

IBM® Type-model Processor GHz¹	FSB MHz Memory	Disk and rpm	Disk controllers	Optical	Graphics adapter and memory		Firewire F/F USBF/R		Available date
6220-20U Pentium®4 2.8	800 256MB	40.0GB2 EIDE 7.2	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 7.2	K 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 7.2I	K 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 7.2	2K EIDE	CD-ROM	Quadro4 580XGL 64MB	4x3	0/0/2/4	XP Pro	Aug 2003

Processor Proc. Upg/L2 cache Implementation	Intel® Pentium 4 at 2.8 or 3.2GHz with 800MHz frontside bus (FSB) / All support Hyper-Threading technology 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)	 NVIDIA Quadro4™ 280NVS (entry 3D) / (see IntelliStation Graphics sheet for specs) NVIDIA Quadro4 580XGL (entry 3D)
IDE disk controller Cables Disk - features	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 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 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 Diskette drive Optical drive IEEE 1394 (FireWire Audio Rear ports Front ports Systems mgmt Keyboard / mouse Cooling fans	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 None (USB floppy optional) Ultra ATA / 48X/20X Max® CD-ROM Not enabled (purchase of 3rd party mini-PCI card will enable ports) Soft audio AC '97 v2.2 interface via ICH4 (AD1885) / internal speaker (use of audio line out requires powered speakers) Four USB (Ver 2.0), two 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 FireWire Monitoring and alerting of thermal, fans, and voltage faults / Winbond® W83791D IBM 104-key keyboard (6-pin PS/2) / IBM three button mouse (6-pin PS/2 conn) Two or three variable speed fans (pwr supply, rear, processor) / not redundant or hot-swap / third fan
Power supply	operates based on heat 200 watts / universal / auto sensing / built-in overload and surge protection





Bay \odot 5.25", HH 1.6", access, optical Bay \odot 3.5", SL 1", no access, disk Bay \odot 3.5", SL 1", no access, open

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, AGP 8X (1.5v)

- used by std AGP graphics adapter

Options and Accessories 256MB PC2700 CL2.5 ECC DDR-SDRAM 512MB PC2700 CL2.5 ECC DDR-SDRAM 06P4053 06P4054 1GB PC2700 CL2.5 ECC DDR-SDRAM 06P4055 IBM USB Portable Diskette Drive 05K9276 IBM 40GB 7.2K-rpm EIDE ATA-100 HDD IBM 80GB 7.2K-rpm EIDE ATA-100 HDD 22P7157 09N4226 IBM 120GB 7.2K-rpm EIDE ATA-100 HDD IBM 80GB S-ATA 7.2K-RPM HDD IBM 160GB S-ATA 7.2K-RPM HDD 09N4231 09N4253 09N4254 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

Weight and Dimensions

⇒ 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)

- 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

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

Preload with Windows XP Professional¹⁷

Microsoft® Windows® XP Professional

- Free license for Lotus® SmartSuite®
- Free license for Lotus Notes® Client
- ♦ 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 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 US models announced July 29, 2003

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	IBM® Type-model Processo	FSB or GHz ¹ MHz Memory I	Disk and rpm	Disk controllers	Optical	Graphics ad and memo	apter Slots x	FireWire Preload ¹⁷	Available date
× ×	6221-10U 1 x Xeor 6221-22U 1 x Xeon 6221-29U 2 x Xeon	TM2.4 533 512MB 40. 2.67 533 512MB 40. 2.67 533 512MB 36. 2.8 533 512MB 36. 2.8 533 1GB 36.	0GB ² EIDE 7.2 0GB EIDE 7.2k 4GB U320 10K 4GB U320 10K 4GB U320 10K	KUltra320, EIDE (Ultra320, EIDE Ultra320, EIDE Ultra320, EIDE Ultra320, EIDE	CD Combo CD CD-RW	Millennium G450 Quadro4 280NVS	DVI-I 32MB6x6 64MB 6x6 64MB 6x6 64MB 6x6 128MB 6x6	XP Pro XP Pro 1394 XP Pro XP Pro 1394 XP Pro	Dec 2002 Dec 2002 Dec 2002 Dec 2002 Dec 2002 Dec 2002
	Processor L2 cache Processor upgrade Implementation	1 or 2 x Intel® Xeon at 2 512KB std and max / at 2-way SMP / up to two Systemboard contains one Mini PCI, one AGP	t processor spe Xeon Processo two Intel 604-pi	ed ors (same speed in micro-PGA2 z	/cache si IF socke	ze)	, seven slots (o	ne PCI 2.2, four F	PCI-X,
	Memory - std / max Memory - features	512MB or 1GB std / 80 SDRAM DIMMs / four l2-way memory interlea (corrects 1, 2, 3, or 4-b)	DIMM gold-con ve / dual chan	nector slots on nel / Error Che	systembo cking an	oard / DIMMs must d Correcting (EC	be installed in C) via 16-bit C	matched pairs [a	a bank] /
	(one of following)	Matrox® Millennium of dual RAMDAC [360/2: NVIDIA™ Quadro4 28: 350MHz RAMDACs / NVIDIA Quadro4 98: dual head: 2048x153: 3DLabs Wildcat4™ 7 128MB texture buffer) two DVI-I connectors (see the sum of the	32MHz] / dual h 80NVS (high-pe dual head: 2048 0XGL (advance 6x16M each mo 110 (extreme 3l / dual RAMDAO	ead support / one off 2D) / AGP 8X 8x1536x16M ead d 3D) / AGP 8X onitor / two DVI-I D) / AGP 8X Pro C [320/280MHz]	e DVI-I co adapter / ch monito adapter / connecto 50 adapte / dual hea	nnector (ships with on NV18LT 275MHz Graft 275MHz Graft 28MB 325MHz Drags with two long (ships with two long) (ships with with two long) (ships with with two long) (ships with with with with with with with with	one cable with tv BPU / 64MB 200 for std cable with DR-SDRAM / d DVI-I to DB-15 R-SDRAM (128 d digital or analog	vo DB-15 analog o MHz DDR-SDRA h two DB-15 analo ual 350MHz RAM dongles) MB frame buffer,	M/dual og
	IDE disk controller SCSI disk controller SCSI channels and cables	Enhanced IDE busmas LSI Logic® 53C1030 / 6 supports RAID-1 mirro Two 16-bit channels (or systemboard to interna systemboard to rear ext	dual channel U ring (Embedde ne internal and d I disks bays; Ex	JItra320 SCSI c d Mirroring) one external) / I external channel:	ontroller Internal ch Models 2	(LVD 320MB/sec) nannel: one 3-drop 19U/37U have one	/ on planar / 64- 16-bit 68-pin LV 1-drop 16-bit 68	bit 100MHz PCI- D SCSI cable fro	m
	Cables Disk - features	EIDE models: Two EID SCSI models: One or t Some: 40.0GB EIDE / A	DE cables (one : two SCSI cable:	2-drop cable to s (listed above),	CD-ROM one 2-dr	, one 2-drop cable op EIDE cable (to c	to EIDE disk) optical)	n / 4 7 ms: <i>All:</i> S	MART ⁵
	Rack support	4U ⁴ rack mount support Intel E7505 chipset / Efor slots 2 and 3 and eth (one slot and one Mini F	rt via tower-to-r 7505 MCH (Me	rack kit option mory Controller :: Bus B for slots	Hub) for <i>A</i> 4 and 5 a	AGP 8X slot, P64H2 nd SCSI controller)	2, ICH4 / P64H2 / I/O Controller	for two PCI-X bu	ses (Bus A Cl 2.2 bus
	Audio Rear ports Front ports	One gigabit 10/100/100 chip on planar / PCI-X 6 3.5" 1.44MB diskette dr One of following: 48X-2)Some: FireWire contro Soft audio AC '97 v2.2 i Two USB (Ver 2.0), two Two USB (Ver 2.0), aud Monitoring and alerting	64-bit 100MHz / rive 20X ⁶ CD-ROM, 3 Iller in Mini PCI interface via ICI o 9-pin serial, pa dio line out (ster	full duplex / Wak 32X/10X/40X/16 slot / 1394A, 4 H4 (AD1885) / ir arallel, keyboard reo), mic in / <i>son</i>	X Max ^{6,19} 00Mbps, ternal sp , mouse, ne: 4-pin	Alert Standard F CD-RW/DVD-ROM 6-pin port on rear, eaker (use of audio ethernet, audio line 1394 FireWire bond® W791D	Format 1.0 / one 1 Combo, or 40, 1 Combo, or 40, 2 Line out require 2 in, audio line o	rear RJ-45 port X/24X/40X Max ⁶ front, no cables is so powered speal out, mic in / some: SECURITY	CD-RW included kers) 6-pin 1394
(Keyboard / mouse Cooling fans Power supply	IBM 104-key keyboard (Three variable speed fa 425 watts / universal / a	ns (power supp	ly, two in rear) / r	not redùnd	dant or hot-swap protection	optional; supp • Security slot (1	ng feature (U-bol orts optional padl or attachment of th as Kensington o	ock) optional
	Optical Bay		s, open s, diskette eess, disk eess, open eess, open eess, open eess, open pess, open pess, open sess, open pess, open cat4 7110 vid z, PCI-X 1.0 z, PCI-X 1.0 eWire (some) v) cs adapter ade 24P7468 rade 59P5110 ade 59P5110 x4 33L5037 x4 33L5038 MM 33L5039 MM 33L5040 32P0733 32P0725	 pressing ČTF Product Reconstartup Adv Config Popular DMI 2.2-comp 	chassis oilizing fer n top V 6.5" x D V 165mm b (16.3kg ernal disk of (2 disks	ot 19.375" x D 492mm to 20.8kg) capacity ¹³ : x 146GB) x 120GB) nel for a startup by gram via F11 at face (ACPI) 1.0a XP Professional Trofessional SmartSuite® Notes® Client M Enhanced	Diskette boot of Disable mouse Diskette, disk, I/O control Secure acces VPD stored in Write protectic IBM Security S LIMIT 3 year parts Internationa On site, 8 an Mon throug next busine On site wan options7 av	DASD sword password Jese password e control eyboard or mous nhibit and write-pe serial port, parall s openings EEPROM on control for EEF Solutions TED WARRANTY and labor Il Warranty Service through 5 pm, h Fri excluding h ss day response reanty service up ailable as Service m.com/serviceso	PROM PROM Problem of the port of the por
		r-to-Rack Conversion K ibm.com/pc/us/access		Disk-to-Disk partition)	recovery	(III SELVICE		ree support for wanty p	

6221-38U 1 x Xeor 6221-40U 1 x Xeor 6221-42U 1 x Xeor	FSB or GHz¹ MHz Memory Disk and rpm n™2.8B533 1GB 36.4GB² U320 101 n 3.06 533 512MB 40.0GB EIDE 7.2h	Disk Graphics accontrollers Optical and mem	ory bays FireWire Preload ¹⁷ date
6221-47U 1 x Xeor 6221-48U 1 x Xeor 6221-49U 2 x Xeor	1 3.06 533 512MB 40.0GB EIDE 7.2h 2 3.06 533 1GB 36.4GB U320 10K 3 3.06 533 512MB (none) open-bay 1 or 2 x Intel® Xeon at 2.8B or 3.06 512KB std and max / at processor spe 2-way SMP / up to two Xeon Processor	(Ultra320, EIDE CD Quadro4 280NVS (Ultra320, EIDE Combo Quadro4 980XGL (Ultra320, EIDE CD-RW Wildcat4 7110 25 (Ultra320, EIDE Combo Quadro FX 1000 (Ultra320, EIDE DVD Quadro4 280NVS Ultra320, EIDE None Quadro4 280NVS GHz with 533MHz frontside bus (FSB) ed ors (same speed/cache size) in micro-PGA2 ZIF sockets, four DIMM slots	DVI-I 32MB6x6 XP Pro Apr 2003 6 64MB 6x6 XP Pro Apr 2003 .128MB 6x6 1394 XP Pro Apr 2003 128MB 6x6 1394 XP Pro Apr 2003 128MB 6x6 1394 XP Pro Apr 2003 6 64MB 6x6 1394 XP Pro Apr 2003 6 64MB 6x6 1394 XP Pro Apr 2003 6 64MB 6x6 DOS lic Apr 2003
Memory - std / max Memory - features	SDRAM DIMMs / four DIMM gold-con 2-way memory interleave / dual channe	slots used / two slots available / PC2100 2 nector slots on systemboard / DIMMs musel / Error Checking and Correcting (ECC) via e chip and detects 2- through 8-bit errors con	t be installed in matched pairs [a bank] / ia 16-bit Checksum Chipkill TM
Graphics controller (one of following)	 NVIDIA™ Quadro4 280NVS (high p NVIDIA Quadro4 980XGL (advance RAMDACs / dual head: 2048x1536x1 3DLabs Wildcat4™ 7110 (extreme 128MB texture buffer) / dual RAMDAC two DVI-I connectors (ships with two NVIDIA Quadro FX 1000 (advanced 	ntry 2D) (see 6221-November 2002 sheet performance 2D) (see 6221-November 200 ed 3D) / AGP 8X adapter / 128MB 325MH 6M each monitor / two DVI-I connectors (3D) / AGP 8X adapter / 256MB total DDR-C [320/280MHz] / dual head support (up to tw DVI-I to analog DB-15 adapters for analog d 3D) / AGP 8X adapter / 128MB 800Mhz onitor / two DVI-I connectors (ships with two	2 sheet for specs) 4z DDR-SDRAM / dual 350MHz (ships with two DVI-I to DB-15 dongles) SDRAM (128MB frame buffer, o digital or analog monitors) / monitor attachment) DDR-SDRAM / dual 400Mhz RAMDACs /
IDE disk controller SCSI disk controller SCSI channels and cables Cables Disk - features	LSI Logic® 53C1030 / dual channel supports RAID-1 mirroring (Embedd Two 16-bit channels (one internal and systemboard to internal disks bays; Exsystemboard to rear external 68-pin co EIDE models: Two EIDE cables (one SCSI models: One or two SCSI cables	/ integrated in I/O Controller Hub 4 / two Ultra320 SCSI controller (LVD 320MB/s ded Mirroring) d one external) / Internal channel: one 3-d xternal channel: Models 29U/37U have one innector (cable available as option part num 2-drop cable to CD-ROM, one 2-drop cable is (listed above), one 2-drop EIDE cable (to prpm / 9.0 ms seek; Some: 36.4GB Ultra320	ec) / on planar / 64-bit 100MHz PCI-X / rop 16-bit 68-pin LVD SCSI cable from 1-drop 16-bit 68-pin LVD SCSI cable from ber 24P7929) b to EIDE disk) optical)
Rack support Chipset	A for slots 2 and 3 and ethernet controller	rack kit option nory Controller Hub) for AGP 8X slot, P64H2, I r; Bus B for slots 4 and 5 and SCSI controller) D EIDE, USB, Low Pin Count Interface / NS PC	/ I/O Controller Hub (ICH4) for PCI 2.2 bus
Gigabit ethernet Diskette / Optical drives IEEE 1394(FireWire) Audio Rear ports Front ports Systems mgmt	chip on planar / PCI-X 64-bit 100MHz / 3.5" 1.44MB diskette drive and one of Combo, 48X/24X/48X Max ⁶ CD-RW of Some: FireWire controller in Mini PCI Soft audio AC '97 v2.2 interface via IC Two USB (Ver 2.0), two 9-pin serial, partwo USB (Ver 2.0), audio line out (st	roller / Broadcom BCM5703i / full gigabit ethe full duplex / Wake on LAN® / Alert Standard for the following: 48X-20X6 CD-ROM, 48X/20r 16X Max6 DVD-ROM slot / 1394A, 400Mbps, 6-pin port on rear H4 (AD1885) / internal speaker (use of audiarallel, keyboard, mouse, ethernet, audio line rereo), mic in / some: 4-pin 1394 FireWires, and voltage faults / Winbond® W791D	Format 1.0 / one rear ÅJ-45 port 4X/48X/16X Max ^{8,19} CD-RW/DVD-ROM , 4-pin port on front o line out requires powered speakers)
Optical Bay	Three variable speed fans (power supp 425 watts / universal / auto sensing / bu ① 5.25", HH 1.6", access, optical ② 5.25", HH 1.6", access, open ③ 3.5", SL 1", access, diskette ④ 3.5", SL 1", no access, disk ⑤ 3.5", SL 1", no access, open ⑥ 3.5", SL 1", no access, open ⑥ 3.5", SL 1", no access, open 1: fullsize, 32-bit 33MHz, PCI 2.2 (5v) N/A on models with Wildcat4 7110 vid 2: fullsize, 64-bit 100MHz, PCI-X 1.0 3: fullsize, 64-bit 100MHz, PCI-X 1.0 4: fullsize, 64-bit 100MHz, PCI-X 1.0 6: Mini PCI type III - FireWire (some) 1: fullsize, AGP 8X (1.5v) used by std AGP graphics adapter stended slot KB L2 Cache Proc Upgrade 59P5110 KB L2 Cache Proc Upgrade 24P8123 5 ECC DDR-SDRAM DIMM 33L5039 5 ECC DDR-SDRAM DIMM 33L5040 pm Ultra320 SCSI HDD 32P0735 pm ATA-100 EIDE HDD 09N4231 2.200P 20.1inLCD Black A/D 6736-HB0	□ 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 capacity ¹³ :	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 options² 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 March 18, 2002

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	311° 2 P10 (0221) - OCIODE	SI 2000 XIIIEI D	eserver Field Skills Enablement Team
6221-56U 1 x Xeon 6221-57U 1 x Xeon 6221-58U 2 x Xeon 6221-59U 1 x Xeon	M3.2 533 512MB 40.0GB ² EIDE 7.2 3.2 533 512MB 40.0GB EIDE 7.2k 3.2 533 512MB 40.0GB EIDE 7.2k 3.2 533 1GB 36.4GB U320 10K 3.2 533 1GB 40.0GB EIDE 7.2k	 Ültra320,EIDE CD-RW Quadro4 980X Ültra320,EIDE CD-RW Quadro4 980X Ültra320,EIDE Combo Quadro FX 100 Ültra320,EIDE Combo Quadro FX 300 Ültra320,EIDE Combo Quadro FX 300 	ry bays FireWire Preload¹¹ date VS 64MB 6x6 1394 XP Pro Oct 2003 GL 128MB 6x6 1394 XP Pro Oct 2003 GL 128MB 6x6 1394 XP Pro Oct 2003 00 128MB 6x6 1394 XP Pro Oct 2003 00 128MB 6x6 1394 XP Pro Oct 2003
L2 cache L3 cache Processor upgrade 2 Implementation		processor speed pessor speed	
Memory - features 5	SDRAM DIMMs / four DIMM gold-con 2-way memory interleave / dual channe	slots used / two slots available / PC2100 2 nector slots on systemboard / DIMMs mus I / Error Checking and Correcting (ECC) verbip and detects 2- through 8-bit errors con	st be installed in matched pairs [a bank] / ria 16-bit Checksum Chipkill™
(one of following)	see IntelliStation Graphics sheet for to NVIDIA™ Quadro4 280NVS NVIDIA Quadro4 980XGL NVIDIA Quadro FX 1000 NVIDIA Quadro FX 3000	full graphics specifications)	
SCSI disk controller I SCSI channels and cables Cables	LSI Logic® 53C1030 / dual channel supports RAID-1 mirroring (Embedo File Two 16-bit channels (one internal and systemboard to internal disks bays; Ex systemboard to rear external 68-pin co EIDE models: Two EIDE cables (one SCSI models: One or two SCSI cables	d one external) / Internal channel: one 3-c kternal channel: Models 29U/37U have one nnector (cable available as option part num 2-drop cable to CD-ROM, one 2-drop cable s (listed above), one 2-drop EIDE cable (to	drop 16-bit 68-pin LVD SCSI cable from 1-drop 16-bit 68-pin LVD SCSI cable fro
Chipset I	A for slots 2 and 3 and ethernet controller		
Diskette / Optical drives (IEEE 1394(FireWire) FAudio Rear ports Front ports	chip on planar / PCI-X 64-bit 100MHz / 13.5" 1.44MB diskette drive and one o Combo or 48X/24X/48X Max ^e CD-RW FireWire controller in Mini PCI slot / 1 Soft audio AC '97 v2.2 interface via ICI Two USB (Ver 2.0), two 9-pin serial, pa Fwo USB (Ver 2.0), audio line out (ste	394A, 400Mbps, 6-pin port on rear, 4-pin H4 (AD1885) / internal speaker (use of aud rallel, keyboard, mouse, ethernet, audio line	Format 1.0 / one rear ÅJ-45 port 4X/48X/16X Max ^{6,19} CD-RW/DVD-ROM port on front io line out requires powered speakers)
Cooling fans	BM 104-key keyboard (6-pin PS/2) / IB Three variable speed fans (power supp 425 watts / universal / auto sensing / bu	M three button mouse (6-pin PS/2 conn) ly, two in rear) / not redundant or hot-swap ilt-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
Optical Bay @ Bay	© 5.25", HH 1.6", access, optical © 5.25", HH 1.6", access, open © 3.5", SL 1", access, diskette © 3.5", SL 1", no access, disk © 3.5", SL 1", no access, open © 3.5", SL 1", no access, open © 3.5", SL 1", no access, open © 5.5", SL 1", no access, open © 6.5", SL 1", no access, open © 7.5", SL 1", no access, open © 8.5", SL 1", no access, open © 8.5", SL 1", no access, open © 9.5", SL 1", no access, open © 1.5", SL 1", No acces	 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 	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
512MB PC2100 CL 1GB PC2100 CL2.5 2GB PC2100 CL2.5 IBM 36.4GB 10K rp IBM 73.4GB 10K rp IBM 146GB 10K rp IBM 120GB 7.2K rp IBM ThinkVision L2 IBM T221 22.2inLC IBM 4Ux20D Towe	3 Cache Proc Upgrade 13N0691 2.5 ECC DDR-SDRAM x4 33L5038 ECC DDR-SDRAM DIMM 3L5039 5 ECC DDR-SDRAM DIMM 33L5040 5 ECC DDR-SDRAM DIMM 33L5040 5 ECC DDR-SDRAM DIMM 33L5040 6 ECC DDR-SDRAM DIMM 32P0723 6 ECC DDR-SDRAM DIMM 32P0723 6 ECC DDR-SDRAM DIMM 32P0723 6 ECC DDR-SDRAM DIMM 32P0725 6 ECC DDR-SDRAM DIMM 32P0723 6 ECC DDR-SDRAM DIM	Adv Config Power Interface (ACPI) 1.0a DMI 2.2-compliant Preload with 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	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 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 October 7, 2003

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Graphics Adapter	Matrox® Millennium	NVIDIA Quadro4™	NVIDIA Quadro4™	NVIDIA Quadro4™	NVIDIA Quadro4™	NVIDIA Quadro™	3DLabs Wildcat4™	NVIDIA Quadro™
Adaptor	G450 DVI-I	200NVS	280NVS	580XGL	980XGL	FX 1000	7110	FX 3000
Category	Entry 2D	High-Perf 2D	Advanced 2D	Entry 3D	Advanced 3D	Advanced 3D	Extreme 3D	Extreme 3D
Total Memory	32MB	64MB	64MB	64MB	128MB	128MB	256MB*	256MB
Memory Type	150Mhz DDR-SDRAM	166Mhz SDRAM	200Mhz DDR-SDRAM	275Mhz DDR-SDRAM	325Mhz DDR-SDRAM	300Mhz DDR2-SDRAM	166/200Mhz DDR-SDRAM	800Mhz DDR-SDRAM
RAMDAC Detail	Dual 360/232Mhz	Dual 350Mhz	Dual 350Mhz	Dual 350Mhz	Dual 350Mhz	Dual 400Mhz	Dual 320/280Mhz	Dual 400Mhz
Graphics Pipeline	256-bit	128-bit	128-bit	128-bit	128-bit	128-bit	128-bit	256-bit
Supported Bus	AGP 4X	AGP 4X	AGP 8X	AGP 8X	AGP 8X	AGP 8X	AGP 8X	AGP 8X
Maximum Displays	Two Analog One Digital	Two	Two	Two	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	Yes Yes Yes
Max Analog Resolution	2048x1536x32 @ 66Hz	2048x1536x32 @ 60 Hz	2048x1536x32 @ 60 Hz	2048x1536x32 @ 60 Hz	2048x1536x32 @ 60 Hz	2048x1536x32 @ 85 Hz	2048x1536x32 @ 60 Hz	2048x1536x32 @ 85 Hz
Max Digital Resolution	1600x1200x32 @ 60Hz	1280x1024x32 @ 60 Hz	1280x1024x32 @ 60 Hz	1280x1024x32 @ 60 Hz	@ 41 Hz	1600x1200x32 @ 60 Hz 2048x1536x32 @ 41 Hz 3840x2400x32 @ 13 Hz	2048x1536x32 @ 30 Hz	1600x1200x32 @ 60 Hz 2048x1536x32 @ 41 Hz 3840x2400x32 @ 24 Hz
Connectors	One DVI-I	One LFH60	One LFH60	One LFH60	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 DVI-I -to- Dual DB-15 cable included	One LFH-to-Dual DB-15 cable included, LFH-to-Dual DVI-I optional	One LFH-to-Dual DB-15 cable included, LFH-to-Dual DVI-I optional	One LFH-to-Dual DB-15 cable included, LFH-to-Dual DVI-I optional	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							*128MB frame buffer memory and 128MB texture buffer memory Does not support Linux OS	*One single- link DVI-I and One dual-link DVI-I

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

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.

- MHz/GHz only measures microprocessor internal clock speed; many factors affect application performance.
- 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.
- These services are available for machines normally used for business, professional, or trade purposes, rather than personal, family or household purposes. Not all machiné 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.
- ¹² Installation of 2GB RDIMMs requires BIOS and diagnostic firmware version 1.08 or later. When more than 8GB of memory is installed, the integrated SCSI controller must be disabled.
- 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.
- ¹⁵ IBM makes no respresentations or warranties regarding non-IBM products and services that are ServerProven, including but not limited to the implied warranties of merchantability and fitness for particular purpose. These products are offered and warranted by third parties, not IBM.
- Asset ID allows your computer to be scanned by various radio frequency emitting devices which must be purchased separately from independent companies.
- 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.
- Diskettes and hard copy documentation available at extra charge.
- For combination drives, maximum possible speeds only are given in the following order: CD read, CD write, CD re-write, DVD read
- Statement of direction and subject to availability.



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IBM Systems Group Department L4VA 3039 Cornwallis Road Research Triangle Park, NC 27709 August 26, 2003 - usxref.pdf

Bw eserver	x5eries 205 VL	xREF by eServer Field Skills Enablement Team
IBM® Type-model Processor	L2 FSB GHz¹ cache MHz Memory Disk	Disk Extender PCI slots Hot-swap Available controller board controllers x bays disk bays Ethernet date
 8480-93X Celeron® 8480-94X Celeron 8480-95X Celeron 	1.8 128KB 400 256MB 40GB ² EIDE 7200 rpr 1.8 128KB 400 128MB 40GB EIDE 7200 rpr 2.0 128KB 400 128MB 40GB EIDE 7200 rpr	m EIDE Graphics 5 x 7 None (fixed) Gigabit Dec 2002
Positioning Processor(s) L2 cache Implementation SMP support	Value Leader (VL); uniprocessor, entry server desi Intel® Celeron at 1.8GHz or 2.0Ghz with 400N 128KB std and max / ECC / full speed Motherboard contains one mPGA478 socket (proc	igned to meet small business needs and budgets
Memory	256MB / 2GB ¹³ max / two 184-pin gold-plated DI PC2100 266MHz ECC DDR-SDRAM / Error Chec industry std / unbuffered / CAS Latency 2.5 (CL2.5)	cking and Correcting (ECC) DIMMs and ECC memory controller /
SCSI disk controller IDE disk controller Cables Disk	None standard Enhanced IDE / ATA-100 / integrated in I/O Contro Two 2-drop EIDE cables (one cable uses one dro 40GB EIDE / ATA-100 / 7200 rpm / 9.0 ms average	p to CD-ROM, other cable uses one drop to disk)
Rack support Bus slots (see below) Chipset	Intel 845E chipset / 82845E Memory Controller Hu	e AGP 4X slot (not used) / no hot-swap Active™ PCI slots ub (MCH) / s, ATA-100 EIDE, ethernet MAC, USB, Low Pin Count Interface /
Ethernet CD-ROM / diskette Ports Diagnostics Systems mgmt cntrl	Preboot eXecution Environment (PXE) / Wake on L CD-ROM: 48X-20X6 CD-ROM, IDE / Diskette: 3.5 Front: none; Back: two serial (9-pin), parallel, two monitor (analog DB-15), microphone-in (mono), lin Diagnostic LEDs / error LEDs for fans and memor Winbond® W83791 / chip on planar / monitors sys	" 1.44MB diskette drive USB (Ver 2.0), keyboard, mouse, ethernet (RJ-45),
Graphics controller	SVGA / ATI® RageXL / on extender board / 4ME	3 SDRAM std/max / PCI 2.2 32-bit 33MHz / analog 15-pin D-Sub conn
Security	Mechanical side panel key lock / optional U-Bolt s via knockout / power-on password / boot sequenc control / operation without keyboard/mouse / cover tamper detect switch	te
Software	ServerGuide™ (CD-based automated network OS installation and configuration tool), IBM Director (system hardware mgmt software) and many utiliti	IBM 411x20D Tower-to-Rack Kit 09N4300
Keyboard / mouse Cooling fans Power supply	IBM 101 key keyboard / IBM mouse (both black) Three fans (fansink, rear, pwr supply) / not redundant / not hot-swap / full speed 340 watts / universal / auto switch / Automatic Server Restart (ASR) / not hot-swap / no redundancy / cooling fan in power supply (varial	IBM ServeRAID-4Lx Ultra160 SCSI Controller 1BM 20/40GB TR7 Internal Tape Drive 48P7042 1BM 40/80GB DLT1 Internal Half-High Tape Drive 1BM E54 (13.8" viewable) Color Monitor (black) 1BM T541 15" Flat Panel Color Monitor (black) 1BM NetBAY11 Standard Rack Cabinet 9306110 0ther options at ibm.com/pc/us/accessories
Slot 2: fullsize, 32-l Slot 3: fullsize, 32-l Slot 4: fullsize, 32-l Slot 5: fullsize, 32-l Slot: fullsize, 32-l ** on two-slot PCI ex	bit 33MHz, PCI 2.2 (5v)	LIMITED WARRANTY³ 1 year parts and labor International Warranty Service³ International Warranty Service Park No. International Warranty Service Park No. Inte
② Bay ③ Bay ④ Bay ⑤ Bay ⑤ Bay ⑥ Bay ⑥	○ 3.5", SL 1", access, diskette	

See footnotes for important warranty information

6

disk

Mini-tower

Stealth

black

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Maximum internal IDE disk capacity:

240GB13 (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

an imminent componet failure

Predictive Failure Analysis on disk(s) with IBM Director can alert the administrator of

IBM [®] Type-model Processor	L2 FSB GHz ¹ cache MHz Memory Disk	Disk Extender PCI slots Hot-swap controller board controllers x bays disk bays	Available Ethernet date					
** 8480-13X Pentium® 4 ** 8480-22X Pentium 4 ** 8480-2AX Pentium 4 ** 8480-23X Pentium 4 ** 8480-33X Pentium 4 ** 8480-33X Pentium 4	 2.0 512KB 400 256MB 18.2GB Ultra160 2.0 512KB 400 256MB None 2.0 512KB 400 256MB 40GB EIDE 7200 2.4 512KB 533 256MB 36.4GB Ultra160 1 2.4 512KB 533 256MB None 	10K Ultra160 Ultra160 Graphics, SCSI 5 x 7 Graphics, SCSI 5 x 7 Graphics, SCSI 5 x 7 Graphics, SCSI 5 x 7 None (fixed) None (fixed) 10K Ultra160 Ultra160 Graphics, SCSI 5 x 7 Graphics, SCSI 5 x 7 None (fixed) None (fixed) 6 raphics, SCSI 5 x 7 Oraphics, SCSI 5 x 7 None (fixed) None (fixed) 6 raphics, SCSI 5 x 7 None (fixed) None (fixed) 6 raphics, SCSI 5 x 7 None (fixed) None (fixed)) Gigabit Aug 2002 Gigabit Aug 2002 Gigabit Aug 2002 Gigabit Aug 2002 Gigabit Aug 2002					
Positioning Processor(s) L2 cache Implementation SMP support Memory	Intel® Pentium 4 at 1.8, 2.0, or 2.4GHz with 40 512KB std and max / ECC / full speed Motherboard contains one mPGA478 socket (p AGP slot, ethernet controller, connector for extension No SMP support / no processor upgrade 256MB / 2GB ¹³ max / two 184-pin gold-plated	processor/L2 cache in FC-PGA2), two DIMM sockets, threender board (two PCI slots, graphics controller, some have d DIMM sockets / one socket used / Checking and Correcting (ECC) DIMMs and ECC memory	ee PCI slots, one re SCSI controller)					
SCSI disk controller SCSI connectors IDE disk controller Cables Disk - features	SCSI models: Adaptec® AHA-7892 / single c board / 32-bit 33MHz PCI 2.1 / one 68-pin intel Enhanced IDE / ATA-100 / integrated in I/O Cor SCSI fixed disk models: one 5-drop 16-bit LVE SCSI hot-swap models: one 1-drop 16-bit LVE EIDE models: two 2-drop EIDE cabl Some SCSI models: 18.2GB or 36.4GB / U	channel Ultra160 SCSI controller (160MB/sec) / controller (160MB/sec) / controller and connector on extender board / no external SCSI controller Hub / two connectors on planar	nnector 2-drop EIDE cable ses one drop to disk)					
Rack support Bus slots (see below) Chipset	Intel 845E chipset / 82845E Memory Controlle	/ one AGP 4X slot (not used) / no hot-swap Active™ PCI : er Hub (MCH) / ⊵ bus, ATA-100 EIDE, ethernet MAC, USB, Low Pin Coun						
Ethernet CD-ROM / diskette Ports Diagnostics Systems mgmt cntrl	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: 48X-20X® CD-ROM, IDE / Diskette: 3.5" 1.44MB diskette drive 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) Diagnostic LEDs / error LEDs for fans and memory / server diagnostic programs stored on IBM Enhanced Diagnostics CD 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		4MB SDRAM std/max / PCI 2.2 32-bit 33MHz / analog						
Security	Mechanical side panel key lock (locks hot-swa hot-swap models) / optional U-Bolt support via power-on password / boot sequence control / o without keyboard/mouse / cover tamper detect	a knockout / 512MB PC2100 CL2.5 ECC DDR UDIMM operation 1GB PC2100 CL2.5 ECC DDR UDIMM	10K0067 10K0069 10K0071 09N4226					
Software Keyboard / mouse Cooling fans Power supply	ServerGuide™ (CD-based automated network installation and configuration tool), IBM Directo (system hardware mgmt software) and many use IBM 101 key keyboard / IBM mouse (both black Fixed disk models: three fans (fansink, rear, pwhot-swap models: four fans (fansink, two rear, All: not redundant / not hot-swap / variable s 340 watts / universal / auto switch / Automatic Server Restart (ASR) / not hot-swap no redundancy / cooling fan in power supply (variable s 1995).	IBM 73.4GB 10K Ultra160 SCSI SL HDD(no utilities IBM 36.4GB 10K Ultra160 SCSI Hot-swap Horseld Hotels IBM 73.2GB 10K Ultra160 SCSI Hot-swap 40X/12X/40X Max ⁶ CD-RW internal (black IBM Multi Burner IBM Remote Supervisor Adapter (PCI adal IBM 4Ux20D Tower-to-Rack Kit IBM ServeRAID-4Lx Ultra160 SCSI Controll IBM T541 15" Flat Panel Color Monitor (black IBM T541 15")	t hot-swap) 06P5752 IDD 06P5768 HDD 06P5756) 22P6976 22P6970 oter) 09N7585 09N4300 er 06P5740 ack) 9512AB1 9306110					
Slot 1: fullsize, 32-t Slot 2: fullsize, 32-t Slot 3: fullsize, 32-t Slot 4: fullsize, 32-t Slot 5: fullsize, 32-t Slot 5: fullsize, 32-t ** on two-slot PCI ex CD-ROM 2 diskette 4 b b bisk Mini-tower Stealth black Slot 5: fullsize, 32-t Bay 3: Bay 3: Bay 6: Bay 6: Bay 6: Bay 6: Bay 7: CP Fixt Bay 6: Bay 7: CP Fixt Bay 6: CP Fixt Bay 6: CP Fixt CP Fixt CP Pre CP IBM An i	LIMITED W iguration/Setup Utility (in flash ory) invoked by pressing F1 at up. Select near startup by pressing L+A Config Power Interface (ACPI) 1.0 pe Drivers and Diagnostics ROM included stabilizing feet lle grip on top 5" x W 6.5" x D 20.0" Omm x W 165mm x D 508mm 42 pounds (15.9 to 19.1kg) LIMITED W 1 year parts and Ial international Warra On site, 8 am-5 pm Mon-Fri excluding next business day On site service upoptions (in eligible of 3 year IOR 9x5, 4 (ServicePac part of 3 year IOR 9x5, 4 (ServicePac part of 3 year IOR 24x7, (ServicePac of 3 year IOR 24x7	ARRANTY ³ cor inty Service ³ response time irade locations): ⁷ IBD response num 69P9510) 4 hr avg response num 69P9511) 2 hr avg response num 69P9512) port for warranty						

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IBM® Type-model Processor	L2 FSB GHz ⁱ cache MHz Memory Di	Disk isk controller	Extender PCI slots Hot-swap Available board controllers x bays disk bays Ethernet date
	2.67 512KB 533 256MB None 2.67 512KB 533 256MB 40GB EII 2.8 512KB 533 256MB 36.4GB L 2.8 512KB 533 256MB None 2.8 512KB 533 256MB 40GB EII	Ultra160 10K Ultra160 Ultra160 DE 7200 rpm EIDE Ultra160 10K Ultra160 Ultra160 DE 7200 rpm EIDE Ultra160 10K Ultra160 Ultra160 Ultra160 DE 7200 rpm EIDE	Graphics, SCSI 5 x 7 None (fixed) Gigabit Feb 2003 Graphics, SCSI 5 x 7 None (fixed) Gigabit Feb 2003 Graphics, SCSI 5 x 7 None (fixed) Gigabit Feb 2003 Graphics, SCSI 5 x 7 None (fixed) Gigabit Feb 2003 Graphics, SCSI 5 x 7 None (fixed) Gigabit Feb 2003 Graphics, SCSI 5 x 7 None (fixed) Gigabit Feb 2003 Graphics, SCSI 5 x 7 None (fixed) Gigabit Sep 2003 Graphics, SCSI 5 x 7 None (fixed) Gigabit Sep 2003 Graphics 5 x 7 None (fixed) Gigabit Sep 2003
Positioning Processor(s) L2 cache Implementation SMP support	An extremely affordable, uni-processo Intel® Pentium 4 at 2.67 or 2.8GHz 512KB standard and maximum / ECC Systemboard contains one mPGA478 s	or server that delivers value with 533MHz frontsic C / full speed socket (processor/L2 cac xtender board (two PCI s	lue and availability for small and medium businesses
Memory	256MB / 2GB ¹³ max / two 184-pin go PC2100 266MHz ECC DDR-SDRAM / industry std / unbuffered / CAS Latency	/ Error Checking and C	s / one socket used / correcting (ECC) DIMMs and ECC memory controller /
SCSI disk controller SCSI connectors IDE disk controller Cables Disk - features	board / 32-bit 33MHz PCI 2.1 / one 68 Enhanced IDE / ATA-100 / integrated is SCSI fixed disk models: one 5-drop 16 SCSI hot-swap models: one 1-drop 16 EIDE models: two 2-drop E Some SCSI models: 36.4GB / Ultr	I-pin internal connector in I/O Controller Hub / tw 6-bit LVD SCSI cable, c 6-bit LVD SCSI cable (e IDE cables (one cable ura160 SCSI / 10000 rpr	
Rack support Bus slots (see below) Chipset	Intel 845E chipset / 82845E Memory (2.2 slots / one AGP 4X s Controller Hub (MCH) / r PCI 2.2 bus, ATA-100	lot (not used) / no hot-swap Active™ PCI slots EIDE, ethernet MAC, USB, Low Pin Count Interface / urallel, serial, keyboard, mouse
Ethernet CD-ROM / diskette Ports Diagnostics Systems mgmt cntrl	Preboot eXecution Environment (PXE) CD-ROM: 48X-20X6 CD-ROM, IDE / LFront: (none); Back: two serial (9-pir monitor (analog DB-15), microphone-ii Diagnostic LEDs / error LEDs for fans Winbond® W83791 / chip on planar / r) / Wake on LAN® / Alert Diskette: 3.5" 1.44MB d n), parallel, two USB (V n (mono), line-in (stereo and memory / server d monitors system and pr	iskette drive /er 2.0), keyboard, mouse, ethernet (RJ-45),
Graphics controller			std/max / PCI 2.2 32-bit 33MHz / analog 15-pin D-Sub conn
Security	Mechanical side panel key lock (locks hot-swap models) / optional U-Bolt su power-on password / boot sequence owithout keyboard/mouse / cover tampe	pport via knockout / 5 control / operation er detect switch	56MB PC2100 CL2.5 ECC DDR UDIMM 10K0067 12MB PC2100 CL2.5 ECC DDR UDIMM 10K0069 GB PC2100 CL2.5 ECC DDR UDIMM 10K0071 8M 80GB 7200 rpm EIDE ATA-100 HDD 09N4226 8M 36GB 15K Ultra160 SCSI SL HDD (not hot-swap) 06P5766
Software	ServerGuide™ (CD-based automated installation and configuration tool), IBN (system hardware mgmt software) and	M Director IE	MM 73.4GB 10K Ultra160 SCSI SL HDD(not hot-swap) 06P5752 MM 36.4GB 10K Ultra160 SCSI Hot-swap HDD 06P5768 MM 73.2GB 10K Ultra160 SCSI Hot-swap HDD 06P5756
Keyboard / mouse Cooling fans Power supply	IBM 101 key keyboard / IBM mouse (b Fixed disk models: three fans (fansink, Hot-swap models: four fans (fansink, t All: not redundant / not hot-swap / v 340 watts / universal / auto switch / Automatic Server Restart (ASR) / not ho redundancy / cooling fan in power s	, rear, pwr supply) two rear, pwr supply) trariable speed not-swap /	22P6976 3M Multi Burner 3M Remote Supervisor Adapter (PCI adapter) 3M ServeRAID-4Lx Ultra160 SCSI Controller 3M T541 15" Flat Panel Color Monitor (black) 3M NetBAY11 Standard Rack Cabinet 3M Color Monitor (black) 3M NetBAY11 Standard Rack Cabinet 3M Color Monitor (black) 3M NetBAY11 Standard Rack Cabinet 3M Color Monitor (black) 4M Color Monitor (black) 5M NetBAY11 Standard Rack Cabinet 5M NetBAY11 Standard Rack Cabinet 6M NetBAY11 Standard Rack Cabinet 7M Standard R
Slot 2: fullsize, 32-b Slot 3: fullsize, 32-b Slot 4: fullsize, 32-b Slot 5: fullsize, 32-b ** on two-slot PCI ex CD-ROM Bay 2 Bay 3 Bay 4 Bay 6 Bay 6 Bay 6 Bay 6 Bay 6 Bay 6 Bay 7 Adisk Mini-tower Stealth black	bit 33MHz, PCI 2.2 (5v) bit 33MHz, PCI 2.2 (5v) bit 33MHz, PCI 2.2 (5v) bit 33MHz, PCI 2.2 (5v)** bit 33MHz, PCI 2.2 (5v)** bit 33MHz, PCI 2.2 (5v)** bit 4GP 4X (1.5v) tender board b 5.25", HH1.6", access, CD-ROM b 5.25", HH1.6", access, open (no disk) b 3.5", SL 1", access, open b 3.5", SL 1", access, open b 3.5", SI 1", access, open	 ◇ Removable left side ◇ Configuration/Setup memory) invoked by startup ◇ SCSISelect near sta CTRL+A ◇ Adv Config Power In ◇ Device Drivers and E CD-ROM included ◇ Four stabilizing feet ◇ Handle grip on top ◇ H 18.5" x W 6.5" x D ◇ H 470mm x W 165m ◇ 35 to 42 pounds (15. Maximum internal SC 587.2GB (4 disks x 1 Maximum internal IDI 240GB (3 disks x 80	Utility (in flash pressing F1 at rtup by pre

IBM® Type-model Processor	GHz ¹ L2 FSB Memory	Disk contro		slots Power supply Available bays number and type Ethernet date
 ≈ 8647-22X 1 x Xeon[™] ≈ 8647-2AX 1 x Xeon ≈ 8647-32X 1 x Xeon 8647-3AX 1 x Xeon ≈ 8647-3BX 1 x Xeon 	2.0 512KB 400 512MB No		20 6 hot-swap 6 20 None (4 fixed) 6 20 6 hot-swap 6	x 9 One fixed Gigabit Dec 2002
Positioning Processor(s) SMP - L2 cache Implementation		GHz with 400 or 533MHz Processors (same speed/o el 604-pin micro-PGA ZIF	ache size) / 512KB sockets, four DIMM sl	std and max / at processor speed lots, seven slots (one PCI 2.2, four PCI-
Memory	DDR-SDRAM DIMMs / four DIMbank] / 2-way memory interleave	MM gold-connector slots or ve / dual channel / Error C	systemboard / DIMM hecking and Correct	0 266MHz CL2.5 registered 184-pin ECC is must be installed in matched pairs [a ing (ECC) via 16-bit Checksum 8-bit errors contained in two chips)
IDE disk controller SCSI disk controller	Enhanced IDE busmaster / AT LSI Logic® 53C1030 / dual ch supports RAID-1 mirroring (E RAID 0, 1, 1E, 5, 00, 10, 1E0, 5	nannel Ultra320 SCSI cor imbedded Mirroring) / shai	troller (LVD 320MB/s	connectors on planar sec) / on planar / 64-bit 100MHz PCI-X / ServeRAID™-5i Controller for low-cost
SCSI channels and cables	SCSI cable from systemboard to backplane; External channel: co One SCSI cable (listed above)	o internal disks baýs; Hot-s able available as option pn , one 2-drop EIDE cable (wap models: one 1-dro 32P8164 from systeml to CD-ROM)	models: one 4-drop 16-bit 68-pin LVD p 16-bit 68-pin LVD SCSI cable to 6-bay coard to rear external 68-pin connector
Chipset	Intel E7505 chipset / E7505 MC A for slots 2 and 3 and ethernet of	er-to-rack kit option one PCI 2.2 / one Mini PCI / CH (Memory Controller Hub) controller; Bus B for slots 4 a	one AGP 8X (not availa for AGP 8X slot, P64H and 5 and SCSI control	able) / no hot-swap Active™ PCI slots I2, ICH4 / P64H2 for two PCI-X buses (Bus Ier) / I/O Controller Hub (ICH4) for PCI 2.2 / NS PC87366 Super I/O off LPC interface
Ethernet CD-ROM / diskette Ports Diagnostics	One gigabit 10/100/1000 etherne chip on planar / PCI-X 64-bit 100 CD-ROM: 48X-20X° CD-ROM, I Front: two USB (Ver 2.0); Back: monitor (analog DB-15), microph Diagnostic LEDs / error LEDs fo	et controller / Broadcom BCI DMHz / full duplex / Wake on IDE / Diskette: 3.5" 1.44MB : two USB (Ver 2.0), two seri- none-in (mono), line-in (steri- pr fans and memory / serveri- nar / monitors system and p	M5703i / full gigabit ethe LAN® / Alert Standard diskette drive al (9-pin), parallel, keyteo), line-out (stereo) diagnostic programs stocessor temperature.	ernet MAC and PHY layer functions / Format 1.0 / one rear RJ-45 port coard, mouse, ethernet (RJ-45), stored on IBM Enhanced Diagnostics CD fan speed and failure, and voltages /
Graphics controller				32-bit 33MHz / analog 15-pin D-Sub conn
Security	Mechanical side panel key lock hot-swap models) / optional U-E power-on password / boot seque without keyboard/mouse / secur	(locks hot-swap disks on Bolt support via knockout / ence control / operation	Xeon DP 2.0GHz/400 Xeon DP 2.4B GHz/5 256MB PC2100 CL2 512MB PC2100 CL2	0/512KB L2 Cache Proc Upg 59P5112 33/512KB L2 Cache Proc Upg 59P5108 .5 ECC DDR-SDRAM 33L5037 .5 ECC DDR-SDRAM 33L5038
Software	ServerGuide™ (CD-based auto installation and configuration too (system hardware mgmt software)	ol), IBM Director	2GB PC2100 CL2.5 I IBM 73.4GB 10K Ulti	ECC DDR-SDRAM DIMM 33L5039 SCC DDR-SDRAM DIMM 33L5040 33L5040 3320 SCSI 68-pin (not hot-swp) 32P0724 a320 SCSI 68-pin (not hot-swp) 32P0725
Keyboard / mouse Cooling fans Power supply(s)	IBM 101 key keyboard / IBM more Four / three for processor(s), me power supply cage fan (even in call: not redundant / not hot-swa some: one 425 watt std and max 3BX: two 350 watt std and max All: universal / voltage-sensir Restart (ASR) / cooling fan in po	emory, and disk bays / one odual power supply model) p / all variable speed x / not hot-swap t / hot-swap / redundant ng / Automatic Server	IBM 73GB 10K Ultra3 IBM 146GB 10K Ultra 40X/12X/40X Max ⁶ V IBM Remote Super IBM 4U Extended De IBM ServeRAID-5i Co IBM T541 15" Flat Pa	a320 SCSI Hot-Swap SL HDD 32P0727 a32P0727 a32P0727 a32P0728 CD-RW internal (black) 22P6976 asor Adapter (PCI adapter) 09N7585 epth Tower-to-Rack Kit 59P4817 ontroller (adapter for Slot 4) anel Color Monitor (black) com/pc/us/accessories
Slot 2: fullsize, 64-bit Slot 3: fullsize, 64-bit Slot 4: fullsize, 64-bit Slot 5: fullsize, 64-bit Slot 6: Mini PCI type Slot: fullsize, AGP 8 * Extended slot for op CD-ROM ② diskette diskette	① 5.25", HH 1.6", access, CD-RO(2) 5.25", HH 1.6", access, open ③ 3.5", SL 1", access, diskette swap models 2AX, 3AX, and 3BX, ays ④ to ⑨ 3.5", SL 1", access, he disk models 22X and 32X: ④ 3.5", SL 1", no access, not hotel ⑤ 3.5", SL 1", no access, not hotel ⑥ 3.5", SL 1", no access, not hotel ⑥ 3.5", SL 1", no access, not hotel 0 3.5", SL 1", no acces	ded* pressing F1 at st.	r de panel tup Utility invoked by artup y via F1 at startup t Utility near startup by t t Interface (ACPI) 1.0a d IBM Enhanced com included et t t D 26.0" 5 metal cage for disk e out of chassis for	LIMITED WARRANTY³

IBM® Type-model Processor	GHz ¹ cache MHz Memory Disk	Disk controller	Hot-swap PCI s disk bays x b	slots Power supply Available ays number and type Ethernet date
8647-42X 1 x Xeon ¹ 8647-4AX 1 x Xeon 8647-4BX 1 x Xeon 8647-52X 1 x Xeon 8647-5AX 1 x Xeon 8647-5BX 1 x Xeon	 2.67 512KB 533 256MB 36.4GB² Ultra 2.67 512KB 533 512MB None (open-b 2.67 512KB 533 512MB None (open-b 2.8B 512KB 533 256MB 36.4GB Ultra 2.8B 512KB 533 512MB None (open-b 2.8B 512KB 533 512MB None (open-b 	bay) Ultra320 bay) Ultra320 bay) Ultra320 bay) Ultra320	6 hot-swap 6 x None (4 fixed) 6 x 6 hot-swap 6 x	x 9 One fixed Gigabit Feb 2003 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 2-way SMP / up to two Xeon Processors (Systemboard contains two Intel 604-pin microne Mini PCI [used by graphics], one unaversely.	(same speed/cach ro-PGA ZIF socket:	ie size) / 512KB st s, four DIMM slots,	td and max / at processor speed seven slots (one PCI 2.2, four PCI-X,
Memory	256MB or 512MB std / 8GB ¹³ max / two slo DDR-SDRAM DIMMs / four DIMM gold-connec 2-way memory interleave / dual channel / E (corrects 1, 2, 3, or 4-bit errors on same ch	ctor slots on systemictor Checking a	board / DIMMs must nd Correcting (EC	be installed in matched pairs [a bank] / C) via 16-bit Checksum Chipkill™
IDE disk controller SCSI disk controller	Enhanced IDE busmaster / ATA-100 / integ LSI Logic® 53C1030 / dual channel Ultra supports RAID-1 mirroring (Embedded M RAID 0, 1, 1E, 5, 00, 10, 1E0, 50 (installed	a320 SCSI control irroring) / shared I only in Slot 4) Tw	Iler (LVD 320MB/se with optional IBM Se vo 16-bit channels (ec) / on planar / 64-bit 100MHz PCI-X / ServeRAID™-5i Controller for low-cost (one internal and one external) / Internal
SCSI channels and cables	channel: Fixed disk models: one 4-drop 16 swap models: one 1-drop 16-bit 68-pin LVI option pn 32P8164 from systemboard to re One SCSI cable (listed above), one 2-drop	D SCSI cable to 6 ear external 68-pir EIDE cable (to CI	-bay backplane; <i>É.</i> n connector D-ROM)	xternal channel: cable available as
Disk - features	Some: 36.4GB Ultra320 SCSI / 10K rpm / 4		ad seek / S.M.A.R.1	1.5
Rack support Bus slots (see below Chipset	4U ⁴ rack mount support via tower-to-rack kit of Four 64-bit 100MHz PCI-X 1.0 / one PCI 2.2 / Intel E7505 chipset / E7505 MCH (Memory 0 A for slots 2 and 3 and ethernet controller; Bubus (one slot and one Mini PCI slot), ATA-100	/ one Mini PCI /one Controller Hub) for us B for slots 4 and	AGP 8X slot, P64H2 5 and SCSI controlle	2, ICH4 / P64H2 for two PCI-X buses (Bus er) / I/O Controller Hub (ICH4) for PCI 2.2
Ethernet CD-ROM / diskette Ports	One gigabit 10/100/1000 ethernet controller/chip on planar / PCI-X 64-bit 100MHz / full du CD-ROM: 48X-20X ⁶ CD-ROM, IDE / Disketti Front: two USB (Ver 2.0); Back: two USB (Ver 2.0);	iplex / Wake on LAN e: 3.5" 1.44MB disl	N® / Alert Štandard F kette drive	Format 1.0 / one rear ŔJ-45 port
Diagnostics	monitor (analog DB-15), microphone-in (mon Diagnostic LEDs / error LEDs for fans and m Winbond® W791D / chip on planar / monitors support for optional Remote Supervisor A	io), line-in (stereo), nemory / server dia is system and proce	line-out (stereo) gnostic programs st essor temperature, t	tored on IBM Enhanced Diagnostics CD fan speed and failure, and voltages /
Graphics controller	SVGA / ATI® RageXL / on Mini PCI adapter /			
Security	Mechanical side panel key lock (locks hot-sw hot-swap models) / optional U-Bolt support v power-on password / boot sequence control without keyboard/mouse / security slot (for op	via knockout / Xe / operation 25 pt cable lock) 51	eon 2.8B GHz/533/5 56MB PC2100 CL2.5 12MB PC2100 CL2.5	12KB L2 Cache Proc Upg 24P7861 512KB L2 Cache Proc Upg 24P8054 5 ECC DDR-SDRAM 33L5037 5 ECC DDR-SDRAM 33L5038
Software	ServerGuide™ (CD-based automated network installation and configuration tool), IBM Direct (system hardware mgmt software) and many	ctor IB	GB PC2100 CL2.5 E M 73.4GB 10K Ultra	CC DDR-SDRAM DIMM 33L5039 CC DDR-SDRAM DIMM 33L5040 a320 SCSI 68-pin (not hot-swp) 32P0724 320 SCSI 68-pin (not hot-swp) 32P0725
Keyboard / mouse Cooling fans Power supply(s)	IBM 101 key keyboard / IBM mouse (both bla Four / three for processor(s), memory, and di power supply cage fan (even in dual power su All: not redundant / not hot-swap / all variable Some: one 425 watt std and max / not hot-swap / All: universal / voltage-sensing / Automatic Restart (ASR) / cooling fan in power supply(s	isk bays / one upply model) e speed yap redundant c Server s) (variable spd) IB	M 73GB 10K Ultra32 M 146GB 10K Ultra)X/12X/40X Max ⁶ CI M Remote Supervis M 4U Extended Dep M ServeRAID-5i Cor M T541 15" Flat Pai	320 SCSI Hot-Swap SL HDD 32P0727 32P0727 322 SCSI Hot-Swap SL HDD 32P0727 32P0728 32P0
Slot 2: fullsize, 64-bi Slot 3: fullsize, 64-bi Slot 4: fullsize, 64-bi Slot 5: fullsize, 64-bi Slot 6: Mini PCI type Slot: fullsize, AGP * Extended slot for c CD-ROM a diskette diskette fixe fixe Bay Bay Hot-swap Max Fixe Max Fixe	t 100MHz, PCI-X 1.0 (3.3v) t 100MHz, PCI-X 1.0 (3.3v) t 100MHz, PCI-X 1.0 (3.3v) extended* extende	aven black color emovable left side profiguration/Setup essing F1 at startul OS Setup Utility via Bl Configuration Utiessing CTRL+C MI 2.2-compliant dv Config Power Intervice Driver and IBliagnostics CD-RON our stabilizing feet andle grip on top	panel Utility invoked by p a F1 at startup lity near startup by terface (ACPI) 1.0a M Enhanced Included 26.0" m x D 660mm o 25.8kg) etal cage for disk ut of chassis for ng nalysis on disk(s) n alert the admin-	LIMITED WARRANTY³

IBM® Type-model Processor	L2 FSB GHz ¹ cache MHz Memory Disk	Disk controlle		PCI slots x bays r	Power supply number and type	Ethernet	Available date
8647-62X 1 x Xeon ¹ 8647-6AX 1 x Xeon 8647-6BX 1 x Xeon	 3.06 512KB 533 256MB 36.4GB² Ultra3: 3.06 512KB 533 512MB None (open-base) 3.06 512KB 533 512MB None (open-base) 	ay) Ultra32	0 6 hot-swap	6 x 9	One fixed One fixed Two redundant	Gigabit	Jul 2003 Jul 2003 Jul 2003
Processor(s) SMP - L2 Cache Implementation	1 x Intel® Xeon at 3.06 GHz with 533MHz 2-way SMP / up to two Xeon Processors (s Systemboard contains two Intel 604-pin micro one Mini PCI [used by graphics], one unavar	same speed/ca b-PGA ZIF sock	iche size) / 512KB kets, four DIMM slo	std and ots, seven	max / at processlots (one PCI 2		
Memory	256MB or 512MB std / 8GB ¹³ max / two slots DDR-SDRAM DIMMs / four DIMM gold-connect 2-way memory interleave / dual channel / E (corrects 1, 2, 3, or 4-bit errors on same chi	for slots on system rror Checking	emboard / DIMMs m and Correcting (ust be ins (ECC) via	talled in matched 16-bit Checksu	pairs [a b um Chip	oank] /
IDE disk controller SCSI disk controller SCSI channels and cables Cables Disk - features	Enhanced IDE busmaster / ATA-100 / integ LSI Logic® 53C1030 / dual channel Ultra3 supports RAID-1 mirroring (Embedded Mir RAID 0, 1, 1E, 5, 00, 10, 1E0, 50 (installed channel: Fixed disk models: one 4-drop 16-swap models: one 1-drop 16-bit 68-pin LVD option pn 32P8164 from systemboard to re: One SCSI cable (listed above), one 2-drop ESOME: 36.4GB Ultra320 SCSI / 10K rpm / 4	320 SCSI cont rroring) / share only in Slot 4) of bit 68-pin LVD SCSI cable to ar external 68- EIDE cable (to	roller (LVD 320Ml d with optional IB Two 16-bit channe SCSI cable from 6-bay backplane; pin connector CD-ROM)	B/sec) / o M ServeF els (one ir systembo <i>Externa</i>	on planar / 64-bit RAID™-5i Contro Iternal and one o Dard to internal o	oller for I external) disks bay	ow-cost / Internal ys; Hot-
Rack support Bus slots (see below Chipset	4U ⁴ rack mount support via tower-to-rack kit of Four 64-bit 100MHz PCI-X 1.0 / one PCI 2.2 / Intel E7505 chipset / E7505 MCH (Memory CA for slots 2 and 3 and ethernet controller; Bus bus (one slot and one Mini PCI slot), ATA-100	one Mini PCI /o Controller Hub) f s B for slots 4 ar	or AGP 8X slot, P6 nd 5 and SCSI cont	4H2, ICH4 roller) / I/C	4 / P64H2 for two Controller Hub	PCI-X bi (ICH4) fo	uses (Bus or PCI 2.2
Ethernet CD-ROM / diskette Ports Diagnostics Systems mgmt cntrl	One gigabit 10/100/1000 ethernet controller / Echip on planar / PCI-X 64-bit 100MHz / full dup CD-ROM: 48X-20X6 CD-ROM, IDE / Diskette Front: two USB (Ver 2.0); Back: two USB (Ver monitor (analog DB-15), microphone-in (mono Diagnostic LEDs / error LEDs for fans and me Winbond® W791D / chip on planar / monitors support for optional Remote Supervisor Active Company (Note: 100 to	blex / Wake on L 2: 3.5" 1.44MB or 2.0), two seria b), line-in (stered emory / server of system and pro-	.AN® / Alert Standa diskette drive I (9-pin), parallel, ko o), line-out (stereo) diagnostic program ocessor temperatu	rd Format eyboard, r s stored o re, fan sp	1.0 / one rear RJ mouse, ethernet (on IBM Enhanced eed and failure, a	l-45 port (RJ-45), d Diagno	estics CD
Graphics controller	SVGA / ATI® RageXL / on Mini PCI adapter /	8MB SDRAM s	td and max / PCI 2	.2 32-bit 3	3MHz / analog 1	5-pin D-	Sub conn
Security	Mechanical side panel key lock (locks hot-sw hot-swap models) / optional U-Bolt support vi. power-on password / boot sequence control / without keyboard/mouse / security slot (for op	rap disks on a knockout / operation t cable lock)	Xeon 3.06B GHz/9 256MB PC2100 C 512MB PC2100 CI 1GB PC2100 CL2.	533/512K EL2.5 ECC _2.5 ECC 5 ECC DI	B L2 Cache Pro C DDR-SDRAM DDR-SDRAM DR-SDRAM DIMI	c Upg	24P8122 33L5037 33L5038 33L5039
Software	ServerGuide™ (CD-based automated networinstallation and configuration tool), IBM Direct (system hardware mgmt software) and many	ior	2GB PC2100 CL2. IBM 73.4GB 10K U IBM 146GB 10K U IBM 36.4GB 15K U	Jitra320 S Itra320 S	CSI 68-pin <u>(not l</u> CSI 68-pin <u>(not h</u>	<u>not-swp)</u> ot-swp)	
Keyboard / mouse Cooling fans Power supply(s)	IBM 101 key keyboard / IBM mouse (both black Four / three for processor(s), memory, and dispower supply cage fan (even in dual power sup All: not redundant / not hot-swap / all variable Some: one 425 watt std and max / not hot-swap 6BX: two 514 watt std and max / hot-swap / re universal / voltage-sensing / Automatic Strestart (ASR) / cooling fan in power supply(s) (stressed for three for the supply (so the four forms).	k bays / one pply model) speed o edundant Server	IBM 73GB 10K Ultra320 SCSI Hot-Swap SL HDD IBM 146GB 10K Ultra320 SCSI Hot-Swap SL HDD 40X/12X/40X Max ⁶ CD-RW internal (black) IBM Remote Supervisor Adapter (PCI adapter) IBM 4U Extended Depth Tower-to-Rack Kit IBM ServeRAID-5i Controller (adapter for Slot 4) IBM T541 15" Flat Panel Color Monitor (black)			32P0727 32P0728 22P6976 09N7585 59P4817 25P3492 9512AB1	
Slot 2: fullsize, 64-bit Slot 3: fullsize, 64-bit Slot 4: fullsize, 64-bit Slot 5: fullsize, 64-bit Slot 6: Mini PCI type Slot: fullsize, AGP * Extended slot for o CD-ROM © diskette • • • • • • • • • • • • • • • • • • •	t 100MHz, PCI-X 1.0 (3.3v) c 100MHz, PCI-X 1.0 (ssing F1 at star DS Setup Utility Configuration Issing CTRL+C II 2.2-compliant Config Power Vice Driver and Ignostics CD-RG II stabilizing feemale grip on top 8.4" x W 6.5" x 67mm x W 165 to 57 pounds (2 ed disk models: ys 4,5,6,7 rotate sy access for catellicitive Failure IIBM Director	up Utility invoked by tup via F1 at startup Utility near startup Utility near startup Interface (ACPI) 1. IBM Enhanced DM included t D 26.0" mm x D 660mm 0 to 25.8kg) metal cage for diskout of chassis for	\$\display 1 y \top \text{Intro} \text{P} \text{Intro} \text{P} \text{On Mo ne:} On opt	ear parts and la ernational Warrar site, 8 am-5 pm, n-Fri excluding het business day r site service upgitons (in eligible la 3 year IOR 9x5, 4 ServicePac part 13 year IOR 24x7, ServicePac part 13 year IOR 24x7, ServicePac part 14 year IOR 24x7, ServicePac part 15 year IOR 24x7, ServicePac part 16 year IOR 24x7, ServicePac part 17 year IOR 24x7, ServicePac part 16 year IOR 24x7,	bor nty Servi nolidays, esponse rade locations BD resp num 96P 4 hr avg num 96P 2 hr avg num 96P poort for v	ce³ e time s):7 onse P2248) esponse 2249) response 2250) response 2251) varranty

IBM® Type-model Qty x l	L2 Processor cache Memory	Memory type Disk	SCSI controller Mecha	Slots x bays nical (hot-swap bay		Available Ethernet date
→ 8671-11X 1 x Xeon → 8671-1AX 1 x Xeon → 8671-21X 1 x Xeon → 8671-2AX 1 x Xeon → 8671-3AX 1 x Xeon → 8671-3AX 1 x Xeon 8671-4AX 1 x Xeon 8671-4AX 1 x Xeon	1.8GHz 512KB 512MB 2.0GHz 512KB 256MB 2.0GHz 512KB 512MB 2.2GHz 512KB 256MB 2.2GHz 512KB 512MB 2.4GHz 512KB 256MB	Chipkill™ None ECC None Chipkill None ECC None Chipkill None ECC None	e 2 x Ultra320Towe e 2 x Ultra320Towe	er 6x10 (6 hot-swap s er 6x10 (6 hot-swap s	std; 9 max)2 hot-swa std; 9 max)1 fixed std; 9 max)2 hot-swa std; 9 max)1 fixed std; 9 max)2 hot-swa std; 9 max)1 fixed	Gigabit Jun 2002 apGigabit Jun 2002 Gigabit Jun 2002 apGigabit Jun 2002 Gigabit Jun 2002
Positioning Processor(s) L2 cache SMP support Implementation	Universal server; two-way start I x Intel® Xeon™ Proces 512KB / on die of processo 2-way SMP / up to two Xeo Systemboard contains two six PCI slots (two hot-swap	sor 1.8, 2.0, 2. r / at processor n Processors D Intel 603-pin mid	.2 or 2.4GHz with 4 speed (no L3 cache P (same speed/cach cro-PGA ZIF sockets	00MHz frontside bus le size) s, six memory gold-con	/ Hyper-Threading to nector DIMM slots,	
Memory	256 or 512MB std / 12GB¹ PC2100 266MHz registere DIMMs must be installed in 256MB models: Error Chee 512MB models: Error Chee same chip and detects 2- th	ed 184-pin ECC matched pairs [cking and Corr cking and Corr	DDR-SDRAM DIM [a bank] / 2-way mer ecting (ECC) / corre ecting (ECC) via 16	Ms / nory interleave / dual c cts single-bit errors an -bit Checksum Chipk	nd detects 2-bit errors kill™ (corrects 1, 2, 3,	or 4-bit errors on
SCSI channels	LSI Logic® 53C1030 / dua supports RAID-1 mirroring shared with optional IBM S Two 16-bit channels / SC3 interface for Bay 8 and 9 (n via external SCSI knockou Enhanced IDE ATA-100 cc None standard / supports 7 Six hot-swap / 80-pin SCA-	g with up to one erveRAID™-6i (SI Channel A: 1 nay require a ca t in rear (cable r ontroller in CSB: '200-15000 rpm	hot-spare disk / Controller for low-cos 16-bit 68-pin LVD ci able) or with optiona req 32P8164) or via 5 South Bridge / one n disks / one backpla	t RAID 0, 1, 1E, 5, 00 able from controller to 3-Pack Kit (cable incl opt ServeRAID adapte connector on planar/ ne/all disk bays Ultra	, 10, 1E0, 50 (installe b backplane; <i>Chann</i> luded); supports exte er with external conn one 1-drop IDE cab a320-enabled	ed only in Slot 4) el B: 16-bit 68-pin ernal SCSI devices ector(s) e (CD-ROM)
Mechanical Chipset	Tower / conversion to or E ServerWorks® Grand Cha two CIOB-X2 I/O Bridges (controllers; IMB2 bus to Ho for PCI 2.2 bus A with slot	ampion™ 4.0 LI IMB2 bus to Ho ost Bridge for Po	E / CMIC LE Host B st Bridge for PCI-X CI-X 1.0 Bus C with	idge (memory controll 1.0 Bus B with slots 2, slots 5 and 6) / CSB5	ler and I/O Bridge) / 3, 4 and Ultra320 ar South Bridge (Thin I	MB to Host Bridge
	10/100/1000 gigabit / Broad 48X-20X ⁶ CD-ROM / IDE / Rear: two USB (Vers 1.1), Front: one USB (Vers 1.1);	1.6" HH; <i>Diskei</i> keyboard, mou <i>Graphics:</i> SVC	tte: 3.5" 1.44MB disk se, parallel, serial (9 GA / ATI® Rage XL /	ette drive / dust cover pin),graphics (DB-15) on planar / 8MB SDRA	, ethernet (RJ-45), tw M std/max / 32-bit 3	o RJ-45 (sys mgmt) 3MHz PCI 2.2 Bus
Security	Power-on password / admi button / unattended boot / s					
Systems mgmt Diagnostics Software	IBM Integrated system math H8S2148 / on planar / proving monitoring such as temp, of supports optional Remote Strength Path Diagnostics™ failing part (under side cover ServerGuide™ (CD-ROMit utilities), IBM Director, other	anagement produces system and optional disks, fasurervisor Adaptinuous power banel providing or / Information installation and	d environmental ans, power supp / pter with 20-pin (no ext pwr reqd) LED map to LED Panel in front	Xeon DP 1.8GHz/512 Xeon DP 2.2GHz/512 Xeon DP 2.2GHz/512 Xeon DP 2.4GHz/512 256MB PC2100 CL2 512MB PC2100 CL2.5 1GB PC2100 CL2.5 2GB PC2100 CL2.5 IBM ServeRAID-6i CIBM Remote Supervis	2KB L2 Cache Proc L 2KB L2 Cache Proc L 2KB L2 Cache Proc L 2.5 ECC DDR-SDRA 5 ECC DDR-SDRAM ECC DDR-SDRAM ECC DDR-SDRAM Controller (adapter fo	Jpg 33P2931 Jpg 33P2932 Jpg 37L3533 M DIMM 33L5037 M DIMM 33L5039 RDIMM 33L5039 RDIMM 33L5040 r slot 4) 71P8595
Keyboard / mouse Power supply	IBM 101-key keyboard / IB x1X: std: one 560 watt / n max: two 560 watt wit xAX: std: two 560W / hot- All: voltage-sensing / aut Four fans and two blowers redundant / PFA / fan in ea	ot hot-swap or r h optional Upgr swap / redunda o-restart / fan in / variable spee	redundant rade Kit 33P2753 nt n each power supp d / hot-swap /	IBM T541 15" Flat Par 36.4GB 15K-2 80 Ultr 3-Pack Ultra320 Hot- IBM 560WPower Upg 5Ux24D Tower-to-Ra Other options at ibm.	nel Color Monitor (blac ra320 SCSI Hot-Swa Swap Expansion Kit grade Kit (two supplie ack Conversion Kit III com/pc/us/accessor	9512AB1 p SL HDD 06P5776 33P2751 s) 33P2753 59P4211 ies
Slot 2: full, 64-bit 10 Slot 3: full, 64-bit 10 Slot 4: full, 64-bit 13 Slot 5: full, 64-bit 13 * Extended slot for constant in the second slot for constant i	MHz 5v PCI 2.2, Bus A 10MHz 3.3v PCI-X, not hot, E 10MHz 3.3v PCI-X, not hot, E 10MHz 3.3v PCI-X, not hot, E 10MHz 3.3v PCI-X, not-swap 13MHz 3.3v PCI-X, hot-swap 13MHz 3.5v PCI-X, hot-swap 1	Bus B Bus B Bus B Bus B Bus B Bus C Diplier Gliskette Glot-swap G	inck release adapter some sing ration/Setup Util ssing F1 at startup Logic Configuration pressing CTRL+C gnostics (PC-Doctor at startup P12.0-compliant erator Information Padictive failure analysmory, processors, Viplies, and fans in coector can alert the syen imminent componwer: H 17.31" x W	ty invoked by Utility near startup M) by pressing nel (in front) is on disk options, RMs, power njunction with IBM stem administrator ent failure 8.5" x D 27.6" 16mm x D 700mm 45.8 kg k capacity: 8GB SL disks with	 24 hr x 7 day co 4 hour average (ServicePacpar 24 hr x 7 day co 2 hour average 	abor ranty Service ³ om, Mon - Fri ng holidays, next oonse time ⁷ ranty service in eligible e, ing holidays, response rt num 21P2083) overage, response t number 21P2084) overage, response inumber 21P2085) pport for warranty

See footnotes for important warranty information US models announced June 11, 2002

• = Hot-swap

(X235) © IBM Corp. July 2002

Type-model of by A Processor cache cache Memory Disk Controller Mechanical (Not-way plays) supply Ethernet (1987-164) 1 x Xeon 2.87614; 51x88 DMB 512MB Nane 2 x Ultra20 Tower 6x10 (6 Not-way sit.) 9 max) 550W hot Gigabit Mine 1874A 1 x Xeon 2.87614; 51x88 DMB 512MB Nane 2 x Ultra20 Tower 6x10 (6 Not-way sit.) 9 max) 550W hot Gigabit Mine 1874A 1 x Xeon 3.06614; 51x88 DMB 512MB Nane 2 x Ultra20 Tower 6x10 (6 Not-way sit.) 9 max) 550W hot Gigabit Mine 1871AN 1 x Xeon 3.06614; 51x88 DMB 512MB Nane 2 x Ultra20 Tower 6x10 (6 Not-way sit.) 9 max) 560W hot Gigabit Mine 1871AN 1 x Xeon 3.06614; 51x88 DMB 512MB Nane 2 x Ultra20 Tower 6x10 (6 Not-way sit.) 9 max) 560W hot Gigabit Mine 1871AN 1 x Xeon 3.06614; 51x88 DMB 512MB Nane 2 x Ultra20 Tower 6x10 (6 Not-way sit.) 9 max) 560W hot Gigabit Mine 1871AN 1 x Xeon 3.06614; 51x88 DMB 512MB Nane 2 x Ultra20 Tower 6x10 (6 Not-way sit.) 9 max) 560W hot Gigabit Mine 1871AN 1 x Xeon 3.06614; 51x88 DMB 1 GB Nane 2 x Ultra20 Tower 6x10 (6 Not-way sit.) 9 max) 660W hot Gigabit Mine 1871AN 1 x Xeon 3.0614; 51x88 DMB 1 GB Nane 2 x Ultra20 Tower 6x10 (6 Not-way sit.) 9 max) 660W hot Gigabit Mine 1871AN 1 x Xeon 3.0614; 51x88 DMB 1 GB Nane 2 x Ultra20 Tower 6x10 (6 Not-way) 8 max) 660W hot Gigabit Mine 1871AN 1 x Xeon 3.0614; 51x88 DMB 1 GB Nane 2 x Ultra20 Tower 6x10 (6 Not-way) 8 max) 660W hot Gigabit Mine 1871AN 1 x Xeon 3.0614; 51x88 DMB 1 mine 6x10 x x x x x x x x x x x x x x x x x x									9.7	-				
8871-8X 1 x Xeon 28GHz 512KB 0MB 512KB None 2 x Ultra201 Tower 6x10 (6 hot-swap std. 9 max) 560W hot digglish M 6871-8X1 x Xeon 28GHz 512KB 0MB 512KB None 2 x Ultra201 Tower 6x10 (6 hot-swap std. 9 max) 650W fixed digglish M 6871-8X1 x Xeon 3,06GHz 512KB 0MB 512KB None 2 x Ultra201 Tower 6x10 (6 hot-swap std. 9 max) 650W fixed digglish M 6871-8X1 x Xeon 3,06GHz 512KB 0MB 512KB None 2 x Ultra201 Tower 6x10 (6 hot-swap std. 9 max) 650W fixed digglish M 6871-8X1 x Xeon 3,06GHz 512KB 0MB 512KB None 2 x Ultra201 Tower 6x10 (6 hot-swap std. 9 max) 650W fixed digglish M 6871-8X1 x Xeon 3,06GHz 512KB 0MB 512KB None 2 x Ultra201 Tower 6x10 (6 hot-swap std. 9 max) 650W fixed digglish M 6871-8X1 x Xeon 3,06GHz 512KB 1MB 1 GB None 2 x Ultra201 Tower 6x10 (6 hot-swap std. 9 max) 650W fixed digglish M 6871-8X1 x Xeon 3,06GHz 512KB 1MB 1 GB None 2 x Ultra201 Tower 6x10 (6 hot-swap std. 9 max) 650W fixed digglish M 6871-8X1 x Xeon 3,06GHz 512KB 1MB 1 GB None 2 x Ultra201 Tower 6x10 (6 hot-swap std. 9 max) 650W fixed digglish M 6871-8X1 x Xeon 3,06GHz 512KB 1MB 1 GB None 2 x Ultra201 Tower 6x10 (6 hot-swap std. 9 max) 650W fixed digglish M 6871-8X1 x Xeon 3,06GHz 512KB 1MB 1 GB None 2 x Ultra201 Tower 6x10 (6 hot-swap std. 9 max) 650W fixed digglish M 6871-8X1 x Xeon 3,06GHz 512KB 1MB 1 GB None 2 x Ultra201 Tower 6x10 (6 hot-swap std. 9 max) 650W fixed digglish M 6871-8X1 x Xeon 3,06GHz 512KB 1MB 1 GB None 2 x Ultra201 Tower 6x10 (6 hot-swap std. 9 max) 650W fixed digglish M 6871-8X1 x Xeon 3,06GHz 512KB 1MB 1 GB None 2 x Ultra201 Tower 6x10 (6 hot-swap std. 9 max) 650W fixed digglish M 6871-8X1 x Xeon 3,06GHz 512KB 1MB 1 GB None 2 x Ultra201 Tower 6x10 (6 hot-swap std. 9 max) 650W fixed digglish M 6871-8X1 x Xeon 3,06GHz 512KB 1 MB 1 GB None 2 x Ultra201 Tower 6x10 (6 hot-swap std. 9 max) 650W fixed digglish M 6871-8X1 x Xeon 3,06GHz 512KB 1 MB 1 GB None 2 x Ultra201 Tower 6x10 (6 hot-swap std. 9 max) 650W fixed digglish M 6871-8X1 x Xeon 3,06GHz 512KB 1 MB 1						chanical			Ethernet	Available date				
Processor(3) 12 cache 13 cache 14	133	8671-6AX 1 x Xeon 8671-71X 1 x Xeon 8671-7AX 1 x Xeon 8671-81X 1 x Xeon 8671-8AX 1 x Xeon 8671-G1X 1 x Xeon	2.67GHz 512KB 0M 2.8BGHz 512KB 0M 2.8BGHz 512KB 0M 3.06GHz 512KB 0M 3.06GHz 512KB 0M 3.2GHz 512KB 1M	B 512MB Non B 512MB Non B 512MB Non B 512MB Non B 512MB Non B 1GB Non	e 2 x Ultra320 7 e 2 x Ultra320 7	Fower 6x1 Fower 6x1 Fower 6x1 Fower 6x1 Fower 6x1 Fower 6x1	0 (6 hot-swap std; 9 0 (6 hot-swap std; 9	9 max) 560W hot 9 max) 560W fixed 9 max) 560W hot 9 max) 660W fixed 9 max) 660W fixed 9 max) 660W fixed	Gigabit Gigabit Gigabit Gigabit Gigabit Gigabit	Mar 2003 Mar 2003 Mar 2003 May 2003 May 2003 Nov 2003				
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 Checkeum Chipkill* (correction) (2-way memory interleave / dual channel / memory bus runs at 2x100MHz / Error Checking and Correcting (ECC) via 16-bit Checkeum Chipkill* (correction) (2-way memory interleave / dual channel with pairs of the same chips of the		Processor(s) L2 cache L3 cache SMP support Implementation	Up to 1 x Intel® Xeor 512KB / all models / 1MB / available on so 2-way SMP / up to t Systemboard contain	n™ Processor on die of proce ome models / o wo Xeon Proce is two Intel 603	3.2 GHz with 533 assor / at processon die of processon ssors (same spe-pin micro-PGA 2	3MHz fronts or speed or / at proce ed/cache si ZIF sockets	side buś / Hyper-Tŕ essor speed iize) s, six memory gold-	nreading technology		e price				
supports RAID-1 mirroring with up to one hot-spare disk / shared with optional IBM ServeRAID**-6; Controller I low-cost RAID 0, 1, 1E, 5, 00, 10, 1E 0, 50 (installed only in Siot Pack Kit (cost RAID 0, 1, 1E, 5, 00, 10, 1E 0, 50) (installed only in Siot Pack Kit (cost RAID 0, 1, 1E, 5, 00, 10, 1E). So (installed only in Siot Pack Kit (cost RAID 0, 1), 1E, 5, 00, 10, 1E 1, 1E		•	PC2100 266MHz reg DIMMs must be insta 2x100MHz / Error C	gistered 184-pin alled in matched hecking and C	ECC DDR-SDR. pairs [a bank] / correcting (ECC)	AM DIMMs 2-way mem via 16-bit	nory interleave / dua Checksum Chipki	ill™ (corrects 1, 2, 3	3, or 4-bit	t errors on				
Chipset ServerWorks® Grand Champion™ 4.0 LE / CMIC LE Host Bridge (memory controller and I/O Bridges) (MB2 bus to Host Bridge for PCI-X 1.0 Bus B with slots 2, 3, 4 and Ultra220 and ethernet controller; IMB2 bus to Host Bridge for PCI-X 1.0 Bus C with slots 5 and 6) / CSBS South Bridge (Thin IMB to Host E for PCI 2.2 bus A with slot 1 and graphics controller, EIDE, USB, SMBus, LPC bus to Super I/O/ / NS PC97417 Supe I/O/ NS	ļ	SCSI channels IDE controller / cable Disk - capacity	supports RAID-1 millow-cost RAID 0, 1, 1 Two 16-bit channels interface for Bay 8 a devices via external SEnhanced IDE ATANone standard / supp	rroring with up IE, 5, 00, 10, 11 / SCSI Channe nd 9 (may requ SCSI knockout i 100 controller in ports 7200-1500	to one hot-spare E0, 50 (installed el A: 16-bit 68-pin ire a cable) or w n rear (cable req n CSB5 South Bi 0 rpm disks / one	e disk / sha only in Slot LVD cable ith optional 32P8164) or idge / one backplane	ared with optional I t 4) e from controller to .I 3-Pack Kit (cable or via opt ServeRAI connector on plane / all disk bays Ultra	BM ServeRAID™-6i backplane; Channe included); supports D adapter with exter ar / one 1-drop IDE 320-enabled	i Controlle el B: 16-b e external rnal conne cable (C	er for bit 68-pin SCSI ector(s) D-ROM)				
CD-ROM / diskette 48X-20X° CD-ROM DE / 1.6" HH; Diskette: 3.5" 1.44MB diskette drive / Aust cover Bear ports Front port / graphics Front port / graphics Front port / graphics Front port / graphics Front port Graphics SVGA / ATI* Rage XL / on planar / gMB SDRAM std/max / 32-bit 33MHz PCI 2.2 Bus Power-on password / administrator password / hinged and lockable front door to cover disk bays, power button, and return button / unattended boot / selectable boot Systems mgmt IBM Integrated system management processor (ISMP) / HSS2148 / on planar / provides system and environmental monitoring such as temp, optional disks, fans, power supply supports optional Remote Supervisor Adapter with 20-pin connector on planar for continuous power (no ext pwr reqd) Light Path Diagnostise* panel providing LED map to Struke CD-ROM installation and configuration Light Path Diagnostise* panel providing LED map to Struke CD-ROM installation and configuration Light Path Diagnostise* panel providing LED map to Struke CD-ROM installation and configuration Light Path Diagnostise* panel providing LED map to Struke LED map to Light Path Diagnostise* panel providing LED map to Light Path Diagnostise*		Chipset	ServerWorks® Grand two CIOB-X2 I/O Brid controllers; IMB2 bus	ServerWorks® Grand Champion™ 4.0 LE / CMIC LE Host Bridge (memory controller and I/O Bridge) / wo 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 ontrollers; IMB2 bus to Host Bridge for PCI-X 1.0 Bus C with slots 5 and 6) / CSB5 South Bridge (Thin IMB to Host Bri or PCI 2.2 bus A with slot 1 and graphics controller, EIDE, USB, SMBus, LPC bus to Super I/O) / NS PC87417 Super I 0/100/1000 gigabit / Broadcom® BCM 5703 / on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / Alert Standard F										
Systems mgmt BM 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 private) / Ight Path Diagnostics Diagnostics Light Path Diagnostics Dia		CD-ROM / diskette Rear ports	D/100/1000 gigabit / Broadcom® BCM 5703 / on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / Alert Standard F BX-20X® CD-ROM / IDE / 1.6" HH; <i>Diskette:</i> 3.5" 1.44MB diskette drive / dust cover lear: two USB (Vers 1.1), keyboard, mouse, parallel, two serial (9-pin),graphics (DB-15), ethernet (RJ-45), two RJ-45 (sys n											
BM Integrated system management processor (ISMP)		Security												
Soliciting So		Diagnostics	IBM Integrated syste H8S2148 / on planar monitoring such as te supports optional Rer connector on planar f Light Path Diagnost failing part (under side ServerGuide ™ (CD-F	em managemer / provides syste emp, optional dis mote Supervisor or continuous pi ics™ panel provi e cover) / Informa GOM installatior	nt processor (ISI m and environme sks, fans, power s r Adapter with 20- ower (no ext pwr iding LED map to ation LED Panel ir	MP) / Xe ental Xe supp / Xe pin 51: reqd) 1G a front IBN n IBN	eon 2.8BGHz/512KB eon 3.06GHZ/512KB eon 3.2GHZ/512KB 2MB PC2100 CL2.4 6B PC2100 CL2.5 B B PC2100 CL2.5 B M ServeRAID-6i Co M Remote Supervisi	B L2 Cache Proc U B L2 Cache Proc U L2/1MB L3 Proc U 5 ECC DDR-SDRAM ECC DDR-SDRAM F ECC DDR-SDRAM ontroller (adapter fo or Adapter (PCI ada	pg pg pg M DIMM RDIMM RDIMM r slot 4) pter)	71P8966 71P8967 02R1988 23K4523 33L5038 33L5039 33L5040 71P8595 09N7585 9512AB1				
redundant / PFA / fan in each power supply Slot 1: full, 32-bit 33MHz 5v PCl 2.2, Bus A Slot 2: full, 64-bit 100MHz 3.3v PCl-X, not hot, Bus B Slot 3: full, 64-bit 100MHz 3.3v PCl-X, not hot, Bus B Slot 4: full, 64-bit 100MHz 3.3v PCl-X, not hot, Bus B Slot 5: full, 64-bit 133MHz 3.3v PCl-X, not hot, Bus B Slot 6: full, 64-bit 133MHz 3.3v PCl-X, hot-swap, Bus C Slot 6: full, 64-bit 133MHz 3.3v PCl-X, hot-swap, Bus C Slot 6: full, 64-bit 133MHz 3.3v PCl-X, hot-swap, Bus C Slot 6: full, 64-bit 133MHz 3.3v PCl-X, hot-swap, Bus C Slot 6: full, 64-bit 133MHz 3.3v PCl-X, hot-swap, Bus C Slot 6: full, 64-bit 133MHz 3.3v PCl-X, hot-swap, Bus C Slot 6: full, 64-bit 133MHz 3.3v PCl-X, hot-swap, Bus C Slot 6: full, 64-bit 133MHz 3.3v PCl-X, hot-swap, Bus C Slot 6: full, 64-bit 133MHz 3.3v PCl-X, hot-swap, Bus C Slot 6: full, 64-bit 133MHz 3.3v PCl-X, hot-swap, Bus C Slot 6: full, 64-bit 100MHz 3.3v PCl-X, hot-swap, Bus C		Power supply	IBM 101-key keyboa 8xX, GxX: std/max: Rest: std/max: one/t All: voltage-sensing	one/two 660 wa wo 560 watt / auto-restart /	att` fan in each	36. 3-F IBN IBN Ott	.4GB 15K-2 80 Ultra Pack Ultra320 Hot-S M 560W Hot-Swap M 660W Hot-Swap P her options at ibn	a320 SCSI Hot-Śwa Swap Expansion Kit Power Upgrade Kit ower Upgrade Kit (3.0 n.com/pc/us/access	p´SL HDD :* 06 Only) sories					
Slot 1: full, 32-bit 33MHz 5v PCl-2, Bus A Slot 2: full, 64-bit 100MHz 3.3v PCl-X, not hot, Bus B Slot 4: full, 64-bit 100MHz 3.3v PCl-X, not hot, Bus B Slot 4: full, 64-bit 100MHz 3.3v PCl-X, not hot, Bus B Slot 4: full, 64-bit 130MHz 3.3v PCl-X, not hot, Bus B Slot 5: full, 64-bit 133MHz 3.3v PCl-X, hot-swap, Bus C Slot 6: full, 64-bit 133MHz 3.3v PCl-X, hot-swap, Bus C *Extended slot for opt IBM ServeRAID-5i Controller Solut 5: full, 64-bit 133MHz 3.3v PCl-X, hot-swap, Bus C Extended slot for opt IBM ServeRAID-5i Controller Solut 6: full, 64-bit 133MHz 3.3v PCl-X, hot-swap, Bus C Slot 6: full, 64-bit 133MHz 3.3v PCl-X, hot-swap, Bus		Fans				ap /	ot backward compati			V 3				
Bays 2 through 7 support 6 SL disks via SCA-2 connectors. **Bays 8 and 9 support three 3.5" All models: Max int disk capacity: 1.321TB² with nine 146.8GB SL disks with 2110th average response (ServicePac part number 21P 24x7¹⁴ toll-free support for wa		Slot 2: full, 64-bit 10 Slot 3: full, 64-bit 10 Slot 4: full, 64-bit 13 Slot 6: full, 64-bit 13 * Extended slot for o Solit 5: full, 64-bit 13 * Extended slot for o Solit 5: full, 64-bit 13 Slot 6: full, 64-bit 13 * Extended slot for o Solit 5: full, 64-bit 13 Slot 6: full, 64-bit 13 Slot 6: full, 64-bit 13 Slot 6: full, 64-bit 13 Bay	OMHz 3.3v PCI-X, not OMHz 3.3v PCI-X, not OMHz 3.3v PCI-X, not OMHz 3.3v PCI-X, hot-3MHz 3.3v PCI-X, hot-3MHz 3.3v PCI-X, hot-10 IBM ServeRAID-5i (1) 3.5", SL 1", acci (2) 3.5", SL 1", acci (3) 3.5", sc 1", acci (3) 3.5"	hot, Bus B hot, Bus B hot, Bus B' -swap, Bus C -swap, Bus C Controller ess, diskette ess, hot-swap ess, hot-swap ess, hot-swap ess, hot-swap ess, hot-swap ess, hot-swap ess, copen** ess, copen** 6 SL disks	Configuration/S pressing F1 at s LSI Logic Configuration State Sta	etup Utility ir tartup guration Util RL+C -Doctor™) b ant ation Panel e analysis cessors, VRM: ins in conjurt the system component 1" x W 8.5" ds olor	nvoked by lity near startup by pressing l (in front) on disk options, s, power nction with IBM m administrator failure x D 27.6"	 3 year parts and laternational Warr On site, 8 am - 5 p coverage excludir business day respect 3 year on site warr upgrade options (locations):7 9 hour coverage Mon-Fri excludid 4 hour average (ServicePac® part 24 hr x 7 day co 4 hour average (ServicePacpart 24 hr x 7 day co 2 hour average (ServicePacpart 25 hour average (ServicePacpart 26 hr x 7 day co 2 hour average (ServicePacpart 27 hour average (ServicePacpart 27 hr x 7 day co 2 hour average (ServicePacpart 27 hr x 7 day co 2 hour average (ServicePacpart 27 hr x 2 hr	abor ranty Serv m, Mon - ng holida poonse tim ranty serv in eligible e, ing holida response rt num 21F overage, response t number 2 verage, response	vice ³ Fri ys, next ie ⁷ vice e ays, 2 21P2084)				

IBM® Type-model Qty x	Processor	L3 cache l	Memory	ECC memory features	Disk	SCSI controller			disk bays (std/max) E	Ethernet	Available date
8685-71X 1 x Xeoi 8685-7RX 1 x Xeoi 8685-72X 2 x Xeoi 8685-73X 2 x Xeoi 8685-81X 1 x Xeoi 8685-8RX 1 x Xeoi 8685-91X 1 x Xeoi 8685-9RX 1 x Xeoi	MP 2.0GHz MP 2.0GHz MP 2.0GHz MP 2.5GHz MP 2.5GHz MP 2.5GHz MP 2.8GHz	1MB 1MB 1MB 1MB 1MB 2MB	512MB 1GB 3GB 1GB 1GB 1GB	Hot Spare/Chipkill ¹¹ Hot Spare/Chipkill	M None None None 2 x 36.4GB 10K None None None None	2 x Ultra160 2 x Ultra160 2 x Ultra160 2 x Ultra160 2 x Ultra160	Rack Tower Tower Tower Rack Tower	7 x10 7 x10 7 x10 7 x10 7 x10 7 x10 7 x10	6/12 0 6/12 0 6/12 0 6/12 0 6/12 0	Gigabit Gigabit Gigabit Gigabit Gigabit Gigabit	Jun 2003 Jun 2002 Nov 2003 Nov 2003 Jun 2003 Jun 2003 Jun 2003 Jun 2003
Processors L2 cache L3 cache Processor upgrade Implementation	512KB / on o 1MB or 2ME 4-way SMP Systemboar	die of pro 3 / on die 7 up to fo d contain	ocessor/ e of proce our Xeon ns four Ir	essor MP 2.0, 2.5, dat processor speed essor / at processor s Processors MP (sa tel 603-pin micro-Po SCSI, ethernet, grap	l speed me speed/cache GA ZIF sockets, c	size)		,,		J	nology
Memory	184-pin EC0 installed in r of a pair or mirroring (C DDR-S matched quad of memory	SDRAM I pairs or DIMMs I mirrorir	 two (or six on 73 DIMMs / one memor quads [a bank] / 2 [a bank]; reqs addit g supported with a or 4-bit errors on s 	orý-board std with - or 4-way memo ional memory ma any OS) / Error	h 12 DIMM gold-co ory interleave / Hotatching failed bank Checking and Co	onnect t Spar t) / Act orrecti	or slots e Mem tive Me ng (EC	ory (acti mory™ C) via 1	s must vated b via me 6-bit C	be by failure mory hecksum
SCSI disk controller SCSI connectors IDE controller / cabli Disk - capacity Disk - bays	Channel B: (Channel A: (ng Enhanced IE None (or tw	68-pin co 68-pin co DE ATA- o) stanc	onnector onnector 100 cont dard / su	tra160 SCSI (LVD 1 on planar to SCSI b on planar for option roller in CSB5 South pports up to 15,000 max: six additional ba	ackplane (one-dr al one-drop 16-bit n Bridge / one one n rpm disks / 80-	op 16-bit LVD cable t LVD cable (32P81 e-drop IDE cable fro pin SCA-2 connec	e) / 64) to om IDE tors	rear 0.8 control	mm VHE ler to CD	OCI con -ROM	nector
Mechanical Rack / conversion Architecture / chipse	Rack system te ServerWorl two CIOB-X ethernet and SMBus, IOA () Six hot-swap	ns`suppo ks® Gra I/O Brid d one PO NPIC, LP p PCI-X	orted in I nd Chan Iges (IME CI 2.2 bu PC bus to 1.0 slots	/ tower models hav BM NetBAY™ racks npion™ 4.0 HE / CN B bus to Host Bridge s for SCSI / CSB5 S Super I/O) / five pe ¹ available with pou not expansion / sep	s / kit available to MC Host Bridge (e, one with two Po South Bridge (Thin er PCI buses / No wer and attention	convert tower to ra Memory Controller CI-X buses C and I n IMB to Host Bridg S PC87417 Super indicator lights (op	ack (us and I/ D, othe ge, one I/O (di otical s	se NetB O Bridger with one PCI 2. skette, ensors	AY11 fo ge) and fi one PCI- 2 bus A, keyboard control p	ve REN X bus E EIDE, d, mous	MCs / B and USB, se)
Ethernet controller CD-ROM / diskette Rear ports Graphics controller	CD-ROM: 48 Four USB (V two RJ-45 (fe	8X-20Xº /ers 1.1) or integr	CD-RON , one ser ated syst	/ Broadcom® BCM 5 M, IDE (ATAPI), 1.6' ial (9-pin), keyboard tem management pr anar / 8MB SDRAM	' HH, bootable / <i>D</i> (PS/2), mouse (F ocessor) / no para	<i>Diskette drive:</i> 3.5" 1 PS/2), ethernet (RJ allel port	I.44 M -45), g	B disket raphics	tte drive, (DB-15),	dust co	
Security				strator password / h ed boot / selectable		ole front door to co	ver dis	k bays,	power b	utton, a	and reset
Systems management Diagnostics Software	H8S2148 / o monitoring s supports opt connector or Light Path I failing part (u	on planar such as t ional Re n planar Diagnos under top le™ (CD-	r / provide temp, opi emote Su for contir stics™ pa p cover) / -ROM ins	es system and enviro tional disks, fans, po pervisor Adapter wit nuous power (no ext nel providing LED mo Information LED Pa tallation and configu	onmental ower supplies / h 20-pin ernal power req) nap to anel in front	512MB PC1600 EC 1GB PC1600 EC 2GB PC1600 EC Xeon MP 2.0GHz Xeon MP 2.5GHz Xeon MP 2.8GHz 6-pack Ultra320 I 370 watt Hot-Swa IBM 7U x 26D TOU	C DDI C DDI :/1MB :/1MB :/2MB Hot-Sv ap Red ver-to-I	R SDR/ R SDR/ L3 Cac L3 Cac L3 Cac vap Ex dundan Rack Co	AM RDINAM RDINAM RDINAM RDINAM Proche Proche Prochansion to Power ponversion	/IM /IM Upg Upg Upg Kit Supply Kit III	32P1474
Keyboard / mouse Power supply Fans	Std: two 370 redundant w universal (vo Nine hot-sw	O watt ho rith four p oltage se vap redu	ot-swap; power su ensing) / f undant fa	/board / IBM mouse Max: four 370 watt pplies / tool-free inst fans in each power s ans / plus fan in each ure signals diagnos	hot-swap / ´all / supply / PFA n power supply/	IBM External SCSI Media Bay Cable k IBM ServeRAID TM IBM 36.4GB 10K IBM 73.4GB 10K IBM Remote Supe IBM T541 15" Flat Other options at	Kit (2-di 4-4H U Ultra1 Ultra1 ervisor t Pane	rop SCS Jitra160 60 SCS 60 SCS Adapte I Color	SI to HH b SCSI A SI Hot-S SI Hot-S er (PCI a Monitor (bays) Adapter wap SL wap SL dapter) (black)	. 06P5755 . 06P5756 . 09N7585
⇒Tower dim: H15.5 ⇒Rack dim: H12.0	" x W17.6" x D2 " x W17.6" x D2	29.8"; 10 27.7"; 10	04 to 150 04 to 150	lb Slot 1: 32-bit 33M lb primarily fo	Hz 5v PCI, not ho	t-swap, Bus A; tote Supervisor Adp	⇔ 3y		EDWAI		ГҮ ³

Rack or • • • • **Tower** Standard hotswap disk bays Diskette CD-ROM HH 5.25" Optional hotswap disk bays HH 5.25"

Black color ACPI 1.0

Orange components and labels indicate hot-swap options

⇒ Vital Product Data Backup BIOS

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 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

 \Rightarrow 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 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
• 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)

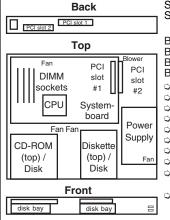
 Other ServicePac options at ibm.com/services/its/us/ source/wamomxeu.pdf

24x7¹⁴ toll-free support for warranty issues during the warranty period³ (X255C) © IBM Corp. November 2003

See footnotes for important warranty information

= Hot-swap

IBM [®] Type-model Qty x Pi	L2 rocessor cache	FSB MHz Me	Mem emory typ		sk	Disk controller	Disk bays	Mech- anical	Slots x bays	Ethernet	Limited warranty	Available date
 8673-92X Pentium® 8673-12X Pentium 4 8673-13X Pentium 4 8673-42X Pentium 4 8673-43X Pentium 4 8673-62X Pentium 4 8673-63X Pentium 4 	2.0GHz 512KB 2.0GHz 512KB 2.4GHz 512KB 2.4GHz 512KB 2.67GHz 512KB	400 25 400 25 533 25 533 25 533 25	56MB EC 56MB EC 56MB EC 56MB EC 56MB EC 56MB EC	C 40GB C 18.2GE C 40GB E C 18.2GE C 40GB E	EIDE B SCSI EIDE B SCSI EIDE	ATA-100 ATA-100 Ultra160 ATA-100 Ultra160 ATA-100 Ultra160	2 fixed 2 fixed 2 fixed 2 fixed 2 fixed	1U rack	2x4 2x4 2x4 2x4 2x4 2x4 2x4 2x4	2 x Gigabi 2 x Gigabi 2 x Gigabit 2 x Gigabit 2 x Gigabit 2 x Gigabit 2 x Gigabit	1 year 1 year 1 year 1 year 1 year	Aug 2002 Aug 2002 Oct 2002 Oct 2002 Oct 2002
Positioning Processor(s) L2 cache SMP support Implementation	A highly affordable intel® Pentium of 512KB / on die No SMP support Systemboard co connector for on	4 at 1.8 c of proces ntains on	or 2.0GHz¹ wassor / at pro e Intel mPG/	vith 400MHz cessor spee A478B socke	frontside d (no L3 t (with P	e bus (FS 3 cache) entium 4 F	- C-PGA2	2 and heats	sink), fo	our memory	DIMM sl	ots,
Memory	256MB std / 4G DIMMs / four DI Error Checking	IMM gold	-connector s	lots on syste	emboard						C DDR-	SDRAM
SCSI disk controller SCSI connectors IDE disk controller Cables Disk - features	SCSI models: SCSI models: Enhanced IDE b SCSI models: EIDE models: SCSI: 18.2GB U	64-bit 66l On adapt ousmaster one 2-dro one 2-dro	MHz PCI ada er: one 68-p r / ATA-100 s pp 16-bit LVI pp EIDE cabl	apter / one cl in SCSI conr support / two) SCSI cable e (to CD-RC	hannel w nector / c connec e, one 1- OM and c	vith up to one 0.8mr tors on sy drop 40-co lisk), one	15 device n VHDC stemboa onductor 1-drop E	e support I 68-pin ex ard EIDE cab EIDE cable	ternal of le (con (to sec	connector nected to C cond disk ba	ay) ´	
Mechanical Architecture / chipsets Bus slots	EIA 19" Rack (ServerWorks® one CIOB-X2 I/O CSB5 South Bric National Semico (See below) two	Grand Ch D Bridge (dge (Thin enductor®	nampion™ S (IMB bus to I IMB to Host PC87414 S	SL / CMIC-SI Host Bridge f Bridge for P uper I/O chip	L (Super for PCI-) PCI 2.2-b (serial,	Lite) Hos X Bus A w ased grap keyboard	t Bridge ith slots phics con , mouse,	(memory o and PCI-X ntroller, EI	controll Bus B	er and I/O E with dual e	Bridge) / thernet)	
Ethernet controllers CD-ROM / diskette Rear ports Front ports / graphics Console interconnects		K 64-bit 10 OM / IDE; bin), two e (Vers 1.1	00MHz Bus I Diskette: 3. ethernet (RJ-); Graphics:	3 / full duplex 5" 1.44MB di 45),keyboard SVGA / ATI	⟨ / PXE / iskette dd, mouse Rage X	Wake on rive / dust e, analog [(L / on pla	LAÑ® / A cover 0B-15 mar / 8M	lert Standa onitor / no p B SDRAM	ard For parallel std/ma	mat 1.0 / two	o rear Ru	J-45 ports
Systems mgmt Diagnostics	WinBond® W837 Diagnostics via Remote Supervi	PC-Docto	r on a stand	ard IBM Enh	nanced E	Diagnostic	s CD (di	skette can	be crea	ated) / supp		
Security Software	Power-on passw unattended boot ServerGuide TM utilities), IBM Dir	t / selecta (CD-ROM	ble boot / un 1 installation	attended sta		512 1G 120	2MB PC2 B PC210 DGB ATA	2100 CL2. 00 CL2.5 E A-100 EID	5 ECC ECC DE E HDE	DDR-SDRADR-SDRAMD (7200 rpm	AM DIMA RDIMM n)*	//33L5038 33L5039 09N4231
Cooling fans Power supply Prerequisites	Five fans (three power supply) / 200 watt / univer Monitor, keyboa supports IBM A	variable s rsal / auto rd, mouse	speed / not re b-sensing / au e, rack, oper	edundant or l uto-restart su ating system	hot-swap upport	36. 73. Re Se IBN IBN IBN Oth	4GB 15k 4GB 10k mote Su rveRAID 1/ T541 1 1/ NetBA 1/ NetBA 1/ ACT L ner optio	\[\left(\text{Ultra160} \) \[\left(\text{Ultra160} \) \[\left(\text{Pervisor A} \) \[\left(\text{V} \) \] \[\left(\text{V} \) \[\left(\text{V} \) \[\left(\text{V} \) \] \[\left(\text{V} \) \[\left(\text{V} \) \[\left(\text{V} \) \] \[\left(\text{V} \) \[\left(\text{V} \) \] \[\left(\text{V} \) \[\left(\text{V} \) \] \[\left(\text{V} \) \[\left(\text{V} \) \[\left(\text{V} \) \] \[\left(\text{V} \) \[\left(\text{V} \) \] \[\left(\text{V} \) \[\left(\text{V} \) \] \[\left(\text{V} \) \[\left(\text{V} \) \] \[\left(\text{V} \) \[\left(\text{V} \) \] \[\left(\text{V} \) \] \[\left(\text{V} \) \[\left(\text{V} \) \] \[\left(\text{V} \) \[\left(\text{V} \) \] \[\left(\text{V} \) \] \[\left(\text{V} \) \[\left(\text{V} \) \] \[\left(\text{V} \) \[\left(\text{V} \) \] \[\left(\text{V} \) \[\left(\text{V} \) \] \[\left(\text{V} \) \[\left(\text{V} \) \[\left(\text{V} \) \] \[\left(\text{V} \) \[\left(\text{V} \) \] \[\left(\text{V} \) \[SCSIS SCSIS dapter ra160S nel Col lard Ra rprise I sole Ma com/po	Rack)*)* er black) ories	06P5765 06P5766 06P5752 09N7585 06P5740 9512AB1 9306250 930842S 1735L04



Slot 1: halfsize, 64-bit 133MHz PCI X 1.0 (3.3v) Slot 2: halfsize, low-profile, 64-bit 133MHz PCÍ X 1.0 (3.3v) - SCSI adapter in some models

Bay ① 3.5", UltraSlim 0.5", access, Bay ② 5.25", UltraSlim 0.5", access, Bay ③ 3.5", SL 1", no acces Bay ④ 3.5", SL 1", no acces std diskette std CD-ROM no access, std fixed disk no access, open for fixed disk

Raven black front bezel

- H 1.72" (1U) x W 17.3" x D 16.75"; 43.7mm x 439.9mm x425.5mm
- 26 to 28.4 lbs; 11.8kg to 12.9kg (minimum to max configuration) Configuration/Setup Utility: F1 at startup
- Optional System Partition: ALT+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, and IBM Director CD, and Broadcom Ethernet 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): 146.8GB with two 73.4GB SL SCSI disks or 240GB with two 120GB EIDE disks / supports 15K rpm SCSI disks

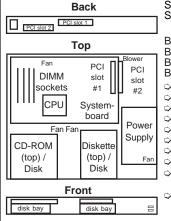
LIMITED WARRANTY³

- 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)
- 24x7¹⁴ toll-free support for warranty issues during the warranty period3

(X305A) © IBM Corp. December 2002

IBM® Type-model Qty x P	L2 rocessor cache	FSB MHz	Memory	Memory type	Disk	Disk controlle	Disk r bays	Mech- anical	Slots x bays	Ethernet	Limited warranty	Available r³ date
8673-72X Pentium 4 8673-73X Pentium 4 8673-82X Pentium 4 8673-83X Pentium 4	2.8BGHz 512KE 3.06GHz 512KE	3 533 3 533	256MB 256MB 256MB 256MB	ECC ECC ECC	40GB EIDE 18.2GB SCSI 40GB EIDE 36.4GB SCSI	Ultra160 ATA-10	2 fixed	1U rack	2x4 2x4	2 x Gigab 2 x Gigab 2 x Gigab 2 x Gigab	t 1 year t 1 year	May2003 Sep 2003
Positioning Processor(s) L2 cache SMP support Implementation	A highly affordal Intel® Pentium 512KB / on die No SMP suppor Systemboard co connector for on	4 up to of prod t entains o	2.8BGH cessor / a one Intel r	z ¹ with 53 at process mPGA478	33MHz frontside sor speed (no L BB socket (with F	e bus (FS 3 cache) Pentium 4	FC-PGA					
Memory	256MB std / 4G DIMMs / four D Error Checking	IMM go	ld-conne	ctor slots	on systemboar	d / memo					CC DDR	-SDRAM
SCSI disk controller	SCSI models:				gle channel Wi				MB/sec)/		
SCSI connectors IDE disk controller Cables	SCSI models: Enhanced IDE to SCSI models: EIDE models:	On ada ousmas one 2-c one 2-c	pter: one ter / ATA drop 16-b drop EIDE	68-pin S -100 supp it LVD SC cable (to	CSI connector / bort / two connectsI cable, one 1 b CD-ROM and	one 0.8m ctors on s -drop 40- disk), one	m VHDC ystemboo conducto e 1-drop E	I 68-pin ex ard r EIDE cal EIDE cable	ole (cor e (to se	nected to C	ay)	<i>'</i>
Disk - features	SCSI: 18.2GB/3			-				-		•	-	.M.A.R.T.⁵
Mechanical Architecture / chipset Bus slots	EIA 19" Rack (s ServerWorks® one CIOB-X2 I/CSB5 South Bri National Semico (See below) two	Grand O Bridg dge (Thonducto	Champic e (IMB bu nin IMB to or® PC874	on™ SĹ / 0 us to Host Host Brid I14 Supel	CMIC-SL (Supe t Bridge for PCI dge for PCI 2.2- r I/O chip (serial	r Lite) Ho -X Bus A based gra , keyboar	st Bridge with slots aphics co d, mouse	(memory and PCI-) ntroller, E	control K Bus E	ler and I/O I B with dual e	Bridge) / ethernet)	
Ethernet controllers	Two gigabit 10/1											
CD-ROM / diskette Rear ports Front ports / graphics Console interconnect	on planar / PCI-; 24X-10X ⁶ CD-R <i>Rear:</i> serial (9- <i>Front:</i> two USB s No system-to-sy	OM / ID pin), two (Vers 1	E; <i>Diske</i> c etherne .1); <i>Grap</i>	tte: 3.5" 1 t (RJ-45),l phics: SV(.44MB diskette keyboard, mous GA / ATI® Rage	drive / dus e, analog XL / on pl	st cover DB-15 m anar / 8M	onitor / no B SDRAM	parallel std/ma	port		·
Systems mgmt Diagnostics	WinBond® W83 Diagnostics via Remote Superv	PC-Do	ctor on a	standard	IBM Enhanced	Diagnosti	cs CD (di	skette car	be cre	ated) / supp		
Security	Power-on passy unattended boo									DDR-SDR		
Software	ServerGuide™ utilities), IBM Di	(CD-RC	DM install	ation and		10	3B PC21 20GB AT	00 CL2.5 I A-100 EI	ECC DI	DR-SDRAM D (7200 rpr	l RDIMM n)*	33L5039 09N4231
Cooling fans Power supply Prerequisites	Five fans (three power supply) / 200 watt / unive Monitor, keyboa supports IBM A	variable rsal / au ırd, mou	e speed / ito-sensir use, rack,	not redun ng / auto-i operating	ndant or hot-swa restart support g system /	on 36 ap 7; R Si IE IE IE	S.4GB 15I 3.4GB 10I emote Su erveRAID M T541 1 M NetBA M NetBA M ACT L ther optio	C Ultra160 C Ultra160 Ipervisor A IP™-4Lx Ult I5" Flat Pa LY25 Stand LY42 Ente Local Con	SCSIS SCSIS dapter ra160S anel Co dard Ra erprise sole Ma com/po	SCSI Adapt lor Monitor lick Rack	D* D* er (black)	06P5765 06P5766 06P5752 09N7585 06P5740 9512AB1 9306250 930842S 1735L04
						—				-		



Slot 1: halfsize, 64-bit 133MHz PCI X 1.0 (3.3v) Slot 2: halfsize, low-profile, 64-bit 133MHz PCIX 1.0 (3.3v) - SCSI adapter in some models

Bay ① 3.5", UltraSlim 0.5", access, Bay ② 5.25", UltraSlim 0.5", access, Bay ③ 3.5", SL 1", no acces Bay ④ 3.5", SL 1", no acces std diskette std CD-ROM no access, std fixed disk no access, open for fixed disk

Raven black front bezel

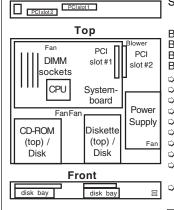
- H 1.72" (1U) x W 17.3" x D 16.75"; 43.7mm x 439.9mm x425.5mm
- 26 to 28.4 lbs; 11.8kg to 12.9kg (minimum to max configuration) Configuration/Setup Utility: F1 at startup
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- SCSISelect near startup by pressing CTRL+A (SCSI models) Ships with Diagnostics CD, ServerGuide Setup and Installation CD, and IBM Director CD, and Broadcom Ethernet 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): 146.8GB with two 73.4GB SL SCSI disks or 240GB with two 120GB EIDE disks / supports 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)
- 24x7¹⁴ toll-free support for warranty issues during the warranty period3

IBM® Type-model	Proces	ssor	Memory	Disk	Disk controller	Mechanical	Slots	x bays	Hot-swap disk bays		Power supply	Available date
8673-4AX	Pentium 4	® 2.4Ghz	¹ 256MB	36.4GB ²	Ultra 160	1U⁴ rack	2 slots	x 4 ba	ys None	2 x Gigabit	DC power	Mar 2003
				ned for netv ower enviro	vork infrastrud nments	ctures requir	ing ne	twork				
Positioning Processor L2 cache SMP suppor Processor up Implementat	pgrade	Intel® Po 512KB / No SMP None su Systemb	entium 4 on die of support ipported oard conta	2.4Ghz with processor /		ntside bus speed (no L3 socket (with I	cache	e) n 4 FC-l	PGA2 and		ur memory DIN ors, ethernet, a	
Memory - st Memory - so Memory - fea Memory - su	ockets atures	4 socket PC2100	266MHz 1	able / ECC registered 1	(Error Checkir 84-pin gold-pla ECC DIMMs /	ated DIMM	0,		MMs and E	ECC memory	controller	
SCSI disk of SCSI Conn Cables Disk - featur	ectors	On adap	oter: one 6 op 16-bit	88-pin SCSI LVD SCSI	channel Wide connector / o cable, one 1-c pm, 5.2ms rea	ne 0.8mm V Irop 40-cond	HDCI	68-pin e	xternal coi	nnector	PCI adapter	/ 15 device
Architecture Mechanical	·	one CIO CSB5 Sc / National	B-X2 I/O I outh Bridg al Semico	Bridge (IMB le (Thin IME nductor® PC	bus to Host E to Host Bridg 87414 Super	Bridge for PÖ ge for PCI 2.2 I/O chip (se	I-X Bu 2-base rial, ke	ı́s A with d graph eyboard,	slots and ics control mouse, d	PCI-X Bus E ler, EIDE, US iskette)	ller and I/O Br 3 with dual eth 5B, LPC bus to quires vented	ernet) / Super I/C
Ethernet co CD-ROM / Rear ports Front ports/ Console int	diskette /graphics	on planar 24X-10X Rear: se Front: tv	r / PCI-X 64 6 CD-RON erial (9-pin vo USB (Ve	1-bit 100MHz // / IDE; Dis i), two ether ers 1.1); Gra	Bus B / full dup skette: 3.5" 1.4 net (RJ-45),ke	blex / PXE / W 4MB diskette yboard, mou ATI® Rage XL	ake one drive se, an	LAN® / / / dust c alog DB anar / 8N	Alert Standa over -15 monito /IB SDRAM	ard Format 1.0 r / no paralle std/max / 32-	and PHY layer) / two rear RJ-4 el port bit 33MHz PCl 2	5 ports
Systems me Diagnostics					nar / monitors a standard IE						nd failure, and eated)	voltages
Graphics co	ontroller	SVGA /	PCI bus /	ATI® Rage	XL(on planar) DC2B / analo	/ a 15-nin D-s	hall			OPTION	S	
Security		Power-o	n passwo	rd / adminis	strator passwo	ord /	2				SDRAM DIMM	33L5037 33L5038
Software ⁹		ServerG	iuide™ (C		tillation and co		1 1	GB PC2 8.2GB 1	100 CL2.5 5K Ultra16	ECC DDR-SI 60 SCSI SL 68	DRAM RDIMM 3-pin HDD	33L5039 06P5765
Keyboard / Cooling fans		None st Five fan power s	s (three fa	ans for syste ariable spee	em, one blowe d / not redund	r in rear, one	e on 7	86.4GB 1 73.4GB 1 Remote	5K Ultra16 0K Ultra16 Supervisor	60 SCSI SL 66 60 SCSI SL 68 60 SCSI SL 68 r Adapter JItra160 SCS	3-pin HDD 3-pin HDD	06P5751 06P5766 06P5752 09N7585 06P5740
Power supp	,	supports not redu Appropri monitor,	dual inpundant / no ate do po	ut sources (ot hot-swap wer source	irect current] two power so / auto-restart and customer ck with perfor	urces) / support supplied wi	sing / I I I ring, N	BM T54 BM Netl BM Netl JetBAY	1 15" Flat 3AY25 Sta 3AY42 Ent ACT Local	Panel Color Indard Rack terprise Rack Console Ma	Monitor (black	9512AB1 9306250 930842S 1735L04



Back

Slot 1: halfsize, 64-bit 133MHz PCI X 1.0 (3.3v) Slot 2: halfsize, low-profile, 64-bit 133MHz PCI X 1.0 (3.3v) -SCSI adapter in some models

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Raven black front bezel

- ➡ H 1.72" (1U) x W 17.3" x D 16.75"; 43.7mm x 439.9mm x425.5mm
- 26 to 28.4 lbs; 11.8kg to 12.9kg (minimum to max configuration)
 Configuration/Setup Utility: F1 at startup
- Optional System Partition: ALT+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, and IBM Director CD, and Broadcom Ethernet CD Predictive Failure Analysis on disk(s) with IBM Director can alert the administrator of an imminent component failure

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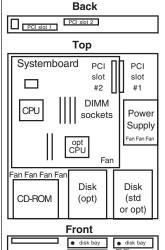
LIMITED WARRANTY³

- 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)
- (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

IBM® Type-model Qty x Pro	cessor	Proc. Speed	L2 Cache	Memory	Memory type	Disk	Disk controller	Hot -swap or fixed disk bays	Slots x bays	Ethernet		Available date
8835-21X 1 x Opter 8835-22X 1 x Opter 8835-31X 1 x Opter 8835-32X 1 x Opter 8835-51X 1 x Opter 8835-52X 1 x Opter 8835-5DX 2 x Opter	on 240 on 242 on 242 on 246 on 246 on 246	2.0Ghz 2.0Ghz 2.0Ghz	1MB 1MB 1MB 1MB 1MB 1MB 1MB	1GB 1GB 1GB 1GB 1GB 1GB 2GB	Chipkill Chipkill Chipkill Chipkill Chipkill Chipkill Chipkill	None (open) 80GB ² EIDE None (open) 80GB ² EIDE None (open) 80GB ² EIDE 36.4GB 10K	Ultra320 EIDE Ultra320 EIDE Ultra320 EIDE Ultra320	2 fixed 2 hot-swap 2 fixed 2 hot-swap 2 fixed 2 hot-swap	2x3 2x3 2x3 2x3 2x3 2x3	2 x Gigabit 2 x Gigabit 2 x Gigabit 2 x Gigabit 2 x Gigabit 2 x Gigabit 2 x Gigabit	1 year 1 year 1 year 1 year 1 year 1 year	Oct 2003 Oct 2003 Oct 2003 Oct 2003 Oct 2003 Oct 2003
Processor(s) L2 cache SMP support Implementation	1MB / or 2-way SI Systembo	n die of pro MP / up to pard conta	ocesso two C ains two	r / at prod Opteron P o AMD Se	cessor spe rocessors ocket 940	eed (no L3 cac (same speed/	he) cache size = sockets,	six memory D				
Memory	slots used SDRAM I memory in	l (four slots DIMMs / six nterleave /	s used in x DIMM dual ch	n 5DX mo gold-conr annel / m	del) / four s nector slots emory bus	slots available (to s on systemboar runs at 2 x 100	wo avail. in d / DIMMs MHz / Err o	slots enabled wind 5DX) / PC2700 must be installed or Checking and letects 2- through	333MF d in ma d Corre	Iz registered tched pairs [acting (ECC)	184-pin a bank] / via 16-b	ECC DDR- 2-way iit
SCSI disk controller IDE controller / cable	64-bit 10 one 16-b <i>All:</i> Enha	OMHz PCI it internal o nced IDE	-X Bus channe ATA-10	B / suppo I / 16-bit ()0 control	orts RAID- 68-pin LVI ler in CSB	1 mirroring (E D cable from sy 5 South Bridge	mbedded stemboar / two coni	Mirroring) with d to backplane	two SC for two ar / one	SI disks in fr disks / no ex e 1-drop IDE	ont bays ternal co cable (C	onnector CD-ROM)
Disk - capacity Disk - bays	SCSI mo	dels: 36.40	GB sup	ports up t	to 15000 r	pm disks; <i>EIDE</i>	modéls:	80GB / 7200 rp each disk bay	m / AT	A-100 / 8.7m	ns seek	,,
Mechanical Architecture / chipsets	s AMD® 81 bridge B HyperTra National	I 31 PCI-X for PCI-X ansport clo Semicond	Bridg expan ock (PC luctor®	e Chip prosion slots Cl, AC '97 PC87366	roviding tv s) / 8111 7, Etherne 3 Super I/0	vo PCI-X bridg I/O HyperTran t, SMBus, USE	es runnin I sport Bri B, EIDE, L	Idge Chip sup IPC to BIOS a	oridge A porting	A for SCSI a a 200 Mhz	ind Ethe	ernet;
Ethernet controllers CD-ROM/diskette/kbc Rear ports Front ports / graphics Console interconnect	on planai 24X-10X ⁶ <i>Rear:</i> tw <i>Front:</i> tw C2T Inte	r / PCI-X 6 CD-ROM to USB (Ve to USB (Ve rconnect™	64-bit 19 1 / IDE ers 1.1) ers 1.1); 1 cablin	00MHz B / <i>Diskette</i> , serial (9 <i>Graphics</i> g not sup	us B / full e <i>and keyl</i> p-pin), two :: SVGA / A pported / N	duplex / Wake board: none (U ethernet (RJ-4: TI® Rage XL / c	on LAN® SB disket 5) / paralle on planar /	el port not supp 8MB SDRAM st	d Forma d option orted d/max /	at 1.0 / two r nal); legacy 32-bit 33MH;	eår RJ- not sup _l z PCI 2.2	45 ports ported 2 Bus A
Systems mgmt Diagnostics	connecto Adapter I Diagnosit	MS-9549 r on plana Il card sup tic LEDs f ht Path D	ar / opti oported or fans	onál Rem , memory	note Supe / DIMMs a		Opter Opter 512MI 1GB I	on 240 Proces on 242 Proces on 246 Proces 3 PC2700 CL2.5 PC2700 CL2.5	sor Up sor Up ECC I	ograde ograde ODR-SDRAM DR-SDRAM	RDIMM	73P2267
Security Software	unattend ServerG		selecta D-RON	ble boot . I installat	/ unattend ion and c	rd / led start mode onfiguration	80GB 120GI 36.4G	PC2700 CL2.5 ATA-100 EIDI B ATA-100 EID B 15K Ultra320 B 15K Ultra320	E HDD ¹ E HDD SCSI	* * Hot-Swap Sl	L HDD*	09N4226 09N4231 32P0734 32P0735
Cooling fans Power supply Prerequisites	variable 411 watt	speed / no / universa	ot redu al / aut	ndant or o-sensing	hot-swap g / auto-re	ver supply) / estart support e), operating s	Remo USB NetBA NetBA	ote Supervisor Portable Diske AY ACT Local AY Remote Co USB Conversio	Adapte tte Driv Consol nsole I	r II ve e Manager (Manager (R0	(LCM)	59P2984 05K9276 1735L04 1735R16 73P5832



Bay © 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 x653.3mm
 → 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

Disk not supported in all e325 systems

- 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)

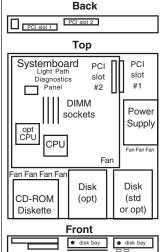
 3 year IOR 24x7, 4 hr avg response
 - (ServicePac part num 69P9507)
 - 3 year IOR 9x5, NBD response (ServicePac part num 69P9506)
 - Other ServicePac options at ibm.com/services/its/us/ source/wamomxeu.pdf
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information

= Hot-swap in some models

US models announced August 5, 2003

IBM® Type-model Qty x P	rocessor	L2 cache	FSB MHz	Memory	Memory type		Disk controller	Hot -swap or fixed disk bays	Slots x bays	Ethernet	Limited warranty	Available date
8830-11X 1 x Xeon 8830-12X 1 x Xeon 8830-21X 1 x Xeon 8830-22X 1 x Xeon	2.8B GHz 2.8B GHz 3.06 GHz 3.06 GHz	512KB 512KB 512KB 512KB	533₺ 533₺ 533₺ 533₺	512MB 512MB 512MB 512MB 512MB	Chipkill	None (open) 40GB ² EIDE None (open) 40GB ² EIDE	Ultra320 EIDE Ultra320 EIDE	2 fixed '	2x4 2x4 2x4 2x4 2x4	2 x Gigab 2 x Gigab 2 x Gigab 2 x Gigab	it 1 year it 1 year it 1 year it 1 year	May 2003 May 2003 Apr 2003 May 2003
Positioning Processor(s) L2 cache SMP support Implementation	1 x Intel® 512KB / c 2-way SN Systembo	Xeon 2.8 on die of pour die von die of pour die of the control	BB or 3. rocessor wo Xeor ins two li	06GHz 1 / at proc n Process ntel 603-	with 533Nessor spe sors (sam pin micro-	MHz frontside I ed (no L3 cach e speed/cache	ous / Hype e) size) ets, four me	nance computing te	chnolog	ЭУ		
Memory	PC2100 2 must be in Error Ch	266MHz re nstalled in	gistered matched d Corred	184-pin I pairs [a cting (E(ECC DDF bank] / 2- CC) via 16	way memory ir i-bit Checksur	Ms / four D iterleave /	IMM gold-conn dual channel / r ™ (corrects 1, 2	nemory	bus runs a	t 2 x 100N	/IHz/
SCSI disk controller IDE controller / cable Disk - capacity Disk - bays	64-bit 100 one 16-bi All: Enha EIDE mo SCSI mo	OMHz PCI it internal onced IDE of dels: One dels: none	-X Bus E channel ATA-100 2-drop E standar	3 / suppo / 16-bit 6 controll IDE cab d / supp	rts RAID- 68-pin LVI er in CSB le to two orts up to	1 mirroring (E O cable from sy 5 South Bridge disk bays / one 15000 rpm dis	mbedded vstemboar v two con 1-drop El ks; EIDE r	controller (LVI Mirroring) with d to backplane nectors on plar DE cable to CD models: 40GB / s in each disk	two SC for two lar / one -ROM 7200 rp	SI disks in disks / no e 1-drop IDI om / ATA-1	front bay external c E cable (0 00 / 8.7m	onnector CD-ROM) s seek
Mechanical Architecture / chipsets Bus slots	s ServerW one CIOE slot 2 and SMBus, L	orks® Gra 3-X2 I/O B d Ultra320 _PC bus to	ind Char ridge (IM / CSB5 Super I	mpion ™ 1B2 bus South B /O) / Nat	4.0 LE / 0 to Host Bridge (Thi ional Sem	CMIC LE Host I	Bridge (me Bus A wit Bridge for C87417 Si	h slot 1 and du PCI 2.2 Bus C	r and I/	O Bridge) / net and PC	I-X Bus F	3 with DE, USB,
Ethernet controllers CD-ROM / diskette Rear ports Front ports / graphics Console interconnects	on planar 24X-10X ^e <i>Rear:</i> on <i>Front:</i> tw sC2T Inter	C/PCI-X 64 CD-ROM Ne USB (Ve O USB (Ve Connect™	1-bit 100 / IDE; <i>D</i> ers 1.1), (ers 1.1); cable (1	MHz Bus Diskette: C2T in, C Graphic: 0 inch, 2	s A / full du 3.5" 1.44N 22T out, s s: SVGA / 445mm) is	uplex / Wake or MB diskette driv erial (9-pin), tw ATI® Rage XL standard (Key	n LAN® / AÌ re / dust co ro ethernet / on plana rboard Vid	t (RJ-45), one F r / 8MB SDRAN	ormat 1. IS-485 (I std/ma II) chair	0 / two rear (sys mgmt) ax / 32-bit 3 ning cable)	RJ-45 po no paral 3MHz PC one Cab	orts lel port I 2.2 bus
Systems mgmt Diagnostics	monitorin with 20-p Light Pa t	ig such as in conn on th Diagno	temp, m planar f stics ™ (emory, c or contir LED ligh	ptional di luous pwr ts indicate	sks, fàns, pów (no ext pwr req	er supply / Xeon Xeon	on planar / pro support for op 2.4GHz/512KI 2.8GHz/512KI 2.8BGHz/512I	tional A 3 L2 Ca 3 L2 Ca	emote Sup ache Proc ache Proc	ervisor A Upg Upg	
Security Software	unattend ServerG	n password ed boot / s uide™ (CE IBM Direct	electable D-ROM ir	e boot / u istallatio	nattende	d start mode	512M 1GB I 2GB I 80GB	B PC2100 CL2 PC2100 CL2.5 PC2100 CL2.5 ATA-100 EID	.5 ECC ECC D ECC D E HDD	DDR-SDR DR-SDRAN DR-SDRAN *	AM ĎIMN 1 RDIMM 1 RDIMM	1 33L5038 33L5039 33L5040 09N4226
Cooling fans Power supply Prerequisites	variable s 332 watt Monitor, I one Cabl	keyboard,	ot redunal / auto- mouse, echnolog	dant or l -sensing rack, dis gy (C2T)	not-swap / auto-re k (some), Kit per ch	pply) / estart support operating sys, ain of servers	73.4G Remo xSerie break or NetB	BB 15K Ultra320 BB 10K-4 Ultra10 bte Supervisor A es Cable Chair out cable and2 AY ACT Local C r not supported A	60 SCS Adapter Techr meter P Console	l Hot-Swap : nology Cab (VM chaini Manager	SLHDD* le Kit (2	



Bay ① 3.5", UltraSlim 0.5", access, std diskette
Bay ② 5.25", UltraSlim 0.5", access, std CD-ROM
Bay ③ 3.5", SL 1", access, std fixed or hot-swap disk
Bay ④ 3.5", SL 1", access, open for fixed or hot-swap access, open for fixed or hot-swap disk

Stealth black color front bezel

Steatill Drack Color Horit Dezel
 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 x653.3mm
 26 to 28.4 lbs; 11.8kg to 12.9kg (minimum to max configuration)
 Configuration/Setup Utility: F1 at startup
 Diagnostics (PC-Doctor™): F2 at startup
 System Partition Boot: ALT+F1 at startup
 Network Boot: E12 at startup

Network Boot: F12 at startup

Operator Information Panel in front LSI Logic Configuration Utility: CTRL+C at startup

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

Maximum internal disk capacity¹³ (model dependent): 293.6GB with two 146.8GB SL SCSI disks or 240GB with two 120GB EIDE disks

See footnotes for important warranty information

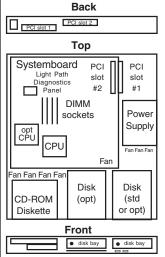
- = Hot-swap in some models
- US models announced April 15, 2003; previous models on February 18, 2003
- △ 533Mhz FSB models may use 400Mhz FSB processors. 400Mhz FSB models may not use 533Mhz FSB processors.

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

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IBM® Type-model Qty x P	L2		lemory	Disk	Disk	Hot -swap or		Slots	Ethernet v	Limited	Available date
Type-model Qty x P < 8676-41X 1 x Xeon ¹ < 8676-42X 1 x Xeon 8676-61X 1 x Xeon 8676-62X 1 x Xeon	[™] 2.0GHz 512KB 2.0GHz 512KB 2.4GHz 512KB	512MB C 512MB C 512MB C	hipkill 4 hipkill N	None (open) NogB ² EIDE None (open) NogB EIDE	Ultra320 EIDE Ultra320	2 hot-swap	1U⁴ rack 1U rack	2x4 2x4 2x4	2 x Gigabi	t 3 year t 3 year t 3 year	Aug 2002 Aug 2002 Aug 2002
Positioning Processor(s) L2 cache SMP support Implementation	A highly manageabl 1 x Intel® Xeon 2.0 512KB / on die of pr 2-way SMP / up to to Systemboard container for one PCI-X so	or 2.4GHz ocessor / at wo Xeon Proins two Intel 6	1 with 40 processo ocessors 603-pin n	00MHz fronts or speed (no (same speed nicro-PGA Z	ide bus / L3 cache) d/cache siz F sockets,	Hyper-Thread ⊴e)	ing techn	ology			
Memory	512MB std / 8GB m PC2100 266MHz re must be installed in Error Checking and detects 2- through 8	gistered 184 matched pai d Correctin ç	-pin ECC rs [a banl g (ECC) \	DDR-SDRA k] / 2-way me via 16-bit Ch	M DIMMs emory inter	/ four DIMM go rleave / dual ch	nannel / m	nemory	bus runs at	2 x 100N	1Hz/
SCSI disk controller IDE controller / cable Disk - capacity Disk - bays	All (not used on EID 64-bit 100MHz PCI- one 16-bit internal of All: Enhanced IDE EIDE models: One of SCSI models: two h	-X Bus B / su channel /16- ATA-100 con 2-drop EIDE standard / s	upports R -bit 68-pi ntroller in cable to supports	RAID-1 mirro n LVD cable CSB5 South two disk bay up to 15000	oring (Emb from systen Bridge / t ys / one 1- rpm disks;	pedded Mirrori emboard to ba wo connectors drop EIDE cat EIDE models	ing) with the ckplane for son plant old to CD and to CD are to CD	two SC or two ar / one -ROM 7200 rp	SI disks in f disks/ no ex 1-drop IDE om / ATA-10	ront bays ternal co cable (C	nnector CD-ROM) s seek
Mechanical Architecture / chipsets Bus slots	EIA 19" Rack (1U ⁴) s ServerWorks® Gra one CIOB-X2 I/O Bi slot 2 and Ultra320 SMBus, LPC bus to (See below) two ava	i nd Champic ridge (IMB2 l / CSB5 Sou Super I/O) /	on™ 4.0 bus to Ho ith Bridge ′ Nationa	LE / CMIC Lost Bridge fo e (Thin IMB t I Semicondu	E Host Brid r PCI-X Bu o Host Brid ctor® PC8	dge (memory ous A with slot 1 dge for PCI 2.2 7417 Super I/0	controller I and dua 2 Bus C v	and I/0	D Bridge) / net and PCI	-X Bus E	s with PE, USB,
Ethernet controllers CD-ROM / diskette Rear ports Front ports / graphics Console interconnect		l-bit 100MHz / IDE; <i>Diske</i> ers 1.1), C2T ers 1.1); <i>Gra_l</i> cable (10 ind	z Bus A / f ette: 3.5" in, C2T c phics: SV ch, 245m	full duplex / \ 1.44MB disk out, serial (9 /GA / ATI® R nm) is standa	Vake on La ette drive / -pin), two e age XL / o ard (Keybo	AN® / Alert Sta dust cover ethernet (RJ-4 n planar / 8MB ard Video Mou	ndard Fo 5), one R SDRAM use (KVN	rmat 1.º S-485 (std/ma I) chain	0 / two rear sys mgmt) / x / 32-bit 33 ing cable) /	RJ-45 po no paral MHz PC one Cab	erts lel port l 2.2 bus
Systems mgmt Diagnostics	IBM Integrated sys monitoring such as with 20-pin conn on Light Path Diagnos component) and on	temp, memo planar for co stics™ (LED	ory, option ontinuous lights ind	nal disks, fàr s pwr (no ext dicate failing	ns, pówer s pwr req)		ort for opt GHz/512 IGHz/512	ional Ř 2KB L2 2KB L2	emote Supe Cache Prod Cache Prod	ervisor A Upg Upg	
Security Software	Power-on password unattended boot / se ServerGuide™ (CD utilities), IBM Direct	electable boo -ROM instal	ot / unatte lation an	ended start n		1GB PC210 2GB PC210 80GB ATA- 36.4GB 15K	0 CL2.5 I 0 CL2.5 I 100 EIDE Ultra320	ECC DI ECC DI E HDD* SCSI H	DR-SDRAM DR-SDRAM	RDIMM RDIMM	33L5039 33L5040 09N4226 06P5776
Cooling fans Power supply Prerequisites	Eight fans (five for s variable speed / no 332 watt / universa Monitor, keyboard, one Cable Chain Te NetBAY ACT CAT-6	ot redundant al / auto-sen mouse, rack echnology (C	t or hot-s ising / au ., disk (so 22T) Kit p	swap uto-restart si ome), operati	ng sys,	Remote Sup ServeRAID ^T IBM T541 15 xSeries Cab breakout cal NetBAY AC * Disk not su	M-4Mx Ul 5" Flat Pa le Chain ole and2 T Local C	tra 160 : nel Col Techno meter K onsole	or Monitor (blogy Cable (VM chainin Manager	black) Kit (2 me	
	Clot 1.	halfaiza 64	h:+ 1001	ALL- DOLV 1	0 (0 0 A) D	^			-		



Slot 1: halfsize, 64-bit 100MHz PCI X 1.0 (3.3v); Bus A Slot 2: fullsize, 64-bit 100MHz PCI X 1.0 (3.3v); Bus B Bay ① 3.5", UltraSlim 0.5", access, std diskette
Bay ② 5.25", UltraSlim 0.5", access, std CD-ROM
Bay ③ 3.5", SL 1",
Bay ④ 3.5", SL 1",
Comparison of the com access, std fixed or hot-swap disk access, open for fixed or hot-swap disk Stealth black

- Utility tray in front slides out from under middle bay (USB devices)
 H1.72" (1U) x W 17.3" x D 25.7"; 43.7mm x 439.9mm x653.3mm
- ⇒ 26 to 28.4 lbs; 11.8kg to 12.9kg (minimum to 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
- Operator Information Panel in front
- LSI Logic Configuration Utility: CTRL+C at startup
- □ 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

Maximum internal disk capacity¹³ (model dependent): 293.6GB with two 146.8GB SL SCSI disks or 240GB with two 120GB EIDE disks / supports 15K rpm SCSI disks

• = Hot-swap in some models

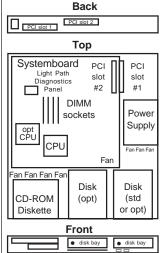
See footnotes for important warranty information

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):
 - 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) Other ServicePac options at
- ibm.com/services/its/us/ source/wamomxeu.pdf
- 24x7¹⁴ toll-free support for warranty issues during the warranty period3

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IBM® Type-model Qty x Pro	ocessor	L2 cache	FSB MHz	Memory	Memory type	Disk	Disk controller	Hot -swap or fixed disk bays	Slots x bays	Ethernet		Available date
8676-71X 1 x Xeon [™] 8676-72X 1 x Xeon 2 ≈ 8676-81X 1 x Xeon 2 ≈ 8676-82X 1 x Xeon 2	2.6GHz 2.8GHz	512KB 512KB 512KB 512KB	400 🖎	512MB 512MB 512MB 512MB	Chipkill Chipkill	None (open) 40GB ² EIDE None (open) 40GB ² EIDE	Ultra320 EIDE Ultra320 EIDE	2 fixed '	2x4 2x4 2x4 2x4	2 x Gigabi 2 x Gigabi 2 x Gigabi 2 x Gigabi	t 3 year t 3 year	Aug 2002 Nov 2002
Positioning Processor(s) L2 cache SMP support Implementation	1 x Intel® 512KB / 0 2-way SN Systembo	Xeon 2.6 on die of pr MP / up to to oard contait	ocesson wo Xeon ins two I	GHz ¹ wit r / at proc n Process ntel 603-	h 400MH: essor spe sors (same pin micro-	z frontside bu: ed (no L3 cach e speed/cache	s / Hyper- ⁻ ne) size) ets, four m	nance computir Threading tech emory DIMM sl	nology			
Memory	PC2100 2 must be in Error Che	266MHz re nstalled in	gistered matched d Corre	l 184-pin d pairs [a cting (E (ECC DDR bank] / 2- CC) via 16	way memory ii -bit Checksui	Ms / four D nterleave /	olMM gold-conn dual channel / ™ (corrects 1, 2	memory	bus runs at	2 x 100N	ЛHz /
SCSI disk controller IDE controller / cable Disk - capacity Disk - bays	64-bit 100 one 16-bi All: Enhai EIDE mo	OMHz PCI- it internal onced IDE A dels: One of dels: none	-X Bus E channel ATA-100 2-drop E standa	3 / suppo / 16-bit 6) controll EIDE cab rd / support	rts RAID- 68-pin LVI er in CSB le to two c orts up to	1 mirroring (E D cable from s 5 South Bridge disk bays / one 15000 rpm dis	Embedded ystemboar e / two con e 1-drop El sks; <i>EIDE i</i>	controller (LVI Mirroring) with d to backplane nectors on plar DE cable to CI models: 40GB of n each disk bay	two SC for two nar / one D-ROM 7200 rp	SI disks in f disks / no e a 1-drop IDE om / ATA-10	ront bay xternal c cable (0	onnector CD-ROM) s seek
Mechanical Architecture / chipsets	EIA 19" F ServerW one CIOE slot 2 and SMBus, L	Rack (1U ⁴) orks® Gra 3-X2 I/O B I Ultra320 LPC bus to	/ rack-r Ind Cha ridge (IN / CSB5 Super I	mount on mpion™ MB2 bust South B /O) / Nati	ly / suppo 4.0 LE / 0 to Host Br ridge (Thi ional Sem	rted in 26" dee CMIC LE Host ridge for PCI-X	ep racks su Bridge (mo Bus A wit Bridge for C87417 S	ch as the IBM Nemory controlled the slot 1 and du PCI 2.2 Bus C	letBAY ^{TI} er and I/e al ether	Rack prod D Bridge) / net and PC	ucts I-X Bus E	3 with
Ethernet controllers CD-ROM / diskette Rear ports Front ports / graphics Console interconnects	on planar 24X-10X ⁶ <i>Rear:</i> on <i>Front:</i> tw C2T Inter	PCI-X 64 CD-ROM LE USB (Ve LO USB (Ve Connect™	I-bit 100 / IDE; <i>L</i> ers 1.1), ers 1.1); cable (<i>1</i>	MHz Bus Diskette: C2T in, C Graphic: 10 inch, 2	s A / full du 3.5" 1.44N 22T out, s s: SVGA / !45mm) is	iplex / Wake o IB diskette driverial (9-pin), tv ATI® Rage XL standard (Key	n LAN® / Alve / dust covo etherne / on plana / board Vid	t (RJ-45), one F r / 8MB SDRAN	ormat 1. RS-485 (// std/ma //) chair	0 / two rear sys mgmt) / ax / 32-bit 33 ning cable) /	RJ-45 po no paral MHz PC one Cab	lel port 1 2.2 bus
Systems mgmt Diagnostics	monitorin with 20-p Light Pat	g such as in conn on t h Diagno :	temp, m planar i stics™ (nemory, c for contin LED ligh	ptional di luous pwr ts indicate	sks, fans, pow (no ext pwr red	er supply / (a) Xeon Xeon	/ on planar / pro/ support for op 2.6GHz/512K 2.8GHz/512K 2.8BGHz/512	tional R B L2 Ca B L2 Ca	emote Supache Proc I	ervisor A Jpg Jpg	
Security Software	unattende ServerG	n password ed boot / se uide™ (CD IBM Direct	electabl -ROM i	e boot / u nstallatio	nattended	d start mode	512M 1GB 2GB 80GE	B PC2100 CL2.5 PC2100 CL2.5 PC2100 CL2.5 B ATA-100 EID BB 15K Ultra32	5 ECC I ECC D ECC D E HDD	DDR-SDRAM DR-SDRAM DR-SDRAM	M RÖIMM I RDIMM I RDIMM	133L5038 33L5039
Cooling fans Power supply Prerequisites	variable s 332 watt Monitor, I one Cable	keyboard,	ot redunal / auto mouse, echnolog	dant or I sensing rack, dis gy (C2T)	not-swap / auto-re k (some), Kit per ch	oply) / start support operating sys ain of servers	Remo Serve xSeri break or NetB	ote Supervisor A eRAID™-4Mx U es Cable Chai cout cable and AY ACT Local cont supported	Adapter Iltra160 n Techr 2M KVI Consol	SCSI Adap nology Cabl M chaining e Manager	ter e Kit (2N	09N7585 06P5736



access, std fixed or hot-swap disk 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 x653.3mm
 → 26 to 28.4 lbs; 11.8kg to 12.9kg (minimum to 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
- Operator Information Panel in front
- LSI Logic Configuration Utility: CTRL+C at startup
- □ 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

Maximum internal disk capacity¹³ (model dependent): 293.6GB with two 146.8GB SL SCSI disks or 240GB with two 120GB EIDE disks

LIMITED WARRANTY³

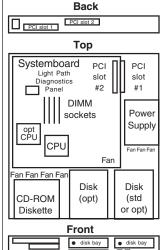
- 3 year parts and labor
- International Warranty Service³
- On site, 8 am 5 pm, Mon Fri coverage excluding holidays, next business day response time7
- On site service upgrade options (in eligible locations):7
 - 3 year IOR 9x5, 4 hr avg response (ServicePac® part num 21P2072)
- 3 year IOR 24x7, 4 hr 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 ibm.com/services/its/us/ source/wamomxeu.pdf
- 24x7¹⁴ toll-free support for warranty issues during the warranty period3

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See footnotes for important warranty information

- = Hot-swap in some models
- ✓ US models announced on November 19, 2002; withdrawn effective September 26, 2003

IBM [®] Type-model Qty x Pı	L2 ocessor cache	L3 cache Memo	Memory ry type	Disk	Disk controller	Power Supply	Disk bays	Slots x bays Etherne		Available date
8676-11X 1 x Xeon 8676-12X 1 x Xeon 8676-21X 1 x Xeon 8676-22X 1 x Xeon 8676-G1X 1 x Xeon 8676-G2X 1 x Xeon	2.8B GHz 512KE 3.06 GHz 512KE 3.06 GHz 512KE 3.2 GHz 512KE	3 0MB 512M 3 0MB 512M 3 0MB 512M 3 1MB 1GB	B Chipkill B Chipkill	None (open) 40GB ² EIDE None (open) 40GB ² EIDE None (open) 80GB ² EIDE	Ultra320 EIDE Ultra320 EIDE Ultra320 EIDE	332W 332W 332W 332W	2 fixed 2 hot-swap 2 fixed	2x4 2 x Giga 2x4 2 x Giga	abit 3 year abit 3 year abit 3 year abit 3 year	May 2003 Apr 2003 May 2003 Nov 2003
Positioning Processor(s) Cache SMP support Implementation	A highly manage Up to 1 x Intel® 512KB L2 cach 2-way SMP / up Systemboard co riser for one PCI	Xeon 3.2GH e on all mod to two Xeon I ntains two Int	Iz 1 with 53 els / 1MB Processors el 603-pin	3MHz ∠ fronts L3 cache on s s (same speed/c micro-PGA ZIF	ide bus / lome mode ache size) sockets, fo	Hyper-Thre els / on die)	eading techn of processo	ology or / at process	or speed	
Memory	512MB or 1GB PC2100 266MH must be installed Error Checking detects 2- through	z registered 1 d in matched p and Correct	84-pin ECo pairs [a bar ing (ECC)	C DDR-SDRAM nk] / 2-way mem via 16-bit Chec	DIMMs / f ory interle	our DIMM (ave / dual o	hannel / me	mory bus runs	at 2 x 1001	MHz/
SCSI disk controller IDE controller / cable Disk - capacity Disk - bays	All (not used on 64-bit 100MHz F one 16-bit intern All: Enhanced ID EIDE models: O SCSI models: tw	PCI-X Bus B / lal channel / DE ATA-100 d lne 2-drop Ell lone standard	supports In 16-bit 68-peontroller in DE cable to supports	RAID-1 mirrori vin LVD cable fron the CSB5 South E to two disk bays tup to 15000 rpi	ng (Embe om system Bridge / two / one 1-dr m disks; <i>E</i>	dded Mirro nboard to b connecto op EIDE ca EIDE model	ring) with tw ackplane for rs on planar able to CD-F ls: 40GB / 72	ro SCSI disks i r two disks / no / one 1-drop II ROM 200 rpm / ATA-	n front bay external c DE cable (0 100 / 8.7m	connector CD-ROM) as seek
Mechanical Architecture / chipset Bus slots	EIA 19" Rack (1 s ServerWorks® one CIOB-X2 I/O slot 2 and Ultra3 SMBus, LPC bu (See below) two	Grand Cham D Bridge (IME 320 / CSB5 S s to Super I/C	pion™ 4.0 32 bus to F outh Bridg)) / Nationa	DE / CMIC LE lost Bridge for F le (Thin IMB to I al Semiconduct	Host Bridg PCI-X Bus Host Bridg or® PC874	je (memory A with slot je for PCI 2 I17 Super I	controller a 1 and dual e 2 Bus C wit	ind I/O Bridge) ethernet and P	/ CI-X Bus E	
Ethernet controllers CD-ROM / diskette Rear ports Front ports / graphics Console interconnect	Two gigabit 10/1 on planar / PCI-) 24X-10X ⁶ CD-Rc Rear: one USB Front: two USB s C2T Interconned Technology Cab	X 64-bit 100M OM / IDE; <i>Dis</i> (Vers 1.1), C (Vers 1.1); <i>G</i> ct™ cable (10	Hz Bus A / skette: 3.5" 2T in, C2T Graphics: S inch, 245r	full duplex / Wa 1.44MB diskett out, serial (9-pi VGA / ATI® Rag mm) is standard	ke on LANe drive / dr n), two eth pe XL / on p (Keyboar	N® / Alert St ust cover nernet (RJ- planar / 8M d Video Mo	andard Form 45), one RS- B SDRAM si buse (KVM)	nat 1.0 / two re 485 (sys mgm td/max / 32-bit chaining cable	ar RJ-45 po t) / no paral 33MHz PC) / one Cat	orts Ilel port Il 2.2 bus
Systems mgmt Diagnostics	IBM Integrated monitoring such with 20-pin conn Light Path Diag component) and	as temp, me on planar fo nostics™ (L	mory, option r continuou ED lights in	onal disks, fans, us pwr (no ext po ndicate failing	power su wr req)	pply / supr Xeon 2.8B Xeon 3.06	oort for optio GHz/512KB GHz/512KB		ipervisor A oc Upg oc Upg	
Security Software	Power-on passw unattended book ServerGuide TM utilities), IBM Dir	t / selectable (CD-ROM ins	boot / unat tallation ar	tended start mo	de	1GB PC21 2GB PC21 80GB ATA	00 CL2.5 E0 00 CL2.5 E0 -100 EIDE I	ECC DDR-SDR/ DC DDR-SDR/ DC DDR-SDR/ HDD* BCSI Hot-Swap	AM RDIMM AM RDIMM	1 33L5039 1 33L5040 09N4226
Cooling fans Power supply Prerequisites	Eight fans (five f variable speed 332 or 411 watt Monitor, keyboa one Cable Chair NetBAY ACT CA	/ not redund fixed / univer rd, mouse, ra n Technology	ant or hot- sal / auto- ick, disk (s (C2T) Kit	swap sensing / auto-r ome), operating	estart ;	Remote Su ServeRAID xSeries Ca NetBAY AG	pervisor Ada o™-4Mx Ultra oble Chain T CT Local Co		apter Ible Kit er	09N7585 06P5736 06P4792 1735L04



access, std fixed or hot-swap disk

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 x653.3mm
 → 26 to 28.4 lbs; 11.8kg to 12.9kg (minimum to 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
- Operator Information Panel in front
- LSI Logic Configuration Utility: CTRL+C at startup
- □ 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

Maximum internal disk capacity¹³ (model dependent): 293.6GB with two 146.8GB SL SCSI disks or 240GB with two 120GB EIDE disks

LIMITED WARRANTY³

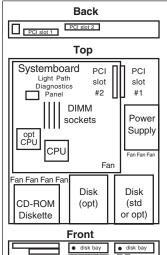
- 3 year parts and labor
- International Warranty Service³
- On site, 8 am 5 pm, Mon Fri coverage excluding holidays, next business day response time7
- On site service upgrade options (in eligible locations):7
 - 3 year IOR 9x5, 4 hr avg response (ServicePac® part num 21P2072)
 - 3 year IOR 24x7, 4 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 ibm.com/services/its/us/ source/wamomxeu.pdf
- 24x7¹⁴ toll-free support for warranty issues during the warranty period3

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See footnotes for important warranty information

- = Hot-swap in some models
- us models announced April 15, 2003; previous models on February 18, 2003

	rocessor	L2 cache	FSB MHz	Memory	Memory type	Disk	Disk controller	Hot -swap or fixed disk bays	Slots x bays		warranty ³			
8676-1AX 1 x Xeon	2.8B GHz	512KB	533	512MB	Chipkill	None (open)	Ultra320	2 hot-swap	2x4	2 x Gigab	it 3 year	Mar 2003		
						tructures req	uiring ne	twork						
equipme	nt to sup	port DC	power	environii	ients									
Positioning Processor(s) L2 cache SMP support Implementation	1 x Intel 512KB / 2-way SI Systemb	Xeon 2 on die of p MP / up to oard cont	2.8BGHz processo two Xeo ains two	with 533 r / at proc n Process Intel 603-	BMHz fror essor spe sors (sam pin micro-	ntside bus / H ed (no L3 cach e speed/cache	yper-Threa ne) e size) ets, four m	mance computing ding technologoemory DIMM sl	gy '					
Memory	PC2100 must be i	G12MB 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 nust 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 letects 2- through 8-bit errors contained in two chips) 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 /												
SCSI disk controller	64-bit 10	0MHz PC	I-X Bus I	B / suppo	rts RAID-	1 mirroring (E	Embedded	l Mirroring) with	two SC	SI disks in	front bays	s /		
IDE controller / cable	All: Enha	the 16-bit internal channel / 16-bit 68-pin LVD cable from systemboard to backplane for two disks / no external connector //: Enhanced IDE ATA-100 controller in CSB5 South Bridge / two connectors on planar / one 1-drop IDE cable (CD-ROM) IDE models: One 2-drop EIDE cable to two disk bays / one 1-drop EIDE cable to CD-ROM												
Disk - capacity Disk - bays	SCSI mo	dels: non	e standa	rd / supp	orts up to	15000 rpm dis	sks; <i>EIDE</i>	models: 40GB n n each disk bay	/ 7200 rs	om / ATA-1 s k bays Ul t	00 / 8.7ms ra320-ena	s seek abled		
Mechanical Architecture / chipset	s ServerW one CIOI slot 2 and SMBus,	/orks® Gr 3-X2 I/O I d Ultra320 LPC bus t	r ánd Cha Bridge (II D / CSB5 to Super	ampion™ MB2 bus South B I/O) / Nat	4.0 LĖ / (to Host Bi ridge (Thi ional Sem	CMIC LE Host ridge for PCI->	Bridge (m (Bus A wi Bridge for (C87417 S	th slot 1 and du PCI 2.2 Bus C	er and I/ al ether	O Bridge) / net and PC	I-X Bus B			
Ethernet controllers								gigabit etherne						
CD-ROM / diskette Rear ports Front ports / graphics Console interconnect	24X-10X Rear: or Front: tw sC2T Inte	⁶ CD-ROM ne USB (V ro USB (V rconnect [⊤]	M / IDE; /ers 1.1), /ers 1.1); ™ cable (Diskette: 3 C2T in, C Graphic 10 inch, 2	3.5" 1.44N 22T out, s s: SVGA / 45mm) is	⁄iB diskette dri erial (9-pin), tv ATI® Rage XL standard (Ke	ve / dust co vo etherne . / on plana yboard Vic	t (RJ-45), one F tr / 8MB SDRAM	RS-485 (M std/ma M) chair	(sys mgmt) ax / 32-bit 3 ning cable)	/ no parall 3MHz PCI / one Cabl	el port 2.2 bus		
Systems mgmt	monitorir with 20-p	ng such as oin conn o	s temp, n n planar	nemory, c for contin	ptional di luous pwr	sks, fa`ns, poʻw (no ext pwr red	rer supply q)	/ on planar / pr / support for op	tional R	emote Sup	ervisor Ad	dapter		
Diagnostics Security							iiponent)	and on-board		TIONS	J-DOCIOF I	11 0103)		
Software	unattend ServerG	ed boot / :	selectabl D-ROM i	le boot / u nstallatio	n and con	d start mode figuration	512N 1GB	2.8BGHz/512 IB PC2100 CL2. PC2100 CL2.5	KB L2 (.5 ECC I ECC D	Cache Prod DR-SDRA DR-SDRAM	M DIMM // RDIMM	33L5039		
Cooling fans	Eight far	s (five fo	r system	n. three o	n power	supply) /		PC2100 CL2.5						



Bay @3.5", UltraSlim 0.5", access, std diskette Bay @5.25", UltraSlim 0.5", access, std CD-ROM

Bay ③ 3.5", SL 1", Bay ④ 3.5", SL 1", access, std fixed or hot-swap disk access, open for fixed or hot-swap disk

Stealth black color front bezel

Eight fans (five for system, three on power supply) /

supports dual input sources (two power sources) /

not redundant / not hot-swap / auto-restart support

332 watt (-48 to -60 V dc [direct current]) / auto-sensing

Monitor, keyb., mouse, rack, disk, operating sys, one C2T Kit per chain of servers or NetBAY ACT CAT-5

variable speed / not redundant or hot-swap

- 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 x653.3mm 26 to 28.4 lbs; 11.8kg to 12.9kg (minimum to 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
- Operator Information Panel in front
- LSI Logic Configuration Utility: CTRL+C at startup
- 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

Maximum internal disk capacity¹³ (model dependent): 293.6GB with two 146.8GB SL SCSI disks or 240GB with two 120GB EIDE disks

LIMITED WARRANTY³

06P5776

09N7585

06P5736

06P4792

1735L04

3 year parts and labor

36.4GB 15K Ultra320 SCSI Hot-Swap SL HDD

Cable Chain Technology (C2T) Cable Kit (2 meter

breakout cable and 2 meter KVM chaining cable)

Remote Supervisor Adapter ServeRAID™-4Mx Ultra160 SCSI Adapter

NetBAY ACT Local Console Manager

- 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 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

Power supply

Prerequisites

us models announced February18, 2003

⁼ Hot-swap

IBM®	_	L2	Ultra160	SCSI			Fixed		Power		Available
Type-model Qty: 8827-14X 2 x Pentiu	x Processor	cache Memory	SCSI disk	controller	anical		disk bays 2 fixed			Complian	date Apr 2002
DC power	models are des	signed for networ power environm	k infrastructure			OX-T	ZIIXCU	103	Bo powe	I NEBO O	Api 2002
Positioning Processor(s) L2 cache Implementation SMP support	2 x Intel® Penti 512KB std and Motherboard co 2-way SMP via	ment Building Sysium® III 1.26GHz. I max / ECC / at pontains two Intel I a second identica	-S with 133MHz rocessor speed PGA370 sockets Il processor is si	z frontside bu s / processor an s, six DIMM so tandard	s d L2 cach ckets, two	ne in FI PCI ris	ip Chip F	in Grid	Array (FC	-PGA2)	ystems
Memory	Error Checkin	3 ¹³ max / 6 socket ng and Correctin MHz / six 168-pin	g (ECC) memor	y controller / m	atched pa	airs req	uired / two	o-way i stered	nterleavin SDRAM E	g/ :CC DIMM	ls only
SCSI disk controller SCSI channels SCSI disk SCSI disk bays IDE controller / cable	SCSI Channel SCSI Channel 1 x 36GB Ultra Two fixed disk	A-7899W / dual c A: external 16-bi B: one internal 1 160 SCSI, 10K rp bays (not hot-swa controller in South	t .8mm VHDCI 6 6-bit 68-pin LVD om, 4.9ms read s ap) in disk drive	8-pin external cable from co seek, S.M.A.R. carrier that slic	connecto ntroller to T. ⁵ les out fro	r`(no ca two-ba om fron	ables) ay disk dr t	ive carr	ier	4-bit PCI	
Mechanical Rack support PCI bus slots Chipset	Designed for in (See below) thi PCI 2.2 / peer I ServerWorks® South Bridge) / CSB5 South Bridge) / Baseboard Mar	(2U ⁴) x 20-inch d nstallation in a two ree full height full PCI buses / no ho III HE-SL chipso / NB6555 Champ ridge for EIDE, US nagement Contro below): 4 bays / tv	o-post, 19" rack of length 64-bit 33l ot-swap Active™ of / CNB20HE-Sion I/O Bridge (05B, LPC bus for \$1ler	MHz slots / thre PCI slots L North Bridge DIOB20) for PC Super I/O Natio	ee low-pro for CIOB I Bus B (sonal Semi	ofile hall and Poslots, S conduc	If length (CI A 32-b CCSI) and ctor PC8	64-bit 60 bit 33MI d C (slot 741(dis	6MHz PCI Hz (graphi is) / kette, seri	slots/ cs, etherne	et,
10/100 ethernet CD-ROM / diskette Rear ports	2 x Intel 82550 24X-10X° CD-F Two USB ports connector for fr Y-splitter cable	/ on planar / full d ROM / multisessid s (Version 1.1); Ru ront panel alarm r	uplex / supports on / IDE interface J-45 serial; PS/2 elay contacts / r	Wake on LANe / bootable; Let keyboard; two parallel port	®, PXE 2. Diskette: 3 Diskette: 3 Diskette: 4 Diskette: 2.	0 Boot .5" 1.44 hernet connec	Agent, A 4MB disk ; DB-15 ts to USE	dapter cette dri graphic port (c	Fault Tole ve / dust c s; 68-pin S r keyboar	over SCSI; DB- d port with	15 male standard
Security	Power-on pass	GA / PCI bus / ATI® Rage XL (on planar) / 8MB SDRAM std/max / 1600x1280 at 16M colors at 85Hz / 15-pin D-shell wer-on password / admin password / unattended boot / selectable boot / boot without keyboard / diskette write prote								otect	
Alarm panel Status LEDs Systems mgmt Diagnostics OS support Software ship group	four alarm pane Operator Infor Integrated serr processors, tel ED diagnostic Red Hat Linux Resource CD	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 Operator Information Panel (in front) / includes switches (NMI, power, reset) and status LEDs (NIC, disk, main power) Integrated service processor (Baseboard Management Controller) / on planar / failures or thresholds in fans, memory, processors, temperature, voltage, and power supplies activate alarm panel LEDs / LED diagnostics and on-board diagnostics providing an LED map to a failing component Red Hat Linux® 7.1 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)								wer) ry,	
Keyboard / mouse Power supply	350 watt (-48 t supports dual i	two / accessible to -60 V dc [direcinput sources (tw	ct current])/ o power source	s)/	1GB S 36.4G IBM E IBM SI	DRAM B 10K 54 (13. leek Ty	I ECC DI Ultra160 8" viewa vo-Buttor	MM 133 SCSI S ble) FS n Mouse	Γ Monitor e (black)	MM (black)	33L3324 33L3326 06P5751 633147N 28L3673
Fans Prerequisites									28L3644		
Slot 2: fullsize, 64 Slot 3: fullsize, 64 Slot 4: low-profile, 64 Slot 5: low-profile, 64 Slot 6: low-profile, 64 CD-ROM diskette disk bay Bay ① 3.5", 0.5",	disk bay access, std access, std no access, std	2.2 (5v), Bus B 2.2 (5v), Bus B 2.2 (3.3v), Bus C 2.2 (3.3v), Bus C 2.2 (3.3v), Bus C 2.2 (3.3v), Bus C 2U Rack	Configuration pressing Fixos SCSISelec CTRL+A PC-Doctor Several ha H 3.5" x W H 89 mm x 34 to 37 pc IPMI 1.5 ar	ck color (front bion/Setup Utility 2 at startup the treat startup the treat startup the treat diagnostics redcopy publica 17.5" x D 20.0 kW 445 mm x lounds (15.4 to and WfM 2.0-col	vinvoked l by pressir on diskett tions by 508 mm 16.8 kg) mpiant	ng e	4	1 yeas Interror On si cover next le 1 yeas upgralocati • 9 h holo (Not 4 h) (Not 24 2 k)	r parts and lational Wate, 8 am - lage exclusioness of late option late option late option late option late option late option late optiones late optiones l	arranty Se 5 pm, Mon ding holid day respor varranty se s (in eligib e, Mon-Fri r response aco® part num coverage ge respons ac part num coverage ge respons ac part num support fo	ervice ³ I - Fri ays, ays, sse time ⁷ ervice ble excluding e time mber) se time se time se time

@ 201 701						,,	IVEI I ICIG OKIII		
IBM [®] Type-model Qty x	L2 Processor cache	Memory Memory type	Disk	SCSI controller	Mechanical	Slots x bays (hot-swap bays	Power) supply	Ethernet	Available date
8670-11X 1 x Xeon 8670-21X 1 x Xeon 8670-31X 1 x Xeon	2.2GHz 512KB			2 x Ultra320	2U rack	5x8 (6 hot-swa	ap)1 x hot-swap ap)1 x hot-swap ap)1 x hot-swap	2 x Gigabi	Jul 2002
Positioning Processor(s) L2 cache SMP support Implementation	A rack-dense 2-way 1 x Intel® Xeon™ 512KB / on die of pr 2-way SMP / up to Systemboard contai slot for standard PC	Processor 2.0, 2.0 ocessor / at proces two Xeon MP Profess two Intel 603-pi	2, or 2.4 ssor spee ocessors n micro-F	GHz ¹ with 40 ed (no L3 cach (same speed PGA ZIF socke	0MHz fron le) d/cache siz ets, four me	tside bus / Hyp e) emory DIMM slo	er-Threading te	chnology e PCI-X slots	
Memory	512MB std / 8GB m PC2100 266MHz remust be installed in Error Checking and detects 2- through 8	gistered 184-pin E matched pairs [a b d Correcting (ECC	CC DDR- ank] / 2-v c) via 16-	-SDRAM DIM vay memory ir bit Checksur	Ms / four DI nterleave / d	MM gold-conne dual channel / m	ector slots on sys nemory bus runs	temboard / E at 2 x 100M	DIMMs Hz/
SCSI disk controller SCSI channels IDE controller / cable Disk - capacity Disk - bays	LSI Logic® 53C103 supports RAID-1 mi shared with optional Two 16-bit channel backplane for six dis VHDCI connector / Enhanced IDE ATA None standard / sup Six hot-swap / 80-pi	irroring (Embedder I IBM ServeRAID™ s (one internal an sks; <i>Channel B:</i> 1 supports optional 1-100 controller in Coports 7200-15000	ed Mirror l-6i Contr d one ex 6-bit 68-p ServeRA CSB5 Sol rpm disk	ing) with up to oller for low-coller	o one hot-spost RAID 0 SI Channel o support e with externate connect plane	pare disk / , 1, 1E, 5, 00, 1 / A: 16-bit 68-pi xternal SCSI de al connector(s) or on planar / or	0, 1E0, 50 (instain LVD cable fro evices via extern ne 1-drop IDE ca	alled only in om systemb all SCSI 0.8 able (CD-RC	Slot 2) oard to mm
Mechanical Chipset	EIA 19" Rack (2U ⁴) ServerWorks® Gra two CIOB-X2 I/O Br controllers; IMB2 bu CSB5 South Bridge USB, SMBus, LPC (See below) Four av	nd Champion™ 4 idges (IMB2 bus to us to Host Bridge fo (Thin IMB to Host bus to Super I/O)/	.0 LE / C Host Br or PCI Bo Bridge fo NS PC8	MIC LE Host ridge for PCI E us B with slots or PCI 2.2 bus 7417 Super I	Bridge (me Bus A with I s 3 and 4 o s C with slo O	mory controller low profile slots n riser card) / t 5 (on riser car	and I/O Bridge) 1, 2, and Ultra3 d) and graphics	/ 20 and ethe controller, E	
Ethernet controller CD-ROM / diskette Rear ports Front port / graphics	Two gigabit 10/100/on planar / PCI-X 64 24X-10X ⁶ CD-ROM Rear: two USB (Ve no parallel port	1000 ethernet ports I-bit 100MHz / full of / IDE; <i>Diskette:</i> 3. rs 1.1), keyboard,	s (dual po luplex / V 5" 1.44M mouse, s	ort) / Intel 8254 Vake on LAN® B diskette driv erial (9-pin), g	AGEB / two f / Alert Star re / dust cor raphics (DI	full gigabit ether ndard Format 1. ver B-15), two ether	net MAC and PH 0 / two RJ-45 po net (RJ-45), two	IY layer func rts in rear RJ-45 (sys	mgmt) /
Security	Power-on password	d / administrator pa	ssword /	unattended b	oot / select	able boot seque	ence		
Systems mgmt Diagnostics Software	IBM Integrated syst H8S2148 / on plana monitoring such as supports optional R connector on riser from tight Path Diagnos falling part (under to ServerGuide™ (CD utilities), IBM Direct	r / provides system temp, optional dislemote Supervisor or continuous pow stics™ panel provicp cover) / Informati-ROM installation	n and envice, fans, fans	vironmental power supp / with 20-pin t power reqd) map to Panel in front	Xeon DR Xeon DI 512MB 1GB PC 2GB PC IBM Ser IBM Re 36.4GB	P 2.2GHz/512K P 2.4GHz/512K PC2100 CL2.5 C2100 CL2.5 EC C2100 CL2.5 EC CYCRAID-6i Cor mote Superviso 15K-2 80 Ultra3	B L2 Cache Pro B L2 Cache Pro (B L2 Cache Pro ECC DDR-SDRA CC DDR-SDRAI troller (adapter or Adapter (PCI 320 SCSI Hot-Sv	c Upg oc Upg RAM DIMM M RDIMM* M RDIMM* for slot 2) adapter) vap SL HDD	
Keyboard / mouse Power supply		hot-swap; <i>Max:</i> two edundant with two tage-sensing / auto	power su o-restart	upplies /	146.8GB 350W H NetBAY	10K-5 80 Ultra3 lot-Swap Powe	320 SCSI Hot-Sv 320 SCSI Hot-Swar Supply (with t Conversion Opt Manager	ap SL HDD hree fans)	32P0727 32P0728 59P4057 32P1636 1735L04
Fans Prerequisites	Std: five fans; Max: power supply)/ All: variable speed Monitor, keyboard,	redundant with eight / hot-swap / PFA	ht fans ins		NetBAY Other o	Remote Conseptions at ibm.c			1735R16
Slot 2: low-profile, 6 Slot 3: full, 64-bit 13 Slot 4: full, 64-bit 13 Slot 5: half,32-bit 33	4-bit 100MHz 3.3v P 4-bit 100MHz 3.3v P 33MHz 3.3v PCI-X, nd 33MHz 3.3v PCI-X, nd BMHz 5v PCI 2.2, not optional IBM ServeRA	CI-X, not hot, Bus A ot hot-swap, Bus B ot hot-swap, Bus B hot-swap, Bus C**	A* ⊅ Con ⊅ Diag ⊅ Syst ⊅ Netv	figuration/Set gnostics (PC-I tem Partition I work Boot: F1	up Utility: F Doctor™): F Boot: ALT+l 2 at startup	1 at startup 2 at startup F1 at startup	LIMITED 3 year parts a International On site, 8 am coverage exc business day	Warranty Se - 5 pm, Mon luding holid	rvice³ - Fri ays, next

** Primarily for optional Remote Supervisor Adapter

 Opt disk Opt disk Opt disk Opt disk Opt disk Opt disk

Bay ① 3.5", 0.5", Bay ② 5.25", 0.5" Bay ③ 3.5", SL 1", Bay ④ 3.5", SL 1", Bay ⑤ 3.5", SL 1", access, std diskette access, std CD-ROM access, hot-swap, open for disk access, hot-swap, open for disk access, hot-swap, open for disk SL 1", SL 1", Bay ® 3.5", SL 1", Bay © 3.5", SL 1", Bay ® 3.5", SL 1", access, hot-swap, open for disk access, hot-swap, open for disk access, hot-swap, open for disk

Bays 3 through 8 support six SL disks via SCA-2 connectors

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

All models: Max int disk capacity: 880.0GB2 with six 146.8GB SL disks

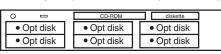
- 3 year on site warranty service upgrade options (in eligible locations):7
 - 9 hr coverage, Mon-Fri excluding holidays, 4 hr response time (ServicePac® 21P2077)
 - 24 hr x 7 day coverage, 4 hour average response time (ServicePac 21P2078)
 - 24 hr x 7 day coverage,
 2 hour average response time
 (ServicePac 21P2093)
 Other ServicePac options at
 - ibm.com/services/its/us/ source/wamomxeu.pdf
- 24x7¹⁴ toll-free support for warranty issues during the warranty period3

2U

Rack

IBM® Type-model Qty x I	Processor	L2 Cache	L3 Cache	Memory	Disk	SCSI controller	Form Factor		x bays vap bays)		Power s	upply	Ethernet	Available date
8670-51X 1 x Xeo 8670-61X 1 x Xeo 8670-71X 1 x Xeo	n™ 2.67GHz n 2.8BGHz n 3.06GHz n 3.06GHz n 3.2GHz	512KB 512KB 512KB 512KB 512KB 512KB	OMB OMB OMB 1MB 1MB	512MB 512MB 512MB 512MB 1GB	None None None None None	2 x Ultra32 2 x Ultra32 2 x Ultra32 2 x Ultra32 2 x Ultra32	2U ⁴ 0 2U 0 2U 0 2U 0 2U 0 2U	5x8 (6 5x8 (6 5x8 (6 5x8 (6	hot-swap) hot-swap) hot-swap) hot-swap) hot-swap)	1 x 1 x 1 x	350W 350W 512W 512W	not-swap not-swap not-swap not-swap	2 x Gigabit 2 x Gigabit 2 x Gigabit 2 x Gigabit 2 x Gigabit	Feb 2003
Positioning Processor(s) L2/L3 cache SMP support Implementation	A rack-dense Up to 1 x li 512KB L2 C 2-way SMP Systemboard slot for stand	ntel® Xe Cache / l / up to d contair	on ™ F Jp to ' two X ns two	Processon IMB L3 (eon Proc Intel 603	or 3.20 Cache cessors -pin mi	Shz with 533 / Both on di s (same spe cro-PGA ZIF	BMHz f e of pro ed/cacl socket	rontside ocessor he size) ts, four m	bus / Hyp / Both at p nemory DIN	er-TI proce //M s	nreading essor sp lots, two	g technolo eed o low-profil	e PCI-X slots	
Memory	512MB or 10 DIMMs PC2 systemboard bus runs at 4-bit errors of	100 266 d / DIMM 2 x 133	MHz i Is mus MHz /	registere st be ins Error C	d 184- _l talled in heckir	pin ECC DE n matched p ng and Cor	R-SDF airs [a recting	RAM DIM bank] / 2 (ECC) v	IMs / four 2-way mer via 16-bit	DIM nory Che	M gold- interlea cksum	connector ve / dual	slots on channel / m	emory
SCSI disk controller SCSI channels IDE controller / cable Disk - capacity Disk - bays	supports RA shared with of Two 16-bit of backplane to VHDCI conn Enhanced ID None standa Six hot-swap	.ID-1 mir optional channels or six dis rector / s DE ATA- ard / sup	rroring IBM S s (one ks; <i>Ci</i> suppor 100 co ports 7	g (EmbererveRAII internal hannel B ts option ontroller in 2200-150	dded M D™-6i (and or : 16-bit al Serv n CSB: 000 rpm	firroring) wit Controller for ne external) : 68-pin inter reRAID ada 5 South Bric n disks / one	h up to low-co / SCS face to oters w ge / on backpl	one hot-set RAID I Channe support ith externe connectance ane	spare disk 0, 1, 1E, 5 el A: 16-bi external S nal connec ctor on pla	, 00, t 68- CSI tor(s nar/	10, 1E0 pin LVI devices s) one 1-c	0, 50 (insta 0 cable fro via extern drop IDE ca	alled only in Som systembonal SCSI 0.8rable (CD-RC	Slot 2) pard to mm
Mechanical Chipset	EIA 19" Rac ServerWork two CIOB-X2 controllers; I CSB5 South USB, SMBus (See below)	(s[®] Grár 2 I/O Brid MB2 bu: Bridge ∂ s, LPC b	nd Cha dges (s to Ho (Thin I ous to S	ampion™ IMB2 bu ost Bridg MB to Ho Super I/C	M 4.0 L l s to Ho e for Prost Bric O) / NS	É / CMIC LE est Bridge for CI Bus B wit dge for PCI 2 PC87417 S	Host E PCI Bots h slots 2.2 bus uper I/0	Bridge (m us A with 3 and 4 c C with sl O	emory cor low profile on riser ca lot 5 (on ris	ntrolle e slo ird) / ser c	er and lats 1, 2, and ard) and	O Bridge) and Ultra3 d graphics	20 and ether	
Ethernet controller CD-ROM / diskette Rear ports Front port / graphics	Two gigabit 1 on planar / P 24X-10X ⁶ CE <i>Rear:</i> two U no parallel po <i>Front:</i> one U	CI-X 64- D-ROM / ISB (Ver ort	bit 100 IDE; s 1.1),	OMHz / fu <i>Diskette:</i> keyboar	ill duple 3.5" 1. d, mou	ex / Wake or 44MB diske se, serial (9-	LAN® / tte drive pin), gr	/ Alert Sta e / dust co aphics (D	andard For over DB-15), two	rmat o eth	1.0 / two	RJ-45 pc	orts in rear RJ-45 (sys r	ngmt) /
Security	Power-on pa	assword	/ admi	nistrator	passw	ord / unatter	nded bo	ot / selec	ctable boo	t seq	uence			
Systems mgmt	IBM Integra H8S2148 / o monitoring s supports opt connector or	n planar uch as te ional Re	/ prov emp, c mote s	ides syst optional c Supervis	tem and lisks, fa or Ada _l	d environme ans, power s pter with 20-	ntal upp / pin	Xeon 3 Xeon 3		12K 12KE 2KB	B L2 Ca 3 L2 Ca L2/1ME	ache Proc iche Proc 3 L3 Cach	: Upg	71P8966 71P8967 02R1988 88P9677 23K4523
Diagnostics Software	Light Path D failing part (u ServerGuid utilities), IBM	Diagnost under top e™ (CD-	t ics ™ cover ROM	panel pro) / Inform installation	oviding nation L on and	LED map to ED Panel in configuratio	front	1GB P 2GB P IBM Se	C2100 CL C2100 CL	2.5 2.5 6i C	ECC DI ECC DI ontrolle	DR-SDRA DR-SDRA r (adapter	M RDIMM M RDIMM* for slot 2)	33L5039 33L5040 71P8595 09N7585
Keyboard / mouse Power supply	None stand Std/Max: one All: rear ac	ard (becelotwo 35 cess / recide / voltage	cause 0 or 5 edund age-se	rack-ba 14 watt h ant with ensing/a	sed) not-swa two po nuto-res	ip ower supplie start		73.4GE 146.8G 350W 514W NetBA	3 10K-5 80 B 10K-5 80 Hot-Swap Hot-Swap Y Local C	Ultra O Ultra Pow Pow onsc	a320 S0 a320 S0 ver Sup ver Sup vle Man	ÖSI Hot-Sv SI Hot-Sw ply (with t ply (3.060 ager	wap SL HDD ap SL HDD hree fans)* Ghz+ Only)*	32P0727 32P0728 59P4057 74P4965 1735L04
Prerequisites		supply)/r e speed /	edund / hot-s	lant with ϵ	eight fai A	ns installed;	<i>-</i>	Other	Y Remote options at onal powe	ibm	.com/p	c/us/acces	ssories n installing (1735R16 33L5040
Slot 1: low-profile, 6	4-bit 100MHz	3.3v PC	I-X, n	ot hot, Bu	ıs A ⇨	Quick relea	se adap	oter slots	(no screw	s)		LIMITED	WARRANT	Y 3

Slot 1: low-profile, 64-bit 100MHz 3.3v PCI-X, not 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-DoctorTM): 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 Slot 5: half,32-bit 33MHz 5v PCI 2.2, not hot-swap, Bus C** > Network Boot: F12 at startup > LSI Logic Configuration Utility: CTRL+C at Start ** Primarily for optional Remote Supervisor Adapter



Bay ① 3.5", 0.5", Bay ② 5.25", 0.5" access, std diskette access, std CD-ROM Bay (2) 5.25", 0.5" Bay (3) 3.5", SL 1", Bay (4) 3.5", SL 1", Bay (5) 3.5", SL 1", Bay (6) 3.5", SL 1", Bay (7) 3.5", SL 1", Bay (8) 3.5", SL 1", access, hot-swap, open for disk access, hot-swap, open for disk

Bays 3 through 8 support six SL disks via SCA-2 connectors

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 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 hr response time (ServicePac® 21P2077)

4 hour average response time
(ServicePac 21P2078)

24 hr x 7 day coverage,

4 hour average response time

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

2U

Rack

									2/-	
IBM® Type-model Qty x Pr	L3 rocessor cache	Memory	Disks	SCSI controller	Mechan- ical		RXE Exp Port	Hot-swap s pwr supplies	Mgmt adapte	Available r date
8686-1RQ 1 x Xeon ^T 8686-1SQ 2 x Xeon ^T 8686-1TQ 2 x Xeon ^T 8686-2RQ 2 x Xeon 8686-3RQ 2 x Xeon	MP 2.0GHz 1MB MP 2.0GHz 1MB MP 2.5GHz 1MB	1GB Chipkill™ 1GB Chipkill 3GB Chipkill 2 2GB Chipkill 2GB Chipkill	None None x 36.4GB 1 None None	Ultra160 Ultra160 0KUltra160 Ultra160 Ultra160	3U rack 3U rack 3U rack	6x5 6x5 6x5	One One	One (not redun Two redundant Two redundant Two redundant Two redundant	PCI PCI PCI	Jun 2003 Nov 2003 Nov 2003 Jun 2003 Jun 2003
Processors L2 cache L3 cache Processor upgrade Implementation	1 or 2 x Intel® Xeor 512KB / on die of pr 1MB or 2MB / on die 4-way SMP / up to for Systemboard contain and integrated SCSI	ocessor / at processor / at processo	essor speed processor s sors MP (sai pin micro-Po	speed me speed/ca	.che size)					0,
Memory	Up to 3GB std / 16 1.7-inch tall / one mpairs / 128-bit simu Error Checking an chip and detects 2-	nemory board sta Itaneous transfer I d Correcting (E	ndard with from two [[CC] via 16	8 DIMM gol DIMMs / PC -bit Checks	d-connec 1600 200 sum Chip	tor slots DMHz re) DIMM: gistered	s must be installe 184-pin DDR-SI	ed in m DRAM	natched RDIMMs /
SCSI disk controller SCSI connectors SCSI cabling IDE controller / cabling Disk - capacity Disk - bays	Adaptec® AIC-7892 Controller hard-wire One standard 16-bit SCSI RAID adapter Enhanced IDE ATA- None standard / sup Three hot-swap bay	d to SCSI backpla LVD cable includ 68-pin connector 33 controller in C ports up to 15,00	ane (no cabled for attached on systemb SB4 South I 0 rpm disks	e) / no externing an optio oard for this Bridge	nal ŠCSI (nal Serve cable to (connecto RAID ad	or apter to	the three-bay bac	kplane	
Mechanical	EIA 19" rack mode	ls (3U4) x 28" dee	p/supporte	ed in NetBAY	™ Racks	(such as	NetBAY	42 SR, NetBAY4	2 ER)	
Chipset Slots (Active™ PCI-X) RXE Expansion Port	IBM XA-32™ chipse (one to IBM PCI-X H PCI-X 1.0, one PCI 2 ServerWorks® OSB ² Six hot-swap PCI-X hot replace, hot up One port to suppor	ost Bridge; one to 2.2) / PCI 2.2 Bus I South Bridge (ID 1.0 slots¹º availab grade, hot expa i	RXE Expar 0 supports S E, USB, ISA le with powe nsion / sepa	nsion Port) / I CSI, graphic bus for Supe r and attention trated by insi	BM PCI-X s, etherno er I/O NS on indicate ulative pla	(Host Bri et, adapte PC97317 or lights (astic divid	idge prover slot wi 7VUL [distoption] optical siders	vides three peer F th Remote Supen skette, keyboard, ensors control po	PCI bus visor Ad mouse wer to s	es (two dapter, and]) slot) /
CD-ROM / diskette Ethernet Graphics controller Ports	24X-10X ⁶ CD-ROM Intel 82559 10/100 e SVGA / S3 [®] Savage Rear: RXE-100 Expa USB (Ver 1.1), keybo	ethernet controlle 24 LT / on system ansion Port (to cor	r / on systen board / 8ME nnect option	S SDRAM sto al RXE-100),	l/ṁax / up RXE Mar	to 1280: nagemen	x1024 at t Port (to	t 64K colors at 85 manage optional	Hz RXE-1	00), two
Security	Power-on and admir	nistrator passwor	ds / unattend	ded boot / se	ectable b	oot				
Systems management Diagnostics	Remote Supervisor console and mgmt / Light Path Diagnos	oower on/off syste	m / monitors	s power statu	is, op sys	tem, tem	perature	, disks, fans, pow	er supp	lies
Software	IBM Real Time Diag available even while ServerGuide™ (CD utilities), IBM Directo	server running -ROM installation	Ü	,	512ME 1GB F	3 PC1600 PC1600 E	O ECC D ECC DD	nsion Enclosure DDR SDRAM RD R SDRAM RDIM R SDRAM RDIMI	M	86841RX 33L3283 33L3285 33L3287
Keyboard / mouse Power supplies Cooling fans Six available 3.3 volt A	None standard (beca Std: one or two 370 redundant with two p worldwide / voltage- fans in each powers Six hot-swap, redun one additional fan in fan failure signals Di active PCI-X slots:	watt hot-swap; Moower supplies (some supplies (some supplies) / PFA dant, multi-speed each power supplies.	ax: three ho ome configu start / fans / oly / PFA /	rations)/	Xeon Xeon Xeon 370 wa IBM Se IBM 73 IBM In IBM In	MP 2.0G MP 2.5G MP 2.8G att Hot-Sv erveRAID 3.4GB 10 etBAY42 tegrated 541 15" F	Hz/1MB Hz/1MB Hz/2MB wap Red oth-4Mx l K Ultra1 Standar xSeries ilat Pane	L3 Cache Proc L3 Cache Proc L3 Cache Proc undant Power Su Ultra160 SCSI Ad 60 SCSI Hot-Swa d Rack (SR) Adapter for iSerie I Color Monitor (b m/pc/us/accesso	Upg Upg Upg oply apter p SL s lack)	73P8805 73P8806 73P8807 31P6108 06P5736 06P5756 9306420 1519100 9512AB1
- or two fullsize, 64-b	ots supports (slots 1, 2 oit, 133MHz PCI-X, hot oit, 100MHz PCI-X, hot oit, 66MHz PCI-X, hot	-swap Dimer	nsions: H130	5" x W17.4" x 3.4mm x W44 lbs; 24.9 to 3	L c D27.6" 42.0mm x	•	m	LIMITED WA	RRAN	TY ³

- PCI-X, hot-swap
- or two fullsize, 64-bit, 66MHz PCI-- or two fullsize, 64-bit, 66MHz PCI, or two fullsize, 64-bit, 33MHz PCI, PCI, hot-swap
- 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

		Std		diskette CD-ROM
l	Std Power	or opt Power	Opt Power	• Disk ③
l	Supply	Supply	Supply	Disk 4
ı	Ľ	•	l•	 Opt disk

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

- 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

- 3 year parts and labor
- International Warranty Service 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 period

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IBM®											
Type-model Qty x Proce	L3 essor cache	Memory SCSI disks	SCSI controller		Slots >	Hot-swap		swap	Chipset	Operating system	Available date
8834-21X 2 x Itanium 8834-32X 2 x Itanium	1.4Ghz 1.5ME 1.5Ghz 6.0ME	B 2GB 1 x 73.4GB B 4GB 2 x 73.4GB	2 x Ultra320 2 x Ultra320	2U ⁴ rack 2U ⁴ rack	3x2 3x2	2 hot-swap 2 hot-swap	2+1 rec 2+1 rec	lundant lundant	E8870 E8870	None None	Sep 2003 Aug 2003
Processor L3 cache Processor upgrade Implementation	Up to 2 x Inte Up to 6.0MB Not Available Two Processo cartridge) prodone Processo	ance 2-way Intel Ita el® Itanium 2™ 1.50 L3 cache / inside I or Board with two S cessor and caches or Board (2 sockets x WXB), one Side l/O)	Ghz with 400 tanium 2 car tocket K 418 / each Itaniu , SAC, SDC)	OMHz frontsion tridge / at post- pin LIF soction powered to two Memo	de bus rocess kets / by on ry Boa	s (double pur or speed both sockets e Power Pod ards, one I/O	used by l on Pro Basebo	ÓMHz) y Itaniu cessor oard (slo	/ others m PAC4 Board / ots, grap	avail. by 18 (418-p system co hics, ethe	special bid in array ontains ernet,
Memory - features	Two Memory DIMMs for fou	td / 16GB max ¹³ / 1 Boards standard e ur-way interleaving s Card to Card (C2	ach with fou / must insta	r 184-pin DI Il four identio	MM s	ockets / ship	s standa	ard with	four or	eight 512	MB ´
SCSI channels SCSI implementation SIDE controller IDE cabling Disks - capacity	Two Ultra320 First channel second channel Enhanced IDE One 1-drop IDE 1 or 2 x 73.40	O LVD Ultra320 / ir SCSI channels (LV to internal 2-port S el to one external .8: E busmaster / ATA DE cable to DVD/C GB² Ultra320 SCSI pin SCA-2 connecto	DS 320MB/s CSI backpla mm VHDCI 6 -100 / one c D-RW / 10000 rpm	sec) / 64-bit ne for interr 8-pin connector on	100MI nal hot ctor (16 Lega	-swap disks (6-bit LVD cabl cy I/O Board	(16-bit L le from I/	VD cab	le to SC	SI backpl	ane) /
		models (2U⁴) IBM NetBAY™ Ente	erprise Racks	s or other Ne	etBAY	racks with e	xtension	option	s		
Legacy I/O Board I	SR870BH2 in Input Output H82801DB I/O Legacy I/O Bot 1.1), single chone RJ-45 so Three PCI-X s	hipset / well-aligne cludes E8870 Scala- Hub (SIOH), E8870 Controller Hub (IChoortroller Hub (IChone) IDE, FirmWherial, no parallel, no slots ¹¹ available with insulative plastic d	able Node C SP Scalabilit H4), 82802A0 connector / are Hub (FV o keyboard, n power and	ontroller (SNy Port Switch C FirmWare contains contains contains (or Firm (H), I/O Firm (no mouse) / (attention ind	IC), E h (SPS Hub (ntrolle nware ' USB licator	8870DH DDF S), 82870P2 (FMH) rs for hardwa Bridge (IFB) used for keyl lights (magno	R Memo 64-Bit P are mon , SMCS board ar	ry Hub CI/PCI- itoring ™ LPC nd mou	(DMH), I X Contro (BMC, I0 47B272 se	E8870IO bller (P64I CMB), US Super I/C	Server H2), 6B (Vers
Optical / Ports 8 Ports r	8X6 DVD/CD-l no mouse / tw	el 82546EB 10/100/ RW Combo Drive / /o analog DB-15 S\ RAGE XL / integrat	one RJ-45 s /GA (one fro	erial / no par nt, one rear)	rallel /	four USB 1.1	(two fro				rd /
Security E	BIOS administ	trator and BIOS use	r passwords	/ mountable	in an o	ptional secure	e rack en	closure	/ selecta	ble drive-s	tartup
Diagnostics I Software and CDs	(3) Hot-Swap (system, temp, Intel Server M out-of-band re Diagnostic Dis	ntrollers: (1) Basebo Controller (HSC) / pro , disks, fans, power lanagement 6.1 incl emote management skette, Utliity CD, F uide / no ServerGu	ovides remot supplies / s uding integra event alerti Publication C	e console an oftware utilit ated in-band ng and loggi D,	d mgm y (Inte and ng	nt / power on/o	off syster strol) for 00 DDF	m / mon mgmt r OPT	itors pow required IONS SDRAM	er status, and supper	oper
Power supplies	Std/Max: two/ universal (volt cords to two of Six redundar additional fans	d / use optional USI /three 350 watt hore tage sensing) / two connectors / PFA nt fans / variable s inside power sup system included / S	t-swap N+1 individual 2 peed / PFA plies	20v power	/	2GB PC2100 BM 73.4GB BM 146.8GB BM USB Spa NOTE: 3rd po NOTE: All oth special bid	10K Ulti 3 10K Ul ace Sav ower sup	a320 S tra320 er Keyl pply ava	CSI HS SCSI HS board iilable by	SL HDD S SL HDD special b	32P0728 22P5150 id only
Dimensions: H3.50"	x W18.90" x x W480.00mm 31.39 kg) om top (no toc ies from front (iory upgrades (I) y pressing F2	D30.51" Sm x D775.00mm fto Scust replaceable) IBM service only) fto Scust replaceable)	Red Hat, and Slot 1: Bottom Ill length, 64-k Slot 2: Middle alf length, 64- Slot 3: Top Sl	n Slot / Not ho bit 133MHz P Slot, Back si bit 100MHz F ot / Not hot-s bit 100MHz P	ot-swar CI-X, a de / No PCI-X, wap CI-X, a	nccessible, Buse accessible, Buse access	us B	3 year Internation on sit covera busine 3 year upgra- locatio	parts an ational W e, 8 am - age exclu ess day r on site w de option ons):7	Jarranty S 5 pm, Mo uding holic esponse to varranty s ns (in eligi	ervice ³ n - Fri days, next time ervice

Rack (front) DVD/CD-RW 000 Vd USBUSB Disk

> Rack (rear) • PCI

disk bays (both hot-swap) Stealth black color

⇒ Wired for Mgmt 2.0⇒ DMI 2.0 and ACPI

2.0-compliant

 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

- holidays, 4 hour average response time

- response time

 24 hr x 7 day coverage, 4 hour average response time

 24x7¹⁴ toll-free support for warranty issues during the warranty period³

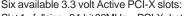
 ServicePac® Warranty and Maintenance options at ibm.com/services/its/us/servicepac.html

IBM [⊚] Type-model Qty x	Processor	L3 cache	L4 cache	Memory	Disk	SCSI controller	Mech anica		SMP/RXE Exp Port	Hot-swap s pwr supplies	Mgmt Available adapter date
8870-3RY 2 x Xeor 8870-4RY 4 x Xeor		None None		GB Chipkill ¹ GB Chipkill							t PCI Jul 2003 t PCI Jul 2003
Positioning Processors L2 cache L4 cache Processor upgrade SMP Expansion Module Additional boards	512KB each 3RY: 64MB; 64MB in each 3RY: 4-way SMP v 3RY: one stroache, sixtee Ports) / each One I/O Boa	Pl® Xeon™ processon ARY: 128 h SMP E. SMP with vith two S d; 4RY: tv n DIMM s SMP Exp rd (PCI-X	Processor / on dismb; All: xpansion two SMF Expa std; A sockets, to ansion M (Host Br)	sor 3.0GHz¹ e of process XceL4™ Se Module / EO P Expansion II: two max / hree SMP E: lodule activa idge, SCSI,	with 40 sor / at erver Ac CC / 64- Modules es or up each co xpansion tes one ethernet	OMHz fronts processor s celerator C bit 400MHz s; All: model to 16-way S intains four land Ports (second RXE Expands, graphics,	side bus peed ache / bus fro s can be SMP with ntel 603 and mod sion Por South E	om Cache e upgrade h two xSe B-pin micr dule conn t (only or Bridge, S	e and Scaed to Xeor eries 445 o-PGA ZI ected via ne RXE E uper I/O,	alability Controll n MP processors systems F sockets for Xe one or two SM xpansion Port s slot for Mgmt A	er s to support up to eon, 64MB L4 P Expansion upported)
Memory	16 DIMM go PC2100 DDI	ld-connect R SDRAN -bit errors	ctor slots M / Error s on sam	/ must instal Checking a e chip; up to	II two inc and Cor o two ch	dentical DIM recting (Edips at once	Ms at s CC) and redund	same tim d Chipki l dant bit s	e / 2-way II™ via M steering) /) / four 512MB / interleaving / emory ProteXi / Active Memor	
SCSI disk controller SCSI implementation IDE controller Disk - capacity/bays	First channel second chan one standard Enhanced ID	to internated to internated to one (I (longer)	al 2-port S external : 16-bit LVI 00 control	SCSI backpla .8mm VHDC D cable inclu ler in South E	nne for in I 68-pin d ded for a Bridge / d	ternal hot-st connector (1 attaching an one one-dro	wap disk 6-bit LV optiona p IDE ca	ks (16-bit D cable fr I ServeR able to ba	LVD cable om I/O Bo AID adap ackplane f	e to SCSI backp pard to ext conne ter to the two-ba for diskette and	lane) / ector) / ny backplane CD-ROM
Mechanical	EIA 19" rack	models	(4U ⁴) x 28	3" deep/sup	ported in	n NetBAY™	Racks (such as I	NetBAY42	SR, NetBAY42	ER)
Chipset Slots (Active™ PCI-X) RXE Expansion Port	Expansion Po X Host Bridge Adapter, VIA' PCI 2.2 Bus Six hot-swap hot replace, One RXE-100	orts / IBM e provides 82C686 F supports PCI-X 1. hot upg Remote	Memory s three per B South I s SCSI, e 0 slots 10 prade, ho Expansion	I/O Controlle eer PCI buse Bridge (IDE A thernet / PCI available with t expansion Enclosure of	er with two s / PCI 2 ATA-100 I-X Bus / h power n / sepa can be sh	no remote I/0 2.2 Bus E s , USB, Supe A, B, C, D s and attention trated by in hared between	D ports (upports er I/O P(upport F on indica sulative en two xa	(each to a graphics, 297317V PCI-X slot ator lights plastic of 445 4-way	a IBM PC adapter: UL [keybooks / desigres (optical dividers y, 8-way, o	slot with Remote pard, mouse]) / ned to the PCI-X sensors control or 16-way xSerie	/ each IBM PCI- e Supervisor (1.0 specification power to slot) /
CD-ROM / diskette Ethernet Graphics controller Ports	24X-8X ⁶ DVI Dual Broadco SVGA / S3 [®]	D-ROM / om ^å 5704 Savage4 00 Expan	3.5" 1.44 10/100/10 Pro / on sion Port	MB diskette 000 ethernet I/O Board / 8 (to connect	drive / controlle BMB SDI optiona	both remover / on I/O B RAM 125MH I RXE-100),	able fro pard / fu lz std/m RXE M	m Ultrab ill duplex nax / up t lanageme	ay 2000 / 64-bit 6 o 1280x1 ent Port, t	bays / supports 6MHz PCI bus / 024 at 64K colo two USB (Vers	CD-RW, DVD Wake on LAN® ors at 85Hz
Security	Power-on an	d adminis	strator pa	sswords / ur	nattende	d boot / sel	ectable	boot			
Systems mgmt Diagnostics Software	console and Light Path I IBM Real Tir available eve ServerGuide	mgmt / p Diagnosti ne Diagn en while s e™ (CD-R	ower on/ ics™ / pr lostics (op server rui ROM insta	off system / imary indica perated thro nning allation and	monitors tor on ir ugh IBM	s power state of the property	us, op s anel wi xSeries with t	system, t th LEDs SMP Ex wo 3.0Gl	emperatu associate pansion M nz Xeon I	re, disks, fans, ded with failing community Module Processors	02R1871
Keyboard / mouse Power supplies Cooling fans	utilities), IBM Director, and others 512MB DDR PC2100 ECC SDRAM RDIMM									33L5039 33L5040 p 06P5756 der 37L6889 9306110 22P9101 ck) 9511AG4	
Six available 3.3 volt Slot 1: fullsize, 64-bit Slot 2: fullsize, 64-bit Slot 3: fullsize, 64-bit Slot 4: fullsize, 64-bit Slot 5: fullsize, 64-bit Slot 5: fullsize, 64-bit Slot: used by Remover Supply	66MHz PCI-) 66MHz PCI-) 100MHz PCI-) 130MHz PCI-) 133MHz PCI-) ote Supervisor A	(, hot-swaj (, hot-swaj (, hot-swaj (, hot-swaj (, hot-swaj (, hot-swaj dp, 32-bit 4U Ra 4U Ra OM (Ultrab	p Bus A p Bus A p, Bus B p, Bus B p, Bus C p, Bus D 33MHz ack	Max weigl Stealth bla Tool-frees Access pr MP Expa Access pr SMP Expa Setup Pro SCSISele Information out Light F diagnostic Predictive XceL4 Se power sup IBM Direct All model	ns: H178 ht: 110 lb ht	Bmm x W48; as; 50kg bility s, memory, a lodule from t plies and di pressing F1 loctor) by pr esanel and froi el (1st and 2 tt removing o	adapters op sks from at start esssing F at start t-acces nd level over) erts on p he, men isks with	s, and I front up F2 at start up sible pull processor nory, fans	\$\to \text{In \$\phi\$ \cdot \text{On no } \phi \tex	LIMITED WA year parts and ternational War note, 9 hr x 5 ext day respons year on site wa pgrade option (i cations): ⁷ 24 hr x 7 day co 2 hour respons (No ServicePac a ost warranty ma ervices available 4x7 ¹⁴ toll-free su arranty issues o arranty period ³	labor rranty Service³ day coverage, se time³ rranty service in eligible overage, e time available) sintenance e

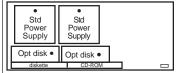
IBM® Type-model Qty x	Processor	L3 cache	L4 cache	Memory	Disk	SCSI controller	Mech- anical		SMP/RXE Exp Ports		Mgmt / adapter	Available date
8870-1RX 2 x Xeor 8870-2RX 2 x Xeor 8870-4RX 4 x Xeor	MP 2.5GHz	1MB 1MB 2MB	64MB 2	2GB Chipkill™ 2GB Chipkill 2GB Chipkill	None	2xUltra320 2xUltra320 2xUltra320	0 4U rac	k 6x4	3/1 3/1 3/1	Two redundant Two redundant Two redundant	PCI .	Jul 2003
Positioning Processors L3 cache L4 cache Processor upgrade SMP Expansion Module Additional boards	2 or 4 x Intel 1MB or 2MB 64MB XceL4 64MB in each 4-way SMP (u One SMP Ex L4 cache, sixi Ports) / each One I/O Boar	P Xeon™ each pr each pr Serve SMP E up to 8-w panion N een DIM SMP Exp td (PCI-X	Processor occessor oc	sor MP 2.0, 2 / on die of pr rator Cache Module / EC with optional s td / two max s s, three SMP Module activate idge, SCSI, e	2.5, or 2 ocessor (up to 1 C / 64-b SMP Exp / each of Expansi es one F ethernet,	.8GHz¹ with / at proce 28MB with bit 400MHz bansion Mo ontains fou ion Ports (see Expan graphics,	h 400MH; ssor spee o optional bus from dule) r Intel 603 second mo sion Port South Bri	z frontsied SMP E: Cache B-pin mic odule co (one RX dge, Su	xpansion and Sca	sion-critical businsupports Hyper Module) / Ilability Controlle ZIF sockets for invited one or two sistems one or two sistems of the control of the contro	-Threadi er Xeon MF BMP Exp rted) dapter),	P, 64MB cansion one
Memory	16 DIMM gole PC2100 DDF	d-connect SDRAN bit errors	tor slots // Error s on sam	/ must install Checking a ne chip; up to	two ind nd Cori two chi	entical DIN r ecting (E 0 ps at once	//Ms at sa CC) and ; redunda	me time Chipkill Int bit st	e / 2-way ™ via M o :eering) /	/ four 512MB interleaving / emory ProteXi Active Memory	on™	
SCSI disk controller SCSI implementation IDE controller Disk - capacity/bays	First channel second chann one standard Enhanced IDI	to interna lel to one (longer) E ATA-10	al 2-port S external 16-bit LVI 00 control	SCSI backplar .8mm VHDCI D cable includ ller in South B	ne for int 68-pin co led for at ridge / o	ernal hot-stonnector (1 ttaching an ne one-dro	wap disks 6-bit LVD optional \$ p IDE cab	(16-bit L cable fro ServeRA de to bac	LVD cable om I/O Bo VID adapt ckplane fo	oard to ext conne er to the two-ba or diskette and (ane) / ector) / y backpl CD-ROM	ane 1
Mechanical	EIA 19" rack	models	(4U ⁴) x 2	8" deep / supp	orted in	NetBAY™	Racks (su	ıch as N	letBAY42	SR, NetBAY42	ER)	
Chipset Slots (Active™ PCI-X RXE Expansion Port	Expansion Po X Host Bridge Adapter, VIA® PCI 2.2 Bus F) Six hot-swap hot replace, C One RXE-100	orts / IBM provides 82C686 supports PCI-X 1. hot upg Remote	Memory s three pe B South I s SCSI, e 0 slots ¹⁰ prade, ho Expansion	I/O Controller eer PCI buses Bridge (IDE A ethernet / PCI- available with ot expansion on Enclosure ca	with two F / PCI 2 TA-100, X Bus A power a / separan be sha	o remote I/0 .2 Bus E si USB, Supe J. B, C, D s and attention rated by in ared between	D ports (e upports great I/O PCS upport PC on indicate sulative pen two x44	ach to a aphics, 97317VL BI-X slots or lights blastic display	IBM PCI adapter s JL [keybo s / design (optical s ividers , 8-way, o		/ each I Superv 1.0 spe power to	BM PCI- isor cification o slot) / rvers or
CD-ROM / diskette Ethernet Graphics controller Ports	Dual Broadco SVGA / S3® S	m ^å 5704 Savage4 00 Expan	10/100/1 Pro / on sion Port	000 ethernet of I/O Board / 8 If (to connect of	controlle MB SDR optional	r / on I/O B RAM 125MI RXE-100),	oard / full Hz std/ma RXE Ma	duplex / x / up to nageme	64-bit 66 1280x10 nt Port, t	MHz PCl bus / 024 at 64K colo wo USB (Vers	Wake or rs at 85l	n LAN® Hz
Security	Power-on and	d adminis	trator pa	sswords / una	attended	boot / sel	ectable bo	oot				
Systems mgmt Diagnostics	console and	mgmt / p	ower on/ i cs ™ / pr	off system / nimary indicate	nonitors or on inf	power state formation power state power st	tus, op sy panel with	stem, te	emperatur associate	Il connectors / pre, disks, fans, d with failing co	power s ompone	upplies nts /
Software	available eve ServerGuide utilities), IBM	n while s ™ (CD-R Director	server rui ROM insta , and oth	nning allation and d ers		ation	2GB DDF	PC210 PC210	0 ECC S	DRAM RDIMM DRAM RDIMM	33 33	R1870 L5039 L5040 R2062
Keyboard / mouse Power supplies Cooling fans	utilities), IBM Director, and others 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 Four hot-swap, redundant, multi-speed fans / one additional fan in each power supply / PFA / fan failure signals Diagnostic LED and mgmt processor 28 BDRAW FOZTO ECC SDRAW DIMM 35L304 Xeon MP 2.0GHz/1MB L3 Cache Proc Upg								R2063 R2064 P5756 L6889 06110 P9101			
	66MHz PCI-X 66MHz PCI-X 100MHz PCI-X 133MHz PCI-X 133MHz PCI-X 133MHz PCI-X ste Supervisor Ar access, disket access, CD-R access, hot-sw	, hot-swap, hot-swap, hot-swap, hot-swap, hot-swap, hot-swap, hot-swap, hot-swap, hot-swap, te (Ultrabom (Ultrabom (Ultrabom (Ultrabom (Ultrabom (Ultrabom (Ultrabap))	o Bus A p, Bus B p, Bus B p, Bus C p, Bus C p, Bus D 33MHz	Max weigh Stealth bla Tool-free si Access pro Setup Proc SCISCICC Information out Light Prodictions Predictive XceL4 Seppower supp	s: H178 t: 110 lbs ck color erviceab ocessors nsion Mo wer supp gram by p st (PC-Do t tby pres n LED pa ath pane s without Failure A ver Acce blies, and or	mm x W48: s; 50kg illity , memory, a odule from t olies and dispressing F1 octor) by pr ssing Ctrl+A nel and froi el (1st and 2 removing o hallerator Cac d optional d	adapters, adapters, adapters, appropriate startup essing F2 A at startup ht-accessional level cover) estending the memorisks with	and ont at startu ble pull- ocessors ory, fans	P Pose Se, P 24 was was	LIMITED WA year parts and ternational War n site, 9 hr x 5 ext day respons year on site wa yearde option (i cations): 24 hr x 7 day co 2 hour response No ServicePac a set warranty ma ervices available x714 toll-free su arranty period 3	labor ranty Se day cov se time ⁷ arranty se n eligibl verage, e time vailable) intenance pport fo	rvice ³ verage, service e

IBM® Type-model Qty x	Processor	L3 cache	L4 cache	Memory	Disk	SCSI controller	Mecl anic		s SMP/RXE	Hot-swap	Mgmt adapter	Available date
8870-1AX 2 x Xeor 8870-2AX 2 x Xeor 8870-4AX 2 x Xeor	MP 2.5GHz	z 1MB 1MB 2MB	64MB	0GB Chipkill 0GB Chipkill 0GB Chipkill	™ None None None	2xUltra32 2xUltra32 2xUltra32	20 4U ra	ack 6x	4 3/1	Two redundant Two redundant Two redundant	t PCI	Jul 2003
Positioning Processors L3 cache L4 cache Processor upgrade SMP Expansion Module Additional boards	2 or 4 x Inte 1MB or 2MB 64MB XceL4 64MB in eacl SMP Expans One SMP Ex L4 cache, six Ports) / each One I/O Boal	I® Xeón™ seach pi seach pi seach pi m SMP E sion Modi panion I teen DIM SMP Exi rd (PCI-)	Proces rocessor raceli expansion ule stand Module s IM socke pansion K Host B	ssor MP 2.0, / on die of perator Cache n Module / EC std / ready f std / two max ets, three SMF Module activa Bridge, SCSI,	2.5, or 2 processor (up to 1 CC / 64-I for addin / each of Expans tes one I ethernet	2.8GHz ¹ wir / at proce 128MB wit bit 400MH: g additional contains four ion Ports (RXE Expare, graphics,	th 400M essor sp h option z bus fro al proces ur Intel 6 second i nsion Po South I	Hz front eed al SMP om Cach ssors (u 03-pin m module of tr (one F Bridge, S	Expansion the and Sca to 8 tota the connected EXE Expan Super I/O,	sion-critical busing supports Hyper Module) / Ilability Controll l) and memory ZIF sockets for via one or two sion Port supposlot for Mgmt Andules, I/O Bo	er Xeon MisMP Exited) Adapter)	P, 64MB pansion , one
Memory	PC2100 DDF	d-connect R SDRAII -bit error	ctor slots M / Erro s on sar	s / must instal or Checking a me chip; up to	II two inc and Cor o two chi	dentical DII recting (E ips at once	MMs at : E CC) and e; redun	same tir d Chipk dant bit	ne / 2-way ill™ via M steering) /	interleaving / emory ProteXi Active Memor		oorting
SCSI disk controller SCSI implementation IDE controller Disk - capacity/bays	First channel second channone standard Enhanced ID	to internate to one (longer) E ATA-10	al 2-port external 16-bit L\ 00 contro	SCŠI backpla I .8mm VHDC /D cable inclu oller in South I	nne for int I 68-pin c ded for a Bridge / c	ternal hot-s connector (ttaching ar one one-dro	swap disl 16-bit LV n optiona op IDE c	ks (16-bi D cable Il ServeF able to b	t LVD cable from I/O Bo RAID adapt ackplane f	egrated RAID- e to SCSI backpl pard to ext conne er to the two-ba or diskette and 0 ay / 80-pin SCA	lane) / ector) / y backp CD-RON	lane ⁄I
Mechanical	EIA 19" rack	models	(4U ⁴) x 2	28" deep / sup	ported in	n NetBAY™	Racks ((such as	NetBAY42	SR, NetBAY42	ER)	
Chipset Slots (Active™ PCI-X) RXE Expansion Port	Expansion Po X Host Bridge Adapter, VIA® PCI 2.2 Bus f Six hot-swap hot replace, One RXE-100	e provide e provide 82C686 support PCI-X 1 hot upo Remote	Memorys three post thr	y I/O Controlle beer PCI buse Bridge (IDE A ethernet / PCI available with ot expansion on Enclosure co	er with two sets / PCI 2 ATA-100, I-X Bus / h power for sepa an / sepa	o remote I/ 2.2 Bus E s USB, Sup A, B, C, D s and attenti rated by ir ared betwe	O ports supports er I/O Posupport F support F support I sulative en two x	(each to graphics C97317\ PCI-X slo ator light plastic 445 4-wa	a IBM PC s, adapter s /UL [keybo tts / design ts (optical s dividers ay, 8-way, o		/ each e Superv 1.0 spe power t s 445 se	IBM PCI- visor ecification o slot) /
CD-ROM / diskette Ethernet Graphics controller Ports	Dual Broadco SVGA / S3® S Rear: RXE-10	om ^å 5704 Savage4 00 Expar	10/100/ Pro / on nsion Po	1000 ethernet I/O Board / 8	controlle 3MB SDF optional	r / on I/O E RAM 125M RXE-100)	Board / fu Hz std/m , RXE M	ıll duplex nax / up lanagem	<pre>< / 64-bit 66 to 1280x10 nent Port, t</pre>	6MHz PCİ bus / 024 at 64K colo wo USB (Vers	Wake o	n LAN® Hz
Security	Power-on and	d adminis	strator pa	asswords / ur	nattended	d boot / se	lectable	boot				
Systems mgmt Diagnostics Software	console and	mgmt / p Diagnost ne Diagr en while : ™ (CD-F	ower on ics™ / p nostics (d server ru ROM ins	n/off system / orimary indica operated thro unning stallation and	monitors tor on in ugh IBM	formation Director)	atus, op panel wi IBM Pre Micro IBM So	system, th LEDs eload Kit soft Wir ftware S	temperatus associates for 1-8 Prodows Services Services associates as a service as	ver Datacenter : Update for	power s ompone 48 2003 48	supplies
Keyboard / mouse Power supplies Cooling fans	None standa Std: two; ma.	rd (beca x: two / h r / redund / worldw power si p, redur al fan in e	ause race not-swap dant at 2 ride / volupply / Findant, meach powers.	ck-based) o / 1050 watts 220v with two Itage-sensing PFA ulti-speed far wer supply / F	power s / auto-rens / PFA /	supplies / estart /	1GB DE 2GB DE Xeon M Xeon M Xeon M IBM 73. IBM Ser	OR PC2 OR PC2 IP 2.0GH IP 2.5GH IP 2.8GH 4GB 10H VeRAID	100 ECC \$ 100 ECC \$ Hz/1MB L3 Hz/1MB L3 Hz/2MB L3 (Ultra160 \$ ™-4H Ultra	ver Datacenter 2 BDRAM RDIMM BDRAM RDIMM Cache Proc U _I Cache Proc U _I Cache Proc U _I SCSI Hot-Swap 160 SCSI Adapt n/pc/us/accessor	33 og 02 og 02 og 02 og 06 er 37	BL5039 BL5040 2R2062 2R2063 2R2064 6P5756 7L6889
	66MHz PCI-X 66MHz PCI-X 100MHz PCI-X 130MHz PCI-X 133MHz PCI-X 133MHz PCI-X 133MHz PCI-X access, disket access, CD-R access, hot-sv	c, hot-swa c, hot-swa c, hot-swa c, hot-swa d, hot-swa dp, 32-bit 4U Ra db (Ultrab OM (Ultrab	p Bus A p, Bus B p, Bus B p, Bus C 33MHz ack	Max weigl Stealth bla Tool-frees Access pr Access pr SMP Expa Access po Setup Pro Diagnostic SCSISele Informatic out Light F diagnostic Predictive XceL4 Se power sup BM Direc	ns: H178 ht: 110 lb ack color serviceak ocessors ansion M bower sup gram by cs (PC-D ct by pre on LED pa Path pane s withou Failure A rore Acce poplies, an tor	mm x W48 s; 50kg bility s, memory, odule from plies and d pressing F octor) by p ssing Ctrl+. anel and fro el (1st and 2 t removing	adapters top jisks from 1 at start ressing I A at start not-acces 2nd level cover) lerts on piche, mer disks with	on the second of		LIMITED WA year parts and ternational War n site, 9 hr x 5 ext day respons year on site wa ograde option (i cations): 24 hr x 7 day co 2 hour respons (No ServicePac a ost warranty ma ervices available tx7 ¹⁴ toll-free su arranty jesues of arranty period ³	labor ranty Se day cov se time ⁷ rranty se n eligible everage, e time uvailable) intenan e upport fo	ervice ³ verage, ervice le ce

												-
IBM [®] Type-model Qty x	Processor	L3 cache	L4 cache	Memory	Disk	SCSI controller	Mech- anical		SMP/RXE Exp Ports	Hot-swap pwr supplies		Available r date
8688-4RX 1 x Itanii 8688-5RX 2 x Itanii 8688-6RX 2 x Itanii	ım 2™ 1.4GHz	4.0MB	64MB		[™] None	1xUltra320 1xUltra320 1xUltra320	4U⁴ racl	6x2	0/1	Two redunda Two redunda Two redunda	int PCI	Jul 2003
Positioning Processors L2 cache L3 cache L4 cache Processor upgrade SMP Exp. Module Additional boards	1 or 2 x Intel ^o 256KB each 3MB, 4MB or 64MB XceL4 ^o ECC / 64-bit ^o 4-way SMP Not Applicable	® Itaniun process 6MB ea ™ Serve 400MHz	n 2 [™] Proof / on ach proofer Acce bus fro	lerator Cache im Cache and Bridge, SCSI, e	Ahz or for for for for for for for for for	1.0GHz with processor spacessor / at plant lity Controlled, graphics, \$	400MHz beed brocessor er South Brid	frontsi speed	de bus I uper I/O,	slot for Mgmt	Adapter	
Memory	PC2100 266M 2-way interlea	IHz regis aving / A oit errors	stered 1 Active I s on sai	Vlemory ™ with me chip; up to	ĎR-SDF i Error	RAM DIMMs Checking a	/ DIMMs Ind Corre	must b	e installe (ECC), C	d in matched Chipkill™, Me	pairs [a mory P	roteXion™
SCSI disk controller SCSI implementation IDE controller Disk - capacity/bays	ServeRAID ac	backpla dapter a : ATA-1(ne for ir nd SCS 00 contre	nternal hot-swa I cable require oller in South E	ap disks ed if atta Bridge/c	(16-bit LVD) aching exter one one-drop	cable to nal storago IDE cabl	SCSI by ge end e to ba	oackplane losures ckplane fo) / or diskette and	d CD-RO	М
Mechanical	EIA 19" rack	models	(4U⁴) x :	28" deep / sup	ported ir	n NetBAY™ F	Racks (su	ch as N	letBAY42	SR, NetBAY	12 ER)	
Chipset Slots (Active™ PCI-X RXE Expansion Port	IBM Memory In provides three VIA® 82C686E PCI 2.2 Bus F Six hot-swap F hot replace, h	O Contr peer PC South E supports PCI-X 1.0	oller with Disconsisted by Stridge (III Sis SCSI, of Stote of Stot	DE ATA-100, Uethernet / PCI-2 available with p of expansion /	O ports (E suppor ISB, Sup X Bus A Dower ar separate	(each to a IBI ts graphics, a per I/O PC97; , B, C, D sup nd attention in ed by insulat	M PCI-X F adapter sl 317VUL [F port PCI-) ndicator lig ive plastic	lost Brot with seyboa slots of	idge) / ead Remote S rd, mouse / designed otical sens ers	Supervisor Ada e]) / I to the PCI-X sors control po	apter, 1.0 speci ower to sl	fication ot) /
CD-ROM / diskette Ethernet Graphics controller Ports	Dual Broadcor SVGA / S3® S Rear: RXE-10	n® 5704 avage4 0 Expar	10/100/ Pro / or sion Po	n I/O Board / 8	controlle MB SDF optional	er / on I/O Bo RAM 125MH RXE-100), I	ard / full o z std/max RXE Man	duplex :/ up to ageme	/ 64-bit 66 o 1280x10 nt Port, tv	SMHz PCI bus 024 at 64K co wo USB (Vers	/ Wake lors at 8	5Hz
Security	Power-on and	adminis	trator pa	sswords / unat	tended b	oot/selecta	ble boot					
Systems mgmt 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 Light Path Diagnostics™ / primary indicator on information panel with LEDs associated with failing components / IBM Real Time Diagnostics (operated through IBM Director)								es			
Software	available ever	while se ™ (CD-R	erver rur OM inst	nning allation and co		on It	tanium 2 tanium 2	1.4GH: 1.5GH:	z/4MB L3 z/6MB L3	Cache Proc Cache Proc Cache Proc	Upg Upg	73P7076 73P7077 73P7078
Keyboard / mouse Power supplies Cooling fans	Std: two; max. watts at 110v / front access / fans in each p Four hot-swap	two/ho redund worldwid ower sup redunc	ot-swap ant at 22 de / volta pply / Pf lant, mu	age-sensing / a =A	: 220v oi ower sup iuto-rest	550 E E E E E E E E E E E E E E E E E E	EXA 512M EXA 1GB EXA 2GB BM 73.4G BM 146.8 BM Serve letXtreme Removable	B PC2' PC210 PC210 B 15K GB 10 RAID ^T Dual P e 3.5"	100 CL2.5 0 CL2.5 E 0 CL2.5 E Ultra320 K Ultra32 M-4Mx Ult ort Gigabit Diskette I	ECC DDR SDI CCC DDR SDI CCC DDR SDI SCSI Hot-Sw 0 SCSI Hot-S ra160 SCSI Hot-S tethernet Adap Drive Ultrabay Color Monitor	RAM RAM RAM vap wap Adapter oter v 2000	73P2027 73P2028 73P2030 32P0735 32P0728 06P5736 31P6401 08K9603 9511AG4
Six available 3.3 volt	Active PCI-X sl	ots:		Dimensior Dimensi	ns: H7.0		Other opti			n /pc/us/acces		3011AG4



Slot 1: fullsize, 64-bit66MHz PCI-X, hot-swap Bus A Slot 2: fullsize, 64-bit66MHz PCI-X, hot-swap Bus A Slot 3: fullsize, 64-bit100MHz PCI-X, hot-swap, Bus B Slot 4: fullsize, 64-bit100MHz PCI-X, hot-swap, Bus B Slot 5: fullsize, 64-bit133MHz PCI-X, hot-swap, Bus C Slot 6: fullsize, 64-bit133MHz PCI-X, hot-swap, Bus D Slot: used by Remote Supervisor Adp, 32-bit 33MHz



4U Rack

 $\begin{array}{lll} \text{Bay} \textcircled{1} & 3.5\text{", } 0.5\text{",} & \text{access, open (Ultrabay 2000)} \\ \text{Bay} \textcircled{2} & 3.5\text{", } 0.5\text{",} & \text{access, Combo (Ultrabay 2000)} \\ \text{Bay} \textcircled{3} & 3.5\text{", } \text{SL}1\text{", access, hot-swap} \\ \text{Bay} \textcircled{4} & 3.5\text{", } \text{SL}1\text{", access, hot-swap} \\ \end{array}$

- 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 pullout 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
- Dn 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

IBM® Type-model Qty x	L3 Processor cache	L4 cache	Memory	Disk	SCSI controller	Mech anica		SMP/RXE Exp Ports	Hot-swap pwr supplies	Mgmt A adapter	Available date
8855-1RX 2 x Itanii 8855-2AX 2 x Itanii 8855-2RX 2 x Itanii 8855-3AX 2 x Itanii	$\begin{array}{llllllllllllllllllllllllllllllllllll$	64MB 10 64MB 20 64MB 0	GB Chipkill ^{TI} GB Chipkill GB Chipkill GB Chipkill GB Chipkill GB Chipkill	None None None None	2 x Ultra3: 2 x Ultra3: 2 x Ultra3: 2 x Ultra3: 2 x Ultra3: 2 x Ultra3:	20 4U ra 20 4U ra 20 4U ra 20 4U ra	ck 6x2 ck 6x2 ck 6x2 ck 6x2	0/1 0/1 0/1 0/1	Two redundant Two redundant Two redundant Two redundant Two redundant Two redundant	PCI [PCI [PCI [PCI [
Positioning Processors L2 cache L3 cache L4 cache Processor upgrade SMP Exp. Module	Up to 16-way power 2 x Intel® Itanium 2™ 256KB each process 3MB, 4MB or 6MB e 64MB XceL4™ Serve ECC / 64-bit 400MHz 4-way SMP per chas Up to 16-way using	Procession / on die ach proce er Acceler bus from ssis four x455	or 1.3GHz, e of process ssor / on die rator Cache Cache and chassis / re	1.4GHz sor / at e of pro Comparison Scalab equires	or 1.5GHz processor ocessor / at ility Contro appropriate	with 400 speed process ller 8 8-way c	OMHz fro or speed or 16-wa	ontside bu d y kits	s		
Additional boards	One I/O Board (PCI-X Hos										
Memory	1GB or 2GB std (usin slots PC2100 266MHz 2-way interleaving / A 2, 3, or 4-bit errors on mirroring supported w	z registered Active Men same chip	d 184-ṕin EC nory ™ with l o; up to two o	C DDR Error C chips at	-SDRAM D hecking ar once; redu	IMMs / D nd Corre ndant bit	MMs mo cting (E steering)	ust be inst CC), Chip) / via me	alled in matched kill™, Memory mory mirroring	d pairs [a ProteX i	a bank] / ion ™ (1,
SCSI disk controller SCSI implementation	LSI® 53C1030 / Ultra: Two channel backpla ServeRAID adapter a Enhanced IDE ATA-1	ne for inte	ernal hot-swa cable require	ap disks ed if att	(16-bit LV) taching exte	D cable t ernal sto	SCSI I age end	oackplane closures) /		
Disk - capacity/bays	No disks standard / su	ipports up	to 15K rpm S	SCŠI di	sks / two ho	t-swap b	ays / cor	verged tra	ay / 80-pin SCA	-2 conne	
Mechanical	EIA 19" rack models	` '				,			SR, NetBAY42	ER)	
•	IBM XA-64™ chipsel IBM Memory I/O Control IBM Memory I/O Control IBM Memory I/O Control IBM 82C686B South IPCI 2.2 Bus F support Six hot-swap PCI-X 1.4 hot replace, hot up One RXE-100 Remote attached alone. Both Potentia	roller with to CI buses / FBridge (IDE S SCSI, ether of the SCSI) average of the School of the Schoo	wo remote I/PCI 2.2 Bus E E ATA-100, U hernet / PCI- vailable with p t expansion Enclosure ca	O ports E suppo JSB, Su X Bus A Dower a 1 / sepa an be sh	(each to a lints graphics per I/O PC9 a, B, C, D sund attention arated by intered between the street between	BM PCI-X , adapter 7317VUL pport PC indicator isulative en two x4	Host Br slot with [keyboa -X slots lights (o plastic o 55 4-way	idge) / ead Remote S Ird, mouse / designed ptical sens lividers /, 8-way, o	Supervisor Adap -]) / I to the PCI-X 1. 	ter, 0 specifi er to slot s 445 sei	cation t) / rvers or
CD-ROM / diskette Ethernet Graphics controller Ports	24X/10X/24X/8X ⁶ CD Dual Broadcom ⁶ 5704 SVGA / S3 ⁶ Savage4 Rear: RXE-100 Expar 15 graphics, ethernet	RW/DVD 10/100/10 Pro / on I	-ROM Comb 000 ethernet /O Board / 8 (to connect	oo IV di controlle MB SD optiona	rive standa er / on I/O E RAM 125M I RXE-100)	rd / two i Board / fu Hz std/m , RXE Ma	removab I duplex ax / up tanageme	le Ultraba / 64-bit 66 o 1280x10 ent Port, tv	ay™ 2000 bays BMHz PCI bus / 024 at 64K colo wo USB (Vers 1	Wake or	n LAN® Hz
Security	Power-on and adminis	trator pass	swords/unat	tended l	boot/select	able boot					
Systems mgmt Diagnostics	Remote Supervisor A console and mgmt / po Light Path Diagnosti IBM Real Time Diagno	ower on/off i cs™ / prim ostics (ope	system / mo nary indicator rated throug	nitors po on info	ower status rmation pa <u>r</u>	, op syste nel with L	m, tempe EDs ass	erature, di ociated wi	sks, fans, power	supplies nents/	s 73P7076
Software	available even while s ServerGuide™ (CD-Futilities), IBM Director	ROM install	lation and co	nfigurat	ion	Itanium 2 512MB F	2 1.5GH C2100 C	z/6MB L3 L2.5 ECC	Cache Proc Up Cache Proc Up DDR SDRAM	oğ	73P7077 73P7078 33L5038
Keyboard / mouse Power supplies	None standard (beca Std: two; max: two / he watts at 110v / redund front access / worldwifans in each power su	ot-swap / 1 lant at 220 de / voltag	1050 watts at v with two po e-sensing / a	220v o ower su	pplies /	2GB PC: IBM 73.4 IBM 146 IBM Ser	2100 CL IGB 15K .8GB 10 VeRAID [†]	2.5 ECC [Ultra320 K Ultra320 ™ 6M Ultra	DDR SDRAM DDR SDRAM SCSI Hot-Swaj D SCSI Hot-Swa 3320 256MB Ca	o ap ache	33L5039 33L5040 32P0735 32P0728 02R0988
Cooling fans	Four hot-swap, redund one additional fan in e					4-way to	8-way	Expansion	rage Enclosure ı Option ental Option		86841RX 73P9911 73P9715
Slot 2: fullsize, 64-bit Slot 3: fullsize, 64-bit Slot 4: fullsize, 64-bit Slot 5: fullsize, 64-bit Slot 6: fullsize, 64-bit Slot: used by Remover Supply Opt disk •	66MHz PCI-X, hot-swa 66MHz PCI-X, hot-swa 100MHz PCI-X, hot-swa 130MHz PCI-X, hot-swa 133MHz PCI-X, hot-swa ote Supervisor Adp, 32-bit 4U Raccess, open (Ultrabay access, Combo (Ultrabay access, hot-swap	ap Bus A ap, Bus B ap, Bus B ap, Bus C ap, Bus D at 33MHz ack	Max weighter Stealth blater Tool-free Stealth blater Tool-free Access promption of Setup Properties SCSISelector Information out Light Prodictive Accel 4 Serpower sup IBM Direct	ns: H176 nt: 120 lck color lck color lcervicea locessor lnsion M lcervicea l	Bmm x W48 lbs; 54.30kg bility s, memory, lodule from oplies and d pressing F loctor) by p essing Ctrl+, anel and fro el (1st and 2 ut removing	adapters top isks from 1 at startu ressing F A at startu nt-accese 2nd level cover) lerts on p che, mer disks with	and and front p 2 at start p sible pull rocessor ory, fans	# 3 a m a m a m a m a m a m a m a m a m a	LIMITED WA year parts and thernational Wa in site, 24 hr x 7 ame day respon year on site w pgrade option (ocations): ⁷ 24 hr x 7 day oc 2 hour respons 96P2689 ost warranty in services avail 4x7 ¹⁴ toll-free s varranty period ³	l labor rranty So day couse time varranty in eligib poverage, ee time naintena able upport f during tl	ervice ³ verage, ⁷ service ole , ance
Bay ④ 3.5", SL 1",	access, not-swap		293.6GB v	with two	146.8GB ²	hot-swap	SCSI di		55A\ ⊜ IPM Cor		

Front LED panel Bay 1 Bay 2 USB Dis Blade B 2 B 3 B 5 В 9 В 6 8 12

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 HS20 server blades and SCSI Expansion Units from front

 \Box Access modules from rear

Midplane in center of system to interface for all major system components

Prédictive Failure Analysis® alerts on blowers, blade server memory, processor(s), and optional disk(s) with IBM Director

				uisk(s)	WILLI IDIVI DILECTOI
SM SM PM 3	Blower module 1 • (std)	PM 1 M M 1	Module	Switch module bay	Switch module function
SM SM PM 2 + 4 +	Blower module 2 • (std)	PM M 2	bays	1 2 3	Ethernet link 1 for all blade servers Ethernet link 2 for all blade servers Network connection 1 for all blade server I/O expansion options (Fibre Channel)
Switch Power modules	mo	dules mod	jement dule td)	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 21P2074)

• 3 year IOR 24x7, 4 hr avg response

(ServicePac part num 21P2073)

3 year IOR 9x5, 4 hr avg response (ServicePac part num 21P2072)
5 year IOR 9x5, 4 hr avg response

(ServicePac part num 69P9247)

5 year IOR 24x7, 2 hr avg response (ServicePac part num 69P9249)

Other ServicePac options at ibm.com/services/its/us/ source/wamomxeu.pdf

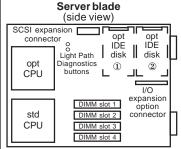
24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information

US models announced September 24, 2002 or October 14, 2003

(BC1) © IBM Corp. October 2003

IBM [®] Type-model Qty x Pro		Frontside Bus Mhz	Disk co	ontroller		optional		unit		anical	Required chassis	Available date
 ≈ 8678-21X 1 x Xeon¹ ≈ 8678-41X 1 x Xeon ≈ 8678-51X 1 x Xeon ≈ 8678-61X 1 x Xeon 	2.4GHz 512MB 2.67GHz 512MB 2.8GHz 512MB	400Mhz N 400Mhz N 400Mhz N	one (open) one (open) one (open) one (open)	EIDE 2 EIDE 2 EIDE 2	2 fixed 2 fixed 2 fixed		wap Ult wap Ult wap Ult	ra320 ra320 ra320	0x2 0x2 0x2	6U⁴ blade 6U blade 6U blade 6U blade	BladeCenterBladeCenter	Nov 2002 Mar 2003
Positioning Processor(s) L2 cache SMP support Implementation	Ultra-dense, highly manageable modular computing platform with superior performance 1 x Intel® Xeon 2.0 to 2.8GHz with 400 MHz frontside bus / Hyper-Threading technology / NetBurst™ microarchitecture 512KB / on die of processor / at processor speed (no L3 cache) 2-way SMP / up to two Xeon Processors (same speed/cache size) 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										nitecture	
Memory	512MB std / 8GB pC2100 266MHz re must be installed in Error Checking ar detects 2- through 8	egistered 184 matched pain nd Correcting	-pin ECC DD rs [a bank] / 2 g (ECC) via 1	DR-SDRA 2-way me I 6-bit C h	AM DIM emory ii necksui	Ms / fou nterleav	e / dual	chann	el / me	mory bus	runs at 2 x 100N	ЛHz /
IDE controller IDE disk bays SCSI disk controller SCSI disk bays External storage	Enhanced IDE AT/ no cable as IDE dis Supports max of tw None / supports o one connector / LS CIOB-X2 I/O Bridg one-inch high SL S Supports max of tw 80-pin SCA-2 conr Support for IBM To	sk attaches to vo IDE disks / ptional SCS il Logic® 53C e (IMB2 bus t SCSI disks in t vo hot-swap 3 nectors / all Sc	o riser card a space for or I Storage Ex 1020 Ultra32 o Host Bridg front bays / c 8.5" SL Ultra CSI bays Ul	ind tray (inly one II ixpansion 20 SCSI (ge) / supp one 16-bi 320 SCS tra320-e	inčlude DE disk n Unit (controll corts R it intern d disks	d with o if an I/C a blade er [LVD AID-1 m al chanr in optior I	ption kit Dexpan occupy 320MB, nirroring nel / no onal SCS	s) / eac sion o ing adj /sec] / g [Emb cables	h IDE ption in acent 64-bit oedded or ext age Ex	connecto nstalled [l blade slo 100MHz d Mirrorin ernal con	or on separate but Fibre Channel] out / connects to HPCI-X Bus B froug] with two hot-sunector)	us IS20 via m
Mechanical Architecture / chipsets Bus slots	Supported in IBM B ServerWorks® Gra sone CIOB-X2 I/O E the I/O expansion of Super I/O, and PC No PCI or PCI-X sl	and Champic Bridge (IMB2 I option connec I 2.2 Bus C wi	on™ 4.0 LE / ous to Host I ctor / CSB5 \$ ith graphics	/ CMIC L Bridge) fo South Br controlle	.E Host or two F idge (Tl er / Natio	Bridge (PCI-X Bu nin IMB onal Ser	memor uses wit to Host nicondu	y contr th Bus Bridge ictor® F	oller a A for e) for E PC874	nd I/O Br ethernet a IDE, USE	idge) / and Bus B for eth 3, LPC bus to	
Ethernet controllers Network-interface CD / diskette / USB Kybd / video / mouse Graphics	Two gigabit 10/100/1000 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 4-port GB Ethernet Switch Module (the second controller requires a second optional Ethernet Switch Module) 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 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® Rage XL / on blade / 8MB SDRAM std/max / 32-bit 33MHz PCI 2.2 bus											
Systems mgmt Diagnostics	IBM integrated sy H8S2148 / on blad monitoring, event r for communication Light Path Diagno component) and or	e / provides s ecording, ale with BladeCe ostics™ (LED	ystem and e rt capability / nter manage lights indica	nvironm / RS-485 ement mo ate failing	ental interfac odule	ce Xe Xe Xe 512 (S) 1G	on 2.4G on 2.67 on 2.8G 2MB PC B PC21	6Hz/51 Ghz/51 6hz/512 2100 C 00 CL2	2KB L 12KB I 2KB L 2L2.5 E 2.5 EC	2 Cache L2 Cache 2 Cache CC DDR C DDR-SI	Proc Upg Proc Upg Proc Upg Proc Upg Proc Upg -SDRAM DIMM DRAM RDIMM	48P7060 48P7096 73P5982 73P5983 33L5038 33L5039
Security Software ship group	Power-on password / administrator password / unattended boot / selectable boot / unattended start mode Documentation CD, IBM Director 4.1 CD, Device Driver CD IBM HS20 SCS Storge Expansion Unit (blad IBM HS20 Fibre Channel Expansion Card (with ports; each port requires a FC Switch Modul								sion Unit (blade sion Card (with t	wo		
Cooling fans Power supply Prerequisites	Uses cooling from on each processor Uses power modul Monitor, keyboard, disk, BladeCenter	and BladeCe e(s) in Blade(mouse for se	nter module Center (type tup; etherne	s and fro 8677) et switch	ont pane	rs IBN 36. 36. 73.	// HS20 4GB 15 4GB 15 4GB 10	40GB K Ultra K Ultra K Ultra	² 5400 a160 S 320 S 160 S	rpm ATA SCSI Hot- SSI Hot-S SSI Hot-S orage Exp	A-100 HDD Swap SL HDD* Swap SL HDD* Swap SL HDD* Swap SL HDD* Swansion Unit	48P7063 06P5768 06P5776 06P5756



A control panel on top front of blade has following LEDs:

- Power good
- Blade location
- Over temperature
- General fault

Information

Bay $\, \odot \,$ 3.5", 9.5mm, no front access, optional ThinkPad® IDE disk Bay $\, \odot \,$ 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 EIDÉ 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):
 - 3 year IOR 24x7, 2 hr avg response (ServicePac® part num 69P9519) 3 year IOR 24x7, 4 hr avg response

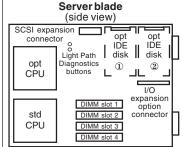
 - (ServicePac part num 69P9518)

 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

See footnotes for important warranty information

- US models announced March 11, 2003; others September 24, 2002
- → US models withdrawn effective June 27, 2003 (21X) or September 26, 2003 (41X)

IBM® Type-model Qty x Pro	ocessor ¹	Memory	Frontside Bus Mhz	Disk	Disk controller	Disk bays	SCSI s optional	upport v			Mech- anical	Required chassis	Available date	
8832-21X 1 x Xeon 8832-31X 1 x Xeon 8832-G1X 1 x Xeon	3.06GHz	512MB 512MB 1GB	533Mhz	None (op None (op None (op	en) EIDE	2 fixed 2 fixed 2 fixed	2 hot-s	wap Ul	tra320	0x2	6U ⁴ blade 6U ⁴ blade 6U ⁴ blade	BladeCenter	Oct 2003	
Positioning Processor(s) L2 cache SMP support Implementation	Up to 1 x 512KB / 6 2-way SM Server bla	Intel® Xe on die of IP / up to t ade contai	eon 3.2GH processor two Xeon F ins two Inte	able modulate with 533 and at processors at 604-pin mor, one I/O e	MHz fronts ssor speed (same spe licro-PGA 2	ide bus (no L3 ed/cache ZIF socke	/ Hyper- cache) e size) ets, four	Thread memor	ing tecl	nnolog I slots,	y / NetBur		tecture	
Memory	PC2100 2 must be in Error Che	66MHz renstalled in ecking an	egistered 1 matched p id Correct	pairs [a ban	CDDR-SDF k] / 2-way r via 16-bit C	RAM DIM nemory i checksu	IMs / fou nterleav	r DIMM e / dual	channe	el / me	mory bus r	systemboard / runs at 2 x 100N rors on same c	/IHz/	
IDE controller/bays SCSI disk controller	IDE disk disks / sp None / st via one co CIOB-ES	/ no cable cace for o upports o onnector I/O Brido	e as IDE d only one ID optional S / LSI Logi ge (IMB2 b	lisk attache DE disk if a GCSI Stora c® 53C102 ous to Host	es to riser in I/O expa ige Expan 0 Ultra320 t Bridge) /	card and ansion o sion Un SCSI c supports	d tray (ir ption ins i it (a bla ontrolle s RAID	ncluded stalled ade occ [LVD -1 mirr	with of Fibre (cupying 320MB)	ption Chann adjac /sec] / [Embe	kit) / Supp el] / RAID ent blade / 64-bit 13 edded Mirr	/ each support forts max of tw -1 mirroring s slot / connect 3MHz PCI-X E oring] with two ernal connector	to IDE standard s to HS20 Bus B from hot-swap	
SCSI disk bays	Supports 80-pin SC	max of tw A-2 conn	o hot-swa _l ectors / all	p 3.5" SL U SCSI bay s	ltra320 SC s Ultra320 ·	SI disks -enable	in optio	nal SCS	SI Stora	ige Ex)	
External storage	Support fo	or IBM To	talStorage	™ solutions	(including	FAStT a	and NAS	family	of prod	ucts)				
Mechanical Architecture / chipsets Bus slots	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) / ets 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 Network-interface CD / diskette / USB	Two gigabit 10/100/1000 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 4-port GB Ethernet Switch Module (the second controller requires a second optional Ethernet Switch Module) 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 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 / red	uests for	keyboard,		d video in E	BlaḋeCer	nter by p	essing	the disp	olăy bu		nt control pane		
Systems mgmt Diagnostics	H8S2148 monitoring for commit Light Pat	/ on blade g, event re unication v h Diagno	e / provides ecording, a with Blade e stics ™ (LE	agement p is system ar alert capabi Center mar ED lights in agnostics (v	nd environr lity / RS-48 nagement r dicate failir	nentaľ 35 interfa nodule ng	ce Xe 512 1G OS) 2G							
Security Software ship group	Power-on password / administrator password / unattended boot / selectable boot / unattended start mode Documentation CD, IBM Director 4.1 CD, Device Driver CD									wo) 48P7061				
Cooling fans Power supply Prerequisites	Uses cool on each p Uses pow Monitor, k	ling from E rocessor er module eyboard,	BladeCent and Blade e(s) in Blac mouse for	er (type 86 Center mod deCenter (ty setup; ethe), operating	77) / therm dules and f ype 8677) ernet switcl	al senso ront pan	rs 36 el 36 73	IBM HS20 40GB ² 5400 rpm ATA-100 HDD						
Server b	lade	R	av ① 35" (9.5mm no f	ront access	e ontion:	 al Think!	Pad®ID	F diek	⇔ 3 1		D WARRANT	Y 3	



A control panel on top front of blade has following LEDs:

- Powergood
- Blade location
- Overtemperature
- Information

· General fault

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 EIDÉ disks or 293.6GB* with two 146.8GB SL SCSI disks

- ⇒ 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):
 - 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

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.

- MHz/GHz only measures microprocessor internal clock speed; many factors affect application perfomance.
- 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.
- 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.
- These services are available for machines normally used for business, professional, or trade purposes, rather than personal, family or household purposes. Not all machiné 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.
- ¹² Installation of 2GB RDIMMs requires BIOS and diagnostic firmware version 1.08 or later. When more than 8GB of memory is installed, the integrated SCSI controller must be disabled.
- 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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- Y 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.
- Diskettes and hard copy documentation available at extra charge.
- For combination drives, maximum possible speeds only are given in the following order: CD read, CD write, CD re-write, DVD read
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