GB Hot-Swap SATA HDD 750GB Hot-Swap SATA HDD 73GB 15K 3.5" SAS Hot-Swap HDD 146GB 15K 3.5" SAS Hot-Swap HDD IBM HH SATA Multiburner Comb drive (DVD-RAM) IBM Remote Supervisor Adapter II slimline IBM 5Ux20D Tower-to-Rack Kit IBM SAS HBA Controller										41Y2726 41Y2729 41Y2732 39M4504 39M4508 39M4514 43W7572 39M4522 39M4526 39M4530 43W7576 40K1043 40K1044 43W8265 39Y9566 42C8923 25R8060	

Other options at ibm.com/products/us



- Slot 1: fullsize, PCI-E x8 (x8 electrical)
- Slot 2: fullsize, PCI-E x4 (x1 electrical)
- Slot 3: fullsize, 64-bit 133MHz, 3.3v PCI-X (Optional)
- Slot 4: fullsize, 32-bit 33MHz, PCI 2.2 (5v)
- Slot 5: fullsize, 32-bit 33MHz, PCI 2.2 (5v)

- Bay ① 5.25", HH 1.6", access, optical
- Bay ② 5.25", HH 1.6", access, open (no disk)
- Bay ③ 3.5", SL 1", access, open
- Bay ④ 3.5", SL 1", access, std disk (some)
- Bay ⑤ 3.5", SL 1", access, open
- Bay ⑥ 3.5", SL 1", access, open
- Bay ⑦ 3.5", SL 1", access, open

- ◇ Predictive Failure Analysis on disk(s) with IBM Director can alert the administrator of an imminent component failure
- ◇ Redundant power supplies standard in some models

- ◇ Removable left side panel
- ◇ Configuration/Setup Utility (in flash memory) invoked by pressing F1 at startup
- ◇ Advanced Configuration Power Interface (ACPI) 2.0
- ◇ Device Drivers and Diagnostics CD-ROM included
- ◇ Four stabilizing feet
- ◇ H 17.25" x W 8.5" x D 21.25"
- ◇ H 448mm x W 215.9mm x D 539.75mm
- ◇ 36 to 56 pounds (16.3 to 25.2kg)

Maximum SATA capacity:
3TB¹³ (4 disks x 750GB)
Maximum hot-swap SAS capacity:
584GB¹³ (4 disks x 146GB)

LIMITED WARRANTY³

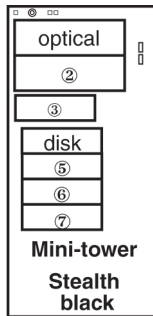
- ⇨ 1 year parts and labor standard 4367MTM
- ⇨ 3 year parts and labor standard 4368 MTM
- ⇨ International Warranty Service³
- ⇨ On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- ⇨ On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 24x7, 2 hr avg response (ServicePac part num 51J9055)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 51J9054)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 51J9053)
 - 3 year IOR 9x5, NBD response (ServicePac part num 51J9052)
- ⇨ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ⇨ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

IBM® Machine Type	Machine model	Processor / Speed / Core	FSB MHz	L2 cache	Memory	Disk/Disk controller	slots x bays	Hard disk bays	Power Supply	Ethernet	Available date
4367/4368	B2Y	Core™ 2 Duo E2200 2.2GHz/DC	800	1MB	1x512MB	Open/SATA	4 x 7	4 simple-swap	1x400W	Gigabit	Sep 2008
4367/4368	C2Y	Core 2 Duo E7200 2.53GHz/DC	1066	3MB	1x512MB	Open/SATA	4 x 7	4 simple-swap	1x400W	Gigabit	Sep 2008
4368	E4U*	Xeon X3370 3.0GHz/QC	1333	12MB	2x2GB	Open/SAS/SATA	4 x 7	4 hot-swap	2x430W	Gigabit	Dec 2008

Positioning Processor(s)	<i>Single socket, entry server for small and medium size business' and distributed enterprises</i> Intel® Core 2 Duo at 2.2GHz 800MHz FSB Dual-Core / Core 2 Duo at 2.8GHz 1066MHz FSB Dual-Core / Xeon up to 3.0GHz 1333MHz FSB Quad-Core / All Optimized for Extended Memory 64 Technology (EM64T)										
L2 cache Implementation	2MB std on Core 2 Duo / 6 or 12MB std on Xeon Motherboard contains one LGA-775 socket, four DIMM sockets, two PCI Express slots, three PCI slots, SAS/SATA support, ATI video and Gigabit Ethernet.										
SMP support	No SMP support / no processor upgrade										
Memory	512MB, 1 or 2GB std / 8GB ¹³ max / four 184-pin gold-plated DIMM sockets / one or two socket used / PC2-6400 800MHz ECC DDR2-SDRAM / All Error Checking and Correcting (ECC) / DIMMs and ECC memory controller / industry std / unbuffered										
SAS/SATA controller	LSI Logic® 1064e / daughter card / supports SAS or SATA drives / four-port / PCI-Express / RAID 0,1										
SATA controller	Four channel SATA controller (3.0Gb/sec) / supports 4 drives standard / integrated										
Cables	One 1-drop SATA cable per installed hard disk / one 1-drop SATA cable per installed optical drive										
Disk	None standard										
Rack support	5U ⁴ rack mount support via tower-to-rack kit option										
Bus slots (see below)	One PCI-E x8 / one PCI-E x4 / two 32-bit 33MHz 5v PCI 2.2 slots / one optional 64-bit 133MHz PCI-X slot										
Chipset	Intel 3210 chipset / Memory Controller Hub (MCH) / I/O Controller Hub (ICH9R) for PCI 2.2, ethernet MAC, USB, Low Pin Count Interface / Firmware Hub / SMSC® SCH5027 Super I/O for diskette, parallel, serial, keyboard, mouse										
Ethernet	Gigabit Ethernet / Broadcom® 5722 / on planar / full-duplex / PHY and MAC layers / Preboot eXecution Environment (PXE) / Wake on LAN [®]										
Optical / diskette Ports	DVD-ROM, SATA / None standard <i>Front:</i> two USB (2.0); <i>Rear:</i> two serial (9-pin), parallel, four USB (2.0), ethernet (RJ45) and video										
Diagnostics	Diagnostic LEDs / error LEDs for fans and memory / server diagnostic programs stored on IBM Enhanced Diagnostics CD										
Systems mgmt	Mini-baseboard management controller / IPMI 2.0 / monitors system and processor temperature, fan speed and failure, and voltages / secure remote power on/off / support for optional Remote Supervisor Adapter II										
Graphics controller	ATI® ES1000(RN50) / 16MB DDR2 SDRAM std/max / on planar / analog 15-pin / up to 1024x768x32bit@85Hz										
Security	Chassis intrusion detection / mechanical side panel key lock / U-Bolt Tie-down capability/power-on password / boot sequence control / operation without kybd/mouse										
Software	ServerGuide™ (CD-based automated network OS installation and configuration tool), IBM Director (system hardware management software) and many utilities										
Keyboard / mouse	None standard										
Cooling fans	Three fans (cpu, rear, pwr supply) plus additional fan on SAS models / not redundant / not hot-swap										
Power supply	Some: 400W / not hot-swap / no redundancy / some: 430W / hot-swap / redundant / all: universal / auto switch / Automatic Server Restart (ASR) / cooling fan in power supply (variable speed)										

1GB(2x512MB) PC2-6400 ECC CL6 DDR2 800MHz DIMM Kit	46C7443
2GB(2x1GB) PC2-6400 ECC CL6 DDR2 800MHz DIMM Kit	46C7428
4GB(2x2GB) PC2-6400 ECC CL6 DDR2 800MHz DIMM Kit	46C7429
512MB PC2-5300 ECC DDR2 667MHz	41Y2726
2GB(2x1GB) PC2-5300 ECC DDR2 667MHz	41Y2729
4GB(2x2GB) PC2-5300 ECC DDR2 667MHz	41Y2732
IBM 160GB SATA (7.2K) simple-swap HDD	39M4504
IBM 250GB SATA (7.2K) simple-swap HDD	39M4508
IBM 500GB SATA (7.2K) simple-swap HDD	39M4514
IBM 750GB SATA (7.2K) simple-swap HDD	43W7572
160GB Hot-Swap SATA HDD	39M4522
250GB Hot-Swap SATA HDD	39M4526
500GB Hot-Swap SATA HDD	39M4530
750GB Hot-Swap SATA HDD	43W7576
1TB Hot-Swap SATA HDD	43W7626
146GB 15K 3.5" SAS Hot-Swap HDD	40K1043
146GB 15K 3.5" SAS Hot-Swap HDD	40K1044
IBM HH SATA Multiburner Comb drive (DVD-RAM)	43N8265
IBM Remote Supervisor Adapter II slimline	39Y9566
IBM 5Ux20D Tower-to-Rack Kit	42C8923
IBM SAS HBA Controller	25R8060

Other options at ibm.com/products/us



- Slot 1: fullsize, PCI-E x8 (x8 electrical)
- Slot 2: fullsize, PCI-E x4 (x1 electrical)
- Slot 3: fullsize, 64-bit 133MHz, 3.3v PCI-X (Optional)
- Slot 4: fullsize, 32-bit 33MHz, PCI 2.2 (5v)
- Slot 5: fullsize, 32-bit 33MHz, PCI 2.2 (5v)

- Bay ① 5.25", HH 1.6", access, optical
- Bay ② 5.25", HH 1.6", access, open (no disk)
- Bay ③ 3.5", SL 1", access, open
- Bay ④ 3.5", SL 1", access, std disk (some)
- Bay ⑤ 3.5", SL 1", access, open
- Bay ⑥ 3.5", SL 1", access, open
- Bay ⑦ 3.5", SL 1", access, open

- ◇ Predictive Failure Analysis on disk(s) with IBM Director can alert the administrator of an imminent component failure
- ◇ Redundant power supplies standard in some models

- ◇ Removable left side panel
- ◇ Configuration/Setup Utility (in flash memory) invoked by pressing F1 at startup
- ◇ Advanced Configuration Power Interface (ACPI) 2.0
- ◇ Device Drivers and Diagnostics CD-ROM included
- ◇ Four stabilizing feet
- ◇ H 17.25" x W 8.5" x D 21.25"
- ◇ H 448mm x W 215.9mm x D 539.75mm
- ◇ 36 to 56 pounds (16.3 to 25.2kg)

Maximum SATA capacity:
4TB¹³ (4 disks x 1TB)
Maximum hot-swap SAS capacity:
584GB¹³ (4 disks x 146GB)

LIMITED WARRANTY³

- 1 year parts and labor standard 4367MTM
- 3 year parts and labor standard 4368 MTM
- International Warranty Service³
- On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 24x7, 2 hr avg response (ServicePac part num 51J9055)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 51J9054)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 51J9053)
 - 3 year IOR 9x5, NBD response (ServicePac part num 51J9052)
- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

IBM® Machine Type model	Processor / Speed	L2 cache	FSB MHz	Memory	Disk controller	Disk bays	Mechanical	Slots x bays	Ethernet	Ltd warr ³	Available date	
4364/4365 12Y/1BY	Celeron® D 341	2.93GHz/DC	256KB	533	1 x 512MB	SATA	2 simple-swap	1U ⁴ rack	2x3	Dual GB	1/3yr	Nov 2006
4364/4365 22Y/2BY	Pentium® D 945	3.4GHz/DC	2x2MB	800	1 x 512MB	SATA	2 simple-swap	1U rack	2x3	Dual GB	1/3yr	Nov 2006
4364/4365 42Y/4BY	Xeon® 3040	1.87GHz/DC	2MB	1066	2 x 512MB	SATA	2 simple-swap	1U rack	2x3	Dual GB	1/3yr	Nov 2006
4364/4365 44Y/4DY	Xeon 3040	1.87GHz/DC	2MB	1066	2 x 512MB	SAS/SATA	2 hot-swap	1U rack	2x3	Dual GB	1/3yr	Nov 2006
4364/4365 52Y/5BY	Xeon 3050	2.13GHz/DC	2MB	1066	2 x 512MB	SAS/SATA	2 hot-swap	1U rack	2x3	Dual GB	1/3yr	Nov 2006
4364/4365 54Y/5DY	Xeon 3050	2.13GHz/DC	2MB	1066	2 x 512MB	SAS	4 hot-swap	1U rack	2x5	Dual GB	1/3yr	Nov 2006
4364/4365 62Y/6BY	Xeon 3060	2.4GHz/DC	4MB	1066	2 x 512MB	SAS/SATA	2 hot-swap	1U rack	2x3	Dual GB	1/3yr	Nov 2006
4364/4365 64Y/6DY	Xeon 3060	2.4GHz/DC	4MB	1066	2 x 512MB	SAS	4 hot-swap	1U rack	2x5	Dual GB	1/3yr	Nov 2006

Positioning *Efficient and dense 1U, single-socket, rack-optimized server for web and network infrastructure*
 Processor(s) **Intel® Celeron at 2.93GHz 533 FSB / Pentium D at 3.4GHz Dual-Core 800MHz FSB / Xeon up to 2.4GHz Dual-Core 1066MHz FSB / All Optimized for Extended Memory 64 Technology (EM64T)**
 L2 cache **256KB** std on Celeron / **2x2MB** std on Pentium D / **2 or 4MB** on Xeon / ECC / full speed
 SMP support No SMP support
 Implementation Motherboard contains one LGA-775 socket, four DIMM sockets, integrated SATA or SAS/SATA, Dual Gigabit Ethernet and two PCI Express® x8 slots

Memory **512MB or 1GB** std / 8GB¹³ max / four 240-pin gold-plated DIMM sockets / two sockets used / **PC2-5300 667MHz ECC DDR2-SDRAM / All Error Checking and Correcting (ECC)** / DIMMs and ECC memory controller / industry std / unbuffered

SAS/SATA controller **LSI Logic® 1064e** / daughter card / supports SAS or SATA drives / four-port / PCI-Express / **RAID 0,1**
 SATA controller Four channel SATA controller (3.0GB/sec) / supports 2 drives standard / integrated into South Bridge
 IDE controller Enhanced IDE busmaster / ATA-100 support / one connector on systemboard
 Cables **SAS models:** one 1-drop EIDE cable (connected to Optical)
SATA models: two 1-drop SATA cables, one 1-drop EIDE cable (connected to Optical)

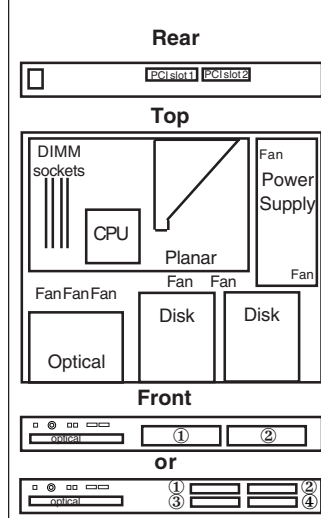
Disk None standard
 Mechanical **EIA 22" Rack (1U⁴)** / rack-mount only
 Architecture / Intel **3010 chipset** / Memory Controller Hub (MCH) / I/O Controller Hub (ICH7R) for PCI-E, ATA-100 EIDE, ethernet chipsets
 Bus slots MAC, USB, Low Pin Count Interface / Firmware Hub / **SMSC® SCH5017** Super I/O for serial, keyboard, mouse (See below) two PCI-E™ x8

Ethernet controllers **Dual-Gigabit** 10/100/1000 ethernet ports / Broadcom® 5721 / two full gigabit ethernet MAC and PHY layer functions / integrated / port one is CSA, port two is PCI 2.2 / full duplex / PXE / Wake on LAN® / Rear RJ-45 ports (2)
 Optical / diskette **4364 MTMs:** 48X-20X⁶ CD-ROM, IDE; **4365 MTMs:** 48X-32X-48X-16X⁶ CD-RW/DVD-ROM, IDE / **Diskette:** none
 Ports **Front:** two USB (2.0) / **Rear:** serial (9-pin), two ethernet (RJ-45), keyboard, mouse, video (DB-15), two USB (2.0), one systems management (RJ-45)
 Graphics ATI® ES1000(RN50) / 16MB SDRAM std/max / on planar / analog 15-pin / up to 1024x768x32bit@85Hz

Console interconnects No system-to-system interconnect cable (separate keyboard, video, mouse ports on back)
 Systems mgmt Mini-baseboard management controller / IPMI 1.5 / monitors system and processor temperature, fan failure, and voltages
 Diagnostics Diagnostic LEDs/ Error LEDs for fans and memory/ Diagnostics via PC-Doctor on a standard IBM Enhanced Diagnostics CD (diskette can be created) / support for optional slimline Remote Supervisor Adapter II with dedicated slot on planar for continuous power (no external power required)

Security Power-on password / administrator password / unattended boot / selectable boot / unattended start mode / **secure remote power on / off via IPMI 1.5**
 Software **ServerGuide™** (CD-ROM installation and configuration utilities), IBM Director™ and others
 Cooling fans Seven fans (five fans for system, two on power supply) / variable speed / not redundant or hot-swap
 Power supply 351 watt / universal / auto-sensing / auto-restart support
 Prerequisites Monitor, keyboard, mouse, rack

- 512MB PC2-5300 ECC DDR2 41Y2726
 - 2GB(2x1GB) PC2-5300 ECC DDR2 41Y2729
 - 4GB(2x2GB) PC2-5300 ECC DDR2 41Y2732
 - IBM 36GB SFF SAS HDD 40K1051
 - IBM 73GB SFF SAS HDD 40K1052
 - IBM 80GB SATA (7.2K) simple-swap HDD 39M4500
 - IBM 160GB SATA (7.2K) simple-swap HDD 39M4504
 - IBM 250GB SATA (7.2K) simple-swap HDD 39M4508
 - IBM 500GB SATA (7.2K) simple-swap HDD 39M4514
 - 80GB Hot-Swap SATA HDD 39M4518
 - 160GB Hot-Swap SATA HDD 39M4522
 - 250GB Hot-Swap SATA HDD 39M4526
 - 500GB Hot-Swap SATA HDD 39M4530
 - 73GB 10K 3.5" SAS Hot-Swap HDD 40K1039
 - 146GB 10K 3.5" SAS Hot-Swap HDD 40K1040
 - 300GB 10K 3.5" SAS Hot-Swap HDD 40K1041
 - 36GB 15K 3.5" SAS Hot-Swap HDD 40K1042
 - 73GB 15K 3.5" SAS Hot-Swap HDD 40K1043
 - 146GB 15K 3.5" SAS Hot-Swap HDD 40K1044
 - IBM Remote Supervisor Adapter II slimline 42C4178
 - IBM Simple-Swap SATA RAID Kit 42C1313
- Other options at ibm.com/pc/us/accessories



Slot 1: 3/4 length, full height, PCI-E x8
 Slot 2: half length, low-profile, PCI-E x8

- Some:
- Bay ① 3.5", SL 1", access, open for simple-swap/hot-swap disk
 - Bay ② 3.5", SL 1", access, open for simple-swap/hot-swap disk
 - Bay ③ 5.25", UltraSlim 0.5", access, std optical
- Some:
- Bay ① 2.5", SFF, access, open for hot-swap disk
 - Bay ② 2.5", SFF, access, open for hot-swap disk
 - Bay ③ 2.5", SFF, access, open for hot-swap disk
 - Bay ④ 2.5", SFF, access, open for hot-swap disk
 - Bay ⑤ 5.25", UltraSlim 0.5", access, std optical

- ❖ Raven black front bezel
- ❖ H 1.75" (1U) x W 17.32" x D 22"; 43mm x 440mm x 559mm
- ❖ 24.4 to 28 lbs; 11kg to 12.7kg (minimum to max configuration)
- ❖ Configuration/Setup Utility: F1 at startup
- ❖ Network Boot: F12 at startup
- ❖ Operator Information Panel in front
- ❖ Ships with Diagnostics CD, ServerGuide Setup and Installation CD
- ❖ Predictive Failure Analysis on disk(s) with IBM Director can alert the administrator of an imminent component failure

Maximum internal disk capacity¹³ (model dependent):
 1TB with two 500GB 3.5" SATA disks, 600GB with two 300GB 3.5" SAS disks or 292GB with four 2.5" 73GB SAS disks

LIMITED WARRANTY³

- ❖ 1 year parts and labor standard 4364 MTM
- ❖ 3 year parts and labor standard 4365 MTM
- ❖ International Warranty Service³
- ❖ On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- ❖ On site service upgrade options (ineligible locations):⁷
 - 3 year IOR 9x5, NBD avg response (ServicePac part num 69P9505)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9506)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9507)
 - 3 year IOR 24x7, 2 hr response (ServicePac part num 69P9508)
- ❖ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ❖ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information

IBM® Machine Type model	Processor / Speed	L2 cache	FSB MHz	Memory	Disk controller	Disk bays	Mechanical	Slots x bays	Ethernet	Ltd warr ³	Available date	
4364/4365 21Y/2AY	Pentium® D 925	3.0GHz/DC	2x2MB	800	1 x 512MB	SATA	2 simple-swap	1U ⁴ rack	2x3	Dual GB	1/3yr	Feb 2007
4364/4365 82Y/8BY	Xeon® 3210	2.13GHz/QC	8MB	1066	2 x 512MB	SAS/SATA	2 hot-swap	1U rack	2x3	Dual GB	1/3yr	Feb 2007
4364/4365 92Y/9BY	Xeon 3220	2.4GHz/QC	8MB	1066	2 x 512MB	SAS/SATA	2 hot-swap	1U rack	2x3	Dual GB	1/3yr	Feb 2007
4364/4365 32Y/3BY	Pentium E2160	1.8GHz/DC	1MB	800	1 x 512MB	SATA	2 simple-swap	1U rack	2x3	Dual GB	1/3yr	Sep 2007
4364/4365 72Y/7BY	Xeon 3070	2.66GHz/DC	4MB	1066	2 x 512MB	SAS/SATA	2 hot-swap	1U rack	2x3	Dual GB	1/3yr	Sep 2007

Positioning Processor(s) *Efficient and dense 1U, single-socket, rack-optimized server for web and network infrastructure*
Intel® Pentium D at 3.0GHz Dual-Core 800MHz FSB / Xeon up to 2.66GHz Dual-Core 1066MHz FSB / Xeon up to 2.4GHz Quad-Core 1066MHz FSB / All Optimized for Extended Memory 64 Technology (EM64T)
 L2 cache **2x2MB** std on Pentium D / **4 or 8MB** on Xeon / ECC / full speed
 SMP support No SMP support
 Implementation Motherboard contains one LGA-775 socket, four DIMM sockets, integrated SATA or SAS/SATA, Dual Gigabit Ethernet and two PCI Express® x8 slots

Memory **512MB or 1GB** std / 8GB¹³ max / four 240-pin gold-plated DIMM sockets / two sockets used / **PC2-5300 667MHz ECC DDR2-SDRAM / All Error Checking and Correcting (ECC)** / DIMMs and ECC memory controller / industry std / unbuffered

SAS/SATA controller **LSI Logic® 1064e** / daughter card / supports SAS or SATA drives / four-port / PCI-Express / **RAID 0,1**
 SATA controller Four channel SATA controller (3.0GB/sec) / supports 2 drives standard / integrated into South Bridge
 IDE controller Enhanced IDE busmaster / ATA-100 support / one connector on systemboard
 Cables **SAS models:** one 1-drop EIDE cable (connected to Optical)
SATA models: two 1-drop SATA cables, one 1-drop EIDE cable (connected to Optical)
 Disk None standard

Mechanical **EIA 22" Rack (1U⁴)** / rack-mount only
 Architecture / Intel **3010 chipset** / Memory Controller Hub (MCH) / I/O Controller Hub (ICH7R) for PCI-E, ATA-100 EIDE, ethernet chipsets
 Bus slots MAC, USB, Low Pin Count Interface / Firmware Hub / **SMSC® SCH5017** Super I/O for serial, keyboard, mouse (See below) two PCI-E™ x8

Ethernet controllers **Dual-Gigabit** 10/100/1000 ethernet ports / Broadcom® 5721 / two full gigabit ethernet MAC and PHY layer functions / integrated / port one is CSA, port two is PCI 2.2 / full duplex / PXE / Wake on LAN® / Rear RJ-45 ports (2)
 Optical / diskette **4364 MTMs:** 48X-20X⁶ CD-ROM, IDE; **4365 MTMs:** 48X-32X-48X-16X⁶ CD-RW/DVD-ROM, IDE / **Diskette:** none
 Ports **Front:** two USB (2.0) / **Rear:** serial (9-pin), two ethernet (RJ-45), keyboard, mouse, video (DB-15), two USB (2.0), one systems management (RJ-45)
 Graphics ATI® ES1000(RN50) / 16MB SDRAM std/max / on planar / analog 15-pin / up to 1024x768x32bit@85Hz

Console interconnects No system-to-system interconnect cable (separate keyboard, video, mouse ports on back)
 Systems mgmt Mini-baseboard management controller / IPMI 1.5 / monitors system and processor temperature, fan failure, and voltages
 Diagnostics Diagnostic LEDs/ Error LEDs for fans and memory/ Diagnostics via PC-Doctor on a standard IBM Enhanced Diagnostics CD (diskette can be created) / support for optional slimline Remote Supervisor Adapter II with dedicated slot on planar for continuous power (no external power required)

Security	Power-on password / administrator password / unattended boot / selectable boot / unattended start mode / secure remote power on / off via IPMI 1.5	512MB PC2-5300 ECC DDR2 2GB(2x1GB) PC2-5300 ECC DDR2 4GB(2x2GB) PC2-5300 ECC DDR2	41Y2726 41Y2729 41Y2732
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director™ and others	IBM 36GB SFF SAS HDD IBM 73GB SFF SAS HDD IBM 80GB SATA (7.2K) simple-swap HDD IBM 160GB SATA (7.2K) simple-swap HDD IBM 250GB SATA (7.2K) simple-swap HDD IBM 500GB SATA (7.2K) simple-swap HDD	40K1051 40K1052 39M4500 39M4504 39M4508 39M4514
Cooling fans	Seven fans (five fans for system, two on power supply) / variable speed / not redundant or hot-swap	80GB Hot-Swap SATA HDD 160GB Hot-Swap SATA HDD 250GB Hot-Swap SATA HDD 500GB Hot-Swap SATA HDD	39M4518 39M4522 39M4526 39M4530
Power supply	351 watt / universal / auto-sensing / auto-restart support	73GB 10K 3.5" SAS Hot-Swap HDD 146GB 10K 3.5" SAS Hot-Swap HDD 300GB 10K 3.5" SAS Hot-Swap HDD 36GB 15K 3.5" SAS Hot-Swap HDD 73GB 15K 3.5" SAS Hot-Swap HDD 146GB 15K 3.5" SAS Hot-Swap HDD	40K1039 40K1040 40K1041 40K1042 40K1043 40K1044
Prerequisites	Monitor, keyboard, mouse, rack	IBM Remote Supervisor Adapter II slimline IBM Simple-Swap SATA RAID Kit	42C4178 42C1313

Rear

Slot 1: 3/4 length, full height, PCI-E x8
 Slot 2: half length, low-profile, PCI-E x8

Top

Front

or

Some:
 Bay ① 3.5", SL 1", access, open for simple-swap/hot-swap disk
 Bay ② 3.5", SL 1", access, open for simple-swap/hot-swap disk
 Bay ③ 5.25", UltraSlim 0.5", access, std optical

Some:
 Bay ① 2.5", SFF, access, open for hot-swap disk
 Bay ② 2.5", SFF, access, open for hot-swap disk
 Bay ③ 2.5", SFF, access, open for hot-swap disk
 Bay ④ 2.5", SFF, access, open for hot-swap disk
 Bay ⑤ 5.25", UltraSlim 0.5", access, std optical

- ❖ Raven black front bezel
- ❖ H 1.75" (1U) x W 17.32" x D 22"; 43mm x 440mm x 559mm
- ❖ 24.4 to 28 lbs; 11kg to 12.7kg (minimum to max configuration)
- ❖ Configuration/Setup Utility: F1 at startup
- ❖ Network Boot: F12 at startup
- ❖ Operator Information Panel in front
- ❖ Ships with Diagnostics CD, ServerGuide Setup and Installation CD
- ❖ Predictive Failure Analysis on disk(s) with IBM Director can alert the administrator of an imminent component failure

Maximum internal disk capacity¹³ (model dependent):
 1TB with two 500GB 3.5" SATA disks, 600GB with two 300GB 3.5" SAS disks or 292GB with four 2.5" 73GB SAS disks

LIMITED WARRANTY³

- ❖ 1 year parts and labor standard 4364 MTM
- ❖ 3 year parts and labor standard 4365 MTM
- ❖ International Warranty Service³
- ❖ On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- ❖ On site service upgrade options (ineligible locations):⁷
 - 3 year IOR 9x5, NBD avg response (ServicePac part num 69P9505)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9506)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9507)
 - 3 year IOR 24x7, 2 hr response (ServicePac part num 69P9508)
- ❖ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ❖ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

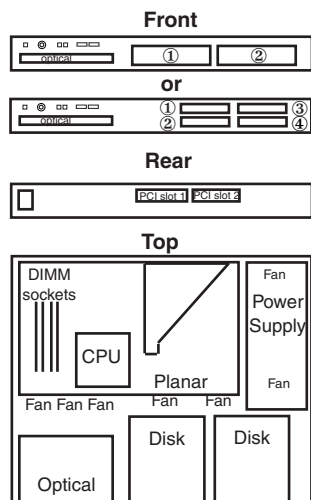
See footnotes for important warranty information

IBM® Machine Type	model	Processor / Speed / Core	L2 cache	FSB MHz	Memory	Disk controller	Disk bays	Mechanical	Slots x bays	Ethernet	Ltd warr ³	Available date
4190/4194	15Y	Celeron® 440 2.0GHz/SC	512KB	800	2 x 512MB	SATA (no RAID)	2 simple-swap	1U ⁴ rack	2x3	Dual Gb	1/3yr	Jan 2008

Positioning Processor(s)	<i>Efficient and dense 1U, single-socket, rack-optimized server for web and network infrastructure</i> Intel® Celeron up to 2.0GHz 800MHz FSB / Core 2 Duo up to 2.4GHz 800MHz FSB Dual-Core / Xeon up to 3.0GHz 1333MHz FSB Dual-Core / Xeon up to 2.66GHz 1333MHz FSB Quad-Core / All Optimized for Extended Memory 64 Technology (EM64T)											
L2 cache	512KB std on Celeron / 2MB std on Core 2 Duo / 6 or 12MB std on Xeon											
SMP support Implementation	No SMP support Motherboard contains one LGA-775 socket, four DIMM sockets, integrated SATA or SAS/SATA, Dual Gigabit Ethernet and two PCI Express® x8 slots											
Memory	1 or 2GB std / 8GB ¹³ max / four 184-pin gold-plated DIMM sockets / two sockets used / PC2-5300 667MHz ECC DDR2-SDRAM / All Error Checking and Correcting (ECC) / DIMMs and ECC memory controller / industry std / unbuffered											
SAS/SATA controller	LSI Logic® 1064e / daughter card / supports SAS or SATA drives / four-port / PCI-Express / RAID 0,1											
SATA controller	Four channel SATA controller (3.0Gb/sec) / 2 drives supported / integrated into South Bridge / RAID via ServeRAID-BR10i SAS/SATA controller kit(44X0411)											
IDE controller	Enhanced IDE busmaster / ATA-100 support / one connector on systemboard											
Cables	SAS models: one 1-drop EIDE cable (connected to Optical) SATA models: two 1-drop SATA cables, one 1-drop EIDE cable (connected to Optical)											
Mechanical Architecture / chipsets	EIA 22" Rack (1U⁴) / rack-mount only Intel 3210 chipset / Memory Controller Hub (MCH) / I/O Controller Hub (ICH9R) for PCI-E, ATA-100 EIDE, ethernet MAC, USB, Low Pin Count Interface / Firmware Hub / SMSC® SCH5027 Super I/O for serial, keyboard, mouse (See below) two PCI-E™ x8											
Bus slots												
Ethernet controllers	Dual-Gigabit Ethernet ports / Broadcom® 5722 & 5703 / full gigabit ethernet MAC and PHY layer functions / integrated / port one is PCI-E, port two is PCI 2.2 / full duplex / PXE / Wake on LAN® / Rear RJ-45 ports (2)											
Optical / diskette Ports	48X-32X-48X-16X® CD-RW/DVD-ROM, IDE / <i>Diskette</i> : none <i>Front</i> : two USB (2.0) / <i>Rear</i> : serial (9-pin), two ethernet (RJ-45), video (DB-15), two USB (2.0), one systems mgt (RJ-45)											
Graphics	ATI® ES1000(RN50) / 16MB SDRAM std/max / on planar / analog 15-pin / up to 1024x768x32bit@85Hz											
Console interconnects	No system-to-system interconnect cable											
Systems mgmt	Mini-baseboard management controller / IPMI 2.0 / monitors system and processor temperature, fan failure, and voltages											
Diagnostics	Diagnostic LEDs/ Error LEDs for fans and memory/ Diagnostics via PC-Doctor on a standard IBM Enhanced Diagnostics CD (diskette can be created) / support for optional slimline Remote Supervisor Adapter II with dedicated slot on planar for continuous power (no external power required)											
Security	Power-on password / administrator password / unattended boot / selectable boot / unattended start mode / secure remote power on / off via IPMI 2.0											
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director™ and others											
Cooling fans	Seven fans (five fans for system, two on power supply) / variable speed / not redundant or hot-swap											
Power supply Prerequisites	351 watt / universal / auto-sensing / auto-restart support Monitor, keyboard, mouse, rack											

512MB PC2-5300 ECC DDR2	41Y2726
2GB(2x1GB) PC2-5300 ECC DDR2	41Y2729
4GB(2x2GB) PC2-5300 ECC DDR2	41Y2732
IBM 73GB SFF SAS HDD	40K1052
IBM 160GB SATA (7.2K) simple-swap HDD	39M4504
IBM 250GB SATA (7.2K) simple-swap HDD	39M4508
IBM 500GB SATA (7.2K) simple-swap HDD	39M4514
IBM 750GB SATA (7.2K) simple-swap HDD	43W7572
160GB Hot-Swap SATA HDD	39M4522
250GB Hot-Swap SATA HDD	39M4526
500GB Hot-Swap SATA HDD	39M4530
750GB Hot-Swap SATA HDD	43W7576
73GB 15K 3.5" SAS Hot-Swap HDD	40K1043
146GB 15K 3.5" SAS Hot-Swap HDD	40K1044
300GB 15K 3.5" SAS Hot-Swap HDD	43X0802
73GB 10K SFF SAS Hot-Swap HDD	40K1052
146GB 10K SFF SAS Hot-Swap HDD	43X0824
73GB 15K SFF SAS Hot-Swap HDD	43X0837
IBM Remote Supervisor Adapter II slimline	39Y9566
ServeRAID-BR10i SAS/SATA controller kit	44X0411
ServeRAID-MR10i SAS/SATA controller kit	43W4296

Other options at ibm.com/products/us



Some:
Bay ① 2.5", SFF, access, open for hot-swap disk
Bay ② 2.5", SFF, access, open for hot-swap disk
Bay ③ 2.5", SFF, access, open for hot-swap disk
Bay ④ 2.5", SFF, access, open for hot-swap disk
Bay ⑤ 5.25", UltraSlim 0.5", access, std optical

- Some:
- Bay ① 3.5", SL 1", access, open for simple-swap/hot-swap disk
 - Bay ② 3.5", SL 1", access, open for simple-swap/hot-swap disk
 - Bay ③ 5.25", UltraSlim 0.5", access, std optical
- ❖ Raven black front bezel
 - ❖ H 1.75" (1U) x W 17.32" x D 22"; 43mm x 440mm x 559mm
 - ❖ 24.4 to 28 lbs; 11kg to 12.7kg (minimum to max configuration)
 - ❖ Configuration/Setup Utility: F1 at startup
 - ❖ Network Boot: F12 at startup
 - ❖ Operator Information Panel in front
 - ❖ Ships with Diagnostics CD, ServerGuide Setup and Installation CD
 - ❖ Predictive Failure Analysis on disk(s) with IBM Director can alert the administrator of an imminent component failure

Maximum internal disk capacity¹³ (model dependent):
1.5TB with two 750GB 3.5" SATA disks, 600GB with two 300GB 3.5" SAS disks or 292GB with four 2.5" 73GB SAS disks

LIMITED WARRANTY³

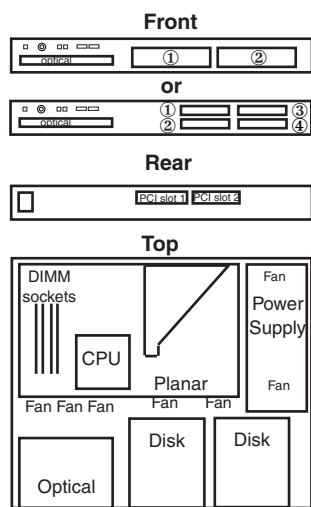
- ❖ 1 year parts and labor standard 4190 MTM
- ❖ 3 year parts and labor standard 4194 MTM
- ❖ International Warranty Service³
- ❖ On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- ❖ On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 9x5, NBD avg response (ServicePac part num 51J9180)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 51J9181)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 51J9182)
- ❖ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ❖ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

IBM® Machine Type	Machine model	Processor / Speed / Core	L2 cache	FSB MHz	Memory	Disk controller	Disk bays	Mechanical	Slots x bays	Ethernet	Ltd warr ³	Available date
4190/4194	B2Y	Core™ 2 Duo E2200 2.2GHz/2C	1MB	800	2 x 512MB	SATA (no RAID)	2 simple-swap	1U ⁴ rack	2x3	Dual Gb	1/3yr	Sep 2008
4190/4194	C2Y	Core 2 Duo E7200 2.53GHz/2C	3MB	1066	2 x 512MB	SATA (no RAID)	2 simple-swap	1U rack	2x3	Dual Gb	1/3yr	Sep 2008

Positioning Processor(s)	<i>Efficient and dense 1U, single-socket, rack-optimized server for web and network infrastructure</i> Intel® Core 2 Duo at up to 2.6GHz 800MHz FSB Dual-Core / Core 2 Duo at up to 2.8GHz 1066MHz FSB Dual-Core / Xeon at 3.16GHz 1333MHz FSB Dual-Core / Xeon up to 2.83GHz 1333MHz FSB Quad-Core / Celeron at 2.0GHz 800MHz FSB / All Optimized for Extended Memory 64 Technology (EM64T)											
L2 cache	512KB std on Celeron / 1, 2 or 3MB std on Core 2 Duo / 6 or 12MB std on Xeon											
SMP support	No SMP support											
Implementation	Motherboard contains one LGA-775 socket, four DIMM sockets, integrated SATA or SAS/SATA, Dual Gigabit Ethernet and two PCI Express® x8 slots											
Memory	1GB std / 8GB ¹³ max / four 184-pin gold-plated DIMM sockets / one or two sockets used / PC2-6400 800MHz ECC DDR2-SDRAM / All Error Checking and Correcting (ECC) / DIMMs and ECC memory controller / industry std / unbuffered											
SAS/SATA controller	LSI Logic® 1064e / daughter card / supports SAS or SATA drives / four-port / PCI-Express / RAID 0,1 Four channel SATA controller (3.0Gb/sec) / 2 drives supported / integrated into South Bridge / RAID via ServeRAID-BR10i SAS/SATA controller kit(44X0411)											
IDE controller	Enhanced IDE busmaster / ATA-100 support / one connector on systemboard											
Cables	SAS models: one 1-drop EIDE cable (connected to Optical) SATA models: two 1-drop SATA cables, one 1-drop EIDE cable (connected to Optical)											
Mechanical Architecture / chipsets	EIA 22" Rack (1U⁴) / rack-mount only Intel 3210 chipset / Memory Controller Hub (MCH) / I/O Controller Hub (ICH9R) for PCI-E, ATA-100 EIDE, ethernet MAC, USB, Low Pin Count Interface / Firmware Hub / SMSC® SCH5027 Super I/O for serial, keyboard, mouse											
Bus slots	(See below) two PCI-E™ x8											
Ethernet controllers	Dual-Gigabit Ethernet ports / Broadcom® 5722 & 5703 / full gigabit ethernet MAC and PHY layer functions / integrated / port one is PCI-E, port two is PCI 2.2 / full duplex / PXE / Wake on LAN® / Rear RJ-45 ports (2)											
Optical / diskette Ports	48X-32X-48X-16X ⁵ CD-RW/DVD-ROM, IDE / <i>Diskette</i> : none Front: two USB (2.0) / Rear: serial (9-pin), two ethernet (RJ-45), video (DB-15), two USB (2.0), one systems mgt (RJ-45)											
Graphics	ATI® ES1000(RN50) / 16MB SDRAM std/max / on planar / analog 15-pin / up to 1024x768x32bit@85Hz											
Console interconnects	No system-to-system interconnect cable											
Systems mgmt	Mini-baseboard management controller / IPMI 2.0 / monitors system and processor temperature, fan failure, and voltages											
Diagnostics	Diagnostic LEDs/ Error LEDs for fans and memory/ Diagnostics via PC-Doctor on a standard IBM Enhanced Diagnostics CD (diskette can be created) / support for optional slimline Remote Supervisor Adapter II with dedicated slot on planar for continuous power (no external power required)											
Security	Power-on password / administrator password / unattended boot / selectable boot / unattended start mode / secure remote power on / off via IPMI 2.0											
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director™ and others											
Cooling fans	Seven fans (five fans for system, two on power supply) / variable speed / not redundant or hot-swap											
Power supply	351 watt / universal / auto-sensing / auto-restart support											
Prerequisites	Monitor, keyboard, mouse, rack											

- 46C7443 1GB(2x512MB) PC2-6400 CL6 ECC DDR2 800MHz DIMM Kit
- 46C7428 2GB(2x1GB) PC2-6400 CL6 ECC DDR2 800MHz DIMM Kit
- 46C7429 4GB(2x2GB) PC2-6400 CL6 ECC DDR2 800MHz DIMM Kit
- 41Y2726 512MB PC2-5300 ECC DDR2
- 41Y2729 2GB(2x1GB) PC2-5300 ECC DDR2
- 41Y2732 4GB(2x2GB) PC2-5300 ECC DDR2
- 40K1052 IBM 73GB SFF SAS HDD
- 39M4504 IBM 160GB SATA (7.2K) simple-swap HDD
- 39M4508 IBM 250GB SATA (7.2K) simple-swap HDD
- 39M4514 IBM 500GB SATA (7.2K) simple-swap HDD
- 43W7572 IBM 750GB SATA (7.2K) simple-swap HDD
- 39M4522 160GB Hot-Swap SATA HDD
- 39M4526 250GB Hot-Swap SATA HDD
- 39M4530 500GB Hot-Swap SATA HDD
- 43W7576 750GB Hot-Swap SATA HDD
- 43W7626 1TB Hot-Swap SATA HDD
- 40K1043 73GB 15K 3.5" SAS Hot-Swap HDD
- 40K1044 146GB 15K 3.5" SAS Hot-Swap HDD
- 43X0802 300GB 15K 3.5" SAS Hot-Swap HDD
- 40K1052 73GB 10K SFF SAS Hot-Swap HDD
- 43X0824 146GB 10K SFF SAS Hot-Swap HDD
- 43X0837 73GB 15K SFF SAS Hot-Swap HDD
- 39Y9566 IBM Remote Supervisor Adapter II slimline
- 44X0411 ServeRAID-BR10i SAS/SATA controller kit
- 43W4296 ServeRAID-MR10i SAS/SATA controller kit

Other options at ibm.com/products/us



- Slot 1: 3/4 length, full height, PCI-E x8
- Slot 2: half length, low-profile, PCI-E x8
- Some:
- Bay ① 2.5", SFF, access, open for hot-swap disk
- Bay ② 2.5", SFF, access, open for hot-swap disk
- Bay ③ 2.5", SFF, access, open for hot-swap disk
- Bay ④ 2.5", SFF, access, open for hot-swap disk
- Bay ⑤ 5.25", UltraSlim 0.5", access, std optical
- Some:
- Bay ① 3.5", SL 1", access, open for simple-swap/hot-swap disk
- Bay ② 3.5", SL 1", access, open for simple-swap/hot-swap disk
- Bay ③ 5.25", UltraSlim 0.5", access, std optical
- ⊖ Raven black front bezel
- ⊖ H 1.75" (1U) x W 17.32" x D 22"; 43mm x 440mm x 559mm
- ⊖ 24.4 to 28 lbs; 11kg to 12.7kg (minimum to max configuration)
- ⊖ Configuration/Setup Utility: F1 at startup
- ⊖ Network Boot: F12 at startup
- ⊖ Operator Information Panel in front
- ⊖ Ships with Diagnostics CD, ServerGuide Setup and Installation CD
- ⊖ Predictive Failure Analysis on disk(s) with IBM Director can alert the administrator of an imminent component failure

Maximum internal disk capacity¹³ (model dependent):
2TB with two 1TB 3.5" SATA disks, 600GB with two 300GB 3.5" SAS disks or 584GB with four 2.5" 146GB SAS disks

LIMITED WARRANTY³

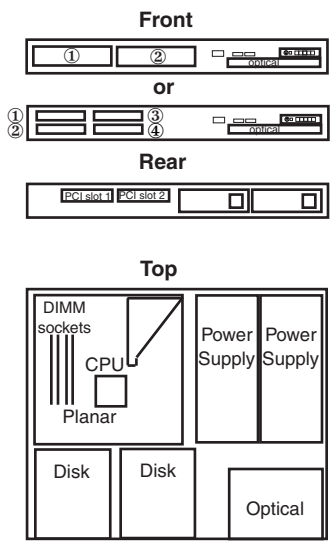
- ⊖ 1 year parts and labor standard 4190 MTM
- ⊖ 3 year parts and labor standard 4194 MTM
- ⊖ International Warranty Service³
- ⊖ On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- ⊖ On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 9x5, NBD avg response (ServicePac part num 51J9180)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 51J9181)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 51J9182)
- ⊖ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ⊖ 24x7¹⁴ toll-free support for warranty issues during the warranty period⁵

See footnotes for important warranty information

IBM® Machine Type	Machine model	Processor / Speed / Core	L2 cache	FSB MHz	Memory	Disk controller	Disk bays	Mechanical	Slots x bays	Ethernet	Ltd warr ³	Available date
4192/4193	62Y	Xeon® X3320 2.5GHz/QC	12MB	1333	2 x 1GB	SAS	4 hot-swap	1U ⁴ rack	2x5	Dual GB	1/3yr	Apr 2008

Positioning Processor(s)	<i>Efficient and dense 1U, single-socket, rack-optimized server for web and network infrastructure</i> Intel® Xeon up to 3.0GHz 1333MHz FSB Dual-Core / Xeon up to 3.0GHz 1333MHz FSB Quad-Core / All Optimized for Extended Memory 64 Technology (EM64T) 4, 6 or 12MB std on Xeon											
L2 cache	No SMP support											
SMP support Implementation	Motherboard contains one LGA-775 socket, four DIMM sockets, integrated SATA or SAS/SATA, Dual Gigabit Ethernet and two PCI Express® x8 slots											
Memory	1 or 2GB std / 8GB ¹³ max / four 184-pin gold-plated DIMM sockets / two sockets used / PC2-5300 667MHz ECC DDR2-SDRAM / All Error Checking and Correcting (ECC) / DIMMs and ECC memory controller / industry std / unbuffered											
SAS/SATA controller	LSI Logic® 1064e / daughter card / supports SAS or SATA drives / four-port / PCI-Express / RAID 0,1											
SATA controller	Four channel SATA controller (3.0GB/sec) / supports 2 drives standard / integrated into South Bridge											
IDE controller	Enhanced IDE busmaster / ATA-100 support / one connector on systemboard											
Cables	SAS models: one 1-drop EIDE cable (connected to Optical)											
Disk	SATA models: two 1-drop SATA cables, one 1-drop EIDE cable (connected to Optical) None standard											
Mechanical Architecture / chipsets	EIA 22" Rack (1U⁴) / rack-mount only Intel 3210 chipset / Memory Controller Hub (MCH) / I/O Controller Hub (ICH9R) for PCI-E, ATA-100 EIDE, ethernet MAC, USB, Low Pin Count Interface / Firmware Hub / SMSC® SCH5027 Super I/O for serial, keyboard, mouse											
Bus slots	(See below) two PCI-E™ x8											
Ethernet controllers	Dual-Gigabit 10/100/1000 ethernet ports / Two Broadcom® 5722 / two full gigabit ethernet MAC and PHY layer functions / integrated / port one is PCI-E, port two is PCI 2.2 / full duplex / PXE / Wake on LAN® / Rear RJ-45 ports (2)											
Optical / diskette Ports	48X-32X-48X-16X® CD-RW/DVD-ROM, IDE / Diskette: none Front: two USB (2.0), video (DB-15) / Rear: serial (9-pin), two ethernet (RJ-45), video (DB-15), two USB (2.0), one systems mgt (RJ-45)											
Graphics	ATI® ES1000(RN50) / 16MB SDRAM std/max / on planar / analog 15-pin / up to 1024x768x32bit@85Hz											
Console interconnects	No system-to-system interconnect cable											
Systems mgmt	IBM Integrated Baseboard Management Controller(BMC) / IPMI 2.0 / H82166 / on planar / monitors system and processor temperature, fan failure and voltages / IBM Active Energy Manager™ / support for optional slimline Remote Supervisor Adapter II with dedicated slot on planar for continuous power (no external power required)											
Diagnostics	Light Path Diagnostics panel providing LED map to failing part (located on front panel) / Diagnostics via preboot DSA on std IBM Enhanced Diagnostics CD (diskette can be created)											
Security	Power-on password / administrator password / unattended boot / selectable boot / unattended start mode / secure remote power on / off via IPMI 2.0											
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director™ and others											
Cooling fans	Calibrated Vectored Cooling™ / Six fans (four fans for system, two in power supplies) / variable speed / redundant and hot-swap											
Power supply	450 watt / hot-swap / universal / auto-sensing / auto-restart support											
Prerequisites	Monitor, keyboard, mouse, rack											

512MB PC2-5300 ECC DDR2	41Y2726
2GB(2x1GB) PC2-5300 ECC DDR2	41Y2729
4GB(2x2GB) PC2-5300 ECC DDR2	41Y2732
IBM 160GB SATA (7.2K) simple-swap HDD	39M4504
IBM 250GB SATA (7.2K) simple-swap HDD	39M4508
IBM 500GB SATA (7.2K) simple-swap HDD	39M4514
IBM 750GB SATA (7.2K) simple-swap HDD	43W7572
160GB Hot-Swap SATA HDD	39M4522
250GB Hot-Swap SATA HDD	39M4526
500GB Hot-Swap SATA HDD	39M4530
750GB Hot-Swap SATA HDD	43W7576
73GB 15K 3.5" SAS Hot-Swap HDD	40K1043
146GB 15K 3.5" SAS Hot-Swap HDD	40K1044
300GB 15K 3.5" SAS Hot-Swap HDD	43X0802
73GB 10K SFF SAS Hot-Swap HDD	40K1052
146GB 10K SFF SAS Hot-Swap HDD	43X0824
73GB 15K SFF SAS Hot-Swap HDD	43X0837
IBM Remote Supervisor Adapter II slimline	39Y9566
IBM Simple-Swap SATA RAID Kit	43V7471



Slot 1: half length, full height, PCI-E x8
Slot 2: half length, full height, PCI-E x8

Other options at ibm.com/products/us

Some:
Bay ① 3.5", SL 1", access, open for simple-swap/hot-swap disk
Bay ② 3.5", SL 1", access, open for simple-swap/hot-swap disk
Bay ③ 5.25", UltraSlim 0.5", access, std optical

Some:
Bay ① 2.5", SFF, access, open for hot-swap disk
Bay ② 2.5", SFF, access, open for hot-swap disk
Bay ③ 2.5", SFF, access, open for hot-swap disk
Bay ④ 2.5", SFF, access, open for hot-swap disk
Bay ⑤ 5.25", UltraSlim 0.5", access, std optical

- Raven black front bezel
- H 1.75" (1U) x W 17.32" x D 28"; 43mm x 440mm x 711mm
- 24.4 to 28 lbs; 11kg to 12.7kg (minimum to max configuration)
- Configuration/Setup Utility: F1 at startup
- Network Boot: F12 at startup
- Operator Information Panel in front
- Ships with Diagnostics CD, ServerGuide Setup and Installation CD
- Predictive Failure Analysis on disk(s) with IBM Director can alert the administrator of an imminent component failure

Maximum internal disk capacity¹³ (model dependent):
1.5TB with two 750GB 3.5" SATA disks, 600GB with two 300GB 3.5" SAS disks or 292GB with four 2.5" 73GB SAS disks

LIMITED WARRANTY³

- 1 year parts and labor standard 4192 MTM
- 3 year parts and labor standard 4193 MTM
- International Warranty Service³
- On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 9x5, NBD avg response (ServicePac part num 51J9142)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 51J9143)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 51J9144)
- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

IBM [®] Machine Type	Machine model	Processor / Speed / Core	L2 cache	FSB MHz	Memory	Disk controller	Disk bays	Mechanical	Slots x bays	Ethernet	Ltd warr ³	Available date
4192/4193 B2Y	Xeon [®] E3120	3.16GHz/DC	6MB	1333	2 x 512MB	SAS/SATA	2 hot-swap	1U ⁴ rack	2x3	Dual Gb	1/3yr	Sep 2008
4192/4193 B4Y	Xeon E3120	3.16GHz/DC	6MB	1333	2 x 512MB	SATA (no RAID)	2 simple-swap	1U rack	2x3	Dual Gb	1/3yr	Sep 2008
4192/4193 D2Y	Xeon X3330	2.66GHz/QC	6MB	1333	2 x 1GB	SAS	4 hot-swap	1U rack	2x5	Dual Gb	1/3yr	Sep 2008
4192/4193 84Y	Xeon X3360	2.83GHz/QC	12MB	1333	2 x 1GB	SAS	4 hot-swap	1U rack	2x5	Dual Gb	1/3yr	Sep 2008
4192/4193 92Y	Xeon X3370	3.0GHz/QC	12MB	1333	2 x 1GB	SAS	4 hot-swap	1U rack	2x5	Dual Gb	1/3yr	Sep 2008

Positioning Processor(s) *Efficient and dense 1U, single-socket, rack-optimized server for web and network infrastructure*
Intel[®] Xeon up to 3.0GHz 1333MHz FSB / Quad-Core / Xeon up to 3.16GHz 1333MHz FSB / Dual-Core / All Optimized for Extended Memory 64 Technology (EM64T)
 L2 cache **6 or 12MB** std
 SMP support No SMP support
 Implementation Motherboard contains one LGA-775 socket, four DIMM sockets, integrated SATA or SAS/SATA, Dual Gigabit Ethernet and two PCI Express[®] x8 slots

Memory **1 or 2GB** std / 8GB¹³ max / four 240-pin gold-plated DIMM sockets / two sockets used / **PC2-6400 800MHz ECC DDR2-SDRAM / All Error Checking and Correcting (ECC)** / DIMMs and ECC memory controller / industry std / unbuffered

SAS/SATA controller **LSI Logic[®] 1064e** / daughter card / supports SAS or SATA drives / four-port / PCI-Express / **RAID 0,1**
 SATA controller Four channel SATA controller (3.0Gb/sec) / 2 drives supported / integrated into South Bridge / RAID via ServeRAID-BR10i SAS/SATA controller kit(44X0411)

IDE controller Enhanced IDE busmaster / ATA-100 support / one connector on systemboard

Cables **SAS models:** one 1-drop EIDE cable (connected to Optical)
SATA models: two 1-drop SATA cables, one 1-drop EIDE cable (connected to Optical)

Mechanical Architecture / chipsets **EIA 22" Rack (1U⁴)** / rack-mount only
Intel 3210 chipset / Memory Controller Hub (MCH) / I/O Controller Hub (ICH9R) for PCI-E, ATA-100 EIDE, ethernet MAC, USB, Low Pin Count Interface / Firmware Hub / SMSC[®] SCH5027 Super I/O for serial, keyboard, mouse
 Bus slots (See below) two PCI-E[™] x8

Ethernet controllers **Dual Gigabit** ethernet ports / Two Broadcom[®] 5722 / two full gigabit ethernet MAC and PHY layer functions / integrated / port one is PCI-E, port two is PCI 2.2 / full duplex / PXE / Wake on LAN[®] / Rear RJ-45 ports (2)

Optical / diskette Ports **48X-32X-48X-16X⁶ CD-RW/DVD-ROM, IDE / Diskette:** none
Front: two USB (2.0), video (DB-15) / **Rear:** serial (9-pin), two ethernet (RJ-45), video (DB-15), two USB (2.0), one systems mgt (RJ-45)

Graphics ATI[®] ES1000(RN50) / 16MB SDRAM std/max / on planar / analog 15-pin / up to 1024x768x32bit@85Hz

Console interconnects No system-to-system interconnect cable

Systems mgmt **IBM Integrated Baseboard Management Controller(BMC)** / IPMI 2.0 / H82166 / on planar / monitors system and processor temperature, fan failure and voltages / **IBM Active Energy Manager™** / support for optional slimline Remote Supervisor Adapter II with dedicated slot on planar for continuous power (no external power required)

Diagnostics **Light Path Diagnostics** panel providing LED map to failing part (located on front panel) / Diagnostics via preboot DSA on std IBM Enhanced Diagnostics CD (diskette can be created)

Security Power-on password / administrator password / unattended boot / selectable boot / unattended start mode / **secure remote power on / off via IPMI 2.0**

Software **ServerGuide™** (CD-ROM installation and configuration utilities), IBM Director™ and others

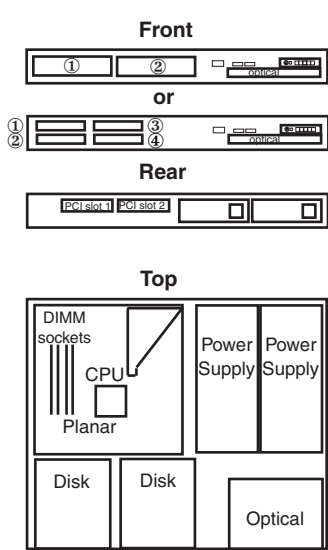
Cooling fans **Calibrated Vectored Cooling™** / Six fans (four fans for system, two in power supplies) / variable speed / redundant and hot-swap

Power supply 450 watt / hot-swap / universal / auto-sensing / auto-restart support

Prerequisites Monitor, keyboard, mouse, rack

- 512MB PC2-5300 ECC DDR2 41Y2726
- 2GB(2x1GB) PC2-5300 ECC DDR2 41Y2729
- 4GB(2x2GB) PC2-5300 ECC DDR2 41Y2732
- 1GB(2x512MB) PC2-6400 CL6 ECC 800MHz DIMM 46C7443
- 2GB(2x1GB) PC2-6400 CL6 ECC 800MHz DIMM 46C7428
- 4GB(2x2GB) PC2-6400 CL6 ECC 800MHz DIMM 46C7429
- IBM 160GB SATA (7.2K) simple-swap HDD 39M4504
- IBM 250GB SATA (7.2K) simple-swap HDD 39M4508
- IBM 500GB SATA (7.2K) simple-swap HDD 39M4514
- IBM 750GB SATA (7.2K) simple-swap HDD 43W7572
- 160GB Hot-Swap SATA HDD 39M4522
- 250GB Hot-Swap SATA HDD 39M4526
- 500GB Hot-Swap SATA HDD 39M4530
- 750GB Hot-Swap SATA HDD 43W7576
- 73GB 15K 3.5" SAS Hot-Swap HDD 40K1043
- 146GB 15K 3.5" SAS Hot-Swap HDD 40K1044
- 300GB 15K 3.5" SAS Hot-Swap HDD 43X0802
- 73GB 10K SFF SAS Hot-Swap HDD 40K1052
- 146GB 10K SFF SAS Hot-Swap HDD 43X0824
- 73GB 15K SFF SAS Hot-Swap HDD 43X0837
- IBM Remote Supervisor Adapter II slimline 39Y9566
- ServeRAID-BR10i SAS/SATA controller kit 44X0411
- ServeRAID-MR10i SAS/SATA controller kit 43W4296

Other options at ibm.com/products/us



Slot 1: half length, full height, PCI-E x8
 Slot 2: half length, full height, PCI-E x8

Some:
 Bay ① 2.5", SFF, access, open for hot-swap disk
 Bay ② 2.5", SFF, access, open for hot-swap disk
 Bay ③ 2.5", SFF, access, open for hot-swap disk
 Bay ④ 2.5", SFF, access, open for hot-swap disk
 Bay ⑤ 5.25", UltraSlim 0.5", access, std optical

Some:
 Bay ① 3.5", SL 1", access, open for simple-swap/hot-swap disk
 Bay ② 3.5", SL 1", access, open for simple-swap/hot-swap disk
 Bay ③ 5.25", UltraSlim 0.5", access, std optical

- Raven black front bezel
- H 1.75" (1U) x W 17.32" x D 28"; 43mm x 440mm x 711mm
- 24.4 to 28 lbs; 11kg to 12.7kg (minimum to max configuration)
- Configuration/Setup Utility: F1 at startup
- Network Boot: F12 at startup
- Operator Information Panel in front
- Ships with Diagnostics CD, ServerGuide Setup and Installation CD
- Predictive Failure Analysis on disk(s) with IBM Director can alert the administrator of an imminent component failure

Maximum internal disk capacity¹³ (model dependent):
 1.5TB with two 750GB 3.5" SATA disks, 2TB with two 1TB 3.5" SAS disks or 584GB with four 2.5" 146GB SAS disks

LIMITED WARRANTY³

- 1 year parts and labor standard 4192 MTM
- 3 year parts and labor standard 4193 MTM
- International Warranty Service³
- On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 9x5, NBD avg response (ServicePac part num 51J9142)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 51J9143)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 51J9144)
- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

IBM® Type-GAV-model	Qty x Processor	L2 Core cache	Memory	Disk controller	Mechanical	Slots x bays (std/max)	Warranty	Power supply	Ethernet	Available date	
7973/74-B2y-B2x	1x Xeon™E5310	1.6GHz	QC 8MB	1GB	Open SATA	Tower	6x7 (4/4 SS)	1/3yr	1 x 670W fixed	GB	Aug 2007
7973/74-C2y-C2x	1x Xeon E5320	1.86GHz	QC 8MB	1GB	Open SATA	Tower	6x7 (4/4 SS)	1/3yr	1 x 670W fixed	GB	Aug 2007
7973/74-F2y-F2x	1x Xeon E5335	2.0GHz	QC 8MB	1GB	Open SATA	Tower	6x7 (4/4 SS)	1/3yr	1 x 670W fixed	GB	Aug 2007
7975/76-B4y-B4x	1x Xeon E5310	1.6GHz	QC 8MB	1GB	Open SAS/SATA	Tower	6x11 (4/8 HS)	1/3yr	1 x 670W fixed	GB	Aug 2007
7975/76-C4y-C4x	1x Xeon E5320	1.86GHz	QC 8MB	1GB	Open SAS/SATA	Tower	6x11 (4/8 HS)	1/3yr	1 x 670W fixed	GB	Aug 2007
7975/76-F2y-F2x	1x Xeon E5335	2.0GHz	QC 8MB	1GB	Open SAS/SATA	Tower	6x11 (4/8 HS)	1/3yr	1 x 670W fixed	GB	Aug 2007
7975/76-F4y-F4x	1x Xeon E5335	2.0GHz	QC 8MB	1GB	Open SAS/SATA	Tower	6x11 (4/8 HS)	1/3yr	1 x 835W hot-swap	GB	Aug 2007

Positioning Processor L2 cache SMP support
Universal server; two-way server using the Xeon processor to provide power and performance at an affordable price
 Up to **1 x Intel® Xeon 1.86GHz with 1066MHz FSB / 8MB L2 ECC Cache** / Quad-Core / All EM64T
8MB / std and max / at processor speed
2-way SMP / up to two Xeon Processors (same speed/cache size)

Implementation Systemboard contains two Intel LGA771 sockets, eight memory gold-connector DIMM slots, three PCI-E slots, two PCI-X slots, one PCI slot, integrated SAS, ethernet and graphics controllers

Memory **1GB** std / 32GB¹³ max / two slots used / six slots available / **PC2-5300 667MHz FBD 240-pin ECC DDR2-SDRAM DIMMs** / DIMMs must be installed in matched pairs [a bank] / **Fully Buffered** / 2-way memory interleave / dual channel / **Error Checking and Correcting (ECC)** (corrects any x4 or x8 SDRAM device failure, detects all two wire faults on DIMMs, detects all permutations of two x4 DRAM failures, detects any two bits in error within 8 bytes of data, corrects any single bit error within 8 bytes of data) / **Active Memory™**: **memory mirroring, online-spare memory, Chipkill**

SAS/SATA controller MTs 7973/4: native SATA / on planar / PCI-Express / HostRAID 0 & 1 / MTs 7975/6: ServeRAID 8k-I std / **Adaptec® AIC-9580W / eight port SAS(300MB/sec) or SATA(150MB/sec)** / hot-swap / on planar / PCI-Express / **RAID 0, 1 & 10**

SAS connectors Dual channel controller wired to hot-swap DASD backplane

SAS cabling Mini SAS cable connects controller to 4-bay backplane

IDE controller / cable IDE ATA 66/33 / one connector on planar / one 2-drop IDE cable (CD-ROM)

Disk - capacity None std / supports 7200-15000 rpm disks / single backplane (upgradeable to dual backplanes)

Disk - bays Some: four hot-swap SAS/SATA bays (upgradeable to eight); some: four simple-swap SATA bays

Mechanical Slots (see below) Chipset
 Tower / conversion to EIA 26" Rack (5U⁴) via optional kit 39Y8382
 Three PCI-Express, two PCI-X 64-bit/133MHz and one PCI 32-bit/33MHz slot
Intel 5000P chipset / Intel Memory Controller Hub (MCH) provides two PCI-Express x8 slots / Enterprise Southbridge(ESB-2E) provides: one PCI-Express x8 slot with x4 Links, two 64-bit/100MHz PCI-X slots, one 32-bit/33MHz PCI slot, ATI video, Gigabit ethernet, IDE, USB, SMBus, LPC bus to NS PC8374L for Super I/O

Ethernet controller **One** 10/100/1000 gigabit / Broadcom® BCM 5721 / on planar / PCI-Express / full duplex / Wake on LAN® / IPMI (2.0)

CD-ROM / diskette 48X⁶ CD-ROM / IDE / 1.6" HH; *Diskette: USB only*

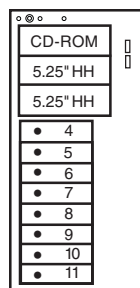
Rear ports *Rear: two USB (Vers 2.0), keyboard, mouse, parallel, two serial (9-pin), graphics (DB-15), one ethernet (RJ-45), RJ-45 (sys mgmt)*

Front port / graphics *Front: two USB (Vers 2.0); Graphics: XVGA / ATI® RN50(ES1000) / on planar / 16MB DDR std/max / 32-bit/33MHz PCI 2.2*

Security Power-on password / administrator password / front door to cover disk bays and power button / unattended boot / selectable boot

Systems mgmt	IBM Integrated Baseboard Management Controller(BMC) / IPMI 2.0 H8S2166 / on planar / provides system and environmental monitoring such as temp, optional disks, fans, power supp / supports opt. Remote Supervisor Adapter II Slimline with 140-pin connector on planar for continuous power (no ext pwr reqd)	Xeon E5310 1.6GHz/1066MHz/8MB L2 Cache Proc Upg	43W5821
Diagnosics	System error LED Panel in front	Xeon E5320 1.86GHz/1066MHz/8MB L2 Cache Proc Upg	43W5822
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director, others	Xeon E5335 2.0GHz/1066MHz/8MB L2 Cache Proc Upg	43W5823
Keyboard / mouse	Optional	1GB Kit (2x512MB DIMM) PC2-5300 CL5 ECC Chipkill AMF	39M5782
Power supply	<i>Some: 670 watt / fixed / one std/max; some: 835 watt / hot-swap / one/two std/max / redundant with two; all: voltage-sensing / auto-restart std/max: three/six / three fans (mid-chassis) / variable speed / hot-swap (Opt) two additional mid-chassis fans and one rear / redundant with optional fans / PFA / fan in each power supply</i>	2GB Kit (2x1GB DIMM) PC2-5300 CL5 ECC Chipkill AMF	39M5785
Fans		4GB Kit (2x2GB DIMM) PC2-5300 CL5 ECC Chipkill AMF	39M5791
		8GB Kit (2x4GB DIMM) PC2-5300 CL5 ECC Chipkill AMF	39M5797
		73GB 10K SAS Hot-Swap HDD	40K1039
		146GB 10K SAS Hot-Swap HDD	40K1040
		300GB 10K SAS Hot-Swap HDD	40K1041
		36GB 15K SAS Hot-Swap HDD	40K1042
		73GB 15K SAS Hot-Swap HDD	40K1043
		146GB 15K SAS Hot-Swap HDD	40K1044
		500GB 7.2K SATA Hot-Swap HDD	39M4530
		IBM Remote Supervisor Adapter II Slimline	39Y9566
		IBM Redundant Power and Cooling Option(NA)	39Y8487

Other options at www.ibm.com/pc/us/accessories



Bay 1 5.25", HH 1.6" access, CD-ROM
 Bay 2 5.25", HH 1.6" access, open
 Bay 3 5.25", HH 1.6" access, open
Hot-Swap SAS/SATA models:
 Bay 4 3.5", SL 1", access, open
 Bay 5 3.5", SL 1", access, open
 Bay 6 3.5", SL 1", access, open
 Bay 7 3.5", SL 1", access, open
 Bay 8 3.5", SL 1", access, open
 Bay 9 3.5", SL 1", access, open
 Bay 10 3.5", SL 1", access, open
 Bay 11 3.5", SL 1", access, open
Simple-Swap SATA models:
 Bay 8 3.5", SL 1", access, open
 Bay 9 3.5", SL 1", access, open
 Bay 10 3.5", SL 1", access, open
 Bay 11 3.5", SL 1", access, open

- ⇨ Quick release adapter slots (no screws)
- ⇨ Configuration/Setup Utility invoked by pressing F1 at startup
- ⇨ RAID Configuration Utility near startup by pressing CTRL+A
- ⇨ ACPI 2.0-compliant
- ⇨ Operator Information Panel (in front)
- ⇨ Predictive failure analysis on disk options, memory, processors, VRMs, power supplies, and fans in conjunction with IBM Director can alert the system administrator of an imminent component failure
- ⇨ Tower: H 17.3" x W 8.6" x D 29.4"
- ⇨ 42 to 84 pounds
- ⇨ Stealth black color

Slot 1: half-length, PCI-Express x8(x4 electrical)
 Slot 2: full, PCI-Express x8
 Slot 3: full, PCI-Express x8
 Slot 4: full, 64-bit 133MHz 3.3v PCI-X
 Slot 5: full, 64-bit 133MHz 3.3v PCI-X
 Slot 6: half-length, 32-bit 33MHz 5.0v PCI

Hot-Swap models: Max internal disk capacity: 2.4TB² with eight 300GB 10K SAS or 4.0TB² with eight 500GB SATA hot-swap HDDs
Simple-Swap models: Max internal disk capacity: 1.0TB² with four 250GB SATA non-hot-swap HDDs

LIMITED WARRANTY³

- ⇨ 1 yr parts and labor 7973/7975 MTM
- ⇨ 3 yr parts and labor 7974/7976 MTM
- ⇨ International Warranty Service³
- ⇨ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- ⇨ 3 year on site warranty service upgrade options (ineligible locations):⁷
 - 9 hour coverage, Mon-Fri excluding holidays, 4 hour average response (ServicePac[®] part num 21P2083)
 - 24 hr x 7 day coverage, 4 hour average response (ServicePac part number 21P2084)
 - 24 hr x 7 day coverage, 2 hour average response (ServicePac part number 21P2085)
- ⇨ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

IBM® Type-GAV-model	Qty x Processor	L2 Core cache Memory	Disk controller	Mechanical	Slots x bays (std/max)	Warranty	Power supply	Ethernet	Available date
7973/74-2Bx	1x Xeon™E5205 1.86GHz	DC 6MB 1GB	Open SATA	Tower	6x7 (4/4 SS)	1/3yr	1 x 670W fixed	Gb	Nov 2008
7975/76-2Bx	1x Xeon E5205 1.86GHz	DC 6MB 1GB	Open SAS/SATA	Tower	6x11 (4/8 HS)	1/3yr	1 x 670W fixed	Gb	Nov 2008
7975/76-2Cx	1x Xeon E5205 1.86GHz	DC 6MB 1GB	Open SAS/SATA	Tower	6x11 (4/8 HS)	1/3yr	1 x 835W hot-swap	Gb	Nov 2008

Positioning Processor L2 cache SMP support *Universal server; two-way server using the Xeon processor to provide power and performance at an affordable price*
 Up to **2 x Intel® Xeon 1.86GHz with 1066MHz FSB / 6MB L2 ECC Cache** / Dual-Core / All EM64T
6MB / std and max / at processor speed
2-way SMP / up to two Xeon Processors (same speed/cache size)

Implementation Systemboard contains two Intel LGA771 sockets, eight memory gold-connector DIMM slots, three PCI-E slots, two PCI-X slots, one PCI slot, integrated SAS, ethernet and graphics controllers

Memory **1GB** std / 32GB¹³ max / two slots used / six slots available / **PC2-5300 667MHz FBD 240-pin ECC DDR2-SDRAM DIMMs / DIMMs must be installed in matched pairs [a bank] / Fully Buffered / 2-way memory interleave / dual channel / Error Checking and Correcting (ECC)** (corrects any x4 or x8 SDRAM device failure, detects all two wire faults on DIMMs, detects all permutations of two x4 DRAM failures, detects any two bits in error within 8 bytes of data, corrects any single bit error within 8 bytes of data) / **Active Memory™: memory mirroring, online-spare memory, Chipkill**

SAS/SATA controller MTs 7973/4: native SATA / on planar / PCI-Express / HostRAID 0 & 1 / MTs 7975/6: ServeRAID 8k-l std / **Adaptec® AIC-9580W / eight port SAS(300MB/sec) or SATA(150MB/sec) / hot-swap / on planar / PCI-Express / RAID 0, 1 & 10**

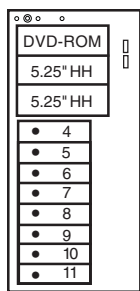
SAS connectors SAS cabling IDE controller / cable Disk - capacity Disk - bays Dual channel controller wired to hot-swap DASD backplane
 Mini SAS cable connects controller to 4-bay backplane
 IDE ATA 66/33 / one connector on planar / one 2-drop IDE cable (CD-ROM)
 None std / supports 7200-15000 rpm disks / single backplane (upgradeable to dual backplanes)
 Some: four hot-swap SAS/SATA bays (upgradeable to eight); some: four simple-swap SATA bays

Mechanical Slots (see below) Chipset Tower / conversion to EIA 26" Rack (5U⁴) via optional kit 39Y8382
 Three PCI-Express, two PCI-X 64-bit/133MHz and one PCI 32-bit/33MHz slot
Intel 5000P chipset / Intel Memory Controller Hub (MCH) provides two PCI-Express x8 slots / Enterprise Southbridge(ESB-2E) provides: one PCI-Express x8 slot with x4 Links, two 64-bit/100MHz PCI-X slots, one 32-bit/33MHz PCI slot, ATI video, Gigabit ethernet, IDE, USB, SMBus, LPC bus to NS PC8374L for Super I/O

Ethernet controller **One** 10/100/1000 gigabit / Broadcom® BCM 5721 / on planar / PCI-Express / full duplex / Wake on LAN® / IPMI (2.0)

DVD-ROM / diskette Rear ports Front port / graphics Security 16X⁶ DVD-ROM / IDE / 1.6" HH; *Diskette*: USB only
Rear: two USB (Vers 2.0), keyboard, mouse, parallel, **two** serial (9-pin), graphics (DB-15), one ethernet (RJ-45), RJ-45 (sys mgmt)
Front: two USB (Vers 2.0); *Graphics*: X VGA / ATI® RN50(ES1000) / on planar / 16MB DDR std/max / 32-bit/33MHz PCI 2.2
 Power-on password / administrator password / front door to cover disk bays and power button / unattended boot / selectable boot

Systems mgmt	IBM Integrated Baseboard Management Controller(BMC) / IPMI 2.0 H8S2166 / on planar / provides system and environmental monitoring such as temp, optional disks, fans, power supp / supports opt. Remote Supervisor Adapter II Slimline with 140-pin connector on planar for continuous power (no ext pwr reqd)	Xeon E5205 1.86GHz/1066MHz/6MB L2 Cache Proc Upg 1GB Kit (2x512MB DIMM) PC2-5300 CL5 ECC Chipkill AMF 2GB Kit (2x1GB DIMM) PC2-5300 CL5 ECC Chipkill AMF 4GB Kit (2x2GB DIMM) PC2-5300 CL5 ECC Chipkill AMF 73GB 10K SAS Hot-Swap HDD 146GB 10K SAS Hot-Swap HDD 300GB 10K SAS Hot-Swap HDD 36GB 15K SAS Hot-Swap HDD 73GB 15K SAS Hot-Swap HDD 146GB 15K SAS Hot-Swap HDD 80GB 7200 rpm SATA Hot-Swap HDD 160GB 7200 rpm SATA Hot-Swap HDD 250GB 7200 rpm SATA Hot-Swap HDD 80GB 7200 rpm SATA Simple-Swap HDD 160GB 7200 rpm SATA Simple-Swap HDD 250GB 7200 rpm SATA Simple-Swap HDD IBM Remote Supervisor Adapter II Slimline IBM Redundant Power and Cooling Option(NA) IBM ServeRAID-MR10is VAULT SAS/SATA Controller	44E5134 39M5782 39M5785 39M5791 40K1039 40K1040 40K1041 40K1042 40K1043 40K1044 39M4518 39M4522 39M4526 39M4500 39M4504 39M4508 39Y9566 39Y8487 44E8695
Diagnostics	System error LED Panel in front	Other options at www.ibm.com/products/us	
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director, others		
Keyboard / mouse	Optional		
Power supply	<i>Some</i> : 670 watt / fixed / one std/max; <i>some</i> : 835 watt / hot-swap / one/two std/max / redundant with two; <i>all</i> : voltage-sensing / auto-restart std/max: three/six / three fans (mid-chassis) / variable speed / hot-swap (Opt) two additional mid-chassis fans and one rear / redundant with optional fans / PFA / fan in each power supply		
Fans			



Bay 1 5.25", HH 1.6" access, DVD-ROM
 Bay 2 5.25", HH 1.6" access, open
 Bay 3 5.25", HH 1.6" access, open
Hot-Swap SAS/SATA models:
 Bay 4 3.5", SL 1", access, open
 Bay 5 3.5", SL 1", access, open
 Bay 6 3.5", SL 1", access, open
 Bay 7 3.5", SL 1", access, open
 Bay 8 3.5", SL 1", access, open
 Bay 9 3.5", SL 1", access, open
 Bay 10 3.5", SL 1", access, open
 Bay 11 3.5", SL 1", access, open
Simple-Swap SATA models:
 Bay 8 3.5", SL 1", access, open
 Bay 9 3.5", SL 1", access, open
 Bay 10 3.5", SL 1", access, open
 Bay 11 3.5", SL 1", access, open

- ⇨ Quick release adapter slots
- ⇨ Configuration/Setup Utility invoked by pressing F1 at startup
- ⇨ RAID Configuration Utility near startup by pressing CTRL+A
- ⇨ ACPI 2.0-compliant
- ⇨ Operator Information Panel (in front)
- ⇨ Predictive failure analysis on disk options, memory, processors, VRMs, power supplies, and fans in conjunction with IBM Director can alert the system administrator of an imminent component failure
- ⇨ Tower: H 17.3" x W 8.6" x D 29.4"
- ⇨ 42 to 84 pounds
- ⇨ Stealth black color

Slot 1: half-length, PCI-Express x8(x4 electrical)
 Slot 2: full, PCI-Express x8
 Slot 3: full, PCI-Express x8
 Slot 4: full, 64-bit 133MHz 3.3v PCI-X
 Slot 5: full, 64-bit 133MHz 3.3v PCI-X
 Slot 6: half-length, 32-bit 33MHz 5.0v PCI

Hot-Swap models: Max internal disk capacity: 6.0TB² with eight 750GB SATA hot-swap HDDs
Simple-Swap models: Max internal disk capacity: 3.0TB² with four 750GB SATA non-hot-swap HDDs

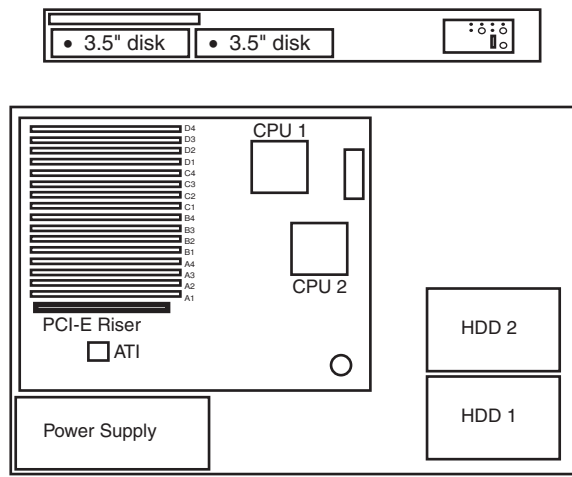
LIMITED WARRANTY³

- ⇨ 1 yr parts and labor 7973/7975 MTM
- ⇨ 3 yr parts and labor 7974/7976 MTM
- ⇨ International Warranty Service³
- ⇨ On site, 8 am - 5 pm, M-F coverage excluding holidays, next business day response time⁷
- ⇨ 3 year on site warranty service upgrade options for 7973/7975 MTM:
 - 9 hr coverage, M-F excluding holidays, 4 hr avg response (ServicePac[®] part number 38R3487)
 - 24 hr x 7 day coverage, 4 hour average response (ServicePac part number 38R3488)
- ⇨ 3 year on site warranty service upgrade options for 7974/7976 MTM:
 - 9 hr coverage, M-F excluding holidays, 4 hr avg response (ServicePac part number 40M6919)
 - 24 hr x 7 day coverage, 4 hour average response (ServicePac part number 40M6920)
- ⇨ 24x7¹⁴ toll-free support for warranty issues during the warranty period³ (eligible locations only⁷)

IBM® Type-model	Qty x Processor/Core	L2 cache	Memory	Disk controller	Disk bays	Disks	Optical	Power Supply	Slots x bays	Ethernet	Limited warranty ³	Available date
7948-58x	2 x Xeon™ E5472 3.0GHz/QC12MB	12 or 6MB	16x4GB	SATA	2 fixed	2x500GB	open	1x600W	1x2	2 x GB	1 year	May 2008

Positioning Processor	<i>1U, dual-socket server providing High Performance Computing in space-constrained environments</i>											
L2 cache	Two Intel® Xeon Processors up to 3.0GHz / 12MB L2 ECC Cache / Quad-Core / Two Xeon Processors 3.4GHz / 6MB L2 ECC Cache / Dual-Core / All 1600MHz FSB / Extended Memory 64 Technology (EM64T) / Enhanced Intel Speedstep Technology (EIST)											
SMP support Implementation	12 or 6MB / std and max / at processor speed											
Memory	2-way SMP / two Xeon Processors (same speed/cache size) standard											
SATA controller	Systemboard contains two Intel LGA771 sockets, sixteen memory gold-connector DIMM slots, one 2nd Generation PCI-E slot, integrated SATA, ethernet and graphics controllers											
SATA connectors	4, 32 or 64GB std / 64GB¹³ max / 2, 8 or 16 slots used / 14, 8 or 0 slots available / PC2-5300 667MHz FBD 240-pin ECC DDR2-SDRAM DIMMs / dual channel / 2-way memory interleave / DIMMs must be installed in matched pairs [a bank] / Fully Buffered / Error Checking and Correcting (ECC) (corrects any x4 or x8 SDRAM device failure, detects all two wire faults on DIMMs, detects all permutations of two x4 DRAM failures, detects any two bits in error within 8 bytes of data, corrects any single bit error within 8 bytes of data) / Chipkill											
IDE controller/cable	Integrated in ESB2-E / six port SATA controller (300MB/sec) / on planar / PCI-Express											
Disk - capacity	Two internal SATA ports on systemboard are connected with one-drop SATA cables directly to individual disks											
Disk - bays	Enhanced IDE/ATA 100 controller integrated in I/O Controller Hub / one connector on planar / one 1-drop IDE cable (DVD-ROM)											
Chipset	Some: 500Gb or 1TB; some: open / supports 7200 rpm SATA disks / no backplane											
Mechanical	Two fixed 3.5" SATA HDD / filler panels installed in each disk bay											
Bus slots	Intel chipset / Intel 5400 Memory Controller Hub (MCH) provides one PCI-Express x16 slot / Enterprise Southbridge(ESB-2E) provides: ATI video, Dual Gigabit ethernet, IDE, USB, SMBus, LPC bus to NS PC87427 for Super I/O											
Ethernet controller	EIA 19" Rack (1U⁴) / rack-mount only / supported in IBM NetBAY™ Rack products / no rack to tower conversion (See below) one 2nd Generation PCI-Express x16 slot (x16 Links)											
Front & Rear ports	Two 10/100/1000 ethernet ports / Two Intel 82563EB / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-Express / full duplex / Wake on LAN® / Alert Standard Format 2.0 / two RJ-45 ports in rear											
Graphics	Open / USB only											
Security	Front: one USB (Vers 2.0); Rear: two USB (Vers 2.0), keyboard and mouse(stacked PS/2s), graphics (DB-15), two ethernet (RJ-45), one RJ-45 (serial) / no parallel port											
Systems mgmt	SVGA / ATI® RN50(ES1000) / rear port / on planar / 32MB DDR std/max / 32-bit/33MHz PCI 2.3											
Diagnosics Software	Power-on password / administrator password / unattended boot / selectable boot sequence											
Keyboard / mouse	Intel Integrated Baseboard Management Controller(BMC) / IPMI 2.0 / H8S2166 / on planar / provides system and environmental monitoring such as temp, optional disks, fans, power supply											
Power supply	Light Guided Diagnostics / integrated diagnostic LEDs to assist in troubleshooting board level issues											
Fans	System x3450 Quick Setup Guide and Documentation CD: Option Installation Guide, Installation Guide, User's Guide and Hardware Maintenance Manual and Troubleshooting Guide											
Prerequisites	None standard (because rack-based) / PS/2											
	Std/Max: one 600 watt / rear access / auto restart / auto-sensing								4GB PC2-5300 FBD (2 x 2GB)		39M5791	
	Std/Max: five / fixed / variable speed								8GB PC2-5300 FBD (2 x 4GB)		39M5797	
	Monitor, keyboard, mouse, SATA disk(some), rack, OS								IBM 250GB 7.2K rpm SATA simple-swap HDD		39M4508	
									IBM 500GB 7.2K rpm SATA simple-swap HDD		39M4514	
									IBM 750GB 7.2K rpm SATA simple-swap HDD		43W7572	

Other options at ibm.com/products/us



- ⊖ Quick release adapter slots (no screws)
- ⊖ Configuration/Setup Utility: F1 at startup
- ⊖ Diagnostics (PC-Doctor™): F2 at startup
- ⊖ Network Boot: F12 at startup
- ⊖ Front indicators LEDs: NIC 1&2 Activity, Power/Sleep, HDD activity, Identification, and System status
- ⊖ Light Guided Diagnostics can alert the system administrator of a component failure
- ⊖ Rack: H 1.72" x W 16.7" x D 27.4" (H 43.6mm x W 424mm x D 696mm)
- ⊖ 42 to 84 pounds
- ⊖ Stealth black color

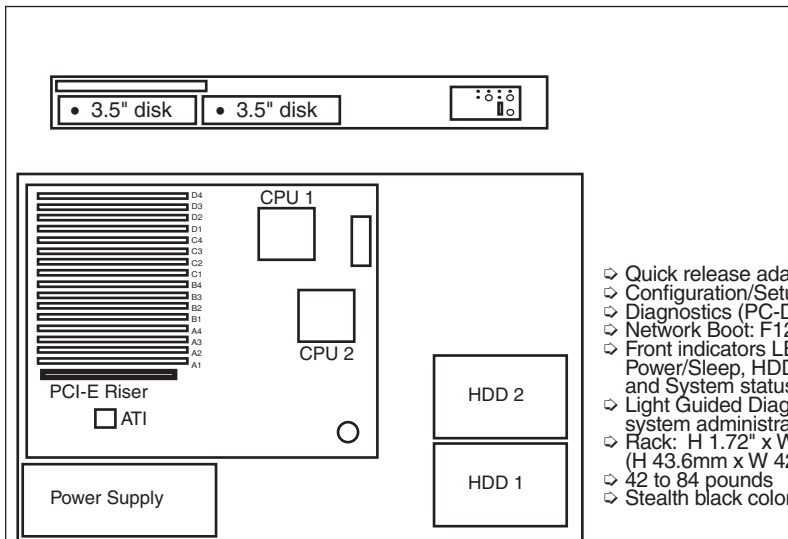
LIMITED WARRANTY³

- ⊖ 1 year parts and labor
- ⊖ International Warranty Service³
- ⊖ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- ⊖ 3 year on site warranty service upgrade options (in eligible locations):⁷
 - 9-5PM coverage, Mon-Fri excluding holidays, NBD response time (ServicePac[®] 51J9496)
 - 9-5PM coverage, Mon-Fri excluding holidays, 4 hr response time (ServicePac 51J9497)
 - 24 hr x 7 day coverage, 4 hour average response time (ServicePac 51J9498)
- ⊖ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ⊖ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

Max internal disk capacity:
3.5" SATA models: 1.5TB² with two 750GB SL disks

See footnotes for important warranty information

IBM® Type-model	Qty x Processor/Core	L2 cache	Memory	Disk controller	Disk bays	Disks	Optical	Power Supply	Slots x bays	Ethernet	Limited warranty ³	Available date
7948-2Cx	2 x Xeon™ X5272 3.4GHz/DC	6MB	2x4GB	SATA	2 fixed (open 3.5)	open	1x600W	1x2	2 x GB	1 year	Sep 2008	
7948-3Cx	2 x Xeon E5462 2.8GHz/DC	12MB	2x4GB	SATA	2 fixed (open 3.5)	open	1x600W	1x2	2 x GB	1 year	Sep 2008	
7948-5Cx	2 x Xeon E5472 3.0GHz/QC	12MB	2x4GB	SATA	2 fixed (open 3.5)	open	1x600W	1x2	2 x GB	1 year	Sep 2008	
7948-6Cx	2 x Xeon X5482 3.2GHz/QC	12MB	2x4GB	SATA	2 fixed (open 3.5)	open	1x600W	1x2	2 x GB	1 year	Nov 2008	
7948-5Dx	2 x Xeon E5472 3.0GHz/QC	12MB	8x4GB	SATA	2 fixed 1x500GB	open	1x600W	1x2	2 x GB	1 year	Sep 2008	
7948-5Fx	2 x Xeon E5472 3.0GHz/QC	12MB	16x4GB	SATA	2 fixed 1x500GB	open	1x600W	1x2	2 x GB	1 year	Sep 2008	
7948-5Gx	2 x Xeon E5472 3.0GHz/QC	12MB	16x4GB	SATA	2 fixed 2x500GB	open	1x600W	1x2	2 x GB	1 year	Sep 2008	
Positioning Processor	1U, dual-socket server providing High Performance Computing in space-constrained environments Two Intel® Xeon Processors up to 3.2GHz / 12MB L2 ECC Cache / Quad-Core / Two Xeon Processors 3.4GHz / 6MB L2 ECC Cache / Dual-Core / All 1600MHz FSB / Extended Memory 64 Technology (EM64T) / Enhanced Intel Speedstep Technology (EIST)											
L2 cache	12 or 6MB / std and max / at processor speed											
SMP support Implementation	2-way SMP / two Xeon Processors (same speed/cache size) standard Systemboard contains two Intel LGA771 sockets, sixteen memory gold-connector DIMM slots, one 2nd Generation PCI-E slot, integrated SATA, ethernet and graphics controllers											
Memory	4, 32 or 64GB std / 64GB ¹³ max / 2, 8 or 16 slots used / 14, 8 or 0 slots available / PC2-6400 800MHz FBD 240-pin ECC DDR2-SDRAM DIMMs / dual channel / 2-way memory interleave / DIMMs must be installed in matched pairs [a bank] / Fully Buffered / Error Checking and Correcting (ECC) (corrects any x4 or x8 SDRAM device failure, detects all two wire faults on DIMMs, detects all permutations of two x4 DRAM failures, detects any two bits in error within 8 bytes of data, corrects any single bit error within 8 bytes of data) / Chipkill											
SATA controller	Integrated in ESB2-E / six port SATA controller (300MB/sec) / on planar / PCI-Express											
SATA connectors	Two internal SATA ports on systemboard are connected with one-drop SATA cables directly to individual disks											
IDE controller/cable	Enhanced IDE/ATA 100 controller integrated in I/O Controller Hub / one connector on planar / one 1-drop IDE cable (DVD-ROM)											
Disk - capacity	Some: 500Gb or 1TB; some: open / supports 7200 rpm SATA disks / no backplane											
Disk - bays	Two fixed 3.5" SATA HDD / filler panels installed in each disk bay											
Chipset	Intel chipset / Intel 5400 Memory Controller Hub (MCH) provides one PCI-Express x16 slot / Enterprise Southbridge(ESB-2E) provides: ATI video, Dual Gigabit ethernet, IDE, USB, SMBus, LPC bus to NS PC87427 for Super I/O											
Mechanical	EIA 19" Rack (1U ⁴) / rack-mount only / supported in IBM NetBAY™ Rack products / no rack to tower conversion											
Bus slots	(See below) one 2nd Generation PCI-Express x16 slot (x16 Links)											
Ethernet controller	Two 10/100/1000 ethernet ports / Two Intel 82563EB / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-Express / full duplex / Wake on LAN® / Alert Standard Format 2.0 / two RJ-45 ports in rear											
Optical / diskette	Open / USB only											
Front & Rear ports	Front: one USB (Vers 2.0); Rear: two USB (Vers 2.0), keyboard and mouse(stacked PS/2s), graphics (DB-15), two ethernet (RJ-45), one RJ-45 (serial) / no parallel port											
Graphics	SVGA / ATI® RN50(ES1000) / rear port / on planar / 32MB DDR std/max / 32-bit/33MHz PCI 2.3											
Security	Power-on password / administrator password / unattended boot / selectable boot sequence											
Systems mgmt	Intel Integrated Baseboard Management Controller(BMC) / IPMI 2.0 / H8S2166 / on planar / provides system and environmental monitoring such as temp, optional disks, fans, power supply											
Diagnostics Software	Light Guided Diagnostics / integrated diagnostic LEDs to assist in troubleshooting board level issues System x3450 Quick Setup Guide and Documentation CD: Option Installation Guide, Installation Guide, User's Guide and Hardware Maintenance Manual and Troubleshooting Guide											
Keyboard / mouse	None standard (because rack-based) / PS/2											
Power supply	Std/Max: one 600 watt / rear access / auto restart / auto-sensing											
Fans	Std/max: five / fixed / variable speed											
Prerequisites	Monitor, keyboard, mouse, SATA disk(some), rack, OS											



4GB PC2-6400 FBD (2 x 2GB)	46C7571
8GB PC2-6400 FBD (2 x 4GB)	46C7572
IBM 250GB 7.2K rpm SATA simple-swap HDD	39M4508
IBM 500GB 7.2K rpm SATA simple-swap HDD	39M4514
IBM 750GB 7.2K rpm SATA simple-swap HDD	43W7572

Other options at ibm.com/products/us

- ⊖ Quick release adapter slots (no screws)
- ⊖ Configuration/Setup Utility: F1 at startup
- ⊖ Diagnostics (PC-Doctor™): F2 at startup
- ⊖ Network Boot: F12 at startup
- ⊖ Front indicators LEDs: NIC 1&2 Activity, Power/Sleep, HDD activity, Identification, and System status
- ⊖ Light Guided Diagnostics can alert the system administrator of a component failure
- ⊖ Rack: H 1.72" x W 16.7" x D 27.4" (H 43.6mm x W 424mm x D 696mm)
- ⊖ 42 to 84 pounds
- ⊖ Stealth black color

LIMITED WARRANTY³

- ⊖ 1 year parts and labor
- ⊖ International Warranty Service³
- ⊖ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- ⊖ 3 year on site warranty service upgrade options (in eligible locations):⁷
 - 9-5PM coverage, Mon-Fri excluding holidays, NBD response time (ServicePac® 51J8880)
 - 9-5PM coverage, Mon-Fri excluding holidays, 4 hr response time (ServicePac 51J8881)
 - 24 hr x 7 day coverage, 4 hour average response time (ServicePac 51J8882)
- ⊖ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ⊖ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

Max internal disk capacity:
3.5" SATA models: 1.5TB² with two 750GB SL disks

See footnotes for important warranty information

IBM® Type-model	Qty x Processor	Speed/Core	L2 Cache	Optical	Memory	Disk / Controller	Disk bays	Slots x bays	Ethernet	Warranty ³ (years)	Available date
7984 - 11U	1 x Opteron™ 2210	1.8GHz/DC	2MB	Open	2x512MB	80GB/SATA	2 fixed	2x3	Dual Gigabit	1	Sept 2006
7984 - 31U	1 x Opteron 2214	2.2GHz/DC	2MB	CD-RW/DVD	2x512MB	80GB/SATA	2 fixed	2x3	Dual Gigabit	1	Sept 2006
7984 - 41U	1 x Opteron 2216	2.4GHz/DC	2MB	Open	2x512MB	80GB/SATA	2 fixed	2x3	Dual Gigabit	1	Sept 2006
7984 - 51U	1 x Opteron 2218	2.6GHz/DC	2MB	Open	2x512MB	80GB/SATA	2 fixed	2x3	Dual Gigabit	1	Sept 2006
7984 - 52U	2 x Opteron 2218	2.6GHz/DC	2MB	Open	4x512MB	80GB/SATA	2 fixed	2x3	Dual Gigabit	1	Sept 2006
7984 - 6AU	2 x Opteron 2220SE	2.8GHz/DC	2MB	Open	4x512MB	80GB/SATA	2 fixed	2x3	Dual Gigabit	1	Sept 2006
7984 - 6BU	1 x Opteron 2220	2.4GHz/DC	2MB	Open	2x1GB	2x73GB/SAS	2 fixed	2x3	Dual Gigabit	1	Nov 2006
7984 - 72U	1 x Opteron 2220	2.8GHz/DC	2MB	Open	2x512MB	160GB/SATA	2 fixed	2x3	Dual Gigabit	1	Apr 2007
7984 - 82U	2 x Opteron 2222SE	3.0GHz/DC	2MB	Open	4x512MB	160GB/SATA	2 fixed	2x3	Dual Gigabit	1	May 2007

Positioning Processor(s) Up to two AMD® Opteron 2000 Series Dual Core Processors up to 3.0GHz¹ / simultaneously supports 32-bit and 64-bit computing
L2 cache 1MB / per core / at processor speed / Dual Core Capable
SMP support Implementation 2-way SMP / up to two Opteron Processors (same speed/cache size required)
 Systemboard contains two LGA 1207-pin sockets, twelve memory DIMM slots, integrated SATA, dual ethernet, graphics, one PCI-E x16 slot and either one PCI-E x8 or one HTx slot

Memory 1 or 2 GB std / 24GB max¹³ per processor (48GB max per dual cpu system) / single cpu system: two slots used, four slots available; dual cpu system: four slots used, eight slots available / PC-5300 667MHz registered 240-pin DDR2-SDRAM RDIMMs / twelve DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / dual channel / two-way interleaving / Error Checking and Correcting (ECC) via 16-bit Checksum / Xcelerated Memory Technology™ / Chipkill™ on 1, 2 and 4GB DIMMs / online hot-spare memory / hardware scrubbing

SATA disk controller Integrated SATA II controller / provided by HT1000 South Bridge / two port / optional SAS / optional RAID
SATA controller/cable Two connectors on planar / two 1-drop cables / one 1-drop IDE cable (for optical drive)
Disk - capacity 80GB / 7200 rpm / 9.0ms seek
Disk - bays Two 3.5" fixed / SATA connectors / filler panels in each disk bay / supports 15k drives
Mechanical EIA 19" Rack (1U⁴) / rack-mount only / supported in 26" deep racks such as the IBM NetBAY™ Rack products

Architecture/chipsets ServerWorks™ Chipset / HT2100 System I/O Controller provides: one PCI-Express x16 slot, one PCI-Express x8 or one HTx slot, HyperTransport bridge to HT1000 South Bridge / HT1000 South Bridge provides: PCI-X, USB(2.0), ATI video, SATA, Dual GB ethernet, IDE and LPC bus to NS PC87427 for Super I/O

Bus slots (See detail below) one half-length PCI-E x16 and one half-length PCI-E x8 / option to convert PCI-E x8 slot to HTx slot

Ethernet Two gigabit 10/100/1000 ethernet ports / Broadcom® 5704 / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-X 64-bit 133MHz / full duplex / Wake on LAN® / two rear RJ-45 ports

Optical / diskette Optional / IDE / Diskette none (USB diskette optional)
Rear ports Rear: four USB (Vers 2.0), serial (9-pin), two ethernet (RJ-45), analog DB-15 graphics / parallel port not supported
Front ports Front: two USB (Vers 2.0)
Graphics SVGA / ATI® RN50b(ES1000) / on planar / 16MB SDRAM std/max
Keyboard / mouse None standard (because rack-based)

Security Systems mgmt Power-on and administrator passwords / unattended boot / selectable boot
IBM Integrated Baseboard Management Controller(BMC) / H82166 / IPMI 2.0

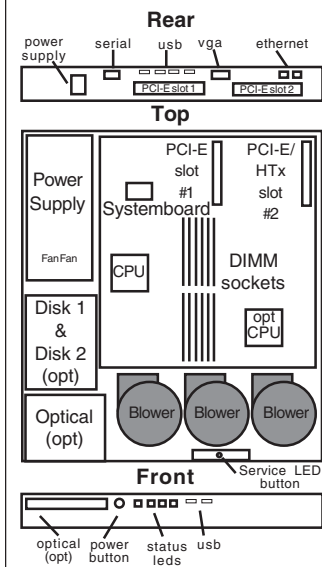
Diagnostics Diagnostic LEDs for fans, memory DIMMs and processors / PFA / Light Path Diagnostics not supported

Software ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director™, and others

Cooling Five fans total / three blowers for processors, memory and HDD bays / two fans inside power supply / Calibrated Vector Cooling™ / variable speed / not redundant / not hot-swap

Power supply 650 watt / universal / auto-sensing / auto-restart support
Prerequisites Monitor, keyboard, mouse, rack, os

Dual Core AMD Opteron Processor Model 2210	40K1208
Dual Core AMD Opteron Processor Model 2214	40K1215
Dual Core AMD Opteron Processor Model 2216	40K1210
Dual Core AMD Opteron Processor Model 2218	40K1211
Dual Core AMD Opteron Processor Model 2220	43W7265
Dual Core AMD Opteron Processor Model 2220SE	40K1209
Dual Core AMD Opteron Processor Model 2222SE	43W7266
1GB (2x512) PC2-5300 CL5 ECC DDR2 RDIMM Kit	41Y2759
2GB (2x1GB) PC2-5300 CL5 ECC DDR2 RDIMM Kit	41Y2762
4GB (2x2GB) PC2-5300 CL5 ECC DDR2 RDIMM Kit	41Y2765
8GB (2x4GB) PC2-5300 CL5 ECC DDR2 RDIMM Kit	41Y2768
IBM 80GB 7.2K 3.5" SATA HDD	39M4500
IBM 160GB 7.2K 3.5" SATA HDD	39M4504
IBM 250GB 7.2K 3.5" SATA HDD	39M4508
IBM 500GB 7.2K 3.5" SATA HDD	39M4514
IBM 750GB 7.2K 3.5" SATA HDD	43W7572
IBM 73GB 10K 3.5" SAS HDD*	40K1045
IBM 146GB 10K 3.5" SAS HDD*	40K1046
IBM 300GB 10K 3.5" SAS HDD*	40K1047
IBM 73GB 15K 3.5" SAS HDD*	40K1049
IBM 146GB 15K 3.5" SAS HDD*	40K1050
IBM SAS HBA Controller	25R8060
IBM InfiniBand HTx Adapter by Q Logic	41Y4519
PCI-E x8 Riser Card	32R3288
HTx Riser Card	40K7462



Maximum internal disk capacity¹³:
 1.5TB with two 750GB SATA disks or
 600GB with two 300GB SAS disks
 and optional* SAS controller

Slot 1: Full height, half-length, PCI-E x16
 Slot 2: Full height, half-length, PCI-E x8 or HTx

- Bay ① 5.25", UltraSlim 0.5", access, optional optical
- Bay ② 3.5", SL 1", no access, std fixed disk
- Bay ③ 3.5", SL 1", no access, open for fixed disk

- ⇨ Stealth black color front bezel
- ⇨ H 1.72" (1U) x W 17.3" x D 25.7"
- ⇨ H 43.7mm x W 439.9mm x L 653.3mm
- ⇨ 26 to 32 lbs; 11.8kg to 14.6kg (minimum to max configuration)
- ⇨ Configuration/Setup Utility: F1 at startup
- ⇨ Network Boot: F12 at startup
- ⇨ Operator Information Panel in front
- ⇨ Includes one line cord (9 ft universal interrack HV cable with IEC plug)
- ⇨ Predictive Failure Analysis® on processor(s), voltage regulator modules, memory, fans, power supply, and disk options

LIMITED WARRANTY³

- ⇨ 1 year parts and labor
- ⇨ International Warranty Service³
- ⇨ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- ⇨ On site service upgrade options (in eligible locations):⁷
 - 1 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9399)
 - 2 year IOR 24x7, 4 hr avg response (ServicePac part num 96P2119)
 - 2 year IOR 24x7, 2 hr avg response (ServicePac part num 96P2120)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9507)
 - 3 year IOR 9x5, NBD response (ServicePac part num 69P9505)
- ⇨ Other ServicePac options at www.ibm.com/services/us/its/pdf/wamomxeu.pdf
- ⇨ 24x7⁷ toll-free support for warranty issues during the warranty period³

*IBM SAS HBA Controller option required for SAS support (included on 6BU)

IBM® Type-model	Qty x Processor	Speed/Core	L2 Cache	Optical	Memory	Disk / Controller	Disk bays	Slots x bays	Ethernet	Warranty ³ (years)	Available date
7984 - 13U	1 x Opteron™ 2210	1.8GHz/DC	2MB	Open	2x512MB	160GB/SATA	2 fixed	2x3	Dual Gigabit	1	Aug 2007
7984 - 33U	1 x Opteron 2214	2.2GHz/DC	2MB	CD-RW/DVD	2x512MB	160GB/SATA	2 fixed	2x3	Dual Gigabit	1	Aug 2007
7984 - 43U	1 x Opteron 2216	2.4GHz/DC	2MB	Open	2x512MB	160GB/SATA	2 fixed	2x3	Dual Gigabit	1	Aug 2007
7984 - 53U	1 x Opteron 2218	2.6GHz/DC	2MB	Open	2x512MB	160GB/SATA	2 fixed	2x3	Dual Gigabit	1	Aug 2007
7984 - 54U	2 x Opteron 2218	2.6GHz/DC	2MB	Open	4x512MB	160GB/SATA	2 fixed	2x3	Dual Gigabit	1	Aug 2007
7984 - 74U	2 x Opteron 2220	2.8GHz/DC	2MB	Open	4x512MB	160GB/SATA	2 fixed	2x3	Dual Gigabit	1	Aug 2007

Positioning Processor(s) **Dual Core, Dual-Socket Rack-Optimized High Performance Computing Server with entry pricing**
 Up to two AMD® Opteron 2000 Series Dual Core Processors up to 2.8GHz¹ / simultaneously supports 32-bit and 64-bit computing
L2 cache 1MB / per core / at processor speed / Dual Core Capable
SMP support 2-way SMP / up to two Opteron Processors (same speed/cache size required)
Implementation Systemboard contains two LGA 1207-pin sockets, twelve memory DIMM slots, integrated SATA, dual ethernet, graphics, one PCI-E x16 slot and either one PCI-E x8 or one HTx slot

Memory 1 or 2 GB std / 24GB max¹³ per processor (48GB max per dual cpu system) / single cpu system: two slots used, four slots available; dual cpu system: four slots used, eight slots available / PC-5300 667MHz registered 240-pin DDR2-SDRAM RDIMMs / twelve DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / dual channel / two-way interleaving / **Error Checking and Correcting (ECC)** via 16-bit Checksum / **Xcelerated Memory Technology™** / **Chipkill™** on 1, 2 and 4GB DIMMs / online hot-spare memory / hardware scrubbing

SATA disk controller Integrated SATA II controller / provided by HT1000 South Bridge / two port / optional SAS / optional RAID
SATA controller/cable Two connectors on planar / two 1-drop cables / one 1-drop IDE cable (for optical drive)
Disk - capacity 80GB / 7200 rpm / 9.0ms seek
Disk - bays Two 3.5" fixed / SATA connectors / filler panels in each disk bay / supports 15k drives
Mechanical EIA 19" Rack (1U⁴) / rack-mount only / supported in 26" deep racks such as the IBM NetBAY™ Rack products

Architecture/chipsets ServerWorks™ Chipset / HT2100 System I/O Controller provides: one PCI-Express x16 slot, one PCI-Express x8 or one HTx slot, HyperTransport bridge to HT1000 South Bridge / HT1000 South Bridge provides: PCI-X, USB(2.0), ATI video, SATA, Dual GB ethernet, IDE and LPC bus to NS PC87427 for Super I/O

Bus slots (See detail below) one half-length PCI-E x16 and one half-length PCI-E x8 / option to convert PCI-E x8 slot to HTx slot

Ethernet Two gigabit 10/100/1000 ethernet ports / Broadcom® 5704 / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-X 64-bit 133MHz / full duplex / Wake on LAN® / two rear RJ-45 ports

Optical / diskette Optional / IDE / Diskette none (USB diskette optional)

Rear ports Rear: four USB (Vers 2.0), serial (9-pin), two ethernet (RJ-45), analog DB-15 graphics / parallel port not supported

Front ports Front: two USB (Vers 2.0)

Graphics SVGA / ATI® RN50b(ES1000) / on planar / 16MB SDRAM std/max

Keyboard / mouse None standard (because rack-based)

Security Power-on and administrator passwords / unattended boot / selectable boot

Systems mgmt IBM Integrated Baseboard Management Controller(BMC) / H82166 / IPMI 2.0

Diagnostics Diagnostic LEDs for fans, memory DIMMs and processors / PFA / Light Path Diagnostics not supported

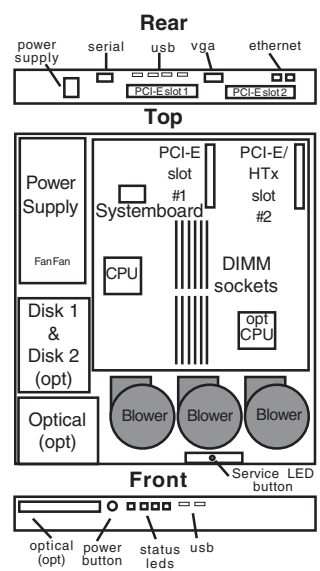
Software ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director™, and others

Cooling Five fans total / three blowers for processors, memory and HDD bays / two fans inside power supply / Calibrated Vector Cooling™ / variable speed / not redundant / not hot-swap

Power supply 650 watt / universal / auto-sensing / auto-restart support

Prerequisites Monitor, keyboard, mouse, rack, os

Dual Core AMD Opteron Processor Model 2210	40K1208
Dual Core AMD Opteron Processor Model 2214	40K1215
Dual Core AMD Opteron Processor Model 2216	40K1210
Dual Core AMD Opteron Processor Model 2218	40K1211
Dual Core AMD Opteron Processor Model 2220	43W7265
1GB (2x512) PC2-5300 CL5 ECC DDR2 FBDIMM Kit	41Y2759
2GB (2x1GB) PC2-5300 CL5 ECC DDR2 FBDIMM Kit	41Y2762
4GB (2x2GB) PC2-5300 CL5 ECC DDR2 FBDIMM Kit	41Y2765
8GB (2x4GB) PC2-5300 CL5 ECC DDR2 FBDIMM Kit	41Y2768
IBM 80GB 7.2K 3.5" SATA HDD	39M4500
IBM 160GB 7.2K 3.5" SATA HDD	39M4504
IBM 250GB 7.2K 3.5" SATA HDD	39M4508
IBM 500GB 7.2K 3.5" SATA HDD	39M4514
IBM 750GB 7.2K 3.5" SATA HDD	43W7572
IBM 73GB 10K 3.5" SAS HDD*	40K1045
IBM 146GB 10K 3.5" SAS HDD*	40K1046
IBM 300GB 10K 3.5" SAS HDD*	40K1047
IBM 73GB 15K 3.5" SAS HDD*	40K1049
IBM 146GB 15K 3.5" SAS HDD*	40K1050
IBM SAS HBA Controller	25R8060
IBM InfiniBand HTx Adapter by Q Logic	41Y4519
PCI-E x8 Riser Card	32R3288
HTx Riser Card	40K7462



Maximum internal disk capacity¹³:
 1.5TB with two 750GB SATA disks or
 600GB with two 300GB SAS disks
 and optional* SAS controller

Slot 1: Full height, half-length, PCI-E x16
 Slot 2: Full height, half-length, PCI-E x8 or HTx

- Bay ① 5.25", UltraSlim 0.5", access, optional optical
- Bay ② 3.5", SL 1", no access, std fixed disk
- Bay ③ 3.5", SL 1", no access, open for fixed disk

- Stealth black color front bezel
- H 1.72" (1U) x W 17.3" x D 25.7"
- H 43.7mm x W 439.9mm x L 653.3mm
- 26 to 32 lbs; 11.8kg to 14.6kg (minimum to max configuration)
- Configuration/Setup Utility: F1 at startup
- Network Boot: F12 at startup
- Operator Information Panel in front
- Includes one line cord (9 ft universal interrack HV cable with IEC plug)
- Predictive Failure Analysis® on processor(s), voltage regulator modules, memory, fans, power supply, and disk options

Other options at ibm.com/pc/us/accessories

LIMITED WARRANTY³

- 1 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- On site service upgrade options (in eligible locations):⁷
 - 1 year IOR 9x5, 4 hr avg response (ServicePac® partnum 69P9399)
 - 2 year IOR 24x7, 4 hr avg response (ServicePac partnum 96P2119)
 - 2 year IOR 24x7, 2 hr avg response (ServicePac partnum 96P2120)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac partnum 69P9507)
 - 3 year IOR 9x5, NBD response (ServicePac partnum 69P9505)
- Other ServicePac options at www.ibm.com/services/us/its/pdf/wamomxeu.pdf
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

*IBM SAS HBA Controller option required for SAS support

IBM® Type-model	Qty x Processor	Speed/Core	L2 Cache	Optical	Memory	Disk / Controller / bays	Slots x bays	Ethernet	Warranty ³ (years)	Available date
7940 - 32U	1 x Opteron™ 2352	2.1GHz/QC	2MB	Open	2x1GB	160GB / SATA / 2 fixed	2x3	Dual Gigabit	1	June 2008
7940 - 52U	1 x Opteron 2356	2.3GHz/QC	2MB	Open	2x1GB	160GB / SATA / 2 fixed	2x3	Dual Gigabit	1	June 2008
7940 - 62U	2 x Opteron 2360SE	2.5GHz/QC	2MB	Open	4x2GB	160GB / SATA / 2 fixed	2x3	Dual Gigabit	1	July 2008

Positioning Processor(s) **Quad-Core, Dual-Socket Rack-Optimized High Performance Computing Server with entry pricing**
 Up to two AMD® Opteron 2000 Series Quad Core Processors up to 2.5GHz¹ / simultaneously supports 32 and 64-bit computing
L2 cache **512KB** / per core / at processor speed
SMP support **2-way SMP** / up to two Opteron Processors (same speed/cache size required)
Implementation Systemboard contains two LGA 1207-pin sockets, twelve memory DIMM slots, integrated SATA, dual ethernet, graphics, one PCI-E x16 slot and either one PCI-E x8 or one HTx slot

Memory **2 or 8 GB** std / 24GB max¹³ per processor (48GB max per dual cpu system) / *single cpu system*: two slots used, four slots available; *dual cpu system*: four slots used, eight slots available / **PC-5300 667MHz registered 240-pin DDR2-SDRAM RDIMMs** / twelve DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / dual channel / two-way interleaving / **Error Checking and Correcting (ECC)** via 16-bit Checksum / **Xcelerated Memory Technology™** / **Chipkill™** on 1, 2 and 4GB DIMMs / online hot-spare memory / hardware scrubbing

SATA disk controller **Integrated SATA II controller** / provided by HT1000 South Bridge / two port / optional SAS / optional RAID
SATA controller/cable Two connectors on planar / two 1-drop cables / one 1-drop IDE cable (for optical drive)
Disk - capacity 80GB / 7200 rpm / 9.0ms seek
Disk - bays Two 3.5" fixed / SATA connectors / filler panels in each disk bay / supports 15k drives
Mechanical **EIA 19" Rack (1U⁴)** / rack-mount only / supported in 26" deep racks such as the IBM NetBAY™ Rack products

Architecture/chipsets **ServerWorks™ Chipset / HT2100 System I/O Controller** provides: one PCI-Express x16 slot, one PCI-Express x8 or one HTx slot, HyperTransport bridge to HT1000 South Bridge / **HT1000 South Bridge** provides: PCI-X, USB(2.0), ATI video, SATA, Dual GB ethernet, IDE and LPC bus to NS PC87427 for Super I/O

Bus slots (See detail below) one half-length PCI-E x16 and one half-length PCI-E x8 / option to convert PCI-E x8 slot to HTx slot

Ethernet Dual Gigabit Ethernet ports / Broadcom® 5704 / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-X 64-bit 133MHz / full duplex / Wake on LAN® / two rear RJ-45 ports

Optical / diskette Optional / IDE / *Diskette* none (USB diskette optional)
Rear ports *Rear*: four USB (Vers 2.0), serial (9-pin), two ethernet (RJ-45), analog DB-15 graphics / parallel port not supported
Front ports *Front*: two USB (Vers 2.0)
Graphics SVGA / ATI® RN50b(ES1000) / on planar / 16MB SDRAM std/max
Keyboard / mouse None standard (because rack-based)

Security Systems mgmt Power-on and administrator passwords / unattended boot / selectable boot
IBM Integrated Baseboard Management Controller(BMC) / H82166 / IPMI 2.0

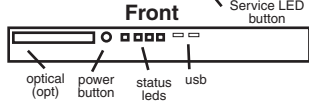
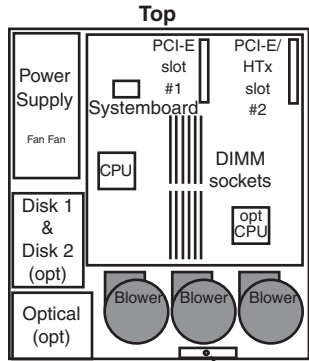
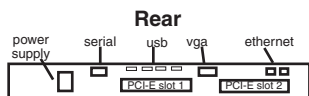
Diagnostics Diagnostic LEDs for fans, memory DIMMs and processors / PFA / Light Path Diagnostics not supported

Software **ServerGuide™** (CD-ROM installation and configuration utilities), IBM Director™, and others

Cooling Five fans total / three blowers for processors, memory and HDD bays / two fans inside power supply / **Calibrated Vector Cooling™** / variable speed / not redundant / not hot-swap

Power supply Prerequisites 650 watt / universal / auto-sensing / auto-restart support
 Monitor, keyboard, mouse, rack, os

AMD Opteron Processor Model 2352	43W7461
AMD Opteron Processor Model 2356	43W7463
1GB (2x512) PC2-5300 CL5 ECC DDR2 FBDIMM	41Y2759
2GB (2x1GB) PC2-5300 CL5 ECC DDR2 FBDIMM	41Y2762
4GB (2x2GB) PC2-5300 CL5 ECC DDR2 FBDIMM	41Y2765
8GB (2x4GB) PC2-5300 CL5 ECC DDR2 FBDIMM	41Y2768
IBM 80GB 7.2K 3.5" SATA HDD	39M4500
IBM 160GB 7.2K 3.5" SATA HDD	39M4504
IBM 250GB 7.2K 3.5" SATA HDD	39M4508
IBM 500GB 7.2K 3.5" SATA HDD	39M4514
IBM 750GB 7.2K 3.5" SATA HDD	43W7572
IBM 73GB 10K 3.5" SAS HDD*	40K1045
IBM 146GB 10K 3.5" SAS HDD*	40K1046
IBM 300GB 10K 3.5" SAS HDD*	40K1047
IBM 73GB 15K 3.5" SAS HDD*	40K1049
IBM 146GB 15K 3.5" SAS HDD*	40K1050
IBM SAS HBA Controller	25R8060
IBM InfiniBand HTx Adapter by Q Logic	41Y4519
PCI-E x8 Riser Card	32R3288
HTx Riser Card	40K7462



Slot 1: Full height, half-length, PCI-E x16
 Slot 2: Full height, half-length, PCI-E x8 or HTx

Bay ① 5.25", UltraSlim 0.5", access, optional optical
 Bay ② 3.5", SL 1", no access, std fixed disk
 Bay ③ 3.5", SL 1", no access, open for fixed disk

- ⇨ Stealth black color front bezel
- ⇨ H 1.72" (1U) x W 17.3" x D 25.7"
 H 43.7mm x W 439.9mm x L 653.3mm
- ⇨ 26 to 32 lbs; 11.8kg to 14.6kg (minimum to max configuration)
- ⇨ Configuration/Setup Utility: F1 at startup
- ⇨ Network Boot: F12 at startup
- ⇨ Operator Information Panel in front
- ⇨ Includes one line cord (9 ft universal interrack HV cable with IEC plug)
- ⇨ Predictive Failure Analysis® on processor(s), voltage regulator modules, memory, fans, power supply, and disk options

Maximum internal disk capacity¹³:
 1.5TB with two 750GB SATA disks or
 600GB with two 300GB SAS disks
 and optional* SAS controller

*IBM SAS HBA Controller option required for SAS support

Other options at ibm.com/products/us

LIMITED WARRANTY³

- ⇨ 1 year parts and labor
- ⇨ International Warranty Service³
- ⇨ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- ⇨ On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 9x5, NBDresponse (ServicePac® part num 46D4095)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 46D4096)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 46D4097)
 - 3 year IOR 24x7, 2 hr avg response (ServicePac part num 46D4098)
- ⇨ Other ServicePac options at www.ibm.com/services/us/its/pdf/wamomxeu.pdf
- ⇨ 24x7¹⁴ toll-free support for warranty issues during the warranty period⁵

IBM® Type-model	Qty x Processor	L2 Core cache	Memory	Disk	Disk controller	Mechanical	Slots x bays (hot-swap bays)	Power supply	Ethernet	Available date
7977- A2x	1 x Xeon™ E5405 2.0GHz	QC 12MB	1GB	Open	SAS/SATA	Tower	6x11 (8 HS std/max)	1 x 835W HS	2xGigabit	Jan 2008
7977- D2x	1x Xeon E5410 2.33GHz	QC 12MB	1GB	Open	SAS/SATA	Tower	6x11 (8 HS std/max)	1 x 835W HS	2xGigabit	Jan 2008
7977- M2x	1x Xeon E5440 2.83GHz	QC 12MB	1GB	Open	SAS/SATA	Tower	6x11 (8 HS std/max)	1 x 835W HS	2xGigabit	Jan 2008
7977- R2x	1x Xeon E5450 3.0GHz	QC 12MB	1GB	Open	SAS/SATA	Tower	6x11 (8 HS std/max)	1 x 835W HS	2xGigabit	Jan 2008

Positioning Processor *Universal server; two-way server using the Xeon processor to provide power and performance at an affordable price*
 Up to 1 x Intel® Xeon Processor up to 3.0GHz with 1333MHz FSB / 12MB L2 ECC Cache / Xeon Processor up to 2.66GHz with 1333MHz FSB / 8MB L2 ECC Cache / All Quad-Core / All EM64T
 L2 cache 8 OR 12MB / std and max / at processor speed
 SMP support 2-way SMP / up to two Xeon Processors (same speed/cache size)
 Implementation Systemboard contains two Intel LGA771 sockets, twelve memory gold-connector DIMM slots, three PCI-E slots, two PCI-X slots, one PCI slot, integrated SAS, ethernet and graphics controllers

Memory **1GB** std / 48GB¹³ max (48GB maximum can be achieved when 4GB DIMMs are supported, 24GB is the max with less than 4GB DIMMs) / two slots used / ten slots available / **PC2-5300 667MHz FBD 240-pin ECC DDR2-SDRAM DIMMs** / DIMMs must be installed in matched pairs [a bank] / **Fully Buffered** / 2-way memory interleave / dual channel / **Error Checking and Correcting (ECC)** (corrects any x4 or x8 SDRAM device failure, detects all two wire faults on DIMMs, detects all permutations of two x4 DRAM failures, detects any two bits in error within 8 bytes of data, corrects any single bit error within 8 bytes of data) / **Active Memory™**: **memory mirroring, online-spare memory, Chipkill**

SAS/SATA controller **Adaptec® AIC-9580W / eight port SAS or SATA** (300MB/sec SAS) (150MB/sec SATA) / hot-swap / on planar / PCI-Express / supports **RAID 0, 1, 5 & 10** / ServeRAID 8k std

SAS connectors Dual channel controller wired to two hot-swap DASD backplanes
 SAS cabling Two mini SAS cables connect controller to dual 4-bay backplanes

IDE controller / cable IDE ATA 66/33 / one connector on planar / one 2-drop IDE cable (DVD-ROM)

Disk - capacity None std / supports 7200-15000 rpm disks / dual backplanes
 Disk - bays Eight hot-swap SAS/SATA bays or 12 hot-swap SFF SAS bays

Mechanical Slots (see below) Tower / conversion to EIA 26" Rack (5U⁴) via optional kit 39Y8382
 Chipset Three PCI-Express, two PCI-X 64-bit/133MHz and one PCI 32-bit/33MHz slot
Intel 5000P chipset / Intel Memory Controller Hub (MCH) provides two PCI-Express x8 slots / Enterprise Southbridge(ESB-2E) provides one PCI-Express x8 slot with x4 Links, two 64-bit/100MHz PCI-X slots, one 32-bit/33MHz PCI slot, ATI video, Dual Gigabit ethernet, IDE, USB, SMBus, LPC bus to NS PC8374L for Super I/O

Ethernet controller **Dual 10/100/1000 gigabit** / Broadcom® BCM 5721 / on planar / PCI-Express 64-bit 100MHz / full duplex / Wake on LAN® / IPMI (2.0)

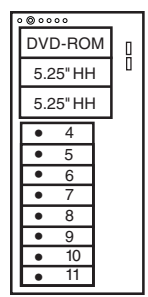
DVD-ROM / diskette 16X⁶ DVD-ROM / IDE / 1.6" HH; *Diskette: USB only*
 Rear ports Xeon two USB (Vers 2.0), keyboard, mouse, parallel, **two** serial (9-pin), graphics (DB-15), two ethernet (RJ-45), RJ-45 (sys mgmt)
 Front port / graphics Front: two USB (Vers 2.0); Graphics: SVGA / ATI® RN50(ES1000) / on planar / 16MB DDR std/max / 32-bit/33MHz PCI 2.2

Security Power-on password / administrator password / front door to cover disk bays and power button / unattended boot / selectable boot

Systems mgmt	IBM Integrated Baseboard Management Controller(BMC) / IPMI 2.0 H8S2166 / on planar / provides system and environmental monitoring such as temp, optional disks, fans, power supp / supports opt. Remote Supervisor Adapter II Slimline with 140-pin connector on planar for continuous power (no ext pwr reqd)	Xeon E5335 2.0GHz/1333MHz/8MB L2 Cache Proc Upg	43W5823
Diagnosics	Light Path Diagnostics™ panel providing LED map to failing part (on side cover) / Information LED Panel in front	Xeon E5345 2.33GHz/1333MHz/8MB L2 Cache Proc Upg	43W5824
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director, others	Xeon E5355 2.66GHz/1333MHz/8MB L2 Cache Proc Upg	43W5825
		Xeon E5405 2.0GHz/1333MHz/12MB L2 Cache Proc Upg	44R5630
		Xeon E5410 2.33GHz/1333MHz/12MB L2 Cache Proc Upg	44R5631
		Xeon E5420 2.5GHz/1333MHz/12MB L2 Cache Proc Upg	44R5632
		Xeon E5430 2.66GHz/1333MHz/12MB L2 Cache Proc Upg	44R5633
		Xeon E5440 2.83GHz/1333MHz/12MB L2 Cache Proc Upg	44R5634
		Xeon E5450 3.0GHz/1333MHz/12MB L2 Cache Proc Upg	44E5122
		1GB Kit (2x512MB DIMM) PC2-5300 DDR2 FBD CL4	39M5782
		2GB Kit (2x1GB DIMM) PC2-5300 DDR2 FBD CL4	39M5785
		4GB Kit (2x2GB DIMM) PC2-5300 DDR2 FBD CL4	39M5791
		146GB 10K SAS Hot-Swap HDD	40K1040
		300GB 10K SAS Hot-Swap HDD	40K1041
		36GB 15K SAS Hot-Swap HDD	40K1042
		73GB 15K SAS Hot-Swap HDD	40K1043
		146GB 15K SAS Hot-Swap HDD	40K1044
		160GB 7.2K SATA Hot-Swap HDD	39M4522
		250GB 7.2K SATA Hot-Swap HDD	39M4526
		500GB 7.2K SATA Hot-Swap HDD	39M4530
		IBM Remote Supervisor Adapter II Slimline	39Y9566
		IBM Redundant Power and Cooling Option(NA)	39Y8487

Keyboard / mouse Optional
 Power supply 835 watt / std/max: one/two / hot-swap / voltage-sensing / auto-restart / redundant with optional power supply
 Fans std/max: three/six / three fans (mid-chassis) / variable speed / hot-swap / (Opt) two additional mid-chassis fans and one rear / redundant with optional fans / PFA / fan in each power supply

Tower



- Bay 1 5.25", HH 1.6" access, DVD-ROM
- Bay 2 5.25", HH 1.6" access, open
- Bay 3 5.25", HH 1.6" access, open
- Bay 4 3.5", SL 1", access, hot-swap
- Bay 5 3.5", SL 1", access, hot-swap
- Bay 6 3.5", SL 1", access, hot-swap
- Bay 7 3.5", SL 1", access, hot-swap
- Bay 8 3.5", SL 1", access, hot-swap
- Bay 9 3.5", SL 1", access, hot-swap
- Bay 10 3.5", SL 1", access, hot-swap
- Bay 11 3.5", SL 1", access, hot-swap

- Quick release adapter slots (no screws)
- Configuration/Setup Utility invoked by pressing F1 at startup
- Aurora RAID Configuration Utility near startup by pressing CTRL+A
- ACPI 2.0-compliant
- Operator Information Panel (in front)
- Predictive failure analysis on disk options, memory, processors, VRMs, power supplies, and fans in conjunction with IBM Director can alert the system administrator of an imminent component failure
- Tower: H 17.3" x W 8.6" x D 29.4"
- 74 to 101 pounds
- Stealth black color

- Slot 1: half-length, PCI-Express x8(x4 electrical)
- Slot 2: full, PCI-Express x8
- Slot 3: full, PCI-Express x8
- Slot 4: full, 64-bit 133MHz 3.3v PCI-X
- Slot 5: full, 64-bit 133MHz 3.3v PCI-X
- Slot 6: half-length, 32-bit 33MHz 5.0v PCI

All models: Max internal disk capacity:
 2.4TB² with eight 300GB 10K SAS or
 6.0TB² with eight 750GB SATA hot-swap HDDs

Other options at www.ibm.com/pc/us/accessories

LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- 3 year on site warranty service upgrade options (in eligible locations):⁷
 - 9 hour coverage, Mon-Fri excluding holidays, 4 hour average response (ServicePac[®] part num 21P2083)
 - 24 hr x 7 day coverage, 4 hour average response (ServicePac part number 21P2084)
 - 24 hr x 7 day coverage, 2 hour average response (ServicePac part number 21P2085)
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information

• = Hot-swap

IBM® Type-GAV-model	Qty x Processor/Core	L2 cache	Memory	Disk	Disk controller	Optical	Power Supply	Disk bays	Slots x bays	Ethernet	Limited warranty ³	Available date
7978-G5y-G5x	1 x Xeon™ 5050 3.0GHz/DC	4MB	1GB	(open 3.5)	SAS/SATA Combo	670W	2 hot-swap	2x4	2 x GB	3 year	July 2006	
7978-G6y-G6x	1 x Xeon 5050 3.0GHz/DC	4MB	1GB	(open 3.5)	SATA Combo	670W	2 simple-swap	2x4	2 x GB	3 year	July 2006	
7978-45y-45x	1 x Xeon 5080 3.73GHz/DC	4MB	1GB	(open 3.5)	SAS/SATA Combo	670W	2 hot-swap	2x4	2 x GB	3 year	July 2006	
7978-4Sy-4Sx	1 x Xeon 5080 3.73GHz/DC	4MB	1GB	(open 2.5)	SAS/SATA Combo	670W	4 hot-swap	2x4	2 x GB	3 year	July 2006	

Positioning Processor
A highly manageable, ultra-dense 1U, 2-way server delivering performance computing in space-constrained environments
 Up to **1x Intel® Xeon Processor 3.0 GHz** with 667MHz FSB Dual Core / Up to **1 x Intel Xeon Processor 3.73 GHz** with 1066MHz FSB Dual Core / **1x Intel® Xeon Processor 3.0 GHz** with 1333MHz FSB Dual Core / **Extended Memory 64 Technology (EM64T)** / Hyper-Threading technology / Enhanced Intel Speedstep Technology (EIST)
2 MB / per core / at processor speed
2-way SMP / up to two Xeon Processors (same speed/cache size)
SMP support Implementation
 Systemboard contains two Intel LGA771 sockets, eight memory gold-connector DIMM slots, two PCI-E slots or one PCI-E slot and one PCI-X slot, integrated SAS or SATA, ethernet and graphics controllers

Memory
1GB std / 32GB¹³ max / two slots used / six slots available / **PC2-5300 667MHz FBD 240-pin ECC DDR2-SDRAM DIMMs** / dual channel / 2-way memory interleave / DIMMs must be installed in matched pairs [a bank] / **Fully Buffered / Error Checking and Correcting (ECC)** (corrects any x4 or x8 SDRAM device failure, detects all two wire faults on DIMMs, detects all permutations of two x4 DRAM failures, detects any two bits in error within 8 bytes of data, corrects any single bit error within 8 bytes of data) / **Active Memory™**: memory mirroring, online-spare memory, Chipkill

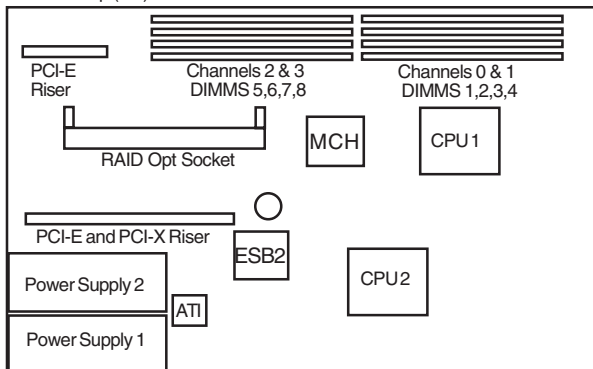
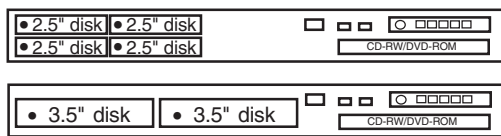
SAS/SATA controller
Adaptec® AIC-9580W / dual channel SAS controller / four port SAS or two port SATA (300MB/sec SATA) / on planar / PCI-Express / some: hot-swap, supports **RAID 0, 1, &10** ; some: simple swap, supports **HostRAID / optional IBM ServeRAID™-8k Adaptor** for low-cost RAID 0, 1, 1E, 5, 00, 10, 1E0, 50 (installed on reserved internal connector)
SAS connectors
 One internal connection wired to DASD backplane
IDE controller/cable
 Enhanced IDE/ATA 100 controller in Enterprise South Bridge / one connector on planar / one 1-drop IDE cable (DVD-ROM)
Disk - capacity
 None standard / supports 7200-15000 rpm disks / one backplane
Disk - bays
 Some: two hot-swap 3.5" SAS HDD ; some: four hot-swap 2.5" SAS HDD ; some: two simple swap 3.5" SATA HDD / filler panels installed in each disk bay

Mechanical Chipset
EIA 19" Rack (1U⁴) / rack-mount only / supported in IBM NetBAY™ Rack products / no rack to tower conversion
Intel 5000X chipset / Intel Memory Controller Hub (MCH) provides one PCI-Express x8 slot / Enterprise Southbridge(ESB-2E) provides: one PCI-Express x8 slot with x4 Links or one 64-bit/133MHz PCI-X slot, ATI video, Dual Gigabit ethernet, IDE, USB, SMBus, LPC bus to NS PC8742XVUL for Super I/O
Bus slots
 (See below) one PCI-Express x8 (x8 Links) / one PCI-X 1.0 or one PCI-Express x8 (x4 Links) / no hot-swap Active™ PCI slots

Ethernet controller
 Two gigabit 10/100/1000 ethernet ports / **Two Broadcom® 5708** / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / TCP/IP Offload Engine (TOE) / Alert Standard Format 2.0 / two RJ-45 ports in rear
Optical / diskette
 8X-24X⁶ CD-RW/DVD-ROM / USB only
Front & Rear ports
Front: two USB (Vers 2.0), graphics (DB-15) *Rear:* two USB (Vers 2.0), serial (9-pin), graphics (DB-15), two ethernet (RJ-45), one RJ-45 (sys mgmt) / no parallel port
Graphics
 SVGA / ATI® RN50(ES1000) / front and rear ports / on planar / 16MB DDR std/max / 32-bit/33MHz PCI 2.3

Security Systems mgmt
 Power-on password / administrator password / unattended boot / selectable boot sequence
IBM Integrated Baseboard Management Controller(BMC) / IPMI 2.0 / H8S2166 / on planar / provides system and environmental monitoring such as temp, optional disks, fans, power supply / supports opt. Remote Supervisor Adapter II Slimline with 140-pin connector on planar for continuous power (no external power required)

Diagnostics	Drop down Light Path Diagnostics panel providing LED map to failing part (located on front panel)	Xeon 3.0GHz/667MHz - 2 x 2MB L2 Cache	25R8921
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director systems mgmt, others	Xeon 3.73GHz/1066MHz - 2 x 2MB L2 Cache	25R8924
Keyboard / mouse	None standard (because rack-based) / USB only	1GB PC2-5300 FBD (2 x 512MB)	39M5782
Power supply	<i>Std/Max:</i> one/two 670 watt hot-swap / rear access / auto restart / redundant with two power supplies / auto-sensing	2GB PC2-5300 FBD (2 x 1GB)	39M5785
Fans	Calibrated Vectored Cooling™ <i>Std:</i> ten fans; <i>Max:</i> twelve (two fans with optional second cpu) / variable speed / hot-swap / PFA	4GB PC2-5300 FBD (2 x 2GB)	39M5791
Prerequisites	Monitor, keyboard, mouse, SAS/SATA disk, rack, OS	8GB PC2-5300 FBD (2 x 4GB) - When available	39M5797
		IBM ServeRAID-8k Adapter	25R8064
		IBM Remote Supervisor Adapter II Slim	39Y9566
		300GB 10K-rpm SAS HS 3.5" (MM carrier) HDD	40K1041
		73.4GB 10K-rpm SAS SFF HS 2.5" (SFF tray) HDD	40K1052
		73.4GB 15K-rpm SAS HS 3.5" (MM carrier) HDD	40K1043
		146.4GB 15K-rpm SAS HS 3.5" (MM carrier) HDD	40K1044
		670 Watt Hot-swap Power Supply Option (US)	32R2815
		PCI Riser Card PCI-X Option	32R8216



Slot 1: PCI-Express x8(x8 Links) half length
 Slot 2*: PCI-Express x8(x4 Links) or 64-bit 133MHz 3.3v PCI-X; both half length
 * riser determines PCI-Express or PCI-X

Max internal disk capacity:
 3.5" SAS models: 600GB² with two 300GB SL disks
 2.5" SAS models: 292GB² with four 73.4GB SFF disks
 3.5" SATA models: 1TB² with two 500GB SL disks

See footnotes for important warranty information

Other options at ibm.com/products/us

LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- 3 year on site warranty service upgrade options (in eligible locations):⁷
 - 9 hr coverage, Mon-Fri excluding holidays, 4 hr response time (ServicePac[®] 21P2172)
 - 24 hr x 7 day coverage, 4 hour average response time (ServicePac21P2173)
 - 24 hr x 7 day coverage, 2 hour average response time (ServicePac21P2074)
- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

IBM® Type-GAV-model	Qty x Processor/Core	L2 cache	Memory	Disk	Disk controller	Optical	Power Supply	Disk bays	Slots x bays	Ethernet	Limited warranty ³	Available date
7978-21y-21x	1 x Xeon™ 5110 1.6GHz/DC	4MB	1GB	(open 3.5)	SAS/SATA Combo	670W	2 hot-swap	2x4	2 x GB	3 year Aug	2006	
7978-22y-22x	1 x Xeon 5110 1.6GHz/DC	4MB	1GB	(open 3.5)	SATA Combo	670W	2 simple-swap	2x4	2 x GB	3 year Aug	2006	
7978-31y-31x	1 x Xeon 5120 1.86GHz/DC	4MB	1GB	(open 3.5)	SAS/SATA Combo	670W	2 hot-swap	2x4	2 x GB	3 year Aug	2006	
7978-32y-32x	1 x Xeon 5120 1.86GHz/DC	4MB	1GB	(open 3.5)	SATA Combo	670W	2 simple-swap	2x4	2 x GB	3 year Aug	2006	
7978-3Ay-3Ax	1 x Xeon 5120 1.86GHz/DC	4MB	1GB	(open 2.5)	SAS/SATA Combo	670W	4 hot-swap	2x4	2 x GB	3 year Aug	2006	

Positioning Processor A highly manageable, ultra-dense 1U, 2-way server delivering performance computing in space-constrained environments
Up to **1x Intel® Xeon Processor 3.0 GHz** with 667MHz FSB Dual Core / Up to **1 x Intel Xeon Processor 3.73 GHz** with 1066MHz FSB Dual Core / **1x Intel® Xeon Processor 3.0 GHz** with 1333MHz FSB Dual Core / **Extended Memory 64 Technology (EM64T)** / Hyper-Threading technology / Enhanced Intel Speedstep Technology (EIST)

L2 cache 2 MB / per core / at processor speed
SMP support 2-way SMP / up to two Xeon Processors (same speed/cache size)
Implementation Systemboard contains two Intel LGA771 sockets, eight memory gold-connector DIMM slots, two PCI-E slots or one PCI-E slot and one PCI-X slot, integrated SAS or SATA, ethernet and graphics controllers

Memory 1GB std / 32GB¹³ max / two slots used / six slots available / **PC2-5300 667MHz FBD 240-pin ECC DDR2-SDRAM DIMMs** / dual channel / 2-way memory interleave / DIMMs must be installed in matched pairs [a bank] / **Fully Buffered / Error Checking and Correcting (ECC)** (corrects any x4 or x8 SDRAM device failure, detects all two wire faults on DIMMs, detects all permutations of two x4 DRAM failures, detects any two bits in error within 8 bytes of data, corrects any single bit error within 8 bytes of data) / **Active Memory™**: memory mirroring, online-spare memory, Chipkill

SAS/SATA controller **Adaptec® AIC-9580W / dual channel SAS controller / four port SAS or two port SATA** (300MB/sec SATA) / on planar / PCI-Express / some: hot-swap, supports **RAID 0, 1, &10** ; some: simple swap, supports **HostRAID / optional IBM ServeRAID™-8k Adaptor** for low-cost RAID 0, 1, 1E, 5, 00, 10, 1E0, 50 (installed on reserved internal connector)

SAS connectors One internal connection wired to DASD backplane
IDE controller/cable Enhanced IDE/ATA 100 controller in Enterprise South Bridge / one connector on planar / one 1-drop IDE cable (DVD-ROM)
Disk - capacity None standard / supports 7200-15000 rpm disks / one backplane
Disk - bays Some: two hot-swap 3.5" SAS HDD ; some: four hot-swap 2.5" SAS HDD ; some: two simple swap 3.5" SATA HDD / filler panels installed in each disk bay

Mechanical Chipset **EIA 19" Rack (1U⁴)** / rack-mount only / supported in IBM NetBAY™ Rack products / no rack to tower conversion
Intel 5000X chipset / Intel Memory Controller Hub (MCH) provides one PCI-Express x8 slot / Enterprise Southbridge(ESB-2E) provides: one PCI-Express x8 slot with x4 Links or one 64-bit/133MHz PCI-X slot, ATI video, Dual Gigabit ethernet, IDE, USB, SMBus, LPC bus to NS PC8742XVUL for Super I/O

Bus slots (See below) one PCI-Express x8 (x8 Links) / one PCI-X 1.0 or one PCI-Express x8 (x4 Links) / no hot-swap Active™ PCI slots

Ethernet controller Two gigabit 10/100/1000 ethernet ports / **Two Broadcom® 5708** / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / TCP/IP Offload Engine (TOE) / Alert Standard Format 2.0 / two RJ-45 ports in rear

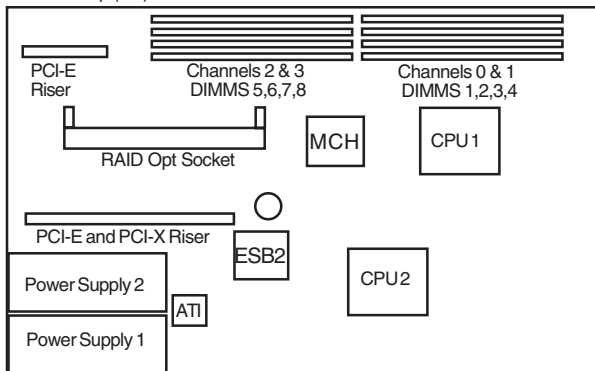
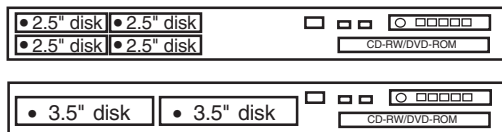
Optical / diskette 8X-24X⁶ CD-RW/DVD-ROM / USB only
Front & Rear ports Front: two USB (Vers 2.0), graphics (DB-15) Rear: two USB (Vers 2.0), serial (9-pin), graphics (DB-15), two ethernet (RJ-45), one RJ-45 (sys mgmt) / no parallel port

Graphics SVGA / ATI® RN50(ES1000) / front and rear ports / on planar / 16MB DDR std/max / 32-bit/33MHz PCI 2.3

Security Systems mgmt Power-on password / administrator password / unattended boot / selectable boot sequence
IBM Integrated Baseboard Management Controller(BMC) / IPMI 2.0 / H8S2166 / on planar / provides system and environmental monitoring such as temp, optional disks, fans, power supply / supports opt. Remote Supervisor Adapter II Slimline with 140-pin connector on planar for continuous power (no external power required)

Diagnostics	Drop down Light Path Diagnostics panel providing LED map to failing part (located on front panel)	Xeon 1.6GHz/1066MHz - 2 x 2MB L2 Cache	40K1237
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director systems mgmt, others	Xeon 1.86GHz/1066MHz - 2 x 2MB L2 Cache	40K1238
Keyboard / mouse	None standard (because rack-based) / USB only	1GB PC2-5300 FBD (2 x 512MB)	39M5782
Power supply	Std/Max: one/two 670 watt hot-swap / rear access / auto restart / redundant with two power supplies / auto-sensing	2GB PC2-5300 FBD (2 x 1GB)	39M5785
Fans	Calibrated Vectored Cooling™ Std: ten fans; Max: twelve (two fans with optional second cpu) / variable speed / hot-swap / PFA	4GB PC2-5300 FBD (2 x 2GB)	39M5791
Prerequisites	Monitor, keyboard, mouse, SAS/SATA disk, rack, OS	8GB PC2-5300 FBD (2 x 4GB)	39M5797
		IBM ServeRAID-8k Adapter	25R8064
		IBM Remote Supervisor Adapter II Slim	39Y9566
		300GB 10K-rpm SAS HS 3.5" (MM carrier) HDD	40K1041
		73.4GB 10K-rpm SAS SFF HS 2.5" (SFF tray) HDD	40K1052
		73.4GB 15K-rpm SAS HS 3.5" (MM carrier) HDD	40K1043
		146.4GB 15K-rpm SAS HS 3.5" (MM carrier) HDD	40K1044
		670 Watt Hot-swap Power Supply Option (US)	32R2815
		PCI Riser Card PCI-X Option	32R8216

Other options at ibm.com/products/us



Slot 1: PCI-Express x8(x8 Links) half length
Slot 2*: PCI-Express x8(x4 Links) or 64-bit 133MHz 3.3v PCI-X; both half length
* riser determines PCI-Express or PCI-X

Max internal disk capacity:
3.5" SAS models: 600GB² with two 300GB SL disks
2.5" SAS models: 292GB² with four 73.4GB SFF disks
3.5" SATA models: 1TB² with two 500GB SL disks

See footnotes for important warranty information

- Quick release adapter slots (no screws)
- Configuration/Setup Utility: F1 at startup
- Diagnostics (PC-Doctor™): F2 at startup
- Network Boot: F12 at startup
- Front indicators LEDs: Power-on LED, HDD activity LED, locator LED, system information LED, and system-error LED
- Predictive failure analysis on disk options, memory, processors, VRMs, power supplies, and fans in conjunction with IBM Director can alert the system administrator of an imminent component failure
- Rack: H 1.75" x W 17.3" x D 27.5" (H 43mm x W 440mm x D 711.4mm)
- 28 to 35.5 pounds
- Stealth black color

LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- 3 year on site warranty service upgrade options (in eligible locations):⁷
 - 9 hr coverage, Mon-Fri excluding holidays, 4 hr response time (ServicePac® 21P2172)
 - 24 hr x 7 day coverage, 4 hour average response time (ServicePac 21P2173)
 - 24 hr x 7 day coverage, 2 hour average response time (ServicePac 21P2074)
- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

IBM® Type-GAV-model	Qty x Processor/Core	L2 cache	Memory	Disk	Disk controller	Optical	Power Supply	Disk bays	Slots x bays	Ethernet	Limited warranty ³	Available date
7978-41y-41x	1 x Xeon™ 5130 2.0GHz/DC	4MB	1GB	(open 3.5)	SAS/SATA Combo	670W	2 hot-swap	2x4	2 x GB	3 year Aug	2006	
7978-42y-42x	1 x Xeon 5130 2.0GHz/DC	4MB	1GB	(open 3.5)	SATA Combo	670W	2 simple-swap	2x4	2 x GB	3 year Aug	2006	
7978-4Ay-4Ax	1 x Xeon 5130 2.0GHz/DC	4MB	1GB	(open 2.5)	SAS/SATA Combo	670W	4 hot-swap	2x4	2 x GB	3 year Aug	2006	
7978-51y-51x	1 x Xeon 5140 2.33GHz/DC	4MB	1GB	(open 3.5)	SAS/SATA Combo	670W	2 hot-swap	2x4	2 x GB	3 year Aug	2006	
7978-5Ay-5Ax	1 x Xeon 5140 2.33GHz/DC	4MB	1GB	(open 2.5)	SAS/SATA Combo	670W	4 hot-swap	2x4	2 x GB	3 year Aug	2006	

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2 MB / per core / at processor speed
2-way SMP / up to two Xeon Processors (same speed/cache size)
SMP support Implementation Systemboard contains two Intel LGA771 sockets, eight memory gold-connector DIMM slots, two PCI-E slots or one PCI-E slot and one PCI-X slot, integrated SAS or SATA, ethernet and graphics controllers

Memory **1GB** std / 32GB¹³ max / two slots used / six slots available / **PC2-5300 667MHz FBD 240-pin ECC DDR2-SDRAM DIMMs** / dual channel / 2-way memory interleave / DIMMs must be installed in matched pairs [a bank] / **Fully Buffered / Error Checking and Correcting (ECC)** (corrects any x4 or x8 SDRAM device failure, detects all two wire faults on DIMMs, detects all permutations of two x4 DRAM failures, detects any two bits in error within 8 bytes of data, corrects any single bit error within 8 bytes of data) / **Active Memory™**: memory mirroring, online-spare memory, Chipkill

SAS/SATA controller **Adaptec® AIC-9580W** / dual channel SAS controller / four port SAS or two port SATA (300MB/sec SATA) / on planar / PCI-Express / some: hot-swap, supports **RAID 0, 1, &10** ; some: simple swap, supports **HostRAID** / optional IBM ServeRAID™-8k Adaptor for low-cost RAID 0, 1, 1E, 5, 00, 10, 1E0, 50 (installed on reserved internal connector)
SAS connectors One internal connection wired to DASD backplane
IDE controller/cable Enhanced IDE/ATA 100 controller in Enterprise South Bridge / one connector on planar / one 1-drop IDE cable (DVD-ROM)
Disk - capacity None standard / supports 7200-15000 rpm disks / one backplane
Disk - bays Some: two hot-swap 3.5" SAS HDD ; some: four hot-swap 2.5" SAS HDD ; some: two simple swap 3.5" SATA HDD / filler panels installed in each disk bay

Mechanical Chipset **EIA 19" Rack (1U⁴)** / rack-mount only / supported in IBM NetBAY™ Rack products / no rack to tower conversion
Intel 5000X chipset / Intel Memory Controller Hub (MCH) provides one PCI-Express x8 slot / Enterprise Southbridge(ESB-2E) provides: one PCI-Express x8 slot with x4 Links or one 64-bit/133MHz PCI-X slot, ATI video, Dual Gigabit ethernet, IDE, USB, SMBus, LPC bus to NS PC8742XVUL for Super I/O
Bus slots (See below) one PCI-Express x8 (x8 Links) / one PCI-X 1.0 or one PCI-Express x8 (x4 Links) / no hot-swap Active™ PCI slots

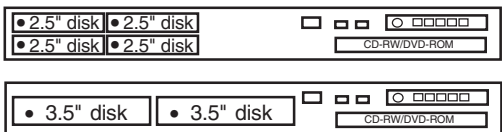
Ethernet controller Two gigabit 10/100/1000 ethernet ports / **Two Broadcom® 5708** / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / TCP/IP Offload Engine (TOE) / Alert Standard Format 2.0 / two RJ-45 ports in rear

Optical / diskette Front & Rear ports 8X-24X⁶ CD-RW/DVD-ROM / USB only
Front: two USB (Vers 2.0), graphics (DB-15) **Rear:** two USB (Vers 2.0), serial (9-pin), graphics (DB-15), two ethernet (RJ-45), one RJ-45 (sys mgmt) / no parallel port
Graphics SVGA / ATI® RN50(ES1000) / front and rear ports / on planar / 16MB DDR std/max / 32-bit/33MHz PCI 2.3

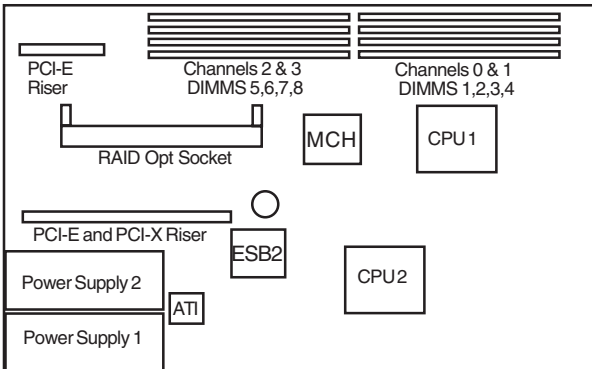
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Diagnostics	Drop down Light Path Diagnostics panel providing LED map to failing part (located on front panel)		
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director systems mgmt, others	Xeon 2.0GHz/1333MHz - 2 x 2MB L2 Cache	40K1239
Keyboard / mouse	None standard (because rack-based) / USB only	Xeon 2.33GHz/1333MHz - 2 x 2MB L2 Cache	40K1240
Power supply	Std/Max: one/two 670 watt hot-swap / rear access / auto restart / redundant with two power supplies / auto-sensing	1GB PC2-5300 FBD (2 x 512MB)	39M5782
Fans	Calibrated Vectored Cooling™ Std: ten fans; Max: twelve (two fans with optional second cpu) / variable speed / hot-swap / PFA	2GB PC2-5300 FBD (2 x 1GB)	39M5785
Prerequisites	Monitor, keyboard, mouse, SAS/SATA disk, rack, OS	4GB PC2-5300 FBD (2 x 2GB)	39M5791
		8GB PC2-5300 FBD (2 x 4GB)	39M5797
		IBM ServeRAID-8k Adapter	25R8064
		IBM Remote Supervisor Adapter II Slim	39Y9566
		300GB 10K-rpm SAS HS 3.5" (MM carrier) HDD	40K1041
		73.4GB 10K-rpm SAS SFF HS 2.5" (SFF tray) HDD	40K1052
		73.4GB 15K-rpm SAS HS 3.5" (MM carrier) HDD	40K1043
		146.4GB 15K-rpm SAS HS 3.5" (MM carrier) HDD	40K1044
		670 Watt Hot-swap Power Supply Option (US)	32R2815
		PCI Riser Card PCI-X Option	32R8216

Other options at ibm.com/products/us



• = Hot-swap (HS)



Slot 1: PCI-Express x8(x8 Links) half length
Slot 2*: PCI-Express x8(x4 Links) or 64-bit 133MHz 3.3v PCI-X; both half length
* riser determines PCI-Express or PCI-X

Max internal disk capacity:
3.5" SAS models: 600GB² with two 300GB SL disks
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- Diagnostics (PC-Doctor™): F2 at startup
- Network Boot: F12 at startup
- Front indicators LEDs: Power-on LED, HDD activity LED, locator LED, system information LED, and system-error LED
- Predictive failure analysis on disk options, memory, processors, VRMs, power supplies, and fans in conjunction with IBM Director can alert the system administrator of an imminent component failure
- Rack: H 1.75" x W 17.3" x D 27.5" (H 43mm x W 440mm x D 711.4mm)
- 28 to 35.5 pounds
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- 3 year parts and labor
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- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
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- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

IBM® Type-GAV-model	Qty x Processor/Core	L2 cache Memory	Disk	Disk controller	Optical	Power Supply	Disk bays	Slots x bays	Limited warranty ³	Available date
7978-71y-71x	1 x Xeon™ 5160 3.0GHz/DC	4MB 1GB	(open 3.5)	SAS/SATA Combo	670W	2 hot-swap	2x4 2 x GB	3 year Aug 2006		
7978-7Ay-7Ax	1 x Xeon 5160 3.0GHz/DC	4MB 1GB	(open 2.5)	SAS/SATA Combo	670W	4 hot-swap	2x4 2 x GB	3 year Aug 2006		

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 Systemboard contains two Intel LGA771 sockets, eight memory gold-connector DIMM slots, two PCI-E slots or one PCI-E slot and one PCI-X slot, integrated SAS or SATA, ethernet and graphics controllers

Memory
1GB std / 32GB¹³ max / two slots used / six slots available / **PC2-5300 667MHz FBD 240-pin ECC DDR2-SDRAM DIMMs** / dual channel / 2-way memory interleave / DIMMs must be installed in matched pairs [a bank] / **Fully Buffered / Error Checking and Correcting (ECC)** (corrects any x4 or x8 SDRAM device failure, detects all two wire faults on DIMMs, detects all permutations of two x4 DRAM failures, detects any two bits in error within 8 bytes of data, corrects any single bit error within 8 bytes of data) / **Active Memory™**: memory mirroring, online-spare memory, Chipkill

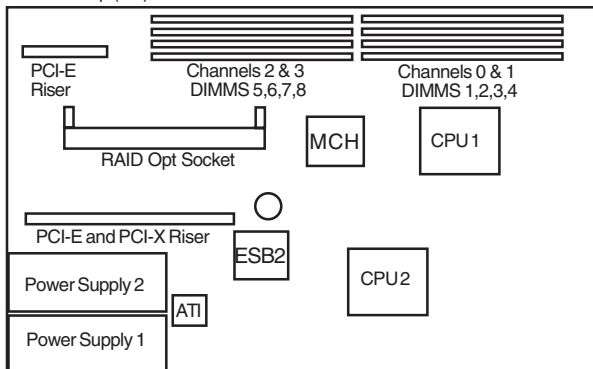
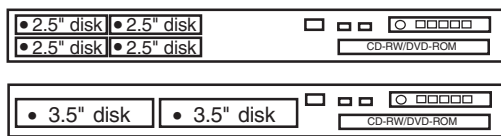
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SAS connectors One internal connection wired to DASD backplane
IDE controller/cable Enhanced IDE/ATA 100 controller in Enterprise South Bridge / one connector on planar / one 1-drop IDE cable (DVD-ROM)
Disk - capacity None standard / supports 7200-15000 rpm disks / one backplane
Disk - bays Some: two hot-swap 3.5" SAS HDD ; some: four hot-swap 2.5" SAS HDD ; some: two simple swap 3.5" SATA HDD / filler panels installed in each disk bay

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Bus slots (See below) one PCI-Express x8 (x8 Links) / one PCI-X 1.0 or one PCI-Express x8 (x4 Links) / no hot-swap Active™ PCI slots

Ethernet controller Two gigabit 10/100/1000 ethernet ports / **Two Broadcom® 5708** / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / TCP/IP Offload Engine (TOE) / Alert Standard Format 2.0 / two RJ-45 ports in rear
Optical / diskette 8X-24X⁶ CD-RW/DVD-ROM / USB only
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Graphics SVGA / ATI® RN50(ES1000) / front and rear ports / on planar / 16MB DDR std/max / 32-bit/33MHz PCI 2.3

Security Systems mgmt Power-on password / administrator password / unattended boot / selectable boot sequence
IBM Integrated Baseboard Management Controller(BMC) / IPMI 2.0 / H8S2166 / on planar / provides system and environmental monitoring such as temp, optional disks, fans, power supply / supports opt. Remote Supervisor Adapter II Slimline with 140-pin connector on planar for continuous power (no external power required)

Diagnostics	Drop down Light Path Diagnostics panel providing LED map to failing part (located on front panel)	
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director systems mgmt, others	Xeon 2.66GHz/1333MHz - 2 x 2MB L2 Cache 40K1241
Keyboard / mouse	None standard (because rack-based) / USB only	Xeon 3.0GHz/1333MHz - 2 x 2MB L2 Cache 40K1242
Power supply	Std/Max: one/two 670 watt hot-swap / rear access / auto restart / redundant with two power supplies / auto-sensing	1GB PC2-5300 FBD (2 x 512MB) 39M5782
Fans	Calibrated Vectored Cooling™ Std: ten fans; Max: twelve (two fans with optional second cpu) / variable speed / hot-swap / PFA	2GB PC2-5300 FBD (2 x 1GB) 39M5785
Prerequisites	Monitor, keyboard, mouse, SAS/SATA disk, rack, OS	4GB PC2-5300 FBD (2 x 2GB) 39M5791
		8GB PC2-5300 FBD (2 x 4GB) 39M5797
		IBM ServeRAID-8k Adapter 25R8064
		IBM Remote Supervisor Adapter II Slim 39Y9566
		300GB 10K-rpm SAS HS 3.5" (MM carrier) HDD 40K1041
		73.4GB 10K-rpm SAS SFF HS 2.5" (SFF tray) HDD 40K1052
		73.4GB 15K-rpm SAS HS 3.5" (MM carrier) HDD 40K1043
		146.4GB 15K-rpm SAS HS 3.5" (MM carrier) HDD 40K1044
		670 Watt Hot-swap Power Supply Option (US) 32R2815
		PCI Riser Card PCI-X Option 32R8216



Slot 1: PCI-Express x8(x8 Links) half length
 Slot 2*: PCI-Express x8(x4 Links) or 64-bit 133MHz 3.3v PCI-X; both half length
 * riser determines PCI-Express or PCI-X

Max internal disk capacity:
 3.5" SAS models: 600GB² with two 300GB SL disks
 2.5" SAS models: 292GB² with four 73.4GB SFF disks
 3.5" SATA models: 1TB² with two 500GB SL disks

See footnotes for important warranty information

Other options at ibm.com/products/us

LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- 3 year on site warranty service upgrade options (in eligible locations):⁷
 - 9 hr coverage, Mon-Fri excluding holidays, 4 hr response time (ServicePac[®] 21P2172)
 - 24 hr x 7 day coverage, 4 hour average response time (ServicePac 21P2173)
 - 24 hr x 7 day coverage, 2 hour average response time (ServicePac 21P2074)
- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

IBM® Type-GAV-model	Qty x Processor/Core	L2 cache	Memory	Disk	Disk controller	Optical	Power Supply	Disk bays	Slots x bays	Ethernet	Limited warranty ³	Available date
7978-A1y-A1x	1 x Xeon™ E5310 1.6GHz/QC	8MB	1GB	(open 3.5)	SAS/SATA	Combo	670W	2 hot-swap	2x4	2 x GB	3 year	Dec 2006
7978-C1y-C1x	1 x Xeon E5320 1.86GHz/QC	8MB	2GB	(open 3.5)	SAS/SATA	Combo	670W	2 hot-swap	2x4	2 x GB	3 year	Dec 2006
7978-A2y-A2x	1 x Xeon E5335 2.0GHz/QC	8MB	2GB	(open 3.5)	SAS/SATA	Combo	670W	2 hot-swap	2x2	2 x GB	3 year	Feb 2007
7978-C2y-C2x	1 x Xeon E5345 2.33GHz/QC	8MB	2GB	(open 3.5)	SAS/SATA	Combo	670W	2 hot-swap	2x2	2 x GB	3 year	Feb 2007
7978-CBy-CBx	1 x Xeon E5345 2.33GHz/QC	8MB	2GB	(open 2.5)	SAS	Combo	670W	2 hot-swap	2x4	2 x GB	3 year	Feb 2007
7978-CCy-CCx	1 x Xeon E5355 2.66GHz/QC	8MB	2GB	(open 3.5)	SAS/SATA	Combo	670W	2 simple-swap	2x2	2 x GB	3 year	Feb 2007

Positioning Processor A highly manageable, ultra-dense 1U, dual-socket server providing performance computing in space-constrained environments
Up to 1x Intel® Xeon Processor 1.86GHz with 1066MHz FSB / up to 1x Intel Xeon Processor 2.66GHz with 1333Mz FSB / 8MB L2 ECC Cache / Quad-Core / Extended Memory 64 Technology (EM64T) / Enhanced Intel Speedstep Technology (EIST) 8 MB / std and max / at processor speed
L2 cache
SMP support 2-way SMP / up to two Xeon Processors (same speed/cache size)
Implementation Systemboard contains two Intel LGA771 sockets, eight memory gold-connector DIMM slots, two PCI-E slots or one PCI-E slot and one PCI-X slot, integrated SAS or SATA, ethernet and graphics controllers

Memory 1 or 2GB std / 32GB¹³ max / two slots used / six slots available / PC2-5300 667MHz FBD 240-pin ECC DDR2-SDRAM DIMMs / dual channel / 2-way memory interleave / DIMMs must be installed in matched pairs [a bank] / Fully Buffered / Error Checking and Correcting (ECC) (corrects any x4 or x8 SDRAM device failure, detects all two wire faults on DIMMs, detects all permutations of two x4 DRAM failures, detects any two bits in error within 8 bytes of data, corrects any single bit error within 8 bytes of data) / Active Memory™: memory mirroring, online-spare memory, Chipkill

SAS/SATA controller Adaptec® AIC-9580W / dual channel SAS controller / four port SAS or two port SATA (300MB/sec SAS) (150MB/sec SATA) / on planar / PCI-Express / some: hot-swap, supports RAID 0, 1, & 10 ; some: simple swap, supports HostRAID / optional IBM ServeRAID™-8k Adaptor for low-cost RAID 0, 1, 1E, 5, 00, 10, 1E0, 50 (installed on reserved internal connector)
SAS connectors One internal connection wired to DASD backplane
IDE controller/cable Enhanced IDE/ATA 100 controller in Enterprise South Bridge / one connector on planar / one 1-drop IDE cable (DVD-ROM)
Disk - capacity None standard / supports 7200-15000 rpm disks / one backplane
Disk - bays Some: two hot-swap 3.5" SAS HDD ; some: four hot-swap 2.5" SAS HDD ; some: two simple swap 3.5" SATA HDD / filler panels installed in each disk bay

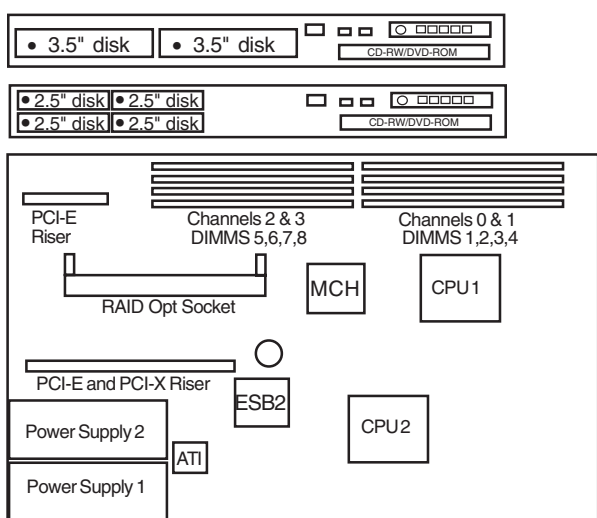
Mechanical Chipset EIA 19" Rack (1U⁴) / rack-mount only / supported in IBM NetBAY™ Rack products / no rack to tower conversion
Intel 5000X chipset / Intel Memory Controller Hub (MCH) provides one PCI-Express x8 slot / Enterprise Southbridge(ESB-2E) provides: one PCI-Express x8 slot with 4 Links or one 64-bit/133MHz PCI-X slot, ATI video, Dual Gigabit ethernet, IDE, USB, SMBus, LPC bus to NS PC8742XVUL for Super I/O
Bus slots (See below) one PCI-Express x8 (x8 Links) / one PCI-X 1.0 or one PCI-Express x8 (x4 Links) / no hot-swap Active™ PCI slots

Ethernet controller Two gigabit 10/100/1000 ethernet ports / Two Broadcom® 5708 / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / TCP/IP Offload Engine (TOE) / Alert Standard Format 2.0 / two RJ-45 ports in rear

Optical / diskette Front & Rear ports 8X-24X⁵ CD-RW/DVD-ROM / USB only
Front: two USB (Vers 2.0), graphics (DB-15) Rear: two USB (Vers 2.0), serial (9-pin), graphics (DB-15), two ethernet (RJ-45), one RJ-45 (sys mgmt) / no parallel port

Graphics SVGA / ATI® RN50(ES1000) / front and rear ports / on planar / 16MB DDR std/max / 32-bit/33MHz PCI 2.3
Security Systems mgmt Power-on password / administrator password / unattended boot / selectable boot sequence
IBM Integrated Baseboard Management Controller(BMC) / IPMI 2.0 / H8S2166 / on planar / provides system and environmental monitoring such as temp, optional disks, fans, power supply / supports opt. Remote Supervisor Adapter II Slimline with 140-pin connector on planar for continuous power (no external power required)

Diagnostics	Drop down Light Path Diagnostics panel providing LED map to failing part (located on front panel)	Xeon E5310 1.6GHz/1066MHz/8MB L2 Cache	40K1257
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director systems mgmt, others	Xeon E5320 1.86GHz/1066MHz/8MB L2 Cache	40K1249
Keyboard / mouse	None standard (because rack-based) / USB only	Xeon E5335 2.0GHz/1333MHz/8MB L2 Cache	40K1258
Power supply	Std/Max: one/two 670 watt hot-swap / rear access / auto restart / redundant with two power supplies / auto-sensing	Xeon E5345 2.33GHz/1333MHz/8MB L2 Cache	40K1272
Fans	Calibrated Vectored Cooling™ Std: ten fans; Max: twelve (two fans with optional second cpu) / variable speed / hot-swap / PFA	Xeon E5355 2.66GHz/1333MHz/8MB L2 Cache	40K1251
Prerequisites	Monitor, keyboard, mouse, SAS/SATA disk, rack, OS	1GB PC2-5300 FBD (2 x 512MB)	39M5782
		2GB PC2-5300 FBD (2 x 1GB)	39M5785
		4GB PC2-5300 FBD (2 x 2GB)	39M5791
		8GB PC2-5300 FBD (2 x 4GB) - When available	39M5797
		IBM ServeRAID-8k Adaptor	25R8064
		IBM Remote Supervisor Adapter II Slim	73P9341
		250GB 7.2K rpm SATA II hot-swap	39M4526
		500GB 7.2K rpm SATA hot-swap 300MB/sec	39M4530
		300GB 10K-rpm SAS HS 3.5" (MM carrier) HDD	40K1041
		73.4GB 10K-rpm SAS SFF HS 2.5" (SFF tray) HDD	40K1052
		73.4GB 15K-rpm SAS HS 3.5" (MM carrier) HDD	40K1043
		146.4GB 15K-rpm SAS HS 3.5" (MM carrier) HDD	40K1044
		670 Watt Hot-swap Power Supply Option (US)	32R2815
		PCI Riser Card PCI-X Option	32R8216
		Other options at ibm.com/pc/us/accessories	



- Quick release adapter slots (no screws)
- Configuration/Setup Utility: F1 at startup
- Diagnostics (PC-Doctor™): F2 at startup
- Network Boot: F12 at startup
- Front indicators LEDs: Power-on LED, HDD activity LED, locator LED, system information LED, and system-error LED
- Predictive failure analysis on disk options, memory, processors, VRMs, power supplies, and fans in conjunction with IBM Director can alert the system administrator of an imminent component failure
- Rack: H 1.75" x W 17.3" x D 27.5" (H 43mm x W 440mm x D 711.4mm)
- 28 to 35.5 pounds
- Stealth black color

LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- 3 year on site warranty service upgrade options (in eligible locations):⁷
 - 9 hr coverage, Mon-Fri excluding holidays, 4 hr response time (ServicePac® 21P2172)
 - 24 hr x 7 day coverage, 4 hour average response time (ServicePac 21P2173)
 - 24 hr x 7 day coverage, 2 hour average response time (ServicePac 21P2074)
- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

Slot 1: PCI-Express x8(x8 Links) half length
 Slot 2: PCI-Express x8(x4 Links) or 64-bit 133MHz 3.3v PCI-X; both half length
 * riser determines PCI-Express or PCI-X

Max internal disk capacity:
 3.5" SAS models: 600GB² with two 300GB SL disks
 2.5" SAS models: 292GB² with four 73.4GB SFF disks
 3.5" SATA models: 1TB² with two 500GB SL disks

See footnotes for important warranty information

IBM® Type-GAV-model	Qty x Processor/Core	L2 cache	Memory	Disk	Disk controller	Optical	Power Supply	Disk bays	Slots x bays	Ethernet	Limited warranty ³	Available date
7978-JAU-JAx	1 x Xeon™ L5310 1.6GHz/QC	8MB	2GB	(open 2.5)	SAS	Combo	1x670W	4 hot-swap	2x4	2 x GB	3 year	May 2007
7978-JBu-JBx	1 x Xeon L5320 1.86GHz/QC	8MB	2GB	(open 2.5)	SAS	Combo	1x670W	4 hot-swap	2x4	2 x GB	3 year	May 2007
7978-C4u-C4x	1 x Xeon X5365 3.06GHz/QC	8MB	2GB	(open 3.5)	SAS	Combo	1x670W	2 hot-swap	2x2	2 x GB	3 year	Sep 2007
7978-CDu-CDx	1 x Xeon X5365 3.06GHz/QC	8MB	2GB	(open 2.5)	SAS	Combo	1x670W	4 hot-swap	2x4	2 x GB	3 year	Sep 2007
7978-EDu-EDx	1 x Xeon X5355 2.66GHz/QC	8MB	4GB	(open 3.5)	SAS	Combo	2x670W	2 hot-swap	2x2	2 x GB	3 year	Sep 2007

Positioning Processor *A highly manageable, ultra-dense 1U, dual-socket server providing performance computing in space-constrained environments*
Up to 1x Intel® Xeon Processor 3.0GHz with 133MHz FSB / Xeon Processor 1.86GHz with 1066MHz FSB / 8MB L2 ECC Cache / Quad-Core / Extended Memory 64 Technology (EM64T) / Enhanced Intel Speedstep Technology (EIST)
L2 cache 8 MB / std and max / at processor speed
SMP support Implementation 2-way SMP / up to two Xeon Processors (same speed/cache size)
 Systemboard contains two Intel LGA771 sockets, eight memory gold-connector DIMM slots, two PCI-E slots or one PCI-E slot and one PCI-X slot, integrated SAS or SATA, ethernet and graphics controllers

Memory 1 or 2GB std / 32GB¹³ max / two slots used / six slots available / **PC2-5300 667MHz FBD 240-pin ECC DDR2-SDRAM DIMMs / dual channel / 2-way memory interleave / DIMMs must be installed in matched pairs [a bank] / Fully Buffered / Error Checking and Correcting (ECC)** (corrects any x4 or x8 SDRAM device failure, detects all two wire faults on DIMMs, detects all permutations of two x4 DRAM failures, detects any two bits in error within 8 bytes of data, corrects any single bit error within 8 bytes of data) / **Active Memory™: memory mirroring, online-spare memory, Chipkill**

SAS/SATA controller **Adaptec® AIC-9580W / dual channel SAS controller / four port SAS or two port SATA** (300MB/sec SAS) (150MB/sec SATA) / on planar / PCI-Express / some: hot-swap, supports RAID 0, 1, & 10 ; some: simple swap, supports **HostRAID / optional IBM ServeRAID™-8k Adaptor for low-cost RAID 0, 1, 1E, 5, 00, 10, 1E0, 50** (installed on reserved internal connector)
SAS connectors One internal connection wired to DASD backplane
IDE controller/cable Enhanced IDE/ATA 100 controller in Enterprise South Bridge / one connector on planar / one 1-drop IDE cable (DVD-ROM)
Disk - capacity None standard / supports 7200-15000 rpm disks / one backplane
Disk - bays Some: two hot-swap 3.5" SAS HDD ; some: four hot-swap 2.5" SAS HDD ; some: two simple swap 3.5" SATA HDD / filler panels installed in each disk bay

Mechanical Chipset **EIA 19" Rack (1U⁴) / rack-mount only / supported in IBM NetBAY™ Rack products / no rack to tower conversion**
Intel 5000X chipset / Intel Memory Controller Hub (MCH) provides one PCI-Express x8 slot / Enterprise Southbridge(ESB2-E) provides: one PCI-Express x8 slot with 4 Links or one 64-bit/133MHz PCI-X slot, ATI video, Dual Gigabit ethernet, IDE, USB, SMBus, LPC bus to NS PC8742XVUL for Super I/O
Bus slots (See below) one PCI-Express x8 (x8 Links) / one PCI-X 1.0 or one PCI-Express x8 (x4 Links) / no hot-swap Active™ PCI slots

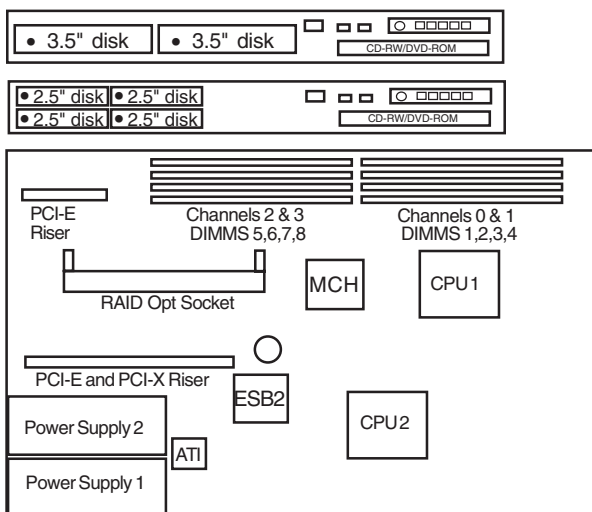
Ethernet controller Two gigabit 10/100/1000 ethernet ports / **Two Broadcom® 5708** / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / TCP/IP Offload Engine (TOE) / Alert Standard Format 2.0 / two RJ-45 ports in rear
Optical / diskette 8X-24X® CD-RW/DVD-ROM / USB only
Front & Rear ports Front: two USB (Vers 2.0), graphics (DB-15) Rear: two USB (Vers 2.0), serial (9-pin), graphics (DB-15), two ethernet (RJ-45), one RJ-45 (sys mgmt) / no parallel port
Graphics SVGA / ATI® RN50(ES1000) / front and rear ports / on planar / 16MB DDR std/max / 32-bit/33MHz PCI 2.3

Security Systems mgmt Power-on password / administrator password / unattended boot / selectable boot sequence
IBM Integrated Baseboard Management Controller(BMC) / IPMI 2.0 / H8S2166 / on planar / provides system and environmental monitoring such as temp, optional disks, fans, power supply / supports opt. Remote Supervisor Adapter II Slimline with 140-pin connector on planar for continuous power (no external power required)

Diagnostics **Drop down Light Path Diagnostics** panel providing LED map to failing part (located on front panel)
Software **ServerGuide™** (CD-ROM installation and configuration utilities), IBM Director systems mgmt, others
Keyboard / mouse None standard (because rack-based) / USB only
Power supply Std/Max: one/two 670 watt hot-swap / rear access / auto restart / redundant with two power supplies / auto-sensing
Fans **Calibrated Vectored Cooling™** Std: ten fans; Max: twelve (two fans with optional second cpu) / variable speed / hot-swap / PFA
Prerequisites Monitor, keyboard, mouse, SAS/SATA disk, rack, OS

Xeon X5365 3.0GHz/1333MHz/8MB L2 Cache	44E5036
Xeon L5310 1.6GHz/1066MHz/8MB L2 Cache	43W5909
Xeon L5320 1.86GHz/1066MHz/8MB L2 Cache	43W5910
1GB PC2-5300 FBD (2 x 512MB)	39M5782
2GB PC2-5300 FBD (2 x 1GB)	39M5785
4GB PC2-5300 FBD (2 x 2GB)	39M5791
8GB PC2-5300 FBD (2 x 4GB)	39M5797
IBM ServeRAID-8k Adaptor	25R8064
IBM Remote Supervisor Adapter II Slim	39Y9566
250GB 7.2K rpm SATA II hot-swap	39M4526
500GB 7.2K rpm SATA hot-swap 300MB/sec	39M4530
300GB 10K-rpm SAS HS 3.5" (MM carrier) HDD	40K1041
73.4GB 10K-rpm SAS SFF HS 2.5" (SFF tray) HDD	40K1052
73.4GB 15K-rpm SAS HS 3.5" (MM carrier) HDD	40K1043
146.4GB 15K-rpm SAS HS 3.5" (MM carrier) HDD	40K1044
670 Watt Hot-swap Power Supply Option (US)	32R2815
PCI Riser Card PCI-X Option	32R2816

Other options at ibm.com/products/us



Slot 1: PCI-Express x8(x8 Links) half length
 Slot 2: PCI-Express x8(x4 Links) or 64-bit 133MHz 3.3v PCI-X; both half length
 * riser determines PCI-Express or PCI-X

- ❖ Quick release adapter slots (no screws)
- ❖ Configuration/Setup Utility: F1 at startup
- ❖ Diagnostics (PC-Doctor™): F2 at startup
- ❖ Network Boot: F12 at startup
- ❖ Front indicators LEDs: Power-on LED, HDD activity LED, locator LED, system information LED, and system-error LED
- ❖ Predictive failure analysis on disk options, memory, processors, VRMs, power supplies, and fans in conjunction with IBM Director can alert the system administrator of an imminent component failure
- ❖ Rack: H 1.75" x W 17.3" x D 27.5" (H 43mm x W 440mm x D 711.4mm)
- ❖ 28 to 35.5 pounds
- ❖ Stealth black color

LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- 3 year on site warranty service upgrade options (in eligible locations):⁷
 - 9 hr coverage, Mon-Fri excluding holidays, 4 hr response time (ServicePac® 21P2172)
 - 24 hr x 7 day coverage, 4 hour average response time (ServicePac 21P2173)
 - 24 hr x 7 day coverage, 2 hour average response time (ServicePac 21P2074)
- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

Max internal disk capacity:
 3.5" SAS models: 600GB² with two 300GB SL disks
 2.5" SAS models: 292GB² with four 73.4GB SFF disks
 3.5" SATA models: 1TB² with two 500GB SL disks

See footnotes for important warranty information

IBM® Type-model	Qty x Processor/Core	L2 cache	Memory	Disk	Disk controller	Optical	Power Supply	Disk bays	Slots x bays	Ethernet	Limited warranty ³	Available date
7978-BAX	1 x Xeon™ E5405 2.0GHz/QC	12MB	2GB	(open 2.5)	SAS	Combo	1x670W	4 hot-swap	2x4	2 x GB	3 year	Jan 2008
7978-B1x	1 x Xeon E5405 2.0GHz/QC	12MB	2GB	(open 3.5)	SAS/SATA	Combo	1x670W	2 hot-swap	2x2	2 x GB	3 year	Jan 2008
7978-BCx	1 x Xeon E5420 2.5GHz/QC	12MB	2GB	(open 2.5)	SAS	Combo	1x670W	4 hot-swap	2x4	2 x GB	3 year	Jan 2008
7978-B3x	1 x Xeon E5420 2.5GHz/QC	12MB	2GB	(open 3.5)	SAS/SATA	Combo	1x670W	2 hot-swap	2x2	2 x GB	3 year	Jan 2008
7978-BDx	1 x Xeon E5430 2.66GHz/QC	12MB	2GB	(open 2.5)	SAS	Combo	1x670W	4 hot-swap	2x4	2 x GB	3 year	Jan 2008
7978-B4x	1 x Xeon E5430 2.66GHz/QC	12MB	2GB	(open 3.5)	SAS/SATA	Combo	1x670W	2 hot-swap	2x2	2 x GB	3 year	Jan 2008

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Up to 2 x Intel® Xeon Processor 3.16GHz with 1333MHz FSB / 12MB L2 ECC Cache / Quad-Core / Extended Memory 64 Technology (EM64T) / Enhanced Intel Speedstep Technology (EIST)
12 MB / std and max / at processor speed
SMP support **2-way SMP / up to two Xeon Processors (same speed/cache size)**
Implementation Systemboard contains two Intel LGA771 sockets, eight memory gold-connector DIMM slots, two PCI-E slots or one PCI-E slot and one PCI-X slot, integrated SAS or SATA, ethernet and graphics controllers

Memory **2GB (2x1GB) std / 32GB¹³ max / two slots used / six slots available / PC2-5300 667MHz FBD 240-pin ECC DDR2-SDRAM DIMMs / dual channel / 2-way memory interleave / DIMMs must be installed in matched pairs [a bank] / Fully Buffered / Error Checking and Correcting (ECC) (corrects any x4 or x8 SDRAM device failure, detects all two wire faults on DIMMs, detects all permutations of two x4 DRAM failures, detects any two bits in error within 8 bytes of data, corrects any single bit error within 8 bytes of data) / Active Memory™: memory mirroring, online-spare memory, Chipkill**

SAS/SATA controller **Adaptec® AIC-9580W / dual channel SAS controller / four port SAS or two port SATA (300MB/sec SAS) (150MB/sec SATA) / on planar / PCI-Express / some: hot-swap, supports RAID 0, 1, & 10 / some: simple swap, supports HostRAID / optional IBM ServeRAID™-8k Adaptor for low-cost RAID 0, 1, 1E, 5, 00, 10, 1E0, 50 (installed on reserved internal connector)**
SAS connectors One internal connection wired to DASD backplane
IDE controller/cable Enhanced IDE/ATA 100 controller in Enterprise South Bridge / one connector on planar / one 1-drop IDE cable (DVD-ROM)
Disk - capacity None standard / supports 7200-15000 rpm disks / one backplane
Disk - bays Some: two hot-swap 3.5" SAS HDD / some: four hot-swap 2.5" SAS HDD / some: two simple swap 3.5" SATA HDD / filler panels installed in each disk bay

Mechanical Chipset **EIA 19" Rack (1U⁴) / rack-mount only / supported in IBM NetBAY™ Rack products / no rack to tower conversion**
Intel 5000X chipset / Intel Memory Controller Hub (MCH) provides one PCI-Express x8 slot / Enterprise Southbridge (ESB-2E) provides: one PCI-Express x8 slot with x4 Links or one 64-bit/133MHz PCI-X slot, ATI video, Dual Gigabit ethernet, IDE, USB, SMBus, LPC bus to NS PC8742XVUL for Super I/O
Bus slots (See below) one PCI-Express x8 (x8 Links) / one PCI-X 1.0 or one PCI-Express x8 (x4 Links) / no hot-swap Active™ PCI slots

Ethernet controller Two gigabit 10/100/1000 ethernet ports / **Two Broadcom® 5708 / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / TCP/IP Offload Engine (TOE) / Alert Standard Format 2.0 / two RJ-45 ports in rear**
Optical / diskette 8X-24X⁶ CD-RW/DVD-ROM / USB only
Front & Rear ports *Front:* two USB (Vers 2.0), graphics (DB-15) *Rear:* two USB (Vers 2.0), serial (9-pin), graphics (DB-15), two ethernet (RJ-45), one RJ-45 (sys mgmt) / no parallel port

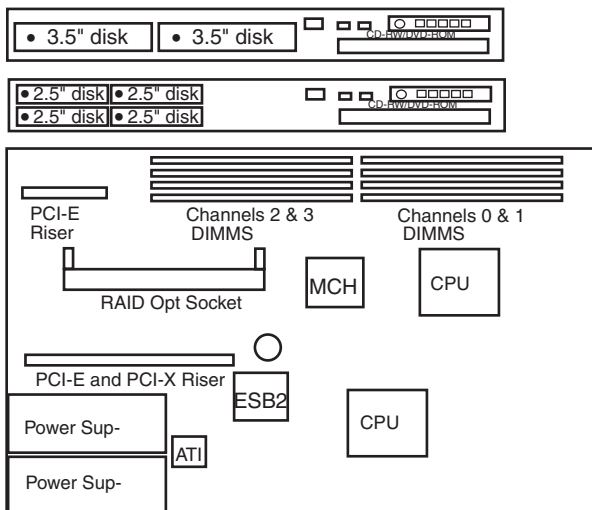
Graphics SVGA / ATI⁹ RN50(ES1000) / front and rear ports / on planar / 16MB DDR std/max / 32-bit/33MHz PCI 2.3

Security Systems mgmt Power-on password / administrator password / unattended boot / selectable boot sequence
IBM Integrated Baseboard Management Controller (BMC) / IPMI 2.0 / H8S2166 / on planar / provides system and environmental monitoring such as temp, optional disks, fans, power supply / supports opt. Remote Supervisor Adapter II Slimline with 140-pin connector on planar for continuous power (no external power required)

Diagnostics **Drop down Light Path Diagnostics** panel providing LED map to failing part (located on front panel)
Software **ServerGuide™** (CD-ROM installation and configuration utilities), IBM Director systems mgmt, others
Keyboard / mouse None standard (because rack-based) / USB only
Power supply *Std/Max:* one/two 670 watt hot-swap / rear access / auto restart / redundant with two power supplies / auto-sensing
Fans **Calibrated Vectored Cooling™** Std: ten fans; Max: twelve (two fans with optional second cpu) / variable speed / hot-swap / PFA
Prerequisites Monitor, keyboard, mouse, SAS/SATA disk, rack, OS

Xeon E5405 2.0GHz/1333MHz/12MB L2 Cache	44E5074
Xeon E5420 2.5GHz/1333MHz/12MB L2 Cache	44E5076
Xeon E5430 2.66GHz/1333MHz/12MB L2 Cache	44E5077
1GB PC2-5300 FBD (2 x 512MB)	39M5782
2GB PC2-5300 FBD (2 x 1GB)	39M5785
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8GB PC2-5300 FBD (2 x 4GB)	39M5797
IBM ServeRAID-8k Adaptor	25R8064
IBM Remote Supervisor Adapter II Slim	39Y9566
250GB 7.2K rpm SATA II hot-swap	39M4526
500GB 7.2K rpm SATA hot-swap 300MB/sec	39M4530
750GB 7.2K rpm SATA hot-swap 300MB/sec	43W7576
1TB 7.2K rpm SATA hot-swap 300MB/sec	43W7676
300GB 15K-rpm SAS HS 3.5" (MM carrier) HDD	43X0802
73.4GB 10K-rpm SAS SFF HS 2.5" (SFF tray) HDD	40K1052
146GB 10K-rpm SAS SFF HS 2.5" (SFF tray) HDD	43X0824
73.4GB 15K-rpm SAS SF HS 2.5" (SFF tray) HDD	43X0837
73.4GB 15K-rpm SAS HS 3.5" (MM carrier) HDD	40K1043
146.4GB 15K-rpm SAS HS 3.5" (MM carrier) HDD	40K1044
670 Watt Hot-swap Power Supply Option (US)	32R2815
PCI Riser Card PCI-X Option	32R8216

Other options at ibm.com/products/us



- ❖ Quick release adapter slots (no screws)
- ❖ Configuration/Setup Utility: F1 at startup
- ❖ Diagnostics (PC-Doctor™): F2 at startup
- ❖ Network Boot: F12 at startup
- ❖ Front indicators LEDs: Power-on LED, HDD activity LED, locator LED, system information LED, and system-error LED
- ❖ Predictive failure analysis on disk options, memory, processors, VRMs, power supplies, and fans in conjunction with IBM Director can alert the system administrator of an imminent component failure
- ❖ Rack: H 1.75" x W 17.3" x D 27.5" (H 43mm x W 440mm x D 711.4mm)
- ❖ 28 to 35.5 pounds
- ❖ Stealth black color

LIMITED WARRANTY³

- ~ 3 year parts and labor
- ~ International Warranty Service³
- ~ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- ~ 3 year on site warranty service upgrade options (in eligible locations):⁷
 - 9 hr coverage, Mon-Fri excluding holidays, 4 hr response time (ServicePac[®] 21P2172)
 - 24 hr x 7 day coverage, 4 hour average response time (ServicePac 21P2173)
 - 24 hr x 7 day coverage, 2 hour average response time (ServicePac 21P2074)
- ~ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ~ 24x7¹⁴ toll-free support for warranty

Slot 1: PCI-Express x8(x8 Links) half length
 Slot 2: PCI-Express x8(x4 Links) or 64-bit 133MHz 3.3v PCI-X; both half length
 * riser determines PCI-Express or PCI-X

Max internal disk capacity:
 3.5" SAS models: 600GB² with two 300GB SL disks
 2.5" SAS models: 292GB² with four 73.4GB SFF disks
 3.5" SATA models: 1TB² with two 500GB SL disks

See footnotes for important warranty information

IBM® Type-model	Qty x Processor/Core	L2 cache	Memory	Disk	Disk controller	Optical	Power Supply	Disk bays	Slots x bays	Ethernet	Limited warranty ³	Available date
7978-BEx	1 x Xeon™ E5440 2.8GHz/QC	12MB	2GB	(open 2.5)	SAS	Combo	1x670W	4 hot-swap	2x4	2 x GB	3 year	Jan 2008
7978-B5x	1 x Xeon E5440 2.8GHz/QC	12MB	2GB	(open 3.5)	SAS/SATA	Combo	1x670W	2 hot-swap	2x2	2 x GB	3 year	Jan 2008
7978-BJx	1 x Xeon X5450 3.0GHz/QC	12MB	2GB	(open 2.5)	SAS	Combo	1x670W	4 hot-swap	2x4	2 x GB	3 year	Jan 2008
7978-B9x	1 x Xeon X5450 3.0GHz/QC	12MB	2GB	(open 3.5)	SAS/SATA	Combo	1x670W	2 hot-swap	2x2	2 x GB	3 year	Jan 2008
7978-BGx	1 x Xeon X5460 3.16GHz/QC	12MB	2GB	(open 2.5)	SAS	Combo	1x670W	4 hot-swap	2x4	2 x GB	3 year	Jan 2008
7978-B7x	1 x Xeon X5460 3.16GHz/QC	12MB	2GB	(open 3.5)	SAS/SATA	Combo	1x670W	2 hot-swap	2x2	2 x GB	3 year	Jan 2008

Positioning Processor *A highly manageable, ultra-dense 1U, dual-socket server providing performance computing in space-constrained environments*
Up to 2 x Intel® Xeon Processor 3.16GHz with 1333MHz FSB / 12MB L2 ECC Cache / Quad-Core / Extended Memory 64 Technology (EM64T) / Enhanced Intel Speedstep Technology (EIST)
12 MB / std and max / at processor speed
SMP support Implementation **2-way SMP / up to two Xeon Processors (same speed/cache size)**
Systemboard contains two Intel LGA771 sockets, eight memory gold-connector DIMM slots, two PCI-E slots or one PCI-E slot and one PCI-X slot, integrated SAS or SATA, ethernet and graphics controllers

Memory **2GB (2x1GB) std / 32GB¹³ max / two slots used / six slots available / PC2-5300 667MHz FBD 240-pin ECC DDR2-SDRAM DIMMs / dual channel / 2-way memory interleave / DIMMs must be installed in matched pairs [a bank] / Fully Buffered / Error Checking and Correcting (ECC) (corrects any x4 or x8 SDRAM device failure, detects all two wire faults on DIMMs, detects all permutations of two x4 DRAM failures, detects any two bits in error within 8 bytes of data, corrects any single bit error within 8 bytes of data) / Active Memory™: memory mirroring, online-spare memory, Chipkill**

SAS/SATA controller **Adaptec® AIC-9580W / dual channel SAS controller / four port SAS or two port SATA (300MB/sec SAS) (150MB/sec SATA) / on planar / PCI-Express / some: hot-swap, supports RAID 0, 1, & 10 / some: simple swap, supports HostRAID / optional IBM ServeRAID™-8k Adaptor for low-cost RAID 0, 1, 1E, 5, 00, 10, 1E0, 50 (installed on reserved internal connector)**

SAS connectors One internal connection wired to DASD backplane
IDE controller/cable Enhanced IDE/ATA 100 controller in Enterprise South Bridge / one connector on planar / one 1-drop IDE cable (DVD-ROM)
Disk - capacity None standard / supports 7200-15000 rpm disks / one backplane
Disk - bays Some: two hot-swap 3.5" SAS HDD / some: four hot-swap 2.5" SAS HDD / some: two simple swap 3.5" SATA HDD / filler panels installed in each disk bay

Mechanical Chipset **EIA 19" Rack (1U⁴) / rack-mount only / supported in IBM NetBAY™ Rack products / no rack to tower conversion**
Intel 5000X chipset / Intel Memory Controller Hub (MCH) provides one PCI-Express x8 slot / Enterprise Southbridge (ESB-2E) provides: one PCI-Express x8 slot with x4 Links or one 64-bit/133MHz PCI-X slot, ATI video, Dual Gigabit ethernet, IDE, USB, SMBus, LPC bus to NS PC8742XVUL for Super I/O

Bus slots (See below) one PCI-Express x8 (x8 Links) / one PCI-X 1.0 or one PCI-Express x8 (x4 Links) / no hot-swap Active™ PCI slots

Ethernet controller Two gigabit 10/100/1000 ethernet ports / **Two Broadcom® 5708 / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / TCP/IP Offload Engine (TOE) / Alert Standard Format 2.0 / two RJ-45 ports in rear**

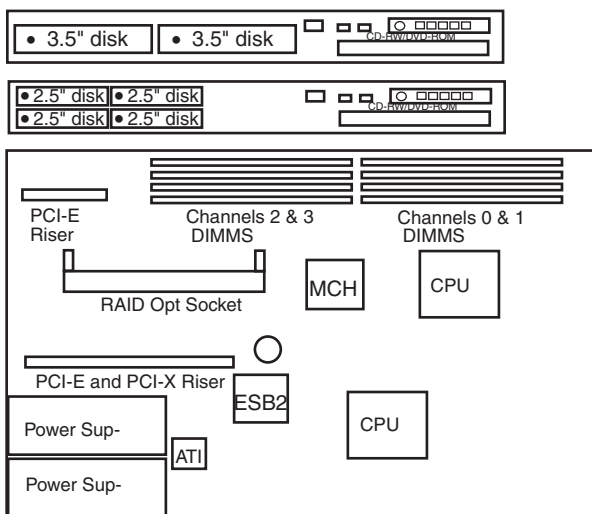
Optical / diskette Front & Rear ports 8X-24X⁶ CD-RW/DVD-ROM / USB only
Front: two USB (Vers 2.0), graphics (DB-15) **Rear:** two USB (Vers 2.0), serial (9-pin), graphics (DB-15), two ethernet (RJ-45), one RJ-45 (sys mgmt) / no parallel port

Graphics SVGA / ATI⁹ RN50(ES1000) / front and rear ports / on planar / 16MB DDR std/max / 32-bit/33MHz PCI 2.3

Security Systems mgmt Power-on password / administrator password / unattended boot / selectable boot sequence
IBM Integrated Baseboard Management Controller (BMC) / IPMI 2.0 / H8S2166 / on planar / provides system and environmental monitoring such as temp, optional disks, fans, power supply / supports opt. Remote Supervisor Adapter II Slimline with 140-pin connector on planar for continuous power (no external power required)

Diagnostics	Drop down Light Path Diagnostics panel providing LED map to failing part (located on front panel)	Xeon E5440 2.83GHz/1333MHz/12MB L2 Cache	44E5078
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director systems mgmt, others	Xeon X5450 3.0GHz/1333MHz/12MB L2 Cache	44E5121
Keyboard / mouse	None standard (because rack-based) / USB only	Xeon X5460 3.16GHz/1333MHz/12MB L2 Cache	44E5080
Power supply	Std/Max: one/two 670 watt hot-swap / rear access / auto restart / redundant with two power supplies / auto-sensing	1GB PC2-5300 FBD (2 x 512MB)	39M5782
Fans	Calibrated Vectored Cooling™ Std: ten fans; Max: twelve (two fans with optional second cpu) / variable speed / hot-swap / PFA	2GB PC2-5300 FBD (2 x 1GB)	39M5785
Prerequisites	Monitor, keyboard, mouse, SAS/SATA disk, rack, OS	4GB PC2-5300 FBD (2 x 2GB)	39M5791
		8GB PC2-5300 FBD (2 x 4GB)	39M5797
		IBM ServeRAID-8k Adaptor	25R8064
		IBM Remote Supervisor Adapter II Slim	39Y9566
		250GB 7.2K rpm SATA II hot-swap	39M4526
		500GB 7.2K rpm SATA hot-swap 300MB/sec	39M4530
		750GB 7.2K rpm SATA hot-swap 300MB/sec	43W7576
		1TB 7.2K rpm SATA hot-swap 300MB/sec	43W7676
		300GB 15K-rpm SAS HS 3.5" (MM carrier) HDD	43X0802
		73.4GB 10K-rpm SAS SFF HS 2.5" (SFF tray) HDD	40K1052
		146GB 10K-rpm SAS SFF HS 2.5" (SFF tray) HDD	43X0824
		73.4GB 15K-rpm SAS SF HS 2.5" (SFF tray) HDD	43X0837
		73.4GB 15K-rpm SAS HS 3.5" (MM carrier) HDD	40K1043
		146.4GB 15K-rpm SAS HS 3.5" (MM carrier) HDD	40K1044
		670 Watt Hot-swap Power Supply Option (US)	32R2815
		PCI Riser Card PCI-X Option	32R8216

Other options at ibm.com/products/us



Slot 1: PCI-Express x8(x8 Links) half length
 Slot 2*: PCI-Express x8(x4 Links) or 64-bit 133MHz 3.3v PCI-X; both half length
 * riser determines PCI-Express or PCI-X

Max internal disk capacity:
 3.5" SAS models: 600GB² with two 300GB SL disks
 2.5" SAS models: 292GB² with four 73.4GB SFF disks
 3.5" SATA models: 1TB² with two 500GB SL disks

See footnotes for important warranty information

- ❖ Quick release adapter slots (no screws)
- ❖ Configuration/Setup Utility: F1 at startup
- ❖ Diagnostics (PC-Doctor™): F2 at startup
- ❖ Network Boot: F12 at startup
- ❖ Front indicators LEDs: Power-on LED, HDD activity LED, locator LED, system information LED, and system-error LED
- ❖ Predictive failure analysis on disk options, memory, processors, VRMs, power supplies, and system with IBM Director can alert the system administrator of an imminent component failure
- ❖ Rack: H 1.75" x W 17.3" x D 27.5" (H 43mm x W 440mm x D 711.4mm)
- ❖ 28 to 35.5 pounds
- ❖ Stealth black color

LIMITED WARRANTY³

- ~ 3 year parts and labor
- ~ International Warranty Service³
- ~ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- ~ 3 year on site warranty service upgrade options (in eligible locations):⁷
 - 9 hr coverage, Mon-Fri excluding holidays, 4 hr response time (ServicePac[®] 21P2172)
 - 24 hr x 7 day coverage, 4 hour average response time (ServicePac 21P2173)
 - 24 hr x 7 day coverage, 2 hour average response time (ServicePac 21P2074)
- ~ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ~ 24x7¹⁴ toll-free support for warranty

IBM® Type-model	Qty x Processor/Core	L2 cache	Memory	Disk	Disk controller	Optical	Power Supply	Disk bays	Slots x bays	Ethernet	Limited warranty ³	Available date
7978-82x	1 x Xeon™ X5470 3.3GHz/QC	12MB	2GB	(open 3.5)	SAS/SATA	Combo	1x670W	2 hot-swap	2x2	2 x GB	3 year	Sep 2008
7978-8Bx	1 x Xeon X5470 3.3GHz/QC	12MB	2GB	(open 2.5)	SAS	Combo	1x670W	4 hot-swap	2x4	2 x GB	3 year	Sep 2008

Positioning Processor *A highly manageable, ultra-dense 1U, dual-socket server providing performance computing in space-constrained environments*
Up to 2 x Intel® Xeon Processor 3.3GHz with 1333MHz FSB / 12MB L2 ECC Cache / Quad-Core / Extended Memory 64 Technology (EM64T) / Enhanced Intel Speedstep Technology (EIST)
12 MB / std and max / at processor speed
2-way SMP / up to two Xeon Processors (same speed/cache size)
SMP support Implementation Systemboard contains two Intel LGA771 sockets, eight memory gold-connector DIMM slots, two PCI-E slots or one PCI-E slot and one PCI-X slot, integrated SAS or SATA, ethernet and graphics controllers

Memory **2GB (2x1GB)** std / 32GB¹³ max / two slots used / six slots available / **PC2-5300 667MHz FBD 240-pin ECC DDR2-SDRAM DIMMs** / dual channel / 2-way memory interleave / DIMMs must be installed in matched pairs [a bank] / **Fully Buffered / Error Checking and Correcting (ECC)** (corrects any x4 or x8 SDRAM device failure, detects all two wire faults on DIMMs, detects all permutations of two x4 DRAM failures, detects any two bits in error within 8 bytes of data, corrects any single bit error within 8 bytes of data) / **Active Memory™: memory mirroring, online-spare memory, Chipkill**

SAS/SATA controller **Adaptec® AIC-9580W / dual channel SAS controller / four port SAS or two port SATA** (300MB/sec SAS) / (150MB/sec SATA) / on planar / PCI-Express / some: hot-swap, supports **RAID 0, 1, & 10** ; some: simple swap, supports **HostRAID** / optional IBM ServeRAID™-8k Adaptor for low-cost RAID 0, 1, 1E, 5, 00, 10, 1E0, 50 (installed on reserved internal connector)
SAS connectors One internal connection wired to DASD backplane
IDE controller/cable Enhanced IDE/ATA 100 controller in Enterprise South Bridge / one connector on planar / one 1-drop IDE cable (DVD-ROM)
Disk - capacity None standard / supports 7200-15000 rpm disks / one backplane
Disk - bays Some: two hot-swap 3.5" SAS HDD ; some: four hot-swap 2.5" SAS HDD ; some: two simple swap 3.5" SATA HDD / filler panels installed in each disk bay

Mechanical Chipset **EIA 19" Rack (1U⁴)** / rack-mount only / supported in IBM NetBAY™ Rack products / no rack to tower conversion
Intel 5000X chipset / Intel Memory Controller Hub (MCH) provides one PCI-Express x8 slot / Enterprise Southbridge(ESB-2E) provides: one PCI-Express x8 slot with x4 Links or one 64-bit/133MHz PCI-X slot, ATI video, Dual Gigabit ethernet, IDE, USB, SMBus, LPC bus to NS PC8742XVUL for Super I/O

Bus slots (See below) one PCI-Express x8 (x8 Links) / one PCI-X 1.0 or one PCI-Express x8 (x4 Links) / no hot-swap Active™ PCI slots

Ethernet controller Two gigabit 10/100/1000 ethernet ports / **Two Broadcom® 5708** / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / TCP/IP Offload Engine (TOE) / Alert Standard Format 2.0 / two RJ-45 ports in rear

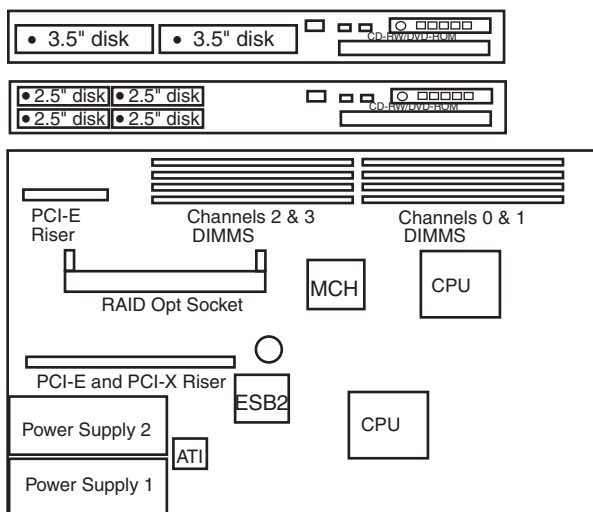
Optical / diskette Front & Rear ports 8X-24X⁶ CD-RW/DVD-ROM / USB only
Front: two USB (Vers 2.0), graphics (DB-15) **Rear:** two USB (Vers 2.0), serial (9-pin), graphics (DB-15), two ethernet (RJ-45), one RJ-45 (sys mgmt) / no parallel port

Graphics SVGA / ATI® RN50(ES1000) / front and rear ports / on planar / 16MB DDR std/max / 32-bit/33MHz PCI 2.3

Security Systems mgmt Power-on password / administrator password / unattended boot / selectable boot sequence
IBM Integrated Baseboard Management Controller (BMC) / IPMI 2.0 / H8S2166 / on planar / provides system and environmental monitoring such as temp, optional disks, fans, power supply / supports opt. Remote Supervisor Adapter II Slimline with 140-pin connector on planar for continuous power (no external power required)

Diagnostics	Drop down Light Path Diagnostics panel providing LED map to failing part (located on front panel)	Xeon X5470 3.3GHz/1333MHz/12MB L2 Cache	46M1031
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director systems mgmt, others	1GB PC2-5300 FBD (2 x 512MB)	39M5782
Keyboard / mouse	None standard (because rack-based) / USB only	2GB PC2-5300 FBD (2 x 1GB)	39M5785
Power supply	Std/Max: one/two 670 watt hot-swap / rear access / auto restart / redundant with two power supplies / auto-sensing	4GB PC2-5300 FBD (2 x 2GB)	39M5791
Fans	Calibrated Vectored Cooling™ Std: ten fans; Max: twelve (two fans with optional second cpu) / variable speed / hot-swap / PFA	8GB PC2-5300 FBD (2 x 4GB)	39M5797
Prerequisites	Monitor, keyboard, mouse, SAS/SATA disk, rack, OS	IBM ServeRAID-8k Adapter	25R8064
		IBM Remote Supervisor Adapter II Slim	39Y9566
		250GB 7.2K rpm SATA II hot-swap	39M4526
		500GB 7.2K rpm SATA hot-swap 300MB/sec	39M4530
		750GB 7.2K rpm SATA hot-swap 300MB/sec	43W0756
		1TB 7.2K rpm SATA hot-swap 300MB/sec	43W0766
		300GB 15K-rpm SAS HS 3.5" (MM carrier) HDD	43X0802
		73.4GB 10K-rpm SAS SFF HS 2.5" (SFF tray) HDD	40K1052
		146GB 10K-rpm SAS SFF HS 2.5" (SFF tray) HDD	43X0824
		73.4GB 15K-rpm SAS SFF HS 2.5" (SFF tray) HDD	43X0837
		73.4GB 15K-rpm SAS HS 3.5" (MM carrier) HDD	40K1043
		146.4GB 15K-rpm SAS HS 3.5" (MM carrier) HDD	40K1044
		670 Watt Hot-swap Power Supply Option (US)	32R2815
		PCI Riser Card PCI-X Option	32R8216

Other options at ibm.com/products/us



Slot 1: PCI-Express x8(x8 Links) half length
 Slot 2: PCI-Express x8(x4 Links) or 64-bit 133MHz 3.3v PCI-X; both half length
 * riser determines PCI-Express or PCI-X

Max internal disk capacity:
 2.5": SAS models: 594GB² with four 146GB SFF disks
 3.5" SATA models: 1.5TB² with two 750GB disks

See footnotes for important warranty information

- ⊘ Quick release adapter slots (no screws)
- ⊘ Configuration/Setup Utility: F1 at startup
- ⊘ Diagnostics (PC-Doctor™): F2 at startup
- ⊘ Network Boot: F12 at startup
- ⊘ Front indicators LEDs: Power-on LED, HDD activity LED, locator LED, system information LED, and system-error LED
- ⊘ Predictive failure analysis on disk options, memory, processors, VRMs, power supplies, and fans in conjunction with IBM Director can alert the system administrator of an imminent component failure
- ⊘ Rack: H 1.75" x W 17.3" x D 27.5" (H 43mm x W 440mm x D 711.4mm)
- ⊘ 28 to 35.5 pounds
- ⊘ Stealth black color

LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- 3 year on site warranty service upgrade options (in eligible locations):⁷
 - 9 hr coverage, Mon-Fri excluding holidays, 4 hr avg response time (ServicePac[®] 12X6610)
 - 24 hr x 7 day coverage, 4 hr avg response time (ServicePac 12X6611)
- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

IBM® Type-GAV-model	Qty x Processor	Core	L2 cache	Memory	Disk	Disk controller	Mechanical	Slots x bays (hot-swap bays)	Power supply	Ethernet	Available date	
7979-G5y-G5x	1 x Xeon™	5050	3.0GHz	DC	4MB	1GB	None	SAS	Rack	4x7 (4 or 6 hot-swap)	1 x 835W Hot-Swap	2xGigabit July 2006
7979-G5y-G5x	1 x Xeon	5050	3.0GHz	DC	4MB	1GB	None	SAS	Rack	4x10 (8 hot-swap)	1 x 835W Hot-Swap	2xGigabit July 2006
7979-H5y-H5x	1 x Xeon	5063	3.2GHz	DC	4MB	1GB	None	SAS	Rack	4x7 (4 or 6 hot-swap)	1 x 835W Hot-Swap	2xGigabit July 2006
7979-H5y-H5x	1 x Xeon	5063	3.2GHz	DC	4MB	1GB	None	SAS	Rack	4x10 (8 hot-swap)	1 x 835W Hot-Swap	2xGigabit July 2006

Positioning Processor A rack-dense 2-way server delivering high availability, scalability and expandability for application-serving Web environments
 Up to **2 x Intel® Xeon Processor 3.0 GHz** with 667MHz FSB Dual Core / Up to **1 x Intel Xeon Processor 3.2 GHz** with 1066MHz FSB Dual Core / **Extended Memory 64 Technology (EM64T)** / Enhanced Intel Speedstep Technology (EIST)

L2 cache 2 MB / per core / at processor speed
SMP support 2-way SMP / up to two Xeon Processors (same speed/cache size)
Implementation Systemboard contains two Intel LGA771 sockets, twelve memory gold-connector DIMM slots, four PCI-E slots or two PCI-E slots and two PCI-X slots, integrated SAS, ethernet and graphics controllers

Memory 1GB std / 48GB¹³ max / two slots used / ten slots available / **PC2-5300 667MHz FBD 240-pin ECC DDR2-SDRAM DIMMs** / dual channel / 2-way memory interleave / DIMMs must be installed in matched pairs [a bank] / **Fully Buffered / Error Checking and Correcting (ECC)** (corrects any x4 or x8 SDRAM device failure, detects all two wire faults on DIMMs, detects all permutations of two x4 DRAM failures, detects any two bits in error within 8 bytes of data, corrects any single bit error within 8 bytes of data) / **Active Memory™: memory mirroring, online-spare memory, Chipkill**

SAS controller **Adaptec® AIC-9580W / dual channel SAS controller / eight port SAS** (300MB/sec SAS) / hot-swap / on planar / PCI-Express / supports **RAID 0, 1 & 10** / optional IBM ServeRAID™-8k Adaptor for low-cost RAID 0, 1, 1E, 10, 5 & 6 (installed on reserved internal connector)
SAS connectors One internal connection wired to DASD backplane / one external connector
IDE controller/cable Enhanced IDE/ATA 100 controller in Enterprise South Bridge / one connector on planar / one 1-drop IDE cable (CD-RW/DVD-ROM)
Disk - capacity None standard / supports 7200-15000 rpm disks / one backplane
Disk - bays Some: six hot-swap 3.5" SAS HDD / some: eight hot-swap 2.5" SAS HDD / filler panels installed in each disk bay
Tape backup Optional internal and external / 3.5" / USB or SATA

Mechanical Chipset **EIA 19" Rack (2U⁴)** / rack-mount only / supported in IBM NetBAY™ Rack products / no rack to tower conversion
Intel 5000P chipset / Intel Memory Controller Hub (MCH) provides riser connector for either two PCI-Express x8 slots or two 64-bit/133MHz PCI-X slots / Enterprise Southbridge (ESB-2E) provides: two PCI-Express x8 slot with x4 Links, ATI video, Dual Gigabit ethernet, IDE, USB, SMBus, LPC bus to NS PC8742XVUL for Super I/O
Bus slots Two PCI-Express x8 (x4 Links) / Two PCI-X 1.0 or two PCI-Express x8 (x8 Links) / no hot-swap Active™ PCI slots

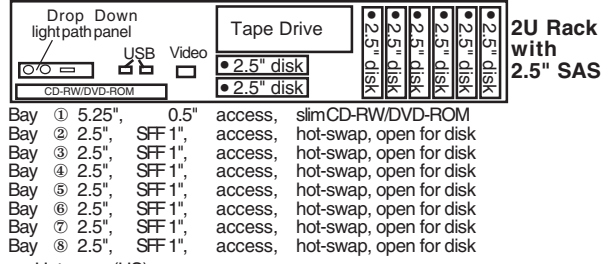
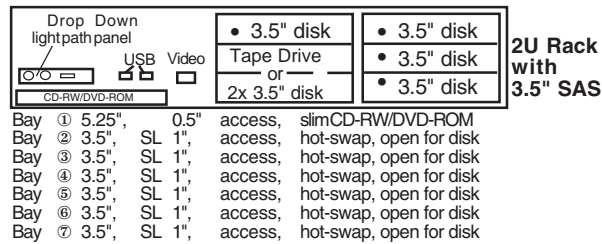
Ethernet controller Dual gigabit 10/100/1000 ethernet ports / **Two Broadcom® 5708** / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-Express / full duplex / Wake on LAN® / TCP/IP Offload Engine (TOE) / Alert Standard Format 2.0 / two RJ-45 ports in rear

Optical / diskette Front & Rear ports 8X-24X⁶ CD-RW/DVD-ROM / USB only
Graphics Front: two USB (Vers 2.0), graphics (DB-15) Rear: two USB (Vers 2.0), serial (9-pin), graphics (DB-15), two ethernet (RJ-45), one RJ-45 (sys mgmt), one SAS / no parallel port
SVGA / ATI® RN50(ES1000) / front and rear ports / on planar / 16MB DDR std/max / 32-bit/33MHz PCI 2.3

Security Systems mgmt Power-on password / administrator password / unattended boot / selectable boot sequence
IBM Integrated Baseboard Management Controller (BMC) / IPMI 2.0 / H8S2166 / on planar / provides system and environmental monitoring such as temp, optional disks, fans, power supply / supports opt. Remote Supervisor Adapter II Slimline with 140-pin connector on planar for continuous power (no external power required)

Diagnostics	Drop down Light Path Diagnostics panel providing LED map to failing part (located on front panel)	Xeon 3.0GHz/667MHz - 2 x 2MB L2 Cache	25R8926
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director systems mgmt, others	Xeon 3.2GHz/1066MHz - 2 x 2MB L2 Cache	25R8927
Keyboard / mouse	None standard (because rack-based) / USB only	1GB PC2-5300 FBD (2 x 512MB)	39M5782
Power supply	Std/Max: one/two 835 watt hot-swap / rear access / auto restart / redundant with two power supplies / auto-sensing	2GB PC2-5300 FBD (2 x 1GB)	39M5785
Fans	Calibrated Vectored Cooling™ Std: five fans; Max: ten (five fans with optional second power supply) / redundant with ten fans installed; All: variable speed / hot-swap / PFA Monitor, keyboard, mouse, SAS disk, rack, OS	4GB PC2-5300 FBD (2 x 2GB)	39M5791
Prerequisites		8GB PC2-5300 FBD (2 x 4GB) - When available	39M5797
		IBM ServeRAID-8k Adapter	25R8064
		IBM Remote Supervisor Adapter II Slim	39Y9566
		300GB 10K-rpm SAS HS 3.5" (MM carrier) HDD	40K1041
		73.4GB 10K-rpm SAS SFF HS 2.5" (SFF tray) HDD	40K1052
		73.4GB 15K-rpm SAS HS 3.5" (MM carrier) HDD	40K1043
		146.4GB 15K-rpm SAS HS 3.5" (MM carrier) HDD	40K1044
		835 Watt Hot-swap Power Supply Option (US)	40K1905
		835 Watt Hot-swap Power Supply Option (WW)	40K1906
		PCI Riser Card PCI-Express Option	40K1907
		PCI Riser Card PCI-X Option	40K1908

Other options at ibm.com/pc/us/accessories



• = Hot-swap (HS)
 Slot 1*: PCI-Express x8(x8 Links) or full length 64-bit 133MHz 3.3v PCI-X
 Slot 2*: PCI-Express x8(x8 Links) or half length 64-bit 133MHz 3.3v PCI-X
 Slot 3: low-profile, PCI-Express x8(x4 Links)
 Slot 4: low-profile, PCI-Express x8(x4 Links)
 *slots 1 & 2 riser determines PCI-Express or PCI-X

Max internal disk capacity:
 3.5" SAS models: 1.8TB² with six 300GB SL disks
 2.5" SAS models: 584GB² with eight 73.4GB SFF disks

LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- 3 year on site warranty service upgrade options (in eligible locations):⁷
 - 9 hr coverage, Mon-Fri excluding holidays, 4 hr response time (ServicePac[®] 21P2077)
 - 24 hr x 7 day coverage, 4 hour average response time (ServicePac 21P2078)
 - 24 hr x 7 day coverage, 2 hour average response time (ServicePac 21P2093)
- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information

IBM® Type-GAV-model	Qty x Processor	L2 Core cache	Memory	Disk	Disk controller	Mechanical	Slots x bays (hot-swap bays)	Power supply	Ethernet	Available date
7979-21y-21x	1 x Xeon™ 5110 1.6GHz	DC 4MB	1GB	None	SAS	Rack	4x7 (4 or 6 hot-swap)	1 x 835W Hot-Swap	2xGigabit	July 2006
7979-2Ay-2Ax	1 x Xeon 5110 1.6GHz	DC 4MB	1GB	None	SAS	Rack	4x10 (8 hot-swap)	1 x 835W Hot-Swap	2xGigabit	July 2006
7979-31y-31x	1 x Xeon 5120 1.86GHz	DC 4MB	1GB	None	SAS	Rack	4x7 (4 or 6 hot-swap)	1 x 835W Hot-Swap	2xGigabit	July 2006
7979-3Ay-3Ax	1 x Xeon 5120 1.86GHz	DC 4MB	1GB	None	SAS	Rack	4x10 (8 hot-swap)	1 x 835W Hot-Swap	2xGigabit	July 2006
7979-41y-41x	1 x Xeon 5130 2.0GHz	DC 4MB	1GB	None	SAS	Rack	4x7 (4 or 6 hot-swap)	1 x 835W Hot-Swap	2xGigabit	July 2006
7979-4Ay-4Ax	1 x Xeon 5130 2.0GHz	DC 4MB	1GB	None	SAS	Rack	4x10 (8 hot-swap)	1 x 835W Hot-Swap	2xGigabit	July 2006

Positioning Processor A rack-dense 2-way server delivering high availability, scalability and expandability for application-serving Web environments Up to **2 x Intel® Xeon Processor 1.86 GHz** with 1066MHz FSB Dual Core / Up to **1 x Intel Xeon Processor 3.0 GHz** with 1333MHz FSB Dual Core / **Extended Memory 64 Technology (EM64T)** / Enhanced Intel Speedstep Technology (EIST)

L2 cache 2 MB / per core / at processor speed
SMP support 2-way SMP / up to two Xeon Processors (same speed/cache size)
Implementation Systemboard contains two Intel LGA771 sockets, twelve memory gold-connector DIMM slots, four PCI-E slots or two PCI-E slots and two PCI-X slots, integrated SAS, ethernet and graphics controllers

Memory 1GB std / 48GB¹³ max / two slots used / ten slots available / **PC2-5300 667MHz FBD 240-pin ECC DDR2-SDRAM DIMMs** / dual channel / 2-way memory interleave / DIMMs must be installed in matched pairs [a bank] / **Fully Buffered / Error Checking and Correcting (ECC)** (corrects any x4 or x8 SDRAM device failure, detects all two wire faults on DIMMs, detects all permutations of two x4 DRAM failures, detects any two bits in error within 8 bytes of data, corrects any single bit error within 8 bytes of data) / **Active Memory™**: memory mirroring, online-spare memory, Chipkill

SAS controller **Adaptec® AIC-9580W / dual channel SAS controller / eight port SAS** (300MB/sec SAS) / hot-swap / on planar / PCI-Express / supports **RAID 0, 1 & 10** / optional IBM ServeRAID™-8k Adaptor for low-cost RAID 0, 1, 1E, 10, 5 & 6 (installed on reserved internal connector)
SAS connectors One internal connection wired to DASD backplane / one external connector
IDE controller/cable Enhanced IDE/ATA 100 controller in Enterprise South Bridge / one connector on planar / one 1-drop IDE cable (CD-RW/DVD-ROM)
Disk - capacity None standard / supports 7200-15000 rpm disks / one backplane
Disk - bays Some: six hot-swap 3.5" SAS HDD / some: eight hot-swap 2.5" SAS HDD / filler panels installed in each disk bay
Tape backup Optional internal and external / 3.5" / USB or SATA

Mechanical Chipset **EIA 19" Rack (2U⁴)** / rack-mount only / supported in IBM NetBAY™ Rack products / no rack-to tower conversion
Intel 5000P chipset / Intel Memory Controller Hub (MCH) provides riser connector for either two PCI-Express x8 slots or two 64-bit/133MHz PCI-X slots / Enterprise Southbridge(ESB-2E) provides: two PCI-Express x8 slot with x4 Links, ATI video, Dual Gigabit ethernet, IDE, USB, SMBus, LPC bus to NS PC8742XVUL for Super I/O
Bus slots (See below) Two PCI-Express x8 (x4 Links) / Two PCI-X 1.0 or two PCI-Express x8 (x8 Links) / no hot-swap Active™ PCI slots

Ethernet controller Dual gigabit 10/100/1000 ethernet ports / **Two Broadcom® 5708** / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-Express / full duplex / Wake on LAN® / TCP/IP Offload Engine (TOE) / Alert Standard Format 2.0 / two RJ-45 ports in rear

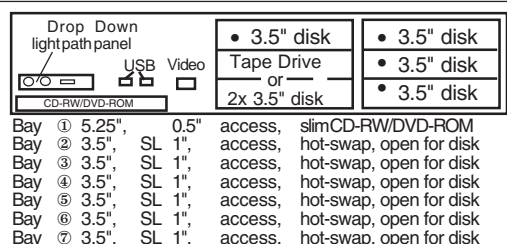
Optical / diskette Front & Rear ports 8X-24X⁶ CD-RW/DVD-ROM / USB only
Graphics Front: two USB (Vers 2.0), graphics (DB-15) Rear: two USB (Vers 2.0), serial (9-pin), graphics (DB-15), two ethernet (RJ-45), one RJ-45 (sys mgmt), one SAS / no parallel port
SVGA / ATI® RN50(ES1000) / front and rear ports / on planar / 16MB DDR std/max / 32-bit/33MHz PCI 2.3

Security Systems mgmt Power-on password / administrator password / unattended boot / selectable boot sequence
IBM Integrated Baseboard Management Controller(BMC) / IPMI 2.0 / H8S2166 / on planar / provides system and environmental monitoring such as temp, optional disks, fans, power supply / supports opt. Remote Supervisor Adapter II Slimline with 140-pin connector on planar for continuous power (no external power required)

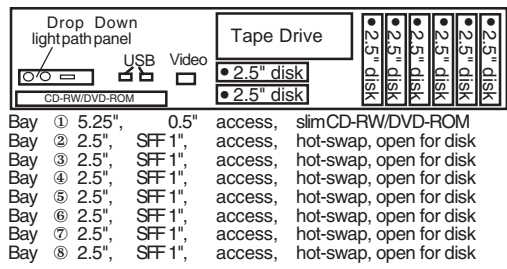
Diagnostics **Drop down Light Path Diagnostics** panel providing LED map to failing part (located on front panel)
Software **ServerGuide™** (CD-ROM installation and configuration utilities), IBM Director systems mgmt, others
Keyboard / mouse None standard (because rack-based) / USB only
Power supply Std/Max: one/two 835 watt hot-swap / rear access / auto restart / redundant with two power supplies / auto-sensing
Fans **Calibrated Vectored Cooling™** Std: five fans; Max: ten (five fans with optional second power supply) / redundant with ten fans installed; All: variable speed / hot-swap / PFA
Prerequisites Monitor, keyboard, mouse, SAS disk, rack, OS

Xeon 1.60GHz/1066MHz - 2 x 2MB L2 Cache	40K1231
Xeon 1.86GHz/1066MHz - 2 x 2MB L2 Cache	40K1232
Xeon 2.0GHz/1333MHz - 2 x 2MB L2 Cache	40K1233
1GB PC2-5300 FBD (2 x 512 MB)	39M5782
2GB PC2-5300 FBD (2 x 1GB)	39M5785
4GB PC2-5300 FBD (2 x 2GB)	39M5791
8GB PC2-5300 FBD (2 x 4GB) - When available	39M5797
IBM ServeRAID-8k Adaptor	25R8064
IBM Remote Supervisor Adapter II Slim	39Y9566
300GB 10K-rpm SAS HS 3.5" (MM carrier) HDD	40K1041
73.4GB 10K-rpm SAS SFF HS 2.5" (SFF tray) HDD	40K1052
73.4GB 15K-rpm SAS HS 3.5" (MM carrier) HDD	40K1043
146.4GB 15K-rpm SAS HS 3.5" (MM carrier) HDD	40K1044
835 Watt Hot-swap Power Supply Option (US)	40K1905
PCI Riser Card PCI-Express Option	40K1907
PCI Riser Card PCI-X Option	40K1908

Other options at ibm.com/pc/us/accessories



2U Rack with 3.5" SAS



2U Rack with 2.5" SAS

- Quick release adapter slots (no screws)
- Configuration/Setup Utility: F1 at startup
- Diagnostics (PC-Doctor™): F2 at startup
- Network Boot: F12 at startup
- Front indicators LEDs: Power-on LED, HDD activity LED, locator LED, system information LED, and system-error LED
- Predictive failure analysis on disk options, memory, processors, VRMs, power supplies, and fans in conjunction with IBM Director can alert the system administrator of an imminent component failure
- Rack: H 3.36" x W 17.5" x D 27.5" (H 85.4mm x W 443.6mm x D 698mm)
- 46.5 to 65 pounds
- Stealth black color

LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- 3 year on site warranty service upgrade options (in eligible locations):⁷
 - 9 hr coverage, Mon-Fri excluding holidays, 4 hr response time (ServicePac[®] 21P2077)
 - 24 hr x 7 day coverage, 4 hour average response time (ServicePac 21P2078)
 - 24 hr x 7 day coverage, 2 hour average response time (ServicePac 21P2093)
- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

Slot 1*: PCI-Express x8(x8 Links) or full length 64-bit 133MHz 3.3v PCI-X
 Slot 2*: PCI-Express x8(x8 Links) or half length 64-bit 133MHz 3.3v PCI-X
 Slot 3: low-profile, PCI-Express x8(x4 Links)
 Slot 4: low-profile, PCI-Express x8(x4 Links)
 *slots 1 & 2 riser determines PCI-Express or PCI-X

Max internal disk capacity:
 3.5" SAS models: 1.8TB² with six 300GB SL disks
 2.5" SAS models: 584GB² with eight 73.4GB SFF disks

IBM® Type-GAV-model	Qty x Processor	L2 Core cache	Memory	Disk	Disk controller	Mechanical	Slots x bays (hot-swap bays)	Powersupply	Ethernet	Available date
7979-71y-71x	1 x Xeon™ 5160 3.0GHz	DC 4MB	1GB	None	SAS	Rack	4x7 (4 or 6 hot-swap)	1 x 835W Hot-Swap	2xGigabit	July 2006
7979-7Ay-7Ax	1 x Xeon 5160 3.0GHz	DC 4MB	1GB	None	SAS	Rack	4x10 (8 hot-swap)	1 x 835W Hot-Swap	2xGigabit	July 2006

Positioning Processor A rack-dense 2-way server delivering high availability, scalability and expandability for application-serving Web environments
Up to **1x Intel® Xeon Processor 1.86 GHz** with 1066MHz FSB Dual Core / Up to **1 x Intel Xeon Processor 3.0 GHz** with 1333MHz FSB Dual Core / **Extended Memory 64 Technology (EM64T)** / Enhanced Intel Speedstep Technology (EIST)

L2 cache 2 MB / per core / at processor speed
SMP support 2-way SMP / up to two Xeon Processors (same speed/cache size)
Implementation Systemboard contains two Intel LGA771 sockets, twelve memory gold-connector DIMM slots, four PCI-E slots or two PCI-E slots and two PCI-X slots, integrated SAS, ethernet and graphics controllers

Memory 1GB std / 48GB¹³ max / two slots used / ten slots available / **PC2-5300 667MHz FBD 240-pin ECC DDR2-SDRAM DIMMs** / dual channel / 2-way memory interleave / DIMMs must be installed in matched pairs [a bank] / **Fully Buffered / Error Checking and Correcting (ECC)** (corrects any x4 or x8 SDRAM device failure, detects all two wire faults on DIMMs, detects all permutations of two x4 DRAM failures, detects any two bits in error within 8 bytes of data, corrects any single bit error within 8 bytes of data) / **Active Memory™: memory mirroring, online-spare memory, Chipkill**

SAS controller **Adaptec® AIC-9580W / dual channel SAS controller / eight port SAS** (300MB/sec SAS) / hot-swap / on planar / PCI-Express / supports **RAID 0, 1 & 10** / optional IBM ServeRAID™-8k Adaptor for low-cost RAID 0, 1, 1E, 10, 5 & 6 (installed on reserved internal connector)

SAS connectors One internal connection wired to DASD backplane / one external connector
IDE controller/cable Enhanced IDE/ATA 100 controller in Enterprise South Bridge / one connector on planar / one 1-drop IDE cable (CD-RW/DVD-ROM)
Disk - capacity None standard / supports 7200-15000 rpm disks / one backplane
Disk - bays Some: six hot-swap 3.5" SAS HDD / some: eight hot-swap 2.5" SAS HDD / filler panels installed in each disk bay
Tape backup Optional internal and external / 3.5" / USB or SATA

Mechanical Chipset **EIA 19" Rack (2U⁴)** / rack-mount only / supported in IBM NetBAY™ Rack products / no rack to tower conversion
Intel 5000P chipset / Intel Memory Controller Hub (MCH) provides riser connector for either two PCI-Express x8 slots or two 64-bit/133MHz PCI-X slots / Enterprise Southbridge (ESB-2E) provides: two PCI-Express x8 slot with x4 Links, ATI video, Dual Gigabit ethernet, IDE, USB, SMBus, LPC bus to NS PC8742XVUL for Super I/O
Bus slots Two PCI-Express x8 (x4 Links) / Two PCI-X 1.0 or two PCI-Express x8 (x8 Links) / no hot-swap Active™ PCI slots

Ethernet controller Dual gigabit 10/100/1000 ethernet ports / **Two Broadcom® 5708** / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-Express / full duplex / Wake on LAN® / TCP/IP Offload Engine (TOE) / Alert Standard Format 2.0 / two RJ-45 ports in rear

Optical / diskette Front & Rear ports 8X-24X⁶ CD-RW/DVD-ROM / USB only
Front: two USB (Vers 2.0), graphics (DB-15) **Rear:** two USB (Vers 2.0), serial (9-pin), graphics (DB-15), two ethernet (RJ-45), one RJ-45 (sys mgmt), one SAS / no parallel port

Graphics SVGA / ATI® RN50(ES1000) / front and rear ports / on planar / 16MB DDR std/max / 32-bit/33MHz PCI 2.3

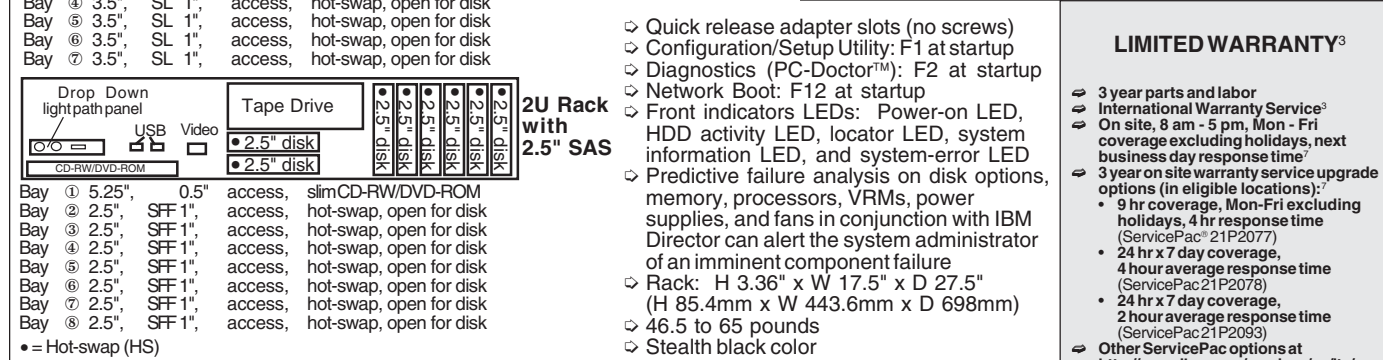
Security Systems mgmt Power-on password / administrator password / unattended boot / selectable boot sequence
IBM Integrated Baseboard Management Controller (BMC) / IPMI 2.0 / H8S2166 / on planar / provides system and environmental monitoring such as temp, optional disks, fans, power supply / supports opt. Remote Supervisor Adapter II Slimline with 140-pin connector on planar for continuous power (no external power required)

Diagnostics **Drop down Light Path Diagnostics** panel providing LED map to failing part (located on front panel)
Software **ServerGuide™** (CD-ROM installation and configuration utilities), IBM Director systems mgmt, others
Keyboard / mouse None standard (because rack-based) / USB only
Power supply Std/Max: one/two 835 watt hot-swap / rear access / auto restart / redundant with two power supplies / auto-sensing

Fans **Calibrated Vectored Cooling™** Std: five fans; Max: ten (five fans with optional second power supply) / redundant with ten fans installed; All: variable speed / hot-swap / PFA Monitor, keyboard, mouse, SAS disk, rack, OS

Xeon 2.33GHz/1333MHz - 2 x 2MB L2 Cache	40K1234
Xeon 2.66GHz/1333MHz - 2 x 2MB L2 Cache	40K1235
Xeon 3.0GHz/1333MHz - 2 x 2MB L2 Cache	40K1236
1GB PC2-5300 FBD (2 x 512 MB)	39M5782
2GB PC2-5300 FBD (2 x 1GB)	39M5785
4GB PC2-5300 FBD (2 x 2GB)	39M5791
8GB PC2-5300 FBD (2 x 4GB) - When available	39M5797
IBM ServeRAID-8k Adapter	25R8064
IBM Remote Supervisor Adapter II Slim	39Y9566
300GB 10K-rpm SAS HS 3.5" (MM carrier) HDD	40K1041
73.4GB 10K-rpm SAS SFF HS 2.5" (SFF tray) HDD	40K1052
73.4GB 15K-rpm SAS HS 3.5" (MM carrier) HDD	40K1043
146.4GB 15K-rpm SAS HS 3.5" (MM carrier) HDD	40K1044
835 Watt Hot-swap Power Supply Option (US)	40K1905
PCI Riser Card PCI-Express Option	40K1907
PCI Riser Card PCI-X Option	40K1908

Other options at ibm.com/pc/us/accessories



Slot 1*: PCI-Express x8(x8 Links) or full length 64-bit 133MHz 3.3v PCI-X
 Slot 2*: PCI-Express x8(x8 Links) or half length 64-bit 133MHz 3.3v PCI-X
 Slot 3: low-profile, PCI-Express x8(x4 Links)
 Slot 4: low-profile, PCI-Express x8(x4 Links)
 *slots 1 & 2 riser determines PCI-Express or PCI-X

See footnotes for important warranty information

Max internal disk capacity:
 3.5" SAS models: 1.8TB² with six 300GB SL disks
 2.5" SAS models: 584GB² with eight 73.4GB SFF disks

LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- 3 year on site warranty service upgrade options (in eligible locations):⁷
 - 9 hr coverage, Mon-Fri excluding holidays, 4 hr response time (ServicePac[®] 21P2077)
 - 24 hr x 7 day coverage, 4 hour average response time (ServicePac 21P2078)
 - 24 hr x 7 day coverage, 2 hour average response time (ServicePac 21P2093)
- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxue.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

IBM® Type-GAV-model	Qty x Processor	L2 Core cache	Memory	Disk	Disk controller	Slots x bays (hot-swap bays)	Powersupply	Ethernet	Available date
7979-A1y-A1x	1 x Xeon™ E5310 1.6GHz	QC 8MB	1GB	3.5" Open	SAS / SATA	4x7 (4 or 6 hot-swap)	1 x 835W Hot-Swap	2xGigabit	Dec 2006
7979-C1y-C1x	1 x Xeon E5320 1.86GHz	QC 8MB	2GB	3.5" Open	SAS / SATA	4x7 (4 or 6 hot-swap)	1 x 835W Hot-Swap	2xGigabit	Dec 2006

Positioning Processor 2U Rack with 3.5" SAS or SATA with high availability, scalability and expandability for application-serving Web environments Up to 2 x Intel® Xeon Processor 1.86GHz with 1066MHz FSB Quad-Core / **Extended Memory 64 Technology (EM64T)** / Enhanced Intel Speedstep Technology (EIST)

L2 cache 8MB / std and max / at processor speed
SMP support 2-way SMP / up to two Xeon Processors (same speed/cache size)
Implementation Systemboard contains two Intel LGA771 sockets, twelve memory gold-connector DIMM slots, four PCI-E slots or two PCI-E slots and two PCI-X slots, integrated SAS, ethernet and graphics controllers

Memory 1 or 2GB std / 48GB¹³ max / two slots used / ten slots available / **PC2-5300 667MHz FBD 240-pin ECC DDR2-SDRAM DIMMs** / dual channel / 2-way memory interleave / DIMMs must be installed in matched pairs [a bank] / **Fully Buffered / Error Checking and Correcting (ECC)** (corrects any x4 or x8 SDRAM device failure, detects all two wire faults on DIMMs, detects all permutations of two x4 DRAM failures, detects any two bits in error within 8 bytes of data, corrects any single bit error within 8 bytes of data) / **Active Memory™: memory mirroring, online-spare memory, Chipkill**

SAS/SATA controller Adaptec® AIC-9580W / dual channel SAS controller / eight port SAS or SATA (300MB/sec SAS) (150MB/sec SATA) / hot-swap / on planar / PCI-Express / supports RAID 0, 1 & 10 / optional IBM ServeRAID™-8k Adaptor for low-cost RAID 0, 1, 1E, 10, 5 & 6 (installed on reserved internal connector)

SAS connectors One internal connection wired to DASD backplane / one external connector
IDE controller/cable Enhanced IDE/ATA 100 controller in Enterprise South Bridge / one connector on planar / one 1-drop IDE cable (CD-RW/DVD-ROM)
Disk - capacity None standard / supports 7200-15000 rpm disks / one backplane
Disk - bays Some: six hot-swap 3.5" SAS or SATA HDD / some: eight hot-swap 2.5" SAS HDD / filler panels installed in open bays
Tape backup Optional internal and external / 3.5" / USB or SATA

Mechanical Chipset EIA 19" Rack (2U⁴) / rack-mount only / supported in IBM NetBAY™ Rack products / no rack to tower conversion
Intel 5000P chipset / Intel Memory Controller Hub (MCH) provides riser connector for either two PCI-Express x8 slots or two 64-bit/133MHz PCI-X slots / Enterprise Southbridge(ESB-2E) provides: two PCI-Express x8 slot with x4 Links, ATI video, Dual Gigabit ethernet, IDE, USB, SMBus, LPC bus to NS PC8742XVU for Super I/O

Bus slots (See below) Four PCI-Express x8 or two PCI-X 1.0 and two PCI-Express x8 / no hot-swap Active™ PCI slots

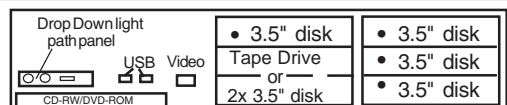
Ethernet controller Dual gigabit 10/100/1000 ethernet ports / **Two Broadcom® 5708** / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-Express / full duplex / Wake on LAN® / TCP/IP Offload Engine (TOE) / Alert Standard Format 2.0 / two RJ-45 ports in rear

Optical / diskette Front & Rear ports 8X-24X⁶ CD-RW/DVD-ROM / USB only
Front: two USB (Vers 2.0), graphics (DB-15) **Rear:** two USB (Vers 2.0), serial (9-pin), graphics (DB-15), two ethernet (RJ-45), one RJ-45 (sys mgmt), one SAS / no parallel port

Graphics SVGA / ATI® RN50(ES1000) / front and rear ports / on planar / 16MB DDR std/max / 32-bit/33MHz PCI 2.3

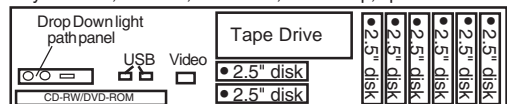
Security Systems mgmt Power-on password / administrator password / unattended boot / selectable boot sequence
IBM Integrated Baseboard Management Controller(BMC) / IPMI 2.0 / H8S2166 / on planar / provides system and environmental monitoring such as temp, optional disks, fans, power supply / supports opt. Remote Supervisor Adapter II Slimline with 140-pin connector on planar for continuous power (no external power required)

Diagnostics	Drop down Light Path Diagnostics panel providing LED map to failing part (located on front panel)	Xeon E5310 1.6GHz/1066MHz/8MB L2 Cache	43W5821
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director systems mgmt, others	Xeon E5320 1.86GHz/1066MHz/8MB L2 Cache	43W5822
Keyboard / mouse	None standard (because rack-based) / USB only	1GB PC2-5300 FBD (2 x 512 MB)	39M5782
Power supply	Std/Max: one/two 835 watt hot-swap / rear access / auto restart / redundant with two power supplies / auto-sensing	2GB PC2-5300 FBD (2 x 1GB)	39M5785
Fans	Calibrated Vectored Cooling™ Std: five fans; Max: ten (five fans with optional second power supply) / redundant with ten fans installed; All: variable speed / hot-swap / PFA	4GB PC2-5300 FBD (2 x 2GB)	39M5791
Prerequisites	Monitor, keyboard, mouse, SAS/SATA disk, rack, OS	8GB PC2-5300 FBD (2 x 4GB)	39M5797
		IBM ServeRAID-8k Adapter	25R8064
		IBM Remote Supervisor Adapter II Slim	39Y9566
		250GB 7.2K rpm SATA II hot-swap	39M4526
		500GB 7.2K rpm SATA hot-swap 300MB/sec	39M4530
		300GB 10K-rpm SAS HS 3.5" (MM carrier) HDD	40K1041
		73.4GB 10K-rpm SAS SFF HS 2.5" (SFF tray) HDD	40K1052
		73.4GB 15K-rpm SAS HS 3.5" (MM carrier) HDD	40K1043
		146.4GB 15K-rpm SAS HS 3.5" (MM carrier) HDD	40K1044
		835 Watt Hot-swap Power Supply Option (US)	40K1905
		PCI Riser Card PCI-X Option	40K1908



Bay ①	5.25"	0.5"	access,	slim	CD-RW/DVD-ROM
Bay ②	3.5"	SL 1"	access,	hot-swap,	open for disk
Bay ③	3.5"	SL 1"	access,	hot-swap,	open for disk
Bay ④	3.5"	SL 1"	access,	hot-swap,	open for disk
Bay ⑤	3.5"	SL 1"	access,	hot-swap,	open for disk
Bay ⑥	3.5"	SL 1"	access,	hot-swap,	open for disk
Bay ⑦	3.5"	SL 1"	access,	hot-swap,	open for disk

• = Hot-swap (HS)



Bay ①	5.25"	0.5"	access,	slim	CD-RW/DVD-ROM
Bay ②	3.5"	SL 1"	access,	open for	Tape Drive
Bay ③	2.5"	SFF 1"	access,	hot-swap,	open for disk
Bay ④	2.5"	SFF 1"	access,	hot-swap,	open for disk
Bay ⑤	2.5"	SFF 1"	access,	hot-swap,	open for disk
Bay ⑥	2.5"	SFF 1"	access,	hot-swap,	open for disk
Bay ⑦	2.5"	SFF 1"	access,	hot-swap,	open for disk
Bay ⑧	2.5"	SFF 1"	access,	hot-swap,	open for disk
Bay ⑨	2.5"	SFF 1"	access,	hot-swap,	open for disk
Bay ⑩	2.5"	SFF 1"	access,	hot-swap,	open for disk

Slot 1*: PCI-Express x8(x8 Links) or full length 64-bit 133MHz 3.3v PCI-X
 Slot 2*: PCI-Express x8(x8 Links) or half length 64-bit 133MHz 3.3v PCI-X
 Slot 3: low-profile, PCI-Express x8(x4 Links)
 Slot 4: low-profile, PCI-Express x8(x4 Links)
 *slots 1 & 2 riser determines PCI-Express or PCI-X

- ↳ Quick release adapter slots (no screws)
- ↳ Configuration/Setup Utility: F1 at startup
- ↳ Diagnostics (PC-Doctor™): F2 at startup
- ↳ Network Boot: F12 at startup
- ↳ Front indicators LEDs: Power-on LED, HDD activity LED, locator LED, system information LED, and system-error LED
- ↳ Predictive failure analysis on disk options, memory, processors, VRMs, power supplies, and fans in conjunction with IBM Director can alert the system administrator of an imminent component failure
- ↳ Rack: H 3.36" x W 17.5" x D 27.5" (H 85.4mm x W 443.6mm x D 698mm)
- ↳ 46.5 to 65 pounds
- ↳ Stealth black color

LIMITED WARRANTY³

- ↳ 3 year parts and labor
- ↳ International Warranty Service³
- ↳ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- ↳ 3 year on site warranty service upgrade options (in eligible locations):⁷
 - 9 hr coverage, Mon-Fri excluding holidays, 4 hr response time (ServicePac® 21P2077)
 - 24 hr x 7 day coverage, 4 hour average response time (ServicePac 21P2078)
 - 24 hr x 7 day coverage, 2 hour average response time (ServicePac 21P2093)
- ↳ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxue.pdf>
- ↳ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information

Max internal disk capacity:
 3.5" SAS models: 1.8TB² with six 300GB SL disks
 3.5" SATA models: 3.0TB² with six 500GB disks
 2.5" SAS models: 584GB² with eight 73.4GB SFF disks

IBM® Type-GAV-model	Qty x Processor	L2 Core cache	Memory	Disk	Disk controller	Slots x bays (hot-swap bays)	Powersupply	Ethernet	Available date
7979-A2y-A2x	1 x Xeon™ E5335	2.0GHz QC 8MB	1GB	3.5" Open	SAS/SATA	4x7 (4 or 6 hot-swap)	1 x 835W Hot-Swap	2xGigabit	Dec 2006
7979-ABy-ABx	1 x Xeon E5335	2.0GHz QC 8MB	2GB	2.5" Open	SAS/SATA	4x10 (8 hot-swap)	1 x 835W Hot-Swap	2xGigabit	Dec 2006
7979-CAy-CAx	1 x Xeon E5320	1.86GHz QC 8MB	2GB	3.5" Open	SAS/SATA	4x10 (8 hot-swap)	1 x 835W Hot-Swap	2xGigabit	Feb 2007
7979-CBy-CBx	1 x Xeon E5345	2.33GHz QC 8MB	2GB	2.5" Open	SAS/SATA	4x10 (8 hot-swap)	1 x 835W Hot-Swap	2xGigabit	Feb 2007
7979-C3y-C3x	1 x Xeon E5355	2.66GHz QC 8MB	2GB	3.5" Open	SAS/SATA	4x7 (4 or 6 hot-swap)	1 x 835W Hot-Swap	2xGigabit	Feb 2007
7979-CCy-CCx	1 x Xeon E5355	2.66GHz QC 8MB	2GB	2.5" Open	SAS/SATA	4x10 (8 hot-swap)	1 x 835W Hot-Swap	2xGigabit	Feb 2007

Positioning Processor **2U Rack with 3.5" SAS or SATA with high availability, scalability and expandability for application-serving Web environments** Up to 2 x Intel® Xeon Processor 1.86GHz with 1066MHz FSB / **1x Intel Xeon Processor up to 2.66GHz with 1333 FSB** / Quad-Core / **Extended Memory 64 Technology (EM64T)** / Enhanced Intel Speedstep Technology (EIST)

L2 cache **8MB** / std and max / at processor speed
 SMP support **2-way SMP** / up to two Xeon Processors (same speed/cache size)
 Implementation Systemboard contains two Intel LGA771 sockets, twelve memory gold-connector DIMM slots, four PCI-E slots or two PCI-E slots and two PCI-X slots, integrated SAS, ethernet and graphics controllers

Memory **1 or 2GB** std / 48GB¹³ max / two slots used / ten slots available / **PC2-5300 667MHz FBD 240-pin ECC DDR2-SDRAM DIMMs** / dual channel / 2-way memory interleave / DIMMs must be installed in matched pairs [a bank] / **Fully Buffered / Error Checking and Correcting (ECC)** (corrects any x4 or x8 SDRAM device failure, detects all two wire faults on DIMMs, detects all permutations of two x4 DRAM failures, detects any two bits in error within 8 bytes of data, corrects any single bit error within 8 bytes of data) / **Active Memory™**: memory mirroring, online-spare memory, Chipkill

SAS/SATA controller **Adaptec® AIC-9580W** / dual channel SAS controller / **eight port SAS or SATA** (300MB/sec SAS) (150MB/sec SATA) / hot-swap / on planar / PCI-Express / supports **RAID 0, 1 & 10** / optional IBM ServeRAID™-8k Adaptor for low-cost RAID 0, 1, 1E, 10, 5 & 6 (installed on reserved internal connector)

SAS connectors One internal connection wired to DASD backplane / one external connector
 IDE controller/cable Enhanced IDE/ATA 100 controller in Enterprise South Bridge / one connector on planar / one 1-drop IDE cable (CD-RW/DVD-ROM)
 Disk - capacity None standard / supports 7200-15000 rpm disks / one backplane
 Disk - bays Some: six hot-swap 3.5" SAS or SATA HDD / some: eight hot-swap 2.5" SAS HDD / filler panels installed in open bays
 Tape backup Optional internal and external / 3.5" / USB or SATA

Mechanical Chipset **EIA 19" Rack (2U⁴)** / rack-mount only / supported in IBM NetBAY™ Rack products / no rack to tower conversion
Intel 5000P chipset / Intel Memory Controller Hub (MCH) provides riser connector for either two PCI-Express x8 slots or two 64-bit/133MHz PCI-X slots / Enterprise Southbridge(ESB-2E) provides: two PCI-Express x8 slot with x4 Links, ATI video, Dual Gigabit ethernet, IDE, USB, SMBus, LPC bus to NS PC8742XVUL for Super I/O
 Bus slots (See below) Four PCI-Express x8 or two PCI-X 1.0 and two PCI-Express x8 / no hot-swap Active™ PCI slots

Ethernet controller Dual gigabit 10/100/1000 ethernet ports / **Two Broadcom® 5708** / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-Express / full duplex / Wake on LAN® / TCP/IP Offload Engine (TOE) / Alert Standard Format 2.0 / two RJ-45 ports in rear

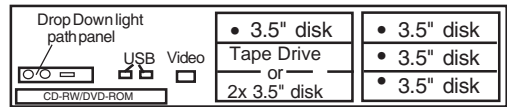
Optical / diskette **8X-24X⁶ CD-RW/DVD-ROM / USB only**
 Front & Rear ports **Front**: two USB (Vers 2.0), graphics (DB-15) **Rear**: two USB (Vers 2.0), serial (9-pin), graphics (DB-15), two ethernet (RJ-45), one RJ-45 (sys mgmt), one SAS / no parallel port
 Graphics **SVGA / ATI® RN50(ES1000)** / front and rear ports / on planar / 16MB DDR std/max / 32-bit/33MHz PCI 2.3

Security Systems mgmt Power-on password / administrator password / unattended boot / selectable boot sequence
IBM Integrated Baseboard Management Controller(BMC) / IPMI 2.0 / H8S2166 / on planar / provides system and environmental monitoring such as temp, optional disks, fans, power supply / supports opt. Remote Supervisor Adapter II Slimline with 140-pin connector on planar for continuous power (no external power required)

Diagnostics **Drop down Light Path Diagnostics** panel providing LED map to failing part (located on front panel)
 Software **ServerGuide™** (CD-ROM installation and configuration utilities), IBM Director systems mgmt, others
 Keyboard / mouse None standard (because rack-based) / USB only
 Power supply **Std/Max**: one/two 835 watt hot-swap / rear access / auto restart / redundant with two power supplies / auto-sensing
 Fans **Calibrated Vectored Cooling™** Std: five fans; Max: ten (five fans with optional second power supply) / redundant with ten fans installed; All: variable speed / hot-swap / PFA
 Prerequisites Monitor, keyboard, mouse, SAS/SATA disk, rack, OS

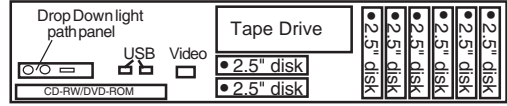
Xeon E5320 1.86GHz/1066MHz/8MB L2 Cache	43W5822
Xeon E5335 2.0GHz/1333MHz/8MB L2 Cache	43W5823
Xeon E5345 2.33GHz/1333MHz/8MB L2 Cache	43W5824
Xeon E5355 2.66GHz/1333MHz/8MB L2 Cache	43W5825
1GB PC2-5300 FBD (2 x 512 MB)	39M5782
2GB PC2-5300 FBD (2 x 1GB)	39M5785
4GB PC2-5300 FBD (2 x 2GB)	39M5791
8GB PC2-5300 FBD (2 x 4GB)	39M5797
IBM ServeRAID-8k Adaptor	25R8064
IBM Remote Supervisor Adapter II Slim	39Y9566
250GB 7.2K rpm SATA II hot-swap	39M4526
500GB 7.2K rpm SATA hot-swap 300MB/sec	39M4530
300GB 10K-rpm SAS HS 3.5" (MM carrier) HDD	40K1041
73.4GB 10K-rpm SAS SFF HS 2.5" (SFF tray) HDD	40K1052
73.4GB 15K-rpm SAS HS 3.5" (MM carrier) HDD	40K1043
146.4GB 15K-rpm SAS HS 3.5" (MM carrier) HDD	40K1044
835 Watt Hot-swap Power Supply Option (US)	40K1905
PCI Riser Card PCI-X Option	40K1908

Other options at ibm.com/pc/us/accessories



Bay	Height	Access	Hot-swap	Open for
Bay ①	5.25"	SL 1"	access,	slim CD-RW/DVD-ROM
Bay ②	3.5"	SL 1"	access,	open for Tape Drive
Bay ③	3.5"	SL 1"	access,	hot-swap, open for disk
Bay ④	3.5"	SL 1"	access,	hot-swap, open for disk
Bay ⑤	3.5"	SL 1"	access,	hot-swap, open for disk
Bay ⑥	3.5"	SL 1"	access,	hot-swap, open for disk
Bay ⑦	3.5"	SL 1"	access,	hot-swap, open for disk

• = Hot-swap (HS)



Bay	Height	Access	Hot-swap	Open for
Bay ①	5.25"	0.5"	access,	slim CD-RW/DVD-ROM
Bay ②	3.5"	SFF 1"	access,	open for Tape Drive
Bay ③	2.5"	SFF 1"	access,	hot-swap, open for disk
Bay ④	2.5"	SFF 1"	access,	hot-swap, open for disk
Bay ⑤	2.5"	SFF 1"	access,	hot-swap, open for disk
Bay ⑥	2.5"	SFF 1"	access,	hot-swap, open for disk
Bay ⑦	2.5"	SFF 1"	access,	hot-swap, open for disk
Bay ⑧	2.5"	SFF 1"	access,	hot-swap, open for disk
Bay ⑨	2.5"	SFF 1"	access,	hot-swap, open for disk
Bay ⑩	2.5"	SFF 1"	access,	hot-swap, open for disk

- Quick release adapter slots (no screws)
- Configuration/Setup Utility: F1 at startup
- Diagnostics (PC-Doctor™): F2 at startup
- Network Boot: F12 at startup
- Front indicators LEDs: Power-on LED, HDD activity LED, locator LED, system information LED, and system-error LED
- Predictive failure analysis on disk options, memory, processors, VRMs, power supplies, and fans in conjunction with IBM Director can alert the system administrator of an imminent component failure
- Rack: H 3.36" x W 17.5" x D 27.5" (H 85.4mm x W 443.6mm x D 698mm)
- 46.5 to 65 pounds
- Stealth black color

LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- 3 year on site warranty service upgrade options (in eligible locations):⁷
 - 9 hr coverage, Mon-Fri excluding holidays, 4 hr response time (ServicePac[®] 21P2077)
 - 24 hr x 7 day coverage, 4 hour average response time (ServicePac 21P2078)
 - 24 hr x 7 day coverage, 2 hour average response time (ServicePac 21P2093)
- Other ServicePac Options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

Slot 1*: PCI-Express x8(x8 Links) or full length 64-bit 133MHz 3.3v PCI-X
 Slot 2*: PCI-Express x8(x8 Links) or half length 64-bit 133MHz 3.3v PCI-X
 Slot 3: low-profile, PCI-Express x8(x4 Links)
 Slot 4: low-profile, PCI-Express x8(x4 Links)
 *slots 1 & 2 riser determines PCI-Express or PCI-X
 Max internal disk capacity:
 3.5" SAS models: 1.8TB² with six 300GB SL disks
 3.5" SATA models: 3.0TB² with six 500GB disks
 2.5" SAS models: 584GB² with eight 73.4GB SFF disks

See footnotes for important warranty information

IBM® Type-GAV-model	Qty x Processor	L2 Core cache	Memory	Disk	Disk controller	Slots x bays (hot-swap bays)	Power supply	Ethernet	Available date
7979-JAY-JAX	1 x Xeon™ L5310 1.6GHz	QC 8MB	2GB	2.5" Open	SAS/SATA	4x10 (8 hot-swap)	1 x 835W Hot-Swap	2xGigabit	May 2007
7979-JBy-JBx	1 x Xeon L5325 1.86GHz	QC 8MB	2GB	2.5" Open	SAS/SATA	4x10 (8 hot-swap)	1 x 835W Hot-Swap	2xGigabit	May 2007
7979-C4y-C4x	1 x Xeon X5365 3.0GHz	QC 8MB	2GB	3.5" Open	SAS/SATA	4x7 (6 hot-swap)	1 x 835W Hot-Swap	2xGigabit	Sep 2007
7979-CDy-CDx	1 x Xeon X5365 3.0GHz	QC 8MB	2GB	2.5" Open	SAS/SATA	4x10 (8 hot-swap)	1 x 835W Hot-Swap	2xGigabit	Sep 2007
7979-EDy-EDx	1 x Xeon X5355 2.66GHz	QC 8MB	4GB	3.5" Open	SAS/SATA	4x7 (6 hot-swap)	2 x 835W Hot-Swap	2xGigabit	Sep 2007

Positioning Processor **2U Rack with 3.5" SAS or SATA with high availability, scalability and expandability for application-serving Web environments** up to 1x Intel® Xeon Processor 3.0GHz with 1333MHz FSB / Xeon Processor 1.86GHz with 1066MHz FSB / Quad-Core / **Extended Memory 64 Technology (EM64T)** / Enhanced Intel Speedstep Technology (EIST)

L2 cache **8MB** / std and max / at processor speed
 SMP support **2-way SMP** / up to two Xeon Processors (same speed/cache size)
 Implementation Systemboard contains two Intel LGA771 sockets, twelve memory gold-connector DIMM slots, four PCI-E slots or two PCI-E slots and two PCI-X slots, integrated SAS, ethernet and graphics controllers

Memory **2GB** std / 48GB¹³ max / two slots used / ten slots available / **PC2-5300 667MHz FBD 240-pin ECC DDR2-SDRAM DIMMs** / dual channel / 2-way memory interleave / DIMMs must be installed in matched pairs [a bank] / **Fully Buffered / Error Checking and Correcting (ECC)** (corrects any x4 or x8 SDRAM device failure, detects all two wire faults on DIMMs, detects all permutations of two x4 DRAM failures, detects any two bits in error within 8 bytes of data, corrects any single bit error within 8 bytes of data) / **Active Memory™: memory mirroring, online-spare memory, Chipkill**

SAS/SATA controller **Adaptec® AIC-9580W / dual channel SAS controller / eight port SAS or SATA** (300MB/sec SAS) (150MB/sec SATA) / hot-swap / on planar / PCI-Express / supports **RAID 0, 1 & 10** / optional IBM ServeRAID™-8k Adaptor for low-cost RAID 0, 1, 1E, 10, 5 & 6 (installed on reserved internal connector) / simultaneous SAS and SATA disks environments are unsupported
 SAS connectors One internal connection wired to DASD backplane / one external connector
 IDE controller/cable Enhanced IDE/ATA 100 controller in Enterprise South Bridge / one connector on planar / one 1-drop IDE cable (CD-RW/DVD-ROM)
 Disk - capacity None standard / supports 7200-15000 rpm disks / one backplane
 Disk - bays Some: six hot-swap 3.5" SAS or SATA HDD / some: eight hot-swap 2.5" SAS HDD / filler panels installed in open bays
 Tape backup Optional internal and external / 3.5" / USB or SATA

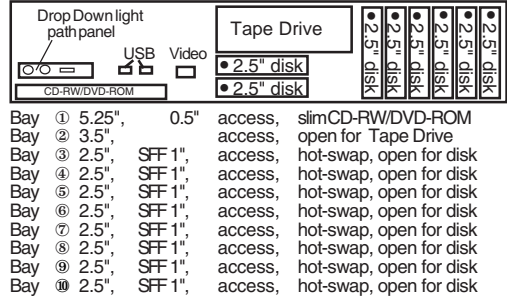
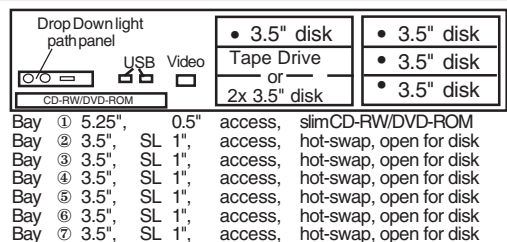
Mechanical Chipset **EIA 19" Rack (2U⁴) / rack-mount only / supported in IBM NetBAY™ Rack products / no rack to tower conversion**
Intel 5000P chipset / Intel Memory Controller Hub (MCH) provides riser connector for either two PCI-Express x8 slots or two 64-bit/133MHz PCI-X slots / Enterprise Southbridge(ESB-2E) provides: two PCI-Express x8 slot with x4 Links, ATI video, Dual Gigabit ethernet, IDE, USB, SMBus, LPC bus to NS PC8742XVUL for Super I/O
 Bus slots (See below) Four PCI-Express x8 or two PCI-X 1.0 and two PCI-Express x8 / no hot-swap Active™ PCI slots

Ethernet controller Dual gigabit 10/100/1000 ethernet ports / **Two Broadcom® 5708** / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-Express / full duplex / Wake on LAN® / TCP/IP Offload Engine (TOE) / Alert Standard Format 2.0 / two RJ-45 ports in rear

Optical / diskette **8X-24X⁶ CD-RW/DVD-ROM / USB only**
 Front & Rear ports **Front:** two USB (Vers 2.0), graphics (DB-15) **Rear:** two USB (Vers 2.0), serial (9-pin), graphics (DB-15), two ethernet (RJ-45), one RJ-45 (sys mgmt), one SAS / no parallel port
 Graphics **SVGA / ATI® RN50(ES1000) / front and rear ports / on planar / 16MB DDR std/max / 32-bit/33MHz PCI 2.3**

Security Systems mgmt Power-on password / administrator password / unattended boot / selectable boot sequence
IBM Integrated Baseboard Management Controller(BMC) / IPMI 2.0 / H8S2166 / on planar / provides system and environmental monitoring such as temp, optional disks, fans, power supply / supports opt. Remote Supervisor Adapter II Slimline with 140-pin connector on planar for continuous power (no external power required)

Diagnostics	Drop down Light Path Diagnostics panel providing LED map to failing part (located on front panel)	Xeon X5365 3.0GHz/1333MHz/8MB L2 Cache	44E5033
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director systems mgmt, others	Xeon L5310 1.6GHz/1066MHz/8MB L2 Cache	43W5918
Keyboard / mouse	None standard (because rack-based) / USB only	Xeon L5325 1.86GHz/1066MHz/8MB L2 Cache	43W5919
Power supply	Std/Max: one/two 835 watt hot-swap / rear access / auto restart / redundant with two power supplies / auto-sensing	1GB PC2-5300 FBD (2 x 512 MB)	39M5782
Fans	Calibrated Vectored Cooling™ Std: five fans; Max: ten (five fans with optional second power supply) / redundant with ten fans installed;All: variable speed / hot-swap / PFA	2GB PC2-5300 FBD (2 x 1GB)	39M5785
Prerequisites	Monitor, keyboard, mouse, SAS/SATA disk, rack, OS	4GB PC2-5300 FBD (2 x 2GB)	39M5791
		8GB PC2-5300 FBD (2 x 4GB)	39M5797
		IBM ServeRAID-8k Adaptor	25R8064
		IBM Remote Supervisor Adapter II Slim	39Y9566
		500GB 7.2K rpm SATA hot-swap 300MB/sec	39M4530
		750GB HS SATA HDD	43W7576
		300GB 10K-rpm SAS HS 3.5" (MM carrier) HDD	40K1041
		73.4GB 10K-rpm SAS SFF HS 2.5" (SFF tray) HDD	40K1052
		73.4GB 15K-rpm SAS HS 3.5" (MM carrier) HDD	40K1043
		146.4GB 15K-rpm SAS HS 3.5" (MM carrier) HDD	40K1044
		835 Watt Hot-swap Power Supply Option (US)	40K1905
		PCI Riser Card PCI-X Option	40K1908
		Other options at ibm.com/products/us	



Slot 1*: PCI-Express x8(x8 Links) or full length 64-bit 133MHz 3.3v PCI-X
 Slot 2*: PCI-Express x8(x8 Links) or half length 64-bit 133MHz 3.3v PCI-X
 Slot 3: low-profile, PCI-Express x8(x4 Links)
 Slot 4: low-profile, PCI-Express x8(x4 Links)
 *slots 1 & 2 riser determines PCI-Express or PCI-X

Max internal disk capacity:
 3.5" SAS models: 1.8TB² with six 300GB SL disks
 3.5" SATA models: 4.5TB² with six 750GB disks
 2.5" SAS models: 1.2TB² with eight 146GB SFF disks

- ↳ Quick release adapter slots (no screws)
- ↳ Configuration/Setup Utility: F1 at startup
- ↳ Diagnostics (PC-Doctor™): F2 at startup
- ↳ Network Boot: F12 at startup
- ↳ Front indicators LEDs: Power-on LED, HDD activity LED, locator LED, system information LED, and system-error LED
- ↳ Predictive failure analysis on disk options, memory, processors, VRMs, power supplies, and fans in conjunction with IBM Director can alert the system administrator of an imminent component failure
- ↳ Rack: H 3.36" x W 17.5" x D 27.5" (H 85.4mm x W 443.6mm x D 698mm)
- ↳ 46.5 to 65 pounds
- ↳ Stealth black color

LIMITED WARRANTY³

- ↳ 3 year parts and labor
- ↳ International Warranty Service³
- ↳ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- ↳ 3 year on site warranty service upgrade options (in eligible locations):⁷
 - 9 hr coverage, Mon-Fri excluding holidays, 4 hr response time (ServicePac[®] 21P2077)
 - 24 hr x 7 day coverage, 4 hour average response time (ServicePac 21P2078)
 - 24 hr x 7 day coverage, 2 hour average response time (ServicePac 21P2093)
- ↳ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ↳ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information

IBM® Type-model	Qty x Processor/Core	L2 cache	Memory	Disk	Disk controller	Optical	Power Supply	Disk bays	Slots x bays	Ethernet	Available date	
7979-BAX	1 x Xeon™ E5405	2.0GHz/QC	12MB	2GB	2.5" Open	SAS	Combo	1 x 835W	8 hot-swap	4x8	2 x GB	Jan 2008
7979-B1x	1 x Xeon E5405	2.0GHz/QC	12MB	2GB	3.5" Open	SAS/SATA	Combo	1 x 835W	6 hot-swap	4x6	2 x GB	Jan 2008
7979-BCx	1 x Xeon E5420	2.5GHz/QC	12MB	2GB	2.5" Open	SAS	Combo	1 x 835W	8 hot-swap	4x8	2 x GB	Jan 2008
7979-B3x	1 x Xeon E5420	2.5GHz/QC	12MB	2GB	3.5" Open	SAS/SATA	Combo	1 x 835W	6 hot-swap	4x6	2 x GB	Jan 2008
7979-BDx	1 x Xeon E5430	2.66GHz/QC	12MB	2GB	2.5" Open	SAS	Combo	1 x 835W	8 hot-swap	4x8	2 x GB	Jan 2008
7979-B4x	1 x Xeon E5430	2.66GHz/QC	12MB	2GB	3.5" Open	SAS/SATA	Combo	1 x 835W	6 hot-swap	4x6	2 x GB	Jan 2008

Positioning 2U Rack with high availability, scalability and expandability for application-serving Web environments

Processor Up to 2 x Intel® Xeon Processor 3.16GHz with 1333MHz FSB / Quad-Core / **Extended Memory 64 Technology (EM64T)** / Enhanced Intel Speedstep Technology (EIST)

L2 cache 12MB / std and max / at processor speed

SMP support 2-way SMP / up to two Xeon Processors (same speed/cache size)

Implementation Systemboard contains two Intel LGA771 sockets, twelve memory gold-connector DIMM slots, four PCI-E slots or two PCI-E slots and two PCI-X slots, integrated SAS, ethernet and graphics controllers

Memory 2GB std / 48GB¹³ max / two slots used / ten slots available / **PC2-5300 667MHz FBD 240-pin ECC DDR2-SDRAM DIMMs** / dual channel / 2-way memory interleave / DIMMs must be installed in matched pairs [a bank] / **Fully Buffered / Error Checking and Correcting (ECC)** (corrects any x4 or x8 SDRAM device failure, detects all two wire faults on DIMMs, detects all permutations of two x4 DRAM failures, detects any two bits in error within 8 bytes of data, corrects any single bit error within 8 bytes of data) / **Active Memory™: memory mirroring, online-spare memory, Chipkill**

SAS/SATA controller **Adaptec® AIC-9580W / dual channel SAS controller / eight port SAS or SATA** (300MB/sec SAS) (150MB/sec SATA) / hot-swap / on planar / PCI-Express / supports **RAID 0, 1 & 10** / optional IBM ServeRAID™-8k Adaptor for low-cost RAID 0, 1, 1E, 10, 5 & 6 (installed on reserved internal connector) / simultaneous SAS and SATA disks environments are unsupported

SAS connectors One internal connection wired to DASD backplane / one external connector

IDE controller/cable Enhanced IDE/ATA 100 controller in Enterprise South Bridge / one connector on planar / one 1-drop IDE cable (CD-RW/DVD-ROM)

Disk - capacity None standard / supports 7200-15000 rpm disks / one backplane

Disk - bays Some: six hot-swap 3.5" SAS or SATA HDD / some: eight hot-swap 2.5" SAS HDD / filler panels installed in open bays

Tape backup Optional internal and external / 3.5" / USB or SATA

Mechanical **EIA 19" Rack (2U*)** / rack-mount only / supported in IBM NetBay™ Rack products / no rack to tower conversion

Chipset **Intel 5000P chipset** / Intel Memory Controller Hub (MCH) provides riser connector for either two PCI-Express x8 slots or two 64-bit/133MHz PCI-X slots / Enterprise Southbridge(ESB-2E) provides: two PCI-Express x8 slot with x4 Links, ATI video, Dual Gigabit ethernet, IDE, USB, SMBus, LPC bus to NS PC8742XVUL for Super I/O

Bus slots (See below) Four PCI-Express x8 or two PCI-X 1.0 and two PCI-Express x8 / no hot-swap Active™ PCI slots

Ethernet controller Dual gigabit 10/100/1000 ethernet ports / **Two Broadcom® 5708** / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-Express / full duplex / Wake on LAN® / TCP/IP Offload Engine (TOE) / Alert Standard Format 2.0 / two RJ-45 ports in rear

Optical / diskette 8X-24X⁶ CD-RW/DVD-ROM / USB only

Front & Rear ports *Front:* two USB (Vers 2.0), graphics (DB-15) *Rear:* two USB (Vers 2.0), serial (9-pin), graphics (DB-15), two ethernet (RJ-45), one RJ-45 (sys mgmt), one SAS / no parallel port

Graphics SVGA / ATI® RN50(ES1000) / front and rear ports / on planar / 16MB DDR std/max / 32-bit/33MHz PCI 2.3

Security Power-on password / administrator password / unattended boot / selectable boot sequence

Systems mgmt **IBM Integrated Baseboard Management Controller (iBMC)** / IPMI 2.0 / H8S2166 / on planar / provides system and environmental monitoring such as temp, optional disks, fans, power supply / supports opt. Remote Supervisor Adapter II Slimline with 140-pin connector on planar for continuous power (no external power required)

Diagnostics **Drop down Light Path Diagnostics** panel providing LED map to failing part (located on front panel)

Software **ServerGuide™** (CD-ROM installation and configuration utilities), IBM Director systems mgmt, others

Keyboard / mouse None standard (because rack-based) / USB only

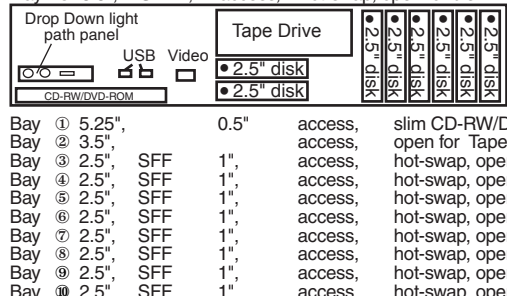
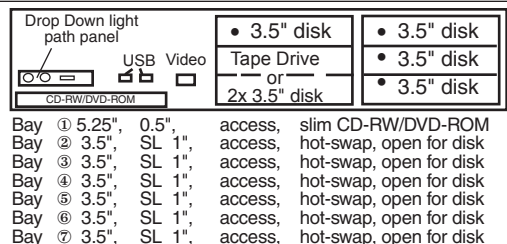
Power supply *Std/Max:* one/two 835 watt hot-swap / rear access / auto restart / redundant with two power supplies / auto-sensing

Fans **Calibrated Vectored Cooling™** *Std:* five fans; *Max:* ten (five fans with optional second power supply) / redundant with ten fans installed; *All:* variable speed / hot-swap / PFA

Prerequisites Monitor, keyboard, mouse, SAS/SATA disk, rack, OS

Xeon E5405 2.0GHz/1333MHz/12MB L2 Cache	44E5074
Xeon E5420 2.5GHz/1333MHz/12MB L2 Cache	44R5632
Xeon E5430 2.66GHz/1333MHz/12MB L2 Cache	44E5077
1GB PC2-5300 FBD (2 x 512 MB)	39M5782
2GB PC2-5300 FBD (2 x 1GB)	39M5785
4GB PC2-5300 FBD (2 x 2GB)	39M5791
8GB PC2-5300 FBD (2 x 4GB)	39M5797
IBM ServeRAID-8k Adapter	25R8064
IBM Remote Supervisor Adapter II Slim	39Y9566
250GB 7.2K rpm SATA II hot-swap	39M4526
500GB 7.2K rpm SATA hot-swap 300MB/sec	39M4530
750GB 7.2K rpm SATA hot-swap 300MB/sec	43W5756
1TB 7.2K rpm SATA hot-swap 300MB/sec	43W7676
300GB 15K-rpm SAS HS 3.5" (MM carrier) HDD	43X0802
73.4GB 10K-rpm SAS SFF HS 2.5" (SFF tray) HDD	40K1052
146GB 10K-rpm SAS SFF HS 2.5" (SFF tray) HDD	43X0824
73.4GB 15K-rpm SAS SFF HS 2.5" (SFF tray) HDD	43X0837
73.4GB 15K-rpm SAS HS 3.5" (MM carrier) HDD	40K1043
146.4GB 15K-rpm SAS HS 3.5" (MM carrier) HDD	40K1044
835 Watt Hot-swap Power Supply Option (US)	40K1905
PCI Riser Card PCI-X Option	40K1908

Other options at ibm.com/products/us



- Quick release adapter slots (no screws)
- Configuration/Setup Utility: F1 at startup
- Diagnostics (PC-Doctor™): F2 at startup
- Network Boot: F12 at startup
- Front indicators LEDs: Power-on LED, HDD activity LED, locator LED, system information LED, and system-error LED
- Predictive failure analysis on disk options, memory, processors, VRMs, power supplies, and fans in conjunction with IBM Director can alert the system administrator of an imminent component failure
- Rack: H 3.36" x W 17.5" x D 27.5" (H 85.4mm x W 443.6mm x D 698mm)
- 46.5 to 65 pounds
- Stealth black color

LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- 3 year on site warranty service upgrade options (in eligible locations)⁷
 - 9 hr coverage, Mon-Fri excluding holidays, 4 hr response time (ServicePac³ 21P2077)
 - 24 hr x 7 day coverage, 4 hour average response time (ServicePac 21P2078)
 - 24 hr x 7 day coverage, 2 hour average response time (ServicePac 21P2093)
- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

Slot 1*: PCI-Express x8(x8 Links) or full length 64-bit 133MHz 3.3v PCI-X
 Slot 2*: PCI-Express x8(x8 Links) or half length 64-bit 133MHz 3.3v PCI-X
 Slot 3: low-profile, PCI-Express x8(x4 Links)
 Slot 4: low-profile, PCI-Express x8(x4 Links)
 *slots 1 & 2 riser determines PCI-Express or PCI-X

See footnotes for important warranty information

Max internal disk capacity:
 3.5" SAS models: 1.8TB² with six 300GB SL disks
 3.5" SATA models: 4.5TB² with six 750GB disks
 2.5" SAS models: 1.2TB² with eight 146GB SFF disks

IBM® Type-model	Qty x Processor/Core	L2 cache	Memory	Disk	Disk controller	Optical	Power Supply	Disk bays	Slots x bays	Ethernet	Available date
7979-82x	1 x Xeon™ X5470 3.3GHz/QC	12MB	2GB	3.5" Open	SAS/SATA	Combo	1 x 835W	6 hot-swap	4x6	2 x GB	Nov 2008
7979-8Bx	1 x Xeon X5470 3.3GHz/QC	12MB	2GB	2.5" Open	SAS	Combo	1 x 835W	8 hot-swap	4x8	2 x GB	Nov 2008

Positioning Processor	2U Rack with high availability, scalability and expandability for application-serving Web environments Up to 2 x Intel® Xeon Processor 3.3GHz with 1333MHz FSB / Quad-Core / Extended Memory 64 Technology (EM64T) / Enhanced Intel Speedstep Technology (EIST)
L2 cache	12MB / std and max / at processor speed
SMP support	2-way SMP / up to two Xeon Processors (same speed/cache size)
Implementation	Systemboard contains two Intel LGA771 sockets, twelve memory gold-connector DIMM slots, four PCI-E slots or two PCI-E slots and two PCI-X slots, integrated SAS, ethernet and graphics controllers
Memory	2GB std / 48GB ¹³ max / two slots used / ten slots available / PC2-5300 667MHz FBD 240-pin ECC DDR2-SDRAM DIMMs / dual channel / 2-way memory interleave / DIMMs must be installed in matched pairs [a bank] / Fully Buffered / Error Checking and Correcting (ECC) (corrects any x4 or x8 SDRAM device failure, detects all two wire faults on DIMMs, detects all permutations of two x4 DRAM failures, detects any two bits in error within 8 bytes of data, corrects any single bit error within 8 bytes of data) / Active Memory™: memory mirroring, online-spare memory, Chipkill
SAS/SATA controller	Adaptec® AIC-9580W / dual channel SAS controller / eight port SAS or SATA (300MB/sec SAS) (150MB/sec SATA) / hot-swap / on planar / PCI-Express / supports RAID 0, 1 & 10 / optional IBM ServeRAID™-8k Adaptor for low-cost RAID 0, 1, 1E, 10, 5 & 6 (installed on reserved internal connector) / simultaneous SAS and SATA disks environments are unsupported
SAS connectors	One internal connection wired to DASD backplane / one external connector
IDE controller/cable	Enhanced IDE/ATA 100 controller in Enterprise South Bridge / one connector on planar / one 1-drop IDE cable (CD-RW/DVD-ROM)
Disk - capacity	None standard / supports 7200-15000 rpm disks / one backplane
Disk - bays	Some: six hot-swap 3.5" SAS or SATA HDD / some: eight hot-swap 2.5" SAS HDD / filler panels installed in open bays
Tape backup	Optional internal and external / 3.5" / USB or SATA
Mechanical Chipset	EIA 19" Rack (2U⁴) / rack-mount only / supported in IBM NetBAY™ Rack products / no rack to tower conversion Intel 5000P chipset / Intel Memory Controller Hub (MCH) provides riser connector for either two PCI-Express x8 slots or two 64-bit/133MHz PCI-X slots / Enterprise Southbridge(ESB-2E) provides: two PCI-Express x8 slot with x4 Links, ATI video, Dual Gigabit ethernet, IDE, USB, SMBus, LPC bus to NS PC8742XVUL for Super I/O
Bus slots	(See below) Four PCI-Express x8 or two PCI-X 1.0 and two PCI-Express x8 / no hot-swap Active™ PCI slots
Ethernet controller	Dual gigabit 10/100/1000 ethernet ports / Two Broadcom® 5708 / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-Express / full duplex / Wake on LAN® / TCP/IP Offload Engine (TOE) / Alert Standard Format 2.0 / two RJ-45 ports in rear
Optical / diskette	8X-24X⁶ CD-RW/DVD-ROM / USB only
Front & Rear ports	Front: two USB (Vers 2.0), graphics (DB-15) Rear: two USB (Vers 2.0), serial (9-pin), graphics (DB-15), two ethernet (RJ-45), one RJ-45 (sys mgmt), one SAS / no parallel port
Graphics	SVGA / ATI® RN50(ES1000) / front and rear ports / on planar / 16MB DDR std/max / 32-bit/33MHz PCI 2.3
Security	Power-on password / administrator password / unattended boot / selectable boot sequence
Systems mgmt	IBM Integrated Baseboard Management Controller(BMC) / IPMI 2.0 / H8S2166 / on planar / provides system and environmental monitoring such as temp, optional disks, fans, power supply / supports opt. Remote Supervisor Adapter II Slimline with 140-pin connector on planar for continuous power (no external power required)

Diagnosics	Drop down Light Path Diagnostics panel providing LED map to failing part (located on front panel)	Xeon X5470 3.3GHz/1333MHz/12MB L2 Cache	46M1034
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director systems mgmt, others	1GB PC2-5300 FBD (2 x 512 MB)	39M5782
Keyboard / mouse	None standard (because rack-based) / USB only	2GB PC2-5300 FBD (2 x 1GB)	39M5785
Power supply	Std/Max: one/two 835 watt hot-swap / rear access / auto restart / redundant with two power supplies / auto-sensing	4GB PC2-5300 FBD (2 x 2GB)	39M5791
Fans	Calibrated Vectors Cooling™ Std: five fans; Max: ten (five fans with optional second power supply) / redundant with ten fans installed; All: variable speed / hot-swap / PFA	8GB PC2-5300 FBD (2 x 4GB)	39M5797
Prerequisites	Monitor, keyboard, mouse, SAS/SATA disk, rack, OS	IBM ServeRAID-8k Adapter	25R8064

2U Rack with 3.5" SAS

- Bay ① 5.25", 0.5", access, slim CD-RW/DVD-ROM
- Bay ② 3.5", SL 1", access, open for Tape Drive
- Bay ③ 3.5", SL 1", access, hot-swap, open for disk
- Bay ④ 3.5", SL 1", access, hot-swap, open for disk
- Bay ⑤ 3.5", SL 1", access, hot-swap, open for disk
- Bay ⑥ 3.5", SL 1", access, hot-swap, open for disk
- Bay ⑦ 3.5", SL 1", access, hot-swap, open for disk

2U Rack with 2.5" SAS

- Bay ① 5.25", 0.5" access, slim CD-RW/DVD-ROM
- Bay ② 3.5", SFF 1", access, open for Tape Drive
- Bay ③ 2.5", SFF 1", access, hot-swap, open for disk
- Bay ④ 2.5", SFF 1", access, hot-swap, open for disk
- Bay ⑤ 2.5", SFF 1", access, hot-swap, open for disk
- Bay ⑥ 2.5", SFF 1", access, hot-swap, open for disk
- Bay ⑦ 2.5", SFF 1", access, hot-swap, open for disk
- Bay ⑧ 2.5", SFF 1", access, hot-swap, open for disk
- Bay ⑨ 2.5", SFF 1", access, hot-swap, open for disk
- Bay ⑩ 2.5", SFF 1", access, hot-swap, open for disk

• = Hot-swap (HS)

Slot 1*: PCI-Express x8(x8 Links) or full length 64-bit 133MHz 3.3v PCI-X
 Slot 2*: PCI-Express x8(x8 Links) or half length 64-bit 133MHz 3.3v PCI-X
 Slot 3: low-profile, PCI-Express x8(x4 Links)
 Slot 4: low-profile, PCI-Express x8(x4 Links)
 *slots 1 & 2 riser determines PCI-Express or PCI-X

See footnotes for important warranty information

300GB 15K-rpm SAS HS 3.5" (MM carrier) HDD	43X0802
73.4GB 10K-rpm SAS SFF HS 2.5" (SFF tray) HDD	40K1052
146GB 10K-rpm SAS SFF HS 2.5" (SFF tray) HDD	43X0824
73.4GB 15K-rpm SAS SFF HS 2.5" (SFF tray) HDD	43X0837
73.4GB 15K-rpm SAS HS 3.5" (MM carrier) HDD	40K1043
146.4GB 15K-rpm SAS HS 3.5" (MM carrier) HDD	40K1044
835 Watt Hot-swap Power Supply Option (US)	40K1905
PCI Riser Card PCI-X Option	40K1908

Other options at ibm.com/products/us

LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- 3 year on site warranty service upgrade options (in eligible locations):⁷
 - 9 hr coverage, Mon-Fri excluding holidays, 4 hr response time (ServicePac® 21P2077)
 - 24 hr x 7 day coverage, 4 hour average response time (ServicePac 21P2078)
 - 24 hr x 7 day coverage, 2 hour average response time (ServicePac 21P2093)
- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

Max internal disk capacity:
 3.5" SATA models: 4.5TB² with six 750GB disks
 2.5" SAS models: 1.2TB² with eight 146GB SFF disks

IBM® Type-model	Qty x Processor	Speed/Core	L2 Cache	Optical	Memory	Disk / Controller	Disk bays	Slots x bays	Ethernet	Warranty ³ (years)	Available date
7985 - 11U	1 x Opteron™ 2210	1.8GHz/DC	2x1MB	CD-RW/DVD	2x512MB	Open/SAS	8-2.5"HS	4x10	Dual Gigabit	3	Nov 2006
7985 - 1AU	1 x Opteron 2210	1.8GHz/DC	2x1MB	CD-RW/DVD	2x512MB	Open/SAS/SATA	6-3.5"HS	4x7	Dual Gigabit	3	Nov 2006
7985 - 21U	1 x Opteron 2212	2.0GHz/DC	2x1MB	CD-RW/DVD	2x512MB	Open/SAS	8-2.5"HS	4x10	Dual Gigabit	3	Nov 2006
7985 - 2AU	1 x Opteron 2212	2.0GHz/DC	2x1MB	CD-RW/DVD	2x512MB	Open/SAS/SATA	6-3.5"HS	4x7	Dual Gigabit	3	Nov 2006
7985 - 41U	1 x Opteron 2216	2.4GHz/DC	2x1MB	CD-RW/DVD	2x512MB	Open/SAS	8-2.5"HS	4x10	Dual Gigabit	3	Nov 2006
7985 - 4AU	1 x Opteron 2216	2.4GHz/DC	2x1MB	CD-RW/DVD	2x512MB	Open/SAS/SATA	6-3.5"HS	4x7	Dual Gigabit	3	Nov 2006
7985 - 51U	1 x Opteron 2218	2.6GHz/DC	2x1MB	CD-RW/DVD	2x512MB	Open/SAS	8-2.5"HS	4x10	Dual Gigabit	3	Nov 2006
7985 - 5AU	1 x Opteron 2218	2.6GHz/DC	2x1MB	CD-RW/DVD	2x512MB	Open/SAS/SATA	6-3.5"HS	4x7	Dual Gigabit	3	Nov 2006

Positioning Rack-optimized, dual-socket, dual-core business performance server
Processor(s) Up to two AMD® Opteron 2000 Series Dual Core Processors up to 2.6GHz¹ / simultaneously supports 32-bit and 64-bit computing
L2 cache 1MB / per core / at processor speed
SMP support 2-way SMP / up to two Opteron Processors (same speed/cache size required)
Implementation Systemboard contains two AM2 sockets, sixteen memory DIMM slots, integrated SAS & SATA, dual ethernet, graphics, one PCI-E x4 slot, two PCI-E x8 slots and one HyperTransport (HTx) slot via riser card

Memory 1 GB std / 32GB max¹³ per processor (64GB max per dual cpu system) / single cpu system: two slots used, six slots available; dual cpu system: four slots used, twelve slots available / PC-5300 667MHz registered 240-pin DDR2-SDRAM RDIMMs / sixteen DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / dual channel / two-way interleaving / Error Checking and Correcting (ECC) via 16-bit Checksum / Chipkill™ on 1, 2 and 4GB DIMMs / online hot-spare memory / hardware scrubbing

SAS controller Adaptec® AIC-9580W / dual channel SAS controller / eight port SAS (300MB/sec SAS) / hot-swap / on planar / PCI-Express / supports RAID 0, 1 & 10 / optional IBM ServeRAID™-8k Adaptor for low-cost RAID 0, 1, 1E, 10, 5 & 6 (installed on reserved internal connector)

SAS connectors One internal connection wired to DASD backplane
SATA disk controller Integrated SATA II controller / provided by HT1000 South Bridge / four port
IDE controller/cable Enhanced IDE/ATA 100 controller integrated in South Bridge / one connector on planar / one 1-drop IDE cable (CD-RW/DVD-ROM)
Disk - capacity None standard / supports 7200-15000 rpm disks / one backplane
Disk - bays Some: six hot-swap 3.5" SAS HDD (4 3.5" HDD bays w/tape option) / some: eight hot-swap 2.5" SAS HDD / filler panels installed in each disk bay
Tape backup Optional internal and external / 3.5" / USB or SATA

Mechanical EIA 19" Rack (2U*) / rack-mount only / supported in IBM NetBAY™ Rack products / no rack to tower conversion
Chipset ServerWorks™ Chipset / HT2100 System I/O Controller provides: two PCI-Express x8 slot, one PCI-Express x4 slot, HyperTransport bridge to HT1000 South Bridge / HT1000 South Bridge provides: PCI-X, USB(2.0), ATI video, SATA, Dual GB ethernet, IDE and LPC bus to NS PC87427 for Super I/O

Bus slots (See detail below) one full-height, full-length HTx, two low profile PCI-E x8 and one low profile PCI-E x4 / option to convert HTx to PCI-X or PCI-E x16 slot

Ethernet Two gigabit 10/100/1000 ethernet ports / Broadcom® 5706 / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-X 64-bit 100MHz / TCP/IP offload engine (TOE) / full duplex / Wake on LAN® / two rear RJ-45 ports

Optical / diskette 24x/10x/24x/8x CD-RW/DVD / IDE / Diskette none (USB diskette optional)
Ports Front: two USB (Vers 2.0), DB-15 graphics / Rear: four USB (Vers 2.0), serial (9-pin), two ethernet (RJ-45), system management (RJ-45), analog DB-15 graphics / parallel port not supported

Graphics SVGA / ATI® ES1000(RN50b) / on planar / 16MB SDRAM std/max
Keyboard / mouse None standard (because rack-based) / USB only

Security Power-on and administrator passwords / unattended boot / selectable boot

Systems mgmt IBM Integrated Baseboard Management Controller (BMC) / H82166 / IPMI 2.0 / IBM Active Energy Manager™

Diagnostics Drop down Light Path Diagnostics panel providing LED map to failing part (located on front panel)

Software ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director™, and others

Power supply Std/Max: one/two 835 watt hot-swap / rear access / auto restart / redundant with two power supplies / auto-sensing

Fans Calibrated Vectored Cooling™ Std: five fans; Max: ten (five fans with optional second power supply) / redundant with ten fans installed; All: variable speed / hot-swap / PFA

Prerequisites Monitor, keyboard, mouse, disk, rack, OS

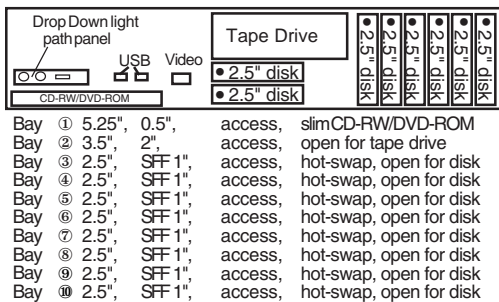
Dual Core AMD Opteron Processor Model 2210	25R8938
Dual Core AMD Opteron Processor Model 2212	25R8939
Dual Core AMD Opteron Processor Model 2216	25R8940
Dual Core AMD Opteron Processor Model 2218	40K1212
1GB (2x512) PC2-5300 CL5 ECC DDR2 RDIMM Kit	41Y2759
2GB (2x1GB) PC2-5300 CL5 ECC DDR2 RDIMM Kit	41Y2762
4GB (2x2GB) PC2-5300 CL5 ECC DDR2 RDIMM Kit	41Y2765
8GB (2x4GB) PC2-5300 CL5 ECC DDR2 RDIMM Kit	41Y2768
IBM 73GB 10K 3.5" SAS Hot-Swap HDD*	40K1039
IBM 146GB 10K 3.5" SAS Hot-Swap HDD*	40K1040
IBM 300GB 10K 3.5" SAS Hot-Swap HDD*	40K1041
IBM 36GB 15K 3.5" SAS Hot-Swap HDD*	40K1042
IBM 73GB 15K 3.5" SAS Hot-Swap HDD*	40K1043
IBM 146GB 15K 3.5" SAS Hot-Swap HDD*	40K1044
IBM 36GB 15K SAS SFF Hot-Swap HDD*	40K1051
IBM 73GB 15K SAS SFF Hot-Swap HDD*	40K1052
IBM 500GB 7.2K 3.5" SATA Hot-Swap HDD*	39M4530
IBM 750GB 3.5" SATA Hot-Swap HDD*	43W7576
IBM SAS HBA Controller	25R8060
PCI-E x16 Riser Card	40K7428
PCI-X Riser Card	40K7427
IBM Remote Supervisor Adapter II Slimline	39Y9566
IBM ServeRAID 8k SAS Controller	25R8064
Qlogic Infinipath HTx Infiniband Adapter	41Y4519
835W Redundant Power Supply (US)	40K1905

Other options at ibm.com/products/us

- H 1.72" x W 17.3" x D 25.7" (H 43.7mm x W 439.9mm x D 653.3mm)
- 26 to 32 pounds
- Stealth black color
- Quick release adapter slots (no screws)
- Configuration/Setup Utility: F1 at startup
- Diagnostics (PC-Doctor™): F2 at startup
- Network Boot: F12 at startup

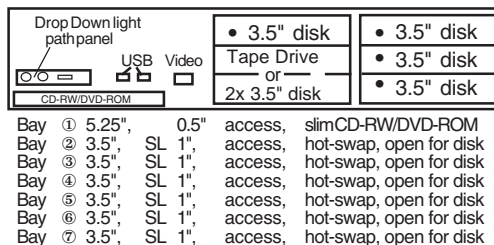
- Front indicators LEDs: Power-on LED, HDD activity LED, locator LED, system information LED, and system-error LED
- Predictive failure analysis on disk options, memory, processors, VRMs, power supplies, and fans in conjunction with IBM Director can alert the system administrator of an imminent component failure

2U Rack with 2.5" SAS



Maximum internal disk capacity¹³:
 4.5TB with six 750GB SATA disks or ● = Hot-swap (HS)
 1.8TB with six 300GB SAS disks

2U Rack with 3.5" SAS/SATA



Slot 1: Riser slot for PCI-Express x16(x16 Links), 64-bit 133MHz 3.3v PCI-X or HTx risers
 Slot 2: low-profile, PCI-Express x8(x4 Links)
 Slot 3: low-profile, PCI-Express x8(x8 Links)
 Slot 4: low-profile, PCI-Express x8(x8 Links)

LIMITED WARRANTY³

- 3 year parts and labor International Warranty Service³ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- On site service upgrade options (in eligible locations):⁷
 - 1 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9403)
 - 2 year IOR 24x7, 4 hr avg response (ServicePac part num 96P2123)
 - 2 year IOR 24x7, 2 hr avg response (ServicePac part num 96P2124)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 21P2078)
 - 3 year IOR 9x5, NBD response (ServicePac part num 69P9258)
- Other ServicePac options at www.ibm.com/services/us/its/pdf/wamomxeu.pdf
- 24x7¹⁴ toll-free support for warranty issues during the warranty period⁵

IBM® Type-model	Qty x Processor	Speed/Core	L2 Cache	Optical	Memory	Disk / Controller	Disk bays	Slots x bays	Ethernet	Warranty ³ (years)	Available date
7985 -12U	1 x Opteron™ 2210HE	1.8GHz/DC	2x1MB	CD-RW/DVD	2x512MB	Open/SAS	8-2.5"HS	4x10	Dual Gigabit	3	Mar 2007
7985 -1BU	1 x Opteron 2210HE	1.8GHz/DC	2x1MB	CD-RW/DVD	2x512MB	Open/SAS/SATA	6-3.5"HS	4x7	Dual Gigabit	3	Mar 2007
7985 - 61U	1 x Opteron 2220	2.8GHz/DC	2x1MB	CD-RW/DVD	2x512MB	Open/SAS	8-2.5"HS	4x10	Dual Gigabit	3	Mar 2007
7985 - 6AU	1 x Opteron 2220	2.8GHz/DC	2x1MB	CD-RW/DVD	2x512MB	Open/SAS/SATA	6-3.5"HS	4x7	Dual Gigabit	3	Mar 2007

Positioning
Processor(s)
L2 cache
SMP support
Implementation

Rack-optimized, dual-socket, dual-core business performance server
 Up to two AMD® Opteron 2000 Series Dual Core Processors up to 2.8GHz¹ / simultaneously supports 32-bit and 64-bit computing
1MB / per core / at processor speed
2-way SMP / up to two Opteron Processors (same speed/cache size required)
 Systemboard contains two AM2 sockets, sixteen memory DIMM slots, integrated SAS & SATA, dual ethernet, graphics, one PCI-E x4 slot, two PCI-E x8 slots and one HyperTransport (HTx) slot via riser card

Memory

1 GB std / 32GB max¹³ per processor (64GB max per dual cpu system) / *single cpu system: two slots used, six slots available; dual cpu system: four slots used, twelve slots available* / **PC-5300 667MHz registered 240-pin DDR2-SDRAM RDIMMs** / sixteen DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / dual channel / two-way interleaving / **Error Checking and Correcting (ECC)** via 16-bit Checksum / **Chipkill™** on 1, 2 and 4GB DIMMs / online hot-spare memory / hardware scrubbing

SAS controller
SAS connectors
SATA disk controller
IDE controller/cable
Disk - capacity
Disk - bays
Tape backup

Adaptec® AIC-9580W / dual channel SAS controller / eight port SAS (300MB/sec SAS) / hot-swap / on planar / PCI-Express / supports RAID 0, 1 & 10 / optional IBM ServeRAID™-8k Adaptor for low-cost RAID 0, 1, 1E, 10, 5 & 6 (installed on reserved internal connector)
 One internal connection wired to DASD backplane
Integrated SATA II controller / provided by HT1000 South Bridge / four port
 Enhanced IDE/ATA 100 controller integrated in South Bridge / one connector on planar / one 1-drop IDE cable (CD-RW/DVD-ROM)
 None standard / supports 7200-15000 rpm disks / one backplane
 Some: six hot-swap 3.5" SAS HDD (4 3.5" HDD bays w/tape option) / some: eight hot-swap 2.5" SAS HDD / filler panels installed in each disk bay
 Optional internal and external / 3.5" / USB or SATA

Mechanical
Chipset
Bus slots
Ethernet
Optical / diskette
Ports
Graphics
Keyboard / mouse

EIA 19" Rack (2U⁴) / rack-mount only / supported in IBM NetBAY™ Rack products / no rack to tower conversion
ServerWorks™ Chipset / HT2100 System I/O Controller provides: two PCI-Express x8 slot, one PCI-Express x4 slot, HyperTransport bridge to HT1000 South Bridge / **HT1000 South Bridge** provides: PCI-X, USB(2.0), ATI video, SATA, Dual GB ethernet, IDE and LPC bus to NS PC87427 for Super I/O
 (See detail below) one full-height, full-length HTx, two low profile PCI-E x8 and one low profile PCI-E x4 / option to convert HTx to PCI-X or PCI-E x16 slot
 Two gigabit 10/100/1000 ethernet ports / Broadcom® 5706 / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-X 64-bit 100MHz / TCP/IP offload engine (TOE) / full duplex / Wake on LAN® / two rear RJ-45 ports
 24x/10x/24x/8x CD-RW/DVD / IDE / *Diskette* none (USB diskette optional)
Front: two USB (Vers 2.0), DB-15 graphics / *Rear:* four USB (Vers 2.0), serial (9-pin), two ethernet (RJ-45), system management (RJ-45), analog DB-15 graphics / parallel port not supported
 SVGA / ATI® ES1000(RN50b) / on planar / 16MB SDRAM std/max
 None standard (because rack-based) / USB only

Security
Systems mgmt
Diagnostics
Software
Power supply
Fans
Prerequisites

Power-on and administrator passwords / unattended boot / selectable boot
IBM Integrated Baseboard Management Controller (BMC) / H82166 / IPMI 2.0 / IBM Active Energy Manager™
Drop down Light Path Diagnostics panel providing LED map to failing part (located on front panel)
ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director™, and others
Std/Max: one/two 835 watt hot-swap / rear access / auto restart / redundant with two power supplies / auto-sensing
Calibrated Vectored Cooling™ *Std:* five fans; *Max:* ten (five fans with optional second power supply) / redundant with ten fans installed; *All:* variable speed / hot-swap / PFA Monitor, keyboard, mouse, disk, rack, OS

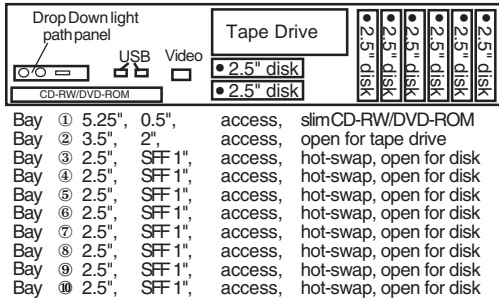
Dual Core AMD Opteron Processor Model 2210HE	43W7271
Dual Core AMD Opteron Processor Model 2220	43W7220
1GB (2x512) PC2-5300 CL5 ECC DDR2 RDIMM Kit	41Y2759
2GB (2x1GB) PC2-5300 CL5 ECC DDR2 RDIMM Kit	41Y2762
4GB (2x2GB) PC2-5300 CL5 ECC DDR2 RDIMM Kit	41Y2765
8GB (2x4GB) PC2-5300 CL5 ECC DDR2 RDIMM Kit	41Y2768
IBM 73GB 10K 3.5" SAS Hot-Swap HDD*	40K1039
IBM 146GB 10K 3.5" SAS Hot-Swap HDD*	40K1040
IBM 300GB 10K 3.5" SAS Hot-Swap HDD*	40K1041
IBM 36GB 15K 3.5" SAS Hot-Swap HDD*	40K1042
IBM 73GB 15K 3.5" SAS Hot-Swap HDD*	40K1043
IBM 146GB 15K 3.5" SAS Hot-Swap HDD*	40K1044
IBM 36GB 15K SAS SFF Hot-Swap HDD*	40K1051
IBM 73GB 15K SAS SFF Hot-Swap HDD*	40K1052
IBM 500GB 7.2K 3.5" SATA Hot-Swap HDD*	39M4530
IBM 750GB 3.5" SATA Hot-Swap HDD*	43W7576
IBM SAS HBA Controller	25R8060
PCI-E x16 Riser Card	40K7428
PCI-X Riser Card	40K7427
IBM Remote Supervisor Adapter II Slimline	39Y9566
IBM ServeRAID 8k SAS Controller	25R8064
Qlogic Infinipath HTx Infiniband Adapter	41Y4519
835W Redundant Power Supply (US)	40K1905

Other options at ibm.com/products/us

- H 1.72" x W 17.3" x D 25.7" (H 43.7mm x W 439.9mm x D 653.3mm)
- 26 to 32 pounds
- Stealth black color
- Quick release adapter slots (no screws)
- Configuration/Setup Utility: F1 at startup
- Diagnostics (PC-Doctor™): F2 at startup
- Network Boot: F12 at startup

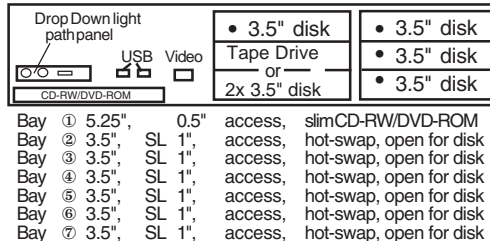
- Front indicators LEDs: Power-on LED, HDD activity LED, locator LED, system information LED, and system-error LED
- Predictive failure analysis on disk options, memory, processors, VRMs, power supplies, and fans in conjunction with IBM Director can alert the system administrator of an imminent component failure

2U Rack with 2.5" SAS



Maximum internal disk capacity¹³:
 4.5TB with six 750GB SATA disks or • = Hot-swap (HS)
 1.8TB with six 300GB SAS disks

2U Rack with 3.5" SAS/SATA



Slot 1: Riser slot for PCI-Express x16(x16 Links), 64-bit 133MHz 3.3v PCI-X or HTx risers
 Slot 2: low-profile, PCI-Express x8(x4 Links)
 Slot 3: low-profile, PCI-Express x8(x8 Links)
 Slot 4: low-profile, PCI-Express x8(x8 Links)

LIMITED WARRANTY³

- **3 year parts and labor International Warranty Service³**
 On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- **On site service upgrade options (in eligible locations):⁷**
 - 1 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9403)
 - 2 year IOR 24x7, 4 hr avg response (ServicePac part num 96P2123)
 - 2 year IOR 24x7, 2 hr avg response (ServicePac part num 96P2124)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 21P2078)
 - 3 year IOR 9x5, NBD response (ServicePac part num 69P9258)
- **Other ServicePac options at www.ibm.com/services/us/its/pdf/wamomxeu.pdf**
- **24x7¹⁴ toll-free support for warranty issues during the warranty period⁵**

IBM® Type-model	Qty x Processor	Speed/Core	L2 Cache	Optical	Memory	Disk / Controller	Disk bays	Slots x bays	Ethernet	Warranty ³ (years)	Available date
7943 - 32U	1 x Opteron™ 2352	2.1GHz/QC	2MB	CD-RW/DVD	2x1GB	Open/SAS/SATA	8-2.5"HS	4x10	Dual Gigabit	3	July 2008
7943 - 34U	1 x Opteron 2352	2.1GHz/QC	2MB	CD-RW/DVD	2x1GB	Open/SAS/SATA	6-3.5"HS	4x7	Dual Gigabit	3	July 2008
7943 - 52U	1 x Opteron 2356	2.3GHz/QC	2MB	CD-RW/DVD	2x1GB	Open/SAS/SATA	8-2.5"HS	4x10	Dual Gigabit	3	July 2008
7943 - 22U	1 x Opteron 2344	1.7GHz/QC	2MB	CD-RW/DVD	2x1GB	Open/SAS/SATA	6-3.5"HS	4x7	Dual Gigabit	3	Aug 2008
7943 - E1U	1 x Opteron 2344	1.7GHz/QC	2MB	CD-RW/DVD	4x1GB	Open/SAS/SATA	6-3.5"HS	4x7	Dual Gigabit	3	Aug 2008
7943 - E2U	1 x Opteron 2352	2.1GHz/QC	2MB	CD-RW/DVD	4x1GB	Open/SAS/SATA	8-2.5"HS	4x10	Dual Gigabit	3	Aug 2008

Positioning Processor(s) **Rack optimized, Quad-Core, Dual-Socket business performance server**
 Up to two AMD® Opteron 2000 Series Quad-Core Processors up to 2.3GHz¹ / simultaneously supports 32 and 64-bit computing
L2 cache **512KB** / per core / at processor speed
SMP support **2-way SMP** / up to two Opteron Processors (same speed cache size required)
Implementation Systemboard contains two AM2 sockets, sixteen memory DIMM slots, integrated SAS & SATA, dual ethernet, graphics, one PCI-E x4 slot, two PCI-E x8 slots and one HyperTransport (HTx) slot via riser card

Memory **2 GB** std / 32GB max¹³ per processor (64GB max per dual cpu system) / *single cpu system*: two slots used, six slots available; *dual cpu system*: four slots used, twelve slots available / **PC-5300 667MHz registered 240-pin DDR2-SDRAM RDIMMs** / sixteen DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / dual channel / two-way interleaving / **Error Checking and Correcting (ECC)** via 16-bit Checksum / **Chipkill™** on 1, 2 and 4GB DIMMs / online hot-spare memory / hardware scrubbing

SAS controller **Adaptec® AIC-9580W / dual channel SAS controller / eight port SAS** (300MB/sec SAS) / hot-swap / on planar / PCI-Express / supports **RAID 0, 1 & 10** / optional IBM ServeRAID™-8k Adaptor for low-cost RAID 0, 1, 1E, 10, 5 & 6 (installed on reserved internal connector)
SAS connectors One internal connection wired to DASD backplane
SATA disk controller **Integrated SATA II controller** / provided by HT1000 South Bridge / four port
IDE controller/cable Enhanced IDE/ATA 100 controller integrated in South Bridge / one connector on planar / one 1-drop IDE cable (CD-RW/DVD-ROM)
Disk - capacity None standard / supports 7200-15000 rpm disks / one backplane
Disk - bays Some: six hot-swap 3.5" SAS HDD (4 3.5" HDD bays w/tape option) / some: eight hot-swap 2.5" SAS HDD / filler panels installed in each disk bay
Tape backup Optional internal and external / 3.5" / USB or SATA

Mechanical Chipset **EIA 19" Rack (2U⁴)** / rack-mount only / supported in IBM NetBAY™ Rack products / no rack to tower conversion
ServerWorks™ Chipset / HT2100 System I/O Controller provides: two PCI-Express x8 slot, one PCI-Express x4 slot, HyperTransport bridge to HT1000 South Bridge / **HT1000 South Bridge** provides: PCI-X, USB(2.0), ATI video, SATA, Dual GB ethernet, IDE and LPC bus to NS PC87427 for Super I/O
Bus slots (See detail below) one full-height, full-length HTx, two low profile PCI-E x8 and one low profile PCI-E x4 / option to convert HTx to PCI-X or PCI-E x16 slot
Ethernet Dual Gigabit Ethernet ports / Broadcom® 5706 / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-X 64-bit 100MHz / TCP/IP offload engine (TOE) / full duplex / Wake on LAN® / two rear RJ-45 ports
Optical / diskette Ports 24x/10x/24x/8x CD-RW/DVD / IDE / *Diskette* none (USB diskette optional)
Graphics Front: two USB (Vers 2.0), DB-15 graphics / Rear: four USB (Vers 2.0), serial (9-pin), two ethernet (RJ-45), system manage-ment (RJ-45), analog DB-15 graphics / parallel port not supported
Keyboard / mouse SVGA / ATI® ES1000(RN50b) / on planar / 16MB SDRAM std/max
 None standard (because rack-based) / USB only

Security Power-on and administrator passwords / unattended boot / selectable boot
Systems mgmt **IBM Integrated Baseboard Management Controller (BMC)** / H82166 / IPMI 2.0 / **IBM Active Energy Manager™**
Diagnostics **Drop down Light Path Diagnostics** panel providing LED map to failing part (located on front panel)
Software **ServerGuide™** (CD-ROM installation and configuration utilities), IBM Director™, and others
Power supply *Std/Max*: one/two 835 watt hot-swap / rear access / auto restart / redundant with two power supplies / auto-sensing
Fans **Calibrated Vectored Cooling™** Std: five fans; Max: ten (five fans with optional second power supply) / redundant with ten fans installed; All: variable speed / hot-swap / PFA
Prerequisites Monitor, keyboard, mouse, disk, rack, OS

Quad Core AMD Opteron Processor Model 2344	46M2282
Quad Core AMD Opteron Processor Model 2352	44R5930
Quad Core AMD Opteron Processor Model 2356	44R5932
1GB (2x512) PC2-5300 CL5 ECC DDR2 RDIMM	41Y2759
2GB (2x1GB) PC2-5300 CL5 ECC DDR2 RDIMM	41Y2762
4GB (2x2GB) PC2-5300 CL5 ECC DDR2 RDIMM	41Y2765
8GB (2x4GB) PC2-5300 CL5 ECC DDR2 RDIMM	41Y2768
IBM 73GB 10K 3.5" SAS Hot-Swap HDD	40K1039
IBM 146GB 10K 3.5" SAS Hot-Swap HDD	40K1040
IBM 300GB 10K 3.5" SAS Hot-Swap HDD	40K1041
IBM 36GB 15K 3.5" SAS Hot-Swap HDD	40K1042
IBM 73GB 15K 3.5" SAS Hot-Swap HDD	40K1043
IBM 146GB 15K 3.5" SAS Hot-Swap HDD	40K1044
IBM 36GB 15K SAS SFF Hot-Swap HDD	40K1051
IBM 73GB 15K SAS SFF Hot-Swap HDD	40K1052
IBM 500GB 7.2K 3.5" SATA Hot-Swap HDD	39M4530
IBM 750GB 3.5" SATA Hot-Swap HDD	43W7576
IBM SAS HBA Controller	25R8060
PCI-E x16 Riser Card	40K7428
PCI-X Riser Card	40K7427
IBM Remote Supervisor Adapter II Slimline	39Y9566
IBM ServeRAID 8k SAS Controller	25R8064
Qlogic Infinipath HTx Infiniband Adapter	41Y4519
835W Redundant Power Supply (US)	40K1905

Other options at ibm.com/products/us

- H 1.72" x W 17.3" x D 25.7" (H 43.7mm x W 439.9mm x D 653.3mm)
- 26 to 32 pounds
- Stealth black color
- Quick release adapter slots (no screws)
- Configuration/Setup Utility: F1 at startup
- Diagnostics (PC-Doctor™): F2 at startup
- Network Boot: F12 at startup

- Front indicators LEDs: Power-on LED, HDD activity LED, locator LED, system information LED, and system-error LED
- Predictive failure analysis on disk options, memory, processors, VRMs, power supplies, and fans in conjunction with IBM Director can alert the system administrator of an imminent component failure

2U Rack with 2.5" SAS

Bay	Height	Access	Drive Type
Bay 1	5.25", 0.5"	access, slim	CD-RW/DVD-ROM
Bay 2	3.5", 2"	access, open	for tape drive
Bay 3	2.5", SFF	1", access,	hot-swap, open
Bay 4	2.5", SFF	1", access,	hot-swap, open
Bay 5	2.5", SFF	1", access,	hot-swap, open
Bay 6	2.5", SFF	1", access,	hot-swap, open
Bay 7	2.5", SFF	1", access,	hot-swap, open
Bay 8	2.5", SFF	1", access,	hot-swap, open
Bay 9	2.5", SFF	1", access,	hot-swap, open
Bay 10	2.5", SFF	1", access,	hot-swap, open

Maximum internal disk capacity¹³:
 4.5TB with six 750GB SATA disks or • = Hot-swap (HS)
 2.4TB with six 300GB SAS disks

2U Rack with 3.5" SAS/SATA

Bay	Height	Access	Drive Type
Bay 1	5.25", 0.5"	access, slim	CD-RW/DVD-ROM
Bay 2	3.5", SL 1"	access,	hot-swap, open
Bay 3	3.5", SL 1"	access,	hot-swap, open
Bay 4	3.5", SL 1"	access,	hot-swap, open
Bay 5	3.5", SL 1"	access,	hot-swap, open
Bay 6	3.5", SL 1"	access,	hot-swap, open
Bay 7	3.5", SL 1"	access,	hot-swap, open

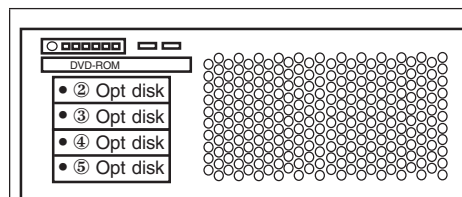
- Slot 1: Riser slot for PCI-Express x16(x16 Links), 64-bit 133MHz 3.3v PCI-X or HTx risers
- Slot 2: low-profile, PCI-Express x8(x4 Links)
- Slot 3: low-profile, PCI-Express x8(x8 Links)
- Slot 4: low-profile, PCI-Express x8(x8 Links)

LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- On site service upgrade options (in eligible locations):⁷
 - 1 year IOR 9x5, 4 hr avg response (ServicePac® part num 69P9403)
 - 2 year IOR 24x7, 4 hr avg response (ServicePac part num 96P2123)
 - 2 year IOR 24x7, 2 hr avg response (ServicePac part num 96P2124)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 21P2078)
 - 3 year IOR 9x5, NBD response (ServicePac part num 69P9258)
- Other ServicePac options at www.ibm.com/services/us/its/pdf/wamomxeu.pdf
- 24x7¹⁴ toll-free support for warranty issues during the warranty period⁵

IBM® Type-model	Qty x Processor	Speed/Core	L2 cache	Watts	CPU/Memory cards	Memory	DIMM slots	Disk controller	Mechanical	Slots x bays	Hot-swap pwr supplies	Warranty (yrs.)	Available date
8877-4RY	2 x Opteron™ 8218	2.6GHz/DC	2MB	95W	Two	4x1GB	16	SAS	4U ⁴ rack	7x5	1 x 1500W	3	Sep 2006

Positioning Processors L2 cache Processor upgrade Implementation	Up to 4-way, high performance server with maximum memory availability and superior performance per watt Up to two AMD® Opteron 8000 Series Dual Core Processor up to 3.0GHz / simultaneously supports 32-bit and 64-bit computing 1MB / per core / at processor speed 4-way SMP / up to four Opteron Processors (same speed/cache size) / Dual Core Capable System board contains four CPU/Memory Card Connectors, one HTx slot, four PCI-Express slots, two PCI-X slots, one dedicated slot for optional RSA II daughter card and integrated SAS, dual ethernet, graphics												
Active Memory™	1, 4 or 8GB std / 32GB max per processor (128GB max per chassis using four cpu/memory cards) / one cpu/memory card standard (up to four) with 8 DIMM gold-connector slots each / DIMMs must be installed in matched pairs / PC-5300 667MHz registered 240-pin DDR2-SDRAM RDIMMs / two-way interleaving / Error Checking and Correcting (ECC) via 16-bit Checksum / Xcelerated Memory Technology™ / Chipkill™ on 1, 2 and 4GB DIMMs / online hot-spare memory / hardware scrubbing												
SAS disk controller	Adaptec® AIC-9580W SAS controller (3Gb/sec) / dual channel / four port / on planar / PCI-Express / RAID 0, 1 & 10 / optional IBM ServeRAID™-8k Adaptor for low-cost RAID 0, 1, 1E, 5, 00, 10, 1E0, 50 (installed on reserved internal connector)												
SAS connectors IDE controller / cabling Disk - capacity Disk - bays Mechanical	One internal connection wired to DASD backplane Enhanced IDE ATA-100 controller integrated in South Bridge / one connector on planar / one 1-drop IDE cable (DVD-ROM) Supports up to 300GB 10K rpm disks Four 3.5" hot-swap bays / converged tray / SAS connectors EIA 19" Rack (4U⁴) / rack-mount only / supported in IBM NetBAY™ Rack products / no rack to tower conversion												
Chipset	ServerWorks™ Chipset / Two HT2100 PCI-Express Host Bridges / HT2100A provides: one PCI-Express x8 slot, one PCI-Express x4 slot, PCI-Express bridge to Adaptec SAS, PCI-Express bridge to Dual GB ethernet and HyperTransport bridge to HT1000 South Bridge / HT2100B provides: one PCI-Express x16 slot and one PCI-Express x8 slot / HT1000 South Bridge provides: two PCI-X 1.0 slots at up to 64-bit/133MHz, USB(2.0), ATI video, IDE and LPC bus to NS PC87427 for Super I/O												
Bus Slots	(See below) Four total PCI-Express / two PCI-X at up to 133 MHz / one HTx / one dedicated slot for optional RSA II daughter card												
DVD-ROM / diskette Ethernet	8X ⁶ Slim DVD-ROM / none Dual Broadcom® 5708C 10/100/1000 ethernet controllers / on systemboard / two full gigabit ethernet MAC and PHY layer functions / PCI-Express / full duplex / Wake on LAN® / Alert Standard Format 2.0 / two RJ-45 ports in rear XVGA / AT® RN50(ES1000) / on planar / 16MB SDRAM std/max / 32-bit 33MHz PCI 2.2 bus <i>Rear:</i> RSA ethernet, RSA serial, one USB(2.0), keyboard, mouse, analog DB-15 graphics, two ethernet, std. serial RS-485 / <i>Front:</i> two USB(2.0)												
Graphics controller Ports	Power-on and administrator passwords / unattended boot / selectable boot BMC standard / IPMI 2.0 / Active Energy Manager™ / Remote Supervisor Adapter II Slimline optional (std on E4U) / PCI adaptor / includes 10/100 ethernet and serial connectors / provides remote console and mgmt / power on/off system / monitors power status, op system, temperature, disks, fans, power supplies												
Security Systems mgmt	Drop down Light Path Diagnostics / primary indicator on information panel with LEDs associated with failing components / IBM Real Time Diagnostics (operated through IBM Director) available even while server running												
Diagnostics	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director												
Software	None standard (because rack-based) <i>Std:</i> one 1500 watt hot-swap(240 VAC); <i>Max:</i> two hot-swap / redundant with two power supplies (some configurations) / worldwide / voltage-sensing / auto-restart / PFA												
Keyboard / mouse Power supplies	Dual Core AMD Opteron Processor Model 8212 40K1200 Dual Core AMD Opteron Processor Model 8214 40K1201 Dual Core AMD Opteron Processor Model 8216 43W7244 Dual Core AMD Opteron Processor Model 8218 40K1202 Dual Core AMD Opteron Processor Model 8220 43W7246 Dual Core AMD Opteron Processor Model 8220SE 40K1203 Dual Core AMD Opteron Processor Model 8222SE 43W7247 Dual Core AMD Opteron Processor Model 8224SE 44R6036 1GB (2x512) PC2-5300 CL5 ECC DDR2 RDIMM Kit 41Y2759 2GB (2x1GB) PC2-5300 CL5 ECC DDR2 RDIMM Kit 41Y2762 4GB (2x2GB) PC2-5300 CL5 ECC DDR2 RDIMM Kit 41Y2765 8GB (2x4GB) PC2-5300 CL5 ECC DDR2 RDIMM Kit 41Y2768 IBM 73GB 10K HS 3.5" SAS HDD 40K1039 IBM 146GB 10K HS 3.5" SAS HDD 40K1040 IBM 300GB 10K HS 3.5" SAS HDD 40K1041 IBM ServeRAID 8k SAS Controller 25R8064 1500W US Power Supply 40K7543 Redundant Fan Kit - 3 Fans 40K7545 Processor Pass Thru Card 40K7547 Other options at ibm.com/products/us												
Cooling fans	Calibrated Vektored Cooling™ <i>Std:</i> three fans; <i>Max:</i> six / hot-swap, redundant, multi-speed fans / one additional fan in each power supply / PFA / fan failure signals Diagnostic LED and management processor / redundant fan kit required for three or more processors												



Max BTU Output:
Ship Config: 409 Btu/hr (120 watts)
Full Config: 1366 Btu/hr (400 watts)

- ⊖ Dimensions: H7" x W19" x D28"
- ⊖ Dimensions: H178mm x W483mm x D711mm
- ⊖ Weight: 26 to 32lbs; 11.8 to 14.6kg
- ⊖ Stealth black color
- ⊖ Tool-free serviceability
- ⊖ Access adapters, power supplies, processors, memory and systemboard from top
- ⊖ Setup Program by pressing F1 at startup
- ⊖ Diagnostics (PC-Doctor) by pressing F2 at startup
- ⊖ Drop Down Light Path Diagnostics (level 2 diagnostic panel) for outside view of potential problem without removing cover
- ⊖ Information LED panel, diagnostic LED panel, and component LEDs give visual indications of system well-being
- ⊖ Predictive Failure Analysis® alerts on disks, power supplies, memory, processors, VRMs, and fans with IBM Director

All models: Maximum internal disk capacity: 1.2TB with four 300GB² hot-swap SAS disks

LIMITED WARRANTY³

- ⊖ 3 year parts and labor
- ⊖ International Warranty Service³
- ⊖ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- ⊖ On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 24x7, 4 hr avg response 69P9507
 - 3 year IOR 24x7, 2 hr avg response 69P9508
 - 1 year IOR 9x5, NBD response 69P9398
 - 2 year IOR 9x5, NBD response 96P2117
- ⊖ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ⊖ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

IBM® Type-model	Qty x Processor	Speed/Core	L2 cache	CPU/Memory Watts	cards	Memory	DIMM slots	Disk controller	Mechanical	Slots x bays	Hot-swap pwr supplies	Warranty (yrs.)	Available date
7163-1RU	2 x Opteron™ 8350	2.0GHz/QC	2MB	115W	Two	4x1GB	16	SAS	4U ⁴ rack	7x5	1 x 1500W	3	June 2008
7163-3RU	2 x Opteron 8356	2.3GHz/QC	2MB	115W	Two	4x1GB	16	SAS	4U rack	7x5	1 x 1500W	3	June 2008
7163-5RU	2 x Opteron 8360 SE	2.5GHz/QC	2MB	137W	Two	4x1GB	16	SAS	4U rack	7x5	1 x 1500W	3	July 2008
7163-ARU	2 x Opteron 8378	2.4GHz/QC	2MB	75W	Two	4x1GB	16	SAS	4U rack	7x5	1 x 1500W	3	Mar 2009
7163-DRU	2 x Opteron 8384	2.7GHz/QC	2MB	75W	Two	4x1GB	16	SAS	4U rack	7x5	1 x 1500W	3	Mar 2009
7163-DBU	3 x Opteron 8384	2.7GHz/QC	2MB	75W	Three	6x2GB	24	SAS	4U rack	7x5	1 x 1500W	3	Mar 2009

Positioning Processors Up to three AMD® Opteron 8000 Series Quad-Core Processor up to 2.7GHz¹ / simultaneously supports 32 and 64-bit computing
 L2 cache 512KB / per core / at processor speed
 Processor upgrade Implementation 4-way SMP / up to four Opteron Processors (same speed/cache size)
 System board contains four CPU/Memory Card Connectors, one HTX slot, four PCI-Express slots, two PCI-X slots, one dedicated slot for optional RSA II daughter card and integrated SAS, dual ethernet, graphics

Active Memory™ 4GB std / 32GB max per processor (128GB max per chassis using four cpu/memory cards) / two pr three cpu/memory card standard (up to four) with 8 DIMM gold-connector slots each / DIMMs must be installed in matched pairs / PC2-5300 667MHz registered 240-pin DDR2-SDRAM RDIMMs / two-way interleaving / Error Checking and Correcting (ECC) via 16-bit Checksum / Xcelerated Memory Technology™ / Chipkill™ on 1, 2 and 4GB DIMMs / online hot-spare memory / hardware scrubbing

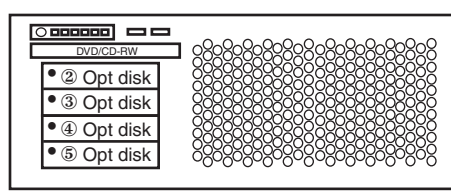
SAS disk controller Adaptec® AIC-9580W SAS controller (3Gb/sec) / dual channel / four port / on planar / PCI-Express / RAID 0, 1 & 10 / optional IBM ServeRAID™-8k Adaptor for low-cost RAID 0, 1, 1E, 5, 00, 10, 1E0, 50 (installed on reserved internal connector)
 SAS connectors One internal connection wired to DASD backplane
 IDE controller / cabling Enhanced IDE ATA-100 controller integrated in South Bridge / one connector on planar / one 1-drop IDE cable (DVD-ROM)
 Disk - capacity Supports up to 300GB 10K rpm disks
 Disk - bays Four 3.5" hot-swap bays / converged tray / SAS connectors
 Mechanical EIA 19" Rack (4U⁴) / rack-mount only / supported in IBM NetBAY™ Rack products / no rack to tower conversion

Chipset ServerWorks™ Chipset / Two HT2100 PCI-Express Host Bridges / HT2100A provides: one PCI-Express x8 slot, one PCI-Express x4 slot, PCI-Express bridge to Adaptec SAS, PCI-Express bridge to Dual GB ethernet and HyperTransport bridge to HT1000 South Bridge / HT2100B provides: one PCI-Express x16 slot and one PCI-Express x8 slot / HT1000 South Bridge provides: two PCI-X 1.0 slots at up to 64-bit/133MHz, USB(2.0), ATI video, IDE and LPC bus to NS PC87427 for Super I/O (See below) Four total PCI-Express / two PCI-X at up to 133 MHz / one HTx / one dedicated slot for optional RSA II daughter card

Optical / diskette 24X-10x⁶ Slim DVD/CD-RW / none
 Ethernet Dual Broadcom® 5708C Gigabit Ethernet controllers / on systemboard / two full gigabit ethernet MAC and PHY layer functions / PCI-Express / full duplex / Wake on LAN® / Alert Standard Format 2.0 / two RJ-45 ports in rear
 Graphics controller ATI® RN50(ES1000) / on planar / 16MB SDRAM std/max / 32-bit 33MHz PCI 2.2 bus
 Ports Rear: RSA ethernet, RSA serial, one USB(2.0), keyboard, mouse, analog DB-15 graphics, two ethernet, std. serial RS-485 / Front: two USB(2.0)

Security Systems mgmt Power-on and administrator passwords / unattended boot / selectable boot
 BMC standard / IPMI 2.0 / Active Energy Manager™ / Remote Supervisor Adapter II Slimline optional / PCI adapter / includes 10/100 ethernet and serial connectors / provides remote console and mgmt / power on/off system / monitors power status, op system, temperature, disks, fans, power supplies
 Diagnostics Drop down Light Path Diagnostics / primary indicator on information panel with LEDs associated with failing components / IBM Real Time Diagnostics (operated through IBM Director) available even while server running
 Software ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director

Keyboard / mouse	None standard (because rack-based)	Quad Core AMD Opteron Processor Model 8378	46M2489
Power supplies	Std: one 1500 watt hot-swap(240 VAC); Max: two hot-swap / redundant with two power supplies (some configurations) / worldwide / voltage-sensing / auto-restart / PFA	Quad Core AMD Opteron Processor Model 8380	46M2492
Cooling fans	Calibrated Vektored Cooling™ Std: three fans; Max: six / hot-swap, redundant, multi-speed fans / one additional fan in each power supply / PFA / fan failure signals Diagnostic LED and management processor / redundant fan kit required for three or more processors	Quad Core AMD Opteron Processor Model 8382	46M2495
		Quad Core AMD Opteron Processor Model 8384	46M2498
		Quad Core AMD Opteron Processor Model 8350	43R6295
		Quad Core AMD Opteron Processor Model 8356	43W7406
		Quad Core AMD Opteron Processor Model 8360SE	43W7408
		2GB (2x1GB) PC2-5300 CL5 ECC DDR2 RDIMM	41Y2762
		4GB (2x2GB) PC2-5300 CL5 ECC DDR2 RDIMM	46C7539
		8GB (2x4GB) PC2-5300 CL5 ECC DDR2 RDIMM	46C7538
		IBM 73GB 10K HS 3.5" SAS HDD	40K1039
		IBM 146GB 10K HS 3.5" SAS HDD	40K1040
		IBM 300GB 10K HS 3.5" SAS HDD	40K1041
		IBM ServeRAID 8k SAS Controller	25R8064
		1500W US Power Supply	40K7543
		Redundant Fan Kit - 3 Fans	40K7545
		Processor Pass Thru Card	40K7547
		Other options at ibm.com/products/us	



- Bay ① 5.25", 0.5", access, std DVD/CD-RW
- Bay ② 3.5", SL 1", access, hot-swap, open
- Bay ③ 3.5", SL 1", access, hot-swap, open
- Bay ④ 3.5", SL 1", access, hot-swap, open
- Bay ⑤ 3.5", SL 1", access, hot-swap, open

Available expansion slots:
 Slot 1 - fullsize, PCI-Express x16
 Slot 2 - fullsize, PCI-Express x8
 Slot 3 - fullsize, PCI-Express x8
 Slot 4 - fullsize, PCI-Express x4
 Slot 5 - fullsize, 64-bit, PCI-X 1.0, 100/133MHz*
 Slot 6 - fullsize, 64-bit, PCI-X 1.0, 100/133MHz*
 RSA slot - supports RSA II slimline adapter
 *If one PCI-X 133MHz card is plugged into slot 6 and slot 5 is empty, then it will run at 133MHz. If one PCI-X 133 MHz card is plugged into slot 5 and 6 is empty, then it will run at 100MHz. If two 133MHz cards are plugged into slots 5 and 6, they will run at 100MHz

- Dimensions: H7" x W19" x D28"
- Dimensions: H178mm x W483mm x D711mm
- Weight: 26 to 32lbs; 11.8 to 14.6kg
- Stealth black color
- Tool-free serviceability
- Access adapters, power supplies, processors, memory and systemboard from top
- Setup Program by pressing F1 at startup
- Diagnostics (PC-Doctor) by pressing F2 at startup
- Drop Down Light Path Diagnostics (level 2 diagnostic panel) for outside view of potential problem without removing cover
- Information LED panel, diagnostic LED panel, and component LEDs give visual indications of system well-being
- Predictive Failure Analysis® alerts on disks, power supplies, memory, processors, VRMs, and fans with IBM Director

LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 24x7, 4 hr avg response ServicePac® part number 96P2253
 - 3 year IOR 24x7, 2 hr avg response ServicePac® part number 96P2254
 - 1 year IOR 9x5, NBD response ServicePac® part number 69P9402
 - 2 year IOR 9x5, NBD response ServicePac® part number 96P2121
- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

All models: Maximum internal disk capacity: 1.2TB with four 300GB² hot-swap SAS disks

IBM® Type-model	Qty x Processor	L2 Core cache	Memory	DIMM slots	Memory Cards	Disks	Disk Controller	Mechanical	Slots x bays	Hot-swap pwr supplies	Warranty (yrs.)	Available date
8865-13U	1 x Xeon™ MP 3.16GHz	SC 1MB	1GB(2x512MB)	4	One	None	SAS	Tower	6x12	2 x775W	3	May 2006
8865-1TU	1 x Xeon MP 3.16GHz	SC 1MB	1GB(2x512MB)	4	One	None	SAS	7U Rack	6x12	2 x775W	3	May 2006
8865-22U	1 x Xeon MP 3.66GHz	SC 1MB	2GB(2x1GB)	4	One	None	SAS	Tower	6x12	2 x775W	3	May 2006
8865-2TU	1 x Xeon MP 3.66GHz	SC 1MB	2GB(2x1GB)	4	One	None	SAS	7U Rack	6x12	2 x775W	3	May 2006
8865-32U	1 x Xeon MP 7020 2.67GHz	DC 2MB	2GB(2x1GB)	4	One	None	SAS	Tower	6x12	2 x775W	3	May 2006
8865-3TU	1 x Xeon MP 7020 2.67GHz	DC 2MB	2GB(2x1GB)	4	One	None	SAS	7U Rack	6x12	2 x775W	3	May 2006
8865-42U	1 x Xeon MP 7040 3.0GHz	DC 4MB	2GB(2x1GB)	4	One	None	SAS	Tower	6x12	2 x775W	3	May 2006
8865-4TU	1 x Xeon MP 7040 3.0GHz	DC 4MB	2GB(2x1GB)	4	One	None	SAS	7U Rack	6x12	2 x775W	3	May 2006

Processors One 64-bit Intel® Xeon™ Processor MP up to 3.66GHz¹ 667MHz FSB Single Core / one 64-bit Intel Xeon Processor MP up to 3.0GHz 667MHz FSB Dual Core / NetBurst™ / Extended Memory 64 Technology™ (EM64T) / Hyper-Threading
L2 cache 1 or 2MB / per core / on die of processor / at processor speed / XceL4v™ Dynamic Server Cache
Processor upgrade Implementation 4-way SMP / up to four Xeon Processors MP (same speed/cache size)
 System board contains four Intel 604-pin micro-PGA4 ZIF sockets, four memory board slots, six Active™ PCI-X 2.0 slots, integrated Serial Attach SCSI (SAS), ethernet, and graphics

Active Memory™ 1 or 2GB std / 64GB max per chassis using high-capacity memory card / one memory card standard (up to four) with 4 DIMM gold-connector slots each / DIMMs must be installed in matched pairs / PC2-3200 400MHz registered 240-pin DDR2-SDRAM RDIMMs / Error Checking and Correcting (ECC) via 16-bit Checksum
 Chipkill™ / Memory ProteXion™ (redundant bit steering) and Memory Mirroring™ and Hot-swap (non-OS specific) / Hot-add (supported only with Microsoft® Windows™ Server 2003™)

SAS disk controller ALL: Adaptec® AIC-9410 / Dual-channel Serial Attached SCSI (SAS) 3.0GHz (3GB/sec) / 64-bit 266MHz PCI-X 2.0
SAS connectors Dual-channel controller wired to dual SAS backplanes
SAS cabling Hot-swap bays connect to integrated SAS controller through SAS expander, 1 cable for each of the 2 SAS backplanes
IDE controller / cabling Enhanced IDE ATA-33 controller in CSB6 South Bridge
Disk - capacity Max: 3.6TB-10k / supports up to 15,000 rpm disks
Disk - bays Up to Twelve 3.5" hot-swap bays / Six standard converged tray / 80-pin SCA-2 connectors / One FH (or 2 HH) Tape Drive Bays
Mechanical EA 19" rack models (7U) x 28" deep / supported in NetBAY™ Racks (such as NetBAY42 SR, NetBAY42 ER)

Chipset IBM XA-64e™ 3rd Generation chipset / Integrated Processor and Memory Controller / Supports EM64T / 2 IBM PCI-X 2.0 Host Bridges / Host Bridge One supports video, optional ServeRaid 8i, ServerWorks® CSB6 South Bridge (IDE, USB, bus for Super I/O NS 87417 [diskette, keyboard, mouse]), Dual Port Broadcom 5704, and 2 PCI-X 2.0 slots / Host Bridge Two supports 4 PCI-X 2.0 slots
I/O Slots Six total Active™ PCI-X 2.0 64-bit slots available with power and attention indicator lights (optical sensors control power to slot) / hot replace, hot upgrade, hot expansion / separated by insulative plastic dividers, all slots support up to 266MHz

DVD-ROM / diskette IBM SlimLine DVD-ROM, IDE (ATAPI), 1.6" HH, bootable / 3.5" 1.44 MB diskette drive
Ethernet Broadcom® 5704 10/100/1000 dual ethernet / on systemboard / 64-bit 266Mhz PCI-X 2.0 / Wake on LAN® / Alert on LAN™ 2
Graphics controller SVGA / ATI® Radeon Mobility 7000 / on planar / 16MB SDRAM std/max / 32-bit 33MHz PCI 2.2 bus
Ports Rear: RSA ethernet, RSA serial, two USB (Ver 2.0), keyboard, mouse, analog DB-15 graphics, two ethernet, std. serial, RS-485 / Front: USB (Ver 2.0)

Security Power-on and administrator passwords / unattended boot / selectable boot
Systems management BMC standard / IPMI 2.0 / Remote Supervisor Adapter II slimline (optional) / PCI adapter / includes 10/100 ethernet, RJ-11, and serial connectors / provides remote console and mgmt / power on/off system / monitors power status, op system, temperature, disks, fans, power supplies

Diagnostics Drop-down Light Path Diagnostics / primary indicator on information panel with LEDs associated with failing components / IBM Real Time Diagnostics (operated through IBM Director) available even while server running
Software ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director, and others

Keyboard / mouse Rack model: none standard / Tower model: IBM 104-key keyboard (PS/2) / IBM 3-button optical mouse (PS/2)
Power supplies Std: two 775 watt hot-swap / redundant with three power supplies (N+1) / worldwide / voltage-sensing / auto-restart / rear accessible fans in each power supply / PFA

Cooling fans Eight hot-swap, redundant, multi-speed fans / One cooling fan in each power supply filler when power supply is not installed / PFA / failure signals Diagnostic LED and mgmt processor

Options	1GB PC2-3200 CL3 ECC RDIMM (2x512MB)	39M5821	IBM ServeRAID™-8i SA-SCSI Adapter	39R8729
	2GB PC2-3200 CL3 ECC RDIMM (2x1GB)	39M5809	IBM ServeRAID 6M U320 256MB Adapter	02R0988
	4GB PC2-3200 CL3 ECC RDIMM (2x2GB)	39M5812	IBM 73.4GB 10K 3.5" SAS Hot-swap HDD	40K1039
	Active Memory 4-slot Expansion Card	41Y5000	IBM 146GB 10K 3.5" SAS Hot-Swap HDD	40K1040
	Xeon MP 3.16GHz/1MB L2 Cache Proc Upg	40K2521	IBM 300GB 10K 3.5" SAS Hot-Swap HDD	40K1041
	Xeon MP 3.66GHz/1MB L2 Cache Proc Upg	40K2520	Remote Supervisor Adapter II Slimline	39Y9566
	Xeon MP 7020 2.67GHz Proc Upg	40K2522	SAS 3.5" 6-drive Backplane	41Y5003
	Xeon MP 7040 3.0GHz Proc Upg	40K2523	IBM 73.4GB 15K 3.5" SAS Hot-swap HDD	40K1043
	Dual Core X3 Upgrade kit(no procs included)	41Y5005	IBM 146GB 15K 3.5" SAS Hot-Swap HDD	40K1044
	775 watt Hot-Swap Power Supply (WW)	41Y5002		

LIMITED WARRANTY³

- ↪ 3 year parts and labor
- ↪ International Warranty Service³
- ↪ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- ↪ On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 96P2253)
 - 3 year IOR 24x7, 2 hr avg response (ServicePac part num 96P2254)
 - 4 year IOR 9x5, NBD response (ServicePac part num 96P2255)
 - 5 year IOR 9x5, NBD response (ServicePac part num 69P2259)
- ↪ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ↪ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

Bay ① 3.5", SL 1", access, diskette
 Bay ② 5.25", HH 1.6" access, CD-ROM
 Bay ③ 5.25", HH 1.6" access, open*
 Bay ④ 5.25", HH 1.6" access, open*
 Bays 5 to 10 (six bays): standard 3.5" SL 1" hot-swap disk bays
 Bays 11 to 16 (six bays): optional 3.5" SL 1" hot-swap disk bays

Light Path Diag **7U⁴ Rack or Tower**

Removable Processor Board Tray

• Opt disk	• Opt disk	Floppy Drive	
• Opt disk	• Opt disk	CD-ROM	
• Opt disk	• Opt disk	Full High Tape Bay	
• Opt disk	• Opt disk	or 2 Half High Bays	
• Opt disk	• Opt disk		

- ↪ Stealth black color
- ↪ Tool-free serviceability
- ↪ Tower Dimensions: H15.5" x W18.2" x D30"(762mm)
- ↪ Tower Weight: 149 to 180lbs; 67.6 to 81.7Kg
- ↪ Rack Dimensions: H12" x W17.5" x D28.2"
- ↪ Rack Dimensions: H306mm x W444mm x D715mm
- ↪ Rack Weight: 144 to 158lbs; 65.4 to 71.7Kg
- ↪ Access adapters, fans, and memory from top
- ↪ Access processors and systemboard from front
- ↪ Access power supplies from back
- ↪ Setup Program by pressing F1 at startup
- ↪ Diagnostics (PC-Doctor) by pressing F2 at startup
- ↪ SCSISelect by pressing Ctrl+A at startup
- ↪ Drop Down Light Path Diagnostics (level 2 diagnostic panel) for outside view of potential problem without removing cover
- ↪ Predictive Failure Analysis® alerts on disks, power supplies, memory, processors, VRMs, and fans with IBM Director

BTU Output:
 Ship Config: 1,170 Btu/hr (343 watts)
 Full Config: 6,142 Btu/hr (1800 watts)

All models: Maximum internal disk capacity: 3.6TB with 12x 300GB² hot-swap SAS disks

IBM® Type-model	Qty x Processor	Core	L2 cache	Memory	DIMM slots	Memory Cards	RSA II	Disk Controller	Mechanical	Slots x bays	Power Supplies	Warranty (yrs.)	Available date
8866-11U	1 x Xeon™ MP 7110N 2.5GHz	DC	2x1MB	2x1GB	4	One	Opt	SAS	Tower	6x12	2 x775W	3	Nov 2006
8866-1RU	1 x Xeon MP 7110N 2.5GHz	DC	2x1MB	2x1GB	4	One	Opt	SAS	7U Rack	6x12	2 x775W	3	Nov 2006
8866-21U	1 x Xeon MP 7120N 3.0GHz	DC	2x1MB	2x1GB	4	One	Opt	SAS	Tower	6x12	2 x775W	3	Nov 2006
8866-2RU	1 x Xeon MP 7120N 3.0GHz	DC	2x1MB	2x1GB	4	One	Opt	SAS	7U Rack	6x12	2 x775W	3	Nov 2006
8866-31U	1 x Xeon MP 7130N 3.16GHz	DC	2x1MB	2x1GB	4	One	Opt	SAS	Tower	6x12	2 x775W	3	Nov 2006
8866-3RU	1 x Xeon MP 7130N 3.16GHz	DC	2x1MB	2x1GB	4	One	Opt	SAS	7U Rack	6x12	2 x775W	3	Nov 2006
8866-41U	2 x Xeon MP 7140N 3.30GHz	DC	2x1MB	2x2GB	8	Two	Std	SAS	Tower	6x12	3 x775W	3	Nov 2006
8866-4RU	2 x Xeon MP 7140N 3.30GHz	DC	2x1MB	2x2GB	8	Two	Std	SAS	7U Rack	6x12	3 x775W	3	Nov 2006

Processors Up to two 64-bit Intel® Xeon™ Processor MP up to 3.30GHz¹ 667MHz FSB Dual Core / one 64-bit Intel Xeon Processor MP up to 3.0GHz 667MHz FSB Dual Core / NetBurst™ / Extended Memory 64 Technology™ (EM64T) / Hyper-Threading 1MB / per core / on die of processor / at processor speed / Xcel4v™ Dynamic Server Cache

L2 cache 4MB on 7110N & 7120N / 8MB on 7130N / 16MB on 7140N

L3 cache 4MB on 7110N & 7120N / 8MB on 7130N / 16MB on 7140N

Processor upgrade Implementation 4-way SMP / up to four Xeon Processors MP (same speed/cache size)

System board contains four Intel 604-pin micro-PGA4 ZIF sockets, four memory board slots, four Active™ PCI-E x8 slots, two Active™ PCI-X 2.0 slots, integrated Serial Attach SCSI (SAS), ethernet, and graphics

Active Memory™ 2 or 4GB std / 64GB max per chassis using high-capacity memory card / up to two memory cards standard (max of four) with 4 DIMM gold-connector slots each / DIMMs must be installed in matched pairs / PC2-3200 400MHz registered 240-pin DDR2-SDRAM RDIMMs / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ / Memory ProteXion™ (redundant bit steering) and Memory Mirroring™ and Hot-swap (non-OS specific) / Hot-add (supported only with Microsoft® Windows™ Server 2003™)

SAS disk controller All: Adaptec® AIC-9410 / Dual-channel Serial Attached SCSI (SAS) 3.0GHz (3GB/sec) / 64-bit 266MHz PCI-X 2.0 / Some: ServeRAID™ 8i / RAID 0,1, 10, 5, 6, 60, 1E & 5EE / std on 41U & 4RU / dedicated slot / 64-bit 133MHz PCI-X / optional on others

SAS connectors Dual-channel controller wired to dual SAS backplanes

SAS cabling Hot-swap bays connect to integrated SAS controller through SAS expander, 1 cable for each of the 2 SAS backplanes

IDE controller / cabling Enhanced IDE ATA-33 controller in CSB6 South Bridge

Disk - capacity Max: 3.6TB-10k / supports up to 15,000 rpm disks

Disk - bays Up to Twelve 3.5" hot-swap bays / Six standard converged tray / 80-pin SCA-2 connectors / One FH (or 2 HH) Tape Drive Bays

Mechanical EIA 19" rack models (7U⁴) x 28" deep / supported in NetBAY™ Racks (such as NetBAY42 SR, NetBAY42 ER)

Chipset IBM XA-64e™ 3rd Generation chipset / Integrated Processor and Memory Controller / Supports EM64T / 2 IBM PCI-X 2.0 Host Bridges / Host Bridge One supports video, optional ServeRaid 8i, ServerWorks® CSB6 South Bridge (IDE, USB, bus for Super I/O NS 87417 [diskette, keyboard, mouse]), Dual Port Broadcom 5704, and 2 PCI-X 2.0 slots / Host Bridge Two supports 4 PCI-E x8 slots

I/O Slots Four Active™ PCI-E x8 slots / full height, full length / Two Active™ PCI-X 2.0 64-bit slots available with power and attention indicator lights (optional sensors control power to slot) / hot replace, hot upgrade, hot expansion / separated by insulative plastic dividers

DVD-ROM / diskette IBM SlimLine DVD-ROM, IDE (ATAPI), 1.6" HH, bootable / 3.5" 1.44 MB diskette drive

Ethernet Broadcom® 5704 10/100/1000 dual ethernet / on systemboard / 64-bit 266MHz PCI-X 2.0 / Wake on LAN® / Alert on LAN™ 2

Graphics controller SVGA / ATI® Radeon Mobility 7000 / on planar / 16MB SDRAM std/max / 32-bit 33MHz PCI 2.2 bus

Ports Rear: RSA ethernet, RSA serial, two USB(2.0), kybd, mouse, DB-15 graphics, two ethernet, std. serial, RS-485 / Front: USB (2.0)

Security Power-on and administrator passwords / unattended boot / selectable boot

Systems management BMC standard / IPMI 2.0 / Remote Supervisor Adapter II slimline (std on 41U & 4RU) / PCI adapter / includes 10/100 ethernet, RJ-11, and serial connectors / provides remote console and mgmt / power on/off system / monitors power status, op system, temperature, disks, fans, power supplies / optional on others

Diagnostics Drop-down Light Path Diagnostics / primary indicator on information panel with LEDs associated with failing components / IBM Real Time Diagnostics (operated through IBM Director) available even while server running

Software ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director, and others

Keyboard / mouse Rack model: none standard / Tower model: IBM 104-key keyboard (PS/2) / IBM 3-button optical mouse (PS/2)

Power supplies Some: two; some: three / 775 watt hot-swap / redundant with three power supplies (N+1) / worldwide / voltage-sensing / auto-restart / rear accessible fans in each power supply / PFA

Cooling fans Eight hot-swap, redundant, multi-speed fans / One cooling fan in each power supply filler when power supply is not installed / PFA / failure signals Diagnostic LED and mgmt processor

Options	Part Number	Part Number	Part Number
1GB PC2-3200 CL3 ECC RDIMM (2x512MB)	39M5821	IBM ServeRAID 8i SAS Adapter	39R8729
2GB PC2-3200 CL3 ECC RDIMM (2x1GB)	39M5809	IBM ServeRAID 6M U320 256MB Adapter	39R8816
4GB PC2-3200 CL3 ECC RDIMM (2x2GB)	39M5812	IBM 73.4GB 10K 3.5" SAS Hot-swap HDD	40K1039
Active Memory 4-slot Expansion Card	41Y5000	IBM 146GB 10K 3.5" SAS Hot-swap HDD	40K1040
Xeon 7110N 2.5GHz/4MB L3/Dual Core Proc	40K1259	IBM 300GB 10K 3.5" SAS Hot-swap HDD	40K1041
Xeon 7120N 3.0GHz/4MB L3/Dual Core Proc	40K1260	Remote Supervisor Adapter II Slimline	39Y9566
Xeon 7130N 3.16GHz/8MB L3/Dual Core Proc	40K1261	SAS 3.5" 6-drive Backplane	41Y5003
Xeon 7140N 3.3GHz/16MB L3/Dual Core Proc	40K1262	IBM 73.4GB 15K 3.5" SAS Hot-swap HDD	40K1043
775 watt Hot-Swap Power Supply (WW)	41Y5002	IBM 146GB 15K 3.5" SAS Hot-swap HDD	40K1044

LIMITED WARRANTY³

- ↪ 3 year parts and labor
- ↪ International Warranty Service³
- ↪ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- ↪ On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 30L9187)
 - 3 year IOR 24x7, 2 hr avg response (ServicePac part num 31L2723)
 - 4 year IOR 9x5, NBD response (ServicePac part num 69P9218)
 - 5 year IOR 9x5, NBD response (ServicePac part num 69P9222)
- ↪ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ↪ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

Bay ① 3.5", SL 1", access, diskette
 Bay ② 5.25", HH 1.6" access, DVD-ROM
 Bay ③ 5.25", HH 1.6" access, open*
 Bay ④ 5.25", HH 1.6" access, open*
 Bays 5 to 10 (six bays): standard 3.5" SL 1" hot-swap disk bays
 Bays 11 to 16 (six bays): optional 3.5" SL 1" hot-swap disk bays

Light Path Diag **7U⁴ Rack or Tower**

Removable Processor Board Tray

• Opt disk	• Opt disk	Floppy Drive
• Opt disk	• Opt disk	CD-ROM
• Opt disk	• Opt disk	Full High Tape Bay
• Opt disk	• Opt disk	or 2 Half High Bays

- ↪ Stealth black color
- ↪ Tool-free serviceability
- ↪ Tower Dimensions: H15.5" x W18.2" x D30"(762mm)
- ↪ Tower Weight: 149 to 180lbs; 67.6 to 81.7Kg
- ↪ Rack Dimensions: H12" x W17.5" x D28.2"
- ↪ Rack Dimensions: H306mm x W444mm x D715mm
- ↪ Rack Weight: 144 to 158lbs; 65.4 to 71.7Kg
- ↪ Access adapters, fans, and memory from top
- ↪ Access processors and systemboard from front
- ↪ Access power supplies from back
- ↪ Setup Program by pressing F1 at startup
- ↪ Diagnostics (PC-Doctor) by pressing F2 at startup
- ↪ SCSISelect by pressing Ctrl+A at startup
- ↪ Drop Down Light Path Diagnostics (level 2 diagnostic panel) for outside view of potential problem without removing cover
- ↪ Predictive Failure Analysis® alerts on disks, power supplies, memory, processors, VRMs, and fans with IBM Director

All models: Maximum internal disk capacity: 3.6TB with 12x 300GB² hot-swap SAS disks

BTU Output:
 Ship Config: 1,170 Btu/hr (343 watts)
 Full Config: 6,142 Btu/hr (1800 watts)

IBM® Type-model	Qty x Processor	Core	L2 cache	Memory	DIMM slots	Memory Cards	RSA II	Disk Controller	Mechanical	Slots x bays	Power Supplies	Warranty (yrs.)	Available date
8866-51U	2 x Xeon™ MP 7150N 3.5GHz	DC	2x1MB	2x2GB	8	Two	Std	SAS	Tower	6x12	3 x775W	3	Feb 2007
8866-5RU	2 x Xeon MP 7150N 3.5GHz	DC	2x1MB	2x2GB	8	Two	Std	SAS	7U Rack	6x12	3 x775W	3	Feb 2007

Processors	Two 64-bit Intel® Xeon™ Processor MP up to 3.5GHz¹ 667MHz FSB Dual Core / NetBurst™ / Extended Memory 64 Technology™ (EM64T) / Hyper-Threading
L2 cache	1MB / per core / on die of processor / at processor speed / Xcel4v™ Dynamic Server Cache
L3 cache	16MB on 7150N
Processor upgrade Implementation	4-way SMP / up to four Xeon Processors MP (same speed/cache size) System board contains four Intel 604-pin micro-PGA4 ZIF sockets, four memory board slots, four Active™ PCI-E x8 slots, two Active™ PCI-X 2.0 slots, integrated Serial Attach SCSI (SAS), ethernet, and graphics
Active Memory™	2 or 4GB std / 64GB max per chassis using high-capacity memory card / up to two memory cards standard (max of four) with 4 DIMM gold-connector slots each / DIMMs must be installed in matched pairs / PC2-3200 400MHz registered 240-pin DDR2-SDRAM RDIMMs / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ / Memory ProteXion™ (redundant bit steering) and Memory Mirroring™ and Hot-swap (non-OS specific) / Hot-add (supported only with Microsoft® Windows™ Server 2003™)
SAS disk controller	All: Adaptec® AIC-9410 / Dual-channel Serial Attached SCSI (SAS) 3.0GHz (3GB/sec) / 64-bit 266MHz PCI-X 2.0 / Some: ServeRAID™ 8i / RAID 0,1, 10, 5, 6, 60, 1E & 5EE / std on 51U & 5RU / dedicated slot / 64-bit 133MHz PCI-X / optional on others
SAS connectors	Dual-channel controller wired to dual SAS backplanes
SAS cabling	Hot-swap bays connect to integrated SAS controller through SAS expander, 1 cable for each of the 2 SAS backplanes
IDE controller / cabling	Enhanced IDE ATA-33 controller in CSB6 South Bridge
Disk - capacity	Max: 3.6TB-10k / supports up to 15,000 rpm disks
Disk - bays	Up to Twelve 3.5" hot-swap bays / Six standard converged tray / 80-pin SCA-2 connectors / One FH (or 2 HH) Tape Drive Bays
Mechanical	EIA 19" rack models (7U⁴) x 28" deep / supported in NetBAY™ Racks (such as NetBAY42 SR, NetBAY42 ER)
Chipset	IBM XA-64e™ 3rd Generation chipset / Integrated Processor and Memory Controller / Supports EM64T / 2 IBM PCI-X 2.0 Host Bridges / Host Bridge One supports video, optional ServeRaid 8i, ServerWorks® CSB6 South Bridge (IDE, USB, bus for Super I/O NS 87417 [diskette, keyboard, mouse]), Dual Port Broadcom 5704, and 2 PCI-X 2.0 slots / Host Bridge Two supports 4 PCI-E x8 slots
I/O Slots	Four Active™ PCI-E x8 slots / full height, full length / Two Active™ PCI-X 2.0 64-bit slots available with power and attention indicator lights (optical sensors control power to slot) / hot replace, hot upgrade, hot expansion / separated by insulative plastic dividers
DVD-ROM / diskette	IBM SlimLine DVD-ROM, IDE (ATAPI), 1.6" HH, bootable / 3.5" 1.44 MB diskette drive
Ethernet	Broadcom® 5704 10/100/1000 dual ethernet / on systemboard / 64-bit 266Mhz PCI-X 2.0 / Wake on LAN® / Alert on LAN™ 2
Graphics controller	SVGA / ATI® Radeon Mobility 7000 / on planar / 16MB SDRAM std/max / 32-bit 33MHz PCI 2.2 bus
Ports	Rear: RSA ethernet, RSA serial, two USB(2.0), kybd, mouse, DB-15 graphics, two ethernet, std. serial, RS-485 / Front: USB (2.0)
Security	Power-on and administrator passwords / unattended boot / selectable boot
Systems management	BMC standard / IPMI 2.0 / Remote Supervisor Adapter II slimline (std on 41U & 4RU) / PCI adapter / includes 10/100 ethernet, RJ-11, and serial connectors / provides remote console and mgmt / power on/off system / monitors power status, op system, temperature, disks, fans, power supplies / optional on others
Diagnostics	Drop-down Light Path Diagnostics / primary indicator on information panel with LEDs associated with failing components / IBM Real Time Diagnostics (operated through IBM Director) available even while server running
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director, and others
Keyboard / mouse	Rack model: none standard / Tower model: IBM 104-key keyboard (PS/2) / IBM 3-button optical mouse (PS/2)
Power supplies	Some: two; some: three / 775 watt hot-swap / redundant with three power supplies (N+1) / worldwide / voltage-sensing / auto-restart / rear accessible fans in each power supply / PFA
Cooling fans	Eight hot-swap, redundant, multi-speed fans / One cooling fan in each power supply filler when power supply is not installed / PFA / failure signals Diagnostic LED and mgmt processor

Options	1GB PC2-3200 CL3 ECC RDIMM (2x512MB)	39M5821	IBM ServeRAID 8i SAS Adapter	39R8729
	2GB PC2-3200 CL3 ECC RDIMM (2x1GB)	39M5809	IBM ServeRAID 6M U320 256MB Adapter	39R8816
	4GB PC2-3200 CL3 ECC RDIMM (2x2GB)	39M5812	IBM 73.4GB 10K 3.5" SAS Hot-swap HDD	40K1039
	8GB PC2-3200 CL3 ECC RDIMM (2x4GB)	30R5145	IBM 146GB 10K 3.5" SAS Hot-Swap HDD	40K1040
	Active Memory 4-slot Expansion Card	41Y5000	IBM 300GB 10K 3.5" SAS Hot-Swap HDD	40K1041
	Xeon 7150N 3.5GHz/16MB L3/Dual Core Proc	43V4553	Remote Supervisor Adapter II Slimline	39Y9566
	775 watt Hot-Swap Power Supply (WW)	41Y5002	IBM 36GB 15K 3.5" SAS Hot-swap HDD	40K1042
	Tower to Rack conversion kit	32R0719	IBM 73.4GB 15K 3.5" SAS Hot-swap HDD	40K1043
	SAS 3.5" 6-drive Backplane	41Y5003	IBM 146GB 15K 3.5" SAS Hot-Swap HDD	40K1044

LIMITED WARRANTY³

- ↪ 3 year parts and labor
- ↪ International Warranty Service³
- ↪ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- ↪ On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 30L9187)
 - 3 year IOR 24x7, 2 hr avg response (ServicePac part num 31L2723)
 - 4 year IOR 9x5, NBD response (ServicePac part num 69P9218)
 - 5 year IOR 9x5, NBD response (ServicePac part num 69P9222)
- ↪ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ↪ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

Bay ① 3.5", SL 1", access, diskette
 Bay ② 5.25", HH 1.6" access, DVD-ROM
 Bay ③ 5.25", HH 1.6" access, open*
 Bay ④ 5.25", HH 1.6" access, open*
 Bays 5 to 10 (six bays):
 standard 3.5" SL 1" hot-swap disk bays
 Bays 11 to 16 (six bays):
 optional 3.5" SL 1" hot-swap disk bays

Light Path Diag **7U⁴ Rack or Tower**

Removable Processor Board Tray

• Opt disk	• Opt disk	Floppy Drive
• Opt disk	• Opt disk	CD-ROM
• Opt disk	• Opt disk	Full High Tape Bay
• Opt disk	• Opt disk	or 2 Half High Bays
• Opt disk	• Opt disk	
• Opt disk	• Opt disk	

- ↪ Stealth black color
- ↪ Tool-free serviceability
- ↪ Tower Dimensions: H15.5" x W18.2" x D30"(762mm)
- ↪ Tower Weight: 149 to 180lbs; 67.6 to 81.7Kg
- ↪ Rack Dimensions: H12" x W17.5" x D28.2"
- ↪ Rack Dimensions: H306mm x W444mm x D715mm
- ↪ Rack Weight: 144 to 158lbs; 65.4 to 71.7Kg
- ↪ Access adapters, fans, and memory from top
- ↪ Access processors and systemboard from front
- ↪ Access power supplies from back
- ↪ Setup Program by pressing F1 at startup
- ↪ Diagnostics (PC-Doctor) by pressing F2 at startup
- ↪ SCSISelect by pressing Ctrl+A at startup
- ↪ Drop Down Light Path Diagnostics (level 2 diagnostic panel) for outside view of potential problem without removing cover
- ↪ Predictive Failure Analysis® alerts on disks, power supplies, memory, processors, VRMs, and fans with IBM Director

All models: Maximum internal disk capacity: 3.6TB with 12x 300GB² hot-swap SAS disks

BTU Output:
 Ship Config: 1,170 Btu/hr (343 watts)
 Full Config: 6,142 Btu/hr (1800 watts)

IBM® Type-model	Qty x Processor	Core	L2 cache	Memory	DIMM slots	Memory cards	Disks	Disk controller	Mechanical	Slots x bays	Hot-swap pwr supplies	Warranty (yrs.)	Available date
8863-1SY	1 x Xeon™ MP 3.16GHz	SC	1MB	2x1GB	4	One	None	SAS	3U ⁴ rack	6x7	1 x 1300	3	May 2006
8863-2SY	1 x Xeon MP 3.66GHz	SC	1MB	2x1GB	4	One	None	SAS	3U rack	6x7	1 x 1300	3	May 2006
8863-3SY	1 x Xeon 7020 MP 2.67GHz	DC	2x1MB	2x1GB	4	One	None	SAS	3U rack	6x7	1 x 1300	3	May 2006
8863-4SY	1 x Xeon 7040 MP 3.0GHz	DC	2x2MB	2x1GB	4	One	None	SAS	3U rack	6x7	1 x 1300	3	May 2006
8863-E8Y	2 x Xeon MP 3.66GHz	SC	1MB	2x1GB	4	One	None	SAS	3U rack	6x7	2 x 1300	3	May 2006
8863-E9Y	1 x Xeon MP 3.16GHz	SC	1MB	2x1GB	4	One	None	SAS	3U rack	6x7	2 x 1300	3	May 2006
8863-EAY	4 x Xeon 7020 MP 2.67GHz	DC	2x1MB	8x1GB	16	Four	None	SAS	3U rack	6x7	2 x 1300	3	May 2006

Processors Up to two 64-bit Intel® Xeon™ Processor MP up to 3.66GHz¹ 667MHz FSB Single Core / Up to four 64-bit Intel Xeon Processor MP up to 3.0GHz 667MHz FSB Dual Core / NetBurst™ / Extended Memory 64 Technology™ (EM64T) / Hyper-Threading

L2 cache 1 or 2 MB / per core / at processor speed / Xcel4v™ Dynamic Server Cache

Processor upgrade Implementation 4-way SMP / up to four Xeon Processors MP (same speed/cache size) / Dual Core Capable

System board contains four Intel 604-pin micro-PGA4 ZIF sockets, four memory board slots, six Active™ PCI-X 2.0 slots, and integrated SCSI, ethernet, graphics

Active Memory™ 2GB std / 64GB max per chassis using high-capacity memory card / one memory card standard (up to four) with 4 DIMM gold-connector slots each / DIMMs must be installed in matched pairs / PC2-3200 400MHz registered 240-pin DDR2-SDRAM RDIMMs / Error Checking and Correcting (ECC) via 16-bit Checksum

Chipkill™ / Memory ProteXion™ (redundant bit steering) and **Memory Mirroring™** and Hot-swap (non-OS specific) / Hot-add (supported only with Microsoft® Windows™ Server 2003™)

SAS disk controller Some: Adaptec® AIC-9410 / Serial Attached SCSI (SAS) 3.0GHz (3GB/sec) / 64-bit 266MHz PCI-X 2.0 / ServeRaid 8i std on E8Y & EAY / optional on others

SAS connectors Dual channel controller wired to SAS backplane

SAS cabling Two standard SAS cables attached to six-bay backplane

IDE controller / cabling Enhanced IDE ATA-33 controller in CSB6 South Bridge

Disk - capacity Supports up to 73GB 10K rpm disks

Disk - bays Six 2.5" hot-swap bays / converged tray / 80-pin SCA-2 connectors

Mechanical EIA 19" rack models (3U⁴) x 28" deep / supported in NetBAY™ Racks (such as NetBAY42 SR, NetBAY42 ER)

Chipset IBM XA-64e™ 3rd Generation chipset / Integrated Processor and Memory Controller / Supports EM64T / 2 IBM PCI-X 2.0 Host Bridges / Host Bridge One supports video, optional ServeRaid 8i, ServerWorks® CSB6 South Bridge (IDE, USB, bus for Super I/O NS 87417 [diskette, keyboard, mouse]), Dual Port Broadcom 5704, and 2 PCI-X 2.0 slots / Host Bridge Two supports 4 PCI-X 2.0 slots

Slots (Active™) Six total PCI-X 2.0 slots available with power and attention indicator lights (optical sensors control power to slot) / hot replace, hot upgrade, hot expansion / separated by insulative plastic dividers, all slots support up to 266MHz

DVD-ROM / diskette 8X⁶ Slim DVD-ROM / none

Ethernet Broadcom® 5704 10/100/1000 dual ethernet / on systemboard / 64-bit 266MHz PCI-X 2.0 / Wake on LAN® / Alert on LAN™ 2

Graphics controller SVGA / ATI® 7000m / on planar / 16MB SDRAM std/max / 32-bit 33MHz PCI 2.2 bus

Ports Rear: RSA ethernet, RSA serial, two USB (Ver 2.0), keyboard, mouse, analog DB-15 graphics, two ethernet, std. serial RS-485 / Front: USB (Ver 2.0)

Security Power-on and administrator passwords / unattended boot / selectable boot

Systems management BMC standard / IPMI 2.0 / Remote Supervisor Adapter II Slimline std on E8Y & EAY / optional on others / PCI adapter / includes 10/100 ethernet and serial connectors / provides remote console and mgmt / power on/off system / monitors power status, op system, temperature, disks, fans, power supplies

Diagnostics Drop down Light Path Diagnostics / primary indicator on information panel with LEDs associated with failing components / IBM Real Time Diagnostics (operated through IBM Director) available even while server running

Software ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director

Keyboard / mouse None standard (because rack-based)

Power supplies Std: one 1300 watt hot-swap(240 VAC); Max: two hot-swap / redundant with two power supplies (some configurations) / worldwide / voltage-sensing / auto-restart / PFA

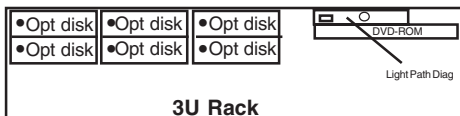
Cooling fans Eight hot-swap, redundant, multi-speed fans / one additional fan in each power supply / PFA / fan failure signals Diagnostic LED and mgmt processor

2GB PC2-3200 CL3 ECC RDIMM (2x1GB)	39M5809
4GB PC2-3200 CL3 ECC RDIMM (2x2GB)	39M5812
8GB PC2-3200 CL3 ECC RDIMM (2x4GB)	30R5145
Active Memory 4-slot Expansion Card	41Y5000
Xeon MP 3.16GHz/1MB L2 Cache Proc Upg	40K2521
Xeon MP 3.66GHz/1MB L2 Cache Proc Upg	40K2520
Xeon MP 7020 2.67GHz/2x1MB L2 Cache Proc Upg	40K2522
Xeon MP 7040 3.0GHz/2x2MB L2 Cache Proc Upg	40K2523
1300 watt Hot-Swap Power Supply (WW)	41Y5001
IBM ServeRAID™-8i SAS-SCSI Adapter	39R8729
IBM ServeRAID 6M U320 256MB Adapter	02R0988
IBM 36.4GB 10K 2.5" SAS Hot-swap HDD	40K1051
IBM 73.4GB 10K 2.5" SAS Hot-Swap HDD	40K1052
IBM Remote Supervisor Adapter II Slimline	39Y9566
Dual Core X3 upgrade kit	41Y5005
Other options at ibm.com/pc/us/accessories	

Six available 3.3 volt PCI-X 2.0 slots:

- Slot 1 - fullsize, 64-bit, 266MHz PCI-X, hot-swap
- Slot 2 - fullsize, 64-bit, 266MHz PCI-X, hot-swap
- Slot 3 - fullsize, 64-bit, 266MHz PCI-X, hot-swap
- Slot 4 - fullsize, 64-bit, 266MHz PCI-X, hot-swap
- Slot 5 - fullsize, 64-bit, 266MHz PCI-X, hot-swap
- Slot 6 - fullsize, 64-bit, 266MHz PCI-X, hot-swap

*exclusive slot available for ServeRAID 8i adapter



3U Rack

- Bay ① 5.25", 0.5", access, std DVD-ROM
- Bay ② 2.5", SL 1", access, hot-swap, open
- Bay ③ 2.5", SL 1", access, hot-swap, open
- Bay ④ 2.5", SL 1", access, hot-swap, open
- Bay ⑤ 2.5", SL 1", access, hot-swap, open
- Bay ⑥ 2.5", SL 1", access, hot-swap, open
- Bay ⑦ 2.5", SL 1", access, hot-swap, open

Max BTU Output:
 Ship Configuration: 1,086 Btu/hr (318 watts)
 Full Configuration: 5,200 Btu/hr (1524 watts)

- Dimensions: H5.25" x W17.4" x D27.6"
- Dimensions: H133.4mm x W442.0mm x D701mm
- Weight: 63 to 83lbs; 28.6 to 37.6kg
- Stealth black color
- Tool-free serviceability
- Access processors from front
- Access adapters, power supplies, memory and systemboard from top
- Setup Program by pressing F1 at startup
- Diagnostics (PC-Doctor) by pressing F2 at startup
- SCSISelect by pressing Ctrl+A at startup
- Drop Down Light Path Diagnostics (level 2 diagnostic panel) for outside view of potential problem without removing cover
- Information LED panel, diagnostic LED panel, and component LEDs give visual indications of system well-being
- Predictive Failure Analysis® alerts on disks, power supplies, memory, processors, VRMs, and fans with IBM Director

All models: Maximum internal disk capacity: 440.4GB with six 73.4GB² hot-swap SAS disks

LIMITED WARRANTY³

- ↔ 3 year parts and labor
- ↔ International Warranty Service³
- ↔ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- ↔ On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 24x7, 4 hr avg response 96P2253
 - 3 year IOR 24x7, 2 hr avg response 96P2254
 - 4 year IOR 9x5, NBD response 96P2255
 - 5 year IOR 9x5, NBD response 69P2259
- ↔ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ↔ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

IBM® Type-model	Qty x Processor	Core	L2 cache	Memory	DIMM slots	Memory cards	RSA II	Disk controller	Mechanical	Slots x bays	Hot-swap pwr supplies	Warranty (yrs.)	Available date
8864-1RU	1 x Xeon™ MP 7110N 2.5GHz	DC	2x1MB	2x1GB	4	One	Opt	SAS	3U ⁴ rack	6x7	1 x 1300	3	Oct 2006
8864-2RU	2 x Xeon MP 7120N 3.0GHz	DC	2x1MB	2x1GB	4	One	Std	SAS	3U rack	6x7	1 x 1300	3	Oct 2006
8864-3RU	2 x Xeon MP 7130N 3.16GHz	DC	2x1MB	2x1GB	4	One	Std	SAS	3U rack	6x7	1 x 1300	3	Oct 2006
8864-4RU	2 x Xeon MP 7140N 3.3GHz	DC	2x1MB	2x2GB	8	Two	Std	SAS	3U rack	6x7	2 x 1300	3	Oct 2006
8864-5RU	2 x Xeon MP 7150N 3.5GHz	DC	2x1MB	2x2GB	8	Two	Std	SAS	3U rack	6x7	2 x 1300	3	Feb 2007
8864-1TU*	1 x Xeon MP 7110N 2.5GHz	DC	2x1MB	2x1GB	4	One	Opt	SAS	3U rack	6x7	1 x 1300	3	May 2007
8864-2TU*	2 x Xeon MP 7120N 3.0GHz	DC	2x1MB	2x1GB	4	One	Opt	SAS	3U rack	6x7	1 x 1300	3	May 2007

Processors Up to two 64-bit Intel® Xeon™ Processor MP up to 3.5GHz/667MHz FSB Dual Core / NetBurst™ / Extended Memory 64 Technology™ (EM64T) / Hyper-Threading

L2 cache 1 MB / per core / at processor speed / Xcel4™ Dynamic Server Cache

L3 cache 4MB on 7110N & 7120N / 8MB on 7130N / 16MB on 7140N

Processor upgrade Implementation 4-way SMP / up to four Xeon Processors MP (same speed/cache size) / Dual Core Capable
System board contains four Intel 604-pin micro-PGA4 ZIF sockets, four memory board slots, four Active™ PCI-E x8 slots, two Active™ PCI-X 2.0 slots and integrated SCSI, ethernet, graphics

Active Memory™ 2 or 4GB std / 64GB max per chassis using high-capacity memory card / one or two memory card standard (up to four) with 4 DIMM gold-connector slots each / DIMMs must be installed in matched pairs / PC2-3200 400MHz registered 240-pin DDR2-SDRAM RDIMMs / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ / Memory ProteXion™ (redundant bit steering) and Memory Mirroring™ and Hot-swap (non-OS specific) / Hot-add (supported only with Microsoft® Windows™ Server 2003™)

SAS disk controller Some: Adaptec® AIC-9410 / Serial Attached SCSI (SAS) 3.0GHz (3GB/sec) / 64-bit 266MHz PCI-X 2.0
Some: ServeRAID™ 8i / RAID 0,1, 10, 5, 6, 60, 1E & 5EE / std on 4RU & 5RU / dedicated slot / 64-bit 133MHz PCI-X

SAS connectors Dual channel controller wired to SAS backplane

SAS cabling Two standard SAS cables attached to six-bay backplane

IDE controller / cabling Enhanced IDE ATA-33 controller in CSB6 South Bridge

Disk - capacity Supports up to 73GB 10K rpm disks

Disk - bays Six 2.5" hot-swap bays / converged tray / 80-pin SCA-2 connectors

Mechanical EIA 19" rack models (3U⁴) x 28" deep / supported in NetBAY™ Racks (such as NetBAY42 SR, NetBAY42 ER)

Chipset IBM XA-64e™ 3rd Generation chipset / Integrated Processor and Memory Controller / Supports EM64T / 2 IBM PCI-X 2.0 Host Bridges / Host Bridge One supports video, optional ServeRaid 8i, ServerWorks® CSB6 South Bridge (IDE, USB, bus for Super I/O NS 87417 [diskette, keyboard, mouse]), Dual Port Broadcom 5704, and 2 PCI-X 2.0 slots / Host Bridge Two supports 4 PCI-E x8 slots

Slots (Active™) Four Active™ PCI-E x8 slots / full height, full length / Two Active™ PCI-X 2.0 64-bit slots available with power and attention indicator lights (optical sensors control power to slot) / hot replace, hot upgrade, hot expansion / separated by insulative plastic dividers

Optical / diskette Most: 8x⁹ DVD ROM / 5RU: 24x/8x⁹ CD-RW/DVD Combo / none

Ethernet Broadcom® 5704 10/100/1000 dual ethernet / on systemboard / 64-bit 266Mhz PCI-X 2.0 / Wake on LAN® / Alert on LAN™ 2

Graphics controller SVGA / ATI™ 7000m / on planar / 16MB SDRAM std/max / 32-bit 33MHz PCI 2.2 bus

Ports Rear: RSA ethernet, RSA serial, two USB (2.0), kybd, mouse, DB-15 graphics, two ethernet, std. serial RS-485 / Front: USB (2.0)

Security Power-on and administrator passwords / unattended boot / selectable boot

System management BMC std / IPMI 2.0 / IBM Active Energy Manager™ / Remote Supervisor Adapter II Slimline std on 2RU, 3RU, 4RU & 5RU / optional on 1RU / PCI adapter / includes 10/100 ethernet and serial connectors / provides remote console and mgmt / power on/off system / monitors power status, op system, temperature, disks, fans, power supplies

Diagnostics Drop down Light Path Diagnostics / primary indicator on information panel with LEDs associated with failing components / IBM Real Time Diagnostics (operated through IBM Director) available even while server running

Software ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director

Keyboard / mouse None standard (because rack-based)

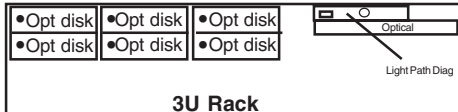
Power supplies Some: one; some: two / 1300 watt hot-swap(240 VAC); Max: two hot-swap / redundant with two power supplies (some configurations) / worldwide / voltage-sensing / auto-restart / PFA

Cooling fans Eight hot-swap, redundant, multi-speed fans / one additional fan in each power supply / PFA / fan failure signals Diagnostic LED and mgmt processor

Two available 3.3 volt PCI-X 2.0 slots:

- Slot 1 - fullsize, 64-bit, 266MHzPCI-X, hot-swap
 - Slot 2 - fullsize, 64-bit, 266MHzPCI-X, hot-swap
- Four available PCI-E x8 slots:
- Slot 3 - full-height, full-length, PCI-E x8
 - Slot 4 - full-height, full-length, PCI-E x8
 - Slot 5 - full-height, full-length, PCI-E x8
 - Slot 6 - full-height, full-length, PCI-E x8

*exclusive slot available for ServeRAID 8i adapter



- Bay ① 5.25", 0.5", access, std* DVD-ROM
- Bay ② 2.5", SL 1", access, hot-swap, open
- Bay ③ 2.5", SL 1", access, hot-swap, open
- Bay ④ 2.5", SL 1", access, hot-swap, open
- Bay ⑤ 2.5", SL 1", access, hot-swap, open
- Bay ⑥ 2.5", SL 1", access, hot-swap, open
- Bay ⑦ 2.5", SL 1", access, hot-swap, open

* CD-RW/DVD ROM std on 5RU

- Dimensions: H5.25" x W17.4" x D27.6"
- Dimensions: H133.4mm x W442.0mm x D701mm
- Weight: 63 to 83lbs; 28.6 to 37.6kg
- Stealth black color
- Tool-free serviceability
- Access processors from front
- Access adapters, power supplies, memory and systemboard from top
- Setup Program by pressing F1 at startup
- Diagnostics (PC-Doctor) by pressing F2 at startup
- SCSISelect by pressing Ctrl+A at startup
- Drop Down Light Path Diagnostics (level 2 diagnostic panel) for outside view of potential problem without removing cover
- Information LED panel, diagnostic LED panel, and component LEDs give visual indications of system well-being
- Predictive Failure Analysis® alerts on disks, power supplies, memory, processors, VRMs, and fans with IBM Director

All models: Maximum internal disk capacity: 440.4GB with six 73.4GB² hot-swap SAS disks

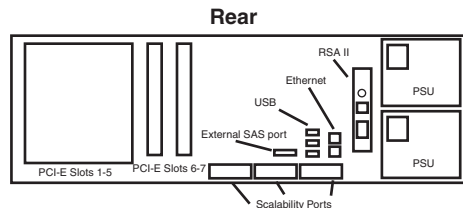
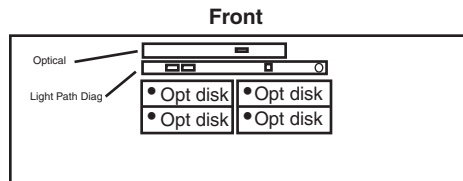
LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 24x7, 4 hr avg response 96P2253
 - 3 year IOR 24x7, 2 hr avg response 96P2254
 - 4 year IOR 9x5, NBD response 96P2255
 - 5 year IOR 9x5, NBD response 69P2259
- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

IBM® Type-model	Qty x Processor	Core	L2 cache	Memory	DIMM slots	Memory cards	Disk controller	RSA II Mechanical	Slots x bays	Hot-swap pwr supplies	Warranty (yrs.)	Available date
7141-1RU	2 x Xeon™ MP E7210	2.4GHz DC	2x4MB	4x1GB	16	Two	Std	SAS	4U ⁴ rack	7x5	2 x 1440W	3 Dec 2007

Processors	Two 64-bit Intel® Xeon™ Processor MP up to 2.4GHz¹Dual-Core / up to 2.93GHz²Quad-Core / All 1066MHz FSB / Extended Memory 64 Technology™ (EM64T)
L2 cache	2 x 2, 3 or 4 MB / on-die / at processor speed
Processor upgrade Implementation	4-way SMP / up to four Xeon Processors MP (same speed/cache size)
Active Memory™	4 or 8GB std / 128GB max per chassis using high-capacity memory card / two or four memory cards standard (up to four) with 8 DIMM gold-connector slots each / DIMMs must be installed in matched pairs / PC2-5300 667MHz registered 240-pin DDR2-SDRAM DIMMs / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ / Memory ProteXion™ (redundant bit steering) and Memory Mirroring™ and Hot-swap (non-OS specific) / Hot-add (supported only with Microsoft® Windows™ Server 2003™)
SAS disk controller	Std: LSI® 1078 SAS Controller / Serial Attached SCSI (SAS) (3GB/sec) / PCI-E x8 / RAID 0,1 Optional: ServeRAID™ 10k / RAID 5, 5E, 50 & 6 / dedicated slot / dimm / battery backup
SAS connectors	Controller wired to SAS backplane / external 4x SAS port on rear
IDE controller	Enhanced IDE ATA-100 controller in ICH7 South Bridge
Disk - capacity	Supports up to 146GB 10K or 73GB 15K rpm disks
Disk - bays	Four 2.5" hot-swap bays / converged tray / 29-pin SAS connectors
Mechanical	EIA 19" rack models (4U⁴) x 28" deep / supported in NetBAY™ Racks
Chipset	IBM X4™ 4th Generation chipset / Integrated Processor and Memory Controller / Scalable from 4 to 16 sockets / Supports EM64T / provides 7 PCI-E x8 slots / supports optional ServeRAID Xi / Intel® I/O Controller Hub 7 (ICH7) South Bridge provides: IDE, USB, bus for Super I/O, Dual Port Broadcom 5709C, RSA2(video)
Slots	Two Active™ PCI-E x8 slots / slots available with power and attention indicator lights (optical sensors control power to slot) / hot replace, hot upgrade, hot expansion / separated by insulative plastic dividers / Five PCI-E x8 slots / all full height, half length
Optical / diskette	24x8x ⁶ CD-RW/DVD Combo / none
Ethernet	Broadcom® 5709C 10/100/1000 dual ethernet / on systemboard / PCI-E x4 / Wake on LAN® / Alert on LAN™ 2
Graphics controller	SVGA / ATI® RN50 (ES1000) / on planar / 16MB SDRAM std/max
Ports	Rear: RSA ethernet, RSA serial, three USB (2.0), DB-15 graphics, 4x SAS and two ethernet Front: two USB (2.0)
Security	Power-on and administrator passwords / unattended boot / selectable boot
System management	BMC standard / IPMI 2.0 / IBM Active Energy Manager™ / Remote Supervisor Adapter II Slimline std / PCI adapter / includes 10/100 ethernet and serial connectors / provides remote console and mgmt / power on/off system / monitors power status, op system, temperature, disks, fans, power supplies
Diagnostics	Light Path Diagnostics Card / primary indicator on information panel with LEDs associated with failing components / IBM Real Time Diagnostics (operated through IBM Director) available even while server running
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director

Keyboard / mouse	None standard (because rack-based)	
Power supplies	Std/Max: Two / 1440 watt (240 VAC) / rear access / hot-swap / redundant / worldwide / voltage-sensing / auto-restart / PFA	2GB PC2-5300 CL5 ECC DDR2 RDIMM (2x1GB) 41Y2762 4GB PC2-5300 CL5 ECC DDR2 RDIMM (2x2GB) 41Y2771 8GB PC2-5300 CL5 ECC DDR2 RDIMM (2x4GB) 41Y2768
Cooling fans	Six hot-swap, redundant, multi-speed fans / one additional fan in each power supply / PFA / fan failure signals Diagnostic LED and mgmt processor	IBM Active Memory 8-slot Expansion Card 44E4252 IBM Internal Removable Flash Drive 44E4251 Xeon E7210 2.4GHz/8MB L2/Dual Core Proc 44E4244 Xeon E7320 2.13GHz/4MB L2/Quad Core Proc 44E4241 Xeon E7330 2.4GHz/6MB L2/Quad Core Proc 44E4242 Xeon X7350 2.93GHz/8MB L2/Quad Core Proc 44E4243 IBM ServeRAID-MR10k SAS Controller 43W4280 IBM 73GB 10K 2.5" SAS Hot-swap HDD 40K1052 IBM 146GB 10K 2.5" SAS Hot-Swap HDD 43X0824 IBM 73GB 15K 2.5" SAS Hot-Swap HDD 43X0837



- Bay ① 5.25", 0.5", access, CD-RW/DVD-ROM
- Bay ② 2.5", SL 1", access, hot-swap, open
- Bay ③ 2.5", SL 1", access, hot-swap, open
- Bay ④ 2.5", SL 1", access, hot-swap, open
- Bay ⑤ 2.5", SL 1", access, hot-swap, open

- Five available PCI-E x8 slots:
- Slot 1 - full-height, half-length, PCI-E x8
 - Slot 2 - full-height, half-length, PCI-E x8
 - Slot 3 - full-height, half-length, PCI-E x8
 - Slot 4 - full-height, half-length, PCI-E x8
 - Slot 5 - full-height, half-length, PCI-E x8

- Two available Hot-swap PCI-E x8 slots:
- Slot 6 - full-height, half-length, PCI-E x8, hot-swap
 - Slot 7 - full-height, half-length, PCI-E x8, hot-swap

- ⊘ Dimensions: H6.8" x W17.46" x D28.35"
- ⊘ Dimensions: H172mm x W443mm x D720mm
- ⊘ Weight: 70 to 95lbs; 31.75 to 43.2kg
- ⊘ Stealth black color
- ⊘ Tool-free serviceability
- ⊘ Access power supplies from rear
- ⊘ Access adapters, processors, memory and systemboard from top
- ⊘ Setup Program by pressing F1 at startup
- ⊘ Diagnostics (DSA) by pressing F2 at startup
- ⊘ SAS Select by pressing Ctrl+C at startup
- ⊘ Drop Down Light Path Diagnostics (level 2 diagnostic panel) for outside view of potential problem without removing cover
- ⊘ Information LED panel, diagnostic LED panel, and component LEDs give visual indications of system well-being
- ⊘ Predictive Failure Analysis® alerts on disks, power supplies, memory, processors, VRMs, and fans with IBM Director

All models: Maximum internal disk capacity: 584GB with four 146GB² hot-swap SAS disks

Other options at ibm.com/products/us/

LIMITED WARRANTY³

- ⇒ 3 year parts and labor
- ⇒ International Warranty Service³
- ⇒ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- ⇒ On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 24x7, 4 hr avg response 10N3059
 - 3 year IOR 24x7, 2 hr avg response 10N3060
 - 4 year IOR 9x5, NBD response 10N3061
 - 5 year IOR 9x5, NBD response 10N3065
- ⇒ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ⇒ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

IBM® Type-model	Qty x Processor	Core	L2 cache	Memory	DIMM slots	Memory cards	RSA II	Disk controller	Mechanical	Slots x bays	Hot-swap pwr supplies	Warranty (yrs.)	Available date
7233-2RU	2 x Xeon™ MP E7420 2.13GHz	4	2x3MB	4x1GB	16	Two	Std	SAS	4U ⁴ rack	7x5	2 x 1440W	3	Oct 2008
7233-5RU	2 x Xeon MP E7450 2.4GHz	6	3x3MB	8x1GB	32	Four	Std	SAS	4U rack	7x5	2 x 1440W	3	Oct 2008
7233-6RU	2 x Xeon MP X7460 2.66GHz	6	3x3MB	8x1GB	32	Four	Std	SAS	4U rack	7x5	2 x 1440W	3	Oct 2008
7233-7RU	2 x Xeon MP L7445 2.13GHz	4	2x3MB	4x1GB	16	Two	Std	SAS	4U rack	7x5	2 x 1440W	3	Oct 2008
7233-E5U*	2 x Xeon MP E7450 2.4GHz	6	3x3MB	8x2GB	32	Four	Std	SAS	4U rack	7x5	2 x 1440W	3	Oct 2008
7233-E2U*	1 x Xeon MP E7420 2.13GHz	4	2x3MB	2x1GB	8	One	Std	SAS	4U rack	7x5	2 x 1440W	3	Mar 2009
7233-4RU	2 x Xeon MP E7440 2.4GHz	4	2x3MB	4x1GB	16	Two	Std	SAS	4U rack	7x5	2 x 1440W	3	Apr 2009

Processors	Two 64-bit Intel® Xeon™ Processor MP up to 2.66GHz¹ Six-Core / up to 2.13GHz¹ Quad-Core / All 1066MHz FSB / Extended Memory 64 Technology™ (EM64T)
L2 cache	6 or 9MB / on-die / at processor speed
Processor upgrade Implementation	4-way SMP / up to four Xeon Processors MP (same speed/cache size) System board contains four Intel 604-pin micro-PGA4 ZIF sockets, four memory board slots, two Active™ PCI-E x8 slots, five PCI-E x8 slots and integrated SAS, ethernet, graphics
Active Memory™	4, 8 or 16GB std / 128GB max per chassis using high-capacity memory card / two or four memory cards standard (up to four) with 8 DIMM gold-connector slots each / DIMMs must be installed in matched pairs / PC2-5300 667MHz registered 240-pin DDR2-SDRAM DIMMs / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ / Memory ProteXion™ (redundant bit steering) and Memory Mirroring™ and Hot-swap (non-OS specific) / Hot-add (supported only with Microsoft® Windows™ Server 2003™)
SAS disk controller	<i>Std:</i> LSI® 1078 SAS Controller / Serial Attached SCSI (SAS) (3GB/sec) / PCI-E x8 / RAID 0,1 <i>Optional:</i> ServeRAID™ 10k / RAID 5, 5E, 50 & 6 / dedicated slot / dimm / battery backup
SAS connectors	Controller wired to SAS backplane / external 4x SAS port on rear
IDE controller	Enhanced IDE ATA-100 controller in ICH7 South Bridge
Disk - capacity	Supports up to 146GB 10K or 73GB 15K rpm disks
Disk - bays	Four 2.5" hot-swap bays / converged tray / 29-pin SAS connectors
Mechanical	EIA 19" rack models (4U⁴) x 28" deep / supported in NetBAY™ Racks
Chipset	IBM X4™ 4th Generation chipset / Integrated Processor and Memory Controller / Scalable from 4 to 16 sockets / Supports EM64T / provides 7 PCI-E x8 slots / supports optional ServeRAID Xi / Intel® I/O Controller Hub 7 (ICH7) South Bridge provides: IDE, USB, bus for Super I/O, Dual Port Broadcom 5709C, RSA2(video)
Slots	Two Active™ PCI-E x8 slots / slots available with power and attention indicator lights (optical sensors control power to slot) / hot replace, hot upgrade, hot expansion / separated by insulative plastic dividers / Five PCI-E x8 slots / all full height, half length
Optical / diskette	24x8x6 CD-RW/DVD Combo / none
Ethernet	Broadcom® 5709C 10/100/1000 dual ethernet / on systemboard / PCI-E x4 / Wake on LAN® / Alert on LAN™ 2
Graphics controller	SVGA / ATI® RN50 (ES1000) / on planar / 16MB SDRAM std/max
Ports	<i>Rear:</i> RSA ethernet, RSA serial, three USB (2.0), DB-15 graphics, 4x SAS and two ethernet <i>Front:</i> two USB (2.0)
Security	Power-on and administrator passwords / unattended boot / selectable boot
System management	BMC standard / IPMI 2.0 / PowerExecutive™ / Remote Supervisor Adapter II Slimline std / PCI adapter / includes 10/100 ethernet and serial connectors / provides remote console and mgmt / power on/off system / monitors power status, op system, temperature, disks, fans, power supplies
Diagnostics	Light Path Diagnostics Card / primary indicator on information panel with LEDs associated with failing components / IBM Real Time Diagnostics (operated through IBM Director) available even while server running
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director

Keyboard / mouse	None standard (because rack-based)	2GB PC2-5300 CL5 ECC DDR2 RDIMM (2x1GB)	41Y2762
Power supplies	<i>Std/Max:</i> Two / 1440 watt (240 VAC) / rear access / hot-swap / redundant / worldwide / voltage-sensing / auto-restart / PFA	4GB PC2-5300 CL5 ECC DDR2 RDIMM (2x2GB)	41Y2771
Cooling fans	Six hot-swap, redundant, multi-speed fans / one additional fan in each power supply / PFA / fan failure signals Diagnostic LED and mgmt processor	8GB PC2-5300 CL5 ECC DDR2 RDIMM (2x4GB)	41Y2768
		16GB PC2-5300 CL5 ECC DDR2 RDIMM (2x8GB)	43V7356
		IBM Active Memory 8-slot Expansion Card	44E4252
		IBM Internal Removable Flash Drive	44E4251
		Xeon E7420 2.13GHz/6MB L2/Quad-Core Proc	44E4469
		Xeon E7440 2.4GHz/6MB L2/Quad-Core Proc	44E4471
		Xeon L7445 2.13GHz/6MB L2/Quad-Core Proc	44E4517
		Xeon E7450 2.4GHz/9MB L2/Six-Core Proc	44E4472
		Xeon X7460 2.66GHz/9MB L2/Six-Core Proc	44E4473
		IBM ServeRAID-MR10k SAS Controller	43W4280
		IBM 73GB 10K 2.5" SAS Hot-swap HDD	40K1052
		IBM 146GB 10K 2.5" SAS Hot-Swap HDD	43X0824
		IBM 73GB 15K 2.5" SAS Hot-Swap HDD	43X0837

Front

Optical
Light Path Diag

- Opt disk
- Opt disk
- Opt disk
- Opt disk

Rear

Optical
Light Path Diag
Opt disk
Opt disk
Opt disk
Opt disk
Rear: RSA ethernet, RSA serial, three USB (2.0), DB-15 graphics, 4x SAS and two ethernet
Front: two USB (2.0)

Other options at ibm.com/products/us/

- Dimensions: H6.8" x W17.46" x D28.35"
- Dimensions: H172mm x W443mm x D720mm
- Weight: 70 to 95lbs; 31.75 to 43.2kg
- Stealth black color
- Tool-free serviceability
- Access power supplies from rear
- Access adapters, processors, memory and systemboard from top
- Setup Program by pressing F1 at startup
- Diagnostics (DSA) by pressing F2 at startup
- SAS Select by pressing Ctrl+C at startup
- Drop Down Light Path Diagnostics (level 2 diagnostic panel) for outside view of potential problem without removing cover
- Information LED panel, diagnostic LED panel, and component LEDs give visual indications of system well-being
- Predictive Failure Analysis® alerts on disks, power supplies, memory, processors, VRMs, and fans with IBM Director

LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 24x7, 4 hr avg response 10N3059
 - 3 year IOR 24x7, 2 hr avg response 10N3060
 - 4 year IOR 9x5, NBD response 10N3061
 - 5 year IOR 9x5, NBD response 10N3065
- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

All models: Maximum internal disk capacity: 584GB with four 146GB² hot-swap SAS disks

IBM® Type-model	Qty x Processor	Core	L2 cache	Memory	DIMM slots	Memory cards	Disks	Disk controller	Mechanical	Slots x bays	Hot-swap pwr supplies	Warranty (yrs.)	Available date	
8872-7RY	2 x Xeon™ MP 7020	2.66GHz	DC	2x1MB	2x1GB	8	Two	None	SAS	3U ⁴ rack	6x7	2 x 1300	3	May 2006
8872-8RY	2 x Xeon MP 7040	3.0GHz	DC	2x2MB	2x1GB	8	Two	None	SAS	3U rack	6x7	2 x 1300	3	May 2006

Processors Two 64-bit Intel® Xeon™ Processor MP up to 3.0GHz¹ 667MHz FSB Dual Core / NetBurst™ / Extended Memory 64 Technology™ (EM64T) / Hyper-Threading technology
L2 cache 1 or 2MB / per core / Xcel4™ Dynamic Server Cache (256MB per 4 CPUs starting at 8-way)
L3 cache None
Processor upgrade 4-way SMP / up to four Xeon Processors (same speed/cache/core) per chassis / Dual Core Capable / up to 32-way (eight chassis interconnected)
Implementation System board contains four Intel 604-pin micro-PGA4 ZIF sockets, four memory board slots, six Active™ PCI-X 2.0 slots, and integrated Serial Attached SCSI, ethernet, graphics

Active Memory™ 2GB std / 64GB max per chassis using high-capacity memory card / 512GB max (eight chassis interconnect) / two memory cards standard (up to four) with 4 DIMM gold-connector slots each / DIMMs must be installed in matched pairs / PC2-3200 400MHz registered 240-pin DDR2-SDRAM RDIMMs / **Error Checking and Correcting (ECC)** via 16-bit Checksum Chipkill™ / **Memory ProteXion™** (redundant bit steering) and **Memory Mirroring™** and Hot-swap (non-OS specific) / Hot-add (supported only with Microsoft® Windows™ Server 2003™)

SAS disk controller ALL: Adaptec® AIC-9410 / **Serial Attached SCSI (SAS)** 3.0GHz (3GB/sec) / 64-bit 266MHz PCI-X 2.0 / ServeRaid 8i optional with dedicated slot
SAS connectors Dual channel controller wired to SAS backplane
SAS cabling Two standard SAS cables attached to six-bay backplane
IDE controller / cabling Enhanced IDE ATA-33 controller in CSB6 South Bridge
Disk - capacity None / supports up to 73GB 10,000 rpm disks
Disk - bays Six 2.5" hot-swap bays / converged tray / 80-pin SCA-2 connectors
Mechanical **EIA 19" rack models (3U⁴)** x 28" deep / supported in NetBAY™ Racks (such as NetBAY42 SR, NetBAY42 ER) / connect eight chassis (x3950 or x3950 E) to achieve 32-way in 24U

Chipset **IBM XA-64e™ 3rd Generation chipset** / Integrated Processor and Memory Controller / Supports EM64T / Support for external scalability and memory control / 2 IBM PCI-X 2.0 Host Bridges / Host Bridge One supports video, optional ServeRaid 8i, ServerWorks® CSB6 South Bridge (IDE, USB, bus for Super I/O NS 87417 [diskette, keyboard, mouse]), Dual Port Broadcom 5704, and 2 PCI-X 2.0 slots / Host Bridge Two supports 4 PCI-X 2.0 slots
Slots (Active™) Six total PCI-X 2.0 slots available with power and attention indicator lights (optical sensors control power to slot) / hot replace, hot upgrade, hot expansion / separated by insulative plastic dividers, all slots support up to 266MHz

DVD-ROM / diskette 8X⁶ Slim DVD-ROM / none
Ethernet Broadcom® 5704 10/100/1000 dual ethernet per chassis / on systemboard / 64-bit 266Mhz PCI-X 2.0 / Wake on LAN® / Alert on LAN™ 2
Graphics controller SVGA / ATI® 7000M / on planar / 16MB SDRAM std/max / 32-bit 33MHz PCI 2.2 bus
Ports Rear: Three Scalability ports, RSA ethernet, RSA serial, two USB (Ver 2.0), keyboard, mouse, analog DB-15 graphics, two ethernet, std. serial RS-485 / Front: One USB (Ver 2.0)

Security Power-on and administrator passwords / unattended boot / selectable boot
Systems management **Remote Supervisor Adapter II slimline** / PCI adapter / includes 10/100 ethernet, RJ-11, and serial connectors / provides remote console and mgmt / power on/off system / monitors power status, op system, temperature, disks, fans, power supplies / BMC / IMPI 2.0 /

Diagnostics **Drop down Light Path Diagnostics** / primary indicator on information panel with LEDs associated with failing components / IBM Real Time Diagnostics (operated through IBM Director)

Software **ServerGuide™** (CD-ROM installation and configuration utilities), IBM Director

Keyboard / mouse None standard (because rack-based)
Power supplies Std: Two 1300 watt hot-swap(240 VAC); Max: two hot-swap / fully redundant with two power supplies /worldwide / voltage-sensing / auto-restart / rear accessible fans in each power supply / PFA

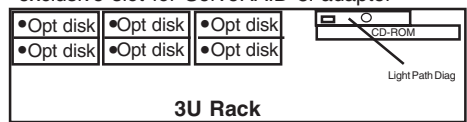
Cooling fans Eight hot-swap, redundant, multi-speed fans / one additional fan in each power supply / PFA / fan failure signals Diagnostic LED and mgmt processor

8W = 2 x XpandOnDemand Scalability kits 2.3m	2GB PC2-3200 CL3 ECC RDIMM (2x1GB)	39M5809
16W = 6 x XpandOnDemand Scalability kits 2.3m	4GB PC2-3200 CL3 ECC RDIMM (2x2GB)	39M5812
32W = 8 x XpandOnDemand Scalability kits 2.3m + 4 x2.9m	8GB PC2-3200 CL3 ECC RDIMM (2x4GB)	30R5145
Six available 3.3 volt PCI-X 2.0 slots:	Active Memory 4-slot Expansion Card	41Y5000
Slot 1 - fullsize, 64-bit, 266MHzPCI-X, hot-swap	Xeon MP 7020 2.66GHz/2x1MB L2 Proc Upg	40K2522
Slot 2 - fullsize, 64-bit, 266MHzPCI-X, hot-swap	Xeon MP 7040 3.0GHz/2x2MB L2 Proc Upg	40K2523
Slot 3 - fullsize, 64-bit, 266MHzPCI-X, hot-swap	IBM ServeRAID™-8i SAS-SCSI Adapter	39R8729
Slot 4 - fullsize, 64-bit, 266MHzPCI-X, hot-swap	IBM ServeRAID 6M U320 256MB Adapter	02R0988
Slot 5 - fullsize, 64-bit, 266MHzPCI-X, hot-swap	IBM 36.4GB 10K 2.5" SAS Hot-swap HDD	40K1051
Slot 6 - fullsize, 64-bit, 266MHzPCI-X, hot-swap	IBM 73.4GB 10K 2.5" SAS Hot-Swap HDD	40K1052
*exclusive slot for ServeRAID 8i adapter	XpandOnDemand™ Scalability Cable - 2.3M	13M7414
	XpandOnDemand™ Scalability Cable - 2.9M	13M7416
	x3950 Scalability Enablement Memory Adapter	41Y5004
	x3950 E Modular Expansion Enclosure	8874-3RY
	Dual Core X3 upgrade kit	41Y5005
	Other options at ibm.com/pc/us/accessories	

Dimensions: H5.05" x W17.32" x D28.15"
 Dimensions: H128.35mm x W440.0mm x D715mm
 Weight: 70 to 85lbs; 31.75 to 38.5kg
 Stealth black color
 Tool-free serviceability
 Access adapters, power supplies, processors, memory and systemboard from top
 Setup Program by pressing F1 at startup
 Diagnostics (PC-Doctor) by pressing F2 at startup
 SCSISelect by pressing Ctrl+A at startup
 Drop Down Light Path Diagnostics (level 2 diagnostic panel) for outside view of potential problem without removing cover
 Information LED panel, diagnostic LED panel, and component LEDs give visual indications of system well-being
 Predictive Failure Analysis® alerts on disks, power supplies, memory, processors, VRMs, and fans with IBM Director

LIMITED WARRANTY³

- ⇐ 3 year parts and labor
- ⇐ International Warranty Service³
- ⇐ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- ⇐ On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 24x7, 4 hr avg response 96P2688
 - 3 year IOR 24x7, 2 hr avg response 96P2689
 - 4 year IOR 9x5, NBD response 96P2690
 - 5 year IOR 9x5, NBD response 96P2694
- ⇐ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ⇐ 24x7¹⁴ toll-free support for warranty issues during the warranty period³



3U Rack
 Bay ① 5.25", 0.5", access, std CD-ROM
 Bay ② 2.5", SL 1", access, hot-swap, open
 Bay ③ 2.5", SL 1", access, hot-swap, open
 Bay ④ 2.5", SL 1", access, hot-swap, open
 Bay ⑤ 2.5", SL 1", access, hot-swap, open
 Bay ⑥ 2.5", SL 1", access, hot-swap, open
 Bay ⑦ 2.5", SL 1", access, hot-swap, open

Max BTU Output:
 Ship Configuration: 1,325 Btu/hr (388 watts)
 Full Configuration: 5,200 Btu/hr (1524 watts)

All models: Maximum internal disk capacity: 440.4GB with six 73.4GB² hot-swap SAS disks

IBM® Type-model	Qty x Processor	Core	L2 cache	Memory	DIMM slots	Memory cards	Disks	Disk controller	Mechanical	Slots x bays	Hot-swap pwr supplies	Warranty (yrs.)	Available date
8878-1RY	2 x Xeon™ MP 7110N	2.5GHz	DC 2x1MB	2x1GB	8	Two	None	SAS	3U ⁴ rack	6x7	2 x 1300	3	Nov 2006
8878-2RY	2 x Xeon MP 7120N	3.0GHz	DC 2x1MB	2x2GB	8	Two	None	SAS	3U rack	6x7	2 x 1300	3	Nov 2006
8878-3RY	2 x Xeon MP 7130N	3.16GHz	DC 2x1MB	2x2GB	8	Two	None	SAS	3U rack	6x7	2 x 1300	3	Nov 2006
8878-4RY	2 x Xeon MP 7140N	3.3GHz	DC 2x1MB	2x2GB	16	Four	None	SAS	3U rack	6x7	2 x 1300	3	Nov 2006
8878-5RY	2 x Xeon MP 7150N	3.5GHz	DC 2x1MB	2x2GB	16	Four	None	SAS	3U rack	6x7	2 x 1300	3	Feb 2007

Processors Two 64-bit Intel® Xeon™ Processor MP up to 3.5GHz¹ 667MHz FSB Dual Core / NetBurst™ / Extended Memory 64 Technology™ (EM64T) / Hyper-Threading technology
L2 cache 1MB / per core / Xcel4v™ Dynamic Server Cache (256MB per 4 CPUs starting at 8-way)
L3 cache 4MB on 7110N & 7120N / 8MB on 7130N / 16MB on 7140N
Processor upgrade 4-way SMP / up to four Xeon Processors (same speed/cache/core) per chassis / Dual Core Capable / up to 32-way (eight chassis interconnected)
Implementation System board contains four Intel 604-pin micro-PGA4 ZIF sockets, four memory board slots, six Active™ PCI-X 2.0 slots, and integrated Serial Attached SCSI, ethernet, graphics

Active Memory™ 2GB std / 64GB max per chassis using high-capacity memory card / 512GB max (eight chassis interconnect) / two memory cards standard (up to four) with 4 DIMM gold-connector slots each / DIMMs must be installed in matched pairs / PC2-3200 400MHz registered 240-pin DDR2-SDRAM RDIMMs / **Error Checking and Correcting (ECC)** via 16-bit Checksum Chipkill™ / **Memory ProteXion™** (redundant bit steering) and **Memory Mirroring™** and Hot-swap (non-OS specific) / Hot-add (supported only with Microsoft® Windows™ Server 2003™)

SAS disk controller ALL: Adaptec® AIC-9410 / **Serial Attached SCSI (SAS)** 3.0GHz (3GB/sec) / 64-bit 266MHz PCI-X 2.0 / **ServeRAID™ 8i / RAID 0, 1, 10, 5, 6, 60, 1E & 5EE** / standard on 2RY, 3RY & 4RY / dedicated slot / 64-bit 133MHz PCI-X / optional on others
SAS connectors Dual channel controller wired to SAS backplane
SAS cabling Two standard SAS cables attached to six-bay backplane
IDE controller / cabling Enhanced IDE ATA-33 controller in CSB6 South Bridge
Disk - capacity None / supports up to 73GB 10,000 rpm disks
Disk - bays Six 2.5" hot-swap bays / converged tray / 80-pin SCA-2 connectors
Mechanical **EIA 19" rack models (3U)** x 28" deep / supported in NetBAY™ Racks (such as NetBAY42 SR, NetBAY42 ER) / connect eight chassis (x3950 or x3950 E) to achieve 32-way in 24U

Chipset **IBM XA-64e™ 3rd Generation chipset** / Integrated Processor and Memory Controller / Supports EM64T / Support for external scalability and memory control / 2 IBM PCI-X 2.0 Host Bridges / Host Bridge One supports video, optional ServeRaid 8i, ServerWorks® CSB6 South Bridge (IDE, USB, bus for Super I/O NS 87417 [diskette, keyboard, mouse]), Dual Port Broadcom 5704, and 2 PCI-X 2.0 slots / Host Bridge Two supports 4 PCI-X 2.0 slots
Slots (Active™) Six total PCI-X 2.0 slots available with power and attention indicator lights (optical sensors control power to slot) / hot replace, hot upgrade, hot expansion / separated by insulative plastic dividers, all slots support up to 266MHz

DVD-ROM / diskette 8X⁶ Slim DVD-ROM / none
Ethernet Broadcom® 5704 10/100/1000 dual ethernet per chassis / on systemboard / 64-bit 266Mhz PCI-X 2.0 / Wake on LAN® / Alert on LAN™ 2

Graphics controller SVGA / ATI® 7000M / on planar / 16MB SDRAM std/max / 32-bit 33MHz PCI 2.2 bus
Ports Rear: Three Scalability ports, RSA ethernet, RSA serial, two USB (Ver 2.0), keyboard, mouse, analog DB-15 graphics, two ethernet, std. serial RS-485 / Front: One USB (Ver 2.0)

Security Power-on and administrator passwords / unattended boot / selectable boot
System management **Remote Supervisor Adapter II slimline** / PCI adapter / includes 10/100 ethernet, RJ-11, and serial connectors / provides remote console and mgmt / power on/off system / monitors power status, op system, temperature, disks, fans, power supplies / BMC / IMPI 2.0 / **IBM Active Energy Manager™**

Diagnostics **Drop down Light Path Diagnostics** / primary indicator on information panel with LEDs associated with failing components / IBM Real Time Diagnostics (operated through IBM Director)

Software **ServerGuide™** (CD-ROM installation and configuration utilities), IBM Director

Keyboard / mouse None standard (because rack-based)
Power supplies Std: Two 1300 watt hot-swap(240 VAC); Max: two hot-swap / fully redundant with two power supplies / worldwide / voltage-sensing / auto-restart / rear accessible fans in each power supply / PFA

Cooling fans Eight hot-swap, redundant, multi-speed fans / one additional fan in each power supply / PFA / fan failure signals Diagnostic LED and mgmt processor

8W = 2 x XpandOnDemand Scalability kits 2.3m	2GB PC2-3200 CL3 ECC RDIMM (2x1GB)	39M5809
16W = 6 x XpandOnDemand Scalability kits 2.3m	4GB PC2-3200 CL3 ECC RDIMM (2x2GB)	39M5812
32W = 8 x XpandOnDemand Scalability kits 2.3m + 4 x2.9m	8GB PC2-3200 CL3 ECC RDIMM (2x4GB)	30R5145
Six available 3.3 volt PCI-X 2.0 slots:	Active Memory 4-slot Expansion Card	41Y5000
Slot 1 - fullsize, 64-bit, 266MHzPCI-X, hot-swap	Xeon 7110N 2.5GHz/4MB L3/Dual Core Proc	40K1259
Slot 2 - fullsize, 64-bit, 266MHzPCI-X, hot-swap	Xeon 7120N 3.0GHz/4MB L3/Dual Core Proc	40K1260
Slot 3 - fullsize, 64-bit, 266MHzPCI-X, hot-swap	Xeon 7130N 3.16GHz/8MB L3/Dual Core Proc	40K1261
Slot 4 - fullsize, 64-bit, 266MHzPCI-X, hot-swap	Xeon 7140N 3.3GHz/16MB L3/Dual Core Proc	40K1262
Slot 5 - fullsize, 64-bit, 266MHzPCI-X, hot-swap	Xeon 7150N 3.5GHz/16MB L3/Dual Core Proc	43V4553
Slot 6 - fullsize, 64-bit, 266MHzPCI-X, hot-swap	IBM ServeRAID™-8i Adapter	39R8729
*exclusive slot for ServeRAID 8i adapter	IBM ServeRAID 6M U320 256MB Adapter	39R8816
	IBM 36.4GB 10K 2.5" SAS Hot-swap HDD	40K1051
	IBM 73.4GB 10K 2.5" SAS Hot-Swap HDD	40K1052
	XpandOnDemand™ Scalability Cable - 2.3M	13M7414
	XpandOnDemand™ Scalability Cable - 2.9M	13M7416
	x3950 Scalability Enablement Memory Adapter	41Y5004
	x3950 E Modular Expansion Enclosure	8874-3RY
	Dual Core X3 upgrade kit	41Y5005
	Other options at ibm.com/products/us	

8W = 2 x XpandOnDemand Scalability kits 2.3m
 16W = 6 x XpandOnDemand Scalability kits 2.3m
 32W = 8 x XpandOnDemand Scalability kits 2.3m + 4 x2.9m
 Six available 3.3 volt PCI-X 2.0 slots:

Slot 1 - fullsize, 64-bit, 266MHzPCI-X, hot-swap
 Slot 2 - fullsize, 64-bit, 266MHzPCI-X, hot-swap
 Slot 3 - fullsize, 64-bit, 266MHzPCI-X, hot-swap
 Slot 4 - fullsize, 64-bit, 266MHzPCI-X, hot-swap
 Slot 5 - fullsize, 64-bit, 266MHzPCI-X, hot-swap
 Slot 6 - fullsize, 64-bit, 266MHzPCI-X, hot-swap
 *exclusive slot for ServeRAID 8i adapter



3U Rack

Bay ① 2.5", 0.5", access, std CD-ROM
 Bay ② 2.5", SL 1", access, hot-swap, open
 Bay ③ 2.5", SL 1", access, hot-swap, open
 Bay ④ 2.5", SL 1", access, hot-swap, open
 Bay ⑤ 2.5", SL 1", access, hot-swap, open
 Bay ⑥ 2.5", SL 1", access, hot-swap, open
 Bay ⑦ 2.5", SL 1", access, hot-swap, open

Max BTU Output:
 Ship Configuration: 1,325 Btu/hr (388 watts)
 Full Configuration: 5,200 Btu/hr (1524 watts)

- ⊗ Dimensions: H5.05" x W17.32" x D28.15"
- ⊗ Dimensions: H128.35mm x W440.0mm x D715mm
- ⊗ Weight: 70 to 85lbs; 31.75 to 38.5kg
- ⊗ Stealth black color
- ⊗ Tool-free serviceability
- ⊗ Access adapters, power supplies, processors, memory and systemboard from top
- ⊗ Setup Program by pressing F1 at startup
- ⊗ Diagnostics (PC-Doctor) by pressing F2 at startup
- ⊗ SCSISelect by pressing Ctrl+A at startup
- ⊗ Drop Down Light Path Diagnostics (level 2 diagnostic panel) for outside view of potential problem without removing cover
- ⊗ Information LED panel, diagnostic LED panel, and component LEDs give visual indications of system well-being
- ⊗ Predictive Failure Analysis® alerts on disks, power supplies, memory, processors, VRMs, and fans with IBM Director

All models: Maximum internal disk capacity: 440.4GB with six 73.4GB² hot-swap SAS disks

LIMITED WARRANTY³

- ⊗ 3 year parts and labor
- ⊗ International Warranty Service³
- ⊗ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- ⊗ On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 24x7, 4 hr avg response 96P2688
 - 3 year IOR 24x7, 2 hr avg response 96P2689
 - 4 year IOR 9x5, NBD response 96P2690
 - 5 year IOR 9x5, NBD response 96P2694
- ⊗ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ⊗ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

IBM® Type-model	Qty x Processor	Core	L2 cache	Memory	DIMM slots	Memory cards	Disks	Disk controller	Mechanical	Slots x bays	Hot-swap pwr supplies	Warranty (yrs.)	Available date
8878-3AU	4 x Xeon™ MP 7130N	3.16GHz	DC 2x1MB	2x2GB	16	Four	None	SAS	3U ⁴ rack	6x7	2 x 1300	3	May 2007
8878-5AU	4 x Xeon™ MP 7150N	3.5GHz	DC 2x1MB	2x2GB	16	Four	None	SAS	3U rack	6x7	2 x 1300	3	May 2007
8878-3BU	4 x Xeon™ MP 7130N	3.16GHz	DC 2x1MB	2x2GB	16	Four	None	SAS	3U rack	6x7	2 x 1300	3	May 2007
8878-5BU	4 x Xeon™ MP 7150N	3.5GHz	DC 2x1MB	2x2GB	16	Four	None	SAS	3U rack	6x7	2 x 1300	3	May 2007

Processors Four 64-bit Intel® Xeon™ Processor MP up to 3.5GHz¹ 667MHz FSB Dual Core / NetBurst™ / Extended Memory 64 Technology™ (EM64T) / Hyper-Threading technology
L2 cache 1MB / per core / Xcel4v™ Dynamic Server Cache (256MB per 4 CPUs starting at 8-way)
L3 cache 8MB on 7130N / 16MB on 7140N & 7150N
Processor upgrade 4-way SMP / up to four Xeon Processors (same speed/cache/core) per chassis / Dual Core Capable / up to 32-way (eight chassis interconnected)
Implementation System board contains four Intel 604-pin micro-PGA4 ZIF sockets, four memory board slots, six Active™ PCI-X 2.0 slots, and integrated Serial Attached SCSI, ethernet, graphics

Active Memory™ 4GB std / 64GB max per chassis using high-capacity memory card / 512GB max (eight chassis interconnect) / two memory cards standard (up to four) with 4 DIMM gold-connector slots each / DIMMs must be installed in matched pairs / PC2-3200 400MHz registered 240-pin DDR2-SDRAM RDIMMs / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ / Memory ProteXion™ (redundant bit steering) and Memory Mirroring™ and Hot-swap (non-OS specific) / Hot-add (supported only with Microsoft® Windows™ Server 2003™)

SAS disk controller ALL: Adaptec® AIC-9410 / Serial Attached SCSI (SAS) 3.0GHz (3GB/sec) / 64-bit 266MHz PCI-X 2.0 / ServeRAID™ 8i / RAID 0, 1, 10, 5, 6, 60, 1E & 5EE / standard on 2RY, 3RY & 4RY / dedicated slot / 64-bit 133MHz PCI-X / optional on others
SAS connectors Dual channel controller wired to SAS backplane
SAS cabling Two standard SAS cables attached to six-bay backplane
IDE controller / cabling Enhanced IDE ATA-33 controller in CSB6 South Bridge
Disk - capacity None / supports up to 73GB 10,000 rpm disks
Disk - bays Six 2.5" hot-swap bays / converged tray / 80-pin SCA-2 connectors
Mechanical EIA 19" rack models (3U) x 28" deep / supported in NetBAY™ Racks (such as NetBAY42 SR, NetBAY42 ER) / connect eight chassis (x3950 or x3950 E) to achieve 32-way in 24U

Chipset IBM XA-64e™ 3rd Generation chipset / Integrated Processor and Memory Controller / Supports EM64T / Support for external scalability and memory control / 2 IBM PCI-X 2.0 Host Bridges / Host Bridge One supports video, optional ServeRAid 8i, ServerWorks® CSB6 South Bridge (IDE, USB, bus for Super I/O NS 87417 [diskette, keyboard, mouse]), Dual Port Broadcom 5704, and 2 PCI-X 2.0 slots / Host Bridge Two supports 4 PCI-X 2.0 slots
Slots (Active™) Six total PCI-X 2.0 slots available with power and attention indicator lights (optical sensors control power to slot) / hot replace, hot upgrade, hot expansion / separated by insulative plastic dividers, all slots support up to 266MHz

DVD-ROM / diskette 8X⁶ Slim DVD-ROM / none
Ethernet Broadcom® 5704 10/100/1000 dual ethernet per chassis / on systemboard / 64-bit 266MHz PCI-X 2.0 / Wake on LAN® / Alert on LAN™ 2
Graphics controller SVGA / ATI® 7000M / on planar / 16MB SDRAM std/max / 32-bit 33MHz PCI 2.2 bus
Ports Rear: Three Scalability ports, RSA ethernet, RSA serial, two USB (Ver 2.0), keyboard, mouse, analog DB-15 graphics, two ethernet, std. serial RS-485 / Front: One USB (Ver 2.0)

Security Power-on and administrator passwords / unattended boot / selectable boot
System management Remote Supervisor Adapter II slimline / PCI adapter / includes 10/100 ethernet, RJ-11, and serial connectors / provides remote console and mgmt / power on/off system / monitors power status, op system, temperature, disks, fans, power supplies / BMC / IMPI 2.0 / IBM Active Energy Manager™

Diagnostics Drop down Light Path Diagnostics / primary indicator on information panel with LEDs associated with failing components / IBM Real Time Diagnostics (operated through IBM Director)

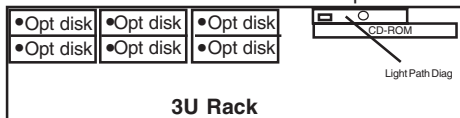
Software ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director

Keyboard / mouse None standard (because rack-based)
Power supplies Std: Two 1300 watt hot-swap(240 VAC); Max: two hot-swap / fully redundant with two power supplies / worldwide / voltage-sensing / auto-restart / rear accessible fans in each power supply / PFA
Cooling fans Eight hot-swap, redundant, multi-speed fans / one additional fan in each power supply / PFA / fan failure signals Diagnostic LED and mgmt processor

2GB PC2-3200 CL3 ECC RDIMM (2x1GB)	39M5809
4GB PC2-3200 CL3 ECC RDIMM (2x2GB)	39M5812
8GB PC2-3200 CL3 ECC RDIMM (2x4GB)	30R5145
Active Memory 4-slot Expansion Card	41Y5000
Xeon 7110N 2.5GHz/4MB L3/Dual Core Proc	40K1259
Xeon 7120N 3.0GHz/4MB L3/Dual Core Proc	40K1260
Xeon 7130N 3.16GHz/8MB L3/Dual Core Proc	40K1261
Xeon 7140N 3.3GHz/16MB L3/Dual Core Proc	40K1262
Xeon 7150N 3.5GHz/16MB L3/Dual Core Proc	43V4553
IBM ServeRAID™-8i Adapter	39R8729
IBM ServeRAID 6M U320 256MB Adapter	39R8816
IBM 36.4GB 10K 2.5" SAS Hot-swap HDD	40K1051
IBM 73.4GB 10K 2.5" SAS Hot-Swap HDD	40K1052
XpandOnDemand™ Scalability Cable - 2.3M	13M7414
XpandOnDemand™ Scalability Cable - 2.9M	13M7416
x3950 Scalability Enablement Memory Adapter	41Y5004
x3950 E Modular Expansion Enclosure	8874-3RY
Dual Core X3 upgrade kit	41Y5005
Other options at ibm.com/products/us	

8W = 2 x XpandOnDemand Scalability kits 2.3m
 16W = 6 x XpandOnDemand Scalability kits 2.3m
 32W = 8 x XpandOnDemand Scalability kits 2.3m + 4 x2.9m
 Six available 3.3 volt PCI-X 2.0 slots:

Slot 1 - fullsize, 64-bit, 266MHzPCI-X, hot-swap
 Slot 2 - fullsize, 64-bit, 266MHzPCI-X, hot-swap
 Slot 3 - fullsize, 64-bit, 266MHzPCI-X, hot-swap
 Slot 4 - fullsize, 64-bit, 266MHzPCI-X, hot-swap
 Slot 5 - fullsize, 64-bit, 266MHzPCI-X, hot-swap
 Slot 6 - fullsize, 64-bit, 266MHzPCI-X, hot-swap
 *exclusive slot for ServeRAID 8i adapter



Bay ① 5.25", 0.5", access, std CD-ROM
 Bay ② 2.5", SL 1", access, hot-swap, open
 Bay ③ 2.5", SL 1", access, hot-swap, open
 Bay ④ 2.5", SL 1", access, hot-swap, open
 Bay ⑤ 2.5", SL 1", access, hot-swap, open
 Bay ⑥ 2.5", SL 1", access, hot-swap, open
 Bay ⑦ 2.5", SL 1", access, hot-swap, open

Max BTU Output:
 Ship Configuration: 1,325 Btu/hr (388 watts)
 Full Configuration: 5,200 Btu/hr (1524 watts)

- ⊗ Dimensions: H5.05" x W17.32" x D28.15"
- ⊗ Dimensions: H128.35mm x W440.0mm x D715mm
- ⊗ Weight: 70 to 85lbs; 31.75 to 38.5kg
- ⊗ Stealth black color
- ⊗ Tool-free serviceability
- ⊗ Access adapters, power supplies, processors, memory and systemboard from top
- ⊗ Setup Program by pressing F1 at startup
- ⊗ Diagnostics (PC-Doctor) by pressing F2 at startup
- ⊗ SCSISelect by pressing Ctrl+A at startup
- ⊗ Drop Down Light Path Diagnostics (level 2 diagnostic panel) for outside view of potential problem without removing cover
- ⊗ Information LED panel, diagnostic LED panel, and component LEDs give visual indications of system well-being
- ⊗ Predictive Failure Analysis® alerts on disks, power supplies, memory, processors, VRMs, and fans with IBM Director

All models: Maximum internal disk capacity: 440.4GB with six 73.4GB² hot-swap SAS disks

LIMITED WARRANTY³

- ⊗ 3 year parts and labor
- ⊗ International Warranty Service³
- ⊗ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- ⊗ On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 24x7, 4 hr avg response 96P2688
 - 3 year IOR 24x7, 2 hr avg response 96P2689
 - 4 year IOR 9x5, NBD response 96P2690
 - 5 year IOR 9x5, NBD response 96P2694
- ⊗ Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- ⊗ 24x7¹⁴ toll-free support for warranty issues during the warranty period³

IBM® Type-model	Qty x Processor	Core	L2 cache	Memory	DIMM slots	Memory cards	Disks	Disk controller	Mechanical	Slots x bays	Hot-swap pwr supplies	Warranty (yrs.)	Available date
8878-3DU	4 x Xeon™ MP 7130N	3.16GHz	DC 2x1MB	2x2GB	16	Four	None	SAS	3U ⁴ rack	6x7	2 x 1300	3	May 2007
8878-5DU	4 x Xeon™ MP 7150N	3.5GHz	DC 2x1MB	2x2GB	16	Four	None	SAS	3U rack	6x7	2 x 1300	3	May 2007
8878-3EU	4 x Xeon™ MP 7130N	3.16GHz	DC 2x1MB	2x2GB	16	Four	None	SAS	3U rack	6x7	2 x 1300	3	May 2007
8878-5EU	4 x Xeon™ MP 7150N	3.5GHz	DC 2x1MB	2x2GB	16	Four	None	SAS	3U rack	6x7	2 x 1300	3	May 2007

Processors Four 64-bit Intel® Xeon™ Processor MP up to 3.5GHz¹ 667MHz FSB Dual Core / NetBurst™ / Extended Memory 64 Technology™ (EM64T) / Hyper-Threading technology
L2 cache 1MB / per core / Xcel4v™ Dynamic Server Cache (256MB per 4 CPUs starting at 8-way)
L3 cache 8MB on 7130N / 16MB on 7140N & 7150N
Processor upgrade 4-way SMP / up to four Xeon Processors (same speed/cache/core) per chassis / Dual Core Capable / up to 32-way (eight chassis interconnected)
Implementation System board contains four Intel 604-pin micro-PGA4 ZIF sockets, four memory board slots, six Active™ PCI-X 2.0 slots, and integrated Serial Attached SCSI, ethernet, graphics

Active Memory™ 4GB std / 64GB max per chassis using high-capacity memory card / 512GB max (eight chassis interconnect) / two memory cards standard (up to four) with 4 DIMM gold-connector slots each / DIMMs must be installed in matched pairs / PC2-3200 400MHz registered 240-pin DDR2-SDRAM RDIMMs / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ / Memory ProteXion™ (redundant bit steering) and Memory Mirroring™ and Hot-swap (non-OS specific) / Hot-add (supported only with Microsoft® Windows™ Server 2003™)

SAS disk controller ALL: Adaptec® AIC-9410 / Serial Attached SCSI (SAS) 3.0GHz (3GB/sec) / 64-bit 266MHz PCI-X 2.0 / ServeRAID™ 8i / RAID 0, 1, 10, 5, 6, 60, 1E & 5EE / standard on 2RY, 3RY & 4RY / dedicated slot / 64-bit 133MHz PCI-X / optional on others
SAS connectors Dual channel controller wired to SAS backplane
SAS cabling Two standard SAS cables attached to six-bay backplane
IDE controller / cabling Enhanced IDE ATA-33 controller in CSB6 South Bridge
Disk - capacity None / supports up to 73GB 10,000 rpm disks
Disk - bays Six 2.5" hot-swap bays / converged tray / 80-pin SCA-2 connectors
Mechanical EIA 19" rack models (3U) x 28" deep / supported in NetBAY™ Racks (such as NetBAY42 SR, NetBAY42 ER) / connect eight chassis (x3950 or x3950 E) to achieve 32-way in 24U

Chipset IBM XA-64e™ 3rd Generation chipset / Integrated Processor and Memory Controller / Supports EM64T / Support for external scalability and memory control / 2 IBM PCI-X 2.0 Host Bridges / Host Bridge One supports video, optional ServeRAid 8i, ServerWorks® CSB6 South Bridge (IDE, USB, bus for Super I/O NS 87417 [diskette, keyboard, mouse]), Dual Port Broadcom 5704, and 2 PCI-X 2.0 slots / Host Bridge Two supports 4 PCI-X 2.0 slots
Slots (Active™) Six total PCI-X 2.0 slots available with power and attention indicator lights (optical sensors control power to slot) / hot replace, hot upgrade, hot expansion / separated by insulative plastic dividers, all slots support up to 266MHz

DVD-ROM / diskette 8X⁶ Slim DVD-ROM / none
Ethernet Broadcom® 5704 10/100/1000 dual ethernet per chassis / on systemboard / 64-bit 266MHz PCI-X 2.0 / Wake on LAN® / Alert on LAN™ 2
Graphics controller SVGA / ATI® 7000M / on planar / 16MB SDRAM std/max / 32-bit 33MHz PCI 2.2 bus
Ports Rear: Three Scalability ports, RSA ethernet, RSA serial, two USB (Ver 2.0), keyboard, mouse, analog DB-15 graphics, two ethernet, std. serial RS-485 / Front: One USB (Ver 2.0)

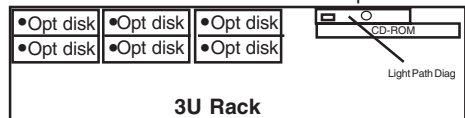
Security Power-on and administrator passwords / unattended boot / selectable boot
System management Remote Supervisor Adapter II slimline / PCI adapter / includes 10/100 ethernet, RJ-11, and serial connectors / provides remote console and mgmt / power on/off system / monitors power status, op system, temperature, disks, fans, power supplies / BMC / IMPI 2.0 / IBM Active Energy Manager™

Diagnostics Drop down Light Path Diagnostics / primary indicator on information panel with LEDs associated with failing components / IBM Real Time Diagnostics (operated through IBM Director)

Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director	2GB PC2-3200 CL3 ECC RDIMM (2x1GB)	39M5809
		4GB PC2-3200 CL3 ECC RDIMM (2x2GB)	39M5812
		8GB PC2-3200 CL3 ECC RDIMM (2x4GB)	30R5145
		Active Memory 4-slot Expansion Card	41Y5000
		Xeon 7110N 2.5GHz/4MB L3/Dual Core Proc	40K1259
		Xeon 7120N 3.0GHz/4MB L3/Dual Core Proc	40K1260
		Xeon 7130N 3.16GHz/8MB L3/Dual Core Proc	40K1261
		Xeon 7140N 3.3GHz/16MB L3/Dual Core Proc	40K1262
		Xeon 7150N 3.5GHz/16MB L3/Dual Core Proc	43V4553
		IBM ServeRAID™-8i Adapter	39R8729
		IBM ServeRAID 6M U320 256MB Adapter	39R8816
		IBM 36.4GB 10K 2.5" SAS Hot-swap HDD	40K1051
		IBM 73.4GB 10K 2.5" SAS Hot-Swap HDD	40K1052
		XpandOnDemand™ Scalability Cable - 2.3M	13M7414
		XpandOnDemand™ Scalability Cable - 2.9M	13M7416
		x3950 Scalability Enablement Memory Adapter	41Y5004
		x3950 E Modular Expansion Enclosure	8874-3RY
		Dual Core X3 upgrade kit	41Y5005
		Other options at ibm.com/products/us	

8W = 2 x XpandOnDemand Scalability kits 2.3m
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 32W = 8 x XpandOnDemand Scalability kits 2.3m + 4 x2.9m
 Six available 3.3 volt PCI-X 2.0 slots:

- Slot 1 - fullsize, 64-bit, 266MHzPCI-X, hot-swap
 - Slot 2 - fullsize, 64-bit, 266MHzPCI-X, hot-swap
 - Slot 3 - fullsize, 64-bit, 266MHzPCI-X, hot-swap
 - Slot 4 - fullsize, 64-bit, 266MHzPCI-X, hot-swap
 - Slot 5 - fullsize, 64-bit, 266MHzPCI-X, hot-swap
 - Slot 6 - fullsize, 64-bit, 266MHzPCI-X, hot-swap
- *exclusive slot for ServeRAID 8i adapter



- Bay ① 5.25", 0.5", access, std CD-ROM
- Bay ② 2.5", SL 1", access, hot-swap, open
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- Bay ④ 2.5", SL 1", access, hot-swap, open
- Bay ⑤ 2.5", SL 1", access, hot-swap, open
- Bay ⑥ 2.5", SL 1", access, hot-swap, open
- Bay ⑦ 2.5", SL 1", access, hot-swap, open

Max BTU Output:
 Ship Configuration: 1,325 Btu/hr (388 watts)
 Full Configuration: 5,200 Btu/hr (1524 watts)

- Dimensions: H5.05" x W17.32" x D28.15"
- Dimensions: H128.35mm x W440.0mm x D715mm
- Weight: 70 to 85lbs; 31.75 to 38.5kg
- Stealth black color
- Tool-free serviceability
- Access adapters, power supplies, processors, memory and systemboard from top
- Setup Program by pressing F1 at startup
- Diagnostics (PC-Doctor) by pressing F2 at startup
- SCSISelect by pressing Ctrl+A at startup
- Drop Down Light Path Diagnostics (level 2 diagnostic panel) for outside view of potential problem without removing cover
- Information LED panel, diagnostic LED panel, and component LEDs give visual indications of system well-being
- Predictive Failure Analysis® alerts on disks, power supplies, memory, processors, VRMs, and fans with IBM Director

All models: Maximum internal disk capacity: 440.4GB with six 73.4GB² hot-swap SAS disks

LIMITED WARRANTY³

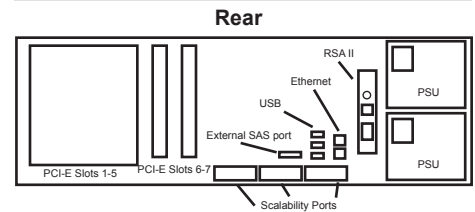
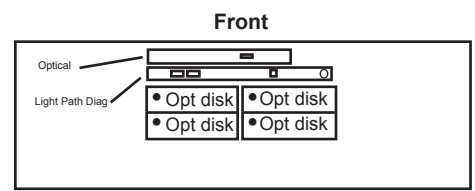
- 3 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 24x7, 4 hr avg response 96P2688
 - 3 year IOR 24x7, 2 hr avg response 96P2689
 - 4 year IOR 9x5, NBD response 96P2690
 - 5 year IOR 9x5, NBD response 96P2694
- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

IBM® Type-model	Qty x Processor	Core	L2 cache	Memory	DIMM slots	Memory cards	RSA II	Disk controller	Mechanical	Slots x bays	Hot-swap pwr supplies	Warranty (yrs.)	Available date
7141-1SU	2 x Xeon™ MP E7310	1.6GHz	DC 2x2MB	4x1GB	16	Two	Std	SAS	4U ⁴ rack	7x5	2 x 1440W	3	Mar 2008
7141-3SU	2 x Xeon MP E7330	2.4GHz	QC 2x3MB	8x1GB	32	Four	Std	SAS	4U rack	7x5	2 x 1440W	3	Feb 2008
7141-4SU	2 x Xeon MP X7350	2.93GHz	QC 2x4MB	8x1GB	32	Four	Std	SAS	4U rack	7x5	2 x 1440W	3	Feb 2008

Processors	Two 64-bit Intel® Xeon™ MP Processors up to 1.6GHz¹ Dual-Core / up to 2.93GHz¹ Quad-Core / All 1066MHz FSB / Extended Memory 64 Technology™ (EM64T)
L2 cache	2 x 2, 2 x 3 or 2 x 4 MB / on-die / at processor speed
Processor upgrade Implementation	4-way SMP / up to four Xeon Processors (same speed/cache/core) per chassis / up to 16-way/64-core (four chassis interconnected)
Active Memory™	4 or 8GB std / 256GB max per chassis using high-capacity memory card / two or four memory cards standard (up to four) with 8 DIMM gold-connector slots each / DIMMs must be installed in matched pairs / PC2-5300 667MHz registered 240-pin DDR2-SDRAM DIMMs / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ / Memory ProteXion™ (redundant bit steering) and Memory Mirroring™ and Hot-swap (non-OS specific) / Hot-add (supported only with Microsoft® Windows™ Server 2003™)
SAS disk controller	Std: LSI® 1078 SAS Controller / Serial Attached SCSI (SAS) (3GB/sec) / PCI-E x8 / RAID 0,1 Optional: ServeRAID™ 10k / RAID 5, 5E, 50 & 6 / dedicated slot / dimm / battery backup
SAS connectors	Controller wired to SAS backplane / external 4x SAS port on rear
IDE controller	Enhanced IDE ATA-100 controller in ICH7 South Bridge
Disk - capacity	Supports up to 146GB 10K or 73GB 15K rpm disks
Disk - bays	Four 2.5" hot-swap bays / converged tray / 29-pin SAS connectors
Mechanical	EIA 19" rack models (4U ⁴) x 28" deep / supported in NetBAY™ Racks
Chipset	IBM X4™ 4th Generation chipset / Integrated Processor and Memory Controller / Scalable from 4 to 16 sockets / Supports EM64T / provides 7 PCI-E x8 slots / supports optional ServeRAID Xi / Intel® I/O Controller Hub 7 (ICH7) South Bridge provides: IDE, USB, bus for Super I/O, Dual Port Broadcom 5709C, RSA2(video)
Slots	Two Active™ PCI-E x8 slots / slots available with power and attention indicator lights (optical sensors control power to slot) / hot replace, hot upgrade, hot expansion / separated by insulative plastic dividers / Five PCI-E x8 slots / all full height, half length
Optical / diskette	24x8x ⁶ CD-RW/DVD Combo / none
Ethernet	Broadcom® 5709C 10/100/1000 dual ethernet / on systemboard / PCI-E x4 / Wake on LAN® / Alert on LAN™ 2
Graphics controller	SVGA / ATI® RN50 (ES1000) / on planar / 16MB SDRAM std/max
Ports	Rear: RSA ethernet, RSA serial, three USB (2.0), DB-15 graphics, 4x SAS and two ethernet Front: two USB (2.0)
Security	Power-on and administrator passwords / unattended boot / selectable boot
System management	BMC standard / IPMI 2.0 / PowerExecutive™ / Remote Supervisor Adapter II Slimline std / PCI adapter / includes 10/100 ethernet and serial connectors / provides remote console and mgmt / power on/off system / monitors power status, op system, temperature, disks, fans, power supplies
Diagnostics	Light Path Diagnostics Card / primary indicator on information panel with LEDs associated with failing components / IBM Real Time Diagnostics (operated through IBM Director) available even while server running
Software	ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director

Keyboard / mouse	None standard (because rack-based)	2GB PC2-5300 CL5 ECC DDR2 RDIMM (2x1GB)	41Y2762
Power supplies	Std/Max: Two / 1440 watt (240 VAC) / rear access / hot-swap / redundant / worldwide / voltage-sensing / auto-restart / PFA	4GB PC2-5300 CL5 ECC DDR2 RDIMM (2x2GB)	41Y2771
Cooling fans	Six hot-swap, redundant, multi-speed fans / one additional fan in each power supply / PFA / fan failure signals Diagnostic LED and mgmt processor	8GB PC2-5300 CL5 ECC DDR2 RDIMM (2x4GB)	41Y2768
		16GB PC2-5300 CL5 ECC DDR2 RDIMM (2x8GB)	43V7356
		IBM Active Memory 8-slot Expansion Card	44E4252
		IBM Internal Removable Flash Drive	44E4251
		Xeon E7310 1.6GHz/4MB L2/Dual Core Proc	44W2784
		Xeon E7320 2.13GHz/4MB L2/Quad Core Proc	44E4241
		Xeon E7330 2.4GHz/6MB L2/Quad Core Proc	44E4242
		Xeon X7350 2.93GHz/8MB L2/Quad Core Proc	44E4243
		IBM ServeRAID-MR10k SAS Controller	43W4280
		IBM 73GB 10K 2.5" SAS Hot-swap HDD	40K1052
		IBM 146GB 10K 2.5" SAS Hot-Swap HDD	43X0824
		IBM 73GB 15K 2.5" SAS Hot-Swap HDD	43X0837
		IBM ScaleXpander Option Kit (2-3 Node)	44E4249
		IBM ScaleXpander Option Kit (4 Node)	44E4250

Other options at ibm.com/products/us/



- Bay ① 5.25", 0.5", access, CD-RW/DVD-ROM
- Bay ② 2.5", SL 1", access, hot-swap, open
- Bay ③ 2.5", SL 1", access, hot-swap, open
- Bay ④ 2.5", SL 1", access, hot-swap, open
- Bay ⑤ 2.5", SL 1", access, hot-swap, open

- Five available PCI-E x8 slots:
- Slot 1 - full-height, half-length, PCI-E x8
 - Slot 2 - full-height, half-length, PCI-E x8
 - Slot 3 - full-height, half-length, PCI-E x8
 - Slot 4 - full-height, half-length, PCI-E x8
 - Slot 5 - full-height, half-length, PCI-E x8

- Two available Hot-swap PCI-E x8 slots:
- Slot 6 - full-height, half-length, PCI-E x8, hot-swap
 - Slot 7 - full-height, half-length, PCI-E x8, hot-swap

- ⊙ Dimensions: H6.8" x W17.46" x D28.35"
- ⊙ Dimensions: H172mm x W443mm x D720mm
- ⊙ Weight: 70 to 95lbs; 31.75 to 43.2kg
- ⊙ Stealth black color
- ⊙ Tool-free serviceability
- ⊙ Access power supplies from rear
- ⊙ Access adapters, processors, memory and systemboard from top
- ⊙ Setup Program by pressing F1 at startup
- ⊙ Diagnostics (DSA) by pressing F2 at startup
- ⊙ SAS Select by pressing Ctrl+C at startup
- ⊙ Drop Down Light Path Diagnostics (level 2 diagnostic panel) for outside view of potential problem without removing cover
- ⊙ Information LED panel, diagnostic LED panel, and component LEDs give visual indications of system well-being
- ⊙ Predictive Failure Analysis® alerts on disks, power supplies, memory, processors, VRMs, and fans with IBM Director

All models: Maximum internal disk capacity: 584GB with four 146GB² hot-swap SAS disks

LIMITED WARRANTY³

- ⇒ **3 year parts and labor**
- ⇒ **International Warranty Service³**
- ⇒ **On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷**
- ⇒ **On site service upgrade options (in eligible locations):⁷**
 - 3 year IOR 24x7, 4 hr avg response**
ServicePac® part number 10N3059
 - 3 year IOR 24x7, 2 hr avg response**
ServicePac part number 10N3060
 - 4 year IOR 9x5, NBD response**
ServicePac part number 10N3061
 - 5 year IOR 9x5, NBD response**
ServicePac part number 10N3065
- ⇒ **Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>**
- ⇒ **24x7¹⁴ toll-free support for warranty issues during the warranty period³**

See footnotes for important warranty information

IBM® Type-model	Qty x Processor	Core	L2 cache	Memory	DIMM slots	Memory cards	RSA II	Disk controller	Mechanical	Slots x bays	Hot-swap pwr supplies	Warranty (yrs.)	Available date	
7233-2SU	2 x Xeon™ MP E7420	2.13GHz	4	2x3MB	4x1GB	16	Two	Std	SAS	4U ⁴ rack	7x5	2 x 1440W	3	Oct 2008
7233-5SU	2 x Xeon MP E7450	2.4GHz	6	3x3MB	8x1GB	32	Four	Std	SAS	4U rack	7x5	2 x 1440W	3	Oct 2008
7233-6SU	2 x Xeon MP X7460	2.66GHz	6	3x3MB	8x1GB	32	Four	Std	SAS	4U rack	7x5	2 x 1440W	3	Oct 2008
7233-7SU	2 x Xeon MP L7445	2.13GHz	4	2x3MB	4x1GB	16	Two	Std	SAS	4U rack	7x5	2 x 1440W	3	Oct 2008
7233-E6U*	4 x Xeon MP X7460	2.66GHz	6	3x3MB	2x1GB	32	Four	Std	SAS	4U rack	7x5	2 x 1440W	3	Mar 2009
7233-4SU	2 x Xeon MP E7440	2.4GHz	4	2x3MB	4x1GB	16	Two	Std	SAS	4U rack	7x5	2 x 1440W	3	Apr 2009

Processors 64-bit Intel® Xeon™ MP Processors up to 2.66GHz¹ Six-Core / up to 2.13GHz¹ Quad-Core / All 1066MHz FSB / Extended Memory 64 Technology™ (EM64T)
L2 cache 6 or 9MB std / on-die / at processor speed
Processor upgrade Implementation 4-way SMP / up to four Xeon Processors (same speed/cache/core) per chassis / up to 16-way/64-core (four chassis interconnected) System board contains four Intel 604-pin micro-PGA4 ZIF sockets, four memory board slots, two Active™ PCI-E x8 slots, five PCI-E x8 slots and integrated SAS, ethernet, graphics

Active Memory™ 2, 4 or 8GB std / 256GB max per chassis using high-capacity memory card / two or four memory cards standard (up to four) with 8 DIMM gold-connector slots each / DIMMs must be installed in matched pairs / PC2-5300 667MHz registered 240-pin DDR2-SDRAM DIMMs / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ / Memory ProteXion™ (redundant bit steering) and Memory Mirroring™ and Hot-swap (non-OS specific) / Hot-add (supported only with Microsoft® Windows™ Server 2003™)

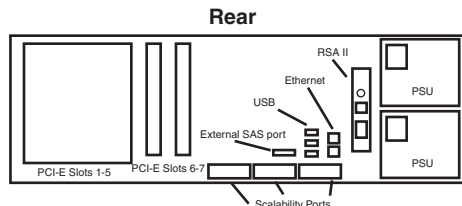
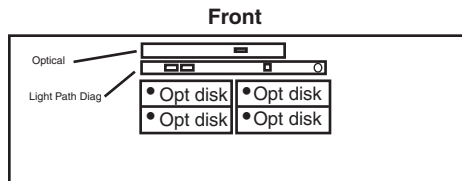
SAS disk controller Std: LSI® 1078 SAS Controller / Serial Attached SCSI (SAS) (3GB/sec) / PCI-E x8 / RAID 0,1
 Optional: ServeRAID™ 10k / RAID 5, 5E, 50 & 6 / dedicated slot / dimm / battery backup
SAS connectors Controller wired to SAS backplane / external 4x SAS port on rear
IDE controller Enhanced IDE ATA-100 controller in ICH7 South Bridge
Disk - capacity Supports up to 146GB 10K or 73GB 15K rpm disks
Disk - bays Four 2.5" hot-swap bays / converged tray / 29-pin SAS connectors
Mechanical EIA 19" rack models (4U⁴) x 28" deep / supported in NetBAY™ Racks

Chipset IBM X4™ 4th Generation chipset / Integrated Processor and Memory Controller / Scalable from 4 to 16 sockets / Supports EM64T / provides 7 PCI-E x8 slots / supports optional ServeRAID Xi / Intel® I/O Controller Hub 7 (ICH7) South Bridge provides: IDE, USB, bus for Super I/O, Dual Port Broadcom 5709C, RSA2 (video)
Slots Two Active™ PCI-E x8 slots / slots available with power and attention indicator lights (optical sensors control power to slot) / hot replace, hot upgrade, hot expansion / separated by insulative plastic dividers / Five PCI-E x8 slots / all full height, half length
Optical / diskette 24x8x6 CD-RW/DVD Combo / none
Ethernet Broadcom® 5709C 10/100/1000 dual ethernet / on systemboard / PCI-E x4 / Wake on LAN® / Alert on LAN™ 2
Graphics controller SVGA / ATI® RN50 (ES1000) / on planar / 16MB SDRAM std/max
Ports Rear: RSA ethernet, RSA serial, three USB (2.0), DB-15 graphics, 4x SAS and two ethernet
 Front: two USB (2.0)

Security Power-on and administrator passwords / unattended boot / selectable boot
System management BMC standard / IPMI 2.0 / PowerExecutive™ / Remote Supervisor Adapter II Slimline std / PCI adapter / includes 10/100 ethernet and serial connectors / provides remote console and mgmt / power on/off system / monitors power status, op system, temperature, disks, fans, power supplies
Diagnostics Light Path Diagnostics Card / primary indicator on information panel with LEDs associated with failing components / IBM Real Time Diagnostics (operated through IBM Director) available even while server running
Software ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director

Keyboard / mouse None standard (because rack-based)
Power supplies Std/Max: Two / 1440 watt (240 VAC) / rear access / hot-swap / redundant / worldwide / voltage-sensing / auto-restart / PFA
Cooling fans Six hot-swap, redundant, multi-speed fans / one additional fan in each power supply / PFA / fan failure signals Diagnostic LED and mgmt processor

- 2GB PC2-5300 CL5 ECC DDR2 RDIMM (2x1GB) 41Y2762
- 4GB PC2-5300 CL5 ECC DDR2 RDIMM (2x2GB) 41Y2771
- 8GB PC2-5300 CL5 ECC DDR2 RDIMM (2x4GB) 41Y2768
- 16GB PC2-5300 CL5 ECC DDR2 RDIMM (2x8GB) 43V7356
- IBM Active Memory 8-slot Expansion Card 44E4252
- IBM Internal Removable Flash Drive 44E4251
- Xeon E7420 2.13GHz/6MB L2/Quad-Core Proc 44E4469
- Xeon E7430 2.13GHz/6MB L2/Quad-Core Proc 44E4470
- Xeon L7445 2.13GHz/6MB L2/Quad-Core Proc 44E4517
- Xeon E7450 2.4GHz/9MB L2/Six-Core Proc 44E4472
- Xeon E7440 2.4GHz/9MB L2/Six-Core Proc 44E4471
- Xeon X7460 2.66GHz/9MB L2/Six-Core Proc 44E4473
- IBM ServeRAID-MR10k SAS Controller 43W4280
- IBM 73GB 10K 2.5" SAS Hot-swap HDD 40K1052
- IBM 146GB 10K 2.5" SAS Hot-Swap HDD 43X0824
- IBM 73GB 15K 2.5" SAS Hot-Swap HDD 43X0837
- IBM ScaleXpander Option Kit (2-3 Node) 44E4249
- IBM ScaleXpander Option Kit (4 Node) 44E4250
- Other options at ibm.com/products/us/



- Bay ① 5.25", 0.5" access, CD-RW/DVD-ROM
- Bay ② 2.5", SL 1" access, hot-swap, open
- Bay ③ 2.5", SL 1" access, hot-swap, open
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 Slot 5 - full-height, half-length, PCI-E x8

Two available Hot-swap PCI-E x8 slots:
 Slot 6 - full-height, half-length, PCI-E x8, hot-swap
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- Dimensions: H6.8" x W17.46" x D28.35"
- Dimensions: H172mm x W443mm x D720mm
- Weight: 70 to 95lbs; 31.75 to 43.2kg
- Stealth black color
- Tool-free serviceability
- Access power supplies from rear
- Access adapters, processors, memory and systemboard from top
- Setup Program by pressing F1 at startup
- Diagnostics (DSA) by pressing F2 at startup
- SAS Select by pressing Ctrl+C at startup
- Drop Down Light Path Diagnostics (level 2 diagnostic panel) for outside view of potential problem without removing cover
- Information LED panel, diagnostic LED panel, and component LEDs give visual indications of system well-being
- Predictive Failure Analysis® alerts on disks, power supplies, memory, processors, VRMs, and fans with IBM Director

All models: Maximum internal disk capacity: 584GB with four 146GB² hot-swap SAS disks

LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷
- On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 24x7, 4 hr avg response ServicePac® part number 10N3059
 - 3 year IOR 24x7, 2 hr avg response ServicePac part number 10N3060
 - 4 year IOR 9x5, NBD response ServicePac part number 10N3061
 - 5 year IOR 9x5, NBD response ServicePac part number 10N3065
- Other ServicePac options at <http://www.ibm.com/services/us/its/pdf/wamomxeu.pdf>
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

Warranty information: For a copy of applicable product warranties, write to: Warranty Information, P.O. Box 12195, RTP, NC, 27709, Attn: Dept JDJA/B203. IBM makes no representation or warranty regarding third party products or services.

- ¹ MHz/GHz only measures microprocessor internal clock speed; many factors affect application performance.
- ² MB/GB/TB = 1 million/billion/trillion bytes when referring to storage capacity. Accessible capacity is less; up to 3GB is used in service partition.
- ³ For terms and conditions or a copy of IBM's Statement of Limited Warranty, call 1 800 772-2227 in the U.S. Copies available upon request. Telephone support may be subject to additional charges. For onsite labor, IBM will attempt to diagnose and resolve the problem remotely before sending a technician. International Warranty Service is available in any country in which this product is sold and serviced. Service delivery methods and parts availability vary by country, may be different from that in the country of purchase, and are subject to change without notice. Fees and restrictions may apply in some countries.
- ⁴ A single "U", or rack unit, is 1.75" or 44.45mm.
- ⁵ S.M.A.R.T. stands for Self-Monitoring, Analysis and Reporting Technology.
- ⁶ CD and DVD drives speeds are variable and are often less than the maximum.
- ⁷ These services are available for machines normally used for business, professional, or trade purposes, rather than personal, family or household purposes. Not all machine types and models are covered. Service period begins with the equipment date of purchase. Service must be purchased during the original limited product warranty period. Service levels are response time objectives and are not guarantees. A service technician is scheduled to arrive at your location within two or four business hours or the next business day (depending on service) after remote problem determination is completed. For the 9x5x4-hour service, calls dispatched after 1:00 p.m. local time, you can expect the service technician to arrive by the morning of the next business day. For non-critical service requests, a service technician will arrive by the end of the following business day. If the machine problem turns out to be a Customer Replaceable Unit (CRU), IBM will express ship the part to you for quick replacement. Onsite 24x7x2-hour service is not available in all locations. External peripherals, such as racks, tape drives, and channel controllers, require their own, separate service coverage, they are not covered under the attached

Machine. Service activation is required immediately following purchase. For ThinkPad notebooks requiring LCD or other component replacement, IBM may choose to perform service at the depot repair center. For failing non-IBM components, customer must provide replacement part unless IBM has a Technical Support Agreement with the manufacturer. Service does not cover accessories, supply items and certain parts such as batteries, frames and covers. Not available in all states; call your IBM representative for details.

- ⁸ Subject to conditions.
- ⁹ Some software may differ from retail version (if any) and may not include user manuals or all program functionality. Software license agreements may apply.
- ¹⁰ Updated drivers and hot-swap services for certain operating systems may be required to support PCI hot-swap functions.
- ¹¹ Fire GL1, Fire GL2 and Fire GL4 are trademarks of ATI Technologies, Inc., and are used under license.
- ¹³ Maximum memory and internal hard disk capacities may require the replacement of standard component with largest supported component available.
- ¹⁴ Response times may vary. May exclude some holidays. Telephone support may be subject to additional charges.
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- ¹⁷ Some software may differ from its retail version (if available), and may not include user manual or all program functionality. Software license agreements may apply.
- ¹⁸ Diskettes and hard copy documentation available at extra charge.
- ¹⁹ For combination drives, maximum possible speeds only are given in the following order: CD read, CD write, CD re-write, DVD read.
- ²⁰ Statement of direction and subject to availability.



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