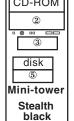


http://www.ibm.com/servers/eserver/education/cust/xseries/xref.html

•									The second second	-
IBM®Machine Type Model Procces 8486 - E1x Celeron®		L2 FSB Cache MHz 256KB 533	Memory 256MB	Disk 80GB	Disk controller SATA	Maximum Capacity 500GB	Slots x bays 4 x 5	Hard disk bays 2 fixed	Gigabit	Available date Sep 2005
8486 - E2x Celeron 8486 - E3x Pentium® 8486 - E4x Pentium 4 8486 - E5x Pentium 4 8486 - E7x Pentium D	4 521 2.8GHz/SC 4 531 3.0GHz/SC 4 541 3.2GHz/SC 4 551 3.4GHz/SC	256KB 533 1MB 800 1MB 800 1MB 800 1MB 800 2x1MB 800	512MB 512MB 512MB 512MB 512MB 512MB 512MB	80GB 80GB 80GB 80GB 80GB 80GB	SATA SATA SATA SATA SATA SATA	500GB 500GB 500GB 500GB 500GB	4 x 5 4 x 5 4 x 5 4 x 5 4 x 5 4 x 5	2 fixed 2 fixed 2 fixed 2 fixed 2 fixed 2 fixed	Gigabit Gigabit Gigabit Gigabit Gigabit Gigabit	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 / no	to 3.4GHz Si 533MHz FSB 4 / 2x1MB std s one LGA-77 A and Gigabit	ngle Core 80 / All Optimi on Pentium 5 socket, fou Ethernet.	00MHz F i zed for D / 256K	SB / Pentiur Extended Me B std and ma	n D 2.8GI emory 64 ax on Cele	Hz Dual Techno eron / EC	logy (EMC C / full spe	64T) eed	
Memory	256MB or 512MB / 80 SDRAM / All Error C	GB ¹³ max / four Checking and C	184-pin gold- _l Correcting (EC	plated DIN CC) / DIM	//M sockets / o Ms and ECC	one socket memory co	used / P (ontroller /	C2-4200 53 industry sto	33MHz ECC d / unbuffere	DDR2- ed /
SCSI disk controller IDE disk controller SATA disk controller Cables Disk RAID Controller	None standard / Ultr Enhanced IDE / ATA Dual channel SATA One 2-drop EIDE ca 80GB SATA / 7,200 None standard / Sen	100 / integrat controller (1.5 lbles (to CD-R rpm / 9.0 ms s	ed in I/O Cor GB/sec) / su OM) / one 1- eek / S.M.A.I	ntroller Hu upports 2 -drop SA R.T.	ub / one conr drives stand	nector on p dard	olanar			
Rack support Bus slots (see below) Chipset	None One PCI E bus / one Intel E7230 chipset MAC, USB, Low Pin keyboard, mouse	/ Memory Cor	ntroller Hub (I	MCH) / I/	O Controller	Hub (ICH-	-7) for P0	CI 2.2, AT		
Ethernet	10/100/1000 gigabit /		21 / on plana	ır / full du	plex / PHY a	nd MAC la	ayers / Pi	reboot eXe	ecution Env	rironment
CD-ROM / diskette Ports Diagnostics Systems mgmt	(PXE) / Wake on LAI Some: CD-ROM: 48 Front: two USB (Ver monitor (analog DB- Diagnostic LEDs / erro None	X-20X ⁶ CD-R0 2.0); <i>Back:</i> tv 15)	vo serial (9-p	oin), paral	lel, two USB	(Ver 2.0),	keyboar	d, mouse,	ethernet (RJ-45),
Graphics controller	ATI® RN50(ES1000) /	16MB SDRAM	std/max / on p	olanar / an	alog 15-pin / ι	up to 1024	x 768 x 3	2 bit @85H	lz	
Security	Optional U-Bolt supp control / operation v				ord / boot sec	quence				
Software	ServerGuide™ (CD- installation and confi Director (system ha	guration tool)	included and	IBM	512MB PC2 2x1GB PC2 2x2GB PC2 IBM 80GB	2-4200 CL 2-4200 CL	3 ECC E	DR2 Rob DR2 Rob	IS IS	30R5148 30R5149 30R5150 39M4500
Keyboard / mouse Cooling fans Power supply	IBM 101 key keyboa Three variable speed supply) / not redunda 310 watts / universal Server Restart (ASR cooling fan in power	d fans (cpu he ant / not hot-sv / manual swite) / not hot-swa	eatsink, rear, vap ching / Autom ap /no redund	power	IBM 160GB IBM 250GB IBM 500GB 48X/32X/48 IBM Multi-b IBM USB P 36/72GB D	SATA-15 SATA-15 SATA-15 X/16X Ma urner Plus ortable Di	50` (7.2K) 50 (7.2K) 50 (7.2K) ax ⁶ CD-R 5 skette D	simple-sv simple-sv simple-sv W/DVD (b	vap HDD vap HDD vap HDD	39M4504 39M4508 39M4514 32R2905 32R2906 05K9276 71P9145
CD-ROM ② ③ disk ⑤	Bay ① 5.25", HH Bay ② 5.25", HH Bay ③ 3.5", SL 1", Bay ④ 3.5", SL 1", Bay ⑤ 3.5", SL 1",		open (no dis lisk GBps)	k)	VXA-2 Tap IBM 20/40G IBM ServeF IBM Ultra32 Other optio	e Drive BB TR7 In RAID-7t SA 20 SCSI Cons at ibr	ternal Ta ATA Con ontroller n.com/po 1 year Interna On site	ape Drive stroller 2 c/us/acces LIMITED V parts and I tional War s, 8 am-5 p	WARRAN abor ranty Servi	59P6746 48P7042 71P8648 13N2249



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)

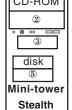
♦BTU Output:

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

IBM®Machine Type Model Procce	ssor Speed¹/Core		SB MHz Memory	, Disk	Disk controller	Maximum Capacity	Slots x bays	Hard disk bays	Ethernet	Available date
8486 - EAx Celeron®	D 331 2.66GHz	256KB 5	533 512ME	80GB	SATA	500GB	4 x 5	2 fixed	Gigabit	Feb 2006
8486 - EBx Celeron 8486 - ECx Pentium ^e			533 512ME 800 512ME		SATA SATA	500GB 500GB	4 x 5 4 x 5	2 fixed 2 fixed	Gigabit Gigabit	Feb 2006 Feb 2006
8486 - EDx Pentium			800 512ME		SATA	500GB 500GB	4 x 5	2 fixed	Gigabit	Feb 2006
8486 - EEx Pentium			800 512ME		SATA	500GB	4 x 5	2 fixed	Gigabit	Feb 2006
8486 - EFx Pentium			800 512ME		SATA	500GB	4 x 5	2 fixed	Gigabit	Feb 2006
8486 - EGx Pentium 8486 - EHx Pentium			300 512ME 300 512ME		SATA SATA	500GB 500GB	4 x 5 4 x 5	2 fixed 2 fixed	Gigabit Gigabit	Feb 2006 Feb 2006
8486 - EJx Pentium I	D 930 3.0GHz/DC		300 512ME		SATA	500GB	4 x 5	2 fixed	Gigabit	Feb 2006
8486 - EKx Pentium			800 512ME			500GB	4 x 5	2 fixed	Gigabit	Mar 2006
Positioning	Uniprocessor, entry							- Duel Ce	000MII-	ECD /
Processor(s)	Intel® Pentium 4 up Intel Celeron D 2.66									FSB /
L2 cache	1 or 2MB std on Per									
Implementation	Motherboard contain			four DIMM	sockets, for	ur slots(1 PC	I Expre	ss x8, 1 F	CI Express	x1, 2
SMP support	PCI), integrated SAT No SMP support / n									
	• • • • • • • • • • • • • • • • • • • •	•								
Memory	512MB / 8GB ¹³ max /									RAM / All
	Error Checking and	Correcting	(ECC) / DIIVIIV	s and ECC	memory con	troller / Indus	try sta / t	unbullerea	/	
SCSI disk controller	None standard / Ult	ra320 SCS	I controller2	LVD 320M	B/sec) optio	nal for tape	backup			
IDE disk controller	Enhanced IDE / ATA						lanar			
SATA disk controller Cables	Dual channel SATA One 2-drop EIDE ca	controller	(1.5GB/Sec) / D-ROM) / one	Supports 2	2 drives stai ATA cable n	naara er installed	hard dis	k		
Disk	80GB SATA / 7,200				TA Cable p	ci ilistalica	nara ais	orc .		
RAID Controller	None standard / Ser	veRAID 7t	controller op	ional						
Rack support	None									
Bus slots (see below)		us / one 64	-bit PCIe™ x8	slot / one 6	34-bit PCle >	k1 / two 32-b	it 33MH:	z 5v PCI 2	.2 slots	
Chipset `	Intel E7230 chipset	/ Memory	Controller Hu	b (MCH) / I	O Controlle	er Hub (ICH-	for P(CI 2.2, AT.	A-100 EIDE	
	MAC, USB, Low Pin	Count Inte	rface / Firmw	are Hub / S	MSC® LPC4	17M192 Sup	er I/O fo	r diskette,	parallel, se	rial,
	keyboard, mouse									
Ethernet	10/100/1000 gigabit		ո [®] 5721 / on p	lanar / full-d	duplex / PH	and MAC I	ayers / F	Preboot eX	Cecution En	vironment
CD-ROM / diskette	(PXE) / Wake on LA Some: CD-ROM: 48		D-BOM IDE:	come: CDE	2///D//D-BC	M Combo:4	8Y/32Y	/ /QY/16Y 6	/ None eta	ndard
Ports	Front: two USB (Ver									
5 1	monitor (analog DB-	15)	·	. /		,	•		,	,.
Diagnostics	Diagnostic LEDs / erro	or LEDs for	fans and mem	ory / server	diagnostic pi	rograms store	ed on IBN	M Enhance	d Diagnostic	s CD
Systems mgmt	None									
Graphics controller	ATI® RN50(ES1000) /	16MB SDR	AM std/max / d	on planar/a	nalog 15-pin	/ up to 1024 x	< 768 x 3	32 bit @100)Hz	
Security	Optional U-Bolt supp	ort via kno	ckout / nowe	r-on nacew	ord / boot s	equence				
Security	control / operation v									
0 - (1	· · · · · · · · · · · · · · · · · · ·					2-4200 CL3 E 2-4200 CL3 E				30R5148 30R5149
Software	ServerGuide™ (CD installation and conf				2x2GBPC	2-4200 CL3 E	CC DDR2	RoHS		30R5150
	Director (system ha	rdware mg	mt software)	optional	□ IBM 160GI	SATA-150 (7. B SATA-150 (7	7 2K) simi	nle-swan HI	מו	39M4500 39M4504
Kanda a and Time and	· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·		IBM 250GI	B SATA-150 (7 B SATA-150 (7	7.2K) sim	ole-swap H[DD DD	39M4508
Keyboard / mouse Cooling fans	IBM 101 key keyboa Three variable spee				48X/32X/4	B SA I A-150 (<i>i</i> I8X/16X Max ⁶ (.∠k)simi CD-RW/D	pie-swap HL)VD (black)	טט	39M4514 32R2905
Cooming rans	supply) / not redund			ai, power	IBM Multi-l	burner Plus		, ,		32R2906
Power supply	310 watts / universal	/ manual s	switching / Au			Portable Diske DDS/5 Internal				40K1692 71P9145
	Server Restart (ASF cooling fan in power			undancy /	VXA-2 Tap	oe Drive				59P6746
	cooming fair in power	supply (va	iliable speed)			GB TR7 Interr RAID-7t SATA				48P7042 71P8648
65.501					IBM Ultra3	320 SCSI Cont	roller2			13N2249
CD-ROM					Other opti	ons at ibm.co				FV3
2	Day @ 5 05 1111	1 (1)	OD DOM					LIMITED	WARRAN1	Y°



black

Bay ① 5.25", HH 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, CD-ROM 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
- ♦ H 16.8" x W 8" x D 19.4"
- ♦ H 427mm x W 203mm x D 493mm
 ♦ 36 to 45.8 pounds (16.3 to 20.8kg)
- ♦BTU Output:

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

□ LIMITED WARRANTY³
 □ 1 year parts and labor
 □ International Warranty Service³

On site, 8 am-5 pm,

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

- options (in eligible locations):⁷
 3 year IOR 24x7, 2 hr avg response
- (ServicePac part num 41W9318) 3 year IOR 24x7, 4 hr avg response
- (ServicePac part num 41W9317) 3 year IOR 9x5, 4 hr avg response
- (ServicePac part num 41W9316) 3 year IOR 9x5, NBD response
- (ServicePac part num 41W9315) Other ServicePac options at

http://www.ibm.com/

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

Proccessor

IBM®Machine Type Model

Hard

disk bays Ethernet

Available date

Maximum Capacity

Slots

x bays

Disk

controller

Disk

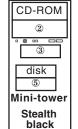
i ype Wodei	Procces	SOF	Speed /Core	Cacne	IVIMZ	wemory	DISK	controller	Сарасіту	x bays	aisk bays	Ethernet	date
8486 - ELX 8486 - EMX 8486 - ENX 8486 - E8X	Pentiui Pentiui	m [®] 4 631 n 4 631 n 4 651 n D 930	3.0GHz/SC 3.0GHz/SC 3.4GHz/SC 3.0GHz/DC	2MB 2MB 2MB 4MB	800 800 800 800	1 x 512MB 1 x 512MB 1 x 512MB 2 x 512MB	160GB 80GB 80GB 80GB	SATA SATA SATA SATA	1TB 1TB 1TB 1TB	4 x 5 4 x 5 4 x 5 4 x 5	2 fixed 2 fixed 2 fixed 2 fixed	Gigabit Gigabit Gigabit Gigabit	June 2006 June 2006 June 2006 June 2006
Positioning Processor(s)		Intel® P	entium 4 up	to 3.4G	Hz Siı	d to meet sma ngle-Core 800 FSB / All Op	MHz FS	B / Pentiu	m D up to	3.0GHz	Dual-Co	re 800MH	z FSB /
L2 cache Implementation		1 or 2M Motherb PCI), int	B std on Pent oard contains egrated SATA	ium 4 / one L0 and G	4MB s GA-775 igabit l	td on Pentium socket, four Ethernet.	D / 256	KB std and	max on Ce	eleron / E	ECC / fuĬl-s	speed	
SMP support		No SMF	support / no	proces	sor up	grade							
Memory						d-plated DIMM C) / DIMMs and							DRAM / All
SCSI disk con IDE disk cont SATA disk co Cables Disk RAID Control	roller ontroller	Enhance Dual ch One 2-0 80 or 16	ed IDE / ATA- annel SATA (Irop EIDE cab 30GB SATA /	100 / in controlled bles (to 7,200 rp	tegrate er (1.50 CD-Ro om / 9.	ntroller2 (LVD ed in I/O Contr GB/sec) / sup OM) / one 1-d 0 ms seek / S troller optiona	oller Hub ports 2 Irop SAT .M.A.R.T	o / one con drives stan A cable pe	nector on p	lanar			
Rack support Bus slots (see Chipset	t e below)	Intel E7 MAC, U	230 chipset /	/ Memoi	ry Con	PCIe™ x8 slot troller Hub (M e / Firmware F	CH) / I/C	Controller	Hub (ICH-	for P(CI 2.2, AT	A-100 EID	E, ethernet erial,
Ethernet CD-ROM / di Ports Diagnostics Systems mgr		(PXE) / Some: (Front: tv monitor	Wake on LAN CD-ROM: 48> vo USB (Ver: (analog DB-1	I [®] (-20X ⁶ (2.0); <i>B</i> (5)	CD-RC ack: tw	21 / on planal M, IDE; some o serial (9-pin and memory /	e: CDRV n), paralle	· V/DVD-RON el, two USB	M Combo:4 (Ver 2.0),	8X/32X/ keyboar	/48X/16X ⁶ rd, mouse,	/ None st ethernet	andard (RJ-45),
Graphics con	troller	ATI® RN	50(ES1000) / 1	6MB SE	DRAM s	std/max / on pla	anar / ana	log 15-pin /	up to 1024	x 768 x 3	2 bit @100	ıHz	
Security						ıt / power-on rd/mouse/disp		d / boot se	quence				
Software		installati	ion and config	guration	tool) i	ited network on ncluded and I software) option	BM	2x1GBPC2 2x2GBPC2	-4200 CL3 E -4200 CL3 E -4200 CL3 E ATA-150 (7.	CC DDR2 CC DDR2	RoHS RoHS)	30R5148 30R5149 30R5150 39M4500
Keyboard / m Cooling fans Power supply		Three vasupply) 310 wat Server F	ariable speed / not redunda ts / universal ;	fans (ont / not / manuariant / not h	cpu he hot-sw al switc ot-swa	hing / Automa p /no redunda	ıtic	IBM 160GB IBM 250GB IBM 500GB 48X/32X/48 IBM Multi-bi IBM USB Po 36/72GB DI VXA-2 Tape IBM 20/40G IBM ServeR	SATA-150 (7 SATA-150 (7 SATA-150 (7 X/16X Max ⁶ (urner Plus ortable Diske DS/5 Internal	7.2K) simp 7.2K) simp 7.2K) simp 7.2K) simp CD-RW/D ette Drive Tape Dri nal Tape D A Controlle	ole-swap HE ole-swap HE ole-swap HE VD (black) ve Orive)D	39M4504 39M4508 39M4514 32R2905 32R2906 40K1692 71P9145 59P6746 48P7042 71P8648 13N2249

FSB MHz

Memory

Cache

Speed¹/Core



Bay ① 5.25", HH 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, CD-ROM 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
- → H 17.24" x W 8.07" x D 19.57"
- → H 438mm x W 205mm x D 497mm ♦ 30.86 to 37.48 pounds (14 to 17kg)
- ♦BTU Output:

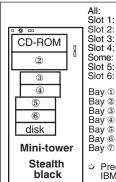
Minimum: 326 Btu/hr (96 watts) Maximum: 1024 Btu/hr (300 watts)

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

BM @server TM > For GAV systems, lowercase "y					xRE	F by eS	erver Field S	kills and	Educat	ion Team
IBM® Machine Type GAV-model	Proccessor / Speed	L2 FSB cache MHz	Memory	Disk/Disk controller		PCI slots x bays	Hard disk bays	Power Supply	Ethernet	Available date
8485/8490 10y-10x Pe 8485/8490 12y-12x Pe 8485/8490 12y-12x Pe 8485/8490 1Ay-1Ax Pe 8485/8490 2Ay-2Ax Pe 8485/8490 3Ay-3Ax Pe 8485/8490 3Ay-3Ax Pe 8485/8490 70y-70x Pe 8485/8490 7Ay-7Ax Pe 8485/8490 8Ay-8Ax Pe 8485/8490 8Ay-8Ax Pe	entium 4 531 3.0GH entium 4 630 3.0GH entium 4 640 3.2GH entium 4 650 3.2GH entium 4 650 3.2GH entium D 820 2.8GH entium D 820 2.8GH entium D 830 3.0GH	z¹ 1MB 800 z 1MB 800 z 2MB 800 z 2X1MB 800 z 2X1MB 800 z 2X1MB 800	512MB 1GB	80GB/SATA None/SATA None/SATA 80GB/SATA None/SAS/SA None/SAS/SA None/SAS/SA None/SATA None/SAS/SA None/SAS/SA None/SAS/SA	1.0TB 1.0TB 1.0TB 1.0TB 1.0TB 1.0TB TA 1.2TB TA 1.2TB 1.0TB TA 1.2TB	4 x 7 4 4 x 7 4 4 x 7 4 4 x 7 4 4 x 7 4 6 x 7 4 6 x 7 4 6 x 7 4 6 x 7 4	fixed simple-swap simple-swap fixed simple-swap hot-swap hot-swap simple-swap hot-swap	1x400W 1x400W 1x400W 1x400W 1x400W 1x400W 2x430W 2x430W 1x400W 2x430W	Gigabit Gigabit Gigabit Gigabit Gigabit Gigabit Gigabit Gigabit Gigabit Gigabit	Oct 2005 Oct 2005 Oct 2005 Oct 2005 Oct 2005 Oct 2005 Oct 2005 Oct 2005
Positioning Processor(s)	Single socket, entry Intel® Pentium 4 up Optimized for Exte Up to 2MB std on P	to 3.4GHz Sinded Memory entium 4 / 2x1	i <mark>ngle Core</mark> y 64 Tech MB std on	800MHz FSB nology (EM64 Pentium D	/ Pentium T)	D up to	3.0GHz Dua			
Implementation SMP support	Motherboard contain 2 PCI) some: six slo No SMP support / n	ts(1 PCI Expre	ess x8, 1 F	CI Express x1	, 2 PCI, 2 I	PCI-X), in	tegrated SAT	ess x8, A and Gi	gabit Eth	rernet.
Memory	512MB or 1GB std / 8 DDR2-SDRAM / All	GB ¹³ max / fou Error Checking	ır 184-pin g g and Corr	old-plated DIMM recting (ECC) /	l sockets / c DIMMs and	ne or two ECC mer	socket used / mory controller	PC2-4200 / industry	533MH; std / unl	z ECC ouffered
SAS disk controller IDE disk controller SATA disk controller Cables Disk RAID Controller	Integrated SAS con- Enhanced IDE / AT/ Four channel SATA One 2-drop EIDE ca Some: 80GB SATA IBM ServeRAID™ 86	a-100 / integrat controller (3.0 ables (to CD-F 7,200 rpm / 9	ted in I/O (OGB/sec) / ROM) / one 0.0 ms seel	Controller Hub / / supports 4 dr e 1-drop SATA k / S.M.A.R.T.	ives stand cable per	ard installed				
Rack support Bus slots (see below) Chipset	IBM ServeRAID™ 8e (ŘAID Ö, 1) / on planar / supports SATA or SAS interface 5U⁴ rack mount support via tower-to-rack kit option elow) 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 E CD-ROM: 48X-20X ⁶ Front: two USB (2.0 Diagnostic LEDs / err Mini-baseboard mar failure, and voltages	nvironment (P CD-ROM, ID I; Back: two sor IEDs for fantagement conf	XE) / Wak E / None : erial (9-pir s and mem troller / IPI	e on LAN® hatandard n), parallel, two ory / server diag MI 1.5 / monito	USB (2.0) gnostic prog	, keyboard rams store and proc	d, mouse, eth ed on IBM Enh essor temper	anced Dia ature, fa	agnostics n speed	and
Graphics controller	ATI® RN50(ES1000) /	16MB SDRAM	std/max / d	on planar / analo	ng 15-pin / u	p to 1024	c768x32bit@85	5Hz		
Security Software	Mechanical side pan power-on password without keyboard/m ServerGuide™ (CD installation and cont management), IBM management softwa	/ boot sequer ouse -based autom iguration tool) Director (syst	ated netw , ServeR A em hardw	I / operation ork OS IID™ (RAID are	2GB(2x1GB) 4GB(2x2GB) IBM 80GB SA IBM 160GB S IBM 250GB S IBM 500GB S 80GB Hot-Sw 160GB Hot-Sy	PC2-4200 Cl PC2-4200 Cl TA (7.2K) sir ATA (7.2K) s ATA (7.2K) s ATA (7.2K) s rap SATA HD	DD	4S 4S		30R5148 30R5149 30R5150 39M4500 39M4504 39M4508 39M4514 39M4518 39M4522 39M4522
Keyboard / mouse Cooling fans Power supply	Optional Three fans (fansink, on SAS models / no Some: 400W / not h some: 430W / hot-sy switch / Automatic S cooling fan in power	redundant / n ot-swap / no re vap / redundar erver Restart	of hot-swa edundancy nt / all: univ (ASR) /	/	IBM Remote S IBM 5Ux20D IBM ServeRA	/16X Max° CI Supervisor Ad Tower-to-Ra ID-7t SATA Ir	J-RW/DVD-ROM (lapter II (PCI adap	ter)	k)	26K5709 26K5710 26K5711 26K5697 26K5698 32R2905 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 5:

- 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-ROMincluded
- CD-HOMIRICALDED Four stabilizing feet H 17.25" x W 8.5" x D 21.25" H 448mm x W 215.9mm x D 539.75mm 36 to 45.8 pounds (16.3 to 20.8kg)

Maximum SATA capacity: 2TB¹³ (4 disks x 500GB) Maximum hot-swap SAS capacity: 1.2TB¹³ (4 disks x 300GB)

LIMITED WARRANTY³

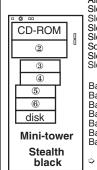
1 year parts and labor standard 8485 MTM 3 year parts and labor standard 8490 MTM

- International Warranty Service3
- On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time

- 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
- 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

For GAV systems, lowercase "y" should be replaced with a country-specific code IBM® Machine Disk/Disk Maximum PCI slots **FSB** Proccessor / Speed Memory Supply Ethernet **GAV-model** cache MHz controller Capacity x bays disk bays date Type Pentium® 4 521 2.8GHz¹ 1MB
Pentium 4 631 3.0GHz 2MB
Pentium D 920 2.8GHz 4MB
Pentium D 930 3.0GHz 4MB
Pentium D 940 3.2GHz 4MB
Pentium D 940 3.2GHz 4MB simple-swap 1x400W Gigabit Feb 2006 simple-swap 1x400W Gigabit Feb 2006 simple-swap 1x400W Gigabit Feb 2006 hot-swap 1x400W Gigabit Feb 2006 1.0TB 4 x 7 1.0TB 4 x 7 1.0TB 4 x 7 1.0TB 4 x 7 1.0TB 6 x 7 1.0TB 6 x 7 1.2TB 6 x 7 8485/8490 A2y-A2x 800 512MB None/SATA 800 512MB None/SATA 800 512MB None/SATA 800 512MB None/SAS/SATA 800 512MB None/SAS/SATA 800 2x512MB None/SAS/SATA 800 2x512MB None/SAS/SATA 8485/8490 B2y-B2x Pentium 4 8485/8490 G2y-G2x Pentium D 8485/8490 H2y-H2x Pentium D 4 4 4 1x400W Gigabit Feb 2006 1x400W Gigabit Feb 2006 8485/8490 J2y-J2x hot-swap 8485/8490 J4ý-J4x 4 hot-swap Single socket, entry server for small and medium size business' and distributed enterprises Positioning Intel® Pentium 4 up to 3.0GHz Single-Core 800MHz FSB / Pentium D up to 3.2GHz Dual-Core 800MHz FSB / All Optimized for Extended Memory 64 Technology (EM64T)

1 or 2MB std on Pentium 4 / 4MB std on Pentium D Processor(s) L2 cache Motherboard contains one LGA-775 socket, four DIMM sockets, some: four slots(1 PCI Express x8, 1 PCI Express x1 Implementation 2 PCI) some: six slots(1 PCI Express x8, 1 PCI Express x1, 2 PCI, 2 PCI-X), integrated SATA and Gigabit Ethernet. No SMP support / no processor upgrade SMP support 512MB or 1GB std / 8GB13 max / four 184-pin gold-plated DIMM sockets / one or two socket used / PC2-4200 533MHz ECC DDR2-SDRAM / All Error Checking and Correcting (ECC) / DIMMs and ECC memory controller / industry std / unbuffered Memory Integrated SAS controller / supports SAS or SATA drives Enhanced IDE / ATA-100 / integrated in I/O Controller Hub / one connector on planar SAS disk controller IDE disk controller Four channel SATA controller (3.0GB/sec) / supports 4 drives standard
One 2-drop EIDE cables (to CD-ROM) / one 1-drop SATA cable per installed hard disk
Some: 80GB SATA / 7,200 rpm / 9.0 ms seek / S.M.A.R.T. SATA disk controller Cables Disk **RAID** Controller IBM ServeRAID™ 8e (RAID 0, 1) / on planar / supports SATA or SAS interface 5U⁴ rack mount support via tower-to-rack kit option
All: one PCI Express® bus / one 64-bit PCIe™ x8 / one 64-bit PCIe x1/ two 32-bit 33MHz 5v PCI 2.2 slots /
some: two 64-bit 66MHz 3.3v PCI-X slots / no hot-swap Active™ PCI slots
Intel E7230 chipset / Memory Controller Hub (MCH) / I/O Controller Hub (ICH7R) for PCI 2.2, ATA-100 EIDE, ethernet Rack support Bus slots (see below) Chipset MAC, USB, Low Pin Count Interface / Firmware Hub / SMSC® LPC47M192 Super I/O for diskette, parallel, serial, keyboard, mouse 10/100/1000 gigabit / Broadcom® 5721 / on planar / full-duplex / PHY and MAC layers / Preboot eXecution Environment (PXE) / Wake on LAN® Ethernet CD-ROM / diskette CD-ROM: 48X-20X6 CD-ROM, IDE / None standard Ports Front: two USB (2.0); Back: two serial (9-pin), parallel, two USB (2.0), keyboard, mouse, ethernet (RJ45) and monitor Diagnostic LEDs / error LEDs for fans and memory / server diagnostic programs stored on IBM Enhanced Diagnostics CD Mini-baseboard management controller / IPMI 1.5 / monitors system and processor temperature, fan speed and Diagnostics Systems mgmt failure, and voltages / secure remote power on/off / support for optional Remote Supervisor Adapter II Graphics controller ATI® RN50(ES1000) / 16MB SDRAM std/max / on planar / analog 15-pin / up to 1024x768x32bit@85Hz 512MB PC2-4200 CL3 ECC DDR2RoHS
2GB(2x1GB) PC2-4200 CL3 ECC DDR2 RoHS
4GB(2x2GB) PC2-4200 CL3 ECC DDR2 RoHS
1BM 80GB SATA (7.2K) simple-swap HDD
1BM 180GB SATA (7.2K) simple-swap HDD
1BM 180GB SATA (7.2K) simple-swap HDD
1BM 50GB Hot-Swap SATA HDD
250GB Hot-Swap SATA HDD
250GB Hot-Swap SATA HDD
73GB 10K 3.5" SAS Hot-Swap HDD
30GB 10K 3.5" SAS Hot-Swap HDD
30GB 10K 3.5" SAS Hot-Swap HDD
36GB 15K 3.5" SAS Hot-Swap HDD
36GB 15K 3.5" SAS Hot-Swap HDD
36GB 15K 3.5" SAS Hot-Swap HDD
36B 15K 3.5" SAS Hot-Swap HDD
38B 15K 3.5" Security Mechanical side panel key lock / U-Bolt Tie-down capability power-on password / boot sequence control / operation 30R5148 30R5149 30R5150 39M4500 39M4504 39M4508 without keyboard/mouse Software ServerGuide™ (CD-based automated network OS installation and configuration tool), ServeRAID™ (RAID management), IBM Director (system hardware management software) and many utilities 39M4514 39M4518 39M4522 39M4526 Keyboard / mouse Optional 40K1039 40K1040 40K1041 Three fans (fansink, rear, pwr supply) plus additional fan on SAS models / not redundant / not hot-swap Cooling fans 40K1042 Some: 400W / not hot-swap / no redundancy 40K1043 32R2905 59P2984 Power supply some: 430W / hot-swap / redundant / all: universal / auto switch / Automatic Server Restart (ASR) / 39R9361 cooling fan in power supply (variable speed) 71P8648



- 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) Slot 1: fullsize, Slot 2: fullsize, Slot 3: fullsize Slot 4: fullsize, Some: fullsize, fullsize, 64-bit 66MHz, PCI-X (3.3v) 64-bit 66MHz, PCI-X (3.3v) Slot 5:
- Bay ① 5.25", HH 1.6", access, CD-ROM
 Bay ② 5.25", HH 1.6", access, open (no disk)
 Bay ③ 3.5", SL 1", access, open
 Bay ④ 3.5", SL 1", access, std disk (some)
 Bay ⑤ 3.5", SL 1", access, open
 Bay ⑥ 3.5", SL 1", access, open
 Bay ⑦ 3.5", SL 1", access, open
- Predictive Failure Analysis on disk(s) with IBM Director can alert the administrator of an imminent component failure
- Redundant power supplies standard in some models

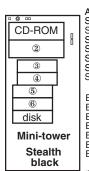
- Removable left side panel
 Configuration/Setup Utility (in flash) memory) invoked by pressing F1 at startup
- Advanced Configuration Power Interface (ACPI) 1.0
- Device Drivers and Diagnostics CD-ROM included
- Four stabilizing feet H 17.25" x W 8.5" x D 21.25" H 448mm x W 215.9mm x D 539.75mm
- 36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

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

LIMITED WARRANTY³

- 1 year parts and labor standard 8485 MTM 3 year parts and labor standard 8490 MTM
- International Warranty Service3
- On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- 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
- 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

For GAV systems, lowercase "	y" should be replaced with a country-specific code.											
IBM® Machine Type GAV-model	Proccessor / Speed L2 FSB cache MHz Mem	Disk/Disk controller		Hard Power Availa kbays Supply Ethernet c								
8485/8490 B4y-B4x F 8485/8490 B6y-B6x F 8485/8490 F2y-F2x F 8485/8490 F4y-F4x F 8485/8490 H4y-H4y F	Pentium® 4 631 3.0GHz¹ 2MB 800 1x51 Pentium 4 631 3.0GHz 2MB 800 2x51 Pentium 4 661 3.6GHz 2MB 800 1x51 Pentium 4 661 3.6GHz 2MB 800 2x51	12MB 1x160GB/SATA 12MB 2x160GB/SATA 12MB None/SATA 12MB None/SAS/SAT	2.0TB 4 x 7 4 sim	ple-swap 1x400W Gigabit May 2 ple-swap 1x400W Gigabit May 2 ple-swap 1x400W Gigabit May 2 swap 1x400W Gigabit May 2 ple-swap 1x400W Gigabit May 2 swap 2x430W Gigabit May 2 swap 2x430W Gigabit May 2 swap 2x430W Gigabit May 2								
Positioning Processor(s)	Single socket, entry server for small and Intel® Pentium 4 up to 3.6GHz Single- Optimized for Extended Memory 64 2MB std on Pentium 4 / 4MB std on Pen	-Core 800MHz FSB / Technology (EM64T)	ess' and distributed enter	rprises								
Implementation SMP support	Motherboard contains one LGA-775 socket, four DIMM sockets, some: four slots(1 PCI Express x8, 1 PCI Express x1, 2 PCI) some: six slots(1 PCI Express x8, 1 PCI Express x1, 2 PCI, 2 PCI-X), integrated SATA and Gigabit Ethernet. No SMP support / no processor upgrade											
Memory		512MB or 1GB std / 8GB ¹³ max / four 184-pin gold-plated DIMM sockets / one or two socket used / PC2-4200 533MHz ECC DDR2-SDRAM / All Error Checking and Correcting (ECC) / DIMMs and ECC memory controller / industry std / unbuffered										
SAS disk controller IDE disk controller SATA disk controller Cables Disk RAID Controller	Integrated SAS controller / supports SA Enhanced IDE / ATA-100 / integrated in Four channel SATA controller (3.0GB/s One 2-drop EIDE cables (to CD-ROM) Some: 160GB SATA; some: 250GB SAT IBM ServeRAID™ 8e (RAID 0, 1) / on pla	I/O Controller Hub / c sec) / supports 4 driv / one 1-drop SATA c TA / 7,200 rpm / 9.0 m	es standard able per installed hard on seek / S.M.A.R.T.	disk								
Rack support Bus slots (see below) Chipset	5U ⁴ rack mount support via tower-to-rack kit option by) All: one PCI Express® bus / one 64-bit PCle™ x8 / one 64-bit PCle 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 / Broadcom® 5721 / Preboot eXecution Environment (PXE) / CD-ROM: 48X-20X6 CD-ROM, IDE / N. Front: two USB (2.0); Back: two serial Diagnostic LEDs / error LEDs for fans and Mini-baseboard management controller failure, and voltages / secure remote	Wake on LAN® lone standard (9-pin), parallel, two U memory / server diagn / IPMI 1.5 / monitors	JSB (2.0), keyboard, more ostic programs stored on a system and processor	use, ethernet (RJ45) and monit BM Enhanced Diagnostics CD temperature, fan speed and								
Graphics controller	ATI® RN50(ES1000) / 16MB SDRAM std/m	nax / on planar / analog	15-pin / up to 1024x768x3	32bit@85Hz								
Security Software	Mechanical side panel key lock / U-Bolt power-on password / boot sequence continuous without keyboard/mouse ServerGuide™ (CD-based automated installation and configuration tool), Serv	ontrol / operation 2	12MB PC2-4200 CL3 ECC DDR2 GB(2x1GB) PC2-4200 CL3 ECC GB(2x2GB) PC2-4200 CL3 ECC 3M 80GB SATA (7.2K) simple-s 3M 160GB SATA (7.2K) simple-s 3M 250GB SATA (7.2K) simple-s 3M 500GB SATA (7.2K) simple-s	DDR2 RoHS 30R5								
Keyboard / mouse Cooling fans Power supply	Optional Three fans (fansink, rear, pwr supply) pi on SAS models / not redundant / not hot Some: 400W / not hot-swap / no redund some: 430W / hot-swap / redundant / all switch / Automatic Server Restart (ASR)	es 2 7 1. Ilus additional fan 3 3- t-swap 3 dancy / 1 Il: universal / auto 1 Il	OGB Hot-Swap SATA HDD OGOGB Hot-Swap SATA HDD SOGB Hot-Swap SATA HDD SGB Hot-Swap SATA HDD AGB 10K 3.5" SAS Hot-Swap HD GGB 10K 3.5" SAS Hot-Swap HD OGB 10K 3.5" SAS Hot-Swap HD SGB 15K 3.5" SAS Hot-Swap HD SW32X/48X/16X Max* CD-RW/D SW/32X/48X/16X Max* CD-RW/D SW SW20X/48X/16X MAX* CD-RW/D SW20X/48X MAX* CD-RW/D SW20X/4	39M/ 39M/ 39M/ 39M/ 39M/ 40K1 30D 40K1 50D 40K1 50D 40K1 50D 40K1 50D 50D 50D 50D 50D 50D 50D 50D 50D 50D								
Keyboard / mouse Cooling fans	without keyboard/mouse ServerGuide™ (CD-based automated installation and configuration tool), Serveranagement), IBM Director (system hanagement software) and many utilitie. Optional Three fans (fansink, rear, pwr supply) pron SAS models / not redundant / not hot Some: 400W / not hot-swap / no redundant / all	network OS veRAID™ (RAID lardware es lus additional fan t-swap dancy / lu universal / auto) / leed)	3M 80GB SATA (7.2K) simple-sw 3M 160GB SATA (7.2K) simple-s 3M 250GB SATA (7.2K) simple-s 3M 250GB SATA (7.2K) simple-s 9M 500GB SATA (7.2K) simple-s 9M 50GB Hot-Swap SATA HDD 9M 50GB Hot-Swap SATA HDD 9M 50GB HOT-Swap SATA HDD 9M 50GB 10K 3.5" SAS Hot-Swap HD 9M 50GB 10K 3.5" SAS Hot-Swap HD 9M 50GB 15K 3.5" SAS HOT-Swap HD	ap HDD								



- fullsize, 64-bit PCI-E x8 (4GBps) fullsize, 64-bit PCI-E x1 (500MBps) fullsize, 32-bit 33MHz, PCI 2.2 (5v) fullsize, 32-bit 33MHz, PCI 2.2 (5v) Slot 1: Slot 2: Slot 3: Slot 4 Some: fullsize, 64-bit 66MHz, PCI-X (3.3v) fullsize, 64-bit 66MHz, PCI-X (3.3v) Slot 6:
- Bav ① Bay ② Bay 3
- 5.25", HH 1.6", access, CD-ROM 5.25", HH 1.6", access, open (no disk) 3.5", SL 1", access, open 3.5", SL 1", access, std disk (some) 3.5", SL 1", access, open 3.5", SL 1", access, open 3.5", SL 1", access, open Bay 4 Bay ⑤ Bay 6 Bay ®
- 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-ROMincluded
- → Four stabilizing feet
 → H 17.25" x W 8.5" x D 21.25"
 → H 448mm x W 215.9mm x D 539.75mm
- 36 to 45.8 pounds (16.3 to 20.8kg)

Maximum SATA capacity: 2TB13 (4 disks x 500GB) Maximum hot-swap SAS capacity: 1.2TB¹³ (4 disks x 300GB)

LIMITED WARRANTY³

- 1 year parts and labor standard 8485 MTM 3 year parts and labor standard 8490 MTM
- International Warranty Service3

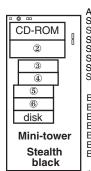
Other options at ibm.com/pc/us/accessories

- International Warranty Service³
 On site, 8 am-5 pm,
 Mon-Friexcluding 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/

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

 24x7¹⁴toll-free support for warranty issues during the warranty period³

IBM®Machine Type model	Proccessor / Speed	L2 FSB cache MHz	Memory	Disk/Disk controller	Maximum Capacity	PCI slots x bays	Hard disk bays	Power Supply	Ethernet	Available date
8485/8490 14U 8485/8490 16U 8485/8490 72U 8485/8490 74U 8485/8490 JAU	Pentium® 4 531 3.0GHz Pentium 4 531 3.0GHz Pentium D 820 2.8GHz Pentium D 820 2.8GHz Pentium D 945 3.4GHz	2 1MB 800 2MB 800 2MB 800	1x512MB 2x512MB	None/SAS/SATA 1x160GB/SATA None/SAS/SATA 2x250GB/SATA None/SAS/SATA	2.0TB 1.2TB 2.0TB	6 x 7 4 x 7 6 x 7 4 x 7 6 x 7	4 hot-swap 4 simple-swap 4 hot-swap 4 simple-swap 4 hot-swap	1x400W 1x400W 1x400W	Giğabit Gigabit Gigabit	Sep 2006 Sep 2006 Sep 2006 Sep 2006 Sep 2006
Positioning Processor(s) L2 cache Implementation SMP support	Single socket, entr Intel® Pentium 4 L Optimized for Ext 1MB std on Pentium Motherboard conta 2 PCI) some: six si No SMP support /	ip to 3.0GH tended Me m 4 / 2 or 4 ins one LG lots(1 PCI E	Iz Single-Comory 64 Te MB std on PA-775 socke Express x8,	ore 800MHz FSB chnology (EM64 Pentium D et, four DIMM soo	F / Pentiu F T) ckets, som	m D up t	o 3.4GHz Du	oress x8,	1 PCI E	xpress x1,
Memory	512MB or 1GB std / DDR2-SDRAM / Al									
SAS disk controlle IDE disk controlle SATA disk control Cables Disk RAID Controller	r Enhanced IDE / AT	A-100 / inte A controller cables (to C A; some: 2	egrated in I/0 (3.0GB/sec D-ROM) / c 50GB SATA	O Controller Hub / c) / supports 4 drone 1-drop SATA / 7,200 rpm / 9.0	rives stand cable ped ms seek	dard r installed / S.M.A.I	hard disk R.T.			
Rack support Bus slots (see be Chipset	5U ⁴ rack mount su low) All: one PCI Expres some: two 64-bit 66 Intel E7230 chipse MAC, USB, Low Pi keyboard, mouse	.s [®] bus / one 6MHz 3.3v I et / Memory	e 64-bit PCle PCI-X slots / Controller I	[™] xፄ / one 64-bit no hot-swap Acti Hub (MCH) / I/O (ve™ PCI s Controller	slots Hub (ICH	I7R) for PCI 2	.2, ATA-	100 EIDE	
Ethernet Optical / diskette Ports Diagnostics Systems mgmt	10/100/1000 gigabi Preboot eXecution Some: 48X-20X ⁶ C Front: two USB (2. Diagnostic LEDs / ei Mini-baseboard ma failure, and voltage	Environment CD-ROM, ID CD-ROM, ID CO); Back: tror LEDs for the control of the con	nt (PXE) / W DE; <i>Some:</i> 4 wo serial (9- r fans and mo controller /	ake on LAN® 8X-32X-48X-16X pin), parallel, two emory / server diad IPMI 1.5 / monito	⁶ CD-RW/ USB (2.0 gnostic pro ors system	/DVD-RO), keyboa grams sto n and pro	M, IDE / None ard, mouse, et red on IBM En accessor tempe	hernet (F hanced D rature, fa	IJ45) and liagnostics an speed	S CD I and
Graphics controlle	er ATI® RN50(ES1000)	/ 16MB SD	RAM std/max	/ on planar / analo	og 15-pin /	up to 102	4x768x32bit@8	35Hz		
Security Software	Mechanical side pa power-on passwor without keyboard/r ServerGuide™ (C installation and con management), IBM management softw	d / boot se mouse D-based au nfiguration // Director (quence cont utomated ne tool), Serve l (system hard	trol / operation twork OS RAID™ (RAID	2GB(2x1GE 4GB(2x2GE IBM 80GB S IBM 160GB IBM 250GB IBM 500GB 80GB Hot- 160GB Hot-	SATA (7.2K) s SATA (7.2K) SATA (7.2K)	CL3 ECC DDR2 CL3 ECC DDR2 simple-swap HDD simple-swap HDD simple-swap HDD simple-swap HDD l simple-swap HDD HDD HDD)		30R5148 30R5149 30R5150 39M4500 39M4504 39M4508 39M4514 39M4518 39M4522 39M4526
Keyboard / mouse Cooling fans Power supply	Optional Three fans (fansink on SAS models / n Some: 400W / not some: 430W / hot-s switch / Automatic cooling fan in powe	ot redundar hot-swap / swap / redu Server Res	nt / not hot-si no redundan ndant / all: u start (ASR) /	wap icy / niversal / auto	73GB10K3 146GB10K 300GB10K 36GB15K3 73GB15K3 48X/32X/48 IBM Remote IBM 5Ux20I IBM ServeR	.5" SAS Hot- 3.5" SAS Hot- 3.5" SAS Hot- .5" SAS Hot- .5" SAS Hot- X/16X Max ⁶ & Supervisor, D Tower-to-F AID-7t SATA	Swap HDD t-Swap HDD t-Swap HDD Swap HDD Swap HDD CD-RW/DVD-RON Adapter II (PCI ada	pter) ler	ack)	40K1039 40K1040 40K1041 40K1042 40K1043 32R2905 59P2984 39R9361 71P8648



- 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 1: Slot 2: fullsize, Slot 3: fullsize, Slot 4 fullsize. Some: Slot 5: Slot 6: fullsize, 64-bit 66MHz, PCI-X (3.3v) fullsize, 64-bit 66MHz, PCI-X (3.3v)
- Bay ① 5.25", HH 1.6", access, CD-ROM
 Bay ② 5.25", HH 1.6", access, open (no disk)
 Bay ③ 3.5", SL 1", access, open
 Bay ④ 3.5", SL 1", access, std disk (some)
 Bay ⑤ 3.5", SL 1", access, open
 Bay ⑥ 3.5", SL 1", access, open
 Bay ⑦ 3.5", SL 1", access, open
- Predictive Failure Analysis on disk(s) with IBM Director can alert the administrator of an imminent component failure
- Redundant power supplies standard in some models

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

Maximum SATA capacity: 2TB13 (4 disks x 500GB) Maximum hot-swap SAS capacity: 1.2TB¹³ (4 disks x 300GB)

LIMITED WARRANTY³

- 1 year parts and labor standard 8485 MTM
 3 year parts and labor standard 8490 MTM
- International Warranty Service3

- International Warranty Service³
 On site, 8 am-5 pm,
 Mon-Friexcluding 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/

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

 24x7¹⁴toll-free support for warranty issues during the warranty period³

IBM® Type-model Processor		L2 cache		Memory	Disk		Disk controlle		-swap k bays	PCI slots x bays	Power su number an		Ethernet	Available date
8649-42X 1 x Xeon ^{TI} 8649-4AX 1 x Xeon 8649-52X 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	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 UI None (ope None (ope 36.4GB UIt None (ope None (ope 36.4GB UIt None (ope None (ope	n-bay) ra320 10 n-bay) n-bay) ra320 10 n-bay)	Ultra32 K Ultra32 Ultra32	0 6 hot- 0 None 0 6 hot- 0 6 hot- 0 None 0 6 hot-	swap (4 fixed) swap swap (4 fixed) swap	6 x 9 6 x 9 6 x 7 6 x 9 6 x 9	One fixed One fixed One fixed One fixed	d undant d d undant d d	Giğabit Gigabit Gigabit Gigabit Gigabit Gigabit Gigabit	Feb 2004 Feb 2004 Feb 2004 Feb 2004 Feb 2004 Feb 2004 Feb 2004 Feb 2004
Processor(s) SMP - L2 Cache Implementation	2-way Syster	SMP / umboard c	ip to tv ontains	vo Xeon F s two Intel	Iz with 533 l Processors (s 604-pin mic available AG	same spec ro-PGA Z	ed/cache s IF sockets	iże) / 512F , four DIMI	(B std a M slots, s	eading te and max seven slo	chnology at process ts (one PCI	or spee 2.2, fo	d ur PCI-X,	one Mini
Memory	DDR-S 2-way	SDRAM I memorv	DIMMs interle	s / four DII ave / dua	lots used / to MM gold-con I channel / E and detects	nector slo Error Che	its on syste cking and	emboard / Correctin	DIMMs r na (ECC)	must bĕ iı) via 16-b	nstalled in in it Checksu	natched m Chi r	∣pairs [a okill™ (co	rrects 1, 2,
IDE disk controller SCSI disk controller SCSI channels and cables	support 5, 00, one 4- SCSI conne	ogic® 530 rts RAID 10, 1E0, drop 16- cable to 6 ctor	C1030 -1 miri 50 (ins bit 68- 6-bay b	/ dual ch roring (Er stalled only oin LVD S backplane	A-100 / integ annel Ultra: nbedded Mir y in Slot 4) T CSI cable fr ; External c	320 SCSI roring) / s wo 16-bit om syster hannel: ca	controller hared with channels (nboard to i ble availab	(LVD 320 optional II one interna nternal dis ole as optio	MB/sec) 3M Serve al and on ks bays;	/ on plan eRAID™- le externa Hot-swal	ar / 64-bit 1 5i Controller I) / <i>Internal</i> 5 models: o	<i>cnanne</i> ne 1-dr	<i>l:</i> Fixed d op 16-bit	isk models: 68-pin LVD
Cables Disk - features	One S Some.	CSI cabl 36.4GE	e (liste 3 Ultra3	d above), 320 SCSI	one 2-drop / 10K rpm / 4	EIDE cab 4.7 ms av	le (to CD-F erage read	ROM) seek / S.N	И.A.R.T.⁵	5				
Rack support Bus slots (see below) Chipset	Four 6 Intel E for slot	34-bit 100 27505 ch ts 2 and 3	MHż F ipset / 3 and (PCI-X 1.0 / E7505 M ethernet c	ver-to-rack ki / one PCI 2.2 ICH (Memon ontroller; Bu , ATA-100 E	2 / öne Mir y Controlle s B for slo	er Hub) for ts 4 and 5	AGP 8X s and SCSI	lot, P64F controlle	12, ICH4 r) / I/O Co	/ P64H2 for ontroller Hul	two PC (ICH4	CI-X buse) for PCI	s (Bus A 2.2 bus
Ethernet CD-ROM / diskette Ports Diagnostics Systems mgmt cntrl	CD-RO Front: monito Diagno Winbo	n planar / OM: 48X- two USI or (analogostic LED and® W79	/ PCI-X -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	net controller OMHz / full of IDE / Diske ck: two USB chone-in (mo for fans and anar / monito Supervisor	luplex / W tte: 3.5" 1 (Ver 2.0), no), line-in memory / ors system	ake on LAI .44MB disk two serial n (stereo), server dia n and proce	N® / Alert S kette drive (9-pin), pa line-out (st gnostic pro- essor temp	rallel, key tereo) ograms s erature, t	Format 1 yboard, n stored on fan speed	.0 / one rea nouse, ether IBM Enhan I and failure	r RJ-45 met (RJ ced Dia , and vo	port I-45), agnostics	CD
Graphics controller	SVGA	/ ATI® R	ageXL	/ on Mini	PCI adapter	/ 8MB SD	RAM std a	and max / I	PCI 2.2 3	32-bit 33N	IHz / analog	15-pin	D-Sub co	onn
Security	hot-sw power	ap mode on pass	els) / o _l word /	otional U-I boot sequ	(locks hot-s Bolt support uence contro urity slot (for	via knocko I / operati	out /	Xeon 2.80 Xeon 3.06 2x256MB) GHz/53 3 GHz/53 PC2100	33/512KB 33/512KB CL2.5 E	L2 Cache I L2 Cache I L2 Cache I CC non-Chi CDDR-SDF	Proc Up Proc Up pkill DIN	og og	24P7861 24P8054 24P8122 73P2868 33L5038
Software	and co		où tool), IBM Dir	omated netw rector (syster		re mgmt	1GB PC2 2GB PC2 IBM 73.40	100 CL2 100 CL2 3B 10K l	.5 ECC [.5 ECC [Jltra320 §	DR-SDRAI DR-SDRAI SCSI 68-pin	M DIMN M DIMN (not ho	/I o <u>t-swp)</u>	33L5039 33L5040 32P0724
Keyboard / mouse Cooling fans Power supply(s)	up to s power All: n Some. xBX: All:	six / three supply o ot redund one 425 two 514 universa	e for prage factorial fact	rocessor(s ns (three not hot-swa std and m std and m tage-sens	ouse (both b.), memory, ain dual powe ap / all variat ax / not hot-ax / hot-swaping / Automatower supply	and disk ber supply role speed swap p / redundatic Serve	ays / two nodel) lant	IBM 36.40 IBM 73GE IBM 146G 40X/12X/4 IBM Remail IBM 4U E IBM Serve IBM Serve	GB 15K U 3 10K Ult GB 10K U 40X Max ote Supe extended eRAID-5i eRAID-6i	Jltra320 SC tra320 SC Jltra320 S 6 CD-RW ervisor Ad Depth To Controlle Controlle	CSI 68-pin CSI Hot-Swa CSI Hot-Swa CSI Hot-Swa internal (bla pwer-to-Rac er (adapter f foc/us/acces	vap SL up SL H vap SL I ack) I adaptor k Kit or Slot or Slot	HDD DD HDD er) 4)	32P0725 06P5776 32P0727 32P0728 22P6976 59P2984 59P4817 25P3492 71P8595
Slot 1: half-length, 32 Slot 2: fullsize, 64-bit Slot 3: fullsize, 64-bit Slot 4: fullsize, 64-bit	100MI 100MI	Hz, PCI-) Hz, PCI-)	X 1.0 (X 1.0 (3.Śv) 3.3v)	\$	Remova Configur	lack color ble left sid ration/Setu F1 at star	e panel up Utility ir		ру		ED WA	RRANT	Y ³

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

Slot 6: Mini PCI type III, 32-bit 33MHz (5v) - used graphics Slot: fullsize, AGP 8X Pro50 (1.5v) - unavailable

* Extended slot for opt IBM ServeRAID-5i

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 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

DIVI (C BCI VCI	X3eries 220 (0040) (1	cordary 2000)	ATILI DY COCI	vei i leid Skills alla Ludo	ation ream
IBM® Type-GAV-model Proce	L2 FSB essor GHz¹cache MHz Memory	Disk Disk controller	Hot-swap PCI slo		Available t date
8648-40y-40x 1 x 3 8648-4Ay-4Ax 1 x 3 8648-4By-4Bx 1 x 3 8648-50Y-50x 1 x 3 8648-5AY-5Ax 1 x 3 8648-5BY-5Bx 1 x 3 8648-60Y-60x 1 x 3 8648-6BY-6Bx 1 x 3	Xeon™ 3.0 2MB 800 512MB 80 Keon 3.0 2MB 800 512MB No Keon 3.0 2MB 800 512MB No Keon 3.2 2MB 800 512MB No Keon 3.4 2MB 800 512MB No	OGB ² SATA 7200 SATA one (open-bay) Ultra320 OGB SATA 7200 SATA one (open-bay) Ultra320 one (open-bay) Ultra320 OGB SATA 7200 SATA one (open-bay) Ultra320 one (open-bay) Ultra320 one (open-bay) Ultra320	3 simple-swap 6 x 6 hot-swap 6 x 3 simple-swap 6 x 6 hot-swap 6 x 6 hot-swap 6 x 3 simple-swap 6 x 3 simple-swap 6 x 6 hot-swap 6 x 6 hot-swap 6 x 6 hot-swap 6 x	7 One fixed Gigabit 9 One fixed Gigabit 9 Two redundant Gigabit 7 One fixed Gigabit 9 Two redundant Gigabit 7 One fixed Gigabit 7 One fixed Gigabit 9 One fixed Gigabit 9 One fixed Gigabit 9 Two redundant Gigabit	Mar 2005 Mar 2005 Mar 2005 Mar 2005 Mar 2005 Mar 2005 Mar 2005 Mar 2005 Mar 2005
Processor(s) SMP - L2 Cache Implementation	1 x Intel® Xeon up to 3.4 GHz with 2-way SMP / up to two Xeon Proces Systemboard contains two Intel 604-	ssors (same speed/cache siz- pin micro-PGA ZIF sockets,	(a) / EM64T / 2MB L2 If the control of the control	ECC Cache / Hyper-Threading / at processor speed s (3 PCI-X, 2 PCI, 1 PCI Expr	g technology ess x16)
Memory	512MB std / 16GB ¹³ max (16GB ma than 4GB DIMMs) / two slots used / connector slots on systemboard / DII Error Checking and Correcting (E detects 2- through 8-bit errors contain	MMs must be installed in ma CC) via 16-bit Checksum (tched pairs [a bank] / 2-\ Chipkill ™ (corrects 1, 2,	way memory interleave / dúal 3, or 4-bit errors on same chi	with less gold- channel / p and
SATA disk controller SCSI disk controller Cables RAID Controller	Dual Channel SATA-150 controller (Adaptec® 7902 / dual channel Ultra supports RAID-0 & 1 mirroring / To drop 16-bit 68-pin LVD SCSI cable to to rear external 68-pin connector One SCSI cable (listed above), two of IBM ServeRAID 7e (RAID 0 0r 1) / of	a320 SCSI controller (LVD a wo 16-bit channels (one inter to 6-bay backplane; External one-drop SATA, one 2-drop	320MB/sec) / on planar / nal and one external) / <i>l.</i> <i>channel:</i> cable available EIDE cable (to CD-ROM	/ 64-bit 100MHz PCI-X / Serve nternal channel: Hot-swap mo as option pn 24P7929 from s l),	dels: one 1-
Mechanical Bus slots (see below) Chipset	4U ⁴ Tower (rack mount support via One PCI-Express / three 64-bit (one Intel E7520 chipset / E7525 MCH (supports Adaptec 7902, 2 64bit/100M bit/33MHz PCI slots (slots 2 & 3), vid	133MHz. 2 100MHz) PCI-X	1.0 / two 32-bit/33MHz PCI-Express x16(vid), Br B B supports one 64bit/1 Pin Count Interface / NS	/ no hot-swap Active™ PCI sl oadcom, PXH, ICH5R / PXH 33MHz PCI-X slot (4) / ICH5F 6 PC87366 Super I/O off LPC	ots BUS A I for two 32- interface
Ethernet CD-ROM / diskette Ports Diagnostics Systems mgmt cntrl Graphics controller	One gigabit 10/100/1000 ethernet cochip on planar / PCI-X 64-bit 100MH: CD-ROM: 48X-20X ⁶ CD-ROM! IDE / Front: two USB (Ver 2.0); Back: two monitor (analog DB-15) Diagnostic LEDs / error LEDs for far Winbond [®] W791D / chip on planar support for optional Remote Supe SVGA / ATI [®] Radeon™7000M on Planar SVGA / ATI [®] Radeon™700M on Planar SVGA / ATI [®] Radeon S	/ <i>Diskette:</i> 3.5" 1.44MB diske o USB (Ver 2.0), two serial (ns and memory / server diag / monitors system and proces	ette drive 9-pin), parallel, keyboard nostic programs stored o	, mouse, ethernet (RJ-45), on IBM Enhanced Diagnostics	; CD
Security	Mechanical side panel key lock (lock hot-swap models) / optional U-Bolt s power-on password / boot sequence without keyboard/mouse / security sl	upport via knockout /); e control / operation); lot (for opt cable lock) ;	(eon 3.2 GHz/800/2MB (eon 3.4 GHz/800/2MB 512MB (2x256) PC2-320	L2 Cache EM64TProc Upg L2 Cache EM64TProc Upg L2 Cache EM64TProc Upg 00 ECC DDR2	25R8900 25R8901 13N0676 73P3523
Software	ServerGuide™ (CD-based automate and configuration tool), IBM Director software) and many utilities	ed network OS installation - (system hardware mgmt 2	IGB (2x512) PC2-3200 IGB (2x512) PC2-3200 I 2GB (2x1GB) PC2-3200 BM 80GB SATA-150 (7	ECC DDR2 ChipK DIMM Kit ECC DDR2 DIMM Kit	73P3522 73P2865 73P2866 73P8002
Keyboard / mouse Cooling fans	IBM 101 key keyboard / IBM mouse Up to six / three for processor(s), me power supply cage fans (three in dua All: not redundant / not hot-swap / al	(both black, 6-pin PS/2) emory, and disk bays / two al power supply model) Il variable speed	BM 160GB SATA-150 (BM 250GB SATA-150 (BM 36.4GB 15K Ultra32 BM 73GB 10K Ultra320	7.2K) simple-swap HDD 7.2K) simple-swap HDD 0 SCSI Hot-Swap SL HDD SCSI Hot-Swap SL HDD	73P8003 73P8006 06P5776 32P0727
Power supply(s)	Some: one 530 watt std and max / n xBx: two 514 watt std and max / h All: universal / voltage-sensing / Restart (ASR) / cooling fan in power	not hot-swap not-swap / redundant	40X/12X/40X Max ⁶ CD-F BM Remote Supervisor BM 4U Extended Depth	Adapter II (PCI adapter) Tower-to-Rack Kit	32P0728 22P6976 59P2984 26K6095
Slot 5: fullsize, 64-bit Slot 6: fullsize, 64-bit * support only for x8	1/33MHz, PCI (5v) 1/33MHz, PCI (5v) 1 133MHz, PCI-X 1.0 (3.3v) 1 100MHz, PCI-X 1.0 (3.3v)** 1 100MHz, PCI-X 1.0 (3.3v) adaptors	I	BM ServeRAID 7t SATA Other options at ibm.cc panel Utility invoked by up		13N2190 71P8648
CD-BOM Bay	erveŘAID-6i+ ① 5.25", HH 1.6", access, CD-ROM ② 5.25", HH 1.6", access, open ③ 3.5", SL 1", access, diskette	Adaptec Configuration Adaptec Configuration Startup by pressing DMI 2.2-compliant Adv Config Power In	on Utility near CTRL+I Interface (ACPI) 1.0a	o 1 year parts and labor o International Warranty Serv o On site, 8 am-5 pm, Mon-Fri excluding holidays	s,

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

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)

- Device Driver and IBM Enhanced
- Diagnostics CD-ROM included

- ♦ 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

- 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

Biii @ 501 V01	X001103 220 (00-10	, (, .p = 000)		<u>.</u>	ocivei i icia omiio ai	
	L2 FSB essor GHz¹cache MHz Memor	y Disk	Disk controller		Cl slots Power supply bays number and type	Available Ethernet 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-E5U-E7x 1 x) 8648-B2U-B2x 1 x) 8648-B4U-B4x 1 x) 8648-B4U-B6x 1 x)	(eon 2.8 2MB 800 512MB (eon 2.8 2MB 800 2GB (eon 2.8 2MB 800 2GB (eon 3.2 2MB 800 2GB (eon 3.0 2MB 800 512MB (eon 3.0 2MB 800 512MB	None (open-bay) None (open-bay) None (open-bay) None (open-bay) None (open-bay) B 80GB SATA 7200 None (open-bay)	SATA Ultra320 Ultra320 Ultra320 Ultra320 Ultra320 SATA Ultra320 Ultra320	6 hot-swap 6 hot-swap 6 hot-swap 6 hot-swap 4 simple-swap 6 hot-swap	6 x 9 One fixed 6 x 9 Two redundant	Gigabit Sep 2005 Gigabit Sep 2005 Gigabit Sep 2005 Gigabit Sep 2005 Gigabit Sep 2005 Gigabit Sep 2005 Gigabit Apr 2006 Gigabit Apr 2006 Gigabit Apr 2006
Processor(s) SMP - L2 Cache Implementation	1 x Intel® Xeon up to 3.4 GHz 2-way SMP / up to two Xeon F Systemboard contains two Inte	Processors (same speed	d/cache`size	e) / 2MB std and m	nax / at processor speed	0 03
Memory	512MB std / 16GB ¹³ max (16G than 4GB DIMMs) / two slots u connector slots on systemboard Error Checking and Correction detects 2- through 8-bit errors of	d / DIMMs must be insta ng (ECC) via 16-bit Ch	alled in mate i ecksum C l	ched pairs [a bank] . hipkill ™ (corrects 1,	/ 2-way memory interlead , 2, 3, or 4-bit errors on :	naximum with less x 240 pin gold- ye / dual channel / same chip and
SATA disk controller SCSI disk controller	Dual Channel SATA-150 contro Adaptec® 7902 / dual channel supports RAID-0 & 1 mirroring drop 16-bit 68-pin LVD SCSI cor to rear external 68-pin connect One SCSI cable (listed above),	JUltra320 SCSI contro J / Two 16-bit channels able to 6-bay backplane or two one-drop SATA or	oller (LVD 3 s (one interr ; <i>External c</i> ne 2-drop F	20MB/sec) / on plar nal and one external channel: cable availa FIDE cable (to CD-R	nar / 64-bit 100MHz PCI- l) / <i>Internal channel:</i> Hot- able as option pn 24P792 ROM).	swap models: one 1- 29 from systemboard
RAID Controller	IBM ServeRAID 7e (RAID 0 0r 4U ⁴ Tower (rack mount suppor	1) / on planar / supports t via tower-to-rack kit of	s SATA or s	SCSI interface / sup	ports ServeRAID 6i+ cor	
Ethernet CD-ROM / diskette Ports Diagnostics Systems mgmt cntrl Graphics controller	One gigabit 10/100/1000 etherr chip on planar / PCI-X 64-bit 10 CD-ROM: 48X-20X° CD-ROM, Front: two USB (Ver 2.0); Bac monitor (analog DB-15) Diagnostic LEDs / error LEDs f Winbond® W791D / chip on pla support for optional Remote SVGA / ATI® Radeon™7000M	et controller / Broadcom OMHz / full duplex / Wa IDE / <i>Diskette</i> : 3.5" 1.4 k: two USB (Ver 2.0), to or fans and memory / s anar / monitors system a	n 5721 / full ke on LAN® I4MB disket wo serial (9 server diagr and process	gigabit ethernet MA 7 Alert Standard Fo tte drive 1-pin), parallel, keybo nostic programs stor	C and PHY layer function ormat 2.0 / one rear RJ-4! oard, mouse, ethernet (R red on IBM Enhanced Di a speed and failure, and v	ns / 5 port J-45), agnostics CD
Security	Mechanical side panel key lock hot-swap models) / optional U-power-on password / boot seq without keyboard/mouse / secu	(locks hot-swap disks Bolt support via knockou Jence control / operation	on X ut / X n X ock) X	eon 2.8 GHz/800/21 eon 3.0 GHz/800/21 eon 3.2 GHz/800/21 eon 3.4 GHz/800/21	MB L2 Cache EM64TPro MB L2 Cache EM64TPro MB L2 Cache EM64TPro MB L2 Cache EM64TPro	oc Upg 40K2515 oc Upg 40K2516 oc Upg 40K2517
Software	ServerGuide™ (CD-based autand configuration tool), IBM Dir software) and many utilities		stallation 10 e mgmt 10 20	GB (2x1GÉ) PC2-32	200 ECC DDR2 200 ECC DDR2 ChipK DI 200 ECC DDR2 DIMM K	(it 39M5809
Keyboard / mouse Cooling fans Power supply(s)	IBM 101 key keyboard / IBM m Up to six / three for processor(: power supply cage fans (three All: not redundant / not hot-swa Some: one 530 watt std and m Some: two 514 watt std and m All: universal / voltage-sens Restart (ASR) / cooling fan in p	s), memory, and disk bain dual power supply map / all variable speed ax / not hot-swap ax / hot-swap / redundaing / Automatic Server	e spd)	BM 160GB SATA-18 BM 250GB SATA-18 BM 36.4GB 15K Ultr BM 73GB 10K Ultra BM 146GB 10K Ultra BM 32X/48X Max ⁶ C BM Remote Supervi BM 4U Extended De	0 (7.2K) simple-swap HD 50 (7.2K) simple-swap H 50 (7.2K) simple-swap H a320 SCSI Hot-Swap SL 320 SCSI Hot-Swap SL I a320 SCSI Hot-Swap SL I CD-RW internal (black) sor Adapter II (PCI adap epth Tower-to-Rack Kit	DD 40K6868 DD 40K6872 . HDD 30R5096 HDD 40K1023 HDD 40K1024 22P7042 ter) 59P2984 26K6095
Slot 2: fullsize, 32 Slot 3: fullsize, 32 Slot 4: fullsize, 62 Slot 5: fullsize, 64 Slot 6: fullsize, 64 * support only for ** slot for opt IBM CD-ROM Bay Bay Hot- Six b Giskette Gisk	CI-Express x16 (3.3v)* 2-bit/33MHz, PCI (5v) 2-bit/33MHz, PCI (5v) 4-bit 133MHz, PCI-X 1.0 (3.3v) 4-bit 100MHz, PCI-X 1.0 (3.3v)** 4-bit 100MHz, PCI-X 1.0 (3.3v)* 4-bit 100MHz, PCI-X 1.0 (3.3v) 5 x8 adaptors 1 ServeRAID-6i+ ① 5.25", HH 1.6", access, CD-F ② 5.25", HH 1.6", access, open ③ 3.5", SL 1", access, disker 1 swap models: 1 bays ④ to ⑨ 3.5", SL 1", access 1 bays ④ to ⑨ 3.5", SL 1", access 1 bays ④ to ⑨ 3.5", SL 1", simple-swap 1 access 2 sys ⑤ to ⑨ 3.5", SI 1", simple-swap 1 access 2 sys ⑥ to ⑨ 3.5", SI 1", simple-swap 1 access 2 sys ⑥ to ⑨ 3.5", SI 1", simple-swap 1 access 3 5", SI 1", simple-swap 1 access 1 acces	ROM	ack color ole left side p tition/Setup l F1 at startu up Utility via Configuratio compliant ig Power In river and IE ics CD-RON illizing feet rip on top W 6.5" x D	BM ServeRAID 7t Soluther options at ibn panel Utility invoked by up a F1 at startup on Utility near CTRL+I atterface (ACPI) 1.0a BM Enhanced VI included	LIMITED WA 1 year parts and I International Warra On site, 8 am-5 pm Mon-Fri excluding next business day On site service up options (in eligible 3 year IOR 9x5, (ServicePac part	71P8648 ARRANTY³ abor anty Service³ n, holidays, response time grade locations): ⁷ NBD response rt num 96P2248) 4 hr avg response

• 9

Hot-swap

models only

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: Maximum Internal disk capacity*.

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

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

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	L2 essor GHz¹cac		Memory	Disk	Disk controll		-swap k bays	PCI slots x bays	Power supply number and type	Etherne	Available date
8488-32U-32x 1 x 2 8488-34U-34x 1 x 2 8488-36U-36x 1 x 2 8448-B2U-B2x 1 x 2 8448-B4U-B4x 1 x 2 8448-B6U-B6x 1 x 2	Keon 2.8 2M Keon 3.0 2M Keon 3.0 2M	IB 800 IB 800 IB 800 IB 800	512MB 512MB 512MB 512MB 512MB 512MB	80GB ² SATA 720 None (open-bay None (open-bay 80GB SATA 720 None (open-bay None (open-bay) Ultra32) Ultra32 0 SATA) Ultra32	0 6 hot- 0 6 hot- 4 simp 0 6 hot-	swap ole-swap swap	6 x 9 6 x 9 6 x 7 6 x 9	One fixed One fixed Two redundant One fixed One fixed Two redundant	Gigabit Gigabit Gigabit Gigabit	Apr 2006 Apr 2006
Processor(s) SMP - L2 Cache Implementation	1 x Intel® Xeor 2-way SMP / t Systemboard of	n up to 3 up to two contains t	3.4 GHz v Xeon Pro two Intel 6	vith 800MHz fronts ocessors (same spe 604-pin micro-PGA	side bus (F eed/cache s ZIF sockets	SB) / EM6 size) / 2MB s, six DIMM	64T / 2M std and slots, s	B L2 EC I max / a ix slots (3	C Cache / Hyper- t processor speed PCI-X, 2 PCI, 1	Threading	g technology ess x16)
Memory	512MB std / 10 than 4GB DIM connector slots Error Checkin detects 2- thro	6GB ¹³ ma Ms) / two s on syste ng and C ugh 8-bit	ax (16GB slots use emboard / correcting errors co	maximum can be a cd / four slots availa / DIMMs must be in (ECC) via 16-bit (ntained in two chips	ichieved whole / PC2-3 stalled in m Checksum) available	nen 4GB D 200 400Mh atched pair Chipkill™ on 1GB (2)	IMMs are Iz ECC I rs [a ban (corrects x512) DII	e support DDR2-SE k] / 2-way i 1, 2, 3, MM Kit ar	ed, 12GB is the n DRAM DIMMs / Si y memory interlea or 4-bit errors on nd greater	naximum x 240 pin ve / dual o same chi	with less gold- channel / p and
SATA disk controller SCSI disk controller Cables RAID Controller	Dual Channel Adaptec® 790: supports RAID drop 16-bit 68- to rear externa One SCSI cab	SATA-15 2 / dual (I-0 & 1 m pin LVD Il 68-pin (Ile (listed	50 controllechannel Laboration of the control of th	er (150MB/sec / tw Jitra320 SCSI cont Two 16-bit chann le to 6-bay backpla	connector roller (LVD els (one inte ne; Externa one 2-drop	rs on plana 320MB/seernal and o al channel: EIDE cab	ar /suppo ec) / on p one extern cable av	rts Serve planar / 64 nal) / <i>Inte</i> ailable as D-ROM),	RAID™ 7e 4-bit 100MHz PCI- <i>mal channel:</i> Hot- coption pn 24P79.	-X / Serve swap mod 29 from st	RAID 7e dels: one 1-
Mechanical Bus slots (see below) Chipset	4U ⁴ Tower (rad One PCI-Expre Intel E7520 ch supports Adap bit/33MHz PCI	ck mount ess / thre ipset / E tec 7902, slots (slo	support (e 64-bit (c 7525 MC), 2 64bit/1 ots 2 & 3),	via tower-to-rack kit one 133MHz, 2 100 CH (Memory Contro 00MHz PCI-X slots video, SATA, 4xUs	option) MHz) PCI- Ier Hub) foi (5 & 6), BU BB(2.0), Lov	X 1.0 / two · PCI-Expre JS B suppo v Pin Coun	32-bit/33 ess x16(v orts one (nt Interfac	3MHz / r vid), Broa 64bit/133l ce / NS P	no hot-swap Activo dcom, PXH, ICH5 MHz PCI-X slot (4 C87366 Super I/C	e™ PCI sl R / PXH) / ICH5R) off LPC	ots BUS A for two 32- interface
Ethernet CD-ROM / diskette Ports Diagnostics Systems mgmt cntrl Graphics controller	monitor (analogous Diagnostic LEI Winbond® W79	B (Ver 2. g DB-15) Ds / error 91D / ch	.0) <i>; Back.</i> LEDs for ip on plan	t controller / Broadc MHz / full duplex / V DE / Diskette: 3.5" two USB (Ver 2.0) fans and memory ar / monitors syster supervisor Adapte n Planar / 16MB SD	, two serial / server dia n and proce	(9-pin), pai gnostic pro essor temp	rallel, key ograms s erature. f	/board, m tored on an speed	nouse, ethernet (H IBM Enhanced D I and failure, and '	J-45),	CD
Security	hot-swap mode power-on pass	els) / opti sword / b	onal U-Bo oot seque	locks hot-swap dislot support via knoclence control / operacy slot (for opt cable	out / tion	Xeon 3.0 Xeon 3.2 Xeon 3.4	GHz/800 GHz/800 GHz/800)/2MB L2)/2MB L2)/2MB L2	Cache EM64TPi Cache EM64TPi Cache EM64TPi Cache EM64TPi	oc Upg oc Upg	40K2500 40K2515 40K2516 40K2517
Software		ion tool),	IBM Direct	nated network OS ctor (system hardwa		1GB (2x5 1GB (2x5	512) PC2 512) PC2	-3200 EC	ECC DDR2 CC DDR2 CC DDR2 ChipK D CC DDR2 DIMM	IMM Kit Kit	73P3523 39M5818 39M5821 39M5809
Keyboard / mouse Cooling fans Power supply(s)	Up to six / three power supply of Not redundant One 530 watts	ee for pro cage fans / not hot- std and n g / Auton	cessor(s), s (three in swap / all nax / not h natic Serv	use (both black, 6-p, memory, and disk dual power supply variable speed / not-swap / universal er Restart (ASR) /	bays / two model) /	IBM 80GE IBM 1600 IBM 2500 IBM 36.40 IBM 73GE IBM 1460 48X/32X/4 IBM Rem	B SATA- GB SATA- GB SATA GB 15K U B 10K U GB 10K U 48X Max lote Supe	150 (7.2k A-150 (7.2k A-150 (7.2 Ultra320 St Ultra320 St CD-RW Ervisor Ac	() simple-swap HI(K) simple-swap HI(K) simple-swap HI(K) simple-swap II SCSI Hot-Swap SL SCSI Hot-Swap SI (Internal (black) lapter II (PCI ada) ower-to-Rack Kit	OD HDD HDD L HDD HDD _ HDD	40K6864 40K6868 40K6872 30R5096 40K1023 40K1024 22P7042 59P2984 26K6095
	, PCI-Express > , 32-bit/33MHz,					IBM Serve	eRAID-6 eRAID 7	i+ control t SATA c	ler (adapter for SI	,	13N2190 71P8648

Slot 2: fullsize, 32-bit/33MHz, PCI (5v) Slot 3: fullsize, 32-bit/33MHz, PCI (5v)

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

support only for x8 adaptors

** slot for opt IBM ServeRAID-6i+



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

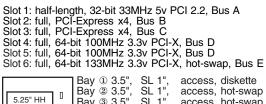
1 year parts and labor

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-model Qty x F	L2 L3 Processor cache cache Memory Di	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 No. 2.67GHz 512KB 0MB 512MB No. 2.8BGHz 512KB 0MB 512MB No. 2.8BGHz 512KB 0MB 512MB No. 3.06GHz 512KB 0MB 512MB No. 	one 2 x Ultra320 Tower one 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 to Up to 1 x Intel® Xeon™ Processor 512KB / all models / on die of processor 1MB / available on some models / 2-way SMP / up to two Xeon Processor Systemboard contains two Intel 60 six PCI slots (two hot-swap Active	r 3.06 GHz with 533MHz to cessor / at processor spee on die of processor / at p cessors (same speed/cach 03-pin micro-PGA ZIF soci	frontside bus / Hyper-Thread d rocessor speed le size) kets, six memory gold-conni	ector DIMM slots,			
Memory	512MB std / 12GB max / two slots PC2100 266MHz registered 184-pi DIMMs must be installed in matche 2x100MHz / Error Checking and through 8-bit errors contained in tw	in ECC DDR-SDRAM DIMed pairs [a bank] / 2-way n Correcting (ECC) (correc	Ms nemory interleave / dual cha ts 1, 2, 3, or 4-bit errors on	same chip and detects 2-			
SCSI channels	LSI Logic® 53C1030 / dual chants supports RAID-1 mirroring with a low-cost RAID 0, 1, 1E, 5, 00, 10, Two 16-bit channels / SCSI Chantinterface for Bay 8 and 9 (may redevices via external SCSI knockout eEnhanced IDE ATA-100 controller None standard / supports 7200-150 Six hot-swap / 80-pin SCA-2 conne	up to one hot-spare disk / 1E0, 50 (installed only in inel A: 16-bit 68-pin LVD ciquire a cable) or with option in rear (cable req 32P816 in CSB5 South Bridge / 6000 rpm disks / one backpla	shared with optional IBM S Slot 4) able from controller to back ponal 3-Pack Kit (cable inclu- 34) or via opt ServeRAID add one connector on planar / o ane / all disk bays Ultra320-e	berveRAID™-6i Controller for collane; Channel B: 16-bit 68-pin ded); supports external SCSI apter with external connector(s) ne 1-drop IDE cable (CD-ROM) nabled			
Mechanical Chipset	Tower / conversion to or EIA 19" Ra ServerWorks® Grand Champion ^{TI} two CIOB-X2 I/O Bridges (IMB2 bus controllers; IMB2 bus to Host Bridg for PCI 2.2 bus A with slot 1 and gra	^M 4.0 LE / CMIC LE Host B s to Host Bridge for PCI-X e for PCI-X 1.0 Bus C with	ridge (memory controller and 1.0 Bus B with slots 2, 3, 4 a slots 5 and 6) / CSB5 South	I 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-20X6 CD-ROM / IDE / 1.6" HI- Rear: two USB (Vers 1.1), keyboard, Front: one USB (Vers 1.1); Graphics:	H; Diskette: 3.5" 1.44MB of 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 button / unattended boot / selectable						
Systems mgmt Diagnostics Software	IBM Integrated system managem H8S2148 / on planar / provides syst monitoring such as temp, optional c supports optional Remote Supervis connector on planar for continuous Light Path Diagnostics™ panel profailing part (under side cover) / Inforr ServerGuide™ (CD-ROM installatio utilities), IBM Director, others	tem and environmental disks, fans, power supp / or Adapter with 20-pin power (no ext pwr reqd) byiding LED map to mation LED Panel in front	Xeon 2.67GHz/512KB L2 Cache Proc Upg 7 Xeon 2.8BGHz/512KB L2 Cache Proc Upg 7 Xeon 3.06GHZ/512KB L2 Cache Proc Upg 7 Xeon 2.8BGHz/512KB L2 Cache Proc Upg 1 Xeon 3.06GHZ/512KB L2 Cache Proc Upg 2 Xeon 3.06GHZ/512KB L2 Cache Proc Upg 3 Xeon 3.06GHZ/512KB				
Keyboard / mouse Power supply	IBM 101-key keyboard / IBM mou 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 / varial redundant / PFA / fan in each pow	Ali: voltage-sensing / auto-restart / fan in each ble speed / hot-swap /	IBM T541 15" Flat Panel Colo 36.4GB 15K-2 80 Ultra320 3-Pack Ultra320 Hot-Swap IBM 560W Hot-Swap Power IBM 660W Hot-Swap Power Other options at ibm.con *Not backward compatible wi	SCSI Hot-Śwap 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 13 Slot 5: full, 64-bit 13 * Extended slot for containing the state of the slot for containing the slot full for containing the slot for containing the slot for containing the slot for containing the slot full for containing the slot for containing the slot for containing the slot full full full for containing the slot full full full full full full full ful	MHz 5v PCI 2.2, Bus A MHz 3.3v PCI-X, not hot, Bus B MHz 3.3v PCI-X, not hot, Bus B MHz 3.3v PCI-X, not hot, Bus B MHz 3.3v PCI-X, not-swap, Bus C MHz 3.3v PCI-X, hot-swap, Bus C MHZ 3.5v PC	Quick release adapter s Configuration/Setup Util pressing F1 at startup LSI Logic Configuration by pressing CTRL+C Diagnostics (PC-Doctor F2 at startup ACPI2.0-compliant Operator Information Pa Predictive failure analys memory, processors, V supplies, and fans in co Director can alert the sy of an imminent compon. Tower: H 17.31" x W 8 74 to 101 pounds	Utility near startup Utility near startup Inte Onserving anel (in front) sis on disk options, RMs, power njunction with IBM stem administrator ent failure 3.5" x D 27.6" Sk capacity: 8GB SL disks with ap Expansion Kit	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, ion-Fri excluding holidays, hour average response ServicePac® part num 21P2083) 4 hr x 7 day coverage, hour average response ServicePacpartnumber 21P2084) 4 hr x 7 day coverage, hour average response ServicePac part number 21P2085) 714 toll-free support for warranty less during the warranty period³			

IBM® Type-model Qty	L2 x Processor cache Memory Disk	SCSI controller Mechanic	Slots x bays al (hot-swap bays)	Power supply	Available Ethernet date				
8841-05U-05x 1 x X 8841-15y-15x 1 x X 8841-25y-25x 1 x X 8841-35y-35x 1 x X 8841-45y-45x 1 x X 8841-16y-16x 1 x X 8841-E1y-E1x 1 x X 8841-55U-55x 1 x X	eon 3.2GHz 2MB 1GB None eon 3.4GHz 2MB 1GB None eon 3.6GHz 2MB 1GB None eon 3.0GHz 2MB 1GB None eon 3.0GHz 2MB 1GB 3x73.4G	2 x Ultra320 Tower 2 x Ultra320 Tower 2 x Ultra320 Tower 2 x Ultra320 Tower 2 x Ultra320 Tower 3B 2 x Ultra320 Tower	6x10 (6 hot-swap std; 9 ma 6x10 (6 hot-swap std; 9 ma	x) 1 x 670W hot-swap x) 1 x 670W hot-swap	2xGigabit Mar 2005 2xGigabit Mar 2005 2xGigabit Mar 2005 2xGigabit Mar 2005 2xGigabit Mar 2005 2xGigabit Mar 2005 2xGigabit Mar 2005				
Positioning Processor Universal server; two-way server using the Xeon processor to provide power and performance at an affordable price Up to 1 x Intel® Xeon™ Processor 2.8, 3.0, 3.2, 3.4, 3.6, 3.8 GHz with 800MHz frontside bus / Extended Memory 64 Technology (EM64T) / Simultaneous Multi-threading (SMT) / Hyper-Threading technology / 2MB / all models / on die of processor / at processor speed 2-way SMP / up to two Xeon Processors (same speed/cache size) Systemboard contains two Intel 604-pin micro-PGA ZIF sockets, eight memory gold-connector DIMM slots, six PCI slots (one hot-swap Active™ PCI slots), and integrated SCSI, ethernet, graphics 1GB std / 16GB max / two slots used / six slots available / PC2-3200 400MHz registered 240-pin ECC DDR2-SDRAM DIMMs / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / memory bus runs at 2x200MHz / Error Checking and Correcting (ECC) (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips) / Active Memory™: memory mirroring, online-spare memory									
SCSI disk controller Adaptec AIC 7902 / dual channel Ultra320 SCSI controller (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X / HostRAID supports RAID-0, 1 mirroring with up to one hot-spare disk / optional IBM ServeRAID™-7k Controller for low-cost RAID 0, 1, 1E, 1E0, 5, 00, 10, 50 (installed on internal connector) SCSI channels Two 16-bit channels / SCSI Channel B: 16-bit 68-pin LVD cable from controller to backplane; Channel A: 16-bit 68-pin interface for Bay 8 and 9 (may require a cable) or with optional 3-Pack Kit (cable included); supports external SCSI devices via external SCSI knockout in rear (cable req 24P7973) or via opt ServeRAID adapter with external connector(s) IDE controller / cable Disk - capacity Disk - bays Six hot-swap / 80-pin SCA-2 connectors / three additional hot-swap bays with Kit 33P2751 for up to nine 15K rpm disks									
Mechanical Slots Chipset (see below)	Tower / conversion to EIA 19" Ra Two PCI-Express (one hot-plug), Intel E7520 chipset / Intel E7520 (slots 2 & 3) / PXH: Bus A, two 64 6) / ICH5R: one 32-bit/33MHz slot	three PCI-X 64-bit (one Memory Controller Hul 1-bit/100MHz PCI-X slot:	133MHz and two 100MHz), o o (MCH): PXH, ICH5R, Dual E s (slots 4 & 5), Adaptec SCSI I	ne 32-bit/33MHz´slot troadcom ethernet, two Bus B, one 64-bit/133N	1Hz Hot-Plug slot (slot				
Ethernet controller CD-ROM / diskette Rear ports Front port / graphics	Dual 10/100/1000 gigabit / Broadd Format (2.0) / IPMI (1.5) 48X-20X ⁶ CD-ROM / IDE / 1.6" H Rear: two USB (Vers 2.0), keybo Front: one USB (Vers 2.0); Graph	IH; <i>Diskette:</i> 3.5" 1.44N ard, mouse, parallel, tw	B diskette drive / dust cover o serial (9-pin),graphics (DB-1	5), two ethernet (RJ-4	5), RJ-45 (sys mgmt)				
Security	Power-on password / administrate front door to cover disk bays, pow unattended boot / selectable boot	ver button, and reset but	ton / Xeon 3.0GHz/2ME Xeon 3.2GHz/2ME	L2 Cache Proc Upg L2 Cache Proc Upg L2 Cache Proc Upg	40K2503 40K2504 40K2505				
Systems mgmt	IBM Integrated system manage H8S2148 / on planar / provides sy such as temp, optional disks, fans Supervisor Adapter II Slimline with continuous power (std on 32y) (r	ystem and environments s, power supp / supports n 20-pin connector on pl	Xeon 3.6GHz/2ME Xeon 3.6GHz/2ME Xeon 3.8GHz/2ME Xeon 3.8GHz/2ME Xeon 3.6GHz/2ME	L2 Cache Proc Upg L2 Cache Proc Upg L2 Cache Proc Upg L2-3200 CL3 ECC DDR2 non-C 3200 CL3 ECC DDR2 non-C	pk 39M5818				
Diagnostics Software	Light Path Diagnostics™ panel (under side cover) / Information LisserverGuide™ (CD-ROM installa utilities), IBM Director, others	providing LED map to fa ED Panel in front	2GB (2x1GB) PC2 73.4GB 10K Ultra3 146.4GB 10K Ultra	3200 CL3 ECC DDR2 RDIMN 3200 CL3 ECC DDR2 RDIMN 20 SCSI Hot-Swap SSL HDD 320 SCSI Hot-Swap SSL HDD 20 SCSI Hot-Swap SSL HDD	9 39M5809 40K1023				
Keyboard / mouse Power supply Fans	IBM 101-key keyboard / IBM moustd/max: one/two 670 watt / voltag Fan in each std/max: four/six/ two (Opt) two fans (rear) / variable spo optional rear fans / PFA / fan in	ge-sensing / auto-restart fans (front), two fans o eed / hot-swap / redund	IBM ServeRAID-7/ IBM Remote Supe n planar, ant with IBM 670W Hot-Sw		71K8642 73P9341 33P2751 25K9560				



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 ACPI 2.0-compliant Operator Information Panel (in front) Predictive failure analysis on disk options, memory, processors, VRMs, power 5.25" HH CD-ROM ⇒ Tower: H 17.31" x W 8.5" x D 27.6" ⇒ 74 to 101 pounds⇒ Stealth black color

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

All models: Max int disk capacity: 1.8TB2 with six 300GB Ultra160 or Ultra320 SCSI hot-swap slimline HDDs

of an imminent component failure

Quick release adapter slots (no screws)

Adaptec Configuration Utility near startup by pressing CTRL+I

supplies, and fans in conjunction with IBM

Director can alert the system administrator

Configuration/Setup Utility invoked by

Diagnostics (PC-Doctor™) by pressing

pressing F1 at startup

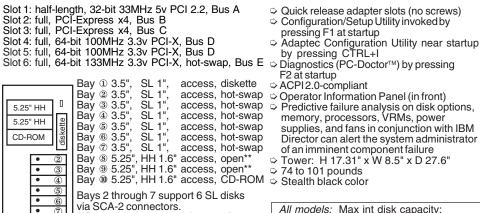
F2 at startup

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

Tower

IBM [®] Type-model Qt	y x Processor	L2 cache Memor	y Disk	SCSI controller	Mechanic		s x bays wap bays)	Power supply	Ethernet	Available date
8841-0RU-0Rx 1 x 8841-1RU-1Rx 1 x 8841-1SU-1Sx 1 x 8841-2RU-2Rx 1 x 8841-3RU-3Rx 1 x 8841-4RU-4Rx 1 x 8841-5RU-5Rx 1 x	Xeon 3.0GHz Xeon 3.0GHz	2MB 1GB 2MB 1GB 2MB 1GB 2MB 1GB 2MB 1GB 2MB 1GB 2MB 1GB	None None None None None None	2 x Ultra320	Tower Tower Tower Tower	6x10 (6 ho	t-swap std; 9 max t-swap std; 9 max) 1 x 670W hot-swap) 1 x 670W hot-swap	2xGiğabit 2xGigabit 2xGigabit 2xGigabit 2xGigabit	Apr 2006 Apr 2006 Apr 2006 Apr 2006 Apr 2006
Positioning Processor L2 cache SMP support Implementation	Up to 1 x Int ogy (EM64T 2MB / all mo 2-way SMP Systemboard	el [®] Xeon™ Pr) / Simultane dels / on die c / up to two Xe I contains two	ocesso ous Mu of proces eon Prod Intel 60	r 2.8, 3.0, 3.2 ulti-threading ssor / at proce cessors (same 04-pin micro-F	2, 3.4, 3.6, (SMT) / I essor spee e speed/ca PGA ZIF so	or to provide 3.8 GHz with Hyper-Thread d ache size) ockets, eight	power and perform n 800MHz frontside ding technology /	mance at an affordab. e bus / Extended Me	le price mory 64 Te	echnol-
Memory	DIMMs must Error Check	be installed in	matche	ed pairs [a ba (ECC) (correc	nk] / 2-way ts 1. 2. 3.	memory into or 4-bit erro	terleave / dual char rs on same chip ar	d 240-pin ECC DDR2 - nnel / memory bus rur nd detects 2- through	ns at 2x200	MHz /
SCSI disk controller SCSI channels IDE controller / cable Disk - capacity Disk - bays	HostRAID so low-cost RAII Two 16-bit ch Bay 8 and 9 knockout in re Enhanced ID None std / su	upports RAID - D 0, 1, 1E, 1E nannels / <i>SCS</i> (may require a ear (cable red E ATA-100 co upports 7200-	0, 1 mi 0, 5, 00 I Chann a cable) 24P79 ontroller I 5000 rp	rroring with u, 10, 50 (instance) B: 16-bit 68 or with option 73) or via option ICH5R South Misks / one	up to one I lled on inte 3-pin LVD nal 3-Pack : ServeRAI uth Bridge e backplan	not-spare disernal connectable from considering Kit (cable in Dadapter word one connected)	sk / optional IBM S tor) ontroller to backpla cluded); supports e cluded); supports e citor on planar / on ays Ultra320-enab	e 1-drop IDE cable (C	oller for t 68-pin inte via externa D-ROM)	
Mechanical Slots Chipset (see below)	Two PCI-Exp Intel E7520 (slots 2 & 3)	oress (one hot chipset / Intel / PXH: Bus A,	-plug), t E7520 two 64-	hree PCI-X 64 Memory Con bit/100MHz F	4-bit (one troller Hub CI-X slots	133MHz and (MCH): PXI (slots 4 & 5)	H, ICH5R, Dual Bro , Adaptec SCSI Bu	acks (13N0956) e 32-bit/33MHz slot oadcom ethernet, two us B, one 64-bit/133M uper I/O / NS PC87417	Hz Hot-Plu	g slot (slot
Ethernet controller CD-ROM / diskette Rear ports Front port / graphics	Format (2.0) 48X-20X ⁶ CE Rear: two US	/ IPMĬ (1.5) D-ROM / IDE / SB (Vers 2.0),	1.6" Hi	H; <i>Diskette:</i> 3 ard, mouse, pa	.5" 1.44ME arallel, two	3 diskette dri serial (9-pi	ive / dust cover n),graphics (DB-15	duplex / Wake on LAI), two ethernet (RJ-45 DDR std/max / 32-bi	5), RJ-45 (s	sys mgmt)
Security	front door to	ssword / adm cover disk bay oot / selectab	s, powe				Xeon 2.8GHz/2MB L Xeon 3.0GHz/2MB L Xeon 3.2GHz/2MB L	2 Cache Proc Upg		40K2503 40K2504 40K2505
Systems mgmt Diagnostics	H8S2148 / or such as temp Supervisor A continuous p Light Path D	ted system non planar / provo, optional dislication (std on Diagnostics**	vides sy ks, fans, ne with 32y) (no panel p	stem and env , power supp 20-pin conne o ext pwr requ providing LED	rironmental / supports ctor on pla d) map to fa	monitoring opt. Remote nar for	Xeon 3.4GHZ/2MB L Xeon 3.6GHz/2MB L Xeon 3.8GHz/2MB L 512MB (2x256) PC2- 1GB (2x512) PC2-32	2 Cache Proc Upg 2 Cache Proc Upg		40K2506 40K2507 40K2508 73P3523 39M5818 39M5821
Software	ServerGuide	over) / Informa over) / Informa over) / Informa over) / Informa information over) / Information over) / I	installat				73.4GB 10K Ultra320 146.4GB 10K Ultra32	200 CL3 ECC DDR2 RDIMM D SCSI Hot-Swap SSL HDD 20 SCSI Hot-Swap SSL HDD		39M5809 40K1023 40K1024
Keyboard / mouse Power supply Fans	std/max: one Fan in each (Opt) two fan	keyboard / IE /two 670 watt std/max: four/s s (rear) / varia r fans / PFA /	/ voltag six/ two able spe	e-sensing / aufans (front), tweed / hot-swap	uto-restart vo fans on o / redunda	planar,	IBM ServeRAID-7k C IBM Remote Supervi 3-Pack Ultra320 Hot- IBM 670W Hot-Swap	isor Adapter II Slimline		30R5097 71K8642 73P9341 33P2751 25K9560



*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
- - F2 at startup
- ACPI 2.0-compliant
- access, hot-swap Operator Information Panel (in front)
- access, hot-swap access 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

All models: Max int disk capacity: 1.8TB2 with six 300GB Ultra 160 or Ultra320 SCSI hot-swap slimline HDDs

LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am 5 pm, Mon Fri coverage excluding holidays, next business day response time7
- 3 year on site warranty service upgrade options (in eligible locations):
 - 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

Tower

		•	·					_			September 1	-
IBM® Type-model Qty x	Processor	L2 cache	Memory	DIMM slots	Memory Cards	/ Disks	SCSI controller	Mechan- ical	Slots x bays	Hot-swap V pwr supplies		ty Available date
8865-11Y 1 x Xeo	n™ MP 3.160	GHz 1MB	2GB(2x1GB) 4	One	None	SAS	Tower	6x12	2 x775W	3	Sep 2005
	n™ MP 3.160 n™ MP 3.160		1GB(2x512N 2GB(2x1GB		One	None None	SAS	Tower 7U Rack	6x12 6x12	2 x775W 2 x775W	3 3	Sep 2005 Sep 2005
	n™ MP 3.160		1GB(2x1GB		One One	None	SAS SAS	7U Rack		2 x775W	3	Sep 2005
8865-21Y 1 x Xeo	n™ MP 3.660	GHz 1MB	2GB(2x1GB)	´ 4	One	None	SAS	Tower	6x12	2 x775W	3	Sep 2005
	n™ MP 3.660		2GB(2x1GB		One	None	SAS	7U Rack		2 x775W	3	Sep 2005
	n™ MP 3.660 n™ MP 3.160		4GB(4x1GB 1GB(2x512M		Two Two	None None	SAS SAS	Tower 7U Rack	6x12 6x12	2 x775W 2 x775W	3 3	Sep 2005 Sep 2005
Processors	One or two	64-bit Intel® 2	Xeon™ Proces	sor MF	3.16 o	r 3.66GH	1z ¹ with 667					
L2 cache	1MR / on die	of processor	™ (EM64T) / H	yper-11 sneed	nreading / Xcel 4	tecnnoi None™ T	ogy amic Server	Cache				
Processor upgrade			Ceon Processors					Odono				
Implementation	System board	d contains for	ur Intel 604-pin CSI (SAS), ethe	micro-l	PGA4 ŽI	F socket		mory board	slot, six Ad	ctive™ PCI-X 2	2.0 slo	ts,
Active Memory [™]			1x ^{12,13} (with 4GB		<u> </u>		acity mome	ony cord / on	o momon	, board standa	rd with	1 DIMM
Active internory	gold-connecte	or slots / DIM	IMs must be ins	talled i	n match	ed pairs	/ PC2-3200) 400MHz re	e memory eaistered 2	240-pin DDR2-	SDRA	M RDIMMs
	/ Error Chec	king and Co	orrecting (ECC)) via 1 6	6-bit Ch	ecksum	Chipkill™.	/ Memory F	ProteXion [®]	™ (redundant	bit ste	ering) and
	Memory Mir	r oring ™ and	Hot-swap (non-	-OS sp	ecific) /	Hot-add	(supported	only with M	1icrosoft® V	Windows™ Se	rver 2	003™)
SAS disk controller			/ Dual-channel			ed SCSI	(SAS) 3.00	GHz (3GB/se	ec) / 64-bit	266MHz PCI-	X 2.0	
SAS connectors	Dual channel	Controller wi	red to dual SAS integrated SAS	backp	lanes	uah CAC	2 ovnandar	1 apple for	acab of th	00 0 CAC bool	mlana	
SAS cabling IDE controller / cabling						ugii SAC	expander,	i cable ioi	each of the	ie z SAS baci	vpiai ie	5
Disk - capacity	Max: 3.6TB-1	10k / supports	s up to 15,000 r	pm dis	ks							
Disk - bays			ap bays / Six st									Drive Bays
Mechanical		•	l ⁴) x 28" deep /				,					
Chipset			ation chipset / Host Bridges /									
			CSB6 South Brid									
1/0 01 1			CI-X 2.0 slots / I									
I/O Slots			0 64-bit slots av hot expansion /									to slot) /
CD-ROM/diskette			<u> </u>				<u>'</u>			u up to 2001/11	12	
Ethernet	Broadcom [®] 5	5704 10/100/1	D-ROM, IDE (AT 1000 dual etherr	AFI), net/on	ı.o nn, ı.svstem	boolable board / 6	37 3.5 1.44 34-bit 266M	hz PCI-X 2.0) / Wake o	on I AN® / Alert	on I A	\N™ 2
Graphics controller			pility 7000 / on pl								011 =	" -
Ports			serial, two USB	(Ver 2	2.0), keyl	ooard, m	ouse, analo	og DB-15 gra	aphics, two	o ethernet, std	. serial	, RS-485 /
0	Front: USB (\		1 /			. / .						
Security Systems management			or passwords / ເ Supervisor Ada					inter / include	es 10/100	ethernet R.I-1	1 and	d serial
Cyclomo managomen			ote console and									
Diamantina	fans, power s					:			:-			/
Diagnostics			liagnostics / pri s (operated thro							ea with falling o	ompo	nents /
Software			installation and									
Keyboard / mouse	Rack model:	none standar	rd / Tower mode	el: IBM	104-ke	v kevbo	pard (PS/2) / IBM 3-b	utton opti	ical mouse (F	PS/2)	
Power supplies	Std: two 775	watt hot-swap	p / redundant w	ith thre								ar
Cooling fans			ower supply / Pf		!!						_4 :4	ا امال
Cooling lans			, multi-speed far nostic LED and				eacn power	supply filler	wnen pov	ver supply is n	ot insta	alled /
Options			C RDIMM (2x				IBM Ser	veRAID 6M	1 U320 25	56MB Adapte		02R0988
'			C RDIMM (2x		73P2					Hot-swap HDI		26K5709
			CC RDIMM (2x		73P2					lot-Swap HDE		26K5710
	Active Mem	ory 4-slot E	xpansion Card L2 Cache Pro	ne Hne	13M7 13N0			GB 10K 3.9 Supervisor		lot-Swap HDE		26K5711 59P2984
			L2 Cache Pro					5" 6-drive B		ii Siiiiiiile		13M7864
			ver Supply (WV		13M7					Hot-swap HDI		26K5698
LIMITED WAS			N-SCSI Adapte		13N2					lot-Swap HDE)	26K5699
LIMITED WARF		Bay ① 3	.5", SL 1", a .25",HH 1.6" a	ccess	, diskett	e M		th black col free service				
□ International Warrant			.25", HH 1.6" a			J.V.				5" x W18.2" x	D30'	(762mm)
→ On site, 8 am - 5 pm, I			.25", HH 1.6" a		open*					lbs; 67.6 to 8		` ′
coverage excluding he		Bays 5 to	o 10 (six bays lard 3.5" SL 1"): hot-ev	wan diek	have				(W17.5" x D2 nm x W444m		715mm
next business day res			to 16 (six bay		vap uist	Lays				bs; 65.4 to 71		or ioiiiiii
(in eligible locations)	.7		al 3.5" SL 1" h		ıp disk b	oays	Acces	ss aďapters	, fans, ar	nd memory fr	om ťo	
3 year IOR 24x7, 4 hr (ServicePac partnum)		<u> </u>	Light Path Diag	7U4 R	ack or	Tower		ss processo ss power s		systemboard	rom	rront
• 3 year IOR 24x7, 2 hr							Setur	Program b	oy pressir	ng F1 at start	up	
(ServicePac part num	96P2254)		Removable Process	or Board Tra	у		Diagr Diagr	nostics (PC-	-Doctor) b	by pressing F	2 at	startup
4 year IOR 9x5, NBD (Service Pac part num	-	●Opt disk	●Opt disk	7		$\neg \neg$	SCSI	Select by p	ressing C	Ctrl+A at start agnostics (lev	up	
(ServicePac part num • 5 year IOR 9x5, NBD	,	Opt disk	Opt disk	┤├ ─	Floppy Drive					ide view of po		
(ServicePac part num	69P2259)	Opt disk	Opt disk	71	CD-ROM		proble	em without´	removing	cover .		
→ Other ServicePac opti http://www.ibm.com/s.		 Opt disk 	●Opt disk] [Full High Tape	Bay				s® alerts on o		_
http://www.ibm.com/s us/its/pdf/wamomxeu.j		Opt disk	●Opt disk	╗┝╌	or 2 Half High E			r supplies, ans with IBI		processors,	v UIVIS	>,
24x7 ¹⁴ toll-free suppor	t for warranty	Opt disk	 Opt disk 	⅃╚	or a right	Jugo				BTU Output:		
issues during the warr				201 - 10			- 0:5	alt a L		Ship Config: 2,0	006 Btu/	hr (588 watts)
All models: M	axımum inter	nal disk cap	pacity: 3.6TB w	/ith 12	x 300G	B² hot-s	swap SAS	disks		Full Config: 6,3	46 Btu/h	r (1860 watts)

8865-11 1 x Xeon*MP 3.16GHz 1MB 2GB(2x1GB) 4 One None SAS Tower 6x12 2 x775W 3 Sep 2005 8865-12 1 x Xeon*MP 3.16GHz 1MB 2GB(2x1GB) 4 One None SAS Tower 6x12 2 x775W 3 Sep 2005 8865-17 1 x Xeon*MP 3.16GHz 1MB 2GB(2x1GB) 4 One None SAS TO Hack 6x12 2 x775W 3 Sep 2005 8865-17 1 x Xeon*MP 3.16GHz 1MB 2GB(2x1GB) 4 One None SAS TO Hack 6x12 2 x775W 3 Sep 2005 8865-17 1 x Xeon*MP 3.66GHz 1MB 2GB(2x1GB) 4 One None SAS TO Hack 6x12 2 x775W 3 Sep 2005 8865-17 1 x Xeon*MP 3.66GHz 1MB 2GB(2x1GB) 4 One None SAS TO Hack 6x12 2 x775W 3 Sep 2005 8865-17 1 x Xeon*MP 3.66GHz 1MB 2GB(2x1GB) 4 One None SAS TO Hack 6x12 2 x775W 3 Sep 2005 8865-17 1 x Xeon*MP 3.66GHz 1MB 2GB(2x1GB) 4 One None SAS TO Hack 6x12 2 x775W 3 Sep 2005 8865-17 1 x Xeon*MP 3.66GHz 1MB 2GB(2x1GB) 4 One None SAS TO Hack 6x12 2 x775W 3 Sep 2005 8865-17 1 x Xeon*MP 3.66GHz 1MB 2GB(2x1GB) 4 One None SAS TO Hack 6x12 2 x775W 3 Sep 2005 8865-17 1 x Xeon*MP 3.66GHz 1MB 2GB(2x1GB) 4 One None SAS TO Hack 6x12 2 x775W 3 Sep 2005 8865-17 1 x Xeon*MP 3.66GHz 1MB 2GB(2x1GB) 4 One None SAS TO Hack 6x12 2 x775W 3 Sep 2005 8865-17 1 x Xeon*MP 3.66GHz 1MB 2GB(2x1GB) 4 One None SAS TO Hack 6x12 2 x775W 3 Sep 2005 8865-17 1 x Xeon*MP 3.66GHz 1MB 2GB(2x1GB) 4 One None SAS TO Hack 6x12 2 x775W 3 Sep 2005 8865-17 1 x Xeon*MP 3.66GHz 1MB 4GB(2x1GB) 4 One None SAS TO Hack 6x12 2 x775W 3 Sep 2005 8865-17 1 x Xeon*MP 3.66GHz 1MB 4 Sep 2005 8865-17 1 x Xeon*MP 3.66GHz 1MB 4 Sep 2005 8865-17 1 x Xeon*MP 3.66GHz 1MB 4 Sep 2005 8865-17 1 x Xeon*MP 3.66GHz 1MB 4 Sep 2005 8865-17 1 x Xeon*MP 3.66GHz 1MB 4 Sep 2005 8865-17 1 x Xeon*MP 3.66GHz 1MB 4 Sep 2005 8865-17 1 x Xeon*MP 3.66GHz 1MB 4 Sep 2005 8865-17 1 x Xeon*MP 3.66GHz 1MB 4 Sep 2005 8865-17 1 x Xeon*MP 3.66GHz 1MB 4 Sep 2005 8865-17 1 x Xeon*MP 3.66GHz 1MB 4 Sep 2005 8865-17 1 x Xeon*MP 3.66GHz 1MB 4 Sep 2005 8865-17 1 x Xeon*MP 3.66GHz 1MB 4 Sep 2005 8865-17 1 x Xeon*MP 3.66GHz 1MB 4 Sep 2005 8865-17 1 x Xeon*MP 3.66GHz 1MB 4 Sep 2005 8865-17 1 x Xeon*MP 3.66GHz 1MB 4 Sep 2005 8865-17 1 x Xeon*MP 3.66GHz 1MB 4 Sep 2005 8865-17 1 x	_										of annual contract of the contract
Memory 47 Technology** (EMS4T) / Hyper-Threading technology 1 MB / or die of processor / a processor speed / Xeel.Av** 1 MB / or die of processor / a processor speed / Xeel.Av** 1 MB / or die of processor / a processor speed / Xeel.Av** 2 MB / up to fur Xeen Processors MP (sams speed/cache size) 1 MB / or die of processor / a processor speed / Xeel.Av** 2 MB / up to fur Xeen Processors MP (sams speed/cache size) 1 MB / or die of processor / a processor speed / Xeel.Av** 2 MB / up to fur Xeen Processors MP (sams speed/cache size) 1 MB / or die of processor / Average / Av	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-E1Y 2 x Xeo	n™MP 3.16G n™MP 3.16G n™MP 3.16G n™MP 3.16G n™MP 3.66G n™MP 3.66G n™MP 3.66G	cache GHZ 1MB	Memory 2GB(2x1GB) 1GB(2x512ME 2GB(2x1GB) 1GB(2x512ME 2GB(2x1GB) 2GB(2x1GB) 4GB(4x1GB)	Slots Card	S Disks None None None None None None None Non	SAS SAS SAS SAS SAS SAS SAS SAS	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
gold-connector slots / DIMMs must be installed in matched pairs / PC2-3200 400Mt-registered 240-pin DDR2-SDRAM RDIMMs / Ferror Checking and Correcting (ECC) via 16-bit Checksum Chipiditi* / Memory ProteXnom* (recurdant bit steering) and Memory Mirroring* and Hot-swap (non-OS specific) / Hot-add (supported only with Microsoft* Windows** Server 2003** And Memory Mirroring** and Hot-swap (non-OS specific) / Hot-add (supported only with Microsoft* Windows** Server 2003** Dual channel Controller wired to dual SAS backplanes Hot-swap bays connect to integrated SAS controller through SAS expander, 1 cable for each of the 2 SAS backplanes Hot-swap bays connect to integrated SAS controller through SAS expander, 1 cable for each of the 2 SAS backplanes Hot-swap bays connect to integrated SAS controller through SAS expander, 1 cable for each of the 2 SAS backplanes Hot-swap bays connect to integrated SAS controller through SAS expander, 1 cable for each of the 2 SAS backplanes Hot-swap bays connect to integrated SAS consorting through SAS expander, 1 cable for each of the 2 SAS backplanes Hot-swap bays connect to integrated SAS controller through SAS expander, 1 cable for each of the 2 SAS backplanes Hot-swap bays connect in CSBS South Bridge South Bridge Hot-swap bays South Bridge South Bridge South Brid	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) / Hyp / at processor speon Processors l Ir Intel 604-pin m	per-Threadir peed / XceL MP (same s nicro-PGA4	g technolo . 4v ™ Dyna :peed/cach ZIF socket	ogy Imic Server Ie size)	Cache			
Dual channel Controller wired to dual SAS backplanes SAS cabling IDE controller / cabling IDE co	Active Memory™	gold-connector/ Error Check	r slots / DIMI king and Co	Ms must be insta rrecting (ECC)	alled in mato via 16-bit C	hed pairs hecksum	/ PČ2-3200 Chipkill ™ /	400MHz re Memory F	egistered 2 ProteXion	240-pin DDR2- ™ (redundant	SDRAM RDIMMs bit steering) and
models) / 2 IBM PCI-X 2.0 Host Bridges (DF, USB, but sor Super IV DN Super IV	SAS connectors SAS cabling IDE controller / cabling Disk - capacity Disk - bays	Dual channel Hot-swap bay Enhanced IDE 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 troller in CSB6 Sup to 15,000 rpap bays / Six sta	oackplanes controller the outh Bridge m disks ndard conve	rough SAS	S expander,	1 cable for A-2 connect	each of the	he 2 SAS back e FH (or 2 HH)	kplanes) Tape Drive Bays
Ethernet Graphics controller Ports SroXe/ A / Tall* a Radeon Mobility 7000 / on planar / 16MB SDFAM std/max / 32±0 it 33MHz FC102 zb us. Rear. RSA ethernet, RSA serial, two USB (Ver 2.0), keyboard, mouse, analog DB-15 graphics, two ethernet, std. serial, RS-485 / Front: USB (Ver 2.0) Security Power-on and administrator passwords / unattended boot / selectable boot Systems management BMC standard / Remote Supervisor Adapter II slimitine (optional) / PCI adapter / includes 10/100 ethernet, RJ-11, and serial inconnectors / provides remote console and mgmt / power or/off system / momitors power status, op system, temperature, disks, fans, power supplies Diagnostics Diagnostics Diagnostics Diagnostics Diagnostics Diagnostics Diagnostics Diagnostics Diagnostics None standard / Remote Supervisor Adapter II slimitine (optional) / PCI adapter / includes 10/100 ethernet, RJ-11, and serial strains, power supplies Diagnostics Diagnostics Diagnostics Diagnostics Diagnostics Diagnostics Diagnostics Diagnostics None standard / Remote Supervisor Adapter II slight Path Diagnostics / primary indicator on information panel with LEDs associated with failing components / libit Rade Time Diagnostics (perated through IBM Director) available even while server running ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director, and others None standard / Berosava / redundant with three power suppplies (N+1) / worldwide / voltage-sensing / auto-restart / rear accessible fans in each power supply is not installed / PFA / failure signals Diagnostic LED and mgmt processor Diagnostics Diagnostics Diagnostics None standard / Berosava / redundant with three power supply (RM) / PFA Eight hot-swap, redundant, multi-speed fans / One cooling fan in each power supply is not installed / PFA / failure signals Diagnostic LED and mgmt processor Diagnostics Diagnostics Diagnostics Diagnostics Diagnostics Diagnostics Diagnostics / Remote National Market / Remote National Market / Remote National Ma	·	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 0 64-bit slots ava	1 supports a ge (IDE, US ost Bridge s ilable with p	dapter PC B, bus for upports 4 ower and	I 33MHz an Super I/O I PCI-X 2.0 s attention ind	nd 66MHz, s NS 87417 [d llots dicator lights	lot for opt liskette, ke (optical s	ional ServeRA eyboard, mous ensors control	ID 8i (inc. se]), Dual Port power to slot) /
Systems management BMC standard / Remote Supervisor 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 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 Keyboard / mouse Power supplies Sid: two 775 watt hot-swap / redundant with three power supplies (N+1) / worldwide / voltage-sensing / auto-restart / rear accessible fans in each power supply / PFA Cooling fans Eight hot-swap, redundant, multi-speed fans / One cooling fan in each power supply filler when power supply is not installed / PFA / failure signals Diagnostic LED and mgmt processor Options 1GB PC2-3200 CL3 ECC RDIMM (2x1GB) 73P2865 IBM 53 + GAB 104 + Sap 104 + GAB	Ethernet Graphics controller	Broadcom [®] 5 SVGA / ATI [®] Rear: RSA et	704 10/100/1 Radeon Mobi hernet, RSA	000 dual etherne lity 7000 / on pla	et / on syste nar / 16MB	mboard / 6 SDRAM s	64-bit 266Ml td/max / 32-	hz PCI-X 2.0 ·bit 33MHz F) / Wake (PCI 2.2 bu	IS	
None standard (because rack-based)	Systems management Diagnostics	: BMC standard connectors / p fans, power s Drop-down L IBM Real Tim	d / Remote S provides remo supplies .ight Path Di e Diagnostics	supervisor Adap ote console and agnostics / print (operated through	oter II slimlin mgmt / pow nary indicato gh IBM Dire	e (optiona er on/off s r on inform ctor) availa	l) / PCI ada system / mo nation pane ble even wh	initors powe I with LEDs hile server ru	r status, o associate inning	op system, tem	nperature, disks,
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 3.6GGHz/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 International Warranty Service³ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response (ServicePac partnum 96P2253) • 3 year IOR 24x7, 4 hr avg response (ServicePac partnum 96P2253) • 4 year IOR 24x7, 2 hr avg response (ServicePac partnum 96P2254) • 4 year IOR 9x5, NBD response	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 witl wer supply / PF/ multi-speed fans	n three powers	er supplies	s (N+1) / wo	orldwide / vol	Itage-sens	Ü	
⇒ 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 • 3 year IOR 24x7, 4 hr avg response (ServicePac partnum96P2253) • 3 year IOR 24x7, 2 hr avg response (ServicePac partnum96P2254) • 4 year IOR 9x5, NBD response	Options	2GB PC2-32 4GB PC2-32 Active Memory 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) cpansion Card L2 Cache Prod L2 Cache Proder Supply (WW	GB) 73F GB) 73F 13N Upg 13N Upg 13N) 13N	22866 22867 M7409 N0694 N0695 M7415	IBM 73.4 IBM 146 IBM 300 Remote SAS 3.5 IBM 73.4	4GB 10K 3.5 GB 10K 3.5 GB 10K 3.5 Supervisor " 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 HDE lot-Swap HDE II Slimline Hot-swap HDI	D 26K5709 D 26K5710 D 26K5711 59P2984 13M7864 D 26K5698
(ServicePacpartnum 96P2255) • 5 year IOR 9x5, NBD response (ServicePacpartnum 69P2259) → Other ServicePac options at http://www.ibm.com/services/ us/its/pdf/wamomxeu.pdf → 24x7 ¹⁴ toll-free support for warranty • Opt disk	→ 3 year parts and labo → International Warran → On site, 8 am - 5 pm, coverage excluding h next business day re → On site service upgra (in eligible locations	ty Service ³ Mon - Fri ioididays, sponse time ⁷ ade options); avay response 196P2253) avay response 196P2254) response 196P2255) response 169P2259) itions at services/ pdf rt for warranty	Bay ② 5. Bay ③ 5. Bay ⑤ 5. Bays 5 trestanda Bays 11 optiona Opt disk Opt disk Opt disk Opt disk Opt disk Opt disk	25", HH 1.6" ac 25", HH 1.6" ac 25", HH 1.6" ac 25", HH 1.6" ac 5 10 (six bays); ard 3.5" SL 1" ht 16 (six bays al 3.5" SL 1" ho 17 (six bays al 3.5" SL 1" ho 18 (six bays al 3.5" SL 1" ho 19 (six bays al 3.5" SL 1"	cess, CD-F cess, open cess, open not-swap di): t-swap disk /U4 Rack o Board Tray Floppy Drive CD-RC Full High Tr.	sk bays bays r Tower	Stealt Tool-f Towe Towe Rack Rack Rack Acces Acces Setup Diagn SCSI Drop diagn proble Predic	h black colifee service r Dimension r Weight: 1-Dimension Weight: 14-Dimension Weight: 14-Dimension Weight: 14-Dimension Weight: 14-Dimension Weight: 14-Dimension Weight: 14-Dimension Weight: 15-Dimension Weight: 15-Dim	or eability ns: H15.549 to 180 s: H12" x s: H306r 4 to 158ll , fans, all ors and supplies fr poy pressing Ot Path Dia for outsiremoving e Analysis memory,	5" x W18.2" x blbs; 67.6 to 8 cm x W444m bs; 65.4 to 71 nd memory fr systemboard rom back ng F1 at start by pressing FCtrl+A at start agnostics (levide view of pog cover is® alerts on comprocessors, or	c D30"(762mm) 1.7Kg 28.2" m x D715mm .7Kg om top from front up F2 at startup up el 2 otential disks,
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 300	GB ² hot-s	wap SAS	disks			

FSB

Memory

IBM[®]

Ethernet

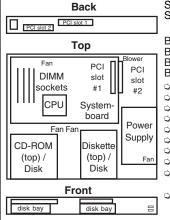
Limited Available

Type-model Qty x	Processor o	cache	MHz	Memory	type	Disk	controller	bays	anical	x bays	Eulernet	warranty	r ³ date
8673-72X Pentium 8673-73X Pentium 8673-82X Pentium 8673-83X Pentium	4 2.8BGHz 5 4 3.06GHz 5	512KB 512KB	533 533	256MB 256MB 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
Positioning Processor(s) L2 cache SMP support Implementation	Intel® Pen 512KB / o No SMP su Systemboo	itium 4 on die d upport ard con	up to prostains	one Intel	Iz 1 with 5 at process mPGA478	x-optimized serve 33MHz frontside sor speed (no L BB socket (with F PCI-X slot, and i	e bus (FSI 3 cache) Pentium 4	FC-PGA					
Memory	DIMMs / fo	our DIN	MM g	old-conne	ctor slots	three slots ava on systemboar emory controller	d / memo					CC DDR-	-SDRAM
SCSI disk controller SCSI connectors IDE disk controller Cables Disk - features	SCSI mod Enhanced SCSI mod EIDE mod	dels: C IDE bu lels: c lels: c	64-bit On adusmas one 2- one 2-	66MHz Polapter: on ster / ATA drop 16-b	CI adapte e 68-pin -100 supp it LVD SC E cable (to	gle channel Wier / one channel of SCSI connector or to two connects cable, one 1 o CD-ROM and rpm, 5.2ms read	with up to r ctors on sy -drop 40-c disk), one	15 devices ystemboo conducto 1-drop E	e support ard r EIDE cab	ole (con	nected to C	av)	
Mechanical Architecture / chipse Bus slots	ets ServerWo one CIOB- CSB5 Sou National S	orks® G -X2 I/O ith Brid semicor	Grand Bridge Ige (T Induct	I Champio ge (IMB bo hin IMB to or® PC874	on™ SĹ / us to Hos o Host Bri 114 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) Hos X Bus A v based gra , keyboard	st Bridge vith slots phics co d, mouse	(memory and PCI-) ntroller, El	controll < Bus E	er and I/O I S with dual e	Bridge) / ethernet)	
Ethernet controllers CD-ROM / diskette Rear ports Front ports / graphic Console interconnect	on planar / 24X-10X ⁶ (<i>Rear:</i> seri s <i>Front:</i> two	PCI-X CD-RC ial (9-p USB (64-bi M / II in), tw Vers	it 100MHz DE; <i>Diske</i> vo etherne 1.1); <i>Gra</i>	Bus B / fi tte: 3.5" 1 t (RJ-45), phics: SV		/ Wake on drive / dus e, analog XL / on pla	LAÑ® / A t cover DB-15 manar / 8M	lert Stand onitor / no B SDRAM	ard For parallel std/ma	mat 1.0 / tw	o rear Ru	J-45 ports
Systems mgmt Diagnostics	Diagnostic	s via P	C-Do	octor on a	standard	s system and pr IBM Enhanced onn on planar fo	Diagnostic	cs CD (di	skette can	be crea	ated) / supp	ort for op	
Security Software		d boot / ide™ (0	/ sele CD-R	ctable bod OM install	ot / unatte ation and	vord / nded start mode I configuration	51 10 12	2MB PC 3B PC21 0GB AT	2100 CL2. 00 CL2.5 I A-100 EID	5 ECC ECC DI E HDI	DDR-SDR DDR-SDR DR-SDRAM D (7200 rpi	AM DIMN 1 RDIMM m)*	//33L5038 33L5039 09N4231
Cooling fans Power supply Prerequisites	power sup	ply) / v univers eyboar	ariabl sal / a d, mo	le speed / uto-sensi use, rack	not redur ng / auto- , operatin		In 36 Ip 73 Re Se IB IB IB IB	.4GB 15h .4GB 10h ernote Su erveRAID M T541 1 M NetBA M NetBA M ACT L her optio	(Ultra160 (Ultra160 pervisor A pervisor A 5" Flat Pa Y25 Stand Y42 Ente ocal Cons	SCSIS SCSIS dapter ra160S anel Col dard Ra erprise sole Ma com/po	SCSI Adapt or Monitor ick Rack	D* D* er (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 PCÍ X 1.0 (3.3v) - SCSI adapter in some models

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

Raven black front bezel

- H 1.72" (1U) x W 17.3" x D 16.75"; 43.7mm x 439.9mm x425.5mm
- 26 to 28.4 lbs; 11.8kg to 12.9kg (minimum to max configuration) Configuration/Setup Utility: F1 at startup
- Optional System Partition: ALT+F1 at startup
- Network Boot: F12 at startup
- Operator Information Panel in front
- SCSISelect near startup by pressing CTRL+A (SCSI models) Ships with Diagnostics CD, ServerGuide Setup and Installation
- CD, and IBM Director CD, and Broadcom Ethernet CD
- Predictive Failure Analysis on disk(s) with IBM Director can alert the administrator of an imminent component failure

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

LIMITED WARRANTY³

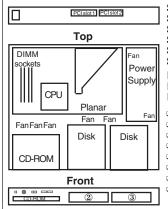
- 1 year parts and labor
- International Warranty Service³
- On site, 8 am 5 pm, Mon Fri coverage excluding holidays, next business day response time7
- On site service upgrade options (in eligible locations):7
 3 year IOR 9x5, NBD avg response
 - (ServicePac® part num 69P9505)

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

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

See footnotes for important warranty information

For GAV systems, lowercase	"y" should be replaced with a cou	untry-specific cod	de.				100	Name of Street
IBM® Machine Type GAV model	Dranger / Smoot	L2 FSB cache MHz		Disk controller	Disk bays	Mech- S anical x	Slots bays Ethernet	Ltd Available warr³ date
8849/8491 1Áy-Ax F 8849/8491 20y-20x F 8849/8491 30y-30x F 8849/8491 3Ay-3Ax F 8849/8491 40y-40x F	Pentium® 4 531 3.0GHz Pentium 4 531 3.0GHz Pentium D 830 3.0GHz Pentium 4 640 3.2GHz Pentium 4 640 3.4GHz Pentium 4 650 3.4GHz Pentium 4 660 3.6GHz	1MB 800 2x1MB 800 2MB 800 2MB 800 2MB 800	512MB 1 GB 512MB 512MB 512MB	SATA SAS/SATA SAS/SATA SAS/SATA SAS/SATA SAS/SATA SAS/SATA	2 hot-swap 2 hot-swap	1U rack 1U rack 1U rack 1U rack 1U rack	2x3 Dual Gb 2x3 Dual Gb 2x3 Dual Gb 2x3 Dual Gb 2x3 Dual Gb	1/3yr Oct 2005 1/3yr Oct 2005 1/3yr Oct 2005 1/3yr Oct 2005 1/3yr Oct 2005 1/3yr Oct 2005 1/3yr Oct 2005
Positioning Processor(s)	A highly affordable, u Intel® Pentium 4 up t Optimized for Exten	to 3.6GHz 9 ded Memo	Single Core 8 ry 64 Techno	00MHz FSB / F logy (EM64T)		z Dual Co	re 800MHz F	SB / All
L2 cache SMP support Implementation	Up to 2MB std on Per No SMP support Motherboard contains and two slots: some:	one LGA-7	75 socket, fou	r DIMM sockets	s, integrated SATA	or SAS/S	SATA, Dual Gi	gabit Ethernet
Memory	512MB std / 8GB ¹³ max All Error Checking and							DR2-SDRAM /
	SAS models: Adapter SATA models: Integrat Enhanced IDE busma SAS models: one 1-d SATA models: two 1- None standard	ted Intel con aster / ATA- rop EIDE c	troller / two-cha -100 support / able (connecte	annel / on plana one connector ed to CD-ROM)	r / Integrated Raid on systemboard	8e (Raid (0 or 1) ´	
Mechanical Architecture / chipsets Bus slots	EIA 22" Rack (1U⁴) / Intel E7210 chipset / EIDE, ethernet MAC, parallel, serial, keyboa (See below) two avail Active™ PCI slots /	Memory Co USB, Low F ard, mouse	ontroller Hub (l Pin Count Inter	face / Firmware	Hub / SMSC® LP	C47M192	Super I/O for	diskette,
Ethernet controllers	Dual Gigabit 10/100/rintegrated / port one is	1000 ethernes CSA, port	et ports / Broa two is PCI 2.2	dcom 5721 / tw / full duplex / PX	o full gigabit ethe E / Wake on LAN®	net MAC a / Rear RJ	and PHY layer J-45 ports (2)	functions /
CD-ROM / diskette Rear ports Front ports / Graphics	24X-10X ⁶ CD-ROM SI Rear: serial (9-pin), to Front: two USB (Vers ATI ⁸ RN50(ES1000) / 1	vo ethernet (s 2.0)	(RJ-45),keyboa		· ·		·	JSB (Vers 2.0)
Console interconnects Systems mgmt	No system-to-system Mini-baseboard mana voltages							ailure, and
Diagnostics	Diagnostic LEDS/ Err Diagnostics CD (disket planar for continuous	ette can be	created) / sup	port for optiona				
Security	Power-on password / unattended boot / selesecure remote power	ectable boot	t / unattended	start mode / 20	12MB PC2-4200 CL3 EC GB(2x1GB) PC2-4200 C GB(2x2GB) PC2-4200 C M 80GB SATA (7.2K) sii	L3 ECC DDR2 L3 ECC DDR2 mple-swap HI	2 RoHS 2 RoHS DD	30R5148 30R5149 30R5150 39M4500
Software	ServerGuide™ (CD-F utilities), IBM Director	ROM installa	ation and conf	figuration IB	:M 160GB SATA (7.2K) s :M 250GB SATA (7.2K) s :GB Hot-Swap SATA HE	simple-swap H simple-swap H D	HDD HDD	39M4504 39M4508 39M4518 39M4522
Cooling fans Power supply Prerequisites	Seven fans (five fans / variable speed / not 350 watt / universal / Monitor, keyboard, m	redundant auto-sensir	or hot-swap	er supply) 25 73 14 art support 36 73 14 18	50GB Hot-Swap SATA H 50GB Hot-Swap SATA H 3GB 10K 3.5" SAS Hot-S 46GB 10K 3.5" SAS Hot-S 5GB 15K 3.5" SAS Hot-S 3GB 15K 3.5" SAS Hot-S 46GB 15K 3.5" SAS Hot-S	DD wap HDD Swap HDD Swap HDD wap HDD wap HDD Swap HDD dapter II (PCI a	adapter)	39M4526 28K5709 26K5710 26K5711 26K5697 26K5698 26K5699 59P2984 71P8648
Back PCIsiot1	Some:	A Laurentia C. P.	Lb-t-back		ther options at ibm.com /	-		7 11 00-10



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

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)

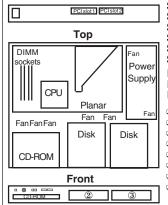
- 3 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9507)
- 3 year IOR 24x7, 2 hr response (ServicePac part num 69P9508) → Other ServicePac options at
- http://www.ibm.com/ services/us/its/pdf/wamomxeu.pdf

 ⇒ 24x7¹⁴ toll-free support for warranty

issues during the warranty period3

Maximum internal disk capacity¹³ (model dependent):

For GAV systems, lowercase	e "y" should be replaced with a country-spe	ecific code				-	
IBM® Machine	L2	FSB	Disk	Disk	Mech- Slots	•	Ltd Available
Type GAV model	Processor / Speed cache	MHz Memory	controller	bays	anical x bay	s Ethernet v	warr ³ date
8849/8891 G2y-G2x 8849/8891 G4y-G4x 8849/8891 H2y-H2x 8849/8891 H4y-H4x	Pentium® 4 631 3.0GHz 2ME Pentium D 920 2.8GHz 4ME Pentium D 920 2.8GHz 4ME Pentium D 930 3.0GHz 4ME Pentium D 930 3.0GHz 4MB Pentium D 940 3.2GHz 4MB	3 800 1GB 3 800 1GB 3 800 1GB 3 800 1GB	SATA SATA SAS/SATA SATA SAS/SATA SAS/SATA	2 simple-swap 2 hot-swap	1U rack 2x3 1U rack 2x3 1U rack 2x3 1U rack 2x3	3 Dual Gb 1, 3 Dual Gb 1, 3 Dual Gb 1, 3 Dual Gb 1,	/3yr Feb 2006 /3yr Feb 2006
Positioning Processor(s)	A highly affordable, uni-pro- Intel® Pentium 4 up to 3.0 Optimized for Extended M 2MB std on Pentium 4 / 4MB	GHz Single-Core 8 Jemory 64 Techno	00MHz FSB / logy (EM64T)		3.2GHz Dual	Core 800MF	Iz FSB / All
SMP support Implementation	No SMP support Motherboard contains one L and two slots: some: (1 PCI				or SAS/SAT	A, Dual Giga	bit Ethernet
Memory	512MB or 1GB std / 8GB ¹³ m SDRAM / All Error Checking						
SCSI disk controller SATA disk controller IDE disk controller Cables	SAS models: Adaptec® 94(SATA models: Integrated Intenhanced IDE busmaster / SAS models: one 1-drop E SATA models: two 1-drop None standard	el controller / two-cha ' ATA-100 support / IDE cable (connecte	annel / on plan one connectored to CD-ROM	ar / Integrated Raid or on systemboard /I)	8e (Raid 0 or	0 or 1)	
Mechanical Architecture / chipsets Bus slots	EIA 22" Rack (1U ⁴) / rack- Intel E7210 chipset / Mem EIDE, ethernet MAC, USB, parallel, serial, keyboard, m (See below) two available F Active™ PCI slots /	ory ControÍler Hub (Low Pin Count Inter ouse	face / Firmwar	e Hub / SMSC® LP	C47M192 Su	per I/O for dis	skette,
Ethernet controllers	Dual-Gigabit 10/100/1000 e integrated / port one is CSA	thernet ports / Broa , port two is PCI 2.2	adcom® 5721 / / full duplex / P	two full gigabit ethe XE / Wake on LAN®	ernet MAC an / Rear RJ-45	d PHY layer ports (2)	functions /
CD-ROM / diskette Rear ports Front ports / Graphics	24X-10X° CD-ROM Slim/ ID Rear: serial (9-pin), two eth Front: two USB (Vers 2.0) ATI® RN50(ES1000) / 16MB S	ernet (RJ-45),keyboa		· ·			B (Vers 2.0)
Console interconnects Systems mgmt	S No system-to-system interc Mini-baseboard manageme					ture, fan failı	ure, and
Diagnostics	voltages Diagnostic LEDS/ Error LEI Diagnostics CD (diskette ca planar for continuous powe	an be created) / sup	port for option				
Security	Power-on password / admi unattended boot / selectable	e boot / unattended	start mode /	512MB PC2-4200 CL3 EC 2GB(2x1GB) PC2-4200 C 4GB(2x2GB) PC2-4200 C	C DDR2RoHS L3 ECC DDR2 Rol L3 ECC DDR2 Rol	HS HS	30R5148 30R5149 30R5150
Software	secure remote power on A ServerGuide™ (CD-ROM i utilities), IBM Director™ and	nstallation and conf	figuration	IBM 80GB SATA (7.2K) sii IBM 160GB SATA (7.2K) s IBM 250GB SATA (7.2K) s 80GB Hot-Swap SATA HD	mple-swap HDD simple-swap HDD simple-swap HDD DD		39M4500 39M4504 39M4508 39M4518
Cooling fans	Seven fans (five fans for sy / variable speed / not redur	ndant or hot-swap	er supply)	160GB Hot-Swap SATA H 250GB Hot-Swap SATA H 73GB 10K 3.5" SAS Hot-S 146GB 10K 3.5" SAS Hot-S	DD DD wap HDD		39M4522 39M4526 40K1039 40K1040
Power supply Prerequisites	350 watt / universal / auto- Monitor, keyboard, mouse,		art support	146GB 10K 3.5 SAS H0t- 300GB 10K 3.5 SAS H0t- 36GB 15K 3.5 SAS H0t-S 73GB 15K 3.5 SAS H0t-S 146GB 15K 3.5 SAS H0t-S BM Remote Supervisor A BM ServeRAID-7t SATA II	Swap HDD wap HDD wap HDD Swap HDD dapter II (PCI adap	ter) er	40K1040 40K1041 40K1042 40K1043 40K1044 59P2984 71P8648
Back				Other options at ibm.com/	•		
PCI slot 1	Some:	ith full height 64-hit	100MHz PCL	Υ 1 በ (3 3 _V)			



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, PCle 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

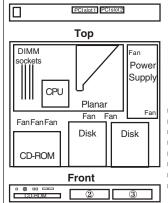
- On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- on site service upgrade
 options (in eligible locations):
 3 year IOR 9x5, NBD avg response
 (ServicePac part num 69P9505)
 3 year IOR 9x5, 4 hr avg response
 (ServicePac part num 69P9506)

- 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

	xSeries 300iii				XHEF by e	Server F	ieia Si	kilis and	Educat	lion Team	
	"y" should be replaced with a country-						01-4-				
IBM® Machine Type GAV model	Processor / Speed	L2 FSB cache MHz	Memory	Disk controller	Disk bays	Mech- anical	Slots x bays	Ethernet	Ltd warr ³	Available date	
8849/8891 K2y-K2x 8849/8891 K4y-K4x	Pentium® D 950 3.4GHz/D Pentium D 950 3.4GHz/D Pentium D 960 3.6GHz/D	C 4MB 800 C 4MB 800	2 x 512MB 2 x 512MB	SATA SAS/SATA	2 simple-swap 2 hot-swap	1U⁴ rack 1U rack	2x3 2x3	Dual GB Dual GB	1/3yr I 1/3yr I	May 2006 May 2006 May 2006	
Positioning Processor(s)	A highly affordable, uni-p				II Optimized for	r Extende	ed Mer	mory 64	Гесhno	ology	
L2 cache SMP support Implementation	(EM64T) 4MB std on Pentium D / E No SMP support Motherboard contains one and two slots: some: (1 P	e LGA-775 so	cket, four DI			ΓA or SAS	S/SATA	A, Dual Gi	igabit E	Ethernet	
Memory	1GB std / 8GB ¹³ max / four Error Checking and Corre								R2-SDF	RAM / AII	
SCSI disk controller SATA disk controller IDE disk controller Cables	SAS models: Adaptec® 9 SATA models: Integrated Enhanced IDE busmaste SAS models: one 1-drop SATA models: two 1-dro None standard	Intel controller r / ATA-100 s EIDE cable (/ two-channe support / on- connected t	el / on plana e connector o CD-ROM)	r / Integrated Rai on systemboar	id 8e (Rai d	d 0 or	or 1) 1)			
Mechanical Architecture / chipsets	EIA 22" Rack (1U ⁴) / rac Intel E7210 chipset / Me EIDE, ethernet MAC, USE parallel, serial, keyboard,	mory Controll 3, Low Pin Co	er Hub (MCI ount Interface	H) / I/O Con e / Firmware	troller Hub (ICH- Hub / SMSC® L	-S) for PC PC47M19	01 2.2 a 92 Sup	and PCI-X er I/O for	bus, A	TA-100 e,	
Bus slots	(See below) two available Active™ PCI slots /		00MHz or o	ne 64-bit PC	Cle™ x8 and one	PCI-X 1.	0 1001	MHz / no	hot-swa	ар	
Ethernet controllers	Dual-Gigabit 10/100/1000 integrated / port one is CS	0 ethernet por SA, port two is	ts / Broadco PCI 2.2 / ful	m® 5721 / tv ll duplex / PX	wo full gigabit et E / Wake on LAN	hernet MA ® / Rear	AC and RJ-45	l PHY layo ports (2)	er funct	tions /	
CD-ROM / diskette Rear ports Front ports / Graphics	24X-10X ⁶ CD-ROM Slim/ Rear: serial (9-pin), two e Front: two USB (Vers 2.0 ATI® RN50(ES1000) / 16MB	ethernet (RJ-45 0)	5),keyboard,				·		JSB (Ve	ers 2.0)	
Console interconnects Systems mgmt	No system-to-system into Mini-baseboard managen voltages							ure, fan fa	ailure, a	and	
Diagnostics	Diagnostic LEDS/ Error L Diagnostics CD (diskette planar for continuous pov	can be create	ed) / support	for optiona							
Security	Power-on password / ad unattended boot / selecta secure remote power or	ible boot / una	attended sta	rt mode / 20	12MB PC2-4200 CL3 E GB(2x1GB) PC2-4200 GB(2x2GB) PC2-4200	CL3 ECC DE	DR2 RoH	S S		30R5148 30R5149 30R5150	
Software	ServerGuide™ (CD-RON utilities), IBM Director™ a	1 installation	and configu	ration IB	M 80GB SATA (7.2K) M 160GB SATA (7.2K M 250GB SATA (7.2K)GB Hot-Swap SATA I	() simple-swa () simple-swa	p HDD			39M4500 39M4504 39M4508 39M4518	
Cooling fans	Seven fans (five fans for / variable speed / not red			upply) 25 73	60GB Hot-Swap SATA 60GB Hot-Swap SATA 8GB 10K 3.5" SAS Hot-	HDD -Swap HDD				39M4522 39M4526 40K1039	
Power supply Prerequisites	350 watt / universal / aut Monitor, keyboard, mous	to-sensing / a		30 36 73 14 IB	16GB 10K 3.5" SAS Ho 10GB 10K 3.5" SAS Hot 16GB 15K 3.5" SAS Hot 16GB 15K 3.5" SAS Hot 16GB 15K 3.5" SAS Hot M Remote Supervisor M ServeRAID-7t SAT	ot-Swap HDD -Swap HDD -Swap HDD ot-Swap HDD Adapter II (P	Cl adapte	er)		40K1040 40K1041 40K1042 40K1043 40K1044 59P2984 71P8648	
Back Other options at ibm.com/pc/us/accessories Some:											
PCIslot1	Slot 1: 3/4 le	ngth, full heigh									
Тор	Some:	•	•		` ,			EDWAR			
DIMM sockets	/ Slot 2: half le	ngth, full heigh	nt, 64-bit 100 file, PCIe x8	JMHz PCI X	1.0 (3.3v)	3 year	parts a	nd labor st nd labor st Warranty S	andard	8491 MTM	



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

Raven black front bezel

- → H 1.75" (1U) x W 17.3" x D 22"; 43mm x 440mm x 559mm
 → 24.25 to 30 lbs; 11kg to 12.7kg (minimum to max configuration)
- Configuration/Setup Utility: F1 at startup
- Network Boot: F12 at startup
- Operator Information Panel in front
- Ships with Diagnostics CD, ServerGuide Setup and Installation CD Predictive Failure Analysis on disk(s) with IBM Director can alert the administrator of an imminent component failure

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

- International Warranty Service³

- International Warranty Service³
 On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
 On site service upgrade options (in eligible locations):7
 3 year IOR 9x5, NBD avg response (ServicePac part num 69P9505)
 3 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9506)
 3 year IOR 24x7, 4 hr avg response

- (Servicerac part num espessor)

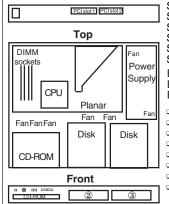
 3 year IOR 24x7, 4 hr avg response
 (ServicePac part num espessor)

 3 year IOR 24x7, 2 hr response
 (ServicePac part num espessor)

 Other ServicePac options at http://www.ibm.com/

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

IBM® Machine	Droopson / Speed		FSB		Disk	Disk	Mech-	Slots		Ltd	Available
Type model 8849/8891 FAU	Processor / Speed Pentium® D 915 2.8GHz/D0		800	Memory 2 x 512MB	sata	2 simple-swar	anical 1U4 rack	2x3	Ethernet Dual GB		Sep 2006
8849/8891 JAU 8849/8891 JBX	Pentium D 945 3.4GHz/D0 Pentium D 945 3.4GHz/D0	C 4MB	800	2 x 512MB	SATA	2 simple-swap	1U rack	2x3	Dual GB	1/3ýr	Sep 2006 Sep 2006
0043/0031 BBX	7 CHILIAN D 040 0.40112100	J HIND	000	ZXSTZIVID	OAO/OAT/	A 2 Hot swap	TO TACK	2,0	Duai GD	170y1	OCP 2000
Positioning Processor(s)	A highly affordable, uni-pi Intel® Pentium D up to 3 (EM64T)					II Optimized fo	r Extende	ed Mei	mory 64	Techn	ology
L2 cache SMP support	4MB std on Pentium D / E No SMP support	CC / fu	ll spe	ed							
Implementation	Motherboard contains one and two slots: some: (1 Pe						TA or SA	S/SAT/	A, Dual G	igabit	Ethernet
Memory	1GB std / 8GB ¹³ max / four Error Checking and Corre									R2-SD	RAM / All
	SAS models: Adaptec® 9 SATA models: Integrated In Enhanced IDE busmaster SAS models: one 1-drop SATA models: two 1-drop	ntel con / ATA EIDE c	troller -100 s able (two-channe support one connected t	el / on plana e connecto o CD-ROM	ar / Integrated Ra r on systemboar)	aid 8e (Rai rd	id 0 or			
Disk	None standard										
Mechanical Architecture / chipsets	EIA 22" Rack (1U4) / racl Intel E7230 chipset / Mer EIDE, ethernet MAC, USB	nory Co, Low F	ontroĺl	er Hub (MCI	H) / I/O Cor e / Firmware	ntroller Hub (ICH e Hub / SMSC® I	l-S) for P0 _PC47M1	CI 2.2 a 92 Sup	and PCI-X per I/O for	(bus, disket	ATA-100 te,
Bus slots	parallel, serial, keyboard, (See below) two available Active™ PCI slots /	PCI-X	1.0 1	00MHz or o	ne 64-bit Po	Cle™ x8 and one	PCI-X 1	.0 1001	MHz / no	hot-sw	/ap
Ethernet controllers	Dual-Gigabit 10/100/1000 integrated / port one is CS									er fund	ctions /
CD-ROM / diskette Rear ports Front ports / Graphics	24X-10X ⁶ CD-ROM Slim/ I Rear: serial (9-pin), two et Front: two USB (Vers 2.0 ATI* RN50(ES1000) / 16MB	thernet	(RJ-4	5),keyboard,	-	Ü	·			USB (\	/ers 2.0)
Console interconnects Systems mgmt	S No system-to-system inte Mini-baseboard managem voltages								ure, fan f	ailure,	and
Diagnostics	Diagnostic LEDS/ Error Li Diagnostics CD (diskette oplanar for continuous pow	can be	create	ed) / support	for optiona						
Security	Power-on password / adrunattended boot / selectal	ole boo	t / una	attended sta	rt mode / 2	12MB PC2-4200 CL3 GB(2x1GB) PC2-4200 GB(2x2GB) PC2-4200	CL3 ECC DI	DR2 RoH	IS IS		30R5148 30R5149 30R5150
Software	secure remote power or ServerGuide™ (CD-ROM utilities), IBM Director™ a	install	ation	and configu	ration	BM 80GB SATA (7.2K) BM 160GB SATA (7.2k) BM 250GB SATA (7.2k) 0GB Hot-Swap SATA) simple-swap () simple-swa () simple-swa	o HDD ap HDD ap HDD			39M4500 39M4504 39M4508 39M4518
Cooling fans	Seven fans (five fans for				upply) 1	60GB Hot-Swap SATA	A HDD				39M4522 39M4526 40K1039
Power supply Prerequisites	/ variable speed / not red 350 watt / universal / auto Monitor, keyboard, mouse	o-sensi				3GB 10K 3.5" SAS Hot 46GB 10K 3.5" SAS Hot 00GB 10K 3.5" SAS Ho 6GB 15K 3.5" SAS Hot 3GB 15K 3.5" SAS Hot 46GB 15K 3.5" SAS Hot 3M Remote Superviso	i Auaptei II (F	OI auapii	er)		40K1040 40K1041 40K1042 40K1043 40K1044 59P2984
Back						BM ServeRAID-7t SAT Other options at ibm.co	•		r		71P8648
PCI slot 1	Some:					uner options at ibm.co	m/pc/us/acce	3301162			



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, PCle 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

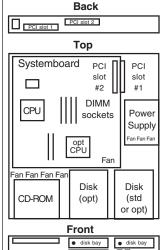
- On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time

- 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

	IDM®		D					Dist.		01.1		
	IBM® Type-model Qty x Prod		Proc. Speed		Memory	Memory type	Disk		Hot -swap or fixed disk bays	Slots x bays	Ethernet warran	-
~	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 8835-5DX 2 x Optero	on 240 on 242 on 242 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	1GB 1GB 1GB 1GB 1GB 1GB 2GB	Chipkill Chipkill Chipkill Chipkill Chipkill Chipkill Chipkill Chipkill	None (open) 80GB ² EIDE None (open) 80GB ² EIDE None (open) 80GB ² EIDE 36.4GB 10K	Ultra320 EIDE Ultra320 EIDE Ultra320 EIDE Ultra320	2 fixed 2 hot-swap 2 fixed 2 hot-swap 2 fixed	2x3 2x3	2 x Gigabit 1 yea 2 x Gigabit 1 yea	or Oct 2003 or Oct 2003 or Oct 2003 or Oct 2003 or Oct 2003
	Processor(s) L2 cache SMP support Implementation	1MB / on 2-way SI Systembo	die of pro MP / up to pard conta	cessor two C ins two	r / at prod opteron P o AMD So	cessor spe rocessors ocket 940	eed (no L3 cacl same speed/c	ne) cache size sockets,	e required) six memory D		ruction set / 32-bit	.
	Memory	slots used SDRAM I memory in	l (four slots DIMMs / six nterleave /	used ir DIMM dual ch	n 5DX mo gold-conr annel / me	del) / four s nector slots emory bus	slots available (tv on systemboard runs at 2 x 1001	vo ávail. in d / DIMMs MHz / Errc	5DX) / PC2700 must be installe or Checking an	333MH d in ma d Corre	rocessor, six with drawdressor, six with drawdressor and the registered 184-pintched pairs [a bank ecting (ECC) via 16 prors contained in the rocessor and the received the re	n ECC DDR-] / 2-way -bit
	SCSI disk controller IDE controller / cable Disk - capacity Disk - bays	64-bit 100 one 16-bit All: Enha EIDE mo SCSI mo	OMHz PCI it internal onced IDE of odels: One idels: 36.40	-X Bus channe ATA-10 2-drop GB sup	B / suppo I / 16-bit (00 control o EIDE ca ports up t	orts RAID- 68-pin LVI ler in CSB able to two to 15000 r	1 mirroring (Er D cable from systems 5 South Bridge o disk bays (pr pm disks; EIDE	mbedded stemboard / two conr imary) / c models: 8	Mirroring) with d to backplane nectors on plan one 1-drop EID 80GB / 7200 rp	two SC for two ar / one E cabl m / AT	B/sec) / on planar/ SI disks in front ba disks / no external e to CD-ROM (se A-100 / 8.7ms see sk bays Ultra320-ei	connector (CD-ROM) condary)
	Mechanical Architecture / chipsets Bus slots	AMD® 81 bridge B HyperTra National	31 PCI-X for PCI-X insport clo Semicond	Bridge expanock (PC uctor®	e Chip posion slots SI, AC '97 PC87366	roviding tv s) / 8111 ′, Etherne s Super I/0	vo PCI-X bridge I/O HyperTran t, SMBus, USE	es running sport Bri , EIDE, L	g at 100Mhz (b dge Chip supp .PC to BIOS ar	ridge <i>A</i> porting	a 200 Mhz double	nernet;
	Ethernet controllers CD-ROM/diskette/kbd Rear ports Front ports / graphics Console interconnects	on planar 24X-10X ⁶ <i>Rear:</i> tw <i>Front:</i> tw C2T Inter	r / PCI-X 6 CD-ROM o USB (Ve o USB (Ve connect™	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 <i>and keyl</i> p-pin), two : SVGA / A pported / N	duplex / Wake board: none (US ethernet (RJ-45 ATI® Rage XL / o	on LAN® / SB diskett S) / paralle n planar / 8	/ Alert Standard te and keyboar el port not supp 8MB SDRAM st	d Forma d option orted d/max /	32-bit 33MHz PCI 2	J-45 ports pported 2.2 Bus A
	Systems mgmt Diagnostics	connecto Adapter I Diagnosit	MS-9549 r on plana I card not ic LEDs fo ht Path Di	r / opti suppo or fans	onál Rem rted , memory	note Super DIMMs a		Optero Optero 512ME 1GB F	PC2700 CL2.5 I	sor Up sor Up ECC D ECC DI	grade	M 73P2267
	Security Software	unattende ServerG		selecta D-ROM	ble boot / I installat	/ unattend ion and c	rd / led start mode onfiguration	80GB 120GE 36.4G 73.4G	ATA-100 EIDE 3 ATA-100 EID B 15K Ultra320 B 15K Ultra320	HDD* E HDD SCSI I SCSI I	* Hot-Swap SL HDD Hot-Swap SL HDD	09N4226 09N4231 * 32P0734 * 32P0735
	Cooling fans Power supply Prerequisites	variable : 411 watt	spèed / 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	ServeRAID-6M Portable Disket AY ACT Local (SCSI (te Driv Console nsole N n Optio	e Manager (LCM) Manager (RCM) n	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 ① 5.25", UltraSlim 0.5", access, std CD-ROM Bay ② 3.5", SL 1", access, std fixed or hot-swap disk Bay ③ 3.5", SL 1", access, open for fixed or hot-swap disk

- Stealth black color front bezel
- Utility tray in front slides out from under middle bay (USB devices)
- → H 1.72" (1U) x W 17.3" x D 25.7"; 43.7mm x 439.9mm 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)

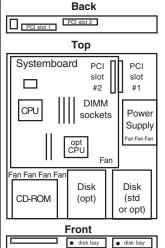
 2 year IOR 24x7, 2 hr avg response
- (ServicePac part num 96P2120)

 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 US models announced August 5, 2003 (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 MM 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 ① 5.25", UltraSlim 0.5", access, std CD-ROM Bay ② 3.5", SL 1", access, std fixed or hot-swap disk Bay ③ 3.5", SL 1", access, open for fixed or hot-swap disk

- Stealth black color front bezel
- Utility tray in front slides out from under middle bay (USB devices)
- → H 1.72" (1U) x W 17.3" x D 25.7"; 43.7mm x 439.9mm 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

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DIVI @ SCI VCI	e320111 (7909) October 2003	XNEF	by eserver Field S	Kills and Education Team
IBM® Type-GAV Qty x	x Processor/Core Speed Cache Memory	Disk / Controller Disk	Slots Kbays x bays Ether	Limited Available net warranty ³ date
7969 - 46y-46x 1 x C 7969 - 55y-55x 1 x C 7969 - 56y-56x 1 x C 7969 - 66y-65x 1 x C 7969 - 66y-66x 1 x C 7969 - 66y-66x 2 x C 7969 - 76y-67x 2 x C 7969 - 75y-75x 1 x C 7969 - 76y-76x 1 x C 7969 - 81y-81x 1 x C	Opteron®265/DC 1.8GHz¹ 2MB 2x512MB Chipkill Opteron 270/DC 2.0GHz 2MB 2x512MB Chipkill Opteron 275/DC 2.2GHz 2x2MB 4x1GB Chipkill Opteron 275/DC 2.2GHz 2x2MB 4x1GB Chipkill Opteron 280/DC 2.4GHz 2MB 2x512MB Chipkill Opteron 280/DC 2.4GHz 2MB 2x512MB Chipkill Opteron 280/DC 2.4GHz 1MB 2x512MB Chipkill Opteron 252/SC 2.6GHz 1MB 2x512MB Chipkill Opteron 254/SC 2.8GHz 1MB 2x512MB Chipkill 2x512MB Chipkill	80GB/SATA 2 fix none/Ultra320 2 hc 80GB/SATA 2 fix none/Ultra320 2 hc 80GB/SATA 2 fix 2x36GB/Ultra320 2 hc 80GB/SATA 2 fix none/Ultra320 2 hc 80GB/SATA 2 fix 80GB/SATA 2 fix 80GB/SATA 2 fix	2x3	igabit 1 year jgabit 1 year jg
Processor(s) L2 cache SMP support Implementation Memory	Entry 2-way rack server for compute-intesnsive Up to 2 x AMD® Opteron™ 280 Dual Core or 25 supports 32-bit and 64-bit computing 1MB / per core / at processor speed (no L3 cache 2-way SMP / up to two Opteron Processors (sam Systemboard contains two AMD Socket 940 micro ethernet, graphics, one PCI-E x8 and one 64-bit 1: 1GB std / 16GB max¹³ / four slots enabled with ur 160000 x resident and 160000 NR 160000 MM 18000000 NR 16000000000000000000000000000000000000	e) ne speed/cache size requ b-PGA ZIF sockets, eight 33/100Mhz PCI-X (option	uired) t memory DIMM slots n to convert PCI-X slo	, integrated SATA or SCSI, of to second PCI-E x8)
SCSI disk controller	1GB std / 16GB max ¹³ / four slots enabled with ur PC3200 registered 184-pin ECC DDR-SDRAM DII be installed in matched pairs [a bank] / 2-way men Chipkill™ supported All (not used on SATA models): LSI Logic® 53C10 64-bit 100MHz PCI-X Bus B / supports RAID-1 mi one 16-bit internal channel / 16-bit 68-pin LVD cal All: SATA-150 controller / two connectors on plana	020 / Ultra320 SCSI con	ntroller (LVD 320MB/s	sec) / on planar /
Disk - capacity Disk - bays	SCSI models: some: open some: 36GB; SATA mc SCSI models: two hot-swap / 80-pin SCA-2 connec supports 15k drives	odels: 80GB / 7200 rpm / ectors / filler panels in eac	/ 9.0ms seek ch disk bay / all disk b	pays Ultra320-enabled,
Mechanical Architecture/chipsets Bus slots	EIA 19" Rack (1U⁴) / rack-mount only / supported ServerWorks HT2000 System I/O controller con 1GHz and provides PCI-E, PCI-X and Dual Gigabit to the HT2000 via a 8x Hyper Transport bus and p Timer, Watchdog Timer, Interrupt controller and LF (See detail below) one full-length PCI-X 1.0 and on no hot-swap Active™ PCI slots	In 26" deep racks such inects to the processor's it Ethernet / ServerWork provides PCI-X, SATA 2.0 PCI he half length PCI-E x8 / 0	as the IBM NetBAY" sub-system via a 16x ks HT1000 South Bri 0, USB 2.0, ATA 100 option to convert PCI-	M Hack products Lyper Transport Bus at idge interfaces system I/O IDE, SMB, IOAPIC, Event X slot to PCI-E x8 /
Ethernet controllers Optical/diskette/kbd Rear ports Front ports / graphics Console interconnects	Two gigabit 10/100/1000 ethernet ports / Broadcom on planar / PCI-X 64-bit 100MHz / full duplex / Wal 24X-10X ⁶ CD-ROM / IDE / <i>Diskette and keyboard: Rear:</i> two USB (Vers 2.0), serial (9-pin), two ethe <i>Front:</i> two USB (Vers 2.0); <i>Graphics:</i> SVGA / ATIs C2T Interconnect™ cabling not supported / NetBay (RCM), and USB Conversion Option (UCO) are s	apported		
Systems mgmt Diagnostics Security Software	Standard MS-9549 QLogic system management / compliant / connector on planar / Remote Supervis Adapter II optional Diagnositic LEDs for fans, memory DIMMs and pr PFA / Light Path Diagnostics not supported Power-on password / administrator password / Se On/Off / unattended boot / selectable boot / unatter start mode / text console redirect via serial over L/ ServerGuide™ (CD-ROM installation and configurutilities), IBM Director™, and others	rocessors / Opteron 25 Opteron 26 Opteron 27 Opteron 27 Opteron 27 Opteron 28 Opteron 28 Opteron 28 Opteron 28 Opteron 28 Opteron 28 Opteron 28 Opteron 27 Opteron 28 Opteron 27 Opteron 28 Opteron 27 Opteron 27 Opteron 27 Opteron 28 Opteron 28	52 Processor Upgradi 54 Processor Upgradi 55 Processor Upgradi 75 Processor Upgradi 80 Processor Upgradi 80 Processor Upgradi 80 CL3 ECC DDR-SE 80 CL3 ECC DDR-SE 81-150 7.2k HDD 81-150 7.2k HDD 81-150 Ultra320 SCSI Hot-Sv	e 32R2215 e 32R2021 e 25R8960 e 25R8960 e 25R8966 DRAM kit 39M5800 DRAM kit 39M5803 39M4503 25R6903
Cooling fans Power supply Prerequisites	Eight fans (five for system, three inside power sup Calibrated Vector Cooling™ / variable speed / not r not hot-swap 411 watt / universal / auto-sensing / auto-restart s Monitor, keyboard, mouse, rack, disk (some), os	oply) / redundant / support 146GB 15K 146.4GB 10 300GB 10K IBM TotalS IBM ServeF	(Ultra320 SCSI Hot-S 0K Ultra320 SCSI Hot-S (Ultra320 SCSI Hot-S torage FC2-133 Host RAID-6M SCSI (256M	Swap HDD 40K1028 t-Swap SL HDD 40K1024 Swap SL HDD 40K1025 Bus Adapter 24P0960 IB Cache) 02R0988
Back PCISIO12 Top Systemboard PCI	Slot 1: full-length, 64-bit 133/100MHz Slot 2: half-length, PCI-E x8 Bay ① 5.25", UltraSlim 0.5", access, st Bay ② 3.5", SL 1", access, std fixe	z PCI X 1.0 (3.3v) std. / f	full-length, PCI-E x8 c	option USR9276
Slot #1 CPU III DIMM socket Opt CPU Fan Fan Fan Fan Fan Disk (opt) Front • disk bay	Utility tray in front slides out from und H 1.72" (1U) x W 17.3" x D 25.7"; 43	3.7mm x 439.9mm x653.3 imum to max configurati tartup startup L+C at startup ial interrack HV cable pocessor(s), voltage reguloly, and disk options yis (model dependent): Si disks or	international War on site, 8 am - 5 coverage exclusion) on site, 8 am - 5 coverage exclusions and on site service (in eligible location of the service and on site service and on sit service and on site service and on site service and on site ser	5 pm, Mon - Fri ling holidays, lay response time ⁷ upgrade options tions); 5, 4 hr avg response partnum69P9399) x7, 4 hr avg response artnum96P2119) x7, 2 hr avg response artnum96P2120) x7, 4 hr avg response artnum96P5150) 5, 7, 4 hr avg response artnum69P9507) 5, NBD response

- System Fathlith Book. ACT I at startup

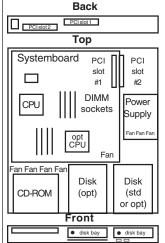
 Network Boot: F12 at startup

 Operator Information Panel in front

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

- issues during the warranty period3

IBM®Type-GAV Qty	x Processor/Core	Speed	L2 Cache	Memory	Disk / Contr	roller	Disk bays	Slots x bays	Ethernet	Limited warranty ³	Available date
	Opteron®285/DC		2MB 2MB	2x512MB Chipkill 2x512MB Chipkill	none/Ultra 80GB/SAT	1320 2 FA 2	2 hot-swap 2 fixed	2x3 2x3	Dual Gigabit Dual Gigabit	1 year 1 year	Apr 2006 Apr 2006
,									3	,	,
Positioning Processor(s)	Entry 2-way ra	ack serve	er for con™ 28	ompute-intesnsive 5 Dual Core or 25	applicatio 4 Single Co	ns and ore / 800	dual core Mhz Hype	comp rTrans	uting at an a	ttractive gy / Simult	price aneously
L2 cache SMP support Implementation	2-way SMP / u	owt ot qu	Optero	outing speed (no L3 cache n Processors (same) Socket 940 micro- 8 and one 64-bit 13	e speed/cac	the size ockets, e PCI-X (op	required) eight memo otion to cor	ory DIM	IM slots, integ CI-X slot to s	rated SAT	A or SCSI -E x8)
Memory	PC3200 registe	ered 184- matched r	oin ECC	ots enabled with un C DDR-SDRAM DIN bank] / 2-way mem	/IMs / eight	DIMM g	old-connec	tor slot	s on systemb	oard / DIN	/IMs must
SCSI disk controller	64-bit 100MHz	PCI-X Bi	ıs B / s	LSI Logic® 53C10	r rorina (Eml	bedded I	Mirrorina) v	with two	SCSI disks	in front ba	vs /
SATA controller/cabl Disk - capacity Disk - bays	one 16-bit inter e All: SATA-150 SCSI models:	nal chanr controller some: ope wo hot-sv	nel / 16 / two co en some	i-bit 68-pin LVD cab onnectors on planar e: 36GB; <i>SATA mo</i> 0-pin SCA-2 connec	ole from syst r / two 1-dro dels: 80GB /	temboard p cables / 7200 rp	d to backpl / 1 IDE om / 9.0ms	ane fo	two disks / r	o external	connector
Mechanical Architecture/chipsets	EIA 19" Rack ServerWorks I 1GHz and prov to the HT2000	(1U ⁴) / ra H T2000 S rides PCI- via_a 8x I	ck-mou System E, PCI- Typer T	nt only / supported //O controller con -X and Dual Gigabit ransport bus and p ot controller and LP	in 26" deep nects to the t Ethernet / s rovides PCI-	racks si process ServerW -X, SATA	uch as the sor sub-sys /orks HT1 \ 2.0, USB	IBM Notem vi 000 Sc 2.0, A	etBAY™ Racl a a 16x Hype buth Bridge i TA 100 IDE, \$	c products r Transpo nterfaces s SMB, IOAF	rt Bus at system I/O PIC, Event
Bus slots	(See detail belono hot-swap A	ow) one fu	ıll-lengtl	of controller and LP n PCI-X 1.0 and one	e half length	PCI-E x	8 / option t	o conv	ert PCI-X slot	to PCI-E >	k8 /
Ethernet controllers	Two gigabit 10/	/100/1000 -X 64-bit	ethern 100MH	et ports / Broadcom z / full duplex / Wak	BCM5780 / ke on LAN®	/ two full / two rea	gigabit eth	ernet N	MAC and PHY	layer fund	ctions /
Optical/diskette/kbd Rear ports Front ports / graphic Console interconnec	ts C2T Interconne	ect™ cabli	ng not	z / full duplex / Wak ette and keyboard: al (9-pin), two ether aphics: SVGA / ATI supported / NetBay option (UCO) are su	Local Cons	diskette / paralle on planar sole Man	and keybo I port not s / 16MB Sl ager (LCM	pard op support DRAM I), NetI	tional); legacy ed std/max / 102 3ay Remote 0	not supp 24x768x32 Console M	orted 2bit@85Hz anager
Systems mgmt	Standard MS-9 compliant / con	549 QLog	gic syste planar	em management / I / Remote Supervis	PMI 1.5 or	Opteror	254 Proc 265 Proc	essor	Upgrade		32R2215 32R2021
Diagnostics	Adapter II optio Diagnositic LEI	nal Os for fan	s, mem	nory DIMMs and pro		Opteror	n 275 Proc n 285 Proc C3200 CL3	essor	Upğrade DDR-SDRAM	kit	32R2023 40K1977 39M5800
Security	PFĂ / Light Pat Power-on pass On/Off / unatte	word 7 ac	dministra	ator password / Sec ctable boot / unatter	cure Power	2GB PC 80GB S	C3200 CL3 SATA-150	ECC 7.2k HI	DDR-SDRAM DD	kit	39M5803 39M4503
Software	start mode / te:	xt console (CD-RO	e redired M insta	ct via serial over LA llation and configur	NI I	73GB 1 146GB 146.4GI	SATA-150 5K Ultra32 15K Ultra3 B 10K Ultra	0 SCS 20 SC 3320 S	l Hot-Swap F SI Hot-Swap CSI Hot-Swai	HDD HDD SL HDD	25R6903 90P1319 40K1028 40K1024
Cooling fans	Eight fans (five Calibrated Vecinot hot-swap	for syste tor Coolin	m, thre∉ g™ / va	e inside power suppriable speed / not re	oly) /	300GB IBM Tot IBM Se	10K Ultra3 talStorage rveRAID-6l	FC2-10 FC2-10 M SCS	SI Hot-Swap 3 33 Host Bus 7 31 (256MB Ca	SL HDD Adapter che)	40K1025 24P0960 02R0988 05K9276



Power supply Prerequisites

Slot 1: full-length, 64-bit 133/100MHz PCI X 1.0 (3.3v) std. / full-length, PCI-E x8 option

Slot 2: half-length, PCI-E x8

not hot-swap 411 watt / universal / auto-sensing / auto-restart support Monitor, keyboard, mouse, rack, disk (some), os

Bay ① 5.25", UltraSlim 0.5", access, std CD-ROM

Bay ② 3.5", SL 1", access, std fixed or hot-swap disk Bay ③ 3.5", SL 1", access, open for fixed or hot-swap disk

Stealth black color front bezel

Utility tray in front slides out from under middle bay (USB devices)

Samy day in Horit sinces out norm under findate 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): 600GB with two 300GB SL SCSI disks or 320GB with two 160GB SATA disks

LIMITED WARRANTY³ 1 year parts and labor

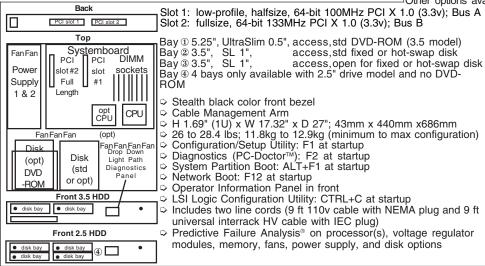
USB Portable Diskette Drive

1 year parts and labor
International Warranty Service®
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
1 year IOR 9x5, 4 hr avg response
(ServicePace® partnum69P9399)
2 year IOR 24x7, 4 hr avg response
(ServicePacepartnum96P2119)
2 year IOR 24x7, 2 hr avg response
(ServicePacpartnum96P210)
3 year IOR 24x7, 4 hr avg response
(ServicePacpartnum69P9507)
3 year IOR 9x5, NBD response
(ServicePacpartnum69P9505)
Other ServicePacpotions at
www.ibm.com/services/us/its/pdf/wan

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

issues during the warranty period3

IBM® Type-GAV-model Qty	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. 3 1GB None (open 2. 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-E2y-E2x 1 x Xeon 3.0GHz 2MB 2GB None (open 2.5) Ultra320 None 585W 4 hot-swap 2x4 2 x Gigabit 3 year Mar 2005 Positioning Processor(s) Cache SMP support Implementation 8837-E2y-E2x 1 x Xeon 3.0GHz 2MB 2GB None (open 2.5) Ultra320 None 585W 4 hot-swap 2x4 2 x Gigabit 3 year Mar 2005 A highly manageable, ultra-dense 1U, 2-way server that delivers performance computing in space-constrained environments 1 x Intel® Xeon 3.0, 3.2, 3.4, 3.6GHz with 800MHz / 2MB L2 Cache / Extended Memory 64 Technology (EM64T) 2MB L2 cache on all models / on die of processor / at processor speed / ECC 2-way SMP / up to two Xeon Processors (same speed/cache size) Systemboard contains two Intel 604 pin micro-PGA ZIF sockets, eight DIMM slots, two PCI-X slots (one full length 133MHz, one low-profile 100MHz) and integrated SCSI or SATA, dual GB ethernet, graphics												
Memory	connector slots on	GB std / 16GB max ¹³ / 8 slots (6 avail) / PC2-3200 400MHz registered 240-pin ECC DDR2-SDRAM DIMMs / eight DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / Active Memory(TM): online spare and memory mirror / Error Checking and Correcting (ECC)										
SCSI disk controller SATA disk Controller IDE controller / cable Disk - MAX capacity Disk - bays	LSI Logic® 53C1020 / Ultra320 SCSI controller (LVD 320MB/sec) / on planar / supports RAID-1 mirroring (Embedded Mirroring) with two SCSI disks in front bays / one 16-bit internal channel / no external connector Enhanced SATA-150 (150MB/sec) controller / two connectors on planar / two one-drop cables one 1-drop EIDE cable to DVD-ROM SCSI 3.5: 292GB with two 146GB HDD SCSI 2.5:four 2.5" 73GB HDD SATA: 500GB with two 250GB HDD SCSI: two hot-swap or four 2.5" hot-swap / 80-pin SCA-2 connectors SATA: 2 simple-swap											
Mechanical Architecture / chipsets Bus slots Ethernet controllers DVD-ROM / diskette Rear ports Graphics	Mechanical Architecture / chipsets Architecture / chipsets EIA 19" Rack (1U⁴) / rack-mount only / supported in 26" deep racks such as the IBM NetBAY™ Rack products Intel E7520 / Intel Memory Controller Hub (MCH) / 3 PCI buses (one 64bit/133MHz PCI-X1.0, one 64bit/100MHz PCI-X1.0, and 32bit/33MHz PCI) / Intel PCI-X Bridge (supports 133MHz PCI-X slots 1 & 2, LSI Logic 53C1020) / ICH5R South Bridge (Thin IMB to Host Bridge for graphics controller, EIDE, USB, SMBus, LPC bus to Super I/O) / National PC87427 Super I/O (supports legacy components; keyboard, mouse, serial) (See below) two available PCI-X 1.0 / no hot-swap Active™ PCI slots / optional full-length PCI-Express x8 Riser Avail Two gigabit 10/100/1000 ethernet ports / Broadcom BCM5721 / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / Alert Standard Format 2.0 / two rear RJ-45 ports Some: DVD-ROM / IDE; Diskette: none Rear: Two USB (2.0), serial (9-pin), video, two ethernet (RJ-45), one RJ-45 (sys mgmt) / mouse ps2 / keyboard ps2											
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 C	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	Monitor, keyboard, mouse, rack, disk (some), operating sys 36.4GB 10K Ultra320 SCSI Hot-Swap 2.5" HDD 32P075 ServeRAID 6i+ adaptor Remote Supervisor Adapter II slimline 73P934 Second 585W Power supply 90P528 PCI-Express x8 full-length riser card 22R929 Other options available at www.ibm.com/pc/us/accessories											

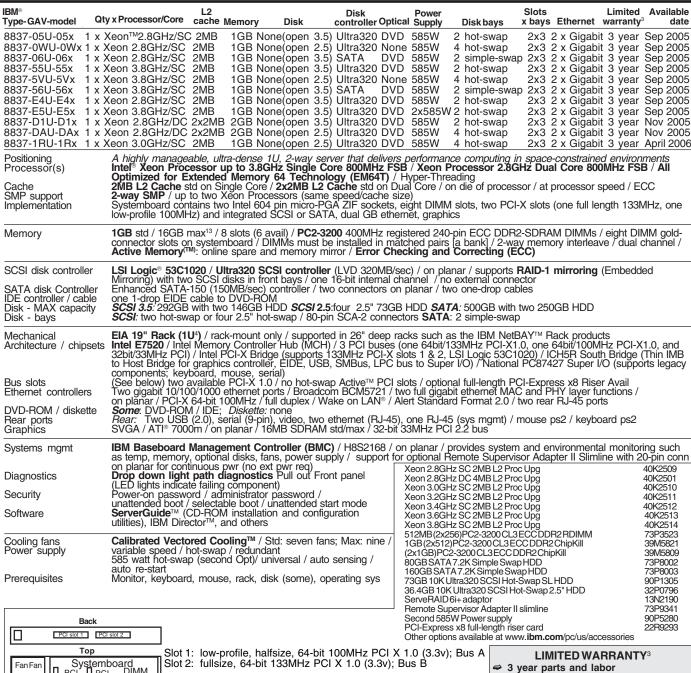


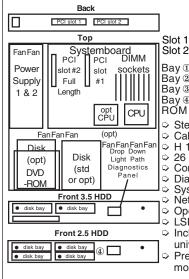
LIMITED WARRANTY³

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





Bay ① 5.25", UltraSlim 0.5", access,std DVD-ROM (3.5 model) Bay ② 3.5", SL 1", access,std fixed or hot-swap disk access,open for fixed or hot-swap access, open for fixed or hot-swap disk Bay @ 4 bays only available with 2.5" drive model and no DVD-

- Stealth black color front bezel
- Cable Management Arm
- H 1.69" (1U) x W 17.32" x D 27"; 43mm x 440mm x686mm 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

- International Warranty Service³
- On site, 8 am 5 pm, Mon Fri coverage excluding holidays, next business day response time7
- On site service upgrade options (in eligible locations):7
 - 3 year IOR 9x5, 4 hr avg response (ServicePac® part num 21P2072)
 - 3 year IOR 24x7, 4 hr avg response
 - (ServicePac part num 21P2073) 3 year IOR 24x7, 2 hr avg response
 - (ServicePac part num 21P2074) 4 year IOR 24x7, 4 hr avg response
 - (ServicePac part num 69P9244) 5 year IOR 9x5, NBD response
 - (ServicePac part num 69P9246)
 Other ServicePac options at http://www.ibm.com/
 - services/us/its/pdf/wamomxeu.pdf 24x7¹⁴ toll-free support for warranty issues during the warranty period3

IBM® Type-model Qty x Pr	000000	L2 cache	FSB MHz	Memory	Memory type	Disk	Disk	Hot -swap o fixed disk bay		Ethornot	Limited warranty ³	Available date
8676-1AX 1 x Xeon			533	512MB		None (open)		2 hot-swa			oit 3 year N	
0070 170X 1 X X0011	2.0D GI12	OTZIND	000	OTZIVID	Ornpitiii	rione (open)	01114020	2 110t 5Wa	p 2x-	Z X Gigar	ii o your i	viai 2000
DC powe	er models	are desi	igned fo	r netwo	rk infras	tructures req	uiring net	work				
equipme	nt to supp	oort DC	power e	environn	nents							
Positioning Processor(s) L2 cache SMP support Implementation	1 x Intel® 512KB / o 2-way SM Systembo	Xeon 2. on die of p IP / up to oard conta	8BGHz ¹ rocessor two Xeor ains two l	with 533 / at process ntel 603-	MHz fror essor spe sors (sam oin micro-	erver that deliventside bus / Hoed (no L3 cache speed/cache PGA ZIF sock thernet, graph	yper-Threa ne) size) ets, four me	ding technol	ogy			
Memory	PC2100 2 must be in	66MHz renstalled in ecking an	egistered matched nd Corre	184-pin l pairs [a cting (EC	ECC DDF bank] / 2- C) via 16	o slots availab R-SDRAM DIM way memory ii 6-bit Checksui ochips)	Ms / four D nterleave /	dual channel	/ memory	bus ruńs a	t 2 x 100M	Hz/
SCSI disk controller IDE controller / cable Disk - capacity Disk - bays	64-bit 100 one 16-bit All: Enhar EIDE mod SCSI mod	MHz PCI t internal nced IDE dels: One dels: none	I-X Bus E channel ATA-100 2-drop E standar	3 / suppor / 16-bit 6) controlle EIDE cab rd / suppor	rts RAID- 8-pin LVI er in CSB le to two orts up to	C1020 / Ultra 1 mirroring (E D cable from s 5 South Bridge disk bays / one 15000 rpm dis onnectors / fille	Embedded ystemboar e / two con e 1-drop El sks; <i>EIDE r</i>	Mirroring) w d to backplar nectors on pl DE cable to models: 40Gl	ith two SC ne for two anar / one CD-ROM 3 / 7200 rp	SI disks in disks / no e a 1-drop ID om / ATA-1	front bays external co E cable (Cl 00 / 8.7ms	nnector D-ROM) seek
Mechanical Architecture / chipsets Bus slots	s ServerWo one CIOB slot 2 and SMBus, L	orks® Gra 3-X2 I/O B Ultra320 .PC bus to	ánd Cha Bridge (IM) / CSB5 o Super I	mpion ™ 1B2 bus t South Bı /O) / Nati	4.0 LE / 0 to Host Bridge (Thi onal Sem	orted in 26" dee CMIC LE Host ridge for PCI-X n IMB to Host niconductor® P swap Active™	Bridge (me (Bus A wit Bridge for C87417 Si	emory contro h slot 1 and o PCI 2.2 Bus	ller and I/ dual ether C with gra	O Bridge) / net and PC	I-X Bus B	
Ethernet controllers CD-ROM / diskette Rear ports Front ports / graphics Console interconnect	on planar 24X-10X ⁶ Rear: on Front: two sC2T Interd Technolog	/ PCI-X 6 CD-ROM e USB (Vo o USB (Vo connect ^{TN} gy Cable	4-bit 100 1/IDE; <i>L</i> ers 1.1), ers 1.1); d cable (1 Kit requir	MHz Bus Diskette: 3 C2T in, C Graphics 0 inch, 2 red at end	A / full du 3.5" 1.44N 22T out, s 5: SVGA / 45mm) is d of chain	standard (Key (a cable with	n LAN® / AÌ ve / dust co vo ethernet . / on plana yboard Vid separate ko	ert Standard over t (RJ-45), one r / 8MB SDR, eo Mouse (K eyboard, mo	Format 1. RS-485 AM std/ma VM) chair use, moni	.0 / two real (sys mgmt) ax / 32-bit 3 ning cable) tor connect	r RJ-45 por / no paralle 3MHz PCI / one Cable tors)	ts el port 2.2 bus e Chain
Systems mgmt	IBM Integ	rated sy	stem ma	anageme	ent proce	essor (ISMP)	H8S2148	on planar /	orovides s	system and	environme	ental

monitoring such as temp, memory, optional disks, fans, power supply / support for optional Rémote 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

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 (X335DC-A) © IBM Corp. February 2003

See footnotes for important warranty information

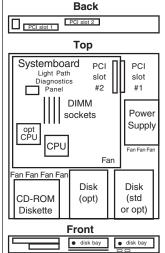
⁼ Hot-swap

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)										
must be installed in matched pairs [a bank] / 2-way memory inter Error Checking and Correcting (ECC) via 16-bit Checksum C	CC2100 266MHz registered 184-pin ECC DDR-SDRAM DIMMs / four DIMM gold-connector slots on systemboard / DIMMs nust be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / memory bus runs at 2 x 100MHz / cirror Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ (corrects 1, 2, 3, or 4-bit errors on same chip and letects 2- through 8-bit errors contained in two chips). 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										
Two gigabit 10/100/1000 ethernet ports / Broadcom BCM5703 / ton planar / PCI-X 64-bit 100MHz Bus A / full duplex / Wake on Lz 24X-10X° CD-ROM / IDE; Diskette: 3.5" 1.44MB diskette drive / Rear: one USB (Vers 1.1), C2T in, C2T out, serial (9-pin), two € Front: two USB (Vers 1.1); Graphics: SVGA / ATI® Rage XL / or SC2T Interconnect™ cable (10 inch, 245mm) is standard (Keybo Technology Cable Kit required at end of chain (a cable with sep	AN® / Alert Standard Format 1.0 / two rear RJ-45 ports dust cover bthernet (RJ-45), one RS-485 (sys mgmt) / no parallel port n planar / 8MB SDRAM std/max / 32-bit 33MHz PCI 2.2 bus ard 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

(X335DC-B) © IBM Corp. January 2004

See footnotes for important warranty information

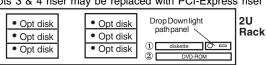
### Second Company Schild risk Second Controller anical bays disk havy Panel supply Complain ### Second Controller Second Controller															
DC power models are designed to network infrastructures requiring network equipment to support DC power environments Positioning Processor(s) Proce		x Processor									Complian	Available t date			
Processor(s) L2 cache	DC power	r models are desi	gned for netwo	ork infrastructui			6x4	2 fixed	Yes	DC powe	r NEBS-3	Apr 2002			
Error Checking and Correcting (ECC) memory controller / matched pairs required / two-way interleaving/ SCSI channels SCSI disk bays SCSI disk bays SCSI disk bays IDE controller / cable IDE Chromatic in the state of th	Processor(s) L2 cache Implementation	2 x Intel® Pentiu 512KB std and a Motherboard co 2-way SMP via	um® III 1.26ĞH max / ECC / at ntains two Inte second identio	z-S with 133MF processor spee I PGA370 socke cal processor is	Hz frontside bu d / processor a ets, six DIMM se standard	us nd L2 cac ockets, two	he in Fl o PCI ri	ip Chip F	Pin Grid	Array (FC	-PGA2)	ystems			
SCSI Channel S. cost idental 16-bit 8-pm vHDDC 88-pin external connector (no cables) SCSI Channel 8: cost internal 16-bit 8-pm vHDDC 18-pin external connector (no cables) SCSI Channel 8: cost internal 16-bit 8-pm vHDDC 28-bit from controlled to two-bay disk drive carrier 1.36GB Utra 160 SCSI; 10K rpm, 4-pm read seek, S.M.A.R.T. 1.5CB VAR 1.5CB	Memory	Error Checking	and Correcti	ng (ECC) memo	ory controller / r	natched p	airs req	uired / tw ports reg	vo-way i istered (nterleavin SDRAM E	g / CC DIMM	1s only			
Back support PCI bus slots Chipset Chi	SCSI disk SCSI disk bays	SCSI Channel A SCSI Channel E 1 x 36GB Ultra1 Two fixed disk b	CSI Channel A: external 16-bit .8mm VHDCI 68-pin external connector (no cables) CSI Channel B: one internal 16-bit 68-pin LVD cable from controller to two-bay disk drive carrier COUNTY (1968) COUNTY												
24X-10x° CD-ROM/ multisession / IDE iniefrace / bootable; Diskettle: 3.5° 1.44MB diskette drive / dust cover tear provides and the connector for front panel alarm relay contacts / no parallel port / mouse connects to USB port (version 1.1); RJ-45 ethernet; DB-15 graphics; 686-pin SCSI; DB-15 male connector for front panel alarm relay contacts / no parallel port / mouse connects to USB port (version 1.1); RJ-45 ethernet; DB-15 graphics; 686-pin SCSI; DB-15 male connector for front panel alarm relay contacts / no parallel port / mouse connects to USB port (or keyboard port with standard Y-splitter cable) 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 / damin password / unattended boot / selectable boot / boot without keyboard / diskette write protect Alarm panel Status LEDs Systems mgmt Systems mgmt Diagnostics Systems mgmt Diagnostics Diagnostics Diagnostics Systems protect information Panel (in front) / includes switches (NMI, power, reset) and status LEDs (NIC, disk, main power) uncessors, temperature, voltage, and power supplies activate alarm panel LEDs/ Software ship porus Reyboard / mouse Systems mgmt Diagnostics Fower supply Software ship porus Reyboard / mouse sound management Controller) / on planar / failures or thresholds in fans, memory, processors, temperature, voltage, and power supplies activate alarm panel LEDs/ Reyboard / mouse salarm panel late Damp or a failure signal and panel pa	Rack support PCI bus slots Chipset	Designed for ins (See below) thre PCI 2.2 / peer P ServerWorks® South Bridge) / I CSB5 South Brid Baseboard Mana	A 19" Rack (2U ⁴) x 20-inch deep esigned for installation in a two-post, 19" rack unit only (not supported in IBM NetBAY™ Racks) / ships with rack mount kit ee below) three full height full length 64-bit 33MHz slots / three low-profile half length 64-bit 66MHz PCI slots / CI 2.2 / peer PCI buses / no hot-swap Active™ PCI slots erverWorks® III HE-SL chipset / CNB20HE-SL North Bridge for CIOB and PCI A 32-bit 33MHz (graphics, ethernet, buth Bridge) / NB6555 Champion I/O Bridge (CIOB20) for PCI Bus B (slots, SCSI) and C (slots) / SB5 South Bridge for EIDE, USB, LPC bus for Super I/O National Semiconductor PC8741(diskette, serial, keyboard) and aseboard Management Controller												
Alarm panel Status LEDs Status LEDs Systems mgmt Status LEDs: Operator Information Panel (in front) broadleds switches (MMI, power, reset) and status LEDs (NIC, disk, main power) untegrated service processor (Baseboard Management Controller) / on planar / failures or thresholds in fans, memory, processors, temperature, voltage, and power supplies activate alarm panel 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 (NIC, disk, main power) networks and power outages / for the sholds in fans, memory, processors, temperature, voltage, and power supplies activate alarm panel LEDs (NIC, disk, main power) networks and power outages / for the sholds in fans, memory, processors, temperature, voltage, and power supplies and configuration utilities, intel Server Control server management software, Product Guide), PC-Doctor™ diagnostics diskette, and IBM Director (on separate CD) Keyboard / mouse Product Guide), PC-Doctor™ diagnostics diskette, and IBM Director (on separate CD) Red Hat Linux 7: 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) Store (Status 2): Status 2: Status	CD-ROM / diskette Rear ports	24X-10X ⁶ CD-R Two USB ports (connector for fro Y-splitter cable)	k Intel 82550 / on planar / full duplex / supports Wake on LAN®, PXE 2.0 Boot Agent, Adapter Fault Tolerance Failover X-10X6 CD-ROM / multisession / IDE interface / bootable; <i>Diskette:</i> 3.5" 1.44MB diskette drive / dust cover vo USB ports (Version 1.1); RJ-45 serial; PS/2 keyboard; two RJ-45 ethernet; DB-15 graphics; 68-pin SCSI; DB-15 male innector for front panel alarm relay contacts / no parallel port / mouse connects to USB port (or keyboard port with standard splitter cable)												
Status LEDs Systems mgmt Status LEDs Systems mgmt Operator Information Panel (LEDs; power alarm fault, major alarm fault alar	Security	Power-on passv													
Power supply Std: two: max: two accessible from rear / 350 watt (-48 to -60 V dc [direct current]) / supports dual input sources (two power sources) / redundant / hot-swap / auto-restart support Fans	Status LEDs Systems mgmt Diagnostics OS support	four alarm panel Operator Inforr Integrated serv processors, tem LED diagnostics Red Hat Linux Resource CD (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,												
Fans Four tans / 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 33MHz PCI 2.2 (5v), Bus B Slot 3: fullsize, 64-bit 33MHz PCI 2.2 (5v), Bus B Slot 3: fullsize, 64-bit 33MHz PCI 2.2 (5v), Bus B Slot 4: low-profile, 64-bit 66MHz PCI 2.2 (3.3v), Bus C Slot 5: low-profile, 64-bit 66MHz PCI 2.2 (3.3v), Bus C Slot 6: low-profile, 64-bit 66MHz PCI 2.2 (3.3v), Bus C Slot 6: low-profile, 64-bit 66MHz PCI 2.2 (3.3v), Bus C Slot 5: low-profile, 64-bit 66MHz PCI 2.2 (3.3v), Bus C Slot 6: low-profile, 64-bit 66MHz PCI 2.2 (3.		Std: two; max: to 350 watt (-48 to supports dual in	wo / accessible -60 V dc [direction of the course of the course of the course of the course of the cours of the cours of the cours of the course of the cours of the cours of the cours of the course	ect current])/ wo power sourc	es)/	1GB 9 36.4G IBM E IBM 9	SDRAM 3B 10K 54 (13. 3leek Tv	1 ECC DI Ultra160 .8" viewa vo-Butto	MM 133 SCSI S ble) FSI n Mouse	MHz RDII L HDD 「Monitor ((black)	MM black)	33L3326 06P5751 633147N 28L3673			
Slot 2: fullsize, 64-bit 33MHz PCI 2.2 (5v), Bus B Slot 3: fullsize, 64-bit 33MHz PCI 2.2 (5v), Bus B Slot 4: low-profile, 64-bit 66MHz PCI 2.2 (3.3v), Bus C Slot 5: low-profile, 64-bit 66MHz PCI 2.2 (3.3v), Bus C Slot 6: low-profile, 64-bit 66MHz PCI 2		fan failure signa fan in each pow Appropriate de p	ls front panel a er supply / fan power source a	larm LED / on each Pentiu and customer su	m III processor applied wiring,							28L3644			
All models: Max int disk capacity: issues during the warranty period 72.8GB² with two 36.4GB SL disks	ervice ³ 1 - Fri lays, nse time ⁷ ervice ble excluding e time mber) , se time nber) , se time nber) or warranty														

IBM® Type-model Qty x P	Processor	L2 cache Memory	Ultra320 SCSI disk	SCSI controller	Mech- anical	Slots x bays			Power supply	Compliant	Available date
8847-14X 2 x Pentium [®] 8847-24X 2 x Pentium		512KB 2GB 1 x	(146.8GB 10K	2 x Ultra320	2U rack	6x3	2 HS	Yes D	C powe	er NEBS-3 er NEBS-3 environme	Jul 2004
Positioning N Processor(s) 2 L2 cache 51 Implementation M	letwork Equipment x Intel® Pentiun 12KB std and male to the report of th	t Building System **Seon 2.4GHz **x / ECC / at proce **ins two Intel So	n (NEBS) level 3 with 533MHz essor speed / p cket 604 INT3	3-compiant for to z frontside bu rocessor and La /FCPGA, six D	elecomn s 2 cache i IMM soo	nunication in Flip C	ons car	rier-gra Grid A	de enviro	onments -PGA2)	
sh	p to 2GB std / 1 nips with two 512 latched pairs requ	GB or 1GB DIM	/IMs / Error Cl	hecking and C	orrectir	ng (ECC	C) mem	nory cor	/ Four s ntroller /	ockets av	ailable /
SCSI channels Si SCSI disk SCSI disk bays Ti	er Adaptec® AIC-7902W / dual channel Wide Ultra320 SCSI controller (LVD 320MB/sec) / on planar / 64-bit PCI 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 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 ble EIDE ATA-66 controller in South Bridge / one connector on planar / one 1-drop IDE cable (to CD-ROM)										
Rack support PCI bus slots (S Pr Chipset In IC	IA 19" Rack (2U esigned for instal See below) three CI 2.2 / peer PCI tel® E7501 chip outh Bridge) / PCH3-S South Bridgaseboard Manag See diagram belo	lation in a two-pot full height full ler I buses / no hot- set / E7501 MCI 64Hz PCI Bus B ge for EIDE, US ement Controlle	ost, 19" rack unngth 64-bit 133 swap Active™ H North Bridge (slots, SCSI) a B, LPC bus for	MHz slots / thre PCI slots for CIOB and and C (slots) / Super I/O Nat	e low-p PCI A 6 ional Se	rofile ha 4-bit 33 micond	alf leng 3MHz (ç	th 64-bi	t [′] 66MHz s, etherr	z PCI slots net,	s /
CD-ROM / diskette 24 Rear ports Tv	x Intel 82546 / on planar / full duplex / supports Wake on LAN®, PXE 2.0 Boot Agent, Adapter Fault Tolerance Failover 4X-10X6 CD-ROM / multisession / IDE interface / bootable wo USB ports (Version 1.1); RJ-45 serial; PS/2 keyboard; two RJ-45 ethernet; DB-15 graphics; 68-pin SCSI; DB-15 male connector for front panel alarm relay contacts / no parallel port / mouse connects to USB port (or keyboard port with standard -splitter cable) VGA / PCI bus / ATI® Rage XL (on planar) / 8MB SDRAM std/max / 1600x1280 at 16M colors at 85Hz / 15-pin D-shell										
Security Po	ower-on passwor	rd / admin passy	ord / unattend	led boot / selec	table bo	ot / boo	ot witho	out kevt	oard		
Status LEDs Systems mgmt Diagnostics OS support Software ship group Research	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)										
Power supply Si	one (since rack-b. td: one (14X) or 80 watt (-48 to - upports dual inpuredundant / hot-s	two (24X); <i>max</i> . 60 V dc [direc t t sources (two po	t current]) / ower sources) /	ble from rear (IM Mem ecial Bid		73P4126
fa fa A _l	our fans / multispe in failure signals fi in in each power s ppropriate DC po ionitor, keyboard,	ront panel alarm supply / fan on ea ower source and	LED / ach Pentium III d customer sup	processor oplied wiring,							
Slot 2: fullsize, 64-bit	t 133MHz PCI-X t 133MHz PCI-X disk bay 2 cess, std CD-access, std disk	5v), Bus B 5v), Bus B (3.3v), Bus C (3.3v), Bus C (3.3v), Bus C (3.4v), Bus C	⇒ Configurat pressing F ⇒ SCSISelec CTRL+A ⇒ PC-Doctor ⇒ Several ha ⇒ H 3.45" x ' ⇒ H 87.6 mn ⇒ 34 to 37 p	ck color (front ion/Setup Utility: 2 at startup ct near startup diagnostics ardcopy publica W 17.14" x D 2 n x W 435.3 mrounds (15.4 to	vinvoked by presion disk attions 0.0" n x D 50 16.8 kg	sing ette 08 mm		3/3 yea Internat On site, coverag next bu 2 year upgrad locatior • 9 hr holid 96P2 • 24 hi 2 hol 96P2 224 x ¹⁴ t	r parts a rional Wa 8 am - 5 ge exclus siness don site e option is): coverag ays, 4 h 122 x 7 da ur avera 123 x 7 da ur avera 124 oll-free silional Wall was siness of the silional free silional was siness of the silional was siness of the silional was silional free silional was	y coverage ge respon y coverage ge respon support fo	rvice ³ - Fri ays, se time ⁷ service service se time e, se time e, se time e, sse time er warranty
				Max int disk ca _l h two 146.8GB		6					ty period ³

IBM® Type-GAV-model Qty	L2 y x Processor Cache Memory	SCSI Disk controller	Form Factor	Slots x bays (hot-swap bays)	Power supply	Available Ethernet date
	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	Ione	0 2U ⁴ 0 2U 0 2U 0 2U 0 2U 0 2U 0 2U	4x8 (6 hot-swap) 1 2 4x8 (6 hot-swap) 2 2 4x8 (6 hot-swap) 2 2 4x8 (6 hot-swap) 1 2 4x8 (6 ho	x 625W hot-swap x 625W hot-swap	2 x Gigabit Mar 200 2 x Gigabit Mar 200
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 Intellection	r 2.8, 3.0, 3.2, 3.4, 3.6 Hyper-Threading technolocessor / at processor n Processors (same spettel PGA604 micro-PGA	Ghz wit blogy / s speed eed/cac ZIF so	h 800MHz frontside bu Simultaneous multi-t he size) ckets, eight memory [us / Optimized fo hreaded (SMT)	r Extended Memory w-profile PCI-X
Memory	(100MHz) slots, two full-length of the start	slots used / six slots ave t DIMM gold-connector ave / dual channel / Ac ECC) / optional 16-bit (ailable / slots or ctive Mo Checks	DIMMs / PC2-3200 D n systemboard / DIMM emory™: Memory mirr	DR2 400MHz reg Is must be installer oring, hot-spare n	istered 240-pin ECC of in matched pairs [and in matched pairs and in matched pairs are 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 int backplane for six disks; Cht 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 o	up to one hot-spare on reserved internal connernal and one external annel A: 16-bit 68-pin ii s optional ServeRAID atroller in ICH5 South Bio-15000 rpm disks / one	lisk / op nector)) / <i>SCS</i> nterface adapter ridge / o e backpl	otional IBM ServeRAID If Channel B: 16-bit 68 to support external S s with external connector on plantane	TM-7k Adaptor for log- B-pin LVD cable fr SCSI devices via ector(s) for external lar / one 1-drop II	ow-cost RAID 0, 1, 1E om systemboard to external SCSI 0.8mm al devices DE cable (CD-ROM)
Mechanical Chipset	EIA 19" Rack (2U ⁴) / rack-m Intel E7520 / Memory Controlots 3 & 4) / Intel Dodson I ServeRAID 7k Adapter / ICH bus to Super I/O) / LPC-SIO (See below) Four available I	oller Hub´(MCH) / Intel /O Proccesor (supports 5 South Bridge (Thin II 8742x Super I/O	I/O Cor 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 PCI-22) 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>D</i> <i>Front</i> : one USB (Vers 2.0) / (RJ-45), two RJ-45 (sys mgn SVGA / ATI® Radeon™ 7000r	ernet ports / Two Broad MHz / full duplex / Wake Diskette: 3.5" 1.44MB dis Rear:two USB (Vers 2.0 nt) / no parallel port	com® 5 on LAN skette d)), keybo	721 / two full gigabit e 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	trator password / unatte	nded bo	oot / selectable boot se	quence	
Systems mgmt Diagnostics Software	IBM Baseboard Management H8S2168 / on planar / provide environmental monitoring surfans, power supp / supports Adapter II slimline with reservent in the secont in the second in the se	des system and ch as temp, optional di optional Remote Supe verved connector for ower reqd) nostics panel providing a front panel) stallation and configura	sks, ervisor J LED	Xeon2.8GHz800MHz/2MBL2 Xeon3.0GHz800MHz/2MBL2 Xeon3.2GHz800MHz/2MBL2 Xeon3.4GHz800MHz/2MBL2 Xeon3.6GHz800MHz/2MBL2 Xeon3.6GHz800MHz/2MBL2 512MB(2x256)PC2-3200CL3 1GB(2x512)PC2-3200CL3EC 2GB(2x1GB)PC2-3200CL3EC	ProcUpg ProcUpg ProcUpg ProcUpg ProcUpg ProcUpg ECCDDR2Non-ChpkKit ECDDR2Non-ChpkKit ECDDR2-SDRAM	25R8908 25R8902 25R8903 13N0686 13N0687 13N0689 73P352 73P362 73P2866 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: NPFA	ot-swap / rear access / a ower supplies / auto-ser g™ <i>Std:</i> six fans; <i>Max:</i> t power supply) / redund variable speed / hot-swa	nsing twelve lant	IBM Remote Supervisor Adapte 73.4GB 10K Ultra320 SCSI Hot 146.8GB 10K Ultra320 SCSI Hot 625W (N. America) Hot-Swap F NetBAY Local Console Manage NetBAY Remote Console Mana Other options at ibm.com/pc/us	-Swap SL HDD ot-Swap SL HDD Power Supply or ger /accessories	73P9341 90P1305 90P1306 26K5097 1735L04 1735R16
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 caccess, hot-swap, hot-	hot, Bus A Quick releated Not, Bus B Quick releated Not, Bus B Quick releated Not, Bus B Quick releated Not, Bus B* Quick releated Not Paress riser Not Network B Paress riser Not Network B CSI bus identification identification system-error Predictive memory, p supplies, a Director can of an immir Rack: H 3 disk disk (H 85.4mm idsk disk disk ape drive All models:	ion/Settles (PC-Dirition/Settles (PC-Dirition B) oot: F1: lators Li activity on LED, oor LED, or Cessond fans n alert the nent con lent con s.36" x W 4 pounds ck color	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): • 9 hr covera holidays, 4 (ServicePac • 24 hr x 7 da 4 hour aver (ServicePac • 24 hr x 7 da 2 hour aver (ServicePac • 24 hr x 7 da 2 hour aver (ServicePac • 24x7¹⁴ toll-fre ≥ 24x7¹⁴ toll-fre	and labor Warranty Service ³ 1 - 5 pm, Mon - Fri cluding holidays, next y response time ⁷ warranty service ons (in eligible age, Mon-Fri excluding hr response time 21P2077) ay coverage, rage response time 21P2078) ay coverage, rage response time 21P2093) ePac options at

IBM® Type-GAV-model C	Rty x Processor/Core	L2 Cache Memory I	SCSI Disk controller	Form Factor	Slots x bays (hot-swap bays)	Power supply	Ethernet	Available date			
8840-E3y-E3U 1 x 8840-E4y-E4U 1 x	Xeon™ 2.8GHz/SC Xeon 2.8GHz/SC Xeon 3.4GHz/SC Xeon 3.8GHz/SC Xeon 2.8GHz/DC Xeon 3.0GHz/SC	2MB 1GB N 2MB 1GB N 2MB 1GB N 2x2MB 2GB N	lone 2 x Ultra32(lone 2	2U 2U 2U 2U 2U 2U	4x8 (6 hot-swap 4x8 (6 hot-swap 4x8 (6 hot-swap 4x8 (6 hot-swap) 1 x 625W hot-swap) 1 x 625W hot-swap) 2 x 625W hot-swap) 1 x 625W 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 2 x Gigabit 2 x Gigabit	Sep 2005 Sep 2005 Sep 2005 Oct 2005			
Positioning Processor L2 cache SMP support Implementation	Processor Intel® Xeon™ Processor up to 3.8GHz Single Core 800MHz FSB / Xeon Processor 2.8GHz Dual Core 800MHz FSB / All Optimized for Extended Memory 64 Technology (EM64T) / Hyper-Threading / Simultaneous multi-threaded L2 cache SMP support Implementation SMP y up to two Xeon Processor (same speed/cache size) Systemboard contains two Intel PGA604 micro-PGA ZIF sockets, eight memory DIMM slots, two low-profile PCI-X										
(100MHz) slots, two full-length PCI-X (133MHz) slots, and integrated SCSI, dual GB ethernet, graphics Memory 1GB 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 channels	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) 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 Enhanced IDE ATA-100 controller in ICH5 South Bridge / one connector on planar / one 1-drop IDE cable (CD-ROM) None standard / supports 7200-15000 rpm disks / one backplane Six hot-swap / 80-pin SCA-2 connectors / filler panels installed in each disk bay / all disk bays Ultra320-enabled										
Mechanical Chipset Bus slots											
Ethernet controller Optical / diskette Front & Rear ports Graphics	on planar / PCI-X (8X-24X ⁶ DVD-ROM Front: one USB ((RJ-45), two RJ-45	64-bit 100MHz / 1064-bit 1000 / 10000 / 1000 / 1000 / 1000 / 1000 / 1000 / 1000 / 1000 / 1000 / 1000	full duplex / Wake e: 3.5" 1.44MB dis wo USB (Vers 2.0 o parallel port	on LAI kette d), keyb	N® / Alert Standar Irive / dust cover oard, mouse, ser	abit ethernet MAC and d Format 2.0 / two RJ al (9-pin), graphics (E -bit 33MHz PCI 2.2 b	-45 portš in r	ear			
Security	Power-on passwor	d / administrator	password / unatte	nded b	oot / selectable bo	ot sequence					
Systems mgmt	IBM Baseboard II H8S2168 / on plar environmental mor fans, power supp Adapter II slimline continuous power	nar / provides sy nitoring such as / supports optio with reseverved	rstem and temp, optional distant temp, optional distant temps and temps are supperturbed to the supperturbed to the suppersults and the suppersults are suppersults and the suppersults are suppersults and the suppersults are suppersults are suppersults and the suppersults are suppersult		Xeon 2.8GHz DC Xeon 3.0GHz SC Xeon 3.2GHz SC Xeon 3.4GHz SC	800MHz/2MB L2 Proc 800MHz/4MB L2 Proc 800MHz/2MB L2 Proc 800MHz/2MB L2 Proc 800MHz/2MB L2 Proc	Upg Upg Upg Upg	40K2503 40K2502 40K2504 40K2505 40K2506			
Diagnostics	Drop down light	path diagnostic	s panel providing	LED	Xeon 3.8GHz SC	800MHz/2MB L2 Proc 800MHz/2MB L2 Proc	Upg	40K2507 40K2508			
Software	map to failing part ServerGuide™ (C utilities), IBM Dire	D-ROM installat	ion and configura	tion	1GB(2x512)PC2-3 2GB(2x1GB)PC2-	2-3200 CL3 ECC DDR 3200 CL3 ECC DDR2	Non-Chpk Kit -SDRAM	39M5818 39M5809			
Keyboard / mouse Power supply	None standard (be Std/Max: one/two 6	325 watt hot-swa	p / rear access / a	4GB(2x2GB)PC2-3200 CL3 ECC DDR2-SDRAM 39M581 auto IBM ServeRAID-7k Adapter 71P864							
Fans	restart / redundant Calibrated Vector (six fans with optio with twelve fans ins PFA	ed Cooling™ St nal second powe stalled;All: variab	d: six fans; Max: ter supply) / redund e speed / hot-swa	welve ant	Ya						
Prerequisites	Monitor, keyboard,	mouse, SCSI d	sk, rack			ibm.com/pc/us/accesso	ories	1735R16			

Slot 1: low-profile, 64-bit 100MHz 3.3v PCI-X, non hot, Bus A Slot 2: low-profile, 64-bit 100MHz 3.3v PCI-X non hot, Bus A Slot 3: full, 64-bit 133MHz 3.3v PCI-X, not hot-swap, Bus B* Slot 4: full, 64-bit 133MHz 3.3v PCI-X, not hot-swap, Bus B* *slots 3 & 4 riser may be replaced with PCI-Express riser



Bay ① 3.5", 0.5", Bay ② 5.25", 0.5" access, slim diskette access, slim DVD-ROM 0.5", Bay ② 5.25", Bay ③ 3.5", Bay ④ 3.5", Bay ⑤ 3.5", Bay ⑥ 3.5", Bay ⑧ 3.5", SL 1" access, hot-swap, open for disk SL 1", SL 1", SL 1", SL 1", SL 1", access, hot-swap, open for disk access, hot-swap, open for disk access, hot-swap, open for disk access, hot-swap, open for disk

Bay ® 3.5", SL 1", access, hot-swap, open for disk Bays 3 through 8 support six SL disks; or 1 DDS5 Tape drive (2 slots used, additional PCI SCSI adaptor req)via SCA-2 connectors

Quick release adapter slots (no screws)

- Configuration/Setup Utility: F1 at startup
 Diagnostics (PC-Doctor™): F2 at startup
 System Partition Boot: ALT+F1 at startup
- Network Boot: F12 at startup
- Front indicators LEDs: Power-on LED, SCSI bus activity LED, system identification LED, information LED, and system-error LED
- Predictive failure analysis on disk options, memory, processors, VRMs, power supplies, and fans in conjunction with IBM Director can alert the system administrator
- of an imminent component failure

 ⇒ Rack: H 3.36" x W 17.5" x D 27.5" (H 85.4mm x W 443.6mm x D 698mm)
- ⇒ 46.5 to 62 pounds

All models: Max int disk capacity: 1.8TB² with six 300GB SL disks

LIMITED WARRANTY³

- 3 year parts and labor International Warranty Service³ On site, 8 am 5 pm, Mon Fri coverage excluding holidays, next business day response time⁷ 3 year on site warranty service upgrade options (in eligible Incati
- - upgrade options (in eligible locations):7

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

 24 hr x 7 day coverage, 4 hour average response time (ServicePac21P2078)

 24 hr x 7 day coverage, 2 hour average response time (ServicePac21P2093)

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

bivi @server ····	xseries	300 (June 2003)		х	HEF DY	eServer	Field Skills	Enablen	ient Team
IBM®		L3		Dist.	scsi	Mechan-		RXE	Hot-swap		Available
Type-model Qty x F 8686-1RQ 1 x Xeon ≈ 8686-1SQ 2 x Xeon ≈ 8686-1TQ 2 x Xeon 8686-2RQ 2 x Xeon 8686-3RQ 2 x Xeon	MP 2.0GHz MP 2.0GHz MP 2.5GHz	1MB 1MB 1MB	Memory 1GB Chipkill™ 1GB Chipkill 3GB Chipkill 2 2GB Chipkill 2GB Chipkill	None None x 36.4GB 1 None None	Ultra160 Ultra160 OKUltra160 Ultra160 Ultra160 Ultra160	3U rack 3U rack 3U rack		One One One One	pwr supplies One (not rec Two redunda Two redunda Two redunda Two redunda	lun) PCI ant PCI ant PCI ant PCI	Jun 2003 Nov 2003 Nov 2003 Jun 2003
Processors L2 cache L3 cache Processor upgrade Implementation	512KB / on c 1MB or 2MB 4-way SMP / Systemboard	die of pro / on die / up to fo d contain	TM Processor Mocessor / at processor / at processor / at processor / at xeon Processor s four Intel 603-ethernet, graphi	essor speed t processor s sors MP (sar pin micro-PC	speed ne speed/ca	.che size)				ŭ	0,
Memory	1.7-inch tall pairs / 128-b Error Check	/ one me oit simult king and	GB max ^{12,13} / two emory board sta taneous transfer d Correcting (E through 8-bit er	andard with a r from two D ECC) via 16	8 DIMM gold DIMMs / PC -bit Checks	d-connect 1600 200 um Chip	or slots / MHz reg	DIMMs istered	must be inst 184-pin DDR	talled in r -SDRAM	matched RDIMMs /
SCSI disk controller SCSI connectors SCSI cabling IDE controller / cabling Disk - capacity Disk - bays	Controller ha One standard SCSI RAID a g Enhanced ID None standa	ard-wired d 16-bit L adapter 6 DE ATA-3 ard / supp	Wide Ultra160 S I to SCSI backpla LVD cable includ 68-pin connector 33 controller in Coorts up to 15,00 s / converged tray	ane (no cable ded for attach r on systembe OSB4 South E O rpm disks	e) / no exterr ning an option oard for this Bridge	nal ŠCSI c nal Servel cable to g	onnector RAID ada	ipter to t	he three-bay	backplan	
Mechanical	EIA 19" rack	models	s (3U ⁴) x 28" dee	p / supporte	d in NetBAY	™ Racks	(such as	NetBAY	42 SR, NetBA	Y42 ER)	
Chipset Slots (Active™ PCI-X) RXE Expansion Port	(one to IBM F PCI-X 1.0, or ServerWorks Six hot-swap hot replace,	PCI-X Ho ne PCI 2 s® OSB4 PCI-X 1. hot upg	t / IBM Memory Interpretation of the control of the	D RXE Expan 0 supports S DE, USB, ISA DIE with power nsion / sepa	ision Port) / il CSI, graphic bus for Super and attentic trated by inst	BM PCI-X s, etherne er I/O NS F on indicato ulative pla	Host Brid t, adapte C97317 or lights (c stic divide	dge prov r slot wit VUL [dis optical se ers	ides three pee h Remote Sur kette, keyboa ensors control	er PCI bus pervisor A rd, mouse power to	ses (two dapter, and e]) slot)/
CD-ROM / diskette Ethernet Graphics controller Ports	24X-10X ⁶ CE Intel 82559 1 SVGA / S3 [®] Rear: RXE-1	D-ROM / 0/100 et Savage4 00 Expar	3.5" 1.44MB dis thernet controlle 4 LT / on system nsion Port (to cor ard, mouse, anal	kette drive r / on system board / 8MB nnect optiona	nboard / full o SDRAM std al RXE-100),	duplex / 32 l/max / up RXE Man	2-bit PCI to 1280x agement	/ Wake 1024 at Port (to	on LAN®/ Ale 64K colors at manage optio	rt on LAN 85Hz nal RXE-	l™ 2 100), two
Security	Power-on an	d admini	istrator passwor	ds / unattend	ded boot / sel	ectable bo	oot				
Systems managemen Diagnostics	console and i	mgmt / po	Adapter / PCI ac power on/off syste tics™ / primary in	em / monitors	s power statu	is, op syste	em, temp	erature,	disks, fans, p	ower supp	plies
Software	available eve	en while s e™ (CD-f	nostics (operated server running ROM installation r, and others	•	,	512MB 1GB P	PC1600 C1600 E	ECĊ D CC DDF	sion Enclosur DR SDRAM I R SDRAM RD R SDRAM RD	RDIMM IMM	86841RX 33L3283 33L3285 33L3287
Keyboard / mouse Power supplies Cooling fans	Std: one or tw redundant wi worldwide / v fans in each	wo 370 w ith two po oltage-s power su	use rack-based) vatt hot-swap; M ower supplies (seensing / auto-resupply / PFA dant, multi-speed	lax: three hot ome configu start /	t-swap / rations) /	Xeon N Xeon N Xeon N 370 wa IBM Se	MP 2.0GH MP 2.5GH MP 2.8GH tt Hot-Sw rveRAID	dz/1MB dz/1MB dz/2MB ap Redu ™-4Mx U	L3 Cache Pro L3 Cache Pro L3 Cache Pro Indant Power Iltra160 SCSI 50 SCSI Hot-S	oc Upg oc Upg oc Upg Supply Adapter	73P8805 73P8806 73P8807 31P6108 06P5736 06P5756
Six available 3.3 volt	fan failure sig Active PCI-X sl	gnals Dia ots:	each power suppagnostic LED and		essor	IBM Ne IBM Int IBM T5	tBAY42 s egrated x 41 15" Fl	Standard Series A at Panel	d Rack (SR) Adapter for iSe Color Monitor n/pc/us/acces	eries r (black)	9306420 1519100 9512AB1
Bus 2 (B) with two s one fullsize, 64- or two fullsize, 64- four fullsize, 64- Bus 1 (A) with four s four fullsize, 64-	bit, 133MHz PC bit, 100MHz PC bit, 66MHz PC bit, 66MHz PC bit, 33MHz PC slots supports (s	CI-X, hot-s CI-X, hot-s CI-X, hot-s CI, hot-s Slots 3, 4,	-swap -swap -swap -swap -swap -swap -swap -swap -syap	nsions: H5.2 nsions: H133 ht: 58.4 to 70l th black color free serviceal ss adapters, p mboard from	3.4mm x W44 lbs; 24.9 to 3 bility processors, r	12.0mm x 1.8kg		⇒ 3 ye ⇒ Inte ⇒ On s	LIMITED Vear parts and rnational Warsite, 8 am - 5 verage exclut business da	labor ranty Ser pm, Mon ding holid	rvice³ - Fri days,

- 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

	014	Std	0	diskette CD-ROM
ı	Std Power	or opt Power	Opt Power	• Disk ③
ı	Supply	Supply	Supply	• Disk 4
ı	Ľ	lacktriangle	•	 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 power supplies and disks from front

- Access power supplies and disks in firm on the 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:

- 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

220.2GB with three 73.4GB2 hot-swap SCSI disks

sw @server™ 2	xSeries™ 36		xREF b	y eSe	rver Field Skills	and Educa	ition Team					
IBM® Type-model Qty	x Processor	L2 cache	Memory	DIMN		SCS		Mechanical	Slots		Warrant (yrs.)	y Available 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	TMMP 3.16GHz MP 3.66GHz MP 7020 2.67GH: MP 7040 3.0GHz MP 3.66GHz MP 3.66GHz MP 3.16GHz	1MB 1MB	2x1GB 2x1GB 2x1GB	4 4 4 4 8 4	None None None None	SAS SAS SAS SAS -10k SAS SAS	; ; S w/ 8i	3U ⁴ rack 3U rack 3U rack 3U rack 3U rack 3U rack 3U rack 3U rack	6x7 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 3 3	Apr 2005 Apr 2005 Nov 2005 Nov 2005 Jun 2005 Aug 2005 Sep 2005 Sep 2005
Processors	Up to two 64-bit MP up to 3.0GHz	Intel® Xeo	n™ Proce	ssor	MP up	to 3.66G	Hz¹ 66	7MHz FSB	Single	Core / one 64-bit	Intel Xeon	Processor
L2 cache Processor upgrade Implementation	1 or 2 MB / per co 4-way SMP / up to System board con integrated SCSI, e	ore / at pro o four Xeo tains four	ocessor sp n Process Intel 604-r	eed / sors M oin mi	XceL4v IP (sam icro-PG/	v [™] Dynam e speed/c \4 ZIF soo	nic Sen ache si ckets, c	ver Cache ze) / Dual C one memory	ore Ca board	pable slot, six Active™ P	CI-X 2.0 slot	ts, and
Active Memory [™]	Up to 4GB std / 64 DIMMs must be in and Correcting (E steering) and Men Server 2003 TM	1GB max stalled in recc) via 1 nory Mirro	using high matched p I 6-bit Che oring ™ an	n-capa pairs / e cksu nd Ho	acity mer PC2-32 I m Chip t-swap (mory card 200 400Ml kill ™ / Wi non-OS s	/ one r Hz regis th 16 E pecific)	memory boa stered 240-p DIMMs instal / Hot-add (ird stan in DDR led: Me support	dard with 4 DIMM 22-SDRAM RDIMM emory ProteXion™ ted only with Micro	gold-connectis / Error Chair (redundant soft® Windows	tor slots / necking bit ws TM
SCSI disk controller SCSI connectors SCSI cabling IDE controller / cablin Disk - capacity Disk - bays	ALL: Adaptec® All Controller wired to One standard SAS g Enhanced IDE AT E1x: 3 x 36.4GB-1 Six 2.5" hot-swap	SAS back cable atta A-33 contr 0k / suppo	plane ached to s oller in CS orts up to	six-ba BB6 S 73GE	y backp outh Bri 10K rp	lane dge m disks	`	GB/sec) / 64	-bit 266	6MHz PCI-X 2.0 <i>E1</i>	X: ServeRa	aid 8i
Mechanical Chipset	EIA 19" rack mod IBM XA-64e™ 3rd Bridges / Host Brid NS 87417 [diskette 2.0 slots	Generati Ige One si e, keyboard	on chipse upports vio d, mouse]	et / Index deo, contraction / Index deco, contraction / Index decoration / Index decorati	itegrated optional al Port B	Processo ServeRaio Froadcom	or and I I 8i, Sei 5704, a	Memory Cor rverWorks® (and 2 PCI-X	ntroller / CSB6 S (2.0 slo	/ Supports EM64T South Bridge (IDE, ots / Host Bridge Tv	/ 2 IBM PCI USB, bus fo wo supports	
Slots (Active [™]) CD-ROM / diskette Ethernet Graphics controller Ports	Six total PCI-X 2.0 upgrade, hot expat 8X° Slim DVD-ROI Broadcom® 5704 1 SVGA / ATI® 7000 Rear: RSA etheme Front: USB (Ver 2.	nsion / sep M / none 0/100/100 m / on pla et. RSA se	oarated by 10 dual eth nar / 16Ml	r insul nernet B SDI	lative pla t / on sys RAM sto	astic divide stemboard I/max / 32	ers, all s I / 64-bi -bit 33N	slots support it 266Mhz Po MHz PCI 2.2	ted up t CI-X 2.0 bus	to 266MHz 0 / Wake on LAN®,	/ Alert on LA	N™ 2
Security	Power-on and adn	ninistrator	passwords	s / un	attended	d boot / se	electable	e boot				
Systems management	nt Remote Supervis remote console an	or Adapte d mgmt /	e r II Slimlir power on/	ne (op off sy	otion) / F vstem / r	PCI adapte monitors p	er / inclu ower st	udes 10/100 tatus, op sys	ethernestem, te	et, RJ-11, and seria emperature, disks, t	al connector fans, power	s / provides supplies
Diagnostics Software	Drop down Light IBM Real Time Dia ServerGuide ™ (C	annostics (operated	throu	ah IBM I	Director) a	ıvailable	e even while	h LEDs server	s associated with fa running	illing compo	nents /
Keyboard / mouse Power supplies	None standard (be Std: one or two 13 redundant with two worldwide / voltage	power su	ıpplies (so	me c	onfigura	wap / tions) /		4GB PC2-320 8GB PC2-320 Active Memo	00 CL3 E 00 CL3 E rv 4-slo	ECC RDIMM (2x1GB ECC RDIMM (2x2GB) ECC RDIMM (2x4GB t Expansion Card MB L2 Cache Proc L)	73P2866 73P2867 30R5145 13M7409 13N0694
Cooling fans	Eight hot-swap, recone additional fan i fan failure signals l	n each po	wer süpph	y / PF	A /	ssor		Xeon MP 3.6 Xeon MP 702 Xeon MP 704 1300 watt Ho IBM ServeRA	6GHz/1 20 2.670 10 3.0GI t-Swap ND™-8i	MB L2 Cache Proc L GHz/2x1MB L2 Cach Hz/2x2MB L2 Cache Power Supply (WW) SAS-SCSI Adapter	Jpg e Proc Upg Proc Upg	13N0695 25R8941 25R8942 13M7413 13N2227
Slot 2 - fullsize, 64- Slot 3 - fullsize, 64-	bit, 266MHzPCI-X, bit, 266MHzPCI-X, bit, 266MHzPCI-X,	hot-swap)					IBM 36.4GB IBM 73.4GB IBM Remote Dual Core X3	10K 2.5' 10K 2.5' Supervi 3 upgrad	J320 256MB Adapter " SAS Hot-swap HDI " SAS Hot-Swap HDI isor Adapter II Slimlir de kit (available 12/0 n.com/pc/us/accesso)) ne 5)	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,	hot-swap	Dime Dime ⇒ Weig Stea	ensio ght: 6 lth bl	ns: H13	bs; 28.6 t r	W442.	0mm x D70	5	LIMITED 3 year parts an International W On site, 8 am	arranty Se	rvice ³

Opt disk Opt disk Opt disk 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: 1,086 Btu/hr (318 watts)
Full Configuration: 5,200 Btu/hr (1524 watts)

- Access adapters, power supplies, processors, memory and systemboard from top Setup Program by pressing F1 at startup Diagnostics (PC-Doctor) by pressing F2 at startup SCSISelect by pressing Ctrl+A at startup Drop Down Light Path Diagnostics (level 2 diagnostic panel) for outside view of potential

- 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

coverage excluding holidays, next business day response time⁷

On site service upgrade options (in eligible locations):

- 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 MS Datacenter#) (3/04) xREF by eServer Field Skills Enablement Team

IBM® Type-model Qty x	Processor	L3 cache	L4 cache	Memory	Disk	SCSI controller	Mech- anical		SMP/RXE Exp Ports	Hot-swap pwr supplies	Mgmt A	Available date
8870-1BX 2 x Xeon 8870-2BX 2 x Xeon 8870-4BX 2 x Xeon	MP 2.7GHz	2MB	64MB 0	GB Chipkill™ GB Chipkill GB Chipkill	None	2xUltra320 2xUltra320 2xUltra320) 4U rack	6x4		Two redundan Two redundan Two redundan	PCI N	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, sixi Ports) / each One I/O Boar	each prodese each prodese each prodese each prodese each module each module each panion March each panion March each prodese each each prodese each each each each prodese each each each each each each each eac	cessor Mocessor / r Acceler kpansion alle standa lodule st M sockets ansion M Host Bri	IP 2.2, 2.7, o on die of pr rator Cache Module / EC ard / ready for s, three SMP lodule activate dge, SCSI, e	r 3.0GH rocessor (up to 1 CC / 64-h or adding / each c Expans es one I ethernet	Iz1 with 400 r / at proces 128MB with poit 400MHz g additional contains four ion Ports (s RXE Expans , graphics,	MHz front ssor spee optional s bus from I processor Intel 603- second mo sion Port (South Brid	side bud d SMP E: Cache rs (up pin mic dule co one RX dge, Su	xpansion and Sca to 8 total cro-PGA 2 nnected v (E Expansion	sion-critical busin orts Hyper-Three Module) / Iability Controll) and memory ZIF sockets for via one or two sion Port suppo slot for Mgmt / Modules, I/O Bo	ading er Xeon MF SMP Exp rted)	P, 64MB pansion one
Memory	PC2100 DDF	d-connec R SDRAM bit errors	tor slots . 1 / Error s on sam	/ must install Checking a e chip; up to	two ind nd Cor two chi	lentical DIM recting (EC ips at once:	lMs at sar CC) and C redundar	ne time hipkill nt bit st	e / 2-way ™ via M o :eering) /	interleaving / emory ProteXi Active Memor		orting
SCSI disk controller SCSI implementation IDE controller Disk - capacity/bays	First channel second chann one standard Enhanced IDI	to interna lel to one (longer) 1 E ATA-10	l 2-port S external . I 6-bit LVI 0 control	CSI backplar 8mm VHDCI D cable incluc ler in South B	ne for int 68-pin c led for a tridge / o	ternal hot-sy onnector (10 ttaching an one one-dro	wap disks (6-bit LVD o optional S p IDE cabl	16-bit L able fro erveRA e to bac	LVD cable om I/O Bo IID adapt ckplane fo	egrated RAID-1 e to SCSI backp pard to ext conne er to the two-ba or diskette and o ay / 80-pin SCA	ane) / ector) / y backpla CD-ROM	ane 1
Mechanical	EIA 19" rack	models ((4U ⁴) x 28	3" deep / supp	orted in	NetBAY™	Racks (su	ch as N	letBAY42	SR, NetBAY42	ER)	
· · ·	IBM XA-32™ 2nd Generation chipset / IBM Cache and Scalability Controller with L4 cache controller and three SMP Expansion Ports / IBM Memory I/O Controller with two remote I/O ports (each to a IBM PCI-X Host Bridge) / each IBM PCI-X Host Bridge provides three peer PCI buses / PCI 2.2 Bus E supports graphics, adapter slot with Remote Supervisor Adapter, VIA® 82C686B South Bridge (IDE ATA-100, USB, Super I/O PC97317VUL [keyboard, mouse]) / PCI 2.2 Bus F supports SCSI, ethernet / PCI-X Bus A, B, C, D support PCI-X slots / designed to the PCI-X 1.0 specification ve™ PCI-X) Six hot-swap PCI-X 1.0 slots¹⁰ available with power and attention indicator lights (optical sensors control power to slot) / hot replace, hot upgrade, hot expansion / separated by insulative plastic dividers unsion Port One RXE-100 Remote Expansion Enclosure can be shared between two x445 4-way, 8-way, or 16-way xSeries 445 servers or attached alone. Both PCI-X 6-packs must be installed to support RIO sharing as each server will access six additional PCI-X slots											BM PCI- isor cification o slot) /
Ethernet	Dual Broadco SVGA / ATI®	m ^å 5704 Rage XL 00 Expan	10/100/10 / on I/O l sion Port	000 ethernet of Board / 8MB (to connect)	controlle SDRAM optional	r / on I/O Bo I std/max / u RXE-100),	oard / full oup to 1280 RXE Man	duplex / x1024 ageme	64-bit 66 at 85Hz. nt Port, t	pays / supports SMHz PCI bus / wo USB (Vers ers 1.1)	Wake or	n LAN®
Security	Power-on and	adminis	trator pas	sswords / una	attended	boot / sele	ectable bo	ot				
Systems mgmt Diagnostics Software	console and i	mgmt / po liagnosti ne Diagno n while s ™ (CD-R	ower on/o cs™ / pri ostics (op erver rur OM insta	off system / r mary indicate perated throu nning allation and o	nonitors or on in igh IBM	power stat formation p Director)	tus, op sys banel with IBM Preloa Microso IBM Softw	stem, te LEDs a ad Kit f ft Wind are Sul	emperatur associate or 1-8 Pr ows Serv bscription	er Datacenter : Update for	power si omponer 48 2003 48	upplies
Keyboard / mouse Power supplies Cooling fans	None standa Std: two; max watts at 110v front access fans in each Four hot-swa one additiona fan failure sig	rd (beca x: two / h y / redund / worldwi power su p, redund Il fan in e gnals Dia	use rack ot-swap / lant at 22 de / volta pply / PF dant, mul ach powe gnostic L	-based) / 1200 watts 20v with two age-sensing FA Iti-speed fans er supply / PI ED and mgr	power s / auto-re s / FA / nt proce	or 600 supplies / ; estart / ;	1GB DDR 2GB DDR Xeon MP: Xeon MP: Xeon MP: IBM 73.4G IBM Serve Other opti	PC210 PC210 2.2GHz 2.7GHz 3.0GHz B 10K L RAID	00 ECC S 00 ECC S 2/2MB L3 2/2MB L3 2/4MB L3 2/4MB L3 -4H Ultra	ver Datacenter in DRAM RDIMM in RDIMM RDIMM Cache Proc Up SCSI Hot-Swap 160 SCSI Adapt In/pc/us/access	33 33 39 13 39 13 39 69 60 er 37	L5039 L5040 N0723 N0722 N0721 P5756 L6889
	66MHz PCI-X 66MHz PCI-X 100MHz PCI-X 133MHz PCI-X 133MHz PCI-X te Supervisor Ar access, diskett access, CD-RG access, hot-sw	, hot-swap, hot-swap, hot-swap, hot-swap, hot-swap, hot-swap, a2-bit a4U Ra	o Bus A o Bus A o, Bus B o, Bus B o, Bus B o, Bus C o, Bus D o, Bus D o, Bus D	Max weigh Stealth bla Tool-free s Access pro SMP Expa Access poo Setup Proo Diagnostic SCSISelec Information out Light P diagnostics Predictive XceL4 Ser power sup IBM Direct	as: H178 t: 110 lb ck color erviceat ccessors nsion M wer supp gram by sc (PC-D t tby pres n LED pa ath pane s without Failure A ver Acce plies, an or	mm x W483 s; 50kg bility s, memory, a odule from to blies and dis pressing F1 octor) by pressing Ctrl+A anel and fror el (1st and 2 t removing c	adapters, a op sks from from at startup essing F2 a at startup in tracessite and level cover) erts on prohe, memorisks with	nd ont at startu ole pull- cessors y, fans	Property of the second of the	LIMITED WA year parts and ternational War n site, 9 hr x 5 ext day response year on site wa year on site on site wa year on site on site wa year on site on si	labor ranty Sei day cov se time ranty se n eligible verage, e time vailable) intenancile coptions om/serv u.pdf ppport fo during ti	rvice ³ verage, ervice e ce s at rices/us/

IBM [⊚] Type-model Qty x Pr	rocessor	L2 cache	L3 cache	Memory	DIMM slots	Disks	SCSI controller	Mechanical	Slots x bays	Hot-swap pwr supplies		Available date
8872-1RY 2 x Xeon 8872-2RY 2 x Xeon 8872-3RY 2 x Xeon 8872-5RY 2 x Xeon 8872-6RY 2 x Xeon	MP 3.0GHz MP 3.33GHz MP 7020 2.66GHz MP 7040 3.0GHz	2x2MB		2x1GB 2x1GB 2x1GB 2x1GB 2x1GB	8 8 8 8	None None None None None	SAS SAS SAS SAS SAS	3U⁴ rack 3U rack 3U rack 3U rack 3U rack	6x7 6x7 6x7 6x7 6x7	2 x 1300 2 x 1300 2 x 1300 2 x 1300 2 x 1300	3 3 3 3	Jun 2005 Jun 2005 Jun 2005 Nov 2005 Nov 2005
Processors L2 cache L3 cache Processor upgrade Implementation	Two 64-bit Intel® Xd 3.0GHz 667MHz FS 1 or 2MB / per core 4 or 8MB / integrate 4-way SMP / up to chassis interconnec System board containtegrated Serial Atta	/ XceL4 ed / at pro four Xeo cted) ins four !	ocesson n Proc Intel 60	namic Sei r speed essors (sa)4-pin mici	ver Ca ame sp ro-PGA	che (256 eed/cach	e/core) per	PUs starting a chassis / Dua	at 8-way) I Core Ca	apable / up to	32-way	(eight
Active Memory™	2GB std / 64GB ma cards standard (up t 400MHz registered d Chipkill™ / Memon (supported only with	io four) w 240-pin [rith 4 D DDR2-(IMM gold SDRAM F	-connec	ctor slots s / Error	each / DIM Checking a	Ms must be ir and Correcti i	nstalled in na (ECC)	n matched pair:) via 16-bit C h	s / PC2-: I ecksum	3200 1
SCSI disk controller SCSI connectors SCSI cabling IDE controller / cabling Disk - capacity Disk - bays Mechanical	ALL: Adaptec® AIC- with dedicated slot Controller wired to S One standard SAS Enhanced IDE ATA- None / supports up Six 2.5" hot-swap b: EIA 19" rack mode chassis (x460 or M)	SAS back cable atta 33 contro to 73GB ays / cor	plane ached to oller in 10,000 nverged x 28" d	to six-bay CSB6 So rpm disk tray / 80 eep / sup	backpl uth Brid s -pin SC ported	ane Ige CA-2 con in NetBA	nectors	,				•
Chipset	IBM XA-64e™ 3rd 0 scalability and memo ServerWorks® CSB6 5704, and 2 PCI-X	Generation control South E 2.0 slots	on chi ol / 2 IE Bridge (/ Host	pset / Inte BM PCI-X (IDE, USE Bridge Tw	egrated 2.0 Ho 3, bus f o supp	Process st Bridge or Super orts 4 Po	or and Men s / Host Brid I/O NS 874 CI-X 2.0 slot	nory Controlle Ige One supp 17 [diskette, k s	r / Suppo orts video ceyboard,	orts EM64T / S o, optional Sen , mouse]), Dua	upport fo eRaid 8 I Port Br	or external i, oadcom
Slots (Active™)	Six total PCI-X 2.0 s upgrade, hot expans) / hot re	place, hot
CD-ROM / diskette Ethernet Graphics controller Ports	8X ⁶ Slim DVD-ROM Broadcom [®] 5704 10 LAN [™] 2 SVGA / ATI [®] 7000M <i>Rear:</i> Three Scalabi ethernet, std. serial,)/100/100 I / on plai	nar / 16	SMB SDR	AM std	/max / 32	2-bit 33MHz	PCI 2.2 bus				
Security Systems managemen Diagnostics Software	Power-on and admint Remote Supervisor remote console and Drop down Light PIBM Real Time Diac ServerGuide™ (CD utilities), IBM Director	r Adapte mgmt / Path Diag gnostics (-ROM in	er II slii power anostic	mline / P(on/off sys :s / prima:	CI adap tem / n v indic	nter / incl nonitors p ator on in	udes 10/100 bower status oformation p 2GB 4GB	ethernet, RJ op system,	temperations associated the second temperature the second temperatur	ure, disks, fans ated with failino MM(2x1GB) MM(2x2GB)	s, power	supplies
Keyboard / mouse Power supplies Cooling fans	None standard (bec Std: Two 1300 watt redundant with two pauto-restart / rear ac Eight hot-swap, redu one additional fan in fan failure signals Di	hot-swap power su pcessible undant, m each por	o; <i>Max:</i> ipplies in fans in nulti-spe wer sup	two hot-si /worldwide n each poi eed fans / oply / PFA	e / volta wer sur . /	ige-sensi oply / PF	ng / Xeor Xeor Xeor Xeor Xeor IBM S	e Memory 4-slo	ot Expans 1MB L2 4l 1MB L2 8l 1MB L2 8l GHz/2x1M Hz/2x2M 1MB L2 8l ii SAS-SC U320 256	ion Card MB L3 Proc Upg MB L3 Proc Upg MB L2 4MB L3Pi B L2 8MB L3 Pr MB L3 Proc Upg SI Adapter	oc Upg	13M7409 13N0715 13N0714 25R8941 25R8942 13N0713 13N2227 02R0988
8W = 2 x XpandOnDe 16W = 6 x XpandOnD 32W = 8 x XpandOnD Six available 3.3 volt Slot 1 - fullsize, 64-l	Demand Scalability kits Demand Scalability kits PCI-X 2.0 slots:	2.3m 2.3m +		n			IBM Xpar Xpar Xpar MXE Dual	36.4GB 10K 2.5 73.4GB 10K 2.5 dOnDemand™ dOnDemand™ -460 Modular E Core X3 upgra r options at ib i	5" SAS Ho Scalabilit Scalabilit xpansion de kit (ava	ot-Swap HDD y Cable - 2.3M y Cable - 2.9M Enclosure	i	26K5654 26K5655 13M7414 13M7416 8874-1RY 39Y6580
Slot 2 - fullsize, 64-l Slot 3 - fullsize, 64-l Slot 4 - fullsize, 64-l Slot 5 - fullsize, 64-l Slot 5 - fullsize, 64-l *exclusive slot availa Opt disk Opt disk Opt disk Opt disk The state of the s	bit, 266MHzPCI-X, I bit, 2	not-swapnot-swapnot-swapnot-swapnot-swapsi adapte is adapte open open open open open open open ope	Di D	imensions reight: 70 to realth blac cool-free seccess adaremory and to programme tup. Programme	: H128. to 85lbs k color erviceal pters, d syste am by (PC-D by pre-Light Fanel) fo hout re Light Flanel LE-being ailure dilies, m th IBM Maxir	35mm x s; 31.75 t bility power si mboard pressing octor) by ssing Ctr Path Diag or outside moving anel, diag EDs give Analysis emory, p Director	upplies, prod from top F1 at startu pressing F I+A at startu nostics (leve	cessors, ip 2 at startup p 2 l 2 ential panel, tions of isks, VRMs,	 Intern On sit cove next I On si (in eli 3 ye 96P 3 ye 96P 5 ye 96P 5 ye 20 24x7¹⁴ 	r parts and la ational Warrate, 8 am - 5 pierage exclude business day te service up igible location ar IOR 24x7, 2689 ar IOR 9x5, Na 2694 ServicePac of Www.ibm.com ces/us/its/pdf toll-free supps during the warrange in the warrange in the service of the control of the service	abor anty Sei m, Mon ing holi respon grade o ns): 4 hr avg 2 hr avg IBD res poptions n/ /wamon oort for	rvice ³ - Fri idays, se time ⁷ ptions g response g response ponse ponse at nxeu.pdf

IBM® Machine			L2			Disk	Maximum		Slots	Hard		Available
	essor	Speed¹/Core 2.2GHz/SC	Cache 512KB	Memory	Disk 80GB	controller SATA	r Capacity 1 TB	Optical	x bays 4 x 5	disk bays	Cigobit	Oct 2006
4347 - 42U Optero 4347 - 44U Optero	on [®] 1210 on 1210 on 1214	1.8GHz/DC 1.8GHz/DC	2x1MB 2x1MB 2x1MB	1 x 512MB 1 x 512MB 2 x 512MB 2 x 512MB	80GB 160GB 160GB	SATA SATA SATA	1 TB 1 TB 1 TB	CD-ROM CD-ROM CD-ROM Combo	4 x 5 4 x 5 4 x 5	2 fixed 2 fixed 2 fixed 2 fixed	Gigabit Gigabit Gigabit Gigabit	Oct 2006 Oct 2006 Oct 2006
Positioning Processor(s)		<i>rocessor, entr</i> le-socket AMD								Athlon up to	2.2GHz S	ingle-Core
L2 cache Implementation	Moth Giga	std on Optero erboard conta bit Ethernet. SMP support /	ins one i	AM2 socket,	four DII			ots(2 PCI E	xpress	x8, 2 PCI),	integrated	SATA and
SMP support						I I I DII	NANA I I -	/ DOO 5000		- F00 DDD	0000444	/ AU F
Memory		IB or 1GB std king and Cor									2-SDRAM	/ All Error
SCSI disk controller IDE disk controller SATA disk controlle	r Dual	e standard / Lanced IDE / A channel SAT	A control	SCSI control integrated in ller (1.5GB/s	ler 2 (L\ I/O Cor sec) / int	/D 320M ntroller Hu egrated i	B/sec) opti ub / one co nto I/O Co	ional for tap Innector on Intoller Hub	pe backi planar / suppo	up orts up to tw	o HDDs 8	one
Cables Disk RAID Controller	One 80 o None	ault™ drive st 2-drop EIDE r 160GB SATA e standard / IB	cable (to A / 7,200 M SAS F	optical drive rpm / 9.0 ms IBA Controll	e) / one s seek / er optior	1-drop S S.M.A.R. nal for RA	ATA cable T. AID 0 & 1	per installe	ed hard	disk		
Rack support Bus slots (see belo	None w) Two		s / two 32	?-bit 33MHz (5v PCI 2	.2 slots						
Chipset	ATA-	ia® nForce™ 100 EIDE, SA er I/O for diske	NTA, USB	, Low Pin Co	ICP / I/Count Inte	Control erface / S	ler Hub pro ST 49LF00	ovides: two 04A, 4Mbit F	PCI-Exp irmware	oress x8 slo e Hub / Winl	ts, two PC	1 2.2 slots, 374K
Ethernet	10/10	00/1000 gigab	it / Broad	com 5721 /	on plana	ır / full du	plex / PHY	and MAC	ayers /	Preboot eXe	ecution Env	vironment
Optical / diskette Ports Diagnostics Systems mgmt	Som Fron	E) / Wake on L e: CD-ROM: 4 t: two USB(2.0 nostic LEDs / e	48X-20X ⁶ 0); <i>Back:</i>	one serial(9)-pin), or	ne paralle	el, four USI	B(2.0), ethe	rnet(RJ-	-45), video([DB-15)	cs CD
Graphics controller	ATI®	ES1000 / 16MI	B SDRAN	l std/max / on	planar/	analog 15	-pin / up to	1024 x 768	x 32 bit @	@85Hz		
Security	Optio conti	onal U-Bolt sup ol / operation	oport via without	knockout / p keyboard/m	ower-or ouse/dis	n passwo splay	ord / boot s	sequence				
Software	ınsta	erGuide™ (C llation and co ctor (system h	ntiguratio	n tool) inclu	ded and	OS IBM andard	512MB PC 2x1GB PC 2x2GB PC	C2-5300 CL C2-5300 CL C2-5300 CL	5 ECC 5 ECC 5 ECC	DDR2 DDR2 DDR2 simple-swa	n HDD	41Y2726 41Y2729 41Y2732 39M4500
Keyboard / mouse Cooling fans	Thre	ded / USB onle e variable spe	ed fans	(cpu heatsir	nk, front,	nower	IBM 250G	B SATA-15	0 (7.2K	simple-swa) simple-sw) simple-sw	an HDD	39M4504 39M4508 39M4514
Power supply	310 Serv	ly) / not redur watts / univers er Restart (AS ng fan in pow	sal / manı SR) / not	ual switching hot-swap /n	o redund	dancy /	IBM Multi- IBM USB	8X/16X Ma burner Plus Portable Di jult 80GB (\$	s skette D) simple-sw RW/DVD (b Drive	lack)	32R2905 32R2906 40K1692 25R0006
Optical @	Bay 2	5.25", HH 5.25", HH 3.5" SI 1"		cess, optica cess, open (IBM 400/8 IBM 160/3 IBM DDS/ IBM HH L IBM DLTV IBM SAS I	600GB LT03 20GB VXA 5 Tape Driv TO2 Tape 74 Tape Dri	3 Tape 1 -3 Tape ve (SCS Drive (S ve (SAT bller (for	SATA RAII	ŠI)	39M5657 25R0045 39M5656 39M5658 39M5659 25R8060 39R8743



Bay ③ 3.5", SL 1", access, open Bay ④ 3.5", SL 1", access, std disk Bay ⑤ 3.5", SL 1", access, open

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

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

- ♦ H 17.2" x W 8.1" x D 19.6"
 ♦ H 438mm x W 205mm x D 497mm
- ♦ 31 to 38 pounds (14 to 17kg)
- ♦BTU Output:

Minimum: 185 Btu/hr (54 watts) Maximum: 853 Btu/hr (250 watts)

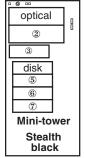
♦ Maximum internal disk capacity¹³: 1TB with two 500GB SATA disks

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

- → 1 year parts and labor
 → International Warranty Service³
- 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)
- - (ServicePac part num 41W9316)

 3 year IOR 9x5, NBD response
 - (ServicePac part num 41W9315)
- Other ServicePac options at http://www.ibm.com/
- services/us/its/pdf/wamomxeu.pdf 24x7¹⁴ toll-free support for warranty issues during the warranty period³

IBM®Machine Type model	Proccessor	/ Speed	L2 cache		Memory	Disk/Disk controller	Maximum Capacity		Hard disk bays	Power Supply	Ethernet	Available date
4362/4363 24Y/2DY 4362/4363 32Y/3BY 4362/4363 42Y/4BY 4362/4363 43Y/4CY 4362/4363 52Y/5BY 4362/4363 56Y/5FY 4362/4363 57Y/5GY	Pentium D 945 Xeon® 3040 Xeon 3040 Xeon 3050 Xeon 3050 Xeon 3050 Xeon 3050 Xeon 3060	5 3.0GHz ¹ 5 3.0GHz 5 3.4GHz 1 1.86GHz 1 1.86GHz 2 1.3GHz 2 2.13GHz 2 2.4GHz 2 2.4GHz	2x2MB 2x2MB 2 2MB 2 2MB 2 2MB 2 2MB 2 2MB 2 2MB 2 2MB	800 1066 1066 1066 1066 1066 1066	1x512MB 2x512MB 1x512MB 1x512MB 2x512MB 2x512MB 2x512MB 2x512MB 2x512MB 2x512MB 2x512MB 2x512MB	None/SATA None/SATA None/SATA None/SATA 1x160GB/SA None/SAS/S/ None/SAS/S/ 1x160GB/SA None/SAS/S/ None/SAS/S/ None/SAS/S/	2.0TB 2.0TB TA 2.0TB ATA 2.0TB 2.0TB ATA 2.0TB	5 x 7 5 x 7 5 x 7 5 x 7 5 x 7 5 x 7 5 x 7	4 simple-swap 4 hot-swap 4 simple-swap 4 simple-swap 4 hot-swap	1x400W 1x400W 1x400W 1x400W 1x400W 1x400W 2x430W 2x430W 1x400W	Gigabit Gigabit Gigabit Gigabit Gigabit Gigabit Gigabit	Nov 2006 Nov 2006
Positioning Processor(s) L2 cache Implementation SMP support	Single socker Intel® Pentiu for Extended 1MB per core Motherboard support, ATI No SMP supp	m D up to d Memory e std on Po contains o video and	o 3.4GI o 64 Te entium one LG. Gigabit	dz 80 chno D / 2 A-775 t Ethe	OMHz FSB logy (EM64 or 4MB std socket, fou rnet.	IT) on Xeon	2.4GHz 10	66 MH	z FSB / All [•
Memory	512MB or 1G DDR2-SDRAM	B std / 8GI /I / All Eri	3 ¹³ max or Che	/ four cking	184-pin gold and Correc	l-plated DIMM ting (ECC) / D	sockets / one IMMs and E	or two	socket used / mory controller	PC2-530 / industry	0 667MH y std / un	z ECC buffered
SAS/SATA controller IDE controller SATA controller Cables Disk	LSI Logic® 1 Enhanced ID Four channel One 2-drop E Some: 160GE	E / ATA-1 SATA co IDE cable	00 / inte ontroller es (to o	egrate (3.00 ptical	d in I/O Co GB/sec) / s) / one 1-dr	ntroller Hub / upports 4 driv op SATA cab	one connec res standar	tor on p d / inte	olanar ['] grated	s / RAID	0,1	
Rack support Bus slots (see below	5U⁴ rack mou) One PCI-E x8						slots					
Chipset	Intel 3010 ch MAC, USB, L board, mouse	.ow Pin Co										
Ethernet Optical / diskette Ports Diagnostics Systems mgmt	10/100/1000 Preboot eXec 4362 MTMs: Front: two US Diagnostic LEI Mini-baseboo failure, and v	cution Env 48X-20X ⁶ SB (2.0); Ds / error I ord manag	ironmer CD-R0 Rear: to EDs for gement	nt (PX DM, II wo se r fans contre	E) / Wake on E; 4363 Norial (9-pin), and memonoller / IPMI	on LAN® ITMs: 48X-32 parallel, four / / server diagr 1.5 / monitor	X-48X-16X ⁶ JSB (2.0), I nostic progra s system a	CD-R ceyboar ms store	W/DVD-ROM rd, mouse, etl ed on IBM Enl cessor tempe	nernet (R nanced D rature, fa	IJ45) and iagnostics an speed	d video s CD l and
Graphics controller	ATI® ES1000(RN50) / 16	MB SD	RAM s	std/max / on	planar / analog	15-pin / up	to 1024	x768x32bit@8	5Hz		
Security Software	Chassiss intru lock / U-Bolt boot sequence ServerGuide installation an hardware ma	Tie-down ce control ™ (CD-ba nd configu	capabili / opera sed au iration	ty/povation v itoma tool),	ver-on pass without kyb ted networl IBM Directo	word / d/mouse C OS or (system	BM 80GB SATA BM 160GB SAT	22-5300 E 22-5300 E (7.2K) si (7.2K) s (A (7.2K) s (A (7.2K) s (SATA HE	ECC DDR2 667MH ECC DDR2 667MH mple-swap HDD simple-swap HDD simple-swap HDD simple-swap HDD DD	Z Z		41Y2726 41Y2729 41Y2732 39M4500 39M4504 39M4508 39M4514 39M4518 39M45122
Keyboard / mouse Cooling fans Power supply	Optional Three fans (f on SAS mode Some: 400W some: 430W switch / Auto cooling fan in	els / not re / not hot-; / hot-swap matic Sen	edundar swap / I o / redu ver Res	nt / no no rec ndant tart (<i>I</i>	t hot-swap dundancy / / all: univer ASR) /	itional fan sal / auto	250GB Hot-Swa 500GB Hot-Swa 53GB 10K 3.5" 800GB 10K 3.5" 806GB 15K 3.5" 83GB 15K 3.5" 84GB 15K 3.5" BM Multibumer BM Remote Sup BM 5Ux20D To Simple Swap SA	p SATA H p SATA H p SATA H case Hot-S SAS Hot-S SAS Hot-S SAS Hot-S SAS Hot-S Plus (DV pervisor A wer-to-Ra cTA RAID	IDD IDD Wap HDD Swap HDD Swap HDD wap HDD wap HDD Swap HDD Swap HDD Swap HDD D-RAM) dapter II slimline tck Kit			39M4526 39M4526 39M4530 40K1039 40K1041 40K1041 40K1043 40K1044 32R2906 39Y9566 42C8923 42C1312



- Slot 1: fullsize, PCI-E x8 (4GBps)
 Slot 2: fullsize, PCI-E x1 (500MBps)
 Slot 3: fullsize, 32-bit 33MHz, PCI 2.2 (5v)
 Slot 4: fullsize, 32-bit 33MHz, PCI 2.2 (5v)
 Slot 5: fullsize, 32-bit 33MHz, PCI 2.2 (5v)
- Bay ① 5.25", HH 1.6", access, optical Bay ② 5.25", HH 1.6", access, open (no disk) Bay ③ 3.5", SL 1", access, open Bay ④ 3.5", SL 1", access, std disk (some) Bay ⑤ 3.5", SL 1", access, open Bay ⑥ 3.5", SL 1", access, open Bay ⑥ 3.5", SL 1", access, open Bay ⑦ 3.5", SL 1", access, open
- Predictive Failure Analysis on disk(s) with IBM Director can alert the administrator of an imminent component failure
- Redundant power supplies standard in some models

- Removable left side panelConfiguration/Setup Utility (in flash memory) invoked by pressing F1 at startup
- Advanced Configuration Power Interface (ACPI) 1.0 Device Drivers and Diagnostics
- CD-ROM included
- ♦ Four stabilizing feet
 ♦ H 17.25" x W 8.5" x D 21.25"
 ♦ H 448mm x W 215.9mm x D 539.75mm 36 to 56 pounds (16.3 to 25.2kg)

Maximum SATA capacity: 2TB¹³ (4 disks x 500GB) Maximum hot-swap SAS capacity: 1.2TB¹³ (4 disks x 300GB)

- 1 year parts and labor standard 4362 MTM 3 year parts and labor standard 4363 MTM
- International Warranty Service3
- On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- 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/

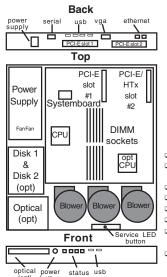
- http://www.ibm.com/
 services/us/its/pdf/wamomxeu.pdf

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

BM System x3	250						xREF by S	STG Field Sk	ills and Edu	cation	Team
IBM® Machine Type model	Processo	or / Speed	L2 cache	FSB MHz	Memory	Disk controlle	Disk r bays	Mech- SI anical x b	ots pays Ethernet	Ltd warr ³	Available date
4364/4365 22Y/2BY 4364/4365 42Y/4BY 4364/4365 44Y/4DY 4364/4365 52Y/5BY 4364/4365 54Y/5DY 4364/4365 62Y/6BY		1 2.93GHz/DC 15 3.4GHz/DC 1.87GHz/DC 1.87GHz/DC 2.13GHz/DC 2.13GHz/DC 2.14GHz/DC 2.4GHz/DC	2MB 2MB 2MB 2MB 4MB	800 1066 1066 1066 1066	1 x 512MB 1 x 512MB 2 x 512MB	SATA SATA SATA SAS/SAT SAS/SAT SAS SAS/SAT SAS	2 simple-swaj 2 simple-swaj FA 2 hot-swap FA 2 hot-swap	O 1U rack 2 1U rack 2 1U rack 2 1U rack 2 1U rack 2	2x3 Dual GB 2x3 Dual GB 2x3 Dual GB 2x3 Dual GB 2x3 Dual GB 2x5 Dual GB 2x5 Dual GB 2x5 Dual GB	1/3yr 1/3yr 1/3yr 1/3yr 1/3yr 1/3yr	Nov 2006 Nov 2006 Nov 2006 Nov 2006 Nov 2006 Nov 2006
Positioning Processor(s) L2 cache SMP support Implementation	Efficient and Intel® Celer Core 1066M 256KB std on SMP sup Motherboard	on at 2.93GHz MHz FSB / All (on Celeron / 2x2 oport	ngle-sock 533 FS Optimiz 2MB std	ket, ra B / Po ed for on Pe	ack-optimized entium D at r Extended entium D / 2	t 3.4GHz Memory or 4MB o	for web and netw Dual-Core 800M 64 Technology on Xeon / ECC / f s, integrated SA	vork infrastrud IHz FSB / Xe (EM64T) ull speed	cture on up to 2.4	GHz D	ual-
Memory	512MB or 10 SDRAM / A	GB std / 8GB ¹³ n	nax / foui	r 184-p	oin gold-plate ting (ECC) /	d DIMM so DIMMs an	ockets / two socke ad ECC memory c	ets used / PC2- ontroller / indu	-5300 667MH: stry std / unbu	z ECC iffered	DDR2-
SAS/SATA controlle SATA controller IDE controller Cables	Four channe Enhanced I SAS models	el SATA contro DE busmaster , s: one 1-drop E els: two 1-drop	ller (3.0) / ATA-1 IDE cab	GB/se 00 su ole (co	ec) / support pport / one onnected to	ts 2 drives connecto Optical)	Irives / four-port s standard / inte r on systemboar ble (connected t	grated into Sod	s / RAID 0,1 outh Bridge		
Mechanical Architecture / chipsets Bus slots	Intel 3010 o MAC, USB,	ck (1U⁴) / rack- chipset / Memo Low Pin Count two PCI-E™ x	ry Contr Interfac	ollér F	Hub (MCH) / mware Hub	/ I/O Cont / SMSC®	roller Hub (ICH7 SCH5017 Super	R) for PCI-E, I/O for serial	ATA-100 EIE , keyboard, n	DE, eth	ernet
Ethernet controllers Optical / diskette Ports Graphics	integrated / 4364 MTMs Front: two U systems ma	port one is CSA :: 48X-20X ⁶ CD JSB (2.0) / <i>Rea</i> inagement (RJ-	i, port tw -ROM, I er: serial 45)	o is F DE; 4 (9-pir	PCI 2.2 / full (1365 MTMs: n), two ether	duplex / PX 48X-32X net (RJ-4	two full gigabit et KE / Wake on LAN -48X-16X ⁶ CD-R 5), keyboard, mo 15-pin / up to 1024	/ Rear RJ-4 W/DVD-ROM use, video (DI	45 ports (2) I, IDE / <i>Diske</i> B-15), two US	<i>ette:</i> no	ne
Console interconnects Systems mgmt Diagnostics	Mini-basebo voltages Diagnostic I Diagnostics	oard manageme _EDS/ Error LE	ent contr DS for f an be cr	foller / fans a reated	IPMI 1.5 / and memory) / support f	monitors / Diagnos or optiona	system and prod tics via PC-Doct al slimline Remo	cessor tempe or on a stand	rature, fan fa dard IBM Enl	nanced	
Security Software	unattended secure rem ServerGuid	assword / adm boot / selectabl ote power on le [™] (CD-ROM VI Director [™] an	le boot / / off via installati	unatt IPMI on an	ended start	mode / 4 tion E	12MB PC2-5300 ECC GB(2x1GB) PC2-5300 GB(2x2GB) PC2-5300 BM 36GB SFF SAS HD BM 73GB SFF SAS HD BM 80GB SATA (7.2K) BM 160GB SATA (7.2K) BM 250GB SATA (7.2K	ECC DDR2 ECC DDR2 DD simple-swap HDE simple-swap HDE	D		41Y2726 41Y2729 41Y2732 40K1051 40K1052 39M4500 39M4504 39M4508
Cooling fans Power supply Prerequisites	variable spe 351 watt / ι	(five fans for seed / not redundant iniversal / auto- yboard, mouse,	dant or -sensing	hot-sv	vap	pply) / IE 8 1 pport 2 5 7	BM 500GB SATA (7.2K 0GB Hot-Swap SATA I 60GB Hot-Swap SATA 50GB Hot-Swap SATA 00GB Hot-Swap SATA 3GB 10K 3.5" SAS Hot 46GB 10K 3.5" SAS Hot	Simple-swap HD HDD HDD HDD HDD HDD Swap HDD ot-Swap HDD			39M4514 39M4518 39M4522 39M4526 39M4530 40K1039 40K1040
Rear Possil		Slot 1: 3/4 leng Slot 2: half leng Some:				3 7 1 IE IE	00GB 10K 3.5" SAS Hot 6GB 15K 3.5" SAS Hot 3GB 15K 3.5" SAS Hot 46GB 15K 3.5" SAS Hot BM Remote Supervisor BM Simple-Swap SATA other options at ibm.cor	-Swap HDD -Swap HDD ot-Swap HDD r Adapter II slimline A RAID Kit			40K1041 40K1042 40K1043 40K1044 42C4178 42C1313
DIMM sockets CPU Plan. Fan Fan Fan Disk Optical Topical Or Or Or Or Or Or Or Or Or O	Fan Fan Disk	Bay ① 3.5", Si Bay ② 3.5", U Some: Bay ③ 2.5", Si Bay ② 2.5", Si Bay ③ 2.5", Si Bay ③ 2.5", Si Bay ⑤ 5.25", U □ Raven black □ H 1.75" (1U) □ 24.4 to 28 lb □ Configuration □ Network Boo □ Operator Info □ Ships with Dia □ Predictive Falert the adm	L 1", acitraSlim FF, acce FF, acce FF, acce ItraSlim front bez x W 17 s; 11kg y/Setup l tt. F12 a brmation agnostics ailure Ar hinistrato	cess, 0.5", a ess, 0 ess, 0 ess, 0 ess, 0 ess, 0 0.5", a zel .32" x to 12. Jtility: tt start Pane s CD, s alysis or of a	open for sinaccess, std pen for hot- pen for hot- pen for hot- pen for hot- access, std D 22"; 43m 7kg (minimu F1 at startup tup I in front ServerGuide s on disk(s) n imminent	mple-swap optical swap disk swap disk swap disk swap disk optical m x 440m um to max Setup and with IBM componer	nm x 559mm c configuration)	→ 1 year part → 3 year part → Internation → On site, 8 Mon-Friex next busin → On site sei options (ir ・ 3 year l (Service → Other Service → Other Service	IITED WARF ats and labor states and labo	andard 4 andard 4 ervice ³ ys, nse time ons): ⁷ vg resp 9P9506 9P9506 9P9507 respons 9P9508 is at	4364 MTM 4365 MTM e onse) onse) ponse)
See testrates for imp	or 292	GB with four 2.5	73GB	SAS di	sks	1000 0000	D O.O OMO UISKS	issues du	ring the warra		

IBM® Type-GAV-model (Qty x Processor Cor	L2 e cache Memory I	Disk Disk controller	Mechanical	Slots x bays (std/max)	Warranty Powersupply	Available Ethernet date
7973/74-52ý-52x 1; 7973/74-62ý-62x 1; 7975/76-42ý-42x 1; 7975/76-52ý-52x 1; 7975/76-52ý-52x 1; 7975/76-62ý-62x 1;	x Xeon [™] 5110 1.6GHz DC x Xeon 5120 1.86GHz DC x Xeon 5130 2.0GHz DC x Xeon 5110 1.6GHz DC x Xeon 5110 1.6GHz DC x Xeon 5120 1.86GHz DC x Xeon 5120 1.86GHz DC x Xeon 5130 2.0GHz DC x Xeon 5130 2.0GHz DC	4MB 1GB N	None SATA None SATA None SAS/SATA None SAS/SATA None SAS/SATA None SAS/SATA None SAS/SATA None SAS/SATA	Tower	6x7 (4/4 SS) 6x7 (4/4 SS) 6x7 (4/4 SS) 6x7 (4/4 SS) 6x11 (4/8 HS) 6x11 (4/8 HS) 6x11 (4/8 HS) 6x11 (4/8 HS) 6x11 (4/8 HS) 6x11 (4/8 HS)	1/3yr 1 x 670W fixed 1/3yr 1 x 670W fixed 1/3yr 1 x 670W fixed 1/3yr 1 x 670W fixed 1/3yr 1 x 835W hot-sw 1/3yr 1 x 870W fixed 1/3yr 1 x 835W hot-sw 1/3yr 1 x 835W hot-sw	GB Aug 2006 vap GB Aug 2006 GB Aug 2006
Positioning Processor L2 cache SMP support Implementation	Universal server; two-way Up to 1 x Intel® Xeon Pro 1333MHz FSB Dual Core 4MB / all models / at proc 2-way SMP / up to two X Systemboard contains two	e / Extended Men essor speed Leon Processors (o Intel LGA771 so	nory 64 Techno same speed/cac ockets, eight men	b logy (EM641 he size) nory gold-con	T)		
Memory	one PCI slot, integrated S 1GB std / 32GB¹³ max / ¹ DIMMs must be installed is and Correcting (ECC) (cof two x4 DRAM failures, Active Memory™: mem	two slots used / si n matched pairs [i orrects any x4 or detects any two bi	ix slots available a bank] / Fully B x8 SDRAM devi	/ PC2-5300 6 Buffered / 2-w ce failure, det 8 bytes of da	vay memory in tects all two wi tta, corrects an	terleave / dual channel / E re faults on DIMMs, detec	Error Checking cts all permutations
SAS/SATA controller SAS connectors SAS cabling		580W / eight po veRAID 8k-I std; So red to hot-swap D	ort SAS(300MB/s ome: native SATA/ OASD backplane	sec) or SATA	(150MB/sec)	/ hot-swap / on planar / P pports RAID 0 & 1	PCI-Express /
IDE controller / cable Disk - capacity Disk - bays	IDE ATA 66/33 / one con None std / supports 7200 Some: four hot-swap SAS	-15000 rpm disks	/ single backplar	ne (upgradeal	ble to dual bad		
Mechanical Slots (see below) Chipset	Tower / conversion to EIA Three PCI-Express, two F Intel 5000P chipset / Intel provides: one PCI-Expres ethernet, IDE, USB, SMBI One 10/100/1000 gigabit /	PCI-X 64-bit/133M el Memory Control s x8 slot with x4 L us, LPC bus to NS	Hz and one PCI ller Hub (MCH) p inks, two 64-bit/ S PC8374L for Si	32-bit/33MH: provides two l /100MHz PCI uper I/O	PCI-Express x I-X slots, one 3	32-bit/33MHz PCI slot, AT	I video, Gigabit
CD-ROM / diskette Rear ports Front port / graphics	48X ⁶ CD-ROM / IDE / 1.6 <i>Rear:</i> two USB (Vers 2.0) <i>Front:</i> two USB (Vers 2.0)	" HH; <i>Diskette:</i> U	SB only	· ·		,	,
Security	Power-on password / adn disk bays and power butto					66MHz/4MB L2 Cache Proc Upg 066MHz/4MB L2 Cache Proc Upg	40K1231 40K1232
Systems mgmt Diagnostics	IBM Integrated Baseboa H8S2166 / on planar / pro such as temp, optional dis Supervisor Adapter II Slim continuous power (no ext System error LED Panel i	ord Management ovides system and sks, fans, power s line with 140-pin of pwr regd)	Controller(BMC	C) / IPMI 2.0	1GB Kit (2x512M 2GB Kit (2x1GB I		40K1233 .4 39M5782 39M5785 39M5791 40K1039 40K1040
Software	ServerGuide™ (CD-ROM IBM Director, others		configuration utilit	ties),	300GB 10K SAS 36GB 15K SAS F 73GB 15K SAS F	Hot-Swap HDD	40K1041 40K1042 40K1043
Keyboard / mouse Power supply Fans	Optional Some: 670 watt / fixed / or one/two std/max / redunds std/max: three/six / three (Opt) two additional mid-coptional fans / PFA / fan in	ant with twó; <i>all: \</i> fans (mid-chassis) hassis fans and o	voltage-sensing /) / variable speed ne rear / redunda	auto-restart d / hot-swap	250GB 7.2K SAT 80GB 7.2K SATA 160GB 7.2K SAT		40K1044 39M4518 39M4522 39M4526 39M4500 39M4504 39M4504
5.25"HH Bay	y 1 5.25", HH 1.6" acces y 2 5.25", HH 1.6" acces y 3 5.25", HH 1.6" acces t-Swap SAS/SATA mod y 4 3.5", SL 1", access	s,open s,open dels:	Quick release ad	lantar clote (n	IBM Remote Sup IBM Redundant F Otheroptions at w	revisor Adapter II Slimline Power and Cooling Option(NA) ww.ibm.com/pc/us/accessories	39Y9566 39Y8487
• 4 Bay	y 5 3.5", SL 1", access y 6 3.5", SL 1", access y 7 3.5", SL 1", access y 8 3.5", SL 1", access y 9 3.5", SL 1", access y 10 3.5", SL 1", access y 11 3.5", SL 1", access mple-Swap SATA mode y 8 3.5", SL 1", access y 9 3.5", SL 1", access y 9 3.5", SL 1", access y 11 3.5", SL 1", access	s, open	Configuration/Seoressing F1 at states AAID Configurates at a configurate startup by press ACPI 2.0-complication of the configurates at a configuration of the configuration of th	etup Utility investion Utility nestion Utility nesting CTRL+A ant attion Panel (in analysis on sors, VRMs, as in conjunct the system omponent fair x W 8.6" x	ear A n front) disk options, power tion with IBM administrator lure	LIMITED WAR → 1 yr parts and labor → 3 yr parts and labor → international Warran → On site, 8 am - 5 pm coverage excluding business day respoi → 3 year on site warrar upgrade options (in locations): • 9 hour coverage, Mon-Fri excluding 4 hour average re (ServicePac® part re	7973/7975 MTM 7974/7976 MTM ty Service ³ , Mon - Fri holidays, next nse time' nty service eligible g holidays, ssponse num 21P2083)
Slot 5: full, 64-bit 1		Hot-Swap mod 2.4TB² with eigl 4.0TB² with eigl Simple-Swap r	dels: Max internated the state of the state	al disk capa SAS or hot-swap H ernal disk ca	DDs apacity:	24 hr x 7 day cove 4 hour average re (ServicePac part nu 24 hr x 7 day cove 2 hour average re (ServicePac part nu ≥ 24x7¹⁴ toll-free suppoissues during the wall	erage, sponse umber 21P2084) erage, sponse umber 21P2085) ort for warranty

BM System x3	455					xRE	F by STG	Field	Skills and E	ducatio	n Team
IBM® Type-model Qty	x Processor	Speed/Core	L2 Cache	Optical	Memory	Disk / Controlle	r Disk bays	Slots x bays	Ethernet	Warranty (years)	³ Available date
7984 - 11U 1 x O 7984 - 31U 1 x O 7984 - 41U 1 x O	pteron TM 2210 oteron 2214 oteron 2216 oteron 2218 oteron 2216 oteron 2220SE	1.8GHz/DC 2.2GHz/DC 2.4GHz/DC 2.6GHz/DC 2.6GHz/DC 2.8GHz/DC	2MB 2MB 2MB 2MB 2MB 2MB 2MB	None CD-RW/DVD None None None None	2x512MB 2x512MB 2x512MB 2x512MB 4x512MB 4x512MB	80GB/SATA 80GB/SATA 80GB/SATA 80GB/SATA 80GB/SATA 80GB/SATA	2 fixed	2x3 2x3 2x3 2x3 2x3 2x3 2x3	Dual Gigabi Dual Gigabi Dual Gigabi Dual Gigabi Dual Gigabi Dual Gigabi	t 1 t 1	Sept 2006 Sept 2006 Sept 2006 Sept 2006 Sept 2006 Sept 2006
Positioning Processor(s) L2 cache SMP support Implementation	Up to two AM 1MB / per cor 2-way SMP /	D® Opteron 20 e / at processo up to two Opt	000 Seri or speed teron Pr	pute-intesnsive es Dual Core P d / Dual Core C rocessors (same 07-pin sockets, or one HTx slot	rocessors u capable e speed/cac	p to 2.8GHz¹ / he size reauire	simultaneoı d)	usly supp	ports 32-bit ar	nd 64-bit	
Memory	1 or 2 GB sto available; dua twelve DIMM interleaving / 1, 2 and 4GB	l / 24GB max ¹ <i>l cpu system:</i> t gold-connecto Error Checkir DIMMs / onlin	³ per pro four slots r slots o ng and le hot-sp	ocessor (48GB is used, eight skinn systemboard Correcting (EC) pare memory / h	max per dua ots available / DIMMs mu CC) via 16-b nardware sc	al cpu system) / / PC-5300 667 ust be installed it Checksum / 2 rubbing	single cpu 'MHz regist in matched Xcelerated	system: tered 24 pairs [a Memor	two slots use 0-pin DDR2- bank] / dual o y Technolog	d, four sl SDRAM l channel / y™ / Chi _l	ots RDIMMs / two-way okill™ on
SATA disk controller SATA controller/cable Disk - capacity Disk - bays Mechanical	7200 Two 3.5" fixed	rpm / 9.0ms se I / SATA conn	ectors /	vided by HT100 rop cables / one filler panels in e nly / supported	ach disk ba	y / supports 15	k drives			S	
Architecture/chipsets	ServerWorks slot, HyperTra GB ethernet, I	™ Chipset / H Insport bridge DE and LPC b	IT2100 to HT10 ous to N	System I/O Co 000 South Bridg S PC87427 for	entroller pro e / HT1000 Super I/O	ovides: one PCI South Bridge	-Express x ⁻ provides: P	16 slot, o	one PCI-Expre SB(2.0), ATI v	ess x8 oi rideo, SA	one HTx TA, Dual
Bus slots	(See detail be	low) one half-le	ength Po	CI-E x16 and or	ne half-lengt	h PCI-E x8 / op	tion to conv	ert PCI-	E x8 slot to H	Tx slot	
Ethernet Optical / diskette Rear ports Front ports Graphics Keyboard / mouse	Optional / IDE Rear: four U Front: two US SVGA / ATI®	. / <i>Diskette</i> non SB (Vers 2.0), SB (Vers 2.0)	e (USB serial (9 0) / on p	orts / Broadcom Wake on LAN® diskette optiona 9-pin), two ether blanar / 16MB S ed)	al) met (RJ-45)	, analog DB-15					anar /
Security Systems mgmt				ords / unattende gement Contro			2.0				
Diagnostics		EDs for fans, nath Diagnostics		DIMMs and propported	ocessors /	Dual Cor	e AMD Opter	on Proces	sor Model 2210 sor Model 2214 sor Model 2216		40K1208 40K1215 40K1210
Software	ServerGuide utilities), IBM	™ (CD-ROM ir Director™, and	nstallatio I others	on and configura	ation	Dual Cor Dual Cor	e AMD Optero e AMD Optero	on Proces on Proces	sor Model 2218 sor Model 2220	SE	40K1211 40K1209
Cooling Power supply Prerequisites	HDD bays / tv Calibrated Ve not hot-swap 650 watt / uni	vo fans inside ector Cooling	power s ™ / varia ensing /	ablé speed / no ′ auto-restart su	t redundant	2GB (2x1 4GB (2x2 / 8GB (2x4 IBM 80G IBM 1600 IBM 2500	(GB) PC2-530 (GB) PC2-530	00 CL5 EC 00 CL5 EC 00 CL5 EC SATA HD SATA HI 'SATA H	DD IDD	M Kit M Kit	41Y2759 41Y2762 41Y2765 41Y2768 39M4500 39M4504 39M4508 39M4514
power serial usb v supply PCI-Esiat1	rga ethernet	1TB with t	wo 500	ıl disk capacity IGB SATA disk 300GB SAS dis	s or	IBM 73G IBM 1460 IBM 3000 IBM 73G	B 10K 3.5" S GB 10K 3.5" GB 10K 3.5" B 15K 3.5" GB 15K 3.5"	SAS HDD SAS HDI SAS HD SAS HDD	* O* D*)*		40K1045 40K1046 40K1047 40K1049 40K1050



leds

600GB with two 300GB SAS disks and optional* SAS controller

Slot 1: Full height, half-length, PCI-E x16 Other options at ibm.com/pSlot 2: Full height, half-length, PCI-E x8 Std or option to convert to HTx Other options at ibm.com/pc/us/accessories

IBM SAS HBA Controller

PCI-E x8 Riser Card

HTx Riser Card

Bay \odot 5.25", UltraSlim 0.5", access, optional optical Bay \odot 3.5", SL 1", no access, std fixed disk Bay \odot 3.5", SL 1", no access, open for fixed disk

Stealth black color front bezel

- Steathfolds color from bezer

 H 1.72" (1U) x W 17.3" x D 25.7"

 H 43.7mm x W 439.9mm x L 653.3mm

 Solution 26 to 32 lbs; 11.8kg to 14.6kg (minimum to max configuration)

 Configuration/Setup Utility: F1 at startup

 Network Boot: F12 at startup

- Operator Information Panel in front
- Includes one line cord (9 ft universal interrack HV cable with IEC plug)
- Predictive Failure Analysis® on processor(s), voltage regulator modules, memory, fans, power supply, and disk options

LIMITED WARRANTY³

25R8060

32R3288

40K7462

- 1 year parts and labor International Warranty Service³ On site, 8 am 5 pm, Mon Fri coverage excluding holidays, next business day response time⁷
- next business day response time?
 On site service upgrade options
 (in eligible locations):?

 1 year IOR 9x5, 4 hr avg response
 (ServicePacpartnum96P9399)

 2 year IOR 24x7, 4 hr avg response
 (ServicePacpartnum96P2119)

 2 year IOR 24x7, 2 hr avg response
 (ServicePacpartnum96P2120)

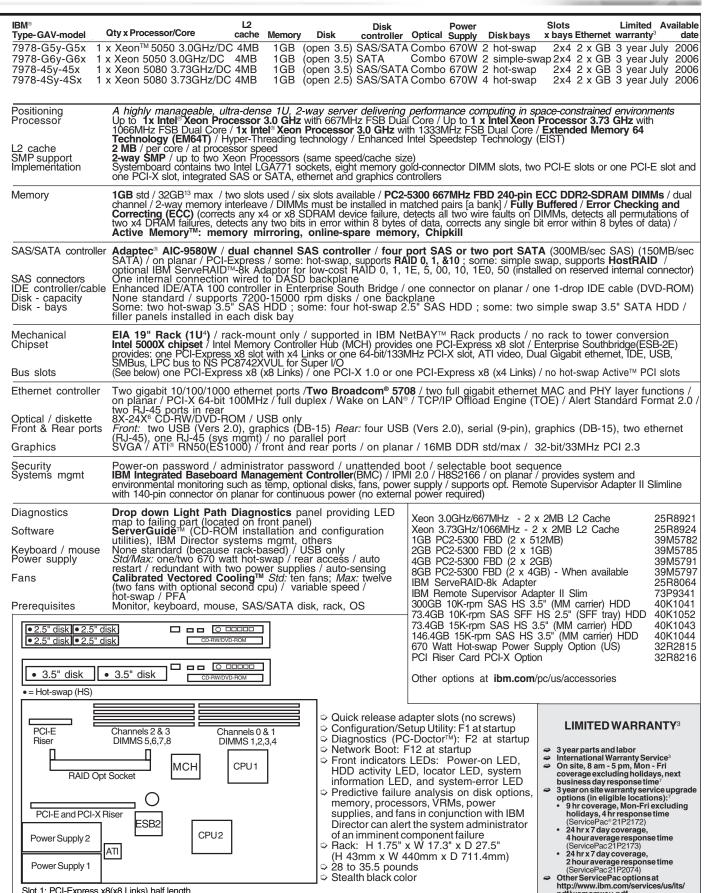
 3 year IOR 24x7, 4 hr avg response
 (ServicePacpartnum96P9507)

 3 year IOR 9x5, NBD response
 (ServicePacpartnum96P9505)
 Other ServicePac options at
 www.ibm.com/services/us/its/pdf/wamomxeu.pdf
 24x7'4 toll-free support for warranty
 Issues during the warranty period³

issues during the warranty period³

*IBM SAS HBA Controller option required for SAS support

				-
IBM®	L2 Corp. cacho Momoro			Available
7977-12y-12x 1 x x 7977-22y-22x 1 x x	y x Processor Core cache Memory, [eon™5050 3.0GHz] DC 4MB 1GB (eon 5060 3.2GHz] DC 4MB 1GB (eon 5110 1.6GHz] DC 4MB 1GB (eon 5120 1.86GHz] DC 4MB 1GB (eon 5130 2.0GHz] DC 4MB 1GB (eon 5140 2.33GHz] DC 4MB 1GB (eon 5150 2.66GHz] DC 4MB 1GB (eon 5160 3.0GHz] DC 4MB 1GB	None CAC / CATA Tower Gv11	(8 hot-swap std/max) 1 x 835W hot-swap 2xGigabit 8 hot-swap std/max) 1 x 835W hot-swap 2xGigabit (8 hot-swap std/max) 1 x 835W hot-swap 2xGigabit	Jul 2006 Jul 2006 Jul 2006 Jul 2006 Jul 2006 Jul 2006 Jul 2006 Jul 2006 Jul 2006
Positioning Processor L2 cache SMP support Implementation	Universal server; two-way server using Up to 1 x Intel® Xeon Processor 3.0 RFSB Dual Core / Extended Memory 2MB / per core / all models / at process 2-way SMP / up to two Xeon Process	g the Xeon processor to provide po GHz with 667MHz FSB Dual Core 64 Technology (EM64T) / Hyper- isor speed sors (same speed/cache size) 71 sockets, twelve memory gold-co	ower and performance at an affordable price / Up to 1 x Intel Xeon Processor 3.2 GHz with 1	066MHz
Memory	installed in matched pairs [a bank] / Fu (ECC) (corrects any x4 or x8 SDRAM	illy Buffered / 2-way memory inter device failure, detects all two wire ithin 8 bytes of data, corrects any s	MMs are supported, 24GB is the max with less tha 240-pin ECC DDR2-SDRAM DIMMs / DIMMs muleave / dual channel / Error Checking and Correfaults on DIMMs, detects all permutations of two x single bit error within 8 bytes of data) / Active Mer	e cting 4 DRAM
SAS/SATA controller SAS connectors SAS cabling	Adaptec® AIC-9580W / eight port supports RAID 0, 1, 5 &10 / ServeRAID 8k st Dual channel controller wired to two ho Two mini SAS cables connect controlle	td ot-swap DASD backplanes	150MB/sec SATA) / hot-swap / on planar / PCI-E	xpress /
IDE controller / cable Disk - capacity Disk - bays	IDE ATA 66/33 / one connector on pla None std / supports 7200-15000 rpm of Eight hot-swap SAS/SATA bays	nar / one 2-drop IDE cable (DVD-F	ROM)	
Mechanical Slots (see below) Chipset	Tower / conversion to EIA 26" Rack (5 Three PCI-Express, two PCI-X 64-bit/1 Intel 5000P chipset / Intel Memory Coprovides: one PCI-Express x8 slot with Gigabit ethernet, IDE, USB, SMBus, LF Dual 10/100/1000 gigabit / Broadcom®	I33MHz and one PCI 32-bit/33MH: ontroller Hub (MCH) provides two I i x4 Links, two 64-bit/100MHz PCI PC bus to NS PC8374L for Super I,	z slot PCI-Express x8 slots / Enterprise Southbridge(ES I-X slots, one 32-bit/33MHz PCI slot, ATI video, Du /O ss 64-bit 100MHz / full duplex / Wake on LAN® / II	B-2E) ual PMI (2.0)
DVD-ROM / diskette Rear ports Front port / graphics	16X ⁶ DVD-ROM / IDE / 1.6" HH; <i>Disk</i> :	rette: USB only	graphics (DB-15), two ethernet (RJ-45), RJ-45 (sy blanar / 16MB DDR std/max / 32-bit/33MHz PCI 2	
Security	Power-on password / administrator padisk bays and power button / unattender	ssword / front door to cover	Xeon 3.0GHz/667MHz/4MB L2 Cache Proc Upg Xeon 3.2GHz/1066MHz/4MB L2 Cache Proc Upg	25R8926 25R8912
Systems mgmt Diagnostics Software	IBM Integrated Baseboard Manager H8S2166 / on planar / provides system such as temp, optional disks, fans, posupervisor Adapter II Slimline with 140 continuous power (no ext pwr reqd) Light Path Diagnostics Manager provides the provided of the provided o	n and environmental monitoring wer supp / supports opt. Remote -pin connector on planar for ding LED map to failing part	Xeon 1.6GHz/1066MHz/4MB L2 Cache Proc Upg Xeon 1.86GHz/1066MHz/4MB L2 Cache Proc Upg Xeon 2.0GHz/1333MHz/4MB L2 Cache Proc Upg Xeon 2.33GHz/1333MHz/4MB L2 Cache Proc Upg Xeon 2.66GHz/1333MHz/4MB L2 Cache Proc Upg Xeon 3.0GHz/1333MHz/4MB L2 Cache Proc Upg Xeon 3.0GHz/1333MHz/4MB L2 Cache Proc Upg 1GB Kit (2x512MB DIMM) PC2-5300 DDR2 FBD CL4 2GB Kit (2x1GB DIMM) PC2-5300 DDR2 FBD CL4 4GB Kit (2x2GB DIMM) PC2-5300 DDR2 FBD CL4	40K1231 40K1232 40K1233 40K1234 40K1235 40K1236 39M5782 39M5785 39M5791
Keyboard / mouse Power supply Fans	Optional 835 watt / std/max: one/two / hot-swap redundant with optional power supply std/max: three/six / three fans (mid-cha (Opt) two additional mid-chassis fans a optional fans / PFA / fan in each power	assis) / variable speed / hot-swap / and one rear / redundant with	73GB 10K SAS Hot-Swap HDD 146GB 10K SAS Hot-Swap HDD 300GB 10K SAS Hot-Swap HDD 36GB 15K SAS Hot-Swap HDD 73GB 15K SAS Hot-Swap HDD 146GB 15K SAS Hot-Swap HDD	40K1039 40K1040 40K1041 40K1042 40K1043 40K1044
5.25"HH 5.25"HH • 4 • 5 • 6 • 7	/ 1 5.25", HH 1.6" access, DVD-RON / 2 5.25", HH 1.6" access, open / 3 5.25", HH 1.6" access, open / 4 3.5", SL 1", access, hot-swap / 5 3.5", SL 1", access, hot-swap / 6 3.5", SL 1", access, hot-swap / 7 3.5", SL 1", access, hot-swap	 Quick release adapter slots (n Configuration/Setup Utility inv 	BOGB 7.2K SATA Hot-Swap HDD 160GB 7.2K SATA Hot-Swap HDD 250GB 7.2K SATA Hot-Swap HDD IBM Remote Supervisor Adapter II Slimline IBM Redundant Power and Cooling Option(NA) Otheroptions at www.ibm.com/pc/us/accessories TO SCREWS) OKED LIMITED WARRANTY ³	39M4518 39M4522 39M4526 39Y9566 39Y8487
Tower Slot 1: half-length Slot 2: full, PCI-E Slot 3: full, PCI-E Slot 4: full, 64-bit Slot 5: full, 64-bit		Aurora RAID Configuration Ustartup by pressing CTRL+A	On site, 8 am - 5 pm, Mon - Ficoverage excluding holidays business day response time? 3 year on site warranty service upgrade options (in eligible locations): 9 hour coverage, Mon-Fri excluding holiday 4 hour average response (ServicePac® part num 21P2 24 hr x 7 day coverage, 4 hour average response (ServicePac® part number 21 24 hr x 7 day coverage, 24 hour average part number 21 24 hr x 7 day coverage,	ee es, 2083)
	2.4	ll models: Max internal disk cap 4TB² with eight 300GB 10K SAS 0TB² with eight 250GB SATA hot	or issues during the warranty n	arranty



riser determines PCI-Express or PCI-X

See footnotes for important warranty information

Max internal disk capacity: 3.5" SAS models: 600GB² with two 300GB SL disks

Stealth black color

2.5: SAS models: 292GB2 with four 73.4GB SFF disks

3.5" SATA models: 1TB2 with two 500GB SL disks

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pdf/wamomxeu.pdf

24x7¹⁴toll-free support for warranty issues during the warranty period³



riser determines PCI-Express or PCI-X

See footnotes for important warranty information

Power Supply 1

Max internal disk capacity: 3.5" SAS models: 600GB² with two 300GB SL disks

28 to 35.5 pounds Stealth black color

2.5: SAS models: 292GB2 with four 73.4GB SFF disks

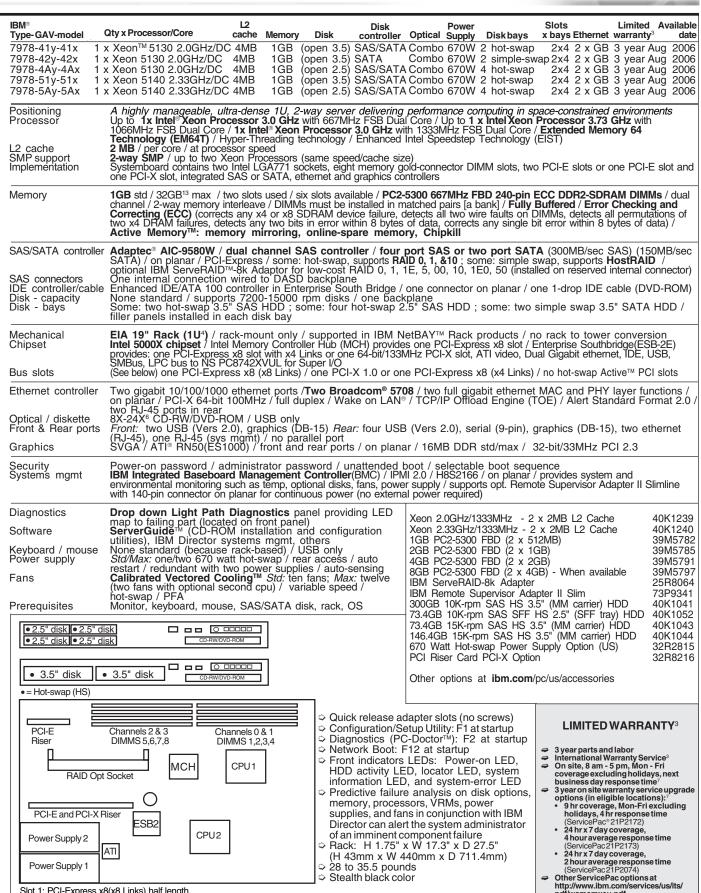
3.5" SATA models: 1TB2 with two 500GB SL disks

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2 hour average response time (ServicePac 21P2074) Other ServicePac options at http://www.ibm.com/services/us/its/

pdf/wamomxeu.pdf

24x7¹⁴toll-free support for warranty issues during the warranty period³



riser determines PCI-Express or PCI-X

See footnotes for important warranty information

Max internal disk capacity: 3.5" SAS models: 600GB² with two 300GB SL disks

2.5: SAS models: 292GB2 with four 73.4GB SFF disks

3.5" SATA models: 1TB2 with two 500GB SL disks

Stealth black color

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pdf/wamomxeu.pdf

24x7¹⁴toll-free support for warranty issues during the warranty period³

•				ia ckino ana Eudodion Team
7978-61y-61x 1 7978-6Ay-6Ax 1 7978-71y-71x 1	x Xeon 5150 2.66GHz/DC 4MB 1GB (or x Xeon 5160 3.0GHz/DC 4MB 1GB (or	pen 3.5) SAS/SATA pen 3.5) SAS/SATA pen 3.5) SAS/SATA	Optical Supply Diskbays Combo 670W 2 hot-swal Combo 670W 2 hot-swal Combo 670W 2 hot-swal Combo 670W 4 hot-swal	2x4 2 x GB 3 year Aug 2006 2x4 2 x GB 3 year Aug 2006
Positioning Processor L2 cache SMP support Implementation	A highly manageable, ultra-dense 1U, 2-w. Up to 1x Intel® Xeon Processor 3.0 GHz wir 1066MHz FSB Dual Core / 1x Intel® Xeon Processor 3.0 GHz wir 1066MHz FSB Dual Core / 1x Intel® Xeon Processor Speed 2 MB / per core / at processor speed 2-way SMP / up to two Xeon Processors (sa Systemboard contains two Intel LGA771 soch one PCI-X slot, integrated SAS or SATA, ether	th 667MHz FSB Dua rocessor 3.0 GHz wi hnology / Enhanced ame speed/cache siz kets, eight memory g	I Core / Up to 1 x Intel Xeor th 1333MHz FSB Dual Core Intel Speedstep Technology e) old-connector DIMM slots, tv	n Processor 3.73 GHz with / Extended Memory 64 (EIST)
Memory	1GB std / 32GB¹³ max / two slots used / six channel / 2-way memory interleave / DIMMs r Correcting (ECC) (corrects any x4 or x8 SDI two x4 DRAM failures, detects any two bits in Active Memory™: memory mirroring, o	must be installed in m RAM device failure, o n error within 8 bytes	<pre>iatched pairs [a bank] / Fully letects all two wire faults on of data, corrects any single</pre>	ECC DDR2-SDRAM DIMMs / dual Buffered / Error Checking and DIMMs, detects all permutations of bit error within 8 bytes of data) /
SAS connectors	Adaptec® AIC-9580W / dual channel SASATA) / on planar / PCI-Express / some: hoptional IBM ServeRAID™-8k Adaptor for koone internal connection wired to DASD benhanced IDE/ATA 100 controller in Enterp None standard / supports 7200-15000 rp Some: two hot-swap 3.5" SAS HDD; son filler panels installed in each disk bay	ow-cost RAID 0, 1, backplane brise South Bridge /	IE, 5, 00, 10, 1E0, 50 (instance) one connector on planar /	alled on reserved internal connector) one 1-drop IDE cable (DVD-ROM)
Mechanical Chipset Bus slots	EIA 19" Rack (1U4) / rack-mount only / s Intel 5000X chipset / Intel Memory Controlle provides: one PCI-Express x8 slot with x4 Lin SMBus, LPC bus to NS PC8742XVUL for Su (See below) one PCI-Express x8 (x8 Links) /	r Hub (MCH) provide ks or one 64-bit/133N per I/O	s one PCI-Express x8 slot / /IHz PCI-X slot, ATI video, D	Enterprise Southbridge(ESB-2E) lual Gigabit ethernet, IDE, USB,
Ethernet controller Optical / diskette Front & Rear ports Graphics	Two gigabit 10/100/1000 ethernet ports /Ton planar / PCI-X 64-bit 100MHz / full dupl two RJ-45 ports in rear 8X-24X° CD-RW/DVD-ROM / USB only Frot: two USB (Vers 2.0), graphics (DB-(RJ-45), one RJ-45 (sys mgmt) / no parall SVGA / ATI® RN50(ES1000) / front and respectively.	lex / Wake on LAN®	/ TCP/IP Offload Engine (TOE) / Alert Standard Format 2.0 /
Security Systems mgmt	Power-on password / administrator passw IBM Integrated Baseboard Management C environmental monitoring such as temp, optio with 140-pin connector on planar for continuo	ontroller(BMC) / IPM nal disks, fans, powe	ll 2.0 / H8S2166 / on planar r supply / supports opt. Rem	/ provides system and
Diagnostics Software Keyboard / mouse Power supply Fans Prerequisites • 2.5" disk • 2.5" d • 2.5" disk • 2.5" d		d configuration ners B only access / auto s / auto-sensing ans; <i>Max</i> : twelve ble speed /	Xeon 2.66GHz/1333MHz - Xeon 3.0GHz/1333MHz - 2 1GB PC2-5300 FBD (2 x 5 2GB PC2-5300 FBD (2 x 6 4GB PC2-5300 FBD (2 x 4 1 2 4 4 2 4 3 4 4 4 4 4 4 4 4 4 4 4 4 4 4	x 2MB L2 Cache 40K1242 39M5782 (GB) 39M5785 (GB) 39M5791 39M5797 (GB) - When available r 25R8064 (apter II Slim 73P9341 40K1041 (HS 2.5" (SFF tray) HDD 40K1052 3.5" (MM carrier) HDD 40K1043 3.5" (MM carrier) HDD 40K1044 Supply Option (US) 32R2815
• 3.5" disk •= Hot-swap (HS)	3.5" disk CD-RW/DVD-ROM	7	PCI Riser Card PCI-X Opti Other options at ibm.com	
PCI-E and PCI-X F Power Supply 2 Power Supply 1		 Configuration/Si Diagnostics (PC Network Boot: F Front indicators HDD activity LE information LED Predictive failure memory, processupplies, and fail Director can ale of an imminent C Rack: H 1.75" 	LEDs: Power-on LED, D, locator LED, system D, and system-error LED e analysis on disk options, sors, VRMs, power as in conjunction with IBM t the system administrator omponent failure k W 17.3" x D 27.5" 40mm x D 711.4mm) ds	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):° • 9 hr coverage, Mon-Fri excluding holidays, 4 hr response time (ServicePac® 21P2172) • 24 hr x7 day coverage, 4 hour average response time (ServicePac® 21P2173) • 24 hr x7 day coverage, 2 hour average response time (ServicePac® 21P2074) ⇔ Other ServicePac options at

* riser determines PCI-Express or PCI-X

See footnotes for important warranty information

Max internal disk capacity: 3.5" SAS models: 600GB² with two 300GB SL disks 2.5: SAS models: 292GB² with four 73.4GB SFF disks

3.5" SATA models: 1TB2 with two 500GB SL disks

(ServicePac21P2173)

• 24 hr x 7 day coverage,
2 hour average response time
(ServicePac21P2074)

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

• 24xT**toll-free support for warranty
issues during the warranty period³

	y x Processor Core cache Xeon™ 5050 3.0GHz DC 4MB				Slots x bays (hot-swap bays) 4x7 (4 or 6 hot-swap) 1	Power supply x 835W Hot-Swap	Ethernet	Available date
7979-GSý-GSx 1 x 2 7979-H5v-H5x 1 x 2	Xeon 5050 3.0GHz DC 4MB Xeon 5063 3.2GHz DC 4MB Xeon 5063 3.2GHz DC 4MB	1GB None S 1GB None S 1GB None S	SAS / SATA R SAS / SATA R	ack 4	4x10 (8 hot-swap) 1 4x7 (4 or 6 hot-swap) 1	x 835W Hot-Swap x 835W Hot-Swap x 835W Hot-Swap	2xGigabit 2xGigabit	Jul 2006 Jul 2006
Positioning Processor	A rack-dense 2-way server of Up to 1x Intel® Xeon Process FSB Dual Core / Extended M Technology (EIST)	sor 3.0 GHz with	n 667MHz FSB	Dual Co	ore / Up to 1 x Intel Xe	on Processor 3.2 (GHz with i	1066MHz
L2 cache SMP support Implementation	2 MB / per core / at processor 2-way SMP / up to two Xeon Systemboard contains two Inte and two PCI-X slots, integrated	Processors (sar el LGA771 socke	me speed/cache ets, twelve mem and graphics co	size) ory golo ntrollers	d-connector DIMM slot	s, four PCI-E slots o	or two PC	I-E slots
Memory	1GB std / 48GB¹³ max / two s channel / 2-way memory interle Correcting (ECC) (corrects artwo x4 DRAM failures, detects Active Memory™: memory	eave / DIMMs m ny x4 or x8 SDR anv two bits in	ust be installed AM device failu error within 8 by	in matcl re, dete rtes of o	hed pairs [a bank] / Fu cts all two wire faults o data, corrects any sing	IIv Buffered / Error	Checking	a and
SAS connectors	Adaptec® AIC-9580W / du hot-swap / on planar / PCI-Exp 10, 5 & 6 (installed on reserv One internal connection wir Enhanced IDE/ATA 100 cont None standard / supports 7 Some: six hot-swap 3.5" SA Optional internal and extern	ress / supports R red internal con ed to DASD ba roller in Enterpri 200-15000 rpm S HDD / some	AID 0, 1 & 10 / or nector) ackplane / one se South Bridge n disks / one b : eight hot-swa	otional extern e/one	IBM ServeRAID™-8k al connector connector on planar / o	Adaptor for low-cos	st RAID 0), 1, 1E,)VD-ROM)
Mechanical Chipset	EIA 19" Rack (2U ⁴) / rack- Intel 5000P chipset / Intel Me bit/133MHz PCI-X slots / Enter ethernet, IDE, USB, SMBus, L (See below) Two PCI-Express	mory Controller prise Southbridg PC bus to NS PC	Hüb (MCH) pro ge(ESB-2E) prov C8742XVUL for	vides ris vides: tw Super I	ser connector for eithe vo PCI-Express x8 slot //O	r two PCI-Express x with x4 Links, ATI v	8 slots or video, Dua	two 64- al Gigabit
Ethernet controller Optical / diskette Front & Rear ports Graphics	Dual gigabit 10/100/1000 eth on planar / PCI-Express / ful two RJ-45 ports in rear 8X-24X ⁶ CD-RW/DVD-ROM <i>Front:</i> two USB (Vers 2.0), (RJ-45), one RJ-45 (sys mg SVGA / ATI [®] RN50(ES1000	l duplex / Wake / USB only	e on LAN® / TC	P/IP O	offload Engine (TOE)	/ Alert Standard Fo	ormat 2.0	/
Security Systems mgmt	Power-on password / admir IBM Integrated Baseboard N environmental monitoring such with 140-pin connector on plar	as temp, option	al disks, fans, p	ower su	ipply / supports opt. Re	equence ar / provides systen emote Supervisor Ad	n and dapter II S	limline
Diagnostics Software Keyboard / mouse Power supply Fans Prerequisites	Drop down Light Path Dia map to failing part (located of ServerGuide™ (CD-ROM in utilities), IBM Director syste None standard (because rac Std/Max: one/two 835 wath restart / redundant with two participated Vectored Coolin (five fans with optional second with ten fans installed; All: var Monitor, keyboard, mouse, S	n front panel) stallation and ms mgmt, othe k-based) / USB ot-swap / rear a power supplies g™ Std: five fa d power supply iable speed / hc	configuration ers 3 only access / auto / auto-sensing ns; <i>Max</i> : ten y) / redundant ot-swap / PFA	Xe 1G 2G 4G 8G IBI IBI 30	con 3.0GHz/667MHz con 3.2GHz/1066MHz con 3.2GHz/106MHz con 3.2GHz/1066MHz con 3.2GHz/1066MHz con 3.2GHz/106MHz c	2 x 2MB L2 Cache (512MB) (1GB) (2GB) (2GB) (2GB) - When avail oter Adapter II Slim S 3.5" (MM carrier)	e able HDD	25R8926 25R8927 39M5782 39M5785 39M5791 39M5797 25R8064 39Y9566 40K1041 40K1052
Drop Down lightpathpanel USB Vid CD-RWDVD-ROM Bay ① 5.25", 0.	2x 3.5" disk • 3.5" dis 5" access, slimCD-RW/DVD-ROM	with 3.5" SAS		73. 144 83: 83: PC	.4GB 15K-rpm SAS H: 6.4GB 15K-rpm SAS H: 5 Watt Hot-swap Pow 5 Watt Hot-swap Pow CI Riser Card PCI-Exp CI Riser Card PCI-X O	S 3.5" (MM carrier) HS 3.5" (MM carrier) er Supply Option (U er Supply Option (W ress Option	HDD) HDD S) (W)	40K1043 40K1044 40K1905 40K1906 40K1907 40K1908
Bay ② 3.5", SL 1" Bay ③ 3.5", SL 1" Bay ④ 3.5", SL 1"	 access, hot-swap, open for dis 	k		Ot	her options at ibm.co	om/pc/us/accessorie	s	
Bay © 3.5", SL 1" Bay © 3.5", SL 1" Bay © 3.5", SL 1" Drop Down lightpathpanel CD-RWDVD-RM Bay © 5.25", SFT 1", Bay © 2.5", SFT 1",	access, hot-swap, open for dis access, hot-swap, open for dispersion for dispersion for hot-swap, open for hot-swap, open for hot-sw	2U Rack with 2.5" SAS	 Configuration Diagnostics Network Boo Front indicat HDD activity information I Predictive fa memory, pro supplies, and Director can of an immine Rack: H 3.3 	n/Setup (PC-Do to F12 ors LE LED, au illure ar cessors I fans in alert the alert the own 44: ounds	ter slots (no screws) b Utility: F1 at startup b ctor™): F2 at startup bcs: Power-on LED, locator LED, system nd system-error LED nalysis on disk option s, VRMs, power n conjunction with IBM e system administrato bonent failure 17.5" x D 27.5" 3.6mm x D 698mm)	⇒ 3 year parts an ⇒ International W → On site, 8 am - coverage exclubusiness day n 3 year on site w options (in elie • 9 hr coverag holidays, 4 h	d labor larranty Seris 5 pm, Mon- lding holiday esponse tim arranty serv gible locatio le, Mon-Frie lar response 121P2077) coverage, ge response 11P2078) coverage, ge response 11P2093) lac options a	vice ³ -Fri ys, next e ⁷ ice upgrade ns): ⁷ excluding time e time
Slot 2*: PCI-Express xt Slot 3: low-profile, PC Slot 4: low-profile, PC *slots 1 & 2 riser detern		Hz 3.3v PCI-X Max internal 3.5" SAS mod			00GB SL disks nt 73.4GB SFF disks	pdf/wamomxet 24x714toll-free issues during the v	J.pdf support for varranty per	warranty iod ³

See footnotes for important warranty information



See footnotes for important warranty information



IBM® Type-model Qty x Pro	ocessor	L2 cache N	lemory	Ultra320 SC	SI disk	SCSI controller	Mechanica	Slots x bays	Disk Bays	Alarm Panel	Power supply	Compliant	Available date
7980-52X 2 x Xeor 7980-53X 2 x Xeor 7980-54X 2 x Xeor 7980-55X 2 x Xeor	1 3.2GHz	2MB 2MB	1GB 2GB 2GB 2GB	Open Open 2 x 146.8GI 2 x 146.8GI	B ² 10K B 10K	2 x Ultra320 2 x Ultra320 2 x Ultra320 2 x Ultra320	2U⁴ rack 2U rack 2U rack 2U rack	6x3 6x3 6x3 6x3	2 HS 2 HS 2 HS 2 HS	Yes Yes Yes Yes	DC power AC power DC power AC power	NEBS-3 NEBS-3	May 2006 May 2006 May 2006 May 2006
DC power	r models ard	e desig				tures requiri		equipm		suppor	t DC power	environm	ents
Positioning Processor(s) L2 cache Implementation SMP support	2 x Intel® x 2MB std a Systemboa integrated	keon 3.2 and max ard conf subsys	2GHz w (/ ECC tains tw stems	vith 800MHz / at process vo Intel 604	FSB / sor spe pin mid	or providers of Optimized for ed ero-PGA ZIF r is standard	sockets, s	Memor	y 64 To	echnolo	•	, ,,	ŭ
Memory	DIIVIIVIS ML	ıst de ir	nstalled	in matched	pairs is	400MHz regi ets used / Fo a bank] / two ine spare an	-wav mem	orv interi	eave /	duai-cr	nannei / Er	/ Six DIMI BB or 1GB ror Check	M gold- DIMMs / ing and
SCSI disk controller SCSI channels SCSI disk SCSI disk bays IDE controller / cable	SCSI Chai SCSI Chai Up to two Two hot-sv	nnel A: nnel B: 1 46.80 wap dis	one inte externa BB Ultra k bavs	ernal 16-bit 8 al 16-bit .8mi a320 SCSI, 1 in disk drive	80-pin` m VHD 10K rpr e carrie	LVD cable from the control of the co	om controll ternal conr d seek, S.I out from f	er to two nector (no M.A.R.T. ront	o-báy d o cable ⁵ / RA	isk drives) ID 0 an	e carrier d 1		architecture
Mechanical Rack support PCI bus slots Chipset	Designed f	for insta	Ilátion i			ack unit only (it 133MHz ski tive™ PCI sko ller Hub (MC CI-X support PCI riser boa 7 for Super I/							
Bays Ethernet DVD-ROM / diskette Ports	Dual Gigab Adapter Fa 24X-10X ⁶ s Rear: Two SCSI; DB-	oit 10/100 oult Toler slim-line o USB p 15 male	0/1000 e rance, F e CD-D' orts (Ve e conne	ethernet ports Failover VD ROM / U er 2.0); RJ-4	/ Intel 8 ISB onl 15 seria t panel	s (hot-swap) 32546 / on pla ly al; combo ke alarm relay	nar / full-duṗ yboard anc	olex / sup _l I mouse;	ports W	/ake on J-45 et			
Graphics controller	SVGA / PO	CI bus /	ATI® R	Rage XL (on	planar)	/ 16MB SDF	RAM std/ma	x / 1600	x1200	at 16M	colors at 8	5Hz / DB-1	5
Security	Power-on	passwo	rd / adr	min passwor	rd / una	attended boo	t / selectab	le boot /	boot v	vithout	keyboard		
Alarm panel Status LEDs Systems mgmt	four alarm Operator Integrated	panel [*] L Informa Servic	.EDs: p ation Pa e proce	ower alarm f anel (in fron essor (Baset	fault, cr nt) / inc board N	es 24x7 surve ritical alarm fa ludes switch Management rer supplies	ault, major es (NMI, p Controller)	alarm fai ower, res / on pla	ulf, mir set) an nar / fa	ior aları d statu: ailures d	m fault s LEDs (N	IC, disk, m	ain power)
OS support Software ship group	Microsoft® \ Resource	Windows CD (CE	s™ Serv D-ROM i	rer 2003, Ente installation an	erprise I nd confi	Edition / Red I guration utilitie	Hat® Enterpo es, Intel Ser	rise Linux ver Contr	3 & 4 z ol serve	AS / SU er mana	SE® Linux E gement sof	Enterprise S tware, Prod	erver 9 uct Guide)
Keyboard / mouse Power supply	DC 600 wa	wo / rea att (-48	r acces to -60	śsible / AC 6	orts du	ıal input sour	,	ions avai	ilable v	ia spec	ial Bid		
Fans	fan failure	signals	front pa	not hot-swap anel alarm L / / fan on ea	ED /								
Prerequisites				ource and cu se, rack, op		supplied wiri	ng,						
Slot 2: fullsize, 64		z PCI-X z PCI-X Iz PCI-)	((5V) ((5V) X (3.3V	')	Confi press	en black colo iguration/Setu sing F2 at sta ISelect near L+A	ıp`Utility inv artup	oked by		 ⇒ 3/3 ⇒ Inte ⇒ On cov nex ⇒ 2 ye upg loca 	LIMITED N year parts ernational M site, 8 am - erage exclut t business ear on site grade option ations):7	and labor larranty Se 5 pm, Mor uding holid day respor warranty ns (in eligit	ervice ³ n - Fri ays, nse time ⁷ service
Slot 6: low-profile, 6: CD-ROM disk bay Bay ② 3.5", 0.5", Bay ③ 3.5", SL 1", Bay ④ 3.5", SL 1",	disk ba	ay 2 CD-D\	X (3.3V 2U Rac VD ROI disk	() () () () () () () () () () () () () (⇒ PC-E⇒ Seve⇒ H 3.4⇒ H 87	Doctor™ diag ral hardcopy 45" x W 17.1 .6 mm x W 4 o 37 pounds (publicatio 4" x D 20.0 35.3 mm x	ns " D 508 m		• 2 • 2 • 2 • 2 9	nolidays, 4 6P2122 4 hr x 7 da hour aver 6P2123 4 hr x 7 da hour aver 6P2124 714 toll-free	hr respons ay coverag age respon ay coverag age respon	se time e, nse time e, nse time
,	, -			2	All mod 293.6GE	<i>lels:</i> Max int 3 ² with two 1 ⁴	disk capac 46.8GB SL	ity: disks			ues during		

IBM® Type-model Qty	x Processor	Speed/Core	L2 Cache	Optical	Memory	Disk / Controlle	Disk bays	Slots x bays		rranty ³ Available ears) date
7985 - 11U 1 x 0 7985 - 1AU 1 x 0 7985 - 21U 1 x 0 7985 - 2AU 1 x 0 7985 - 41U 1 x 0 7985 - 41U 1 x 0 7985 - 51U 1 x 0 7985 - 5AU 1 x 0	Opteron 2210 Opteron 2212 Opteron 2212 Opteron 2216 Opteron 2216	0 1.8GHz/DC 1.8GHz/DC 2.0GHz/DC 2.0GHz/DC 2.4GHz/DC 2.4GHz/DC 2.6GHz/DC 2.6GHz/DC	2x1MB 2x1MB 2x1MB 2x1MB 2x1MB 2x1MB	CD-RW/DVD CD-RW/DVD CD-RW/DVD CD-RW/DVD CD-RW/DVD CD-RW/DVD CD-RW/DVD CD-RW/DVD	2x512MB 2x512MB 2x512MB 2x512MB	Open/SAS Open/SAS/SAT Open/SAS Open/SAS Open/SAS Open/SAS Open/SAS Open/SAS/SAT	A 6-3.5"HS 8-2.5"HS A 6-3.5"HS 8-2.5"HS	4x7 4x10 4x7 4x10 4x7 4x10	Dual Gigabit Dual Gigabit Dual Gigabit Dual Gigabit Dual Gigabit Dual Gigabit Dual Gigabit Dual Gigabit	3 Nov 2006 3 Nov 2006
Positioning Processor(s) L2 cache SMP support Implementation	Up to two A 1MB / per of 2-way SMI Systemboa	AMD® Opteron 2 core / at proces P / up to two O rd contains two	2000 Seri ssor spee opteron Pi o AM2 soo	d rocessors (sam	Processors of speed/cathernory DIM	up to 2.6GHz¹ / si the size required) M slots, integrated	·	• • •		, ,
Memory	Error Ched	cking and Cori	recting (i	sor (64GB max slots available d / DIMMs mus ECC) via 16-bit / hardware scru	Checksum	u system) / <i>single</i> 67MHz registered d in matched pair / Xcelerated Me	cpu system: t d 240-pin DE s [a bank] / du nory Techno	two slot R2-SD Ial char Iogy I	ts used, six slot PRAM RDIMMs nnel / two-way i / Chipkill™ on	s available; <i>dual</i> / sixteen DIMM nterleaving / 1, 2 and 4GB
SAS controller	Adaptec® A supports RA connector)	ID 0, 1 & 10 / op	ual chan tional IBN	nel SAS contro ∕I ServeRAID™-	oller / eight 8k Adaptor i	port SAS (300M or low-cost RAID	B/sec SAS) / 0, 1, 1E, 10, 5	hot-sw 5 & 6 (ii	ap / on planar / nstalled on rese	PCI-Express / rved internal
SAS connectors SATA disk controll IDE controller/cabl Disk - capacity Disk - bays	One internated er Integrated Enhanced I None stand	al connection wi SATA II contro DE/ATA 100 co lard / supports not-swap 3.5" S	oller / pro ontroller in 7200-150	ovided by HT10 Itegrated in Sou 100 rpm disks /	th Bridge / o one backpla	ne connector on r		•	,	,
Tape backup			nal / 3.5" .	/ USB or SATA						
Mechanical Chipset Bus slots	ServerWor HyperTrans ethernet, ID (See detail	rks™ Chipset / sport bridge to h DE and LPC bus	HT2100 HT1000 S to NS P	System I/O C South Bridge / I C87427 for Sup	ontroller pro HT1000 Soυ per I/O	I NetBAY™ Rac ovides: two PCI-E ith Bridge provide e PCI-E x8 and or	xpress x8 slo es: PCI-X, US	t, one B(2.0),	PCI-Express x ² ATI video, SA	l slot, rA, Dual GB
Ethernet Optical / diskette Ports	Two gigabit PCI-X 64-b 24x/10x/24; Front: two	t 10/100/1000 e it 100MHz / TC x/8x CD-RW/D\ USB (Vers 2.0	P/IP offio VD / IDE). DB-15	ad engine (TOE / <i>Diskette</i> none graphics / <i>Rea</i>	E) / full duple e (USB diske r: four USB	(Vers 2.0), serial	® / two rear R	J-45 pc	orts	•
Graphics Keyboard / mouse	(RJ-45), an SVGA / AT None stand	alog DB-15 gra l® ES1000(RN5 dard (because i	iphics / pa 50b) / on p rack-base	arallel port not s planar / 16MB s d) / USB only	supported SDRAM std/	Dual Core	AMD Opteron F	rocesso	or Model 2212	25R8938 25R8939
Security	Power-on a selectable I		or passwo	ords / unattende	ed boot /	Dual Core	AMD Opteron F	rocesso	or Model 2218	25R8940 40K1212
Systems mgmt	IBM Integr		rd Mana	gement Contro	oller (BMC)	/ 2GB(2x1)	GB) PC2-5300 C	L5 ECC	DDR2 RDIMMKI DDR2 RDIMMKI DDR2 RDIMMKI	t 41Y2762
Diagnostics	Drop dow	n Light Path	Diagnos	stics panel pr	oviding LEI	D 8GB (2x4)		L5 ECC	DDR2 RDIMMK	
Software	ServerGuio utilities), IBI	de™ (CD-ROM M Director™, ar	installation in others	nt paṅel) on and configui	ration	IBM 146G IBM 300G	B 10K 3.5" SAS B 10K 3.5" SAS B 10K 3.5" SAS 3 15K 3.5" SAS	S Hot-Sv S Hot-S	vap HDD* wap HDD*	40K1040 40K1041
Power supply	Std/Max: 0	ne/two 835 wa	att hot-sw	vap / rear acce	ess / auto	IBM 73GE	3 15K 3.5" SAS	Hot-Sw	/ap HDD*	40K1042 40K1043 40K1044
Fans	(five fans v	vith optional se	econd bo	r supplies / au Std: five fans; wer supply) / i speed / hot-sv	edundant	IBM 73GE	B 15K 3.5" SA 3 15K SAS SFF 3 15K SAS SFF B 7.2K 3.5" SA	Hot-Sw	/ap HDD*	40K1051 40K1052 39M4530
Prerequisites	Monitor, ke	eyboard, mous	e, disk,	rack, OS	T	IBM SAS	HBA Controller Riser Card		p	25R8060 40K7428
26 to 32 poundStealth black of Quick release	V 439.9mm x D 6 ds color adapter slots (no Setup Utility: F1 ² C-Doctor™): F2	53.3mm) conscrews) at startup	HDD activinformatic Predictive memory, supplies, Director of	cators LEDs: Pow vity LED, locator L on LED, and syster a failure analysis of processors, VRM and fans in conjur- can alert the syste- ent component fail	ED, system m-error LED on disk options ls, power nction with IBI m administrat	PCI-X Ris IBM Rem IBM Serve Qlogic Infi 835W Rec		ontroller band Ac Supply (L	dapter JS)	40K7427 39Y9566 25R8064 41Y4519 40K1905

2U Rack with 2.5" SAS

2U Rack with 3.5" SAS/SATA

• 3.5" disk

• 3.5" disk

Drop Down light

pathpanel

Drop Down light path panel	Tape Drive	• 2.5 • 2.5 • 2.5 • 2.5
UŞB Video	• 2.5" disk • 2.5" disk	disk disk
Bay ① 5.25", 0.5", Bay ② 3.5", 2", Bay ③ 2.5", SFF 1", Bay ⑤ 2.5", SFF 1", Bay ⑥ 2.5", SFF 1", Bay ⑦ 2.5", SFF 1", Bay ⑨ 2.5", SFF 1",	access, open access, hot-sv access, hot-sv access, hot-sv access, hot-sv access, hot-sv access, hot-sv access, hot-sv	D-RW/DVD-ROM for tape drive wap, open for disk wap, open for disk
Maximum internal disk	capacity13:	

• = Hot-swap (HS)

3TB with six 500GB SATA disks or

1.8TB with six 300GB SAS disks

		J.	B \	/ideo	Tape Dr	ive	• 3.5" disk
CE	D-RW/	DVD-ROM	_		2x 3.5" c	lisk	• 3.5" disk
Bay Bay Bay Bay Bay Bay Bay	3 4 5 6	5.25", 3.5", 3.5", 3.5", 3.5", 3.5", 3.5",	SL SL SL SL SL SL	1", 1", 1", 1",	access, access, access, access, access, access,	hot-swa hot-swa hot-swa hot-swa	PRW/DVD-ROM ap, open for disk ap, open for disk
	_						

Slot 1: Riser slot for PCI-Express x16(x16 Links), 64-bit 133MHz 3.3v PCI-X or HTx risers Slot 2: low-profile, PCI-Express x8(x4 Links) Slot 3: low-profile, PCI-Express x8(x8 Links) Slot 4: low-profile, PCI-Express x8(x8 Links)

- Jayear 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*partnum69P9403) 2 year IOR 24x7, 4 hr avg response (ServicePacpartnum96P2123) 2 year IOR 24x7, 2 hr avg response (ServicePacpartnum96P2124 3 year IOR 24x7, 4 hr avg response (ServicePacpartnum96P2124) 3 year IOR 24x7, 4 hr avg response (ServicePacpartnum96P9258) Other ServicePacpartnum69P9258) Other ServicePac pottons at www.ibm.com/services/us/its/pdt/wamomxeu.pdf 24x7¹⁴ toll-free support for warranty issues during the warranty period³

Type-model Qty x Processor

IBM[®]

Hot-swap Warranty Available

pwr supplies (yrs.)

Slots x

bays

8877-1RY 1 x Optero 8877-2RY 1 x Optero 8877-4RY 2 x Optero 8877-5RY 2 x Optero	on 8218 2.6GHz/DC 2	MB 95W C MB 95W T	One 2x512MB One 2x512MB Two 4x1GB Two 4x1GB	16	SAS 4L SAS 4L	J ⁴ rack J rack J rack J rack	7x5 7x5 7x5 7x5 7x5	1 x 1500W 1 x 1500W 1 x 1500W 1 x 1500W	3 3 3 3	Sep 2006 Sep 2006 Sep 2006 Sep 2006
Positioning Processors L2 cache Processor upgrade Implementation	Up to 4-way, high perfor One AMD® Opteron 8000 : 1MB / per core / at proces 4-way SMP / up to four O System board contains for dedicated slot for optional i	Series Dual Core sor speed pteron Processo ir CPU/Memory	e Processor up to rs (same speed/ Card Connectors	o 2.8GH cache si s, one H	z¹ / simultar ze) / Dual C Tx slot, foul	ieously sú _l Core Capal r PCI-Expr	pports 32 ole ess slots	2-bit and 64-b	oit comp	outing
Active Memory™	1 or 2GB std / 32GB max standard (up to four) with 8 registered 240-pin DDR2-S Xcelerated Memory Tech	per processor (B DIMM gold-con BDRAM RDIMMs Inology TM / Chip	128GB max per inector slots eacl / two-way interle i kill ™ on 1, 2 an	chassis n / DIMM aving / E d 4GB D	using four of Is must be in Error Check DIMMs / onli	cpu/memo installed in king and C ine hot-spa	ry cards) matched correctinare mem	/ one cpu/m d pairs / PC-5 ig (ECC) via ory / hardwar	emory (300 66 16-bit C e scrub	card 7MHz Checksum / Jobing
SAS disk controller SAS connectors IDE controller / cabling Disk - capacity Disk - bays Mechanical	Adaptec® AIC-9580W SAIBM ServeRAID™-8k Adap One internal connection wi Enhanced IDE ATA-100 co Supports up to 300GB 10k Four 3.5" hot-swap bays / EIA 19" Rack (4U4) / rack	tor for low-cost F red to DASD bac ontroller integrate (rpm disks	RAID 0, 1, 1E, 5, ckplane ed in South Bridg	, 00, 10, e / one c	1E0, 50 (in: connector or	stalled on I	reserved one 1-dro	internal conn op IDE cable (iector) (DVD-R	
Chipset Bus Slots	ServerWorks™ Chipset / PCI-Express x4 slot, PCI-E to HT1000 South Bridge / provides: two PCI-X 1.0 slo Super I/O (See below) Four total PCI	ots at up to 64-bi	V 133IVIHZ, USB(2.0), ATI	video, IDE	and LPC t	ous to ins	5 PU8/42/ 10	or	
DVD-ROM / diskette Ethernet Graphics controller Ports	8X° Slim DVD-ROM / none Dual Broadcom® 5708C 10 functions / PCI-Express / XVGA / ATI® RN50(ES10) Rear: RSA ethernet, RSA Front: two USB(2.0))/100/1000 ether full duplex / W full duplex / W	'ake on LAN® / 16MB SDRAM s	Alert Sta td/max /	andard For 32-bit 33MH	mat 2.0 / Iz PCI 2.2	two RJ- bus	45 ports in re	ear	,
Security Systems mgmt Diagnostics Software	Power-on and administrate BMC standard / IPMI 2.0 / ethernet and serial connectemperature, disks, fans, pood bown Light Path Di IBM Real Time Diagnostic ServerGuide™ (CD-ROM	tors / provides re power supplies l agnostics / prin s (operated throu	emote console a nary indicator on ugh IBM Director	nd mgmi informat) availab	t / power on ion panel w le even whil	n/off systen	n / monit	ors power sta	atus, op	system,
Keyboard / mouse Power supplies	None standard (because Std: one 1500 watt hot-sw: redundant with two power worldwide / voltage-sensing	ap(240 VAC): <i>Ma</i>	ax: two hot-swap configurations) / PFA	1	Dual Core / Dual Core / Dual Core /	AMD Optero AMD Optero AMD Optero	n Process n Process n Process	or Model 8212 or Model 8214 or Model 8218 or Model 8220S	SE .	40K1200 40K1201 40K1202 40K1203
Cooling fans	Calibrated Vectored Co hot-swap, redundant, multi- power supply / PFA / fan fa management processor / r more processors	-speed fans / one ailure signals Dia	e additional fan ir gnostic LED and	n each	2GB (2x1G 4GB (2x2G 8GB (2x4G IBM 73GB IBM 146GE IBM 300GE	iB) PC2-530 iB) PC2-530 iB) PC2-530 10K HS 3.5 3 10K HS 3 3 10K HS 3	0 CL5 EC(0 CL5 EC(0 CL5 EC) 5" SAS HI .5" SAS H .5" SAS H	HDD HDD	ЛKit ЛKit	41Y2759 41Y2762 41Y2765 41Y2768 40K1039 40K1040 40K1041
DVD-ROM 2 Opt disk 3 Opt disk			utput: 409 Btu/hr (120 366 Btu/hr (400		IBM Servel 1500W US Redundant	RAID 8k SAS Power Sup t Fan Kit - 3 Pass Thru C	6 Controlle ply Fans			25R8064 40K7543 40K7545 40K7547 39Y9566

CPU/Memory

cards

12

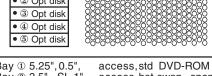
cache Watts

Speed/Core

DIMM

Disk

Memory slots controller Mechanical



Bay ① 5.25", 0.5", access,std DVD-ROM Bay ② 3.5", SL 1", access,hot-swap, open access,hot-swap, open Bay ④ 3.5", SL 1", Bay ⑤ 3.5", SL 1", access,hot-swap, open access,hot-swap, open access,hot-swap, open access,hot-swap, open

Available expansion slots:

Slot 1 - fullsize, PCI-Express x16 Slot 2 - fullsize, PCI-Express x8

Slot 3 - fullsize, PCI-Express x8

Slot 4 - fullsize, PCI-Express x4 Slot 5 - fullsize, 64-bit, PCI-X 1.0, 100/133MHz* Slot 6 - fullsize, 64-bit, PCI-X 1.0, 100/133MHz*

RSA slot - supports RSA II slimline adapter *If one PCI-X 133MHz card is plugged into slot 6 and slot 5 is empty, then it will run at 133MHz. If one PCI-X 133 MHz card is plugged into slot 5 and 6 is empty, then it will run at 100MHz. If two 133MHz cards are plugged into slots 5 and 6, they will run at 100MHz

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

Dimensions: H7" x W19" x D28"

Dimensions: H178mm x W483mm x D711mm

Weight: 26 to 32lbs; 11.8 to 14.6kg

Stealth black color Tool-free serviceability

Access adapters, power supplies, processors, memory and systemboard from top

Setup Program by pressing F1 at startup Diagnostics (PC-Doctor) by pressing F2 at startup

Drop Down Light Path Diagnostics (level 2 diagnostic panel) for outside view of potential problem without removing cover

Information LED panel, diagnostic LED panel, and component LEDs give visual indications of system well-being

Predictive Failure Analysis® alerts on disks, power supplies, memory, processors, VRMs, and fans with IBM Director

All models: Maximum internal disk capacity: 1.2TB with four 300GB2 hot-swap SAS disks

LIMITED WARRANTY3

3 year parts and labor

International Warranty Service³

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

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

 3 year IOR 24x7, 4 hr avg response 69P950

 3 year IOR 24x7, 2 hr avg response 69P9508

• 1 year IOR 9x5, NBD response 69P9398

• 2 year IOR 9x5, NBD response 96P2117

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

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

IBM [®] Type-model Qty x l	Processor	l Core ca	_2 che Memory	DIMM slots	Memory Cards	/ Disks	Disk Controlle	_r Mechanical		Hot-swap bwr supplies	Warranty Available (yrs.) date
8865-13U 1 x Xeon 8865-17U 1 x Xeon 8865-22U 1 x Xeon 8865-2TU 1 x Xeon 8865-3TU 1 x Xeon 8865-3TU 1 x Xeon 8865-42U 1 x Xeon 8865-42U 1 x Xeon	MP 3.66GHz MP 3.66GHz MP 7020 2 6	: SC 1N : SC 1N :7GHzDC 2N	MB 1GB(2x512) MB 1GB(2x512) MB 2GB(2x1GB)	B) 4 B) 4	One One One One One One One	None None None None None None None	SAS SAS SAS SAS SAS SAS	Tower 7U Rack	6x12 6x12 6x12 6x12 6x12	2 x775W 2 x775W 2 x775W 2 x775W 2 x775W 2 x775W 2 x775W 2 x775W	3 May 2006 3 May 2006
Processors L2 cache Processor upgrade Implementation	One 64-bit I up to 3.0GH 1 or 2MB / p 4-way SMP System boar integrated Se	ntel® Xeon™ f lz 667MHz FS ber core / on c / up to four Xe d contains fou erial Attach SC	Processor MP up BB Dual Core / N die of processor / eon Processors M r Intel 604-pin mi SI (SAS), etherne	p to 3.66 letBurst at proce IP (same cro-PGA et, and g	GHz¹ 60 M / Extended Ssor spector Substituting the spector Substituting the substitution that substitution the sub	67MHz ended I eed / Xc cache s ockets, f	FSB Sing Memory (:eL4v™ D size) four mem	gle Core / c 64 Technolo ynamic Serv ory board sk	one 64-bi ogy™ (El ver Cache ots, six A	t Intel Xeon I M64T) / Hype e .ctive™ PCI-X	Processor MP r-Threading 2.0 slots,
Active Memory [™]	1 or 2GB sta gold-connect RDIMMs / E Chipkill TM / I (supported o	d / 64GB max or slots each / rror Checking Memory Prote nly with Micros	per chassis using DIMMs must be g and Correcting Xion™ (redundal soft® Windows™ S	g high-ca installed g (ECC) nt bit ste Server 20	pacity m in matc via 16-b ering) a 003 [™]	emory on hed pai it Chec and Men	card / one rs / PC2- ksum nory Mirr	e memory ca 3200 400M⊦ roring ™ and	ard standa Iz registe Hot-swa	ard (up to fou red 240-pin D p (non-OS sp	r) with 4 DIMM DDR2-SDRAM pecific) / Hot-add
SAS disk controller SAS connectors SAS cabling IDE controller / cabling Disk - capacity Disk - bays Mechanical	Dual-channe Hot-swap ba Enhanced ID	l controller wire ys connect to F ATA-33 con	Dual-channel Sed to dual SAS baintegrated SAS or troller in CSB6 So up to 15,000 rpm up bays / Six stan x 28" deep / su	ackplane ontroller f outh Brid	s through : ae	SAS ex	pander, 1	cable for ea	ch of the	2 SAS back	I-X 2.0 planes) Tape Drive Bays
Chipset I/O Slots	2.0 Host Bri bus for Supe Two suppor Six total Activ	dges / Host B er I/O NS 874 ts 4 PCI-X 2.0 ve™ PCI-X 2.0	ration chipset / ridge One suppo 17 [diskette, key) slots 64-bit slots availa xpansion / separa	orts vide board, r able with	o, optior nouse]), power a	nal Ser Dual F .nd atte	veRaid 8 Port Broad Intion indic	i, ServerWo dcom 5704, cator lights (c	rks® CSE and 2 F optical ser	36 South Brid PCI-X 2.0 slo Insors control (dae (IDE. USB.
DVD-ROM / diskette Ethernet Graphics controller Ports	Broadcom® 5 SVGA / ATI®	5704 10/100/10 Radeon Mobi thernet, RSA	DE (ATAPI), 1.6" 000 dual ethernet lity 7000 / on plan serial, two USB (\	on sys ar / 16M	temboar B SDRA	d / 64-b .M std/n	it 266Mhz nax / 32-b	z PCI-X 2.0 / bit 33MHz PC	2.2 bus	3	
Security Systems management Diagnostics Software	serial connections serial connections disks, fans, prop-down IBM Real Tires	rd / IPMI 2.0 / ctors / provides bower supplies Light Path Di ne Diagnostics	r passwords / una Remote Supervists remote console agnostics / prima (operated through installation and co	sor Ada and mgi ary indica ah IBM D	pter II sl nt / pow ator on ir director) :	imline (er on/o nformati available	optional) / ff system on panel e even w	with LEDs a	ssociated		
Keyboard / mouse Power supplies Cooling fans	Std: two 775 accessible fa Fight hot-swa	watt hot-swap Ins in each pot In redundant	d / Tower model: o / redundant with wer supply / PFA multi-speed fans ostic LED and mo	three po	wer sup oling far	plies (N	+1) / wor	ldwide / volta	age-sensi	ng / auto-rést	
Options	2GB PC2-3 4GB PC2-3 Active Men Xeon MP 3 Xeon MP 7 Xeon MP 7 Dual Core	3200 CL3 EC 3200 CL3 EC nory 4-slot Ex 3.16GHz/1MB 3.66GHz/1MB 020 2.67GHz 040 3.0GHz X3 Upgrade I		AB) 3 AB) 3 Upg 4 Upg 4 uded) 4	9M582 9M580 9M581 1Y5000 0K2521 0K2520 0K2522 0K2523 1Y5005	9 1 2 1 1 1 1 1 2 3 3 1	BM Serv BM 73.4 BM 1460 BM 3000 Remote S SAS 3.5" BM 73.4	GB 10K 3.5 GB 10K 3.5 GB 10K 3.5 Supervisor A G-drive Ba GB 15K 3.5	U320 25 " SAS H ' SAS H ' SAS H Adapter I ckplane " SAS H	66MB Ådapte lot-swap HDI ot-Swap HDI ot-Swap HDI	D 40K1039 D 40K1040 D 40K1041 39Y9566 41Y5003 D 40K1043
LIMITED WARF	ry Service ³ Mon - Fri olidays, sponse time ⁷ de options : ⁷ ra vg response 96P2253) avg response 96P2254) response 96P2255) response 69P2259) ions at ervices/ pdf	Bay 2 5. Bay 3 5. Bay 4 5. Bays 5 to standa Bays 11	5", SL 1", acc 25", HH 1.6" a	cess, CE cess, ope cess, ope ot-swap : -swap d U4 Rack Gard Tray Floppy c Full Hill	o-ROM en* en* disk ba isk bays	ys (1)	Tool-fr Tower Tower Tower Rack I Rack I Rack N Access Access Setup Diagno SCSIS Drop I diagno proble Predic	Weight: 14: Dimensions: Dimensions: Weight: 144 s adapters, s processor s power sul Program by setics (PC-E elect by pre Down Light stic panel) m without re tive Failure	ability s: H15.5 9 to 180l H12" x H12" x H306m to 158lb fans, and s and s opplies fro pressin Octor) b essing C Path Dia for outsic emoving Analysis nemory,	lbs; 67.6 to 8 W17.5" x D3 m x W444m s; 65.4 to 71 ad memory fr ystemboard back g F1 at start yp ressing F trl+A at start gnostics (lev de view of po cover g alerts on o processors, r	28.2" Im x D715mm I.7Kg rom top from front tup =2 at startup rel 2 otential disks,

All models: Maximum internal disk capacity: 3.6TB with 12x 300GB2 hot-swap SAS disks

	` '									-0.00	_	_	and the second
IBM® Type-model Qty x	Processor	(L2 Core cache	Memory		Memory Cards	RSA II	Disk Controller	Mechanical		Power Was		y Available date
8866-11U 1 x Xeoi 8866-1RU 1 x Xeoi 8866-2RU 1 x Xeoi 8866-2RU 1 x Xeoi 8866-31U 1 x Xeoi 8866-31U 1 x Xeoi 8866-4RU 2 x Xeoi 8866-4RU 2 x Xeoi	n MP 7110N 2 n MP 7120N 3 n MP 7120N 3 n MP 7130N 3 n MP 7130N 3 n MP 7140N 3	2.5GHz 3.0GHz 3.0GHz 3.16GHz 3.16GHz 3.30GHz	DC 2x1MB DC 2x1MB DC 2x1MB DC 2x1MB DC 2x1MB DC 2x1MB DC 2x1MB DC 2x1MB DC 2x1MB	2x1GB 2x1GB 2x1GB 2x1GB 2x1GB 2x2GB	4 4 4 4 4 4 8 8	One One One One One Two Two	Opt Opt Opt Opt Opt Opt Std Std	SAS SAS SAS SAS SAS SAS SAS	Tower 7U Rack	6x12 6x12 6x12	2 x775W 2 x775W 2 x775W 2 x775W 2 x775W 2 x775W 2 x775W 3 x775W 3 x775W	333333	Nov 2006 Nov 2006 Nov 2006 Nov 2006 Nov 2006 Nov 2006 Nov 2006 Nov 2006
Processors L2 cache L3 cache Processor upgrade Implementation	Up to two 64 MP up to 3.0 1MB / per cor 4MB on 7110 4-way SMP / System board Active TM PCI->	GHz 667MI re / on die / N & 7120N / up to four) I contains fo	Hz FSB Dua of processor / 8MB on 713 Xeon Proces our Intel 604-	al Core / North / at proce 30N / 16M sors MP (pin micro-	NetBurs ssor sp B on 71 same s PGA4	st™ / Exte eed / Xce 40N speed/cacl ZIF socke	ended l eL4v ™ [he size) ets, four	Memory 6 Dynamic S memory b	64 Technolo Server Cache Doard slots, f	gy™ (EN	//64T) / Hy _l	oer-Th	nreading
Active Memory [™]	2 or 4GB std DIMM gold-co SDRAM RDIN Chipkill™ / M (supported on	nnector slot /IMs / Erro r	ts each / DIN Checking a	/IMs must a nd Corre	be insta ectina (alled in m ECC) via	atched 16-bit (pairs / PC Checksur	2-3200 400N n	/IHz regis	stered 240-	pin Di	DH2-
SAS disk controller SAS connectors SAS cabling IDE controller / cabling Disk - capacity Disk - bays Mechanical	All: Adaptec® ServeRAID™ Dual-channel Hot-swap bay Enhanced IDE Max: 3.6TB-11 Up to Twelve EIA 19" rack	controller w s connect to E ATA-33 co	,1, 10, 5, 6, 6 ired to dual 3 o integrated 3 ontroller in C3	50, 1E & 5 SAS backp SAS contro SB6 South	EE / sto planes oller thre n Bridge	on 41U on 41U o	& 4RU / S expan	dedicated der, 1 cab	l slot / 64-bit le for each o	133MHz of the 2 S	PCI-X / op AS backpla	tional anes	on others
Chipset	IBM XA-64e™ Bridges / Hosi NS 87417 [dis slots	3rd General Bridge On	ration chips e supports vi	et / Integradeo, optio	ated Pr	ocessor a	nd Men Server	nory Conti	roller / Suppo SB6 South E	orts EM6 Bridge (ID	4T / 2 IBM DE, USB, bi	PCI-X	X 2.0 Host Super I/O
I/O Slots	Four Active™ lights (optical	PCI-E x8 slo sensors cor	ots / full heig ntrol power to	ht, full leng s slot) / ho	gth / Tw t replac	o Active™ e, hot upo	PCI-X grade, h	2.0 64-bit ot expans	slots availab ion / separat	le with po ed by ins	ower and a sulative plas	ttentic stic di	n indicator viders
DVD-ROM / diskette Ethernet Graphics controller Ports	IBM SlimLine Broadcom® 57 SVGA / ATI® I Rear: RSA etl	704 10/100/ Radeon Mol	1000 dual et bility 7000 / c	hernet / or on planar /	n systen 16MB	nboard / 6 SDRAM s	64-bit 26 std/max	66Mhz PC / 32-bit 33	I-X 2.0 / Wal MHz PCI 2.2	2 bus			
Security Systems management	Power-on and BMC standard RJ-11, and se temperature, of	d / IPMI 2.0 erial connect	/ Remote Su tors / provide	upervisor es remote	Adapte	er II slimlir e and mor	ne (std d	on 41U &					
Diagnostics Software	Drop-down L IBM Real Tim ServerGuide ¹	ight Path L	Jiagnostics	/ primary i	ındıcato	r on intori	mation p lable ev IBM Dir	oanel with ven while s rector, and	LEDs assoc server runnin I others	ciated wit	h failing co	mpon	ents /
Keyboard / mouse Power supplies	Rack model: r Some: two; so	ome: three /	775 watt ho	t-swap / re	edundar	nt with thre	rd (PS/ ee powe	2) / IBM 3 er supplies	-button optica (N+1) / wor	al mouse Idwide / v	e (PS/2) voltage-sen	sing /	auto-
Cooling fans	restart / rear a Eight hot-swa PFA / failure s	o, redundan	ıt, multi-spee	d fans / Oi	ne cooli	ng fan in	each po	ower suppl	y filler when	power su	upply is not	instal	led /
Options	1GB PC2-32 2GB PC2-32 4GB PC2-32 Active Mem Xeon 7110N Xeon 7120N Xeon 7130N Xeon 7140N 775 watt Ho	200 CL3 E 200 CL3 E ory 4-slot E I 2.5GHz/4 I 3.0GHz/4 I 3.16GHz/1 I 3.3GHz/1	CC RDIMM CC RDIMM Expansion (MB L3/Dual MB L3/Dual 8MB L3/Dual 6MB L3/Dual	(2x1GB) (2x2GB) Card Core Pro	39N 39N 41N oc 40h oc 40h roc 40h roc 40h	M5809 M5812 /5000 (1259 (1260 (1261	IBM IBM IBM Ren SAS IBM	ServeRA 73.4GB 146GB 1 300GB 1 note Supe 3.5" 6-d 73.4GB	IID 8i SAS A IID 6M U320 10K 3.5" SA 0K 3.5" SA 0K 3.5" SA ervisor Adap rive Backpla 15K 3.5" SA 5K 3.5" SA	0 256ME AS Hot-s S Hot-S S Hot-S oter II Sli ane AS Hot-s	wap HDD wap HDD wap HDD mline wap HDD	3 4 4 4 3 4	9R8729 9R8816 9K1039 9K1040 9K1041 9Y9566 1Y5003 9K1043
LIMITED WARF	y Service ³ Mon - Fri olidays, sponse time ⁷ de options ; ⁷ r avg response 30L9187) avg response 31L2723) response 69P9218) response	Bay ② ! Bay ③ ! Bay ④ ! Bays 5 stand Bays 1	3.5", SL 1", 5.25", HH 1.5.25", HH 1.1.5.25", HH 1.1.1 to 10 (six b dard 3.5" SI 1 to 16 (six nal 3.5" SL 1 to 10 (six b dard 3.5" SL 1 to 10	6" access 6" access 6" access eavys):	s, DVD s, open s, open wap di ap disk	-ROM * sk bays bays r Tower		ower Dimower Wei ack Dime lack Dime lack Dime lack Weig access ad access process poetup Propilagnostic ICSISelectorop Dowriagnostic	ck color serviceability lensions: H' ght: 149 to ensions: H1 ensions: H3 ensio	15.5" x 1 180lbs; 1 2" x W1 06mm x 58lbs; 6 s, and m nd syste s from I sessing F or) by ping Ctrl+A Diagno utside v	67.6 to 81. 7.5" x D28 x W444mm 5.4 to 71.7 temory froi mboard fro back 1 at startul ressing F2 A at startul stics (level tiew of pote	7Kg S.2" 1 x D YKg 1 top om fr at s 2	715mm oont
⇒ Other ServicePac opting http://www.ibm.com/s us/its/pdf/wamomxeu. ⇒ 24x7¹⁴ toll-free suppor	ons at ervices/ pdf	Opt disk Opt disk Opt disk Opt disk		sk sk —	Full High Ta	аре Вау	₽	redictive ower sup	Failure Ana plies, memo rith IBM Dire	lysis® al ory, proe ector	erts on dis		,

Opt disk

Ship Config: 1,170 Btu/hr (343 watts)

BTU Output:

24x7¹⁴ toll-free support for warranty

issues during the warranty period $^{\scriptscriptstyle 3}$

											_		-
IBM® Type-model Qty	x Processor		L2 cache	Memory	DIMM slots	Memory cards			Mechanica	Slots x l bays	Hot-swap pwr supplies		y Available date
8863-1SY 1 x Xeon 8863-2SY 1 x Xeon 8863-3SY 1 x Xeon 8863-4SY 1 x Xeon 8863-E8Y 2 x Xeon 8863-E9Y 1 x Xeon 8863-EAY 4 x Xeon	MP 3.66GHz 7020 MP 2.67GHz 7040 MP 3.0GHz MP 3.66GHz MP 3.16GHz	DC SC SC	1MB 1MB 2x1MB 2x2MB 1MB 1MB 2x1MB	2x1GB 2x1GB 2x1GB 2x1GB 2x1GB 2x1GB 8x1GB	4 4 4 4 4 16	One One One One One Four	None None None None None None	SAS SAS SAS SAS SAS SAS	3U⁴ rack 3U rack 3U rack 3U rack 3U rack 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	თოოოოო ფი	May 2006 May 2006 May 2006 May 2006 May 2006 May 2006 May 2006
Processors	Up to two 64-bit Ir Processor MP up to	tel® Xe	on™ Pro	ocessor_N	IP up t	o 3.660	GHz¹_66	7MHz FS	B Single	Core / Up	to four 64-b	it Intel	Xeon
L2 cache Processor upgrade Implementation	1 or 2 MB / per cor 4-way SMP / up to System board containtegrated SCSI, eth	e / at p four Xe ins fou	orocessoi eon Proc ir Intel 60	r speed / X essors MP 04-pin micr	cel 4v	™ Dvna	mic Sei	ver Cache	ج				
Active Memory™	2GB std / 64GB ma connector slots eacl RDIMMs / Error Ch Chipkill TM / Memor (supported only with	n / DIM necking y Prote	lMs must g and Co eXion™	t be installe orrecting ((redundant	ed in m (ECC) v bit ste	atched ⁄ia 16-k ering) a	nairs / I	PC2-3200	400MHz r	eaistered	240-pin DDR	2-SDRA	M I
SAS disk controller	Some: Adaptec® Ale			Attached	SCSI (SAS) 3.	0GHz (3GB/sec)	/ 64-bit 26	6MHz PC	I-X 2.0 / Serve	Raid 8	i <i>std on</i>
SAS connectors SAS cabling IDE controller / cabling Disk - capacity Disk - bays Mechanical	E8Y & EAY / options Dual channel contr Two standard SAS Enhanced IDE ATA Supports up to 73G Six 2.5" hot-swap b EIA 19" rack mode	oller win cables -33 cor B 10K ays / c	red to SA attached atroller in rpm disk converged	I to six-bay CSB6 Sou s d tray / 80-	/ backp uth Bridg pin SC	ge A-2 cor			as NetBA	Y42 SR, I	NetBAY42 ER)	
Chipset	IBM XA-64e [™] 3rd 2.0 Host Bridges / bus for Super I/O N Two supports 4 PO	Host E VS 874	Bridge O⊦ I17 [disk	ne suppor	ts video	o, optio	nal Sei	∿eRaid 8	i, ServerW	orks® CS	SB6 South Bri	dge (IE	DE, USB,
Slots (Active™)	Six total PCI-X 2.0 s	lots av	ailable w								ower to slot) /	hot rep	place, hot
DVD-ROM / diskette Ethernet Graphics controller Ports Security	upgrade, hot expan: 8X° Slim DVD-ROM Broadcom® 5704 10 SVGA / ATI® 7000m Rear: RSA ethernet Front: USB (Ver 2.0 Power-on and admi	/ none 0/100/1 n / on p , RSA)	e 000 dual lanar / 16 serial, tw	ethernet / 6MB SDR/ o USB (Ve	on syst AM std/i er 2.0), l	emboai nax / 3 keyboai	rd / 64-l 2-bit 33 rd, mou	oit 266Mhz MHz PCI se, analog	z PCI-X 2.(2.2 bus) / Wake o			
Systems management	BMC standard / IPM	11 2.0 /	Remote	Superviso	or Adar	ter II S	limline	std on E8	BY & EAY/	optional o	n others / PCI	adapte	r / includes
Diagnostics Software	10/100 ethernet and system, temperature Drop down Light F IBM Real Time Diad ServerGuide ™ (CD	l serial e, disks Path D i	connecto s, fans, p i agnostic	ors / provid ower supp cs / primar	les rem olies v indica	ote con tor on i	sole an nformat	d mgmt /	power on/o with LEDs	off system associate	/ monitors po	wer sta	tus, op
Keyboard / mouse Power supplies	None standard (be Std: one 1300 watt redundant with two worldwide / voltage-	hot-swa power	ap(240 V supplies	AC); <i>Max:</i> (some cor	nfiguration		/	4GBPC2 8GBPC2 Active Me	-3200 CL3 E -3200 CL3 E -3200 CL3 E emory 4-slot 3 16GHz/11	CCRDIMI CCRDIMI Expansion	И(2x2GB) И(2x4GB)		39M5809 39M5812 30R5145 41Y5000 40K2521
Cooling fans	Eight hot-swap, redone additional fan in fan failure signals D	each p	ower su	pply / PFA	/ process	or		Xeon MP Xeon MP Xeon MP 1300 watt	3.66GHz/1 7020 2.67G	MB L2 Cad Hz/2x1ME Hz/2x2MB Power Sup	the Proc Upg B L2 Cache Pro L2 Cache Proc ply (WW)		40K2520 40K2522 40K2523 41Y5001 39R8729
Slot 2 - fullsize, 64- Slot 3 - fullsize, 64-	PCI-X 2.0 slots: bit, 266MHzPCI-X, bit, 266MHzPCI-X, bit, 266MHzPCI-X, bit, 266MHzPCI-X.	hot-sw hot-sw	ap ap			- 11	47.48	IBM Serve IBM 36.40 IBM 73.40 IBM Rem Dual Core Other opt	eRAID 6M L GB 10K 2.5' GB 10K 2.5' ote Supervi e X3 upgrad	I320 256M SAS Hot- SAS Hot- sor Adapte e kit	B Adapter swap HDD		02R0988 40K1051 40K1052 39Y9566 41Y5005
Slot 5 - fullsize, 64-	bit, 266MHzPCI-X,	hot-sw	ap D	imensions imensions	s: H133	3.4mm	x W442	2.0mm x E	701mm	L	.IMITED WA	RRAN	TY ³
Slot 6 - fullsize, 64- *exclusive slot availa			ap ⇔ M oter ⇔ S	eight: 63 tealth blac	to 83lb	s; 28.6			5	Internat	oarts and lab	ity Ser	vice ³

Opt disk Opt disk Opt disk 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: 1,086 Btu/hr (318 watts)
Full Configuration: 5,200 Btu/hr (1524 watts)

- Tool-free serviceability
- Access processors from front
- Access adapters, power supplies, memory and systemboard from top

- Setup Program by pressing F1 at startup

 Diagnostics (PC-Doctor) by pressing F2 at startup

 SCSISelect by pressing Ctrl+A at startup

 Drop Down Light Path Diagnostics (level 2
- diagnostic panel) for outside view of potential problem without removing cover Information LED panel, diagnostic LED panel,
- and component LEDs give visual indications of system well-being
- Predictive Failure Analysis® alerts on disks, power supplies, memory, processors, VRMs, and fans with IBM Director

All models: Maximum internal disk capacity: 440.4GB with six 73.4GB2 hot-swap SAS disks

- ➡ 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, 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®		L2		DIMM	Memory		Disk		Slots x	Hot-swap	Warranty	Avai	lable
Type-model Qty x Processor	Core	cache	Memory	slots	cards	RSA II	controller	Mechanical	bays	pwr supplies	(yrs.)		date
8864-1RU 1 x Xeon™ MP 7110N 2.5GHz 8864-2RU 2 x Xeon MP 7120N 3.0GHz 8864-3RU 2 x Xeon MP 7130N 3.16GHz 8864-4RU 2 x Xeon MP 7140N 3.3GHz	DC DC DC DC	2x1MB 2x1MB 2x1MB 2x1MB 2x1MB	2x1GB 2x1GB 2x1GB 2x2GB	4 4 4 8	One One One Two	Opt Std Std Std	SAS SAS SAS SAS	3U⁴ rack 3U rack 3U rack 3U rack	6x7 6x7 6x7 6x7	1 x 1300 1 x 1300 1 x 1300 2 x 1300	3 3 3 3	Oct 2	2006 2006 2006 2006

Processors	Up to two 64-bit Intel® Xeon™ Processor MP up to 3.3GHz¹667Mh	Hz FSB Dual Core / NetBurst™ / Extended Memory 64
L2 cache	Technology™ (EM64T) / Hyper-Threading 1 MB / per core / at processor speed / XceL4v_™ Dynamic Server Car	che
L3 cache	4MB on 7110N & 7120N / 8MB on 7130N / 16MB on 7140N	
Processor upgrade Implementation	4-way SMP / up to four Xeon Processors MP (same speed/cache siz System board contains four Intel 604-pin micro-PGA4 ZIF sockets, for	ur memory board slots, four Active™ PCI-E x8 slots, two
	Active™ PCI-X 2.0 slots and integrated SCSI, ethernet, graphics	•
Active Memory [™]	2 or 4GB std / 64GB max per chassis using high-capacity memory cagold-connector slots each / DIMMs must be installed in matched pairs RDIMMs / Error Checking and Correcting (ECC) via 16-bit Check Chipkill™ / Memory ProteXion™ (redundant bit steering) and Memo (supported only with Microsoft® Windows™ Server 2003™	:/PC2-3200 400MHz registered 240-pin DDR2-SDRAM
SAS disk controller	Some: Adaptec® AIC-9410 / Serial Attached SCSI (SAS) 3.0GHz (30	GB/sec) / 64-bit 266MHz PCI-X 2.0
SAS connectors	Some: ServeRAID™ 8i / RAID 0,1, 10, 5, 6, 60, 1E & 5EÉ / std on 4R Dual channel controller wired to SAS backplane	U / dedicated slot / 64-bit 133MHz PCI-X
SAS cabling	Two standard SAS cables attached to six-bay backplane Enhanced IDE ATA-33 controller in CSB6 South Bridge	
Disk - capacity	Supports up to 73GB 10K rpm disks	
Disk - bays Mechanical	Six 2.5" hot-swap bays / converged tray / 80-pin SCA-2 connectors EIA 19" rack models (3U¹) x 28" deep / supported in NetBAY™ Rack	(s (such as NetBAY42 SR. NetBAY42 ER)
Chipset	IBM XA-64e™ 3rd Generation chipset / Integrated Processor and M	,
Onipact	Bridges / Host Bridge One supports video, optional ServeRaid 8i, Serv NS 87417 [diskette, keyboard, mouse]), Dual Port Broadcom 5704, an slots	rerWorks® CSB6 South Bridge (IDE, USB, bus for Super I/O d 2 PCI-X 2.0 slots / Host Bridge Two supports 4 PCI-E x8
Slots (Active™)	Four Active™ PCI-E x8 slots / full height, full length / Two Active™ PCI-	X 2.0 64-bit slots available with power and attention indicator
DVD-ROM / diskette	lights (optical sensors control power to slot) / hot replace, hot upgrade, 8X ⁶ Slim DVD-ROM / none	
Ethernet Graphics controller	Broadcom® 5704 10/100/1000 dual ethernet / on systemboard / 64-bit SVGA / ATI® 7000m / on planar / 16MB SDRAM std/max / 32-bit 33MF	266Mhz PCI-X 2.0 / Wake on LAN® / Alert on LAN™ 2 Hz PCI 2.2 hus
Ports	Rear: RSA ethernet, RSA serial, two USB (2.0), kybd, mouse, DB-15	graphics, two ethernet, std. serial RS-485 / Front: USB (2.0)
Security	Power-on and administrator passwords / unattended boot / selectable	boot
System management	BMC standard / IPMI 2.0 / PowerExecutive™ / Remote Supervisor / 1RU / PCI adapter / includes 10/100 ethernet and serial connectors / p	provides remote console and mgmt / power on/off system /
Diagnostics	monitors power status, op system, temperature, disks, fans, power st	upplies hand left by associated with failing components /
Software	IBM Real Time Diagnostics (operated through IBM Director) available ServerGuide™ (CD-ROM installation and configuration utilities), IBM	even while server running
		
Keyboard / mouse Power supplies	None standard (because rack-based) Some: one; some: two / 1300 watt hot-swap(240 VAC); Max: two	2GB PC2-3200 CL3 ECC RDIMM (2x1GB)
	hot-swap / redundant with two power supplies (some configurations) / worldwide / voltage-sensing / auto-restart / PFA	8GB PC2-3200 CL3 ECC RDIMM (2x4GB) 30R5145 Active Memory 4-slot Expansion Card 41Y5000
Casling fons		Xeon 7110N 2.5GHz/4MB L3/Dual Core Proc 40K1259
Cooling fans	Eight hot-swap, redundant, multi-speed fans / one additional fan in each power supply / PFA /	Xeon 7120N 3.0GHz/4MB L3/Dual Core Proc
	fan failure signals Diagnostic LED and mgmt processor	Xeon 7140N 3.3GHz/16MB L3/Dual Core Proc
		IBM ServeRAID™-8i SAS Adaptér 39R8729 IBM ServeRAID 6M U320 256MB Adapter 39R8816
Two available 3.3 vo	olt PCI-X 2.0 slots:	IBM 36.4GB 10K 2.5" SAS Hot-swap HDD 40K1051
	-bit, 266MHzPCI-X, hot-swap	IBM 73.4GB 10K 2.5" SAS Hot-Swap HDD 40K1052 IBM Remote Supervisor Adapter II Slimline 39Y9566
Slot 2 - fullsize, 64	-bit, 266MHzPCI-X, hot-swap	Other options at ibm.com /pc/us/accessories
Four available PCI-E	Z XO SIOIS.	Other options at ionitoonity of documents

Slot 3 - full-height, full-length, PCI-E x8 Slot 4 - full-height, full-length, PCI-E x8 Slot 5 - full-height, full-length, PCI-E x8

Slot 6 - full-height, full-length, PCI-E x8

*exclusive slot available for ServeRAID 8i adapter





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: 1,086 Btu/hr (318 watts)
Full Configuration: 5,200 Btu/hr (1524 watts)

Dimensions: H5.25" x W17.4" x D27.6" Dimensions: H133.4mm x W442.0mm x D701mm

Weight: 63 to 83lbs; 28.6 to 37.6kg

Stealth black color

Tool-free serviceability

Access processors from front

Access adapters, power supplies, memory and systemboard from top

Setup Program by pressing F1 at startup

Diagnostics (PC-Doctor) by pressing F2 at startup SCSISelect by pressing Ctrl+A at startup Drop Down Light Path Diagnostics (level 2

diagnostic panel) for outside view of potential problem without removing cover Information LED panel, diagnostic LED panel,

and component LEDs give visual indications of system well-being Predictive Failure Analysis® alerts on disks,

power supplies, memory, processors, VRMs, and fans with IBM Director

All models: Maximum internal disk capacity: 440.4GB with six 73.4GB2 hot-swap SAS disks

LIMITED WARRANTY³

3 year parts and labor

International Warranty Service³ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷

On site service upgrade options (in eligible locations):

3 year IOR 24x7, 4 hr avg response 96P2253 3 year IOR 24x7, 2 hr avg response

96P225 4 year IOR 9x5, NBD response

96P225

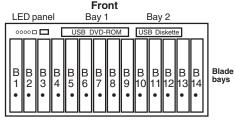
5 year IOR 9x5, NBD response 69P2259

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

ow System x39	00 (00. –)							X	2, 0.0		diis and Ed		
IBM® Type-model Qty	x Processor	Core	L2 cache	Memory		Memory cards		Disk controller	Mechanica	Slots x bays	Hot-swap pwr supplies		y Available date
8872-7RY 2 x Xeon ^T 8872-8RY 2 x Xeon	^M MP 7020 2.66GHz MP 7040 3.0GHz	DC DC	2x1MB 2x2MB	2x1GB 2x1GB	8	Two Two	None None	SAS SAS	3U⁴ rack 3U rack	6x7 6x7	2 x 1300 2 x 1300	3	May 2006 May 2006
Processors L2 cache L3 cache Processor upgrade Implementation	Two 64-bit Intel® Xec Technology™ (EM64 1 or 2MB / per core / None 4-way SMP / up to for chassis interconnecte System board contain integrated Serial Attac	xceL our Xe ed) os four	4v ™ Dyn on Proce ¹ Intel 604	iamic Serv essors (sar 4-pin micro	ver Ca me spo o-PGA	cne (25 eed/cac	he/core)	per chas	starting at a	8-way) Core Capa	able / up to 3	2-way (eight
Active Memory™	2GB std / 64GB max cards standard (up to 400MHz registered 24 Chipkill™ / Memory (supported only with I	per c four) 40-pin Prote Micros	hassis us with 4 DI DDR2-S Xion ™ (r oft® Wind	sing high-o MM gold-o DRAM RI redundant dows™ Se	capacit connect DIMMs bit steem	ty memo ctor slots s / Erro eering) a 003 TM	ory card s each / r Check and Mer	/ 512GB DIMMs n ing and nory Miri	max (eight nust be inst Correcting roring™ and	chassis i alled in m (ECC) v d Hot-sw	interconnect) natched pairs ia 16-bit Che ap (non-OS	/ two model / PC2-3 ecksum specific)	emory 200 / Hot-add
SAS disk controller SAS connectors SAS cabling IDE controller / cabling Disk - capacity Disk - bays Mechanical	ALL: Adaptec® AIC-9 with dedicated slot Dual channel controlle Two standard SAS case Enhanced IDE ATA-3 None / supports up to Six 2.5" hot-swap bay EIA 19" rack models chassis (x3950 or x350 cm to the support of the	er wire ables a 3 cont	d to SAS attached roller in 0	backplan to six-bay CSB6 Sou	e backr th Bric	olane Ige	,	·					
Chipset Slots (Active™)	IBM XA-64e™ 3rd Go scalability and memor ServerWorks® CSB6 3 5704, and 2 PCI-X 2. Six total PCI-X 2.0 slo upgrade, hot expansion	y cont South .0 slots ots ava	rol / 2 IBI Bridge (I s / Host E illable wit	M PCI-X 2 IDE, USB, 3ridge Two h power a	2.0 Ho bus for supposited and atte	st Bridge or Supe oorts 4 F ention in	es / Hos r I/O NS CI-X 2.0 Idicator I	t Bridge (8 87417 (d) slots ights (opti	One support diskette, key ical sensors	s video, d /board, m control p	optional Serve nouse]), Dual	Port Bro	adcom
DVD-ROM / diskette Ethernet	8X ⁶ Slim DVD-ROM / Broadcom [®] 5704 10/1	none 100/10	00 dual	ethernet p	er cha	ssis / or	n system	nboard / 6	4-bit 266Mh	nz PCI-X	2.0 / Wake o	n LAN® .	/ Alert on
Graphics controller Ports	LAN TM 2 SVGA / ATI [®] 7000M / Rear: Three Scalabilit ethernet, std. serial R	on play y ports S-485	anar / 16l s, RSA e / <i>Front:</i>	MB SDRA thernet, R One USB	M std/ SA se (Ver 2	/max / 3 rial, two 2.0)	2-bit 33ľ USB (V	MHz PCI : er 2.0), k	2.2 bus eyboard, m	ouse, ana	alog DB-15 gi	raphics,	two
Security Systems management Diagnostics Software	Power-on and administration Remote Supervisor remote console and n BMC / IMPI 2.0 / Drop down Light Pa IBM Real Time Diagn ServerGuide™ (CD-Futilities), IBM Director	Adapt ngmt / th Dia	t er II slin power c ignostic s	nline / PC on/off syste s / priman	I adap em / m / indica	oter / inc nonitors ator on	ludes 10 power s informati	0/100 ether status, op ion panel 2GBPC2-	system, ter	nperature associate CC RDIMM	e, disks, fans, ed with failing 1 (2x1GB)	compon	supplies /
Keyboard / mouse Power supplies	None standard (beca Std: Two 1300 watt he redundant with two po auto-restart / rear acc Eight hot-swap, redun one additional fan in e fan failure signals Dia	ot-swa ower s essible idant, each po	up(240 V/ upplies /\ e fans in multi-spe ower sup	AC); <i>Max:</i> worldwide each powed fans / ply / PFA /	/ volta /er sup /	ige-sens oply / Pf	/ fully sing / A	Active Me Xeon MP Xeon MP IBM Serve IBM Serve IBM 36.40 IBM 73.40	3200 CL3 EC mory 4-slot I 7020 2.66GH 7040 3.0GH: eRAID™-8i S eRAID 6M U3 §B 10K 2.5" § §B 10K 2.5" § Demand™Sc	Expansion Hz/2x1MB z/2x2MB L AS-SCSI 820 256ME SAS Hot-S SAS Hot-S	L2 Proc Upg L2 Proc Upg L2 Proc Upg Adapter B Adapter Wap HDD Wap HDD		30R5145 41Y5000 40K2522 40K2523 39R8729 02R0988 40K1051 40K1052 13M7414
16W = 6 x XpandOnE 32W = 8 x XpandOnE Six available 3.3 volt	emand Scalabilty kits 2. Demand Scalabilty kits 2. Demand Scalabilty kits 2. Demand Scalabilty kits 2. PCI-X 2.0 slots: bit. 266MHzPCI-X, ho	2.3m 2.3m +		1				XpandOnl x3950 Sca x3950 E N Dual Core	Demand™So alability Enab Modular Expa xX3 upgrade	calability Colement Mansion End	able - 2.9M emory Adapte	r	13M7416 41Y5004 8874-3RY 41Y5005
Slot 2 - fullsize, 64- Slot 3 - fullsize, 64- Slot 4 - fullsize, 64- Slot 5 - fullsize, 64- Slot 5 - fullsize, 64- *exclusive slot for Se Opt disk Opt disk Opt disk Opt disk The state of the state	bit, 266MHzPCI-X, hobit, 2	ot-swa ot-swa ot-swa ot-swa ot-swa ot-swa ot-swa M open open open open open open	P Dirip Diri	mensions: mensions: mensions: sight: 70 to salth black ol-free ser cess adap emory and tup Progra agnostics (SISelect to pp Down L gnostic pa blem with bornation L d compone stem well- edictive Fa wer suppli d fans with	H128. 9 85lbs 1 color rviceat betters, 1 syste syste 2 syste 3 sys	35mm s; 31.75 bility power s mboard pressing octor) b ssing Ct ath Dia- or outsid moving anel, dia- iDs give Analysis emry, Director	c W440. to 38.5k supplies, from to g F1 at y pressi rl+A at gnostics e view o cover gnostic L visual ir alerts process	omm x Dg processo pstartup ng F2 at startup (level 2 f potentia LED pane ndications on disks, ors, VRM	startup	3 year p Internation on site, covera next builded on site (in eligid) • 3 year 96P26 • 3 year 96P26 • 4 year 96P26 • 5 year 96P26 Other S http://wservices	IOR 24x7, 2 89 IOR 9x5, NI 90 IOR 9x5, NI	oor nty Ser n, Mon - ng holid respons girade op s): hr avg hr avg br resp BD resp ptions a l/	vice ³ Fri days, se time ⁷ otions response response oonse oonse at
Full Configuration:	1,325 Btu/hr (388 wa 5,200 Btu/hr (1524 v	vatts)	440.4	nodels: 4GB with							Juring the wa		

IBM®	у Виссесси	Core	L2 cache	Mamani		Memory		Disk controller	Mechanica	Slots x	Hot-swap \	Varranty	y Available
Type-model Qty 8878-1RY 2 x Xeon 8878-2RY 2 x Xeon	x Processor MP 7110N 2.5GHz			2x1GB 2x2GB		Two	None	SAS	3U ⁴ rack 3U rack		2 x 1300 2 x 1300	.,	Nov 2006 Nov 2006
8878-2RY 2 x Xeon 8878-3RY 2 x Xeon 8878-4RY 2 x Xeon	MP 7120N 3.0GHz MP 7130N 3.16GHz MP 7140N 3.3GHz	DC 2 DC 2	2x1MB 2x1MB 2x1MB	2x2GB 2x2GB 2x2GB	8 8 8 16	Two Two Four	None None None	SAS	3U rack 3U rack 3U rack	6x7	2 x 1300 2 x 1300 2 x 1300	3 3 3	Nov 2006 Nov 2006 Nov 2006
Processors L2 cache L3 cache Processor upgrade Implementation	Two 64-bit Intel® Xec Technology™ (EM64 1MB / per core / Xce 4MB on 7110N & 712 4-way SMP / up to fochassis interconnecte System board contain integrated Serial Attact	IT) / F L4v ™ [ON / 8l our Xec ed) is four	Hyper-Th Dynamic MB on 7 on Proce Intel 60	reading te Server C 130N / 16l ssors (sar 4-pin micre	echnolo ache (2 MB on me spe o-PGA	ogy 256MB 7140N eed/cacl	per 4 (ne/core	CPUs startir) per chass	ng at 8-wa sis / Dual (ay) Core Cap	able / up to 32	?-way (eight
Active Memory [™]	2GB std / 64GB max cards standard (up to 400MHz registered 24 Chipkill™ / Memory (supported only with 1	per ch four) v 40-pin Prote) Vlicroso	nassis u vith 4 Dl DDR2-S (ion™ (ioft® Wind	sing high-o MM gold-o SDRAM RI redundant dows™ Se	capacity connect DIMMs bit ste erver 20	y memo stor slots s / Erro ering) a 003 TM	ory card s each , r Chec and Me	d / 512GB i / DIMMs m king and C mory Mirro	max (eigh ust be ins Correcting oring™ ar	t chassis talled in n g (ECC) v nd Hot-sw	interconnect) / natched pairs / ria 16-bit Chec ap (non-OS s	two m PC2-3 cksum pecific)	emory 3200 / Hot-add
SAS disk controller SAS connectors SAS cabling IDE controller / cabling Disk - capacity Disk - bays Mechanical	ALL: Adaptec® AIC-9 RAID 0,1, 10, 5, 6, 60 Dual channel controllel Two standard SAS ca Enhanced IDE ATA-3 None / supports up to Six 2.5" hot-swap bay EIA 19" rack models chassis (x3950 or x35	er wired ables a 3 contr 73GB /s / cor (3U 4)	d to SAS attached roller in (10,000 nverged x 28" de	S backplan to six-bay CSB6 Sou rpm disks tray / 80- eep / supp	e backp th Bride pin SC orted in	olane ge A-2 cor n NetBA							
Chipset Slots (Active™)	IBM XA-64e™ 3rd G scalability and memor ServerWorks® CSB6 : 5704, and 2 PCI-X 2. Six total PCI-X 2.0 slo upgrade, hot expansion	y contr South 0 slots ts avai	ol / 2 IB Bridge (: / Host I lable wit	M PCI-X 2 IDE, USB, Bridge Two th power a	2.0 Hos , bus fo o suppo and atte	st Bridge or Supe orts 4 P ention in	es / Ho: r I/O N: CI-X 2. dicator	st Bridge O S 87417 [di O slots lights (optic	ne suppor iskette, ke cal sensors	ts video, yboard, n s control r	optional Serve nouse]), Dual F	Raid 8i Port Bro	, oadcom
DVD-ROM / diskette Ethernet	8X ⁶ Slim DVD-ROM / Broadcom [®] 5704 10/1		00 dual	ethernet p	er chas	ssis / or	n syster	mboard / 64	1-bit 266M	hz PCI-X	2.0 / Wake on	LAN®	/ Alert on
Graphics controller Ports	LAN TM 2 SVGA / ATI® 7000M / Rear: Three Scalabilit ethernet, std. serial R	on pla y ports S-485	nar / 16 , RSA e / <i>Front:</i>	MB SDRA thernet, R One USB	M std/i SA ser (Ver 2	max / 3. rial, two 2.0)	2-bit 33 USB (\	MHz PCI 2 Ver 2.0), ke	2.2 bus eyboard, m	nouse, ana	alog DB-15 gra	aphics,	two
Security System management Diagnostics Software	Power-on and administ Remote Supervisor remote console and n BMC / IMPI 2.0 / Pow Drop down Light Pa IBM Real Time Diagn ServerGuide™ (CD-Futilities), IBM Director	Adaptongmt / verExeth Diagonstics	er II slin power c ecutive ¹¹ gnostic (operate	nline / PC on/off syste s / primary d through	I adap em / m indica IBM D	ter / inc ionitors ator on i director)	ludes 1 power	0/100 ethe status, op s	system, te with LEDs 3200 CL3 E	associate CC RDIMN	e, disks, fans, ped with failing of (2x1GB)	oower s	supplies /
Keyboard / mouse Power supplies Cooling fans	None standard (beca Std: Two 1300 watthe redundant with two poauto-restart / rear acc Eight hot-swap, redundant one additional fan in e fan failure signals Dia	ot-swap ower su essible dant, r ach po	p(240 V. upplies / e fans in multi-spe wer sup	AC); <i>Max:</i> worldwide each powed fans / pply / PFA	e / volta /er sup /	ige-sen: ply / Pf	sina / I	Xeon 7120 Xeon 7130 Xeon 7140 IBM Serve IBM Servel	nory 4-slot N 2.5GHz/4 N 3.0GHz/4 N 3.16GHz/ N 3.3GHz/ RAID™-8i RAID 6M U	Expansior 4MB L3/Du 4MB L3/Du t/8MB L3/D 16MB L3/D Adapter 320 256MI	n Card ual Core Proc ual Core Proc Dual Core Proc Dual Core Proc Dual Core Proc		30R5145 41Y5000 40K1259 40K1260 40K1261 40K1262 39R8729 39R8816 40K1051
16W = 6 x XpandOnL 32W = 8 x XpandOnL Six available 3.3 volt Slot 1 - fullsize, 64- Slot 2 - fullsize, 64- Slot 3 - fullsize, 64- Slot 4 - fullsize, 64- Slot 5 - fullsize, 64-	bit, 266MHzPCI-X, ho bit, 266MHzPCI-X, ho bit, 266MHzPCI-X, ho bit, 266MHzPCI-X, ho bit, 266MHzPCI-X, ho bit, 266MHzPCI-X, ho	2.3m + 2.3m + ot-swap ot-swap ot-swap ot-swap	O O O Dir O Dir O O We	mensions: mensions: eight: 70 to	H128.3 85lbs	35mm >	W440	XpandOnD x3950 Scal x3950 E M Dual Core Other optio D28.15"	B 10K 2.5" Demand™S Demand™S Demand™S Demand™S Demand™S Demand™S Demand™S Demand™S Demand™S Demand Demand Demand Demand Demand	SAS Hot-Sicalability Cocalability Cocalabili	Swap HDD Cable - 2.3M Cable - 2.9M emory Adapter	RANT	
Slot 6 - fullsize, 64- *exclusive slot for Se Opt disk Opt disk Opt disk	bit, 266MHzPCI-X, ho erveRAID 8i adapter Opt disk Opt disk	M open open open open open open	O Step Step Step Step Step Step Step Step	emory and tup Progragnostics (SISelect & Cop Down Lognostic particular with promotion Lod componistem well-edictive Fa	rviceaboters, plants,	power s mboard pressing octor) by ssing Ct ath Diag r outside moving nel, diag Ds give analysis emory,	from to g F1 at y press rl+A at gnostics e view cover gnostic visual	startup ing F2 at s startup s (level 2 of potential LED panel, indications	rs, startup	On site, covera next bu On site (in eligi • 3 year 96P26 • 4 year 96P26 • 5 year 96P26 • Other S	8 am - 5 pm, age excluding siness day re- service upgrate locations IOR 24x7, 4 88 IOR 24x7, 2 89 IOR 9x5, NB 90 IOR 9x5, NB	Mon - g holicespons ade op): hr avg hr avg D resp D resp	Fri days, se time ⁷ ptions response response ponse
Full Configuration:	1,325 Btu/hr (388 wa 5,200 Btu/hr (1524 v	vatťs)	AII 1.440.	nodels:	Maxim	num int		disk capac vap SAS c	').	service 24x7 ¹⁴ to issues o	s/us/its/pdf/w oll-free suppo during the wa	ramom rt for v rranty	varranty period ³

IBM [®] Type-model	Supported Blades		Switch modules std / max	Switch mod	lules (type)		t Power modules std / max		Blower modules std / max	Mechanica	Available I date
8677-3XX HS20/HS 8677-3RX HS20/HS					3, OPM and CPN 3, OPM and CPN		2/4 2/4	2000W 2000W	2/2 2/2		Oct 2004 Mar 2006
Positioning Description	Flexible, innovati Provides common expansion, externa keyboard, video, r	resource I Fibre Cl	s shared by	blade servers	such as power	, system m	anagemer	nt, cablin	g, ethern		
Blade bays	Supports all blad		HS40/JS20	/JS21/LS20 ar	nd SCSI Storage	Expansion	Units / 14	1 hot-plu	ggable ba	ays / front a	access
Switch modules	Std: none; max: fo	ur / hot-s\	wap / rear a	ccess / Gb Eth	ernet / Fibre Ch	annel / Infir	niBand / O	otical Pa	ss-thru / (Copper Pas	ss-thru
Advanced Management Module (8677-3RXonly)	Std: one on 3RX; controller / commu functionality / ports all ports shared by	inicates w : DB-15 a	rith integräte Inalog video	d system man port, Dual US	agement proces	sor on eac	h server b	lade / co	mplete K	VM switch	local
Management Module (8677-3XXonly)	Std: one on 3XX; a controller / commu connectivity / ports connection port / a	inicates w : DB-15 a	rith integrate Inalog video	d system man port, PS/2 ke	agement proces	ssor on éac	h server b	ĺade / m	ultiplexor	for console	Э
Power modules	Std: two in bays 1 / hot-swap / rear a to all modules and (redundant to each	ccess / 20 blade bay	000 watts at ys 1 through	220v / both re 6 / power for l	edundant to each bays 7 through 1	n other (N+ 14 requires	N redunda two additio	incy) / twonal power	o std mo	dules supp	ly power
Blower modules	Std: two; max: two	/ hot-swa	ιρ / redunda	nt / variable sp	eed / rear acces	ss / up to 32	25 cubic ft	per min	(CFM) / f	ront to bac	k airflow
Mechanical DVD / diskette / USB Keyboard / mouse	EIA 19" rack mod 3XX/3RX: 8X-24X' access / shared by server blade front None standard / pr	³ DVĎ-RĆ y up to 14 panel	OM / 3.5" 1.4 blade serv	4MB diskette ders / requests	drive / one USB for CD-ROM, dis	port (Versic skette drive	on 1.1) / all , and USE	USB into port by	erface / n pressing	ot removal CD select	button on
Ports	server blade front Rear: keyboard (F Front: one USB (V	panel / su PS/2), mo	pports NetE use (PS/2),	BAY ACT CATS	5 chaining solution	ons					
Security	Login password fo recommended in r									/	
Ethernet	One of the dual int Ethernet Switch M									<i>1</i> 0 \	
Systems mgmt	Provides remote of blowers, power mo	onsole`an	id mgmt / p	ower on/off bla	.des/modules / n	nonitors po	wer status	, operatir			ture, disks,
System LED panel	System LED pane								nditions		
Cisco Systems Gigabit Nortel Networks Layer Brocade 10 port 4Gb S Brocade 20 port 4Gb S Cisco Systems InfiniBa NetBAY42 Enterprise F NetBAY42 Standard Ri NetBAY25 Standard Ri	AN Switch Module and Switch Module for Bl Rack Cabinet ack Cabinet	e vitch Module ladeCenter	Э	32R1888 32R1892 32R1859 32R1813 32R1812 32R1900 930842S 9306420 9306250 26K4816	IBMAdvanced IBMKVM/Red 1U 17" Flat Pa 2U 17" Flat Pa IBM BladeCer IBM BladeCer IBM 2-button IBM T115 15" APC Smart-Uf • Other option	lundant Mana anel Monitor C anel Monitor C nter 4-port GE nter 2-port Fib mouse PS/2 Flat Panel Co PS 5000RMB	gement Moc Console Kit (Console Kit (B Ethernet Stree Channel Stree Channel Street)	with kybd/ with kybd/ witch Mod Switch Mod (black)	monitor) ule		25R5778 48P7055 17231UX 17232UX 48P7054 48P7062 28L3673 494215U 37L6861



Rear

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

Switch Power modules Power Management modules module (both std) (std)

- Dimensions: H12.0" x W17.5" x D28" Dimensions: H304.2mm x W444mm x D711.2mm
- Weight: 99 to 240 lb; 44.91 to 108.86kg
- Stealth black color bezel
- Tool-free customer serviceability
- Access server blades and SCSI Expansion Units from front
- bays 🗅 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

Module	Switch module bay	Switch module function
bays	1 2 3	Ethernet link 1 for all blade servers Ethernet link 2 for all blade servers Network connection 1 for all blade server I/O expansion options (Fibre Channel)
gement dule td)	4	Network connection 2 for all blade server I/O expansion options (Fibre Channel)

- ⇒ 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
 - 3 year IOR 24x7, 2 hr avg response (ServicePac® part num 21P2065)
 3 year IOR 24x7, 4 hr avg response
 - (ServicePac part num 21P2085)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 41L2736)
 5 year IOR 9x5, 4 hr avg response
 - (ServicePac part num 69P9207)
 - 5 year IOR 24x7, 2 hr avg response (ServicePac part num 69P9209) Other ServicePac options at
- http://www.ibm.com/services/us/ its/pdf/wamomxeu.pdf 24x7¹⁴ toll-free support for warranty
 - issues during the warranty

IBM® Type-model	Supported Blades	Blade Servers std / max		Switch modules (type)	Advanced Managemen modules std / max	Power modules std / max		Blower modules std / max	Mechanical	Available date
8852-4XX HS20	0/HS40/JS20/JS21/LS2	20 0/14	0/10 Ene	t, Fibre Ch, IB, OPM a	nd CPM 1/2	2/4	2900W	2/2	9U⁴ rack	Mar 2006
Positioning Description	Provides commo expansion, exter	on resources nal Fibre Ch	s shared by the storage	ost efficient infrastrublade servers such as pe switching and conne JS21/LS20 and Blade	power, system mectivity, and I/O (or	nanageme	ent, cablir e. USB a	ig, ethernend nd video)	et managen	
Switch modules	Std: none; max: Nortel Networks	ten / hot-sw ™ / Cisco™	ap / rear acc / QLogic™ /	ess / Gb Ethernet / Fib Brocade® / McData®	re Channel / Infin	iBand / O	ptical Pas	ss-thru / C	opper Pass	s-thru /
Advanced Management Modules	communicates w	ith integrate	ed system ma	ess / comprehensive s anagement processor on B 2.0, Serial(RJ45), 10	on each server bla	ade / com	plete KV	M switch I	ocal functio	er / onality /
Power modules	supply power to	blade bays	1 through 7 a	ess / 2900 watts at 220 and both AMMs, SMs 1 10 used / worldwide / v	I & 2, and all blow	ers / two	optional r	nodules in	bays 3 and	
Blower modules	Std: two; max: tv	vo / hot-swa	p / redundan	t / throttlled according	to incoming air ter	nperature	/ rear ac	cess / fro	nt to back a	irflow
Mechanical Media Tray	DVD-ROM / two	USB ports	(Version 2.0	supported in NetBAY ¹) / Full Light Path Diag nd USB port by pressi	nostic panel / cus	tomer ser	viceable /	front acc de front pa	ess / shared	d by all
Keyboard / mous	on server blade the Rear: two USB,	front panel / two RJ45 (supports Ne one ethernet	nsole support / reques tBAY ACT CAT5 chair and one serial), analoç USB (Media Tray)	ning solutions	,		, ,		•
Security				secure socket layer (S ding security through l					/	
Ethernet	Each of the dual	integrated g	gigabit ethern	et controllers on each b	plade connects to	an option	al <i>GB Etl</i>	nernet Sw	itch Module)
Systems mgmt	disks, blowers, p Manager	ower modu	les / system	wer on/off/reset blades diagnostic programs p	rovided through IE	3M Direct	or softwa	re / Remo	system, tem ote Deployn	perature, nent
System LED pan	eı System LED pai	nei provides	power-on, ic	ocation, over-temperatu	ure, information, a	ınd syster	n-error co	onaltions		

BladeCenter H 2900W Power Module pair with Fan Packs 31R3335

 Bladecenter H 2900W Power Module
 31R3333

 IBM Advanced Management Module
 25R5778

 BladeCenter H Double 30A NEMA L6-30P (208V) 4.3M
 25R5783

 BladeCenter H Dual 32A IEC 309 P+N+G/16A IEC 320-C20 (230V) 4.3M 25R5784
 25R5785

 BladeCenter H Triple 16A IEC 320-C20 (200-240V) 2.8M
 25R5785

 BladeCenter H Double 30A KSC 8305 (220V) 4.3M (Korea)
 25R5811

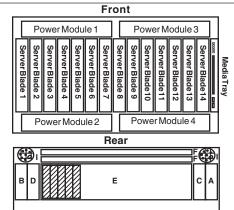
 BladeCenter H Dual 32A AS/NZS 3112/16A IEC320-C20 (ANZ)
 25R5812

 BladeCenter H Serial Port Breakout Cable
 25R5806

 BladeCenter A Serial Port Breakout Cable
 25R5806

 IBM BladeCenter 4-port GB Ethernet Switch Module 48P7054 IBM BladeCenter 2-port Fibre Channel Switch Module 48P7062

Other options at ibm.com/products/us
 Solutions available from IBM BladeCenter Alliance program partners



- Dimensions:
- H15.75" x W19" x D29" H400.05mm x W482.6mm x D766.6mm Dimensions:
- Weight: 90 to 350 lb; 40.82 to 158.8kg
- Stealth black color bezel
 Tool-free customer serviceability
- Access server blades, expansion units and power
- modules from front Access modules from rear

- Midplane in center of system to interface for all system components
 Predictive Failure Analysis® alerts on blowers,
- blade server memory, processor(s), and optional disk(s) with IBM Director
- A Advanced Management Module
 B Switch Module Bays 1 & 2 (dedicated ethernet)
 C Switch Module Bays 3 & 4—OR- Bridge Slots
- D Dedicated Bridge Module Slots (up to 4)
- E Blowers (2)
- F High Speed Switch Module Bays (4)
- G Light Path Diagnostic Panel H Aggregated Serial Connector
- Consolidated Redundant Power Inputs (2)

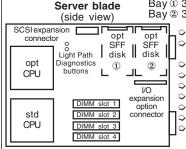
LIMITED WARRANTY³

- 3 year parts and labor
 International Warranty Service³
- On site, 8 am 5 pm, Mon Fri coverage excluding holidays, next business day response time7
- On site service upgrade options (in
 - 3 year IOR 24x7, 2 hr avg response (ServicePac® part num 21P2065)
 3 year IOR 24x7, 4 hr avg response
 - (ServicePac part num 21P2085)
 - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 41L2736)
 - 5 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9207)
 - 5 year IOR 24x7, 2 hr avg response (ServicePac part num 69P9209)
 - Other ServicePac options at http://www-1.ibm.com/services/ us/its/pdf/wamomxeu.pdf
- 24x7¹⁴ toll-free support for warranty issues during the warranty

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IBM® Type-model Processo	L2 or GHz ¹ cache	FSB MHz	Memory	Disk	Disk controller	Diskbays	opt	CSI Supp ional sto	r exp unit	slots x bays	Mech- anical	Ethernet	Available date
8843-L1y-L1x 1 x 8843-J1y-J1x 1 x 8843-M5y-M5x 1 x 8843-25y-25x 1 x 8843-E2y-E2x 1 x 8843-45y-45x 1 x 8843-25y-25x 1 x 8843-25y-25x 1 x 8843-55y-55x 1 x 8843-E7y-E7x 1 x 8843-E7y-E7x 1 x 8843-E9y-E9x 2 x	Xeon 3.0LV 2N Xeon 3.2 2N Xeon 3.2 2N Xeon 3.4 2N Xeon 3.6 2N Xeon 3.2 2N Xeon 2.8 2N Xeon 3.8 2N Xeon 2.8 2N	B 800 B 800 B 800 B 800 B 800 B 800 B 800 B 800	1GB 1GB 2GB 1GB 1GB 1GB 1GB 1GB 512MB	None 36GB None None None 36GB None None	Ultra320 Ultra320 Ultra320 Ultra320 Ultra320 Ultra320 Ultra320 Ultra320 Ultra320 Ultra320 Ultra320 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 H H H H H H H H H H H H H H H H H H H	ot-swap ot-swap ot-swap ot-swap ot-swap ot-swap ot-swap ot-swap ot-swap ot-swap ot-swap	Ultra320 Ultra320 Ultra320 Ultra320 Ultra320 Ultra320 Ultra320 Ultra320 Ultra320 Ultra320 Ultra320 Ultra320	0 x 2 0 x 0	7U blade 7U blade	2 x Gigabit 2 x Gigabit	Feb 2005 Feb 2005 Feb 2005 Mar 2005 Mar 2005 Mar 2005 Mar 2005 Sep 2005 Sep 2005 Sep 2005
Processor(s)	1 or 2 x Intel®	Xeon u	o to 3.8GF	lz with	800MHz f	rontside h	us (FSB) / F	M64T / 1-2	MB I 2	FCC Cac	he / Hyper-Thi	reading
SMP - L2 Cache Implementation	technology / L1 2-way SMP / u Systemboard c expansion option	p to two ontains on conne	Xeon Pro two Intel 60 ector, integ	cessors 04-pin r rated gr	s Low vol s (same spo micro-PGA raphics and	eed/cache ZIF socke d dual Giga	size) ets, fo abit e	/ 1 or 2 our DIMM thernet	MB std ar	nd 4ME SCSI	max / at p	rocessor spee	d e I/O
Memory	512MB/1GB st PC2-3200 400I installed in mate	d / 16GE MHz CL ched pai	3 ¹³ max / tv 2.5 ECC D rs [a bank]	vo slots DR2-SI / 2-way	used / two DRAM DIM y memory i	slots ava IMs / four nterleave /	ilable 240 ' dual	/ pin gold- channel	connector / Chipkill™	slots or	systemboa	ard / DIMMs m	ust be
SCSI disk controller	LSI Logic® 530 PCI-X / support	1020 S s RAID -	CSI contro 1 & 1E mi	ller / Si rroring	ngle chan / One 16-	nel Ultra3 bit channe	20 S el (one	CSI con te interna	t roller (LVI I) / <i>Internal</i>	D 320N channe	IB/sec) / on el: one 2-dro	planar / 64-bi p 16-bit 68-pir	100MHz LVD SCSI
SCSI Disk bays	Two 2.5-inch 3 disks in optiona	Small Fo	orm Factor	(SFF)	Ultra320 ir	nternal fixe	d dis	k bays /	Supports r	nax of	two hot-swa	ap 3.5" SL Ultr	a320 SCSI
External Storage	Support for IBN	1 TotalS	torage™ sc	lutions	(including l	FAStT and	I NAS	ectors; a S family o	of products	ys Uitr	a320-enabi	ea) /	
Mechanical Architecture/Chipset BUS slots	7U⁴ Blade / Sup Intel E7520 ch BUS / ICH5R s interface No PCI or PCI-	upports	USB (1.0)	LSI 10)20 / Dual I	Broadcom	5/04	S / Low	Pin Count	ade to 2 PXH, Interfac	2000W pow ICH5R / PX e / NS PC8	er supply optic (H BUS suppo 7366 Super I/0	on 26K4816) orts PCI-X O off LPC
Ethernet										at MAC	and DHV Is	aver functions	,
Network Interface CD / Diskette / USB Kybd / video / mouse Graphics controller	Dual gigabit 10 chip on blade / adapter fault to or Optical Pass One connecto 3 and 4 of Blad and serial I/O e None / request None / request SVGA / ATI® R	eCenter expansio	/ all blades n cards pla	s in a si nned fo	ingle Blade or future re	Center mu lease ²⁰	ist co	ntain the	same exp	ansion	card (or no	expansion car	d) / ethernet
Systems Mgmt	IBM Baseboar on blade / prov event recording communication	ides svs	tem and er	าvironm	nental móni	torina.		ment Xe	on3.0GHz/800 on3.2GHz/800 on3.4GHz/800	/2MBL2C)/2MBL2C)/2MBL2C	Cache EM64TP Cache EM64TP Cache EM64TP Cache EM64TP	ocUpg rocUpg rocUpg	25R8878 25R8877 25R8876 13N0660
Diagnostics	Light Path Dia on-board diagn	gnostic ostics (v	s™ (LED li ria PC-Doc	ghts in tor in B	dicate failin BIOS)	g compon	ent) a	and Xe	on 3.8GHz/800 2MB (2x256) P	/2MBL2C C2-3200E			13N0696 13N0697 73P3523
Security	No security intradministrator parameters unattended sta	assword	otection / F / unattend	Power-ced boot	on passwor t / selectab	rd / le boot /		2G 4G	B (2x2GB) PC	2-3200 CL 2-3200 CL	BECC DDR2 .3 ECC DDR2 F .3 ECC DDR2 F .3 ECC DDR2 F	RDIMM Kit	39M5818 39M5809 39M5812 30R5145
Software ship group	Documentation	CD, Bro	oadcom CI)							CSI2.5" SFF N SI2.5" SFF NH		40K1037 40K1038
Cooling Fans Power supply(s) Prerequisites	Uses cooling fr sensors on each Uses power model Monitor, keybood disk, BladeCen	odule(s)	in BladeCe	enter (ty	/pes 8677, arnet switch	8852 and	8720	mal Bla Bla Bla Bla	deCenterSCS deCenterSFF deCenterSFF	I Storage E Fibre Cha Gigabit Eth	Exp Unit		26K4817 26K4841 26K4842



- 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 2 3.5", 9.5mm, no front access, optional 2.5-inch SFF SCSI disk

Stealth black front bezel

- ⇒ H 9.7" x W 1.14" x D 17.6"; H 24.5cm x W 2.9cm x D 44.6cm ⇒ 12 lbs; 5.4kg (max configuration)

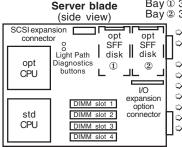
- 12 lbs; 5.4kg (max configuration)
 Configuration/Setup Utility:F1 at startup
 Diagnostics (PC-Doctor™): F2 at startup
 System Partition Boot: ALT+F1 at startup
 Network Boot: F12 at startup
 PXE Boot Agent Utility: Ctrl+S at startup
 Blade control panel on each HS20 blade server provides media select button, keyboard/mouse/video select button, and indicators for blade error, information, location, disk activity, and power
- Predictive Failure Analysis® alerts on memory, processor(s), and optional disk(s) with IBM Director

Maximum internal disk capacity for each HS20 blade server¹³: 146GB with two 73GB SCSI disks (with BladeCenter SCSI Storage Expansion Unit 2 x 300GB for total of 746GB)

- 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
- e 4 year 10h 24A7, 2 hi dig 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

IBM®			L2	FSB			Disk				ort with	slots	Mech-		Available
	ocessor				Memory		controller						anical	Ethernet	date
8843-0Ry-0Rx 1 x 8843-2Ry-2Rx 1 x 8843-3Ry-3Rx 1 x 8843-4Ry-4Rx 1 x 8843-5Ry-5Rx 1 x	⁄Xe∩n	3.2 3.4 3.6 3.8	2MB 2MB 2MB 2MB 2MB	800 800 800 800 800	1GB 1GB 1GB 1GB 1GB	None None	3 Ultra320 Ultra320 Ultra320 Ultra320 Ultra320	2-fixed 2-fixed	2 Hot-s 2 Hot-s 2 Hot-s 2 Hot-s 2 Hot-s	swap (swap (swap (swap (Jitra320 Jitra320 Jitra320 Jitra320 Jitra320	0 x 2 0 x 2 0 x 2 0 x 2 0 x 2	7U blade 7U blade 7U blade 7U blade 7U blade	2 x Gigabit 2 x Gigabit 2 x Gigabit 2 x Gigabit 2 x Gigabit	Mar 2006 Mar 2006 Mar 2006 Mar 2006 Mar 2006
Processor(s)	1 or 2	x In tology	tel® Xe /	on up	to 3.8GH and M5U:	iz with Feature	800MHz fi s Low Vol	rontside l lage Proc	ous (FSE essor for	3) / EN r reduc	164T / 1-2 ed heat o	2MB L2	2 ECC Cacl	he / Hyper-Th	reading ation
SMP - L2 Cache Implementation	Systen	nboai	rd cont	ains t	wo intel 6	04-pin i	s (same sp micro-PGA raphics and	ZIF SOCKE	ets, four L		td and m slots, one	ax / at e SCSI	processor s expansion	ter rack popul peed connector, one	e I/O
Memory	512ME PC2-3 installe	3/1GI 200 4 ed in i	3 std / 400MH matche	16GB Iz CL2 ed pair	¹³ max / tv 2.5 ECC D s [a bank]	wo slots DR2-S /2-wa	s used / two DRAM DIM y memory i	slots ava MMs / four interleave	ilable / 240 pin (/ dual-cha	gold-co annel /	onnector Chipkill™	slots or	n systemboa	ard / DIMMs m	nust be
SCSI disk controller	PCI-X	ogic ® / sup	53C10 ports F	20 SC RAID- 1	CSI contro I & 1E mi	ller / Si rroring	ngle chan / One 16-	nel Ultra3 bit channe	20 SCSI el (one int	contr ternal)	oller (LVI / <i>Internal</i>	D 320N Channe	1B/sec) / on el: one 2-dro	planar / 64-bi p 16-bit 68-pii	t 100MHz n LVD SCSI
SCSI Disk bays	cable Two 2	.5-in	ch Sm	all Fo	rm Facto	r (SFF)	Ultra320 ir	nternal fixe	ed disk ba	ays / S	Supports r	max of	two hot-swa	ap 3.5" SL Ultr	a320 SCSI
External Storage	Suppo	rt for	IBM T	otalSt	orage™ sc	parisions	(including l	FAStT and	I NAS fai	mily of	products	iys Ultr s)	a320-enabl	eu) /	
Mechanical Architecture/Chipset	7U ⁴ Bla Intel E BUS / interface	7520 ICH5	Suppo chips R supp	orted in set / E ports l	n IBM Blad 7525 MCI JSB (1.0)	deCento H (Men / LSI 10	er 8677-3X nory Contro 020 / Dual B	X or 8677- ller Hub) f Broadcom	1XX/2XX or PCI-E: 5704S /	K (requ xpress Low P	iires upgr bridge to in Count	ade to 2 PXH, Interfac	2000W pow ICH5R / PX e / NS PC8	er supply optio (H BUS suppo 7366 Super I/0	on 26K4816) orts PCI-X O off LPC
BUS slots			PCI-X	slots (expansion	via mo	odules or n	etwork-inte	erface op	otion co	onnector)				
Ethernet Network Interface	chip or adapte or <i>Opt</i> One c single	n blacer fau Fical F Onne Blade	de / PC It tolera Passthr ector fo eCente	CI-X 64 ance / rough or I/O er mus	l-bit 100M Load bala <i>Module</i> (th expansio t contain t	Hz / full incing one secon n optic	duplex / Wor teaming / ond controllent / require	lake on La one of the er requires s same int	N® / PXI e dual co s a secor erface m	E 2.0 E entrolle nd option nodules	Boot agen rs connec onal switc s in bays	nt / Alert cts to ar ch or O 3 and 4	Standard F n optional, s PM) I of BladeCe	ayer functions , format 2.0 / Fa upported Ethe enter / all blad O expansion o	ilover, rnet switch es in a
CD / Diskette / USB Kybd / video / mouse Graphics controller	None /	requ	iests fo	or CD- or kevt	ROM, dis	use, an	rive, and US nd video in I 7/16MB SE	BladeCent	er by pre	essina	the displa	av butto	elect button n on front c	on front contro ontrol panel	ol panel
Systems Mgmt	on blacevent	de / p recor	orovide ding, a	s syst lert ca	ém and e pability / F	nvironn RS-485	er (BMC) / nental moni interface fo ement mod	toring, or intermar		Xeor Xeor Xeor	13.0GHz/800 13.2GHz/800 13.4GHz/800)/2MBL2C)/2MBL2C)/2MBL2C	Cache EM64TP Cache EM64TPr Cache EM64TP Cache EM64TP Cache EM64TP	ocUpg rocUpg rocUpg	25R8878 25R8877 25R8876 13N0660 13N0696
Diagnostics	Light on-boa	Path ard di	Diagn agnost	ostics ics (vi	s™ (LED I a PC-Doo	ights in tor in E	dicate failin BIOS)	g compon	ent) and	Xeor 512N	13.8GHz/800 MB (2x256) P)/2MBL2C C2-3200 E	Cache EM64TPr ECC DDR2		13N0697 73P3523
Security	No sec admini unatte	strato	or pass	word /	otection / I unattend	Power-o	on passwor t / selectab	rd / le boot /		2GB 4GB	(2x1GB) PC (2x2GB) PC	2-3200 CL 2-3200 CL	BECC DDR2 L3 ECC DDR2 F L3 ECC DDR2 F L3 ECC DDR2 F	RDIMM Kit	39M5818 39M5809 39M5812 30R5145
Software ship group	Docum	nenta	tion CI	D, Bro	adcom Cl	D				IBM:	36.4GB 10K	Ultra320 S	SCSI2.5" SFF N	HSHDD	40K1037 40K1038
Cooling Fans	Uses	coolin	g from	Blade	Center (t	pes 86	677, 8852 a	nd 8720)	thermal	Blade	eCenterSCS	I Storage E		- :==	26K4817 26K4841
Power supply(s) Prerequisites	Uses r	owe	r modi	ıle(s) i	n BladeCe	enter (tv	enter modul ypes 8677, ernet switch d 8720, ope	8852 and	8720)	Blade	eCenterSFF	Gigabit Eth	hernet Exp Card		26K4842



- 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 2 3.5", 9.5mm, no front access, optional 2.5-inch SFF SCSI disk

Stealth black front bezel

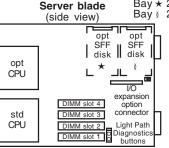
 ⇒ Stealth black front bezel
 ⇒ H 9.7" x W 1.14" x D 17.6";
 H 24.5cm x W 2.9cm x D 44.6cm
 ⇒ 12 lbs; 5.4kg (max configuration)
 ⇒ Configuration/Setup Utility:F1 at startup
 ⇒ Diagnostics (PC-Doctor™): F2 at startup
 ⇒ System Partition Boot: ALT+F1 at startup
 ⇒ Network Boot: F12 at startup
 ⇒ PXE Boot Agent Utility: Ctrl+S at startup
 ⇒ Blade control panel on each HS20 blade server provides media select button, keyboard/mouse/video select button media select button, keyboard/mouse/video select button, and indicators for blade error, information, location, disk activity, and power

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

Maximum internal disk capacity for each HS20 blade server¹³: 146GB with two 73GB SCSI disks (with BladeCenter SCSI Storage Expansion Unit 2 x 300GB for total of 746GB)

- 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 Process	or GHz¹	L2 cache	FSB MHz	Memory	Disk c	Disk ontroller	Disk bays	SCSI Suppo storage ex		slots x bays	Mech- anical	Ethernet	Available date
7981-2Fy 1 x Xeo 7981-3Fy 1 x Xeo	n™ 1.67 n 2.0	2MB 2MB	667 667	1GB 1GB	Open Open	SAS SAS	2-fixed 2-fixed	Not Supp Not Supp	orted orted	1 x 2 1 x 2	single blade single blade	2 x Gigabit 2 x Gigabit	Mar 2006 Mar 2006
Processor(s) SMP - L2 Cache Implementation	1 or 2 x E Transfer (ogy for red 2-way SM Systemboo	Dual-Co Cache A duced po IP / up t ard cont	re Int Archi ower to two ains t	el® Xeon tecture / consump Xeon L' wo Intel 4	LV up Feature Stion and Proce	to 2.0 G es Ultra d heat ou ssors (sa micro-FCI	iHz with Low Vol put allowi me speed PGA ZIF s	667 MHz from lage Processing greater rac d/cache size) / sockets. four D	tside bus or (31 wa k populat 2MB cad IMM slots	s (FSB) att) with ion che std a s. one SC	/ 2MB L2 EC Enhanced Inte and max / at pro CSI expansion of	C Shared Ad I SpeedStep® ocessor speed connector, one	vanced Technol-
·	expansion	option (conne	ctor, inte	grated g	graphics a	and dual (algabit etherne	et				
Memory	gold-conne / Chipkill / h	ector slo	ts on	systemb	oard / 2	-way mei	mory inter	rleave / DIMMs	must be	installed	DDR2-SDRAM in matched pa	irs [a bank] / d	lual-channel
Disk controller Disk bays External Storage	LSI Logic Two 2.5-in Support for	[®] 1064 S n ch Sm r IBM To	SAS o all Fo otalSt	controlle orm Fact orage™ s	er on pla or (SFF solutions	nar (3.00) SAS int (includin	Gb/sec) / I ernal fixed g DS and	Dual Internal o d disk bays / 0 I NAS family o	hannels / GB Std / f products	suppo 146.8GE s)	rts RAID-0 & 1 3 max	mirroring	
Mechanical Architecture/Chipset	Single slot Intel E752	blade / s	Suppo et / M	orted in IE CH (Men	BM Blad	eCenter 8 ntroller Hu	3677, 872 ub) for hig	0, 8730, and 8 h-speed memo	852 ory and Po	CI-Expre	ss / PXH-V BUS 3 (1.0), on-blade	S supports PC	I-E to PCI-X
BUS slots	Bus Interfa	ice to LS	SI1064	4 and AT	l Radeo	n 7000M	/ Dual Bro	padcom 5704S network-interfa				e service proce	essor, PCI-X
Ethernet Network Interface	chip on bla fault tolera Optical Pa One conn	ide / PC nce / Lo issthrou lector fo deCente	ad ba bad ba gh Mo br I/O er mus	l-bit 133N alancing o odule (the expansi at contain	/IHz / ful or teami e secon i on opti	l duplex / ng / one (d controll on / requ	Wake on of the duater require ires same	LAN® / PXE 2 al controllers co es a second op e interface mod	OBoot aconnects to tional swalles in balance	gent / Ale o an optic itch or C ays 3 an	AC and PHY la rt Standard For onal, supported PM) d 4 of BladeCe et and serial I/0	mat 2.0 / Failo Ethernet swite nter / all blade	ver, adapter ch or es in a
DVD / Diskette / USB Kybd / video / mouse Graphics controller	None / req None / req	uests fo	or DVI or key	D-ROM, oboard, m	iouse, a	nd video	in BladeC	rt in BladeCen Center by press std and max /	sing the d	isplay bu	ect button on fi tton on front co	ont control pa ontrol panel	nel
Systems Mgmt	IBM Base on blade / event reco communica	provide rding, a	s syst lert ca	tem and apability /	environi RS-48	mental mo interface	onitoring, e for interi	168 / management	Dual-Core I 1GB (2x512 2GB (2x1G	ntel Xeon P 2MB Kit) PC B Kit) PC2-3	rocessor LV 1.67 GH rocessor LV 2.0 GHz 2-3200 CL3 ECC DDR 3200 CL3 ECC DDR	ProcUpg PR2 SDRAM RDIM 2 SDRAM RDIMM	39M5809
Diagnostics	Light Path on-board o	Diagn diagnost	iostic tics (v	s ™ (LED ia PC-Do	lights in	ndicate fa BIOS)	illing com	ponent) and	8GB (2x4G	B Kit) PC2-3	3200 CL3 ECC DDR: 3200 CL3 ECC DDR: F2.5"SAS HDD		39M5812 30R5145 26K5776
Security	No security administration unattended	tor pass	word	otection / / unatten	Power- ded boo	on passy ot / select	vord / able boot	/	BladeCente IBMBladeC	erSFFFibre CenterSFFC	F2.5"SASHDD Channel Exp Card igabit Ethernet Expa igabit Ethernet Expa		26K5777 26K4841 39R8624 26K4842
Software ship group	Documenta	ation CI	D, Bro	adcom (CD						n/pc/us/accessories		
Cooling Fans Power supply(s) Prerequisites	sensors or	n each p er modu eyboard	oroces ule(s) , mou	ssor and in Blade(ise for se	BladeC Center (i etup; eth	enter mo types 867 ernet swi	dules and 7, 8720, itch modu	852) / thermal I front panel 8730, 8852) ile, g system					



- Power good
- Blade location
- Over temperature
- Information

· General fault

Bay ★ 2.5",6.35cm, no front access Bay ₹ 2.5",6.35cm, no front access

Stealth black front bezel

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 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),

Maximum internal disk capacity for each HS20 LV

and optional disk(s) with IBM Director

blade_server13:

146GB with two 73GB SAS disks

LIMITED WARRANTY3

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

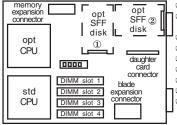
- response (ServicePac part num 69P9522) 4 year IOR 24x7, 2 hr avg

• 4 year 10h 24x7, 2 iii day 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 Pro	cessor GHz ¹		SB Hz Watts	Memory co	Disk ontrolle	Disk er bays	Expansion U	Jnits I/	O slots	Mechanical	Ethernet	Available date
8853-L1x 1 x Xeon 8853-L2x 1 x Xeon 8853-L3x 1 x Xeon 8853-L4x 1 x Xeon 8853-L5x 1 x Xeon 8853-L6x 1 x Xeon	™ 5110 1.6 5120 1.86 5130 2.0 5140 2.33 5150 2.66 5160 3.0	4MB 10	67 65W 67 65W 33 65W 33 65W 33 65W 33 85W	1GB 1GB 1GB 1GB 1GB 1GB	SAS SAS SAS SAS SAS	2-fixed 2-fixed 2-fixed 2-fixed 2-fixed 2-fixed	MIO/SIO/PO MIO/SIO/PO MIO/SIO/PO MIO/SIO/PO MIO/SIO/PO MIO/SIO/PO	CIEU i	up to 2 up to 2 up to 2 up to 2 up to 2 up to 2 up to 2	single slot blade single slot blade single slot blade single slot blade single slot blade single slot blade	2 x Gigabit 2 x Gigabit 2 x Gigabit 2 x Gigabit 2 x Gigabit 2 x Gigabit	Aug 2006 Aug 2006 Aug 2006 Aug 2006 Aug 2006 Aug 2006
Processor(s) SMP - L2 Cache Implementation	Cache / Dua	al Core / I / up to tw d contains	Hyper-Thr o Xeon F two Intel	eading tec rocessors LGA771 s	chnolog (same sockets	ly speed/ca s, four DIN	nche size) / 4l MM slots, one			1333MHz FSB / at processor sp ghter Card conne		
Memory	SURAIVI dev	ice fallure	. aetects a	ali two wire	aults	on Diiviiv	is, detects all	permutati	ons of tv	667MHz FBD 240 dual channel / Eo vo x4 DRAM failu y sparing / Additi GB of memory pe	res. detects a	nv iwo diis
SAS disk controller	LSI Logic® 1 29-pin SFF S	1064E SA SAS cable	S controlles	er / two p o	ort / 30	00MB/sec	/ on planar /	64-bit PC	I-Expres	s / supports RAII	0-0 & 1 mirro	ring / two
SAS Disk bays External Storage	Two 2.5-inc Storage and Support for I	I/O Expa	nsion Unit	` ′	SAS in	ternal fixe	ed disk bays /	Supports	max of	three hot-swap S	FF SAS disks	s in optional
Mechanical Architecture/Chipset BUS slots	Single slot bl Intel 5000P High Speed connector, D No PCI or P	lade / Sup chipset / Daughter Dual GB et	ported in Intel Mer Card con hernet, LS	IBM Blade nory Contr nector and SI 1064E S on via mod	Center oller Hi d BSE SAS, L dules o	8677, 87 ub (MCH) connector PC bus to or network	20, 8730 and provides PC / ESB2M pro NS PC8742 c-interface opti	8852 (L6 I-Express ovides: U 7 for Sup ion conne	x only su bridge t SB (2.0), er I/O ector)	upported in 8852) to Enterprise Sou ATI video, Lega	th Bridge 2(E cy Daughter 0	SB2M), Card
Ethernet Network Interface	Alert Standal optional, sup	rd Format ported Et	2.0 / Fail hernet sv	over, adap vitch or <i>Or</i>	ter faul otical P	t toleranc <i>Passthrou</i> d	e / Load balar ah <i>Module</i> (th	ncing or to e second	eaming / controlle	t MAC and PHY I 'Serial over LAN one of the dual or requires a secon res same interfact sion card (or no e	ontrollers con d optional swit	nects to an ch or OPM)
DVD/ diskette / USB Kybd / video / mouse Graphics controller	None / regue	ests for ke	yboard, n	nouse, and	d video	in Blade	BladeCenter b Center by pres max / 32-bit 33	ssing the	display b	select button on button on front co	front control p ntrol panel	anel
Systems Mgmt	IBM Basebo on blade / pr event record communicati	rovides sy ling, alert (stem and capability	environme RS-485 i /	ental m interfac	ionitoring, e for inte	2166 / management	Xeon1.86 Xeon2.00 Xeon2.33	GHz/1066/4 GHz/1333/4 GHz/1333/4	MBL2 Cache EM64TPro MBL2 Cache EM64TP MBL2 Cache EM64TP MBL2 Cache EM64TP	rocUpg ocUpg rocUpg	40K1225 40K1226 40K1227 40K1228
Diagnostics	Light Path I on-board dia	Diagnosti agnostics (cs ™ (LE[(via PC-D) lights ind octor in Bl	licate fa	ailing com	ponent) and	Xeon 3.00 1GB (2x5	6Hz/1333/4I 12) PC2-53	4MBL2 Cache EM64TF MBL2 Cache EM64TPr 00 CL5 ECC DDR2 Chi	ocUpg pkill FBD 667MHz l	
Security	No security i administrator unattended s	r passwor	d / unatte	/ Power-ornded boot	n pass / selec	word / table boo	t /	4GB (2x2 8GB (2x4	GB) PC2-50 GB) PC2-50	800 CL5 ECC DDR2 Ch 800 CL5 ECC DDR2 Ch 800 CL5 ECC DDR2 Ch SFF SAS HDD	ipkill FBD 667MHz	:Kit 39M5791
Software ship group	Documentati	ion CD, B	roadcom	CD, Serve	erGuide	e CD		IBM 73GE	3 NHS 2.5"	SFF SAS HDD and I/O Expansion Blade		26K5777 39R7563
Cooling Fans Power supply(s) Prerequisites	Uses cooling sensors on e Uses power Monitor, keyl disk, BladeC	module(s board, mo) in Blade buse for s	Center (ty) etup; ethei	pes 86 rnet sw	77, 8720, /itch mod	8730, 8852) ule,	BladeCen BladeCer BladeCer QLogiciS Cisco 4X Cisco 4X QLogic 40 Emulex 40	terMemory terSFF Fibr terSFF Gigs CSI Expans InfiniBand S InfiniBand E GBSFF Fibr GBSFF Fibr	and I/O Expansion Blade re Channel Expansion C abit Ethernet Expansion ion Card for BladeCente Switch Module for Blade expansion Card for Blade re Channel Expansion C orn/pc/us/accessories	e Card Card er Center eCenter eCenter ard for BladeCente	42C1600 26K4841 39R8624 32R1923 32R1756 32R1760 er 26R0890

Server blade (side view)

Bay 1 3.5", 9.5mm, no front access, optional 2.5-inch SFF SAS disk Bay 2 3.5", 9.5mm, no front access, optional 2.5-inch SFF SAS disk



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 44.6cm 12 lbs; 5.4kg (max configuration) Configuration/Setup Utility:F1 at startup Diagnostics (PC-DoctorTM): F2 at startup System Partition Boot: ALT+F1 at startup Network Boot: F12 at startup PXE Boot Agent Utility: Ctrl+S at startup

- Blade control panel on each HS21 blade server provides media select button, keyboard/mouse/video select button, and indicators for blade error, information, location, disk activity, and power
- Predictive Failure Analysis® alerts on memory, processor(s). and optional disk(s) with IBM Director

Maximum internal disk capacity for each HS21 blade server¹³: 146GB with two 73GB SAS disks (with BladeCenter Storage Expansion Unit 3 x 146GB for total of 584GB)

- response (ServicePac part num 69P9522) 4 year IOR 24x7, 2 hr avg
- e 4 year 10h 24A7, 2 hi dig 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

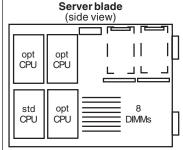
Required

Available

Mech-

Slots

Type-model Qty x Pro	ocessor1	L3 Cache Memory	Bus Mhz	Disk 0	Disk controller	Disk bays		Si support nal expans			Mech- anical	Required chassis	Available date
8839-41X 1 x Xeon ¹	™ 2.8GHz N		400Mhz				2 ho	ot-swap U	Jltra320	0x2	6U⁴ blade	BladeCente	r Mar 2004
Positioning Processor(s) L2/L3 cache SMP support Implementation	1 x Intel® 512KB L2 4-way SM Server bla	se, highly mana Xeon 2.8GHz N Cache / 2MB P / up to four > de contains fou expansion unit	/IP with 40 L3 Cache (eon MP Ir Intel 60	00MHz / on d Proces 4-pin m	frontside lie of pro sors (san nicro-PG	e bus / ocessor me spe A ZIF s	Hyper / at p eed/cae sockets	-Threadir rocessor che size) s, eight n	ng techn speed nemory	ology /	['] NetBurst [⊤] slots,	[™] microarchite	
Memory	PC2100 2 DIMMs mu 100MHz /	16GB max ¹³ / tv 66MHz register ast be installed Error Checkin and detects 2-	ed 184-pii in matche g and Co	n ECC d pairs rrectin	DDR-SI a bank g (ECC	DRAM] / 2-wa) via 16	DIMMs ay mer 6-bit C	s / eight mory inte Checksur	DIMM g rleave / n Chipl	dual c kill™ (d	hannel / m corrects 1,	nemory bus ru	ns at 2 x
SCSI disk controller	via one co CIOB-ES 3.5" one-ii Supports r	pports optional onnector / LSI L I/O Bridge (IME nch high SL SC max of two hot-s A-2 connectors	ogic® 530 32 bus to SI disks i wap 3.5"	C1020 Host B n front SL Ultra	Ultra320 Bridge) / bays / c a320 SC	SCSI suppor one 16- SI disk	contro ts R / bit int s in op	oller [LVD AID-1 mi n ernal cha) 32ÓMÈ rroring annel / r	3/sec] / [Embe no cabl	64-bit 13 dded Mirr les or exte	3MHz PCI-X oring] with tween connected to the connected t	Bus B from o hot-swap
External storage		r IBM TotalStora						IAS famil	y of prod	ducts)			
Mechanical		in IBM BladeCei											
Architecture / chipset	sone CIOB ethernet a bus to Su	orks® Grand Ch -X2 I/O Bridge and the I/O expander oer I/O, and PC PCI-X slots (e	(IMB2 bus ansion opt I 2.2 Bus	to Ho ion cor C with	est Bridge nnector in graphic	e) for to CSB6 cs conti	wo PC South roller /	CI-X Buse n Bridge ' National	es with I (Thin IN I Semic	Bus A /IB to H onduct	for etherno lost Bridgo or® PC874	et and Bus B e) for EIDE, U	for JSB, LPC
Ethernet controllers Network-interface	Wake on L 4-port GB Two conn	it 10/100/1000 etl AN® / Alert Stand Ethernet Switch ectors for I/O e in a single Blad	dard Forma h <i>Module</i> expansior	at 1.0 / t (the se n optio	teaming a econd co n / requi	and faild ntroller res sar	ver su requir ne inte	pport / on- res a sec erface mo	e of the ond opt odules ir	controlle ional E n bays	ers connect thernet Sv 3 and 4 o	ts to an optiona vitch Module) f BladeCenter	al .
CD / diskette / USB Kybd / video / mouse Graphics	None / red	uests for CD-RO quests for keybo TI® Radeon 700	ard, mou	se, and	l video ir	n Blade	Cente	er by pres	ssing the	e displa	ay button o	on front contro	ol panel ol panel
Systems mgmt Diagnostics	/ on blade event reco communic Light Pat	prated Baseboa / provides systording, alert cap ation with Blad h Diagnostics ^T t) and on-board	em and e bability / F eCenter n ™ (LED lig	nviron RS-485 nanage Ints inc	mental r interfac ment m dicate fa	nonitori e for odule iling	ing,	512MB P 1GB PC2 2GB PC2 IBM HS4	C2100 (2100 CL 2100 CL 40 SCS	CL2.5 E 2.5 EC 2.5 EC I Storg	C DDR-SD C DDR-SD e Expansi	oc Upg SDRAM DIMM RAM RDIMM RAM RDIMM on Unit (blade sion Card (wi	13N0653 33L5038 33L5039 33L5040 e) 26K4847 th two
Security	•	password / ad					/	ports;	each po	rt requ	ires a FC S	Switch Module Swap SL HDD*	e) 48P7061
Software ship group	unattende	d boot / selecta ation CD, IBM	ble boot /	unatte	ended st		~ ~	36.4GB 1	15K Ultra	a320 S0	CSI Hot-Sv	vap SL HDD* Swap SL HDD*	06P5776
Coolingfans	Uses cooli	ng from BladeC	enter (typ	e 8677	') / therm	al sens	sors	146.8GB	10K U	tra320	SCSI Hot-	Swap SL HDD Sansion Unit	
Power supply Prerequisites	Uses pow Monitor, k	rocessor and Blacer module(s) in eyboard, mous eCenter (type 8	BladeCe e for setu	nter (typ; ethe	ype 867 ernet sw	7) itch mo		DISK TE	quiles à	JOSI 3	ioraye Exp	oansion oill	



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

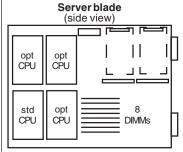
Maximum internal disk capacity for each HS40 blade server13: 293.6GB* with two 146.8GB SL SCSI disks

- 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 ocessor ¹ Cache Memory	Frontside Disk Bus Mhz Disk control		CSI support with ional expansion unit	Slots Mech- x bays anical	Required chassis	Available date
8839-61X 1 x Xeon ¹	™ 2.2GHz MP 2MB 1GB ™ 2.7GHz MP 2MB 2GB ™ 3.0GHz MP 4MB 2GB	400Mhz None None 400Mhz None None 400Mhz None None	None 2	hot-swap Ultra320 hot-swap Ultra320 hot-swap Ultra320	0x2 7U4 blade	 BladeCenter 	Mar 2004
Positioning Processor(s) L2/L3 cache SMP support Implementation	Ultra-dense, highly mana 1 x Intel® Xeon MP up to 512KB L2 Cache / Up to 4-way SMP / up to four X Server blade contains for connector, two I/O expan	3.0GHz with 400MHz from 4MB L3 Cache / on of the Cache / on of the Cache / on of the Cache / on	ontside bus / File of process same speed/o GA ZIF socke	Hyper-Threading tec sor / at processor s cache size) ets, eight memory	chnology / NetBurnspeed DIMM slots, one	st™ microarchite	
Memory	Up to 2GB std / 16GB m PC2100 266MHz register DIMMs must be installed 100MHz / Error Checkin same chip and detects 2-	red 184-pin ECC DDR- in matched pairs [a bang and Correcting (EC	SDRAM DIMI nk] / 2-way m C) via 16-bit	Ms / eight DIMM g nemory interleave / t Checksum Chip l	gold-connector s ′ dual channel / ı kill ™ (corrects 1	nemory bus rur	ns at 2 x
SCSI disk controller	via one connector / LSI L CIOB-ES I/O Bridge (IME 3.5" one-inch high SL SC Supports max of two hot-s	Logic® 53C1020 Ultra3: B2 bus to Host Bridge) CSI disks in front bays swap 3.5" SL Ultra320 S	20 SCSI cont / supports I / one 16-bit i SCSI disks in	roller [LVD 32ÓMÈ RAID-1 mirroring nternal channel / i	Š/seć] / 64-bit 13 [Embedded Mir no cables or ext	33MHz PCI-X E roring] with two ernal connecto	Bus B from hot-swap
External storage	80-pin SCA-2 connectors Support for IBM TotalStor			NAS family of prod	ducts)		
Mechanical	Supported in IBM BladeCe ServerWorks® Grand C						
Architecture / chipsets Bus slots	s one CIOB-X2 I/O Bridge ethernet and the I/O expo bus to Super I/O, and PO No PCI or PCI-X slots (e	(IMB2 bus to Host Brid ansion option connecto CI 2.2 Bus C with grapl	lge) for two F r / CSB6 Sou nics controlle	PCI-X Buses with uth Bridge (Thin IN r / National Semic	Bus A for etherr MB to Host Bridg onductor® PC87	net and Bús B f ge) for EIDE, U	or SB, LPC
Ethernet controllers	Four gigabit 10/100/1000 et Wake on LAN® / Alert Stand 4-port GB Ethernet Switc	dard Format 1.0 / teaming	g and failover	support / one of the	controllers conne	cts to an optiona	
Network-interface	One connector for I/O e blades in a single BladeC	expansion option / req	uires same ir	nterface modules ir	n bays 3 and 4		/ all
CD / diskette / USB	None / requests for CD-F					ect button on fro	ont control
Kybd / video / mouse Graphics	e None / requests for keyboo SVGA / ATI® Radeon 700					ont control pane	I
Systems mgmt	Intel integrated Basebook on blade / provides systement recording, alert cal communication with Blad	stem and environmenta pability / RS-485 interf leCenter management	monitoring, ace for module	Xeon 2.2Ghz/2N Xeon 2.7Ghz/2N			13N0656 13N0655
Diagnostics	Light Path Diagnostics component) and on-board) Xeon 3.0Ghz/4N	MB L3 Cache Pr	oc Upg	13N0654 33L5038
Security	Power-on password / ad unattended boot / selecta		start mode	512MB PC2100 (1GB PC2100 CL	.2.5 ECC DDR-SI	DRAM RDIMM	33L5039
Software ship group	Documentation CD, IBM			_ IDIVI 11040 000	I Storge Expans	ion Unit (blade	
Cooling fans	Uses cooling from BladeCe thermal sensors on each p and front panel	processor and BladeCent	er modules	ports; each po 36.4GB 15K Ultr	e Channel Expai ort requires a FC ra160 SCSI Hot- a320 SCSI Hot-S	Switch Module Swap SL HDD*	
Power supply Prerequisites	Uses power module(s) in B Monitor, keyboard, mouse disk, BladeCenter (types 86	for setup; ethernet switch	module,	73.4GB 10K Ultr 146.8GB 10K UI	ra160 SCSI Hot-	Swap SL HDD* -Swap SL HDD	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: 600GB* with two 300GB 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[®]

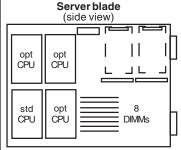
Required

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 Kpansion 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
- 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

- 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

Qty x Processor

L2 GHz¹ Core cache

IBM® Type-model

Ethernet

NEBS

Mechanical

Available

date

Type-model Gily X Pic	JUESSUI	GIIZ	COIC	Cacile	wemony	DISK	Days	expansion u	III Abays	Mechanica	Eulernet	INEDS	uate
8842-RTU 2 x Powe	erPC 970FX	(2.2	SC	512KB	2GB	N/A	None	None	0 x 0	9.5mm blade	2 x Gigabit	Yes	May 2006
Positioning Processor(s) L2 Cache SMP support Implementation	512KB La 2-way SN Server bla	2 Cac /IP / v ade co	che vith two ntains	o PowerP two IBM	C Process	ors (san	ne spee	d/cache size) s soldered to p		tions environn		ntroller, F	-ibre
Memory	2GB std (DIMM gol	2x1G d-con	B) / 8 0 necto	GB ¹³ max r slots / Dll	/ two slots VIMs must	used / tv be insta	wo slots lled in n	available / PC natched pairs [-2700 333 a bank] / 2	MHz CL2.5 EC0 -way memory ir	C DDR-SDRA nterleave / du	M DIMM al-channe	1s / four el
IDE controller Disk bays External Storage	Enhanced None (HD Support fo	DE D	ATA-1 ot sup 1 Tota	00 control ported in I Storage™	ler in AMD NEBS envir solutions (i	8111 Sonment	outh Bri) g FAStT	dge and NAS fam	ily of produ	ıcts)			
Mechanical	Single-wid	de Bla	de / N	EBS Supp	ort in IBM E	BladeCe	nter T						
Architecture/Chipset	IBM U3 N IDE / Bro	lorthi adco	oridge m 570	e / AMD 8 * 4S / NS P	131 Hyper C87417 St	Transpo uper I/O	off LPC	nel and PCI-X interface	Bridge / A	AMD 8111 Sout	thbridge prov	iding US	3B1.1 and
BUS slots	No PCI o	r PCI-	X slot	s (expansi	on via mod	dules or	network	c-interface option	on connect	or)			
Ethernet Controllers	Dual Giga chip on bl adapter fa or Optical	abit 1 ade / ault tol / Pass	0/100/ PCI-X leranc sthroug	/1000 ethe 64-bit 133 e / Load bagh <i>Module</i>	rnet contro MHz / full of alancing or (the secon	ller / Bro duplex / teaming d contro	Dadcom Wake og / one o oller req	n® 5704S / two n LAN® / PXE of the dual cont uires a second	full gigabit 2.0 Boot ag trollers con optional s	ethernet MAC a gent / Alert Stan nects to an option witch or OPM)	and PHY layed dard Format 2 onal, supporte	r function 2.0 / Failded d Ethern	ns / over, net switch
Network Interface	One conn BladeCen	ector iter / a	for I/C) expansio les in a sir	n option (F gle BladeC	ibre Cha Center m	annel Ex lust con	(pansion Card) tain the same	/ requires expansion	same interface card (or no expa	modules in b ansion card)	ays 3 an	d 4 of
DVD / Diskette / USB Kybd / video / mouse Graphics controller		quests	s for D)VD-ROM,	diskette dr	ive, and	USB p	ort in BladeCe	nter by pre	ssing media sel	ect button on	front con	ntrol panel
Systems Mgmt	IBM Integration in the provides standard capability with Blade	grated systen / RS- eCent	l Serv n and 485 ir er Ma	ice Proce environme terface for nagement	essor / H82 ental monito intermana module / C	148 / IPI oring, ev gement luster S	VII 1.5 / vent recommu commu system I	on blade / ording, alert nication Management	2GB PC-270 IBM BladeCei IBM BladeCe	0 ECC CL 2.5 DDR R 0 ECC CL 2.5 DDR R nter T Advanced Mana nter T Chassis (AC Ve	DIMM agement Module ersion)		39M5839 39M5843 32R0835 87301RX
Diagnostics	Light Pat on-board	h Dia diagn	gnos ostics	t ics (LED (via PC-D	ights indica octor in Bl	ate failing OS)	g compo	onent) and	IBM 1300W A IBM 1300W D	nterTChassis (DC Ve .C PowerSupply (x2) .C PowerSupply (x2)			87201RX 32R0834 32R0833
Security	No securi administra unattende	ator pa	asswo	rd / unatte	/ Power-or nded boot	n passw / selecta	ord / ble boo	t/	QLogic 4GB	s Fiber Intelligent Giga SFF Fibre Channel Ex Optical Pass-thru Modi	oansion Card for B		26K6547 26R0884 39Y9320
Software ship group	Documen	tation	CD, I	BM Direct	or CD, Dev	rice Driv	er CD		Other option	s at ibm.com /pc/us/	accessories		
Cooling Fans	Uses coo	ling fro	om Bl	adeCenter	T (types 8	730 and	8720)	thermal					
Power supply(s) Prerequisites	Uses pow Monitor, k	ver ma ceyboa	odule(ard, m	s) in Blade ouse for s	:Center I (1 etup; ether	types 87 net swit	730 and ch mod	8720) ule, FCC erating system					

Disk

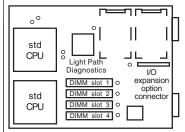
bays

Disk

Memory

Optional storage slots expansion unit x bays

Server blade (side view)



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

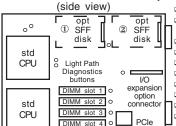
- Power good
- Blade location
- Over temperature
- Information
- · General fault

- Stealth black front bezel
- ⇒ H 9.7" x W 1.14" x D 17.6";
- H 24.5cm x W 2.9cm x D 44.6cm
- ⇒ 12 lbs; 5.4kg (max configuration) ⇒ RTU 2-core 250W

- RTU 2-core 250W
 Configuration/Setup Utility:F1 at startup
 Diagnostics (PC-Doctor™): F2 at startup
 System Partition Boot: ALT+F1 at startup
 Network Boot: F12 at startup
 PXE Boot Agent Utility: Ctrl+S at startup
 Blade control panel on each JS20 blade server provides media select button, keyboard/mouse/video select button, and indicators for blade error. information, location, disk 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

- 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 Prod	cessor GHz ¹		.2 che	Memory	Disk (Disk controller		Optional storage expansion unit	Mechanical	Ethernet	Available date
8844-31U 2 x PPC 9 8844-51U 2 x PPC 9 8844-E3U 2 x PPC 9 8844-E5U 2 x PPC 9	70MP 2.7* 70MP 2.5* 70MP 2.7* 70MP 2.5*	SC 1N	1MB 2x 1B 2x	512MB 400MHz 1GB 400MHz 1GB 533MHz 2GB 533MHz	Open Open 1x73GE 1x73GE	SAS SAS 3 SAS 3 SAS	2 Fixed 2 Fixed 2 Fixed 2 Fixed	3 Hot Swap SAS*** 3 Hot Swap SAS*** 3 Hot Swap SAS*** 3 Hot Swap SAS***	9.5mm blade 9.5mm blade 9.5mm blade 9.5mm blade	2 x Gigabit 2 x Gigabit 2 x Gigabit 2 x Gigabit	Mar 2006 Mar 2006 Aug 2006 Aug 2006
Positioning	maintenand	ce costs. . For the	needs	21 is also optimize of SMB and HPC	ted for sc the JS2	ientific re 1 Expres	searcn i s model	es for AIX 5L [™] , HPC ble for building front- nigrating older UNIX n life sciences and s s (E3U, E5U) are av d at a lower price.	seismic anaiysis	with its integr	ated vector
Processor(s) L2 Cache SMP support Implementation	1MB L2 Ca 2-core or 4 Server blace	ache per 1-core S de contai	r core SMP / two ins two I	o PowerPC Proce BM PowerPC mi	essors (si croproces	ngle core	or dual	e* Dual-Core / 64 bit core) planar, four DIMM s i support, integrated	slots, 17X PCI E graphics and di	Express, SAS ual Gigabit eth	controller, nernet
Memory	1, 2 or 4Gi 4200 533M bank] and	B std / 1 0 1Hz CL4 banks m	6GB ¹³ m ECC DI just mate	ax / two slots use DR2-SDRAM DIN h in speed (MHz	ed / two s /IMs / fou), though	lots avail r DIMM o not size	able / Po pold-con / 2-way	C2-3200 400MHz Cl nector slots / DIMMs memory interleave /	L3 ECC DDR2-3 must be install dual-channel /	SDRAM DIMN ed in matched Chipkill with x	/Is or PC2- d pairs [a 4 DIMMs
SAS Disk controller SAS Disk bays External Storage	Supports n	nax of tw	o non-ho		all form fa	actor (SF	F) SAS	IHz PCI-X / supports drives / 3.0GB/s / E3 mily of products)		ude one 73Gl	3 drive std
Mechanical Architecture/Chipset	Single-wide IBM U4 No AMD 8111	Blade / orthbride Southb	Support ge / BCI oridge pr	ed in IBM BladeC //5780 PCI Expre oviding USB1.1 a	Center, IBI ess, PCI- and Video	M BladeC X Bridge / NS PC	enter T [*] and Hy 287427	** and IBM BladeCer	nter H nel for PCle and terface	d Dual Gigabi	t Ethernet /
BUS slots	No PCI or	PCI-X sl	lots (exp	ansion via modul	es or net	work-inte	rface op	tion connector)			
Ethernet Controllers Network Interface	adapter fau or <i>Optical</i> I One legacy	ılt tolerar Passthro / connec	nce / Loa <i>ugh Mod</i> ctor or Po	ld balancing or te dule (the second CI-Express conne	aming / c controller ector for l	ne of the requires O expan	dual co a secor sion opt	full gigabit ethernet E 2.0 Boot agent / Al Introllers connects to ind optional switch or ions / requires same e expansion card (or	an optional, su OPM) interface modu	pported Etheri ules in bays 3	net switch
DVD / Diskette / USB Kybd / video / mouse Graphics controller	None / req None / req SVGA / AT	uests for uests for I® RN50	DVD-Ro keyboai on Plan	OM, diskette driverd, mouse, and vi ar / 32MB DDR S	e, and US ideo in Bl SDRAM s	SB port in adeCente td and m	BladeC er by pre ax / 15 p	enter by pressing messing the display but bin connector	edia select butto tton on front co	on on front co ntrol panel	ntrol panel
Systems Mgmt	provides sy capability /	/stem an RS-485	nd enviro interface	ocessor / H8216 nmental monitori e for intermanage ent module / Clu CMP	ng, event ment con	recordin nmunicat	g, alert on	1 ' '	DECC CL4 DDR2 RD DECC CL4 DDR2 RD DECC CL4 DDR2 RD 200 ECC CL3 DDR2 I	IMM Kit IMM Kit IMM Kit RDIMM Kit	41Y2703 41Y2707 41Y2711 41Y2723 39M5821
Diagnostics	Light Path	Diagno	stics (L	ED lights indicate	failing co	mponen	t) and	2GB (2x1GB) PC2-3200 4GB (2x2GB) PC2-3200			39M5809 39M5812
Security	No security administrat unattended	/ intrusio or passw	n protec vord/un	C-Doctor in BIOS tion / Power-on p attended boot / s	oassword electable	/ boot /		8GB (2x4GB) PC2-3200 IBM 36GB 10K SAS 2.5' IBM 73GB 10K SAS 2.5'	SFFNHSHDD SFFNHSHDD		41Y2703 26K5776 26K5777
Software ship group Cooling Fans Power supply(s) Prerequisites	Documenta Uses coolin sensors on Uses power Monitor, ke	ation CD ng from I each pr er module yboard,	, IBM Di BladeCe rocessor e(s) in B mouse f	rector CD, Devicenter (types 8677, and BladeCente adeCenter (types or setup; etherne 177, 8852 and 87	8852 and r modules 8 8677, 8 t switch r	d 8720) / s and froi 852 and module,	nt panel 8720)	QLogic 4GB SFF Fibre C BladeCenter SFF Gigabi Cisco InfiniBand Expans Myrinet Expansion Card Cisco 4X InfiniBand Swi Cisco 4X InfiniBand Exp Other options at ibm.c	t Ethernet Expansion C iion Card for Blade Cer for Blade Center tch Module for Blade C ansion Card for Blade	Card for BladeCente nter Center eCenter	
Server b				m, no front acc							



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

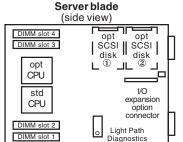
- Stealth black front bezel \Diamond H 9.7" x W 1.14" x D 17.6"
- H 24.5cm x W 2.9cm x D 44.6cm
- 12 lbs; 5.4kg (max configuration) 31U/E3U 2-core 288W / 51U/E5U 4-core 308W
- Configuration/Setup Utility:F1 at startup Diagnostics (PC-Doctor™): F2 at startup
- System Partition Boot: ALT+F1 at startup
- Network Boot: F12 at startup
 PXE Boot Agent Utility: Ctrl+S at startup
- Blade control panel on each JS21 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 JS21 blade server¹³: 146GB with two 73GB SCSI disks (with BladeCenter Storage Expansion Unit 3 x 73GB for total of 219GB***)

*Processor frequency is dependent upon which BladeCenter chassis the JS21 is installed: BladeCenter (8677): 31x, 2.6GHz; 51x, 2.3GHz BladeCenter H (8852): 31x, 2.7GHz; 51x, 2.5GHz BladeCenter T (8720): 31x, 2.6GHz; 51x, 2.3GHz BladeCenter T (8720): 31x, 2.6GHz; 51x, 2.3GHz **BladeCenter T NEBS compliance available September 2006 ***BladeCenter Storage Expansion Unit support available 2nd Quarter 2007

- - 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	ocessor¹ Speed/Core	L2 Memory Cache	Disk Disk controller	Disk r bays	SCSI support	Slots Mec x bays anio		Available date			
8850-55U 1 x Opte 8850-65U 1 x Opte 8850-71U 1 x Opte	eron 246 2.0 GHz/SC eron 270 2.0 GHz/DC eron 275 2.2 GHz/DC eron 250 2.4 GHz/SC eron 252 2.6 GHz/SC	1GB 1MB 1GB 1MB	0MB SCSI 0MB SCSI 0MB SCSI	2 fixed T 2 fixed T 2 fixed T	wo 2.5-inch SFF wo 2.5-inch SFF wo 2.5-inch SFF wo 2.5-inch SFF wo 2.5-inch SFF	0x2 7U ⁴ bl 0x2 7U bla 0x2 7U bla 0x2 7U bla 0x2 7U bla	ade BladeCenter ade BladeCenter ade BladeCenter	Apr 2005 Jul 2005 Apr 2005			
Positioning Processor(s) L2/L3 Cache SMP support Implementation	Ultra-dense, low p Up to 2 x AMD® Opter 1MB L2 Cache per c 2-way SMP / up to Server blade contain and InfiniBand expan	core, AMD Dire two Opteron pro s two AMD 940	ect Connect A ocessors (same o micro PGA Z	rchitecture e speed/ca IF sockets,	e ensures lower la che size) four memory DIM	itency I/O					
Memory	1 or 2GB std / 16GB PC3200 266MHz rec DIMMs must be insta Error Checking and and detects 2- through	alled in matched I Correcting (E	l pairs [a bank] : CC) via 16-bit	/ 2-way m : Checksu i	ole RDIMMs / four D emory interleave / n Chipkill™ (corr	IMM gold-con dual channel ects 1, 2, 3, c	nector slots on sys or 4-bit errors on s	stemboard ame chip			
IDE controller/bays SCSI disk controller SCSI disk bays Other controllers External storage	None One integrated / LSI on planar / supports drives / one 16-bit i Supports max of two 40-pin SCA conne Support for SFF or I Support for IBM Tota	RĂID-1 mirro nternal channel not hot-swap: ectors / all SCS egacy Ethernet	oring [Embeddo I / no cables of 2.5" SL Ultra32 I bays Ultra32 Or Fibre Char	ed Mirrorin r external d 20 SCSI di 20-enabled nnel I/O ca	g] with two non-h connector) sks ! rds, Myrinet or In	ot-swap 2.5" finiBand Expa	/ small form factor	B / (SFF)			
Mechanical Architecture / chipsets Bus slots	Architecture / chipsets AMD 8131 PCI-X Bridge Chip providing two PCI-X buses running at 600Mhz (bus A for SCSI and Ethernet, bus B for PCI-X expansion slots) / AMD 8111 HyperTransport Bridge Chip supporting a 200 Mhz double-pumped HyperTransport clock (PCI, SMBus, USB, LPC to BIOS and Super I/O) / National Semiconductor® PC87417 Super I/O chip										
Ethernet controllers Network-interface DVD / diskette / USB Kybd / video / mouse Graphics	Two gigabit Ethernet of Alert Standard Formas witch or Passthroug One connector for 3 and 4 of BladeCen card) / ethernet and None / requests for DNone / requests for SVGA / ATI® Radeor	at 1.0 / teaming a the Module (the second I/O expansion ter / all blades i serial I/O expar JD-ROM, diskette	nd failover supp second controll option (Fibre n a single Blad nsion cards pla e drive, and USF	ort / one of ler requires Channel E leCenter m nned for fu 3 port in Bla	the dual controllers a second option of the second option of the second in the second in the second decepter by pression decepter by pression of the second	connects to an al switch or Pl requires same me expansion ng media selec	optional, supported M) e interface modules card (or no expan	d Ethernet s in bays sion			
Systems mgmt	IBM integrated sys H8S2148 / on blade monitoring, event re- for communication w	/ provides syst cording, alert ca	em and enviro apability / RS-4	nmental 185 interfa	Low Power Opter	on 250 Processo on 252 Processo on 254 Processo	or Upgrade or Upgrade or Upgrade	25R8891 25R8892 25R8893 25R8937 25R8894			
Diagnostics	Light Path Diagnos component) and on-	stics™ (LED lig board diagnost	hts indicate fai	iling ctor in BIOS	Low Power Opter Low Power Opter	on 275 Processo on 280 Processo	or Upgrade or Upgrade	25R8895 25R8896			
Security	Power-on password unattended boot / se	/ administrator electable boot /	password / unattended sta	art mode	2GB(2x1GBkit) DI 4GB(2x2GBkit) DI 8GB(2x4GBkit) DI	DR-SDRAMVLPI DR-SDRAMVLPI	RDIMM RDIMM	39M5849 39M5852 41Y2756			
Software ship group	Documentation CD,	IBM Director C	D, Device Driv	er CD	IBM 36.4GB SFF IBM 73.4GB SFF AMD Opteron LS	Non-hot-swap	IOK SCSI HD	40K1037 40K1038 25R7748			
Cooling fans Power supply Prerequisites	Uses cooling from Blat thermal sensors on ea and front panel Uses power module(s) Monitor, keyboard, mo	ach processor an) in BladeCenter	d BladeCenter r (types 8677, 88	modules 52 and 872	BladeCenter SCS IBM SFF Fibre C IBM SFF Gigabit	SI Storage Exp I hannel Expansi Ethernet Expan	Jnit on Card sion Card	26K4817 26K4841 26K4842 48P7061			
	disk, BladeCenter (typ	es 8677, 8852 a	nd 8720), opera	ting system	Other options at		s/accessories				



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

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

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

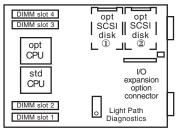
- 11 lbs; 5.0kg (max configuration) Configuration/Setup Utility: F1 at startup Diagnostics (PC-Doctor™): F2 at startup
- System Partition Boot: ALT+F1 at startup
- Network Boot: F12 at startup
- PXE Boot Agent Utility: Ctrl+S at startup
- Blade control panel on each LS20 blade server provides media select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

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

- 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 (ServicePacpartnum 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

IBM® Type-model Qty x Pro	ocessor¹ Speed/Core M	L2	Disk Disk controller	Disk	SCSIsupport		ech- Required nical chassis	Available date
8850-56U 1 x Opte	eron 270 2.0 GHz/DC 1	1GB 1MB 1GB 1MB	OMB SCSI OMB SCSI	2 fixed 7	wo 2.5-inch SFF wo 2.5-inch SFF	0x2 7U ⁴ b 0x2 7U b	blade BladeCenter	Mar 2006
8850-72U 1 x Opte	eron 250 2.4 GHz/SC 1	IGB 1MB		2 fixed 7	wo 2.5-inch SFF wo 2.5-inch SFF	0x2 7U b	olade BladeCenter	Mar 2006
8850-82U 1 x Opte	eron 252 2.6 GHz/SC 2	2GB 1MB 2GB 1MB	OMB SCSI	2 fixed T	wo 2.5-inch SFF wo 2.5-inch SFF	0x2 7U b	olade BladeCenter	Mar 2006
Positioning Processor(s)	Ultra-dense, low pow Up to 2 x AMD® Opteron	rer, full peri						
L2/L3 Cache SMP support	1MB L2 Cache per core	e, AMD Dire	ct Connect A	rchitectur	e ensures lower la	atency 1/O		
Implementation	2-way SMP / up to two Server blade contains to and InfiniBand expansion	wo AMD 940 on card supp	micro PGA ZI ort, integrated	F sockets graphics a	four memory DIN nd dual ethernet	/IM slots, two	SCSI connectors,	Myrinet
Memory	1 or 2GB std / 16GB m PC3200 266MHz registe	ered 184-bin	ECC DDR VL	P SDRAM	RDIMMs / four D	IMM gold-co	onnector slots on sys	stemboard
	DIMMs must be installe Error Checking and C and detects 2- through	d in matched orrecting (E 8-bit errors o	I pairs [a bank] CC) via 16-bit contained in two	/ 2-way m Checksu o chips)	emory interleave m Chipkill™ (corr	/ dual channe ects 1, 2, 3,	el or 4-bit errors on s	ame chip
IDE controller/bays SCSI disk controller	None One integrated / LSI Lo on planar / supports R	ogic® 53C102	20 Ultra320 SC	SI controll	er [LVD 320MB/s	ec] / 64-bit 1	33MHz PCI-X Bus	B /
SCSI disk bays	drives / one 16-bit inte Supports max of two no 40-pin SCA-2 connecto	ernal channel ot hot-swap	l / no cables or 2.5" SL Ultra32	external of SCSI di	connector) sks	101-3Wap 2.5	/ Small form factor	(311)
Other controllers External storage	40-pin SCA-2 connector Support for SFF or legal Support for IBM TotalS	ors / all SCS acy Ethernet torage™ solu	I bays Ultra32 or Fibre Chan utions (includin	20-enable inel I/O ca g FAStT a	: rds, Myrinet or In nd NAS family of	finiBand Exp products)	pansion cards	
Mechanical Architecture / chipsets	Supported in IBM Blade AMD 8131 PCI-X Brido PCI-X expansion slots) HyperTransport clock (I	Center / Blace ge Chip prov / AMD 811 PCI, SMBus,	deCenter suppo viding two PCI- 1 HyperTransp , USB, LPC to	rted in 28" X buses r ort Bridg BIOS and	deep racks such unning at 600Mhz e Chip supportin Super I/O) / Nat	as the IBM No (bus A for S g a 200 Mhz ional Semico	NetBAY™ Rack prod SCSI and Ethernet, z double-pumped onductor® PC87417	ucts bus B for
Bus slots	Super I/O chip No PCI or PCI-X slots							
Ethernet controllers Network-interface	Two gigabit Ethernet cont / Alert Standard Format 1 switch or <i>Passthrough I</i> One connector for I/O 3 and 4 of BladeCenter	.0 / teaming a <i>Module</i> (the s expansion	nd failover supp second controll option (Fibre	ort / one of er requires Channel E	the dual controllers a second option xpansion Card) /	connects to a al switch or I requires sam	an optional, supporte PM) ne interface module	d Ethernet s in bays
DVD / diskette / USB Kybd / video / mouse Graphics	card) / ethernet and ser None / requests for DVD- None / requests for key SVGA / ATI® Radeon M	rial I/O expar ROM. diskette	nsion cărds plai e drive. and USE	nned for fu 3 port in Bla	iture release ²⁰ adeCenter by press	ina media sele	ect button on front co	ntrol panel
Systems mgmt	IBM integrated system H8S2148 / on blade / pmonitoring, event recorfor communication with	provides syst ding, alert ca	em and enviro apability / RS-4	nmental´ 185 interfa	Low Power Opte	ron 252 Proces ron 254 Proces	sor Upgrade sor Upgrade	25R8892 25R8893 25R8937 25R8894
Diagnostics	Light Path Diagnostic component) and on-box	s™ (LED lig ard diagnost	hts indicate fai ics (via PC-Doc	ling tor in BIOS		ron 280 Proces DR-SDRAMVLI	ssor Upgrade PRDIMM	25R8895 25R8896 39M5849
Security	Power-on password / a unattended boot / selection	administrator stable boot /	password / unattended sta	ırt mode	4GB(2x2GBkit) D 8GB(2x4GBkit) D IBM 36.4GB SFF	DR-SDRAMVLI Non-hot-swap	PRDIMM o 10K SCSI HD	39M5852 41Y2756 40K1037
Software ship group	Documentation CD, IBN	M Director C	D, Device Driv	er CD	IBM 73.4GB SFF AMD Opteron LS	S20 Low Profile	Handle	40K1038 25R7748
Cooling fans	Uses cooling from BladeO thermal sensors on each and front panel	processor an	d BladeCenter r	nodules	BladeCenter SC IBM SFF Fibre C IBM SFF Gigabit IBM HS20 Fibre	Channel Expan Ethernet Expa	sion Card ansion Card	26K4817 26K4841 26K4842 48P7061
Power supply Prerequisites	Uses power module(s) in Monitor, keyboard, mouse disk, BladeCenter (types	e for setup: et	héinet switch m	odule.	(U)	•		10. 7001

Server blade (side view)



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

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

Bay $\, @$ 2.5", 9.5mm, no front access, optional SFF SCSI disk Bay $\, @$ 2.5", 9.5mm, no front access, optional SFF SCSI disk

- Stealth black front bezel
- ⇒ 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

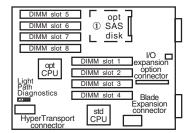
- 3 year parts and labor
- International Warranty Service³
- On site, 8 am 5 pm, Mon Fri coverage excluding holidays, next business day response time?
- On site service upgrade options (in eligible locations):7
 - 3 year IOR 9x5, 4 hr avg response (ServicePac® part num 41C5906)
 - 3 year IOR 24x7, 4 hr avg response (ServicePac part num 41C5907)
 - 4 year IOR 9x5, 4 hr avg response (ServicePac part num 41C5908)
 4 year IOR 24x7, 4 hr avg response
 - (ServicePacpartnum41C5909)

 5 year IOR 9x5, 4 hr avg response
 - 5 year IOR 9x5, 4 hr avg response (ServicePac part num 41C5910)
 - 5 year IOR 24x7, 4 hr avg response (ServicePac part num 41C5911)
 - Other ServicePac options at http://www.ibm.com/ services/us/its/pdf/wamomxeu.pdf
- 24x7¹⁴ toll-free support for warranty issues during the warranty period³

IBM [®] Type-model Qty x Pr	rocessor ¹	Speed/Core	L2 Cache	Watts	Memory	Disk controlle	Disk er bays	Expansi	on Units	I/O slots	Mechanical	Ethernet	Available date
7971-31U 1 x Opter 7971-3AU 1 x Opter 7971-51U 1 x Opter 7971-6AU 1 x Opter	ron 2212HE ron 2212 ron 2216HE	2.0GHz/DC	2MB 2MB 2MB 2MB	68W 95W 68W 95W	1GB 1GB 2GB 2GB	SAS SAS SAS SAS	1 fixed 1 fixed 1 fixed 1 fixed	I SIO/F I SIO/F I SIO/F	PCIEU PCIEU PCIEU PCIEU	up to 2 up to 2	single slot blade single slot blade	2 x Gigabit	Oct 2006
Positioning Processor(s) L2 Cache SMP support Implementation	Up to 2 x A 1MB L2 Ca 2-way SMI Systemboa connector,	AMD Opteron 2 ache per core, P / up to two ard contains two one HyperTra	2000 Se AMD I Opteron to LGA nsport E	ries Du Direct proce 1207-p xpans	ual Core a Connect ssors (sa bin socket sion conne	at up to 2 Archited me spee s, eight I ector, into	2.6GHz / cture er ed/cache DIMM sl egrated	/ simultar nsures love e size) lots, one graphics	eously s wer later Legacy l and Gig	Supports 3 ncy I/O Daughter gabit ether		omputing	xpansion
Memory	1 or 2GB s PC5300 66 DIMMs mu (ECC) via contained i	or 2GB std / 16GB max ¹³ (32GB max with 4GB DIMMS*) / two slots used / six slots available C5300 667MHz registered 240-pin ECC DDR2 VLP SDRAM RDIMMs / eight DIMM gold-connector slots on systemboard / IMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / Error Checking and Correcting ECC) via 16-bit Checksum Chipkill™ (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors ontained in two chips), hardware scrubbing											ard / ecting
IDE controller/bays SAS disk controller	None One integra fully popula	ated / LSI Logi Ited Storage a	c® 1064 nd I/O E	SAS o	controller ion blade	1.5/3Gb/s / no cab	sec] / Poles or ex	CI-X 64-b xternal co	oit/133Ml onnector	Hz / on pla	anar / supports F	RAID-1, 1E &	5 with
SAS disk bays External storage	One non he Support for	ot-swap 2.5" S ' IBM TotalSto	FF SAS rage™ s	disk / colution	Supports	up to th	ree hot-	swap SF	F SAS d	isks in op	tional Storage an	d I/O Expans	sion Unit
Mechanical Architecture/Chipsets	Single slot las ServerWor Card conner Bridge / HT	blade / Suppor rks [™] Chipset ector and Blac 1000 South E	ted in IB / HT200 de Stora Bridge p	M Blad 0 Hyp ge Exp provide	deCenter perTranspoansion c es: USB(2	8677, 87 port Sys onnector .0), ATI v	720, 873 stem I/O r, PCI-X video, D	30 and 88 Control bridge to ual GB e	52 I ler provi LSI 106 thernet,	ides: PCI- 34 SAS, H LPC bus t	Express bridge t yperTransport br to Winbond PC8	o Legacy Da idge to HT10 7427 for Sup	aughter 000 South er I/O
Bus slots	No PCI or	PCI-X slots (e	xpansio	n via n	nodules d	r networ	k-interfa	ice option	connec	tor)			
Ethernet controllers Network-interface	Dual gigabi chip on bla Standard F optional, su One legac 3 and 4 of	it 10/100/1000 de / PCI-X 64- ormat 1.0 / Lo ipported Ether y connector (BladeCenter /	Etherne bit 133M ad balar net swite or PCI-E all blade	t contr 1Hz buncing control 12th or 18 Express es in a	rollers / Br us / full-du or teaming Passthrou ss conne single Bla	roadcom [®] plex / TC g / Failove gh <i>Modu</i> ctor for adeCente	BCM5° CP/IP Offer, adap ale (the s I/O exp er must o	706S / tv floadEngi oter fault to second co contain the	vo full gione (TOE) olerance ontroller options and same	gabit ether / Wake (/ one of the requires of a requirement of a requi	met MAC and Phon LAN® / Serial he dual controller a second optiona same interface rocard (or no exp	HY layer function over LAN / And a connects to a connects to a switch or Plandules in but ansion card)	tions / Alert o an M) ays
DVD / diskette / USB Kybd / video / mouse Graphics	None / requ	uests for DVD- uests for keybo T® Radeon® R	oard, mo	ouse, a	and video	in Blade	Center I	by pressii	ng the di	splay butt	dia select button on on front contr	on front cont ol panel	trol panel
Systems mgmt	on blade / pevent recor	provides syste ding, alert cap ation with Blac	m and e ability /	nviron RS-48	mental m 5 interfac	iónitoring e for inte	Ι,	gement C	Dual Core Al Dual Core Al Dual Core Al	MD Opteron P MD Opteron P MD Opteron P	Processor Model 2212 F Processor Model 2212 Processor Model 2218H Processor Model 2218 ELS ECC DDR2 VLP RI	E	25R8898 25R8931 25R8899 25R8897 39M5861
Diagnostics	Light Path on-board d	Diagnostics iagnostics (via	™ (LED PC-Do	lights in	indicate fa BIOS)	ailing con	nponent	t) and 2	GB (2x1GE GB (2x2GE	B) PC2-5300 (B) PC2-5300 (CL5 ECC DDR2 VLP F CL5 ECC DDR2 VLP F	RDIMM Kit RDIMM Kit	39M5864 39M5867
Security		oassword / adı boot / unattend				ınattende	ed boot /	/	BM 36GB N	8) PC2-4200 (IHS 2.5" SFF IHS 2.5" SFF		DIMM Kit*	39M5870 26K5776 26K5777
Software ship group	Documenta	ation CD, Devi	ce Drive	r CD,	ServerG	uide CD					/OExpansionBlade nannel Expansion Card	l	39R7563 26K4841
Cooling fans Power supply	sensors on Uses powe Monitor, ke	ng from BladeC each process er module(s) in eyboard, mous	or and I BladeC e for set	BladeC enter up; etl	Center mo (types 86° hernet sw	odules an 77, 8720 vitch mod	nd front , 8730, ule,	ermal panel 8852)	BladeCenter QLogic iSCS Disco 4X Infi Disco 4X Infi	SFF Gigabit B I Expansion C niBand Switc niBand Expa	Ethernet Expansion Car Card for BladeCenter In Module for BladeCer Insion Card for BladeCe Inannel Expansion Card	d enter	39R8624 32R1923 32R1756 32R1760 26R0890
Prerequisitės	uisk, biade	Center (types	00//, 8	1∠U, 8	730, 8852	z), opera	urig sys	E	mulex4GB	SFF Fibre Ch	nannel Expansion Card		39Y9186

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

Server blade (side view)



- Stealth black front bezel
- ⇒ H 9.7" x W 1.14" x D 17.6"; H 24.5cm x W 2.9cm x D 44.6cm
- ⇒ 11 lbs; 5.0kg (max configuration)
 ⇒ Configuration/Setup Utility: F1 at startup
 ⇒ Diagnostics (PC-Doctor™): F2 at startup
 ⇒ Network Boot: F12 at startup
 ⇒ PXE Boot Agent Utility: Ctrl+S at startup
 ⇒ Plade control panel on each LS21 blade of

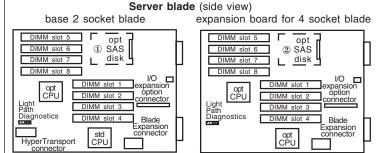
- ➡ Blade control panel on each LS21 blade provides media select button, keyboard/mouse/video select button, and indicators for blade error, information, location, disk activity, and power
- Predictive Failure Analysis® alerts on memory, processor(s), and optional disk(s) with IBM Director

LIMITED WARRANTY³

- 3 year parts and labor
- International Warranty Service³
- On site, 8 am 5 pm, Mon Fri coverage excluding holidays, next business day response time?
- On site service upgrade options (in eligible locations):7
 - 3 year IOR 9x5, 4 hr avg response (ServicePac®partnum69P9517)
 - 3 year IOR 24x7, 4 hr avg response (ServicePacpart num 69P6918)
 - 4 year IOR 9x5, 4 hr avg response (ServicePacpart num 69P5921) 4 year IOR 24x7, 4 hr avg response
 - (ServicePac part num 69P5922) 5 year IOR 9x5, 4 hr avg response (ServicePacpart num 69P9525)
 - 5 year IOR 24x7, 4 hr avg response (ServicePacpart num 69P9526)
 - Other ServicePac options at http://www.ibm.com/ services/us/its/pdf/wamomxeu.pdf
- 24x714 toll-free support for warranty issues during the warranty period³

Bay ① 2.5", 9.5mm, no front access, optional SFF SAS disk

IBM® Type-model Qty x Pr	ocessor¹ Speed	L2 /Core Cache	Watts	Memory co	Disk ontroller	Disk bays	Expansion	on Units	I/O slots	Mechanical	Ethernet	Available date			
7972-31U 1 x Optero 7972-32U 2 x Optero 7972-3AU 1 x Optero 7972-3BU 2 x Optero 7972-51U 1 x Optero 7972-52U 2 x Optero 7972-6AU 1 x Optero 7972-6BU 2 x Optero	on 8212HE 2.0GH on 8212 2.0GH on 8212 2.0GH on 8216HE 2.4GH on 8216HE 2.4GH on 8218 2.6GH	Hz/DC ZMB Hz/DC ZMB Hz/DC ZMB Hz/DC ZMB Hz/DC ZMB Hz/DC ZMB Hz/DC ZMB	68W 68W 95W 95W 68W 68W 95W	1GB 2GB 1GB 2GB 2GB 4GB 2GB 4GB	SAS SAS SAS SAS SAS	1 fixed 2 fixed 1 fixed 2 fixed 1 fixed 2 fixed 1 fixed 2 fixed	SIO/P SIO/P SIO/P SIO/P SIO/P SIO/P SIO/P	CIEU	up to 2 up to 2	single slot blade double slot blade single slot blade double slot blade single slot blade double slot blade single slot blade double slot blade	2 x Gigabit 4 x Gigabit 2 x Gigabit 4 x Gigabit 2 x Gigabit	Oct 2006 Oct 2006 Oct 2006 Oct 2006 Oct 2006 Oct 2006			
Positioning Processor(s) L2 Cache SMP support Implementation	Up to 4 x AMD C 1MB L2 Cache r 2 or 4-way SMP Systemboard cor	Opteron 8000 per core, AMI If up to four ontains up to fo	Series I Direct Opteror Our LGA	Dual Core a t Connect n processor 1207-pin s	at up to Architers (same sockets,	2.6GHz ecture e e speed up to si	: / simulta ensures I /cache s ixteen DI	aneously ower lat ize) IMM slot	v supports ency I/O s, up to tv	n platform with s 32-bit and 64-bit of wo Legacy Daught phics and Gigabit	omputing er Card con				
Memory	I JIIVIIVI AOIA-CONNA	ector slots on Checking an	system d Corre	ecting (EC	viivis mu C) via 1	ıst be in 6-bit C l	istalled ir 1ecksun	n matche n Chipk i	an naire ia	ade / (32/64GB ma ECC DDR2 VLP S bank] / 2-way me cts 1, 2, 3, or 4-bit	morv interies	ave / ana			
SAS disk controller SAS disk bays External storage	Up to two integra supports RAID-1 Up to two non ho sion Unit Support for IBM	I , 1E & 5 with ot-swap 2.5" S	fully po FF SAS	opulated St S disks / Su	troller 1.5 orage a upports	5/3Gb/s nd I/O E up to th	ec] / PCI Expansion ree hot-s	-X 64-bi n blade wap SF	t/133MHz / no cable: F SAS dis	/ on planar / suppo s or external conne ks in optional Stora	orts RAID 0, ector age and I/O	1 / Expan-			
Mechanical Architecture/Chipsets Bus slots	Single or double s ServerWorks™ (Legacy Daughter bridge to HT1000 PC87427 for Sup No PCI or PCI-X	Chipset / Up Card conned South Bridge	to two ctors an e / HT1	HT2000 H y Id Blade St 000 South	yperTra forage E Bridge	nsport xpansic provide	System on conne es: USB(2	I/O Cor ctor, PC 2.0), ATI	itrollers p I-X bridge video, Du	roviding: PCI-Expr to LSI 1064 SAS, al GB ethernet, LF	ress bridges HyperTrans PC bus to W	to sport inbond			
Ethernet controllers Network-interface	four full gigabit et over LAN / Alert : Up to two legac	hernet MAC a Standard For by connector	ind PH\ mat 2.0 or PC I	Y layer fund / Failover, I -Express (ctions / fi adapter connec	ull-duple r fault to tor for l	ex / TCP/ lerance / I/O expa	TP Offloa Remote I nsion c	adEngine (e Direct M e ptions / r	blade / Broadcom [®] Ethernet controllers TOE) / iSCSI / Wa emory Access (RI equires same inter on card (or no exp	ike on LAN® MA) rface module	/ Serial es in bays			
DVD / diskette / USB Kybd / video / mouse Graphics		for keyboard,	mouse,	, and video	in Blad	ėCenter	by pres	sing the	display bu	edia select button Itton on front contr	on front con ol panel	trol panel			
Systems mgmt	on blade / provide event recording, a communication v	es system an alert capabilit	d envird / / RS-4	onmental m 185 interfac	nónitorin ce for int	g,	gement	Dual Core Dual Core Dual Core	AMD Opteron AMD Opteron AMD Opteron	Processor Model 8212 H Processor Model 8212 Processor Model 8216HI Processor Model 8218	Ξ	25R8934 25R8932 25R8935 25R8933			
Diagnostics	Light Path Diagon on-board diagnos	nostics ™ (LE stics (via PC-	D lights Doctor i	s indicate fa in BIOS)	ailing co	mponer	nt) and	2GB (2x10 4GB (2x20	GB) PC2-5300 GB) PC2-5300	CL5 ECC DDR2 VLP RE OCL5 ECC DDR2 VLP R OCL5 ECC DDR2 VLP R	DIMM Kit DIMM Kit	39M5861 39M5864 39M5867 39M5870			
Security	No security intrus administrator pas unattended start	sword / unatt				oot /		IBM 36GB IBM 73GB BladeCent	GB (2x4GB) PC2-4200 CL4 ECC DDR2 VLP RDIMM Kit* M 36GB NHS 2.5" SFF SAS HDD MN 73GB NHS 2.5" SFF SAS HDD adeCenterStorage and VO Expansion Blade						
Software ship group	Documentation C	D, Device D	river CE), ServerG	uide CD)		BladeCenter SFF Fibre Channel Expansion Card 26K BladeCenter SFF Gigabit Ethernet Expansion Card 39PR QLoqic iSCSI Expansion Card for BladeCenter 32R							
Cooling fans Power supply Prerequisites	Uses cooling from sensors on each Uses power mod Monitor, keyboard disk, BladeCente	lûle(s) in Blad d, mouse for	eCente setup; e	r (types 86 ethernet sw	77, 872 vitch mo	0, 8730 dule,	, 8852)	Cisco 4X II Cisco 4X II QLogic 4G Emulex 4G	nfiniBand SwinfiniBand Exp BSFF Fibre C BSFF Fibre C	Card for BladeCenter tch Module for BladeCent ansion Card for BladeCent Channel Expansion Card for Channel Chan	nter orBladeCenter	32R1923 32R1756 32R1760 26R0890 39Y9186			



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

Bay $\ 2.5$ ", 9.5mm, no front access, optional SFF SAS disk Bay $\ 2.5$ ", 9.5mm, no front access, optional SFF SAS 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

- Network Boot: F12 at startup
- PXE Boot Agent Utility: Ctrl+S at startup
- Blade control panel on each LS41 blade server provides media select button, keyboard/mouse/video select button, ⇒ 11 lbs; 5.0kg (max configuration)
 ⇒ Configuration/Setup Utility: F1 at startup
 ⇒ Diagnostics (PC-Doctor™): F2 at startup
 ⇒ Predictive Failure Analysis® alerts on memory, processor(s),
 - and optional disk(s) with IBM Director

- 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® partnum12x7014)
- 3 year IOR 24x7, 4 hr avg response (ServicePacpartnum 12x7015)
- 4 year IOR 9x5, 4 hr avg response (ServicePacpartnum 12x7018) • 4 year IOR 24x7, 4 hr avg response
- (ServicePacpartnum 12x7019) • 5 year IOR 9x5, 4 hr avg response
- (ServicePacpartnum 12x7022)
- 5 year IOR 24x7, 4 hr avg response (ServicePacpartnum 12x7023)
- Other ServicePac options at http://www.ibm.com/ services/us/its/pdf/wamomxeu.pdf
- 24x714 toll-free support for warranty issues during the warranty period³

IBM [⊚] Type-model	Supported Blades		Switch modules std / max	Switch module	es (type)	Managemen modules std / max	modules		Blower modules std / max	Mechanica	Available I date
	0/HS40/JS20/JS21/LS20 0/HS40/JS20/JS21/LS20			t, Fibre Ch, IB, t, Fibre Ch, IB,			2/4 2/4	1300W 1300W	4/4 4/4	8U ⁴ rack 8U rack	Jul 2004 Mar 2006
Positioning Description	Flexible, innovative Provides common resexpansion, external F keyboard, video, mos Supports all blades	sources s libre Char use)	shared by bl nnel storage	lade servers su e switching and	connectivity,	, system m and I/O (co	anagemer ombo CD/I	nt, cabling DVD driv	g, etherno e, and po	et manage orts for USI	ment and B,
Blade bays	•••										
Switch modules	Std: none; max: four	hot-swa	p / rear acce	ess / Gb Etherr	net / Fibre Ch	annel / Infin	iBand / O _l	otical Pa	ss-thru / (Copper Pas	ss-thru
Advanced Management Module	Std: none; max: two communicates with in ports: DB-15 analog values and by up to 8 bla	tegrated video port	system mar , Dual USB	nagement proc	essor oń eacl	h server bla	ide / comp	lete KVI	/I switch	local function	onality /
Power modules	Std: two in bays 1 and C14 male appliance of management module power to switch bays	connector s, blade k	· / 1300 watt bays 1 - 4 ar	s / two std mod nd media tray; t	dules (in slots two addititiona	1 & 2) suppal power mo	ply power odules pro	to switch vide full s	bays 1 8	k 2, both	
Blower modules	Std: four; max: four / (CFM) / front to back	Calibrated airflow; fil	d Vectored (Itered air int	Cooling / hot-sw take	vap / redunda	ınt / variable	e speed / r	ear acce	ss / 330 (cubic ft per	min
Mechanical Optical / USB	EIA 19" rack models 24X-10X-24X-8X ⁶ Co blade servers / reque	mbo / Tw	o USB port	(Version 1.1) /	all USB inter	face (types	A & C) / fi	ont acce			eight
Keyboard / mouse	None standard / prov server blade front par	ides KVĺv	I console su	ipport / request	s for keyboar	d, mouse,	and video	by press	ing the d	isplay butto	on on
Ports	Rear: keyboard (PS/: Telco Alarm Panel Fr	2), mouse			phics (on sta	ndard mgm	it module)	/ no seri	al or para	ıllel ports /	DB-15
Security	Login password for re									/	
Ethernet	recommended in rack Each of the dual integ Module									GB Etherne	t Switch
Systems mgmt	Provides remote cons	sole and	mgmt / pow	er on/off blade	s/modules / n	nonitors po	wer status	operatir	ng system	n, temperat	ure, disks,
System LED panel	blowers, power modu System LED panel pr							vare			

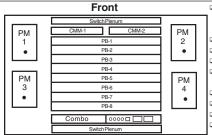
IBM BladeCenter T Advanced Management Module McData EFCM Element Managerfor BladeCenter IBM BladeCenter HS20 Low Profile Handle (800Mhz blade) IBM BladeCenter HS40 Low Profile Handle IBM BladeCenter T Filter NetBAY42 Enterprise Rack Cabinet Four Post Rack Mount Kit Two Post Rack Mount Kit

32R0835 32R1799 25K8360 25K8359 25K8376 930842S IBM USB Floppy Drive 32R0837 32R0836

IBM 1300W DC Power Supply Module (x2)
IBM APC Smart-UPS 5000RMB (208V)
IBM T115 15" Flat Panel Color Monitor (black)
BladeCenter PCI I/O Expansion Unit II
IBM DS4000 EXP700 Fibre Channel Expansion Unit 37L6861 494215U 25K8373 17001RS 05K9276

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

• Solutions available from IBM BladeCenter Alliance program partners



Rear KVM LAN 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

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

Bay	Switch Function
1 2	Ethernet link 1 for all blade servers Ethernet link 2 for all blade servers
3	Network connection 1 for all blade server
0	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

32R0833

3 year parts and labor
 International Warranty Service³

On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time7 On site service upgrade options (in

eligible locations):7

• 3 year IOR 24x7, 2 hr avg response
(ServicePac® part num 21P2065)

• 3 year IOR 24x7, 4 hr avg response

(ServicePac part num 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/ its/pdf/wamomxeu.pdf

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

IBM [®] Type-model Si	upported Blades		Switch modules std / max	Switch modu	ıles (type)		t Power modules std / max		Blower modules std / max	Mechanica	Available I date
8730-1RX All: HS20/F 8730-2RX All: HS20/F					B, OPM and CP B, OPM and CP		2/4 2/4	1300W 1300W	4/4 4/4	8U ⁴ rack 8U rack	Jul 2004 Mar 2006
Positioning Description	Flexible, innovative Provides common re expansion, external keyboard, video, mo	esources : Fibre Cha	shared by b	lade servers	such as power	r, system m	nanageme	nt, cablin	g, ethern	et manage	ment and
Blade bays	Supports all blades		S40/JS20/JS	621/LS20 an	d PCI I/O Expa	ansion Units	s / 8 hot-pl	uggable	server ba	ays / front a	iccess
Switch modules	Std: none; max: four	/ hot-swa	p / rear acc	ess / Gb Ethe	ernet / Fibre Ch	nannel / Infi	niBand / C	ptical Pa	ss-thru /	Copper Pa	ss-thru
Advanced Management Module	Std: none; max: two communicates with i ports: DB-15 analog shared by up to 8 bl.	ntegrated video por	system mai t, Dual USE	nagement pr	ocessor on eac	h server bl	ade / com	plete KVI	VI switch	local function	onality /
Management Modules	Std: one; max: two / controller / communiconnectivity / controller thernet remote mar	cates with s external	integrated Telco alarm	system mana panel / port	agement proces s: DB-15 analog	ssor on ead g video por	ch server b t, PS/2 ke	olade / m	ultiplexor	for console	Э
Power modules	Std: two in bays 1 ar IEC320 C14 male ar management module power to switch bays	opliance c es, blade l	onnector / 1: bays 1 - 4 a	300 watts / tv nd media tray	vo std modules /; two additition	(in slots 1 al power m	& 2) suppl odules pro	y power to vide full s	to switch	bays 1 & 2	, both
Blower modules	Std: four; max: four / (CFM) / front to back				swap / redunda	ant / variabl	e speed /	rear acce	ss / 330	cubic ft per	min
Mechanical Optical / USB Keyboard / mouse Ports	EIA 19" rack model 24X-10X-24X-8X° Corequests for optical (None standard / proserver blade front parameter keyboard (PS) Telco Alarm Panel Front: Two USB (Ve	ombo / Tv CD, and U vides KVN nel /2), mous	vo USB port ISB port(s) to Indicate the state of the stat	(Version 1.1 by pressing Cupport / reque) / all USB inter D select buttor ests for keyboa	rface / front n on blade rd, mouse,	access / s server fror and video	shared by nt panel by press	up to ei	display butto	on on
Security Ethernet	Login password for recommended in rac Each of the dual inte	k environ	ment provid	ing security	through lockabl	e doors or	other seci	urity mea	sures		n Module
Systems mgmt	Provides remote con blowers, power mod								ng syster	n, temperat	ture, disks,
System LED panel	System LED panel p		ower-on, loc	ation, critical	major and mir	nor alarm co	onditions				
McData EFCM Eleme	ilter Rack Cabinet nt Kit	Center	blade)	32R0835 32R1799 25K8360 25K8359 25K8376 930842S 32R0837 32R0836	IBM 1300W A IBM APC Sm IBM T115 15' BladeCenter IBM DS4000 IBM USB Flo Other option Solutions av	art-UPS 50 ' Flat Panel PCI I/O Exp EXP700 Fi ppy Drive ns at ibm.o	00ÖŘMB (2 Color Mo pansion Ur bre Chann com /produ	208V) ´nitor (blac nit nit nel Expan	sion Unit		32R0834 37L6861 494215U 25K8373 17001RS 05K9276
	ront vitchPlenum		imensions: H	13.76"(8U) x W	17.4" x D20"(fron	t bezel to rea	r I/O);	LII	MITED	VARRAN	ГҮ ³

2 PB-2 PB-4 ΡМ 4 PB-6 PB-7

Rear

- **KVM** LAN
- Bay Switch function Ethernet link 1 for all blade servers 2 Ethernet link 2 for all blade servers Network connection 1 for all blade server I/O expansion options (Gb Ethernet/Fibre) 4 Network connection 2 for all blade server I/O expansion options (Gb Ethernet/Fibre)

Access server blades, power supplies, mgmt modules, media tray and expansion units from front

- 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
 - 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-1.ibm.com/services/ us/its/pdf/wamomxeu.pdf 24x7¹⁴ toll-free support for warranty issues during the warranty period3

H349.5mmxW441.9mmxD508mm

Weight: 98 to 192 lb; 44.5 to 87.38kg Stealth black color bezel

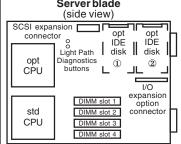
Access switch modules and blowers from rear Fits into Standard Central Office environments

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

Tool-free customer serviceability

Air Intake Filtering

IBM® Type-model Qty x Pro	ocessor ¹ Memory	Frontside Bus Mhz	L3 Cache I	Disk Disk controlle	Disk r bays	SCSI suppo optional store		Slots x bays	Mech- anical	Required chassis	Available date
8832-GTX 1 x Xeor 8832-9TX 1 x Xeor		533Mhz 533Mhz				2 HS Ultra3: 2 HS Ultra3:		0x2 0x2		BladeCenter T BladeCenter T	
Positioning Processor(s) L2/L3 Cache SMP support	Ultra-dense, highly 1 x Intel® Xeon 2. 512KB L2 Cache / 2-way SMP / up to	5 HGz or : 0 - 2MB l	3.2GHz ∟3 Cach	with 533MHz ne / on die of	frontside processo	bus / Hyper r / at process	-Threadi	ng tec		NetBurst™ archi	tecture
Implementation	Server blade conta one SCSI expansio										
Memory	IGB std / 8GB max ¹³ / two slots used / two slots available / PC2100 266MHz registered 184-pin ECC DDR-SDRAM DIMMs / four DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / memory bus runs at 2 x 100MHz / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips)										
IDE controller/bays SCSI disk controller	Enhanced IDE AT. IDE disk / no cable disks / space for control of the s	e as IDE d only one ID optional S / LSI Logi ge (IMB2 b	lisk atta E disk CSI Sto c® 53C1 ous to H	iches to riser if an I/O expa orage Expan 1020 Ultra320 lost Bridge) /	card and ansion op sion Un SCSI co supports	tray (include otion installed it (a blade o ontroller [LVI : RAID-1 mi	ed with od d [Fibre occupying D 320ME irroring	option Chanr g adjad S/sec] [Embe	kit) / Supp lel] / RAID cent blade / 64-bit 13 edded Mirr	orts max of two -1 mirroring someous slot / connects 3MHz PCI-X Bound oring] with two	tandard to HS20 us B from hot-swap
SCSI disk bays	Supports max of tw 80-pin SCA-2 conn	/o hot-swa∣ iectors / all	p 3.5" SI SCSI b	L Ultra320 SC ays Ultra320	SI disks -enabled	in optional S0 I	CSI Stora	age Ex			,
External storage	Support for IBM To						· ·				
Mechanical Architecture / chipsets Bus slots	ServerWorks® Gr one CIOBE-S I/O ethernet and the I/ LPC bus to Super	Supported in IBM BladeCenter (type 8677) / BladeCenter supported in 28" deep racks such as the IBM NetBAY™ Rack products ServerWorks® Grand Champion™ 4.0 LE / CMIC LE Host Bridge (memory controller and I/O Bridge) / single slot one CIOBE-S I/O Bridge (IMB2 bus to Host Bridge) for two PCI-X Buses with Bus A for ethernet and Bus B for ethernet and the I/O expansion option connector / CSB6-U South Bridge (Thin IMB to Host Bridge) for EIDE, USB, LPC bus to Super I/O, and PCI 2.2 Bus C with graphics controller / National Semiconductor® PC87417 Super I/O chip No PCI or PCI-X slots (expansion via modules or network-interface option connector)									
Ethernet controllers 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 / tea Passthrough or I/O expa enter / all b d serial I/O CD-ROM, keyboard,	aming ar h Modulansion (blades ir deskette mouse,	nd failover supple (the second option (Fibre a single Bladsion cards plads drive, and US and video in E	oort / one d controll Channel deCenter anned for BB port in BladeCen	of the dual co er requires a Expansion (must contain future release BladeCenter ter by pressin	ontrollers on second Card) / ron the sar se ²⁰ by pressing the dis	connection option option equire ne expense continuity of the continuity of the continuity of the connection option	ets to an opinal switch is same into cansion can	ional, supported or OPM) erface modules rd (or no expan ton on front con	d Ethernet s in bays sion
Systems mgmt Diagnostics	IBM integrated sy H8S2148 / on bladd monitoring, event r for communication Light Path Diagno component) and or	stem mana e / provides ecording, a with Blade ostics™ (LE	agemer s system dert cap Center n ED lights	nt processor n and environr ability / RS-48 management r s indicate failir	(ISMP) / mental 5 interfac nodule ng	Xeon 3. Proc Ul 512MB 1GB PC 2GB PC	.2Ghz/51 pg PC2100 C2100 CL C2100 CL	2KB L CL2.5 2.5 E(2.5 E(CC DDR-SE	SDRAM DIMM DRAM RDIMM DRAM RDIMM	13N0650 33L5038 33L5039 33L5040
Security	Power-on passwor				t modo	IBM HS	320 Fibre	Chan	nel Expans	ion Unit (blade sion Card (with t	wo
Software ship group	unattended boot / s Documentation CD					IBM HS	320 40ĠI	3² 540	7 rpm ATA		48P7063
Cooling fans Power supply Prerequisites	Uses cooling from sensors on each p front panel Uses power modu Monitor, keyboard disk, BladeCenter	orocessor lle(s) in Bla , mouse fo	and`Bla adeCen or setup	adeCenter mo ter (type 867 ; ethernet sw	dules an 7) itch mod	36.4GB 73.4GB 146.8GI	15K Ultr 10K Ult B 10K U	a320 S ra160 Itra320	SCSI Hot-S SCSI Hot-S SCSI Hot- Storage Ex	Swap SL HDD* wap SL HDD* Swap SL HDD* Swap SL HDD* pansion Unit	
	Server blade Bay ① 3.5", 9.5mm, no front access, optional ThinkPad DE disk (side view) Bay ② 3.5", 9.5mm, no front access, optional ThinkPad DE disk Bay ② 3.5", 9.5mm, no front access, optional ThinkPad DE disk Bay ② 3.5", 9.5mm, no front access, optional ThinkPad DE disk Bay ② 3.5", 9.5mm, no front access, optional ThinkPad DE disk Bay ② 3.5", 9.5mm, no front access, optional ThinkPad DE disk Bay ② 3.5", 9.5mm, no front access, optional ThinkPad DE disk Bay ② 3.5", 9.5mm, no front access, optional ThinkPad DE disk Bay ② 3.5", 9.5mm, no front access, optional ThinkPad DE disk										
(side vi	ew) E	3av ② 3.5".	9.5mm.	no front acces	s. option	al ThinkPad I	IDE disk		ternationa	I Warranty Serv	ice ³



- 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[®]

FSB

Available

Mech-

slots

Type-GAV Processor	GHz ¹	cache MHz	Memory	Disk	DISK controller	Diskbays	optio	nal sto	r exp unit	x bays	anical	Ethernet	date
8843-LTy 1 x Xeon ^T 8843-4Ty 1 x Xeon	[™] 2.8 Low Vol 3.6GHz										7U ⁴ blade 7U ⁴ blade	2 x Gigabit 2 x Gigabit	Feb 2005 Feb 2005
Processor(s) SMP - L2 Cache Implementation	1 x Intel® Xec Threading teo 2-way SMP / Systemboard expansion opt	hnology / Lo up to two Xe contains two	w Voltage eon Proce Intel 604	e Procc essors (I-pin mi	essors re same spe cro-PGA	duce heat ed/cache ZIF socke	output size) / ts, four	for inc 1 MB DIMM	rèased ra	rk densi	tv without in	creased cool	ina canacityl
Memory	512MB/1GB s PC2-3200 400 installed in ma	OMHz CL2.5	ECC DD	R2-SDI	ram dim	Ms / four	240 pir			slots on	systemboar	d / DIMMs m	ust be
SCSI disk controller SCSI Disk bays External Storage	PCI-X / support channel: one : Two 2.5-inch disks in option Support for IB	orts RAID-1 & 2-drop 16-bit Small Form	68-pin L\ Factor (oring (: /D SCS (SFF) L	supported SI cable JItra320 in	in 32-bit I ternal fixe	egacy I d disk I	mode d bavs / :	only) / "On Supports :	ie 16-bit i max of ti	channel (on wo hot-swar	e internal) / <i>Ir</i> o 3.5" SL Ultra	: 100MHz nternal a320 SCSI
Mechanical Architecture/Chipset BUS slots	7U Blade / Su Intel E7520 c BUS / ICH5R interface No PCI or PC	hipset / E75 supports US	25 MCH B (1.0) / L	(Memo SI 102	ry Control 0 / Dual E	ler Hub) fo Broadcom	or PCI-1 5704S	/ Low F	Pin Count	o PXH, IO Interface	CH5R / PXI e / NS PC87	H BUS suppo 366 Super I/0	rts PCI-X O off LPC
Ethernet Network Interface CD / Diskette / USB Kybd / video / mouse Graphics controller													
Systems Mgmt Diagnostics	IBM Baseboa recording, ale intermanagem Management Light Path D	rt capability / nent commur module iagnostics ™	RS-485 i lication w (LED lial)	nterface ith Blac hts indi	e for leCenter cate failin	a	Xeon	1 2.8 GI	Hz/800/1N	//B Low \	Volt EM64T	Proc Upg	13N0699
Security	component) a BIOS) No security in administrator	trusion prote	ction / Po	wer-on	passwor		Xeon 512N 1GB	1 3.6 GI MB (2x2 (2x512	Hz/800/11 256) PC2- 2) PC2-32	ЛВ L2 Са 3200 EC 00 CL3 I	ache EM64 ⁻ CC DDR2 ECC DDR2	F Proc Üpg oK RDIMM K oK RDIMM K	13N0659 73P3522 73P3522 it 73P2866
Software ship group	selectable boo Documentatio	ot / unattende	ed start m	ode			│ IBM : │ IBM	36.4GE 73GB 1	3 10K Ultra 10K Ultra	a320 SC 320 SCSI	SI 2.5"SFF 2.5" SFF N	NHS HDD	it 73P2867 90P1312 90P1313
Cooling Fans Power supply(s) Prerequisites	Uses cooling sensors on ea front panel Uses power n Monitor, keyb disk, BladeCe	ach processonodule(s) in I oard, mouse	or and Bla BladeCen for setup	ideCen iter T (t ; etherr	ter modul ype 8720/ net switch	es and /30)	Blade Blade Blade Blade 17-in	eCente eCente eCente eCente eCente ch Flat	r SCSI Stor r SFF Fibror r SFF Gig r Optical I r SCSI Stor Panel Mc	orage Ex re Chanr Jabit Ethe Pass-thru orage Ex Onitor Col	p Unit nel Exp Card ernet Exp Ca	d ard it US Kybd	26K4817 26K4841 26K4842 02R9080 26K4817 17231UX

Disk

SCSI Support with

Server blade (side view) SCSI expansion اك opt SFF opt S | SFF | SFF | SFF | SFF | SFF | L Diagnostics opt 2 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

- 12 lbs; 5.4kg (max configuration)
 Configuration/Setup Utility: F1 at startup
 Diagnostics (PC-Doctor™): F2 at startup
 System Partition Boot: ALT+F1 at startup

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

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

- 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

Frontside

L3

IBM[®]

Required

Available

Mech-

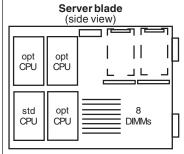
Type-model Qty x Pro	ocessor ¹ Cache Memory	BusMhz	Disk controller		ptional exp. unit	x bays	anical	chassis	date			
8839-6TX 1 x Xeon ^T	™ 2.8GHz MP 2MB 2GB	400Mhz	None None	None	2 H-S Ultra320	0x2	8U4 blade	BladeCenter T	Mar 2004			
Positioning Processor(s) L2/L3 cache SMP support Implementation	Ultra-dense, highly mana Up to 1 x Intel® Xeon 2.8 512KB L2 Cache / 2MB 4-way SMP / up to four > Server blade contains for one SCSI expansion contains	GHz MP v L3 Cache (eon MP l ir Intel 604	with 400MHz fro / on die of pro Processors (sar 4-pin micro-PG	ontside bus cessor / at me speed/c A ZIF sock	/ Hyper-Threadi processor spee ache size) ets, four memor	ng techr d y DIMM	nology / Noslogy	etBurst™ microa				
Memory	2GB std / 16GB max ¹³ / two slots used / six slots available / eight total slots PC2100 266MHz registered 184-pin ECC DDR-SDRAM DIMMs / four DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / memory bus runs at 2 x 100MHz / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips) / memory can be mixed											
SCSI disk controller	None / supports options via one connector / LSI L CIOB-ES I/O Bridge (IME 3.5" one-inch high SL SC Supports max of two hot-s 80-pin SCA-2 connectors	ogic® 530 32 bus to SI disks i wap 3.5" (all SCSI)	C1020 Ultra320 Host Bridge) / n front bays / c SL Ultra320 SC bays Ultra320-	SCSI cont supports I one 16-bit i SI disks in o enabled	roller [LVD 320] RAID-1 mirrorir nternal channel optional SCSI St	MB/sec] ng [Emb / no cal corage E	/ 64-bit 1 edded Mi oles or ex xpansion	33MHz PCI-X rroring] with tw ternal connector	Bus B from o hot-swap			
External storage	Support for IBM TotalStor	age™ solu	tions (including	FAStT and	NAS family of p	roducts)						
Mechanical	Supported in IBM BladeCe ServerWorks® Grand Cl	nter (type 8	8677) / BladeCe	nter support	ted in 28" deep ra	cks sucl	n as the IB	M NetBAY™ Rad	ck products			
Architecture / chipsets Bus slots	sone CIOB-X2 I/O Bridge ethernet and the I/O expa bus to Super I/O, and PO No PCI or PCI-X slots (e	(IMB2 bus ansion opt I 2.2 Bus	s to Host Bridge ion connector / C with graphic	e) for two F ' CSB6 Sou s controlle	PCI-X Buses wit uth Bridge (Thin r / National Sem	h Bus A IMB to niconduc	for ether Host Brid ctor® PC87	net and Bus B ae) for EIDE. U	JSB. LPC			
Ethernet controllers	Four gigabit 10/100/1000 et Wake on LAN® / Alert Stand 4-port GB Ethernet Switch	nernet cont dard Forma	trollers / Intel 825 tt 1.0 / teaming a	545GM/8254 and failover s	6EB / on blade / support / one of th	two PCI- ne contro	X 64-bit 10	ects to an optiona	al			
Network-interface	Two connectors for I/O ex of BladeCenter / all blade ethernet and serial I/O ex	cpansion c s in a sing	option (Fibre Ch le BladeCenter	nannel Expa must cont	nsion Card) / req ain the same ex	uires sar	ne interfac	e modules in ba	ys 3 and 4			
	None / requests for CD-RC None / requests for keyboa SVGA / ATI® Radeon 700	M, diskett ırd, mouse	e drive, and US , and video in B	B port in Bla ladeCenter	adeCenter by pre by pressing the	display b	outton on fi					
Systems mgmt	Intel integrated Baseboa / on blade / provides sys event recording, alert car communication with Blad	em and each	nvironmental n RS-485 interfac	nonitòring, ' e for	512MB PC210 1GB PC2100 (0 CL2.5 CL2.5 E0	ECC DDR	roc Upg R-SDRAM DIMM DRAM RDIMM DRAM RDIMM	13N0653 33L5038 33L5039 33L5040			
Diagnostics	Light Path Diagnostics component) and on-board	^M (LED lig	hts indicate fai	ling	IBM HS40 SC IBM HS40 Fib	SI Stor	ge Expans	sion Unit (blade Insion Card (wi	e) 26K4847 th two			
Security	Power-on password / ad unattended boot / selecta	ble boot /	unattended sta	art mode	ports; each port requires a FC Switch Module) 48P7061 IBM HS40 40GB ² 5400 rpm ATA-100 HDD 48P7063 36.4GB 15K Ultra160 SCSI Hot-Swap SL HDD* 06P5766							
	Documentation CD, IBM				」36.4GB 15K U	Itra320 S	SCSI Hot-S	Swap SL HDD*	06P5776			
Cooling fans Power supply Prerequisites	Uses cooling from BladeC on each processor and Bl Uses power module(s) in Monitor, keyboard, mous disk, BladeCenter (type 8	adeCenter BladeCe e for setu	modules and f nter (type 8677 p; ethernet swi	ront panel 7)	1 146.8GB 10K Ultra320 SCSI Hot-Swap SL HDD* 32P072 * Disk requires SCSI Storage Expansion Unit							

Disk

SCSI support with

Slots

Disk



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

- 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

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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