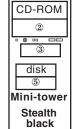


http://www-1.ibm.com/servers/eserver/education/cust/xseries/xref.html

IBM®Machine Type Model Procce	ssor Speed¹/Core	L2 FS Cache Mi		Disk	Disk controller	Maximum Capacity	Slots x bays	Hard disk bays	Ethernet	Available date			
8486 - E1x Celeron® 8486 - E2x Celeron 8486 - E3x Pentium® 8486 - E4x Pentium 4 8486 - E5x Pentium 4 8486 - E6x Pentium 4 8486 - E7x Pentium 1	D 326 2.53GHz D 326 2.53GHz 4 521 2.8GHz/SC 4 531 3.0GHz/SC 4 541 3.2GHz/SC 4 551 3.4GHz/SC	256KB 53 256KB 53 1MB 80 1MB 80 1MB 80 1MB 80 2x1MB 80	3 256MB 3 512MB 0 512MB 0 512MB 0 512MB 0 512MB	80GB 80GB 80GB 80GB 80GB 80GB 80GB	SATA SATA SATA SATA SATA SATA SATA SATA	500GB 500GB 500GB 500GB 500GB 500GB 500GB	4 x 5 4 x 5	2 fixed 2 fixed 2 fixed 2 fixed 2 fixed 2 fixed 2 fixed 2 fixed	Gigabit Gigabit Gigabit Gigabit Gigabit Gigabit Gigabit	Sep 2005 Sep 2005 Sep 2005 Sep 2005 Sep 2005 Sep 2005 Oct 2005			
Positioning Processor(s) L2 cache Implementation SMP support	Uniprocessor, entry Intel® Pentium 4 up Celeron D 2.53GHz 1MB std on Pentium Motherboard contain PCI), integrated SAT No SMP support / n	to 3.4GHz 533MHz FS 4 / 2x1MB s s one LGA- A and Gigat	Single Core and the std on Pentium 775 socket, four Ethernet.	300MHz F nized for n D / 256K	SB / Pention Extended In Bertal and In Inc. Bertal and In Inc. Bertal and Inc. Bertal a	um D 2.8GH Memory 64 nax on Celer	z Dual Techno on / EC	logy (EM C / full sp	64T) eed				
Memory		56MB or 512MB / 8GB ¹³ max / four 184-pin gold-plated DIMM sockets / one socket used / PC24200 533MHz ECC DDR2-DRAM / All Error Checking and Correcting (ECC) / DIMMs and ECC memory controller / industry std / unbuffered / CAS atency 4 (CL4)											
SCSI disk controller IDE disk controller SATA disk controller Cables Disk RAID Controller	Enhanced IDE / ATA Dual channel SATA One 2-drop EIDE ca 80GB SATA / 7,200	lone standard / Ultra320 SCSI controller2 (LVD 320MB/sec) optional for tape backup inhanced IDE / ATA-100 / integrated in I/O Controller Hub / one connector on planar dual channel SATA controller (1.5GB/sec) / supports 2 drives standard one 2-drop EIDE cables (to CD-ROM) / one 1-drop SATA cable per installed hard disk 0GB SATA / 7,200 rpm / 9.0 ms seek / S.M.A.R.T. lone standard / ServeRAID 7t controller optional											
Rack support Bus slots (see below) Chipset	None One PCI E bus / one Intel E7230 chipset MAC, USB, Low Pin keyboard, mouse	/ Memory C	ontroller Hub	(MCH) / I/	O Controlle	r Hub (ICH-7) for P(CI 2.2, AT.					
Ethernet CD-ROM / diskette Ports Diagnostics Systems mgmt	10/100/1000 gigabit (PXE) / Wake on LA Some: CD-ROM: 48 Front: two USB (Ver monitor (analog DB- Diagnostic LEDs / erro None	N [®] 3X-20X ⁶ CD- 2.0); <i>Back:</i> 15)	ROM, IDE; so two serial (9-	ome: CDR pin), para	W/DVD-RO llel, two USI	M Combo:48 B (Ver 2.0), I	3X/32X/ keyboar	/48X/16X ⁶ rd, mouse,	/ None sta ethernet (andard RJ-45),			
Graphics controller	ATI® RN50(ES1000) /	16MB SDRA	M std/max / on	planar / ar	nalog 15-pin	up to 1600 x	1200 x	32 bit @10	00Hz				
Security	Optional U-Bolt suppontrol / operation v				ord / boot s	equence							
Software	ServerGuide™ (CD installation and conf Director (system ha	iguration too	I) included an	d IBM	2x1GB PC 2x2GB PC		ECC I	DR2 Rob DR2 Rob	IS IS	30R5148 30R5149 30R5150			
Keyboard / mouse Cooling fans Power supply	IBM 101 key keyboard / IBM mouse (both black) Three variable speed fans (cpu heatsink, rear, power supply) / not redundant / not hot-swap 310 watts / universal / manual switching / Automatic Server Restart (ASR) / not hot-swap /no redundancy / cooling fan in power supply (variable speed) IBM 80GB SATA-150 (7.2K) simple-swap HDD IBM 250GB SATA-150 (7.2K) simple-sw									39M4500 39M4504 39M4508 32R2905 32R2906 05K9276 71P9145 59P6746			



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

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

→ Removable left side panel

- Configuration/Setup Utility (in flash) memory) invoked by pressing F1 at startup
- Advanced Configuration Power Interface (ACPI) 1.0
- Device Drivers and Diagnostics CD-ROM included
- → Four stabilizing feet

- ♦ 36 to 45.8 pounds (16.3 to 20.8kg)

→BTU Outpuṫ:

Minimum: 379 Btu/hr (111 watts) Maximum: 853 Btu/hr (250 watts)

IBM 20/40GB TR7 Internal Tape Drive 48P7042 IBM ServeRAID-7t SATA Controller 71P8648 IBM Ultra320 SCSI Controller2 13N2249 Other options at ibm.com/pc/us/accessories

LIMITED WARRANTY³

→ 1 year parts and labor

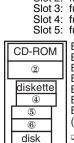
→ International Warranty Service³

On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time

On site service upgrade

- options (in eligible locations):⁷
 3 year IOR 24x7, 2 hr avg response (ServicePac part num 41W9318)
- 3 year IOR 24x7, 4 hr avg response (ServicePac part num 41W9317)
- 3 year IOR 9x5, 4 hr avg response (ServicePac part num 41W9316)
- 3 year IOR 9x5, NBD response (ServicePac part num 41W9315)
- Other ServicePac options at http://www.ibm.com/ services/us/its/pdf/wamomxeu.pdf
- 24x7¹⁴ toll-free support for warranty issues during the warranty period

	For GAV systems, lowercase "x" should be replaced with a country-specific code.														
				se "x" should be re	placed with			de.							
		/I® Mach GAV	nine model	Processor	GHz ¹	L2 cache	FSB MHz	Memory	Disk	Disk controlle	Maximum er Capacity	PCI slots x bays	Hard disk bays	Ethernet	Available date
*	8482 8482 8482 8482 8482	1Rx 1Sx 2Mx	11X 14X 15X 21X 24X	Pentium 4® Pentium 4 Pentium 4 Pentium 4 Pentium 4	2.8 2.8 2.8 3.0 3.0	1MB 1MB 1MB 1MB 1MB	800 800 800 800 800	512MB 512MB 256MB 512MB 512MB	None 36.4GB U320 None None 36.4GB U320	SCSI SATA SCSI	440.4GB 587.2GB 320GB 440.4GB 587.2GB	5 x 7 5 x 7	3 hot-swap 4 fixed 2 simple-swap 3 hot-swap 4 fixed	Gigabit Gigabit Gigabit	Apr 2004 Apr 2004 Apr 2004 Apr 2004 Apr 2004
≫	8482	2Sx 9Mx 3Mx 3Rx	25X	Pentium 4 Celeron® Pentium 4 Pentium 4 Pentium 4	3.0 2.4 3.2 3.2 3.2	1MB 128KB 1MB 1MB 1MB	800	256MB 256MB 512MB 512MB 256MB	None 80GB SATA None 36.4GB U320 None	SATA SATA SCSI	320GB 320GB 440.4GB	5 x 7 5 x 7	2 simple-swap 2 simple-swap 3 hot-swap 4 fixed 2 simple-swap	Gigabit Gigabit Gigabit Gigabit	Apr 2004 Apr 2004 Jun 2004 Jun 2004
60	Position Proce L2 ca	oning essor(s	s)	uniproces Intel® Pe Up to 1M	ssor, en ntium 4 IB std a	try serve 2.8, 3.0 nd max /	r desig , or 3. ECC /	gned to m 2Ghz with full speed	eet small busir n 800MHz fron	ness need tside bus	ds and bud (FSB) or	<i>lgets</i> Celeron	at 2.4GHz		
		suppo		one AGP No SMP	slot, et	hernet co	ontrolle	r, connect	tor for extender	board (t	wo PCI slo	ts and gr	raphics controll	er)	,
	Memo	ory		PC2700 3 All Error	33MHz Checkin	ECC DDI g and Co	R-SDR/ orrectir	AM (modeling (ECC) /	gold-plated DIM ls 1xx and 2xx) DIMMs and EC DIMM configurati	PC3200 C memory	400MHz Ed controller	cc DDR-9 industry	SDRAM (model std / unbuffered	s 3xx) /	nodels /
	IDE d SATA Cable Disk	isk co disk d	ontrolle ntroller controlle	Enhance er Some: di One 2-dr Some: 36	d IDE / A ual char op EIDE 3.4GB U	ATA-100 inel SAT cables 320 SCS	/ integ A-150 (to CD I / 10,0	rated in I/0 controller 0-ROM) / 3 000 rpm / 4	ntroller (LVD 3 O Controller Hu (150MB/sec) Some: one 5-di 4.7 ms seek / anar / supports	ib / one c rop LVD \$ <i>Some:</i> 80	onnector o SCSI cable GB SATA	<i> Some.</i> 7,200 rp	om / 9.0 ms / A	<i>II:</i> S.M.A.I	₹.T.
				ow) One PCI Intel E72	bus / thr 10 chip ernet M	ee 32-bit set / Me AC, USE	: 33MH mory 0 3, Low	Controller I Pin Count	kit option 2.2 slots / two 6 Hub (MCH) / I/0 t Interface / Firr	O Control	ler Hub (IC	H-S) for	PCI 2.2 and P	CI-X bus,	ATA-100
	Etherr CD-Re Ports	OM / (diskette	Preboot e CD-ROM	Xecutio 2: 48X-20 5 USB (n Enviro 0X ⁶ CD-F Ver 2.0);	nment ROM,	(PXE) / W IDE / <i>Disl</i>	nar / full duplex /ake on LAN® / kette: 3.5" 1.44 al (9-pin), parall	Alert Star MB diske	ndard Forn ette drive	nat 2.0	pard, mouse, et	thernet (F	J-45),
		iostics ms mo	gmt cnt	Diagnostion Diagnostion	LEDS / system	error LEI	cessor	temperat	emory / server oure, fan speed or Adapter II (and failu	ire, and vo	Itages /			
	Graph	nics co	ontrolle					AM std/max analog 15-	c / pin D-Sub conn	512MB	PC2700 C	L2.5 ECC	DDR UDIMM DDR UDIMM DDR UDIMM		06P4053 06P4054
	Secur	rity		via knocl	out / po	ower-on on withou	passw It keyb		J-Bolt support sequence se /	256MB 512MB 1GB PC IBM 800	PC3200 C PC3200 C 3200 CL2 GB 7200 rp	L2.5 ECC L2.5 ECC 5 ECC E om simple	C DDR UDIMM C DDR UDIMM DDR UDIMM e-swap SATA-	150 HDD	
	Softw	are		installatio	n and c	onfigurat	ion to	ol), IBM D	etwork OS irector any utilities	32X/10X IBM Rer	(/40X/16X mote Supe	Max ⁶ CE rvisor Ac	t-swap U320 H D-RW/DVD (bla dapter II (PCI a	ack)	32P0726 22P6973 59P2984
	Keyboard / mouse Cooling fans IBM 101 key keyboard / IBM mouse (both black) Three fans (fansink, rear, pwr supply) plus additional fan on SCSI models / not redundant / not hot-swap Power supply IBM ServeRAID-6i+ Controller IBM ServeRAID-7T Controller IBM ServeRAID-7T Controller IBM 20/40GB TR7 Internal Tape Drive IBM 40/80GB DLT1 Internal Half-High Tape Drive 24P239										09N4300 13N2190 71P8648 48P7042 24P2398 9306110				
		Slot Slot Slot	2: fulls 3: fulls 4: fulls	size, 64-bit 66 size, 64-bit 66 size, 32-bit 33 size, 32-bit 33 size, 32-bit 33	SMHz, P SMHz, P SMHz, P	CI-X (3.3 CI 2.2 (5 CI 2.2 (5	3v) v) v)	♦ (Removable left Configuration/S memory) invoke startup Advanced Confi	etup Utilited by pres	ty (in flash ssing F1 at	InterestOn sindMon-	LIMITED WA ar parts and lab national Warrar ite, 8 am-5 pm, Fri excluding h business day n	or nty Servic iolidays,	e ³



Mini-tower

Stealth

black

Bay ① 5.25", HH1.6", access, CD-ROM Bay ② 5.25", HH1.6", access, open (no disk) Bay © 3.25", SL 1", Bay © 3.5", SL 1", access, diskette access, open access (some), open access (some), open access (some), std disk + H 448mm x W 165mm x D 483mm (some)

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

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

Advanced Configuration Power

Interface (ACPI) 1.0 Device Drivers and Diagnostics

CD-ROM included Four stabilizing feet

→ Handle grip on top
 → H 17.25" x W 6.5" x D 19.0"

♦ 35 to 42 pounds (15.9 to 19.1kg)

Maximum SATA capacity: 320GB¹³ (2 disks x 160GB) Maximum hot-swap SCSI capacity:

Mon-Fri excluding holidays next business day response time On site service upgrade

options (in eligible locations):7 3 year IOR 24x7, 2 hr avg response (ServicePac part num 69P9512)

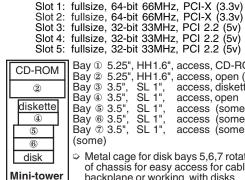
3 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9511) 3 year IOR 9x5, 4 hr avg response

(ServicePac part num 69P9510) 3 year IOR 9x5, NBD response (ServicePac part num 69P9509)

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

439.2GB13 (3 disks x 146.4GB) Maximum fixed SCSI capacity: 585.6GB¹³ (4 disks x 146.4GB)

	For GAV systems, lower	case "v" should be replace	•	_	de.			•		-	-	-
	IBM® Machine Type GAV mode			2 FSB	Memory	Disk	Disk controller	Maximum Capacity	PCI slots x bays	Hard disk bays	Ethernet	Available date
F	8482 - 4My -41x 8482 - 4Ry -44x 8482 - 4Sy -45x 8482 - 5My -51x 8842 - 5Ry -54x 8842 - 5Sy -55x	Pentium 4® EM64 Pentium 4 EM64 Pentium 4 EM64 Pentium 4 EM64 Pentium 4 EM64 Pentium 4 EM64	7 3.2 1M 7 3.2 1M 7 3.4 1M 7 3.4 1M	ИВ 800 ИВ 800 ИВ 800	512MB 512MB 256MB 512MB 512MB 256MB	None 36.4GB U320 None None 36.4GB U320 None	SATA	440.4GB 587.2GB 500GB 440.4GB 587.2GB 500GB	5 x 7	3 hot-swap 4 fixed 2 simple-swap 3 hot-swap 4 fixed 2 simple-swap	Giğabit Gigabit Gigabit Gigabit	Jan 2005 Jan 2005
	Positioning Processor(s) L2 cache Implementation	Intel® Penti Up to 1MB	um 4 3.2 std and mad d contains	& 3.4 Gh ax / ECC / one m478	z with 800 full speed B PGA soc	ket (processor	timized fo	or Extend	ed Memo	ory 64 Techno	• •	,
	SMP support	No SMP su	oport / no	processor	upgrade							
	Memory	SDRAM / A	II Error Ch	ecking an	d Correctir		VIs and EC	C memory	controlle	PC3200 400MH r / industry std / i d pairs [a bank]		
	SCSI disk control IDE disk controlle SATA disk contro Cables Disk RAID Controller	er Enhanced II oller 4Sy: single One 2-drop 4Ry: 36.4GI	DE / ÅTA-1 channel S EIDE cab 3 U320 SC	100 / integ SATA-150 les (to CD CSI / 10,00	rated in I/C controller I-ROM) / 4 IO rpm / 4.7	<i>My & 4Ry:</i> one 7 ms seek / S	b / one co supports e 5-drop l .M.A.R.T.	onnector of 2 drives of VD SCSI	n planar standard cable / 4	/sec) / supports 4 dr # <i>Sy:</i> one 2-drop upports ServeR	SATA c	able
	Rack support Bus slots (see be Chipset	4U ⁴ rack mo elow) One PCI but Intel E7210 EIDE, ether parallel, ser	s / three 32 chipset / net MAC, l	2-bit 33MH Memory 0 USB, Low	lz 5v PCI 2 Controller H Pin Count	2.2 slots / two 6 Hub (MCH) / I/(O Controll	er Hub (IC	CH-S) for	/ no hot-swap / PCI 2.2 and P0 M192 Super I/O	CI-X bus,	ATA-100
	Ethernet CD-ROM / disket Ports Diagnostics Systems mgmt	te CD-ROM: 4 Front: two U monitor (and Diagnostic LI Monitors sy	ecution Env 8X-20X ⁶ C JSB (Ver 2 alog DB-15 EDs / error stem and	vironment D-ROM, I 2.0); Back 5) LEDs for fa processor	(PXE) / W IDE / Disk :: two seria ans and me temperate	emory / server oure, fan speed	Alert Star MB diske el, two Us liagnostic p and failu	ndard Forn tte drive SB (Ver 2. programs s re, and vo	nat 2.0 0), keybootored on lotages /	pard, mouse, et IBM Enhanced D monitoring and	Diagnostic	s CD
	Graphics controll	er SVGA / ATI®	Radeon™	7000M / 16	MB SDRA	M std/max / on p	olanar / ana	alog 15-pin				
	Security	Mechanical : via knockou control / op cover tampe	t / power- eration wit	on passw hout keyb	ord / boot oard/mous		512MB F 1GB PC IBM 800	PC3200 C 3200 CL3 3B SATA-	L3 ECC ECC DE 150 (7.2k	DDR UDIMM DDR UDIMM DR UDIMM () simple-swap		06P4049 06P4050 06P4051 73P8002
	Software	ServerGuid installation a (system har	and config	uration to	ol), IBM Di	rector	IBM 250 IBM 36.4	GB SATA 1GB 10K I	150 (7.2 hot-swap	2K) simple-swa _l 2K) simple-swa _l U320 HDD U320 HDD		73P8003 73P8006 32P0726 32P0724
	Keyboard / mous Cooling fans Power supply		(fansink, re dels / not universal / R) / not ho	ear, pwr su redundant auto swite ot-swap /ne	upply) plus / not hot-s ch / Autom o redundar iable spee	additional fan swap atic Server ncy / d)	IBM 146 IBM 36.4 IBM 73.4 32X/10X IBM Rer IBM Ser IBM Ser IBM 20/4 IBM 40/8 Other op	.8GB 10K 4GB 15K I 4GB 15K I /40X/16X note Supe (20D Tow veRAID-6 veRAID-7 40GB TR7 30GB DLT ptions at	hot-swap hot-swap hot-swap Max ⁶ CE ervisor Ac er-to-Rac i+ Contro t SATA C Internal	o U320 HDD U320 HDD U320 HDD O-RW/DVD (bla dapter II (PCI a ok Kit	dapter) De Drive	32P0725 90P1318 90P1319 22P6973 59P2984 09N4300 13N2190 71P8648 48P7042
					A F	Pamayahla laft	Other of	otions at				24P2



Stealth

black

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

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

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

Removable left side panel

Configuration/Setup Utility (in flash) memory) invoked by pressing F1 at startup

 Advanced Configuration Power Interface (ACPI) 1.0

Device Drivers and Diagnostics

CD-ROM included

♦ Four stabilizing feet

♦ Four stabilizing 1.55.
♦ Handle grip on top
♦ H 17.25" x W 6.5" x D 19.0"
♦ H 448mm x W 165mm x D 483mm

access (some), std disk \$ 35 to 42 pounds (15.9 to 19.1kg)

Maximum SATA capacity 500GB13 (2 disks x 250GB) w/ optional ServeRAID 7t (4 disks x 1TB)

Maximum hot-swap SCSI capacity: 439.2GB¹³ (3 disks x 146.4GB) Maximum fixed SCSI capacity: 585.6GB¹³ (4 disks x 146.4GÉ)

LIMITED WARRANTY³

→ 1 year parts and labor

→ International Warranty Service³

On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time

On site service upgrade options (in eligible locations):⁷
• 3 year IOR 24x7, 2 hr avg response

(ServicePac part num 69P9512) 3 year IOR 24x7, 4 hr avg response

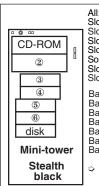
(ServicePac part num 69P9511) 3 year IOR 9x5, 4 hr avg response

(ServicePac part num 69P9510) 3 year IOR 9x5, NBD response

(ServicePac part num 69P9509) Other ServicePac options at http://www.ibm.com/ services/us/its/pdf/wamomxeu.pdf 24x7¹⁴ toll-free support for warranty

issues during the warranty period

IDM® March 1												
IBM® Machine Type GAV-model	Proccessor / Speed	L2 FSB cache MHz	Memory	Disk/Disk controller	Maximum PC Capacity x		Hard disk bays	Power Supply	Ethernet	Available date		
8485/8490 12ý-12x F 8485/8490 1Ay-1Ax F 8485/8490 20y-20x F 8485/8490 2Ay-2Ax F 8485/8490 3Ay-3Ax F 8485/8490 3By-3Bx F 8485/8490 70y-70x F 8485/8490 7Ay-7Ax F 8485/8490 80y-7Ay	Pentium® 4 531 3.0GHz Pentium 4 531 3.0GHz Pentium 4 630 3.0GHz Pentium 4 640 3.2GHz Pentium 4 650 3.2GHz Pentium 4 650 3.2GHz Pentium D 820 3.4GHz Pentium D 820 2.8GHz Pentium D 830 3.0GHz Pentium D 830 3.0GHz Pentium D 830 3.0GHz	1MB 800 2MB 800 2MB 800 2MB 800 2MB 800 2MB 800 2X1MB 800 2X1MB 800 2X1MB 800	512MB 512MB 512MB 512MB 512MB 512MB 2x512MB 1GB 512MB 1GB 512MB 1GB	80GB/SATA None/SATA None/SATA 80GB/SATA None/SASA None/SAS/S/ None/SAS/S/ None/SAS/S/ None/SAS/S/ None/SAS/S/ None/SAS/S/	1.0TB 1.0TB 1.0TB 1.0TB 1.0TB 1.0TB 1.2TB ATA 1.2TB	4 x 7 4 x 7 4 x 7 4 x 7 4 x 7 4 x 7 4 x 7 6 x 7	4 fixed 4 simple-swap 4 simple-swap 4 fixed 4 simple-swap 4 hot-swap 4 hot-swap 4 simple-swap 4 hot-swap 4 hot-swap 4 hot-swap	1x400W 1x400W 1x400W 1x400W 1x400W 2x430W	Gigabit Gigabit Gigabit Gigabit Gigabit Gigabit	Oct 2005 Oct 2005 Oct 2005 Oct 2005 Oct 2005		
Positioning Processor(s)	Single socket, entry s Intel® Pentium 4 up Optimized for Exten	to 3.4GHz Si	inale Core	e 800MHz FS	3 / Pentium			I Core 8	00MHz F	SB / AII		
L2 cache Implementation SMP support	Up to 2MB std on Pe Motherboard contains 2 PCI) some: six slots No SMP support / no	ntium 4 / 2x1 one LGA-77 s(1 PCI Expre	MB std or 5 socket, ess x8, 1 F	n Pentium D four DIMM so	ckets. some	: four s PCI-X), i	lots(1 PCI Exp integrated SAT	ress x8, A and G	1 PCI Exigabit Eth	rpress x1, ernet.		
		· · ·										
Memory	512MB or 1GB std / 80 DDR2-SDRAM / All E											
SAS disk controller IDE disk controller SATA disk controller Cables Disk RAID Controller	Integrated SAS contri Enhanced IDE / ATA- Four channel SATA of One 2-drop EIDE cab Some: 80GB SATA / IBM ServeRAID™ 8e (100 / integrat controller (3.0 bles (to CD-F 7,200 rpm / 9	ed in I/O (OGB/sec) (OM) / one (.0 ms see	Controller Hub / supports 4 c e 1-drop SAT/ k / S.M.A.R.T	/ one conne drives standa A cable per	ard installed	d hard disk					
Rack support Bus slots (see below Chipset) All: one PCI-E bus / or 66MHz 3.3v PCI-X slo Intel E7230 chipset /	5U ⁴ rack mount support via tower-to-rack kit option All: one PCI-E bus / one 64-bit PCI-E x8 / one 64-bit PCI-E x1/ two 32-bit 33MHz 5v PCI 2.2 slots / some: two 64-bit 66MHz 3.3v PCI-X slots / no hot-swap Active™ PCI slots Intel E7230 chipset / Memory Controller Hub (MCH) / I/O Controller Hub (ICH7R) for PCI 2.2, ATA-100 EIDE, ethernet MAC, USB, Low Pin Count Interface / Firmware Hub / SMSC® LPC47M192 Super I/O for diskette, parallel, serial, keyboard, mouse										
Ethernet CD-ROM / diskette Ports Diagnostics Systems mgmt	10/100/1000 gigabit / Preboot eXecution En CD-ROM: 48X-20X ⁶ (Front: two USB (2.0); Diagnostic LEDs / error Mini-baseboard mana failure, and voltages	vironment (P CD-ROM, IDI Back: two s LEDs for fana Igement cont	XE) / Wak E / None erial (9-pii s and mem roller / IP	ke on LAN® standard n), parallel, tw nory / server dia MI 1.5 / monit	o USB (2.0), agnostic progr ors system	keyboa rams sto and pro	ard, mouse, eth red on IBM Enh ocessor temper	nanced `Di rature, fa	agnostics n speed	CD and		
Graphics controller	ATI® RN50(ES1000) / 1	6MB SDRAM	std/max /	on planar / ana	log 15-pin / u	p to 102	4x768x32bit@8	5Hz				
Security	Mechanical side panel power-on password / without keyboard/mo	boot sequer			512MB PC2-4 2GB(2x1GB) I 4GB(2x2GB) I IBM 80GB SA	200 CL3 E PC2-4200 PC2-4200 TA (7.2K)	CC DDR2RoHS CL3 ECC DDR2 Rol CL3 ECC DDR2 Rol simple-swap HDD	HS HS		30R5148 30R5149 30R5150 39M4500		
Software	ServerGuide™ (CD-tinstallation and configmanagement), IBM Emanagement software	pased autom guration tool) Director (syst	, ServeR<i>l</i> em hardw	∖ID ™ (RAID	IBM 160GB SA IBM 250GB SA 80GB Hot-Sw 160GB Hot-Sv	ATA (7.2K) ATA (7.2K) ap SATA H wap SATA) simple-swap HDD) simple-swap HDD HDD HDD			39M4504 39M4508 39M4518 39M4522 39M4526 26K5709		
Keyboard / mouse Cooling fans	Optional Three fans (fansink, r on SAS models / not				250GB Hot-St 73GB 10K 3.5 146GB 10K 3. 300GB 10K 3. 36GB 15K 3.5 73GB 15K 3.5	5" SAS Ho 5" SAS Ho " SAS Hot- " SAS Hot-	t-Swap HDD t-Swap HDD Swap HDD Swap HDD CD-RW/DVD-ROM	Combo (blo	ck)	26K5710 26K5711 26K5697 26K5698 32R2905		
Power supply	Some: 400W / not hor some: 430W / hot-swa switch / Automatic Se cooling fan in power s	t-swap / no re ap / redundar rver Restart	edundancy nt / all: uni (ASR) /	vi / versal / auto	IBM Remote S IBM 5Ux20D 1 IBM ServeRAI	Supervisor. Fower-to-FID-7t SATA	Adapter II (PCI adap Rack Kit Integrated Controlle n/pc/us/accessories	iter) er		59P2984 39R9361 71P8648		



- All: Slot 1: 64-bit PCI-E x8 (4GBps) 64-bit PCI-E x1 (500MBps) 32-bit 33MHz, PCI 2.2 (5v) 32-bit 33MHz, PCI 2.2 (5v) fullsize, Slot 2: fullsize, Slot 3: fullsize, Slot 4: fullsize. Some:
- fullsize, 64-bit 66MHz, PCI-X (3.3v) fullsize, 64-bit 66MHz, PCI-X (3.3v) Slot 6:

- Bay ① 5.25", HH 1.6", access, CD-ROM Bay ② 5.25", HH 1.6", access, open (no disk) Bay ③ 3.5", SL 1", access, open Bay ④ 3.5", SL 1", access, open Bay ⑥ 3.5", SL 1", access, open Bay ⑥ 3.5", SL 1", access, open Bay ⑥ 3.5", SL 1", access, open Bay ⑦ 3.5", SL 1", access, std disk (some)
- Predictive Failure Analysis on disk(s) with IBM Director can alert the administrator of an imminent component failure
- Redundant power supplies standard in some models

- Removable left side panel
 Configuration/Setup Utility (in flash memory) invoked by pressing F1 at startup
- Advanced Configuration Power Interface (ACPI) 1.0 Device Drivers and Diagnostics
- CD-ROM included Four stabilizing feet H 17.25" x W 8.5" x D 21.25" H 448mm x W 215.9mm x D 539.75mm 36 to 45.8 pounds (16.3 to 20.8kg)

Maximum SATA capacity: 1TB¹³ (4 disks x 250GB) Maximum hot-swap SAS capacity: 1.2TB¹³ (4 disks x 300GB)

- 1 year parts and labor standard 8485 MTM 3 year parts and labor standard 8490 MTM
- International Warranty Service3
- On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- next business day response time
 On site service upgrade
 options (in eligible locations):7
 3 year IOR 24x7, 2 hr avg response
 (ServicePac part num 69P9512)
 3 year IOR 24x7, 4 hr avg response
 (ServicePac part num 69P9511)
 3 year IOR 9x5, 4 hr avg response
 (ServicePac part num 69P9510)
 3 year IOR 9x5, NBD response
 (ServicePac part num 69P9509)
 Other ServicePac options at
 http://www.ibm.com/

- http://www.ibm.com/ services/us/its/pdf/wamomxeu.pdf 24x7¹⁴ toll-free support for warranty issues during the warranty period3

IBM® Type-model Processor	GHz ¹	L2 cache	FSB MHz	Memory	Disk		Disk controlle	Hot-swap r disk bays	PCI slots x bays	Power supply number and type	Ethernet	Available date
8649-42X 1 x Xeon ^T 8649-4AX 1 x Xeon 8649-4BX 1 x Xeon 8649-52X 1 x Xeon 8649-5AX 1 x Xeon 8649-5BX 1 x Xeon 8649-6AX 1 x Xeon 8649-6BX 1 x Xeon 8649-6BX 1 x Xeon	2.8B 2.8B 2.8B 3.06 3.06	512KB 512KB	533 533 533 533 533	512MB 512MB 512MB 512MB 512MB 512MB	36.4GB ² Ultr None (open None (open 36.4GB Ultra None (open None (open 36.4GB Ultra None (open None (open	-bay) a320 10K -bay) -bay) a320 10K -bay)	Ultra320 Ultra320 Ultra320	6 hot-swapNone (4 fixed)6 hot-swapHot-swapNone (4 fixed)6 hot-swapHot-swap	6 x 9 6 x 9 d) 6 x 7 6 x 9 6 x 9	One fixed One fixed Two redundant One fixed One fixed Two redundant One fixed One fixed Two redundant One fixed Two redundant	Giğabit Gigabit Gigabit Gigabit Gigabit Gigabit Gigabit	Feb 2004 Feb 2004 Feb 2004 Feb 2004 Feb 2004
Processor(s) SMP - L2 Cache Implementation	2-way Syster	SMP / unboard c	ip to tv ontain:	vo Xeon F s two Intel	Processors (sa 604-pin micro	me speed o-PGA ZIF	d/cache siz sockets,	(FSB) / Hyper-Th ze) / 512KB std four DIMM slots, CSI and ethernet	reading te and max seven slo	chnology / at processor spects (one PCI 2.2, fo	ed our PCI-X,	one Mini
Memory	DDR-S 2-way	SDRAM I memorv	DIMMs interle	s / four DII ave / dua	VIM gold-conn I channel / Er	ector slots ror Check	s on system king and	mboard / DIMMs Correcting (ECC	must bĕ i 3) via 16-k	stered 184-pin ECC nstalled in matched oit Checksum Chi railable on 512MB	d pairs [a pkill ™ (co	rrects 1. 2.
IDE disk controller SCSI disk controller SCSI channels and cables	suppo 5, 00, one 4-	ogic® 530 rts RAID 10, 1E0, drop 16-	C1030 -1 mir 50 (ins bit 68-	dual ch / dual c	annel Ultra32 nbedded Mirro y in Slot 4) Tw iCSI cable froi	20 SCSI c ooring) / sha oring) / sha or 16-bit ch m systemb	ontroller ared with nannels (cooard to in	one internal and d nternal disks bays) / on plar veRAID™- ne externa s; Hot-swa	n planar nar / 64-bit 100MHz 5i Controller for lov al) / <i>Internal channe</i> p models: one 1-di om systemboard to	e <i>l:</i> Fixed d op 16-bit	isk models: 68-pin LVD
Cables Disk - features	conne One S	ctor CSI cabl	e (liste	ed above),	one 2-drop E	IDE cable	(to CD-R			•		
Rack support Bus slots (see below Chipset	Four 6 Intel E for slo	34-bit 100 27505 ch ts 2 and 3	MHz F ipset / 3 and	PCI-X 1.0 / E7505 M ethernet c	CH (Memory ontroller; Bus	/ öne Mini Controller B for slots	Hub) for A 4 and 5 a	AGP 8X slot, P64 and SCSI controll	lH2, ICH4 er) / I/O C	o hot-swap Active™ / P64H2 for two Pontroller Hub (ICH4 66 Super I/O off LP	CI-X buse I) for PCI	s (Bus A 2.2 bus
Ethernet CD-ROM / diskette Ports Diagnostics Systems mgmt cntrl	Chip of CD-Reference Front: monito Diagno Winbo	n planar / OM: 48X- two USI or (analogostic LED and® W79	/ PCI-) -20X ⁶ (B (Ver g DB-1)s / err)1D / (C64-bit 10 CD-ROM, 2.0); Bac 5), microp or LEDs f chip on pla	OMHz / full du IDE / <i>Disketti</i> ck: two USB (\ ohone-in (mon or fans and m anar / monitors	iplex / Wai e: 3.5" 1.4 Ver 2.0), to o), line-in nemory / s s system a	ke on LAN 4MB disk wo serial ((stereo), li erver diag and proces	Nº / Alert Standard ette drive '9-pin), parallel, ko ine-out (stereo) gnostic programs	eyboard, r stored on fan spee	C and PHY layer fu .0 / one rear RJ-45 nouse, ethernet (R IBM Enhanced Did d and failure, and v ing and control)	J-45), agnostics	CD
Graphics controller	SVGA	./ ATI® R	ageXL	. / on Mini	PCI adapter /	8MB SDF	RAM std a	nd max / PCI 2.2	32-bit 33N	/IHz / analog 15-pir	D-Sub co	onn
Security	hot-sw power	ap mode on pass	els) / o _l word /	ptional U-I boot sequ	(locks hot-sw Bolt support vi Jence control rity slot (for o	a knockou / operation	ut /	Xeon 2.80 GHz/5 Xeon 3.06 GHz/5	33/512KB 33/512KB 0 CL2.5 E	L2 Cache Proc U L2 Cache Proc U L2 Cache Proc U CC non-Chipkill DI	pg pg	24P7861 24P8054 24P8122 73P2868 33L5038
Software	and co		où tool), IBM Dir	omated netwo rector (system		tallation mgmt 2	1GB PC2100 CL 2GB PC2100 CL IBM 73.4GB 10K	2.5 ECC I 2.5 ECC I Ultra320	DDR-SDRAM DIMI DDR-SDRAM DIMI SCSI 68-pin <u>(not h</u>	VI ot-swp)	33L5039 33L5040 32P0724
Keyboard / mouse Cooling fans	up to a power All: n Some XBX: All:	six / three supply o ot redund one 425 two 514 universa	e for p age fa dant / r 5 watt 4 watt : al / vol	rocessor(s ns (three not hot-swa std and m std and m tage-sens	ouse (both blas), memory, ar in dual power ap / all variable ax / not hot-sv ax / hot-swap ing / Automat	nd disk ba supply mo e speed vap / redunda ic Server	PS/2) ys / two odel) nt	IBM 36.4GB 15K IBM 73GB 10K L IBM 146GB 10K 40X/12X/40X Ma IBM Remote Sup IBM 4U Extende	Ultra320 S Ultra320 S Ultra320 S x ⁶ CD-RW pervisor Ac d Depth T	lapter II (PCI adap	HDD HDD HDD ter)	32P0725 06P5776 32P0727 32P0728 22P6976 59P2984 59P4817 25P3492
Slot 1: half-length, 3: Slot 2: fullsize, 64-bi Slot 3: fullsize, 64-bi Slot 4: fullsize, 64-bi	2-bit 33 t 100Ml t 100Ml	MHz, PC Hz, PCI-) Hz, PCI-)	Cl 2.2 (X 1.0 (X 1.0 (5v) 3.3v) 3.3v)	†	Raven bla Removab	ick color le left side tion/Setu	IBM ServeRAID-(Other options at e panel p Utility invoked	6i Controlle ibm.com	/pc/us/accessories LIMITED WA year parts and I	4) ARRANT	71P8595



* Extended slot for opt IBM ServeRAID-5i

CD-ROM diskette • 4 • (5) • 6 • 7 • 8 • (9) Hot-swap models only

Bay @ 5.25", HH 1.6", access, CD-ROM Bay @ 5.25", HH 1.6", access, open Bay @ 3.5", SL 1", access, diskette

Hot-swap models 6AX and 6BX:

Hot-swap models 6AX and 6BX: ♦ Handle grip on top Six bays ® to ® 3.5", SL 1", access, hot-swp ♦ H 18.4" x W 6.5" x D 26.0" Fixed disk models 62X:

Bay ⓐ 3.5", SL 1", no access, not hot-swap Bay ⑤ 3.5", SL 1", no access, not hot-swap Bay ⑥ 3.5", SL 1", no access, not hot-swap Bay ⑦ 3.5", SL 1", no access, not hot-swap

Maximum internal SCSI disk capacity13: 587.2GB (4 disks x 146.8GB) Fixed: Hot-swap: 880.8GB (6 disks x 146.8GB) ♦ BIOS Setup Utility via F1 at startup LSI Configuration Utility near startup by

pressing ČTRL+C

♦ DMI 2.2-compliant

Adv Config Power Interface (ACPI) 1.0a
 Device Driver and IBM Enhanced

Diagnostics CD-ROM included

Four stabilizing feet

→ H 467mm x W 165mm x D 660mm

44 to 57 pounds (20 to 25.8kg)

> Fixed disk models: metal cage for disk bays 4,5,6,7 rotate out of chassis for easy access for cabling

Predictive Failure Analysis on disk(s) with IBM Director can alert the administrator of an imminent component failure International Warranty Service³

On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time

On site service upgrade options (in eligible locations):7

3 year IOR 9x5, NBD response (ServicePac® part num 96P2248)

3 year IOR 9x5, 4 hr avg response (ServicePac part num 96P2249) 3 year IOR 24x7, 4 hr avg response

(ServicePac part num 96P2250)

• 3 year IOR 24x7, 2 hr avg response
(ServicePac part num 96P2251)

→ Other ServicePac options at

http://www.ibm.com/

services/us/its/pdf/wamomxeu.pdf 24x7¹⁴ toll-free support for warranty issues during the warranty period³

IBM® L2 FSB Memory Disk Controller Hot-st disk b S648-00y-00x 1 x Xeon 2.8 1MB 800 512MB None (open-bay) Ultra320 6 hot-sw 8648-0By-0Bx 1 x Xeon 2.8 1MB 800 512MB None (open-bay) Ultra320 6 hot-sw 8648-0By-0Bx 1 x Xeon 2.8 1MB 800 512MB None (open-bay) Ultra320 6 hot-sw 8648-10Y-10x 1 x Xeon 3.0 1MB 800 512MB None (open-bay) Ultra320 6 hot-sw 8648-1AY-1Ax 1 x Xeon 3.0 1MB 800 512MB None (open-bay) Ultra320 6 hot-sw 8648-1BY-1Bx 1 x Xeon 3.0 1MB 800 512MB None (open-bay) Ultra320 6 hot-sw 8648-20Y-20x 1 x Xeon 3.2 1MB 800 512MB None (open-bay) Ultra320 6 hot-sw 8648-2AY-2Ax 1 x Xeon 3.2 1MB 800 512MB None (open-bay) Ultra320 6 hot-sw 8648-2BY-2Bx 1 x Xeon 3.2 1MB 800 512MB None (open-bay) Ultra320 6 hot-sw 8648-2BY-2Bx 1 x Xeon 3.2 1MB 800 512MB None (open-bay) Ultra320 6 hot-sw 8648-2BY-2Bx 1 x Xeon 3.2 1MB 800 512MB None (open-bay) Ultra320 6 hot-sw 8648-2BY-2Bx 1 x Xeon 3.2 1MB 800 512MB None (open-bay) Ultra320 6 hot-sw 8648-2BY-2Bx 1 x Xeon 3.2 1MB 800 512MB None (open-bay) Ultra320 6 hot-sw 8648-2BY-2Bx 1 x Xeon 3.2 1MB 800 512MB None (open-bay) Ultra320 6 hot-sw 8648-2BY-2Bx 1 x Xeon 3.2 1MB 800 512MB None (open-bay) Ultra320 6 hot-sw 8648-2BY-2Bx 1 x Xeon 3.2 1MB 800 512MB None (open-bay) Ultra320 6 hot-sw 8648-2BY-2Bx 1 x Xeon 3.2 1MB 800 512MB None (open-bay) Ultra320 6 hot-sw 8648-2BY-2Bx 1 x Xeon 3.2 1MB 800 512MB None (open-bay) Ultra320 6 hot-sw 8648-2BY-2Bx 1 x Xeon 3.2 1MB 800 512MB None (open-bay) Ultra320 6 hot-sw 8648-2BY-2Bx 1 x Xeon 3.2 1MB 800 512MB None (open-bay) Ultra320 6 hot-sw 8648-2BY-2Bx 1 x Xeon 3.2 1MB 800 512MB None (open-bay) Ultra320 6 hot-sw 8648-2BY-2Bx 1 x Xeon 3.2 1MB 800 512M	Perswap 6 x 7 One fixed Gigabit Sept 2004 Perswap 6 x 9 One fixed Gigabit Sept 2004 Perswap 6 x 9 Two redundant Gigabit Sept 2004 Perswap 6 x 9 One fixed Gigabit Sept 2004 Perswap 6 x 9 One fixed Gigabit Sept 2004 Perswap 6 x 9 One fixed Gigabit Sept 2004 Perswap 6 x 9 Two redundant Gigabit Sept 2004 Perswap 6 x 9 One fixed Gigabit Sept 2004 Perswap 6 x 9 One fixed Gigabit Sept 2004 Perswap 6 x 9 One fixed Gigabit Sept 2004 Perswap 6 x 9 Two redundant Gigabit Sept 2004 Perswap 6 x 9 Two redundant Gigabit Sept 2004 Perswap 6 x 9 Two redundant Gigabit Sept 2004
8648-00y-00x 1 x Xeon TM 2.8 1MB 800 512MB 80GB ² SATA 7200 SATA 3 simple 8648-0Ay-0Ax 1 x Xeon 2.8 1MB 800 512MB None (open-bay) Ultra320 6 hot-sw 8648-0By-0Bx 1 x Xeon 2.8 1MB 800 512MB None (open-bay) Ultra320 6 hot-sw 8648-1AY-1Ax 1 x Xeon 3.0 1MB 800 512MB 80GB SATA 7200 SATA 3 simple 8648-1AY-1Ax 1 x Xeon 3.0 1MB 800 512MB None (open-bay) Ultra320 6 hot-sw 8648-1BY-1Bx 1 x Xeon 3.0 1MB 800 512MB None (open-bay) Ultra320 6 hot-sw 8648-2DY-20x 1 x Xeon 3.2 1MB 800 512MB None (open-bay) Ultra320 6 hot-sw 8648-2DY-2Dx 1 x Xeon 3.2 1MB 800 512MB None (open-bay) Ultra320 6 hot-sw 8648-2BY-2Bx 1 x Xeon 3.2 1MB 800 512MB None (open-bay) Ultra320 6 hot-sw 8648-2BY-2Bx 1 x Xeon 3.2 1MB 800 512MB None (open-bay) Ultra320 6 hot-sw 9648-2BY-2Bx 1 x Xeon 3.2 1MB 800 512MB None (open-bay) Ultra320 6 hot-sw 970cessor(s) SMP - L2 Cache 1x Intel® Xeon up to 3.2 GHz with 800MHz frontside bus (FSB) / EM647 2-way SMP / up to two Xeon Processors (same speed/cache size) / 1MB 800 2-100 - 10	e-swap 6 x 7 One fixed Gigabit Sept 2004
SMP - L2 Cache 2-way SMP / up to two Xeon Processors (same speed/cache size) / 1MB s	
Implementation Systemboard contains two Intel 604-pin micro-PGA ZIF sockets, six DIMM s	std and max / at processor speed
Memory 512MB std / 16GB¹³ max (16GB maximum can be achieved when 4GB DIM than 4GB DIMMs) / two slots used / four slots available / PC2-3200 400MHz connector slots on systemboard / DIMMs must be installed in matched pairs Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ (c detects 2- through 8-bit errors contained in two chips) available on 1GB (2x5)	MMs are supported, 12GB is the maximum with less ECC DDR2-SDRAM DIMMs / Six 240 pin gold-[a bank] / 2-way memory interleave / dual channel / corrects 1, 2, 3, or 4-bit errors on same chip and 12) DIMM Kit and greater
SATA disk controller SCSI disk controller Dual Channel SATA-150 controller (150MB/sec / two connectors on planar / Adaptec® 7902 / dual channel Ultra320 SCSI controller (LVD 320MB/sec) supports RAID-0 & 1 mirroring / Two 16-bit channels (one internal and one drop 16-bit 68-pin LVD SCSI cable to 6-bay backplane; External channel: cate to rear external 68-pin connector) / on planar / 64-bit 100MHz PCI-X / ServeRAID 7e e external) / <i>Internal channel:</i> Hot-swap models: one 1-able available as option pn 24P7929 from systemboard
Cables RAID Controller One SCSI cable (listed above), two one-drop SATA, one 2-drop EIDE cable (BM ServeRAID 7e (RAID 0 0r 1) / on planar / supports SATA or SCSI interface.	(to CD-ROM), ace / supports ServeRAID 6i+ controller
Mechanical Bus slots (see below) Chipset 4U ⁴ Tower (rack mount support via tower-to-rack kit option) One PCI-Express / three 64-bit (one 133MHz, 2 100MHz) PCI-X 1.0 / two 3 Intel E7520 chipset / E7525 MCH (Memory Controller Hub) for PCI-Express supports Adaptec 7902, 2 64bit/100MHz PCI-X slots (5 & 6), BUS B supports bit/33MHz PCI slots (slots 2 & 3), video, SATA, 4xUSB(2.0), Low Pin Count I	82-bit/33MHz / no hot-swap Active™ PCI slots s x16(vid), Broadcom, PXH, ICH5R / PXH BUS A s one 64bit/133MHz PCI-X slot (4) / ICH5R for two 32- Interface / NS PC87366 Super I/O off LPC interface
Ethernet One gigabit 10/100/1000 ethernet controller / Broadcom 5721 / full gigabit eth chip on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / Alert Sta CD-ROM / diskette Ports Ports Diagnostics Systems mgmt cntrl Diagnostics Systems mgmt cntrl One gigabit 10/100/1000 ethernet controller / Broadcom 5721 / full gigabit eth chip on planar / full duplex / Wake on LAN® / Alert Sta CD-ROM: 48X-20X® CD-ROM, IDE / Diskette: 3.5" 1.44MB diskette drive Front: two USB (Ver 2.0); Back: two USB (Ver 2.0), two serial (9-pin), paral monitor (analog DB-15) Diagnostics Systems mgmt cntrl Winbond® W791D / chip on planar / monitors system and processor tempers support for optional Remote Supervisor Adapter II (provides continuous	Ilel, keyboard, mouse, ethernet (RJ-45), rams stored on IBM Enhanced Diagnostics CD ature, fan speed and failure, and voltages /
Graphics controller SVGA / ATI® Radeon™ 7000M on Planar / 16MB SDRAM std and max / 15 pin connector Security Mechanical side panel key lock (locks hot-swap disks on hot-swap models) / optional U-Bolt support via knockout / power-on password / boot sequence control / operation without keyboard/mouse / security slot (for opt cable lock) SVGA / ATI® Radeon™ 7000M on Planar / 16MB SDRAM std Xeon 2.80 € Xeon 3.0 € Xeon 3.0 € Step 1	GHz/800/1MB L2 Cache EM64TProc Upg 13N0671 GHz/800/1MB L2 Cache EM64TProc Upg 13N0672 Hz/800/1MB L2 Cache EM64TProc Upg 13N0673 73P3523 2) PC2-3200 ECC DDR2 73P3522
Software ServerGuide (CD-based automated network OS installation and configuration tool), IBM Director (system hardware mgmt software) and many utilities	E) PC2-3200 ECC DDR2 ChipK DIMM Kit 73P2865 B) PC2-3200 ECC DDR2 DIMM Kit 73P2866 SATA-150 (7.2K) simple-swap HDD 73P8002 SATA-150 (7.2K) simple-swap HDD 73P8003
Keyboard / mouse Cooling fans BM 101 key keyboard / IBM mouse (both black, 6-pin PS/2) up to six / three for processor(s), memory, and disk bays / two power supply cage fans (three in dual power supply model) All: not redundant / not hot-swap / all variable speed Some: one 530 watt std and max / not hot-swap XBX: two 514 watt std and max / hot-swap / redundant All: universal / voltage-sensing / Automatic Server IBM 250GB IBM 36.4GB IBM 73GB 1 IBM 146GB 40X/12X/40 IBM Remote	3 SATA-150 (7.2K) simple-swap HDD 73P8006 38 15K Ultra320 SCSI Hot-Swap SL HDD 06P5776 10K Ultra320 SCSI Hot-Swap SL HDD 32P0727 10K Ultra320 SCSI Hot-Swap SL HDD 32P0728 22P6976 22P6976 e Supervisor Adapter II (PCI adapter) 59P2984 ended Depth Tower-to-Rack Kit 26K6095
Hestart (ASH) / cooling tan in power supply(s) (variable spd) IBM ServeR	AAID-6i+ controller (adapter for Slot 5) 13N2190 AAID 7t SATA controller 71P8648 as at ibm.com/pc/us/accessories sed by LIMITED WARRANTY ³

CD-ROM

diskette

• 4

• (5)

• 6

• 7

• 8

• 9

Hot-swap

models only

Bay @ 5.25", HH 1.6", access, CD-ROM Bay @ 5.25", HH 1.6", access, open Bay @ 3.5", SL 1", access, diskette

Hot-swap models:

Six bays ⊕ to ⊕ 3.5", SL 1", access, hot-swp ♦ Four stabilizing feet Simple-swap models: 2 std, 2 avail(up to 4 \$\Display \text{Handle grip on top} SATA HDDs maybe added with ServeRAID \$\Display \text{H 18.4" x W 6.5" x D 25.9"} 7t controller)

Bay & 3.5", SL 1", simple-swap Bay & 3.5", SL 1", simple-swap Bay & 3.5", SL 1", simple-swap Bay & 3.5", SL 1", fixed

Maximum internal disk capacity¹³: SATA: 500GB (2 disks x 250GB); 1TB (4 disks x 250GB) w/ ServeRAID 7t SCSI: 880.8GB (6 disks x 146.8GB)

Adaptec Configuration Utility startup by pressing CTRL+I
 DMI 2.2-compliant

Device Driver and IBM Enhanced Diagnostics CD-ROM included

♦ H 467mm x W 165mm x D 658mm

44 to 57 pounds (20 to 25.8kg)

Fixed disk models: metal cage for disk bays 4,5,6,7 rotate out of chassis for easy access for cabling

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

International Warranty Service³

On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time

On site service upgrade options (in eligible locations):7

3 year IOR 9x5, NBD response (ServicePac® part num 96P2248) 3 year IOR 9x5, 4 hr avg response

(ServicePac part num 96P2249) 3 year IOR 24x7, 4 hr avg response

Syear IOR 24x7, 4 III avg response (ServicePac part num 96P2250)

3 year IOR 24x7, 2 hr avg response (ServicePac part num 96P2251)

Other ServicePac options at

http://www.ibm.com/ services/us/its/pdf/wamomxeu.pdf

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

J @ 501 V01	XSeries *** 220 (0040) (F	oblidary 2000)	XIIII Dy C	Server Field Skills and Education Team
IBM® Type-GAV-model Proce	L2 FSB essor GHz¹ cache MHz Memory	Disk Disk controll		I slots Power supply Available bays number and type Ethernet date
8648-40y-40x 1 x 2 8648-4Ay-4Ax 1 x 2 8648-4By-4Bx 1 x 2 8648-50Y-50x 1 x 2 8648-5AY-5Ax 1 x 2 8648-5BY-5Bx 1 x 2 8648-60Y-60x 1 x 2 8648-6AY-6Ax 1 x 2 8648-6BY-6Bx 1 x 2	Keon 3.0 2MB 800 512MB No Keon 3.0 2MB 800 512MB No Keon 3.2 2MB 800 512MB 80 Keon 3.2 2MB 800 512MB No Keon 3.2 2MB 800 512MB No Keon 3.4 2MB 800 512MB No Keon 3.4 2MB 800 512MB No	GB² SATA 7200 SATA ne (open-bay) Ultra32 GB SATA 7200 SATA ne (open-bay) Ultra32 ne (open-bay) Ultra32 GB SATA 7200 SATA ne (open-bay) Ultra32 ne (open-bay) Ultra32 ne (open-bay) Ultra32 ne (open-bay) Ultra32	20 6 hot-swap 20 6 hot-swap 3 simple-swap 20 6 hot-swap 3 simple-swap 3 simple-swap 20 6 hot-swap	6 x 7 One fixed Gigabit Mar 2005 6 x 9 Two redundant 6 x 9 One fixed Gigabit Mar 2005 6 x 9 One fixed Gigabit Mar 2005 6 x 9 Two redundant Gigabit Mar 2005 6 x 7 One fixed Gigabit Mar 2005 6 x 7 One fixed Gigabit Mar 2005 6 x 9 Two redundant Gigabit Mar 2005 6 x 9 Two redundant Gigabit Mar 2005 6 x 9 Two redundant Gigabit Mar 2005
Processor(s) SMP - L2 Cache Implementation	2-way SMP / up to two Xeon Process	sors (same speed/cache s	size) / 2MB std and m	_2 ECC Cache / Hyper-Threading technology nax / at processor speed slots (3 PCI-X, 2 PCI, 1 PCI Express x16)
Memory	512MB std / 16GB¹³ max (16GB max than 4GB DIMMs) / two slots used / for connector slots on systemboard / DIM Error Checking and Correcting (EC detects 2- through 8-bit errors contain	CC) via 16-bit Checksum	Chipkill™ (corrects 1,	upported, 12GB is the maximum with less R2-SDRAM DIMMs / Six 240 pin gold- / 2-way memory interleave / dual channel / 2, 3, or 4-bit errors on same chip and 1 Kit and greater
SATA disk controller SCSI disk controller Cables RAID Controller	supports RAID-0 & 1 mirroring / Tw	320 SCSI controller (LVL to 16-bit channels (one int 6-bay backplane; Externation one 2-droj	D 320MB/sec) / on plan ernal and one external <i>al channel:</i> cable availa o EIDE cable (to CD-R	nar / 64-bit 100MHz PCI-X / ServeRAID 7e) / Internal channel: Hot-swap models: one 1- able as option pn 24P7929 from systemboard OM).
Mechanical Bus slots (see below) Chipset	4U ⁴ Tower (rack mount support via to One PCI-Express / three 64-bit (one Intel E7520 chipset / E7525 MCH (N supports Adaptec 7902, 2 64bit/100M bit/33MHz PCI slots (slots 2 & 3), vide	ower-to-rack kit option) 133MHz, 2 100MHz) PCI- // Memory Controller Hub) fo Hz PCI-X slots (5 & 6), Bl eo, SATA, 4xUSB(2.0), Lo	X 1.0 / two 32-bit/33M r PCI-Express x16(vid) JS B supports one 64b w Pin Count Interface /	Hz / no hot-swap Active™ PCI slots , broadcom, PXH, ICH5R / PXH BUS A , broadcom, PXH, ICH5R for two 32- / NS PC87366 Super I/O off LPC interface
Ethernet CD-ROM / diskette Ports Diagnostics Systems mgmt cntrl Graphics controller	One gigabit 10/100/1000 ethernet con chip on planar / PCI-X 64-bit 100MHz CD-ROM: 48X-20X° CD-ROM, IDE / Front: two USB (Ver 2.0); Back: two monitor (analog DB-15) Diagnostic LEDs / error LEDs for fan: Winbond® W791D / chip on planar support for optional Remote Supel SVGA / ATI® Radeon™ 7000M on Plan	/ full duplex / Wake on LA Diskette: 3.5" 1.44MB dis USB (Ver 2.0), two serial s and memory / server dia monitors system and proc	Nº / Alert Standard Fo kette drive (9-pin), parallel, keybo agnostic programs store essor temperature, fan	rmat 2.0 / one rear RJ-45 port pard, mouse, ethernet (RJ-45), ed on IBM Enhanced Diagnostics CD speed and failure, and voltages /
Security	Mechanical side panel key lock (locks hot-swap models) / optional U-Bolt su power-on password / boot sequence without keyboard/mouse / security slo	pport via knockout / control / operation	Xeon 3.2 GHz/800/2N Xeon 3.4 GHz/800/2N 512MB (2x256) PC2-	MB L2 Cache EM64TProc Upg 25R8900 MB L2 Cache EM64TProc Upg 25R8901 MB L2 Cache EM64TProc Upg 13N0676 3200 ECC DDR2 73P3523
Software	ServerGuide™ (CD-based automate and configuration tool), IBM Director (software) and many utilities	d network OS installation (system hardware mgmt	2GB (2x1GB) PC2-32 IBM 80GB SATA-150	00 ECC DDR2 ChipK DIMM Kit 73P2865 200 ECC DDR2 DIMM Kit 73P2866 0 (7.2K) simple-swap HDD 73P8002
Keyboard / mouse Cooling fans Power supply(s)	IBM 101 key keyboard / IBM mouse (Up to six / three for processor(s), melpower supply cage fans (three in dual All: not redundant / not hot-swap / all Some: one 530 watt std and max / nox xBx: two 514 watt std and max / nox not supply for the control of the con	mory, and disk bays / two I power supply model) variable speed ot hot-swap ot-swap / redundant Automatic Server	IBM 160GB SATA-15 IBM 250GB SATA-15 IBM 36.4GB 15K Ultra IBM 73GB 10K Ultra IBM 146GB 10K Ultra 40X/12X/40X Max ⁶ IBM Remote Supervis IBM 4U Extended De	50 (7.2K) simple-swap HDD 73P8003 73P8006 73P8006 3320 SCSI Hot-Swap SL HDD 32P0727 3320 SCSI Hot-Swap SL HDD 32P0727 320 SCSI Hot-Swap SL HDD 32P0728 D-RW internal (black) 22P6976 59r Adapter II (PCI adapter) 59P2984 4pth Tower-to-Rack Kit 26K6095
Slot 5: fullsize, 64-bit Slot 6: fullsize, 64-bit * support only for x8 ** slot for opt IBM Se Bay Bay Bay	/33MHz, PCI (5v) /33MHz, PCI (5v) : 133MHz, PCI-X 1.0 (3.3v) : 100MHz, PCI-X 1.0 (3.3v)** : 100MHz, PCI-X 1.0 (3.3v) adaptors	 Raven black color Removable left sid Configuration/Setu pressing F1 at sta BIOS Setup Utility Adaptec Configura startup by pressing DMI 2.2-compliant Adv Config Power Device Driver and 	IBM ServeRAID 7t SAOther options at ibm e panel p Utility invoked by rtup via F1 at startup tion Utility near g CTRL+I Interface (ACPI) 1.0a	Controller (adapter for Slot 5) ATA controller ATA controller T1P8648 13N2190 71P8648 1 year parts and labor International Warranty Service³ On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time

diskette • 4 • (5) • 6 • 7 • 8 • 9 Hot-swap models only

Hot-swap models:

Six bays 4 to 9 3.5", SL 1", access, hot-swp \Leftrightarrow Four stabilizing feet Simple-swap models: 2 std, 2 avail(up to 4 \$\display \text{Handle grip on top} SATA HDDs maybe added with ServeRAID \$\display \text{H 18.4" x W 6.5" x D 25.9"}

7t controller)

Bay [@] 3.5", SL 1", simple-swap Bay [@] 3.5", SL 1", simple-swap Bay [@] 3.5", SL 1", simple-swap Bay [@] 3.5", SL 1", fixed

Maximum internal disk capacity¹³: SATA: 500GB (2 disks x 250GB); 1TB (4 disks x 250GB) w/ ServeRAID 7t SCSI: 880.8GB (6 disks x 146.8GB)

Diagnostics CD-ROM included

♦ H 467mm x W 165mm x D 658mm

44 to 57 pounds (20 to 25.8kg)

Fixed disk models: metal cage for disk bays 4,5,6,7 rotate out of chassis for easy access for cabling

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

On site service upgrade options (in eligible locations):7

3 year IOR 9x5, NBD response (ServicePac® part num 96P2248)

3 year IOR 9x5, 4 hr avg response

(ServicePac part num 96P2249)

3 year IOR 24x7, 4 hr avg response

Syear IOR 24x7, 4 III avg response (ServicePac part num 96P2250)

3 year IOR 24x7, 2 hr avg response (ServicePac part num 96P2251)

Other ServicePac options at

http://www.ibm.com/ services/us/its/pdf/wamomxeu.pdf

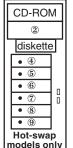
24x7¹⁴ toll-free support for warranty issues during the warranty period³

	•	, , ,	_ ′				The second second	-
	L2 FSB essor GHz¹ cache MHz M		Disk controller	Hot-swap disk bays		Power supply number and type	Ethernet	Available date
8648-32U-32x 1 x) 8648-34U-34x 1 x) 8648-36U-36x 1 x) 8648-E3U-E3x 1 x) 8648-E5U-E5x 1 x) 8648-E7U-E7x 1 x)	(eon 2.8 2MB 800 5 (eon 2.8 2MB 800 2 (eon 2.8 2MB 800 2	12MB 80GB² SATA 7200 112MB None (open-bay) 112MB None (open-bay) 1GB None (open-bay) 1GB None (open-bay) 1GB None (open-bay)	SATA Ultra320 Ultra320 Ultra320 Ultra320 Ultra320	6 hot-swap 6 hot-swap 6 hot-swap	6 x 9 6 x 9 6 x 9 6 x 9	One fixed Two redundant	Giğabit S Gigabit S	Sep 2005 Sep 2005 Sep 2005
Processor(s) SMP - L2 Cache Implementation	2-way SMP / up to two X	GHz with 800MHz frontsic eon Processors (same speed o Intel 604-pin micro-PGA ZI	d/cache`siz	e) / 2MB std an	d max / a	t processor speed	ŭ	0,
Memory	than 4GB DIMMs) / two s connector slots on system Error Checking and Cor	(16GB maximum can be ach lots used / four slots available aboard / DIMMs must be insta rrecting (ECC) via 16-bit Ch rrors contained in two chips) a	e / PC2-320 alled in mat ecksum C	00 400MHz ECC tched pairs [a bar chipkill ™ (correct	DDR2-SI nk] / 2-wa s 1, 2, 3,	DRAM DIMMs / Six y memory interleav or 4-bit errors on s	c 240 pin ac	old-
SATA disk controller SCSI disk controller	Adaptec® 7902 / dual ch supports RAID-0 & 1 mirr drop 16-bit 68-pin LVD SO to rear external 68-pin co		oller (LVD 3 s (one inter ; <i>External</i>	320MB/sec) / ön pal and one external and one external cable av	olanar / 64 nal) / <i>Inte</i> vailable as	4-bit 100MHz PCI- ernal channel: Hot-s	swap mode	els: one 1-
Cables RAID Controller	IBM ServeRAID 7e (RAID	oove), two one-drop SATA, o 0 0 0r 1) / on planar / support	ne 2-drop t s SATA or	SCSI interface / s	D-ROM), supports S	ServeRAID 6i+ con	troller	
Mechanical Bus slots (see below) Chipset	One PCI-Express / three	upport via tower-to-rack kit o 64-bit (one 133MHz, 2 100M 525 MCH (Memory Controlle 64bit/100MHz PCI-X slots (5 2 & 3), video, SATA, 4xUSB	Hz) PCI-X	1.0 / two 32-bit/3 PCI-Express x16(B B supports one Pin Count Interfa	3MHz / r vid), Broa 64bit/133 ce / NS P	no hot-swap Active dcom, PXH, ICH5 MHz PCI-X slot (4) C87366 Super I/O	™ PCI slots R / PXH BU I / ICH5R fo off LPC in	s US A or two 32- terface
Ethernet CD-ROM / diskette Ports Diagnostics Systems mgmt cntrl	chip on planar / PCI-X 64- CD-ROM: 48X-20X6 CD-F Front: two USB (Ver 2.0) monitor (analog DB-15) Diagnostic LEDs / error L	ethernet controller / Broadcon bit 100MHz / full duplex / Wa ROM, IDE / <i>Diskette</i> : 3.5" 1.4 ; <i>Back</i> : two USB (Ver 2.0), t EDS for fans and memory / s	ke on LAN 14MB diske wo serial (9	[®] 7 Alert Standard ette drive 9-pin), parallel, ke postic programs	Format 2 yboard, n	2.0 / one rear RJ-45 nouse, ethernet (R. JBM Enhanced Di	5 port J-45), agnostics C	CD
Graphics controller	support for optional Res SVGA / ATI® Radeon™ 70	on planar / monitors system a mote Supervisor Adapter II 000M on Planar / 16MB SDR	I (provides AM std and	continuous healt d max / 15 pin co	n monitori nector	ng and control)	olageo /	
Security	Mechanical side panel ke hot-swap models) / option power-on password / boo	y lock (locks hot-swap disks lal U-Bolt support via knockol t sequence control / operatio security slot (for opt cable lo	on x ut / x n x	(eon 2.8 GHz/80) (eon 3.0 GHz/80) (eon 3.2 GHz/80))/2MB L2)/2MB L2)/2MB L2	Cache EM64TPro Cache EM64TPro Cache EM64TPro Cache EM64TPro	oc Upg 2 oc Upg 2 oc Upg 2	25R8907 25R8900 25R8901 13N0676
Software		d automated network OS ins M Director (system hardware es	e mgmt 1		-3200 EC -3200 EC	ECC DDR2 C DDR2 C DDR2 ChipK DI CC DDR2 DIMM K	MM Kit	73P3523 73P3522 73P2865 73P2866
Keyboard / mouse Cooling fans Power supply(s)	Up to six / three for proce power supply cage fans (t All: not redundant / not he Some: one 530 watt std a Some: two 514 watt std a All: universal / voltage	BM mouse (both black, 6-pin issor(s), memory, and disk bithree in dual power supply mot-swap / all variable speed and max / not hot-swap and max / hot-swap / redundationsensing / Automatic Server in in power supply(s) (variable	PS/2) IF A STATE OF THE PS/2 IF A STATE OF TH	BM 80GB SATA- BM 160GB SATA BM 250GB SATA BM 36.4GB 15K BM 73GB 10K UI BM 146GB 10K L 10X/12X/40X Max BM Remote Supe	150 (7.2k A-150 (7.2 A-150 (7.2 Ultra320 St Iltra320 SC & CD-RW ervisor Ad	() simple-swap HD (K) simple-swap HI (K) simple-swap HI (K) simple-swap HI (SCSI Hot-Swap SL FI (SSI Hot-Swap SL FI (SSI Hot-Swap SL FI (SSI Hot-Swap SL FI (Dlack) (apter II (PCI adap) (A)	D 7 DD 7 DD 7 . HDD 0 HDD 3 HDD 3 ter) 5	73P8002 73P8003 73P8006 06P5776 32P0727 32P0728 22P6976 59P2984
Slot 2: fullsize, 32	CI-Express x16 (3.3v)* 2-bit/33MHz, PCI (5v)		IE	BM 4U Extended BM ServeRAID-6 BM ServeRAID 7	i+ controll	er (adapter for Slo	t 5) 1	26K6095 13N2190 71P8648

Slot 3: fullsize, 32-bit/33MHz, PCI (5v)

Slot 4: fullsize, 64-bit 133MHz, PCI-X 1.0 (3.3v) Slot 5: fullsize, 64-bit 100MHz, PCI-X 1.0 (3.3v)* Slot 6: fullsize, 64-bit 100MHz, PCI-X 1.0 (3.3v)

* support only for x8 adaptors ** slot for opt IBM ServeRAID-6i+



Bay ① 5.25", HH 1.6", access, CD-ROM Bay ② 5.25", HH 1.6", access, open Bay 3 3.5", SL 1", access, diskette Hot-swap models:

Six bays 4 to 9 3.5", SL 1", access, hot-swp Simple-swap models: 2 std. 2 avail(up to 4 SATA HDDs maybe added with ServeRAID 7t controller)

Bay [@] 3.5", SL 1", simple-swap Bay [@] 3.5", SL 1", simple-swap Bay [@] 3.5", SL 1", simple-swap Bay [@] 3.5", SL 1", fixed

Maximum internal disk capacity13: SATA: 500GB (2 disks x 250GB); 1TB (4 disks x 250GB) w/ ServeRAID 7t SCSI: 880.8GB (6 disks x 146.8GB)

→ Raven black color Removable left side panel

Configuration/Setup Utility invoked by pressing F1 at startup

BIOS Setup Utility via F1 at startup

Adaptec Configuration Utility near

startup by pressing CTRL+I

DMI 2.2-compliant

 ♦ Adv Config Power Interface (ACPI) 1.0a
 ♦ Device Driver and IBM Enhanced Diagnostics CD-ROM included

Four stabilizing feet ♦ Handle grip on top
 ♦ H 18.4" x W 6.5" x D 25.9"

→ H 467mm x W 165mm x D 658mm

44 to 57 pounds (20 to 25.8kg)

Fixed disk models: metal cage for disk bays 4,5,6,7 rotate out of chassis for easy access for cabling

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

LIMITED WARRANTY³

1 year parts and labor

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

International Warranty Service³

On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time On site service upgrade

options (in eligible locations):7 3 year IOR 9x5, NBD response

(ServicePac® part num 96P2248) 3 year IOR 9x5, 4 hr avg response

(ServicePac part num 96P2249) 3 year IOR 24x7, 4 hr avg response

(ServicePac part num 96P2250)

• 3 year IOR 24x7, 2 hr avg response
(ServicePac part num 96P2251)

→ Other ServicePac options at

http://www.ibm.com/ services/us/its/pdf/wamomxeu.pdf 24x7¹⁴ toll-free support for warranty issues during the warranty period³

IBM® Type-GAV-model Proce	essor GHz ¹	l N	SB MHz Memory	, Disk	Disk controlle		Hot-swap disk bays		Power supply number and typ	e Etherne	Available t date
8848-32U-32x 1 x 3 8848-34U-34x 1 x 3 8848-36U-36x 1 x 3	Xeon™ 2.8 Keon 2.8 Keon 2.8	2MB 8 2MB 8 2MB 8	300 512ME 300 512ME 300 512ME	B None (open-bay)) Ultra32	06 h	simple-swap hot-swap hot-swap	6 x 9	One fixed One fixed Two redundan	Giğabit	Sep 2005 Sep 2005 Sep 2005
Processor(s) SMP - L2 Cache Implementation	2-way SMI	P/upto	two Xeon P	with 800MHz fronts rocessors (same spe 604-pin micro-PGA	ed/cache si	ize) / 2	MB std and	d max / a	t processor spee	d	
Memory	than 4GB I connector s Error Che	DIMMs) / slots on s cking an	two slots us systemboard d Correcti r	B maximum can be a sed / four slots availat / DIMMs must be in: g (ECC) via 16-bit Contained in two chips	ole / PC2-32 stalled in ma Checksum	200 40 atched Chipk i	0MHz ECC pairs [a ban ill ™ (corrects	DDR2-SL ik] / 2-wa; s 1, 2, 3,	DRAM DIMMs / S y memory interle or 4-bit errors or	Six 240 pin	aold-
SATA disk controller SCSI disk controller	Adaptec® supports R drop 16-bit to rear external one SCSI	7902 / d l AID-0 & 68-pin L ernal 68- cable (lis	ual channel 1 mirroring VD SCSI ca pin connecto sted above).	oller (150MB/sec / two Ultra320 SCSI cont / Two 16-bit channe ble to 6-bay backplar or two one-drop SATA, 1) / on planar / suppo	roller (LVD els (one inte ne; <i>Externa</i> one 2-drop	320Ml ernal ar <i>al chani</i> EIDE	B/sec) / on p nd one exten nel: cable av cable (to CE	olanar / 64 nal) / <i>Inte</i> ailable as D-ROM).	4-bit 100MHz PC Prnal channel: Ho Soption pn 24P7	t-swap mo 929 from s	dels: one 1-
Mechanical Bus slots (see below) Chipset	4U ⁴ Tower One PCI-E	(rack m xpress /	ount support three 64-bit of / E7525 M	t via tower-to-rack kit (one 133MHz, 2 100 CH (Memory Control (100MHz PCI-X slots s), video, SATA, 4xUS	option) MHz) PCI-> ler Hub) for	X 1.0 /	two 32-bit/3	3MHz / r	no hot-swap Activ	/e™ PCI sl 5R / PXH	ots BUS A I for two 32- interface
Ethernet CD-ROM / diskette Ports Diagnostics Systems mgmt cntrl Graphics controller	chip on pla CD-ROM: Front: two monitor (ar Diagnostic Winbond® \ support fo	nar / PC 48X-20X USB (Venalog DB LEDs / e W791D / or option	I-X 64-bit 1006 CD-ROM, er 2.0); Bac I-15) error LEDs fo chip on pla nal Remote	et controller / Broadco DMHz / full duplex / W IDE / Diskette: 3.5" 1 k: two USB (Ver 2.0) or fans and memory, nar / monitors systen Supervisor Adapter on Planar / 16MB SD	/ake on LAI .44MB disk , two serial / server diag n and proce II (provides	N® 7 Ale kette dr (9-pin) gnostic essor te s contii	ert Standard rive , parallel, key c programs s emperature, f nuous health	Format 2	.0 / one rear RJ- nouse, ethernet (I IBM Enhanced I I and failure, and	45 port RJ-45), Diagnostics	; CD
Security	hot-swap n	nodels) / password	optional U-E I / boot sequ	(locks hot-swap disk Bolt support via knock lence control / operat rity slot (for opt cable	out / ion	Xeon Xeon Xeon	3.0 GHz/80 3.2 GHz/80 3.4 GHz/80	0/2MB L2 0/2MB L2 0/2MB L2	Cache EM64TF Cache EM64TF Cache EM64TF Cache EM64TF	Proc Upg Proc Upg	25R8907 25R8900 25R8901 13N0676
Software	ServerGuid and configu software) a	uration to	ool), IBM Dir	omated network OS i ector (system hardwa	installation are mgmt	1GB 1GB		2-3200 E0 2-3200 E0			73P3523 73P3522 73P2865 73P2866
Keyboard / mouse Cooling fans Power supply(s)	Up to six / power supp Not redund One 530 w voltage-ser	three for oly cage lant / not ratt std an nsing / A	r processor(s fans (three i hot-swap / a nd max / not	ouse (both black, 6-pis), memory, and disk n dual power supply all variable speed / thot-swap / universal ver Restart (ASR) / o	bays / two model)	IBM 8 IBM 1 IBM 2 IBM 3 IBM 7 IBM 1 40X/1 IBM 6	BOGB SATA- 160GB SAT/ 250GB SAT/ 36.4GB 15K 73GB 10K U 146GB 10K U 2X/40X Max Remote Sup 1U Extended	·150 (7.2k A-150 (7.2k A-150 (7.2 Ultra320 Ultra320 S G CD-RW ervisor A I Depth T	() simple-swap H 2K) simple-swap SCSI Hot-Swap S CSI Hot-Swap S GCSI Hot-Swap S I internal (black) dapter II (PCI addower-to-Rack Kit ler (adapter for S	HDD HDD HDD SL HDD - HDD SL HDD apter)	73P8002 73P8003 73P8006 06P5776 32P0727 32P0728 22P6976 59P2984 26K6095 13N2190

Slot 1: fullsize, PCI-Express x16 (3.3v)*
Slot 2: fullsize, 32-bit/33MHz, PCI (5v)
Slot 3: fullsize, 32-bit/33MHz, PCI (5v)
Slot 4: fullsize, 64-bit 133MHz, PCI-X 1.0 (3.3v)
Slot 5: fullsize, 64-bit 100MHz, PCI-X 1.0 (3.3v)*
Slot 6: fullsize, 64-bit 100MHz, PCI-X 1.0 (3.3v)*
**support only for x8 adaptors

support only for x8 adaptors

** slot for opt IBM ServeRAID-6i+

CD-ROM diskette • 4 • (5) • 6 • 7 • 8 • (9) Hot-swap models only Bay \odot 5.25", HH 1.6", access, CD-ROM Bay \odot 5.25", HH 1.6", access, open Bay \odot 3.5", SL 1", access, diskette

Hot-swap models:

Six bays 4 to 9 3.5", SL 1", access, hot-swp Simple-swap models: 2 std, 2 avail(up to 4 SATA HDDs maybe added with ServeRAID & Four stabilizing feet 7t controller)

Bay (§ 3.5", SL 1", simple-swap Bay (§ 3.5", SL 1", simple-swap Bay (§ 3.5", SL 1", simple-swap Bay (§ 3.5", SL 1", fixed

Maximum internal disk capacity¹³: SATA: 500GB (2 disks x 250GB); 1TB (4 disks x 250GB) w/ ServeRAID 7t SCSI: 880.8GB (6 disks x 146.8GB)

- → Raven black color
- Removable left side panel
- Configuration/Setup Utility invoked by pressing F1 at startup

 BIOS Setup Utility via F1 at startup

IBM ServeRAID 7t SATA controller

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

- Adaptec Configuration Utility near startup by pressing CTRL+I

 DMI 2.2-compliant

- ♦ Adv Config Power Interface (ACPI) 1.0a Device Driver and IBM Enhanced Diagnostics CD-ROM included
- → Handle grip on top
 → H 18.4" x W 6.5" x D 25.9"
- → H 467mm x W 165mm x D 658mm
- Fixed disk models: metal cage for disk bays 4,5,6,7 rotate out of chassis for easy access for cabling
- Predictive Failure Analysis on disk(s) with IBM Director can alert the administrator of an imminent component failure

LIMITED WARRANTY³

71P8648

- 1 year parts and labor
- International Warranty Service³
- On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
 - On site service upgrade options (in eligible locations):7
 - 3 year IOR 9x5, NBD response (ServicePac® part num 96P2248)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 96P2249)
 3 year IOR 24x7, 4 hr avg response
- (ServicePac part num 96P2250)

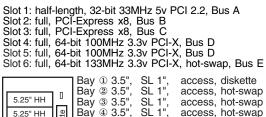
 3 year IOR 24x7, 2 hr avg response
 (ServicePac part num 96P2251)

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

IBM® Type-model Qty x F	L2 L3 Processor cache cache Memory Dis	SCSI sk controller Mechanica	Slots x bays I (hot-swap bays)	Power Available supply Ethernet date			
8671-KAX 1 x Xeon 8671-L1X 1 x Xeon 8671-LAX 1 x Xeon ≈ 8671-M1X 1 x Xeon ≈ 8671-MAX 1 x Xeon	 2.67GHz 512KB 0MB 512MB Not 2.67GHz 512KB 0MB 512MB Not 2.8BGHz 512KB 0MB 512MB Not 2.8BGHz 512KB 0MB 512MB Not 3.06GHz 512KB 0MB 512MB Not 	ne 2 x Ultra320 Tower	6x10 (6 hot-swap std; 9 max 6x10 (6 hot-swap std; 9 max	560W hot Gigabit Jan 2004 560W fixed Gigabit Jan 2004 560W hot Gigabit Jan 2004 660W fixed Gigabit Jan 2004 660W hot Gigabit Jan 2004			
Positioning Processor(s) L2 cache L3 cache SMP support Implementation	Universal server; two-way server us Up to 1 x Intel® Xeon™ Processor 512KB / all models / on die of proc 1MB / available on some models / o 2-way SMP / up to two Xeon Proce Systemboard contains two Intel 603 six PCI slots (two hot-swap Active™	3.06 GHz with 533MHz fessor / at processor spee on die of processor / at pressors (same speed/cach 3-pin micro-PGA ZIF soci	rontside bús / Hyper-Thread d rocessor speed e size) kets, six memory gold-conne	ector DIMM slots,			
Memory	512MB std / 12GB max / two slots PC2100 266MHz registered 184-pir DIMMs must be installed in matched 2x100MHz / Error Checking and 0 through 8-bit errors contained in two	n ECC DDR-SDRAM DIN d pairs [a bank] / 2-way n Correcting (ECC) (correc	IMs nemory interleave / dual cha ts 1, 2, 3, or 4-bit errors on	same chip and detects 2-			
SCSI channels	LSI Logic® 53C1030 / dual chann supports RAID-1 mirroring with up low-cost RAID 0, 1, 1E, 5, 00, 10, 1 Two 16-bit channels / SCSI Channinterface for Bay 8 and 9 (may req devices via external SCSI knockout eEnhanced IDE ATA-100 controller None standard / supports 7200-1500 Six hot-swap / 80-pin SCA-2 connections	to one hot-spare disk / IEO, 50 (installed only in a let A: 16-bit 68-pin LVD caure a cable) or with option in rear (cable reg 32P816 in CSB5 South Bridge / coorpm disks / one backpla	shared with optional IBM S Slot 4) able from controller to backponal 3-Pack Kit (cable included) or via opt ServeRAID adanne connector on planar / or ane / all disk bays Ultra320-eigne /	erveRAID™-6i Controller for blane; Channel B: 16-bit 68-pin bled); supports external SCSI support with external connector(s) ne 1-drop IDE cable (CD-ROM) nabled			
Mechanical Chipset	Tower / conversion to or EIA 19" Ra ServerWorks® Grand Champion™ two CIOB-X2 I/O Bridges (IMB2 bus controllers; IMB2 bus to Host Bridge for PCI 2.2 bus A with slot 1 and gra	4.0 LE / CMIC LE Host Bi to Host Bridge for PCI-X for PCI-X 1.0 Bus C with	idge (memory controller and 1.0 Bus B with slots 2, 3, 4 ar slots 5 and 6) / CSB5 South	I/O Bridge) / nd Ultra320 and ethernet Bridge (Thin IMB to Host Bridge			
Ethernet controller CD-ROM / diskette Rear ports Front port / graphics	10/100/1000 gigabit / Broadcom® BC 48X-20X ⁶ CD-ROM / IDE / 1.6" HH; Rear: two USB (Vers 1.1), keyboard, Front: one USB (Vers 1.1); Graphics:	; <i>Diskette:</i> 3.5" 1.44MB o mouse, parallel, two serial	liskette drive / dust cover (9-pin),graphics (DB-15), ethe	met (RJ-45), two RJ-45 (sys mgmt)			
Security	Power-on password / administrator putton / unattended boot / selectable						
Systems mgmt Diagnostics Software	IBM Integrated system management H8S2148 / on planar / provides system monitoring such as temp, optional disupports optional Remote Superviso connector on planar for continuous pLight Path Diagnostics™ panel provifailing part (under side cover) / Inform ServerGuide™ (CD-ROM installatio utilities), IBM Director, others	em and environmental sks, fans, power supp / or Adapter with 20-pin power (no ext pwr reqd) viding LED map to nation LED Panel in front	Xeon 2.8BGHz/512KB L2 Cache Proc Upg Xeon 3.06GHZ/512KB L2 Cache Proc Upg 2x256MB PC2100 Non-Chipkill DDR-SDRAM Kit 512MB PC2100 CL2.5 ECC DDR-SDRAM DIMM 1GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM 2GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM IBM ServeRAID-6i Controller (adapter for slot 4) IBM Remote Supervisor Adapter II (PCI adapter) 55				
Keyboard / mouse Power supply	IBM 101-key keyboard / IBM mous MAX: std/max: two/two 660 watt M1X: std/max: one/two 660 watt xAX: std/max: two/two 560 watt Rest: std/max: one/two 560 watt Four fans and two blowers / variab redundant / PFA / fan in each pow	All: voltage-sensing / auto-restart / fan in each le speed / hot-swap /	IBM T541 15" Flat Panel Colo 36.4GB 15K-2 80 Ultra320 S 3-Pack Ultra320 Hot-Swap I IBM 560W Hot-Swap Power IBM 660W Hot-Swap Power Other options at ibm.com *Not backward compatible wit	SCSI Hot-Swap SL HDD 06P5776 Expansion Kit 33P2751 er Upgrade Kit* 02R1874 Upgrade Kit (3.06 Only) 02R2015 n/pc/us/accessories th 400Mhz FSB x235			
Slot 2: full, 64-bit 10 Slot 3: full, 64-bit 10 Slot 4: full, 64-bit 11 Slot 5: full, 64-bit 13 * Extended slot for c	MHz 5v PCI 2.2, Bus A 10MHz 3.3v PCI-X, not hot, Bus B 10MHz 3.3v PCI-X, not hot, Bus B 10MHz 3.3v PCI-X, not hot, Bus B* 13MHz 3.3v PCI-X, hot-swap, Bus C	Utility near startup Utility near startup Intel On s cove busis 3 ye upg loca sis on disk options, RMs, power njunction with IBM stem administrator ent failure .5" x D 27.6" Intel On s cove busis 3 ye upg loca 9 Intel (S 2 4 (S 2 2 (S 3 2 (S 3 2 (S 3 3 2 (S 4 3 (S 4 4 (S 5 2 4 (S 6 2 2 2 3 (S 6 2 2 2 4 (S 6 2 2 2 3 (S 6 2 2 2 4 (S 6 2 2 2 3 (S 6 2 2 2 4 (S 6 2 2 6 2 6 2 6 2 6 2 6 2 6 2	ar parts and labor rnational Warranty Service³ site, 8 am - 5 pm, Mon - Fri erage excluding holidays, next iness day response time² ar on site warranty service rade options (in eligible tions):² hour coverage, on-Fri excluding holidays, hour average response servicePac® part num 21P2083) If hr x 7 day coverage, hour average response servicePac part number 21P2084) If hr x 7 day coverage, hour average response servicePac part number 21P2085) The toll-free support for warranty es during the warranty period³				

8841-01y-01x 1 x X	(eon 3.0GHz 1MB 1GB None 2 x Ultra320 Tower 6x10 (eon 3.2GHz 1MB 1GB None 2 x Ultra320 Tower 6x10 (eon 3.4GHz 1MB 1GB None 2 x Ultra320 Tower 6x10 (eon 3.4GHz 1MB 1GB None 2 x Ultra320 Tower 6x10	Slots x bays (hot-swap bays) (6 hot-swap std; 9 max)	() 1 x 670W hot-swap 2xGiğab () 1 x 670W hot-swap 2xGigab () 1 x 670W hot-swap 2xGigab	t Aug 2004 t Aug 2004 t Aug 2004 t Aug 2004 t Aug 2004		
Positioning Processor L2 cache SMP support Implementation	Universal server; two-way server using the Xeon processor to Up to 1 x Intel® Xeon™ Processor 2.8, 3.0, 3.2, 3.4, 3.6 GHz (EM64T) / Simultaneous Multi-threading (SMT) / Hyper-Thre 1MB / all models / on die of processor / at processor speed 2-way SMP / up to two Xeon Processors (same speed/cache Systemboard contains two Intel 604-pin micro-PGA ZIF socket six PCI slots (one hot-swap Active™ PCI slots), and integrated	with 800MHz frontside b eading technology / size) s, eight memory gold-co	us / Extended Memory 64 Tech	nnology		
Memory	512MB or 1MB std / 16GB max / two slots used / six slots ave DIMMs / DIMMs must be installed in matched pairs [a bank] / 2 2x200MHz / Error Checking and Correcting (ECC) (corrects errors contained in two chips) / Active Memory™: memory n optionally available, requiring 512MB DIMMs or greater	nilable / PC2-3200 400M -way memory interleave 1, 2, 3, or 4-bit errors or	Hz registered 240-pin ECC DDR / dual channel / memory bus run n same chip and detects 2- throu	s at gh 8-bit		
SCSI disk controller SCSI channels IDE controller / cable Disk - capacity Disk - bays	Adaptec AIC 7902 / dual channel Ultra320 SCSI controller (HostRAID supports RAID-0, 1 mirroring with up to one hot-splow-cost RAID 0, 1, 1E, 1E0, 5, 00, 10, 50 (installed on internal of 16-bit channels / SCSI Channel B: 16-bit 68-pin LVD cable Bay 8 and 9 (may require a cable) or with optional 3-Pack Kit (of knockout in rear (cable req 24P7973) or via opt ServeRAID ad Enhanced IDE ATA-100 controller in ICH5R South Bridge / one None std / supports 7200-15000 rpm disks / one backplane / al Six hot-swap / 80-pin SCA-2 connectors / three additional hot-swap.	pare disk / optional IBM connector) from controller to backp cable included); supports apter with external connector on planar / o Il disk bays Ultra320-ena	ServeRAID™-7k Controller for lane; Channel A: 16-bit 68-pin in external SCSI devices via extern ector(s) ne 1-drop IDE cable (CD-ROM) ibled			
Mechanical Slots Chipset (see below)	Tower / conversion to EIA 19" Rack (5U4) via optional kit for su Two PCI-Express (one hot-plug), three PCI-X 64-bit (one 133M Intel E7520 chipset / Intel E7520 Memory Controller Hub (MC (slots 2 & 3) / PXH: Bus A, two 64-bit/100MHz PCI-X slots (slots 6) / ICH5R: one 32-bit/33MHz slot (slot 1), ATI video, EIDE, USI	Hz and two 100MHz), o H): PXH, ICH5R, Dual E s 4 & 5), Adaptec SCSI E	ne 32-bit/33MHz slot Broadcom ethernet, two PCI-Expr Bus B, one 64-bit/133MHz Hot-Pl	ug slot (slot		
Ethernet controller CD-ROM / diskette Rear ports Front port / graphics	Dual 10/100/1000 gigabit / Broadcom® BCM 5721 / on planar / IF Format (2.0) / IPMI (1.5) 48X-20X® CD-ROM / IDE / 1.6" HH; Diskette: 3.5" 1.44MB disk Rear: two USB (Vers 2.0), keyboard, mouse, parallel, one seri Front: one USB (Vers 2.0); Graphics: SVGA / ATI® Radeon™ 7	kette drive / dust cover al (9-pin),graphics (DB-1 '000M / on planar / 16Ml	5), two ethernet (RJ-45), RJ-45 B DDR std/max / 32-bit/33MHz F	(sys mgmt) PCI 2.2		
Security	Power-on password / administrator password / hinged and lock unattended boot / selectable boot	able front door to cover	disk bays, power button, and res	et button /		
Systems mgmt Diagnostics Software	IBM Integrated system management processor (ISMP) / H8S2148 / on planar / provides system and environmental monitoring such as temp, optional disks, fans, power supp / supports opt. Remote Supervisor Adapter II Slimline with 20-pin connector on planar for continuous power (std on 32y) (no ext pwr reqd) Light Path Diagnostics™ panel providing LED map to failing part (under side cover) / Information LED Panel in front ServerGuide™ (CD-ROM installation and configuration	Xeon 3.4GHz/1MB L2 Cache Proc Upg 13N Xeon 3.6GHZ/1MB L2 Cache Proc Upg 13N 512MB (2x256) PC2-3200 CL3 ECC DDR2 non-Chipk 73F 1GB (2x512) PC2-3200 CL3 ECC DDR2 non-Chipk 73F 1GB (2x512) PC2-3200 CL3 ECC DDR2 RDIMM 73F 73.4GB 10K Ultra320 SCSI Hot-Swap SL HDD 32F 146.4GB 10K Ultra320 SCSI Hot-Swap SL HDD 32F				
Keyboard / mouse Power supply Fans	utilities), IBM Director, others IBM 101-key keyboard / IBM mouse (both black) std/max: one/two 670 watt / voltage-sensing / auto-restart / Fan in each std/max: four/six/ two fans (front), two fans on planar, (Opt) two fans (rear) / variable speed / hot-swap / redundant with optional rear fans / PFA / fan in each power supply	73.4GB 15K Ultra320 S IBM ServeRAID-7k Co IBM Remote Superviso IBM T541 15" Flat Pand 3-Pack Ultra320 Hot-Su IBM 670W Hot-Swap P	SCSI Hot-Swap SL HDD ntroller r Adapter II Slimline el Color Monitor (black) wap Expansion Kit	06P5776 32P0735 71K8642 73P9341 9512AB1 33P2751 25K9560		
Slot 2: full, PCĬ-Exp Slot 3: full, PCI-Exp Slot 4: full, 64-bit 11 Slot 5: full, 64-bit 11 Slot 6: full, 64-bit 11 Slot 7: fu		on Utility near startup or™) by pressing Panel (in front) lysis on disk options, VRMs, power conjunction with IBM system administrator onent failure / 8.5" x D 27.6"	LIMITED WARRANT 3 year parts and labor International Warranty Serv On site, 8 am - 5 pm, Mon- coverage excluding holida business day response tin 3 year on site warranty serv upgrade options (in eligible locations): 9 hour coverage, Mon-Fri excluding holid 4 hour average respons (ServicePac® part num 21 24 hr x 7 day coverage, 4 hour average respons (ServicePac part number 24 hr x 7 day coverage, 2 hour average respons (ServicePac part number ServicePac part number 24x7¹⁴ toll-free support for	rice ³ Fri ys, next ne ⁷ vice le ays, e P2083) e 21P2084)		
	isks via 3-Pack Kit 33P2751 3-Pack Ultra160 Hot-S		issues during the warranty			

IBM®	L2		SCSI			Slots x l	nave		Pov	vor		Available
	x Processor cache Memo	ory Disk c	ontroller Me	echanical		ot-swap			sup		Ethernet	
8841-05U-05x 1 x X			2 x Ultra320		6x10 (6	hot-swa	ap std; 9					
8841-15y-15x 1 x X	eon® 3.0GHz 2MB 1GB eon 3.2GHz 2MB 1GB		2 x Ultra320 2 x Ultra320									
8841-35y-35x 1 x X			2 x Ultra320									
8841-45ý-45x 1 x X	eon 3.6GHz 2MB 1GB	None 2	2 x Ultra320	Tower	6x10 (6	hot-swa	ap std; 9	max)	1 x 670V	V hot-swap	2xGigabit	Mar 2005
8841-16y-16x 1 x X		None 2	2 x Ultra320	Tower	6x10 (6	hot-swa	ap std; 9	max)	1 x 670V	V hot-swap	2xGigabit	Mar 2005
8841-E1y-E1x 1 x X 8841-E2y-E2x 2 x X	eon 3.0GHZ 2MB 2GB	3x73.4GB 2 3x73.4GB 2	2 X Ultra320 2 v Hltra320	Tower	6x10 (6	not-swa	ap sta; 9 an etd: 0	max)	1 x 670V	v not-swap v hot-swap	2xGigabit	Mar 2005
	eon 3.8GHz 2MB 1GB		2 x Ultra320									
Positioning	Universal server; two-wa											
Processor	Up to 1 x Intel® Xeon™	Processor 2.	8, 3.0, 3.2,	3.4, 3.6, 3	3.8 GHz	with 80	OMHz fro	ontside				echnol-
10	ogy (EM64T) / Simulta	neous Multi-	threading (SMT) / H	lyper-Th	reading	technolo	ogy /			•	
L2 cache SMP support	2MB / all models / on die 2-way SMP / up to two					2)						
Implementation	Systemboard contains to						morv go	ld-conn	ector DIM	1M slots.		
	six PCI slots (one hot-sv	vap Active™ F	PCI slots), a	nd integra	ated SC	SI, ethe	rnet, gra	phics				
Memory	1GB std / 16GB max / t	wo slots used	l / six slots a	vailable /	PC2-32	200 400ľ	MHz regi	istered	240-pin E	CC DDR2	SDRAM D	IMMs /
•	DIMMs must be installed	l in matched p	oairs [a bank	(] / 2-way	memor	y interlea	ave / dua	al chanr	nel / mem	ory bus rur	ns at 2x200	MHz /
	Error Checking and Co	rrecting (EC	C) (corrects	1, 2, 3, (or 4-bit e	errors or	same o	chip and	d detects	2- through	8-bit errors	s contained
0001 " 1	in two chips) / Active M			-								
SCSI disk controller	Adaptec AIC 7902 / dua											
	HostRAID supports RAI low-cost RAID 0, 1, 1E,						puonai i	DIVI SE	rverAID.	-7K COHIC	oller for	
SCSI channels	Two 16-bit channels / So	CSI Channel E	3: 16-bit 68-r	oin LVD o	able fro	m contro	oller to ba	ackplan	e; Chani	<i>nel A:</i> 16-bi	t 68-pin inte	erface for
	Bay 8 and 9 (may requir	e a cable) or	with optiona	3-Pack	Kit (cabl	e include	ed); supp	orts ex	ternal SC	SI devices	via externa	al SCSI
IDE controller / cable	knockout in rear (cable r Enhanced IDE ATA-100									NE cable (C		
Disk - capacity	None std / supports 720									L cable (C	D-HOIVI)	
Disk - bays	Six hot-swap / 80-pin SC									nine 15K rp	om disks	
Mechanical	Tower / conversion to El	A 19" Rack (5U4) via opti	ional kit fo	or suppo	ort in IBN	/I NetBA	Y™ Rad	cks (13N0	0956)		
Slots	Two PCI-Express (one h	ot-plug), three	e PĆI-X 64-I	bit (one 1	33MHz	and two	100MH	z), one	32-bit/33	MHz ['] slot		
Chipset (see below)	Intel E7520 chipset / In											
	(slots 2 & 3) / PXH: Bus 6) / ICH5R: one 32-bit/33	A, two 64-bit/ SMHz slot (slo	t 1) ATI vid	eo FIDE	USB 5	& 5), Ad SMBus T	aptec St PC bus	to Sun	er I/O / N	94-DIV 133IVI S PC87417	MZ MOT-PIU 7 Super I/C	g siot (siot)
Ethernet controller	Dual 10/100/1000 gigabi										-	
Eulemet controller	Format (2.0) / IPMI (1.5)	t / Broaucom	DOW 5/21	/ on plan	ar / PCI	-X 04-DII	. IUUIVIII.	Z / IUII C	iupiex / vv	rake on LAI	N° / Alert S	olanuaru
CD-ROM / diskette	48X-20X ⁶ CD-ROM / IDI	E / 1.6" HH;	Diskette: 3.5	" 1.44MB	diskette	e drive /	dust cov	/er				
Rear ports	Rear: two USB (Vers 2.											
Front port / graphics	Front: one USB (Vers 2.	0); Graphics:	SVGA / AT	l® Radeoi	n'™ 7000	OM / on	planar / ˈ	16MB L	DDH std/n	nax / 32-bi	t/33MHz P	CI 2.2
Security	Power-on password / ac								Cache Proc	. 0		25R8907
	front door to cover disk to unattended boot / selecta		outton, and re	eset butto	ori /				Cache Proc			25R8902
Customa mamt				(ICM/ID)	. /				Cache Proc Cache Proc			25R8903 13N0686
Systems mgmt	IBM Integrated system H8S2148 / on planar / pr					١,			Cache Proc			13N0687
	such as temp, optional of					note 🖯			Cache Proc			13N0689
	Supervisor Adapter II Sli	mline with 20-	pin connecto			5				CDDR2 non-C		73P3523
Diagnostics	continuous power (std o	n 32y) (no ex	kt pwr reqd)	on to f-!	ina ne:+	- 1				DDR2 non-Chi DDR2 RDIMM		73P3522 73P2865
Diagnostics	Light Path Diagnostics (under side cover) / Infor	mation I FD F	onel in fron	iap io iali t	iiig part		,	,		DDR2 RDIMM		73P2866
Software	ServerGuide™ (CD-RO									vap SL HDD		32P0727
	utilities), IBM Director, ot									Swap SL HDD		32P0728
Keyboard / mouse	IBM 101-key keyboard /	IBM mouse ((both black)				3.4GB 15K BM ServeR			vap SL HDD		32P0735 71K8642
Power supply	std/max: one/two 670 wa	att / voltage-se	ensing / auto			- 1			or Adapter II	Slimline		73P9341
Fans	Fan in each std/max: fou								Swap Expans			33P2751
	(Opt) two fans (rear) / va optional rear fans / PF				iit Witti				Power Upgra			25K9560
		., idii iii cac	on power at	איאאי		'	ou ier options	sat www.i l		us/accessories		# 0



Bay ① 3.5", SL 1", access, diskette Bay ② 3.5", SL 1", access, hot-swap Bay ③ 3.5", SL 1", access, hot-swap Bay ⑤ 3.5", SL 1", access, hot-swap Bay ⑥ 5.25", HH 1.6" access, open** Bay ⑨ 5.25", HH 1.6" access, open** Bay ⑩ 5.25", HH 1.6" access, CD-ROM

Bays 2 through 7 support 6 SL disks via SCA-2 connectors. Bays 8 and 9 support three 3.5" disks via 3-Pack Kit 33P2751

Quick release adapter slots (no screws)

Configuration/Setup Utility invoked by pressing F1 at startup

Adaptec Configuration Utility near startup by pressing CTRL+I

Diagnostics (PC-Doctor™) by pressing F2 at startup

ACPI 2.0-compliant

Operator Information Panel (in front)

Predictive failure analysis on disk options, memory, processors, VRMs, power supplies, and fans in conjunction with IBM Director can alert the system administrator of an imminent component failure

⇒ Tower: H 17.31" x W 8.5" x D 27.6"

⇒ 74 to 101 pounds⇒ Stealth black color

All models: Max int disk capacity: 1.2TB2 with nine 146.4GB SL disks with 3-Pack Ultra160 Hot-Swap Expansion Kit

LIMITED WARRANTY³

3 year parts and labor

International Warranty Service³

On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time7

3 year on site warranty service upgrade options (in eligible locations):

9 hour coverage, Mon-Fri excluding holidays, 4 hour average response (ServicePac® part num 21P2083)

• 24 hr x 7 day coverage, 4 hour average response (ServicePac part number 21P2084)

24 hr x 7 day coverage, 2 hour average response (ServicePac part number 21P2085)

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

CD-ROM

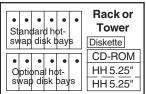
Tower

Din (0 501 V01	xSeries™ 25	o (Julie	2003)		XHEF By es	erver Field 5	kills Enablem	ent ream		
IBM® Type-model Qty x	L3 Processor cache	Memory	ECC memory features	Disk	SCSI controller	Mech- Slots x d anical bays (s	lisk bays std/max) Ethernet	Available date		
8685-71X 1 x Xeon 8685-7RX 1 x Xeon ≈ 8685-72X 2 x Xeon ≈ 8685-73X 2 x Xeon ≈ 8685-81X 1 x Xeon ≈ 8685-8RX 1 x Xeon ≈ 8685-9RX 1 x Xeon ≈ 8685-9RX 1 x Xeon	MP 2.0GHz 1MB MP 2.0GHz 1MB MP 2.0GHz 1MB MP 2.5GHz 1MB MP 2.5GHz 1MB MP 2.8GHz 2MB	512MB Ho 1GB Ho 1GB Ho 1GB Ho 1GB Ho	ot Spare/Chipkill	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 7 x10 Tower 7 x10 Tower 7 x10 Tower 7 x10 Rack 7 x10 Tower 7 x10	6/12 Gigabit 6/12 Gigabit 6/12 Gigabit 6/12 Gigabit 6/12 Gigabit 6/12 Gigabit 6/12 Gigabit 6/12 Gigabit	Jun 2003 Nov 2003 Nov 2003 Jun 2003 Jun 2003 Jun 2003		
Processors L2 cache L3 cache Processor upgrade Implementation	1 or 2 x Intel® Xec 512KB / on die of p 1MB or 2MB / on di 4-way SMP / up to Systemboard conta one PCI slot, and in	rocessor / at le of process four Xeon Pr ains four Inte	t processor speed sor / at processor s rocessors MP (sar I 603-pin micro-PC	speed ne speed/cache GA ZIF sockets, o	size)	,,	Ů	nnology		
Memory	Up to 3GB std / 24 184-pin ECC DDR installed in matche of a pair or quad o mirroring (memor Chipkill ™ (corrects	-SDRAM DI d pairs or q f DIMMs [a y mirroring	MMs'/ one memoudds [a bank] / 2-bank]; reqs additionsupported with a	orý-board std wit or 4-way memo onal memory ma ny OS) / Error	h 12 DIMM gold-co pry interleave / Ho atching failed bank Checking and Co	onnector slots t Spare Memo () / Active Memorrecting (ECC)	/ DIMMs mus ory (activated l mory™ via me C) via 16-bit (t be by failure emory Checksum		
SCSI disk controller SCSI connectors IDE controller / cablir Disk - capacity Disk - bays	Adaptec® AIC-7899 Channel B: 68-pin Channel A: 68-pin g Enhanced IDE ATA None (or two) stan Std: six hot-swap di	connector or connector or a-100 control dard / supp	n planar to SCSI ba n planar for optiona ller in CSB5 South orts up to 15,000	ackplane (one-dr al one-drop 16-bii Bridge / one one rpm disks / 80-	op 16-bit LVD cable : LVD cable (32P81 -drop IDE cable fro pin SCA-2 connec	e) / 64) to rear 0.8i om IDE controll tors	mm VHDCI cor er to CD-ROM	nnector		
Mechanical Rack / conversion Architecture / chipset	two CIOB-X I/O Bri ethernet and one P SMBus, IOAPIC, L) Six hot-swap PCI-X	oorted in IBM and Champ dges (IMB b PCI 2.2 bus fo PC bus to S (1.0 slots ¹⁰	M NetBAY™ racks ion™ 4.0 HE / CM bus to Host Bridge or SCSI / CSB5 S uper I/O) / five pe available with pov	/ kit available to IC Host Bridge (, one with two Poouth Bridge (Thier PCI buses / Nower 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 (use NetBar and I/O Bridga D, other with o ge, one PCI 2.2 I/O (diskette, Potical sensors o	AY11 for rack te) and five REI ne PCI-X bus I bus A, EIDE, keyboard, moucontrol power t	MCs / B and USB, ise)		
Ethernet controller CD-ROM / diskette Rear ports Graphics controller	not replace, hot u 10/100/1000 gigabi CD-ROM: 48X-20X Four USB (Vers 1.1 two RJ-45 (for integ SVGA / ATI® Rage	t ethernet / E 6 CD-ROM,), one serial rated systen	Broadcom® BCM 5 IDE (ATAPI), 1.6" (9-pin), keyboard n management pro	703 / on PCI Bus HH, bootable / <i>E</i> (PS/2), mouse (F ocessor) / no para	B / full duplex / Wa Diskette drive: 3.5" 1 PS/2), ethernet (RJ- allel port	ake on LAN® / A 1.44 MB diskett -45), graphics (Alert Standard I te drive, dust c (DB-15),	cover		
Security	Power-on passwor button (tower only)	d / administr	ator password / h	inged and lockal						
Systems management Diagnostics Software		stem manag ar / provides be temp, option emote Supe r for continuo stics™ pane op cover) / In D-ROM instal	gement processo system and enviro nal disks, fans, po rvisor Adapter with ous power (no extre bl providing LED m formation LED Pa llation and configu	r (ISMP) / inmental wer supplies / n 20-pin ernal power req) ap to nel in front	Xeon MP 2.8GHz/2MB L3 Cache Proc Upg 73P88 6-pack Ultra320 Hot-Swap Expansion Kit 32P81 370 watt Hot-Swap Redundant Power Supply 31P61: IBM 7U x 26D Tower-to-Rack Conversion Kit III 32P14					
Keyboard / mouse Power supply Fans	Tower only: IBM 10 Std: two 370 watth redundant with four universal (voltage s Nine hot-swap red variable speed / PF	03-key keybo not-swap; <i>M</i> power supp sensing) / far lundant fans	pard / IBM mouse ax: four 370 watt lies / tool-free inst as in each power s s / plus fan in each	not-swap / ´all / upply / PFA power supply/	IBM External SCSI Interface Kit (for rear SCSI) 32P8 Media Bay Cable Kit (2-drop SCSI to HH bays) 10K23 IBM ServeRAID™-4H Ultra160 SCSI Adapter 37L68 IBM 36.4GB 10K Ultra160 SCSI Hot-Swap SL 06P53 IBM 73.4GB 10K Ultra160 SCSI Hot-Swap SL 06P53					
Standard hotswap disk bays Bay ① 3.5", SL 1" Bay ② 5.25", HH 1. Bay ③ 5.25", HH 1. Bay ③ 5.25", HH 1. Bays 5 to 10 (six bays) Bays 11 to 16 (six bays)	CD-ROM HH 5.25" HH 5.25" , access, diskette 6" access, CD-ROM 6" access, open* 6" access, open* 6" access, open* 1" hot-swap disk bay	04 to 150 lb color .0 e compo- ind labels e hot-swap is oduct Data o BIOS	primarily fo Slot 2: full, 64-bit 1 Slot 3: full, 64-bit 1 Slot 3: full, 64-bit 1 Slot 5: full, 64-bit 1 Slot 5: full, 64-bit 1 Slot 6: full, 64-bit 1 Slot 7: full, 64-bit 1 Slot 8-bit 1 Slot 8-bit 1 Slot 8-bit 1 Slot 9-bit 1 S	rfor optional Rem 00MHz 3.3v PCI-00MHz 3.v PCI-00MHz 3.3v PCI-00MHz 3.v PCI-00MHz 3.3v PCI-00MHz 3.v PCI-00	ote Supervisor Adp X, hot-swap, Bus B X, hot-swap, Bus B X, hot-swap, Bus C X, hot-swap, Bus C X, hot-swap, Bus C X, hot-swap, Bus C bessing F1 at by pressing elect Utility s from top ts generated tor for DIMM(s),	⇒ 3 year par ⇒ Internation ⇔ On site, 8 coverage business of ⇒ On site se (in eligible • 3 year IC (ServiceP • 5 year IC (ServiceP • 5 year IC (ServiceP ⇒ Other ServiteP http://www.its/pdf/war ⇒ 24x714 toll-	nal Warranty S am-5 pm, Mon excluding holi day response ervice upgrade e locations): ⁷ DR 9x5, 4 hr at Pac part num 3 DR 9x5, 4 hr at Pac part num 60 vicePac option w.ibm.com/ser momxeu.pdf free support fossues during to	Service ³ i-Fri idays, next time ⁷ options vg resp. 41L2738) avg resp 1L2723) vg resp. 9P9223) is at rvices/us/ or		

See footnotes for important warranty information • = Hot-swap US models announced June 2003 or November 2003

⁽X255C) © IBM Corp. November 2003

IBM [®] Type-model Qty x P		L3 ache Memory	ECC memory features	Disk	SCSI controller		Slots x di bays (s	sk bays std/max) Etherne	Available date
8685-A1X 1 x Xeon ¹⁰ 8685-ARX 1 x Xeon 8685-B1X 1 x Xeon 8685-BRX 1 x Xeon 8685-C1X 1 x Xeon 8685-C1X 1 x Xeon 8685-TEX 2 x Xeon	MP 2.2GHz 21 MP 2.7GHz 21 MP 2.7GHz 21 MP 3.0GHz 41 MP 3.0GHz 41	MB 512MB MB 1GB MB 1GB MB 1GB MB 1GB	Hot Spare/Chipkill™ Hot Spare/Chipkill Hot Spare/Chipkill Hot Spare/Chipkill Hot Spare/Chipkill Hot Spare/Chipkill Hot Spare/Chipkill Hot Spare/Chipkill	None None None None None 3 x 73GB - 10k	2 x Ultra160	Rack Tower Rack Tower Rack	7 x10 7 x10 7 x10 7 x10 7 x10	6/12 Gigabit 6/12 Gigabit 6/12 Gigabit 6/12 Gigabit 6/12 Gigabit 6/12 Gigabit 6/12 Gigabit	Mar 2004 Mar 2004 Mar 2004 Mar 2004 Mar 2004
Processors L2 cache L3 cache Processor upgrade Implementation	512KB / on die 1MB, 2MB or 4-way SMP / u Systemboard of	e of processo 4MB / on die p to four Xeon contains four Ir	or MP 2.0, 2.2, 2.7, or / at processor spe of processor / at pro Processors MP (san tel 603-pin micro-PC SCSI, ethernet, graph	ed ocessor speed ne speed/cache s 3A ZIF sockets, o	size)		,,	· ·	inology
Memory	184-pin ECC I installed in ma of a pair or qua mirroring (me	DDR-SDRAM atched pairs of ad of DIMMs emory mirrorin	x / 512 &1GB: two s DIMMs / one memor r quads [a bank] / 2- [a bank]; reqs additing ng supported with a or 4-bit errors on sa	ory-board std with or 4-way memoonal memory ma onal OS) / Error (n 12 DIMM gold- ry interleave / H otching failed ban Checking and C	connect ot Spar ık) / Act orrecti	or slots , e Memo tive Men ng (ECC	/ DIMMs mus ory (activated nory™ via m c) via 16-bit (t be by failure emory Checksum
SCSI disk controller SCSI connectors IDE controller / cabling Disk - capacity Disk - bays	Channel B: 68- Channel A: 68- gEnhanced IDE 7EX: 3 x 73GE	-pin connector -pin connector E ATA-100 cor B - 10K / supp	Itra160 SCSI (LVD 1 or on planar to SCSI bar on planar for optiona ntroller in CSB5 Sou ports up to 15,000 rp max: six additional bar	ackplane (one-droal one-droal al one-drop 16-bit th Bridge / one o om disks / 80-pin	op 16-bit LVD cab LVD cable (32P8 ne-drop IDE cab SCA-2 connecto	ole) / 3164) to le from ors	rear 0.8n IDE con	nm VHDCI cor troller to CD-F	nnector ROM
Mechanical Rack / conversion Architecture / chipset	Rack systems ServerWorks two CIOB-X I/O ethernet and o SMBus, IOAPI Six hot-swap F	supported in Grand Char D Bridges (IMI) One PCI 2.2 bu IC, LPC bus to PCI-X 1.0 slots	r / tower models have IBM NetBAY™ racks npion™ 4.0 HE / CMB bus to Host Bridge is for SCSI / CSB5 S o Super I/O) / five per 10 available with power of expansion / sep	./ kit available to IIC Host Bridge (None with two PC outh Bridge (Thir er PCI buses / NS ver and attention	convert tower to Memory Controlle CI-X buses C and IMB to Host Brid S PC87417 Supe indicator lights (c	rack (user and I/I D, other dige, one of I/O (dieprical s	se NetBA O Bridge er with or e PCI 2.2 skette, k ensors c	AY11 for rack e) and five RE ne PCI-X bus bus A, EIDE eyboard, mou	MCs / B and USB, ise)
Ethernet controller CD-ROM / diskette Rear ports Graphics controller	CD-ROM: 48X Four USB (Ver two RJ-45 (for i	-20Xº CD-ROI s 1.1), one ser integrated sys	t / Broadcom® BCM 5 M, IDE (ATAPI), 1.6" rial (9-pin), keyboard tem management pro anar / 8MB SDRAM	HH, bootable / Di (PS/2), mouse (Pocessor) / no para	<i>iskette drive:</i> 3.5" 'S/2), ethernet (R ıllel port	1.44 MI J-45), g	B diskette raphics (e drive, dust o DB-15),	cover
Security			istrator password / h led boot / selectable l		le front door to co	over dis	k bays, p	ower button,	and reset
Systems managemen Diagnostics Software	t IBM integrated H8S2148 / on p monitoring suc supports option connector on p Light Path Dia failing part (und	d system mar planar / provide ch as temp, op nal Remote Su planar for contil agnostics™ pa der top cover) M (CD-ROM ins	nagement processo es system and enviro tional disks, fans, po ipervisor Adapter with nuous power (no exte anel providing LED ma / Information LED Pa stallation and configu	r (ISMP) / somental wer supplies / n 20-pin ernal power req) ap to nel in front ration	512MB PC1600 1GB PC1600 E0 2GB PC1600 E0 Xeon MP 2.0GH Xeon MP 2.5GH Xeon MP 2.8GH 6-pack Ultra320 370 watt Hot-Sv IBM 7U x 26D To	CC DDF CC DDF Iz/1MB Iz/1MB Iz/2MB Hot-Sv vap Rec ower-to-F	R SDRAI R SDRAI L3 Cach L3 Cach L3 Cach vap Expa dundant Rack Cor	M RDIMM M RDIMM e Proc Upg e Proc Upg e Proc Upg ansion Kit Power Suppl version Kit III	32P1474
Keyboard / mouse Power supply Fans	Std: two 370 w redundant with universal (volta Nine hot-swap	vatt hot-swap; I four power su age sensing) / D redundant fa	yboard / IBM mouse Max: four 370 watt I pplies / tool-free insta fans in each power s ans / plus fan in each lure signals diagnost	(both black) hot-swap / all / upply / PFA power supply/ ic LED	IBM External SCS Media Bay Cable IBM ServeRAID IBM 36.4GB 10I IBM 73.4GB 10I IBM Remote Su IBM T541 15" FI Other options a	Kit (2-dı ™-4H L K Ultra1 K Ultra1 pervisor at Pane	rop SCSI Iltra160 60 SCS 60 SCS Adapter I Color M	to HH bays) SCSI Adapte I Hot-Swap S I Hot-Swap S II Ionitor (black)	L 06P5755 L 06P5756 59P2984
⇒Tower dim: H15.5"; ⇒Rack dim: H12.0";	x W17.6" x D27.			r for optional Remo	ote Supervisor Ad X, hot-swap, Bus	B ⇒ Int	ear parts	ED WARRAN s and labor al Warranty So um-5 pm. Mon-	ervice ³



- 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

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

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

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)
- http://www.ibm.com/services/us/ its/pdf/wamomxeu.pdf
- 24x7¹⁴ toll-free support for warranty issues during the warranty period3

See footnotes for important warranty information

= Hot-swap

							1000	2/				
IBM® Type-model Qty x Processor	L2 cache	DIMN Memory slots	l Memory Cards Dis	SCSI ks controller	Mechan- ical	Slots x bays	Hot-swap pwr supplies		y Available date			
8865-11Y 1 x Xeon™ MP 3.10 8865-12Y 1 x Xeon™ MP 3.10 8865-18Y 1 x Xeon™ MP 3.10 8865-18Y 1 x Xeon™ MP 3.10 8865-21Y 1 x Xeon™ MP 3.60 8865-2RY 1 x Xeon™ MP 3.60 8865-E1Y 2 x Xeon™ MP 3.60 8865-E2Y 1 x Xeon™ MP 3.60	6GHz 1MB 1 6GHz 1MB 2 6GHz 1MB 1 6GHz 1MB 2 6GHz 1MB 2 6GHz 1MB 4	2GB(2x1GB) 4 1GB(2x512MB) 4 2GB(2x1GB) 4 1GB(2x512MB) 4 2GB(2x1GB) 4 2GB(2x1GB) 4 4GB(4x1GB) 8 1GB(2x512MB) 8	One No One No One No One No Two No	ne SAS	Tower Tower 7U Rack 7U Rack Tower 7U Rack Tower 7U Rack Tower 7U Rack	6x12 6x12 6x12 6x12 6x12 6x12 6x12	2 x775W 2 x775W 2 x775W 2 x775W 2 x775W 2 x775W 2 x775W 2 x775W 2 x775W	3 3 3 3 3 3 3	Sep 2005 Sep 2005 Sep 2005 Sep 2005 Sep 2005 Sep 2005 Sep 2005 Sep 2005			
L2 cache Processor upgrade Implementation Memory 64 1MB / on d 4-way SMB System box	I Technology™ (ie of processor / a P / up to four Xeo ard contains four I	on™ Processor MI (EM64T) / Hyper-T at processor speed in Processors MP (Intel 604-pin micro- I (SAS), ethernet, a	hreading tecl / XceL4v™ [same speed/ PGA4 ZIF so	nology lynamic Server cache size)	Cache							
Active Memory [™] Up to 4GB gold-conner / Error Che	std / 64GB max ¹² ctor slots / DIMMs cking and Corre	2.13 (with 4GB DIMM is must be installed ecting (ECC) via 1: ot-swap (non-OS sp	s) using high in matched p 6-bit Checks	airs / PC2-3200 um Chipkill ™	0 400MHz re / Memory F	egistered : ProteXion	240-pin DDR2 n™ (redundant	SDRA- bit stee	.M RDIMMs ering) and			
SAS connectors SAS cabling IDE controller / cabling Disk - capacity Disk - bays	el Controller wired ays connect to int DE ATA-33 contro -10k / supports up ve 3.5" hot-swap	Dual-channel Serial I to dual SAS backptegrated SAS controller in CSB6 South p to 15,000 rpm dis bays / Six standaru x 28" deep / suppoi	olanes oller through Bridge sks d converged	SAS expander,	, 1 cable for CA-2 connec	each of t	the 2 SAS bac e FH (or 2 HF	kplanes				
models) / 2 graphics), S Broadcom S I/O Slots Six total Ac	IBM PCI-X 2.0 Ho ServerWorks® CSI 5704, and 2 PCI- tive™ PCI-X 2.0 6	on chipset / IBM li ost Bridges / 1 sup B6 South Bridge (IE X 2.0 slots / Host B 64-bit slots available expansion / separa	ports adapte DE, USB, bus ridge suppor with power	PCI 33MHz ar for Super I/O s 4 PCI-X 2.0 s and attention inc	nd 66MHz, s NS 87417 [d slots dicator lights	lot for opt liskette, k (optical s	tional ServeRA eyboard, mous sensors contro	AID 8i (i se]), Du I power	nc. ual Port			
Ethernet Broadcom® Graphics controller SVGA / AT Ports Rear: RSA	5704 10/100/100 Radeon Mobility ethernet, RSA se	ROM, IDE (ATAPI), 00 dual ethernet / or y 7000 / on planar / rial, two USB (Ver 2	n systemboai 16MB SDR <i>A</i>	d / 64-bit 266M M std/max / 32	hz PCI-X 2.0 -bit 33MHz F) / Wake PCI 2.2 bu	JS					
Systems management BMC stand connectors fans, powe Diagnostics Drop-dowr IBM Real T	Front: USB (Ver 2.0) Power-on and administrator passwords / unattended boot / selectable boot BMC standard / Remote Supervisor Adapter II slimline (optional) / PCI adapter / includes 10/100 ethernet, RJ-11, and serial onnectors / provides remote console and mgmt / power on/off system / monitors power status, op system, temperature, disks, ans, power supplies Porop-down Light Path Diagnostics / primary indicator on information panel with LEDs associated with failing components / BM Real Time Diagnostics (operated through IBM Director) available even while server running BerverGuide™ (CD-ROM installation and configuration utilities), IBM Director, and others											
Rack mode Std: two 77 accessible Eight hot-su	l: none standard / 5 watt hot-swap / ans in each power vap, redundant, m	/ Tower model: IBM redundant with three	1 104-key ke ee power sup ne cooling far	yboard (PS/2 blies (N+1) / wo) / IBM 3-bi orldwide / vol	utton opt Itage-sens	sing / auto-res	tart / re				
Options 1GB PC2- 2GB PC2- 4GB PC2- Active Me Xeon MP Xeon MP 775 watt h	3200 CL3 ECC 3200 CL3 ECC 3200 CL3 ECC mory 4-slot Expa 3.16GHz/1MB L3	RDIMM (2x512MI RDIMM (2x1GB) RDIMM (2x2GB) ansion Card 2 Cache Proc Upç 2 Cache Proc Upç Supply (WW)	73P2865 73P2866 73P2867 13M7409 13N0694	IBM 73. IBM 146 IBM 300 Remote SAS 3.5 IBM 73.	4GB 10K 3.5 6GB 10K 3.5 0GB 10K 3.5 Supervisor 5" 6-drive Ba 4GB 15K 3.5	.5" SAS H 5" SAS H 5" SAS H Adapter ackplane .5" SAS		D :	02R0988 26K5709 26K5710 26K5711 59P2984 13M7864 26K5698 26K5699			
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 time² → On site service upgrade options (in eligible locations):² → On site service upgrade options (ServicePac partnum 96P2253) → 3 year IOR 24x7, 4 hr avg response (ServicePac partnum 96P2253) → 4 year IOR 9x5, NBD response (ServicePac partnum 96P2255) → 5 year IOR 9x5, NBD response (ServicePac partnum 96P2255) → 5 year IOR 9x5, NBD response (ServicePac partnum 96P2255) → Other ServicePac options at http://www.ibm.com/services/ us/fits/pdf/wamomxeu.pdf → 24x7" toll-free support for warranty is/sues during the warranty period³ Bay ③ 3.5", SL 1", access, diskette Bay ② 5.25", HH 1.6" access, open* Bay ④ 5.25", HH 1.6" access, open* Bay ⊕ Tool-free serviceability □ Tool-free serviceabil												
issues during the warranty period ³ All models: Maximum into	ernal disk capac	city: 3.6TB with 12	2x 300GB² h	ot-swap SAS	disks		Ship Config: 2		nr (588 watts) r (1860 watts)			

8865-11Y 1 x Xeon™ MP 3.16GHz 1MB 2GB(2x1GB) 4 One None SAS Tower 6x12 2 x775W 3 Sep 2005 8865-12Y 1 x Xeon™ MP 3.16GHz 1MB 1GB(2x512MB) 4 One None SAS Tower 6x12 2 x775W 3 Sep 2005 8865-1RY 1 x Xeon™ MP 3.16GHz 1MB 2GB(2x1GB) 4 One None SAS 7U Rack 6x12 2 x775W 3 Sep 2005 8865-1SY 1 x Xeon™ MP 3.16GHz 1MB 1GB(2x512MB) 4 One None SAS 7U Rack 6x12 2 x775W 3 Sep 2005 8865-21Y 1 x Xeon™ MP 3.66GHz 1MB 2GB(2x1GB) 4 One None SAS 7U Rack 6x12 2 x775W 3 Sep 2005 8865-2RY 1 x Xeon™ MP 3.66GHz 1MB 2GB(2x1GB) 4 One None SAS 7U Rack 6x12 2 x775W 3 Sep 2005 8865-2RY 1 x Xeon™ MP 3.66GHz 1MB 2GB(2x1GB) 4 One None SAS 7U Rack 6x12 2 x775W 3 Sep 2005 8865-2RY 1 x Xeon™ MP 3.66GHz 1MB 2GB(2x1GB) 4 One None SAS 7U Rack 6x12 2 x775W 3 Sep 2005 8865-2RY 1 x Xeon™ MP 3.66GHz 1MB 4GB(4x1GB) 8 Two None SAS Tower 6x12 2 x775W 3 Sep 2005 8865-E1Y 2 x Xeon™ MP 3.66GHz 1MB 4GB(4x1GB) 8 Two None SAS Tower 6x12 2 x775W 3 Sep 2005 8865-E1Y 2 x Xeon™ MP 3.66GHz 1MB 4GB(4x1GB) 8 Two None SAS Tower 6x12 2 x775W 3 Sep 2005 8865-E1Y 2 x Xeon™ MP 3.66GHz 1MB 4GB(4x1GB) 8 Two None SAS Tower 6x12 2 x775W 3 Sep 2005 8865-E1Y 2 x Xeon™ MP 3.66GHz 1MB 4GB(4x1GB) 8 Two None SAS Tower 6x12 2 x775W 3 Sep 2005 8865-E1Y 2 x Xeon™ MP 3.66GHz 1MB 4GB(4x1GB) 8 Two None SAS Tower 6x12 2 x775W 3 Sep 2005 8865-E1Y 2 x Xeon™ MP 3.66GHz 1MB 4GB(4x1GB) 8 Two None SAS Tower 6x12 2 x775W 3 Sep 2005 8865-E1Y 2 x Xeon™ MP 3.66GHz 1MB 4GB(4x1GB) 8 Two None SAS Tower 6x12 2 x775W 3 Sep 2005 8865-E1Y 2 x Xeon™ MP 3.66GHz 1MB 4GB(4x1GB) 8 Two None SAS Tower 6x12 2 x775W 3 Sep 2005 8865-E1Y 2 x Xeon™ MP 3.66GHz 1MB 4GB(4x1GB) 8 Two None SAS Tower 6x12 2 x775W 3 Sep 2005 8865-E1Y 2 x Xeon™ MP 3.66GHz 1MB 4GB(4x1GB) 8 Two None SAS Tower 6x12 2 x775W 3 Sep 2005 8865-E1Y 2 x Xeon™ MP 3.66GHz 1MB 4GB(4x1GB) 8 Two None SAS Tower 6x12 2 x775W 3 Sep 2005 8865-E1Y 2 x Xeon™ MP 3.66GHz 1MB 4GB(4x1GB) 8 Two None SAS Tower 6x12 2 x775W 3 Sep 2005 8865-E1Y 2 x Xeon™ MP 3.66GHz 1MB 4GB(4x1GB) 8 Two None SAS Tower 6x12 2 x775W 3 Sep 2005 8865-E1Y 2 x Xeon™ MP 3.66GHz 1MB 4GB(4x1GB) 8 Tw	_		•		-					1000	A STATE OF THE PARTY OF THE PAR			
Hemory 64 Technology™ (EM647) / Hyper-Threading technology IMB / on die of processor of processor speed / Xee4.wW/ Dynamic Server Cache Processor upgrade Active Memory™ Active Memory™ Active Memory™ Active Memory™ Dup 1 MaB sid / 640B mark* (1 with 640-pin mice-PGAZ #27 societs), one memory board starks via Active™ PCI-X 2.0 slots, integrated Serial Attach SCSI (SAS), eithered, and graphics Active Memory™ Dup 1 MaB sid / 640B mark** (1 with 468 bilMMs) using high-capacity memory card / one memory board standard with 4 DilMM glots of parts / PCi-X 200 400MHz registered 240-pin DDP4-SDFAM FDIJMMs Active Memory Microchemical Serial Attached ScSI (SAS) 300Hz registered 240-pin DDP4-SDFAM FDIJMMs Active Memory Microchemical Scale (SAS) 300Hz registered 240-pin DDP4-SDFAM FDIJMMs Active Memory Microchemical Scale (SAS) 300Hz registered 240-pin DDP4-SDFAM FDIJMMs Active Memory Microchemical Scale (SAS) 300Hz registered 240-pin DDP4-SDFAM FDIJMMs Active Memory Microchemical Scale (SAS) 300Hz registered 240-pin DDP4-SDFAM FDIJMMs Active Memory Microchemical Scale (SAS) 300Hz registered 240-pin DDP4-SDFAM FDIJMMs Active Memory Microchemical Scale (SAS) 300Hz registered 240-pin DDP4-SDFAM FDIJMMs Active Memory Microchemical Scale (SAS) 300Hz registered 240-pin DDP4-SDFAM FDIJMMs Active Memory Microchemical Scale (SAS) 300Hz registered 240-pin DDP4-SDFAM FDIJMMs Active Memory Microchemical Scale (SAS) 300Hz registered 240-pin DDP4-SDFAM FDIJMMs Active Memory Microchemical Scale (SAS) 300Hz registered 240-pin DDP4-SDFAM FDIJMMs Active Microchemical Scale (SAS) 300Hz registered 240-pin DDP4-SDFAM FDIJMMs Active Microchemical Scale (SAS) 300Hz registered 240-pin DDP4-SDFAM FDIJMMs Active Microchemical Scale (SAS) 300Hz registered 240-pin DDP4-SDFAM FDIJMMs Active Microchemical Scale (SAS) 300Hz registered 240-pin DDP4-SDFAM FDIJMMs Active Microchemical Scale (SAS) 300Hz registered 300Hz registered 340-pin DDP4-SDFAM FDIJMMs Active Microchemical Scale (SAS) 300Hz registered 340Hz registered 340Hz registered	Type-model Qty x 8865-11Y 1 x Xeo 8865-12Y 1 x Xeo 8865-1RY 1 x Xeo 8865-1SY 1 x Xeo 8865-21Y 1 x Xeo 8865-2RY 1 x Xeo 8865-2RY 2 x Xeo	n™ MP 3.160 n™ MP 3.160 n™ MP 3.160 n™ MP 3.160 n™ MP 3.660 n™ MP 3.660 n™ MP 3.660 n™ MP 3.660	cache GHZ 1MB	2GB(2x1GB) 1GB(2x512Ml 2GB(2x1GB) 1GB(2x512Ml 2GB(2x1GB) 2GB(2x1GB) 4GB(4x1GB)	Slots C 4 C B) 4 C 4 C B) 4 C 4 C 4 C 8 T	ards Disks One Non	controller	ical Tower Tower 7U Rack 7U Rack Tower 7U Rack Tower 7U Rack Tower	6x12 6x12 6x12 6x12 6x12 6x12 6x12 6x12	pwr supplies 2 x775W 2 x775W 2 x775W 2 x775W 2 x775W 2 x775W 2 x775W 2 x775W	(yrs.) date 3 Sep 2005			
gold-connector slots / DIMMs must be installed in matched pairs / PC2-3200 400M/Lz registered 24-Qpin DDR2-SDAM RDIMMs / Error Checking and Correcting (ECC) via 16-bit Checksum Chipsellill" / Memory ProteXion" (redundant bit steering) and Memory Mirroring" and Hot-swap (non-OS specific) / Hot-add (supported only with Microsoft Windows" Server 2003 ⁽ⁱⁱⁱ⁾ American Score (Applier) / Adapter (1-2-pin) / Ad	L2 cache Processor upgrade	Memory 64 1MB / on die 4-way SMP / System board	Technology [™] of processor up to four Xo I contains fou	M (EM64T) / Hy / at processor s eon Processors ur Intel 604-pin n	per-Threa peed / X o MP (sam nicro-PGA	nding techn ceL4v™ Dy le speed/ca N4 ZIF sock	ology namic Server che size)	Cache						
Dual channel Controller wired to dual SAS backplanes Das cabling IDE controller / cabling IDE	Active Memory™	gold-connector/ Error Check	r slots / DIMI king and Co	Ms must be insta rrecting (ECC)	alled in m via 16-bi	atched pair t Checksu	s / PČ2-3200 n Chipkill ™) 400MHz re / Memory F	egistered 2 ProteXion	240-pin DDR2- ™ (redundant I	SDRAM RDIMMs bit steering) and			
models) / 2 IBM PCI-X 2.0 Host Bridges / 1 supports adapter PC I 33MHz and 66MHz, slot for optional ServeRAID 8 (inc. graphics), ServerWorks* CSB6 South Bridge (IDE, USB, bus for Super I/O NS 87417 (diskette, keyboard, nouse)), Dual Port Broadcom 5704, and 2 PCI-X 2.0 slots / 10 Six total Active* PCI-X 2.0 slots supported up to 266MHz 2.0 s	SAS connectors SAS cabling IDE controller / cabling Disk - capacity Disk - bays	Dual channel Hot-swap bay Enhanced IDI Max: 3.6TB-1 Up to Twelve	Controller wire connect to E ATA-33 con Ok / supports 3.5" hot-swa	red to dual SAS integrated SAS itroller in CSB6 S up to 15,000 rp ap bays / Six sta	backplane controller South Brid om disks andard co	es through Sage nverged tra	AS expander	1 cable for CA-2 connec	each of the	he 2 SAS back e FH (or 2 HH)	κplanes · Tape Drive Bays			
Ethemet Graphics controller Ports FroatCorn® 5704 10/100/1000 dual ethemet / on systemboard / 64-bit 266Mbx PCH-X 2.0 / Wake on LAN™ 2 Security Systems management Front: USB (Ver 2.0) Front: US	·	models) / 2 IE graphics), Sei Broadcom 57 Six total Activ	M PCI-X 2.0 verWorks® C 04, and 2 PC e™ PCI-X 2.0	Host Bridges / SB6 South Bridg CI-X 2.0 slots / H D 64-bit slots ava	1 support ge (IDE, I lost Bridg ailable with	s adapter F USB, bus for e supports n power an	CI 33MHz ai or Super I/O 4 PCI-X 2.0 s d attention in	nd 66MHz, s NS 87417 [d slots dicator lights	lot for opti liskette, ke (optical s	ional ServeRAI eyboard, mous ensors control	ID 8i (inc. e]), Dual Port power to slot) /			
System's management BMC standard / Remote Suipervisor Adapter II slimiline (optional) / PCI adapter / includes 10/100 ethernet, RJ-11, and serial connectors / provides remote console and mgmt / power on/off system / monitors power status, op system, temperature, disks, fans, power supplies Diagnostics Diagnostics Diagnostics Drop-down Light Path Diagnostics / primary indicator on information panel with LEDs associated with failing components / IBM Real Time Diagnostics (operated through IBM Director) available even while server running ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director, and others None standard (because rack-based) None standard (because rack-based) ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director, and others None standard (because rack-based) Nature rack-based rack	Ethernet Graphics controller	Broadcom [®] 5 SVGA / ATI [®] Rear: RSA et	704 10/100/1 Radeon Mobi hernet, RSA	000 dual etherne ility 7000 / on pla	et / on sy: anar / 16N	stemboard IB SDRAM	64-bit 266M std/max / 32	hz PCI-X 2.0 -bit 33MHz F) / Wake o PCI 2.2 bu	IS				
None standard (because rack-based) Std: two 775 wath hot-swap / redundant with three power supplies (N+1) / worldwide / voltage-sensing / auto-restart / rear accessible fans in each power supply / PFA	Systems management Diagnostics	Power-on and administrator passwords / unattended boot / selectable boot gement BMC standard / Remote Supervisor Adapter II slimline (optional) / PCI adapter / includes 10/100 ethernet, RJ-11, and serial connectors / provides remote console and mgmt / power on/off system / monitors power status, op system, temperature, disks, fans, power supplies Drop-down Light Path Diagnostics / primary indicator on information panel with LEDs associated with failing components / IBM Real Time Diagnostics (operated through IBM Director) available even while server running												
2GB PC2-3200 CL3 ECC RDIMM (2x1GB) 73P2866 4GB PC2-3200 CL3 ECC RDIMM (2x2GB) 73P2867 Active Memory 4-slot Expansion Card 13M7409 Xeon MP 3.16GHz/1MB L2 Cache Proc Upg 13N0694 Xeon MP 3.66GHz/1MB L2 Cache Proc Upg 13N0695 775 watt Hot-Swap Power Supply (WW) 13M7415 IBM ServeRAID™-8i SA-SCSI Adapter 13N2227 LIMITED WARRANTY³ 3 year parts and labor Bay ③ 5.25", HH 1.6" access, open* On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time? On site service upgrade options (in eligible locations):² 3 year IOR 24x7, 4 hr avg response (ServicePacpartnum 96P2253) Active Memory 4-slot Expansion Card 13M7409 IBM 146GB 10K 3.5" SAS Hot-Swap HDD 26K5711 IBM 300GB 10K 3.5" SAS Hot-Swap HDD 26K569 IBM 146GB 10K 3.5" SAS Hot-Swap HDD 26K5711 IBM 300GB 10K 3.5" SAS Hot-Swap HDD 26K569 IBM 146GB 10K 3.5" SAS Hot-Swap HDD 26K569 IBM 146GB 10K 3.5" SAS Hot-Swap HDD 26K	Keyboard / mouse Power supplies	None standar Std: two 775 accessible far Eight hot-swa	rd (because watt hot-swap ns in each po p, redundant,	rack-based) o / redundant wit wer supply / PF multi-speed fan	h three p A s / One c	ower suppli	es (N+1) / wo	orldwide / vol	ltage-sens	· ·				
3 year parts and labor International Warranty Service³ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day responses time² On site service upgrade options (in eligible locations):² 3 year parts and labor Bay ② 5.25", HH 1.6" access, CD-ROM Bay ③ 5.25", HH 1.6" access, open* Tower Dimensions: H15.5" x W18.2" x D30"(762mm) Rack Dimensions: H12" x W17.5" x D28.2" Rack Dimensions: H12" x W17.5" x D28.2" Rack Dimensions: H306mm x W444mm x D715mm Bay ③ 5.25", HH 1.6" access, open* Bay ④ 5.25", HH 1.6" access, open* Bay ⑤ 5.25", HH 1.6" access, open* Bay ⑤ 5.25", HH 1.6" access, open* Bay ⑤ 5.25", HH 1.6" access, open* Bay ⑥ 5.25", HH 1.6" access, open	Options	2GB PC2-32 4GB PC2-32 Active Mem Xeon MP 3. Xeon MP 3. 775 watt Ho	200 CL3 EC 200 CL3 EC ory 4-slot Ex 16GHz/1MB 66GHz/1MB t-Swap Pow	C RDIMM (2x1 C RDIMM (2x2 xpansion Card L2 Cache Pro L2 Cache Pro er Supply (WW	GB) GB) C Upg C Upg	73P2866 73P2867 13M7409 13N0694 13N0695 13M7415	IBM 73. IBM 146 IBM 300 Remote SAS 3.5 IBM 73.	4GB 10K 3.5 GGB 10K 3.5 GGB 10K 3.5 Supervisor 5" 6-drive Ba 4GB 15K 3.5	.5" SAS H 5" SAS H 5" SAS H Adapter ackplane .5" SAS H	Hot-swap HDI lot-Swap HDI lot-Swap HDI II Slimline Hot-swap HDI	26K5709 26K5710 26K5711 59P2984 13M7864 26K5698			
(ServicePacpartnum96P2254) • 4 year IOR 9x5, NBD response (ServicePacpartnum96P2255) • 5 year IOR 9x5, NBD response (ServicePacpartnum96P2259) • Other ServicePacpartnum69P2259) • Other ServicePac options at http://www.ibm.com/services/ us/its/pdf/wamomxeu.pdf • 24x7¹⁴ toll-free support for warranty Opt disk Opt disk Opt disk Opt disk Opt disk O														
issues during the warranty period ³ All models: Maximum internal disk capacity: 3.6TB with 12x 300GB ² hot-swap SAS disks Ship Config: 2,006 Btu/hr (588 watts) Full Config: 6,346 Btu/hr (1860 watts)			nal disk cap	acity: 3.6TB wi	th 12x 3	00GB ² ho	-swap SAS	disks						

L2

FSB

Memory

IBM[®]

Ethernet

Limited Available

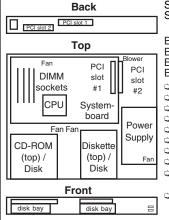
Slots

Type-model Qty	x Processor	cache	MHz	Memory	type	Disk	controlle	r bays	anical	x bays	5	warranty	³ date
8673-72X Pentiu 8673-73X Pentiu 8673-82X Pentiu 8673-83X Pentiu	m 4 2.8BGH m 4 3.06GH	z 512KB z 512KB	533 533	256MB 256MB	ECC ECC ECC	40GB EIDE 18.2GB SCSI 40GB EIDE 36.4GB SCSI	Ultra160 ATA-100	2 fixed 2 fixed	1U rack	2x4 2x4	2 x Gigab 2 x Gigab 2 x Gigab 2 x Gigab	it 1 year it 1 year	May2003 Sep 2003
Positioning Processor(s) L2 cache SMP support Implementation	Intel® P 512KB No SMP Systeml	entium 4 on die support ooard co	4 up to of pro- ntains	to 2.8BGH ocessor / a one Intel n	z ¹ with 5 t process nPGA478	k-optimized serv 33MHz frontside sor speed (no L BB socket (with F PCI-X slot, and i	bus (FS 3 cache) Pentium 4	FC-PGA	2 and heat two EIDE	sink), fo	our memory ctors, etherr	[,] DIMM sl net, and ς	lots, graphics
Memory	DIMMs	four DI	MM g	jold-connec	ctor slots	three slots ava on systemboar nemory controlle	d / memo					CC DDR	-SDRAM
SCSI disk control	er SCSI m					gle channel Wier / one channel				MB/sec)/		
SCSI connectors IDE disk controlle Cables	r Enhanc SCSI m EIDE m	odels: (ed IDE b odels: (odels: (On acusma one 2- one 2-	dapter: one ster / ATA- -drop 16-bi -drop EIDE	e 68-pin 100 sup t LVD SC cable (t	SCSI connecto port / two connects CSI cable, one 1 o CD-ROM and	r ctors on s -drop 40- disk), one	ystembo conducto e 1-drop E	ard r EIDE cal EIDE cable	e (to se	cond disk b	ay)	,
Disk - features						rpm, 5.2ms read							.M.A.H.I.°
Mechanical Architecture / chip Bus slots	osets Server\ one CIC CSB5 S Nationa	Vorks® (B-X2 I/C outh Brid I Semico	Granc D Bridg dge (T Induct	I Champio ge (IMB bu hin IMB to tor® PC874	n™ SL / s to Hos Host Bri 14 Supe	supports 16.75 CMIC-SL (Supe t Bridge for PCI- dge for PCI 2.2- r I/O chip (serial hot-swap Active	r Lite) Ho -X Bus A v based gra , keyboar	st Bridge with slots aphics co d, mouse	(memory and PCI-) ntroller, E	control X Bus E IDE, US	ler and I/O I 3 with dual 6	Bridge) / ethernet)	
CD-ROM / disket Rear ports Front ports / grap Console intercon	on plana e 24X-100 Rear: s nics Front: t	ar / PCI-X (° CD-R(erial (9-p wo USB	(64-b DM / II bin), tv (Vers	it 100MHz DE; <i>Disket</i> vo ethernet 1.1); <i>Grap</i>	Bus B / fi te: 3.5" 1 (RJ-45), hics: SV		/ Wake or drive / dus e, analog XL / on pl	n LAN® / A st cover DB-15 m anar / 8M	Nert Stand onitor / no B SDRAM	ard For parallel l std/ma	mat 1.0 / tw port	o rear R	J-45 ports
Systems mgmt Diagnostics	Diagnos	tics via l	PC-Do	octor on a s	standard	s system and pr IBM Enhanced onn on planar fo	Diagnosti	cs CD (di	skette car	be cre	ated) / supp	ort for or	
Security Software	unatten Server(deḋ boot ≩uide ™ (/sele		t / unatte ation and	vord / nded start mode I configuration	5 51 10 12	12MB PC 3B PC21 20GB AT	2100 CL2 00 CL2.5 I A-100 EII	.5 ECC ECC DI DE HDI	DDR-SDR DDR-SDR DR-SDRAM D (7200 rpi	AM DIMN /I RDIMM m)*	M33L5038 I 33L5039 09N4231
Cooling fans Power supply Prerequisites	power s 200 wat Monitor	upply) / v t / univer keyboa s IBM A	/ariab sal / a rd, mo	le speed / i luto-sensin buse, rack, AT-5 chair	not redur g / auto- operatin		ap 36 R 73 R SG IB IB IB	3.4GB 15I 3.4GB 10I emote Su erveRAIE M T541 - M NetBA M NetBA M ACT I ther optic	C Ultra160 C Ultra160 Ipervisor A IPM-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 ack Rack	D* D* ter (black)	06P5765 06P5766 06P5752 09N7585 06P5740 9512AB1 9306250 930842S 1735L04

Disk

Disk

Mech-



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

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

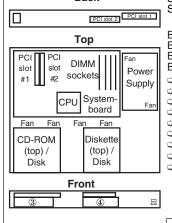
Maximum internal disk capacity¹³ (model dependent): 146.8GB with two 73.4GB SL SCSI disks or 240GB with two 120GB EIDE disks / supports 15K rpm SCSI disks

- 1 year parts and labor
- International Warranty Service³
- On site, 8 am 5 pm, Mon Fri coverage excluding holidays, next business day response time⁷
- On site service upgrade options (in eligible locations):⁷
 - 3 year IOR 9x5, NBD avg response (ServicePac® part num 69P9505)

 3 year IOR 9x5, 4 hr avg response
- (ServicePac part num 69P9506) 3 year IOR 24x7, 4 hr avg response
- (ServicePac part num 69P9507)
- 3 year IOR 24x7, 2 hr avg response (ServicePac part num 69P9508)

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

	For GAV	/ svstem	s lowercas	se "x" should be replaced with	a country-	specific	code			•		- 0.00	-	September 1	-
	IBM	® Mach		Processor	L2	FSB	Memory	Disk	Disk controller	Disk bays	Mech- anical	Slots x bays	Ethernet	Ltd warr ³	Available date
	8836 8836	2Mx 2Sx 3Mx	15X 21X 25X 31X	Pentium 4® 2.8GHz Pentium 4 2.8GHz Pentium 4 3.0GHz Pentium 4 3.0GHz Pentium 4 3.2GHz Pentium 4 3.2GHz	1MB 1MB 1MB 1MB 1MB 1MB	800 800 800 800	512MB 512MB 512MB 512MB	36.4GB SCSI open bay 36.4GB SCSI open bay 36.4GB SCSI open bay	SATA Ultra320 SATA	2 simple-swap 2 fixed 2 simple-swap	1U rack 1U rack 1U rack	2x4 2x4 2x4 2x4	Dual Gb Dual Gb Dual Gb	1 yr 1 yr 1 yr 1 yr	Apr 2004 Jun 2004
	L2 cad SMP s	ssor(s	ť	A highly affordable, Intel® Pentium 4 to 1MB / on die of pr No SMP support Systemboard contariser for two PCI-X	ip to 3 ocesso ains on	. 2GH : or / at e Inte	z 1 with 8 process el mPGA	:00MHz frontsid :or speed (no L :478B socket (v	e bus (FS 3 cache) vith Pentiu	um 4 FC-PGA2 a					
	Memo	ory		512MB std / 4GB registered 184-pin 2 x 166MHz / Erro	ECC [DR-9	SDRAM	DIMMs / four E	DIMM gold	d-connector slots	on syste	mboar	d / memo	ry bus	runs at
	SCSI IDE di Cable	conne sk cor	itroller	SCSI models: Ad on SCSI models: Or Enhanced IDE bur SCSI models: on SATA models: two SCSI: 36.4GB Ultra	PCI ad PCI a smaste e 2-dro o 1-dro	dapte dapte r / A p 16- p SA	r / one c er: one 6 TA-100 s bit LVD TA cable	channel with up 18-pin SCSI con 18-pin SCSI con 19-port / one of 19-port /	to 15 develonector connector ne 1-drop EIDE cat	vice support / Int on systemboard EIDE cable (co ble (connected to	tegrated finected to CD-RO	Raid [*] 7	e (Raid 0-	1)	
	Mechanical EIA 19" Rack (1U4) / rack-mount only Architecture / chipsets Intel E7210 chipset / Memory Controller Hub (MCH) / I/O Controller Hub (ICH-S) for PCI 2.2 and PCI-X bus, ATA-100 EIDE, ethernet MAC, USB, Low Pin Count Interface / Firmware Hub / SMSC® LPC47M192 Super I/O for diskette, parallel, serial, keyboard, mouse Bus slots See below) two available PCI-X 1.0 66MHz / no hot-swap Active™ PCI slots														
Bus slots (See below) two available PCI-X 1.0 66MHz / no hot-swap Active™ PCI slots Ethernet controllers Two gigabit 10/100/1000 ethernet ports / Intel Kenai II / two full gigabit ethernet MAC and PHY layer functions / on plana port one is CSA, port two is PCI 2.2 / full duplex / PXE / Wake on LAN® / Alert Standard Format 2.0 / two rear RJ-45 ports CD-ROM / diskette Rear ports Rear: serial (9-pin), two ethernet (RJ-45),keyboard, mouse, analog DB-15 monitor / no parallel port / two USB (Vers 2.0) Front ports / graphics Front: two USB (Vers 2.0); Graphics: SVGA / ATI® Radeon 7000 / on planar / 18MB DDR SDRAM std/max / 32-bit 33MHz PCI 2.2 bus Console interconnects No system-to-system interconnect cable (separate keyboard, video, mouse ports on back)												ports ers 2.0)			
		ms m		On planar / monite Diagnostics via PC Remote Superviso	-Docto	r on a	ı standar	d IBM Enhance	d Diagno:	stics CD (diskette	can be c			for op	tional
	Secur	•		Power-on passwor unattended boot / s ServerGuide™ (CI utilities), IBM Direc	electab D-ROM	ole bo insta	ot / unati llation ar	tended start mo	de 5	256MB PC2700 C 512MB PC2700 C IGB PC2700 CL2	L2.5 ECC .5 ECC DI .5 ECC DI	DDR-S DR-SD DR-SD	SDRAM DI RAM DIMI RAM DIMI	MM VI	06P4053 06P4054 06P4055 06P4051
	Powe	ng fans r supp quisite	oly	Six fans (four fans / variable speed / / universal / auto- Monitor, keyboard	not red sensing	lunda j / au	nt or ho	t-swap 300 wa rt support	tt 37	BOGB SATA simpleOGB SATA simpleOGB SATA simpleOGB SATA simpleOGB 10K Ultra 33.4GB 10K Ultra 146.4GB 1	pple-swap 320 SCSI 320 SCSI 320 SCSI 320 SCSI or Adapt Ultra320 ATA Con Standard Enterprise Console N	HDD SL 68 SI SL 68 SI SL 6 er II SCSI troller Rack Rack Manage	`(7200 rpr -pin HDD* -pin HDD* 8-pin HDD Adapter er is/accesso	ń)* *	73P8002 73P8003 32P0723 32P0724 32P0725 59P2984 13N2190 71P8648 9306250 930842S 1735L04
			Back	0.01.				MHz PCI X 1.0	(3.3v)	0 (2 2)		INAITE	D WADD	ANIT	V 3



Slot 1: 3/4 size, 64-bit 66MHz PCI X 1.0 (3.3v) Slot 2: half size, low-profile, 64-bit 66MHz PCI X 1.0 (3.3v)

std CD-ROM std diskette no access, std fixed disk no access, open for fixed disk

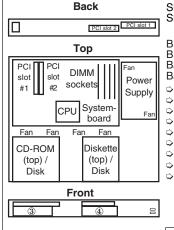
- Raven black front bezel
- ⇒ H 1.72" (1U) x W 17.3" x D 20"; 43.7mm x 439.9mm x 508mm ⇒ 26 to 28 lbs; 11.8kg to 12.7kg (minimum to max configuration) ⇒ Configuration/Setup Utility: F1 at startup

- Network Boot: F12 at startup
- Operator Information Panel in front
- SCSISelect near startup by pressing CTRL+A (SCSI models)
- Ships with Diagnostics CD, ServerGuide Setup and Installation CD
- Predictive Failure Analysis on disk(s) with IBM Director can alert the administrator of an imminent component failure

Maximum internal disk capacity¹³ (model dependent): 292.8GB with two 146.4GB SL SCSI disks or 320GB with two 160GB EIDE disks / up to 15K rpm SCSI disks

- 1 year parts and labor
 International Warranty Service³
 On site, 8 am 5 pm, Mon Fri coverage excluding holidays,
- next business day response time7 On site service upgrade
 - options (in eligible locations):⁷
 3 year IOR 9x5, NBD avg response (ServicePac® part num 69P9505)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9506)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9507)
 - 3 year IOR 24x7, 2 hr avg response (ServicePac part num 69P9508)
- Other ServicePac options at http://www.ibm.com/ services/us/its/pdf/wamomxeu.pdf
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

For CAV systems laweress	"u" abould be replaced with	o o o untru	oposific codo						1000	-	the sales and
For GAV systems, lowercase IBM® Machine Type GAV model	Processor	L2	FSB MHz Mem	orv Disk	Disk controller	Disk bavs	Mech- anical	Slots x bays	Ethernet	Ltd warr	
8836 - 4My -41x P 8836 - 4Sy -45x P 8836 - 5My -51x P	Pentium 4® 3.2GHz Pentium 4 3.2GHz Pentium 4 3.4GHz Pentium 4 3.4GHz	1MB 1MB 1MB	800 512M 800 512M 800 512M	36.4GB 3 open bay 3 36.4GB	SCSI Ultra320 SATA SCSI Ultra320	2 fixed 2 simple-swap	1U ⁴ rac 1U rac 1U ⁴ rac	ck 2x4 k 2x4 ck 2x4	Dual Gb Dual Gb Dual Gb	1 yr 1 yr 1 yr	Aug 2004 Aug 2004 Jan 2005
Positioning Processor(s) L2 cache SMP support Implementation	A highly affordable intel® Pentium 4 1MB min and man No SMP support Systemboard cont PCI-X slots, and in	at 3.2Ġ x / at p tains or	iHz¹ & 3.40 rocessor s ne Intel PG	Hz with 800 beed / ECC A604 socke	OMHz FSB optim t (with Pentium	4 FC-PGA2 and	heatsink	s), four	memory [DIMM	,
Memory	512MB std / 4GB DIMMs / four DIM Correcting (ECC)	IM gold	-connector	slots on sys							
SCSI disk controller SATA disk controller Cables Disk - features	one channel with	up to 1 er (150 ismaste ne 2-dro o 1-dro	5 device s MB/sec) / c er / ATA-10 pp 16-bit L pp SATA c	upport / Inte in planar / o 00 support / VD SCSI ca ables, one 1	egrated Raid 7e ne connector on one connector able, one 1-drop I-drop EIDE cat	(Raid 0-1) / 68 p systemboard / In on systemboard EIDE cable (cor ble (connected to	in conn tegrated nnected CD-RC	ector of Raid 7 to CD- OM)	n PCI ada 7e (Raid 0 ·ROM)	apter	dapter /
Mechanical Architecture / chipsets Bus slots	EIA 19" Rack (1U Intel E7210 chips EIDE, ethernet Ma parallel, serial, ke (See below) two a	s et / Me AC, US yboard,	emory Con B, Low Pin mouse	roller Hub (I Count Inter	face / Firmware	Hub / SMSC® LP	°C47M1	92 Sup			
Ethernet controllers CD-ROM / diskette Rear ports Front ports / Graphics	Dual Gigabit 10/1 integrated / port of ports (2) 24X-10X ⁶ CD-ROI <i>Rear:</i> serial (9-pir <i>Front:</i> two USB (SVGA / ATI® Rad	ne is Co M Slim/ n), two e Vers 2.	SA, port tw IDE; <i>Disk</i> ethernet (R 0)	o is PCI 2.2 ette: 3.5" 1. J-45),keyboa	/ full duplex / PXI 44MB diskette c ard, mouse, anal	E / Wake on LAN® Irive / dust cover og DB-15 monitor	/ Alert S	tandard	Format 2.0) / Rea	ar RJ-45
Console interconnects	s No system-to-sys	tem int	erconnect	cable (sepa	rate keyboard,	video, mouse po	orts on	back)			
Systems mgmt Diagnostics	On planar / monit Diagnostic LEDS/ Diagnostics CD (o planar for continu	′ Error I diskette	LEDS for for can be cr	ans and me eated) / sup	mory/ Diagnosti port for optional r required)	cs via PC-Doctor Remote Superv	r on a s isor Ada	apter II	with 20-p	in cor	nn on
Security Software	Power-on passwo unattended boot / Secure Remote p ServerGuide™ (C utilities), IBM Dire	selecta wr on/c D-ROM	able boot / off via ASF // installati	unattended 2.0 on and conf	start mode / 18	256MB PC3200 CL 512MB PC3200 CL 1GB PC3200 CL3 I 80GB SATA simp 160GB SATA sim 250GB SATA sim	.3 ECC I ECC DD ble-swap ple-swa ple-swa	DDR-SE R-SDR. HDD p HDD p HDD	ORAM DIM AM DIMM (7200 rpn (7200 rpi) (7200 rpi	M n) m) m)	06P4049 06P4050 06P4051 73P8002 73P8003 73P8006
Cooling fans Power supply Prerequisites	Six fans (four fan / variable speed / / universal / auto- Monitor, keyboard	not red sensin	dundant or g / auto-re	hot-swap 3 start suppor	op watt t stem	36.4GB 10K Ultra 33.4GB 10K Ultra 36.4GB 10K Ultra 36.4GB 15K Ultra 33.4GB 15K Ultra 33.4GB 15K Ultra 33.4GB 15K Ultra 34.4GB 15K Ultra 35.4GB 15K Ultra 36.4GB 15K	320 SCS 320 SC 320 SC 320 SC or Adap Ultra320 TA Con tandard	SI SL 68 SI SL 6 SI SL 6 SI SL 6 ter II O SCSI troller Rack	3-pin HDD 68-pin HDD 68-pin HD 68-pin HD Adapter	D D	32P0723 32P0724 32P0725 32P0784 32P0785 32P0785 59P2984 13N2190 71P8648 9306250 cessories



Slot 1: half size, 64-bit 66MHz PCI X 1.0 (3.3v) Slot 2: half size, low-profile, 64-bit 66MHz PCI X 1.0 (3.3v)

std CD-ROM std diskette no access, std fixed disk no access, open for fixed disk

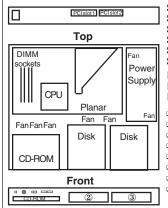
- Raven black front bezel
- ⇒ H 1.72" (1U) x W 17.3" x D 20"; 43.7mm x 439.9mm x 508mm ⇒ 26 to 28 lbs; 11.8kg to 12.7kg (minimum to max configuration) ⇒ Configuration/Setup Utility: F1 at startup

- Network Boot: F12 at startup
- Operator Information Panel in front
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- Ships with Diagnostics CD, ServerGuide Setup and Installation CD
- Predictive Failure Analysis on disk(s) with IBM Director can alert the administrator of an imminent component failure

Maximum internal disk capacity¹³ (model dependent): 292.8GB with two 146.4GB SL SCSI disks or 500GB with two 250GB SATA disks / up to 15K rpm SCSI disks

- 1 year parts and labor
 International Warranty Service³
- On site, 8 am 5 pm, Mon Fri coverage excluding holidays,
- next business day response time7 On site service upgrade
 - options (in eligible locations):⁷
 3 year IOR 9x5, NBD avg response (ServicePac® part num 69P9505)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9506)
 - 3 year IOR 24x7, 4 hr avg response
 - (ServicePac part num 69P9507) 3 year IOR 24x7, 2 hr avg response (ServicePac part num 69P9508)
- Other ServicePac options at http://www.ibm.com/
- services/us/its/pdf/wamomxeu.pdf 24x7¹⁴ toll-free support for warranty issues during the warranty period³

For GAV systems, lowercase	"y" should be replaced with a co	untry-specific co	de.		•	100		-				
IBM® Machine	Drangery / Creed	L2 FSE	3	Disk	Disk	Mech- Slot		Available				
8849/8891 1Áy-Ax P 8849/8891 20y-20x P 8849/8891 30y-30x P 8849/8891 3Ay-3Ax P 8849/8891 40y-40x P	Pentium® 4 531 3.0GHz Pentium 4 531 3.0GHz Pentium D 830 3.0GHz Pentium 4 640 3.2GHz Pentium 4 640 3.2GHz Pentium 4 650 3.4GHz Pentium 4 660 3.6GHz	1MB 800 2x1MB 80 2MB 800 2MB 800 2MB 800	512MB 512MB 0 1GB 0 512MB 0 512MB 0 512MB	SATA SAS/SATA SAS/SATA SATA SAS/SATA SAS/SATA SAS/SATA SAS/SATA SAS/SATA	2 hot-swap 2 hot-swap	1U ⁴ rack 2x 1U rack 2x 1U rack 2x 1U rack 2x 1U rack 2x 1U rack 2x 1U rack 2x	ys Ethernet warn' 3 Dual Gb 1/3yr	Oct 2005 Oct 2005 Oct 2005 Oct 2005 Oct 2005 Oct 2005				
Positioning Processor(s) L2 cache SMP support Implementation	A highly affordable, unlet Pentium 4 up Optimized for Exten Up to 2MB std on Pen No SMP support Motherboard contains and two slots: some:	to 3.6GHz s ded Memo ntium 4 / 2x one LGA-7	Single Core 8 ory 64 Techno 1MB std on Pe 775 socket, fou	OOMHz FSB / Pology (EM64T) entium D / ECC /	/ full speed							
Memory	512MB std / 8GB ¹³ max All Error Checking an	د / four 184-ړ	oin gold-plated [DIMM sockets / or	ne socket used / P			DRAM /				
	SAS models: Adapte SATA models: Integra Enhanced IDE busms SAS models: one 1-c SATA models: two 1 None standard	ted Intel cor aster / ATA Irop EIDE c	ntroller / two-cha -100 support / able (connecte	annel / on planar one connector ed to CD-ROM)	r / Integrated Raid on systemboard	8e (Raid 0 or						
Mechanical Architecture / chipsets Bus slots	EIA 22" Rack (1U⁴) / Intel E7210 chipset / EIDE, ethernet MAC, parallel, serial, keybor (See below) two avai Active™ PCI slots /	Memory C USB, Low F ard, mouse	ontroller Hub (Pin Count Inter	face / Firmware	Hub / SMSC® LP	C47M192 Su	per I/O for disket	te,				
Ethernet controllers	Dual Gigabit 10/100/ integrated / port one is	1000 ethern s CSA, port	et ports / Broa two is PCI 2.2	dcom 5721 / two / full duplex / PXI	o full gigabit ethe E / Wake on LAN®	rnet MAC and / Rear RJ-45	PHY layer funct ports (2)	ions /				
CD-ROM / diskette Rear ports Front ports / Graphics	24X-10X ⁶ CD-ROM S Rear: serial (9-pin), to Front: two USB (Vers ATI ⁸ RN50(ES1000) / 1	vo ethernet 3 2.0)	(RJ-45),keyboa		Ü		,	/ers 2.0)				
Console interconnects Systems mgmt Diagnostics	No system-to-system Mini-baseboard mana voltages Diagnostic LEDS/ Err	gement co	ntroller / IPMI	1.5 / monitors s	system and proce	ssor tempera	ture, fan failure,					
	Diagnostics CD (disker planar for continuous	ette can be	created) / sup	port for optional								
Security	Power-on password / unattended boot / sel secure remote power	ectable boo	t / unattended	start mode / $\frac{2G}{4G}$	2MB PC2-4200 CL3 EC GB(2x1GB) PC2-4200 C GB(2x2GB) PC2-4200 C M 80GB SATA (7.2K) sii	L3 ECC DDR2 Rol L3 ECC DDR2 Rol	HS HS	30R5148 30R5149 30R5150 39M4500				
Software	ServerGuide™ (CD-Futilities), IBM Director	ROM install	ation and conf	figuration IBI IBI 80	M 160GB SATA (7.2K) s M 250GB SATA (7.2K) s GB Hot-Swap SATA HE	simple-swap HDD simple-swap HDD D		39M4504 39M4508 39M4518				
Cooling fans Power supply Prerequisites	160GB Hot-Swap SATA HDD 39M4522 250GB Hot-Swap SATA HDD 39M4526 250GB Hot-Swap SATA HDD 39M4526 250GB Hot-Swap SATA HDD 39M4526 250GB Hot-Swap SATA HDD 26K5709 26K5710 350 watt / universal / auto-sensing / auto-restart support 46GB 10K3.5" SAS Hot-Swap HDD 26K5710 36GB 15K3.5" SAS Hot-Swap HDD 26K5711 36GB 15K3.5" SAS Hot-Swap HDD 26K5697 36GB 15K3.5" SAS Hot-Swap HDD 26K5698 36B 15K3.5" SAS Hot-Swap HDD 26K5699 36B 15K3.5" SAS Hot-Swap HDD 36B 15K3.5" SAS Hot-Swap HDD 36K5710 36K5710 36K5710 36K5710 36K571											
Back	Some:				her options at ibm.com/	•	-	55.0				
PCIslot1 P		4 lenath, fu	ll height. 64-bit	100MHz PCI X	1.0 (3.3v)							



Slot 1: 3/4 length, full height, 64-bit 100MHz PCI X 1.0 (3.3v) Slot 2: half length, low-profile, 64-bit 100MHz PCI X 1.0 (3.3v)

Slot 1: 3/4 length, full height, 64-bit 100MHz PCI X 1.0 (3.3v)

Slot 2: half length, low-profile, PCI-E x8

Bay $\ 0.5.25$ ", UltraSlim 0.5", access, std CD-ROM Bay $\ 0.3.5$ ", SL 1", access, open for fixed disk Bay $\ 0.3.5$ ", SL 1", access, open for fixed disk

Raven black front bezel

H 1.75" (1U) x W 17.3" x D 22"; 43mm x 440mm x 559mm 24.25 to 30 lbs; 11kg to 12.7kg (minimum to max configuration)

Configuration/Setup Utility: F1 at startup

Network Boot: F12 at startup

Operator Information Panel in front

Ships with Diagnostics CD, ServerGuide Setup and Installation CD

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

Maximum internal disk capacity¹³ (model dependent): 600GB with two 300GB SAS disks or 500GB with two 250GB SATA disks

LIMITED WARRANTY³

- 1 year parts and labor standard 8849 MTM
 3 year parts and labor standard 8491 MTM
 International Warranty Service³

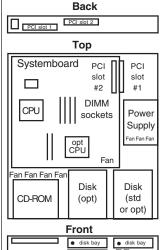
- On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- on site service upgrade
 options (in eligible locations):
 3 year IOR 9x5, NBD avg response
 (ServicePac part num 69P9505)
 3 year IOR 9x5, 4 hr avg response
 (ServicePac part num 69P9506)

- 3 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9507)
- 3 year IOR 24x7, 2 hr response (ServicePac part num 69P9508) Other ServicePac options at

http://www.ibm.com/ services/us/its/pdf/wamomxeu.pdf

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

	IBM® Type-model Qty x Prod	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 Optero 8835-22X 1 x Optero 8835-31X 1 x Optero 8835-32X 1 x Optero 8835-51X 1 x Optero 8835-52X 1 x Optero 8835-52X 2 x Optero	on™ 240 on 240 on 242 on 242 on 246 on 246 on 246	1.4Ghz ¹ 1.4Ghz 1.6Ghz 1.6Ghz 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		Ultra320 EIDE Ultra320 EIDE Ultra320 EIDE Ultra320	2 hot-swap 2 fixed 2 hot-swap 2 fixed 2 hot-swap 2 fixed 2 hot-swap	2x3 2x3 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 1 year	Oct 2003 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 M P / up to oard conta	cessor two C ins two	r / at prod opteron Po o AMD S	cessor spe rocessors ocket 940	nz HyperTransp eed (no L3 cac (same speed/o micro-PGA ZIF MD Opteron H	he) cache size = sockets,	required) six memory D				·
	Memory	slots used SDRAM I memory in	d (four slots DIMMs / six nterleave /	used ir DIMM dual ch	n 5DX mo gold-conr annel / m	del) / four s nector slots emory bus	s become availa slots available (to s on systemboard runs at 2 x 1001 errors on same of	wo avail. in d / DIMMs MHz / Errc	5DX) / PC2700 must be installed or Checking an	333MH 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 Disk - capacity Disk - bays	64-bit 10 one 16-b All: Enha EIDE mo SCSI mo	OMHz PCI it internal onced IDE onced IDE once onced IDE once oncedels: 36.40	-X Bus channe ATA-10 2-drop GB sup	B / supports / 16-bit / 16-bit / 100 control of EIDE control ports up / 100 control /	orts RAID- 68-pin LVI ler in CSB able to tw to 15000 r	C1020 / Ultra3 1 mirroring (Ei D cable from sy 5 South Bridge o disk bays (pi pm disks; EIDE pronectors / filler	mbedded stemboard / two conr rimary) / d : <i>models:</i> 8	Mirroring) with d to backplane nectors on plan one 1-drop EID 30GB / 7200 rp	two SC for two ar / one E cabl m / AT	SI disks in fr disks / no ex 1-drop IDE e to CD-RO A-100 / 8.7m	ont bay ternal c cable (0 M (secons seek	onnector CD-ROM) ondary)
	Mechanical Architecture / chipsets Bus slots	SAMD® 81 bridge B HyperTra National	I 31 PCI-X for PCI-X ansport clo Semicond	Bridge expan ock (PC uctor®	e Chip p sion slots I, AC '97 PC87366	roviding tv s) / 8111 7, Etherne 3 Super I/0	I/O HyperTran t, SMBus, USE	es running sport Bri 3, EIDE, L	g at 100Mhz (t dge Chip sup PC to BIOS a	oridge A porting	A for SCSI a a 200 Mhz	nd Ethe	ernet;
	Ethernet controllers CD-ROM/diskette/kbd Rear ports Front ports / graphics Console interconnects	on plana 24X-10X ⁶ <i>Rear:</i> tw <i>Front:</i> tw C2T Inte	r / PCI-X 6 CD-ROM O USB (Vero USB (Vero USB)	4-bit 10 / IDE ers 1.1) rs 1.1); cablin	00MHz B / <i>Diskette</i> , serial (9 <i>Graphics</i> g not sup	us B / full e and keyl e-pin), two e: SVGA / A eported / N	ethernet (RJ-45 ATI® Rage XL / o	on LAN® / SB diskett 5) / paralle on planar / 8	 Alert Standard e and keyboard l port not supp BMB SDRAM st 	d Forma d option orted d/max /	at 1.0 / two r nal); legacy 32-bit 33MHz	eár RJ- not sup z PCI 2.2	45 ports ported 2 Bus A
	Systems mgmt Diagnostics	connecto Adapter Diagnosi	MS-9549 r on plana Il card not tic LEDs fo tht Path Di	r / opti suppo or fans	onál Rem rted , memory	note Super / DIMMs a		Optero Optero 512ME 1GB F	on 240 Proces on 242 Proces on 246 Proces 3 PC2700 CL2.5 CC2700 CL2.5 CC2700 CL2.5	sor Up sor Up ECC D ECC DI	ograde ograde DDR-SDRAM DR-SDRAM	RDIMM	73P2267
	Security Software	unattend ServerG		selecta D-ROM	ble boot I installat	/ unattend ion and c	rd / led start mode onfiguration	80GB 120GE 36.4GI 73.4GI	ATA-100 EIDE 3 ATA-100 EID B 15K Ultra320 B 15K Ultra320	E HDD* E HDD SCSI I SCSI I	* Hot-Swap SL Hot-Swap SL	_ HDD* _ 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	IBM S USB F NetBA NetBA 1.5M L	otalStorage F0 erveRAID-6M Portable Disker Y ACT Local Y Remote Co JSB Conversion	SCSI (tte Driv Console nsole N n Optio	256MB Cac e e Manager (Manager (RC n	he) LCM)	24P0960 02R0988 05K9276 1735L04 1735R16 73P5832



Disk not supported in all e325 systems Slot 1: half-length, 64-bit 100MHz PCI X 1.0 (3.3v); Bus C Slot 2: full-length, 64-bit 100MHz PCI X 1.0 (3.3v); Bus C

Bay © 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
- International Warranty Service³
- On site, 8 am 5 pm, Mon Fri coverage excluding holidays, next business day response time7
- On site service upgrade options (in eligible locations):7
 - 1 year IOR 9x5, 4 hr avg response (ServicePac® part num 69P9399)
 - 2 year IOR 24x7, 4 hr avg response (ServicePac part num 96P2119)

 2 year IOR 24x7, 2 hr avg response
- (ServicePac part num 96P2120)

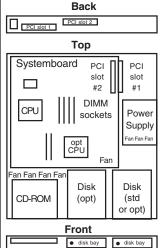
 3 year IOR 24x7, 4 hr avg response
- (ServicePac part num 69P9507)
- 3 year IOR 9x5, NBD response (ServicePac part num 69P9506)
 Other ServicePac options at
- http://www.ibm.com/ services/us/its/pdf/wamomxeu.pdf
- 24x7¹⁴ toll-free support for warranty issues during the warranty period3

See footnotes for important warranty information

= Hot-swap in some models

(X325A) © IBM Corp. August 2003

IBM® Type-model Qty x Pro	ocessor	Proc. Speed	L2 Cache	Memory	Memory type	Disk	Disk controlle	Hot -swap or r fixed disk bays	Slots x bays	Ethernet v		Available date
8835-61X 1 x Opter 8835-62X 1 x Opter 8835-71X 1 x Opter 8835-72X 1 x Opter	on™ 248 on 248 on 250	2.2Ghz ¹ 2.2Ghz 2.4Ghz 2.4Ghz	1MB 1MB 1MB 1MB	1GB 1GB 1GB 1GB	Chipkill Chipkill Chipkill Chipkill	None (open) 80GB ² EIDE None (open) 80GB EIDE	Ultra320 EIDE	2 hot-swap 2 fixed	2x3 2x3 2x3	2 x Gigabit 2 x Gigabit 2 x Gigabit 2 x Gigabit	1 year 1 year 1 year	Jan 2004 Jan 2004 Jun 2004
Processor(s) L2 cache SMP support Implementation	1MB / on 2-way SM Systemboa	die of pro IP / up to ard conta	ocesso two C ains two	r / at proo opteron P o AMD S	cessor spe rocessors ocket 940	eed (no L3 ca (same speed micro-PGA Z	che) /cache siz IF sockets	ology / 64-bit x re required) s, six memory l bus interface				
Memory	PC2700 33 be installed	33MHz re d in match and Corr	gistered ed pairs ecting	l 184-pin l s [a bank] (ECC) via	ECC DDR- / 2-way me . 16-bit C h	-SDRAM DIMN emory interleav	ls / six DIN e / dual cha	al / two slots use //M gold-connect annel / memory acts 1, 2, 3, or 4	tor slots o	on systemboa at 2 x 100MH	ard / DIM Hz / Erro	r
SCSI disk controller	64-bit 100	MHz PCI	-X Bus	B/suppo	orts RAID -	1 mirroring (Embedded	l Mirroring) with	two SC	SI disks in fr	ont bays	
IDE controller / cable	e <i>All:</i> Enhan	ced IDE	ATA-10	00 control	ler in CSB	5 South Bridg	ė / two cor	rd to backplane nnectors on pla one 1-drop Ell	nar / one	1-drop IDE	cable (C	D-ROM)
Disk - capacity Disk - bays	SCSI mod	lels: 36.40	GB sup	ports up	to 15000 r	pm disks; <i>EID</i>	E models:	80GB / 7200 r n each disk bay	pm / ATA	\-100 / 8.7m	s seek	• •
Mechanical Architecture / chipset Bus slots	s AMD® 813 bridge B f HyperTrar National S	31 PCI-X for PCI-X nsport clo Semicond	Bridge expan ock (PC luctor®	e Chip p sion slots N, AC '97 PC87366	roviding tv s) / 8111 7, Etherne 3 Super I/	wo PCI-X brid I/O HyperTra t, SMBus, US	ges runnir nsport B i B, EIDE,	ridge Chip sup LPC to BIOS a	bridge A porting	for SCSI a a 200 Mhz	nd Ethe	rnet;
Ethernet controllers CD-ROM/diskette/kbd Rear ports Front ports / graphics Console interconnect	on planar d 24X-10X ⁶ Rear: two s Front: two s C2T Interd	/ PCI-X 6 CD-ROM) USB (Ve) USB (Ve connect™	64-bit 10 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 key</i> e-pin), two :: SVGA / <i>F</i> eported / N	duplex / Wake board: none (I ethernet (RJ- ATI® Rage XL /	e on LAN® JSB diske 45) / parall on planar / Console M	lel port not sup / 8MB SDRAM s	rd Forma rd option oorted std/max / 3	it 1.0 / two r ial); legacy i 32-bit 33MHz	eár RJ-4 not supp 2 PCl 2.2	15 ports ported Bus A
Systems mgmt Diagnostics	Standard connector Adapter II Diagnositio only / Ligh	on plana card not c LEDs f	ar / Rer suppo or fans	note Sup rted , memory	ervisor / DIMMs a	nent / and processor	Opte 512M s 1GB 2GB	ron 248 Proce ron 250 Proce IB PC2700 CL2. PC2700 CL2.5 PC2700 CL2.5	ssor Up 5 ECC D ECC DE ECC DE	grade DR-SDRAM DR-SDRAM	RDIMM	73P2267 73P2269
Security	Power-on					rd / ded start mode	1200	B ATA-100 EIC	DE HDD*		1100*	09N4226 09N4231
Software		ide™ (C	D-ROM	l installat	ion and c	configuration	73.40	GB 15K Ultra32 GB 15K Ultra32 TotalStorage F	0 SCSI F	Hot-Swap SL	. HDD*	32P0735
Cooling fans Power supply Prerequisites	variable s 411 watt /	pèed / no universa	ot redu al / aut	ndant or o-sensing	hot-swap g / auto-re	ver supply) / estart support e), operating	IBM USB NetB sys, NetB 1.5M	ServeRAID-6N Portable Diske AY ACT Local AY Remote Co USB Conversi k not supported	I SCSI (2 ette Drive Console onsole M on Option	256MB Cac e Manager (Ianager (RC	he) LCM) CM)	02R0988 05K9276 1735L04 1735R16 73P5832



Slot 1: half-length, 64-bit 100MHz PCI X 1.0 (3.3v); Bus C Slot 2: full-length, 64-bit 100MHz PCI X 1.0 (3.3v); Bus C

Bay © 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
- International Warranty Service³
- On site, 8 am 5 pm, Mon Fri coverage excluding holidays, next business day response time7
- On site service upgrade options (in eligible locations):7
 - 1 year IOR 9x5, 4 hr avg response (ServicePac® part num 69P9399)
- 2 year IOR 24x7, 4 hr avg response (ServicePac part num 96P2119)

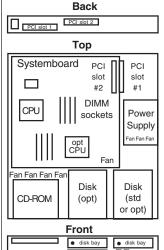
 2 year IOR 24x7, 2 hr avg response
- (ServicePac part num 96P2120) 3 year IOR 24x7, 4 hr avg response
- (ServicePac part num 69P9507)
- 3 year IOR 9x5, NBD response (ServicePac part num 69P9506)
 Other ServicePac options at
- http://www.ibm.com/ services/us/its/pdf/wamomxeu.pdf
- 24x7¹⁴ toll-free support for warranty issues during the warranty period3

See footnotes for important warranty information

= Hot-swap in some models

(X325B) © IBM Corp. January 2004

IBM® Type-GAV Qty x Proc	Proc. essor Speed	L2 Cache M	Memory lemory type	Disk	Disk controller	Hot -swap or fixed disk bays	Slots x bays Ethernet	Limited warranty	Available date
8848-51Y 1 x Optero 8848-52Y 1 x Optero 8848-61Y 1 x Optero 8848-62Y 1 x Optero 8848-71Y 1 x Opteror 8848-72Y 1 x Opteror 8848-81Y 1 x Opteror 8848-82Y 1 x Opteror	n 246 2.0Ghz n 248 2.2Ghz n 248 2.2Ghz n 250 2.4Ghz n 250 2.4Ghz n 252 2.6Ghz	1MB 1 1MB 1 1MB 1 1MB 1 1MB 1	1GB Chipkill 1GB Chipkill 1GB Chipkill 1GB Chipkill 1GB Chipkill 1GB Chipkill 1GB Chipkill 1GB Chipkill	None (open) 80GB ² SATA None (open) 80GB SATA None (open) 80GB SATA None (open) 80GB SATA	Ultra320 SATA Ultra320 SATA Ultra320 SATA Ultra320 SATA	2 hot-swap 2 fixed 2 hot-swap 2 fixed 2 hot-swap 2 fixed 2 hot-swap 2 fixed	2x3 2 x Gigabi 2x3 2 x Gigabit 2x3 2 x Gigabit 2x3 2 x Gigabit	1 year 1 year 1 year 1 year 1 year 1 year	Sept 2004 Sept 2004 Sept 2004 Sept 2004 Sept 2004 Sept 2004 Mar 2005 Mar 2005
Processor(s) L2 cache SMP support Implementation	Up to 2 x AMD® bit compatible 1MB / ECC / on c 2-way SMP / up s Systemboard com PCI-X slots, integr	to two Opt	essor / at procesteron Processors	ssor speed (no l s (same speed/o) micro-PGA ZIF	_3 cache) cache size sockets.	required)	DIMM slots, two		
Memory	1GB std / 16GB n PC2700 or PC320 DIMMs must be ir 100MHz / Chipki)0 register Istalled in	ed 184-pin ECC matched pairs fa	DDR-SDRAM [DIMMš / e	ight DIMM gold	d-connector slots	on systen	nboard /
SCSI disk controller SATA controller/cable Disk - capacity Disk - bays	All (not used on S 64-bit 100MHz PC one 16-bit internal All: SATA-150 cor SCSI models: ope SCSI models: two supports 15k driv	channel ntroller / tw en; <i>SATA i</i> hot-swap	/ 16-bit 68-pin L vo connectors or <i>models:</i> 80GB / 1	VD cable from s planar / two 1-c 7200 rpm / ATA-	drop cable -100 / 9.0r	rd to backplane s / 1 IDE ns seek	e for two disks / r	o externa	l connector
Mechanical Architecture/chipsets Bus slots	EIA 19" Rack (1L AMD® 8131 PCI-) for PCI-X expansi HyperTransport cl National Semicon (See detail below) no hot-swap Activ	two availa		ported in 26" de vo PCI-X bridges r Transport Brid t, SMBus, USB, O chip 1 full-length, 1 H	ep racks s s running a l ge Chip s SATA, ID alf / 133M	such as the IB at 100Mhz (bric supporting a 20 E, LPC to BIO Hz if using sing	M NetBAY™ Rac dge A for SCSI ar 00 Mhz double-pu S and Super I/O) gle adapter, 100M	c products ad Etherne mped / Hz with 2	et; bridge B adaptors /
Ethernet controllers Optical/diskette/kbd Rear ports Front ports / graphics Console interconnects	Two gigabit 10/10 on planar / PCI-X 24X-10X ⁶ CD-ROI <i>Rear:</i> two USB (* <i>Front:</i> two USB (* 6 C2T Interconnect* (RCM), and USB	0/1000 eth 64-bit 100 M / IDE / I Vers 1.1), Vers 1.1); M cabling (Conversio	nernet ports / Bro MHz Bus B / full Diskette and key serial (9-pin), tw Graphics: SVG/ not supported / on Option (UCO)	padcom BCM570 duplex / Wake board: none (US o ethernet (RJ-4 A / ATI® Rage XI NetBay Local Co are supported	04C / two ton LAN® / SB disketto 15) / parall L / on plar onsole Ma	full gigabit ethe Alert Standard e and keyboard el port not sup nar / 8MB SDR nager (LCM), l	ernet MAC and PH I Format 1.0 / two d optional); legacy ported AM std/max / 32- NetBay Remote 0	IY layer for rear RJ-4 not suppose the sup	unctions / l5 ports ported z PCI 2.2 lanager
Systems mgmt Diagnostics	Standard MS-954 connector on plan Adapter II card no Diagnositic LEDs only / Light Path I	ar / Remo t supporte for fans, r	ote Supervisor ed memory DIMMs		Optero Optero Optero 2GB F		sor Upgrade sor Upgrade sor Upgrade ECC DDR-SDRA		13N0705 13N0706 13N0702 13N0703 73P2269
Security Software	Power-on passwo unattended boot / ServerGuide™ (C utilities), IBM Dire	selectable	e boot / unattend	ed start mode	80GB 160GE 36.4G	SATA-150 7.2 3 SATA-150 7. B 15K Ultra320	2k HDD* 0 SCSI Hot-Swap	SL HDD*	
Cooling fans Power supply Prerequisites	Eight fans (five fo variable speed / n 411 watt / univers Monitor, keyboard	ot redunda al / auto-s	ant or hot-swap sensing / auto-re	start support	IBM T IBM S USB F NetBA NetBA 1.5M	otalStorage FC erveRAID-6M Portable Disket Y ACT Local (Y Remote Cor USB Conversion	Console Manager nsole Manager (F	Adapter che) (LCM) (CM)	32P0735 24P0960 02R0988 05K9276 1735L04 1735R16 73P5832



Slot 1: half-length, 64-bit 133/100MHz PCI X 1.0 (3.3v); Bus C Slot 2: full-length, 64-bit 133/100MHz PCI X 1.0 (3.3v); Bus C

Bay © 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 320GB with two 160GB EIDE disks

LIMITED WARRANTY³

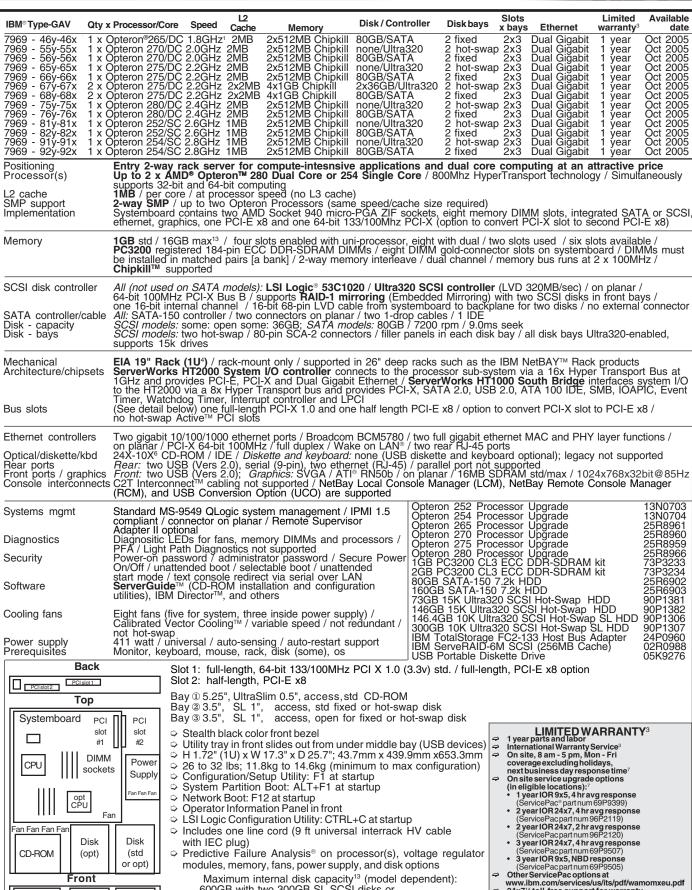
- 1 year parts and labor
- International Warranty Service³
- On site, 8 am 5 pm, Mon Fri coverage excluding holidays, next business day response time7
- On site service upgrade options (in eligible locations):7
 - 1 year IOR 9x5, 4 hr avg response (ServicePac® part num 69P9399)
 - 2 year IOR 24x7, 4 hr avg response (ServicePac part num 96P2119)

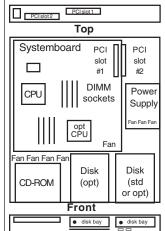
 2 year IOR 24x7, 2 hr avg response
 - (ServicePac part num 96P2120)

 3 year IOR 24x7, 4 hr avg response
 - (ServicePac part num 69P9507)
- 3 year IOR 9x5, NBD response (ServicePac part num 69P9505)
 Other ServicePac options at
- http://www.ibm.com/ services/us/its/pdf/wamomxeu.pdf
- 24x7¹⁴ toll-free support for warranty issues during the warranty period3

See footnotes for important warranty information

= Hot-swap in some models



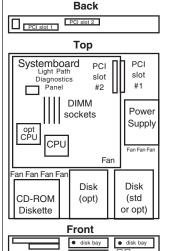


- Network Boot: F12 at startup
- Operator Information Panel in front
- LSI Logic Configuration Utility: CTRL+C at startup
- Includes one line cord (9 ft universal interrack HV cable
- Predictive Failure Analysis® on processor(s), voltage regulator modules, memory, fans, power supply, and disk options

Maximum internal disk capacity¹³ (model dependent): 600GB with two 300GB SL SCSI disks or 320GB with two 160GB SATA disks

- www.ibm.com/services/us/its/pdf/wamomxeu.pdf 24x7¹⁴ toll-free support for warranty issues during the warranty period

IBM® Type-model Qty x P	rocessor	L2 cache	FSB MHz	Memory	Memory type		Disk controller	Hot -swap or fixed disk bays		Ethernet	Limited warranty	
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	Chipkill Chipkill Chipkill Chipkill	None (open) 40GB ² EIDE None (open) 40GB ² EIDE	Ultra320 EIDE Ultra320 EIDE	2 hot-swap 2 fixed 2 hot-swap 2 fixed	2x4 2x4 2x4 2x4 2x4	2 x Gigab 2 x Gigab 2 x Gigab 2 x Gigab	it 1 vear	May 2003 May 2003 Apr 2003 May 2003
Positioning Processor(s) L2 cache SMP support Implementation	1 x Intel 512KB / 2-way SI Systemb	Xeon 2.8 on die of pour betreeholden. MP / up to to ard contains	BB or 3. rocessor wo Xeor ins two I	.06GHz ¹ r / at proc n Process ntel 603-	with 533Nessor spe sors (same pin micro-	erver that delive MHz frontside I ed (no L3 cach e speed/cache PGA ZIF socke thernet, graphi	bus / Hype ie) size) ets, four me	er-Threading to	echnolo	gy		
Memory	PC2100 : must be i Error Ch	266MHz re nstalled in	gistered matched d Corre	l 184-pin d pairs [a cting (E (ECC DDF bank] / 2- CC) via 16	o slots availabl R-SDRAM DIMI way memory ir i-bit Checksun chips)	Ms / four D nterleave /	dual channel /	memory	/ bus ruńs a	t 2 x 100N	ЛHz/
SCSI disk controller IDE controller / cable Disk - capacity Disk - bays	64-bit 10 one 16-b All: Enha EIDE mo SCSI mo	OMHz PCI it internal o nced IDE o dels: One odels: none	-X Bus E channel ATA-100 2-drop E standa	3 / suppo / 16-bit 6 0 controll EIDE cab rd / suppe	rts RAID- 58-pin LVI er in CSB de to two o orts up to	C1020 / Ultras 1 mirroring (E 2 cable from sy 5 South Bridge disk bays / one 15000 rpm dis connectors / f	mbedded vstemboar e / two con 1-drop El ks; <i>EIDE r</i>	Mirroring) with d to backplane nectors on plar DE cable to CI models: 40GB	two SC for two nar / one D-ROM / 7200 rp	CSI disks in disks / no e e 1-drop IDE pm / ATA-10	front bays external co E cable (0 00 / 8.7m	onnector CD-ROM) s seek
Mechanical Architecture / chipsets Bus slots	s ServerW one CIOI slot 2 and SMBus, I	/orks® Gra 3-X2 I/O B d Ultra320 LPC bus to	ind Cha ridge (IN / CSB5 Super I	mpion™ //B2 bus South B I/O) / Nat	4.0 LĖ / 0 to Host Br ridge (Thi ional Sem	orted in 26" dee CMIC LE Host I ridge for PCI-X n IMB to Host I niconductor® P swap Active™ F	Bridge (me Bus A wit Bridge for C87417 Si	emory controlle h slot 1 and du PCI 2.2 Bus C	er and I/ al ether	O Bridge) / net and PC	I-X Bus E	3 with DE, USB,
Ethernet controllers CD-ROM / diskette Rear ports Front ports / graphics Console interconnects	on planar 24X-10X' <i>Rear:</i> or <i>Front:</i> tw sC2T Inte	r / PCI-X 64 CD-ROM ne USB (Ver ro USB (Ver rconnect™	4-bit 100 / IDE; <i>L</i> ers 1.1), ers 1.1); ¹ cable ([*]	MHz Bus Diskette: C2T in, C Graphic 10 inch, 2	s A / full du 3.5" 1.44N 22T out, s s: SVGA / 245mm) is		n LAN® / AÌ ve / dust co vo ethernet / on plana vboard Vid	ert Standard F over t (RJ-45), one F r / 8MB SDRAN eo Mouse (KVI	ormat 1. RS-485 (M std/ma M) chair	.0 / two rear (sys mgmt) , ax / 32-bit 33 ning cable) ,	RJ-45 po / no paral 3MHz PC / one Cab	lel port 1 2.2 bus
Systems mgmt Diagnostics	monitorin with 20-p Light Pa	ng such as oin conn or th Diagno	temp, m planar stics™ (nemory, c for contin (LED ligh	ptional di nuous pwr ts indicate	ssor (ISMP) / I sks, fans, powe (no ext pwr req e failing C-Doctor in BIO	er supply /) Xeon Xeon		otional F B L2 Ca B L2 Ca	iemote Sup ache Proc ache Proc	ervisor A Upg Upg	
Security Software	unattend ServerG	n password ed boot / s uide ™ (CE IBM Direct	electabl D-ROM i	e boot / u nstallatio	nattended	d start mode	512M 1GB I 2GB I 80GB	B PC2100 CL2 PC2100 CL2.5 PC2100 CL2.5 ATA-100 EID GB 15K Ultra320	2.5 ECC ECC D ECC D E HDD	DDR-SDR DR-SDRAN DR-SDRAN *	AM ĎIMN 1 RDIMM 1 RDIMM	33L5039
Cooling fans Power supply Prerequisites	variable 332 watt Monitor, one Cabl	keyboard,	ot redun al / auto mouse, echnolog	idant or lo- sensing rack, dis gy (C2T)	hot-swap / auto-re k (some), Kit per ch	pply) / estart support operating sys, ain of servers	73.4G Remo xSerie break or NetB	B 19K Ollias26 B 10K-4 Ultra1 bte Supervisor es Cable Chai out cable and2 AY ACT Local 6 control supported	60 SCS Adapter n Techr 2 meter I Console	I Hot-Swap s nology Cab KVM chainii Manager	SLHDD* le Kit (2	06P5756 09N7585 meter



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", 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 Diack 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

3 year IOR 24x7, 2 hr avg response

(ServicePac part num 69P9508)

http://www.ibm.com/ services/us/its/pdf/wamomxeu.pdf

issues during the warranty period³

See footnotes for important warranty information

- = Hot-swap in some models
- S US models withdrawn effective March 2004
- △ 533Mhz FSB models may use 400Mhz FSB processors. 400Mhz FSB models may not use 533Mhz FSB processors.

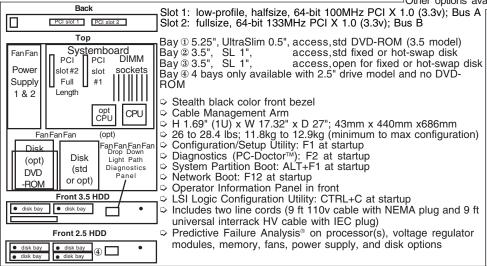
LIMITED WARRANTY³

- → 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)
- Other ServicePac options at
- 24x7¹⁴ toll-free support for warranty

(X335B) © IBM Corp. April 2003

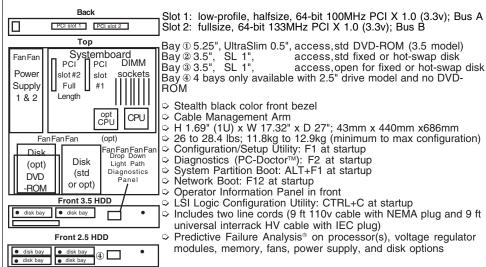
Ü	, ,						
8837-01y-01x 1 x 8837-02y-02x 1 x 8837-11y-11x 1 x 8837-41y-41x 1 x 8837-44y-4Ax 1 x	Xeon® 2.8GHz 1MB 512MB std None (open 3.5) L Xeon 2.8GHz 1MB 512MB std None (open 3.5) S Xeon 3.0GHz 1MB 1GB std None (open 3.5) L Xeon 3.6GHz 1MB 1GB std None (open 3.5) S A highly manageable, ultra-dense 1U, 2-way server that deliven 1 x Intel® Xeon 2.8, 3.0, 3.2, 3.4, 3.6GHz with 800MHz / 1MB 1MB L2 cache on all models / on die of processor / at process 2-way SMP / up to two Xeon Processors (same speed/cache Systemboard contains two Intel 604 pin micro-PGA ZIF socked low-profile 100MHz) and integrated SCSI, dual GB ethernet, g	58TA 585W 2 simple-sp 2x3 2 x Gigabit 3 year Oct 2004 Jitra320 585W 2 hot-swap 2x3 2 x Gigabit 3 year Oct 2004 Jitra320 585W 2 hot-swap 2x3 2 x Gigabit 3 year Oct 2004 Jitra320 585W 4 hot-swap 2x3 2 x Gigabit 3 year Oct 2004 SATA 585W 2 simple-sp 2x3 2 x Gigabit 3 year Oct 2004 ers performance computing in space-constrained environments L2 Cache / Extended Memory 64 Technology (EM64T) sor speed / ECC size) s, eight DIMM slots, two PCI-X slots (one full length 133MHz, one					
SCSI disk controller SATA disk Controller IDE controller / cable Disk - MAX capacity Disk - bays	channel / Active Memory(TM): online spare and memory mirror	I channel / no external connector on planar / two one-drop cables GB HDD SATA: 500GB with two 250GB HDD					
Mechanical Architecture / chipsets Bus slots Ethernet controllers DVD-ROM / diskette Rear ports Graphics	EIA 19" Rack (1U ⁴) / rack-mount only / supported in 26" deep intel E7520 / Intel Memory Controller Hub (MCH) / 3 PCI buse 32bit/33MHz PCI) / Intel PCI-X Bridge (supports 133MHz PCI-X	or racks such as the IBM NetBAY TM Rack products as (one 64bit/133MHz PCI-X1.0, one 64bit/100MHz PCI-X1.0, and X slots 1 & 2, LSI Logic 53C1020) / ICH5R South Bridge (Thin IMB C bus to Super I/O) / National PC87427 Super I/O (supports legacy CI slots / optional full-length PCI-Express x8 Riser Avail / two full gigabit ethernet MAC and PHY layer functions / / Alert Standard Format 2.0 / two rear RJ-45 ports 45), one RJ-45 (sys mgmt) / mouse ps2 / keyboard ps2					
Systems mgmt IBM Baseboard Management Controller (BMC) / H8S2168 / on planar / provides system and environmental monitoring suas temp, memory, optional disks, fans, power supply / support for optional Remote Supervisor Adapter II Slimline with 20-pin on planar for continuous pwr (no ext pwr req) Drop down light path diagnostics Pull out Front panel (LED lights indicate failing component) Security Power-on password / administrator password / sunattended boot / selectable boot / unattended start mode ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director™, and others IBM Baseboard Management Controller (BMC) / H8S2168 / on planar / provides system and environmental monitoring suspended start support for optional Remote Supervisor Adapter II Slimline with 20-pin or optio							
Cooling fans Power supply Prerequisites	Cooling fans seven-nine fans / variable speed / hot-swap / redundant Power supply seven-nine fans / variable speed / hot-swap / redundant 585 watt hot-swap (second Opt)/ universal / auto sensing / auto re-start 160GB SATA 7.2K Simple Swap HDD 73P80 73GB 10K Ultra320 SCSI Hot-Swap SL HDD 90P10 36.4GB 10K Ultra320 SCSI Hot-Swap 2.5" HDD 32P00						
Fan	Slot 2: fullsize, 64-bit 133MHz PCI X 1.0 (3.3v nboard DIMM of sockets 1 Bay ® 3.5", SL 1", access, std DVD-R Bay ® 3.5", SL 1", access, std fixed o Bay ® 3.5", SL 1", access, open for fixed of Bay ® 4 bays only available with 2.5" drive mod ROM Stealth black color front bezel Cable Management Arm H 1.69" (1U) x W 17.32" x D 27"; 43mm x 4-bit Configuration/Setup Utility: F1 at startup Diagnostics (PC-Doctor™): F2 at startup Configuration Boot: ALT+F1 at startup Coperator Information Panel in front LSI Logic Configuration Utility: CTRL+C at startup contraction in configuration Utility: CTRL+C at startup configuration Panel in front Contraction Panel in front Contraction Panel	LIMITED WARRANTY 3 year parts and labor International Warranty Service On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time? On site service upgrade options (in eligible locations):? 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) Cother ServicePac options at					

IBM® Type-GAV-model Qty	L2 y x Processor cache	e Memory Disk	Disk controller	Optical	Power Supply	Disk bays	Slots x bays	Ethernet		Available date
8837-1Vy-1Vx 1 x 8837-16y-16x 1 x 8837-25y-25x 1 x 8837-35y-35x 1 x 8837-3Vy-3Vx 1 x 8837-36y-36x 1 x 8837-45y-45x 1 x 8837-E1y-E1x 1 x	Xeon 3.0GHz 2MB Xeon 3.2GHz 2MB Xeon 3.4GHz 2MB Xeon 3.4GHz 2MB Xeon 3.4GHz 2MB Xeon 3.6GHz 2MB Xeon 3.0GHz 2MB	3 1GB None (open 2 3 1GB None (open 3. 3 1GB None (open 3.	5) Ultra320 5) SATA 5) Ultra320 5) Ultra320 5) Ultra320 5) SATA 5) Ultra320 5) Ultra320	DVD DVD DVD None DVD DVD DVD	585W 585W 585W 585W 585W 585W 585W 585W	2 hot-swap 4 hot-swap 2 simple-sp 2 hot-swap 4 hot-swap 2 simple-sp 2 hot-swap 4 hot-swap 4 hot-swap	2x4 2x3 2x3 2x3 2x4 2x3 2x3 2x3	2 x Gigabit 2 x Gigabit	3 year 3 year 3 year 3 year 3 year 3 year 3 year 3 year	Mar 2005 Mar 2005 Mar 2005 Mar 2005 Mar 2005 Mar 2005 Mar 2005
8837-E2ý-E2x 1 x Xeon 3.0GHz 2MB 2GB None (open 2.5) Ultra320 None 585W 4 hot-swap 2x4 2 x Gigabit 3 year Mar 2005 Positioning Processor(s) Cache SMP support Implementation 8837-E2ý-E2x 1 x Xeon 3.0GHz 2MB 2GB None (open 2.5) Ultra320 None 585W 4 hot-swap 2x4 2 x Gigabit 3 year Mar 2005 A highly manageable, ultra-dense 1U, 2-way server that delivers performance computing in space-constrained environments 1 x Intel® Xeon 3.0, 3.2, 3.4, 3.6GHz with 800MHz / 2MB L2 Cache / Extended Memory 64 Technology (EM64T) 2way SMP / up to two Xeon Processor / at processor / at processor / at processor seame speed/cache size) Systemboard contains two Intel 604 pin micro-PGA ZIF sockets, eight DIMM slots, two PCI-X slots (one full length 133MHz, one low-profile 100MHz) and integrated SCSI or SATA, dual GB ethernet, graphics										
Memory	connector slots on	ax ¹³ / 8 slots (6 avail) / P systemboard / DIMMs m : online spare and memo	ust be installe	ed in mate	ched pairs	s [a bank] / 2-v	vay mer			
SCSI disk controller SATA disk Controller IDE controller / cable Disk - MAX capacity Disk - bays	Mirroring) with two senhanced SATA-1senhanced	vith two 146GB HDD <i>SC</i>	/ one 16-bit in er / two conne SI 2.5 :four 2.	ternal charctors on 5" 73GB	annel / n planar / t HDD <i>SA</i>	o external con wo one-drop c TA : 500GB wit	nector ables th two 2		(Embedd	ed
Mechanical Architecture / chipsets Bus slots Ethernet controllers DVD-ROM / diskette Rear ports Graphics	Mechanical Architecture / chipsets Architecture / chipsets Architecture / chipsets								Thin IMB	
Systems mgmt Diagnostics	as temp, memory, on planar for contin	lanagement Controller optional disks, fans, pow nuous pwr (no ext pwr re path diagnostics Pull o	er supply / su q)	apport for						
Security	(LED lights indicate Power-on password	failing component) d / administrator passwo	rd /			2GHz/2MB L2 6GHz/2MB L2				25R8905 13N0667
Software		selectable boot / unattend D-ROM installation and o tor™, and others		e 	512MB 1GB (2x 2GB (2x	(2x256)PC2-32 (512)PC2-320 (1GB)PC2-320	200 CL3 CL3 E 0 CL3 E	ECC DDR2 CC DDR2 C ECC DDR2 (hipKill	73P3523 73P2865 73P2866
Cooling fans Power supply		rariable speed / hot-swap (second Opt)/ universal		g /	160GB 9	ATA 7.2K Sim _l SATA 7.2K Sin OK Ultra320 SO	nple Swa CSI Hot-	, ap HDD ∙Swap SL H⊡		73P8002 73P8003 90P1305
Prerequisites		mouse, rack, disk (som	e), operating	sys	ServeRA Remote Second PCI-Exp	10K Ultra320 AID 6i+ adapto Supervisor Ac 585W Power aress x8 full-ler ptions available	r lapter II supply ngth rise	slimline er card		32P0796 13N2190 73P9341 90P5280 22R9293 essories



- 3 year parts and labor
- International Warranty Service³
- On site, 8 am 5 pm, Mon Fri coverage excluding holidays, next business day response time?
- On site service upgrade options (in eligible locations):7
 - 3 year IOR 9x5, 4 hr avg response (ServicePac® part num 21P2072)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 21P2073)
 - 3 year IOR 24x7, 2 hr avg response (ServicePac part num 21P2074)
 - 4 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9244)
- 5 year IOR 9x5, NBD response
- (ServicePac part num 69P9246)
 Other ServicePac options at http://www.ibm.com/
- services/us/its/pdf/wamomxeu.pdf 24x7¹⁴ toll-free support for warranty issues during the warranty period³

BM@server™	xSeries™ 3	36 (8837)) - Novem	ber 200	5	хR	REF by eSer	ver Field	d Skills an	d Educa	tion Team
IBM® Type-GAV-model Qty	Processor/Core	L2 cache Memory	Disk	Disk controller O	otical	Power	Disk bays	Slots x bays	Ethernet		Available date
8837-05U-05x 1 x X 8837-0WU-0Wx 1 x X 8837-06U-06x 1 x X 8837-55U-55x 1 x X 8837-5VU-5Vx 1 x X 8837-54U-56x 1 x X 8837-E4U-E4x 1 x X 8837-E5U-E5x 1 x X 8837-D1U-D1x 1 x X	eon™2.8GHz/SC eon 2.8GHz/SC eon 2.8GHz/SC eon 3.8GHz/SC eon 3.8GHz/SC eon 3.8GHz/SC eon 3.8GHz/SC eon 2.8GHz/SC	2 2MB 1GB 2MB 1GB 2MB 1GB 2MB 1GB 1 2MB 1GB 1 2MB 1GB 1 2MB 1GB 1 2MB 1GB 1 2MB 1GB 1 2X2MB 2GB	None(open 3.5 None(open 3.5 None(open 3.5 None(open 3.5 None(open 3.5 None(open 3.5 None(open 3.5 None(open 3.5	5) Ultra320 5) Ultra320) SATA I) Ultra320) Ultra320) SATA I) Ultra320) Ultra320) Ultra320	DVD None DVD DVD None DVD DVD	585W 585W 585W 585W 585W 585W 585W		2x3 2x4 2x3 2x3 2x4 2x3 2x3 2x3 2x3 2x3 2x3	2 x Gigabit 2 x Gigabit	3 year 3 year 3 year 3 year 3 year 3 year 3 year 3 year 3 year	Sep 2005 Sep 2005 Sep 2005 Sep 2005 Sep 2005 Sep 2005 Sep 2005 Sep 2005 Nov 2005
Positioning Processor(s) Cache SMP support Implementation	A highly manage Intel® Xeon Proo Optimized for E 2MB L2 Cache s 2-way SMP / up Systemboard con low-profile 100Mb	stended Mem std on Single Co to two Xeon P ntains two Intel	ory 64 Techno ore / 2x2MB L2 rocessors (sam 604 pin micro-P	Cache std o e speed/cach CGA ZIF sock) / Hy n Dua e size ets, eiç	yper-Inre Il Core / (e) ght DIMN	eading on die of prod // slots, two F	essor / a	t processor s	speed / E0	cc
Memory	1GB std / 16GB connector slots o Active Memory(n systemboard	/ DIMMs must I	be installed in	match	hed pairs	s [a bank] / 2-	wav men			
SCSI disk controller SATA disk Controller IDE controller / cable Disk - MAX capacity Disk - bays	LSI Logic® 53C1 Mirroring) with tw Enhanced SATA- one 1-drop EIDE SCSI 3.5: 292GB SCSI: two hot-sw	o SCSI disks in -150 (150MB/se cable to DVD-l s with two 146G	n front bays / one ec) controller / t ROM BB HDD <i>SCSI</i> 2	e 16-bit intern wo connector . 5 :four 2.5" 7	al cha s on p 3GB F	innel / no blanar / tv HDD SA 1	o external cor wo one-drop <i>TA:</i> 500GB w	nnector cables ith two 25		(Embedd	ed
Mechanical Architecture / chipsets	EIA 19" Rack (1 Intel E7520 / Intel 32bit/33MHz PCI to Host Bridge for components; key) / Intel PCI-X E r graphics contr rboard, mouse,	Bridge (supports roller, EIDE, US serial)	B, SMBus, LF	-X slot PC bus	ts 1 & 2, s to Supe	LSI Logic 53 er I/O) / Natio	C1020) / nal PC87	ICH5R Sout 427 Super I	h Bridge (/O (suppo	1.0, and Thin IMB orts legacy
Bus slots Ethernet controllers DVD-ROM / diskette Rear ports Graphics	(See below) two Two gigabit 10/10 on planar / PCI-X Some : DVD-ROM Rear: Two USB SVGA / ATI® 700	available PCI-X 00/1000 etherne 64-bit 100MHz M / IDE: <i>Diske</i>	(1.0 / no hot-swet ports / Broado z / full duplex / V tte: none	vake on LAIN	/ Alei	rt Standa	ard Format 2.0) / two rea	ar HJ-45 por	ts	
Systems mgmt	IBM Baseboard as temp, memory on planar for con	tinuous pwr (no	ext pwr rea)		3 / on rt for c	planar / optional F	provides syst Remote Supe	em and e rvisor Ada	environment apter II Sliml	al monitor ine with 2	ing such 0-pin conn
Diagnostics Security	Drop down light (LED lights indica Power-on passwo	t path diagnos te failing compo	stics Pull out Fronent)	ont panel	X	Ceon 2.8GI	Hz SC 2MB L2 Hz DC 4MB L2 Hz SC 2MB L2	Proc Upg			25R8907 25R8930 25R8905
Software	unattended boot / ServerGuide™ ((utilities), IBM Dire	/ selectable boc CD-ROM instal	ot / unattended s llation and confi	start mode iguration	X X 5	(eon 3.6Gl (eon 3.8Gl 12MB (2x2	Hz SC 2MB L2 Hz SC 2MB L2 256)PC2-3200 (Proc Upg Proc Upg CL3ECC DI			13N0667 13N0670 73P3523
Cooling fans Power supply	Calibrated Vector variable speed / I 585 watt hot-swa	hot-swap / redu	ındant		8 8	GB (2x1G 0GB SAT/	2)PC2-3200 CL; B)PC2-3200 CL A 7.2K Simple S FA 7.2K Simple	.3ECCDD wap HDD	R2ChipKill		73P2865 73P2866 73P8002 73P8003
Prerequisites	auto re-start Monitor, keyboard	d, mouse, rack	, disk (some), d	operating sys	73 33 S R S	3GB 10K l 6.4GB 10l ServeRAID Remote Su Second 58	Ultra320 SCSI F K Ultra320 SCS 6 6 + adaptor pervisor Adapto 5W Power supp ss x8 full-length	Hot-Śwap S I Hot-Swap er II slimline ly	SLHDD 2.5" HDD		90P1305 32P0796 13N2190 73P9341 90P5280 22R9293
							ns available at		com/pc/us/acc	cessories	
Fan Fan Power Supply Full Leasth	Slot 2 Bay Coard DIMM Bay Coard Bay Coard Bay Coard Bay Coard	2: fullsize, 64- 1 5.25", UltraS 2 3.5", SL 1" 3 3.5", SL 1" 4 bays only	halfsize, 64-bit bit 133MHz Po Slim 0.5", acces , acces , acces available with 2	CI X 1.0 (3.3 ss,std DVD- ss,std fixed ss,open for f	v); Bu ROM or hot ixed o	ıs B (3.5 mo t-swap d or hot-sv	del) lisk vap disk VD-	3 year p Internati On site, coverag next bus	MITED WA parts and la onal Warra 8 am - 5 pm e excluding siness day r service upg	bor nty Servio n, Mon - F holidays esponse	ce ³ ri , time ⁷



- Stealth black color front bezel

- universal interrack HV cable with IEC plug)
- ⇒ Predictive Failure Analysis® on processor(s), voltage regulator modules, memory, fans, power supply, and disk 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)

- (ServicePac part num 69P9244)
 5 year IOR 9x5, NBD response
 (ServicePac part num 69P9246)

 → Other ServicePac options at
 http://www.ibm.com/
 services/us/its/pdf/wamomxeu.pdf

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

See footnotes for important warranty information

IBM®		L2	FSB		Memory		Disk	Hot -swap or	Slots		Limited	Available
Type-model Qty x Pr	ocessor	cache	MHz	Memory	type	Disk		fixed disk bays		Ethernet	warranty ³	date
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 I	Mar 2003
	er models nt to supp					tructures req	uiring net	work				
Positioning Processor(s) L2 cache SMP support Implementation	1 x Intel® 512KB / o 2-way SM Systembo	Xeon 2.0 n die of po P / up to tard conta	8BGHz ¹ rocessor two Xeor ins two I	with 533 / at process ntel 603-	BMHz fron essor spe sors (same pin micro-	erver that delive ttside bus / Hy ed (no L3 cach e speed/cache PGA ZIF sock thernet, graph	/per-Threa ne) size) ets, four me	ding technolog	gy			
Memory	PC2100 2 must be in	66MHz re stalled in cking an	egistered matched d Corre	184-pin d pairs [a cting (EC	ECC DDF bank] / 2- CC) via 16	o slots availab R-SDRAM DIM way memory in bit Checksun chips)	Ms / four D nterleave /	dual channel /	memory	bus runs a	t 2 x 100M	Hz/
SCSI disk controller IDE controller / cable	64-bit 100 one 16-bit	MHz PCI internal o	-X Bus E channel	3 / suppo / 16-bit 6	rts RAID- 8-pin LV[C1020 / Ultra: 1 mirroring (ED) cable from significant	Embedded ystemboar	Mirroring) with d to backplane	n two SC e for two	SI disks in disks / no e	front bays external co	nnector
Disk - capacity Disk - bays	EIDE mod	<i>lels:</i> One <i>lels:</i> none	2-drop E standaı	EIDE cab	le to two o	disk bays / one 15000 rpm dis onnectors / fille	e 1-drop El sks; <i>EIDE r</i>	DE cable to C nodels: 40GB	D-ROM / 7200 rp	om / ATA-1	` 00 / 8.7ms	seek
Mechanical Architecture / chipsets	one CIOB slot 2 and SMBus, L	orks® Gra -X2 I/O B Ultra320 PC bus to	and Cha ridge (IM / CSB5 Super I	mpion ™ /IB2 bus t South Bi /O) / Nati	4.0 LE / 0 to Host Br ridge (Thir ional Sem	rted in 26" dee CMIC LE Host ridge for PCI-X n IMB to Host liconductor® P swap Active™	Bridge (me (Bus A wit Bridge for C87417 Si	emory controll h slot 1 and du PCI 2.2 Bus C	er and I/ ual ether	O Bridge) / net and PC	I-X Bus B	
Ethernet controllers CD-ROM / diskette Rear ports Front ports / graphics Console interconnects	on planar 24X-10X ⁶ <i>Rear:</i> one <i>Front:</i> two sC2T Interd	/ PCI-X 64 CD-ROM e USB (Ve o USB (Ve connect™	4-bit 100 /IDE; <i>[</i> ers 1.1), ers 1.1); cable (1	MHz Bus Diskette: 3 C2T in, C Graphics 10 inch, 2	s A / full du 3.5" 1.44M 22T out, s s: SVGA / 45mm) is		n LAN® / AÌ ve / dust co vo ethernet / on plana /board Vid	ert Standard F over t (RJ-45), one l r / 8MB SDRAI eo Mouse (KV	ormat 1. RS-485 (M std/ma M) chair	0 / two rear sys mgmt) ax / 32-bit 3 ling cable)	RJ-45 por / no paralle 3MHz PCI / one Cable	ts el port 2.2 bus

IBM Integrated system management processor (ISMP) / H8S2148 / on planar / provides system and environmental monitoring such as temp, memory, optional disks, fans, power supply / support for optional Remote Supervisor Adapter

with 20-pin conn on planar for continuous pwr (no ext pwr req) Diagnostics Security Power-on password / administrator password / unattended boot / selectable boot / unattended start mode Software ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director™, and others Cooling fans Eight fans (five for system, three on power supply) / variable speed / not redundant or hot-swap Power supply 332 watt (-48 to -60 V dc [direct current]) / auto-sensing supports dual input sources (two power sources) / not redundant / not hot-swap / auto-restart support Monitor, keyb., mouse, rack, disk, operating sys, one C2T Kit per chain of servers or NetBAY ACT CAT-5 Prerequisites

Light Path Diagnostics™ (LED lights indicate failing component) and on-board diagnostics (via PC-Doctor in BIOS) OPTIONS Xeon 2.8BGHz/512KB L2 Cache Proc Upg 512MB PC2100 CL2.5 ECC DDR-SDRAM DIMM 331 5038 1GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM 33L5039 2GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM 33L5040 36.4GB 15K Ultra320 SCSI Hot-Swap SL HDD 06P5776 Remote Supervisor Adapter ServeRAID™-4Mx Ultra160 SCSI Adapter 09N7585 06P5736 Cable Chain Technology (C2T) Cable Kit (2 meter 06P4792 breakout cable and 2 meter KVM chaining cable) NetBAY ACT Local Console Manager 1735L04

Back PCI slot 2 PCI slot 1 Top Systemboard PCI PCI Light Path slot slot Diagnostics #2 #1 DIMM Powe sockets Supply opt CPU CPU Fan Fan Fa an Fan Fan Fa Disk Disk CD-ROM (opt) (std or opt) Diskette Front disk bay

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 @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
- 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 http://www.ibm.com/
- services/us/its/pdf/wamomxeu.pdf 24x7¹⁴ toll-free support forwarranty issues during the warranty period3

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See footnotes for important warranty information

Systems mgmt

US models announced February18, 2003

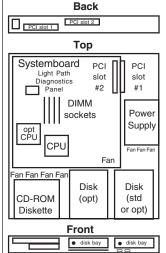
⁼ Hot-swap

IBM @server™ xSeries™ 335 (DC power model) (January 2004) xREF by eServer Field Skills Enablement Team

IBM [⊚] Type-model	Qty x Processor	L2 cache	FSB MHz	:	mory ype	Disk	Disk controller	Hot -swap or fixed disk bays	Slots x bays	Ethernet	Limited warranty ³	Available date
8676-LAX 1	x Xeon 2.8B GHz	512KB	533	512MB Chi	ipkill	None (open)	Ultra320	2 hot-swap	2x4	2 x Gigabi	t 3 year	Jan 2004

DC power models are designed for network infrastructures requiring network equipment to support DC power environments

A highly manageable, ultra-dense 1U, 2-way server that delivers 1 x Intel® Xeon 2.8BGHz¹ with 533MHz frontside bus / Hype 512KB / on die of processor / at processor speed (no L3 cache) 2-way SMP / up to two Xeon Processors (same speed/cache siz Systemboard contains two Intel 603-pin micro-PGA ZIF sockets, riser for one PCI-X slot, and integrated SCSI, ethernet, graphics	r-Threading technology re)							
512MB std / 8GB max¹³ / two slots used / two slots available / PC2100 266MHz registered 184-pin ECC DDR-SDRAM DIMMs / four DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / memory bus runs at 2 x 100MHz / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips). Chipkill available on DIMMs of 512MB or greater only.								
All (not used on EIDE models): LSI Logic® 53C1020 / Ultra320 64-bit 100MHz PCI-X Bus B / supports RAID-1 mirroring (Embone 16-bit internal channel / 16-bit 68-pin LVD cable from syste All: Enhanced IDE ATA-100 controller in CSB5 South Bridge / tEIDE models: One 2-drop EIDE cable to two disk bays / one 1-SCSI models: two hot-swap / 80-pin SCA-2 connectors / filler p	pedded Mirroring) with two SCSI disks in front bays / emboard to backplane for two disks / no external connector wo connectors on planar / one 1-drop IDE cable (CD-ROM) drop EIDE cable to CD-ROM EIDE models: 40GB / 7200 rpm / ATA-100 / 8.7ms seek							
EIA 19" Rack (1U4) / rack-mount only / supported in 26" deep rase ServerWorks® Grand Champion™ 4.0 LE / CMIC LE Host Bridge on CIOB-X2 I/O Bridge (IMB2 bus to Host Bridge for PCI-X Buslot 2 and Ultra320 / CSB5 South Bridge (Thin IMB to Host Brids SMBus, LPC bus to Super I/O) / National Semiconductor® PC8 (See below) two available PCI-X 1.0 / no hot-swap Active™ PC	dge (memory controller and I/O Bridge) / us A with slot 1 and dual ethernet and PCI-X Bus B with dge for PCI 2.2 Bus C with graphics controller, EIDE, USB, 7417 Super I/O chip							
Ethernet controllers Two gigabit 10/100/1000 ethernet ports / Broadcom BCM5703 / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-X 64-bit 100MHz Bus A / full duplex / Wake on LAN® / Alert Standard Format 1.0 / two rear RJ-45 ports CD-ROM / diskette Rear ports Rear: one USB (Vers 1.1), C2T in, C2T out, serial (9-pin), two ethernet (RJ-45), one RS-485 (sys mgmt) / no parallel port Front ports / graphics Front: two USB (Vers 1.1); Graphics: SVGA / ATI® Rage XL / on planar / 8MB SDRAM std/max / 32-bit 33MHz PCI 2.2 bus Console interconnect™ cable (10 inch, 245mm) is standard (Keyboard Video Mouse (KVM) chaining cable) / one Cable Chain								
IBM Integrated system management processor (ISMP) / H8 monitoring such as temp, memory, optional disks, fans, power swith 20-pin conn on planar for continuous pwr (no ext pwr req) Light Path Diagnostics™ (LED lights indicate failing compo	supply / support for optional Remote Supervisor Adapter							
Power-on password / administrator password /	OPTIONS							
unattended boot / selectable boot / unattended start mode ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director™, and others	Xeon 2.8BGHz/512KB L2 Cache Proc Upg 73P6382 2x256MB PC2100 CL2.5 non-Chipkill DIMM 73P2868 512MB PC2100 CL2.5 ECC DDR-SDRAM DIMM 33L5038							
Eight fans (five for system, three on power supply) /	1GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM 33L5039 2GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM 33L5040							
332 watt (-48 to -60 V dc [direct current]) / auto-sensing / supports dual input sources (two power sources) /	36.4GB 15K Ultra320 SCSI Hot-Swap SL HDD 06P5776 Remote Supervisor Adapter 09N7585 ServeRAID TM -4Mx Ultra160 SCSI Adapter 06P5736 Cable Chain Technology (C2T) Cable Kit (2 meter							
Monitor, keyb., mouse, rack, disk, operating sys, one C2T Kit per chain of servers or NetBAY ACT CAT-5	breakout cable and 2 meter KVM chaining cable) NetBAY ACT Local Console Manager 06P4792 1735L04							
5	1 x Intel® Xeon 2.8BGHz¹ with 533MHz frontside bus / Hype 512KB / on die of processor / at processor speed (no L3 cache) 2-way SMP / up to two Xeon Processors (same speed/cache siz Systemboard contains two Intel 603-pin micro-PGA ZIF sockets, riser for one PCI-X slot, and integrated SCSI, ethernet, graphics 512MB std / 8GB max¹³ / two slots used / two slots available / PC2100 266MHz registered 184-pin ECC DDR-SDRAM DIMMS must be installed in matched pairs [a bank] / 2-way memory inter Error Checking and Correcting (ECC) via 16-bit Checksum C detects 2- through 8-bit errors contained in two chips). Chipkill All (not used on EIDE models): LSI Logic® 53C1020 / Ultra32C 64-bit 100MHz PCI-X Bus B / supports RAID-1 mirroring (Embone 16-bit internal channel / 16-bit 68-pin LVD cable from syste All: Enhanced IDE ATA-100 controller in CSB5 South Bridge / t EIDE models: One 2-drop EIDE cable to two disk bays / one 15CSI models: none standard / supports up to 15000 rpm disks; SCSI models: two hot-swap / 80-pin SCA-2 connectors / filler p EIA 19" Rack (1U⁴) / rack-mount only / supported in 26" deep reserveWorks® Grand Champion™ 4.0 LE / CMIC LE Host Brid one CIOB-X2 I/O Bridge (IMB2 bus to Host Bridge for PCI-X Bustot 2 and Ultra320 / CSB5 South Bridge (Thin IMB to Host Brids ServeWorks® Grand Champion™ 4.0 LE / CMIC LE Host Brid Side 2 and Ultra320 / CSB5 South Bridge (Thin IMB to Host Brids SMBus, LPC bus to Super I/O) / National Semiconductor® PC8 (See below) two available PCI-X 1.0 / no hot-swap Active™ PC Two gigabit 10/100/1000 ethernet ports / Broadcom BCM5703 / on planar / PCI-X 64-bit 100MHz Bus A / full duplex / Wake on Load 2 - 10 / 10 / 10 / 10 / 10 / 10 / 10 / 10							



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", access, std fixed or he
access, open for fixed

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
- http://www.ibm.com/ services/us/its/pdf/wamomxeu.pdf
- 24x7¹⁴ toll-free support for warranty issues during the warranty period3

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See footnotes for important warranty information = Hot-swap

IBM®	v Drassassav	L2	Ultra160	SCSI			Fixed		Power	Commiss	Available
Type-model Qty 2 8827-14X 2 x Pentiu	x Processor m® III 1.26GHz	cache Memory 512KB 2GB 1	x 36.4GB ² 10K	controller 2 x Ultra160	anical 2U ⁴ rack		disk bays 2 fixed			Complian r NEBS-3	date Apr 2002
		signed for networ power environm		s requiring net	work						
Positioning Processor(s) L2 cache Implementation SMP support	2 x Intel® Penti 512KB std and Motherboard co	ment Building Sys ium® III 1.26GHz- I max / ECC / at p ontains two Intel I a second identica	-S with 133MHz rocessor speed PGA370 sockets	r frontside bus / processor an s, six DIMM soo	s d L2 cach	ne in Fl	ip Chip F	in Grid	Array (FC	-PGA2)	ystems
Memory	Error Checkin	8 ¹³ max / 6 socket ng and Correctin MHz / six 168-pin	g (ECC) memor	y controller / ma	atched pa	airs req	uired / tw oorts regi	o-way i	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 cl A: external 16-bit B: one internal 10 160 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 slid	connecto ntroller to T. ⁵ les out fro	r`(no ca two-ba om fron	ables) ay disk dr t	ive carr	rier	4-bit PCI	
Mechanical Rack support PCI bus slots Chipset	EIA 19" Rack (Designed for in (See below) thr PCI 2.2 / peer F ServerWorks® South Bridge) / CSB5 South Br Baseboard Mar	(2U ⁴) x 20-inch donstallation in a two ree full height full PCI buses / no ho III HE-SL chipse / NB655 Champiridge for EIDE, US nagement Control below): 4 bays / tv	eep p-post, 19" rack length 64-bit 33l t-swap Active™ et / CNB20HE-S ion I/O Bridge (0 SB, LPC bus for 9 ler	unit only (not si MHz slots / thre PCI slots IL North Bridge CIOB20) for PC Super I/O Natio	upported ee low-pro for CIOB I Bus B (s onal Semi	in IBM ofile ha and P slots, S conduc	NetBAY If length (CI A 32-b CCSI) and ctor PC8	™ Rack 64-bit 60 bit 33Ml d C (slo 741(dis	s) / ships v 6MHz PCI Hz (graphi ts) / kette, seri	slots/ cs, etherne	et,
10/100 ethernet CD-ROM / diskette Rear ports	24X-10X ⁶ CD-F Two USB ports connector for fr Y-splitter cable	/ on planar / full d ROM / multisessic s (Version 1.1); R. ront panel alarm r s) us / ATI® Rage XL	on / IDE interface J-45 serial; PS/2 elay contacts / r	e / bootable; D keyboard; two o parallel port	iskette: 3 RJ-45 et / mouse o	.5" 1.4 hernet connec	4MB disk ; DB-15 ts to USE	cette dri graphic 3 port (c	ve / dust c s; 68-pin s or keyboar	over SCSI; DB- d port with	15 male standard
Security	SVGA / PCI bus / ATI® Rage XL (on planar) / 8MB SDRAM std/max / 1600x1280 at 16M colors at 85Hz / 15-pin D-shell Power-on password / admin password / unattended boot / selectable boot / boot without keyboard / diskette write protect										
Alarm panel Status LEDs Systems mgmt Diagnostics OS support Software ship group	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	ck-based) two / accessible to -60 V dc [direction of the courses of the course of the	ct current])/ o power source	s)/	1GB S 36.4G IBM E IBM S	DRAM B 10K 54 (13. leek Ty	I ECC DI Ultra160 8" viewal vo-Buttor	MM 133 SCSI S ble) FS n Mouse	T Monitor e (black)	MM (black)	33L3324 33L3326 06P5751 633147N 28L3673
Fans Prerequisites	fan failure signa fan in each pow Appropriate do	tispeed / not hot-s als front panel ala wer supply / fan o power source ar pard, mouse, rack	.rm LED / n each Pentium nd customer sup	IBM 84-key Space Saver Keyboard (black) Other options at ibm.com/pc/us/accessories m III processor ipplied wiring.					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 diskette CD-ROM disk	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 transfer startup lot of the trans	vinvoked I by pressir on diskett tions 0 508 mm 16.8 kg) mpiant	ng re	4	1 yeas Interroment	r parts ar national W te, 8 am - rage exclu ousiness c r on site w ade option ons):7 r coverag lidays, 4 h o ServicePa hr x 7 day our avera o ServicePa hr x 7 day our avera o ServicePa day our avera o ServicePa	arranty Se 5 pm, Mon ding holid day respor varranty se s (in eligib e, Mon-Fri r response coverage ge response ac part num coverage ge response 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

BM® Type-model Qty x Processor L2 Cache Memory SCSI disk Controller SCSI disk Controller Sederation	ul 2004 es
Positioning Processor(s) L2 cache Implementation SMP support Degree to the processor of th	ul 2004 es
Positioning Processor(s) L2 cache Implementation SMP support Processor(s) L2 cache Implementation SMP support Processor(s) SAN Support Processor(grated able /
ships with two 512 GB or 1GB DIMMs / Error Checking and Correcting (ECC) memory controller / matched pairs required / two-way interleaving / optional 2GB upgrade kit available by special bid SCSI disk controller SCSI channels SCSI channel A: external 16-bit .8mm VHDCI 68-pin external connector (no cables) SCSI Channel B: one internal 16-bit 68-pin LVD cable from controller to two-bay disk drive carrier SCSI disk SCSI disk bays Two fixed disk bays (not hot-swap) in disk drive carrier that slides out from front IDE controller / cable EIDE ATA-66 controller in South Bridge / one connector on planar / one 1-drop IDE cable (to CD-ROM)	
SCSI channels SCSI Channel A: external 16-bit .8mm VHDCI 68-pin external connector (no cables) SCSI Channel B: one internal 16-bit 68-pin LVD cable from controller to two-bay disk drive carrier SCSI disk 1 x 73.4GB or 146.8GB Ultra320 SCSI, 10K rpm, 4.9ms read seek, S.M.A.R.T. ⁵ Two fixed disk bays (not hot-swap) in disk drive carrier that slides out from front IDE controller / cable EIDE ATA-66 controller in South Bridge / one connector on planar / one 1-drop IDE cable (to CD-ROM)	
Mechanical EIA 19" Rack (2U ⁴) x 20-inch deep	
Pack support PCI bus slots PCI bus slots Chipset Designed for installation in a two-post, 19" rack unit only (not supported in IBM NetBAY™ Racks) / ships with rack mo (See below) three full height full length 64-bit 133MHz slots / three low-profile half length 64-bit 66MHz PCI slots / PCI 2.2 / peer PCI buses / no hot-swap Active™ PCI slots Chipset Intel® E7501 chipset / E7501 MCH North Bridge for CIOB and PCI A 64-bit 33MHz (graphics, ethernet, South Bridge) / P64Hz PCI Bus B (slots, SCSI) and C (slots) / ICH3-S South Bridge for EIDE, USB, LPC bus for Super I/O National Semiconductor PC87417 (serial, keyboard) an Baseboard Management Controller Bays See diagram below): 3 bays / two disk bays (hot-swap) / one CD-ROM bay	
10/100 ethernet CD-ROM / diskette Rear ports 2 x Intel 82546 / on planar / full duplex / supports Wake on LAN®, PXE 2.0 Boot Agent, Adapter Fault Tolerance Fail 24X-10X6 CD-ROM / multisession / IDE interface / bootable Two USB ports (Version 1.1); RJ-45 serial; PS/2 keyboard; two RJ-45 ethernet; DB-15 graphics; 68-pin SCSI; DB-15 m connector for front panel alarm relay contacts / no parallel port / mouse connects to USB port (or keyboard port with stan Y-splitter cable) SVGA / PCI bus / ATI® Rage XL (on planar) / 8MB SDRAM std/max / 1600x1280 at 16M colors at 85Hz / 15-pin D-shell	male
Security Power-on password / admin password / unattended boot / selectable boot / boot without keyboard	
Alarm panel Alarm panel External alarm panel in front bezel provides 24x7 surveillance of critical, major and minor errors and power outages / four alarm panel LEDs: power alarm fault, critical alarm fault, major alarm fault, minor alarm fault 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 Microsoft Windows 2000, Windows 2003 Advanced Server / Red Hat AS 2.1 / SLES Resource CD (CD-ROM installation and configuration utilities, Intel Server Control server management software, Product Guide)	r)
Keyboard / mouse Power supply None (since rack-based) Std: one (14X) or two (24X); max: two / accessible from rear 480 watt (-48 to -60 V dc [direct current]) / supports dual input sources (two power sources) / redundant / hot-swap / auto-restart support	3P4126
Fans Four fans / multispeed / not hot-swap / not redundant / fan failure signals front panel alarm LED / fan in each power supply / fan on each Pentium III processor Appropriate DC power source and customer supplied wiring, monitor, keyboard, mouse, rack, operating system	
Slot 1: fullsize, 64-bit 64MHz PCl-X (5v), Bus B Slot 2: fullsize, 64-bit 64MHz PCl-X (5v), Bus B Slot 3: fullsize, 64-bit 64MHz PCl-X (5v), Bus B Slot 4: low-profile,64-bit 133MHz PCl-X (3.3v), Bus C Slot 5: low-profile,64-bit 133MHz PCl-X (3.3v), Bus C Slot 6: low-profile,64-bit 133MHz PCl-X (3.3v), Bus C Several hardcopy publications 2U Rack Bay ② 3.5", 0.5", access, std CD-ROM Bay ③ 3.5", SL 1", no access, std disk Bay ④ 3.5", SL 1", no access, optional disk D-Rover black color (front bezel) Configuration/Setup Utility invoked by pressing CTRL+A CTRL+A Several hardcopy publications H 3.45" x W 17.14" x D 20.0" H 87.6 mm x W 435.3 mm x D 508 mm 34 to 37 pounds (15.4 to 16.8 kg) P-Rover black color (front bezel) Configuration/Setup Utility invoked by pressing CTRL+A Scholar by pressing F2 at startup SCSISelect near startup by pressing CTRL+A Several hardcopy publications H 3.45" x W 17.14" x D 20.0" H 87.6 mm x W 435.3 mm x D 508 mm 34 to 37 pounds (15.4 to 16.8 kg) P-Rover black color (front bezel) Configuration/Setup Utility invoked by pressing CTRL+A Scyleral hardcopy publications H 3.45" x W 17.14" x D 20.0" H 87.6 mm x W 435.3 mm x D 508 mm H 3.45" x W 17.14" x D 20.0" H 87.6 mm x W 435.3 mm x D 508 mm H 3.45" x W 17.14" x D 20.0" H 87.6 mm x W 435.3 mm x D 508 mm H 3.45" x W 17.14" x D 20.0" H 87.6 mm x W 435.3 mm x D 508 mm H 3.45" x W 17.14" x D 20.0" H 87.6 mm x W 435.3 mm x D 508 mm H 3.45" x W 17.14" x D 20.0" H 87.6 mm x W 435.3 mm x D 508 mm H 3.45" x W 17.14" x D 20.0" H 87.6 mm x W 435.3 mm x D 508 mm H 3.45" x W 17.14" x D 20.0" H 87.6 mm x W 435.3 mm x D 508 mm H 3.45" x W 17.14" x D 20.0" H 87.6 mm x W 435.3 mm x D 508 mm H 3.45" x W 17.14" x D 20.0" H 87.6 mm x W 435.3 mm x D 508 mm H	ce ³ Fri S, time ⁷ rvice xcluding time time time
All models: Max int disk capacity: 24x7 ¹⁴ toll-free support for wa issues during the warranty pe	heriog

IBM® Type-GAV-model Qt	y x Processor	L2 Cache	Memory	Disk	SCSI controller	Form Factor	Slots x bays (hot-swap bays)	Power supply	Ethernet	Available date
8840-01y-01U 1 x 8840-11y-11U 1 x 8840-41y-41U 1 x	Xeon™ 2.8GHz Xeon 3.0GHz Xeon 3.6GHz	1MB 1MB 1MB	1GB N	lone 2	x Ultra320 x Ultra320 x Ultra320	2U	4x8 (6 hot-swap) 4x8 (6 hot-swap) 4x8 (6 hot-swap)	1 x 625W hot-swap 1 x 625W hot-swap 1 x 625W hot-swap	2 x Gigabit 2 x Gigabit 2 x Gigabit	Aug 2004 Aug 2004 Aug 2004
Positioning Processor	A rack-dense . 1 x Intel® Xee	on™ Proc	essor 2.8,	3.0, 3.2	2, 3.4, 3.6G	ihz wit	oility and expandat h 800MHz frontsio	pility for application-selde bus / Optimized foulti-threaded (SMT)	rving Web er	vironments
L2 cache SMP support Implementation	1MB L2 Cach 2-way SMP / Systemboard	e / on die up to two contains t	of processo Xeon Proce wo Intel PG	or / at p essors A604 r	orocessor s (same spe nicro-PGA	peed ed/cac ZIF so	he size) ckets, eight memo	ory DIMM slots, two loual GB ethernet, grap	ow-profile PC	CI-X
Memory	pin ECC DDR pairs [a bank]	2-SDRAM / 2-way n d Correct	I DIMMs / einemory intering (ECC) /	ight DII leave / option	MM gold-co dual channal dal 16-bit C l	nnectonel / A	or slots on system active Memory™:	s / PC2-3200 DDR2 4 board / DIMMs must Memory mirroring, ho rects 1, 2, 3, or 4-bit	be installeď i t-spare mem	n matched ory / Error
SCSI disk controller	Adaptec® AIC supports RAIL 5, 00, 10, 1E0	D-0 and 1	with up to	one h	ot-spare di	sk / op	oller (LVD 320ME tional IBM ServeF	3/sec) / on planar / 64 RAID™-7k Adaptor for	1-bit 100MHz low-cost RAI	PCI-X / D 0, 1, 1E,
SCSI channels	Two 16-bit che backplane for	annels (or six disks;	ne internal a ; <i>Channel A</i>	and one 4: 16-b	e external) it 68-pin in	/ <i>SĆS</i> terface	to support exteri	oit 68-pin LVD cable f nal SCSI devices via onnector(s) for extern	external SC	ooard to SI 0.8mm
IDE controller/cable Disk - capacity Disk - bays	None standard	d/support	s 7200-1500	00 rpm	disks / one	backp	lane	planar $/$ one 1-drop I / all disk bays Ultra32		D-ROM)
Mechanical Chipset	EIA 19" Rack (2U⁴) / rack-mount only / supported in IBM NetBAY™ Rack products / no rack to tower conversion Intel E7520 / Memory Controller Hub (MCH) / Intel I/O Controller Hub 5 (ICH5) / Two Intel PCI-X Hubs (133MHz PCI-X slots 3 & 4) / Intel Dodson I/O Proccesor (supports 100MHz PCI-X slots 1 & 2, Adaptec AIC-7902 and optional ServeRAID 7k Adapter / ICH5 South Bridge (Thin IMB to Host Bridge for graphics controller, EIDE, USB, SMBus, LPC bus to Super I/O) / LPC-SIO 8742x Super I/O (See below) Four available PCI-X 1.0 / no hot-swap Active™ PCI slots									
Ethernet controller Optical / diskette Front & Rear ports Graphics	on planar / PC 8X-24X ⁶ DVD- Front: one US (RJ-45), two F	CI-X 64-bit ROM / ID SB (Vers : RJ-45 (sys	100MHz / fr PE; <i>Diskette</i> 2.0) <i>Rear:</i> tw s mgmt) / no	ull dupl e: 3.5" 1 o USB o parallo	ex / Wake 1.44MB disl 3 (Vers 2.0) el port	on LAI kette d , keyb	N® / Alert Standard Irive / dust cover oard, mouse, seria	bit ethernet MAC and I Format 2.0 / two RJ- al (9-pin), graphics (D bit 33MHz PCI 2.2 bu	-45 ports in r B-15), two e	ear
Security	Power-on pass	sword / ad	ministrator p	oasswo	rd / unatter	nded bo	oot / selectable bo	ot sequence		
Systems mgmt	IBM Baseboa H8S2168 / on environmental fans, power s Adapter II slin continuous po	planar / planar / planar / planar / monitorir upp / sup nline with	provides systems as a such as a ports option reseverved	stem ai temp, d al Ren conne	nd` optional dis note Super		Xeon 3.0GHz 800l Xeon 3.2GHz 800l Xeon 3.4GHz 800l Xeon 3.6GHz 800l	MHz/1MB L2 Proc Upg MHz/1MB L2 Proc Upg MHz/1MB L2 Proc Upg MHz/1MB L2 Proc Upg MHz/1MB L2 Proc Upg	Non Challet	13N0688 13N0681 13N0683 13N0684 13N0685
Diagnostics	Drop down li map to failing				l providing	LED	1GB(2x512)PC2-3	2-3200 CL3 ECC DDR2 200 CL3 ECC DDR2 N	lon-Chpk Kit	73P3523 73P3522
Software	ServerGuide ^T utilities), IBM	™ (CĎ-RC	OM installati	on and		tion	2GB(2x1GB)PC2-3 IBM ServeRAID-7k	3200 CL3 ECC DDR2-		73P2866 71P8642 73P9341
Keyboard / mouse Power supply	None standard Std/Max: one/t				access / aı	uto	73.4GB 10K Ultra3	20 SCSI Hot-Swap SL 320 SCSI Hot-Swap SI		90P1305 90P1306
Fans	restart / redund Calibrated Ve (six fans with of with twelve far	dant with to ctored Coptional se	two power s poling™ <i>Sta</i> econd power	upplies d: six fa r supply	i / auto-sen: ins; <i>Max:</i> tv y) / redunda	sing velve ant	625W (N. America NetBAY Local Con NetBAY Remote C) Hot-Swap Power Sup sole Manager onsole Manager	ply	26K5097 1735L04 1735R16
Prerequisites	PFA Monitor, keybo	ard, mous	se, SCSI dis	sk, rack	(Omer options at I	bm.com /pc/us/accesso	nes	

Slot 1: low-profile, 64-bit 100MHz 3.3v PCI-X, non hot, Bus A○ Quick release adapter slots (no screws) Slot 2: low-profile, 64-bit 100MHz 3.3v PCI-X non hot, Bus A○ Configuration/Setup Utility: F1 at startup Slot 3: full, 64-bit 133MHz 3.3v PCI-X, not hot-swap, Bus B⁺○ Diagnostics (PC-Doctor™): F2 at startup Slot 4: full, 64-bit 133MHz 3.3v PCI-X, not hot-swap, Bus B⁺○ System Partition Boot: ALT+F1 at startup *slots 3 & 4 riser may be replaced with PCI-Express riser ○ Network Boot: F12 at startup ○ Front indicators LEDs: Power-on LED,

Opt disk
 Opt disk

Bay ① 3.5", 0.5", access, slim diskette
Bay ② 5.25", 0.5" access, slim DVD-ROM
Bay ③ 3.5", SL 1", access, hot-swap, open for disk
Bay ⑥ 3.5", SL 1", access, hot-swap, open for disk
Bay ⑥ 3.5", SL 1", access, hot-swap, open for disk
Bay ⑥ 3.5", SL 1", access, hot-swap, open for disk
Bay ⑥ 3.5", SL 1", access, hot-swap, open for disk
Bay ⑥ 3.5", SL 1", access, hot-swap, open for disk
Bay ⑥ 3.5", SL 1", access, hot-swap, open for disk
Bay ⑥ 3.5", SL 1", access, hot-swap, open for disk
Bay ⑥ 3.5", SL 1", access, hot-swap, open for disk
Bay ⑥ 3.5", SL 1", access, hot-swap, open for disk
Bay ⑥ 3.5", SL 1", access, hot-swap, open for disk
Bay ⑥ 3.5", SL 1", access, hot-swap, open for disk
Bay ⑥ 3.5", SL 1", access, hot-swap, open for disk
Bay ⑥ 3.5", SL 1", access, hot-swap, open for disk
Bay ⑥ 3.5", SL 1", access, hot-swap, open for disk
Bay ⑥ 3.5", SL 1", access, hot-swap, open for disk
Bay ⑥ 3.5", SL 1", access, hot-swap, open for disk
Bay ⑥ 3.5", SL 1", access, hot-swap, open for disk
Bay ⑥ 3.5", SL 1", access, hot-swap, open for disk
Bay ⑥ 3.5", SL 1", access, hot-swap, open for disk
Bay ⑥ 3.5", SL 1", access, hot-swap, open for disk
Bay ⑥ 3.5", SL 1", access, hot-swap, open for disk
Bay ⑥ 3.5", SL 1", access, hot-swap, open for disk
Bay ⑥ 3.5", SL 1", access, hot-swap, open for disk
Bay ⑥ 3.5", SL 1", access, hot-swap, open for disk
Bay ⑥ 3.5", SL 1", access, hot-swap, open for disk
Bay ⑥ 3.5", SL 1", access, hot-swap, open for disk

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

SCSI bus activity LED, system identification LED, information LED, and

Predictive failure analysis on disk options,

supplies, and fans in conjunction with IBM

Director can alert the system administrator

(H 85.4mm x W 443.6mm x D 698mm)

memory, processors, VRMs, power

of an imminent component failure

⇒ Rack: H 3.36" x W 17.5" x D 27.5"

system-error LED

Stealth black color

LIMITED WARRANTY3

3 year parts and labor

International Warranty Service³
 On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next

business day response 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)

24 hr x 7 day coverage,
4 hour average response time (ServicePac 21P2078)
24 hr x 7 day coverage,

 24 hr x 7 day coverage,
 2 hour average response time (ServicePac 21P2093)

Other ServicePac options at http://www.ibm.com/ services/us/its/pdf/wamomxeu.pdf

via SCA-2 connectors

Rack

IBM® Type-GAV-model Qty	L2 y x Processor Cache Memory	SCSI Disk controller	Form Factor	Slots x bays (hot-swap bays)	Power supply	Availab Ethernet da
	Xeon™ 3.0GHz 2MB 1GB N Xeon 3.0GHz 2MB 1GB N Xeon 3.2GHz 2MB 1GB N Xeon 3.4GHz 2MB 1GB N Xeon 3.4GHz 2MB 1GB N Xeon 3.6GHz 2MB 1GB N Xeon 3.0GHz 2MB 1GB N Xeon 3.0GHz 2MB 1GB 3	None 2 x Ultra32 None 2 x Ultra32	0 2U ⁴ 0 2U 0 2U 0 2U 0 2U 0 2U 0 2U	4x8 (6 hot-swap) 1 > 4x8 (6 hot-swap) 2 > 4x8 (6 hot-swap) 1 > 4x8 (6 hot-swap) 1 > 4x8 (6 hot-swap) 2 > 4x8 (6 hot-swap) 1 > 4x8 (6 ho	c 625W hot-swap c 625W hot-swap	2 x Gigabit Mar 20 2 x Gigabit Mar 20
Positioning Processor L2 cache SMP support Implementation	A rack-dense 2-way server de 1 x Intel® Xeon™ Processo 64 Technology (EM64T) / H 2MB L2 Cache / on die of processo 2-way SMP / up to two Xeon Systemboard contains two International Control of the	or 2.8, 3.0, 3.2, 3.4, 3.6 Hyper-Threading technorocessor / at processor on Processors (same spatel PGA604 micro-PGA	Ghz with clogy / speed eed/cac	h 800MHz frontside bu Simultaneous multi-t l he size) ckets, eight memory D	us / Optimized fo hreaded (SMT)	r Extended Memor
Memory	(100MHz) slots, two full-length of the start	slots used / six slots av at DIMM gold-connector eave / dual channel / Ac ECC) / optional 16-bit (ailable / slots or ctive M Checks	DIMMs / PC2-3200 D n systemboard / DIMM emory™: Memory mirr	DR2 400MHz reg s must be installe oring, hot-spare n	istered 240-pin ECC d in matched pairs nemory / Error
SCSI channels	Adaptec® AIC-7902 / dual of supports RAID-0 and 1 with 5, 00, 10, 1E0, 50 (installed of Two 16-bit channels (one into backplane for six disks; Ch. VHDCI connector / support Enhanced IDE ATA-100 con None standard / supports 720 Six hot-swap / 80-pin SCA-2 of Six hot-swap / 80-pin SCA-2 of supports 720 six hot-swap / 80-pin SCA-2	up to one hot-spare on reserved internal conniternal and one external annel A: 16-bit 68-pin is optional ServeRAID troller in ICH5 South B00-15000 rpm disks / one	disk / op nector) l) / SCS nterface adapter ridge / o e backp	otional IBM ServeRAID If Channel B: 16-bit 68 to support external S s with external connector on plantane	M-7k Adaptor for log- depin LVD cable fr SCSI devices via ector(s) for externa- lar / one 1-drop II	ow-cost RAID 0, 1, 1 om systemboard to external SCSI 0.8mi al devices DE cable (CD-ROM)
Mechanical Chipset	EIA 19" Rack (2U ⁴) / rack-n Intel E7520 / Memory Contrislots 3 & 4) / Intel Dodson ServeRAID 7k Adapter / ICH bus to Super I/O) / LPC-SIC (See below) Four available I	oller Hub (MCH) / Intel I/O Proccesor (support I5 South Bridge (Thin I) 8742x Super I/O	I/O Cons 100MI MB to F	ntroller Hub 5 (IĊH5) / Hz PCI-X slots 1 & 2, Host Bridge for graphic	Two Intel PCI-X Adaptec AIC-790	Hubs (133MHz PC) 2 and optional
Ethernet controller Optical / diskette Front & Rear ports Graphics	Two gigabit 10/100/1000 ethe on planar / PCI-X 64-bit 100N 8X-24X ⁶ DVD-ROM / IDE; <i>L. Front</i> : one USB (Vers 2.0) / (RJ-45), two RJ-45 (sys mgn SVGA / ATI® Radeon™ 7000it	ernet ports / Two Broad MHz / full duplex / Wake <i>Diskette:</i> 3.5" 1.44MB di <i>Rear:</i> two USB (Vers 2.0 nt) / no parallel port	com® 5 e on LAI skette d 0), keyb	721 / two full gigabit et N® / Alert Standard For rive / dust cover pard, mouse, serial (9-	mat 2.0 / two RJ-4-pin), graphics (DE	45 ports in rear 3-15), two ethernet
Security	Power-on password / adminis	strator password / unatte	ended bo	oot / selectable boot se	quence	
Systems mgmt Diagnostics Software	IBM Baseboard Management H8S2168 / on planar / provide environmental monitoring supfans, power supp / supports Adapter II slimline with resecontinuous power (no ext po Drop down light path diagmap to failing part (located or ServerGuide™ (CD-ROM in utilities), IBM Director system	des system and ch as temp, optional doptional Remote Superverved connector for ower reqd) nostics panel providing no front panel) stallation and configure	isks, ervisor g LED	Xeon2.8GHz800MHz/2MBL2I Xeon3.0GHz800MHz/2MBL2I Xeon3.2GHz800MHz/2MBL2I Xeon3.4GHz800MHz/2MBL2I Xeon3.6GHz800MHz/2MBL2I 512MB(2x256)PC2-3200CL3 1GB(2x512)PC2-3200CL3EC 2GB(2x1GB)PC2-3200CL3EC IBMServeRAID-7kAdapter	ProcUpg ProcUpg ProcUpg ProcUpg ProcUpg ProcUpg ECC DDR2 Non-Chpk Kit CC DDR2-SDRAM	25R890' 25R890' 25R890' 13N068' 13N068' 73P352' 73P362' 73P266' 71P8642'
Keyboard / mouse Power supply Fans	None standard (because rac Std/Max: one/two 625 watt he restart / redundant with two p Calibrated Vectored Cooling (six fans with optional second with twelve fans installed; All: YPFA	ck-based) ot-swap / rear access / a ower supplies / auto-se g™ Std: six fans; Max: d power supply) / reduncy variable speed / hot-swa	nsing twelve dant	IBM Remote Supervisor Adapte 73.4GB 10K Ultra320 SCS Hot 146.8GB 10K Ultra320 SCS Hot 625W (N. America) Hot-Swap F NetBAY Local Console Manage NetBAY Remote Console Mana Other options at ibm.com/pc/us/	-Swap SLHDD vt-Swap SLHDD Power Supply r ger accessories	73P934* 90P1300 90P1300 26K5097 1735L04 1735R10
Slot 2: low-profile, 6 Slot 3: full, 64-bit 13 Slot 4: full, 64-bit 13 *slots 3 & 4 riser n Opt disk Opt disk Opt disk Opt disk Opt disk Slots 3.5", 0.5", Bay @ 3.5", SL 1", Bay ® 3.5", SL 1", Bay ® 3.5", SL 1",	access, hot-swap, open for of access, hot-swap, open for opport six SL disks; or 1 DDS5 That PCI SCSI adaptor req)	hot, Bus AD Quick releihot, Bus AD Configuration ap, Bus B* Diagnostic ap, Brothon ap, Brothon ap, Bus B* Diagnostic ap, Brothon ap, Brothon ap, Bus B* Diagnostic ap, Bus B* Di	ion/Setuse (PC-Dustribuse) (PC	ip Utility: F1 at startup octor™): F2 at startup octor™): F2 at startup 2 at start	 ⇒ 3 year parts a ⇒ International ⇒ On site, 8 am coverage exc business day ⇒ 3 year on site upgrade opti locations):⁷ • 9 hr covera holidays, 4 (ServicePace • 24 hr x 7 da 4 hour aver (ServicePace • 24 hr x 7 da 2 hour aver (ServicePace • Other Service http://www.ik services/us/l ⇒ 24x7¹⁴ toll-free 	and labor Warranty Service ³ 1 - 5 pm, Mon - Fri cluding holidays, ney response time ⁷ warranty service ons (in eligible age, Mon-Fri excludin hr response time 21P2077) ay coverage, rage response time 21P2078) ay coverage, rage response time 21P2093) ePac options at

IBM [®] Type-GAV-model	L2 SCSI Form QtyxProcessor/Core Cache Memory Disk controller Factor	Slots x bays Available r (hot-swap bays) Power supply Ethernet date						
8840-05y-05U 1 2 8840-E3y-E3U 1 2 8840-E4y-E4U 1 2 8840-55y-55U 1 2	x Xeon™ 2.8GHz/SC 2MB 1GB None 2 x Ultra320 2U ⁴ x Xeon 2.8GHz/SC 2MB 1GB None 2 x Ultra320 2U x Xeon 3.4GHz/SC 2MB 1GB None 2 x Ultra320 2U x Xeon 3.8GHz/SC 2MB 1GB None 2 x Ultra320 2U x Xeon 3.8GHz/SC 2MB 1GB None 2 x Ultra320 2U	4x8 (6 hot-swap) 1 x 625W hot-swap 2 x Gigabit Sep 2005 4x8 (6 hot-swap) 1 x 625W hot-swap 2 x Gigabit Sep 2005 4x8 (6 hot-swap) 2 x 625W hot-swap 2 x Gigabit Sep 2005 4x8 (6 hot-swap) 1 x 625W hot-swap 2 x Gigabit Sep 2005 4x8 (6 hot-swap) 1 x 625W hot-swap 2 x Gigabit Oct 2005						
Positioning Processor	Intel® Xeon™ Processor up to 3.8Ghz Single Core 800M / All Optimized for Extended Memory 64 Technology (bility and expandability for application-serving Web environments Hz FSB / Xeon Processor 2.8Ghz Dual Core 800MHz FSB EM64T) / Hyper-Threading / Simultaneous multi-threaded						
L2 cache SMP support Implementation	2MB L2 Cache std on Single Core / 2x2MB L2 Cache std of 2-way SMP / up to two Xeon Processors (same speed/cac Systemboard contains two Intel PGA604 micro-PGA ZIF sc (100MHz) slots, two full-length PCI-X (133MHz) slots, and if	che size) pockets, eight memory DIMM slots, two low-profile PCI-X						
Memory	y 1GB or 2GB std / 16GB¹³ max / two slots used / six slots available / DIMMs / PC2-3200 DDR2 400MHz registered 240-pin ECC DDR2-SDRAM DIMMs / eight DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / Active Memory™: Memory mirroring, hot-spare memory / Error Checking and Correcting (ECC) / optional 16-bit Checksum Chipkill™ corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips,							
SCSI disk controller Adaptec® AIC-7902 / dual channel Ultra320 SCSI controller (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X / supports RAID-0 and 1 with up to one hot-spare disk / optional IBM ServeRAID™-7k Adaptor for low-cost RAID 0, 1, 1E, 5, 00, 10, 1E0, 50 (installed on reserved internal connector) SCSI channels Two 16-bit channels (one internal and one external) / SCSI Channel B: 16-bit 68-pin LVD cable from systemboard to								
	backplane for six disks; Channel A: 16-bit 68-pin interface to support external SCSI devices via external SCSI 0.8mm VHDCI connector / supports optional ServeRAID adapters with external connector(s) for external devices troller/cable Enhanced IDE ATA-100 controller in ICH5 South Bridge / one connector on planar / one 1-drop IDE cable (CD-ROM) apacity None standard / supports 7200-15000 rpm disks / one backplane							
Disk - bays	Six hot-swap / 80-pin SCA-2 connectors / filler panels installed							
Mechanical Chipset	nipset Intel E7520 / Memóry Controller Hub (MCH) / Intel I/O Controller Hub 5 (ICH5) / Two Intel PCI-X Hubs (133MHz PCI-X slots 3 & 4) / Intel Dodson I/O Proccesor (supports 100MHz PCI-X slots 1 & 2, Adaptec AIC-7902 and optional ServeRAID 7k Adapter / ICH5 South Bridge (Thin IMB to Host Bridge for graphics controller, EIDE, USB, SMBus, LPC bus to Super I/O) / LPC-SIO 8742x Super I/O							
Bus slots								
Ethernet controller Optical / diskette Front & Rear ports Graphics	Two gigabit 10/100/1000 ethernet ports / Two Broadcom® 5 on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAI 8X-24X ⁶ DVD-ROM / IDE; <i>Diskette</i> : 3.5" 1.44MB diskette of <i>Front</i> : one USB (Vers 2.0) <i>Rear</i> :two USB (Vers 2.0), keyb (RJ-45), two RJ-45 (sys mgmt) / no parallel port SVGA / ATI® Radeon™ 7000m / on planar / 16MB DDR SDI	drive / dust cover oard, mouse, serial (9-pin), graphics (DB-15), two ethernet						
Security	Power-on password / administrator password / unattended be							
Systems mgmt	IBM Baseboard Management Controller (BMC) / H8S2168 / on planar / provides system and environmental monitoring such as temp, optional disks, fans, power supp / supports optional Remote Supervisor Adapter II slimline with reseverved connector for continuous power (no ext power reqd)	Xeon 2.8GHz SC 800MHz/2MB L2 Proc Upg 25R8907 Xeon 2.8GHz DC 800MHz/4MB L2 Proc Upg 25R8930 Xeon 3.0GHz SC 800MHz/2MB L2 Proc Upg 25R8902 Xeon 3.2GHz SC 800MHz/2MB L2 Proc Upg 25R8903 Xeon 3.4GHz SC 800MHz/2MB L2 Proc Upg 13N0686 Xeon 3.6GHz SC 800MHz/2MB L2 Proc Upg 13N0687						
Diagnostics Software	Drop down light path diagnostics panel providing LED map to failing part (located on front panel) ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director systems mgmt, others	Xeon 3.8GHz SC 800MHz/2MB L2 Proc Upg 13N0689 512MB(2x256)PC2-3200 CL3 ECC DDR2 Non-Chpk Kit 73P3523 1GB(2x512)PC2-3200 CL3 ECC DDR2 Non-Chpk Kit 73P3522 2GB(2x1GB)PC2-3200 CL3 ECC DDR2-SDRAM 73P2866						
Keyboard / mouse Power supply	None standard (because rack-based) Std/Max: one/two 625 watt hot-swap / rear access / auto restart / redundant with two power supplies / auto-sensing	4GB(2x2GB)PC2-3200 CL3 ECC DDR2-SDRAM 73P4792 IBM ServeRAID-7k Adapter						
Fans	Calibrated Vectored Cooling™ Std: six fans; Max: twelve (six fans with optional second power supply) / redundant with twelve fans installed; All: variable speed / hot-swap / PFA 73.4GB 10K Ultra320 SCSI Hot-Swap SL HDD 46.8GB 10K Ultra320 SCSI Hot-Swap SL HDD 50P1306 625W (N. America) Hot-Swap Power Supply NetBAY Local Console Manager 1735L04							
Prerequisites	Monitor, keyboard, mouse, SCSI disk, rack	NetBAY Remote Console Manager 1735R16 Other options at ibm.com/pc/us/accessories						
Slot 1: low-profile, 64-bit 100MHz 3.3v PCI-X, non hot, Bus A Quick release adapter slots (no screws) Slot 2: low-profile, 64-bit 100MHz 3.3v PCI-X non hot, Bus A Configuration/Setup Utility: F1 at startup Slot 3: full, 64-bit 133MHz 3.3v PCI-X, not hot-swap, Bus B* Diagnostics (PC-Doctor™): F2 at startup Slot 4: full, 64-bit 133MHz 3.3v PCI-X, not hot-swap, Bus B* Diagnostics (PC-Doctor™): F2 at startup *slots 3 & 4 riser may be replaced with PCI-Express riser Network Boot: F12 at startup *Opt disk Opt disk O								

• Opt disk Opt disk

Bay ① 3.5", 0.5", Bay ② 5.25", 0.5" access, slim diskette access, slim DVD-ROM Bay ② 5.25", Bay ③ 3.5", Bay ④ 3.5", Bay ⑤ 3.5", Bay ⑥ 3.5", Bay ⑥ 3.5", Bay ⑧ 3.5", SL 1" access, hot-swap, open for disk Bay ③ 3.5", SL 1", access, hot-swap, open for disk Bay ⑤ 3.5", SL 1", access, hot-swap, open for disk Bay ⑥ 3.5", SL 1", access, hot-swap, open for disk Bay ⑥ 3.5", SL 1", access, hot-swap, open for disk Bay ⑦ 3.5", SL 1", access, hot-swap, open for disk Bay ⑧ 3.5", SL 1", access, hot-swap, open for disk Bays 3 through 8 support six SL disks; or 1 DDS5 Tape drive (2 slots used, additional PCI SCSI adaptor req) via SCA-2 connectors

Predictive failure analysis on disk options, memory, processors, VRMs, power supplies, and fans in conjunction with IBM Director can alert the system administrator of an imminent component failure

⇒ Rack: H 3.36" x W 17.5" x D 27.5"

(H 85.4mm x W 443.6mm x D 698mm)

♦ 46.5 to 62 pounds
 ⇒ Stealth black color

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

- upgrate options (in eighnic locations):

 9 hr coverage, Mon-Fri excluding holidays, 4 hr response time (ServicePac*21P2077)

 24 hr x 7 day coverage, 4 hour average response time (ServicePac*21P2078)

 24 hr x 7 day coverage, 2 hour average response time (ServicePac*21P2093)

 Other ServicePac* options at http://www.ibm.com/services/us/its/pdf/ wamomxeu.pdf

 24x7''t toll-free support for warranty issues during the warranty period³

В	IVI @ SEI VEI ···	X3eHes	300	(Julie 200	13)			XHEF D	eserver	riei	a Skills En	abiem	ent i	eam
	IBM®		L3			SCSI	Mechan-	Slots x	RXE	Н	ot-swap	Mgmt	Ava	ilable
		Processor	cache	Memory	Disks	controller	ical		Exp Ports			adapter	r	date
	8686-1RQ 1 x Xec 8686-1SQ 2 x Xec		IMB 1MB	1GB Chipkill ^T 1GB Chipkill	[™] None None	Ultra160 Ultra160					(not reduni redundant			
><	8686-1TQ 2 x Xeo	n MP 2.0GHz	1MB	3GB Chipkill	2 x 36.4GB 10	KUltra160	3U rack	6x5	One	Two	redundant	PCI	Nov	2003
	8686-2RQ 2 x Xeo 8686-3RQ 2 x Xeo		1MB 2MB	2GB Chipkill 2GB Chipkill	None None	Ultra160 Ultra160					redundant redundant			2003 2003
	Processors			™ Processor		r 2.8GHz¹ v	with 400N	/IHz fron	tside bus	/ Hy	per-Threadi	ng tech	nolo	gy
	L2 cache L3 cache			ocessor / at pro of processor /		need								
	Processor upgrade	4-way SMP	/ up to fo	our Xeon Proce	ssors MP (sam	ne speed/ca	che size)						
	Implementation			ns four Intel 603 , ethernet, grap		IA ZIF SOCK	ets, one r	nemory	board slot	, SIX	Active™ PC	I-X SIO	ïS,	
	Memory			GB max ^{12,13} / tw		I). four (2G	B models	s) or six	(3GB mo	dels)	512MB DII	MMs in	 ıstalle	ed /
	,	1.7-inch tall	/ one m	emory board s	tandard with 8	B DIMM gol	d-connec	tor slots	/ DIMMs	mus	st be installe	ed in m	natch	ed
		Error Chec	king an	taneous transf d Correcting	er from two Di (ECC) via 16- l	bit Checks	sum Chi	OIVIHZ FE okill ™ (d	egisterea corrects 1	184- , 2, ;	3, or 4-bit e	PRAIN	on sa	invis /
				through 8-bit e				`			, 			
	SCSI disk controller			Wide Ultra160						IHz P	CI / integra	ted on p	plana	ar
	SCSI connectors SCSI cabling			d to SCSI backı LVD cable inclu						he th	ree-bay bac	kplane	;	
	IDE controller / cabli			68-pin connecto			cable to	get signa	als to three	e-bay	backplane			
	Disk - capacity	None standa	ard / sup	ports up to 15,0	000 rpm disks	Ü								
	Disk - bays			s / converged tr										
	Mechanical			s (3U4) x 28" de	· · · · · ·			`			-			
	Chipset			et / IBM Memory ost Bridge; one										
		PCI-X 1.0, or	ne PCI 2	.2) / PCĬ 2.2 Bu	s 0 supports S0	CSI, graphic	s, ethern	et, adapt	ter slot wit	h Rei	mote Super\	isor Ad	dapte	
	Slots (Active™ PCI-)			South Bridge (I.0 slots ¹⁰ availa										
		hot replace,	, hot up	grade, hot exp	ansion /separ	ated by insi	ulative pla	astič divi	ders					
	RXE Expansion Port	·		t up to 12 addi		lots via an	optional	IBM KX	E-100 Re	mote	Expansio	n Enci	osure	е
	CD-ROM / diskette Ethernet			3.5" 1.44MB d		board / full o	duplex / 3	32-bit PC	I / Wake	on I A	AN®/ Alert o	n I AN ^T	гм 2	
	Graphics controller	SVGA / S3®	Savage	4 LT / on system	mboard / 8MB :	SDRAM sto	d/ṁax / up	to 1280	0x1024 at	64K	colors at 85	Hz		
	Ports			nsion Port (to c ard, mouse, an										
	Security	•	,. ,	istrator passwo					· ·					
	Systems manageme													
	Diagnostics			ower on/off sys tics™ / primary										
	Diagnostics			nostics (operate							Enclosure	OHEHRS		11RX
	Software			server running ROM installation		ation	512M	B PC160	00 ECĊ D	DR S	SDRAM RD		33L3	3283
				or, and others	Trana comigan	allon					RAM RDIMI RAM RDIMI			3285 3287
	Keyboard/mouse			ause rack-base		owen /	Xeon	MP 2.00	Hz/1MB	L3 C	ache Proc I	Jpg	73P8	8805
	Powersupplies	redundant w	ith two p	watt hot-swap; ower supplies (some configura		Xeon	MP 2.50 MP 2.80	HZ/1MB	L3 C L3 C	ache Proc I ache Proc I	Jpg Jpa		8806 8807
		worldwide / v	oltage-s	sensing/auto-r	estart/	,	370 wa	att Hot-S	wap Redu	ındar	nt Power Sup	oply	31P6	6108
	Coolingfans	fans in each Six hot-swap		dant, multi-spe	ed fans /						60 SCSI Ad SI Hot-Swa			5736 5756
				each power su agnostic LED a		ecor	IBM N	etBAY42	2 Standard	Rac	k (SR)		9306 1519	6420
	0:	<u> </u>		agnostic LLD a	ina mgimi proce	,3301					er for iSerie: r Monitor (bl			2AB1
	Six available 3.3 vol Bus 2 (B) with two)					at ibm.cor	n /pc/	us/accessoi	ies		
	- one fullsize, 64	4-bit, 133MHz P(CI-X, hot	-swap Spini	ensions: H5.25 ensions: H133.				m	LII	MITEDWA	RRAN'	TY ³	
	- or two fullsize, 64 - or two fullsize, 64			-swap ⇒ Wei	ght: 58.4 to 70lb			. 5 / 0 / 111			arts and lak			
	- or two fullsize, 64	4-bit, 66MHz P0	CI, hot-	-swap	alth black color I-free serviceab	ilitv			□ Inte	rnati	onal Warrar	ity Serv		
	- or two fullsize, 64	4-DIT, 33IVIHZ P	ان, not		ess adapters, p		memory,	and	⇒ Un s	site,	8 am - 5 pm	, won -	Fri	

- 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	Std or opt	Opt	diskette CD-ROM
П		Power		• Disk ③
П	Supply	Supply	Supply	• Disk 4
	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

- 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

- 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 http://www.ibm.com/ services/us/its/pdf/wamomxeu.pdf 24x7¹⁴ toll-free support for warranty issues during the warranty period³

IB	M @server™ x	Series™ 365					х	REF by	Server	Field Skills	Enablem	ent Team
	IBM® Type-model Qty x Pro	L3 ocessor cache	Memory	DIMM slots	Disks	SCSI controller	Mechan- ical		RXE xp Ports	Hot-swap pwr supplies	Warrant (yrs.)	y Available date
	8861-1RX 1 x Xeon™ 8862-1RX 1 x Xeon № 8862-2RX 2 x Xeon № 8862-3RX 2 x Xeon №	MP 2.0GHz 1MB MP 2.0GHz 1MB MP 2.5GHz 1MB		8 8 8 16	None None	Ultra320 Ultra320 Ultra320 Ultra320	3U rack 3U rack	6x8 6x8	One One	One (not red One (not red Two redunda Two redunda	un) 1 un) 3 nt 3	Dec 2003 Dec 2003 Dec 2003 Dec 2003
	Processors L2 cache L3 cache Processor upgrade Implementation Memory	1 or 2 x Intel® Xe 512KB / on die of 1MB or 2MB / on d 4-way SMP / up to Systemboard con slots, and integra Up to 2GB std / 3 DIMMs installed / matched pairs / F (ECC) via 16-bit and Active Memo	on™ Processor processor / at pi die of processor o four Xeon Proc tains four Intel ted SCSI, ether 32GB max using one memory be PC2100 200MH. Checksum Chi	MP 2.0, rocessor / at proceessors M 603-pin met, grap high-ca bard stanz register ipkill™ /	2.5, o speed essor s IP (sam micro-F ohics pacity ndard w red 184 With 1	r 2.8GHz ¹ peed ne speed/c PGA ZIF s memory continuith 8 or 16 4-pin DDR 6 DIMMs	with 400M ache size ockets, o ard / two 5 DIMM g -SDRAM installed:) ne memo (1GB mo old-conne RDIMMs Memory	ry boar del) or ector slo	d slot, six Actions / DIMMs motors / Dimms / Dim	ading ted tive™ PC dels) 512 nust be in	chnology CI/PCI-X 2MB Installed in secting
	SCSI disk controller SCSI connectors SCSI cabling IDE controller / cabling Disk - capacity Disk - bays	LSI Logic® 53C103 Supports Raid 0/1 One internal and One standard 16-bi SCSI RAID adapt Enhanced IDE AT None standard / s Six hot-swap bay	one external SC it LVD cable can ter 68-pin conne FA-33 controller supports up to 1	CSI conne be reattace ector on s in CSB6 15,000 rp	ector / ched to system South om disk	internal co optional Se board for Bridge	ontroller werveRAID athis cable	rired to So adapter fro	CSI bad m six-ba	ckplane ay backplane in	stead of r	
	Mechanical	EIA 19" rack mo	dels (3U4) x 28	" deep /	suppor	ted in Net	BAY™ Ra	acks (such	n as Ne	tBAY42 SR, N	etBAY42	2 ER)
	Chipset Slots (Active™ PCI-X) RXE Expansion Port	IBM XA-32™ chip Bridges provide si graphics), and Se / PCI-X Bus 1 sup Six total PCI-X slots sensors control pov One port to suppo	ix peer PCI-X burverWorks® CSE eports gigabit Etles (one unavailable ever to slot) / hot r	uses / PC 36 South nernet, S e) / 5 hot-s eplace, ho	CI-X Bu Bridge CSI, ar swap Po ot upgra	s 0 suppo e (IDE, USI nd slot for CI-X 1.0 slo ade, hot exp	rts adapte B, bus for optional S ts ¹⁰ availat oansion / s	er slot with Super I/O ServeRAID ble with pos separated I	n Remo D NS 87 D adapte wer and by insula	te Supervisor 7417 [diskette er attention indica ative plastic divi	Adapter keyboar ator lights dersby	II (inc. rd, mouse]) (optical
	CD-ROM / diskette Ethernet Graphics controller Ports	24X-10X ⁶ CD-RO Broadcom [®] 5704 1 onboard graphics <i>Rear:</i> RXE-100 Ex two USB (Ver 1.1),	0/100/1000 dual disabled / uses xpansion Port (t	ethernet / s video o o connec	on syst n Rem t optior	ote Super nal RXE-10	visor Ada 00), RXE	pter II Managem	ent Por	t (to manage	optional F	RXE-100),
	Security	Power-on and adn	ninistrator passv	vords / un	attend	ed boot / se	electable b	ooot				
	Systems management Diagnostics	console and mgm Light Path Diagr IBM Real Time Dia	t / power on/off : nostics™ / prima agnostics (opera	system / ary indica ted throu	monito ator on	rs power s informatio	tatus, op :	system, te	emperate	ure, disks, fan	s, power	supplies onents /
	Software	available even whi ServerGuide™ (C utilities), IBM Direct	D-ROM installat		onfigur	ation	1GB P	C2100 E0	CC DDF	DR SDRAM F R SDRAM RDI R SDRAM RDI	MM	33L5038 73P2031 33L5040
	Keyboard / mouse Power supplies	None standard (be Std: one or two 9 redundant with two worldwide / voltage	50 watt hot-swa o power supplies ge-sensing / au	p; <i>Max:</i> t s (some c	onfigur	ations)/	IBM x3 Xeon N Xeon N Xeon N	365Memoi MP 2.0GH MP 2.5GH MP 2.8GH	ry Upgra z/1MB z/1MB z/2MB		c Upg c Upg c Upg	73P9710 73P7073 73P7074 73P7075 73P7214
	Cooling fans	fans in each powe Six hot-swap, redu one additional fan fan failure signals	ındant, multi-spe in each power s	upply / P	FA/	essor	IBM Se IBM 73 IBM In IBM T5	erveRAID 3.4GB 15k tegrated x 541 15" Fl	™-4Mx <ultra3 <series at Pane</series </ultra3 	Ultra160 SCS 20 SCSI Hot-9 Adapter for iS el Color Monito	l Ádapte Swap eries or (black)	r 06P5736 32P0735 1519100 9512AB1
	Six available 3.3 volt P									nsion Enclosu com/pc/us/acc		86841RX
	Standard Remote Su - one fullsize, 64-bit Optional ServeRAID	t, 33MHz PCI, hot upervisor Adapter in t,100MHz PCI-X,ho adapter to install t,133MHz PCI-X,ho adapter to install	ot-swap Dim Stalled Dir We Ste Too Accord-swap	nensions: ight: 63 to alth black ol-free ser ress adap temboard	H133. o 83lbs color viceabi eters, pr	ocessors,	x D27.6" 42.0mm x 7.6kg	D701mm	□ 1 or □ Inte □ On : □ co	LIMITED W 3 year parts rnational Warı site, 8 am - 5 p verage excluc t business day	ARRAN and laboranty Serom, Mon-	or vice³ - Fri lays,

0 -	CD-ROM	diskette
Opt disk	Opt disk	Opt disk
Opt disk	Opt disk	Opt disk
	3U Rack	

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", Bay ⑥ 3.5", SL 1", Bay ⑦ 3.5", SL 1", Bay ⑥ 3.5", SL 1", access, std diskette access,std CD-ROM access, hot-swap, open access, hot-swap, open

- Access power supplies and disks from front
- Setup Program by pressing F1 at startup
- Diagnostics (PC-Doctor) by pressing F2 at startup SCSISelect by pressing Ctrl+A at startup Top cover Light Path Diagnostics (level 2
- diagnostic panel) for outside view of potential problem without removing cover
- Information LED panel, diagnostic LED panel, and component LEDs give visual indications of system well-being
- Predictive Failure Analysis® alerts on disks, power supplies, memory, processors, VRMs, and fans with IBM Director

All models: Maximum internal disk capacity: 878.4GB with six 146.8GB2 hot-swap SCSI disks

- On site service upgrade options (in eligible locations):7
 - 3 year IOR 24x7, 4 hr avg response (30L9186 (8861) / 96P2253 (8862)) 3 year IOR 24x7, 2 hr avg response
 - (31L2722 (8861) / 96P2254 (8862))
 - 4 year IOR 9x5, NBD response (69P9210 (8661) / 96P2255 (8862)
- 5 year IOR 9x5, NBD response 69P9214 (8661) / 69P2259 (8862) Other ServicePac options at
- http://www.ibm.com/ services/us/its/pdf/wamomxeu.pdf 24x7¹⁴ toll-free support for warranty issues during the warranty period³

See footnotes for important warranty information

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	xSeries 300 (Iviai							r Field Skills		
	L3 rocessor cache Memo			SCSI controller	Mechan- ical	bays I		Hot-swap s pwr supplies	(yrs.)	
8861-4RX 1 x Xeon ¹ 8862-4RX 1 x Xeon 8862-5RX 2 x Xeon 8862-6RX 2 x Xeon	MP 2.7GHz 2MB 2GB CI	hipkill 8 hipkill 8	None None	Ultra320 Ultra320 Ultra320 Ultra320	3U rack 3U rack	6x8 6x8	One	One (not red One (not red Two redunda Two redunda	un) 3 nt 3	Mar 2004 Mar 2004 Mar 2004 Mar 2004
Processors L2 cache L3 cache Processor upgrade Implementation	1 or 2 x Intel® Xeon™ Proc 512KB / on die of process 2MB or 4MB / on die of pr 4-way SMP / up to four Xeo Systemboard contains four slots, and integrated SCSI	or / at processor rocessor / at pro on Processors M r Intel 603-pin n	or speed ocessor IP (same micro-P(d speed e speed/ca	iche size)				Ü	0,
Memory	Up to 2GB std / 32GB max DIMMs installed / one men matched pairs / PC2100 2 (ECC) via 16-bit Checksu and Active Memory ™ sup	nory board stan 000MHz register ı m Chipkill ™ / \	dard wi ed 184- With 16	th 8 DIMM -pin DDR- 5 DIMMs i	l gold-cor SDRAM F nstalled: I	nnector s RDIMMs Memory	slots / D / Error	IMMs must be Checking an	installed d Corre	d in ecting
SCSI disk controller SCSI connectors SCSI cabling IDE controller / cablin Disk - capacity Disk - bays	LSI Logic® 53C1030 / Wide One internal and one exter One standard 16-bit LVD cab SCSI RAID adapter 68-pin gEnhanced IDE ATA-33 cor None standard / supports Six hot-swap bays / conve	rnal SCSI conne ble can be reattac connector on s atroller in CSB6 up to 15,000 rpi	ector / in whed to consystemb South Indisks	nternal con optional Ser loard for the Bridge	ntroller wi veRAID a nis cable	red to Soldapter fro	CSI bac m six-ba	kplane ly backplane ins	stead of n	
Mechanical	EIA 19" rack models (3U) x 28" deep / s	supporte	ed in NetE	BAY™ Rad	cks (such	n as Net	BAY42 SR, Ne	etBAY42	ER)
,	IBM XA-32™ chipset / IBN Bridges provide six peer Pographics), and ServerWorks / PCI-X Bus 1 supports gigs Six total PCI-X slots (one una sensors control power to slot) One port to support up to	CI-X busés / PC s® CSB6 South abit Ethernet, S0 vailable) / 5 hot-s) / hot replace, ho	CI-X Bus Bridge CSI, and wap PC ot upgrad	O support IDE, USB I slot for o I-X 1.0 slots Ie, hot expe	s adapter , bus for ptional Se s ¹⁰ availabl ansion / se	r slot with Super I/C erveRAID le with po eparated I	n Remoto D NS 87 D adapte wer and by insula	te Supervisor A 7417 [diskette, er attention indicat tive plastic divid	Adapter I keyboar or lights (lersbv	II (inc. 'd, mouse]) (optical
CD-ROM / diskette Ethernet Graphics controller Ports	24X-10X ⁶ CD-ROM / 3.5" Broadcom® 5704 10/100/100 onboard graphics disabled <i>Rear:</i> RXE-100 Expansion two USB (Ver 1.1), keyboard	0 dual ethernet / o / uses video or Port (to connect	on syste n Remo t optiona	te Superval RXE-10	isor Adap 0), RXE N	ter II /lanagem	ent Por	t (to manage o	ptional F	RXE-100),
Security	Power-on and administrator	passwords/una	attende	d boot / se	lectable b	oot				
Systems management Diagnostics	at Remote Supervisor Adapt console and mgmt / power Light Path Diagnostics™ IBM Real Time Diagnostics	on/off system / r / primary indica	monitors ator on i	s power sta information	atus, op s n panel w	ystem, to	emperati s associ	ure, disks, fans ated with failin	, power :	supplies onents /
Software	available even while server ServerGuide™ (CD-ROM ir utilities), IBM Director, and o	nstallation and co others	onfigura	tion	1GB P 2GB P	C2100 E	CC DD	DDR SDRAM F R SDRAM RDI R SDRAM RDI grade Card	IMM	33L5038 73P2031 73P2030 73P9710
Keyboard / mouse Power supplies	None standard (because rac Std: one or two 950 watt h redundant with two powers worldwide / voltage-sensin fans in each power supply /	ot-swap; <i>Max:</i> to upplies (some co g / auto-restart PFA	onfigura / rear a	tions)/	Xeon M Xeon M 950 wa IBM Se	MP 2.7G MP 3.0G att Hot-S erveRAID	Hz/2MB Hz/4MB wap Po¹ D™-6M l	L3 Cache Pro L3 Cache Pro L3 Cache Pro wer Supply (W Jltra320 SCSI	c Upg c Upg W) Adapter	
Cooling fans	Six hot-swap, redundant, m one additional fan in each p fan failure signals Diagnosti	ower supply / PF	FA/	ssor	IBM In	tegrated 541_15" F	xSeries Flat Pan	320 SCSI Hot-9 Adapter for iS el Color Monito ansion Enclosu	eries or (black)	32P0735 1519100 3) 9512AB1 86841RX
Standard Remote 9 one fullsize, 64-I Optional ServeRAII one fullsize, 64-I Optional iSeries IX. three fullsize, 64-I Optional iSeries IX. Optional iSeries IX.	slots 1 - 6: bit, 33MHz PCI, hot-swap Supervisor Adapter installed bit,100MHz PCI-X, hot-swap D adapter to install bit,133MHz PCI-X, hot-swap	Dimensions: Dimensions: Dimensions: Weight: 63 t Stealth black Colored sei Access adarsystemboard Access pow. Setup Progr. Diagnostics: SCSISelect Top cover Lidiagnostic problem with Information I and compon system well- Predictive F. power suppl and fans with All models: 878.4GB with	EH133.4 to 83lbs k color reviceabil pters, pr d from to rer supplam by pr (PC-Do by pressight Pattanel) for nout rem LED par nent LEC being ailure Alies, mer th IBM I Maximu	4mm x W4; 28.6 to 3 lity occessors, op lies and dis ressing F1 cctor) by pri n Diagnost r outside vi noving cove nel, diagno Ds give visu nalysis® ale mory, procipirector um interna	"x D27.6' 42.0mm x 7.6kg memory, a sks from fr at startup essing F2 a at startup ics (level 2 ew of pote er stic LED p ual indicati erts on dis essors, VI	and cont of at startul of anel, cions of sks, RMs, coacity:	1 0 0 1 no conex 0 no (in 0 0 3) (in 0 0 0 1) (in 0 0 0 1) (in 0 0	com/pc/us/acc LIMITED W r 3 year parts rnational Warr site, 8 am - 5 p overage exclud t business day site service up eligible locatio oyear IOR 24x7, 30L9186 (8861) year IOR 9x5, 39P9210 (8661) year IOR 9x5, 39P9214 (8661)	/ARRAN and labo anty Ser m, Mon ing holio r respons grade op ns): 4 hr ave / 96P22 2 hr ave / 96P22 NBD res / 96P22 NBD res / 69P22 options opm/	or rvice ³ - Fri days, se time ⁷ ptions g response (53 (8862)) g response (54 (8862)) sponse (255 (8862)) sponse (259 (8862)) s at

	AGEITES JUL	(110101111	JOI 2000)		X.1.2. D	, 000.	rei i leid Skills	dire Educa	ition rouni
IBM®		L2	DIMM	SCSI		Slots x	Hot-swap	Warrant	y Available
Type-model Qty	x Processor	cache Memo	ry slots Disks	controller	Mechanical	bays	pwr supplies	(yrs.)	date
8863-1RY 1 x Xeon 8863-2RY 1 x Xeon 8863-3RY 1 x Xeon 8863-4RY 1 x Xeon 8863-E1Y 2 x Xeon 8863-E5Y 2 x Xeon 8863-E6Y 2 x Xeon 8863-E7Y 4 x Xeon	MP 3.66GHz MP 7020 2.67GHz MP 7040 3.0GHz MP 3.66GHz MP 3.66GHz MP 3.16GHz	2x2MB 2x1G 1MB 4x1G 1MB 2x1G 1MB 2x1G	AB 4 None AB 4 None AB 4 None AB 8 3x36.4 AB 4 None	SAS SAS SAS SAS 4-10k SAS w/ 8 SAS SAS SAS w/ 8i	3U rack 3U rack	6x7 6x7 6x7 6x7 6x7 6x7 6x7	1 x 1300 1 x 1300 1 x 1300 1 x 1300 2 x 1300 2 x 1300 2 x 1300 2 x 1300 2 x 1300	3 3 3 3 3 3 3	Apr 2005 Apr 2005 Nov 2005 Nov 2005 Jun 2005 Aug 2005 Sep 2005 Sep 2005
Processors	Up to two 64-bit Ir MP up to 3.0GHz							t Intel Xeon	-
L2 cache Processor upgrade Implementation	MP up to 3.0GHz (1 or 2 MB / per cor 4-way SMP / up to System board containtegrated SCSI, ether the strength of the strength o	re / at processor four Xeon Proce ains four Intel 60	ual Core / Net speed / XceL4 essors MP (san 4-pin micro-PG	Burst™ / Extend v™ Dynamic Sen ne speed/cache si A4 ZIF sockets, c	ed Memory ver Cache ize) / Dual Co one memory	ore Cap board s	able lot, six Active™ F	PCI-X 2.0 slot	s, and
Active Memory™	Up to 4GB std / 644 DIMMs must be ins and Correcting (E 0 steering) and Memo Server 2003™	GB max using hi talled in matched CC) via 16-bit Cory Mirroring™	igh-capacity me d pairs / PC2-32 hecksum Chip and Hot-swap	emory card / one 1 200 400MHz regis okill [™] / With 16 E (non-OS specific)	memory boar stered 240-pi DIMMs install / Hot-add (s	rd stand n DDR2 ed: Mer supporte	ard with 4 DIMM SDRAM RDIMI nory ProteXion d only with Micr	I gold-connect Ms / Error Ch ™ (redundant osoft® Windov	tor slots / necking : bit ws TM
SCSI disk controller SCSI connectors SCSI cabling IDE controller / cablin Disk - capacity Disk - bays	ALL: Adaptec® AIC Controller wired to S One standard SAS g Enhanced IDE ATA E1x: 3 x 36.4GB-10 Six 2.5" hot-swap b	SAS backplane cable attached to -33 controller in 0 0k / supports up t	o six-bay back CSB6 South Br to 73GB 10K rp	olane idge om disks	GB/sec) / 64-	bit 266N	/IHz PCI-X 2.0 <i>E</i>	1X: ServeRa	aid 8i
Mechanical Chipset	EIA 19" rack mode IBM XA-64e™ 3rd © Bridges / Host Bridg NS 87417 [diskette,	els (3U ⁴) x 28" do Generation chip ge One supports keyboard, mous	eep / supported set / Integrated video, optional se]), Dual Port E	I in NetBAY™ Rad d Processor and I ServeRaid 8i, Se Broadcom 5704, a	cks (such as Memory Con rverWorks® (and 2 PCI-X	NetBAY troller / S SB6 Sc 2.0 slot	/42 SR, NetBAY Supports EM641 outh Bridge (IDE s / Host Bridge 1	42 ER) / 2 IBM PCI , USB, bus fo wo supports	-X 2.0 Host or Super I/O 4 PCI-X
Slots (Active™) CD-ROM / diskette Ethernet Graphics controller Ports	2.0 slots Six total PCI-X 2.0 s upgrade, hot expan- 8X° Slim DVD-ROM Broadcom® 5704 10 SVGA / ATI® 7000n Rear: RSA ethernet Front: USB (Ver 2.0	slots available wit sion / separated 1 / none 0/100/1000 dual n / on planar / 16 c, RSA serial, two	th power and at by insulative pl ethernet / on sy MB_SDRAM st	tention indicator li astic dividers, all s stemboard / 64-b d/max / 32-bit 33N	ights (optical slots supporte it 266Mhz PC MHz PCI 2.2	sensors ed up to CI-X 2.0 bus	control power to 266MHz / Wake on LAN®	slot) / hot rep	olace, hot N™ 2
Security	Power-on and admi	inistrator passwo	rds / unattende	d boot / selectabl	e boot				
Systems managemen	nt Remote Superviso remote console and	or Adapter II Slin I mgmt / power o	nline (option) / l on/off system /	PCI adapter / inclumonitors power s	udes 10/100 tatus, op sys	ethernet tem, ten	t, RJ-11, and ser nperature, disks,	rial connectors fans, power	s / provides supplies
Diagnostics Software	Drop down Light F IBM Real Time Diad ServerGuide™ (CD	anostics (operate	ed through IBM	Director) available	e even while	n LEDs a server i	associated with f running	ailing compoi	nents /
Keyboard / mouse Power supplies	None standard (be Std: one or two 130 redundant with two worldwide / voltage-	0 watt hot-swap;	: <i>Max:</i> two hot-s	swap /	4GB PC2-320 8GB PC2-320 Active Memor	0 CL3 E0 0 CL3 E0 ry 4-slot	CC RDIMM (2x1GI CC RDIMM (2x2GE CC RDIMM (2x4GI Expansion Card 1B L2 Cache Proc	B)	73P2866 73P2867 30R5145 13M7409 13N0694
Cooling fans	Eight hot-swap, redi one additional fan in fan failure signals D	each power sup	polv / PFA /	ssor	Xeon MP 3.66 Xeon MP 702 Xeon MP 704 1300 watt Hot IBM ServeRA	6GHz/1M 0 2.67GI 0 3.0GH -Swap P ID™-8i S	MB L2 Cache Proc Hz/2x1MB L2 Cac z/2x2MB L2 Cach ower Supply (WW SAS-SCSI Adapter	Upg he Proc Upg e Proc Upg)	13N0695 25R8941 25R8942 13M7413 13N2227
Six available 3.3 voli Slot 1 - fullsize, 64- Slot 2 - fullsize, 64- Slot 3 - fullsize, 64-	-bit, 266MHzPCI-X, -bit, 266MHzPCI-X, -bit, 266MHzPCI-X,	hot-swap hot-swap			IBM 36.4GB 1 IBM 73.4GB 1 IBM Remote 3 Dual Core X3	0K 2.5" 0K 2.5" Supervis upgrade	320 256MB Adapte SAS Hot-swap HE SAS Hot-Swap HE or Adapter II Sliml kit (available 12/0 com/pc/us/acces	DD DD ine D5)	02R0988 26K5654 26K5655 73P9341 39Y6580
Slot 4 - fullsize, 64- Slot 5 - fullsize, 64- Slot 6 - fullsize, 64- *exclusive slot availa	-bit, 266MHzPCI-X, -bit, 266MHzPCI-X, able for ServeRAID &	hot-swap Di hot-swap W Bi adapter St	mensions: H1 eight: 63 to 83 ealth black col- ool-free service ccess adapter	.25" x W17.4" x 33.4mm x W442. Ilbs; 28.6 to 37.6 or ability s, power suppliestemboard from	.0mm x D70 ⁻ 6kg es, processo	ors,	LIMITE 3 year parts al International V On site, 8 am - coverage ex next business	Varranty Ser 5 pm, Mon cluding holi	rvice³ - Fri days,

Opt disk Opt disk Opt disk



3U Rack

Bay ① 5.25", 0.5", Bay ② 2.5", SL 1", Bay ③ 2.5", SL 1", Bay ④ 2.5", SL 1", Bay ⑤ 2.5", SL 1", Bay ⑥ 2.5", SL 1", Bay ⑦ 2.5", SL 1", access,std DVD-ROM access,hot-swap, open access, hot-swap, open

Max BTU Output:

Ship Configuration: 1,262 Btu/hr (361 watts) Full Configuration: 4,053 Btu/hr (1045 watts)

- memory and systemboard from top
 Setup Program by pressing F1 at startup
 Diagnostics (PC-Doctor) by pressing F2 at startup
 SCSISelect by pressing Ctrl+A at startup
 Drop Down Light Path Diagnostics (level 2
- diagnostic panel) for outside view of potential problem without removing cover
- Information LED panel, diagnostic LED panel, and component LEDs give visual indications of system well-being
- Predictive Failure Analysis® alerts on disks, power supplies, memory, processors, VRMs, and fans with IBM Director

All models: Maximum internal disk capacity: 440.4GB with six 73.4GB2 hot-swap SAS disks next business day response time7

On site service upgrade options (in eligible locations):7

- 3 year IOR 24x7, 4 hr avg response 96P2253 • 3 year IOR 24x7, 2 hr avg response
- 96P225 4 year IOR 9x5, NBD response
- 96P2255 5 year IOR 9x5, NBD response
- 69P2259 Other ServicePac options at
- http://www.ibm.com/ services/us/its/pdf/wamomxeu.pdf 24x7¹⁴ toll-free support for warranty issues during the warranty period³

IBM @server™ xSeries™ 445 (8-way Xeon MP) (March 2004) xREF by eServer Field Skills Enablement Team

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 date
8870-12X 2 x Xeon 8870-22X 2 x Xeon 8870-42X 4 x Xeon 8870-3EX 2 x Xeon 8870-4EX 4 x Xeon	MP 2.0GHz MP 2.2GHz MP 2.7GHz MP 3.0GHz DP 3.0GHz DP 3.0GHz	2MB 2MB 4MB N/A N/A	64MB 2 64MB 2 64MB 2 64MB 2	2GB Chipkill ^{TI} 2GB Chipkill 2GB Chipkill 2GB Chipkill 2GB Chipkill 2GB Chipkill	None None None None None	2xUltra32 2xUltra32 2xUltra32 2xUltra32 2xUltra32	0 4U rack	6x4 6x4 6x4 6x4 6x4	3/1 3/1 3/1 3/1 3/1	Two redundan Two redundan Two redundan Two redundan Two redundan Two redundan	t PCI t PCI t PCI t PCI t PCI	May 2004 Mar 2004 Mar 2004 Mar 2004 Mar 2004 Mar 2004
Positioning Processors L3 cache L4 cache Processor upgrade SMP Expansion Module Additional boards	Up to 8-way (12 or 4 Intel®) Up to 4MB e 64MB XceL4 64MB in each 4-way SMP (10 one SMP Exp for Xeon, 64MI Expansion Por I/O Board (P Board)	u (1 O1 /	C I IOOL DI	lage, cool, t		, grapinos,	Coulii Dii	ago, ou	1001 1/O, t	sion-critical busing / supports Hy r speed Module) / ability Controllels only) 603-pin microconnected via o Expansion Port op Modules, 1/4 p Modules, 1/4	luuptoi	,, 0110
Memory	16 DIMM gold / Error Check	-connect t ing and tt once; r	or slots / Correcti edundan	must install to ing (ECC) and t bit steering)	wo inder d Chipk	itical DIMM ill ™ via Me	ls at same mory Prot	time / 2 eXion ™	!-way inte	our 512MB DIM rleaving / PC21 or 4-bit errors hot-add (OS s	00 DDF on same	R SDRAM e chip; up
SCSI disk controller SCSI implementation IDE controller Disk - capacity/bays	First channel second chann one standard Enhanced IDE	to intern lel to one (longer) E ATA-1	al 2-port e externa 16-bit L' 00 contro	: SCSI backp ll .8mm VHD(VD cable incl oller in South	lane for CI 68-pir luded fo Bridge	internal hon connector attaching / one one-	ot-swap dis r (16-bit L\ an option drop IDE d	ks (16-l /D cable al Serve able to	oit LVD ca e from I/C eRAID ac backplar	able to SCSI b DBoard to ext dapter to the to he for diskette	ackplan connect wo-bay and CE	ie) / tor) / backplane)-ROM
Mechanical	EIA 19" rack	models	(4U ⁴) x	28" deep / sı	upported	d in NetBA	Y™ Racks	(such a	as NetBA	Y42 SR, NetBA	AY42 EF	R)
Chipset Slots (Active™ PCI-X)	Expansion Po	rts / IRM	Memory	I/O Controller	r with tw	o remote I/	O norts (ea	ich to a	IBM PCI	e controller and -X Host Bridge lot with Remote ard, mouse]) / ed to the PCI-X) / each	IBM PCI-
Slots (Active [™] PCI-X) RXE Expansion Port	One RXE-100	Remote	Expansion	n Enclosure ca	an be sh	ared between	en two x44	5 4-way,	, 8-way, o		s 445 se	ervers or
CD-ROM / diskette Ethernet Graphics controller Ports	SVGA / ATI® I	mª 5704 Rage XL 00 Expan	10/100/1 . / on I/O ision Por	000 ethernet Board / 8MB t (to connect	controlle SDRAM optional	r / on I/O B 1 std/max / RXE-100)	soard / full o up to 1280 , RXE Man	duplex /)x1024 iageme	64-bit 66 at 85Hz nt Port, tv	MHz PCI bus / vo USB (Vers	Wake o	on LAN [®]
Security	Power-on and	l adminis	strator pa	sswords / un	attended	d boot / sel	ectable bo	ot				
Systems mgmt Diagnostics Software	console and r	ngmt / p iagnosti ne Diagn n while s ™ (CD-R	ower on/ i cs ™ / pr ostics (o server ru ROM inst	off system / imary indicat perated throuning allation and o	monitors or on in ugh IBM	power sta formation p Director) ation	tus, op sys panel with xSeries SI 1GB DDR 2GB DDR	stem, te LEDs a MP Exp PC210 PC210	emperatur issociated ansion M 0 ECC S 0 ECC S	ial connectors e, disks, fans, d with failing c odule DRAM RDIMM DRAM RDIMM Cache Proc U	power sompone	supplies
Keyboard / mouse Power supplies Cooling fans	None standar Std: two; max watts at 110v front access / fans in each p Four hot-swap one additiona fan failure sig	c: two / h / redund / worldwi cower su p, redun I fan in e	ot-swap dant at 2 ide / volt upply / Pl dant, mu each pow	/ 1050 watts 20v with two cage-sensing FA ulti-speed fan ver supply / P	power s / auto-ros / FA /	or 550 supplies / estart /	Xeon MP Xeon MP IBM 73.4G IBM Serve IBM Remo NetBAY11 8X/4X/24X IBM T540	2.7GHz 3.0GHz 3B 10K PRAID™ ote Sup Standa Max C 15" Fla	J/2MB L3 J/4MB L3 Ultra160 J-6M Ultra ervisor Ad ard Rack CD-RW U t Panel C	Cache Proc U Cache Proc U SCSI Hot-Swa 320 SCSI Ada dapter II-EXA	pg 1; pg 1; p 0; pter 3; 1; 9; olack) 9;	3N0722 3N0721 6P5756 2P0033 3N0382 306110 2P9101
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 6: fullsize, 64-bit Slot: used by Remo	66MHz PCI-X, 66MHz PCI-X, 100MHz PCI-X, 100MHz PCI-X, 133MHz PCI-X, 133MHz PCI-X, te Supervisor Access, diskett access, CD-RC access, hot-swaccess, hot-sw	hot-swaphot-sw	o Bus A p, Bus B p, Bus B p, Bus C p, Bus D 33MHz ack	Max weight Stealth blate Tool-free Stealth Blate Tool-	ns: H178 nt: H10 lb lck color lck co	mm x W48 s; 50kg bility s, memory, odule from plies and di pressing F- octor) by pr ssing Ctrl+/ anel and fro li (1st and 2 t removing of	adapters, a top sks from fro 1 at startup ressing F2 A at startup nt-accessite and level cover) lerts on proche, memoritisks with	and ont at startuble pull- cessors ry, fans,	int its war	LIMITED WA year parts and ernational Wai a site, 9 hr x 5 xt day respon year on site w grade option (actions): 4 hr x 7 day co hour respons No ServicePac st warranty m rvices availat her ServicePa tp://www.ibm.c. //pdf/wamomxe x714 toll-free si irranty issues irranty periods ((X445C) © IBM	labor rranty S day co se time arranty in eligiboverage, e time available aintenariole c optior com/ser eu.pdf upport f during	ervice ³ verage, 7 service ele ,) nce ns at vices/us/ or the

IBM @server™ xSeries™ 445 (8-way MS Datacenter#) (3/04) xREF by eServer Field Skills Enablement Team

IBM [®] Type-model Qty x l	Processor	L3 cache	L4 cache	Memory	Disk	SCSI controller	Mech- anical		SMP/RXE Exp Ports	Hot-swap pwr supplies	Mgmt adapter	Available date
8870-1BX 2 x Xeon 8870-2BX 2 x Xeon 8870-4BX 2 x Xeon	MP 2.7GHz	2MB 2MB 4MB	64MB (OGB Chipkill™ OGB Chipkill OGB Chipkill	None	2xUltra320 2xUltra320 2xUltra320	0 4U rack	6x4	3/1	Two redundan Two redundan Two redundan	PCI	Mar 2004 Mar 2004 Mar 2004
Positioning Processors L3 cache L4 cache Processor upgrade SMP Expansion Module Additional boards	2 x Intel® Xec 2MB or 4MB 64MB XceL4 64MB in each SMP Expansi One SMP Ex L4 cache, sixt Ports) / each One I/O Boar	each prodese each prodese each prodese each prodese each substitution of the each prodese each each each prodese each each prodese each each each each each each each eac	cessor Nocessor Nocessor raccele xpansion lie stand lodule some socket pansion Nocestor Britania not socket pansion Nocestor Rost Britania not socket located pansion Nocestor Rost Rost Rost Rost Rost Rost Rost Rost	// P 2.2, 2.7, o / on die of pricator Cache I Module / EC ard / ready for td / two max is, three SMP // odule activat ridge, SCSI, 6	or 3.0GH rocessor (up to 1 CC / 64-b or adding / each c Expans es one I ethernet	Iz¹ with 400 r / at proce 128MB with bit 400MHz g additional contains foun tion Ports (s RXE Expans , graphics,	OMHz from ssor spee optional bus from I processor Intel 603 second mo sion Port (South Bri	side bud d SMP E Cache ors (up -pin mid dule co one R dge, Su	xpansion and Sca to 8 total cro-PGA 2 nnected v (E Expansion)	sion-critical busin orts Hyper-Three Module) / lability Controll) and memory ZIF sockets for via one or two sion Port suppo slot for Mgmt / Modules, I/O Bo	ading er Xeon M SMP Ex rted)	P, 64MB pansion
Memory	PC2100 DDF	d-connec R SDRAM bit errors	tor slots // Error s on sam	/ must install Checking a ne chip; up to	two ind and Cor two chi	dentical DIM recting (EC ips at once	/lMs at sai CC) and (; redunda	me time Chipkil nt bit si	e / 2-way I™ via M o teering) /	interleaving / emory ProteXi Active Memor		porting
SCSI disk controller SCSI implementation IDE controller Disk - capacity/bays	First channel second chann one standard Enhanced IDI	.SI Logic / Wide Ultra320 SCSI (LVD 32MB/sec) / dual channel / 64-bit 66MHz PCI / integrated RAID-1 on I/O Boar First channel to internal 2-port SCSI backplane for internal hot-swap disks (16-bit LVD cable to SCSI backplane) / second channel to one external .8mm VHDCI 68-pin connector (16-bit LVD cable from I/O Board to ext connector) / one standard (longer) 16-bit LVD cable included for attaching an optional ServeRAID adapter to the two-bay backplane Enhanced IDE ATA-100 controller in South Bridge / one one-drop IDE cable to backplane for diskette and CD-ROM No disks standard / supports up to 15K rpm SCSI disks / two hot-swap bays / converged tray / 80-pin SCA-2 connectors										lane M
Mechanical	EIA 19" rack	models	(4U ⁴) x 2	8" deep / supp	oorted in	NetBAY™	Racks (su	ch as N	letBAY42	SR, NetBAY42	ER)	
` ′	Expansion Po X Host Bridge Adapter, VIA® PCI 2.2 Bus F Six hot-swap hot replace, One RXE-100	BM XA-32 [™] 2nd Generation chipset / IBM Cache and Scalability Controller with L4 cache controller and three SMP Expansion Ports / IBM Memory I/O Controller with two remote I/O ports (each to a IBM PCI-X Host Bridge) / each IBM PCI (Host Bridge provides three peer PCI buses / PCI 2.2 Bus E supports graphics, adapter slot with Remote Supervisor Adapter, VIA® 82C686B South Bridge (IDE ATA-100, USB, Super I/O PC97317VUL [keyboard, mouse]) / PCI 2.2 Bus F supports SCSI, ethernet / PCI-X Bus A, B, C, D support PCI-X slots / designed to the PCI-X 1.0 specification shot-swap PCI-X 1.0 slots¹o available with power and attention indicator lights (optical sensors control power to slot) / not replace, hot upgrade, hot expansion / separated by insulative plastic dividers Did RXE-100 Remote Expansion Enclosure can be shared between two x445 4-way, 8-way, or 16-way xSeries 445 servers or attached alone. Both PCI-X 6-packs must be installed to support RIO sharing as each server will access six additional PCI-X slot									IBM PCI- visor ecification to slot) / ervers or	
Ethernet	Dual Broadco SVGA / ATI®	m ^å 5704 Rage XL 00 Expan	10/100/1 / on I/O sion Port	000 ethernet of Board / 8MB t (to connect	controlle SDRAM optional	er / on I/O Bo I std/max / i RXE-100),	oard / full ou up to 1280 RXE Mar	duplex / 0x1024 nageme	/ 64-bit 66 at 85Hz. nt Port, t	pays / supports SMHz PCI bus / wo USB (Vers ers 1.1)	Wake o	n LAN®
Security	Power-on and	adminis	trator pa	sswords / una	attended	boot / sele	ectable bo	ot				
Systems mgmt Diagnostics Software	console and r Light Path D IBM Real Tim available eve ServerGuide	mgmt / p liagnosti ne Diagn n while s ™ (CD-R	ower on/ cs™ / pr ostics (o server rui lOM inst	off system / rimary indicat perated throunning allation and o	monitors or on in ugh IBM	formation p	tus, op sys panel with IBM Prelo Microso IBM Softw	stem, to LEDs ad Kit f ft Wind are Su	emperatur associate for 1-8 Pr lows Serv bscription	er Datacenter : Update for	power s ompone 48 2003 48	supplies
Keyboard / mouse Power supplies Cooling fans	Willities), IBM Director, and others None standard (because rack-based) Std: two; max: two / hot-swap / 1200 watts at 220v or 600 watts at 110v / redundant at 220v with two power supplies / front access / worldwide / voltage-sensing / auto-restart / fans in each power supply / PFA Four hot-swap, redundant, multi-speed fans / Four hot-swap, redundant, multi-speed fans / Sensing / Sen							3L5039 3L5040 3N0723 3N0722 3N0721 6P5756 7L6889				
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 6: fullsize, 64-bit Slot: used by Remo Std Power Supply Opt disk • Opt disk • Glakette	Max weigh Stealth bla Tool-free Access pro Setup Proo Diagnostic SCSISelec Information out Light P diagnostic Predictive XccL4 Ser power sup IBM Direct All model	ns: H178 tt: 110 lb ck color erviceab ocessors nsion Me wer supp gram by ss (PC-D tt by pres n LED pa ath panes s without Failure A ver Acce plies, an or ss: Max	mm x W483 s; 50kg billity s, memory, a odule from to plies and dis pressing F1 octor) by pressing Ctrl+A anel and from el (1st and 2 t removing co	adapters, a cop sks from from at startup essing F2 A at startup int-accessified level cover) erts on prothe, memonisks with all disk c	and ont at startu ble pull- cessors ry, fans	Property of the control of the contr	LIMITED WA year parts and ternational War n site, 9 hr x 5 ext day response year on site wa year on site year on site sat warranty ma yervicePac a year wariah ther ServicePac tp://www.ibm.c s/pdf/wamomxe yeriod³ arranty issues arranty period³	labor ranty Se day co se time rranty se n eligib verage, e vailable) intenan le coption om/servu.pdf	ervice ³ verage, ervice le oce as at vices/us/			

IBM® Type-model Qty x		.3 L4 che cache	Memory	Disk	SCSI controller	Mech- anical		SMP/RXE Exp Ports	Hot-swap pwr supplies		Available date
8855-4BY 4 x Itanii 8855-5BY 4 x Itanii 8855-6BY 4 x Itanii	um 2 1.6Ghz 6M	IB 64MB	2GB Chipkill ¹ 2GB Chipkill 2GB Chipkill	None	2 x Ultra320	4U rack	6x2	0/1	Two redundan Two redundan Two redundan	t PCI	Dec 2004
Positioning Processors L2 cache L3 cache L4 cache Processor upgrade SMP Exp. Module Additional boards	Up to 16-way por 4 x Intel® Itanium 256KB each proc 4MB, 6MB or 9M 64MB XceL4™ S ECC / 64-bit 400l 4-way SMP per c Up to 16-way us One I/O Board (P PCI Board (PCI-X	n 2™ Proces cessor / on o IB each proc Gerver Accel MHz bus fror chassis sing four x45 PCI-X Host B	sor 1.5GHz of process essor / on dierator Cache and cache and chassis / reridge, SCSI,	or1.6GH sor / at e of pro e Scalab equires etherne	Iz with 400M processor spocessor / at pility Controlle appropriate 8t, graphics, S	Hz fronts beed brocessor r 3-way or South Brid	side bus speed 16-way dge, Su	kits	slot for Mgmt /	Adapter), one il Board)
Memory	2GB std (using 2 PC2100 266MHz way interleaving / 3, or 4-bit errors o supported with an	registered 18 Active Memon same chip;	4-́pin ECC DI l ory ™ with Er up to two ch	DR-SDR ror Che ips at or	AM DIMMs / ecking and C nce; redundar	DIMMs no contraction of the cont	nust be g (ECC ring) /	installed), Chipki l via memo	in matched pai II™, Memory F ory mirroring (m	rs [a ba ProteXic	nk] / 2- on™ (1, 2,
SCSI disk controller SCSI implementation IDE controller Disk - capacity/bays	ServeRAID adapt Enhanced IDE AT	kplane for in ter and SCSI A-100 contro	ternal hot-swa cable requir ller in South E	ap disks ed if att Bridge/	(16-bit LVD taching externone one one-drop	cable to nal stora IDE cab	SCSI b ge encl e to bad	ackplane osures ckplane fo) / or diskette and	CD-RO	M
Mechanical	EIA 19" rack mod	dels (4U4) x 2	8" deep / sup	ported i	n NetBAY™ F	Racks (su	ch as N	etBAY42	SR, NetBAY42	PER)	
Chipset Slots (Active™ PCI-X RXE Expansion Port	hot replace, hot	Controller with er PCI buses / outh Bridge (IE ports SCSI, e X 1.0 slots ¹⁰ a upgrade, h note Expansio	two remote I/ PCI 2.2 Bus I DE ATA-100, Uthernet / PCI- available with pot expansion on Enclosure co	O ports E suppo JSB, Sup X Bus A power au 1 / sepa an be st	(each to a IBN rts graphics, a per I/O PC973 , B, C, D supp nd attention in arated by instanced between	M PCI-X I adapter si 317VUL [i bort PCI-X adicator li ulative pi 1 two x45	Host Brider Host With International Market Properties (1984) Host Pro	dge) / ead Remote S d, mouse designed tical sens viders , 8-way, o	Supervisor Adap]) / I to the PCI-X 1 sors control pov r 16-way xSerie	oter, .0 speci ver to slo es 455 se	fication ot) /
CD-ROM / diskette Ethernet Graphics controller Ports	Dual Broadcom® 5	5704 10/100/1 le XL / on I/O xpansion Por	000 ethernet Board / 8MB t (to connect	controlle SDRAM optiona	er / on I/O Bo M 125MHz sto I RXE-100), F	ard / full / d/max / u RXE Man	duplex / ip to 12 agemei	64-bit 66 80x1024 nt Port, tv	SMHz PCI bus at 64K colors vo USB (Vers	Wake of the Wake o	
Security	Power-on and adn	ninistrator pas	swords/unat	tended l	boot/selectab	ole boot					
Systems mgmt Diagnostics Software	Remote Supervis console and mgmt Light Path Diagn IBM Real Time Dia available even wh ServerGuide™ (C utilities), IBM Dire	t / power on/o lostics™ / pri agnostics (op lile server run CD-ROM insta	ff system / mo mary indicato erated throug ning Illation and co	nitors por r on info gh IBM D	ower status, o rmation pane Director) It. It ion It	p system I with LEI anium 2 anium 2 anium 2	, tempe Os asso 1.3GHz 1.4GHz 1.5GHz	rature, dis ciated wi /3MB L3 /4MB L3 /6MB L3	sks, fans, powe th failing comp Cache Proc U Cache Proc U Cache Proc U	r supplie onents / pg pa	es
Keyboard / mouse Power supplies Cooling fans	byboard / mouse syboard / mouse wer supplies None standard (because rack-based) / USB only Std: two; max: two / hot-swap / 1050 watts at 220v or 550 watts at 110v / redundant at 220v with two power supplies / front access / worldwide / voltage-sensing / auto-restart / fans in each power supply / PFA 1512MB PC2100 CL2.5 ECC DDR SDRAM 1GB							33L5039 33L5040 32P0735 32P0728 02R0988 86841RX 73P9911 73P9715			
Bay ② 3.5", 0.5", Bay ③ 3.5", SL 1", Bay ④ 3.5", SL 1",	66MHz PCI-X, hot 66MHz PCI-X, hot 100MHz PCI-X, hot 133MHz PCI-X, hot 133MHz PCI-X, hot ote Supervisor Adp, 3. 4 access, open (Ultraccess, Combo (Uaccess, hot-swap	a-swap Bus A -swap Bus A -swap, Bus B -swap, Bus B -swap, Bus C -swap, Bus C -swap, Bus D 2-bit 33MHz U Rack abay 2000) Jitrabay 2000	Dimension Max weig Stealth bla Tool-free Access pr Access pr SMP Expa Access pr Diagnostic Toflere Count Light F diagnostic Predictive XceL4 Se power sup BM Direc All mode	ns: H17 ht: 120 ht: 120 cock color servicea ocessor ansion M ower sup gram by cs (PC-E ct by pre n LED p oth pan swithou Failure rver Acc uplies, ar tor	9" x W17.3" x 5mm x W440 lbs; 54.30kg r	D28.1" Dmm x D dapters, a p ss from fr at startup ssing F2 at startup -accessil d level ever) rts on pro e, memo sks with al disk c	713mm and ont at startu ble pull- cessors ry, fans,	Pool ht its way ks	LIMITED WA year parts and ternational Wa M On Site (IOF usiness-Day c year on site w ygrade option (cations): 24 hr x 7 day cc 26 hour respons 26 P2689 set warranty n services avail ther ServicePa ther ServicePa yetf/www.ibm. s/pdf/wamomx. x714 toll-free s arranty issues warranty perio	labor rranty S i), 9-5 N overage arranty in eligib overage e time naintena able c option com/sereu.pdf upport i during d i a output discounting d i a output d i a out	ervice ³ ext- y service ble , ance as at vices/us/ for the

IBM®		L2	L3	Memi	DIMM	Diaka	SCSI	Mechanical	Slots x			Available
Type-model Qty x Pr 8872-1RY 2 x Xeon ^T	rocessor MMP 2.83GHz	cache 1MB	4MB	Memory 2x1GB	slots 8	None	SAS	3U ⁴ rack	bays 6x7	pwr supplies 2 x 1300	(yrs.)	Jun 2005
8872-2RY 2 x Xeon	MP 3.0GHz	1MB	8MB	2x1GB	8	None	SAS	3U rack	6x7	2 x 1300	3	Jun 2005
8872-3RY 2 x Xeon 8872-5RY 2 x Xeon	MP 7020 2.66GHz	1MB 2MB	8MB	2x1GB 2x1GB	8 8	None None	SAS SAS	3U rack 3U rack	6x7 6x7	2 x 1300 2 x 1300		Jun 2005 Nov 2005
8872-6RY 2 x Xeon		2x2ME		2x1GB	8	None	SAS	3U rack	6x7	2 x 1300	3	Nov 2005
Processors	Two 64-bit Intel® Xe 3.0GHz 667MHz FS	SB Dual	Core	NetBurst	TM / E	xtended	Memory 64	l Technology	™ (EM64	4-bit Xeon Pr IT) / Hyper-Th	ocessor reading	technology
L2 cache L3 cache	1 or 2MB / per core 4 or 8MB / integrate	ed/atpr	ocesso	r speed								
Processor upgrade	4-way SMP / up to chassis interconnect	four Xec	n Proc	essors (sa	me sp	eed/cach	e/core) per	chassis / Dual	Core Ca	apable / up to :	32-way	(eight
Implementation	System board conta integrated Serial Atta	ins four ached S	Intel 60 CSI, etl	04-pin micr nernet, gra	o-PGA phics	4 ZIF so	ckets, one r	nemory board	slot, six	Active™ PCI-X	(2.0 slot	ts, and
Active Memory [™]	2GB std / 64GB ma	x per ch	nassis u	using high-	capaci	ty memo	ry card / 512	2GB max (eig	ht chassi	s interconnect	/ two m	nemory
	cards standard (up t 400MHz registered Chipkill TM / Memor	240-pin	DDR2-	SDRAM R	DIMM	s / Error	Checking a	and Correctin	ig (ECC)	via 16-bit Ch	ecksum) / Uot add
	(supported only with	Microso	oft® Win	idows™ Se	erver 2	9003™	na ivientory	wiiiTOTIIIg ···· a	110 1101-8	swap (11011-03	specific)	/ Hot-auu
SCSI disk controller	ALL: Adaptec® AIC-	-9410 / \$	Serial A	Attached S	CSI (S	SAS) 3.0	GHz (3GB/s	ec) / 64-bit 26	6MHz PC	CI-X 2.0 / Serve	eRaid 8i	optional
SCSI connectors	with dedicated slot Controller wired to S One standard SAS	AS back	plane		ا من ا م ما							
SCSI cabling IDE controller / cabling	Enhanced IDE ATA-	33 contr	oller in	CSB6 Sou	ıth Brid	ane dge						
Disk - capacity Disk - bays	None / supports up 5 Six 2.5" hot-swap b	ays / co	nverge	d trav / 80-	pin SC	CA-2 con	nectors					
Mechanical	EIA 19" rack mode chassis (x460 or M)	ls (3U⁴)	x 28" c	leep / supr	orted	in NetBA	Y™ Racks (such as NetB	AY42 SR	, NetBAY42 E	H) / cont	nect eight
Chipset	IBM XA-64e™ 3rd (Generati	ion chi	pset / Inte	grated	Process	or and Mem	nory Controller	/ Suppo	rts EM64T / S	upport fo	or external
	scalability and memory ServerWorks® CSB6	South	oi / ∠ II Bridge	(IDE, USB	, bus f	or Super	5 / FIOSE BITC 1/O NS 874	ige One suppo 17 [diskette, k	eyboard,	mouse]), Dua	Port Br	i, oadcom
Cloto (Activista)	5704, and 2 PCI-X								vo cont	l nouver to alar	/ hat ===	nlage h-t
Slots (Active™)	Six total PCI-X 2.0 s upgrade, hot expans	iots avai	parated	Ith power a by insulat	ive pla	ention industrict	ers, all slots	supported up	to 266M	Hz	/ not re	place, not
CD-ROM / diskette Ethernet	8X ⁶ Slim DVD-ROM Broadcom [®] 5704 10		00 dual	ethernet p	er cha	ıssis / on	systemboar	d / 64-bit 266ľ	Mhz PCI-	X 2.0 / Wake o	n LAN®	/ Alert on
Graphics controller	LAN™ 2 SVGA / ATI® 7000M						•					
Ports	Rear: Three Scalabi ethernet, std. serial,	lity ports RS-485	, RSA (ethernet, F	SA se	rial, two	USB (Ver 2.	0), keyboard,	mouse, a	nalog DB-15 g	raphics,	two
Security	Power-on and admir	nistrator	passwo	ords / unat	tended	l boot / s	electable bo	ot				
System's managemen	remote console and	mamt /	power	on/off syst	em / n	nonitors ı	oower status	s, op system, t	emperatu	ıre. disks. fans	. power	supplies
Diagnostics	Drop down Light P	ath Dia Inostics	gnostic (operat	:s / primar ed through	y indic i IBM [ator on 11 Director)	ntormation p	anel with LED PC2-3200 CL3	S ASSOCIA	ated with failing	compo	nents / 73P2866
Software	ServerGuide™ (CD utilities), IBM Directo	-ROM IT	istallatio	on and co	nfigura	tion	4GB	PC2-3200 CL3	ECC RDIN	/M(2x2GB)		73P2867 30R5145
Keyboard / mouse	None standard (bed	cause ra	ick-bas	ed)			Activ	PC2-3200 CL3 e Memory 4-slo	t Expansi	on Card		13M7409
Power supplies	Std: Two 1300 watt redundant with two	hot-swap	o; <i>Max:</i>	two hot-sv			ng / Xeon	n MP 3.00GHz/1	IMB L2 8N	MB L3 Proc Upg MB L3 Proc Upg		13N0715 13N0714
Cooling fans	auto-restart / rear ac Eight hot-swap, redu	cessible	fans ir	n each poy	ver sup	oply / PF	A Xeon	MP 7040 3.0G	Hz/2x2ME	MB L2 4MB L3Pr B L2 8MB L3 Pr		25R8941 25R8942
Cooming fairs	one additional fan in	each po	wer su	pply / PFA		cor	IBM S	ServeRAID™-8	SAS-SC			13N0713 13N2227
	tan tailure signais Di		LLD	uiu mgmi	DIOCES	501		ServeRAID 6M 36.4GB 10K 2.5				02R0988 26K5654
$8W = 2 \times XpandOnDe$ $16W = 6 \times XpandOnD$							IBM	73.4GB 10K 2.5 ndOnDemand™	5" SAS Hot	t-Swap HDD		26K5655 13M7414
$32W = 8 \times XpandOnD$,		4 x2.9r	m			Xpan	idOnDemand™ -460 Modular E	Scalability	/Cable-2.9M		13M7416 8874-1RY
Six available 3.3 volt							Dual	Core X3 upgra	de kit (ava			39Y6580
Slot 1 - fullsize, 64-l Slot 2 - fullsize, 64-l	bit, 266MHzPCI-X, I	not-swa	ם מ כ	imaneiono	HE OF	5" y \//17	32" x D28.1		pc/	LIMITED WA		TY ³
Slot 3 - fullsize, 64-l Slot 4 - fullsize, 64-l	bit, 266MHzPCI-X, I	not-swaj	o ~ D	imensions:	H128	.35mm x	W440.0mm	V D715mm	⇒ 3 vear	parts and la		
Slot 5 - fullsize. 64-l	bit. 266MHzPCI-X. I	not-swai) ~ ~ ~	leight: 70 t tealth blacl	o 85lbs ccolor	s; 31.75 t	o 38.5kg	-	🗢 Interna	ational Warra	inty Sei	
Slot 6 - fullsize, 64-l *exclusive slot availa	bit, 266MHzPCI-X, I ble for ServeRAID 8	not-swap i adante) ~ T			la Hita .	innline pro-		cove	e, 8 am - 5 pr erage excludi	ng holi	days,
Opt disk Opt disk	Ont dick	T GOAPIC	m	emory and	d syste	emboard	from top	l.		ousiness day e service up		
Opt disk Opt disk	Opt disk	$\overline{}$		etup Progriagnostics	am by (PC-D	pressing	F1 at starturer pressing F	ib di	(in elig	gible location	s): ⁷	•
		ght Path Diag	⇒ S	CSISelect	by pre	ssing Cti	I+A at startu	ip	96P2			•
Bay ① 5.25", 0.5",	Rack access, std CD-R	 MC	di	aġnostic p	anel) fo	or outside	view of pot		• 3 ye : 96P2	ar IOR 24x7 , 1 2689	2 hr avg	response
Bay ② 2.5", SL 1",	access, hot-swap,	open		oblem with formation l			cover Inostic LED I	panel.	• 4 ye	ar IOR 9x5, N	BD resp	oonse
Bay ③ 2.5", SL 1", Bay ④ 2.5", SL 1",	access, hot-swap, access, hot-swap,	open .	ar	nd compor	ient LE	EDs give	visual indica	tions of		ar IOR 9x5, N	BD res	oonse
Bay © 2.5", SL 1", Bay © 2.5", SL 1",	access, hot-swap, access, hot-swap,		₽P		ailure i	Analysis [®]	alerts on d		96P2 ⇔ Other	2694 ServicePac	ptions	at
Bay ② 2.5", SL 1",	access, hot-swap,			ower supp nd fans wit			processors,	VRMs,	http://	www.ibm.com	n/	
Max BTU Output:	4.000 Pt-//- /070						arnal diale -	anacitu:	24x7¹⁴	es/us/its/pdf/ toll-free supp	ort for	warranty
Ship Configuration: Full Configuration:							ernal disk o hot-swap S		issues	during the w	arranty	period ³
Soo footnotes for impor				Hot owen			· ·			(¥460A) ⊚ II		

B 3 B 5 B 8 В 9 В 6 12

Rear

SM SM 1	PM 3 •	Blower module 1 • (std)	PM 1	M M 1	Modu
SM	PM 4	Blower module 2 • (std)	PM 2	M M 2	bays

Power Managemen nodules module Switch Power modules modules (both std)

- Units from front
- 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

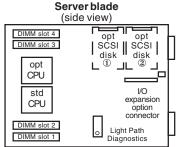
ule	Switch module bay	Switch module function
•	1	Ethernet link 1 for all blade servers
	2	Ethernet link 2 for all blade servers
	3	Network connection 1 for all blade server
		I/O expansion options (Fibre Channel)
nt	4	Network connection 2 for all blade server
		I/O expansion options (Fibre Channel)

- 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 http://www.ibm.com/services/us/ its/pdf/wamomxeu.pdf
- 24x7¹⁴ toll-free support for warranty issues during the warranty

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IBM® Type-model Qty x Pro	ocessor¹ Speed/Core	L2 Memory Cache	Disk Disk Disk controller bays	SCSIsupport	Slots Mech- x bays anical	Required chassis	Available date
8850-71U 1 x Opte		1GB 1MB 1GB 1MB 1GB 1MB	OMB SCSI 2 fixed	Two 2.5-inch SFF Two 2.5-inch SFF Two 2.5-inch SFF Two 2.5-inch SFF Two 2.5-inch SFF	0x2 7U ⁴ blade 0x2 7U ⁴ blade 0x2 7U ⁴ blade 0x2 7U ⁴ blade 0x2 7U ⁴ blade	BladeCenter BladeCenter BladeCenter	Apr 2005 Jul 2005 Apr 2005
Positioning Processor(s) L2/L3 Cache SMP support Implementation	Up to 2 x AMD® Opt 1MB L2 Cache per of 2-way SMP / up to the Server blade contains	eron 275 Dual core, AMD Dire wo Opteron pro s two AMD 940	nance modular comput. Core 2.2GHz, simultan cct Connect Architectt coessors (same speed/ o micro PGA ZIF socke ort, integrated graphics	eously supports 32-l Ire ensures lower la cache size) ts, four memory DIN	bit and 64-bit com atency I/O	puting	Myrinet
Memory	PC3200 266MHz reg DIMMs must be insta Error Checking and	istered 184-pin lled in matched Correcting (E	ed / two slots available ECC DDR VLP SDRA Depairs [a bank] / 2-way ECC) via 16-bit Checks Contained in two chips)	memory interleave	/ dual channel	•	
IDE controller/bays SCSI disk controller SCSI disk bays Other controllers External storage	on planar / supports drives / one 16-bit in Supports max of two 40-pin SCA-2 conne Support for SFF or le	RAID-1 mirro nternal channe not hot-swap ctors / all SCS egacy Ethernet	20 Ultra320 SCSI control oring [Embedded Mirro I / no cables or externa 2.5" SL Ultra320 SCSI bays Ultra320-enable or Fibre Channel I/Outlons (including FAStT	ring] with two non-h Il connector) disks ed cards, Myrinet or In	not-swap 2.5" / sn	nall form factor	
Mechanical Architecture / chipsets Bus slots	AMD 8131 PCI-X Br PCI-X expansion slo HyperTransport clock Super I/O chip	idge Chip protes) / AMD 811 ((PCI, SMBus	deCenter supported in 2 viding two PCI-X buses 1 HyperTransport Bri , USB, LPC to BIOS at wide modules or network	running at 600Mhz dge Chip supportin nd Super I/O) / Nati	z (bus A for SCSI g a 200 Mhz dou ional Semiconduc	and Ethernet, ble-pumped	
	/ Alert Standard Forma switch or Passthroug One connector for I 3 and 4 of BladeCent card) / ethernet and s None / requests for Cl	t 1.0 / teaming a th Module (the I/O expansion ter / all blades i serial I/O expan D-ROM, diskett byboard, mouse	doom® BCM5704S / on bland failover support / one second controller requirements option (Fibre Channel in a single BladeCenternsion cards planned for edrive, and USB port in and video in BladeCent // / on blade / 16MB SD	of the dual controllers res a second option. Expansion Card) / must contain the sa future release ²⁰ BladeCenter by preser by pressing the diRAM std/max / 32-b	connects to an optal switch or PM) requires same intume expansion callsing CD select but splay button on froit 33MHz PCI 2.2	erface modules ord (or no expan ton on front con nt control panel bus	d Ethernet s in bays sion trol panel
Systems mgmt Diagnostics	H8S2148 / on blade / monitoring, event rece for communication wit Light Path Diagnost	provides syster ording, alert cap th BladeCenter ics™ (LED light	oability / RS-485 interfac management module	Low Power Opt Low Power Opt Low Power Opt Low Power Opt S) 2GB Memory Kit	teron 246 Procesteron 270 Procesteron 275 Procesteron 250 Procesteron 252 Processeron 252 Proc	sor Upgrade sor Upgrade sor Upgrade sor Upgrade SDRAM DIMM	
Security Software ship group	Power-on password / unattended boot / selection Documentation CD,	ectable boot / uٰı	nattended start mode	IBM 36.4GB SF IBM 73.4GB SF AMD Opteron L	FF Non-hot-swap FF Non-hot-swap S20 Low Profile	10K SCSI HD 10K SCSI HD Handle	90P1312 90P1313 25R7748
Cooling fans Power supply Prerequisites	on each processor an Uses power module(s	d BladeCenter s) in BladeCent ouse for setup;	ethernet switch module,	IBM SFF Gigab	Channel Expans to Ethernet Expans Channel Expans OW Power Supp	nsion Card sion Card	26K4841 26K4842 48P7061 26K4816



- Power good
- Blade location
- Overtemperature
- Information General fault

Bay $\ 2.5$ ", 9.5mm, no front access, optional ThinkPad® SCSI disk Bay $\ 2.5$ ", 9.5mm, no front access, optional ThinkPad® SCSI disk

Stealth black front bezel

disk, BladeCenter (type 8677), operating system

- H 9.7" x W 1.14" x D 17.6"; H 24.5cm x W 2.9cm x D 44.6cm

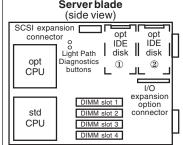
- 11 lbs; 5.0kg (max configuration) Configuration/Setup Utility: F1 at startup Diagnostics (PC-Doctor™): F2 at startup
- System Partition Boot: ALT+F1 at startup
- Network Boot: F12 at startup
- PXE Boot Agent Utility: Ctrl+S at startup
- Blade control panel on each LS20 blade server provides media select button, keyboard/mouse/video select button, and indicators for blade error, information, location, disk activity, and power
- Predictive Failure Analysis® alerts on memory, processor(s), and optional disk(s) with IBM Director

Maximum internal disk capacity for each LS20 blade server¹³: 146GB with two 73.4GB SFF SCSI disks

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am 5 pm, Mon Fri coverage excluding holidays, next business day response time7
- On site service upgrade options (in eligible locations):7
 - 3 year IOR 9x5, 4 hr avg response (ServicePac® part num 41C5906)
 - 3 year IOR 24x7, 4 hr avg response (ServicePacpart num 41C5907) • 4 year IOR 9x5, 4 hr avg response
 - (ServicePacpartnum41C5908) • 4 year IOR 24x7, 4 hr avg response
 - (ServicePacpart num 41C5909) • 5 year IOR 9x5, 4 hr avg response
 - (ServicePacpart num 41C5910) • 5 year IOR 24x7, 4 hr avg response
 - (ServicePacpart num 41C5911) • Other ServicePac options at
 - http://www.ibm.com/ services/us/its/pdf/wamomxeu.pdf
- 24x7¹⁴ toll-free support for warranty issues during the warranty period3

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IBM [®] Type-model Qty x Pro	ocessor ¹ Memory	Frontside Li		Disk ontroller	Disk bays	SCSI suppor			Mech- anical	Required chassis	Available date
	3.06GHz 512MB	5 533Mhz 0M 5 533Mhz 0M 533Mhz 1M	B None	EIDE	2 fixed	2 hot-swap 2 hot-swap 2 hot-swap	Ultra320	0x2	7U ⁴ blade 7U ⁴ blade 7U ⁴ blade	BladeCenter BladeCenter BladeCenter	Oct 2003
Positioning Processor(s) L2/L3 Cache SMP support Implementation	Ultra-dense, high Up to 1 x Intel® X 512KB L2 Cache 2-way SMP / up to Server blade conta one SCSI expansion	(eon 3.2GHz) / 1MB L3 Cado two Xeon Produins two Intel 6	vith 533MH the (some) cessors (sa 04-pin micro	Iz frontsi / on die ame spec o-PGAZ	de bus / e of proc ed/cache IF socke	/ Hyper-Threa essor / at pro esize) ets, four mem	ading tectors ocessor sory	hnology speed // slots,	y / NetBurs	onnectors,	tecture
Memory	512MB or 1GB st PC2100 266MHz r must be installed in Error Checking a detects 2- through	registered 184- n matched pair nd Correcting	pin ECC DI s [a bank] / ı (ECC) via	DR-SDR 2-way m 16-bit C	AM DIM nemory in hecksu i	Ms / four DIM nterleave / du	ıal chann	el / mer	nory bus ri	uns at 2 x 100N	1Hz/
IDE controller/bays SCSI disk controller	via one connector CIOB-ES I/O Brid 3.5" one-inch high	le as IDE disk only one IDE optional SCS r / LSI Logic® Ige (IMB2 bus n SL SCSI dis	attaches to disk if an I. Storage 53C1020 U to Host Biks in front	to riser of I/O expanse Expanse Ultra320 ridge) / se bays / o	card and nsion op sion Un SCSI co supports one 16-b	i tray (includention installed it (a blade of ontroller [LVI or RAID-1 m it internal ch	ed with of the control of the coupying D 320MB irroring the control of the contro	option lange Channe (adjaca (sec] / [Embedo cable	kit) / Suppo el] / RAID- ent blade 64-bit 133 dded Mirro es or exte	orts max of tw I mirroring s slot / connects BMHz PCI-X B bring] with two rnal connector	o IDE tandard s to HS20 us B from hot-swap
SCSI disk bays External storage	Supports max of to 80-pin SCA-2 con Support for IBM To	nectors / ali S (SI bays U	Itra320-	enabled	1 '			oansion Ur	nit /	
Mechanical Architecture / chipsets	Supported in IBM E ServerWorks® G sone CIOBE-S I/O ethernet and the LPC bus to Supe No PCI or PCI-X	rand Champi Bridge (IMB2 I/O expansion r I/O, and PCI	on™ 4.0 Ll bus to Ho option cor 2.2 Bus C	E / CMIC st Bridge nnector / with gra	C LE Ho e) for tw ' CSB6-l aphics c	ost Bridge (n o PCI-X Bus U South Brid controller / Na	nemory of ses with I ge (Thin ational S	ontrolle Bus A t IMB to emicon	er and I/O for etherne Host Brid Iductor® P	Bridge) / sing et and Bus B f dge) for EIDE,	gle-slot or USB,
Ethernet controllers Network-interface CD / diskette / USB Kybd / video / mouse Graphics	Two gigabit Etheme / Alert Standard For switch or Optical One connector for 3 and 4 of BladeC (card) / ethernet at None / requests for None / requests for SVGA / ATI® Rage	rmat 1.0 / team Passthrough I or I/O expans Center / all blac nd serial I/O e r CD-ROM, dis r keyboard, mo	ing and failo Module (the ion option des in a sin xpansion c kette drive, buse, and vi	over suppe second (Fibre on the second (Fi	ort / one I controll Channe IeCenter nned for B port in IadeCen	of the dual color requires at Expansion must contain future releated BladeCenter ter by pressir	ontrollers of second Card) / renthe sands se ²⁰ rey pressing the dis	connect option equires ne expa ing CD play bu	s to an opti al switch of same into ansion car select but	ional, supported or OPM) erface moduled d (or no expar ton on front cor	d Ethernet s in bays asion atrol panel
Systems mgmt Diagnostics	IBM integrated sy H8S2148 / on blac monitoring, event for communication Light Path Diagn component) and o	de / provides sy recording, alei n with BladeCe ostics ™ (LED	stem and e t capability nter manag lights indica	environm / RS-485 jement m ate failin	nental 5 interfa nodule g	Xeon 3. Xeon 3. 512MB I 1GB PC (S) 2GB PC	.06Ghz/5 .2Ghz/51; PC2100 C .2100 CL2 .2100 CL2	12KB L 2KB L2 CL2.5 E 2.5 EC 2.5 EC	DDR-SDI DDR-SDI	Proc Upg Proc Upg DRAM DIMM RAM RDIMM RAM RDIMM	73P9073 73P9074 13N0650 33L5038 33L5039 33L5040
Security Software ship group	Power-on passwo unattended boot / Documentation Cl	selectable boo	t / unattend	ded start		IBM HS ports;	20 Fibre each po	Channe rt requi	el Expansi	on Unit (blade) on Card (with t Switch Module) 100 HDD	wo
Cooling fans Power supply Prerequisites	Uses cooling from on each processo Uses power modu Monitor, keyboard disk, BladeCenter	r and BladeCe lle(s) in Blade(l, mouse for se	nter module Center (type tup; ethern	es and free 8677) et switch	ont pane	36.4GB 36.4GB 73.4GB 146.8GE	15K Ultra 15K Ultra 10K Ultra 3 10K Ultra	a160 S 320 SC a160 S ra320 \$	CSI Hot-S SI Hot-Sw CSI Hot-S SCSI Hot-S	wap SL HDD* ap SL HDD* wap SL HDD* Swap SL HDD* ansion Unit	06P5768 06P5776 06P5756
Server b	lade E	Bav ① 3.5". 9.5	mm. no fron	nt access	s, optiona	 al ThinkPad®l	IDE disk	⇒ 3 v		DWARRANT\ and labor	/ 3



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

- Powergood
- Blade location
- Information
- Overtemperature

· 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

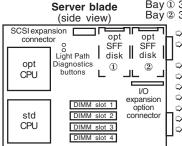
 - (ServicePac part num 69P9518)

 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 http://www.ibm.com/ services/us/its/pdf/wamomxeu.pdf
- 24x7¹⁴ toll-free support forwarranty issues during the warranty period3

See footnotes for important warranty information

Model withdrawn from marketing effective March 2004 Model withdrawn from marketing effective April 2005

IBM® Type-GAV-model Proce	essor GHz1 cache N		Disk Disk controlle	Diskbays	ontional	upport with stor exp unit	slots x bays	!!	Ethernet	Available date
8843-01y-01x 1 x 2 8843-11y-11x 1 x 2 8843-11y-11x 1 x 2 8843-11y-11x 1 x 2 8843-25y-25x 1 x 2 8843-25y-25x 1 x 2 8843-35y-35x 1 x 2 8843-45y-45x 1 x 2 3 8843-25y-25x 1 x 2 3 8843-55U-35x 1 x 2 3 8843-55U-35x 1 x 2 3 8843-57U-45x 2 x 2 x 2 x 2 x 2 x 2 x 2 x 2 x 2 x 2	(eon 3.0 1MB 8 (eon 3.6 1MB 8 (eon 3.8 LV1MB 8 (eon 3.2 2MB 8 (eon 3.2 2MB 8 (eon 3.6 2MB 8 (eon 3.2 2MB 8 (eon 3.2 2MB 8 (eon 2.8 2MB 8 (eon 2.8 2MB 8 (eon 2.8 2MB 8 (eon 2.8 2MB 8 (eon 3.8 2MB 8 (eon 2.8 2MB 8)	00 512MB 1GB 00 1GB 00 512MB 00 1GB 00 1GB 00 1GB 00 1GB 00 1GB 00 1GB 00 1GB 00 1GB 00 4GB	None Ultra320 None Ultra320	2-fixed 2-fixed 2-fixed 2-fixed 2-fixed 2-fixed 2-fixed 2-fixed 2-fixed 2-fixed 2-fixed 2-fixed 2-fixed 2-fixed	2 Hot-sw. 2 Hot-sw.	ap Ultra320	0 x 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	7U ⁴ blade 7U blade	Ethernet 2 x Gigabit	Sept 2004 Sept 2004 Feb 2005 Mar 2005 Mar 2005 Mar 2005 Mar 2005 Sep 2005 Sep 2005 Sep 2005 Sep 2005
Processor(s)	1 x Intel® Xeon up technology L1y: Fea	to 3.8GHz w	ith 800MHz fron	tside bus (I	FSB) / EN	164T / 1-2ME	L2 EC	C Cache /	Hyper-Thread	ing
SMP - L2 Cache Implementation	2-way SMP / up to Systemboard contai expansion option co	two Xeon Prons two Intel 6	ocessors (same s 604-pin micro-PG/	peed/cache A ZIF socke	size) / 1l/ ts, four DI	IB std and n MM slots, on	nax / at e SCSI	processor : expansion	speed connector, on	e I/O
Memory	512MB/1GB std / 80 PC2-3200 400MHz installed in matched	GB ¹³ max / tw CL2.5 ECC I pairs [a bank	o slots used / two DDR2-SDRAM DI] / 2-way memory	slots availa MMs / four interleave /	able / 240 pin go dual char	old-connector nnel	slots or	systembo	ard / DIMMs r	nust be
SCSI disk controller	LSI Logic® 53C1020 PCI-X / supports RA	0 SCSI contro ND-1 & 1E m	oller / Single char irroring / One 16	nnel Ultra32 6-bit channe	20 SCSI o	ontroller (LV rnal) / Interna	D 320N I channe	IB/sec) / or el: one 2-dr	n planar / 64-b op 16-bit 68-pi	it 100MHz n LVD SCSI
SCSI Disk bays	cable Two 2.5-inch Smal	I Form Facto	or (SFF) Ultra320	internal fixe	d disk bay	s / Supports	max of	two hot-sw	an 3.5" SL Ult	
External Storage	disks in optional SC Support for IBM Tot	Si Storage E alStorage™ s	spansion Unit (80 olutions (including	-pin SCA-2 FAStT and	NAS fam	ily of product	ays Ultra	a320-enab	olea) /	
Mechanical Architecture/Chipset	7U Blade / Supporte Intel E7520 chipse BUS / ICH5R suppo interface	ed in IBM Blac t / E7525 MC orts USB (1.0)	deCenter 8677-3X H (Memory Contr / LSI 1020 / Dual	(X or 8677-1 oller Hub) fo Broadcom	XX/2XX (or PCI-Exp 5704S / L	requires upgr bress bridge t bw Pin Count	ade to 2 o PXH, Interfac	000W pow ICH5R / P e / NS PC	er supply optic XH BUS suppo 87366 Super I/	on 26K4816) orts PCI-X O off LPC
BUS slots	No PCI or PCI-X sk	ots (expansion	n via modules or	network-inte	rface option	on connector)				
Network Interface CD / Diskette / USB Kybd / video / mouse Graphics controller	Dual gigabit 10/100/ chip on blade / PCI- adapter fault toleran or Optical Passthrou One connector for 3 and 4 of BladeCei and serial I/O expar None / requests for None / requests for SVGA / ATI® Radeo	ce / Load bali ugh Module (t • I/O expansi nter / all blade nsion cards pl	ancing or teaming he second contro on option (Fibre es in a single Blad anned for future r	/ one of the ller requires Channel Ex eCenter mu elease ²⁰	e dual con a second pansion C st contain	trollers conne optional swit Card) / require the same exp	cts to ar ch or Oles same pansion	n optional, s PM) interface r card (or no	supported Ethe modules in bay expansion ca	ernet switch /s rd) / ethernet
Systems Mgmt	IBM Baseboard Ma on blade / provides event recording, ale communication with	system and e rt capability /	environmental mó RS-485 interface	nitoring, for intermar		Xeon2.8GHz/80 Xeon2.8GHz/80 Xeon3.0GHz/80 Xeon3.2GHz/80 Xeon3.4GHz/80	0/2MBL20 0/1MBL20 0/1MBL20	Cache EM64TF Cache EM64TF Cache EM64TF	ProcUpg ProcUpg ProcUpg	13N0692 25R8878 13N0693 13N0657 13N0658
Diagnostics	Light Path Diagnos on-board diagnostic	stics™ (LED s (via PC-Do	lights indicate fail	ng compon	ent) and	Xeon3.6GHz/80 Xeon3.68GHz/8	0/1MBL20 00/2MBL2	Cache EM64TF Cache EM64T	ProcUpg	13N0659 13N0697
Security	No security intrusion administrator passw unattended start mo	n protection / ord / unattend ode	Power-on passworded boot / selecta	ord / ble boot /		512MB (2x256) F 1GB (2x512) PC 2GB (2x1GB) PC 4GB (2x2GB) PC	2-3200 CL3 22-3200 EC 22-3200 EC	BECC DDR2 CC DDR2 Chip CC DDR2 Chip	K RDIMM Kit	73P3522 73P3522 73P2866 73P2867
Software ship group	Documentation CD,	Broadcom C	:D			IBM 36.4GB 10K U	Iltra320 SC	SI 2.5" SFF NH		90P1312 90P1313
Cooling Fans	Uses cooling from E on each processor a	BladeCenter (type 8677) / therr	nal sensors		BladeCenterSC BladeCenterSF				26K4817 26K4841
Power supply(s) Prerequisites	Uses power module Monitor, keyboard, r disk, BladeCenter (t	e(s) in BladeC mouse for set	enter (type 8677) up; ethernet switc			BladeCenterSFf BladeCenterOpt Otheroptionsatil	icalPass-th	ru Module		26K4842 02R9080



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

Bay ① 3.5", 9.5mm, no front access, optional 2.5-inch SFF SCSI disk Bay @ 3.5", 9.5mm, no front access, optional 2.5-inch SFF SCSI disk

- Stealth black front bezel

- ⇒ Steatth 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
- Network Boot: F12 at startup PXE Boot Agent Utility: Ctrl+S at startup Blade control panel on each HS20 blade server provides media select button, keyboard/mouse/video select button, and indicators for blade error, information, location, disk activity, and power
 - Predictive Failure Analysis® alerts on memory, processor(s), and optional disk(s) with IBM Director

Maximum internal disk capacity for each HS20 blade server¹³: 146GB with two 73GB SCSI disks (with BladeCenter SCSI Storage Expansion Unit 2 x 146GB for total of 438GB)

- 3 year parts and labor
 ☐ International Warranty Service³
 ☐ On site, 8 am-5 pm,
 ☐ Mon-Fri excluding holidays,
 ☐ next business day response time
 ☐ On site service upgrade
 ☐ options (in eligible locations):7
 ☐ 4 year IOR 9x5, NBD response
 ☐ (ServicePac® part num 69P9520)
 ☐ 4 year IOR 9x5, 4 hr avg response
 ☐ (ServicePac part num 69P9521)
 ☐ 4 year IOR 24x7, 4 hr avg
 response

- response (ServicePac part num 69P9522) 4 year IOR 24x7, 2 hr avg
- response
 (ServicePac part num 69P9523)
 Other ServicePac options at http://www.ibm.com/
 services/us/its/pdf/wamomxeu.pdf
 24x7¹⁴ toll-free support for warranty issues during the warranty period³ issues during the warranty period³

L3

Frontside

Disk

Disk

SCSI support with

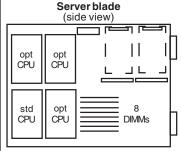
Required

Available

Mech-

Slots

Type-model Qty x Pro	ocessor1	L3 Cache Memory	Frontside Bus Mhz	Disk C	Disk controller	Disk bays		SI suppo Ial expai	ort with nsion unit		Mech- anical	Required chassis	Available date
8839-41X 1 x Xeon ^T		-	400Mhz				-				6U⁴ blade	BladeCente	r Mar 2004
Positioning Processor(s) L2/L3 cache SMP support Implementation	1 x Intel® > 512KB L2 4-way SMF Server blace	e, highly mana Keon 2.8GHz I Cache / 2MB P / up to four of the contains fou expansion unit	MP with 40 L3 Cache Keon MP I Ir Intel 604	00MHz · / on d Proces: 4-pin m	frontside lie of pro sors (san nicro-PG/	e bus / cessor me spe A ZIF s	Hyper- / at pred/cad sockets	Thread rocesso the sizes, eight	ding techror speed e) t memory	nológy /	NetBurst™		
Memory	PC2100 26 DIMMs mus 100MHz / I	16GB max ¹³ / to 66MHz register st be installed Error Checkin and detects 2-	ed 184-pir in matche g and Co	n ECC d pairs rrectin	DDR-SE [a bank g (ECC)	ORAM [] / 2-wa) via 16	DIMMs ly mer 3-bit C	s / eigh nory in checks	t DIMM (terleave / um Chip	⁷ dual c kill ™ (d	hannel / m corrects 1,	emory bus ru	ns at 2 x
SCSI disk controller SCSI disk bays External storage	via one cor CIOB-ES I/ 3.5" one-in- Supports m 80-pin SCA	pports option nnector / LSI L /O Bridge (IME ch high SL SC nax of two hot-s -2 connectors IBM TotalStor	ogic® 530 32 bus to SI disks i wap 3.5" (all SCSI	C1020 I Host B n front SL Ultra bays U	Ultra320 bridge) / bays / c a320 SC Iltra320-	SCSI of support one 16- SI disks enable	contro ts RA bit into s in op	ller [LV \ID-1 n ernal c tional S	/D 320MI nirroring hannel / SCSI Stor	3/sec] / [Embe no cabl age Ex	64-bit 136 dded Mirro les or exte	BMHz PCI-X I oring] with two rnal connecto	Bus B from o hot-swap
Mechanical Architecture / chipsets Bus slots	ServerWor sone CIOB- ethernet ar bus to Sup	n IBM BladeCe rks® Grand Cl X2 I/O Bridge nd the I/O expa er I/O, and PC PCI-X slots (e	hampion ^{TI} (IMB2 bus ansion opt II 2.2 Bus	M 4.0 L s to Ho sion cor C with	.E / CMI st Bridge nnector / graphic	C-LE5 [*] e) for to CSB6 s contr	Host I wo PC South oller /	Bridge I-X Bu Bridge Nation	(memory ses with e (Thin II) aal Semic	Control Bus A MB to Feonduct	ller and I/0 for etherne lost Bridge or® PC874	D Bridge) / doet and Bus B e) for EIDE. U	ouble slot for ISB. LPC
Ethernet controllers Network-interface	Wake on LA 4-port GB I Two conne	10/100/1000 et AN® / Alert Stand Ethernet Switch ectors for I/O n a single Blac	dard Forma h <i>Module</i> expansior	at 1.0 / t (the se n optio	eaming a cond co n / requi	and failo ntroller res san	ver sup requir ne inte	oport/c es a se erface r	one of the econd op nodules i	controlletional E n bays	ers connect thernet Sv 3 and 4 of	s to an optiona vitch Module)	վ ՝
CD / diskette / USB Kybd / video / mouse Graphics	None / requ	lests for CD-RO luests for keybo l [®] Radeon 700	oard, mous	se, and	l video ir	n Blade	Cente	r by pr	essing the	ĕ displa	ay button o		
Systems mgmt Diagnostics	/ on blade a event record communication Light Path	rated Basebood / provides sys rding, alert cap ation with Blad a Diagnostics) and on-board	tem and e pability / F eCenter n ™ (LED lig	nvironi RS-485 nanage Jhts inc	mental n interfac ment mo dicate fai	nonitori e for odule iling	ng,	512MB 1GB PO 2GB PO IBM HI IBM HI	PC2100 C2100 CL C2100 CL S40 SCS S40 Fibre	CL2.5 E 2.5 EC 2.5 EC I Storg Chan	C DDR-SDI C DDR-SDI e Expansionel Expansi	DRÄM DIMM RAM RDIMM RAM RDIMM on Unit (blade sion Card (wit	h two
Security Software ship group	unattended	password / ad I boot / selecta ation CD, IBM	able boot /	unatte	ended sta		de CD	36.4GE 36.4GE 73.4GE	3 15K Ulti 3 15K Ultr 3 10K Ulti	ra160 S a320 S ra160 S	SCSI Hot-S CSI Hot-Sw SCSI Hot-S	Switch Module wap SL HDD* ap SL HDD* wap SL HDD*	06P5768 06P5776 06P5756
Cooling fans Power supply Prerequisites	on each pro Uses powe Monitor, ke	ng from BladeCocessor and Bler module(s) in eyboard, mous eCenter (type	adeCenter BladeCe e for setu	modul nter (ty p; ethe	les and f pe 8677 ernet swi	ront pa 7)	nel					Swap SL HDD ansion Unit	* 32P0728



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

- Powergood
- Blade location
- Overtemperature
- Information
- General fault

- Stealth black front bezel
 H 9.7" x W 1.14" x D 17.6";
 H 24.5cm x W 2.9cm x D 44.6cm
- 12 lbs; 5.4kg (max configuration)
- Configuration/Setup Utility: F1 at startup
 Diagnostics (PC-Doctor™): F2 at startup
- System Partition Boot: ALT+F1 at startup
- Network Boot: F12 at startup PXE Boot Agent Utility: Ctrl+S at startup
- Blade control panel on each HS40 blade server provides media select button, keyboard/mouse/video select button, and indicators for blade error, information, location, disk
- activity, and power Predictive Failure Analysis® alerts on memory, processor(s), and optional disk(s) with IBM Director

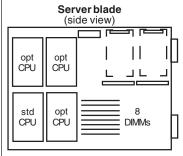
Maximum internal disk capacity for each HS40 blade server13: 293.6GB* with two 146.8GB SL SCSI disks

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 http://www.ibm.com/ services/us/its/pdf/wamomxeu.pdf
- 24x7¹⁴ toll-free support forwarranty issues during the warranty period3

IBM® Type-model Qty x Pro	L3 ocessor¹ Cach	ne Memory	Frontside Bus Mhz	Dis Disk contr			SCSI suppo tional expa		Slots x bays		Required chassis	Available date
8839-51X 1 x Xeon ^T 8839-61X 1 x Xeon ^T 8839-71X 1 x Xeon ^T	[™] 2.7GHz MP 2M [™] 3.0GHz MP 4M	IB 2GB IB 2GB		None No None No	ne No	one 2 one 2		Ultra320 Ultra320	0x2 0x2	7U ⁴ blade 7U ⁴ blade 7U ⁴ blade	BladeCenter BladeCenter BladeCenter	Mar 2004
Positioning Processor(s) L2/L3 cache SMP support Implementation	Ultra-dense, hig 1 x Intel® Xeon I 512KB L2 Cach 4-way SMP / up Server blade cor connector, two I	MP up to 3 ne / Up to o to four X ntains four	3.0GHz with 4MB L3 (eon MP P 1ntel 604-	n 400MHz Cache / or rocessors pin micro-	frontsid die of same) PGA 2	le bus / f proces s speed/ ZIF sock	Hyper-Thresor / at pi cache siz cets, eight	eading tech rocessor s e) memory	nnology speed DIMM	/ NetBurst slots, one		
Memory	Up to 2GB std / PC2100 266MH: DIMMs must be 100MHz / Error same chip and of	z registere installed in Checking	ed 184-pin n matched g and Cor	ECC DDF pairs [a b recting (E	R-SDR. ank] / E CC) vi	AM DIM 2-way r ia 16-bi	IMs / eigh nemory in t Checks	t DIMM g terleave / um Chipk	old-cor dual c kill™ (c	nnector slo hannel / m corrects 1,	emory bus rur	ns at 2 x
SCSI disk controller	None / support via one connect CIOB-ES I/O Br 3.5" one-inch his Supports max of 80-pin SCA-2 co	or / LSI Lo idge (IMB) gh SL SC two hot-sv	ogic® 53C [.] 2 bus to F SI disks in wap 3.5" S	1020 Ultra lost Bridg front bay L Ultra320	320 S(e) / su s / one SCSI	CSI cor pports • 16-bit disks in	troller [LV RAID-1 n internal c	'D 320ME nirroring hannel / r	/sec] / [Embe lo cabl	64-bit 133 dded Mirro es or exte	BMHz PCI-X E oring] with two rnal connector	Bus B from hot-swap
External storage	Support for IBM						d NAS fam	nily of proc	lucts)			
Mechanical Architecture / chipsets Bus slots	Supported in IBM ServerWorks® (sone CIOB-X2 I/O ethernet and the bus to Super I/O No PCI or PCI-2	Grand Ch O Bridge (e I/O expa O, and PCI	ampion ™ IMB2 bus nsion option I 2.2 Bus 0	4.0 LE / to Host B on connec C with gra	CMIC- ridge) tor / C phics o	LE5 Ho for two SB6 Sc controlle	st Bridge PCI-X Bu outh Bridger er / Nation	(memory ses with E e (Thin IM al Semico	contro Bus A IB to F onduct	ller and I/0 for etherne lost Bridge or® PC874	O Bridge) / do et and Bus B f e) for EIDE, U	uble slot or SB, LPC
Ethernet controllers Network-interface CD / diskette / USB	Four gigabit 10/10 Wake on LAN® / / 4-port GB Ethen One connector blades in a singl None / requests	Alert Stand net Switch for I/O ex le BladeCe	ard Format Module (t cpansion c enter must	1.0 / team the second option / re contain th	ing and d contro equires ne sam	l failover oller rec s same i ne expai	support / d quires a se nterface n nsion card	one of the o econd opti nodules in I (or no ex	controlle onal E bays cpansic	ers connect thernet Sw 3 and 4 of on card)	s to an optional vitch Module) BladeCenter	/ all
Kybd / video / mouse Graphics	panel None / requests f SVGA / ATI® Ra										nt control pane	I
Systems mgmt Diagnostics	Intel integrated / on blade / provevent recording, communication Light Path Diag component) and	vides systo , alert cap with Blade gnostics™	em and er ability / Rs Center ma (LED ligh	nvironmen S-485 inte anagemer nts indicat	tal moi rface f it modi e failin	nitòring, for ule g	Xeon 2 Xeon 2	2.7Ghz/2N	1B L3 (Cache Pro Cache Pro Cache Pro	c Upg	13N0656 13N0655 13N0654
Security Software ship group	Power-on passy unattended boot	word / adr t / selectal	ministrator ble boot /	password unattende	l / d start	mode	512MB 1GB P0 2GB P0	PC2100 (C2100 CL2 C2100 CL2	CL2.5 E 2.5 EC 2.5 EC	CC DDR-S DDR-SDI DDR-SDI	SDRAM DIMM RAM RDIMM RAM RDIMM on Unit (blade)	33L5038 33L5039 33L5040 26K4847
Cooling fans Power supply Prerequisites	Uses cooling from on each process Uses power mo Monitor, keyboa disk, BladeCent	sor and Bla dule(s) in ird, mouse	deCenter BladeCen for setup	modules a iter (type i ; ethernet	nd fror 8677) switch	nt panel	36.4GE 36.4GE 73.4GE 146.8G	S40 Fibre s; each po 3 15K Ultra 3 15K Ultra 3 10K Ultra 6B 10K Ult	Chan rt requ a160 S a320 S0 a160 S ra320	nel Expansires a FC S CSI Hot-S CSI Hot-Sw CSI Hot-S SCSI Hot-S	sion Card (with Switch Module) wap SL HDD* rap SL HDD* wap SL HDD* Swap SL HDD*	n two) 48P7061 06P5768 06P5776 06P5756



- Powergood
- Blade location
- Overtemperature
- Information
- General fault

- Stealth black front bezel
- ⇒ H 9.7" x W 1.14" x D 17.6"; H 24.5cm x W 2.9cm x D 44.6cm
- 12 lbs; 5.4kg (max configuration)
- Configuration/Setup Utility: F1 at startup
 Diagnostics (PC-Doctor™): F2 at startup
- System Partition Boot: ALT+F1 at startup
- Network Boot: F12 at startup
- PXE Boot Agent Utility: Ctrl+S at startup
- Blade control panel on each HS40 blade server provides media select button, keyboard/mouse/video select button, and indicators for blade error, information, location, disk activity, and power
- Predictive Failure Analysis® alerts on memory, processor(s), and optional disk(s) with IBM Director

Maximum internal disk capacity for each HS40 blade server13: 293.6GB* with two 146.8GB SL SCSI disks

LIMITED WARRANTY³

3 year parts and labor

Disk requires SCSI Storage Expansion Unit

- 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 http://www.ibm.com/
- services/us/its/pdf/wamomxeu.pdf 24x7¹⁴ toll-free support forwarranty issues during the warranty period3

L3

Frontside

Disk

Disk

SCSI support with

IBM[®]

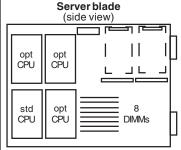
Required

Available

Mech-

Slots

Type-model Qty x Pro	ocessor1	Cache Memory	Bus Mhz	Disk 0	controller	bays		nal expai			anical	chassis	date
8839-21X 1 x Xeon ^T	™ 2.0GHz M	IP 1MB 1GB	400Mhz	None	None	None	2 ho	ot-swap	Ultra320	0x2	7U⁴ blade	BladeCenter	Apr 2004
Positioning Processor(s) L2/L3 cache SMP support Implementation	1 x Intel® 2 512KB L2 4-way SMI Server blace	e, highly mana Xeon 2.0GHz N Cache / 1MB I P / up to four X de contains fou expansion conne	IP with 40 L3 Cache Geon Proc r Intel 60-	00MHz / on d essors 4-pin m	frontside lie of pro (same s nicro-PG	e bus / cessor speed/c A ZIF s	Hyper / at p ache socket	r-Thread rocesso size) s, eight	ding technor speed to memory	ology /	['] NetBurst™ slots,		cture
Memory	PC2100 26 DIMMs mu 100MHz / I	16GB max ¹³ / tv 66MHz registere st be installed i Error Checkin e and detects 2-	ed 184-pii n matche g and Co	n ECC d pairs rrectin	DDR-SE a bank] g (ECC)	DRAM I] / 2-wa) via 16	DIMM: ay mei 6-bit (s / eigh mory in Checks :	it DIMM g terleave / um Chipl	dual c kill™ (d	hannel / m corrects 1,	emory bus rur	ns at 2 x
SCSI disk controller SCSI disk bays	via one col CIOB-ES I. 3.5" one-in	pports optiona nnector / LSI L /O Bridge (IMB ich high SL SC nax of two hot-s	ogic® 530 2 bus to SI disks i	C1020 I Host B n front	Ultra320 Bridge) / bays / c	SCSI suppor ne 16-	contro ts R/ bit int	oller [LV AID-1 n ernal cl	/D 320ME nirroring hannel / r	3/sec] / [Embe no cab	64-bit 133 dded Mirro les or exte	BMHz PCI-X E oring] with two rnal connector	Bus B fron hot-swap
External storage	80-pin SCA	A-2 connectors / IBM TotalStora	all SCSI	bays U	Iltra320-	enable	d			-	parision or	111.7	
Mechanical		in IBM BladeCer									as the IBM	NetBAY™ Rac	k products
Architecture / chipsets	ServerWo sone CIOB- ethernet ar bus to Sup	rks® Grand Ch	ampion™ IMB2 bus Insion opt I 2.2 Bus	M 4.0 L s to Ho sion cor C with	.E / CMI est Bridge nnector / n graphic	C-LE5 e) for to CSB6 s contr	Host wo PC Soutl oller /	Bridge CI-X Bu h Bridge Nation	(memory ses with le e (Thin IN nal Semice	contro Bus A IB to H onduct	oller and I/C for etherne Host Bridge or® PC874	D Bridge) / do et and Bus B f e) for EIDE, U	ouble slot for SB, LPC
Ethernet controllers		: 10/100/1000 eth	•						•		,	MHz buses / ful	II duplex /
Network-interface CD / diskette / USB	Wake on LA 4-port GB One conne blades in a None / req	AN® / Alert Stand Ethernet Switch ector for I/O ex a single BladeC uests for CD-R	lard Forma Module (pansion enter mus	at 1.0 / t (the se optior st conta	teaming a cond count n / require ain the sa	and failo ntroller res sam ame ex	ver su requir ne inte pansi	pport / c res a se erface n on card	one of the econd opt nodules ir I (or no ex	controllional E tonal E bays xpansio	ers connect thernet Sw 3 and 4 of on card)	s to an optional ritch Module) BladeCenter	/ all
Kybd / video / mouse Graphics		uests for keyboa I® Radeon 700										nt control pane	el
Systems mgmt Diagnostics	/ on blade event reco communica Light Path	rated Baseboa / provides syst rding, alert cap ation with Blade Diagnostics ¹¹) and on-board	em and e ability / F eCenter n // (LED lig	nvironi RS-485 nanage Jhts inc	mental n interface ment me dicate fai	nonitòri e for odule iling	ng, ´	512MB 1GB P0	PC2100 (C2100 CL	CL2.5 E 2.5 EC	C DDR-SDI	DRAM DIMM RAM RDIMM	13N0651 33L5038 33L5039
Security Software ship group	unattended	password / adı d boot / selecta ation CD, IBM	ble boot /	unatte	ended sta			IBM HS	S40 SCS S40 Fibre	Storg Chan	e Expansionel Expans	RAM RDIMM on Unit (blade sion Card (with Switch Module)	h two
Cooling fans Power supply Prerequisites	on each pro Uses power Monitor, ke	ng from BladeC ocessor and Blader module(s) in eyboard, mouse eCenter (type 8	adeCenter BladeCe for setu	modul nter (ty p; ethe	les and f pe 8677 ernet swi	ront pa 7)	nel	36.4GE 36.4GE 73.4GE 146.8G	3 15K Últr 3 15K Ultra 3 10K Ultr 3B 10K Ul	a160 S a320 S a160 S tra320	SCSI Hot-S CSI Hot-Sw SCSI Hot-S SCSI Hot-S	wap SL HDD* ap SL HDD* wap SL HDD* Swap SL HDD ansion Unit	06P5768 06P5776 06P5756



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

- Powergood
- Blade location
- Overtemperature
- Information
- · General fault

- Stealth black front bezel
 H 9.7" x W 1.14" x D 17.6";
 H 24.5cm x W 2.9cm x D 44.6cm
- 12 lbs; 5.4kg (max configuration)
- Configuration/Setup Utility: F1 at startup
 Diagnostics (PC-Doctor™): F2 at startup
- System Partition Boot: ALT+F1 at startup
- Network Boot: F12 at startup
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Maximum internal disk capacity for each HS40 blade server13

293.6GB* with two 146.8GB SL SCSI disks

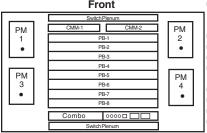
LIMITED WARRANTY3

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am 5 pm, Mon Fri coverage excluding holidays,
- next business day response time⁷ On site service upgrade options (in eligible locations):
 - 3 year IOR 24x7, 2 hr avg response (ServicePac® part num 69P9519) 3 year IOR 24x7, 4 hr avg response

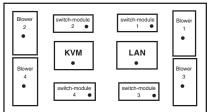
 - (ServicePac part num 69P9518)

 3 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9517)
 - 5 year IOR 9x5, 4 hr avg response
 - (ServicePac part num 69P9525) 5 year IOR 24x7, 2 hr avg response
 - (ServicePac part num 69P9527) Other ServicePac options at http://www.ibm.com/
- services/us/its/pdf/wamomxeu.pdf 24x7¹⁴ toll-free support forwarranty issues during the warranty period3

			Switch module bay	Management ys modulebays std / max	Power modulebays std / max	Module mo	Blower dule bays d / max	Mech- anical	Available date
8720-1RX 8832 H	S20 / 8839 HS40 0 /	8 0/4 Et	hernet, Fibre Cl	hannel 1/2	2/4	1300W	4/4 8	BU⁴ rack	Jul 2004
Positioning Description	Flexible, innovative of Provides common reexpansion, external	esourcés shared Fibre Channel sto	by blade servers	such as power, s	system manage nd I/O (combo	ement, cablin CD/DVD driv	g, ethern	et manage	ement and BB,
Blade bays	keyboard, video, mo Supports HS20 (883 Blades / 8 hot-plugg	able server bays	blades with Low F / front access	Profile Handle, SC	SI Storage Exp	pansion Units	and PC	I I/O Expar	nsion
Switch modules Ethernet Switch Module	Std: none; max: four Supports two 4-port HS20 blade server (the HS20 dual integral 3-4 with optional Ethatch Supports two 2-port ulle of two ports on optio and 4 wired to the H	/ hot-swap / rear GB Ethernet Swittwo modules to strated ethernet conternet Expansion or 6-port Fibre Cl	r access tch Modules in ba upport both ether ntrollers / four exte card on blade ser hannel Switch Mo	ys 1 and 2 / one E net controllers on ernal ports / conne ver dules in bays 3 ar	Ethernet Switch HS20 and for the to std mgn and 4 / one Fibre	n Module requirallover redun nt module / G	uired for oddancy) / GB ethern	ethernet subays 1 and bays 1 and let supported dule require	ipport on d 2 wired to ed in bays ed for one
Modi	and 4 wired to the H	nai Fibre Channe IS20 I/O expansio	el Expansion Card on option connecto	or / two modules to	support both p GBps small for	orts and for f m factor plug	allover re Igable po	edundancy) orts	/ bays 3
	ules Std: one; max: two / controller / communi connectivity / control ethernet remote mar	hot-swap / rear a icates with integra s external Telco a nagement connec	access (I/O ports) ated system mana alarm panel / ports tion port / all port	/ comprehensive agement processo s: DB-15 analog v ts shared by up to	system mana or on each sen ideo port, PS/ o 8 blade serve	gement funct ver blade / m 2 keyboard p ers / ports all l	ions / Po ultiplexor ort, PS/2 ocated o	werPC® 40 for consol 2 mouse po n rear of c	01 e ort, 10/100 hassis
Power modules	Std: two in bays 1 ar 4-Lug Terminal Bloc modules, blade bays switch bays 3 & 4 ar	nd 2 , <i>max:</i> four / k / 1300 watts / T s 1 - 4, and the m nd blade bays 5 -	hot-swap / front a wo standard mod edia tray; two add 8 <i>All</i> : load baland	access / input volta lules (in slots 1 & d litional power mod sing/ voltage-sensi	ages between - 2) supply powe lules provide fu ng / auto-resta	38/-75 VDC ler to switch ball system red rt / no fans in	Min/Max ays 1 & 2 lundent p power n	(-48 VDC 2, both mai lower and p nodule(s)	nominal) / nagement power to
Blower modules	Std: four; max: four / air intake								
Mechanical Optical / USB	EIA 19" rack mode 24X-10X-24X-8X ⁶ Countries of the coun	Is (8U4) x 20" decombo / Two USB ests for optical co	ep / designed for port (Version 1.1 and USB port(s)	EIA-310D and UT) / all USB interfact by pressing CD s	F Four Post Roce (types A & Coelect button of	lacks C) / front acce n server blad	ess / shai e front pa	red by up to anel	o eight
Keyboard / mouse	None standard / pro server blade front pa		ole support / reque	ests for keyboard,	mouse, and v	ideo by press	sing the o	display butt	on on
Ports	Rear: keyboard (PS Telco Alarm Panel F	5/2), mouse (PS/2 Front: two USB (V	?), analog DB-15 (ersion 1.1) /	graphics (on stand	lard mgmt mod	dule) / no seri	al or para	allel ports /	DB-15
Security	Login password for recommended in rad	ck environment p	roviding security t	through lockable of	doors or other	security mea	sures		
Ethernet Systems mgmt	One of the dual intermodule (the second) Provides remote corblowers, power mod	grated gigabit eth HS20/HS40 ethensole and mgmt / lules / system dia	ernet controllers of ernet controller red power on/off black agnostic programs	on each blade send quires a second of des/modules / mo s provided through	vers connects to otional 4-port Conitors power stonal IBM Director	to an optional GB Ethernet Status, operatir software	4 <i>-port G Switch M</i> ng syster	GB Etherne odule) m, tempera	t <i>Switch</i> ture, disks,
System LED panel	System LED panel p	provides power-or	n, location, critical,	, major and minor	alarm conditio	ns			
IBM BladeCenter I IBM BladeCenter I IBM Sleek 2-Butto	ount Kit	lle lle	90P3741 25K8358 25K8359 28L3673 930842S 90P3775 90P3774	IBM 1300W DC IBM BladeCent IBM BladeCent IBM BladeCent IBM FAStT700 IBM FAStT200 IBM FAStT200 IBM T541 15" F Other options Solutions avai	er PCI I/O Exper 1GB Flash er 2GB Flash er 4GB Flash Fibre Channe Storage Serv Dralet Panel Colors at ibm.com lable from IBN	pansion Unit Disk Drive Disk Drive Disk Drive el Storage Se er ive or Monitor (b /pc/us/acces	erver black) sories		90P3742 90P3721 90P3771 90P3772 90P3773 17421RU 35421RU 05K9276 9512AB1 n partners
	Front	Dimensio	ns: H13.76"(8U)	x W17.4" x D20)"(front	1.11	MITERN	MADDAN	TV3



Rear



bezel to rear I/O); H349.5mm x W441.9mm x D508mm

Weight: 98 to 192 lb; 44.5 to 87.38kg

Stealth black color bezel

Tool-free customer serviceability

Access server blades, power supplies, mgmt modules, media tray and expansion units from front Access switch modules and blowers from rear Fits into Standard Central Office enviroments

Air Intake Filtering

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

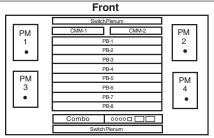
Bay	Switch Function
1 2 3	Ethernet link 1 for all blade servers Ethernet link 2 for all blade servers Network connection 1 for all blade server
	I/O expansion options (Gb Ethernet/Fibre Channel)
4	Network connection 2 for all blade server I/O expansion options (Gb ethernet/Fibre Channel)

LIMITED WARRANTY³

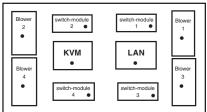
- ⇒ 3 year parts and labor
 ⇒ International Warranty Service³
 ⇒ On site, 8 am 5 pm, Mon Fri coverage excluding holidays, next business day response time next business day response time7
- On site service upgrade options (in
 - 3 year IOR 24x7, 2 hr avg response
 (ServicePac® part num 21P2065)
 3 year IOR 24x7, 4 hr avg response
 - (ServicePac part num 30L9185)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 41L2736)
 5 year IOR 9x5, 4 hr avg response
 - (ServicePac part num 69P9207) 5 year IOR 24x7, 2 hr avg response
 - (ServicePac part num 69P9205) Other ServicePac options at http://www.ibm.com/services/us/
- 24x7¹⁴ toll-free support for warranty issues during the warranty period3

its/pdf/wamomxeu.pdf

		Blade Switch		Management	Power	Power Blow		
Type-model	blades sto	bays module bays Sv td / max std / max	vitch module bays (type)	s modulebays std / max	modulebays std / max	Module module Wattage std / n		Available date
8730-1RX 8832 H	IS20 / 8839 HS40	0/8 0/4 Ethe	rnet, Fibre Cha	annel 1/2	2/4	1300W 4/	4 8U ⁴ rack	Jul 2004
Positioning Description	Provides commo expansion, exterr video. mouse)	tive design provides inve on resources shared by mal Fibre Channel store	blade servers si age switching and	uch as power, sy d connectivity, an	/stem manage d I/O (combo	ment, cabling, e CD/DVD and po	thernet managerts for USB, ke	-
Blade bays	Supports HS20 (8 Expansion Blade	(8832), HS40 (8839) bla es / 8 hot-pluggable ser	ides with Low Prover bays / front a	ofile Handle, HS2 access	20, HS40 SCS	Storage Expans	sion Units and I	PCI I/O
Switch modules Ethernet Switch Module	Supports two 4-p HS20 blade serve	four / hot-swap / rear a port GB Ethernet Switch ver (two modules to sup- ttegrated ethernet contra- expansion card on Serv- port or 6-port Fibre Chanel E pottonal Fibre Channel E	Modules in bays port both etherne	et controllers on F	HS20 and for to	ailover redundan t module / sunno	cy) / bays 1 an	d 2 wired to
Mod	ule of two ports on o and 4 wired to the	optional Fibre Channel Ene HS20 I/O expansion	Expansion Card (option connector	two modules to start two external 20	support both po GBps small for	orts and for failor m factor pluggab	ver redundancy le ports) / bays 3
Management mode	controller / comm connectivity / con	wo / hot-swap / rear ac municates with integrate ntrols external Telco ala management connectio	d system manág rm panel / ports:	gement processor DB-15 analog vi	r on each serv deo port, PS/2	er blade / multip keyboard port,	/ PowerPC® 4 lexor for conso PS/2 mouse p	01 le ort, 10/100
Power modules	Std: two in bays IEC320 C14 male management mo power to switch b	1 and 2 , <i>max:</i> four / ho le appliance connector / odules, blade bays 1 - 4 bays 3 & 4, and blade b	ot-swap / Front ac 1300 watts / two and media tray; pays 5 - 8 <i>All</i> : loa	ccess / input volta o std modules (in Two addititional ad balancing / vol	age range 180\ slots 1 & 2) su power modules tage-sensing /	VAC - 264VAC Note: 10 pply power to some provide full system auto-restart / note: 10 pp. 10 p	Min/Max at 50/6 witch bays 1 & 2 tem redundent fans in power i	0Hz / two 2, both power and module(s)
Blower modules	Std: four; max: fo (CFM) / front to b	our / Calibrated Vectore back airflow; filtered air i	d Cooling / hot-sv ntake	wap / redundant /	variable spee	d / rear access /	330 cubic ft pe	r min
Mechanical Optical / USB	EIA 19" rack mo 24X-10X-24X-8X' blade servers / re	odels (8U ⁴) x 20" deep (6 Combo / Two USB portical cd, a	/ designed for E ort (Version 1.1) / and USB port(s) I	IA-310D and UTI / all USB interfact by pressing CD s	F Four Post Ra e / front access select button o	acks s (types A & C) / n server blade fr	shared by up to	o eight
Keyboard / mouse Ports	server blade from Rear: keyboard	provides KVM console nt panel (PS/2), mouse (PS/2), nel <i>Front:</i> Two USB (Vel	analog DB-15 gra	sts for keyboard, aphics (on standa	mouse, and view ard mgmt mode	deo by pressing ule) / no serial o	the display but parallel ports /	ton on DB15
Security	Login password trecommended in	for remote connection in rack environment prov	secure socket la viding security the	ayer (SSL) secur rough lockable d	ity for remote oors or other s	management ac security measure	cess /	
Ethernet	Ethernet Switch I	integrated gigabit ethern Module (the second HS	net controllers on 320/HS40 etherne	each blade serv et controller requ	ers connects to	o an optional 4-port C	oort GB B Ethernet Sw	itch
Systems mgmt	Module) Provides remote blowers, power n	e console and mgmt / po modules / system diagr	ower on/off blade nostic programs p	es/modules / mor provided through	nitors power sta IBM Director s	atus, operating s software	ystem, tempera	ature, disks,
System LED panel	System LED pan	nel provides power-on, l	ocation, critical, r	major and minor	alarm conditior	าร		
IBM BladeCenter IBM BladeCenter IBM Sleek 2-Butto	lount Kit	landle landle	25K8358 25K8359 28L3673 930842S 90P3775 90P3774 37L6861	IBM 1300W AC IBM BladeCente IBM BladeCente IBM BladeCente IBM BladeCente IBM FAST700 I IBM FAST7200 I IBM FAST7200 I IBM FAST7200 I IBM T541 15" F Other options Solutions avail	er PCI I/O Exper 1GB Flash er 2GB Flash er 4GB Flash Fibre Channel Storage Serve BB Floppy Driv lat Panel Colo at ibm.com/	eansion Unit ' Disk Drive Disk Drive Disk Drive I Storage Serve er ve or Monitor (black pc/us/accessori	x) es	90P3743 90P3721 90P3771 90P3772 90P3773 17421RU 35421RU 05K9276 9512AB1 m partners



Rear



⇒ Dimensions: H13.76"(8U) x W17.4" x D20"(front bezel to rear I/O); H349.5mm x W441.9mm x D508mm

Weight: 98 to 192 lb; 44.5 to 87.38kg

Stealth black color bezel

Tool-free customer serviceability

- Access server blades, power supplies, mgmt modules, media tray and expansion units from front
- Access switch modules and blowers from rear
- Fits into Standard Central Office environments

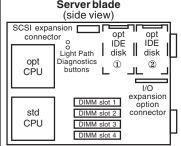
Air Intake Filtering

→ All Intake Fillering
 → Predictive Failure Analysis® alerts blade server memory, processor(s), and optional disk(s) with IBM Director

Bay Switch function	
1 Ethernet link 1 for all bla 2 Ethernet link 2 for all bla 3 Network connection 1 for I/O expansion options (Network connection 2 for I/O expansion options (ade servers or all blade server (Gb Ethernet/Fibre) or all blade server

- ⇒ 3 year parts and labor
 ⇒ International Warranty Service³
 ⇒ On site, 8 am 5 pm, Mon Fri coverage excluding holidays, novt business day response times. next business day response time7
- On site service upgrade options (in
 - 3 year IOR 24x7, 2 hr avg response
 (ServicePac® part num 21P2065)
 3 year IOR 24x7, 4 hr avg response
 - (ServicePac part num 30L9185) 3 year IOR 9x5, 4 hr avg response (ServicePac part num 41L2736)
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 - (ServicePac part num 69P9207) 5 year IOR 24x7, 2 hr avg response (ServicePac part num 69P9205)
 - Other ServicePac options at http://www.ibm.com/services/us/ its/pdf/wamomxeu.pdf
- 24x7¹⁴ toll-free support for warranty issues during the warranty period3

IBM [®] Type-model Qty x Pro		Bus Mhz C			-	SCSI supportional store	exp unit x	bays		Required chassis	Available date
8832-GTX 1 x Xeor 8832-9TX 1 x Xeor		533Mhz 2 533Mhz 2				2 HS Ultra32 2 HS Ultra32				e BladeCenter T e BladeCenter T	
Positioning Processor(s) L2/L3 Cache SMP support Implementation	Ultra-dense, highly 1 x Intel® Xeon 2. 512KB L2 Cache / 2-way SMP / up to Server blade conta one SCSI expansio	5 HGz or 3. 0 - 2MB L3 two Xeon ins two Intel	2GHz with Cache / c Processor 604-pin mid	533MHz on die of p s (same s cro-PGA Z	frontside processo speed/ca IF socke	bus / Hyper r / at process che size) ets, four memo	-Threadin sor speed ory DIMM	ng tecl d I slots	hnology / , two IDE o	connectors,	tecture
Memory	1GB std / 8GB ma PC2100 266MHz re must be installed in Error Checking ar detects 2- through 8	egistered 184 matched pa ad Correctin	4-pin ECC I iirs [a bank] ıg (ECC) vi	DDR-SDR /2-way m a 16-bit C	AM DIM nemory ir hecksur	Ms / four DIM nterleave / dua	al channe	el / me	mory bus	runs at 2 x 100M	1Hz/
IDE controller/bays SCSI disk controller	Enhanced IDE AT IDE disk / no cable disks / space for connector via one connector CIOB-ES I/O Bridg 3.5" one-inch high	e as IDE dis only one IDE optional SC / LSI Logic [©] ge (IMB2 bu	sk attaches E disk if an CSI Storag 53C1020 Is to Host	to riser of I/O expande Expande Ultra320 Bridge) / s	card and nation op sion Un SCSI cosumer suggest to the second suggests to the	tray (include otion installed it (a blade of ontroller [LVE a RAID-1 mi	ed with o d [Fibre C ccupying D 320MB/ irroring [ption Chann adjad /sec] [Embe	kit) / Sup lel] / RAII cent blade / 64-bit 13 edded Mir	ports max of tw D-1 mirroring s e slot / connects 33MHz PCI-X B roring] with two	o IDE tandard s to HS20 us B from hot-swap
SCSI disk bays External storage	Supports max of tw 80-pin SCA-2 conn Support for IBM To	o hot-swap ectors / all S	3.5" SL Ult SCSI bays	ra320 SC: Ultra320-	SI disks enabled	in optional S0 I	CSI Stora	ige Ex			
Mechanical Architecture / chipsets Bus slots	Supported in IBM B ServerWorks® Grone CIOBE-S I/O ethernet and the I/LPC bus to Super No PCI or PCI-X s	and Champ Bridge (IMB 'O expansio I/O, and PC	oion™ 4.0 2 bus to H n option co Cl 2.2 Bus	LE / CMIC lost Bridge onnector / C with gra	C LE Ho e) for tw CSB6-l aphics c	est Bridge (m o PCI-X Bus J South Brido ontroller / Na	emory co es with E ge (Thin ational Se	ontroll Bus A IMB t emico	ler and I/0 for etherr o Host Br nductor® I	D Bridge) / sing net and Bus B f idge) for EIDE,	le slot or USB,
Ethernet controllers Network-interface CD / diskette / USB Kybd / video / mouse Graphics	/ Alert Standard Form switch or Optical F One connector for 3 and 4 of BladeCo card) / ethernet an None / requests for	mat 1.0 / tear Passthrough or I/O expan enter / all blad d serial I/O CD-ROM, d keyboard, m	ming and fai Module (the sion option	llover supp ne second on (Fibre ingle Blad cards pla e, and US video in Bl	ort / one controll Channel leCenter nned for B port in ladeCen	of the dual co er requires a Expansion (must contain future releas BladeCenter ter by pressin	ntrollers of second Card) / rent the same second by pressing the disp	connection option optio	ets to an opmal switch is same in cansion can	otional, supported or OPM) aterface modules ard (or no expan atton on front con	d Ethernet s in bays sion atrol panel
Systems mgmt Diagnostics	IBM integrated sy H8S2148 / on bladd monitoring, event r for communication Light Path Diagno component) and or	e / provides s ecording, ale with BladeC estics™ (LEI	system and ert capabilit enter mana D lights indi	l environm ly / RS-48! lgement m cate failin	nental 5 interfac nodule 9	Proc Up 512MB I 1GB PC 2GB PC	og PC2100 (2100 CL2 2100 CL2	CL2.5 2.5 EC 2.5 EC	C DDR-S	.3 Cache -SDRAM DIMM DRAM RDIMM DRAM RDIMM sion Unit (blade	13N0650 33L5038 33L5039 33L5040
Security Software ship group	Power-on passwor unattended boot / s Documentation CD	electable bo	ot / unatter	nded start		IBM HS ports;	20 Fibre ; each po	Chan rt requ	nel Expan uires a FC	sion Onlt (blade sion Card (with t Switch Module A-100 HDD	two
Cooling fans Power supply Prerequisites	Uses cooling from sensors on each p front panel Uses power modu Monitor, keyboard	BladeCente processor and le(s) in Blad , mouse for	er (type 87 nd BladeC deCenter (setup; eth	20/30) / t enter mod type 8677 ernet swi	hermal dules an	36.4GB 36.4GB 73.4GB 146.8GI	15K Ultra 15K Ultra 10K Ultra 10K Ult	a160 a320 S a160 tra320	SCSI Hot- SCSI Hot-S SCSI Hot- I SCSI Ho	Swap SL HDD* Swap SL HDD* Swap SL HDD* t-Swap SL HDD* t-Swap SL HDD xpansion Unit	06P5768 06P5776 06P5756
Server b	lade E	ay ① 3.5", 9	.5mm, no fr	ont access	s, option	 al ThinkPad®	IDE disk	⇒ 3	year parts	ED WARRANT s and labor	
(side vi	2W) E	ay (1 3.5, 9)	5mm no fr	ont acces	s, option	al ThinkPad*1	DE diek	⇒ In	ternation:	s and labor al Warranty Serv	ice3



- Powergood
- Blade location
- Overtemperature
- Information
- · General fault

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

- 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 http://www.ibm.com/ services/us/its/pdf/wamomxeu.pdf
- 24x7¹⁴ toll-free support forwarranty issues during the warranty period3

IBM® Type-GAV Processor	GHz ¹	L2 cache	FSB MHz	Memory	Disk Disk controlle	r Diskbays	SCSI Supp	ort with	slots x bavs	Mech- anical	Ethernet	Available date
8843-LTy 1 x Xeon 8843-4Ty 1 x Xeon	™ 2.8 Low \		800		None Ultra32 None Ultra32		2 Hot-swap 2 Hot-swap					Feb 2005
6643-419 1 X Ae011	3.0GHZ	IIVID	000	IGB	None Oillasz	0 Z-lixeu	2 HUI-SWAP	Ulliaszu	0 X Z	70 blade	2 X Gigabit	Feb 2005
Processor(s)	Threading t	echnology	/ / Lo\	v Voltage	r 3.6 GHz with Proccessors	educe heat	output for inc	rreased rad	ck densi	ity without in	icreased cooli	/per- ng capacity
SMP - L2 Cache Implementation	Systemboa	rd contain	is two	Intel 604	essors (same s -pin micro-PG/ ted graphics ar	AZIF socke	ts, four DIMM	std and ma I slots, one	ax / at p SCSI e	expansion co	onnector, one	I/O
Memory	512MB/1GI PC2-3200 4 installed in	B std / 8G 400MHz C matched p	i B ¹³ m CL2.5 Dairs [a	ax / two s ECC DD a bank] /	slots used / two R2-SDRAM DI 2-way memory	slots availa MMs / four interleave /	able / 240 pin gold-o dual channel	connector s	slots on	systemboar	rd / DIMMs m	ust be
SCSI disk controller	LSI Logic® PCI-X / sup	53C1020 ports RAI	SCSI D-1 &	controlle 1E mirr	r / Single cha oring (supporte	nnel Ultra3 2 ed in 32-bit l	20 SCSI cont egacy mode o	roller (LVI only) / One	320Ml 16-bit	B/sec) / on p channel (on	olanar / 64-bit e internal) / <i>In</i>	100MHz ternal
SCSI Disk bays	channel: or Two 2.5-in	ie 2-drop o ch Small	16-bit Form	68-pin LV Factor (oring (supported) D SCSI cable SFF) Ultra320	internal fixe	d disk bays /	Supports n	nax of t	wo hot-swap	3.5" SL Ultra	320 SCSI
External Storage	Support for	IBM Tota	Stora	age Expa ge™ solu	nsion Unit (80- tions (including	FAStT and	NAS family o	of products	ys Ultra	320-enable	a) /	
Mechanical Architecture/Chipset	7U Blade / Intel E7520 BUS / ICHS interface	Supported Chipset R support	d in IBI / E752 ts USI	M Blade0 25 MCH 3 (1.0) / L	Center T 8720- (Memory Contr SI 1020 / Dual	XX or 8730 oller Hub) fo Broadcom)-1XX or PCI-Expres 5704S / Low I	s bridge to Pin Count I	PXH, I	CH5R / PXI e / NS PC87	H BUS suppoi '366 Super I/C	ts PCI-X off LPC
BUS slots		PCI-X slot	ts (exp	ansion v	ia modules or	network-inte	erface option o	connector)				
Ethernet Network Interface	or Optical F One conne 3 and 4 of I	It tolerand Passthrougector for I BladeCent	e / Loa gh <i>Mo</i> l/O ex ter / al	ad baland Idule (the Ipansion I blades i	ontroller / Broad z / full duplex / Ving or teaming second contro option (Fibre n a single Blad	/ one of the ller requires Channel Ex eCenter mu	e dual controlle a second ont	ers connec tional switc	ts to an h or OF	optional, su PM)	pported Etner	net switch
CD / Diskette / USB Kybd / video / mouse Graphics controller	None / required None / require	O expans Jests for C Jests for k	sion ca CD-RC ceyboa	ards plani)M, diske ırd, mous	ned for future rette drive, and Use, and video in lanar / 16MB S	elease²º ISB port in ∣ BladeCento	BladeCenter ber by pressing	y pressing the displa	CD sel			
Systems Mgmt	recording, a intermanag	alert capat ement cor	oility / mmun	RS-485 ii	ntroller (BMC) nterface for ith BladeCente		/ on blade / p	rovides sys	stem an	d environme	ental monitorir	ng, event
Diagnostics	Manageme Light Path component BIOS)	Diagnos) and on-k	tics™ ooard	(LED ligl diagnosti	nts indicate fail cs (via PC-Doo	ng ttor in	Xeon 2.8 G Xeon 3.6 G 512MB (2x2	Hz/800/1M 256) PC2-3	IB L2 C 3200 EC	ache EM64 ⁻ CC DDR2	Γ Proc Upg	13N0699 13N0659 73P3522
Security	administrato	or passwo	ird/ui	nattended		ord /		В́) РС2-32	00 ECC	DDR2 Chip	ok rdimm ki ok rdimm ki	
Software ship group	selectable to Documenta				ode		IBM 36.4GE	3 10K Ultra	320 SC	'SI 2.5"SFF	NHS HDD	90P1312 90P1313
Cooling Fans Power supply(s)	sensors on front panel	each pro	cesso	r and Bla	ype 8720/30) / deCenter mod ter T (type 872	ules and	BladeCente BladeCente BladeCente BladeCente	r SCSI Sto r SFF Fibr r SFF Giga	rage Ex e Chani abit Ethe	kp Unit nel Exp Card ernet Exp Ca	d	26K4817 26K4841 26K4842 02R9080
Prerequisites	Monitor, ke	yboard, m	nóuse	for setup	; ethernet switch rating system		BladeCente 17-inch Flat Other option	r SCSI Sto Panel Moi	rage Ex nitor Co	pansion Un nsole Kit w/	US Kybd	26K4817 17231UX

Bay @ 3.5",9.5mm, no front access, optional 2.5-inch SFF SCSI disk Bay @ 3.5",9.5mm, no front access, optional 2.5-inch SFF SCSI disk

Server blade (side view) SCSI expansion opt opt SFF SFF SFF SFF Light Path L Diagnostics JL ^② opt CPU buttons I/O expansion DIMM slot 1 option std DIMM slot 2 connector CPU DIMM slot 3 DIMM slot 4

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

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

- Stealth black front bezel
- ⇒ H 9.7" x W 1.14" x D 17.6"; H 24.5cm x W 2.9cm x D 44.6cm

- H 24.5cm x W 2.9cm x D 44.5cm

 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

 Riede control panel on each HS20 blade:
- ➡ Blade control panel on each HS20 blade server provides media select button, keyboard/mouse/video select button, and indicators for blade error, information, location, disk activity, and power
- Predictive Failure Analysis® alerts on memory, processor(s). and optional disk(s) with IBM Director

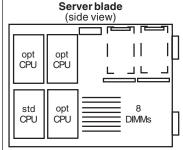
Maximum internal disk capacity for each HS20 blade server¹³: 146GB with two 73GB SCSI disks (with BladeCenter SCSI Storage Expansion Unit 2 x 146GB for total of 438GB)

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- On site service upgrade options (in eligible locations):⁷
 • 4 year IOR 9x5, NBD response
- (ServicePac® part num 69P9520)
- 4 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9521) 4 year IOR 24x7, 4 hr avg response
- (ServicePac part num 69P9522)

 4 year IOR 24x7, 2 hr avg response
 (ServicePac part num 69P9523)

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

IBM® Type-model Qty x Pro	<u> </u>		Disk Disk controller	bays (SCSI support with optional exp. unit	Slots x bays		Required chassis	Available date	
8839-6TX 1 x Xeon™ 2.8GHz MP 2MB 2GB 400Mhz None None None 2 H-S Ultra320 0x2 8U⁴ blade BladeCenter T Mar 2004										
Positioning Processor(s) L2/L3 cache SMP support Implementation	rocessor(s) Up to 1 x Intel® Xéon 2.8ĞHz MP with 400MHz frontside bus / Hyper-Threading téchnology / NetBurst™ microarchitecture 2/L3 cache MP support Up to 1 x Intel® Xéon 2.8ĞHz MP with 400MHz frontside bus / Hyper-Threading téchnology / NetBurst™ microarchitecture 512KB L2 Cache / 2MB L3 Cache / on die of processor / at processor speed 4-way SMP / up to four Xeon MP Processors (same speed/cache size)									
Memory	2GB std / 16GB max ¹³ / two slots used / six slots available / eight total slots PC2100 266MHz registered 184-pin ECC DDR-SDRAM DIMMs / four DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / memory bus runs at 2 x 100MHz / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips) / memory can be mixed									
	None / supports option via one connector / LSI I CIOB-ES I/O Bridge (IMB 3.5" one-inch high SL SO	.ogic® 530 32 bus to CSI disks i	1020 Ultra320 Host Bridge) / n front bays / c	SCSI consupports one 16-bit is	troller [LVD 320] RAID-1 mirrorir internal channel	MB/sec] I g [Emb / no ca	/ 64-bit 1: edded Mir bles or ext	33MHz PCI-X I roring] with two ernal connectors	Bus B from o hot-swap	
SCSI disk bays External storage	Supports max of two hot-s 80-pin SCA-2 connectors Support for IBM TotalStor	/ all SCSI	bays Ultra320-	enabled	•	Ü	•	Jnit /		
Mechanical	Supported in IBM BladeCe	nter (type 8	B677) / BladeCe	nter suppor	ted in 28" deep ra	cks suc	h as the IBI		ck products	
ServerWorks® Grand Champion™ 4.0 LE / CMIC-LE5 Host Bridge (memory controller and I/O Bridge) / Architecture / chipsets one CIOB-X2 I/O Bridge (IMB2 bus to Host Bridge) for two PCI-X Buses with Bus A for ethernet and Bus B for ethernet and the I/O expansion option connector / CSB6 South Bridge (Thin IMB to Host Bridge) for EIDE, USB, LPC bus to Super I/O, and PCI 2.2 Bus C with graphics controller / National Semiconductor® PC87417 Super I/O chip Bus slots No PCI or PCI-X slots (expansion via modules or network-interface option connector)										
Ethernet controllers	Four gigabit 10/100/1000 ethernet controllers / Intel 82545GM/82546EB / on blade / two PCI-X 64-bit 100MHz buses / full duplex /									
Network-interface	Wake on LAN® / Alert Standard Format 1.0 / teaming and failover support / one of the controllers connects to an optional 4-port GB Ethernet Switch Module (the second controller requires a second optional Ethernet Switch Module) Two connectors for I/O expansion option (Fibre Channel Expansion Card) / requires same interface modules in bays 3 and 4 of BladeCenter / all blades in a single BladeCenter must contain the same expansion card (or no expansion card) / ethernet and serial I/O expansion cards planned for future release ²⁰									
CD / diskette / USB Kybd / video / mouse Graphics	None / requests for CD-ROM, diskette drive, and USB port in BladeCenter by pressing CD select button on front control panel None / requests for keyboard, mouse, and video in BladeCenter by pressing the display button on front control panel SVGA / ATI® Radeon 7000 / on blade / 16MB SDRAM std/max / 32-bit 33MHz PCI 2.2 bus									
Systems mgmt	Intel integrated Basebo / on blade / provides sys event recording, alert ca	tem and e pability / F	nvironmental n IS-485 interfac	nonitoring, e for	512MB PC210 1GB PC2100 (0 CL2.5 CL2.5 E	ECC DDR CC DDR-S	-SDRAM DIMM DRAM RDIMM	13N0653 33L5038 33L5039	
Diagnostics	communication with Blad Light Path Diagnostics component) and on-board	™ (LED lig	hts indicate fai	ling	IBM HS40 SC IBM HS40 Fit	2GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM IBM HS40 SCSI Storge Expansion Unit (blac IBM HS40 Fibre Channel Expansion Card (w			th two	
Security	Power-on password / ad			art mode	IBM HS40 40	GB ² 540	0 rpm ATA		48P7063	
Software ship group	Documentation CD, IBM	ole boot / unattended sta Director 4.1 CD, Device			36.4GB 15K Ultra160 SCSI Hot-Swap SL HDD* 06P5768 36.4GB 15K Ultra320 SCSI Hot-Swap SL HDD* 06P5776					
Cooling fans	Uses cooling from BladeC on each processor and Bl							Swap SL HDD* -Swap SL HDD		
Power supply Prerequisites	Uses power module(s) ir Monitor, keyboard, mous disk, BladeCenter (type	BladeCe e for setu	nter (type 8677 p; ethernet swi	7) .	* Disk requires					



- Powergood
- Blade location
- Overtemperature
- Information
- General fault

- Stealth black front bezel
 H 9.7" x W 1.14" x D 17.6";
 H 24.5cm x W 2.9cm x D 44.6cm
- 12 lbs; 5.4kg (max configuration)
- Configuration/Setup Utility: F1 at startup
 Diagnostics (PC-Doctor™): F2 at startup
- System Partition Boot: ALT+F1 at startup
- Network Boot: F12 at startup
- PXE Boot Agent Utility: Ctrl+S at startup Blade control panel on each HS40 blade server provides
- media select button, keyboard/mouse/video select button, and indicators for blade error, information, location, disk activity, and power
- Predictive Failure Analysis® alerts on memory, processor(s), and optional disk(s) with IBM Director

Maximum internal disk capacity for each HS40 blade server13: 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 http://www.ibm.com/ services/us/its/pdf/wamomxeu.pdf
- 24x7¹⁴ toll-free support for warranty issues during the warranty period3

Warranty information: For a copy of applicable product warranties, write to: Warranty Information, P.O. Box 12195, RTP, NC, 27709, Attn: Dept JDJA/B203. IBM makes no representation or warranty regarding third party products or services.

- 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.
- 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.
- 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
- Statement of direction and subject to availability.
- Max physical memory is currently 16GB contingent on general availability of 4GB memory DIMMS, running under select 64-bit Linux distributions; addressable capacity is less. Under select 32-bit Linux distributions, maximum physical memory is 16GB contingent on general availability of 4GB memory modules, with a maximum of 3GB allocated per thread. Maximum physical memory is 4GB running under Microsoft Windows XP Professional operating system; addressable capacity is less.
- 22 16GB Memory max with PC2700 DIMMs, 8GB Max with PC3200 DIMMs



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