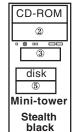


http://www-1.ibm.com/servers/eserver/education/cust/xseries/xref.html

IBM®Machine Type Model Procce	ssor Speed¹/Core		SB Hz Memory	Disk	Disk controller	Maximum Capacity	Slots x bays	Hard disk bays	Ethernet	Available date
8486 - E1x Celeron® 8486 - E2x Celeron 8486 - E3x Pentium® 8486 - E4x Pentium 4 8486 - E5x Pentium 4 8486 - E5x Pentium 4	D 326 2.53GHz D 326 2.53GHz 4 521 2.8GHz/SC 4 531 3.0GHz/SC 4 541 3.2GHz/SC 4 551 3.4GHz/SC	256KB 53 256KB 53 1MB 80 1MB 80 1MB 80	33 256MB 33 512MB 00 512MB 00 512MB 00 512MB 00 512MB	80GB 80GB 80GB 80GB 80GB 80GB 80GB	SATA SATA SATA SATA SATA SATA SATA	500GB 500GB 500GB 500GB 500GB 500GB 500GB	4 x 5 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 2 fixed 2 fixed	Gigabit Gigabit Gigabit Gigabit Gigabit Gigabit Gigabit	Sep 2005 Sep 2005 Sep 2005 Sep 2005 Sep 2005 Sep 2005 Oct 2005
Positioning Processor(s)  L2 cache Implementation  SMP support	Uniprocessor, entry Intel® Pentium 4 up Celeron D 2.53GHz 1MB std on Pentium Motherboard contain PCI), integrated SAT No SMP support / no	to 3.4GHz 533MHz FS 4 / 2x1MB s s one LGA- A and Gigal	Single Core to BB / All Optimestd on Pentiume 775 socket, footit Ethernet.	800MHz F nized for n D / 256K	SB / Pention Extended In Exten	um D 2.8GH Memory 64 nax on Celer	<b>z Dual</b> <b>Techno</b> on / EC	logy (EM C / full spe	<b>64T)</b> eed	
Memory	256MB or 512MB / 86 SDRAM / All Error C Latency 4 (CL4)									
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 / Ser	k-100 / integr controller ( ables (to CD rpm / 9.0 ms	rated in I/O Co 1.5GB/sec) / s -ROM) / one <sup>-</sup> s seek / S.M.A	ntroller H supports 2 I-drop SA .R.T.	ub / one cor drives star	nnector on pl ndard	anar <sup>'</sup>			
Rack support Bus slots (see below) Chipset	None One PCI E bus / one Intel E7230 chipset MAC, USB, Low Pin keyboard, mouse	/ Memory C	Controller Hub	(MCH) / I/	O Controlle	r Hub (ICH-7	7) for P(	CI 2.2, AT.		
Ethernet  CD-ROM / diskette Ports  Diagnostics Systems mgmt	10/100/1000 gigabit (PXE) / Wake on LA Some: CD-ROM: 48 Front: two USB (Ver monitor (analog DB- Diagnostic LEDs / erro None	N® X-20X <sup>6</sup> CD- 2.0); <i>Back</i> 15)	ROM, IDE; so two serial (9-	me: CDR pin), para	W/DVD-RO llel, two USI	M Combo:48 B (Ver 2.0),	8X/32X/ keyboar	/48X/16X <sup>6</sup> rd, mouse,	/ None state ethernet (	andard RJ-45),
Graphics controller	ATI® RN50(ES1000) /	16MB SDRA	M std/max / on	planar / ar	nalog 15-pin	/ up to 1600 x	1200 x	32 bit @10	00Hz	
Security	Optional U-Bolt support via knockout / power-on password / boot sequence control / operation without keyboard/mouse/display									
Software	ServerGuide™ (CD- installation and conf Director (system ha	iguration too	ol) included an	d IBM	2x1GB PC 2x2GB PC	C2-4200 CL3 C2-4200 CL3 C2-4200 CL3	ECC E	DR2 Rob DR2 Rob	IS IS	30R5148 30R5149 30R5150
Keyboard / mouse Cooling fans Power supply	Three variable speed fans (cpu heatsink, rear, power supply) / not redundant / not hot-swap 310 watts / universal / manual switching / Automatic Server Restart (ASR) / not hot-swap /no redundancy / cooling fan in power supply (variable speed)  IBM 160GB SATA-150 (7.2K) simple-swap HDD 39M 48X/322X/48X/16X Max <sup>6</sup> CD-RW/DVD (black) 32R HBM 160GB SATA-150 (7.2K) simple-swap HDD 39M 1BM 250GB SATA-150 (7.2K) simple-swap HDD 39M									39M4500 39M4504 39M4508 32R2905 32R2906 05K9276 71P9145 59P6746



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

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

→ Removable left side panel

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

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

→BTU Outpuṫ:

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



LIMITED WARRANTY<sup>3</sup>

→ 1 year parts and labor

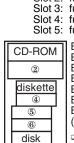
→ International Warranty Service<sup>3</sup>

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

On site service upgrade

- options (in eligible locations):<sup>7</sup>
   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
- 24x7<sup>14</sup> toll-free support for warranty issues during the warranty period

_	-		<sup>™</sup> xSeries							xREF by	y eServe	r Field Skills I	Enablem	ent Team
			se "x" should be re	placed with			de.							
	I® Mach GAV		Processor	GHz <sup>1</sup>	L2 cache	FSB MHz	Memory	Disk		Maximum er Capacity	PCI slots x bays	Hard disk bays	Ethernet	Available date
8482 8482		11X 14X	Pentium 4® Pentium 4	2.8 2.8	1MB 1MB	800 800	512MB 512MB	None 36.4GB U320	SCSI	440.4GB 587.2GB	5 x 7	3 hot-swap 4 fixed		Apr 2004 Apr 2004
8482		15X	Pentium 4	2.8	1MB	800	256MB	None	SATA	320GB	5 x 7	2 simple-swap		
8482		21X	Pentium 4	3.0	1MB	800	512MB	None	SCSI	440.4GB	5 x 7	3 hot-swap		Apr 2004
8482 8482		24X 25X	Pentium 4 Pentium 4	3.0 3.0	1MB 1MB	800 800	512MB 256MB	36.4GB U320 None	SCSI SATA	587.2GB 320GB	5 x 7 5 x 7	4 fixed 2 simple-swap		Apr 2004 Apr 2004
8482	9Mx	91X	Celeron®	2.4	128KB		256MB	80GB SATA	SATA	320GB	5 x 7	2 simple-swap	Gigabit	Apr 2004
8482 8482		31X 34X	Pentium 4 Pentium 4	3.2 3.2	1MB 1MB	800 800	512MB 512MB	None 36.4GB U320		440.4GB 587.2GB	5 x 7 5 x 7	3 hot-swap 4 fixed		Jun 2004 Jun 2004
8482		35X	Pentium 4	3.2	1MB	800	256MB	None	SATA	320GB	5 x 7	2 simple-swap		
Position Proce	oning essor(s	s)						eet small busii n 800MHz fron				at 2.4GHz		
L2 ca	che `		Up to 1M	IB std a	nd max /	ECC /	full speed	d		` ,			F	201 -1-4-
ımpıer	mentat	lion										r DIMM sockets aphics controlle		CI SIOTS,
SMP :	suppo	rt					upgrade							
Memo	ory											PC3200 support SDRAM (models		nodels /
			All Error	Checkin	g and Co	orrecti	ng (ÈCC) /	DIMMs and EC	C memory	controller /	industry	std / unbuffered	/	
						•					added ir	n matched pairs	[a bank]	
		ontrolle ntroller						<b>ntroller</b> (LVD 3 O Controller Hu			n nlanar			
		controll	er <i>Some:</i> d	ual chan	nel SAT	A-150	controller	(150MB/sec)			•			
Cable	s											: two 1-drop SA		
Disk RAID	Contro	oller										om / 9.0 ms / <i>Al</i> upports ServeF		
	suppo						er-to-rack		M 1-11 00M	II - 0 0 - D(	N. V. alata	/ In In	A -45 TM -F	201 -1-4-
Chips		ee beic										/ no hot-swap / PCI 2.2 and PCI		
			EIDE, eth	nernet M	AC, USE	3, Lów	Pin Count	t Interface / Fire	nware Hu	ib / SMSC	PC47	M192 Super I/O	for diske	ette,
Etherr	net		parallel, :					nar / full duplex	/ DHV an	nd MAC lav	ore /			
Luicii	ici		Preboot 6	eXecutio	n Enviro	nment	(PXE) / W	/ake on LAN® /	Alert Star	ndard Forn				
CD-R0 Ports	OM / o	diskette						kette: 3.5" 1.44			0) kovbo	ard, mouse, et	hornot (E	1 45)
FUILS			monitor (			Dack	. two send	ai (9-piii), paiai	iei, two o	SD (Vei 2.	o), keybo	aru, mouse, et	nemet (r	10-40),
	ostics	amt cnt										BM Enhanced D	Diagnostic	s CD
Oystei	ilis ilig	giii Ciii						ure, fan speed <b>or Adapter II</b>				monitoring and	d control)	
Graph	nics co	ntrolle	SVGA / A	TI® 7000	M / 16ME	SDR/	AM std/max	(/				DDR UDIMM		06P4053
0 -							Ŭ	pin D-Sub conn	1GB PC	2700 CL2	5 ECC [	C DDR UDIMM DDR UDIMM		06P4054 06P4055
Secur	ity							J-Bolt support sequence				DDR UDIMM		06P4049
							oard/mou					C DDR UDIMM DDR UDIMM		06P4050 06P4051
			cover tar	nper det	ect swite	ch .			IBM 800	GB 7200 rp	m simpl	e-swap SATA-		73P8002
Softwa	are							etwork OS				t-swap U320 F D-RW/DVD (bla		32P0726 22P6973
							ol), IBM D re) and m	irector nany utilities	IBM Rer	mote Supe	rvisor Ad	dapter II (PCI a		59P2984
Kevbo	oard /	mouse	. ,				ouse (both			x20D Tow veRAID-6i				09N4300 13N2190
	ng fans		Three far	ns (fansi	nk, rear,	pwr si	upply) plus	s additional fan	IBM Ser	rveRAID-7	T Contro	ller		71P8648
Power	r supp	lv					/ not hot-	swap natic Server				Tape Drive al Half-High Tap	ne Drive	48P7042 24P2398
	. сарр	. ,					o redunda		IBM Net	BAY11 Sta	andard F	ack Cabinet		9306110
							iable spee		Other o	ptions at	ibm.com	n/pc/us/accesso	ories	
			ize, 64-bit 66				♦	Removable left	side nane	el.	- 4 · · ·	LIMITED WA	RRANT	<b>Y</b> 3
			ize, 64-bit 66 ize, 32-bit 33					Configuration/S	Setup Utilit	ty (in flash	✓ I yea ✓ Inter	ar parts and labe national Warrar	nty Servic	<b>e</b> <sup>3</sup>
	Slot	4: fulls	ize, 32-bit 33	BMHz, P	CI 2.2 (5	iv)		memory) invoke startup	ed by pres	ssing F1 at	On s	ite, 8 am-5 pm,		
	Slot	5: fulls	ize, 32-bit 33	BMHz, P	CI 2.2 (5	v)		Advanced Conf	iguration F	Power		Fri excluding h business day re		ime



Mini-tower

Stealth

black

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

Metal cage for disk bays 5,6,7 rotate out of chassis for easy access for cabling backplane or working with disks Predictive Failure Analysis on disk(s) with IBM Director can alert the administrator of Advanced Configuration Power Interface (ACPI) 1.0

Device Drivers and Diagnostics CD-ROM included

Four stabilizing feet

⇒ 35 to 42 pounds (15.9 to 19.1kg)

Maximum SATA capacity: 320GB<sup>13</sup> (2 disks x 160GB) Maximum hot-swap SCSI capacity: 439.2GB13 (3 disks x 146.4GB) Maximum fixed SCSI capacity: 585.6GB<sup>13</sup> (4 disks x 146.4GB)

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

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

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

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

Other ServicePac options at http://www.ibm.com/ services/us/its/pdf/wamomxeu.pdf 24x7<sup>14</sup> toll-free support for warranty issues during the warranty period

an imminent componet failure See footnotes for important warranty information US models announced March 16, 2004 (1xx, 2xx) or June 8, 2004 (3xx)

For GAV	systems, lov	vercase"\	/" should be replaced	withac	ountry-sp	ecific cod	e.					-	the second	and the same
	l® Machine GAV mo		Proccessor	GHz <sup>1</sup>	L2 cache	FSB MHz	Memory	Disk	Disk controller	Maximum Capacity	x bays	Hard disk bays	Ethernet	
8482 - 8482 -	4My -41 4Ry -442 4Sy -452 5My -51 5Ry -542 5Sy -552	x Pen	tium 4® EM64T tium 4 EM64T tium 4 EM64T tium 4 EM64T tium 4 EM64T tium 4 EM64T	3.2 3.2 3.4 3.4 3.4	1MB 1MB 1MB 1MB 1MB 1MB	800 800 800 800 800 800	512MB 512MB 256MB 512MB 512MB 256MB	None 36.4GB U320 None None 36.4GB U320 None	SATA	440.4GB 587.2GB 500GB 440.4GB 587.2GB 500GB	5 x 7 5 x 7 5 x 7 5 x 7 5 x 7 5 x 7	3 hot-swap 4 fixed 2 simple-swap 3 hot-swap 4 fixed 2 simple-swap	Gigabit Gigabit Gigabit Gigabit Gigabit Gigabit	Aug 2004 Aug 2004 Aug 2004 Jan 2005 Jan 2005 Jan 2005
L2 cad	ssor(s)	l	Intel® Pentiur Up to 1MB st	<b>n 4 3</b> d and contai	<b>3.2 &amp; 3</b> I max / ins one	. <b>4 Ghz</b> ECC / m478	with 800 full speed PGA soc	ket (processo	timized fo	or Extend	ed Memo	ory 64 Techno	• •	,
SMP s	support		No SMP supp	ort / ı	no prod	cessor	upgrade							
Memo	ory		SDRAM / All	Error	Checki	ing and	I Correctin	ng (ECC) / DIM	Ms and EC	C memory	controller	PC3200 400MH r / industry std / u d pairs [a bank]		
IDE di SATA Cable Disk	disk cont sk contro disk con s Controlle	oller troller	Enhanced IDE 4Sy: single ch One 2-drop E 4Ry: 36.4GB	: / ÅT nanne IDE c J320	A-100 el SATA cables ( SCSI /	/ integr 4-150 c (to CD- ′ 10,000	ated in I/C controller ROM) / 4 7 rpm / 4.7	<i>My &amp; 4Ry:</i> on 7 ms seek / S	ib / one co supports e 5-drop L .M.A.R.T.	onnector o 2 drives s VD SCSI	n planar standard cable / 4	/sec) / supports 4 di <i>ISy:</i> one 2-drop upports ServeR	SATA c	able
		below)	Intel E7210 c	three hipse t MA0	32-bit t / Mer C, USB	33MH; mory C B, Low I	z 5v PCI 2 ontroller F Pin Count	2.2 slots / two 6 Hub (MCH) / I/	O Controll	er Hub (IC	CH-S) for	/ no hot-swap / PCI 2.2 and P0 M192 Super I/O	CI-X bus,	ATA-100
Ports Diagn	OM / disk		Preboot eXec CD-ROM: 483 Front: two US monitor (analo Diagnostic LED Monitors systematics)	ution   K-20X B (Ve og DB os / er em ar	Enviror (° CD-F er 2.0); 3-15) ror LED nd prod	nment (ROM, II Back: Os for facessor	PXE) / Wa DE / <i>Disk</i> two seria ans and me temperatu	emory / server oure, fan speed	Alert Star MB disker lel, two US diagnostic p and failu	ndard Forn tte drive SB (Ver 2. programs s re, and vo	nat 2.0 0), keybo tored on I bitages /	pard, mouse, et BM Enhanced D monitoring and	Diagnostic	s CD
Graph	ics contr	oller	SVGA / ATI® R	adeor	า™ 7000	OM / 16	MB SDRAI	M std/max / on	olanar / ana	alog 15-pin				
Securi	ity		Mechanical side via knockout control / opercover tamper	pow ation	er-on´ı withou	passwo t keybo	ord / boot pard/mous	sequence	512MB F 1GB PC IBM 80G	PC3200 C 3200 CL3 3B SATA-	L3 ECC   ECC DD 150 (7.2k	DDR UDIMM DDR UDIMM DR UDIMM () simple-swap		06P4049 06P4050 06P4051 73P8002
Softwa	are		ServerGuide installation an (system hard)	d con	nfigurat	ion too	I), IBM Di	rector	IBM 250 IBM 36.4	GB SATA IGB 10K I	-150 (7.2 not-swap	2K) simple-swa <sub>l</sub> 2K) simple-swa <sub>l</sub> U320 HDD U320 HDD		73P8003 73P8006 32P0726 32P0724
Coolin	ard / mor g fans · supply	use	IBM 101 key I Three fans (fa on SCSI mode 340 watts / ur Restart (ASR) cooling fan in	nsink els / n iversa / not	t, rear, not redu al / aut t hot-sv	pwr su undant o switc vap /nc	pply) plus / not hot-s h / Autom redundar	additional fan swap atic Server ncy /	IBM 146. IBM 36.4 IBM 73.4 32X/10X IBM Ren IBM 4Ux IBM Ser IBM Ser IBM 20/4 IBM 40/8	.8GB 10K IGB 15K I IGB 15K I I/40X/16X note Supe (20D Tow veRAID-6i VeRAID-71 IOGB TR7 80GB DLT	hot-swap not-swap Max <sup>6</sup> CE ervisor Ac er-to-Rac + Contro t SATA C Internal	o U320 HDD U320 HDD U320 HDD O-RW/DVD (bla dapter II (PCI a ok Kit	dapter)  De Drive	32P0725 90P1318 90P1319 22P6973 59P2984 09N4300 13N2190 71P8648 48P7042
	01-1-4		0.4 1-1- 0.0141.1-					Removable left	cido papal	ı				



Stealth

black

Slot 5: fullsize, 32-bit 33MHz, PCI 2.2 (5v) Bay ① 5.25", HH1.6", access, CD-ROM
Bay ② 5.25", HH1.6", access, open (no disk)
Bay ③ 3.5", SL 1", access, diskette
Bay ④ 3.5", SL 1", access, open
Bay ⑤ 3.5", SL 1", access (some), open
Bay ⑥ 3.5", SL 1", access (some), open
Bay ⑦ 3.5", SL 1", access (some), std di access (some), std disk \$ 35 to 42 pounds (15.9 to 19.1kg) (some)

Slot 1: fullsize, 64-bit 66MHz, PCI-X (3.3v)

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

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

Removable left side panel

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

 Advanced Configuration Power Interface (ACPI) 1.0

Device Drivers and Diagnostics

CD-ROM included

♦ Four stabilizing feet

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

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

Maximum hot-swap SCSI capacity: 439.2GB<sup>13</sup> (3 disks x 146.4GB) Maximum fixed SCSI capacity: 585.6GB¹³ (4 disks x 146.4GÉ)

LIMITED WARRANTY<sup>3</sup>

→ 1 year parts and labor

→ International Warranty Service<sup>3</sup>

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

options (in eligible locations):<sup>7</sup>
• 3 year IOR 24x7, 2 hr avg response

(ServicePac part num 69P9512)

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

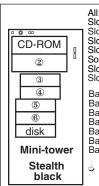
(ServicePac part num 69P9510) 3 year IOR 9x5, NBD response

(ServicePac part num 69P9509) Other ServicePac options at http://www.ibm.com/ services/us/its/pdf/wamomxeu.pdf 24x7<sup>14</sup> toll-free support for warranty

issues during the warranty period

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IDM® March 1										
IBM® Machine Type GAV-model	Proccessor / Speed	L2 FSB cache MHz	Memory	Disk/Disk controller	Maximum PC Capacity x		Hard disk bays	Power Supply	Ethernet	Available date
8485/8490 12ý-12x F 8485/8490 1Ay-1Ax F 8485/8490 20y-20x F 8485/8490 2Ay-2Ax F 8485/8490 3Ay-3Ax F 8485/8490 3By-3Bx F 8485/8490 70y-70x F 8485/8490 7Ay-7Ax F 8485/8490 80y-7Ay	Pentium® 4 531 3.0GHz Pentium 4 531 3.0GHz Pentium 4 630 3.0GHz Pentium 4 640 3.2GHz Pentium 4 650 3.2GHz Pentium 4 650 3.2GHz Pentium D 820 3.4GHz Pentium D 820 2.8GHz Pentium D 830 3.0GHz Pentium D 830 3.0GHz Pentium D 830 3.0GHz	1MB 800 2MB 800 2MB 800 2MB 800 2MB 800 2MB 800 2X1MB 800 2X1MB 800 2X1MB 800	512MB 512MB 512MB 512MB 512MB 512MB 2x512MB 1GB 512MB 1GB 512MB 1GB	80GB/SATA None/SATA None/SATA 80GB/SATA None/SASA None/SAS/S/ None/SAS/S/ None/SAS/S/ None/SAS/S/ None/SAS/S/ None/SAS/S/	1.0TB 1.0TB 1.0TB 1.0TB 1.0TB 1.0TB 1.2TB ATA 1.2TB	4 x 7 4 x 7 4 x 7 4 x 7 4 x 7 4 x 7 4 x 7 6 x 7	4 fixed 4 simple-swap 4 simple-swap 4 fixed 4 simple-swap 4 hot-swap 4 hot-swap 4 simple-swap 4 hot-swap 4 hot-swap 4 hot-swap	1x400W 1x400W 1x400W 1x400W 1x400W 2x430W	Gigabit Gigabit Gigabit Gigabit Gigabit Gigabit	Oct 2005 Oct 2005 Oct 2005 Oct 2005 Oct 2005
Positioning Processor(s)	Single socket, entry s Intel® Pentium 4 up Optimized for Exten	to 3.4GHz Si	inale Core	e 800MHz FS	3 / Pentium			I Core 8	00MHz F	SB / AII
L2 cache Implementation SMP support	Up to 2MB std on Pe Motherboard contains 2 PCI) some: six slots No SMP support / no	ntium 4 / <b>2x1</b> one LGA-77 s(1 PCI Expre	MB std or 5 socket, ess x8, 1 F	n Pentium D four DIMM so	ckets. some	: four s PCI-X), i	lots(1 PCI Exp integrated SAT	ress x8, A and G	1 PCI Exigabit Eth	rpress x1, ernet.
		· · ·								
Memory	512MB or 1GB std / 80 DDR2-SDRAM / All E									
SAS disk controller IDE disk controller SATA disk controller Cables Disk RAID Controller	Integrated SAS contri Enhanced IDE / ATA- Four channel SATA of One 2-drop EIDE cab Some: 80GB SATA / IBM ServeRAID™ 8e (	100 / integrat controller (3.0 bles (to CD-F 7,200 rpm / 9	ed in I/O ( OGB/sec) (OM) / one (.0 ms see	Controller Hub / supports 4 c e 1-drop SAT/ k / S.M.A.R.T	/ one conne drives standa A cable per	ard installed	d hard disk			
Rack support Bus slots (see below Chipset	5U <sup>4</sup> rack mount supp ) All: one PCI-E bus / or 66MHz 3.3v PCI-X slo Intel E7230 chipset / MAC, USB, Low Pin ( keyboard, mouse	ne 64-bit PCI- ots / no hot-sv Memory Cor	E x8 / one vap Active ntroller Hu	e 64-bit PCI-E : e™ PCI slots lb (MCH) / I/O	Controller H	lub (ICF	H7R) for PCI 2.	2, ATA-1	00 EIDE	, ethernet
Ethernet  CD-ROM / diskette Ports Diagnostics Systems mgmt	10/100/1000 gigabit / Preboot eXecution En CD-ROM: 48X-20X <sup>6</sup> ( Front: two USB (2.0); Diagnostic LEDs / error Mini-baseboard mana failure, and voltages	vironment (P CD-ROM, IDI Back: two s LEDs for fana Igement cont	XE) / Wak E / None erial (9-pii s and mem roller / IP	ke on LAN® standard n), parallel, tw nory / server dia MI 1.5 / monit	o USB (2.0), agnostic progr ors system	keyboa rams sto and pro	ard, mouse, eth red on IBM Enh ocessor temper	nanced `Di rature, fa	agnostics n speed	CD and
Graphics controller	ATI® RN50(ES1000) / 1	6MB SDRAM	std/max /	on planar / ana	log 15-pin / u	p to 102	4x768x32bit@8	5Hz		
Security	Mechanical side panel power-on password / without keyboard/mo	boot sequer			512MB PC2-4 2GB(2x1GB) I 4GB(2x2GB) I IBM 80GB SA	200 CL3 E PC2-4200 PC2-4200 TA (7.2K)	CC DDR2RoHS CL3 ECC DDR2 Rol CL3 ECC DDR2 Rol simple-swap HDD	HS HS		30R5148 30R5149 30R5150 39M4500
Software	ServerGuide™ (CD-tinstallation and configmanagement), IBM Emanagement software	pased autom guration tool) Director (syst	, <b>ServeR<i>l</i> em hardw</b>	<b>∖ID</b> ™ (RAID	IBM 160GB SA IBM 250GB SA 80GB Hot-Sw 160GB Hot-Sv	ATA (7.2K) ATA (7.2K) ap SATA H wap SATA	) simple-swap HDD ) simple-swap HDD HDD HDD			39M4504 39M4508 39M4518 39M4522 39M4526 26K5709
Keyboard / mouse Cooling fans	Optional Three fans (fansink, r on SAS models / not				250GB Hot-St 73GB 10K 3.5 146GB 10K 3. 300GB 10K 3. 36GB 15K 3.5 73GB 15K 3.5	5" SAS Ho 5" SAS Ho " SAS Hot- " SAS Hot-	t-Swap HDD t-Swap HDD Swap HDD Swap HDD CD-RW/DVD-ROM	Combo (blo	ck)	26K5710 26K5711 26K5697 26K5698 32R2905
Power supply	Some: 400W / not hor some: 430W / hot-swa switch / Automatic Se cooling fan in power s	t-swap / no re ap / redundar rver Restart	edundancy nt / all: uni (ASR) /	vi / versal / auto	IBM Remote S IBM 5Ux20D 1 IBM ServeRAI	Supervisor. Fower-to-FID-7t SATA	Adapter II (PCI adap Rack Kit Integrated Controlle n/pc/us/accessories	iter) er		59P2984 39R9361 71P8648



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

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

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

Maximum SATA capacity: 1TB<sup>13</sup> (4 disks x 250GB) Maximum hot-swap SAS capacity: 1.2TB<sup>13</sup> (4 disks x 300GB)

#### LIMITED WARRANTY<sup>3</sup>

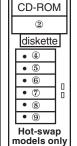
- 1 year parts and labor standard 8485 MTM 3 year parts and labor standard 8490 MTM
- International Warranty Service3
- On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- next business day response time
  On site service upgrade
  options (in eligible locations):7
   3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

- http://www.ibm.com/ services/us/its/pdf/wamomxeu.pdf 24x7<sup>14</sup> toll-free support for warranty issues during the warranty period3

IBM® Type-model Processor	GHz <sup>1</sup>	L2 cache	FSB MHz	Memory	Disk		Disk controlle	Hot-swa r disk ba		CI slots x bays	Power supply number and ty		Available date
8649-42X 1 x Xeon 8649-4AX 1 x Xeon 8649-4BX 1 x Xeon 8649-52X 1 x Xeon 8649-5AX 1 x Xeon 8649-6BX 1 x Xeon 8649-6BX 1 x Xeon 8649-6BX 1 x Xeon 8649-6BX 1 x Xeon	2.8B 2.8B 2.8B 3.06 3.06	512KB 512KB	533 533 533 533 533	512MB 512MB 512MB 512MB 512MB 512MB	36.4GB² Ult None (oper None (oper 36.4GB Ultr None (oper None (oper None (oper None (oper	n-bay) :a320 10K n-bay) n-bay) :a320 10K n-bay)	Ultra320 Ultra320 Ultra320	<ul> <li>6 hot-swa</li> <li>None (4 f</li> <li>6 hot-swa</li> <li>6 hot-swa</li> <li>None (4 f</li> <li>6 hot-swa</li> </ul>	ap ap iixed) ap ap iixed) ap	6 x 9 6 x 9 6 x 7 6 x 9 6 x 9	One fixed One fixed Two redunda One fixed One fixed Two redunda One fixed Two redunda	Giğabit Int Gigabit Gigabit Gigabit Int Gigabit Gigabit Gigabit	Feb 2004 Feb 2004 Feb 2004 Feb 2004 Feb 2004
Processor(s) SMP - L2 Cache Implementation	2-way Syster	<b>SMP</b> / umboard c	ıp to tv ontains	vo Xeon F s two Intel	Processors (sa 1 604-pin micr	ame speed o-PGA ZIF	d/cache si = sockets,	( <b>FSB)</b> / Hyper ze) / <b>512KB</b> four DIMM sl CSI and ether	std an	ading tec ld max / even slots	hnology at processor sp s (one PCI 2.2,	eed four PCI-X,	one Mini
Memory	DDR-S 2-way	SDRAM I memorv	DIMMs interle	s / four DII ave / dua	MM gold-conr I channel / <b>E</b>	nector slots rror Chec	s on syste <b>kina and</b>	mboard / DIM Correcting (I	1Ms m E <b>CC)</b> v	ust bĕ in via <b>16-bi</b>	ered 184-pin E stalled in match <b>t Checksum C</b> ailable on 512M	ned pairs [a hipkill™ (co	rrects 1. 2.
IDE disk controller SCSI disk controller SCSI channels and cables	suppo 5, 00, one 4	<b>ogic® 530</b> rts <b>RAID</b> 10, 1E0, -drop 16-	<b>C1030</b> - <b>1 mir</b> 50 (ins bit 68-	/ dual ch roring (Er stalled only oin LVD S	annel Ultra3: nbedded Mirr y in Slot 4) Tv SCSI cable fro	<b>20 SCSI c</b> oring) / sh wo 16-bit c om system	controller ared with hannels (d board to it	one internal ar nternal disks b	/sec) / Servelnd one bays; H	on plana RAID™-5 external lot-swap	planar ar / 64-bit 100M i Controller for ) / Internal char models: one 1 n systemboard	<i>inei:</i> Fixed c -drop 16-bit	18K models: 68-pin LVD
Cables Disk - features	conne One S	ctor SCSI cabl	e (liste	ed above),	one 2-drop E	EIDE cable	e (to CD-F				•		
Rack support Bus slots (see below Chipset	Four 6 ( Intel E for slo	34-bit 100 <b>27505 ch</b> ts 2 and 3	MHż F <b>ipset</b> / 3 and (	PCI-X 1.0 / E7505 M ethernet c	ICH (Memory ontroller; Bus	/ one Mini Controller B for slots	Hub) for a 4 and 5 a	AGP 8X slot, and SCSI con	P64H2 troller)	2, ICH4 / / I/O Co	hot-swap Active P64H2 for two ntroller Hub (IC 6 Super I/O off	PCI-X buse H4) 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 -20X6 ( 3 (Ver 3 DB-1 0s / err 01D / (	C64-bit 10 CD-ROM, 2.0); Bac 5), microp or LEDs f chip on pla	IOMHz / full di IDE / <i>Disket</i> ck: two USB ( phone-in (mor or fans and r anar / monitol	uplex / Wa te: 3.5" 1.4 Ver 2.0), t no), line-in nemory / s rs system a	ke on LAN 14MB disk wo serial ( (stereo), I server diag and proce	N® / Alert Stan ette drive (9-pin), paralle ine-out (stered gnostic progra ssor temperat	dard F el, keyb o) ms sto ure, fa	ormat 1. ooard, mo ored on I in speed	and PHY layer 0 / one rear RJ ouse, ethernet BM Enhanced and failure, and g and control)	-45 port (RJ-45), Diagnostics	CD
Graphics controller	SVGA	./ ATI® R	ageXL	/ on Mini	PCI adapter	/ 8MB SDF	RAM std a	nd max / PCI	2.2 32	-bit 33MI	Hz / analog 15-	pin D-Sub c	onn
Security	hot-sw power	/ap mode -on pass	els) / o <sub>l</sub> word /	otional U-I boot sequ	(locks hot-si Bolt support v uence control irity slot (for c	ria knocko: / operatio	ut / n ock)	Xeon 2.80 Gl Xeon 3.06 Gl 2x256MB PC	Hz/533 Hz/533 2100 (	/512KB   /512KB   CL2.5 EC	L2 Cache Proc L2 Cache Proc L2 Cache Proc CC non-Chipkill DDR-SDRAM	Upg Upg	24P7861 24P8054 24P8122 73P2868 33L5038
Software	and co		où tool	), IBM Dir	omated netwo rector (system		tallation e mgmt	1GB PC2100 2GB PC2100 IBM 73.4GB	CL2.5 CL2.5 10K UI	ECC D ECC D tra320 S	DR-SDRAM DI DR-SDRAM DI CSI 68-pin <u>(not</u>	MM <u>hot-swp)</u>	33L5039 33L5040 32P0724
Keyboard / mouse Cooling fans	up to power All: n	six / three supply cot redunc	e for p age fa dant / r	rocessor(s ns (three i not hot-swa	iouse (both bl s), memory, a in dual power ap / all variab ax / not hot-s	ınd disk ba r supply m le speed	PS/2) ays / two odel)	IBM 36.4GB 1 IBM 73GB 10 IBM 146GB 1 40X/12X/40X	15K Ul K Ultra OK Ult Max <sup>6</sup>	tra320 S a320 SC ra320 SC CD-RW	CSI 68-pin ( <u>not</u> CSI Hot-Swap SI Hot-Swap SI CSI Hot-Swap S internal (black)	SL HDD L HDD SL HDD	32P0725 06P5776 32P0727 32P0728 22P6976
i ower suppry(s)	xBX: All:	two 514 universa	l watt s al / vol	std and ma tage-sens	ax / hot-swap ax / hot-swap ing / Automa oower supply(	/ redunda tic Server	e spd)	IBM 4U Exter IBM ServeRA IBM ServeRA	ndéd D JD-5i ( JD-6i (	Depth To Controller Controller	apter II (PCI ada wer-to-Rack Kit r (adapter for S r (adapter for S oc/us/accessori	ot 4) ot 4)	59P2984 59P4817 25P3492 71P8595
Slot 1: half-length, 3 Slot 2: fullsize, 64-bi						Raven bla	ack color		. a. 10				
Slot 2: fullsize, 64-bi Slot 3: fullsize, 64-bi Slot 4: fullsize, 64-bi	t 100M	Hz, PCI-)	K 1.0 (	3.3v)	<b></b>		ation/Setu	ıp Utility invol	ked by		LIMITED V		<b>Y</b> 3
Sior 4. Iulisize, 64-Di	LIOUIVI	112, 17017	. 1.0	(O.OV) EXI	-i iu <del>c</del> u	hiessiid i	ı ı aı Sidi	ιάρ <b>–</b> 4		- !	year parts and	I IADUL	



Slot 6: Mini PCI type III, 32-bit 33MHz (5v) - used graphics Slot: fullsize, AGP 8X Pro50 (1.5v) - unavailable \* Extended slot for opt IBM ServeRAID-5i



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

Hot-swap models 6AX and 6BX:

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

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

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

pressing ČTRL+C ♦ DMI 2.2-compliant

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

Diagnostics CD-ROM included

Four stabilizing feet

→ H 467mm x W 165mm x D 660mm 44 to 57 pounds (20 to 25.8kg)

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

easy access for cabling Predictive Failure Analysis on disk(s) with IBM Director can alert the administrator of an imminent component failure International Warranty Service<sup>3</sup>

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 24x7<sup>14</sup> toll-free support for warranty issues during the warranty period<sup>3</sup>

BM @server™	xSeries	S'W 2	26 (8	3648)	(Aug	ust 20	04)		xRE	F by	eServe	er Field Skil	s an	d Educa	ation Team
IBM® Type-GAV-model Proce	essor GHz <sup>1</sup>	L2 cache	FSB MHz I	Memory	D	isk	Disk controll	er	Hot-swa		CI slots	Power sup		Ethernet	Available t date
8648-00y-00x 1 x 3 8648-0Ay-0Ax 1 x 3 8648-0By-0Bx 1 x 3 8648-10Y-10x 1 x 3 8648-1AY-1Ax 1 x 3 8648-1AY-1Ax 1 x 3 8648-1AY-1Ax 1 x 3 8648-2OY-20x 1 x 3 8648-2AY-2Ax 1 x 3 8648-2BY-2Bx 1 x 3	Xeon™ 2.8 Xeon 2.8 Xeon 2.8 Xeon 3.0 Xeon 3.0 Xeon 3.0 Xeon 3.2 Xeon 3.2	1MB 1MB 1MB 1MB 1MB 1MB 1MB	800 8 800 8 800 8 800 8 800 8 800 8 800 8	512MB 512MB 512MB 512MB 512MB 512MB 512MB 512MB 512MB 512MB	None (None (	SATA 720 open-bay) open-bay) SATA 7200 open-bay) open-bay) SATA 7200 open-bay) open-bay)	0 SATA Ultra32 Ultra32 ) SATA Ultra32	30 6 20 6 30 6 20 6 20 6 20 6	simple-s hot-swa hot-swa simple-s hot-swa hot-swa simple-s hot-swa hot-swa	swap ip ip swap ip ip swap ip	6 x 7 6 x 9 6 x 9 6 x 7 6 x 9 6 x 7 6 x 9	One fixed One fixed Two redund One fixed Two redund One fixed	dant dant	Gigabit Gigabit Gigabit Gigabit Gigabit Gigabit Gigabit Gigabit	Sept 2004 Sept 2004 Sept 2004 Sept 2004 Sept 2004 Sept 2004 Sept 2004 Sept 2004
Processor(s) SMP - L2 Cache Implementation	2-way SM	P / up t	o two )	Xeon Pro	cessors	(same spe	ed/cache s	size) /	1MB sto	d and	max / a	C Cache / H t processor s 3 PCI-X, 2 PC	peed		
Memory	512MB sto than 4GB I connector: Error Che detects 2-	I / 16GE DIMMs) slots on <b>cking a</b> through	3 <sup>13</sup> max 1 / two so 2 syster 2 should be sold 3 should be sold 4 should be sold 4 should be sold 5 should be sold 6 should be sold 7 should be sold 8 should be sold 9 should be sol	(16GB) slots used nboard / orrecting errors cor	maximum d / four sl DIMMs r <b>(ECC)</b> v ntained in	n can be a lots availab must be ins ia <b>16-bit C</b> two chips)	chieved whole / PC2-3 stalled in mecksum available	nen 40 <b>200</b> 40 natche <b>Chipl</b> on 1G	GB DIMM DOMHz E d pairs [a kill™ (cor iB (2x512	Is are CC D bank rects 2) DIM	support DR2-SE ] / 2-wa 1, 2, 3, IM Kit a	ted, 12GB is to DRAM DIMMs y memory into or 4-bit errors and greater	he m s / Six erleav s on s	aximum 240 pin re / dual same chi	with less gold- channel / o and
SATA disk controller SCSI disk controller	supports R drop 16-bit to rear extends	<b>7902</b> / 6 <b>AID-0</b> 6 68-pin ernal 68	<b>dual ch &amp; 1 mi</b> i LVD S 8-pin co	nannel U rroring / CSI cable onnector	Iltra320 \$ Two 16- e to 6-ba	SCSI contrological contrologic	<b>oller</b> (LVE Is (one into e; <i>Externa</i>	) 320N ernal a al chai	MB/sec) / and one e nnel: cabl	on pla extern le ava	anar / 6- al) / <i>Inte</i> iilable as	RAID™ 7e 4-bit 100MHz ernal channel: s option pn 24	Hot-s	swap mo	dels: one 1-
Cables RAID Controller	One SCSI IBM Serve	cable ( RAID 7	listed a e (RAII	bove), tw D 0 0r 1)	o one-dr on plan	op SATA, nar / suppo	one 2-drop rts SATA o	o EIDE or SCS	cable (to Strinterfac	o CD- ce / su	-ROM), ipports (	ServeRAID 6i	+ con	troller	
Mechanical Bus slots (see below) Chipset	4U <sup>4</sup> Tower One PCI-E Intel E752 supports A bit/33MHz	xpress 0 chips	/ three set / E7	64-bit (c 7525 MCI	ne 133M H (Memo	IHz, 2 100l orv Controll	VIHz) PCI- er Hub) fo	X 1.0 r PCI-I JS B s w Pin	/ two 32- Express > supports of Count Int	bit/33 x16(vi one 6 terface	MHz / ı d), Broa 4bit/133 e / NS F	no hot-swap / dcom, PXH, MHz PCI-X s C87366 Supe	Active CH5I lot (4) er I/O	™ PCI sI R / PXH / ICH5R off LPC	ots BUS A for two 32- interface
Ethernet  CD-ROM / diskette Ports  Diagnostics Systems mgmt cntrl	chip on pla CD-ROM: Front: two monitor (ar Diagnostic Winbond®	nar / P0 48X-20 USB (\nalog D LEDs / W791D	CI-X 64 X <sup>6</sup> CD- Ver 2.0 B-15) / error L ) / chip	I-bit 100N ROM, ID ) <i>; Back:</i> _EDs for on plana	/IHz / full )E / <i>Diske</i> two USE fans and ar / monit	duplex / W ette: 3.5" 1 3 (Ver 2.0), 1 memory / tors system	ake on LA 44MB dist two serial server dia and proce	N® / A kette d (9-pin agnost essor	llert Stand drive ), parallel ic prograr temperati	dard F I, keyl ms sto ure, fa	-ormat 2 board, n ored on an speed	PHY layer further than 1.0 / one rear nouse, ethern IBM Enhance and failure, ing and control.	RJ-45 et (R. ed Dia and v	) port J-45),	CD
Graphics controller Security	SVGA / AT and max / Mechanica hot-swap r power-on p without key	I® Rade 15 pin o Il side p nodels) passwo	eon™ 7 connec banel ke / option rd / boo	000M on tor ey lock (I nal U-Bo ot sequer	Planar / ocks hot- lt support nce contr	16MB SDF -swap disk: t via knock ol / operati	RAM std son out /	Xeon Xeon Xeon 512M 1GB	2.80 GH 3.00 GH 3.2 GHz 1B (2x256 (2x512) I	Hz/800 Hz/800 z/800/ 6) PC PC2-3	)/1MB L )/1MB L 1MB L2 2-3200 3200 EC	2 Cache EM6 2 Cache EM6 Cache EM6 ECC DDR2 CC DDR2	64TPr 64TPr 1TPro	oc Upg c Upg	13N0671 13N0672 13N0673 73P3523 73P3522
Software	ServerGui and config software) a	uration	tool), IE	3M Direc				2GB IBM	(2x1GB) 80GB SA	PC2- TA-1:	3200 E0 50 (7.2k	C DDR2 Chip CC DDR2 DII () simple-swa (K) simple-sw	ИМ K p HD	iit D	73P2865 73P2866 73P8002 73P8003
Keyboard / mouse Cooling fans Power supply(s)	IBM 101 k up to six / power sup All: not re Some: one xBX: two All: uni Restart (AS	three for ply cage dundan e 530 w o 514 w versal /	or proce e fans ( at / not h att std att std a	essor(s), (three in not-swap and max and max e-sensing	memory, dual pow / all varia / not hot / hot-swa d / Autom	and disk byer supply related to the speed by the speed by the speed by the speed ap / redunction serve	pays / two nodel) lant r	IBM : IBM : IBM : 40X/: IBM : IBM :	250GB S 36.4GB 1 73GB 10H 146GB 10H 12X/40X Remote S 4U Exten ServeRAI	SATA- 5K Ultra 0K Ult Max <sup>6</sup> Super nded [ ID-6i+	150 (7.2) Itra320 S a320 SC tra320 S CD-RW visor Ac Depth To control	CK) simple-sw SCSI Hot-Swap SCSI Hot-Swap CSI Hot-Swa internal (blad apter II (PCI bwer-to-Rack er (adapter fo	ap HI ap SL SL F p SL kk) adapt Kit	DD HDD HDD HDD	73P8006 06P5776 32P0727 32P0728 22P6976 59P2984 26K6095 13N2190
Slot 1: fullsize, PCI-E Slot 2: fullsize, 32-bit Slot 3: fullsize, 32-bit Slot 4: fullsize, 64-bit Slot 5: fullsize, 64-bit Slot 6: fullsize, 64-bit	/33MHz, PC /33MHz, PC 133MHz, P 100MHz, P	CI (5v) CI (5v) CI-X 1. CI-X 1.	.0 (3.3v .0 (3.3v	·)**	<	<ul><li>→ Raven b</li><li>→ Remova</li><li>→ Configuressing</li></ul>	ble left sid	Othe e pane p Utilit	el	at it		/pc/us/access			71P8648
* support only for x8 ** slot for opt IBM Se	adaptors		(3.57	,		<ul><li>DIOS Se</li><li>DIOS Se</li><li>Adaptec</li></ul>	tup Utility	via F1			<b>≈</b> 1	LIMITEI year parts a			Υ³

CD-ROM

diskette

• 4

• (5)

• 6

• 7

• 8

• 9

Hot-swap

models only

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

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

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

Maximum internal disk capacity<sup>13</sup>: SATA: 500GB (2 disks x 250GB); 1TB (4 disks x 250GB) w/ ServeRAID 7t SCSI: 880.8GB (6 disks x 146.8GB)

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

Device Driver and IBM Enhanced Diagnostics CD-ROM included

♦ H 467mm x W 165mm x D 658mm

44 to 57 pounds (20 to 25.8kg)

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

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

International Warranty Service<sup>3</sup>

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

options (in eligible locations):7

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

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

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

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

Other ServicePac options at

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

24x7<sup>14</sup> toll-free support for warranty issues during the warranty period<sup>3</sup>

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

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

Hot-swap models:

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

7t controller)

Bay <sup>@</sup> 3.5", SL 1", simple-swap Bay <sup>@</sup> 3.5", SL 1", simple-swap Bay <sup>@</sup> 3.5", SL 1", simple-swap Bay <sup>@</sup> 3.5", SL 1", fixed

Maximum internal disk capacity<sup>13</sup>: SATA: 500GB (2 disks x 250GB); 1TB (4 disks x 250GB) w/ ServeRAID 7t SCSI: 880.8GB (6 disks x 146.8GB)

Diagnostics CD-ROM included

♦ H 467mm x W 165mm x D 658mm

44 to 57 pounds (20 to 25.8kg)

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

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

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

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

3 year IOR 9x5, 4 hr avg response

(ServicePac part num 96P2249)

3 year IOR 24x7, 4 hr avg response

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

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

Other ServicePac options at

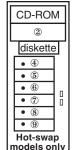
http://www.ibm.com/ services/us/its/pdf/wamomxeu.pdf

24x7<sup>14</sup> toll-free support for warranty issues during the warranty period<sup>3</sup>

•		, ,	` '	,			-		-
IBM® Type-GAV-model Proce	A	SB //Hz Memory	Disk	Disk controlle	Hot-swap er disk bays	PCI slots	Power supply number and type	Ethernet	Available date
8648-32U-32x 1 x 8648-34U-34x 1 x 8648-36U-36x 1 x 8648-36U-36x 1 x 8648-E3U-E3x 1 x 8648-E5U-E5x 1 x 8648-E7U-E7x 1 x 8648-E	(eon 2.8 2MB 8 (eon 2.8 2MB 8 (eon 2.8 2MB 8	512MB 512MB 512MB 512MB 500 512MB 500 2GB 500 2GB	80GB <sup>2</sup> SATA 7200 None (open-bay) None (open-bay) None (open-bay) None (open-bay) None (open-bay)	SATA Ultra32 Ultra32 Ultra32 Ultra32 Ultra32	0 6 hot-swap 0 6 hot-swap 0 6 hot-swap	6 x 9 6 x 9 6 x 9 6 x 9	One fixed	Giğabit Gigabit Gigabit Gigabit	Sep 2005 Sep 2005
Processor(s) SMP - L2 Cache Implementation	2-way SMP / up to	two Xeon Pro	r <b>ith 800MHz frontsid</b> cessors (same speed 04-pin micro-PGA ZII	d/cache`si	size) / <b>2MB</b> std an	d max / a	it processor speed		
Memory	512MB std / 16GB <sup>15</sup> than 4GB DIMMs) / connector slots on s Error Checking an detects 2- through 8	3 max (16GB r two slots used systemboard / id Correcting 3-bit errors con	maximum can be ach d / four slots available DIMMs must be insta (ECC) via 16-bit Ch tained in two chips) a	nieved wh e / <b>PC2-32</b> alled in ma <b>ecksum</b> available d	nen 4GB DIMMs a 200 400MHz ECC atched pairs [a ba Chipkill™ (correct on 1GB (2x512) D	re suppor DDR2-SI nk] / 2-wa s 1, 2, 3, IMM Kit a	ted, 12GB is the m DRAM DIMMs / Siz y memory interlead or 4-bit errors on a nd greater	naximum k 240 pin ve / dual k same chip	with less gold- channel / p and
SATA disk controller SCSI disk controller	drop 16-bit 68-pin L' to rear external 68-p One SCSI cable (lis	VD SCSI cable pin connector sted above), tw	er (150MB/sec / two of ltra320 SCSI contro Two 16-bit channels e to 6-bay backplane; o one-drop SATA, or	; <i>Externa</i> ne 2-drop	a <i>l channel:</i> cable a DEIDE cable (to C	/ailable as D-ROM),	s option pn 24P792	29 from sy	RAID 7e dels: one 1- ystemboard
Mechanical Bus slots (see below) Chipset	4U <sup>4</sup> Tower (rack mo	ount support v	on planar / supports ia tower-to-rack kit op ne 133MHz, 2 100M I (Memory Controller OMHz PCI-X slots (5 video, SATA, 4xUSB	ption)	X 1.0 / two 32-hit/3	SMHz /	no hot-swan Active	™ PCI sk	ots BUS A for two 32- interface
Ethernet  CD-ROM / diskette Ports  Diagnostics Systems mgmt cntrl  Graphics controller	CD-ROM: 48X-20X° Front: two USB (Vemonitor (analog DB) Diagnostic LEDs / e Winbond® W791D / support for option	<sup>6</sup> CD-ROM, ID er 2.0); <i>Back:</i> -15) error LEDs for chip on plana a <b>al Remote Su</b>	controller / Broadcom /Hz / full duplex / Wal E / <i>Diskette</i> : 3.5" 1.4 two USB (Ver 2.0), to fans and memory / s ar / monitors system a upervisor Adapter II Planar / 16MB SDR/	4MB disk wo serial server diag and proce (provides	kette drive (9-pin), parallel, ke gnostic programs essor temperature, s continuous healt	yboard, n stored on fan speed n monitor	nouse, ethernet (R	J-45), agnostics	CD
Security	hot-swap models) / power-on password	optional U-Bòl / boot sequer	ocks hot-swap disks It support via knockounce control / operation slot (for opt cable lo	ut / n ock)	Xeon 3.0 GHz/80 Xeon 3.2 GHz/80 Xeon 3.4 GHz/80	0/2MB L2 0/2MB L2 0/2MB L2	Cache EM64TPro Cache EM64TPro Cache EM64TPro Cache EM64TPro	oc Upg oc Upg	25R8907 25R8900 25R8901 13N0676
Software	ServerGuide™ (CD and configuration to software) and many	ol), IBM Direc	nated network OS instor (system hardware	stallation mgmt	512MB (2x256) P 1GB (2x512) PC2 1GB (2x512) PC2	C2-3200 2-3200 EC -3200 EC	ECC DDR2	MM Kit	73P3523 73P3522 73P2865 73P2866
	Up to six / three for power supply cage † All: not redundant / Some: one 530 wat Some: two 514 wat All: universal / v Restart (ASR) / coo CI-Express x16 (3.3)	processor(s), fans (three in of not hot-swap tt std and max t std and max voltage-sensing ling fan in pov	se (both black, 6-pin memory, and disk ba dual power supply m/ / all variable speed / not hot-swap / hot-swap / redunda g / Automatic Server ver supply(s) (variable	PS/2) eays / two odel)  nt e spd)	IBM 80GB SATA- IBM 160GB SATA- IBM 250GB SATA- IBM 36.4GB 15K IBM 73GB 10K U IBM 146GB 10K U 40X/12X/40X Max IBM Remote Sup IBM 4U Extendec	150 (7.2h 150 (7.2h 150 (7.2h Ultra320 Sta 150 Stra320 Sta 150 Stra320 Sta 150 Sta	(1) simple-swap HD 2K) simple-swap H SCSI Hot-Swap SL I SCSI Hot-Swap SL I SCSI Hot-Swap SL I I internal (black) I apter II (PCI adap bower-to-Rack Kit Ier (adapter for Slo	DDDDDD DD . HDD HDD HDD HDD	73P8002 73P8003 73P8006 06P5776 32P0727 32P0728 22P6976 59P2984 26K6095 13N2190 71P8648
Slot 3: fullsize, 32 Slot 4: fullsize, 64	2-bit/33MHz, PCI (5v 2-bit/33MHz, PCI (5v 4-bit 133MHz, PCI-X	ý 1.0 (3.3v)			Other options at		/pc/us/accessories		7 11 00-10

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

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



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

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

Bay <sup>@</sup> 3.5", SL 1", simple-swap Bay <sup>@</sup> 3.5", SL 1", simple-swap Bay <sup>@</sup> 3.5", SL 1", simple-swap Bay <sup>@</sup> 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 WARRANTY**<sup>3</sup>

1 year parts and labor

International Warranty Service<sup>3</sup>

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

24x7<sup>14</sup> toll-free support for warranty issues during the warranty period<sup>3</sup>

7t controller)

IBM® Type-GAV-model Proce	essor	L2 GHz¹ cache	FSB MHz	Memory	Disk	c	Disk controller		Hot-swap disk bays		Power supply number and type	Etherne	Available t date
8848-32U-32x 1 x 2 8848-34U-34x 1 x 2 8848-36U-36x 1 x 2	Xeon™ Keon Keon	2.8 2MB 2.8 2MB 2.8 2MB	800 800 800	512MB 512MB 512MB	80GB <sup>2</sup> SATA None (open- None (open-	-bay) l	SATA Ultra320 Ultra320	6 I	simple-swap not-swap not-swap	6 x 9	One fixed One fixed Two redundant	Giğabit	Sep 2005 Sep 2005 Sep 2005
Processor(s) SMP - L2 Cache Implementation	1 x In 2-way System	itel® Xeon / SMP / up mboard co	up to to two	<b>3.4 GHz v</b> Xeon Protwo Intel 6	vith 800MHz frocessors (same 604-pin micro-P	ontside speed/o GA ZIF	bus (FS cache siz sockets,	<b>B)</b> / <b>I</b> e) / <b>2</b> six D	EM64T / 2M EMB std and IMM slots, s	IB L2 ECo d max / a six slots (3	C Cache / Hyper- t processor speed PCI-X, 2 PCI, 1	Threading	g technology ess x16)
Memory	than 4 conne <b>Error</b>	IGB DIMM ector slots of Checking	s) / two on syste <b>and C</b>	o slòts use emboard / <b>correctin</b> c	ed / four slots av	vailable / be installe bit Chec	' PC2-32( ed in ma cksum C	00 40 tched hipk	0MHz ECC pairs [a bar i <b>II</b> ™ (corrects	DDR2-SD nk] / 2-way s 1, 2, 3,	ed, 12GB is the n DRAM DIMMs / Si y memory interlea or 4-bit errors on nd greater	x 240 nin	aold-
SATA disk controller SCSI disk controller	Adapt suppo drop 1 to rea One S	tec® 7902 orts RAID-0 16-bit 68-pi or external SCSI cable	dual ( & 1 n LVD 88-pin (listed	channel Unirroring / SCSI cab connector above), to	Two 16-bit ch le to 6-bay back wo one-drop SA	controlle annels (d kplane; ATA, one	er (LVD 3 one inter External e 2-drop l	320M nal ai <i>chan</i> EIDE	B/sec) / on pand one externation one externation one externation on the cable (to CI)	olanar / 64 nal) / <i>Inte</i> /ailable as D-ROM),	RAID™ 7e I-bit 100MHz PCI- mal channel: Hot- option pn 24P79: ServeRAID 6i+ cor	swap mo 29 from s	dels: one 1-
Mechanical Bus slots (see below) Chipset	4U⁴ T One F	ower (rack	moun	t support	via tower-to-rac one 133MHz. 2	k kit opti	ion) z) PCI-X	1.0 /	two 32-bit/3	3MHz / r	no hot-swap Active dcom, PXH, ICH5 VHz PCI-X slot (4 C87366 Super I/C	e™ PCI sl	ots BUS A I for two 32- interface
Ethernet  CD-ROM / diskette Ports  Diagnostics Systems mgmt cntrl  Graphics controller	chip of CD-R Front: monite Diagn Winbo	on planar / I OM: 48X-2 : two USB or (analog ostic LEDs ond® W791	PCI-X 6 0X6 CI (Ver 2 DB-15) / erroi D / ch	64-bit 100l D-ROM, II .0) <i>; Back</i> ) r LEDs for ip on plan	MHz / full duple: DE / <i>Diskette:</i> 3 : two USB (Ver <sup>-</sup> fans and mem	x / Wake 3.5" 1.44h 2.0), two nory / ser ystem an	e on LAN MB diske o serial (9 rver diag nd proces	®7 Alette di 9-pin) nostic ssor te	ert Standard rive , parallel, ke c programs s emperature,	Format 2 yboard, m stored on fan speed	PHY layer functio .0 / one rear RJ-4 louse, ethernet (R IBM Enhanced D I and failure, and ing and control)	5 port J-45), agnostics	: CD
Security	hot-sv power	vap models r-on passw	s) / opti ord / b	ional U-Bo oot seque	locks hot-swap olt support via k ence control / op y slot (for opt c	nockout peration	/ k)	Xeon Xeon Xeon	3.0 GHz/80 3.2 GHz/80 3.4 GHz/80	0/2MB L2 0/2MB L2 0/2MB L2	Cache EM64TP Cache EM64TP Cache EM64TP Cache EM64TP	oc Upg oc Upg	25R8907 25R8900 25R8901 13N0676
Software	and c	erGuide™ ( onfiguration are) and m	tool),	IBM Direct	nated network of ctor (system ha	OS insta Irdware r	ngmt	1GB 1GB	(2x512) PC2 (2x512) PC2	2-3200 EC 2-3200 EC	ECC DDR2 DC DDR2 DC DDR2 ChipK D CC DDR2 DIMM		73P3523 73P3522 73P2865 73P2866
Keyboard / mouse Cooling fans Power supply(s)	Up to power Not re One 5 voltage	six / three r supply ca edundant / i 530 watt sto	for proge fans not hot and r Autor	ocessor(s) s (three in -swap / all nax / not I natic Serv	use (both black, , memory, and dual power sup variable speed not-swap / unive er Restart (ASF	disk bay oply mod I / ersal /	rS/2) ys / two del) ing fan	IBM 8 IBM 2 IBM 3 IBM 7 IBM 1 40X/1 IBM F	BOGB SATA 160GB SATA 250GB SATA 36.4GB 15K 73GB 10K U 46GB 10K 2X/40X Ma Remote Sup	-150 (7.2h A-150 (7.2 A-150 (7.2 Ultra320 S Ultra320 S x <sup>6</sup> CD-RW ervisor Ac	() simple-swap HI 2K) simple-swap H 2K) simple-swap H SCSI Hot-Swap SL SCSI Hot-Swap SL GCSI Hot-Swap SI I internal (black) dapter II (PCI ada)	OD HDD HDD L HDD HDD _ HDD	73P8002 73P8003 73P8006 06P5776 32P0727 32P0728 22P6976 59P2984
Slot 1: fullsize	PCI-F	- xnress x1	6 (3.3)	/)*				IBM S		Si+ control	ower-to-Rack Kit ler (adapter for Sl ontroller	ot 5)	26K6095 13N2190 71P8648

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

support only for x8 adaptors

\*\* slot for opt IBM ServeRAID-6i+

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

models only

Bay  $\odot$  5.25", HH 1.6", access, CD-ROM Bay  $\odot$  5.25", HH 1.6", access, open Bay  $\odot$  3.5", SL 1", access, diskette Hot-swap models:

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

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

Maximum internal disk capacity<sup>13</sup>: 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

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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

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1 year parts and labor

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

International Warranty Service<sup>3</sup>

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

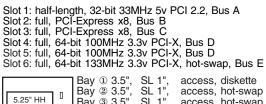
http://www.ibm.com/ services/us/its/pdf/wamomxeu.pdf

24x7<sup>14</sup> toll-free support for warranty issues during the warranty period<sup>3</sup>

IBM® Type-model Qty x F	L2 L3 Processor cache cache Memory Dis	SCSI sk controller Mechanica	Slots x bays I (hot-swap bays)	Power Available supply Ethernet date
8671-KAX 1 x Xeon 8671-L1X 1 x Xeon 8671-LAX 1 x Xeon ≈ 8671-M1X 1 x Xeon ≈ 8671-MAX 1 x Xeon	<ul> <li>2.67GHz 512KB 0MB 512MB No</li> <li>2.67GHz 512KB 0MB 512MB No</li> <li>2.8BGHz 512KB 0MB 512MB No</li> <li>2.8BGHz 512KB 0MB 512MB No</li> <li>3.06GHz 512KB 0MB 512MB No</li> </ul>	ne 2 x Ultra320 Tower one	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 u Up to 1 x Intel® Xeon™ Processor 512KB / all models / on die of proc 1MB / available on some models / 2-way SMP / up to two Xeon Proc Systemboard contains two Intel 60 six PCI slots (two hot-swap Active	r 3.06 GHz with 533MHz fressor / at processor spee on die of processor / at pressors (same speed/cach)3-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 two	n ECC DDR-SDRAM DINed pairs [a bank] / 2-way n Correcting (ECC) (correcting (ECC)	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 chang supports RAID-1 mirroring with u low-cost RAID 0, 1, 1E, 5, 00, 10, Two 16-bit channels / SCSI Chang interface for Bay 8 and 9 (may red devices via external SCSI knockout eEnhanced IDE ATA-100 controller None standard / supports 7200-150 Six hot-swap / 80-pin SCA-2 connections	p to one hot-spare disk / 1E0, 50 (installed only in a nel A: 16-bit 68-pin LVD ca quire a cable) or with optic in rear (cable req 32P816 in CSB5 South Bridge / o 100 rpm disks / one backpla	shared with optional IBM S Slot 4) able from controller to back onal 3-Pack Kit (cable inclu- 34) or via opt ServeRAID add one connector on planar / on 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™ two CIOB-X2 I/O Bridges (IMB2 bus controllers; IMB2 bus to Host Bridge for PCI 2.2 bus A with slot 1 and gra	4.0 LE / CMIC LE Host Bisto 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-20X <sup>6</sup> CD-ROM / IDE / 1.6" HH Rear: two USB (Vers 1.1), keyboard, Front: one USB (Vers 1.1); Graphics:	l; Diskette: 3.5" 1.44MB of mouse, parallel, <b>two</b> 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 / selectabl			
Systems mgmt  Diagnostics  Software	IBM Integrated system manageme H8S2148 / on planar / provides syst monitoring such as temp, optional d supports optional Remote Supervise connector on planar for continuous Light Path Diagnostics™ panel pro failing part (under side cover) / Inform ServerGuide™ (CD-ROM installatio utilities), IBM Director, others	em and environmental lisks, fans, power supp / or Adapter with 20-pin power (no ext pwr reqd) viding LED map to nation LED Panel in front	Xeon 2.67GHz/512KB L2 ( Xeon 2.8BGHz/512KB L2 ( Xeon 3.06GHZ/512KB L2 ( 2x256MB PC2100 Non-Ch ( 512MB PC2100 CL2.5 ECC ( 1GB PC2100 CL2.5 ECC ( 1GB PC2100 CL2.5 ECC ( 1GM ServeRAID-6i Controll ( 1BM Remote Supervisor Av ( 1BM T541 15" Flat Panel Color (	Cache Proc Upg 71P8967 Cache Proc Upg 02R1988 ipkill DDR-SDRAM Kit 73P2868 C DDR-SDRAM DIMM 33L5039 DDR-SDRAM RDIMM 33L5049 DDR-SDRAM RDIMM 33L5040 er (adapter for slot 4) 71P8595 dapter II (PCI adapter) 59P2984
Keyboard / mouse Power supply	IBM 101-key keyboard / IBM mout 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 / variate redundant / PFA / fan in each pow	All: voltage-sensing / auto-restart / fan in each ole speed / hot-swap /		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 second slot for containi	MHz 5v PCI 2.2, Bus A 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 PCI	○ 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	Utility near startup  Utility near startup  Inte  Ons  cove bus  3 ye upg loca sis on disk options, RMs, power njunction with IBM stem administrator ent failure 2.5" 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

8841-01y-01x 1 x X 8841-11y-11x 1 x X 8841-21y-21x 1 x X 8841-31y-31x 1 x X 8841-32y-32x 1 x X	(eon 3.0GHz 1MB 1GB None 2 x Ultra320 Tower 6x10 (eon 3.2GHz 1MB 1GB None 2 x Ultra320 Tower 6x10 (eon 3.4GHz 1MB 1GB None 2 x Ultra320 Tower 6x10 (eon 3.4GHz 1MB 1GB None 2 x Ultra320 Tower 6x10	Slots x bays (hot-swap bays)  (6 hot-swap std; 9 max ) (6 hot-swap std; 9 max	x) 1 x 670W hot-swap 2xGigabit x) 1 x 670W hot-swap 2xGigabit x) 1 x 670W hot-swap 2xGigabit x) 2 x 670W hot-swap 2xGigabit	Aug 2004 Aug 2004 Aug 2004 Aug 2004 Aug 2004
Positioning Processor L2 cache SMP support	Universal server; two-way server using the Xeon processor to Up to 1 x Intel® Xeon™ Processor 2.8, 3.0, 3.2, 3.4, 3.6 GHz (EM64T) / Simultaneous Multi-threading (SMT) / Hyper-Threading 1 all models / on die of processor / at processor speed 2-way SMP / up to two Xeon Processors (same speed/cache	with 800MHz frontside beading technology / size)	ous / Extended Memory 64 Tech	nology
Implementation	Systemboard contains two Intel 604-pin micro-PGA ZIF sockets six PCI slots (one hot-swap Active™ PCI slots), and integrated	s, eight memory gold-co SCSI, ethernet, graphic	onnector DIMM slots, s	
Memory	512MB or 1MB std / 16GB max / two slots used / six slots ave DIMMs / DIMMs must be installed in matched pairs [a bank] / 2 2x200MHz / Error Checking and Correcting (ECC) (corrects errors contained in two chips) / Active Memory™: memory moptionally available, requiring 512MB DIMMs or greater	-way memory interleave 1, 2, 3, or 4-bit errors or	/ dual channel / memory bus runs n same chip and detects 2- throug	s at gh 8-bit
SCSI disk controller	Adaptec AlC 7902 / dual channel Ultra320 SCSI controller (HostRAID supports RAID-0, 1 mirroring with up to one hot-splow-cost RAID 0, 1, 1E, 1E0, 5, 00, 10, 50 (installed on internal of	are disk / optional IBM		
SCSI channels  IDE controller / cable	Two 16-bit channels / SCSI Channel B: 16-bit 68-pin LVD cable Bay 8 and 9 (may require a cable) or with optional 3-Pack Kit (c knockout in rear (cable req 24P7973) or via opt ServeRAID add	from controller to backp cable included); supports apter with external conn	s external SCSI devices via externa nector(s)	
Disk - capacity Disk - bays	None std / supports 7200-15000 rpm disks / one backplane / al Six hot-swap / 80-pin SCA-2 connectors / three additional hot-sw	l disk bays Ultra320-ena	abled `	
Mechanical Slots Chipset (see below)	Tower / conversion to EIA 19" Rack (5U4) via optional kit for su Two PCI-Express (one hot-plug), three PCI-X 64-bit (one 133M Intel E7520 chipset / Intel E7520 Memory Controller Hub (MCI (slots 2 & 3) / PXH: Bus A, two 64-bit/100MHz PCI-X slots (slots 6) / ICH5R: one 32-bit/33MHz slot (slot 1), ATI video, EIDE, USI	Hz and two 100MHz), c H): PXH, ICH5R, Dual E s 4 & 5), Adaptec SCS⊟	one 32-bit/33MHz slot Broadcom ethernet, two PCI-Expre Bus B, one 64-bit/133MHz Hot-Plu	ig slot (slot
Ethernet controller	Dual 10/100/1000 gigabit / Broadcom® BCM 5721 / on planar / Format (2.0) / IPMI (1.5)			
CD-ROM / diskette Rear ports Front port / graphics	48X-20X° CD-ROM / IDE / 1.6" HH; <i>Diskette</i> : 3.5" 1.44MB disk <i>Rear</i> : two USB (Vers 2.0), keyboard, mouse, parallel, <b>one</b> seri. <i>Front:</i> one USB (Vers 2.0); <i>Graphics</i> : SVGA / ATI® Radeon™ 7	al (9-pin), graphics (DB-1	15), two ethernet (RJ-45), RJ-45 ( B DDR std/max / 32-bit/33MHz P	sys mgmt) Cl 2.2
Security	Power-on password / administrator password / hinged and lock unattended boot / selectable boot	able front door to cover	disk bays, power button, and rese	et button /
Systems mgmt  Diagnostics	IBM Integrated system management processor (ISMP) / H8S2148 / on planar / provides system and environmental monitoring such as temp, optional disks, fans, power supp / supports opt. Remote Supervisor Adapter II Slimline with 20-pin connector on planar for continuous power (std on 32y) (no ext pwr reqd)  Light Path Diagnostics™ panel providing LED map to failing part (under side cover) / Information LED Panel in	1GB (2x512) PC2-3200 1GB (2x512) PC2-3200 2GB (2x1GB) PC2-3200 73.4GB 10K Ultra320 S	Cache Proc Upg Cache Proc Upg 200 CL3 ECC DDR2 non-Chipk 0 CL3 ECC DDR2 non-Chipk 0 CL3 ECC DDR2 RDIMM 00 CL3 ECC DDR2 RDIMM SCSI Hot-Swap SL HDD	13N0681 13N0684 13N0685 73P3523 73P3522 73P2865 73P2866 32P0727
Software	front ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director, others	36.4GB 15K Ultra320 \$ 73.4GB 15K Ultra320 \$	SCSI Hot-Swap SL HDD SCSI Hot-Swap SL HDD SCSI Hot-Swap SL HDD	32P0728 06P5776 32P0735
Keyboard / mouse Power supply Fans	IBM 101-key keyboard / IBM mouse (both black) std/max: one/two 670 watt / voltage-sensing / auto-restart / Fan in each std/max: four/six/ two fans (front), two fans on planar, (Opt) two fans (rear) / variable speed / hot-swap / redundant with optional rear fans / PFA / fan in each power supply	3-Pack Ultra320 Hot-Si IBM 670W Hot-Swap F	or Adapter II Slimline rel Color Monitor (black) wap Expansion Kit Power Upgrade Kit (NA) w.ibm.com/pc/us/accessories	71K8642 73P9341 9512AB1 33P2751 25K9560
Slot 2: full, PCĬ-Exp Slot 3: full, PCI-Exp Slot 4: full, 64-bit 11 Slot 5: full, 64-bit 11 Slot 6: full, 64-bit 11 Slot 6: full, 64-bit 13 Bay Bay Bay Bay Bay Bay Bay Bay Bay Bay	press x8, Bus C  DOMHz 3.3v PCl-X, Bus D  DOMHz 3.3v PCl-X, Bus D  DOMHz 3.3v PCl-X, Bus D  Domesting CTRL+I  Diagnostics (PC-Doct F2 at startup)  ACPI2.0-compliant  Doperator Information I  Predictive failure and memory, processors, supplies, and fans in of an imminent compc  Solution of S.25", HH 1.6" access, open**  We 5.25", HH 1.6" access, open**  We 6.25", HH 1.6" access, open**  We 7.4 to 101 pounds  We 5.25", HH 1.6" access, open**  We 7.4 to 101 pounds  We 5.25", HH 1.6" access, open**  We 7.4 to 101 pounds  We 7.4 to 101 pounds	on Utility near startup or™) by pressing  Panel (in front) lysis on disk options, VRMs, power conjunction with IBM system administrator onent failure / 8.5" x D 27.6"	□ Syear parts and labor     □ International Warranty Serv     □ On site, 8 am - 5 pm, Mon -     coverage excluding holidad     business day response tim     □ 3 year on site warranty serv     upgrade options (in eligible locations):     □ 9 hour coverage,     Mon-Fri excluding holida     4 hour average response     (ServicePac® part num 21     □ 24 hr x 7 day coverage,     4 hour average response     (ServicePac part number 2     □ 24 hr x 7 day coverage,     □ 24 hr x 7 day coverage,     □ 24 hr x 7 day coverage,     □ 25 hour average responses     ○ 26 yervicePac part number 20     □ 27 hour average responses     ○ 28 yervicePac part number 20     □ 29 yervicePac part number 20     □ 24 hr x 7 day coverage,     □ 25 yervicePac part number 25 yervicePac part number 25	ice <sup>3</sup> Fri rs, next e <sup>7</sup> rice e 22083) 21P2084)
	ays 8 and 9 support three 3.5" 1.2TB <sup>2</sup> with nine 146. isks via 3-Pack Kit 33P2751 3-Pack Ultra160 Hot-S		24x7 <sup>14</sup> toll-free support for sissues during the warranty	

IBM®	L2	SC	21		Cla	to v bovo		Dawer		Available
	R Processor cache Mem		oller Mech	hanical		ts x bays swap bays)		Power supply	Ethernet	
8841-05U-05x 1 x X					x10 (6 hc	t-swap std;		1 x 670W hot-swap		
	eon® 3.0GHz 2MB 1GB							1 x 670W hot-swap		
8841-25y-25x 1 x X 8841-35y-35x 1 x X								1 x 670W hot-swap		
8841-45y-45x 1 x X								1 x 670W hot-swap 1 x 670W hot-swap		
8841-16y-16x 1 x X								1 x 670W hot-swap		
8841-E1y-E1x 1 x X	eon 3.0GHz 2MB 2GB	3x73.4GB 2 x L	Jltra320 T	ower 6	x10 (6 hc	t-swap std;	9 max)	1 x 670W hot-swap	2xGiğabit	Mar 2005
8841-E2y-E2x 2 x X								1 x 670W hot-swap		
	eon 3.8GHz 2MB 1GB							1 x 670W hot-swap		Sep 2005
Propositioning	Universal server; two-wa									
Processor	Up to 1 x Intel® Xeon™ ogy (EM64T) / Simulta	Processor 2.8, 3.	.0, 3.2, 3.4	I, 3.6, 3.8	B GHZ Wit	n 800MHz t	rontside	bus / <b>Extended Me</b>	mory 64 I	ecnnol-
L2 cache	2MB / all models / on di				per-Trilea	ung techno	iogy /			
SMP support	2-way SMP / up to two				ne size)					
Implementation	Systemboard contains to	vo Intel 604-pin m	nicro-PGA	ZIF soc	kets, eigh			ector DIMM slots,		
	six PCI slots (one hot-sv	vap Active™ PCI s	slots), and	l integrat	ed SCSI,	ethernet, gr	aphics			
Memory	1GB std / 16GB max / 1	wo slots used / six	x slots ava	ailable / F	PC2-3200	400MHz re	gistered :	240-pin ECC DDR2	-SDRAM D	IMMs /
	DIMMs must be installed	I in matched pairs	[a bank] /	2-way n	nemory in	terleave / du	ial chanr	nel / memory bus ru	ns at 2x200	MHz/
	Error Checking and Co	orrecting (ECC) (	corrects 1,	, 2, 3, or	4-bit erro	rs on same	chip and	d detects 2- through	8-bit errors	s contained
	in two chips) / Active N									
SCSI disk controller	Adaptec AIC 7902 / du									
	HostRAID supports RAI						IBM Sei	rveRAID™-7k Contr	oller for	
SCSI channels	low-cost RAID 0, 1, 1E, Two 16-bit channels / So	CSI Channel B: 16	(11 IStalled t i-hit 68-nin	i I VD ca	hle from c	ontroller to b	nackolan	e. <i>Channel A</i> . 16-h	it 68-nin inte	erface for
	Bay 8 and 9 (may requir	e a cable) or with	optional 3	B-Pack Ki	t (cable in	cluded): sur	ports ex	ternal SCSI devices	via externa	al SCSI
	knóckout in rear (cable i	eq 24P7973) or v	ia opt Ser	veRAID	adapter v	vith extérnal	connect	or(s)		
IDE controller / cable									D-ROM)	
Disk - capacity Disk - bays	None std / supports 720								nm diaka	
	Six hot-swap / 80-pin SC					,		· · · · · · · · · · · · · · · · · · ·	prii uisks	
Mechanical	Tower / conversion to E									
Slots Chipset (see below)	Two PCI-Express (one has Intel E7520 chipset / In								PCI-Evore	see v8 elote
Onipoet (occ below)	(slots 2 & 3) / PXH: Bus	A. two 64-bit/100	/ Controlle ИНz PCI-Х	K slots (s	lots 4 & 5	). Adaptec S	SCSI Bus	B. one 64-bit/133N	IHz Hot-Plu	a slot (slot
	6) / ICH5R: one 32-bit/33									
Ethernet controller	<b>Dual</b> 10/100/1000 gigab	t / Broadcom® BC	M 5721 / c	on plana	r / PCI-X 6	64-bit 100MF	Hz / full d	unlex / Wake on I A	N® / Alert S	Standard
	Format (2.0) / IPMI (1.5)		0, 2 . , .	ori piaria	171 0170	71 510 1001111	12 / 1011 0	apiex / Traite on E	/ / !!!!!!	, tarraara
CD-ROM / diskette	48X-20X <sup>6</sup> CD-ROM / ID									
Rear ports	Rear: two USB (Vers 2.									
Front port / graphics	Front: one USB (Vers 2.	0); Graphics: SVC	àA / A∏° I	Radeon'	™ 7000M	on planar /	16MB L	DDR std/max / 32-b	t/33MHz P	CI 2.2
Security	Power-on password / ac					Xeon 2.8G	Hz/2MB L2	Cache Proc Upg		25R8907
	front door to cover disk I		n, and rese	et button	/	1		Cache Proc Upg		25R8902
	unattended boot / select							Cache Proc Upg		25R8903
Systems mgmt	IBM Integrated system							Cache Proc Upg Cache Proc Upg		13N0686 13N0687
	H8S2148 / on planar / p					V000		Cache Proc Upg		13N0689
	such as temp, optional of Supervisor Adapter II Sli					<del>-</del> 1		200 CL3 ECC DDR2 non-	Chipk	73P3523
	continuous power (std c			on plant	101			0 CL3 ECC DDR2 non-Ch		73P3522
Diagnostics	Light Path Diagnostics	™ panel providing	LED map	o to failin	g part	,	,	O CL3 ECC DDR2 RDIM		73P2865
Cathuana	(under side cover) / Info						,	00 CL3 ECC DDR2 RDIMI SCSI Hot-Swap SL HDD	VI	73P2866 32P0727
Software	ServerGuide™ (CD-RO		contigura	ition				SCSI Hot-Swap SL HDD		32P0727 32P0728
	utilities), IBM Director, of							SCSI Hot-Swap SL HDD		32P0735
Keyboard / mouse	IBM 101-key keyboard /					IBM Serve	RAID-7k Co	ontroller		71K8642
Power supply Fans	std/max: one/two 670 w				lonor			or Adapter II Slimline		73P9341
1 0115	Fan in each std/max: for (Opt) two fans (rear) / va							Swap Expansion Kit		33P2751
	optional rear fans / PF.				. vviu i	1		Power Upgrade Kit (NA)  m.com/pc/us/accessories		25K9560
			oup	L.1		Ou lei optio	ı ısaı w/ww/.ll	JIII.OIII/purus/accessofies		



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

Bays 2 through 7 support 6 SL disks Bays 8 and 9 support three 3.5"

via SCA-2 connectors. disks via 3-Pack Kit 33P2751

- Quick release adapter slots (no screws)
- Configuration/Setup Utility invoked by pressing F1 at startup
- Adaptec Configuration Utility near startup by pressing CTRL+I
- Diagnostics (PC-Doctor™) by pressing F2 at startup
- ACPI 2.0-compliant
- Operator Information Panel (in front)
- Predictive failure analysis on disk options, memory, processors, VRMs, power supplies, and fans in conjunction with IBM Director can alert the system administrator of an imminent component failure
- ⇒ Tower: H 17.31" x W 8.5" x D 27.6"
- ⇒ 74 to 101 pounds⇒ Stealth black color

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

#### LIMITED WARRANTY<sup>3</sup>

- 3 year parts and labor
- International Warranty Service<sup>3</sup>
- 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)
- 24x7<sup>14</sup> toll-free support for warranty issues during the warranty period3

5.25" HH

CD-ROM

Tower

BM @ Server   XSeries   255 (June 2003) xREF by eServer Field Skills Enablement Team  IBM® L3 ECC memory SCSI Mech- Slots x disk bays Available												
IBM® Type-model Qty x	L3 Processor cache	Memory	ECC memory features	Disk	SCSI controller			isk bays std/max) Ethernet	Available date			
8685-71X 1 x Xeon 8685-7RX 1 x Xeon < 8685-72X 2 x Xeon < 8685-73X 2 x Xeon < 8685-81X 1 x Xeon < 8685-8RX 1 x Xeon < 8685-9RX 1 x Xeon < 8685-9RX 1 x Xeon	MP 2.0GHz 1MB MP 2.0GHz 1MB MP 2.0GHz 1MB MP 2.5GHz 1MB MP 2.5GHz 1MB MP 2.8GHz 2MB	512MB H 1GB H 3GB H 1GB H 1GB H	Hot Spare/Chipkill	None None None 2 x 36.4GB 10K None None None None	2 x Ultra160 2 x Ultra160 2 x Ultra160 2 x Ultra160 2 x Ultra160	Rack Tower Tower Tower Rack Tower	7 x10 7 x10 7 x10 7 x10 7 x10 7 x10 7 x10	6/12 Gigabit 6/12 Gigabit 6/12 Gigabit 6/12 Gigabit 6/12 Gigabit 6/12 Gigabit 6/12 Gigabit 6/12 Gigabit	Jun 2003 Nov 2003 Nov 2003 Jun 2003 Jun 2003 Jun 2003			
Processors L2 cache L3 cache Processor upgrade Implementation	512KB / on die of 1MB or 2MB / on o 4-way SMP / up to Systemboard conf	processor / die of proce four Xeon ains four In	essor MP 2.0, 2.5, at processor speed ssor / at processor s Processors MP (sai tel 603-pin micro-PC CSI, ethernet, grapl	speed me speed/cache s GA ZIF sockets, o	ize)			· ·	inology			
Memory	184-pin ECC DDI installed in match of a pair or quad mirroring (memo	R-SDRAM I ed pairs or of DIMMs [ ory mirrorin	/ two (or six on 73 DIMMs / one memo quads [a bank] / 2 a bank]; reqs addit g supported with a or 4-bit errors on sa	orý-board std with - or 4-way memo ional memory ma ny OS) / <b>Error (</b>	12 DIMM gold-c ry interleave / <b>Ho</b> tching failed bank Checking and Co	onnector t Spare () / Act orrectir	or slots e Memo ive Mer ng (ECC	/ DIMMs must pry (activated t mory™ via me C) via 16-bit C	be by failure emory checksum			
SCSI disk controller SCSI connectors IDE controller / cablir Disk - capacity Disk - bays	Channel B: 68-pir Channel A: 68-pir ng Enhanced IDE AT None (or two) sta	connector connector A-100 contr ndard / sup	tra160 SCSI (LVD 1 on planar to SCSI b on planar for option oller in CSB5 South oports up to 15,000 nax: six additional ba	ackplane (one-dro al one-drop 16-bit Bridge / one one- rpm disks / 80-p	p 16-bit LVD cable LVD cable (32P81 drop IDE cable fro in SCA-2 connec	e) / I 64) to r om IDE ctors	ear 0.8r controlle	mm VHDCI con er to CD-ROM	nector			
Mechanical Rack / conversion Architecture / chipset	Rack systems' sup ServerWorks® G two CIOB-X I/O B ethernet and one SMBus, IOAPIC, Six hot-swap PCI-	pported in II rand Cham ridges (IME PCI 2.2 bus LPC bus to X 1.0 slots		s / kit available to IIC Host Bridge (No. e, one with two PC Touth Bridge (Thin er PCI buses / NS wer and attention	convert tower to r Memory Controlle CI-X buses C and IMB to Host Brid S PC87417 Super indicator lights (o)	ack (us r and I/0 D, othe ge, one I/O (dis otical se	e NetBA O Bridge r with or PCI 2.2 skette, k	AY11 for rack to and five REM ne PCI-X bus EDE, to bus A, EIDE, to bus to both moustontrol power to both moust for the power to both to both and the both to b	MCs / 3 and USB, se)			
Slots (Active™ PCI-X) Six hot-swap PCI-X 1.0 slots¹⁰ available with power and attention indicator lights (optical sensors control power to slot) / hot replace, hot upgrade, hot expansion / separated by insulative plastic dividers / 3.3 volt or universal  Ethernet controller CD-ROM / diskette CD-ROM / diskette Rear ports CD-ROM: 48X-20X⁰ CD-ROM, IDE (ATAPI), 1.6" HH, bootable / Diskette drive: 3.5" 1.44 MB diskette drive, dust cover Four USB (Vers 1.1), one serial (9-pin), keyboard (PS/2), mouse (PS/2), ethernet (RJ-45), graphics (DB-15), two RJ-45 (for integrated system management processor) / no parallel port SVGA / ATI® Rage XL / on planar / 8MB SDRAM std/max / up to 1280x1024 at 85Hz / 32-bit 33MHz PCI 2.2 Bus A												
Security	Power-on passwo	rd / adminis	strator password / h	inged and lockab								
Systems management Diagnostics Software	nt IBM integrated sy H8S2148 / on plar monitoring such a supports optional l connector on plan Light Path Diagn failing part (under ServerGuide™ (C	rstem mana ar / provide s temp, opt Remote Sup ar for contin ostics™ pa top cover) / D-ROM insi	agement processo s system and enviro ional disks, fans, po pervisor Adapter with uous power (no extra nel providing LED ma Information LED Pa tallation and configu	or (ISMP) / commental wer supplies / h 20-pin ernal power req) hap to hal in front ration	512MB PC1600 1GB PC1600 EC 2GB PC1600 EC Xeon MP 2.0GHz Xeon MP 2.5GHz Xeon MP 2.8GHz 6-pack Ultra320 370 watt Hot-Sw IBM 7U x 26D Tov	C DDF C DDF z/1MB L z/1MB L z/2MB L Hot-Sw ap Red wer-to-F	R SDRA R SDRA B Cach B Cach Rap Explundant Rack Cor	M RDIMM M RDIMM ne Proc Upg ne Proc Upg ne Proc Upg nansion Kit Power Supply nversion Kit III	33L3283 33L3285 33L3287 73P8805 73P8806 73P8807 32P8163 31P6133 32P1474			
tillities), IBM Director, and others  Keyboard / mouse Power supply  Std: two 370 watt hot-swap; Max: four 370 watt hot-swap / redundant with four power supplies / tool-free install / universal (voltage sensing) / fans in each power supply / PFA Nine hot-swap redundant fans / plus fan in each power supply / variable speed / PFA / fan failure signals diagnostic LED  IBM 70 X 26D Tower-to-Hack Conversion IBM External SCSI Interface Kit (for rear S Media Bay Cable Kit (2-drop SCSI to Hb H to Hb Lack) IBM 36.4GB 10K Ultra160 SCSI Hot-St IBM 73.4GB 10K Ultra160 SCSI H									_06P5755			
Bay ① 3.5", SL 1" Bay ② 5.25", HH 1. Bay ③ 5.25", HH 1. Bay ⑤ 5.25", HH 1. Bay ⑤ 5 to 10 (six ba standard 3.5" SL Bays 11 to 16 (six bays)	Rack or Tower Diskette CD-ROM HH 5.25" HH 5.25" , access, diskette 6" access, CD-ROM 6" access, open* 6" access, open* 8" ays): 1" hot-swap disk ba	color 1.0 te compo- and labels te hot-swap s roduct Data p BIOS	b primarily fo Slot 2: full, 64-bit 1 Slot 3: full, 64-bit 1 Slot 4: full, 64-bit 1 Slot 5: full, 64-bit 1 Slot 6: full, 64-bit 1 Slot 7: full, 64-bit 1 Slot 7: full, 64-bit 1 Slot 7: full, 64-bit 1 Compared to the startup; Diagnos F2 at startup; Compared to the startup;	r for optional Remo 00MHz 3.3v PCI-1 00MHz 3.3v PCI-1 00MHz 3.3v PCI-1 00MHz 3.3v PCI-1 00MHz 3.3v PCI-1 00MHz 3.3v PCI-1 is available by prestics (PC-Doctor) by TRL+A for SCSISe provers, memory, CPUs re Analysis alertics and the sor for IBM Direction RM(s), power support of the sor for I	ote Supervisor Adr X, hot-swap, Bus E X, hot-swap, Bus E X, hot-swap, Bus C X, hot-swap, Bus C X, hot-swap, Bus C X, hot-swap, Bus E ssing F1 at by pressing elect Utility of from top s generated or for DIMM(s), ly(s), disk(s),	Interpretation of the control of the	ear parternation site, 8 site, 8 site, 8 site se eligible year IO GerviceP year IO GerviceP year IO GerviceP hyear IO GerviceP year IO Gervice	excluding non- day response rvice upgrade locations):7 DR 9x5, 4 hr avac® part num 2 DR 24x7, 2 hr avac part num 3 DR 9x5, 4 hr avac part num 60 ricePac option v.ibm.com/ser momxeu.pdf free support fossues during t	Gervice <sup>3</sup> -Fri days, next time <sup>7</sup> options /g resp. #1L2738) avg resp  L2723) /g resp. #P9223) s at vices/us/ or			

IBM®		L3	*/cmow/	ECC memory	Diek	SCSI		Slots x o		Availal
Type-model	rocessor  MP 2 2GHz		Memory 512MB	features Hot Spare/Chipkill	Disk  Mone	controller 2 x Ultra160			std/max) Ethe	
8685-ARX 1 x Xeon I 8685-B1X 1 x Xeon I 8685-BRX 1 x Xeon I 8685-C1X 1 x Xeon I 8685-CRX 1 x Xeon I 8685-7EX 2 x Xeon I	MP 2.2GHz MP 2.7GHz MP 2.7GHz MP 3.0GHz MP 3.0GHz	2MB 2MB 2MB 4MB 4MB		Hot Spare/Chipkill	None None None None None 3 x 73GB - 10	2 x Ultra160 2 x Ultra160 2 x Ultra160 2 x Ultra160 2 x Ultra160	Rack Tower Rack Tower Rack	7 x10 7 x10 7 x10 7 x10 7 x10 7 x10	6/12 Giga 6/12 Giga 6/12 Giga 6/12 Giga 6/12 Giga 6/12 Giga	bit Mar 20 bit Mar 20 bit Mar 20 bit Mar 20 bit Mar 20
Processors L2 cache L3 cache Processor upgrade Implementation	512KB / on 1MB, 2MB of 4-way SMP Systemboar	die of or <b>4MB</b> / up to to d conta	processons / on die four Xeor lins four J	or MP 2.0, 2.2, 2.7 or / at processor sp of processor / at p or Processors MP (s ontel 603-pin micro-F SCSI, ethernet, gra	beed processor speed ame speed/cache PGA ZIF sockets, (	size)		,,	Ū	0,7
Memory	184-pin ECC installed in r of a pair or mirroring (	C DDR- matche quad o memor	-SDRAM d pairs o f DIMMs y mirrori	x / 512 &1GB: two DIMMs / one men r quads [a bank] / [a bank]; reqs add ng supported with or 4-bit errors on	nory-board std wit 2- or 4-way memitional memory m any OS) / <b>Error</b>	th 12 DIMM gold- ory interleave / Ho atching failed ban Checking and C	connect ot Spar k) / Ac orrecti	tor slots e Memo tive Me ng (EC	/ DIMMs m ory (activate mory™ via C) via 16-b	lust be ed by failur <b>memory</b> i <b>t Checks</b> ı
SCSI disk controller SCSI connectors	Channel B: (Channel A:	68-pin ( 68-pin (	connecto connecto	Iltra160 SCSI (LVD r on planar to SCSI r on planar for optio	backplane (one-di nal one-drop 16-bi	rop 16-bit LVD cab it LVD cable (32P8	le) / 164) to	rear 0.8	mm VHDCI	connector
Disk - capacity Disk - bays	<i>7EX</i> : 3 x 73	GB - 1	0K / sup	ports up to 15,000 max: six additional	rpm disks / 80-pii	n SCA-2 connecto	ors			
Mechanical Rack / conversion Architecture / chipset	Rack system ServerWorl two CIOB-X ethernet and SMBus, IOA Six hot-swap	ns`supp ks® Gra I/O Bri d one P kPIC, L o PCI->	oorted in and Char dges (IM CI 2.2 bu PC bus to ( 1.0 slots	r / tower models ha IBM NetBAY™ racl mpion™ 4.0 HE / C B bus to Host Bridd us for SCSI / CSB5 o Super I/O) / five p s¹⁰ available with pu hot expansion / se	ks / kit available to MIC Host Bridge ( ge, one with two P South Bridge (Thi eer PCI buses / N ower and attentior	o convert tower to (Memory Controlle CI-X buses C and in IMB to Host Brid IS PC87417 Supe n indicator lights (c	rack (user and I/I D, other dige, one of I/O (disporting)	se NetB O Bridg er with o e PCI 2 skette, l ensors	AY11 for race) and five I ne PCI-X be 2 bus A, EII keyboard, no control powe	REMCs / us B and DE, USB, nouse)
Ethernet controller CD-ROM / diskette Rear ports	CD-ROM: 48 Four USB (V two RJ-45 (fe	3X-20X 'ers 1.1 or integ	6 CD-RO ), one se rated sys	t / Broadcom® BCM M, IDE (ATAPI), 1.6 rial (9-pin), keyboar stem management p lanar / 8MB SDRAM	6" HH, bootable / <i>[</i> d (PS/2), mouse ( processor) / no par	<i>Diskette drive:</i> 3.5" PS/2), ethernet (R allel port	1.44 M J-45), g	B disket raphics	te drive, du: (DB-15),	st cover
Security				istrator password / ded boot / selectable		ble front door to co	over dis	k bays,	power butto	n, and rese
Systems management	H8S2148 / o monitoring s supports opt connector or	n plana such as ional R n plana	ar / provid temp, op emote Su r for conti	es system and envi otional disks, fans, p upervisor Adapter w nuous power (no ex	ronmental ower supplies / ith 20-pin tternal power reg)	512MB PC1600 1GB PC1600 E0 2GB PC1600 E0 Xeon MP 2.0GH Xeon MP 2.5GH	CC DDI CC DDI Iz/1MB Iz/1MB	R SDRA R SDRA L3 Cack L3 Cack	M RDIMM M RDIMM ne Proc Upo ne Proc Upo	33L32 33L32 73P88 73P88
Diagnostics	failing part (u	<b>Diagno</b> under to	<b>stics</b> ™ pa op cover)	anel providing`LED / Information LED F	map to Canel in front	Xeon MP 2.8GH 6-pack Ultra320	Hot-Sv	vap Exp	oansion Kit	32P81
Software	ServerGuid utilities), IBM			stallation and config thers	uration	370 watt Hot-Sw IBM 7U x 26D To	wer-to-l	Rack Co	nversion Kit	III 32P14
Keyboard / mouse Power supply Fans	Std: two 370 redundant w universal (vo Nine hot-sw	) watt h ith four oltage s vap red	ot-swap; power su ensing) / undant f	yboard / IBM mous Max: four 370 wat upplies / tool-free in fans in each power ans / plus fan in each ilure signals diagno	t hot-swap / ´stall / supply / PFA ch power supply/	- IBM External SCS Media Bay Cable IBM ServeRAID IBM 36.4GB 104 IBM 73.4GB 104 IBM Remote Sup IBM T541 15" Fis Other options a	Kit (2-di ™-4H U K Ultra1 K Ultra1 pervisor at Pane	rop SCS Jltra160 60 SCS 60 SCS Adapte I Color I	I to HH bays SCSI Ada SI Hot-Swap SI Hot-Swap r II Vonitor (blad	) 10K23 oter 37L68 o SL 06P57 o SL 06P57 59P29 ck) 9512A
⇒Towerdim: H15.5" > ⇒Rack dim: H12.0" >				) lb primarily f	or for optional Ren	ot-swap, Bus A;	p = 3 y	LIMIT ear par	EDWARR	ANTY <sup>3</sup>

Black color

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

ACPI 1.0

Orange components and labels indicate hot-swap options

⇒ Vital Product Data Backup BIOS

Bay ① 3.5", SL 1", access, diskette Bay ② 5.25", HH 1.6" access, CD-ROM Bay ③ 5.25", HH 1.6" access, open\* Bay ④ 5.25", HH 1.6" access, open\* Bays 5 to 10 (six bays):

standard 3.5" SL 1" hot-swap disk bays Bays 11 to 16 (six bays): optional 3.5" SL 1" hot-swap disk bays

Slot 2: full, 64-bit 100MHz 3.3v PCI-X, hot-swap, Bus B Slot 3: full, 64-bit 100MHz 3.3v PCI-X, hot-swap, Bus B Slot 4: full, 64-bit 100MHz 3.3v PCI-X, hot-swap, Bus C Slot 5: full, 64-bit 100MHz 3.3v PCI-X, hot-swap, Bus C Slot 6: full, 64-bit 100MHz 3.3v PCI-X, hot-swap, Bus D Slot 7: full, 64-bit 100MHz 3.3v PCI-X, hot-swap, Bus D

 $\Rightarrow$  Setup Program is available by pressing F1 at startup; Diagnostics (PC-Doctor) by pressing F2 at startup; CTRL+A for SCSISelect Utility

Removeable top cover

 Access adapters, memory, CPUs from top
 Predictive Failure Analysis<sup>®</sup>: alerts generated by mgmt processor for IBM Director for DIMM(s), processor(s), VRM(s), power supply(s), disk(s), and fans

Maximum internal disk capacity: 880GB2 with twelve 73.4GB SL hot-swap SCSI disks On site, 8 am-5 pm, Mon-Fri coverage excluding holidays, next

business day response time On site service upgrade options

- (in eligible locations):<sup>7</sup>
   3 year IOR 9x5, 4 hr avg response (ServicePac® part num 41L2738)

  • 3 year IOR 24x7, 2 hr avg resp
- (ServicePac part num 31L2723)
   5 year IOR 9x5, 4 hr avg response
- (ServicePac part num 69P9223) http://www.ibm.com/services/us/
- its/pdf/wamomxeu.pdf 24x7<sup>14</sup> toll-free support for warranty issues during the warranty period3

See footnotes for important warranty information

= Hot-swap

US models announced March 2004

							1000	2/				
IBM <sup>⊚</sup> Type-model Qty x Processor	L2 cache	DIMM Memory slots	Memory Cards Dis	SCSI ks controller	Mechan- ical	Slots x bays	Hot-swap pwr supplies		y Available date			
8865-11Y 1 x Xeon™ MP 3.16 8865-12Y 1 x Xeon™ MP 3.16 8865-1RY 1 x Xeon™ MP 3.16 8865-1SY 1 x Xeon™ MP 3.16 8865-21Y 1 x Xeon™ MP 3.66 8865-2RY 1 x Xeon™ MP 3.66 8865-E1Y 2 x Xeon™ MP 3.66 8865-E2Y 1 x Xeon™ MP 3.66	GGHz 1MB GGHz 1MB 2 GGHz 1MB 3 GGHz 1MB 2 GGHz 1MB 2 GGHz 1MB 4	2GB(2x1GB) 4 1GB(2x512MB) 4 2GB(2x1GB) 4 1GB(2x512MB) 4 2GB(2x1GB) 4 2GB(2x1GB) 4 4GB(4x1GB) 8 1GB(2x512MB) 8	One No One No One No One No One No Two No	one SAS	Tower Tower 7U Rack 7U Rack Tower 7U Rack Tower 7U Rack Tower 7U Rack	6x12 6x12 6x12 6x12 6x12 6x12 6x12	2 x775W 2 x775W 2 x775W 2 x775W 2 x775W 2 x775W 2 x775W 2 x775W 2 x775W	3 3 3 3 3 3 3	Sep 2005 Sep 2005 Sep 2005 Sep 2005 Sep 2005 Sep 2005 Sep 2005 Sep 2005			
L2 cache	F Technology™ e of processor / v / up to four Xeo and contains four	on™ Processor M (EM64T) / Hyper-T at processor speed on Processors MP ( Intel 604-pin micro- II (SAS), ethernet, a	hreading ted / <b>XceL4v™</b> I (same speed/ PGA4 ZIF so	nnology Dynamic Server cache size)	Cache							
Active Memory <sup>™</sup> Up to <b>4GB</b> gold-connec / <b>Error Che</b>	std / 64GB max <sup>12</sup> ctor slots / DIMM: cking and Corr	<sup>2,13</sup> (with 4GB DIMN s must be installed <b>ecting (ECC)</b> via <b>1</b> ot-swap (non-OS s	Is) using high in matched p	airs / PC2-3200 : <b>um Chipkill</b> ™	0 400MHz re / <b>Memory F</b>	egistered : ProteXion	240-pin DDR2 n™ (redundant	SDRA- bit stee	.M RDIMMs ering) and			
SAS connectors SAS cabling IDE controller / cabling Disk - capacity Disk - bays  Disk - bays  Disk - bays  Dual chann Hot-swap b Enhanced II Max: 3.6TB Up to Twel	el Controller wired ays connect to in DE ATA-33 contro -10k / supports u <b>ve</b> 3.5" hot-swap	Dual-channel Seria d to dual SAS back tegrated SAS controller in CSB6 South up to 15,000 rpm dia b bays / Six standar x 28" deep / suppo	planes roller through Bridge sks d converged	SAS expander,	, 1 cable for CA-2 connec	each of t	the 2 SAS bac e FH (or 2 HF	kplanes				
models) / 2 graphics), S Broadcom 5 I/O Slots Six total Act	IBM PCI-X 2.0 H erverWorks® CS 5704, and 2 PCI- ive™ PCI-X 2.0 (	ion chipset / IBM I lost Bridges / 1 sup B6 South Bridge (II -X 2.0 slots / Host E 64-bit slots available t expansion / sepan	oports adapte DE, USB, bus Bridge suppor with power	PCI 33MHz ar for Super I/O s 4 PCI-X 2.0 s and attention ind	nd 66MHz, s NS 87417 [d slots dicator lights	lot for opt liskette, k (optical s	tional ServeRA eyboard, mous sensors contro	AID 8i (i se]), Du I power	nc. ual Port			
Ethernet Broadcom® Graphics controller Ports SVGA / ATI Rear: RSA	5704 10/100/100 Radeon Mobilit ethernet, RSA se	ROM, IDE (ATAPI), 00 dual ethernet / o y 7000 / on planar / erial, two USB (Ver	n systemboai ′ 16MB SDR <i>A</i>	d / 64-bit 266M M std/max / 32	hz PCI-X 2.0 -bit 33MHz F	) / Wake PCI 2.2 bu	JS					
Systems management BMC standar connectors fans, power Diagnostics Drop-down IBM Real Ti	Power-on and administrator passwords / unattended boot / selectable boot BMC standard / Remote Supervisor Adapter II slimline (optional) / PCI adapter / includes 10/100 ethernet, RJ-11, and serial connectors / provides remote console and mgmt / power on/off system / monitors power status, op system, temperature, disks, ans, power supplies Drop-down Light Path Diagnostics / primary indicator on information panel with LEDs associated with failing components / BM Real Time Diagnostics (operated through IBM Director) available even while server running ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director, and others											
Rack modes Power supplies Power supplies Cooling fans  Rack modes Std: two 77: accessible f Eight hot-sv	: none standard 5 watt hot-swap / ans in each pow /ap, redundant, n	/ Tower model: IBM redundant with thre	I 104-key ko ee power sup ne cooling fai	eyboard (PS/2 plies (N+1) / wo	) / IBM 3-bi orldwide / vol	utton opt Itage-sens	sing / auto-res	tart / re				
Options 1GB PC2- 2GB PC2- 4GB PC2- Active Me Xeon MP Xeon MP 775 watt H	3200 CL3 ECC 3200 CL3 ECC 3200 CL3 ECC mory 4-slot Exp 3.16GHz/1MB L	RDIMM (2x512M RDIMM (2x1GB) RDIMM (2x2GB) Iansion Card 2 Cache Proc Up Cache Proc Up Supply (WW)	B) 73P2865 73P2866 73P2867 13M7409 13N0694	IBM 73. IBM 146 IBM 300 Remote SAS 3.5 IBM 73.	4GB 10K 3.5 6GB 10K 3.5 0GB 10K 3.5 Supervisor 5" 6-drive Ba 4GB 15K 3.5	.5" SAS H 5" SAS H 5" SAS H Adapter ackplane .5" SAS		D :	02R0988 26K5709 26K5710 26K5711 59P2984 13M7864 26K5698 26K5699			
Bay ① 3.5", SL 1", access, diskette Bay ② 5.25", HH 1.6" access, open* Coverage excluding holidays, next business day response time? On site service upgrade options (in eligible locations):? Syear IOR 24x7, 4 hr avg response (ServicePac partnum 96P2254) Syear IOR 9x5, NBD response (ServicePac partnum 96P2255) Syear IOR 9x5, NBD response (ServicePac partnum 96P2255) Syear IOR 9x5, NBD response (ServicePac partnum 96P2255) Other ServicePac potions at http://www.ibm.com/services/ us/fits/pdf/wamomxeu.pdf  24x7¹¹¹ toll-free support for warranty issues during the warranty period³  Bay ③ 5.25", HH 1.6" access, open* Bay ⑤ 5.25", HH 1.6" access, open* Bay ⑤ 5.25", HH 1.6" access, open* Bay ⑤ 5.25", HH 1.6" access, open* Bay ⑥ 5.25", HH 1.6" access open												
issues during the warranty period <sup>3</sup> All models: Maximum inte	ernal disk capac	<u>                                     </u>	2x 300GB <sup>2</sup> h	ot-swap SAS	disks		Ship Config: 2		nr (588 watts) r (1860 watts)			

IBM® □	L2	DIMM Memory		ots x Hot-swap Warranty Available									
Type-model Qty x Processor 8865-11Y 1 x Xeon™ MP 3.16	cache Memory GGHz 1MB 2GB(2x1GB	slots Cards Disks 3) 4 One None		pays pwr supplies (yrs.) date 6x12 2x775W 3 Sep 2005									
8865-12Y 1 x Xeon™ MP 3.16				Sx12 2 x775W 3 Sep 2005									
8865-1RY 1 x Xeon™ MP 3.16	GHz 1MB 2GB(2x1GE	3) 4 One None	SAS 7U Rack 6	6x12 2 x775W 3 Sep 2005									
8865-1SY 1 x Xeon™MP 3.16 8865-21Y 1 x Xeon™MP 3.66				Sx12 2 x775W 3 Sep 2005									
8865-21Y 1 x Xeon™ MP 3.66 8865-2RY 1 x Xeon™ MP 3.66			SAS Tower 6 SAS 7U Rack 6	6x12									
8865-E1Y 2 x Xeon™ MP 3.66				Sx12 2 x775W 3 Sep 2005									
8865-E2Y 1 x Xeon™ MP 3.16	6GHz 1MB 1GB(2x512)	MB) 8 Two None	SAS 7U Rack 6	3 Sep 2005									
Processors One or two	o 64-bit Intel® Xeon™ Proces I Technology™ (EM64T) / ⊦	sor MP 3.16 or 3.66Gl	<b>Hz</b> <sup>1</sup> with 667MHz frontside	bus std / <b>NetBurst</b> ™ <b>/ Extended</b>									
L2 cache 1MB / on di	ie of processor / at processor	speed / <b>XceL4v</b> ™ Dyna	amic Server Cache										
Processor upgrade 4-way SMP	/ up to four Xeon Processor	's MP (same speed/cacl	ne size)										
	ard contains four Intel 604-pin Serial Attach SCSI (SAS), ethe		ts, one memory board slot	t, six Active™ PCI-X 2.0 slots,									
	` , ,		pacity memory card / one n	memory board standard with 4 DIMM									
				stered 240-pin DDR2-SDRAM RDIMMs									
				teXion™ (redundant bit steering) and osoft® Windows™ Server 2003™)									
		. ,	` ' ' '										
	tec® AIC-9410 / <b>Dual-channe</b> el Controller wired to dual SA		(SAS) 3.0GHz (3GB/sec)	/ 64-bit 266MHz PCI-X 2.0									
	ays connect to integrated SA		S expander, 1 cable for each	ch of the 2 SAS backplanes									
IDE controller / cabling Enhanced II	DE ATA-33 controller in CSB6	South Bridge	'	·									
	-10k / supports up to 15,000		/ 90 nin SCA 2 connectors	s / One FH (or 2 HH) Tape Drive Bays									
Disk - bays Up to Twel Mechanical EIA 19" rac	ck models (7U4) x 28" deep /	supported in NetBAY™	Racks (such as NetBAY42	2 SR, NetBAY42 ER)									
Chipset IBM XA-64	e™ 3rd Generation chipset	/ IBM Integrated Proces	sor/Memory Controller (imp	proved performance from earlier									
models) / 2	IBM PCI-X 2.0 Host Bridges	/ 1 supports adapter PC	I 33MHz and 66MHz, slot	for optional ServeRAID 8i (inc.									
	ServerWorks® CSB6 South Br 5704, and 2 PCI-X 2.0 slots /			tette, keyboard, mouse]), Dual Port									
				ptical sensors control power to slot) /									
	hot upgrade, hot expansion												
CD-ROM/diskette IBM 24X Ma	ax SlimLine CD-ROM, IDE (A	TAPI), 1.6" HH, bootable	e / 3.5" 1.44 MB diskette dr	ive									
				Wake on LAN® / Alert on LAN™ 2									
raphics controller SVGA / ATI® Radeon Mobility 7000 / on planar / 16MB SDRAM std/max / 32-bit 33MHz PCI 2.2 bus orts Rear: RSA ethernet, RSA serial, two USB (Ver 2.0), keyboard, mouse, analog DB-15 graphics, two ethernet, std. serial, RS-485 /													
Front: USB		b (vci 2.0), kcybodia, ii	louse, analog DD 15 graph	iios, two ciriotrici, sta. scriai, i to 400 /									
Security Power-on a	nd administrator passwords /	unattended boot / selec	table boot										
Systems management BMC standa	ard / Remote Supervisor Ad	lapter II slimline (optiona	l) / PCI adapter / includes										
connectors fans, power		nd mgmt / power on/off s	system / monitors power st	tatus, op system, temperature, disks,									
		rimary indicator on inform	nation panel with LEDs as	sociated with failing components /									
	me Diagnostics (operated thro			ing									
<del> </del>	le™ (CD-ROM installation and	d configuration utilities), I	BIVI Director, and others										
	lard (because rack-based) 5 watt hot-swan / redundant v	with three nower supplier	s (N+1) / worldwide / voltag	ge-sensing / auto-restart / rear									
	ans in each power supply / F		s (N+1) / Worldwide / Vollag	ge-sensing / auto-restant / real									
Cooling fans Eight hot-sw	vap, redundant, multi-speed fa	ans / One cooling fan in	each power supply filler wh	nen power supply is not installed /									
	e signals Diagnostic LED and		IDM Company ON 11	1000 OFEND Adamter 00D0000									
Options 1GB PC2- 2GB PC2-	3200 CL3 ECC RDIMM (2: 3200 CL3 ECC RDIMM (3:	x512MB) 73P2865 x1GB) 73P2866	IBM ServeRAID 6M U IBM 73.4GB 10K 3.5"										
	3200 CL3 ECC RDIMM (2)		IBM 146GB 10K 3.5" (										
	mory 4-slot Expansion Car		IBM 300GB 10K 3.5" \$	SAS Hot-Swap HDD 26K5711									
	3.16GHz/1MB L2 Cache Pr 3.66GHz/1MB L2 Cache Pr		Remote Supervisor Ac SAS 3.5" 6-drive Back										
775 watt H	lot-Swap Power Supply (W	W) i 13M7415	IBM 73.4GB 15K 3.5"										
IBM Serve	RAID™-8i SA-SCSI Adapte	er 13N2227	IBM 146GB 15K 3.5" S										
LIMITED WARRANTY <sup>3</sup>	Bay ① 3.5", SL 1",		Stealth black color										
	Bay @ 5.25", HH 1.6" a Bay @ 5.25", HH 1.6" a		Tool-free serviceab Tower Dimensions:	oility : H15.5" x W18.2" x D30"(762mm)									
On site, 8 am - 5 pm, Mon - Fri	Bay @ 5.25", HH 1.6"	access, open*		to 180lbs; 67.6 to 81.7Kg									
coverage excluding holidays,	Bays 5 to 10 (six bays	s):	Rack Dimensions: I	H12" x W17.5" x D28.2"									
next business day response time <sup>7</sup> On site service upgrade options	Bays 11 to 16 (six ba	" hot-swap disk bays		H306mm x W444mm x D715mm o 158lbs; 65.4 to 71.7Kg									
(in eligible locations):7	optional 3.5" SL 1"			ans, and memory from top									
3 year IOR 24x7, 4 hr avg response	·	7U <sup>4</sup> Rack or Tower	Access processors	and systemboard from front									
(ServicePac partnum 96P2253)  • 3 year IOR 24x7, 2 hr avg response			Access power supp	olies from back pressing F1 at startup									
(ServicePac part num 96P2254)	Removable Proces	ssor Board Tray		pressing F1 at startup octor) by pressing F2 at startup									
4 year IOR 9x5, NBD response	a Ont diet: 11 o	¬——	SCSISelect by pres	ssing Ctrl+A at startup									
(ServicePac part num 96P2255)	Opt disk Opt disk	Floppy Drive		ath Diagnostics (level 2									
• 5 year IOR 9x5, NBD response (ServicePac part num 69P2259)	Opt disk Opt disk Opt disk	CD-ROM	problem without rer	or outside view of potential moving cover									
Other ServicePac options at	Opt disk Opt disk Opt disk Opt disk		⇒ Predictive Failure A	Analysis® alerts on disks,									
http://www.ibm.com/services/	Opt disk     Opt disk     Opt disk	Full High Tape Bay		emory, processors, VRMs,									
us/its/pdf/wamomxeu.pdf	Opt disk     Opt disk     Opt disk	or 2 Half High Bays	and fans with IBM I										
issues during the warranty period <sup>3</sup>			1	BTU Output: Ship Config: 2,006 Btu/hr (588 watts)									
11	ernal disk capacity: 3.6TB		Swan SAS dicks	Full Config: 6,346 Btu/hr (1860 watts)									

L2

FSB

Memory

**IBM**<sup>®</sup>

Ethernet

Limited Available

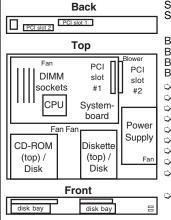
Slots

Type-model Qty	x Processor	cache	MHz	Memory	type	Disk	controlle	r bays	anical	x bays	5	warranty	<sup>3</sup> date
8673-72X Pentiu 8673-73X Pentiu 8673-82X Pentiu 8673-83X Pentiu	m 4 2.8BGH m 4 3.06GH:	z 512KB z 512KB	533	256MB 256MB	ECC ECC ECC	40GB EIDE 18.2GB SCSI 40GB EIDE 36.4GB SCSI	Ultra160 ATA-100	2 fixed 2 fixed	1U rack	2x4 2x4	2 x Gigab 2 x Gigab 2 x Gigab 2 x Gigab	it 1 year it 1 year	May2003 Sep 2003
Positioning Processor(s) L2 cache SMP support Implementation	Intel® P 512KB No SMP Systeml	entium of on die support ooard co	4 up to of pro- ntains	to 2.8BGH ocessor / a one Intel n	<b>z</b> <sup>1</sup> with 5 t process nPGA478	k-optimized serve 33MHz frontside sor speed (no L BB socket (with F PCI-X slot, and i	bus (FS 3 cache) Pentium 4	FC-PGA	2 and hea two EIDE	tsink), fo	our memory tors, etherr	DIMM sl net, and g	ots, raphics
Memory	DIMMs	/ four DI	MM g	jold-connec	ctor slots	three slots ava on systemboar emory controller	d / memo					C DDR-	-SDRAM
SCSI disk control	er SCSIm					gle channel Wier / one channel				MB/sec	)/		
SCSI connectors IDE disk controlle Cables	r Enhanc SCSI m EIDE m	odels: ( ed IDE b odels: ( odels: (	On actusmatione 2- one 2- one 2-	dapter: one ster / ATA- -drop 16-bi -drop EIDE	e 68-pin 100 sup t LVD SC cable (t	SCSI connector bort / two connector CSI cable, one 15 o CD-ROM and	r ctors on s -drop 40- disk), one	ystembo conducto e 1-drop E	ard r EIDE cal EIDE cable	e (to se	cond disk b	ay)	<i>'</i>
Disk - features  Mechanical						rpm, 5.2ms read supports 16.75							.M.A.H.T.°
Architecture / chip	sets <b>Server\</b> one CIC CSB5 S Nationa	<b>Vorks® (</b> B-X2 I/C outh Brid I Semico	Grand D Bridg dge (T enduct	I Champio ge (IMB bu hin IMB to tor® PC874	on™ SL / is to Hos Host Bri :14 Supe	CMIC-SL (Supe t Bridge for PCI- dge for PCI 2.2- r I/O chip (serial hot-swap Active	r Lite) Ho -X Bus A v based gra , keyboar	st Bridge with slots aphics co d, mouse	(memory and PCI- ntroller, E	control X Bus E IDE, US	ler and I/O I B with dual 6	Bridge) / ethernet)	
Ethernet controlle  CD-ROM / diskett Rear ports	on plana e 24X-10	ar / PCI-) (6 CD-R(	< 64-b OM / II	it 100MHz DE; <i>Disket</i>	Bus B / fı <i>tte:</i> 3.5" 1	Broadcom® BCM ull duplex / PXE .44MB diskette ( keyboard, mous	/ Wake or drive / dus	n LAN® / A st cover	Alert Stanc	lard For	mat 1.0 / tw	rer function rear R	ons / J-45 ports
Front ports / grap Console interconr	nics <i>Front:</i> t	wo USB	(Vers	1.1); Grap	hics: SV	GA / ATI® Rage :	XL / on pl	anar / 8M	B SDRAN	Í std/ma	ax / 32-bit 3	3MHz PC	2.2 bus
Systems mgmt Diagnostics	Diagnos	tics via I	PC-Do	octor on a s	standard	s system and pr IBM Enhanced onn on planar fo	Diagnosti	cs CD (di	iskette car	be cre	ated) / supp		
Security				administrat		vord / nded start mode					DDR-SDR.		
Software	Server	auide™ (	CD-R		ation and	configuration	10	GB PC21 20GB AT	00 CL2.5 A-100 EII	ECC DI	DR-SDRAM D (7200 rpi	1 RDIMM n)*	33L5039 09N4231
Cooling fans Power supply Prerequisites	power s 200 wat Monitor	upply) / v t / univer keyboa s IBM A	variab sal / a rd, mo	le speed / i luto-sensin buse, rack, AT-5 chair	not redur ig / auto- operatin		ap 36 R 73 R SG IB IB IB	3.4GB 15I 3.4GB 10I emote Su erveRAIE M T541 - M NetBA M NetBA M ACT I ther optic	K Ultra160 K Ultra160 Ipervisor A I™-4Lx Ult 15" Flat Pa XY25 Stand AY42 Ente Local Condons at <b>ibm</b> .	SCSIS SCSIS adapter tra160 S anel Co dard Ra erprise sole Ma .com/po	SCSI Adapt lor 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 PCIX 1.0 (3.3v) - SCSI adapter in some models

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

Raven black front bezel

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

Maximum internal disk capacity<sup>13</sup> (model dependent): 146.8GB with two 73.4GB SL SCSI disks or 240GB with two 120GB EIDE disks / supports 15K rpm SCSI disks

### **LIMITED WARRANTY**<sup>3</sup>

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

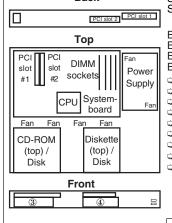
  3 year IOR 9x5, 4 hr avg response
- (ServicePac part num 69P9506) 3 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9507)
- 3 year IOR 24x7, 2 hr avg response
- (ServicePac part num 69P9508) 

  → Other ServicePac options at http://www.ibm.com/
- services/us/its/pdf/wamomxeu.pdf 24x7<sup>14</sup> toll-free support for warranty issues during the warranty period<sup>3</sup>

See footnotes for important warranty information

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For GAV systems, lowercase "x" should be replaced with a country-specific code.														
IBM	® Mach		Processor	L2	FSB	Memory	Disk	Disk controller	Disk bays	Mech- anical	Slots x bays	Ethernet	Ltd warr <sup>3</sup>	Available date
8836 8836	2Mx 2Sx 3Mx	15X 21X 25X 31X	Pentium 4® 2.8GHz Pentium 4 2.8GHz Pentium 4 3.0GHz Pentium 4 3.0GHz Pentium 4 3.2GHz Pentium 4 3.2GHz	1MB 1MB 1MB 1MB 1MB 1MB	800 800 800 800	512MB 512MB 512MB 512MB	36.4GB SCSI open bay 36.4GB SCSI open bay 36.4GB SCSI open bay	SATA Ultra320 SATA	2 simple-swap 2 fixed 2 simple-swap	1U rack 1U rack 1U rack	2x4 2x4 2x4 2x4	Dual Gb Dual Gb Dual Gb	1 yr 1 yr 1 yr 1 yr	Apr 2004 Jun 2004
L2 cad SMP s	ssor(s	ť	A highly affordable, Intel® Pentium 4 to 1MB / on die of pr No SMP support Systemboard contariser for two PCI-X	ip to 3 ocesso ains on	. <b>2GH</b> : or / at e Inte	<b>z</b> 1 with 8 process al mPGA	:00MHz frontsid :or speed (no L :478B socket (v	e bus (FS 3 cache) vith Pentiu	um 4 FC-PGA2 a					
Memo	ory		512MB std / 4GB registered 184-pin 2 x 166MHz / Erro	ECC [	DR-9	SDRAM	DIMMs / four E	DIMM gold	d-connector slots	on syste	mboar	d / memo	ry bus	runs at
SCSI IDE di Cable	conne sk cor	itroller	SCSI models: Ad on SCSI models: Or Enhanced IDE bur SCSI models: on SATA models: two SCSI: 36.4GB Ultra	PCI ad PCI a smaste e 2-dro o 1-dro	dapte dapte r / A p 16- p SA	r / one c er: one 6 TA-100 s bit LVD TA cable	channel with up 18-pin SCSI con 18-pin SCSI con 19-port / one of 19-port /	to 15 develonector connector ne 1-drop EIDE cal	vice support / Int on systemboard EIDE cable (co ble (connected to	tegrated finected to CD-RO	Raid <sup>*</sup> 7	e (Raid 0-	1)	
Mechanical EIA 19" Rack (1U⁴) / rack-mount only  Architecture / chipsets Intel E7210 chipset / Memory Controller Hub (MCH) / I/O Controller Hub (ICH-S) for PCI 2.2 and PCI-X bus, ATA-100  EIDE, ethernet MAC, USB, Low Pin Count Interface / Firmware Hub / SMSC® LPC47M192 Super I/O for diskette, parallel, serial, keyboard, mouse  Bus slots (See below) two available PCI-X 1.0 66MHz / no hot-swap Active™ PCI slots														
Etherr CD-R Rear p Front	om / doorts		Two gigabit 10/100 port one is CSA, p 24X-10X6 CD-RON Rear: serial (9-pin csFront: two USB (V 33MHz PCI 2.2 buts No system-to-syst	0/1000 ( ort two 1 / IDE: ), two e 'ers 2.0	ethern is PC ; <i>Dis</i> ethern )); <i>G</i>	net ports I 2.2 / fu kette: 3. et (RJ-4! raphics:	/ Intel Kenai II Ill duplex / PXE / 5" 1.44MB disk 5),keyboard, mc SVGA / ATI® F	/ two full of two	gigabit ethernet M LAN® / Alert Stand / dust cover og DB-15 monito 000 / on planar /	dard Form or / no par 18MB D	at 2.0 / allel po DR SE	two rear f ort / two U	RJ-45 SB (V	ports ers 2.0)
	ms m		On planar / monite Diagnostics via PC Remote Superviso	-Docto	r on a	ı standar	d IBM Enhance	d Diagno:	stics CD (diskette	can be c			for op	tional
Secur	•		Power-on passwor unattended boot / s <b>ServerGuide™</b> (CI utilities), IBM Direc	electab D-ROM	ole bo insta	ot / unati llation ar	tended start mo	de 5	256MB PC2700 C 512MB PC2700 C IGB PC2700 CL2	L2.5 ECC .5 ECC DI .5 ECC DI	DDR-S DR-SD DR-SD	SDRAM DI RAM DIMI RAM DIMI	MM VI	06P4053 06P4054 06P4055 06P4051
Powe	ng fans r supp quisite	oly	Six fans (four fans / variable speed / / universal / auto- Monitor, keyboard	not red sensing	lunda j / au	nt or ho	t-swap 300 wa rt support	tt 37	BOGB SATA simpleOGB SATA simpleOGB SATA simpleOGB SATA simpleOGB 10K Ultra 33.4GB 10K Ultra 146.4GB 1	pple-swap 320 SCSI 320 SCSI 320 SCSI 320 SCSI or Adapt Ultra320 ATA Con Standard Enterprise Console N	HDD SL 68 SI SL 68 SI SL 6 er II SCSI troller Rack Rack Manage	`(7200 rpr -pin HDD* -pin HDD* 8-pin HDD Adapter er is/accesso	ń)* *	73P8002 73P8003 32P0723 32P0724 32P0725 59P2984 13N2190 71P8648 9306250 930842S 1735L04
		Back	0.01.				MHz PCI X 1.0	(3.3v)	0 (2 2)		INAITE	D WADD	ANIT	<b>V</b> 3



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

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

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

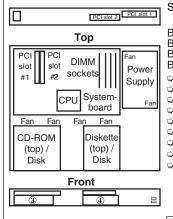
- Network Boot: F12 at startup
- Operator Information Panel in front
- SCSISelect near startup by pressing CTRL+A (SCSI models)
- Ships with Diagnostics CD, ServerGuide Setup and Installation CD
- Predictive Failure Analysis on disk(s) with IBM Director can alert the administrator of an imminent component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

Maximum internal disk capacity<sup>13</sup> (model dependent): 292.8GB with two 146.4GB SL SCSI disks or 320GB with two 160GB EIDE disks / up to 15K rpm SCSI disks

#### **LIMITED WARRANTY**<sup>3</sup>

- 1 year parts and labor
   International Warranty Service<sup>3</sup>
   On site, 8 am 5 pm, Mon Fri coverage excluding holidays,
- next business day response time7 On site service upgrade
  - options (in eligible locations):<sup>7</sup>
     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
- 24x7<sup>14</sup> toll-free support for warranty issues during the warranty period<sup>3</sup>

	For GAV	systems, lowerca	se "y" should be replaced wit	h a country	-specific cod	e						-0.00	Total Section	4	in all promise
		Machine GAV model	Processor	L2 cache	FSB MHz Me	nory	Disk	Disk controlle	Dis r bay		Mech- anical	Slots x bays	Ethernet	Ltd warr <sup>3</sup>	
•	8836 - 8836 - 8836 -	4Sy -45x 5My -51x 5Sy -55x	Pentium 4® 3.2GHz Pentium 4 3.2GHz Pentium 4 3.4GHz Pentium 4 3.4GHz	1MB 1MB 1MB	800 5121 800 5121	MB o MB o MB o	<u> </u>	SCSI Ultra320 SATA SCSI Ultra320 SATA	2 0	2 fixed simple-swap 2 fixed simple-swap	1U rack	2x4 k 2x4	Dual Gb Dual Gb	1 yr 1 yr	Jan 2005
	L2 cac SMP s	ssor(s)	A highly affordable intel® Pentium 4 1MB min and man No SMP support Systemboard cor PCI-X slots, and	at 3.2G ax / at p tains or	Hz¹ & 3.4 rocessor le Intel P	GHz speed GA60	with 8001 d / ECC 04 socket	MHz FSB optir (with Pentium	4 F(	C-PGA2 and h	neatsink)	, four	memory D	olmm :	,
	Memo	ry	512MB std / 4GB DIMMs / four DIM Correcting (ECC	<b>IM</b> gold	-connecto	r slot									
	SATA Cables	disk controll	er SCSI models: A one channel with er SATA-150 control Enhanced IDE b SCSI models: o SATA models: to SCSI: 36.4GB Ulti	up to 1 ler (150 usmaste ne 2-dro vo 1-dro	5 device MB/sec) / er / ATA- op 16-bit op SATA	supp on pl 100 s LVD cable	ort / Integ lanar / on support / s SCSI cab es, one 1-	grated Raid 76 e connector or one connector ole, one 1-drop drop EIDE ca	e (Ra n sys r on o EII ıble (	aid 0-1) / 68 p stemboard / Inf systemboard DE cable (con (connected to	in conne tegrated nected t CD-RO	ector or Raid 7 to CD- M)	n PCI ada e (Raid 0-	pter	dapter /
	Mecha Archite chipse Bus sle	ecture / ts	EIA 19" Rack (1 Intel E7210 chip EIDE, ethernet M parallel, serial, ke (See below) two	<b>set</b> / Me AC, US eyboard,	emory Co B, Low P mouse	ntroÍle n Coi	unt Interfa	ace / Firmware	Hub	o / SMSC® LP	Ć47M19	2 Supe			
		oorts /	integrated / port of ports (2)	one is Co M Slim/ n), two o Vers 2.	SA, port t IDE; <i>Di</i> sethernet ( 0)	wo is skette RJ-45	PCI 2.2 / e: 3.5" 1.4 s),keyboar	full duplex / PX 4MB diskette d, mouse, and	(E / V drive alog [	Vake on LAN® , dust cover DB-15 monitor	/ Alert Sta	andard	Format 2.0	/ Rea	ar RJ-45
	Consol	e interconnec	cts No system-to-sys	stem int	erconnec	t cab	le (separ	ate keyboard,	, vide	eo, mouse po	orts on b	ack)			
	Systen Diagno	ns mgmt ostics	On planar / mon Diagnostic LEDS Diagnostics CD ( planar for continu	/ Error I diskette	EDS for can be o	fans reate	and men d) / supp	nory/ Diagnos ort for optiona required)	tics val Re	via PC-Doctor mote Supervi	on a st sor Ada	pter II	with 20-pi	n con	
	Securi Softwa	,	Power-on passwo unattended boot Secure Remote p ServerGuide <sup>TM</sup> ( utilities), IBM Dire	/ selecta owr on/c CD-ROM	able boot off via AS // installa	/ una F 2.0 tion a	attended s	start mode /	512N 1GB 80GI 1600 2500	MB PC3200 CL MB PC3200 CL PC3200 CL3 E B SATA simp BB SATA simp BB SATA sim	3 ECC D ECC DDF le-swap ple-swap ple-swap	DR-SD R-SDRA HDD HDD HDD HDD	RAM DIMI M DIMM (7200 rpm (7200 rpr (7200 rpi	vl n) n) m)	06P4050 06P4051 73P8002 73P8003 73P8006
		g fans supply uisites	Six fans (four far / variable speed / universal / auto Monitor, keyboar	/ not red -sensing	dundant o g / auto-r	r hot estar	-swap 30 t support	o watt	73.40 146.4 36.4 73.4 Rem Serv Serv IBM	GB 10K Ultra3 GB 10K Ultra3 4GB 10K Ultra GB 15K Ultra3 GB 15K Ultra3 tote Supervisor PRAID M-6i+ PRAID T SA NetBAY25 St Proptions ava	320 SCSI 320 SCS 320 SCS 320 SCS or Adapt Ultra320 TA Contandard	SL 68 SI SL 6 SI SL 6 er II SCSI roller Rack	-pin HDD 8-pin HDD 8-pin HDI 8-pin HDI Adapter		32P0723 32P0724 32P0725 32P0785 32P0785 59P2984 13N2190 71P8648 9306250 essories



**Back** 

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

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

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

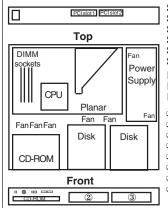
- Network Boot: F12 at startup
- Operator Information Panel in front
- SCSISelect near startup by pressing CTRL+A (SCSI models)
- Ships with Diagnostics CD, ServerGuide Setup and Installation CD
- Predictive Failure Analysis on disk(s) with IBM Director can alert the administrator of an imminent component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

Maximum internal disk capacity<sup>13</sup> (model dependent): 292.8GB with two 146.4GB SL SCSI disks or 500GB with two 250GB SATA disks / up to 15K rpm SCSI disks

#### **LIMITED WARRANTY**<sup>3</sup>

- 1 year parts and labor
   International Warranty Service<sup>3</sup>
- On site, 8 am 5 pm, Mon Fri coverage excluding holidays,
- next business day response time7 On site service upgrade
  - options (in eligible locations):<sup>7</sup>
     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 24x7<sup>14</sup> toll-free support for warranty issues during the warranty period<sup>3</sup>

For GAV systems, lowercase	"y" should be replaced with a co	untry-specific co	de.		•	100		-
IBM® Machine	Drangery / Creed	L2 FSE	3	Disk	Disk	Mech- Slot		Available
8849/8891 1Áy-Ax P 8849/8891 20y-20x P 8849/8891 30y-30x P 8849/8891 3Ay-3Ax P 8849/8891 40y-40x P	Pentium® 4 531 3.0GHz Pentium 4 531 3.0GHz Pentium D 830 3.0GHz Pentium 4 640 3.2GHz Pentium 4 640 3.2GHz Pentium 4 650 3.4GHz Pentium 4 660 3.6GHz	1MB 800 2x1MB 80 2MB 800 2MB 800 2MB 800	512MB 512MB 0 1GB 0 512MB 0 512MB 0 512MB	SATA SAS/SATA SAS/SATA SATA SAS/SATA SAS/SATA SAS/SATA SAS/SATA SAS/SATA	2 hot-swap 2 hot-swap	1U <sup>4</sup> rack 2x 1U rack 2x 1U rack 2x 1U rack 2x 1U rack 2x 1U rack 2x 1U rack 2x	ys Ethernet warn' 3 Dual Gb 1/3yr	Oct 2005 Oct 2005 Oct 2005 Oct 2005 Oct 2005 Oct 2005
Positioning Processor(s) L2 cache SMP support Implementation	A highly affordable, unlet Pentium 4 up Optimized for Exten Up to 2MB std on Pen No SMP support Motherboard contains and two slots: some:	to 3.6GHz s ded Memo ntium 4 / 2x one LGA-7	Single Core 8 ory 64 Techno 1MB std on Pe 775 socket, fou	OOMHz FSB / Pology (EM64T) entium D / ECC /	/ full speed			
Memory	512MB std / 8GB <sup>13</sup> max All Error Checking an	د / four 184-ړ	oin gold-plated [	DIMM sockets / or	ne socket used / P			DRAM /
	SAS models: Adapte SATA models: Integra Enhanced IDE busms SAS models: one 1-c SATA models: two 1 None standard	ted Intel cor aster / ATA Irop EIDE c	ntroller / two-cha -100 support / able (connecte	annel / on planar one connector ed to CD-ROM)	r / Integrated Raid on systemboard	8e (Raid 0 or		
Mechanical Architecture / chipsets Bus slots	EIA 22" Rack (1U⁴) / Intel E7210 chipset / EIDE, ethernet MAC, parallel, serial, keybor (See below) two avai Active™ PCI slots /	Memory C USB, Low F ard, mouse	ontroller Hub ( Pin Count Inter	face / Firmware	Hub / SMSC® LP	C47M192 Su	per I/O for disket	te,
Ethernet controllers	Dual Gigabit 10/100/ integrated / port one is	1000 ethern s CSA, port	et ports / Broa two is PCI 2.2	dcom 5721 / two / full duplex / PXI	o full gigabit ethe E / Wake on LAN®	rnet MAC and / Rear RJ-45	PHY layer funct ports (2)	ions /
CD-ROM / diskette Rear ports Front ports / Graphics	24X-10X <sup>6</sup> CD-ROM S Rear: serial (9-pin), to Front: two USB (Vers ATI <sup>8</sup> RN50(ES1000) / 1	vo ethernet 3 2.0)	(RJ-45),keyboa		Ü		,	/ers 2.0)
Console interconnects Systems mgmt Diagnostics	No system-to-system Mini-baseboard mana voltages Diagnostic LEDS/ Err	gement co	ntroller / IPMI	1.5 / monitors s	system and proce	ssor tempera	ture, fan failure,	
	Diagnostics CD (disker planar for continuous	ette can be	created) / sup	port for optional				
Security	Power-on password / unattended boot / sel secure remote power	ectable boo	t / unattended	start mode / $\frac{2G}{4G}$	2MB PC2-4200 CL3 EC GB(2x1GB) PC2-4200 C GB(2x2GB) PC2-4200 C M 80GB SATA (7.2K) sii	L3 ECC DDR2 Rol L3 ECC DDR2 Rol	HS HS	30R5148 30R5149 30R5150 39M4500
Software	ServerGuide™ (CD-Futilities), IBM Director	ROM install	ation and conf	figuration   IBI IBI 80	M 160GB SATA (7.2K) s M 250GB SATA (7.2K) s GB Hot-Swap SATA HE	simple-swap HDD simple-swap HDD D		39M4504 39M4508 39M4518
Cooling fans Power supply Prerequisites	Seven fans (five fans / variable speed / not 350 watt / universal / Monitor, keyboard, m	redundant auto-sensi	or hot-swap ng / auto-resta	er supply) 25 73 14 30 36 73 14 181	0GB Hot-Swap SATA H 0GB Hot-Swap SATA H 0GB 10K 3.5" SAS Hot-S 6GB 10K 3.5" SAS Hot-S 6GB 15K 3.5" SAS Hot-S 6B 15K 3.5" SAS Hot-S 6GB 15K 3.5" SAS Hot-S 6GB 15K 3.5" SAS Hot-S M Remote Supervisor A:	DD wap HDD Swap HDD Swap HDD wap HDD wap HDD Swap HDD dapter II (PCI adap	ter) er	39M4522 39M4526 26K5709 26K5710 26K5711 26K5697 26K5698 26K5698 59P2984 71P8648
Back	Some:				her options at ibm.com/	•	-	55.0
PCIslot1 P		4 lenath, fu	ll height. 64-bit	100MHz PCI X	1.0 (3.3v)			



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

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

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

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

Raven black front bezel

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

Configuration/Setup Utility: F1 at startup

Network Boot: F12 at startup

Operator Information Panel in front

Ships with Diagnostics CD, ServerGuide Setup and Installation CD

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

Maximum internal disk capacity<sup>13</sup> (model dependent): 600GB with two 300GB SAS disks or 500GB with two 250GB SATA disks

## **LIMITED WARRANTY**<sup>3</sup>

- 1 year parts and labor standard 8849 MTM
   3 year parts and labor standard 8491 MTM
   International Warranty Service<sup>3</sup>

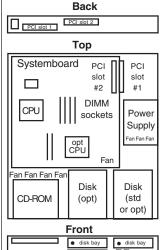
- On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- on site service upgrade
  options (in eligible locations):
  3 year IOR 9x5, NBD avg response
  (ServicePac part num 69P9505)
  3 year IOR 9x5, 4 hr avg response
  (ServicePac part num 69P9506)

- 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

⇒ 24x7<sup>14</sup> toll-free support for warranty issues during the warranty period3

	IBM® Type-model Qty x Prod	20000	Proc. Speed	L2 Cache	Memory	Memory type	Disk	Disk	Hot -swap or fixed disk bays	Slots	Ethernet		Available
× ×	8835-21X 1 x Optero 8835-22X 1 x Optero 8835-31X 1 x Optero 8835-32X 1 x Optero 8835-51X 1 x Optero 8835-52X 1 x Optero 8835-52X 2 x Optero	on™ 240 on 240 on 242 on 242 on 246 on 246 on 246	1.4Ghz <sup>1</sup> 1.4Ghz 1.6Ghz 1.6Ghz 2.0Ghz 2.0Ghz 2.0Ghz	1MB 1MB 1MB 1MB 1MB 1MB 1MB	1GB 1GB 1GB 1GB 1GB 1GB 2GB	Chipkill Chipkill Chipkill Chipkill Chipkill Chipkill Chipkill	None (open) 80GB <sup>2</sup> EIDE None (open) 80GB <sup>2</sup> EIDE None (open) 80GB <sup>2</sup> EIDE 36.4GB 10K	Ultra320 EIDE Ultra320 EIDE Ultra320 EIDE Ultra320	2 hot-swap 2 fixed 2 hot-swap 2 fixed 2 hot-swap 2 fixed 2 hot-swap	2x3 2x3 2x3 2x3 2x3 2x3 2x3 2x3	2 x Gigabit 2 x Gigabit 2 x Gigabit 2 x Gigabit 2 x Gigabit 2 x Gigabit 2 x Gigabit	1 year 1 year 1 year 1 year 1 year 1 year 1 year	Oct 2003 Oct 2003 Oct 2003 Oct 2003 Oct 2003 Oct 2003 Oct 2003
	Processor(s) L2 cache SMP support Implementation	1MB / or 2-way S Systemb	n die of pro MP / up to oard conta	cesso two C ins two	r / at prod opteron Po o AMD Se	cessor spe rocessors ocket 940	nz HyperTransp eed (no L3 cacl (same speed/o micro-PGA ZIF MD Opteron H	he) cache size sockets,	required) six memory D				•
	Memory	slots used SDRAM I memory i	d (four slots DIMMs / six nterleave /	used ir DIMM dual ch	n 5DX mo gold-conr annel / m	del) / four s nector slots emory bus	s become availa slots available (tv s on systemboard runs at 2 x 1001 errors on same of	vo ávail. in d / DIMMs MHz / <b>Erro</b>	5DX) / PC2700 must be installed or Checking an	) 333MH ed in ma <b>d Corre</b>	Iz registered tched pairs [acting (ECC)	184-pin a bank] / via <b>16-b</b>	ECC DDR- ' 2-way <b>it</b>
	SCSI disk controller  IDE controller / cable  Disk - capacity  Disk - bays	64-bit 10 one 16-b All: Enha EIDE mo SCSI mo	OMHz PCI it internal o nced IDE o odels: One odels: 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 <b>RAID-</b> 68-pin LVI ler in CSB able to tw to 15000 r	C1020 / Ultra3 1 mirroring (Ei D cable from sy: 5 South Bridge o disk bays (pi pm disks; EIDE pnnectors / filler	mbedded I stemboard / two conr rimary) / o : <i>models:</i> 8	Mirroring) with I to backplane nectors on plan one 1-drop EIC 30GB / 7200 rp	two SC for two ar / one E cabl om / AT.	SI disks in fr disks / no ex 1-drop IDE e to CD-RO A-100 / 8.7m	ont bay ternal c cable (0 M (secons seek	onnector CD-ROM) ondary)
	Mechanical Architecture / chipsets Bus slots	SAMD® 8° bridge B HyperTra National	I31 PCI-X for PCI-X ansport clo Semicond	<b>Bridge</b> expan ock (PC uctor®	e Chip position slots SI, AC '97 PC87366	roviding tv s) / <b>8111</b> ′, Etherne s Super I/0	<b>I/O HyperTran</b> t, SMBus, USB	es running <b>sport Bri</b> B, EIDE, L	g at 100Mhz (t dge Chip sup PC to BIOS a	oridge <i>A</i> porting	A for SCSI a a 200 Mhz	ind Ethe	ernet;
	Ethernet controllers CD-ROM/diskette/kbd Rear ports Front ports / graphics Console interconnects	on plana 24X-10X <i>Rear:</i> tw <i>Front:</i> tw C2T Inte	r / PCI-X 6 CD-ROM O USB (Ve O USB (Verconnect™	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> -pin), two : SVGA / A ported / N	ethernet (RJ-45 TI® Rage XL / o	on LAN® / SB diskett 5) / paralle n planar / 8	' Alert Standard e and keyboar I port not supp BMB SDRAM st	d Forma d option orted d/max /	at 1.0 / two r nal); legacy 32-bit 33MH;	ear RJ- not sup z PCI 2.2	45 ports ported 2 Bus A
	Systems mgmt  Diagnostics	connecto Adapter Diagnosi	MS-9549 or on plana II card not tic LEDs f ght Path Di	r / opti suppo or fans	onál Rem rted , memory	note Super DIMMs a		Opterd Opterd 512MB 1GB P	on 240 Proces on 242 Proces on 246 Proces of PC2700 CL2.5 CC2700 CL2.5 CC2700 CL2.5	ssor Up ssor Up ECC D ECC DI	ograde ograde DDR-SDRAM DR-SDRAM	<b>RDIMM</b>	73P2267
	Security Software	unattend ServerG		selecta D-ROM	ble boot . I installat	/ unattend ion and c	rd / led start mode onfiguration	80GB 120GE 36.4GI 73.4GI	ATA-100 EIDE 3 ATA-100 EID 3 15K Ultra320 3 15K Ultra320	E HDD* E HDD SCSI I SCSI I	* * Hot-Swap SI Hot-Swap SI	_ HDD* _ HDD*	09N4226 09N4231 32P0734 32P0735
	Cooling fans Power supply Prerequisites	variable 411 watt	speed / no / universa	ot redu al / aut	ndant or o-sensing	hot-swap g / auto-re	ver supply) / estart support e), operating s	IBM S USB F NetBA NetBA 1.5M L	otalStorage F0 erveRAID-6M Portable Diske Y ACT Local Y Remote Co JSB Conversion	SCSI ( tte Driv Console nsole N n Optio	(256MB Cad re e Manager ( Manager (RC n	che) (LCM) CM)	24P0960 02R0988 05K9276 1735L04 1735R16 73P5832



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

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

- Stealth black color front bezel
- Utility tray in front slides out from under middle bay (USB devices)
- H 1.72" (1U) x W 17.3" x D 25.7"; 43.7mm x 439.9mm x653.3mm 26 to 32 lbs; 11.8kg to 14.6kg (minimum to max configuration)
- Configuration/Setup Utility: F1 at startup System Partition Boot: ALT+F1 at startup
- Network Boot: F12 at startup
- Operator Information Panel in front
- LSI Logic Configuration Utility: CTRL+C at startup
- Includes one line cord (9 ft universal interrack HV cable with IEC plug)
- Predictive Failure Analysis® on processor(s), voltage regulator modules, memory, fans, power supply, and disk options

Maximum internal disk capacity<sup>13</sup> (model dependent): 293.6GB with two 146.8GB SL SCSI disks or 240GB with two 120GB EIDE disks

### **LIMITED WARRANTY**<sup>3</sup>

- 1 year parts and labor
- International Warranty Service<sup>3</sup>
- 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)

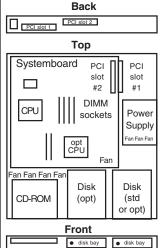
    3 year IOR 24x7, 4 hr avg response
- (ServicePac part num 69P9507)
- 3 year IOR 9x5, NBD response (ServicePac part num 69P9506)
  Other ServicePac options at
- http://www.ibm.com/ services/us/its/pdf/wamomxeu.pdf
- 24x7<sup>14</sup> toll-free support for warranty issues during the warranty period3

See footnotes for important warranty information

= Hot-swap in some models

(X325A) © IBM Corp. August 2003

IBM® Type-model Qty x Pro	cessor	Proc. Speed	L2 Cache	Memory	Memory type	Disk	Disk controller	Hot -swap or fixed disk bays	Slots x bays	Ethernet		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 <sup>1</sup> 2.2Ghz 2.4Ghz 2.4Ghz	1MB 1MB 1MB 1MB	1GB 1GB 1GB 1GB	Chipkill Chipkill Chipkill Chipkill	None (open) 80GB <sup>2</sup> EIDE None (open) 80GB EIDE	Ultra320 EIDE Ultra320 EIDE	2 hot-swap 2 fixed	2x3 2x3 2x3		t 1 year t 1 year	Jan 2004 Jun 2004
Processor(s) L2 cache SMP support Implementation	1MB / or 2-way S Systemb	n die of pr MP / up to oard conta	ocesso o two C ains two	r / at pro opteron F o AMD S	cessor spe Processors ocket 940	eed (no L3 cac /same speed)	he) cache size = sockets,	, six memóry D				.
Memory	be installe Checking	333MHz re ed in match	gistered led pairs recting	184-pin    s [a bank]   <b>(ECC)</b> via	ECC DDR- /2-way me a <b>16-bit C</b> h	SDRAM DIMMs emory interleave	s / six DIM / dual cha	I / two slots used M gold-connected nnel / memory buts 1, 2, 3, or 4-	or slots o	on systembo at 2 x 100M	oard / DIM IHz / <b>Erro</b>	r
SCSI disk controller  IDE controller / cable  Disk - capacity Disk - bays	64-bit 10 one 16-b All: Enha EIDE mo SCSI mo	OMHz PCI it internal inced IDE odels: One odels: 36.4	I-X Bus channe ATA-10 e 2-drop GB sup	B/support I / 16-bit O control D EIDE control D ports up	orts <b>RAID-</b> 68-pin LVI ller in CSB able to tw to 15000 r	1 mirroring (E D cable from sy 5 South Bridge o disk bays (p pm disks; EIDE	mbedded stemboard / two coni rimary) / d = models: 8	Mirroring) with d to backplane	two SC for two lar / one DE cable om / AT	SI disks in f disks / no ex 1-drop IDE e to CD-RC A-100 / 8.7r	ront bays xternal co cable (C DM (secons seek	onnector CD-ROM) ondary)
Mechanical Architecture / chipset	s <b>AMD</b> ® <b>8</b> 1 bridge B HyperTra National	131 PCI-X for PCI-X ansport clo Semicond	( <b>Bridg</b> ( expan ock (PC ductor®	e Chip p sion slot DI, AC '97 PC87366	roviding tv s) / <b>8111</b> 7, Etherne 3 Super I/0	vo PCI-X bridg <b>I/O HyperTrar</b> t, SMBus, USI	es running I <b>sport Bri</b> B, EIDE, L	Idge Chip sup PC to BIOS a	oridge <i>F</i> porting	of for SCSI a 200 Mhz	and Ethe	ernet;
Ethernet controllers CD-ROM/diskette/kbc Rear ports Front ports / graphics Console interconnect	on plana 24X-10X' <i>Rear:</i> tw <i>Front:</i> tw sC2T Inte	r / PCI-X ( CD-ROM OUSB (V OUSB (Verconnect™	64-bit 19 1 / IDE ers 1.1) ers 1.1); 1 cablin	00MHz B / <i>Diskette</i> , serial (9 <i>Graphics</i> g not sup	ous B / full e and keyl e-pin), two s: SVGA / A pported / N	duplex / Wake board: none (U ethernet (RJ-4 TI® Rage XL / c	on LAN® . SB diskett 5) / paralle on planar /	el port not supp 8MB SDRAM st	d Forma d option orted d/max /	at 1.0 / two nal); legacy 32-bit 33MH	reár RJ- not supp Iz PCI 2.2	45 ports ported ! Bus A
Systems mgmt  Diagnostics	connecto Adapter Diagnosi	or on plana II card not	ar / Rer t suppo for fans	note Sup rted , memory	y DIMMs a	nent / and processors	Opter 512MB 1GB F 2GB F	on 248 Proces on 250 Proces 3 PC2700 CL2.5 PC2700 CL2.5 PC2700 CL2.5	ssor Up 5 ECC I ECC DI ECC DI	ograde DDR-SDRAN DR-SDRAM DR-SDRAM	RDIMM	73P2267 73P2269
Security Software	unattend ServerG	ed boot /	selecta D-ROM	ble boot I installat	tion and c	rd / led start mode onfiguration	120GI 36.4G 73.4G	ATA-100 EID B ATA-100 EID B 15K Ultra320 B 15K Ultra320 TotalStorage F	E HDD SCSI SCSI	* Hot-Swap S Hot-Swap S	L HDD*	09N4226 09N4231 32P0734 32P0735 24P0960
Cooling fans Power supply Prerequisites	variable 411 watt	speed / n : / univers	ot redu al / aut	ndant or o-sensing	hot-swap g / auto-re	ver supply) / estart support e), operating s	USB NetBA NetBA 1.5M	ServeRAID-6M Portable Diske AY ACT Local AY Remote Co USB Conversion of not supported	tte Driv Console Insole Mon Option	e Manager Manager (R n	(LCM) CM)	02R0988 05K9276 1735L04 1735R16 73P5832



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

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

- Stealth black color front bezel
- Utility tray in front slides out from under middle bay (USB devices)
- → H 1.72" (1U) x W 17.3" x D 25.7"; 43.7mm x 439.9mm x653.3mm
   → 26 to 32 lbs; 11.8kg to 14.6kg (minimum to max configuration)

- Configuration/Setup Utility: F1 at startup
   System Partition Boot: ALT+F1 at startup
- Network Boot: F12 at startup
- Operator Information Panel in front
- LSI Logic Configuration Utility: CTRL+C at startup
- Includes one line cord (9 ft universal interrack HV cable with IEC plug)
- Predictive Failure Analysis® on processor(s), voltage regulator modules, memory, fans, power supply, and disk options

Maximum internal disk capacity<sup>13</sup> (model dependent): 293.6GB with two 146.8GB SL SCSI disks or 240GB with two 120GB EIDE disks

# LIMITED WARRANTY<sup>3</sup>

- 1 year parts and labor
- International Warranty Service<sup>3</sup>
- 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)

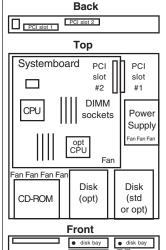
  2 year IOR 24x7, 2 hr avg response
- (ServicePac part num 96P2120) 3 year IOR 24x7, 4 hr avg response
- (ServicePac part num 69P9507)
- 3 year IOR 9x5, NBD response (ServicePac part num 69P9506)
  Other ServicePac options at
- http://www.ibm.com/ services/us/its/pdf/wamomxeu.pdf
  - 24x7<sup>14</sup> toll-free support for warranty issues during the warranty period3

See footnotes for important warranty information

= Hot-swap in some models

(X325B) © IBM Corp. January 2004

IBM® Type-GAV Qty x Proc	Proc. essor Speed	L2 Cache Me	Memory emory type	Disk	Disk controller	Hot -swap or fixed disk bays		Ethernet	Limited warranty	Available date
8848-51Y 1 x Optero 8848-52Y 1 x Optero 8848-61Y 1 x Optero 8848-62Y 1 x Opteror 8848-71Y 1 x Opteror 8848-72Y 1 x Opteror 8848-81Y 1 x Opteror 8848-82Y 1 x Opteror	n 246 2.0Ghz n 248 2.2Ghz n 248 2.2Ghz n 250 2.4Ghz n 250 2.4Ghz n 252 2.6Ghz	1MB 1 1MB 1 1MB 1 1MB 1 1MB 1	GB Chipkill	None (open) 80GB <sup>2</sup> SATA None (open) 80GB SATA None (open) 80GB SATA None (open) 80GB SATA	SATA	2 fixed	2x3 2 x 2x3 2 x 2x3 2 x 2x3 2 x 2x3 2 x 2x3 2 x	Gigabit Gigabit Gigabit Gigabit Gigabit	1 year 1 year 1 year 1 year 1 year 1 year	Sept 2004 Sept 2004 Sept 2004 Sept 2004 Sept 2004 Sept 2004 Mar 2005 Mar 2005
Processor(s) L2 cache SMP support Implementation	Up to 2 x AMD® bit compatible 1MB / ECC / on o 2-way SMP / up Systemboard con PCI-X slots, integ	tie of proce to two Opto tains two A	essor / at proces eron Processors MD Socket 940	sor speed (no l (same speed/o micro-PGA ZIF	3 cache) ache size sockets,	required) eight memory	DIMM slo	ots, two 6		
Memory	1GB std / 16GB r PC2700 or PC320 DIMMs must be in 100MHz / Chipki	<b>)0</b> registere nstalled in r	ed 184-pin ECC natched pairs [a	DDR-SDRAM [	DIMMš / e	ight DIMM gold	d-connecto	or slots o	n system	nboard /
SCSI disk controller  SATA controller/cable Disk - capacity Disk - bays	All (not used on 5 64-bit 100MHz P0 one 16-bit interna All: SATA-150 col SCSI models: ope SCSI models: two supports 15k driv	ntroller / two en; <i>SATA n</i> hot-swap	o connectors on nodels: 80GB / 7	/D cable from s planar / two 1-c '200 rpm / ATA-	ystemboa Irop cable 100 / 9.0r	rd to backplane s / 1 IDE ns seek	e for two (	disks / no	externa	connector
Mechanical Architecture/chipsets Bus slots	EIA 19" Rack (11 AMD® 8131 PCI-3 for PCI-X expans HyperTransport c National Semicon (See detail below) no hot-swap Action	two avalla		ported in 26" de o PCI-X bridges Transport Brid , SMBus, USB, ) chip   full-length, 1 H	ep racks s running a <b>ge Chip</b> s SATA, ID alf / 133M	such as the IB at 100Mhz (bric supporting a 20 E, LPC to BIO Hz if using sing	M NetBAY dge A for to 00 Mhz do S and Sup gle adapte	Y™ Rack SCSI and ouble-pum per I/O) / er, 100MH	products Etherne ped z with 2	et; bridge B adaptors /
Ethernet controllers Optical/diskette/kbd Rear ports Front ports / graphics Console interconnects	Two gigabit 10/10 on planar / PCI-X 24X-10X <sup>6</sup> CD-RO <i>Rear:</i> two USB ( Front: two USB ( C2T Interconnect (RCM), and USB	0/1000 eth 64-bit 100l M / IDE / L Vers 1.1), s Vers 1.1); ™ cabling r Conversion	ernet ports / Bro MHz Bus B / full Diskette and key serial (9-pin), two Graphics: SVGA not supported / N n Option (UCO)	adcom BCM570 duplex / Wake board: none (US o ethernet (RJ-4 \ / ATI® Rage X NetBay Local Co are supported	04C / two ton LAN® / SB diskett (5) / parall L / on plar onsole Ma	full gigabit ethe Alert Standard e and keyboard lel port not sup nar / 8MB SDR unager (LCM), l	rnet MAC   Format 1   optional   ported   AM std/m   NetBay R	and PH\ .0 / two r ); legacy ax / 32-bi emote Co	/ layer fu ear RJ-4 not supp t 33MHz onsole M	nctions / 5 ports orted PCI 2.2 anager
Systems mgmt  Diagnostics	Standard MS-954 connector on plar Adapter II card no Diagnositic LEDs only / Light Path I	nar / Remo ot supported for fans, m	te Supervisor d nemory DIMMs :		Optero Optero Optero 2GB F	on 246 Proces on 248 Proces on 250 Proces on 252 Proces PC2700 CL2.5	sor Upgrasor Upgrasor Upgrasor Upgra	ade ade ade R-SDRAM		13N0705 13N0706 13N0702 13N0703 73P2269
Security Software	Power-on passwo unattended boot / <b>ServerGuide™</b> (0 utilities), IBM Dire	selectable D-ROM in	boot / unattendent	ed start mode	80GB 160GE 36.4G	PC3200 CL3 E SATA-150 7.2 3 SATA-150 7. B 15K Ultra320 B 15K Ultra320	k HDD* 2k HDD* ) SCSI Ho	ot-Swap S	SL HDD*	
Cooling fans Power supply Prerequisites	Eight fans (five fo variable speed / r 411 watt / univers Monitor, keyboard	iot redunda al / auto-se	ınt or hot-swap ensing / auto-res	start support	IBM T IBM S USB F NetBA NetBA 1.5M	ortalStorage FC serveRAID-6M Portable Disket Y ACT Local ( Y Remote Cor USB Conversion of supported	C2-133 Ho SCSI (250 te Drive Console Mar on Option	ost Bus A 6MB Cac Manager ( nager (RC	dapter he) LCM) CM)	24P0960 02R0988 05K9276 1735L04 1735R16 73P5832



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

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

- Stealth black color front bezel
- Utility tray in front slides out from under middle bay (USB devices)
- → H 1.72" (1U) x W 17.3" x D 25.7"; 43.7mm x 439.9mm x653.3mm
   → 26 to 32 lbs; 11.8kg to 14.6kg (minimum to max configuration)

- Configuration/Setup Utility: F1 at startup System Partition Boot: ALT+F1 at startup
- Network Boot: F12 at startup
- Operator Information Panel in front
- LSI Logic Configuration Utility: CTRL+C at startup
- Includes one line cord (9 ft universal interrack HV cable with IEC plug)
- Predictive Failure Analysis® on processor(s), voltage regulator modules, memory, fans, power supply, and disk options

Maximum internal disk capacity<sup>13</sup> (model dependent): 293.6GB with two 146.8GB SL SCSI disks or 320GB with two 160GB EIDE disks

# LIMITED WARRANTY<sup>3</sup>

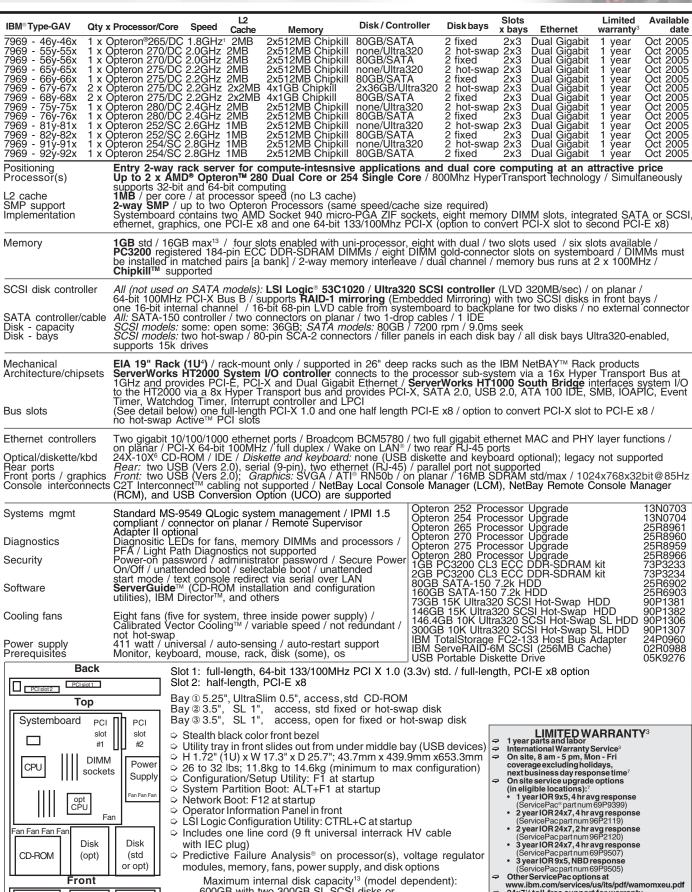
- 1 year parts and labor
- International Warranty Service<sup>3</sup>
- On site, 8 am 5 pm, Mon Fri coverage excluding holidays, next business day response time7
- On site service upgrade options (in eligible locations):7
  - 1 year IOR 9x5, 4 hr avg response (ServicePac® part num 69P9399)
- 2 year IOR 24x7, 4 hr avg response (ServicePac part num 96P2119)

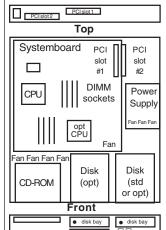
  2 year IOR 24x7, 2 hr avg response
- (ServicePac part num 96P2120)

  3 year IOR 24x7, 4 hr avg response
- (ServicePac part num 69P9507)
- 3 year IOR 9x5, NBD response (ServicePac part num 69P9505)
  Other ServicePac options at
- http://www.ibm.com/ services/us/its/pdf/wamomxeu.pdf
- 24x7<sup>14</sup> toll-free support for warranty issues during the warranty period3

See footnotes for important warranty information

 = Hot-swap in some models 





Network Boot: F12 at startup Operator Information Panel in front

LSI Logic Configuration Utility: CTRL+C at startup

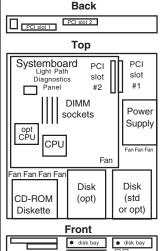
Includes one line cord (9 ft universal interrack HV cable

Predictive Failure Analysis® on processor(s), voltage regulator modules, memory, fans, power supply, and disk options

Maximum internal disk capacity<sup>13</sup> (model dependent): 600GB with two 300GB SL SCSI disks or 320GB with two 160GB SATA disks

www.ibm.com/services/us/its/pdf/wamomxeu.pdf 24x7<sup>14</sup> toll-free support for warranty issues during the warranty period

IBM® Type-model Qty x P	rocessor	L2 cache	FSB MHz	Memory	Memory type	Disk	Disk controller	Hot -swap or fixed disk bays		Ethernet	Limited warranty <sup>3</sup>	
8830-11X 1 x Xeon 8830-12X 1 x Xeon 8830-21X 1 x Xeon 8830-22X 1 x Xeon	2.8B GHz 2.8B GHz 3.06 GHz 3.06 GHz	512KB 512KB 512KB 512KB	533 🖾 533 🖾 533 🖾 533 🖾	512MB 512MB 512MB 512MB 512MB	Chipkill Chipkill Chipkill Chipkill	None (open) 40GB <sup>2</sup> EIDE None (open) 40GB <sup>2</sup> EIDE	Ultra320 EIDE Ultra320 EIDE	2 hot-swap 2 fixed 2 hot-swap 2 fixed	2x4 2x4 2x4 2x4 2x4	2 x Gigab 2 x Gigab 2 x Gigab 2 x Gigab	it 1 vear	May 2003 May 2003 Apr 2003 May 2003
Positioning Processor(s) L2 cache SMP support Implementation	1 x Intel 512KB / 2-way SI Systemb	Xeon 2.8 on die of pour betreeholden. MP / up to to ard contains	BB or 3. rocessor wo Xeor ins two I	.06GHz <sup>1</sup> r / at proc n Process ntel 603-	with 533Nessor spe sors (same pin micro-	MHz frontside I ed (no L3 cach e speed/cache	bus / Hype ie) size) ets, four me	nance computir er-Threading to emory DIMM sl	echnolo	gy		
Memory	PC2100 : must be i Error Ch	266MHz re nstalled in	gistered matched d Corre	l 184-pin d pairs [a <b>cting (E</b> (	ECC DDF bank] / 2- CC) via 16	way memory in -bit Checksun	Ms / four D nterleave /	IMM gold-conn dual channel / ™ (corrects 1, 2	memory	bus ruńs at	t 2 x 100N	/lHz/
SCSI disk controller  IDE controller / cable  Disk - capacity Disk - bays	64-bit 10 one 16-b All: Enha EIDE mo SCSI mo	OMHz PCI it internal o nced IDE o dels: One odels: none	-X Bus E channel ATA-100 2-drop E standa	3 / suppo / 16-bit 6 ) controll EIDE cab rd / supp	rts <b>RAID-</b> 58-pin LVI er in CSB le to two o orts up to	1 mirroring (E O cable from sy 5 South Bridge disk bays / one 15000 rpm dis	mbedded vstemboar e / two con 1-drop El ks; <i>EIDE r</i>	controller (LV) Mirroring) with d to backplane nectors on plar DE cable to CI models: 40GB s in each disk	two SC for two nar / one D-ROM / 7200 rp	SI disks in disks / no ee 1-drop IDE	front bay: external co E cable (0 00 / 8.7m	onnector CD-ROM) s seek
Mechanical Architecture / chipsets Bus slots	s <b>ServerW</b> one CIOI slot 2 and SMBus, I	<b>/orks® Gra</b> 3-X2 I/O B d Ultra320 LPC bus to	ind Cha ridge (IN / CSB5 Super I	mpion™ //B2 bus South B //O) / Nat	<b>4.0 LĖ</b> / 0 to Host Br ridge (Thi ional Sem	CMIC LE Host I idae for PCI-X	Bridge (me Bus A wit Bridge for C87417 Si	h sloṫ 1 and du PCl 2.2 Bus C	er and I/ al ether	O Bridge) / net and PC	I-X Bus E	B with DE, USB,
Ethernet controllers  CD-ROM / diskette Rear ports Front ports / graphics Console interconnects	on planar 24X-10X' <i>Rear:</i> or <i>Front:</i> tw sC2T Inte	r / PCI-X 64 CD-ROM ne USB (Ver ro USB (Ver rconnect™	4-bit 100 / IDE; <i>L</i> ers 1.1), ers 1.1); <sup>1</sup> cable ( <sup>*</sup>	MHz Bus Diskette: C2T in, C Graphic 10 inch, 2	s A / full du 3.5" 1.44N 22T out, s s: SVGA / 245mm) is	iplex / Wake or IB diskette driv erial (9-pin), tw ATI® Rage XL standard (Key	n LAN® / AÌ ve / dust co vo ethernet / on plana vboard Vid	t (RJ-45), one F r / 8MB SDRAN	ormat 1. RS-485 ( M std/ma M) chair	0 / two rear (sys mgmt) / ax / 32-bit 33 ning cable) /	RJ-45 pc / no paral 3MHz PC / one Cab	orts lel port I 2.2 bus
Systems mgmt  Diagnostics	monitorin with 20-p <b>Light Pa</b>	ng such as oin conn or th Diagno	temp, m planar stics™ (	nemory, c for contin LED ligh	ptional di nuous pwr ts indicate	sks, fàns, pów (no ext pwr req	er supply /  ) Xeon  Xeon	on planar / pro support for op 2.4GHz/512K 2.8GHz/512K 2.8BGHz/512	otional F B L2 Ca B L2 Ca	emote Sup ache Proc ache Proc	ervisor A Upg Upg	
Security Software	unattend ServerG	n password ed boot / s <b>uide</b> ™ (CE IBM Direct	electabl D-ROM i	e boot / u nstallatio	nattended	d start mode	512M 1GB I 2GB I 80GB	B PC2100 CL2 PC2100 CL2.5 PC2100 CL2.5 ATA-100 EID GB 15K Ultra320	2.5 ECC ECC D ECC D E HDD	DDR-SDR DR-SDRAN DR-SDRAN *	AM ĎIMN 1 RDIMM 1 RDIMM	1 33L5038 33L5039
Cooling fans Power supply Prerequisites	variable 332 watt Monitor, one Cabl	keyboard,	ot redun al / auto mouse, echnolog	dant or laborated	hot-swap / auto-re k (some), Kit per ch	oply) / start support operating sys, ain of servers	73.4G Remo xSerie break or NetB	B 19K Olliaszo B 10K-4 Ultra1 ote Supervisor es Cable Chai out cable and2 AY ACT Local ( not supported	60 SCS Adapter n Techr ! meter I Console	l Hot-Swap S nology Cab KVM chainir Manager	SLHDD* le Kit (2	06P5756 09N7585 meter



Slot 1: halfsize, 64-bit 100MHz PCI X 1.0 (3.3v); Bus A Slot 2: fullsize, 64-bit 100MHz PCI X 1.0 (3.3v); Bus B

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

access, open for fixed or hot-swap disk

Stealth black color front bezel

Steatill Diack Color Horit Dezel
 Utility tray in front slides out from under middle bay (USB devices)
 H 1.72" (1U) x W 17.3" x D 25.7"; 43.7mm x 439.9mm x653.3mm
 26 to 28.4 lbs; 11.8kg to 12.9kg (minimum to max configuration)
 Configuration/Setup Utility: F1 at startup
 Diagnostics (PC-Doctor™): F2 at startup
 System Partition Boot: ALT+F1 at startup
 Network Boot: E12 at startup

Network Boot: F12 at startup

Operator Information Panel in front

LSI Logic Configuration Utility: CTRL+C at startup

Includes two line cords (9 ft 110v cable with NEMA plug and 9 ft universal interrack HV cable with IEC plug)

Predictive Failure Analysis® on processor(s), voltage regulator modules, memory, fans, power supply, and disk options

Maximum internal disk capacity<sup>13</sup> (model dependent): 293.6GB with two 146.8GB SL SCSI disks or 240GB with two 120GB EIDE disks

3 year IOR 24x7, 4 hr avg response

3 year IOR 24x7, 2 hr avg response

http://www.ibm.com/

24x7<sup>14</sup> toll-free support for warranty issues during the warranty period<sup>3</sup>

See footnotes for important warranty information

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

# **LIMITED WARRANTY**<sup>3</sup>

- 1 year parts and labor
   International Warranty Service<sup>3</sup>
- On site, 8 am 5 pm, Mon Fri coverage excluding holidays, next business day response time7
- On site service upgrade options (in
  - eligible locations):<sup>7</sup>
     3 year IOR 9x5, NBD response
    (ServicePac® part num 69P9505)
- 3 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9506)
- (ServicePac part num 69P9507)
- (ServicePac part num 69P9508)
- Other ServicePac options at services/us/its/pdf/wamomxeu.pdf

(X335B) © IBM Corp. April 2003

@ 202 702	•		•				Okino una Eduda	
IBM®	L2	Memory		Disk	Power	Slots	Limited	Available
Type-GAV-model Qty	x Processor cache Mem	ory type	Disk	controller	Supply Disk	kbays x bays	Ethernet warranty	3 date
	Xeon® 2.8GHz 1MB 512 Xeon 2.8GHz 1MB 512		None (open 3.5) None (open 3.5)	Ultra320 SATA	585W 2 ho	nt-swap 2x3 : nnle-sn 2x3 :	2 x Gigabit 3 year 2 x Gigabit 3 year	Oct 2004
	Keon 3.0GHz 1MB 1G	B std	None (open 3.5)	Ultra320	585W 2 ho	t-swap 2x3	2 x Gigabit 3 year	Oct 2004
	Keon 3.6GHz 1MB 1G Keon 3.6GHz 1MB 1G		None (open 3.5)				2 x Gigabit 3 year	
	Keon 3.6GHz 1MB 1G		None (open 2.5) None (open 3.5)				2 x Gigabit 3 year 2 x Gigabit 3 year	
Positioning	A highly manageable, ulti		vay server that del	ivers perfor	тапсе сотрі	uting in space-	-constrained environ	ments
Processor(s) Cache	1 x Intel® Xeon 2.8, 3.0, 3 1MB L2 cache on all mod					Memory 64	Technology (EM64	Т)
SMP support	2-way SMP / up to two X				/ LOO			
Implementation	Systemboard contains two low-profile 100MHz) and i				DIMM slots, tw	o PCI-X slots	(one full length 133N	MHz, one
Memory	<b>512MB or 1GB</b> std / 16G				z registered 24	10-pin ECC DI	DR2-SDRAM DIMM:	s / eight
•	DIMM gold-connector slot							
	channel / Active Memory bit Checksum Chipkill™	corrects 1, 2, 3	e and memory mirrors. S. or 4-bit errors on	or / ability to same chip	and detects 2	or Cnecking a 2- through 8-bi	it errors contained in	two chips:
	optional on some 1GB (2)							, , ,
SCSI disk controller	LSI Logic <sup>®</sup> 53C1020 / UI Mirroring) with two SCSI of						mirroring (Embedd	ed
SATA disk Controller	Enhanced SATA-150 (150	MB/sec) control						
IDE controller / cable	one 1-drop EIDE cable to SCSI 3.5: 292GB with two		CCI 2 5:four 2 5" 7	SCB HUU	CATA: FOOGE	2 with two 250	CB HDD	
Disk - MAX capacity Disk - bays	SCSI: two hot-swap or for						дь прр	
Mechanical	EIA 19" Rack (1U4) / rac	c-mount only / si	upported in 26" de	ep racks su	ıch as the IBN	/I NetBAY™ R	ack products	
Architecture / chipsets	Intel E7520 / Intel Memor							
	32bit/33MHz PCI) / Intel F to Host Bridge for graphic							
B	components; keyboard, n	nouse, serial)	, , ,		' /			3,
Bus slots Ethernet controllers	(See below) two available Two gigabit 10/100/1000 e							
	on planar / PCI-X 64-bit 1	DOMHz/full dup	lex / Wake on LAN	* / Alert Sta	andard Format	t 2.0 / two rear	RJ-45 ports	
DVD-ROM / diskette Rear ports	Some: DVD-ROM / IDE; Rear: Two USB (2.0), se		o two ethernet (R	I-45) one F	2 I-45 (eve ma	ımt) / mouse r	ne2 / kayboard ne2	
Graphics	SVGA / ATI® 7000m / on					jiiii) / iiiouse p	032 / Keyboard psz	
Systems mgmt	IBM Baseboard Manage	ment Controlle	r (BMC) / H8S216	8 / on plan	ar / provides s	system and er	nvironmental monito	ring such
,	as temp, memory, optiona	l disks, fans, pov	wer supply / suppo					
Diagnostics	on planar for continuous p Drop down light path di			Xeor	3 2GHz/1ME	3 L2 Proc Upg	1	13N0663
-	(LED lights indicate failing	component)		Xeor	1 3.6GHz/1ME	3 L2 Proc Upg	j	13N0665
Security	Power-on password / adr unattended boot / selectal						ECC DDR2 RDIMM	73P3523 73P2865
Software	ServerGuide™ (CD-ROM						C DDR2 ChipKill CC DDR2 ChipKill	73P2866
	utilities), IBM Director™, a	nd others	· ·	80GI	B`SATA 7.2K	Simple Swap I	HDD .	73P8002
Cooling fans	seven-nine fans / variable	speed / hot-swa	ap / redundant			Simple Swap  O SCSI Hot-S		73P8003 90P1305
Power supply	585 watt hot-swap (secon			36.40	GB 10K Ultra	320 SCSI Hot-	Swap 2.5" HDD	32P0796
Prerequisites	auto re-start Monitor, keyboard, mouse	rack disk (sor	me) onerating sys		eRAID 6i+ ad	aptor or Adapter II sli	imlina	13N2190 73P9341
1 Toroquiolico	Monitor, Royboara, model	, raor, alor (oor	no, operating byo	Seco	ond 585W Pov	ver supply		90P5280
				PCI-I	Express x8 fu	III-length riser	card /. <b>ibm.com</b> /pc/us/acc	22R9293
Back				Oute	a opiions ava	iiαDi∈ αι WWW	/.ib/ii.com/pc/us/acc	COSUICS
			64-bit 100MHz P0		3.3v); Bus A			
Тор		•	Hz PCI X 1.0 (3.3	, .	[	1 11/1	IITED WARRANT'	<b>V</b> 3
Fan Fan System	board Bay ① 5.25",	UltraSlim 0.5", a	access,std DVD- access,std fixed				rts and labor	
Power slot#2 slo	Day = 0.0 ,	SL 1",	access, open for		AP GIOIL	Internatio	nal Warranty Service	
Supply   Full #1	Bay	only available	with 2.5" drive me	odel and n	o DVD-	,	am - 5 pm, Mon - F excluding holidays	
1 & 2 Length		ala anto de la de	1			next busin	ness day response	time <sup>7</sup>
	opt     CPU      ⇔ Stealth bla PU	ck color front b agement Arm	ezei				ervice upgrade optice locations):7	ons
FanFanFan (	opt) 🗘 H 1.69" (1	J) x W 17.32" :	x D 27"; 43mm x			3 year lo	OR 9x5, 4 hr avg re	
	FanFanFanFan	lbs; 11.8kg to	12.9kg (minimum	to max co	nfiguration)		Pac® part num 21P20	

anFanFanF Drop Down Light Path Diagnostics Panel Configuration/Setup Utility: F1 at startup
 Diagnostics (PC-Doctor™): F2 at startup
 System Partition Boot: ALT+F1 at startup Disk (opt) (std DVD or opt) Network Boot: F12 at startup Front 3.5 HDD 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) Front 2.5 HDD Predictive Failure Analysis® on processor(s), voltage regulator

modules, memory, fans, power supply, and disk options

3 year IOR 24x7, 4 hr avg response (ServicePac part num 21P2073) 3 year IOR 24x7, 2 hr avg response

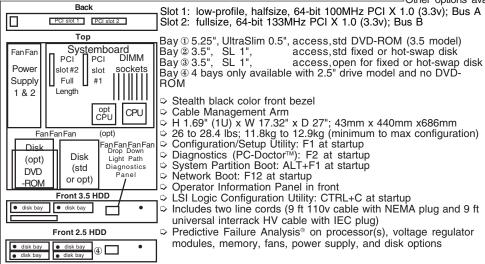
(ServicePac part num 21P2074) 4 year IOR 24x7, 4 hr avg response

(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 24x7<sup>14</sup> toll-free support for warranty issues during the warranty period<sup>3</sup>

IBM® Type-GAV-model Qty	L2 x Processor cache	e Memory Disk	Disk controller	Optical	Power Supply	Disk bays	Slots x bays	Ethernet		Available date
8837-1Vy-1Vx 1 x 2 8837-16y-16x 1 x 2 8837-25y-25x 1 x 2 8837-35y-35x 1 x 2 8837-3Vy-3Vx 1 x 2 8837-36y-36x 1 x 2 8837-45y-45x 1 x 2 8837-E1y-E1x 1 x 2	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 3.3 1GB None (open 2.3 1GB None (open 3.3 1GB None (o	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 4 simple-sp 2 hot-swap 4 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
Positioning Processor(s) Cache SMP support Implementation	1 x Intel® Xeon 3.0 2MB L2 cache on 2-way SMP / up to Systemboard conta	ble, ultra-dense 1U, 2-wa D, 3.2, 3.4, 3.6GHz with 8 all models / on die of pro- two Xeon Processors (some two Intel 604 pin mic c) and integrated SCSI or	800MHz / <b>2M</b> l cessor / at prosame speed/c ro-PGA ZIF s	B L2 Cad ocessor s cache size ockets, e	che / <b>Exte</b> speed / E e) eight DIMN	nce computing ended Memor CC M slots, two P0	in spac y 64 Te	ce-constraine chnology (E	d environ :M64T)	ments
Memory	connector slots on	ax <sup>13</sup> / 8 slots (6 avail) / <b>P</b> 0 systemboard / DIMMs m : online spare and memo	ust be installe	ed in mate	ched pairs	s [a bank] / 2-v	vay mer			
SCSI disk controller SATA disk Controller IDE controller / cable Disk - MAX capacity Disk - bays	Mirroring) with two senhanced SATA-19 one 1-drop EIDE cases 3.5: 292GB w	vith two 146GB HDD <i>SC</i>	one 16-bit in r / two conne <b>SI 2.5</b> :four 2.9	iternal cha ctors on 5" 73GB	annel / n planar / t HDD <i>SA</i>	o external con wo one-drop c <b>TA</b> : 500GB wit	nector ables th two 2		(Embedd	ed
Mechanical Architecture / chipsets Bus slots Ethernet controllers DVD-ROM / diskette Rear ports Graphics	EIA 19" Rack (1U <sup>4</sup> ) / rack-mount only / supported in 26" deep racks such as the IBM NetBAY <sup>TM</sup> 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 IM to Host Bridge for graphics controller, EIDE, USB, SMBus, LPC bus to Super I/O) / National PC87427 Super I/O (supports lega components; keyboard, mouse, serial)  Slots  Sernet controllers  Two gigabit 10/100/1000 ethernet ports / Broadcom BCM5721 / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / Alert Standard Format 2.0 / two rear RJ-45 ports  Some: DVD-ROM / IDE; Diskette: none  Rear: Two USB (2.0), serial (9-pin), video, two ethernet (RJ-45), one RJ-45 (sys mgmt) / mouse ps2 / keyboard ps2								Thin IMB	
Systems mgmt  Diagnostics	as temp, memory, on planar for contin	lanagement Controller optional disks, fans, power lands by fans, power lands by factorial factor	er supply / su q)	ipport 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		<del></del>	512MB 1GB (2x 2GB (2x	(2x256)PC2-32 (512)PC2-320 (1GB)PC2-320	200 CL3 CL3 E 0 CL3 E	ECC DDR2 CC DDR2 C ECC DDR2 (	hipKill	73P3523 73P2865 73P2866
Cooling fans Power supply		rariable speed / hot-swap (second Opt)/ universal /		g /	160GB 9	ATA 7.2K Sim <sub>l</sub> SATA 7.2K Sin OK Ultra320 SO 10K Ultra320 S	nple Swa CSI Hot-	, ap HDD ∙Swap SL H⊡		73P8002 73P8003 90P1305 32P0796
Prerequisites		mouse, rack, disk (some	e), operating	sys	ServeRA Remote Second PCI-Exp	AID 6i+ adapto Supervisor Ac 585W Power a ress x8 full-ler ptions available	r lapter II supply ngth rise	slimline er card		13N2190 73P9341 90P5280 22R9293

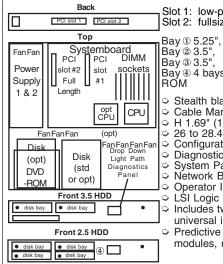


### **LIMITED WARRANTY**<sup>3</sup>

- 3 year parts and labor
- International Warranty Service<sup>3</sup>
- On site, 8 am 5 pm, Mon Fri coverage excluding holidays, next business day response time<sup>7</sup>
- 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 24x7<sup>14</sup> toll-free support for warranty issues during the warranty period<sup>3</sup>

BM@server™	xSeries™	336 (8837	) - Noven	nber 2005	xR	EF by eSer	ver Field	Skills an	d Educa	tion Team
IBM <sup>⊚</sup> Type-GAV-model Qty	x Processor/Core	L2 cache Memory	Disk	Disk controller Optica	Power	Disk bays	Slots	Ethernet		Available date
8837-05U-05x 1 x X 8837-0WU-0Wx 1 x X 8837-06U-06x 1 x X 8837-55U-55x 1 x X 8837-5VU-5Vx 1 x X 8837-5U-56x 1 x X 8837-E4U-E4x 1 x X 8837-E5U-E5x 1 x X 8837-D1U-D1x 1 x X 8837-D4U-D4x 1 x X	eon™2.8GHz/S eon 2.8GHz/SC eon 2.8GHz/SC eon 3.8GHz/SC eon 3.8GHz/SC eon 3.8GHz/SC eon 3.8GHz/SC eon 3.8GHz/SC	C 2MB 1GB 2MB 1GB 2MB 1GB 2MB 1GB 2MB 1GB 2MB 1GB 2MB 1GB 2MB 1GB 2MB 1GB 2MB 1GB	None(open 3 None(open 3. None(open 3. None(open 3. None(open 3. None(open 3. None(open 3. None(open 3. None(open 3.	8.5) Ultra320 DV 5.5) Ultra320 Nor 5) SATA DVE 5) Ultra320 DVE 6) Ultra320 Non 5) SATA DVE 6) SATA DVE 6) Ultra320 DVE 6) Ultra320 DVE 6.5) Ultra320 DVE	D 585W ne 585W 0 585W 0 585W ne 585W 0 585W 0 585W 0 2x585W 0 585W	2 hot-swap 4 hot-swap 2 simple-sp 2 hot-swap 4 hot-swap 2 simple-sp 2 hot-swap /2 hot-swap 2 hot-swap 4 hot-swap	2x3 2x4 2x3 2x3 2x4 2x3 2x3 2x3 2x3 2x3	2 x Gigabit 2 x Gigabit	3 year 3 year 3 year 3 year 3 year 3 year 3 year 3 year 3 year	Sep 2005 Sep 2005 Sep 2005 Sep 2005 Sep 2005 Sep 2005 Sep 2005 Sep 2005 Nov 2005
Positioning Processor(s) Cache SMP support Implementation	Optimized for 2MB L2 Cache 2-way SMP / up Systemboard co	Extended Mem std on Single Co to two Xeon Fontains two Intel	ory 64 Techn fore / 2x2MB L Processors (sar 604 pin micro-	Server that delivers Core 800MHz FS lology (EM64T) / 2 Cache std on Di me speed/cache si PGA ZIF sockets, ATA, dual GB ethe	Hyper-Thre ual Core / c ze) eight DIMM	eading on die of proc 1 slots, two P	essor / at	processor s	speed / E0	cc
Memory	1GB std / 16GB connector slots Active Memory	max <sup>13</sup> / 8 slots on systemboard (TM): online spare	(6 avail) / <b>PC2</b>   / DIMMs must e and memory	-3200 400MHz reg t be installed in ma mirror / Error Che	istered 240 tched pairs ecking and	-pin ECC DD [a bank] / 2-1 Correcting	R2-SDR/ way mem ( <b>ECC)</b>	AM DIMMs nory interlea	/ eight DII ve / dual d	MM gold- channel /
SCSI disk controller SATA disk Controller IDE controller / cable Disk - MAX capacity Disk - bays	Mirroring) with to Enhanced SATA one 1-drop EIDI SCSI 3.5: 292G	vo SCSI disks ir A-150 (150MB/s E cable to DVD- B with two 1460	n front bays / oi ec) controller / ROM BB HDD <b>SCSI</b>	ller (LVD 320MB/s ne 16-bit internal of two connectors on 2.5:four 2.5" 73GE -pin SCA-2 connec	nannel / no 1 planar / tw 3 HDD <i>SA1</i>	external con o one-drop o <b>A</b> : 500GB wi	inector cables th two 25		(Embedd	ed
Mechanical Architecture / chipsets	Intel E7520 / Intel E7520 / Intel E7520 / Intel Sabit/33MHz PC to Host Bridge for	tel Memory Con Cl) / Intel PCI-X I or graphics cont	troller Hub (MC Bridge (support roller. EIDE. U	orted in 26" deep ra CH) / 3 PCI buses ( s 133MHz PCI-X s SB, SMBus, LPC b	(one 64bit/1 Flots 1 & 2, ous to Supe	33MHz PCI-) LSI Logic 530 er I/O) / Nation	X1.0, one C1020) / I nal PC87	64bit/100M CH5R Sout 427 Super I	IHz PCI-X th Bridge ( /O (suppo	1.0, and Thin IMB orts legacy
Bus slots Ethernet controllers DVD-ROM / diskette Rear ports Graphics	Some: DVD-RC Rear: Two US	N 64-011 10010171. 0M / IDE; <i>Diske</i> B (2.0), serial (9	z / Iuii dupiex / ette: none I-pin), video, tw	wap Active™ PCI s dcom BCM5721 / tv Wake on LAN® / A ro ethernet (RJ-45) M std/max / 32-bit	, one RJ-4	īd Format 2.0 5 (sys mgmt)	/ two rea	ar HJ-45 por	is	
Systems mgmt  Diagnostics Security Software		ry, optional disks ntinuous pwr (no nt path diagnos ate failing comp vord / administra r/ selectable boo (CD-ROM insta	s, fans, power so ext pwr req) stics Pull out Fonent) ator password of / unattended llation and con	/ start mode	Xeon 2.8GH Xeon 2.8GH Xeon 3.2GH Xeon 3.6GH Xeon 3.8GH		Proc Upg Proc Upg Proc Upg Proc Upg Proc Upg	apter II Sliml	line with 2	
Cooling fans Power supply Prerequisites	Calibrated Vec variable speed / 585 watt hot-sw auto re-start Monitor, keyboa	hot-swap / redu ap (second Opt	undant )/ universal / au		2GB (2x1GE 80GB SATA 160GB SAT 73GB 10K U 36.4GB 10K ServeRAID	)PC2-3200 CL3 3)PC2-3200 CL 3 7.2K Simple S A 7.2K Simple S Jitra320 SCSI H ( Ultra320 SCSI 6i+ adaptor pervisor Adapte	3ECC DDF wap HDD Swap HDD lot-Swap S Hot-Swap	R2ChipKill LHDD 2.5"HDD		73P2865 73P2866 73P8002 73P8003 90P1305 32P0796 13N2190 73P9341
					Second 585 PCI-Expres	W Power suppl s x8 full-length ns available at v	y riser card		cessories	90P5280 22R9293
Fan Fan Power Supply 1 & 2 Length	Slot Slot Slot Say	2: fullsize, 64 ① 5.25", Ultras ② 3.5", SL 1" ③ 3.5", SL 1" ④ 4 bays only	-bit 133MHz F Slim 0.5", acce ', acce ', acce	oit 100MHz PCI X PCI X 1.0 (3.3v); I ess,std DVD-ROI ess,std fixed or h ess,open for fixed 2.5" drive model	1.0 (3.3v) Bus B M (3.5 mod ot-swap did or hot-sw	g Bus A del) sisk vap disk //D-	LII 3 year parte p	MITED WA arts and la onal Warrai 8 am - 5 pm e excluding iness day r ervice upg le locations	RRANTY bor nty Servic n, Mon - F holidays esponse rade optic	ce <sup>3</sup> ri , time <sup>7</sup>



Stealth black color front bezel

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

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

(in eligible locations):7

3 year IOR 9x5, 4 hr avg response (ServicePac® part num 21P2072) 3 year IOR 24x7, 4 hr avg response (ServicePac part num 21P2073)

3 year IOR 24x7, 2 hr avg response

(ServicePac part num 21P2074) 4 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9244)

ServicePac part num 69F9244)
 Syear IOR 9x5, NBD response (ServicePac part num 69F9246)
 Other ServicePac options at http://www.ibm.com/
services/us/its/pdf/wamomxeu.pdf
 24x7<sup>14</sup> toll-free support for warrants

24x7<sup>14</sup> toll-free support for warranty issues during the warranty period3

										-	The second	-
Type-model Qty x Pr 8676-1AX 1 x Xeon		L2 cache 512KB	FSB MHz 533	Memory 512MB	Memory type Chipkill	Disk None (open)		Hot -swap or fixed disk bays 2 hot-swap		Ethernet 2 x Gigab	warranty	
	er models nt to sup					tructures req	uiring ne	twork				
Positioning Processor(s) L2 cache SMP support Implementation	1 x Intel 512KB / 2-way SI Systemb	Xeon 2 on die of public to the contract of	nocesso two Xeo ains two	with 530 or / at process on Process Intel 603-	3MHz from essor spesors (sam pin micro	ntside bus / H eed (no L3 cacl e speed/cache	yper-Threa ne) e size) ets, four m	nance computir ading technolog emory DIMM sl	ay '			
Memory	must be i	266MHz r nstalled in ecking a	egistere n matche nd Corre	d 184-pin ed pairs [a	ECC DDF bank] / 2- CC) via 16	-way memory i <b>5-bit Checksu</b>	Ms / four D	DIMM gold-conr dual channel / ™ (corrects 1, 2	memory	bus ruńs a	t 2 x 100N	1Hz/
SCSI disk controller  IDE controller / cable  Disk - capacity Disk - bays	64-bit 10 one 16-b All: Enha EIDE mo SCSI mo	OMHz PC it internal inced IDE odels: One odels: non	CI-X Bus channe ATA-10 e 2-drop e standa	B / suppo I / 16-bit 6 O controll EIDE cab ard / supp	orts <b>RAID</b> - 58-pin LVI er in CSB ole to two orts up to	-1 mirroring (I D cable from s 35 South Bridg disk bays / one 15000 rpm dis	Embedded ystemboar e / two con e 1-drop El sks; <i>EIDE l</i>	controller (LV   Mirroring) with rd to backplane nectors on pland IDE cable to CI models: 40GB n each disk bay	two SC for two nar / one D-ROM / 7200 rp	SI disks in disks / no e 1-drop IDI om / ATA-1	front bays external co E cable (C	onnector D-ROM) s seek
Mechanical Architecture / chipsets	s <b>ServerW</b> one CIOI slot 2 and SMBus, I	<b>/orks® Gi</b> B-X2 I/O I d Ultra320 LPC bus 1	and Charidge (I Bridge (I D / CSB To Super	<b>ampion</b> ™ MB2 bus 5 South B I/O) / Nat	to Host B ridge (Thi ional Sen	CMIC LE Host ridge for PCI->	Bridge (m C Bus A with Bridge for C87417 S	th slot 1 and du PCI 2.2 Bus C	er and I/ al ether	O Bridge) / net and PC	I-X Bus E	

Two gigabit 10/100/1000 ethernet ports / Broadcom BCM5703 / two full gigabit ethernet MAC and PHY layer functions /

on planar / PCI-X 64-bit 100MHz Bus A / full duplex / Wake on LAN® / Alert Standard Format 1.0 / two rear RJ-45 ports

Rear ports Rear: one USB (Vers 1.1), C2T in, C2T out, serial (9-pin), two ethernet (RJ-45), one RS-485 (sys mgmt) / no parallel port Front ports / graphics Front: two USB (Vers 1.1); Graphics: SVGA / ATI® Rage XL / on planar / 8MB SDRAM std/max / 32-bit 33MHz PCI 2.2 bus Console interconnects C2T Interconnect™ cable (10 inch, 245mm) is standard (Keyboard Video Mouse (KVM) chaining cable) / one Cable Chain Technology Cable Kit required at end of chain (a cable with separate keyboard, mouse, monitor connectors)

Systems mgmt IBM Integrated system management processor (ISMP) / H8S2148 / on planar / provides system and environmental monitoring such as temp, memory, optional disks, fans, power supply / support for optional Remote Supervisor Adapter with 20-pin conn on planar for continuous pwr (no ext pwr req) Diagnostics Light Path Diagnostics™ (LED lights indicate failing component) and on-board diagnostics (via PC-Doctor in BIOS) OPTIONS Security Power-on password / administrator password / Xeon 2.8BGHz/512KB L2 Cache Proc Upg 512MB PC2100 CL2.5 ECC DDR-SDRAM DIMM unattended boot / selectable boot / unattended start mode Software ServerGuide™ (CD-ROM installation and configuration 1GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM 33L5039 utilities), IBM Director™, and others 2GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM 33L5040 Cooling fans Eight fans (five for system, three on power supply) / 36.4GB 15K Ultra320 SCSI Hot-Swap SL HDD variable speed / not redundant or hot-swap Remote Supervisor Adapter ServeRAID™-4Mx Ultra160 SCSI Adapter Power supply 332 watt (-48 to -60 V dc [direct current]) / auto-sensing supports dual input sources (two power sources) / Cable Chain Technology (C2T) Cable Kit (2 meter not redundant / not hot-swap / auto-restart support breakout cable and 2 meter KVM chaining cable) Monitor, keyb., mouse, rack, disk, operating sys, one C2T Kit per chain of servers or NetBAY ACT CAT-5 Prerequisites NetBAY ACT Local Console Manager

(See below) two available PCI-X 1.0 / no hot-swap Active™ PCI slots

24X-10X6 CD-ROM / IDE; Diskette: 3.5" 1.44MB diskette drive / dust cover

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

Slot 1: halfsize, 64-bit 100MHz PCI X 1.0 (3.3v); Bus A Slot 2: fullsize, 64-bit 100MHz PCI X 1.0 (3.3v); Bus B

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

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

Stealth black color front bezel

- Utility tray in front slides out from under middle bay (USB devices) ➡ H 1.72" (1U) x W 17.3" x D 25.7"; 43.7mm x 439.9mm x653.3mm
- 26 to 28.4 lbs; 11.8kg to 12.9kg (minimum to max configuration)
- Configuration/Setup Utility: F1 at startup
   Diagnostics (PC-Doctor™): F2 at startup
- System Partition Boot: ALT+F1 at startup
- Network Boot: F12 at startup
- Operator Information Panel in front
- LSI Logic Configuration Utility: CTRL+C at startup
- Includes two line cords (9 ft 110v cable with NEMA plug and 9 ft universal interrack HV cable with IEC plug)
- Predictive Failure Analysis® on processor(s), voltage regulator modules, memory, fans, power supply, and disk options

Maximum internal disk capacity<sup>13</sup> (model dependent): 293.6GB with two 146.8GB SL SCSI disks or 240GB with two 120GB EIDE disks

### **LIMITED WARRANTY**<sup>3</sup>

331 5038

06P5776

09N7585

06P5736

06P4792

1735L04

- 3 year parts and labor
- International Warranty Service<sup>3</sup>
- 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 24x7<sup>14</sup> toll-free support for warranty issues during the warranty period3

See footnotes for important warranty information

= Hot-swap

Bus slots

**Ethernet controllers** 

CD-ROM / diskette

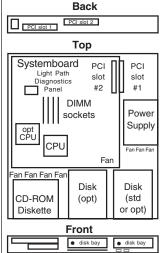
US models announced February18, 2003

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

IBM <sup>⊚</sup> 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 <sup>3</sup>	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)					
<b>512MB</b> std / 8GB max <sup>13</sup> / two slots used / two slots available / <b>PC2100</b> 266MHz registered 184-pin ECC DDR-SDRAM DIMMs must be installed in matched pairs [a bank] / 2-way memory inter <b>Error Checking and Correcting (ECC)</b> via <b>16-bit Checksum C</b> detects 2- through 8-bit errors contained in two chips). Chipkill	/ four DIMM gold-connector slots on systemboard / DIMMs rleave / dual channel / memory bus runs at 2 x 100MHz / Chipkill™ (corrects 1, 2, 3, or 4-bit errors on same chip and					
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 / two full gigabit ethernet MAC and PHY layer functions / on planar / PCl-X 64-bit 100MHz Bus A / full duplex / Wake on LAN® / Alert Standard Format 1.0 / two rear RJ-45 ports ette 24X-10X® CD-ROM / IDE; Diskette: 3.5" 1.44MB diskette drive / dust cover Rear: one USB (Vers 1.1), C2T in, C2T out, serial (9-pin), two ethernet (RJ-45), one RS-485 (sys mgmt) / no parallel port sphics Front: two USB (Vers 1.1); Graphics: SVGA / ATI® Rage XL / on planar / 8MB SDRAM std/max / 32-bit 33MHz PCI 2.2 bus nnects C2T Interconnect™ cable (10 inch, 245mm) is standard (Keyboard Video Mouse (KVM) chaining cable) / one Cable Chain						
IBM Integrated system management processor (ISMP) / H8 monitoring such as temp, memory, optional disks, fans, powers with 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) /	1 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™-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					
	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 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 intel Error Checking and Correcting (ECC) via 16-bit Checksum C detects 2- through 8-bit errors contained in two chips). Chipkil All (not used on EIDE models): LSI Logic® 53C1020 / Ultra32C 64-bit 100MHz PCI-X Bus B / supports RAID-1 mirroring (Emtone 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 Bri 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 Bri 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 L 24X-10X° CD-ROM / IDE; Diskette: 3.5" 1.44MB diskette drive / Rear: one USB (Vers 1.1); Graphics: SVGA / ATI® Rage XL/ or CD-ROM / IDE; Diskette: 3.5" 1.44MB diskette drive / Rear: one USB (Vers 1.1); Graphics: SVGA / ATI® Rage XL/ or CD-ROM / IDE; Diskette: 3.5" 1.44MB diskette drive / Rear: one USB (Vers 1.1); Graphics: SVGA / ATI® Rage XL/ or CD-ROM / IDE; Diskette: 3.5" 1.44MB diskette drive / Rear: one USB (Vers 1.1); Graphics: SVGA / ATI® Rage XL/ or					



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 capacity<sup>13</sup> (model dependent): 293.6GB with two 146.8GB SL SCSI disks or 240GB with two 120GB EIDE disks

# LIMITED WARRANTY<sup>3</sup>

- 3 year parts and labor
- International Warranty Service<sup>3</sup>
- 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 24x7<sup>14</sup> toll-free support for warranty issues during the warranty period3

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See footnotes for important warranty information

IBM®	v Drassass	L2	Ultra160	SCSI			Fixed		Power	Commiss	Available
Type-model Qty 2 8827-14X 2 x Pentiu	x Processor m® III 1.26GHz	cache Memory 512KB 2GB 1	x 36.4GB <sup>2</sup> 10K	controller 2 x Ultra160	anical 2U <sup>4</sup> rack		disk bays 2 fixed			Complian r NEBS-3	date Apr 2002
		signed for networ power environm		s requiring net	work						
Positioning Processor(s) L2 cache Implementation SMP support	2 x Intel® Penti 512KB std and Motherboard co	ment Building Sys ium® III 1.26GHz- I max / ECC / at p ontains two Intel I a second identica	-S with 133MHz rocessor speed PGA370 sockets	<b>r frontside bus</b> / processor an s, six DIMM soo	s d L2 cach	ne in Fl	ip Chip F	in Grid	Array (FC	-PGA2)	ystems
Memory	Error Checkin	8 <sup>13</sup> max / 6 socket ng and Correctin MHz / six 168-pin	g (ECC) memor	y controller / ma	atched pa	airs req	uired / tw oorts regi	o-way i	nterleavin SDRAM E	g / :CC DIMM	ls only
SCSI disk controller SCSI channels SCSI disk SCSI disk bays IDE controller / cable	SCSI Channel SCSI Channel 1 x 36GB Ultra Two fixed disk	A-7899W / dual cl A: external 16-bit B: one internal 10 160 SCSI, 10K rp bays (not hot-swa controller in South	t .8mm VHDCI 6 6-bit 68-pin LVD om, 4.9ms read s ap) in disk drive	8-pin external cable from co seek, S.M.A.R. carrier that slid	connecto ntroller to T. <sup>5</sup> les out fro	r`(no ca two-ba om fron	ables) ay disk dr t	ive carr	rier	4-bit PCI	
Mechanical Rack support PCI bus slots Chipset	EIA 19" Rack ( Designed for in (See below) thr PCI 2.2 / peer F ServerWorks® South Bridge) / CSB5 South Br Baseboard Mar	(2U <sup>4</sup> ) x 20-inch donstallation in a two ree full height full PCI buses / no ho III HE-SL chipse / NB655 Champiridge for EIDE, US nagement Control below): 4 bays / tv	eep p-post, 19" rack length 64-bit 33l t-swap Active™ et / CNB20HE-S ion I/O Bridge (0 SB, LPC bus for 9 ler	unit only (not si MHz slots / thre PCI slots IL North Bridge CIOB20) for PC Super I/O Natio	upported ee low-pro for CIOB I Bus B (s onal Semi	in IBM ofile ha and P slots, S conduc	NetBAY If length ( CI A 32-b CCSI) and ctor PC8	™ Rack 64-bit 60 bit 33Ml d C (slo 741(dis	s) / ships v 6MHz PCI Hz (graphi ts) / kette, seri	slots/ cs, etherne	et,
10/100 ethernet CD-ROM / diskette Rear ports	24X-10X <sup>6</sup> CD-F Two USB ports connector for fr Y-splitter cable	/ on planar / full d ROM / multisessic s (Version 1.1); R. ront panel alarm r s) us / ATI® Rage XL	on / IDE interface J-45 serial; PS/2 elay contacts / r	e / bootable; D keyboard; two o parallel port	iskette: 3 RJ-45 et / mouse o	.5" 1.4 hernet connec	4MB disk ; DB-15 ts to USE	cette dri graphic 3 port (c	ve / dust c s; 68-pin s or keyboar	over SCSI; DB- d port with	15 male standard
Security	Power-on pass	sword / admin pas	sword / unatten	ded boot / sele	ctable bo	ot/boc	t without	keyboa	ard / diske	te write pr	otect
Alarm panel Status LEDs Systems mgmt Diagnostics OS support Software ship group	four alarm pane Operator Infor Integrated serv processors, ter LED diagnostic Red Hat Linux Resource CD	n panel in front be el LEDs: power al rmation Panel (ir vice processor (t mperature, voltac s and on-board d <sup>™</sup> 7.1 (CD-ROM installa ), PC-Doctor™ dia	arm fault, critica n front) / includes Baseboard Mana ge, and power s iagnostics provi ation and config	I alarm fault, m s switches (NM agement Contro upplies activate ding an LED m uration utilities	ajor alarn II, power, oller) / on e alarm pa ap to a fa s, Intel Se	n fault, reset) planar anel LE iling co	minor ala and statu / failures EDs / mponent	arm faul us LEDs or thres t rver ma	t s (NIC, dis sholds in fa	k, main po .ns, memo	wer) ry,
Keyboard / mouse Power supply	350 watt (-48 t supports dual i	ck-based) two / accessible to -60 V dc [direction of the courses of the course of the	ct current])/ o power source	s)/	1GB S 36.4G IBM E IBM S	DRAM B 10K 54 (13. leek Ty	I ECC DI Ultra160 8" viewal vo-Buttor	MM 133 SCSI S ble) FS n Mouse	T Monitor e (black)	MM (black)	33L3324 33L3326 06P5751 633147N 28L3673
Fans Prerequisites	fan failure signa fan in each pow Appropriate do	tispeed / not hot-s als front panel ala wer supply / fan o power source ar pard, mouse, rack	.rm LED / n each Pentium nd customer sup	III processor					/board (bla /us/access		28L3644
Slot 2: fullsize, 64 Slot 3: fullsize, 64 Slot 4: low-profile, 64 Slot 5: low-profile, 64 Slot 6: low-profile, 64  CD-ROM diskette disk bay  Bay ① 3.5", 0.5",	disk bay  access, std access, std no access, std	2.2 (5v), Bus B 2.2 (5v), Bus B 2.2 (3.3v), Bus C 2.2 (3.3v), Bus C 2.2 (3.3v), Bus C 2.2 (3.3v), Bus C diskette CD-ROM disk	Configuration pressing Fixos SCSISelec CTRL+A PC-Doctor Several ha H 3.5" x W H 89 mm x 34 to 37 pc IPMI 1.5 ar	ck color (front bion/Setup Utility 2 at startup the transfer startup lot of the trans	vinvoked I by pressir on diskett tions 0 508 mm 16.8 kg) mpiant	ng re	4	1 yeas Interroment	r parts ar national W te, 8 am - rage exclu pousiness c r on site w ade option ons):7 r coverag lidays, 4 h b ServicePa hr x 7 day our avera b ServicePa hr x 7 day our avera c ServicePa d ServicePa d ServicePa	arranty Se 5 pm, Mon ding holid day respor varranty se s (in eligib e, Mon-Fri r response coverage ge response ac part num coverage ge response ac part num support fo	ervice <sup>3</sup> I - Fri ays, ays, sse time <sup>7</sup> ervice ble excluding e time mber) se time se time se time

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

IBM® Type-GAV-model Qt	y x Processor	L2 Cache	Memory [	Disk	SCSI controller	Form Factor	Slots x bays (hot-swap bays)	Power supply	Ethernet	Available date
8840-01y-01U 1 x 8840-11y-11U 1 x 8840-41y-41U 1 x	Xeon™ 2.8GHz Xeon 3.0GHz Xeon 3.6GHz	1MB 1MB 1MB	1GB No	one 2	x Ultra320 x Ultra320 x Ultra320	2U	4x8 (6 hot-swap 4x8 (6 hot-swap 4x8 (6 hot-swap	) 1 x 625W hot-swap ) 1 x 625W hot-swap ) 1 x 625W hot-swap	2 x Gigabit 2 x Gigabit 2 x Gigabit	Aug 2004 Aug 2004 Aug 2004
Positioning Processor	A rack-dense :	on™ Proc	essor 2.8, 3	3.0, 3.2	, 3.4, 3.6G	hz wit	oility and expandal h <b>800MHz</b> frontsi	bility for application-sedue bus / Optimized foulti-threaded (SMT)	rving Web er	nvironments
L2 cache SMP support Implementation	1MB L2 Cach 2-way SMP / Systemboard	e / on die up to two contains t	of processo Xeon Proce wo Intel PG	r / at p essors ( A604 m	rocessor s (same spe nicro-PGA	peed ed/cac ZIF so	he size) ckets, eight mem	ory DIMM slots, two loud GB ethernet, grap	ow-profile PC	CI-X
Memory	pin ECC DDR pairs [a bank]	2-SDRAM / 2-way m I Correcti	DIMMs / eignemory interling (ECC) /	ght DIN leave / optiona	/IM gold-co dual chan a/ <b>16-bit C</b>	nnectonel / A	or slots on system active Memory™:	s / PC2-3200 DDR2 4 board / DIMMs must Memory mirroring, ho rects 1, 2, 3, or 4-bit	be installeď i t-spare mem	n matched ory / Error
SCSI disk controller	Adaptec® AIC supports RAIL 5, 00, 10, 1E0	0-0 and 1	with up to	one ho	ot-spare di	sk / op	<b>oller</b> (LVD 320ME tional IBM Servel	B/sec) / on planar / 64 RAID™-7k Adaptor for	4-bit 100MHz low-cost RAI	z PCI-X / D 0, 1, 1E,
SCSI channels	Two 16-bit che backplane for VHDCI conne	annels (or six disks; ctor / su	ne internal a <i>Channel A</i> pports option	nd one l: 16-bi nal Ser	e external) t 68-pin in veRAID a	/ <i>SĆS</i> terface dapter	e to support exter s with external co	oit 68-pin LVD cable f nal SCSI devices via onnector(s) for extern	external SC al devices	SI 0.8mm
IDE controller/cable Disk - capacity Disk - bays	None standard	l / support	s 7200-1500	00 rpm 0	disks / one	backpl	lane	planar / one 1-drop I // all disk bays Ultra32		D-ROM)
Mechanical Chipset	Intel E7520 / slots 3 & 4) / ServeRAID 7k bus to Super	Memóry C Intel Dod Adapter / I/O) / LPC	Controller Hu Ison I/O Pro I/ ICH5 Sout C-SIO 8742x	ub (MC ccesor h Bridg Super	H) / Intel I (supports ge (Thin IM I/O	/O Cor 100MI IB to F	ntroller Hub 5 (IĊ Hz PCI-X slots 1 Host Bridge for gra	oroducts / no rack to H5) / Two Intel PCI-X & 2, Adaptec AIC-79( aphics controller, EID	Hubs (133N) 2 and option	MHz PCI-X nal
Ethernet controller Optical / diskette Front & Rear ports Graphics	on planar / PC 8X-24X <sup>6</sup> DVD- Front: one US (RJ-45), two F	(See below) Four available PCI-X 1.0 / no hot-swap Active™ PCI slots  Two gigabit 10/100/1000 ethernet ports /Two Broadcom® 5721 / two full gigabit ethernet MAC and PHY layer functions / on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / Alert Standard Format 2.0 / two RJ-45 ports in rear 8X-24X® DVD-ROM / IDE; Diskette: 3.5" 1.44MB diskette drive / dust cover Front: one USB (Vers 2.0) Rear:two USB (Vers 2.0), keyboard, mouse, serial (9-pin), graphics (DB-15), two ethernet (RJ-45), two RJ-45 (sys mgmt) / no parallel port SVGA / ATI® Radeon™ 7000m / on planar / 16MB DDR SDRAM std/max / 32-bit 33MHz PCI 2.2 bus							ear	
Security	Power-on pass	sword / ad	ministrator p	asswoi	rd / unatter	nded bo	oot / selectable bo	ot sequence		
Systems mgmt	IBM Baseboa H8S2168 / on environmental fans, power s Adapter II slin continuous po	planar / p monitorin upp / supp nline with wer (no e	provides sysing such as to ports option reseverved ext power re	item ar emp, o al Rem connec qd)	nd` optional dis note Super ctor for	visor	Xeon 3.0GHz 800l Xeon 3.2GHz 800l Xeon 3.4GHz 800l Xeon 3.6GHz 800l	MHz/1MB L2 Proc Upg MHz/1MB L2 Proc Upg MHz/1MB L2 Proc Upg MHz/1MB L2 Proc Upg MHz/1MB L2 Proc Upg		13N0688 13N0681 13N0683 13N0684 13N0685
Diagnostics	Drop down limap to failing				providing		1GB(2x512)PC2-3	2-3200 CL3 ECC DDR2 200 CL3 ECC DDR2 N	Ion-Chpk Kit	73P3523 73P3522
Software	ServerGuide <sup>T</sup> utilities), IBM	™ (CÒ-RO	M installation	on ańd		tion	2GB(2x1GB)PC2-3 IBM ServeRAID-7I	3200 CL3 ECC DDR2-		73P2866 71P8642 73P9341
Keyboard / mouse Power supply	None standard Std/Max: one/t				access / aı	uto	73.4GB 10K Ultra3	320 SCSI Hot-Swap SL 320 SCSI Hot-Swap SI		90P1305 90P1306
Fans	restart / redund Calibrated Ve (six fans with owith twelve fan PFA	dant with t ctored Co optional se	two power su coling™ <i>Std.</i> econd power	upplies : six fai supply	/ auto-sen: ns; <i>Max:</i> tv ) / redunda	sing velve ant	625W (N. America NetBAY Local Cor NetBAY Remote C	) Hot-Swap Power Sup Isole Manager Console Manager	ply	26K5097 1735L04 1735R16
Prerequisites	Monitor, keybo	ard, mous	se, SCSI dis	k, rack			Other options at I	<b>bm.com</b> /pc/us/accesso	ries	

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

Drop Down light Opt disk Opt disk path panel Opt disk Opt disk Opt disk Opt disk

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

Front indicators LEDs: Power-on LED, SCSI bus activity LED, system identification LED, information LED, and Rack

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) 

Stealth black color

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

# **LIMITED WARRANTY**<sup>3</sup>

3 year parts and labor International Warranty Service<sup>3</sup>

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

3 year on site warranty service upgrade options (in eligible locations):7

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

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

2 hour average response time (ServicePac 21P2093)

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

24x7<sup>14</sup> toll-free support for warranty issues during the warranty period3

IBM® Type-GAV-model Qty	L2 y x Processor Cache Memory	SCSI / Disk controller	Form Factor	Slots x bays (hot-swap bays)	Power supply	Availabl Ethernet dat
	Xeon™ 3.0GHz	None 2 x Ultra32( None 2 x Ult	0 2U <sup>4</sup> 0 2U 0 2U 0 2U 0 2U 0 2U 0 2U	4x8 (6 hot-swap) 1 ) 4x8 (6 hot-swap) 2 ) 4x8 (6 hot-swap) 1 ) 4x8 (6 hot-swap) 1 ) 4x8 (6 hot-swap) 2 ) 4x8 (6 hot-swap) 1 ) 4x8 (6 hot-swap) 1 )	x 625W hot-swap x 625W hot-swap	2 x Gigabit Mar 20 2 x Gigabit Mar 20
Positioning Processor L2 cache SMP support Implementation	A rack-dense 2-way server of 1 x Intel® Xeon™ Processo 64 Technology (EM64T) / 2MB L2 Cache / on die of p 2-way SMP / up to two Xeo Systemboard contains two Ir (100MHz) slots, two full-leng	or 2.8, 3.0, 3.2, 3.4, 3.60 Hyper-Threading technor rocessor / at processor : n Processors (same spentel PGA604 micro-PGA	Ghz wit blogy / s speed eed/cac ZIF so	h <b>800MHz</b> frontside bu <b>Simultaneous multi-t</b> he size) ckets, eight memory D	us / Optimized fo hreaded (SMT)	r Extended Memory w-profile PCI-X
Memory	1GB std / 16GB <sup>13</sup> max / two DDR2-SDRAM DIMMs / eigh bank] / 2-way memory interle Checking and Correcting ( and detects 2- through 8-bit of	slots used / six slots avant DIMM gold-connector eave / dual channel / AcECC) / optional 16-bit C	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 [and in matched pairs ]]
SCSI channels	Adaptec® AIC-7902 / dual supports RAID-0 and 1 with 5, 00, 10, 1E0, 50 (installed of Two 16-bit channels (one in backplane for six disks; Ch VHDCI connector / support Enhanced IDE ATA-100 con None standard / supports 72(Six hot-swap / 80-pin SCA-2	up to one hot-spare don reserved internal conn ternal and one external) annel A: 16-bit 68-pin in ts optional ServeRAID a atroller in ICH5 South Bi 00-15000 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, 1 om systemboard to external SCSI 0.8mn al devices DE cable (CD-ROM)
Mechanical Chipset	EIA 19" Rack (2U <sup>4</sup> ) / rack-r Intel E7520 / Memory Contr slots 3 & 4) / Intel Dodson ServeRAID 7k Adapter / ICh bus to Super I/O) / LPC-SIO (See below) Four available	oller Hub (MCH) / Intel I/O Proccesor (supports I5 South Bridge (Thin II 0 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- 2 and optional
Ethernet controller  Optical / diskette Front & Rear ports  Graphics	Two gigabit 10/100/1000 eth on planar / PCI-X 64-bit 100I 8X-24X <sup>6</sup> DVD-ROM / IDE; <i>L</i> Front: one USB (Vers 2.0) (RJ-45), two RJ-45 (sys mgr SVGA / ATI® Radeon™ 7000	ernet ports / <b>Two Broad</b> e MHz / full duplex / Wake <i>Diskette:</i> 3.5" 1.44MB dis <i>Rear:</i> two USB (Vers 2.0 nt) / no parallel port	com® 5 on LAN skette d ), keybo	<b>721</b> / two full gigabit et N® / Alert Standard For rive / dust cover pard, mouse, serial (9-	mat 2.0 / two RJ-4-pin), graphics (DE	45 ports in rear 3-15), two ethernet
Security	Power-on password / adminis	strator password / unatte	nded bo	oot / selectable boot se	quence	
Systems mgmt  Diagnostics  Software	IBM Baseboard Manageme H8S2168 / on planar / provienvironmental monitoring stafans, power supp / supports Adapter II slimline with resecontinuous power (no ext portion down light path diagmap to failing part (located o ServerGuide™ (CD-ROM ir utilities), IBM Director systematics in plant in the control of the control o	des system and ich as temp, optional di soptional Remote Superverved connector for ower reqd) nostics panel providing norton panel) stallation and configura	sks, rvisor LED	Xeon2.8GHz800MHz/2MBL2 Xeon3.0GHz800MHz/2MBL2 Xeon3.2GHz800MHz/2MBL2 Xeon3.4GHz800MHz/2MBL2 Xeon3.6GHz800MHz/2MBL2 512MB(2x256)PC2-3200CL3 512MB(2x256)PC2-3200CL3 GB(2x1GB)PC2-3200CL3 GB(2x1GB)PC2-3200CL3 GB(2x1GB)PC2-3200CL3 GB(2x1GB)PC2-3200CL3 GB(2x1GB)PC2-3200CL3 GB(2x1GB)PC2-3200CL3 GB(2x1GB)PC2-3200CL3 CBMServeRAID-7kAdapter	ProcUpg ProcUpg ProcUpg ProcUpg ProcUpg ProcUpg ECCDDR2Non-ChpkKit CCDDR2Non-ChpkKit CCDDR2-SDRAM	25R8907 25R8903 25R8903 13N0686 13N0687 13N0689 73P3522 73P3522 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 Coolin (six fans with optional second with twelve fans installed; All: PFA	ot-swap / rear access / a power supplies / auto-ser g™ Std: six fans; Max: t d 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 Opt disk It is a single of the slots of the	, access, hot-swap, open for pport six SL disks; or 1 DDS5 T and PCI SCSI adaptor req)	hot, Bus Ac Quick releation, Bus Ac Configuration, Bus B* Configuration, Diagnostic ap, Bus B* System Pauress riser Network Bus B* Front indic SCSI bus identification system-err Predictive memory, process and in minimal disk disk disk disk disk disk disk disk	ion/Settles (PC-Dirition)  s (PC-Dirition B)  oot: F1: ators Li activity  on LED, oor LED failure a rocesso  nd fans n alert the nent con  .36" x V  n x W 4  pounds  ck color  Max in	ip Utility: F1 at startup octor™): F2 at startup octor™): F2 at startup 2 at startup EDs: Power-on LED, LED, system information LED, and on analysis on disk option rs, VRMs, power in conjunction with IBM he system administrato ponent failure W 17.5" x D 27.5" 43.6mm x D 698mm)	⇒ 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 <sup>3</sup> 1 - 5 pm, Mon - Fri cluding holidays, nex- y response time <sup>7</sup> e warranty service ons (in eligible age, Mon-Fri excludin hr response time 21P2077) ay coverage, rage response time 21P2078) ay coverage, rage response time 21P2093) ePac options at

- 7	L2 SCSI Form Rty x Processor/Core Cache Memory Disk controller Facto	r (hot-swap bays) Power supply Ethernet date						
8840-E3y-E3U 1 x 8840-E4y-E4U 1 x 8840-55y-55U 1 x	x Xeon™ 2.8GHz/SC 2MB 1GB None 2 x Ultra320 2U <sup>4</sup> Xeon 2.8GHz/SC 2MB 1GB None 2 x Ultra320 2U Xeon 3.4GHz/SC 2MB 1GB None 2 x Ultra320 2U Xeon 3.8GHz/SC 2MB 1GB None 2 x Ultra320 2U Xeon 2.8GHz/DC 2x2MB 2GB None 2 x Ultra320 2U	4x8 (6 hot-swap) 2 x 625W hot-swap 2 x Gigabit Sep 2005 4x8 (6 hot-swap) 1 x 625W hot-swap 2 x Gigabit Sep 2005						
Positioning Processor	Intel® Xeon™ Processor up to 3.8Ghz Single Core 800N / All Optimized for Extended Memory 64 Technology (	bility and expandability for application-serving Web environments  1Hz FSB / Xeon Processor 2.8Ghz Dual Core 800MHz FSB  (EM64T) / Hyper-Threading / Simultaneous multi-threaded						
L2 cache SMP support Implementation	<b>2MB</b> L2 Cache std on Single Core / <b>2x2MB</b> L2 Cache std <b>2-way SMP</b> / up to two Xeon Processors (same speed/cac Systemboard contains two Intel PGA604 micro-PGA ZIF st (100MHz) slots, two full-length PCI-X (133MHz) slots, and	che size) ockets, eight memory DIMM slots, two low-profile PCI-X						
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,							
	supports <b>RAID-0</b> and <b>1</b> with up to one hot-spare disk / o 5, 00, 10, 1E0, 50 (installed on reserved internal connector)	roller (LVD 320MB/sec) / on planar / 64-bit 100MHz PCI-X / ptional IBM ServeRAID™-7k Adaptor for low-cost RAID 0, 1, 1E,						
SCSI channels  IDF controller/cable	backplane for six disks; Channel A: 16-bit 68-pin interfac VHDCI connector / supports optional ServeRAID adapte	61 Channel B: 16-bit 68-pin LVD cable from systemboard to e to support external SCSI devices via external SCSI 0.8mm rs with external connector(s) for external devices one connector on planar / one 1-drop IDE cable (CD-ROM)						
Disk - capacity Disk - bays	None standard / supports 7200-15000 rpm disks / one backp Six hot-swap / 80-pin SCA-2 connectors / filler panels install	plane						
Mechanical Chipset	slots 3 & 4) / Intel Dodson I/O Proccesor (supports 100M ServeRAID 7k Adapter / ICH5 South Bridge (Thin IMB to bus to Super I/O) / LPC-SIO 8742x Super I/O	ontroller Hub 5 (ICH5) / Two Intel PCI-X Hubs (133MHz PCI-X IHz PCI-X slots 1 & 2, Adaptec AIC-7902 and optional Host Bridge for graphics controller, EIDE, USB, SMBus, LPC						
Bus slots	(See below) Four available PCI-X 1.0 / no hot-swap Activ							
Ethernet controller  Optical / diskette Front & Rear ports  Graphics	on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LA 8X-24X <sup>6</sup> DVD-ROM / IDE; Diskette: 3.5" 1.44MB diskette	drive / dust cover coard, mouse, serial (9-pin), graphics (DB-15), two ethernet						
Security	Power-on password / administrator password / unattended b	oot / selectable boot sequence						
Systems mgmt	IBM Baseboard Management Controller (BMC) / H8S2168 / on planar / provides system and environmental monitoring such as temp, optional disks, fans, power supp / supports optional Remote Supervisor Adapter II slimline with reseverved connector for continuous power (no ext power reqd)	Xeon 2.8GHz SC 800MHz/2MB L2 Proc Upg       25R8907         Xeon 2.8GHz DC 800MHz/4MB L2 Proc Upg       25R8930         Xeon 3.0GHz SC 800MHz/2MB L2 Proc Upg       25R8902         Xeon 3.2GHz SC 800MHz/2MB L2 Proc Upg       25R8903         Xeon 3.4GHz SC 800MHz/2MB L2 Proc Upg       13N0686         Xeon 3.6GHz SC 800MHz/2MB L2 Proc Upg       13N0687						
Diagnostics Software	Drop down light path diagnostics panel providing LED map to failing part (located on front panel) ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director systems mgmt, others	Xeon 3.8GHz SC   800MHz/2MB L2 Proc Upg   13N0689   512MB(2x256)PC2-3200 CL3 ECC DDR2 Non-Chpk Kit 73P3523   1GB(2x512)PC2-3200 CL3 ECC DDR2 Non-Chpk Kit 73P3522   2GB(2x1GB)PC2-3200 CL3 ECC DDR2-SDRAM 73P2866						
Keyboard / mouse Power supply	None standard (because rack-based) Std/Max: one/two 625 watt hot-swap / rear access / auto restart / redundant with two power supplies / auto-sensing	4GB(2x2GB)PC2-3200 CL3 ECC DDR2-SDRAM73P4792IBM ServeRAID-7k Adapter71P8642IBM Remote Supervisor Adapter II Slim73P9341						
Fans	restart / redundant with two power supplies / auto-sensing Calibrated Vectored Cooling™ Std: six fans; Max: twelve (six fans with optional second power supply) / redundant with twelve fans installed; All: variable speed / hot-swap / PFA  73.4GB 10K Ultra320 SCSI Hot-Swap SL HDD 146.8GB 10K Ultra320 SCSI Hot-Swap SL HDD 625W (N. America) Hot-Swap Power Supply NetBAY Local Console Manager 1735L							
Prerequisites	Monitor, keyboard, mouse, SCSI disk, rack	NetBAY Remote Console Manager 1735R16 Other options at ibm.com/pc/us/accessories						
Slot 2: low-profile, (Slot 3: full, 64-bit 1: Slot 4: full, 64-bit 1:	Opt disk     Drop Down light	up Utility: F1 at startup Doctor™): F2 at startup Boot: ALT+F1 at startup 12 at startup LEDs: Power-on LED, LED, system I, information LED, and  LIMITED WARRANT T  3 year parts and labor International Warranty Service Coverage excluding holidays, next business day response time  3 year on site warranty service upgrade options (in eligible						

 Opt disk Opt disk

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

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

⇒ Rack: H 3.36" x W 17.5" x D 27.5"

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

♦ 46.5 to 62 pounds⇒ Stealth black color

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

- locations):7

- upgrate options (in eighnic locations):

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

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

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

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

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

Ю	IVI @ SEI VEI ····	X3eHes***	300	(Julie 20	03)					HEF DY	eserver	rie	ia Skilis Er	labiem	ient i	leam
	IBM®		L3				SCSI	Med	chan-	Slots x	RXE	Н	lot-swap	Mamt	Ava	ailable
	Type-model Qty x	Processor	cache	Memory	UTM	Disks	controller	i	cal	bays	Exp Ports	pw	r supplies	adapte	r	date
	8686-1RQ 1 x Xeor 8686-1SQ 2 x Xeor		1MB	1GB Chipki 1GB Chipkil		None None	Ultra160 Ultra160			6x5 6x5			(not redun redundant			
<b>&gt;&lt;</b>	8686-1TQ 2 x Xeor	n MP 2.0GHz	1MB	3GB Chipkil	l 2 x		0KUltra160	ЗU	rack	6x5	One	Two	redundant	PCI	Nov	2003
	8686-2RQ 2 x Xeor 8686-3RQ 2 x Xeor		1MB 2MB	2GB Chipkil 2GB Chipkil		None None	Ultra160 Ultra160			6x5 6x5			redundant redundant			2003 2003
	Processors			™ Processoi			r 2.8GHz¹ v	vith	400M	Hz front	tside bus	/ Hy	per-Threadi	ng tecl	hnolo	gy
	L2 cache L3 cache			ocessor / at p of processor			peed									
	Processor upgrade	4-way SMP	/ up to fo	our Xeon Prod	esso	rs MP (san	ne speed/ca	iche	size)			-:	A ationaTM DO	V - I -		
	Implementation			ns four Intel 6 , ethernet, gra			AA ZIF SOCK	ets,	one m	emory i	oard Sioi	, SIX	Active™ PC	I-X SIO	is,	
	Memory	Up to <b>3GB</b> s	std / 160	GB max <sup>12,13</sup> /	two (	1GB mode	el), four (2G	Вm	odels)	or six	(3GB mo	dels)	) 512MB DI	MMs ir	nstalle	ed /
	•	1.7-inch tall	/ one m	emory board	stan	dard with 8	B DIMM gol	d-cc	nnect	or slots	/ DIMMs	mus	st be installe	ed in n	natch	ed
		Error Checl	king an	taneous trans d Correcting	j (EC	C) via 16-	bit Checks	sum	Chip	wi⊓z re <b>kill</b> ™ (c	orrects 1	, 2,	3, or 4-bit	errors (	on sa	ame
		chip and det	tects 2-	through 8-bit	erro	rs containe	ed in two ch	nips)	)							
	SCSI disk controller SCSI connectors			Wide Ultra16 d to SCSI bac								lHz F	PCI / integra	ted on	plana	ar
	SCSI cabling	One standar	d 16-bit	LVD cable inc	clude	d for attach	ing an optio	nal (	Servel	RAID ac	lapter to t				e;	
	IDE controller / cablin			38-pin connec 33 controller i				cab	le to g	et signa	ls to three	e-bay	y backplane			
	Disk - capacity	None standa	ard / sup	ports up to 15	,000	rpm disks	Ü									
	Disk - bays		. ,	s / converged						, ,			- · · · · · · · · · · · · · · · · · · ·			
	Mechanical			s (3U <sup>4</sup> ) x 28"		- ' '				`			-			
	Chipset			t / IBM Memo ost Bridge; on												
		PCI-X 1.0, or	ne PCI 2	.2) / PCĬ 2.2 B	sus 0	supports S	CSI, graphic	s, e	therne	t, adapt	er slot wit	h Re	mote Super	visor A	dapte	
	Slots (Active™ PCI-X			South Bridge .0 slots <sup>10</sup> ava												
	DVE Evancion Port	hot replace,	, hot up	grade, hot ex t up to 12 add	pans	<b>sion</b> /ˈsepaˈ	rated by insi	ulati	ve pla	stic divi	ders		·		,	
	RXE Expansion Port CD-ROM / diskette			3.5" 1.44MB			oloto via ali	opti	onar	IDIVI NA	E-100 Ne	IIIOU	e Expansio	II EIICI	osuit	
	Ethernet	Intel 82559 1	10/100 e	thernet contro	oller/	on system									тм 2	
	Graphics controller Ports			4 LT / on syst .nsion Port (to											00) t	wo
	1 0110			ard, mouse, a												
	Security	Power-on an	nd admin	istrator passv	vords	/ unattend	ed boot / se	lecta	able bo	oot						
	Systems managemer															
	Diagnostics			ower on/off s tics™ / prima												
		IBM Real Tin	ne Diagr	nostics (opera	ated t								Enclosure			41RX
	Software			server runnin ROM installa		nd configur	ration						SDRAM RD			3283 3285
		utilities), IBN		•									RAM RDIM RAM RDIM			3287
	Keyboard/mouse Powersupplies			use rack-bas vatt hot-swap		x: three hot	-swan /						Cache Proc Cache Proc			8805 8806
	. ower cappings	redundant w	ith two p	ower supplies	ś (sor	ne configui		X	Ceon N	/IP 2.8G	Hz/2MB	L3 C	ache Proc	Upg	73P8	8807
		fans in each		sensing / auto upply / PFA	-rest	art/							nt Power Su 60 SCSI Ad			6108 5736
	Coolingfans	Six hot-swap	, redund	dant, multi-sp				H	3M 73	.4GB 10	K Ultra16	0 SC	CSI Hot-Swa		06Ps	5756
				each power s agnostic LED			essor				Standard xSeries A		ck (SH) ter for iSerie	s		6420 9100
	Six available 3.3 volt	Active PCI-X sl	ots:					- 11	3M T5	41 15" F	lat Panel	Colc	or Monitor (b	lack)		2AB1
	•Bus 2 (B) with two s			): 🔈 Di	mono	ione: UE 2	5" x W17.4"			plions a	i ibiii.cor	n/pc/	/us/accesso	nes		
	- one fullsize, 64 - or two fullsize, 64	-bit, 133MHz P(	CI-X, hot	-swap Di	mens	ions: H133	3.4mm x W4	42.0	mm x	D701m	m	LI	MITED WA	RRAN	<b>TY</b> <sup>3</sup>	
	- or two fullsize, 64	-bit, 66MHz PC	CI-X, hot-	-swap		58.4 to 70l black color	bs; 24.9 to 3	1.8k	g				arts and lal			
	- or two fullsize, 64 - or two fullsize, 64			-swap ⇒ To	ol-fre	e serviceat	oility			ام مد			onal Warrar 8 am - 5 pm			

- or two fullsize, 64-bit, 33MHz PCI, hot-swap
- Bus 1 (A) with four slots supports (slots 3, 4, 5, 6):
   four fullsize, 64-bit, 66MHz PCI-X, hot-swap or two fullsize, 64-bit, 66MHz PCI, hot-swap
- or four fullsize, 64-bit, 33MHz PCI, hot-swap
- Bus 0 with one slot supports:
- only for standard Remote Supervisor Adapter halfsize, 64-bit, 33MHz PCI, not hot-swap

_				
		Std		diskette CD-ROM
	Std Power	or opt Power	Opt Power	• Disk ③
	Supply			
	•	ட	•	<ul> <li>Opt disk</li> </ul>

3U Rack

Bay ① 3.5", 0.5", access, diskette Bay ② 3.5", 0.5", access, CD-ROM Bay ③ 3.5", SL 1", access, hot-swap Bay ④ 3.5", SL 1", access, hot-swap Bay ⑤ 3.5", SL 1", access, hot-swap

- Access adapters, processors, memory, and systemboard from top
- Access power supplies and disks from front

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

All models: Maximum internal disk capacity: 220.2GB with three 73.4GB2 hot-swap SCSI disks

- On site, 8 am 5 pm, Mon Fri coverage excluding holidays, next business day response time7
- On site service upgrade options (in eligible locations):7
  - 3 year IOR 24x7, 4 hr avg response (ServicePac® part num 96P2253)
     3 year IOR 24x7, 2 hr avg response
  - (ServicePac part num 96P2254) • 4 year IOR 9x5, NBD response
  - (ServicePac part num 96P2255) 5 year IOR 9x5, NBD response
- (ServicePac part num 96P2259) Other ServicePac options at
- http://www.ibm.com/ services/us/its/pdf/wamomxeu.pdf 24x7<sup>14</sup> toll-free support for warranty issues during the warranty period<sup>3</sup>

IE	sivi @server™ x	Series™ 365					х	REF by	eServer	Field	Skills En	ablem	ent Team
	IBM®	L3		DIMM		SCSI	Mechan-		RXE		-swap \		y Available
	Type-model Qty x Pro 8861-1RX 1 x Xeon™		Memory 1GB Chinkill™	slots 8		Ultra320	ical 3U4 rack		xp Ports		upplies not redun)	(yrs.) ) 1	Dec 2003
	8862-1RX 1 x Xeon M 8862-2RX 2 x Xeon M 8862-3RX 2 x Xeon M	IP 2.0GHz 1MB IP 2.5GHz 1MB	2GB Chipkill 2GB Chipkill 2GB Chipkill	8 8 16	None None	Ultra320 Ultra320 Ultra320	3U rack 3U rack	6x8 6x8	One One	One (r Two re	not redun edundant edundant		Dec 2003 Dec 2003 Dec 2003
	Processors L2 cache L3 cache	1 or 2 x Intel® Xec 512KB / on die of p 1MB or 2MB / on d	on™ Processor processor / at pr die of processor	MP 2.0, ocessor: / at proce	2.5, or speed essor sp	r 2.8GHz <sup>1</sup> beed	with 400N	MHz front					
	Processor upgrade Implementation	4-way SMP / up to Systemboard confi slots, and integrat	tains four Intel ted SCSL ether	603-pin ı net. arap	micro-F hics	GA ZIF s	ockets, o	ne memo					
	Memory	Up to 2GB std / 3 DIMMs installed / matched pairs / P (ECC) via 16-bit and Active Memo	one memory bo C2100 200MHz Checksum Chi	oard stan z register <b>pkill</b> ™ /	dard w ed 184 With 1	rith 8 or 16 I-pin DDR 6 DIMMs	6 DIMM g -SDRAM installed:	old-conne RDIMMs Memory	ector slo / <b>Error</b>	ts / DI <b>Chec</b> l	MMs mus king and	t be in <b>Corre</b>	nstalled in ecting
	SCSI disk controller	LSI Logic® 53C103	30 / Wide Ultra32	20 SCSI (	LVD 32	20MB/sec)	/ dual cha	annel / 64	-bit 100 <b>N</b>	ИHz PC	CI-X / integ	grated	on planar /
	SCSI connectors SCSI cabling IDE controller / cabling Disk - capacity Disk - bays	Supports Raid 0/1 One internal and of One standard 16-bi SCSI RAID adapt Enhanced IDE AT None standard / s Six hot-swap bay	t LVD cable can er 68-pin conne A-33 controller supports up to 1	be reattacector on s in CSB6 5,000 rp	ched to system South m disk	optional Se board for t Bridge s	rveRAID a	adapter fro	om six-ba	ay back	plane inste	ad of rane	motherboard
	Mechanical	EIA 19" rack mod	dels (3U4) x 28	deep /	suppor	ted in Net	BAY™ Ra	acks (sucl	h as Ne	tBAY42	2 SR, Net	BAY42	2 ER)
	Chipset  Slots (Active™ PCI-X)  RXE Expansion Port	IBM XA-32™ chip Bridges provide si graphics), and Sel / PCI-X Bus 1 sup Six total PCI-X slots sensors control pow One port to suppo	x peer PCI-X burverWorks® CSE ports gigabit Etles (one unavailable ver to slot) / hot r	uses / PC 36 South nernet, S e) / 5 hot-s eplace, ho	CI-X Bu Bridge CSI, and Swap PC ot upgra	s 0 support (IDE, USI ad slot for o DI-X 1.0 slot ade, hot exp	rts adapte 3, bus for optional S ts <sup>10</sup> availat oansion / s	er slot with Super I/G ServeRAID ble with poseparated	h Remo O NS 87 O adapte wer and by insula	te Supe 7417 [d er attentic ttive pla	ervisor Ad liskette, ko on indicator astic divider	lapter l eyboar r lights ( rsbv	II (inc. rd, mouse]) (optical
	CD-ROM / diskette Ethernet Graphics controller Ports	24X-10X <sup>6</sup> CD-ROI Broadcom <sup>®</sup> 5704 10 onboard graphics <i>Rear:</i> RXE-100 Ex two USB (Ver 1.1),	0/100/1000 dual of disabled / uses opansion Port (to	ethernet / video o connec	on syst n Remo t option	ote Super al RXE-10	/isor Ada 10), RXE	pter II Managem	nent Por	t (to m	anage opt	tional F	RXE-100),
	Security	Power-on and adm	ninistrator passv	ords / un	attende	ed boot / se	electable b	ooot					
	Systems management	Remote Supervise console and mgmt	or Adapter II /	PCI adap	ter / ind	cludes 10/	00 etherr	net, RJ-11	I, and se	erial co	nnectors /	provic	des remote
	Diagnostics	Light Path Diagn IBM Real Time Dia available even whi	nostics™ / prima	ary indica ted throu	ator on	information	n panel v	with LEDs	s associ	ated w	ith failing	comp	onents /
	Software	ServerGuide™ (C utilities), IBM Direc	D-ROM installat	ion and c	onfigur	ation	1GB P 2GB P	C2100 E0	CC DDF	R SDRA	RAM RDI AM RDIMI AM RDIMI	M	33L5038 73P2031 33L5040
	Keyboard / mouse Power supplies	None standard (be <i>Std:</i> one or two 95 redundant with two worldwide / voltage fans in each power	50 watt hot-swa p power supplies ge-sensing / aut	p; <i>Max:</i> 1 (some c	onfigur	ations)/	Xeon M Xeon M Xeon M	ИР 2.5GH ИР 2.8GH	łz/1MB łz/1MB łz/2MB	L3 Cad L3 Cad L3 Cad	ard che Proc l che Proc l che Proc l oply (WW)	Jpg Jpg	73P9710 73P7073 73P7074 73P7075 73P7214
	Cooling fans Six available 3.3 volt P	Six hot-swap, redu one additional fan fan failure signals	ındant, multi-spe in each power s	upply / Pl	FA/	essor	IBM Se IBM 73 IBM In IBM T5 RXE-1	erveRAID 8.4GB 15l tegrated 2 541 15" F 00 Remo	™-4Mx K Ultra3: xSeries lat Pane te Expa	Ultra16 20 SCS Adapte el Color nsion E	30 SCSI A SI Hot-Sw er for iSeri	Adapter ap es (black)	r 06P5736 32P0735 1519100 9512AB1 86841RX
	•Buses 0-5 supports s		owon ⇒ Dim	ensions:	H5.25'	' x W17.4"		•					
	Standard Remote Su - one fullsize, 64-bit Optional ServeRAID	t,100MHz PCl-X,hc adapter to install t,133MHz PCl-X,hc	nstalled ot-swap ot-swap ot-swap ot-swap	ensions: ght: 63 to alth black I-free ser	H133.4 83lbs color viceabil	4mm x W44; 28.6 to 3	42.0mm x 7.6kg	D701mm	□ 1 or     □ Inte     □ On s	3 year	TEDWAI r parts an nal Warran am - 5 pm e excludin	d labo ity Serv , Mon -	or vice <sup>3</sup> - Fri

- Optional iSeries IXA adapter to install three fullsize, 64-bit, 133MHzPCl-X,hot-swap

0 -	CD-ROM	diskette
Opt disk	<ul> <li>Opt disk</li> </ul>	Opt disk
Opt disk	Opt disk	Opt disk
	3U Rack	

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

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

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

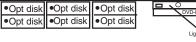
- coverage excluding holidays,
- next business day response time7 On site service upgrade options
  - (in eligible locations):7 3 year IOR 24x7, 4 hr avg response ( 30L9186 (8861) / 96P2253 (8862)
  - 3 year IOR 24x7, 2 hr avg response 31L2722 (8861) / 96P2254 (8862)
  - 4 year IOR 9x5, NBD response ( 69P9210 (8661) / 96P2255 (8862)
- 5 year IOR 9x5, NBD response 69P9214 (8661) / 69P2259 (8862) Other ServicePac options at
- http://www.ibm.com/ services/us/its/pdf/wamomxeu.pdf 24x7<sup>14</sup> toll-free support for warranty issues during the warranty period<sup>3</sup>

See footnotes for important warranty information US models announced December 9, 2003

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_	ASCITES 505 (IMAI)					100	-
8861-4RX 1 x Xeon <sup>T</sup>	rocessor cache Memo	ipkill™ 8 N	SCSI Controller		bays Exp Port 6x8 One	s pwr supplies (y One (not redun)	rranty Available rrs.) date 1 Mar 2004
8862-4RX 1 x Xeon 8862-5RX 2 x Xeon 8862-6RX 2 x Xeon	MP 2.7GHz 2MB 2GB Ch MP 3.0GHz 4MB 2GB Ch	nipkill 8 N nipkill 8 N	None Ultra320 None Ultra320 None Ultra320	3U rack 3U rack	6x8 One 6x8 One	Two redundant Two redundant	3 Mar 2004 3 Mar 2004 3 Mar 2004
Processors L2 cache L3 cache Processor upgrade Implementation	1 or 2 x Intel® Xeon™ Proc 512KB / on die of processo 2MB or 4MB / on die of pro 4-way SMP / up to four Xeon Systemboard contains four slots, and integrated SCSI,	or / at processor s ocessor / at proce n Processors MP ( Intel 603-pin mic	speed essor speed (same speed/ca cro-PGA ZIF so	che size)		,, ,	0,
Memory	Up to 2GB std / 32GB max DIMMs installed / one mem matched pairs / PC2100 20 (ECC) via 16-bit Checksur and Active Memory™ supp	ory board standa 00MHz registered <b>m Chipkill</b> ™ / Wit	rd with 8 DIMM 184-pin DDR-9 th 16 DIMMs ir	gold-cor SDRAM I stalled: I	nnector slots / D RDIMMs / <b>Error</b> <b>Memory ProteX</b>	IMMs must be insta Checking and Co	Illed in rrecting
SCSI disk controller SCSI connectors SCSI cabling IDE controller / cabling Disk - capacity Disk - bays	LSI Logic® 53C1030 / Wide of One internal and one external and one standard 16-bit LVD cabl SCSI RAID adapter 68-pin genhanced IDE ATA-33 com None standard / supports u Six hot-swap bays / conve	nal SCSI connector le can be reattached connector on systroller in CSB6 Sc up to 15,000 rpm	or / internal cord to optional Seretemboard for thouth Bridge disks	itroller wi veRAID a iis cable	red to SCSI bac dapter from six-ba	ckplane ay backplane instead	of motherboard
Mechanical	EIA 19" rack models (3U <sup>4</sup>	<u> </u>			cks (such as Ne	tBAY42 SR. NetBA	(42 ER)
Chipset	IBM XA-32™ chipset / IBM Bridges provide six peer PC graphics), and ServerWorks / PCI-X Bus 1 supports giga	Memory I/O Con II-X buses / PCI-X CSB6 South Britishit Ethernet, SCS	ntroller (improve K Bus 0 support idge (IDE, USB II, and slot for o	d perform s adapter , bus for otional Se	nance from earlier slot with Remo Super I/O NS 87 PerveRAID adapte	er models) / IBM PC te Supervisor Adapt 7417 [diskette, keyb er	CI-X Host er II (inc. oard, mouse])
·	Six total PCI-X slots (one unav sensors control power to slot)	/ hot replace, hot u	ipgrade, hot expa	ansion / se	eparated by insula	ative plastic dividersby	' ' '
<u> </u>	One port to support up to 1			ptional IE	BM RXE-100 Re	mote Expansion En	closure
CD-ROM / diskette Ethernet Graphics controller Ports	24X-10X <sup>6</sup> CD-ROM / 3.5" 1 Broadcom <sup>®</sup> 5704 10/100/1000 onboard graphics disabled <i>Rear:</i> RXE-100 Expansion F two USB (Ver 1.1), keyboard,	) dual ethernet / on / uses video on F Port (to connect on	systemboard / 6 Remote Supervi ptional RXE-100	sor Adap )), RXE N	iter II /lanagement Por	t (to manage option	al RXE-100),
Security	Power-on and administrator	passwords / unatto	ended boot / sel	ectable b	oot		
Systems managemen	Remote Supervisor Adapte	r II / PCI adapter	/ includes 10/10	00 ethern	et, RJ-11, and se	erial connectors / pro	ovides remote
Diagnostics	console and mgmt / power of Light Path Diagnostics™ / IBM Real Time Diagnostics ( available even while server r	<ul><li>primary indicator</li><li>operated through</li></ul>	r on informatior	panel w	ith LEDs associ		mponents /
Software	ServerGuide™ (CD-ROM in utilities), IBM Director, and o	stallation and conf thers	iguration	2GB P		R SDRAM RDIMM R SDRAM RDIMM <sup>12</sup> grade Card	73P2031
Keyboard / mouse Power supplies	None standard (because rac Std: one or two 950 watt he redundant with two power su worldwide / voltage-sensing fans in each power supply /	ot-swap; <i>Max:</i> two ipplies (some conf g / auto-restart / r PFA	figurations)/	Xeon I Xeon I Xeon I 950 wa	MP 2.2GHz/2MB MP 2.7GHz/2MB MP 3.0GHz/4MB att Hot-Swap Po	L3 Cache Proc Up L3 Cache Proc Up L3 Cache Proc Up L3 Cache Proc Up wer Supply (WW) Ultra320 SCSI Adap	g 13N0712 g 13N0711 g 13N0710 73P7214
Cooling fans	Six hot-swap, redundant, mu one additional fan in each po fan failure signals Diagnostio	ower supply / PFA		IBM 73 IBM In IBM T	3.4GB 15K Ultra: tegrated xSeries 541_15" Flat Pan	320 SCSI Hot-Swap Adapter for iSeries iel Color Monitor (bla ansion Enclosure	32P0735 1519100
Standard Remote Source on Fullsize, 64-by Optional ServeRAII one fullsize, 64-by Optional iSeries IXA optional iseries is	slots 1 - 6: bit, 33MHz PCI, hot-swap Supervisor Adapter installed bit,100MHz PCI-X, hot-swap D adapter to install bit,133MHz PCI-X, hot-swap	<ul> <li>Weight: 63 to 8</li> <li>Stealth black of</li> <li>Tool-free service</li> <li>Access adapte</li> <li>systemboard fr</li> <li>Access powers</li> <li>Setup Program</li> <li>Diagnostics (Programs)</li> <li>Top Cover Light</li> <li>diagnostic pane problem without</li> <li>Information LEI and componen</li> <li>system well-be</li> <li>Predictive Failus</li> </ul>	1133.4mm x W4-83lbs; 28.6 to 3 olor ceability ers, processors, rom top supplies and display pressing F1 C-Doctor) by prepressing Ctrl+A tremoving cover by panel, diagnosticate panel panel, diagnosticate panel p	x D27.6' 42.0mm x 7.6kg  memory, a ks from fr at startup essing F2 at startup essing F2 at startup estic LED p al indicat erts on dis essors, VI	D701mm  1 0 on Interpretation on Conex On (in at startup) 2 on tial 3 on tial 4 ons of eks, Otherwood on the cone of eks, on t	LIMITED WARF r 3 year parts and I ernational Warranty site, 8 am - 5 pm, M overage excluding h tt business day resp site service upgrade eligible locations): year IOR 24x7, 4 hr 30L9186 (8861) / 96i year IOR 9x5, NBD 69P9210 (8661) / 96i year IOR 9x5, NBD 69P9214 (8661) / 69i her ServicePac optio p://www.ibm.com/ vices/us/its/pdf/wai 714 toll-free support ues during the warra	abor Service <sup>3</sup> on - Fri olidays, onse time <sup>7</sup> e options  avg response 2253 (8862) ) avg response 2254 (8862) ) response P2255 (8862) ) response P2259 (8862) ) ons at  momxeu.pdf for warranty

J @ 501 V01 /	KSeries 300	(1101	0111501		00,		XIII D	y coc	rver Field Skills	una Ladou	tion roun
IBM®	B	L2		DIMM	Diala	SCSI	Machanical	Slots			y Available
Type-model	MP 3.66GHz MP 7020 2.67GHz MP 7040 3.0GHz MP 3.66GHz MP 3.66GHz MP 3.16GHz	1MB 1MB 2x1MB 2x2MB 1MB 1MB 1MB 1MB		4	None None None None 3x36.4 None None	SAS SAS SAS SAS SAS SAS SAS SAS SAS SAS	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	(yrs.) 3 3 3 3 3 3 3	Apr 2005 Apr 2005 Nov 2005 Nov 2005 Jun 2005 Aug 2005 Sep 2005 Sep 2005
Processors L2 cache Processor upgrade Implementation	Up to two 64-bit Ir MP up to 3.0GHz 0 1 or 2 MB / per cor 4-way SMP / up to System board containtegrated SCSI, eth	ntel® Xeor 667MHz I re / at pro four Xeor ains four I	Proces FSB Dual cessor spe Processo ntel 604-pi	sor N	/IP up	to 3.66GHz¹ 66	7MHz FSB	Single 64 Te	Core / one 64-bit	Intel Xeon T) / Hyper-1	Processor hreading
Active Memory™	Up to <b>4GB</b> std / 644 DIMMs must be ins <b>and Correcting (E</b> steering) and <b>Mem</b> Server 2003™	GB max utalled in notes of the contract of the	using high- natched pa <b>6-bit Chec</b> o <b>ring</b> ™ and	capac iirs / F <b>ksum</b> I Hot-s	ity mer PC2-32 n Chipl swap (i	mory card / one 00 400MHz regi <b>kill™</b> / With 16 I non-OS specific	memory boa stered 240-p DIMMs instal ) / Hot-add (:	rd stan in DDF led: <b>M</b> e suppor	dard with 4 DIMM R2-SDRAM RDIMM emory ProteXion™ ted only with Micro	gold-connects / Error Charles / Error Charles / (redundant soft® Window	tor slots / necking bit vs™
SCSI disk controller SCSI connectors SCSI cabling IDE controller / cabling Disk - capacity Disk - bays	ALL: Adaptec® AIC Controller wired to S One standard SAS Enhanced IDE ATA E1x: 3 x 36.4GB-10 Six 2.5" hot-swap b	SAS back cable atta -33 contro k / suppo	plane ached to si oller in CSE orts up to 73	x-bay 36 Soi 3GB	backpl uth Brid 10K rpr	ane dge n disks	,	-bit 266	6MHz PCI-X 2.0 <i>E1</i>	X: ServeRa	iid 8i
Mechanical Chipset	EIA 19" rack mode IBM XA-64e™ 3rd Bridges / Host Bridg NS 87417 [diskette,	<b>Generatio</b> le One su	on chipset apports vide	t / Inte	egrated Stional S	Processor and ServeRaid 8i, Se	Memory Cor erverWorks® (	ntroller : CSB6 :	/ Supports EM64T South Bridge (IDE,	/ 2 IBM PCI USB, bus fo	-X 2.0 Host r Super I/O 4 PCI-X
Slots (Active <sup>™</sup> ) CD-ROM / diskette Ethernet Graphics controller Ports	2.0 slots Six total PCI-X 2.0 s upgrade, hot expan- 8X° Slim DVD-ROM Broadcom® 5704 10 SVGA / ATI® 7000n Rear: RSA ethernet Front: USB (Ver 2.0	sion / sep   / none  /100/100 n / on plar , RSA se	arated by i 0 dual ethe nar / 16MB	insulat ernet / SDR/	tive pla on sys AM std	stic dividers, all stemboard / 64-b /max / 32-bit 33ľ	slots support oit 266Mhz P MHz PCI 2.2	ted up CI-X 2. bus	to 266MHz 0 / Wake on LAN®/	/ Alert on LA	N™ 2
Security	Power-on and admi	nistrator p	passwords	/ unat	ttended	l boot / selectab	le boot				
Systems managemen	nt Remote Supervisor remote console and	<b>r Adapte</b> I mgmt / լ	<b>r II</b> Slimline cower on/o	e (opti off syst	on) / P tem / n	CI adapter / incl nonitors power s	udes 10/100 status, op sys	ethern stem, te	et, RJ-11, and seria emperature, disks, f	al connectors fans, power	s / provides supplies
Diagnostics Software	Drop down Light FIBM Real Time Diag ServerGuide™ (CD	gnostics (	operated th	rough	i IBM [	Director) availabl	le even while	h LEDs serve	s associated with fa running	illing compor	nents /
Keyboard / mouse Power supplies	None standard (be Std: one or two 130 redundant with two worldwide / voltage-	0 watt ho power su	t-swap; <i>Ma</i> pplies (son	ne cor	nfigurat	vap / ions) /	4GB PC2-320 8GB PC2-320 Active Memo	00 CL3 I 00 CL3 I ory 4-slo	ECC RDIMM (2x1GB ECC RDIMM (2x2GB) ECC RDIMM (2x4GB at Expansion Card MB L2 Cache Proc L	)	73P2866 73P2867 30R5145 13M7409 13N0694
Cooling fans	Eight hot-swap, redi one additional fan in fan failure signals D	each po	wer supply	/ PFA	. /	sor	Xeon MP 3.6 Xeon MP 702 Xeon MP 704 1300 watt Ho	6GHz/1 20 2.670 40 3.0G t-Swap	MB L2 Cache Proc L GHz/2x1MB L2 Cach Hz/2x2MB L2 Cache Power Supply (WW) SAS-SCSI Adapter	Jpg e 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 hot-swap	)				IBM 36.4GB IBM 73.4GB IBM Remote Dual Core X3	10K 2.5 10K 2.5 Superv 3 upgrad	U320 256MB Adapter " SAS Hot-swap HDI " SAS Hot-Swap HDI isor Adapter II Slimlir de kit (available 12/0! n.com/pc/us/accesse	D D 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, able for ServeRAID 8	hot-swap hot-swap	Dimer Dimer Stealt Tool-f	nsion ht: 63 th blac free se ss ad	s: H13 to 83l ck colo ervicea apters		a.0mm x D70 6kg es, process	4	LIMITED  3 year parts an  International W  On site, 8 am -  coverage exc	arranty Ser 5 pm, Mon luding holi	vice³ - Fri days,



#### 3U Rack

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

Max BTU Output:

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

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

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

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

- 3 year IOR 24x7, 4 hr avg response 96P2253 • 3 year IOR 24x7, 2 hr avg response
- 96P225 4 year IOR 9x5, NBD response
- 96P2255 5 year IOR 9x5, NBD response
- 69P2259 Other ServicePac options at
- http://www.ibm.com/ services/us/its/pdf/wamomxeu.pdf 24x7<sup>14</sup> toll-free support for warranty issues during the warranty period<sup>3</sup>

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

IBM® Type-model Qty x	Processor	L3 cache	L4 cache	Memory	Disk	SCSI controller	Mech- anical		SMP/RXE Exp Ports	Hot-swap pwr supplies		Available date
8870-12X 2 x Xeon 8870-22X 2 x Xeon 8870-42X 4 x Xeon 8870-3EX 2 x Xeon 8870-4EX 4 x Xeon	MP 2.0GHz MP 2.2GHz MP 2.7GHz MP 3.0GHz DP 3.0GHz DP 3.0GHz	2MB 2MB 4MB N/A N/A	64MB 2 64MB 2 64MB 2 64MB 2	2GB Chipkill <sup>TI</sup> 2GB Chipkill 2GB Chipkill 2GB Chipkill 2GB Chipkill 2GB Chipkill	None None None None None	2xUltra32 2xUltra32 2xUltra32 2xUltra32 2xUltra32	0 4U rack	6x4 6x4 6x4 6x4 6x4	3/1 3/1 3/1 3/1 3/1	Two redundan Two redundan Two redundan Two redundan Two redundan Two redundan	t PCI t PCI t PCI t PCI t PCI	May 2004 Mar 2004 Mar 2004 Mar 2004 Mar 2004 Mar 2004
Positioning Processors L3 cache L4 cache Processor upgrade SMP Expansion Module Additional boards	Up to 8-way (12 or 4 Intel®) Up to 4MB e 64MB XceL4 64MB in each 4-way SMP (10 one SMP Exp for Xeon, 64MI Expansion Por I/O Board (P Board)	u (1 O1 /	C I IOOL DI	lage, cool, t		, grapinos,	Coulii Dii	ago, ou	1001 1/O, t	sion-critical busing / supports Hy r speed Module) / ability Controllels only) 603-pin microconnected via o Expansion Port op Modules, 1/4 p Modules, 1/4	luuptoi	,, 0110
Memory	16 DIMM gold / Error Check	-connect <b>ing and</b> it once; r	or slots / <b>Correcti</b> edundan	must install to ing (ECC) and t bit steering)	wo inder d <b>Chipk</b>	itical DIMM <b>ill</b> ™ via <b>Me</b>	ls at same mory Prot	time / 2 <b>eXion</b> ™	!-way inte	our 512MB DIM rleaving / PC21 or 4-bit errors hot-add (OS s	00 DDF on same	R SDRAM e chip; up
SCSI disk controller SCSI implementation IDE controller Disk - capacity/bays	First channel second chann one standard Enhanced IDE	to intern lel to one (longer) E ATA-1	al 2-port e externa 16-bit L' 00 contro	: SCSI backp ll .8mm VHD( VD cable incl oller in South	lane for CI 68-pir luded fo Bridge	internal hon connector attaching / one one-	ot-swap dis r (16-bit LV an option drop IDE d	ks (16-l /D cable al Serve able to	oit LVD ca e from I/C eRAID ac backplar	able to SCSI b DBoard to ext dapter to the to he for diskette	ackplan connect wo-bay and CE	ie) / tor) / backplane )-ROM
Mechanical	EIA 19" rack	models	(4U <sup>4</sup> ) x	28" deep / sı	upported	d in NetBA	Y™ Racks	(such a	as NetBA	Y42 SR, NetBA	AY42 EF	R)
Chipset  Slots (Active™ PCI-X)	Expansion Po	rts / IRM	Memory	I/O Controller	r with tw	o remote I/	O norts (ea	ich to a	IBM PCI	e controller and -X Host Bridge lot with Remote ard, mouse]) / ed to the PCI-X	) / each	IBM PCI-
Slots (Active <sup>™</sup> PCI-X) RXE Expansion Port	One RXE-100	Remote	Expansion	n Enclosure ca	an be sh	ared between	en two x44	5 4-way,	, 8-way, o		s 445 se	ervers or
CD-ROM / diskette Ethernet Graphics controller Ports	Dual Broadco	mª 5704 Rage XL 00 Expan	10/100/1 . / on I/O ision Por	000 ethernet Board / 8MB t (to connect	controlle SDRAM optional	r / on I/O B 1 std/max / RXE-100)	soard / full o up to 1280 , RXE Man	duplex / )x1024 iageme	64-bit 66 at 85Hz nt Port, tv	MHz PCI bus / vo USB (Vers	Wake o	on LAN <sup>®</sup>
Security	Power-on and	l adminis	strator pa	sswords / un	attended	d boot / sel	ectable bo	ot				
Systems mgmt Diagnostics Software	console and r	ngmt / p iagnosti ne Diagn n while s ™ (CD-R	ower on/ i <b>cs</b> ™ / pr ostics (o server ru ROM inst	off system / imary indicat perated throuning allation and o	monitors or on in ugh IBM	power sta formation p Director) ation	tus, op sys panel with xSeries SI 1GB DDR 2GB DDR	stem, te LEDs a MP Exp PC210 PC210	emperatur issociated ansion M 0 ECC S 0 ECC S	ial connectors e, disks, fans, d with failing c odule DRAM RDIMM DRAM RDIMM Cache Proc U	power s ompone 02 1 33 1 33	supplies
Keyboard / mouse Power supplies Cooling fans	None standar Std: two; max watts at 110v front access / fans in each p Four hot-swap one additiona fan failure sig	c: two / h / redund / worldwi cower su p, redun I fan in e	ot-swap dant at 2 ide / volt upply / Pl dant, mu each pow	/ 1050 watts 20v with two cage-sensing FA ulti-speed fan ver supply / P	power s / auto-ros / FA /	or 550 supplies / estart /	Xeon MP Xeon MP IBM 73.4G IBM Serve IBM Remo NetBAY11 8X/4X/24X IBM T540	2.7GHz 3.0GHz 3B 10K PRAID™ ote Sup Standa Max C 15" Fla	J/2MB L3 J/4MB L3 Ultra160 J-6M Ultra ervisor Ad ard Rack CD-RW U t Panel C	Cache Proc U Cache Proc U SCSI Hot-Swa 320 SCSI Ada dapter II-EXA	pg 1; pg 1; p 0; pter 3; 1; 9; olack) 9;	3N0722 3N0721 6P5756 2P0033 3N0382 306110 2P9101
Six available 3.3 volt Slot 1: fullsize, 64-bit Slot 2: fullsize, 64-bit Slot 3: fullsize, 64-bit Slot 4: fullsize, 64-bit Slot 5: fullsize, 64-bit Slot 6: fullsize, 64-bit Slot: used by Remo	66MHz PCI-X, 66MHz PCI-X, 100MHz PCI-X, 100MHz PCI-X, 133MHz PCI-X, 133MHz PCI-X, te Supervisor Access, diskett access, CD-RC access, hot-swaccess, hot-sw	hot-swaphot-sw	o Bus A p, Bus B p, Bus B p, Bus C p, Bus D 33MHz ack	Max weight Stealth blate Tool-free Stealth Blate Tool-	ns: H178 nt: H10 lb lck color lck co	mm x W48 s; 50kg bility s, memory, odule from plies and di pressing F- octor) by pr ssing Ctrl+/ anel and fro li (1st and 2 t removing of	adapters, a top sks from fro 1 at startup ressing F2 A at startup nt-accessite and level cover) lerts on proche, memoritisks with	and ont at startuble pull- cessors ry, fans,	int its war	LIMITED WA year parts and ernational Wai a site, 9 hr x 5 xt day respon year on site w grade option ( actions): 4 hr x 7 day co hour respons No ServicePac st warranty m rvices availat her ServicePa tp://www.ibm.c. //pdf/wamomxe x714 toll-free si irranty issues irranty periods ((X445C) © IBM	labor rranty S day co se time arranty in eligiboverage, e time available aintenariole c optior com/ser eu.pdf upport f during	ervice <sup>3</sup> verage, 7 service ele , ) nce ns at vices/us/ or the

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

IBM <sup>®</sup> Type-model Qty x l	Processor	L3 cache	L4 cache	Memory	Disk	SCSI controller	Mech- anical		SMP/RXE Exp Ports	Hot-swap pwr supplies	Mgmt adapter	Available date
8870-1BX 2 x Xeon 8870-2BX 2 x Xeon 8870-4BX 2 x Xeon	MP 2.7GHz	2MB 2MB 4MB	64MB (	OGB Chipkill™ OGB Chipkill OGB Chipkill	None	2xUltra320 2xUltra320 2xUltra320	0 4U rack	6x4	3/1	Two redundan Two redundan Two redundan	PCI	Mar 2004 Mar 2004 Mar 2004
Positioning Processors L3 cache L4 cache Processor upgrade SMP Expansion Module Additional boards	2 x Intel® Xec 2MB or 4MB 64MB XceL4 64MB in each SMP Expansi One SMP Ex L4 cache, sixt Ports) / each One I/O Boar	each prodese each prodese each prodese each prodese each substitution of the each prodese each each each prodese each each prodese each each each each each each each eac	cessor Nocessor Nocessor raccele xpansion lie stand lodule some socket pansion Nocestor Britania not the socket pansion Nocestor Rost Britania not socket located socket lo	// P 2.2, 2.7, o / on die of pricator Cache I Module / EC ard / ready for td / two max is, three SMP // odule activat ridge, SCSI, 6	or 3.0GH rocessor (up to 1 CC / 64-b or adding / each c Expans es one I ethernet	Iz¹ with 400 r / at proce 128MB with bit 400MHz g additional contains foun tion Ports (s RXE Expans , graphics,	OMHz from ssor spee optional bus from I processor Intel 603 second mo sion Port ( South Bri	side bud d SMP E Cache ors (up -pin mid dule co one R dge, Su	xpansion and Sca to 8 total cro-PGA 2 nnected v (E Expansion	sion-critical busin orts Hyper-Three Module) / lability Controll ) and memory ZIF sockets for via one or two sion Port suppo- slot for Mgmt / Modules, I/O Bo	ading er Xeon M SMP Ex rted)	P, 64MB pansion
Memory	PC2100 DDF	d-connec R SDRAM bit errors	tor slots // Error s on sam	/ must install  Checking a  ne chip; up to	two ind and Cor two chi	dentical DIM recting (EC ips at once	/lMs at sai CC) and ( ; redunda	me time Chipkil nt bit si	e / 2-way I™ via <b>M</b> o teering) /	interleaving / emory ProteXi Active Memor		porting
SCSI disk controller SCSI implementation IDE controller Disk - capacity/bays	First channel second chann one standard Enhanced IDI	to interna lel to one (longer) E ATA-10	al 2-port S external 16-bit LV 10 control	SCSI backplaı .8mm VHDCI D cable incluc Iler in South B	ne for int 68-pin c ded for a Bridge / o	ternal hot-sy connector (10 attaching an one one-dro	wap disks 6-bit LVD optional S p IDE cab	(16-bit l cable fr erveRA le to ba	_VD cable om I/O Bo AID 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 backp CD-ROM	lane M
Mechanical	EIA 19" rack	models	( <b>4U</b> <sup>4</sup> ) x 2	8" deep / supp	oorted in	NetBAY™	Racks (su	ch as N	letBAY42	SR, NetBAY42	ER)	
` ′	Expansion Po X Host Bridge Adapter, VIA® PCI 2.2 Bus F Six hot-swap hot replace, One RXE-100	M XA-32™ 2nd Generation chipset / IBM Cache and Scalability Controller with L4 cache controller and three SMP kpansion Ports / IBM Memory I/O Controller with two remote I/O ports (each to a IBM PCI-X Host Bridge) / each IBM PCI-Host Bridge provides three peer PCI buses / PCI 2.2 Bus E supports graphics, adapter slot with Remote Supervisor dapter, VIA® 82C686B South Bridge (IDE ATA-100, USB, Super I/O PC97317VUL [keyboard, mouse]) / CI 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 x hot-swap PCI-X 1.0 slots¹⁰ available with power and attention indicator lights (optical sensors control power to slot) / teleplace, hot upgrade, hot expansion / separated by insulative plastic dividers ne RXE-100 Remote Expansion Enclosure can be shared between two x445 4-way, 8-way, or 16-way xSeries 445 servers or tached alone. Both PCI-X 6-packs must be installed to support RIO sharing as each server will access six additional PCI-X slots								IBM PCI- visor ecification to slot) / ervers or		
Ethernet	<b>Dual</b> Broadco SVGA / ATI®	m <sup>å</sup> 5704 Rage XL 00 Expan	10/100/1 / on I/O sion Port	000 ethernet of Board / 8MB t (to connect	controlle SDRAM optional	er / on I/O Bo I std/max / i RXE-100),	oard / full ou up to 1280 RXE Mar	duplex / 0x1024 nageme	/ 64-bit 66 at 85Hz. nt Port, t	pays / supports SMHz PCI bus / wo USB (Vers ers 1.1)	Wake o	n LAN®
Security	Power-on and	adminis	trator pa	sswords / una	attended	boot / sele	ectable bo	ot				
Systems mgmt Diagnostics Software	console and r Light Path D IBM Real Tim available eve ServerGuide	mgmt / p liagnosti ne Diagn n while s ™ (CD-R	ower on/ cs™ / pr ostics (o server rui lOM inst	off system / rimary indicat perated throunning allation and o	monitors or on in ugh IBM	formation p	tus, op sys panel with IBM Prelo Microso IBM Softw	stem, to LEDs ad Kit f ft Wind are Su	emperatur associate for 1-8 Pr lows Serv bscription	er Datacenter : Update for	power s ompone 48 2003 48	supplies
Keyboard / mouse Power supplies Cooling fans	None standa Std: two; max watts at 110v front access fans in each Four hot-swa one additiona fan failure sig	erverGuide™ (CD-ROM installation and configuration illities), IBM Director, and others  one standard (because rack-based) td: two; max: two / hot-swap / 1200 watts at 220v or 600 atts at 110v / redundant at 220v with two power supplies / ont access / worldwide / voltage-sensing / auto-restart / use in each power supply / PFA our hot-swap, redundant, multi-speed fans / ne additional fan in each power supply / PFA / in failure signals Diagnostic LED and mgmt processor  Microsoft Windows Server Datacenter 2003 IBM Software Subscription Update for Microsoft Windows Server Datacenter 2003 IBM Software Subscription Update for Microsoft Windows Server Datacenter 2003 IBM Software Subscription Update for Microsoft Windows Server Datacenter 2003 IBM Software Subscription Update for Microsoft Windows Server Datacenter 2003 IBM Software Subscription Update for Microsoft Windows Server Datacenter 2003 IBM Software Subscription Update for Microsoft Windows Server Datacenter 2003 IBM Software Subscription Update for Microsoft Windows Server Datacenter 2003 IBM Software Subscription Update for Microsoft Windows Server Datacenter 2003 IBM Software Subscription Update for Microsoft Windows Server Datacenter 2003 IBM Software Subscription Update for Microsoft Windows Server Datacenter 2003 IBM Software Subscription Update for Microsoft Windows Server Datacenter 2003 IBM Software Subscription Update for Microsoft Windows Server Datacenter 2003 IBM Software Subscription Update for Microsoft Windows Server Datacenter 2003 IBM Software Subscription Update for Microsoft Windows Server Datacenter 2003 IBM Software Subscription Update for Microsoft Windows Server Datacenter 2003 IBM Software Subscription Update for Microsoft Windows Server Datacenter 2003 IBM Software Subscription Update for Microsoft Windows Server Datacenter 2003 IBM Software Subscription Update for Microsoft Windows Server Datacenter 2003 IBM Software Subscription Update for Microsoft Windows Server Datacenter 2003 IBM Software Subscription Update for Microsoft Win								3L5040 3N0723 3N0722 3N0721 6P5756		
	G6MHz PCI-X G6MHz PCI-X 100MHz PCI-X 133MHz PCI-X 133MHz PCI-X te Supervisor Ar access, diskett access, CD-RG	, hot-swap, hot-swap, hot-swap, hot-swap, hot-swap, hot-swapdp, 32-bit	o Bus A o Bus A o, Bus B o, Bus B o, Bus B o, Bus C o, Bus C o, Bus C o, Bus C	Max weigh Stealth bla Tool-free Access pro Setup Proo Diagnostic SCSISelec Information out Light P diagnostic Predictive XccL4 Ser power sup IBM Direct All model	ns: H178 tt: 110 lb ck color erviceab ocessors nsion Me wer supp gram by ss (PC-D tt by pre: n LED pa ath panes s without Failure A ver Acce plies, an or	mm x W483 s; 50kg billity s, memory, a odule from to plies and dis pressing F1 octor) by pressing Ctrl+A anel and from el (1st and 2 t removing co	adapters, a cop sks from from at startup essing F2 A at startup int-accessified level cover) erts on proche, memo isks with nal disk c	and ont at startu ble pull- cessors ry, fans	Property of the control of the contr	LIMITED WA year parts and ternational War n site, 9 hr x 5 ext day response year on site wa year on site year on site sat warranty ma yervicePac a year wariah ther ServicePac tp://www.ibm.c s/pdf/wamomxe yeriod³ arranty issues arranty period³	labor ranty Se day co se time rranty se n eligib verage, e vailable) intenan le coption om/servu.pdf	ervice <sup>3</sup> verage, ervice le oce as at vices/us/

IBM® Type-model Qty x		L3 L4 che cache	Memory	Disk	SCSI controller	Mech- anical		SMP/RXE Exp Ports	Hot-swap pwr supplies		Available date
8855-4BY 4 x Itanii 8855-5BY 4 x Itanii 8855-6BY 4 x Itanii	um 2 1.6Ghz 6M	1B 64MB	2GB Chipkill	None	2 x Ultra320 2 x Ultra320 2 x Ultra320	4U rack	6x2	0/1	Two redundan Two redundan Two redundan	t PCI	Dec 2004
Positioning Processors L2 cache L3 cache L4 cache Processor upgrade SMP Exp. Module Additional boards	Up to 16-way pod 4 x Intel® Itania 256KB each pro 4MB, 6MB or 9M 64MB XceL4™ S ECC / 64-bit 400 4-way SMP per Up to 16-way us One I/O Board (PCI Board (PCI-X	n 2™ Process cessor / on d //B each processerver Accelon MHz bus from chassis sing four x458 PCI-X Host Bi	sor 1.5GHz of process essor / on dierator Cache and cache and cache scale, SCSI, endinge, SCSI, endinge, SCSI, endinge, SCSI, endine cache and cac	or1.6GH sor / at e of pro e   Scalab equires etherne	Iz with 400M processor spocessor / at pocessor / at pocess	Hz fronts beed processor r sr 3-way or South Brid	side bus speed 16-way dge, Su	kits	slot for Mgmt <i>i</i>	Adapter	), one il Board)
Memory	<b>PC2100</b> 266MHz way interleaving / 3, or 4-bit errors of supported with ar	registered 18- Active Memon same chip;	4-́pin ECC DI ory™ with Er up to two chi	DR-SDR ror Che ips at or	AM DIMMs / ecking and C nce; redundar	DIMMs no contraction of the cont	nust be g (ECC ring) /	installed ), Chipki via memo	in matched pai II™, <b>Memory F</b> ory mirroring (m	rs [a ba <b>ProteXic</b>	nk] / 2- on™ (1, 2,
SCSI disk controller SCSI implementation IDE controller Disk - capacity/bays	ServeRAID adap Enhanced IDE AT	ckplane for into ter and SCSI FA-100 contro	ternal hot-swa cable requir ller in South E	ap disks ed if att Bridge/	s (16-bit LVD taching exter one one-drop	cable to nal stora IDE cab	SCSI b ge encl e to bad	ackplane osures ckplane fo	) / or diskette and	CD-RO	M
Mechanical	EIA 19" rack mo	<b>dels (4U</b> 4) x 2	8" deep / sup	ported i	n NetBAY™ F	Racks (su	ch as N	etBAY42	SR, NetBAY42	PER)	
Chipset  Slots (Active™ PCI-X  RXE Expansion Port	hot replace, hot	Controller with er PCI buses / buth Bridge (ID pports SCSI, e -X 1.0 slots <sup>10</sup> a t upgrade, ho mote Expansio	two remote I/PCI 2.2 Bus I PE ATA-100, Uthernet / PCI- vailable with pot expansion n Enclosure c	O ports E suppo JSB, Sup X Bus A power au n / sepa an be sh	(each to a IBM rts graphics, a per I/O PC973 A, B, C, D supp nd attention in arated by instracted between	M PCI-X I adapter s 317VUL [i bort PCI-X adicator li ulative p a two x45	Host Brider Host With International Market Properties (1984)   Host Pro	dge) / ead Remote S d, mouse designed btical sens ividers , 8-way, o	Supervisor Adap ]) / I to the PCI-X 1 sors control pov r 16-way xSerie	oter, .0 speci ver to slo es 455 se	fication ot) /
CD-ROM / diskette Ethernet Graphics controller Ports	Dual Broadcom®	5704 10/100/1 ge XL / on I/O Expansion Por	000 ethernet Board / 8MB t (to connect	controlle SDRAM optiona	er / on I/O Bo M 125MHz sto I RXE-100), F	ard / full d/max / u RXE Man	duplex / ip to 12 agemei	64-bit 66 80x1024 nt Port, tv	MHz PCI bus at 64K colors a vo USB (Vers	/ Wake oat 85Hz	
Security	Power-on and adr	ministrator pas	swords/unat	ttended l	boot/selectat	ole boot					
Systems mgmt Diagnostics Software	Remote Supervi console and mgm Light Path Diagr IBM Real Time Di available even wh ServerGuide™ (( utilities), IBM Dire	nt / power on/oi nostics™ / printing nostics (op nile server rund CD-ROM insta	ff system / mo mary indicato erated throug ning .llation and co	nitors po r on info gh IBM D	ower status, o ormation pane Director) It. It ion It	p system I with LEI anium 2 anium 2 anium 2	, tempe Os asso 1.3GHz 1.4GHz 1.5GHz	rature, dis ciated wi /3MB L3 /4MB L3 /6MB L3	sks, fans, powe	r supplie onents / pg pa	es
Keyboard / mouse Power supplies  Cooling fans	None standard (I Std: two; max: tw watts at 110v / refront access / wor fans in each power Four hot-swap, reone additional far	because rack o / hot-swap / dundant at 22 rldwide / volta er supply / PF edundant, mult	-based) / US 1050 watts a 0v with two po ge-sensing / a A ii-speed fans	t 220v o ower su auto-res /	or 550 pplies / IE IE IE IE IE IE IE IE IE	GB PC21 GB PC21 3M 73.40 3M 146.8 3M Serve 3M RXE- -way to 8	100 CL2 100 CL2 3B 15K GB 10h RAID™ 100 Re 3-way E	2.5 ECC I 2.5 ECC I Ultra320 ( Ultra320 6M Ultra mote Sto expansion	DDR SDRAM DDR SDRAM SCSI Hot-Swa D SCSI Hot-Swa 320 256MB C rage Enclosure	ap ache	33L5039 33L5040 32P0735 32P0728 02R0988 86841RX 73P9911 73P9715
Bay ② 3.5", 0.5", Bay ③ 3.5", SL 1", Bay ④ 3.5", SL 1",	66MHz PCI-X, ho 66MHz PCI-X, ho 100MHz PCI-X, ho 133MHz PCI-X, ho 133MHz PCI-X, ho ote Supervisor Adp, 3	t-swap Bus A t-swap Bus A t-swap, Bus B t-swap, Bus B t-swap, Bus C t-swap, Bus C t-swap, Bus D 32-bit 33MHz  4U Rack  rabay 2000)  JItrabay 2000	Dimension  Max weigi  Stealth bla  Tool-frees  Access pro  Access pro  Diagnostic  SCSISele  Informatio out Light F diagnostic  Predictive XceL4 Se power sup IBM Direct  All mode	ns: H17 ht: 120 ht: 120 cack color servicea ocessor ansion M ower sup gram by ccs (PC-L ct by pre- on LED p Path pan ss withou- s Failure rver Acc oplies, ar tor Ms: Ma:	9" x W17.3" x 5mm x W440 lbs; 54.30kg r	dapters, a p ssing F2 at startup ssing F2 at startup cacessil d level over) rts on proe, memo sks with al disk c	713mm and ont at startu ble pull- cessors ry, fans,	Pool ht its way was ks	LIMITED WA year parts and ternational Wai M On Site (IOF usiness-Day cyear on site w grade option ( cations): 24 hr x 7 day co 2 hour respons 36P2689 set warranty n services avail ther ServicePa ther ServicePa stry://www.ibm.cs/pdf/wamomxx x7 <sup>14</sup> toll-free si arranty issues warranty perio	labor rranty S (), 9-5 N overage arranty in eligiboverage e time naintenaable c option com/sereu.pdf upport 1 during d3	ervice <sup>3</sup> ext- y service ble , ance as at vices/us/ for the

IBM®		L2	L3	Memori	DIMM	Diaka	SCSI	Mechanical	Slots x			Available
Type-model Qty x Pr 8872-1RY 2 x Xeon <sup>T</sup>	rocessor MMP 2.83GHz	cache 1MB	4MB	Memory 2x1GB	slots 8	None	SAS	3U <sup>4</sup> rack	bays 6x7	pwr supplies 2 x 1300	(yrs.)	Jun 2005
8872-2RY 2 x Xeon	MP 3.0GHz	1MB	8MB	2x1GB	8	None	SAS	3U rack	6x7	2 x 1300	3	Jun 2005
8872-3RY 2 x Xeon 8872-5RY 2 x Xeon	MP 7020 2.66GHz	1MB 2MB	8MB	2x1GB 2x1GB	8 8	None None	SAS SAS	3U rack 3U rack	6x7 6x7	2 x 1300 2 x 1300		Jun 2005 Nov 2005
8872-6RY 2 x Xeon		2x2ME		2x1GB	8	None	SAS	3U rack	6x7	2 x 1300	3	Nov 2005
Processors	Two 64-bit Intel® Xe 3.0GHz 667MHz FS	SB Dual	Core	NetBurst	TM / E	xtended	Memory 64	l Technology	™ (EM64	<b>4-bit Xeon Pr</b> <b>IT)</b> / Hyper-Th	<b>ocessor</b> reading	technology
L2 cache L3 cache	1 or 2MB / per core 4 or 8MB / integrate	ed/atpr	ocesso	r speed								
Processor upgrade	4-way SMP / up to chassis interconnect	four Xec	n Proc	essors (sa	me sp	eed/cach	e/core) per	chassis / Dual	Core Ca	apable / up to :	32-way	(eight
Implementation	System board conta integrated Serial Atta	ins four ached S	Intel 60 CSI, etl	04-pin micr nernet, gra	o-PGA phics	4 ZIF so	ckets, one r	nemory board	slot, six	Active™ PCI-X	( 2.0 slot	ts, and
Active Memory <sup>™</sup>	2GB std / 64GB ma	x per ch	nassis u	using high-	capaci	ty memo	ry card / 51	2GB max (eig	ht chassi	s interconnect	/ two m	nemory
	cards standard (up t 400MHz registered Chipkill <sup>TM</sup> / Memor	240-pin	DDR2-	SDRAM R	DIMM	s / Error	Checking a	and Correctin	ig (ECC)	via 16-bit Ch	ecksum	)     / Uot add
	(supported only with	Microso	oft® Win	idows™ Se	erver 2	9003™	na ivientory	wiiiTOTIIIg a	110 1101-8	swap (11011-03	specific)	/ Hot-auu
SCSI disk controller	ALL: Adaptec® AIC-	-9410 / <b>\$</b>	Serial A	Attached S	CSI (S	<b>SAS)</b> 3.0	GHz (3GB/s	ec) / 64-bit 26	6MHz PC	CI-X 2.0 / Serve	eRaid 8i	optional
SCSI connectors	with dedicated slot Controller wired to S One standard SAS	AS back	plane		ا من ا م ما							
SCSI cabling IDE controller / cabling	Enhanced IDE ATA-	33 contr	oller in	CSB6 Sou	ıth Brid	ane dge						
Disk - capacity Disk - bays	None / supports up	ays / co	nverge	d trav / 80-	pin SC	CA-2 con	nectors					
Mechanical	EIA 19" rack mode chassis (x460 or M)	ls (3U⁴)	x 28" c	leep / supr	orted	in NetBA	Y™ Racks (	such as NetB	AY42 SR	, NetBAY42 E	H) / cont	nect eight
Chipset	IBM XA-64e™ 3rd (	Generati	ion chi	pset / Inte	grated	Process	or and Mem	nory Controller	/ Suppo	rts EM64T / S	upport fo	or external
	scalability and memory ServerWorks® CSB6	South	oi / ∠ II Bridge	(IDE, USB	, bus f	or Super	5 / FIOSE BITC 1/O NS 874	ige One suppo 17 [diskette, k	eyboard,	mouse]), Dua	Port Br	i, oadcom
Cloto (Activista)	5704, and 2 PCI-X								vo cont	l nouver to alar	/ hat	nlage h-t
Slots (Active™)	Six total PCI-X 2.0 s upgrade, hot expans	iots avai	parated	Ith power a by insulat	ive pla	ention industrict	ers, all slots	supported up	to 266M	Hz	/ not re	place, not
CD-ROM / diskette Ethernet	8X <sup>6</sup> Slim DVD-ROM Broadcom <sup>®</sup> 5704 10		00 dual	ethernet p	er cha	ıssis / on	systemboar	d / 64-bit 266ľ	Mhz PCI-	X 2.0 / Wake o	n LAN®	/ Alert on
Graphics controller	LAN™ 2 SVGA / ATI® 7000M						•					
Ports	Rear: Three Scalabi ethernet, std. serial,	lity ports RS-485	, RSA (	ethernet, F	SA se	rial, two	USB (Ver 2.	0), keyboard,	mouse, a	nalog DB-15 g	raphics,	two
Security	Power-on and admir	nistrator	passwo	ords / unat	tended	l boot / s	electable bo	ot				
System's managemen	remote console and	mamt /	power	on/off syst	em / n	nonitors ı	oower status	s, op system, t	emperatu	ıre. disks. fans	. power	supplies
Diagnostics	Drop down Light P	<b>ath Dia</b> Inostics	<b>gnostic</b> (operat	<b>:s</b> / primar ed through	y indic i IBM [	ator on 11 Director)	ntormation p	anel with LED PC2-3200 CL3	S ASSOCIA	ated with failing	compo	nents / 73P2866
Software	ServerGuide™ (CD utilities), IBM Directo	-ROM IT	istallatio	on and co	nfigura	tion	4GB	PC2-3200 CL3	ECC RDIN	/M(2x2GB)		73P2867 30R5145
Keyboard / mouse	None standard (bed	cause ra	ick-bas	ed)			Activ	PC2-3200 CL3 e Memory 4-slo	t Expansi	on Card		13M7409
Power supplies	Std: Two 1300 watt redundant with two	hot-swap	o; <i>Max:</i>	two hot-sv			ng / Xeon	n MP 3.00GHz/1	IMB L2 8N	MB L3 Proc Upg MB L3 Proc Upg		13N0715 13N0714
Cooling fans	auto-restart / rear ac Eight hot-swap, redu	cessible	fans ir	n each poy	ver sup	oply / PF	A Xeon	MP 7040 3.0G	Hz/2x2ME	MB L2 4MB L3Pr B L2 8MB L3 Pr		25R8941 25R8942
Cooming fairs	one additional fan in	each po	wer su	pply / PFA		cor	IBM S	ServeRAID™-8	SAS-SC			13N0713 13N2227
	tan tailure signais Di		LLD	uiu mgmi	DIOCES	501		ServeRAID 6M 36.4GB 10K 2.5				02R0988 26K5654
$8W = 2 \times XpandOnDe$ $16W = 6 \times XpandOnD$							IBM	73.4GB 10K 2.5 ndOnDemand™	5" SAS Hot	t-Swap HDD		26K5655 13M7414
$32W = 8 \times XpandOnD$	,		4 x2.9r	m			Xpan	idOnDemand™ -460 Modular E	Scalability	/Cable-2.9M		13M7416 8874-1RY
Six available 3.3 volt							Dual	Core X3 upgra	de kit (ava			39Y6580
Slot 1 - fullsize, 64-l Slot 2 - fullsize, 64-l	bit, 266MHzPCI-X, I	not-swa	ם מ כ	imaneiono	HE OF	5" y \//17	32" x D28.1		pc/	LIMITED WA		<b>TY</b> <sup>3</sup>
Slot 3 - fullsize, 64-l Slot 4 - fullsize, 64-l	bit, 266MHzPCI-X, I	not-swaj	o ~ D	imensions:	H128	.35mm x	W440.0mm	V D715mm	⇒ 3 vear	parts and la		
Slot 5 - fullsize. 64-l	bit. 266MHzPCI-X. I	not-swai	) ~ ~ ~	leight: 70 t tealth blacl	o 85lbs ccolor	s; 31.75 t	o 38.5kg	-	🗢 Interna	ational Warra	inty Sei	
Slot 6 - fullsize, 64-l *exclusive slot availa	bit, 266MHzPCI-X, I ble for ServeRAID 8	not-swap i adante	) ~ T			la Hita .	innline pro-		cove	e, 8 am - 5 pr erage excludi	ng holi	days,
Opt disk     Opt disk	Ont dick	T GOOD TO	m	emory and	d syste	emboard	from top	l.		ousiness day e service up		
Opt disk     Opt disk	Opt disk	$\overline{}$		etup Progriagnostics	am by (PC-D	pressing	F1 at starturer pressing F	ib di	(in elig	gible location	s): <sup>7</sup>	•
		ght Path Diag	⇒ S	CSISelect	by pre	ssing Cti	I+A at startu	ip	96P2			•
Bay ① 5.25", 0.5",	Rack access, std CD-R	 MC	di	aġnostic p	anel) fo	or outside	view of pot		• <b>3 ye</b> : 96P2	<b>ar IOR 24x7</b> , 1 2689	2 hr avg	response
Bay ② 2.5", SL 1",	access, hot-swap,	open		oblem with formation l			cover Inostic LED I	panel.	• 4 ye	ar IOR 9x5, N	BD resp	oonse
Bay ③ 2.5", SL 1", Bay ④ 2.5", SL 1",	access, hot-swap, access, hot-swap,	open .	ar	nd compor	ient LE	EDs give	visual indica	tions of		ar IOR 9x5, N	BD res	oonse
Bay © 2.5", SL 1", Bay © 2.5", SL 1",	access, hot-swap, access, hot-swap,		₽P		ailure i	Analysis <sup>®</sup>	alerts on d		96P2 <b>⇔ Other</b>	2694 ServicePac	ptions	at
Bay ② 2.5", SL 1",	access, hot-swap,			ower supp nd fans wit			processors,	VRMs,	http://	www.ibm.com	n/	
Max BTU Output:	4.000 Pt-//- /070						arnal diale -	anacitu:	24x7¹⁴	es/us/its/pdf/ toll-free supp	ort for	warranty
Ship Configuration: Full Configuration:							ernal disk o hot-swap S		issues	during the w	arranty	period <sup>3</sup>
Soo footnotes for impor				Hot owen			· ·			(¥460A) ⊚ II		

#### B 2 B 3 B 5 B 8 В 9 B 10 В В 6 12

#### Rear

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

Power Managemen Switch Power modules modules (both std)

- Units from front Blade
- Access modules from rear
  - Midplane in center of system to interface for all major system components
  - Prédictive Failure Analysis® alerts on blowers, blade server memory, processor(s), and optional disk(s) with IBM Director

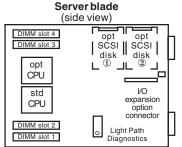
ule	Switch module bay	Switch module function
•	1	Ethernet link 1 for all blade servers
	2	Ethernet link 2 for all blade servers
	3	Network connection 1 for all blade server
nt	4	I/O expansion options (Fibre Channel) Network connection 2 for all blade server I/O expansion options (Fibre Channel)

- coverage excluding holidays, next business day response time7
- On site service upgrade options (in eligible locations):<sup>7</sup> 3 year IOR 24x7, 2 hr avg response
- (ServicePac® part num 21P2074)

  3 year IOR 24x7, 4 hr avg response
- (ServicePac part num 21P2073)
- 3 year IOR 9x5, 4 hr avg response (ServicePac part num 21P2072)
  5 year IOR 9x5, 4 hr avg response
- (ServicePac part num 69P9247) 5 year IOR 24x7, 2 hr avg response (ServicePac part num 69P9249)
- Other ServicePac options at http://www.ibm.com/services/us/ its/pdf/wamomxeu.pdf
- 24x7<sup>14</sup> toll-free support for warranty issues during the warranty

(BC1) © IBM Corp. January 2004

IBM® Type-model Qty x Pro	ocessor¹ Speed/Core	L2 Memory Cache	Disk Disk Disk controller bays	SCSIsupport	Slots Mech- x bays anical	Required chassis	Available date				
8850-71U 1 x Opte		1GB 1MB 1GB 1MB 1GB 1MB	OMB SCSI 2 fixed	Two 2.5-inch SFF Two 2.5-inch SFF Two 2.5-inch SFF Two 2.5-inch SFF Two 2.5-inch SFF	0x2 7U <sup>4</sup> blade 0x2 7U <sup>4</sup> blade 0x2 7U <sup>4</sup> blade 0x2 7U <sup>4</sup> blade 0x2 7U <sup>4</sup> blade	BladeCenter BladeCenter BladeCenter	Apr 2005 Jul 2005 Apr 2005				
Positioning Processor(s) L2/L3 Cache SMP support Implementation	Up to 2 x AMD® Opt 1MB L2 Cache per of 2-way SMP / up to the Server blade contains	eron 275 Dual core, AMD Dire wo Opteron pro s two AMD 940	nance modular comput. Core 2.2GHz, simultan cct Connect Architectt coessors (same speed/ o micro PGA ZIF socke ort, integrated graphics	eously supports 32-l <b>Ire</b> ensures lower la cache size) ts, four memory DIN	bit and 64-bit com atency I/O	puting	Myrinet				
Memory	PC3200 266MHz reg DIMMs must be insta Error Checking and	istered 184-pin lled in matched Correcting (E	ed / two slots available ECC DDR VLP SDRA Depairs [a bank] / 2-way ECC) via 16-bit Checks Contained in two chips)	memory interleave	/ dual channel	•					
IDE controller/bays SCSI disk controller SCSI disk bays Other controllers External storage	on planar / supports drives / one 16-bit in Supports max of two 40-pin SCA-2 conne Support for SFF or le	RAID-1 mirro nternal channe not hot-swap ctors / all SCS egacy Ethernet	20 Ultra320 SCSI control oring [Embedded Mirro I / no cables or externa 2.5" SL Ultra320 SCSI bays Ultra320-enable or Fibre Channel I/Outlons (including FAStT	ring] with two non-h Il connector) disks <b>ed</b> cards, Myrinet or In	not-swap 2.5" / sn	nall form factor					
Mechanical Architecture / chipsets Bus slots	Supported in IBM BladeCenter / BladeCenter supported in 28" deep racks such as the IBM NetBAY™ Rack products / 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 No PCI or PCI-X slots (expansion via modules or network-interface option connector)										
	/ Alert Standard Forma switch or Passthroug One connector for I 3 and 4 of BladeCent card) / ethernet and s None / requests for Cl	t 1.0 / teaming a th Module (the I/O expansion ter / all blades is serial I/O expand-ROM, diskettyboard, mouse	doom® BCM5704S / on bland failover support / one second controller requirements option (Fibre Channel in a single BladeCenternsion cards planned for edrive, and USB port in and video in BladeCent // / on blade / 16MB SD	of the dual controllers res a second option. Expansion Card) / must contain the sa future release <sup>20</sup> BladeCenter by preser by pressing the diRAM std/max / 32-b	connects to an optal switch or PM) requires same intume expansion callsing CD select but splay button on froit 33MHz PCI 2.2	erface modules ord (or no expan ton on front con nt control panel bus	d Ethernet s in bays sion trol panel				
Systems mgmt  Diagnostics	H8S2148 / on blade / monitoring, event rece for communication wit Light Path Diagnost	provides syster ording, alert cap th BladeCenter <b>ics™</b> (LED light	oability / RS-485 interfac management module	Low Power Opt Low Power Opt Low Power Opt Low Power Opt S) 2GB Memory Kit	teron 246 Process teron 270 Process teron 275 Process teron 250 Process teron 250 Process teron 252 Process	sor Upgrade sor Upgrade sor Upgrade sor Upgrade SDRAM DIMM					
Security Software ship group	Power-on password / administrator password / unattended boot / selectable boot / unattended start mode up Documentation CD, IBM Director CD, Device Driver CD AMD Opteron LS20 Low Profile Handle 25R7748										
Cooling fans Power supply Prerequisites											



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

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

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

Stealth black front bezel

disk, BladeCenter (type 8677), operating system

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

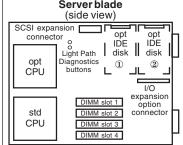
- 11 lbs; 5.0kg (max configuration) Configuration/Setup Utility: F1 at startup Diagnostics (PC-Doctor™): F2 at startup
- System Partition Boot: ALT+F1 at startup
- Network Boot: F12 at startup
- PXE Boot Agent Utility: Ctrl+S at startup
- Blade control panel on each LS20 blade server provides media select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

Maximum internal disk capacity for each LS20 blade server<sup>13</sup>: 146GB with two 73.4GB SFF SCSI disks

- 3 year parts and labor
- International Warranty Service<sup>3</sup>
- On site, 8 am 5 pm, Mon Fri coverage excluding holidays, next business day response time7
- On site service upgrade options (in eligible locations):7
  - 3 year IOR 9x5, 4 hr avg response (ServicePac® part num 41C5906)
  - 3 year IOR 24x7, 4 hr avg response (ServicePacpart num 41C5907) • 4 year IOR 9x5, 4 hr avg response
  - (ServicePacpartnum41C5908) • 4 year IOR 24x7, 4 hr avg response
  - (ServicePacpart num 41C5909) • 5 year IOR 9x5, 4 hr avg response
  - (ServicePacpart num 41C5910) • 5 year IOR 24x7, 4 hr avg response
  - (ServicePacpart num 41C5911) • Other ServicePac options at
  - http://www.ibm.com/ services/us/its/pdf/wamomxeu.pdf
- 24x7<sup>14</sup> toll-free support for warranty issues during the warranty period3

**><** \$

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



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

- Powergood
- Blade location
- Information
- Overtemperature

· General fault

Bay ① 3.5", 9.5mm, no front access, optional ThinkPad® IDE disk Bay ② 3.5", 9.5mm, no front access, optional ThinkPad IDE disk

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

Maximum internal disk capacity for each HS20 blade server13: 80GB with two 40GB EIDÉ disks or 293.6GB\* with two 146.8GB SL SCSI disks

- 3 year parts and labor
   International Warranty Service<sup>3</sup>
- On site, 8 am 5 pm, Mon Fri coverage excluding holidays,
- next business day response time<sup>7</sup> 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

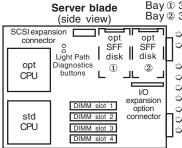
  - (ServicePac part num 69P9518)

    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
- 24x7<sup>14</sup> toll-free support forwarranty issues during the warranty period3

See footnotes for important warranty information

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

IBM® Type-GAV-model Proc		FSB MHz Memory Disk	Disk controller	Dielcheure on	CSI Support with tional stor exp uni	slots t x bays	Mech- anical	Ethernet	Available date
8843-01y-01x 1 x 8843-11y-11x 1 x 3843-11y-11x 1 x 3843-11y-11x 1 x 3843-25y-25x 1 x 3843-25y-25x 1 x 3843-45y-45x 1 x 3843-25y-25x 2 x 3843-25x 2 x 3843-25x 2 x 3843-25x 2 x 3843-25x 2 x 3843-	Xeon™ 2.8 1MB (	800 512MB Non- 800 1GB Non- 800 1GB Non- 800 512MB Non- 800 1GB Non- 800 512MB Non-	e Ultra320 e Ultra320 e Ultra320 e Ultra320 e Ultra320 B Ultra320 e Ultra320 e Ultra320 e Ultra320 e Ultra320 e Ultra320 e Ultra320	2-fixed 2 Hd 2-fixed 2 Hd	ot-swap Ultra320	0 x 2 7 0 x 2 7	U blade	2 x Gigabit 2 x Gigabit	Sept 2004 Sept 2004 Sept 2004 Feb 2005 Mar 2005 Mar 2005 Mar 2005 Mar 2005 Sep 2005 Sep 2005 Sep 2005
Processor(s)	1 x Intel® Xeon up	to 3.8GHz with 80 eatures Low Volage	OMHz front	side bus (FSB)	) / EM64T / 1-2ME	3 L2 ECC	Cache /	Hyper-Threadi	ng
SMP - L2 Cache Implementation	2-way SMP / up to Systemboard conta	two Xeon Processo ains two Intel 604-pir connector, integrated	ors (same sp n micro-PGA	eed/cache size ZIF sockets, fo	e) / <b>1MB</b> std and r our DIMM slots, or	max / at pr	ocessor s	speed	
Memory	512MB/1GB std / 8 PC2-3200 400MHz installed in matched	<b>8GB</b> <sup>13</sup> max / two slot z CL2.5 ECC DDR2- d pairs [a bank] / 2-w	s used / two SDRAM DIN ay memory	slots available MMs / four 240 interleave / dua	/ pin gold-connecto I channel	r slots on s	systembo	ard / DIMMs m	nust be
SCSI disk controller	PCI-X / supports R	20 SCSI controller / SAID-1 & 1E mirrorin	Single chang / One 16	nel Ultra320 S -bit channel (on	CSI controller (L'	/D 320ME al channel:	s/sec) / or one 2-dr	ı planar / 64-bi op 16-bit 68-pi	t 100MHz n LVD SCSI
SCSI Disk bays		all Form Factor (SF							a320 SCSI
External Storage	Support for IBM To	CSI Storage Expànsi otalStorage™ solutior	on Unit (80-) s (including	PAStT and NA	nectors; <b>all SCSI b</b> S family of produc	<b>ays Ultra</b> : ts)	320-enab	lea) /	
Mechanical Architecture/Chipset	7U Blade / Support Intel E7520 chipse BUS / ICH5R supp interface	ted in IBM BladeCen et / E7525 MCH (Me ports USB (1.0) / LSI	ter 8677-3X mory Contro 1020 / Dual	X or 8677-1XX/2 oller Hub) for P0 Broadcom 5704	2XX (requires upg CI-Express bridge 4S / Low Pin Coun	rade to 200 to PXH, IC t Interface	00W pow CH5R / PX / NS PC8	er supply optio (H BUS suppo 37366 Super I/0	n 26K4816) orts PCI-X O off LPC
BUS slots		slots (expansion via r				,			
Network Interface  CD / Diskette / USB Kybd / video / mouse Graphics controller	or Optical Passthro One connector fo 3 and 4 of BladeCe and serial I/O expa	0/1000 ethernet conti- I-X 64-bit 100MHz / fi- I-X 64-	or teaming cond control tion (Fibre ( single Blade for future re	/ one of the dua ler requires a se Channel Expanse Center must co elease <sup>20</sup>	al controllers conne econd optional swi sion Card) / requir ontain the same ex	ects to an o tch or OPI es same in pansion ca	optional, s M) nterface n ard (or no	supported Ethe nodules in bay expansion car	rnet switch s d) / ethernet
Systems Mgmt	on blade / provides	Management Controls system and environ ert capability / RS-48 h BladeCenter Mana	mental món 5 interface f	itoring, or intermanage	ment Xeon2.8GHz/8 Xeon2.8GHz/8 Xeon3.0GHz/8 Xeon3.2GHz/8 Xeon3.4GHz/8	00/2MBL2Ca 00/1MBL2Ca 00/1MBL2Ca	che EM64TP che EM64TP che EM64TP	rocUpg rocUpg rocUpg	13N0692 25R8878 13N0693 13N0657 13N0658
Diagnostics	Light Path Diagno on-board diagnostic	<b>ostics</b> ™ (LED lights ics (via PC-Doctor in	indicate failir BIOS)	ng component)	and Xeon3.6GHz/8 Xeon3.68GHz/8	00/1MBL2Ca 300/2MBL2Ca	che EM64TP ache EM64TF	rocUpg	13N0659 13N0697
Security	No security intrusic administrator passy unattended start m	on protection / Powe word / unattended bo node	r-on passwo ot / selectab	ord / ole boot /	512MB (2x256) 1GB (2x512) PC 2GB (2x1GB) P 4GB (2x2GB) P	2-3200 CL3 E C2-3200 ECC C2-3200 ECC	CC DDR2 DDR2 Chipk DDR2 Chipk	RDIMM Kit	73P3522 73P3522 73P2866 73P2867
Software ship group	Documentation CD	D, Broadcom CD			IBM 36.4GB 10I IBM 73GB 10K	Ultra320 SCSI	2.5" SFF NH		90P1312 90P1313
Cooling Fans	Uses cooling from	BladeCenter (type 8 and BladeCenter m	677) / therm	nal sensors	BladeCenterSC BladeCenterSF				26K4817 26K4841
Power supply(s) Prerequisites	Uses power modul Monitor, keyboard,	le(s) in BladeCenter mouse for setup; et (type 8677), operatir	(type 8677) hernet switc	·	BladeCenterSF BladeCenterOp Otheroptionsat	FGigabit Ethe tical Pass-thru	rnet Exp Card Module		26K4842 02R9080
1									



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

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

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

- Stealth black front bezel

- ⇒ 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

- 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 server<sup>13</sup>: 146GB with two 73GB SCSI disks (with BladeCenter SCSI Storage Expansion Unit 2 x 146GB for total of 438GB)

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

- - response (ServicePac part num 69P9522) 4 year IOR 24x7, 2 hr avg
- response
  (ServicePac part num 69P9523)
  Other ServicePac options at http://www.ibm.com/
  services/us/its/pdf/wamomxeu.pdf
  24x7<sup>14</sup> toll-free support for warranty issues during the warranty period<sup>3</sup> issues during the warranty period3

L3

Frontside

Disk

Disk

SCSI support with

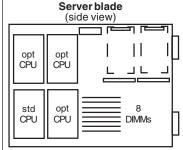
Required

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	™ 2.8GHz N	IP2MB 2GB	400Mhz	None	None	None	2 ho	ot-swap l	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 I P / up to four X de contains fou expansion unit	<b>IP</b> with 40 L <b>3 Cache</b> (eon MP I r Intel 604	00MHz / on d Proces 1-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 r	ng techn speed nemory	ology /	<sup>'</sup> NetBurst <sup>⊤</sup> slots,	<sup>™</sup> microarchite	
Memory	PC2100 2 DIMMs mi 100MHz /	16GB max <sup>13</sup> / tv 66MHz registered ust be installed i <b>Error Checkin</b> and detects 2-	ed 184-pir n matche g and Co	n ECC d pairs <b>rrectir</b>	DDR-SI a bank <b>g (ECC</b>	DRAM   ] / 2-wa <b>)</b> via <b>16</b>	DIMMs ay mer <b>6-bit C</b>	s / eight mory inte Checksur	DIMM g rleave / <b>n Chipl</b>	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 i	onnector / LSI L I/O Bridge (IMB nch high SL SC nax of two hot-s	ogic® 530 2 bus to SI disks i wap 3.5" \$	01020 Host B n front SL Ultra	Ultra320 Bridge) / bays / c a320 SC	SCSI suppor one 16- SI disk	contro ts <b>R</b> / bit int s in op	oller [LVD <b>AID-1 mi</b> ernal cha	) 32ÓMÈ <b>rroring</b> 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		A-2 connectors / r IBM TotalStora						IAS famil	y of prod	ducts)			
Mechanical		in IBM BladeCer											
Architecture / chipset	sone CIOB ethernet a bus to Su	orks® Grand Ch -X2 I/O Bridge on I/O expand the I/O expander I/O, and PC - PCI-X slots (e	(IMB2 bus insion opt I 2.2 Bus	to Ho ion coi C with	est Bridge nnector in graphic	e) for to CSB6 cs conti	wo PC South roller /	CI-X Buse n Bridge 'Nationa	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 eth AN® / Alert Stand Ethernet Switch ectors for I/O e in a single Blad	lard Forma Module expansior	t 1.0 / t (the se optio	teaming a econd co n / requi	and faild ntroller res sar	ver su requir ne inte	pport / on es 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-ROI quests for keybo TI® Radeon 700	ard, mous	se, and	l video ir	n Blade	Cente	r 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 syst ording, alert cap ation with Bladd h Diagnostics <sup>11</sup> t) and on-board	em and e ability / F eCenter n (LED lig	nviron RS-485 nanage hts inc	mental r interfac ment m dicate fa	nonitori e for odule iling	ing,	512MB F 1GB PC2 2GB PC2 IBM HS4 IBM HS4	2100 ( 2100 CL 2100 CL 40 SCS 40 Fibre	CL2.5 E 2.5 EC 2.5 EC I Storg Chan	C DDR-SD C DDR-SD e Expansi nel Expan	SDRAM DIMM RAM RDIMM RAM RDIMM on Unit (blade sion Card (wi	33L5039 33L5040 e) 26K4847 th two
Security	Power-on	password / adi	ministrato	r pass	word /							Switch Module Swap SL HDD*	
Software ship group		d boot / selecta ation CD, IBM					~ ~	36.4GB <sup>-</sup>	15K Ultra	a320 S0	CSI Hot-Sv	vap <sup>'</sup> SL HDD* Swap SL HDD*	06P5776
Cooling fans Power supply Prerequisites	Uses cooli on each p Uses pow Monitor, k	ng from BladeC rocessor and Bla er module(s) in eyboard, mouse eCenter (type 8	enter (typ adeCenter BladeCe e for setu	e 8677 modul nter (typ; ethe	) / therm les and f ype 867 ernet sw	nal sens ront pa 7) itch mo	sors	146.8GB	10K U	tra320	SCSI Hot-	Swap SL HDE pansion Unit	



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

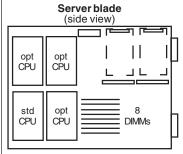
Maximum internal disk capacity for each HS40 blade server13: 293.6GB\* with two 146.8GB SL SCSI disks

- 3 year parts and labor
- International Warranty Service<sup>3</sup>
- On site, 8 am 5 pm, Mon Fri coverage excluding holidays,
- next business day response time<sup>7</sup> 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
- 24x7<sup>14</sup> toll-free support forwarranty issues during the warranty period3

IBM <sup>®</sup> Type-model Qty x Pro	L3 ocessor <sup>1</sup> Cache Me	Frontside mory Bus Mhz Dis	Disk sk controller	Disk bays	SCSI suppoptional exp			Mech- anical	Required chassis	Available date	
8839-61X 1 x Xeon <sup>T</sup>	M 2.2GHz MP 2MB 1 M 2.7GHz MP 2MB 2 M 3.0GHz MP 4MB 2	GB 400Mhz No	ne None	None None None	2 hot-swa	p Ultra320 p Ultra320 p Ultra320	0x2	7U⁴ blade		Mar 2004	
Positioning Processor(s) L2/L3 cache SMP support Implementation	Ultra-dense, highly 1 x Intel® Xeon MP to 512KB L2 Cache / 4-way SMP / up to Server blade contain connector, two I/O e	<b>up to 3.0GHz</b> with 4 <b>Up to 4MB L3 Ca</b> four Xeon MP Produs four Intel 604-pi	·00MHz fron c <b>he</b> / on die cessors (sa n micro-PG	tside bu e of pro me spe A ZIF s	s / Hyper-Th cessor / at   ed/cache si ockets, eigh	reading tec processor : ze) nt memory	hnology speed DIMM	/ NetBurst	™ microarchited		
Memory	Up to 2GB std / 160 PC2100 266MHz reg DIMMs must be insta 100MHz / Error Che same chip and detect	gistered 184-pin En alled in matched pa ecking and Corre	CC DDR-SI airs [a bank cting (ECC	DRAM I (] / 2-wa () via <b>16</b>	DIMMs / eig by memory i <b>5-bit Check</b>	ht DIMM onterleave / sum Chip	jold-co dual c kill™ (d	nnector slo hannel / m corrects 1,	iemory bus rur	ns at 2 x	
SCSI disk controller SCSI disk bays	None / supports op via one connector / CIOB-ES I/O Bridge 3.5" one-inch high S Supports max of two	LSI Logic® 53C10: (IMB2 bus to Hos SL SCSI disks in fr hot-swap 3.5" SL I	20 Ultra320 st Bridge) / ont bays / Ultra320 SC	SCSI ( suppor one 16- SI disk:	controller [L ts <b>RAID-1</b> bit internal s in optional	.VD 320ME mirroring channel / i	B/sec] / [Embe no cab	64-bit 13 dded Mirrolles or exte	3MHz PCI-X E oring] with two rnal connector	Bus B from hot-swap	
External storage	80-pin SCA-2 connections Support for IBM Total					mily of pro	ducts)				
Mechanical Architecture / chipsets	Supported in IBM BladeCenter (type 8677) / BladeCenter supported in 28" deep racks such as the IBM NetBAY™ Rack products <b>ServerWorks® Grand Champion™ 4.0 LE</b> / CMIC-LE5 Host Bridge (memory controller and I/O Bridge) / double slot sets one CIOB-X2 I/O Bridge (IMB2 bus to Host Bridge) for two PCI-X Buses with Bus A for ethernet and Bus B for ethernet and the I/O expansion option connector / CSB6 South Bridge (Thin IMB to Host Bridge) for EIDE, USB, LPC bus to Super I/O, and PCI 2.2 Bus C with graphics controller / National Semiconductor® PC87417 Super I/O chip No PCI or PCI-X slots (expansion via modules or network-interface option connector)										
Ethernet controllers  Network-interface	Four gigabit 10/100/10 Wake on LAN® / Alert 4-port GB Ethernet S One connector for	Standard Format 1. Switch Module (the	0 / teaming a second co	and failo introller	ver support / requires a s	one of the second opt	controll ional E	ers connect thernet Sv	ts to an optional vitch Module)	'	
CD / diskette / USB	blades in a single Bl None / requests for panel	adeCenter must co	ontain the s	ame ex	pansion car	rd (or no e	xpańsio	on card)			
Kybd / video / mouse Graphics	None / requests for ke SVGA / ATI® Radeo								nt control pane	I	
Systems mgmt	Intel integrated Bas / on blade / provides event recording, ale	s system and envi rt capability / RS-4	ronmental ı 185 interfac	monitòri ce for	ng, ´	2.2Ghz/2N	/BI3	Cacha Pro	c Una	13N0656	
Diagnostics	communication with Light Path Diagnos component) and on-	stics™ (LED lights	indicate fa	iling	Xeon Xeon	2.7Ghz/2N 3.0Ghz/4N	/IB L3 /IB L3	Cache Pro Cache Pro	c Upg c Upg	13N0655 13N0654	
Security Software ship group	Power-on password unattended boot / se Documentation CD,	electable boot / un	attended st		de CD IBM I	PC2100 CL PC2100 CL HS40 SCS	2.5 EC 2.5 EC I Storg	C DDR-SD C DDR-SD e Expansi	SDRAM DIMM RAM RDIMM RAM RDIMM on Unit (blade		
Cooling fans Power supply Prerequisites	Uses cooling from B on each processor a Uses power module Monitor, keyboard, r disk, BladeCenter (t	nd BladeCenter mo (s) in BladeCente nouse for setup; o	odules and r (type 867 ethernet sw	front pa 7) ritch mo	por 36.40 36.40 73.40 146.8	ts; each po 3B 15K Ultr 3B 15K Ultr 3B 10K Ultr GB 10K Ultr GB 10K Ul	ort requ ca160 S a320 Sc ca160 S tra320	ires a FC S SCSI Hot-S CSI Hot-Sw SCSI Hot-S SCSI Hot-S	sion Card (witl Switch Module) wap SL HDD* /ap SL HDD* wap SL HDD* Swap SL HDD*	48P7061 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
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- activity, and power Predictive Failure Analysis® alerts on memory, processor(s), and optional disk(s) with IBM Director

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

#### **LIMITED WARRANTY**<sup>3</sup>

3 year parts and labor

Disk requires SCSI Storage Expansion Unit

- International Warranty Service<sup>3</sup>
- On site, 8 am 5 pm, Mon Fri coverage excluding holidays,
- next business day response time<sup>7</sup> 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 24x7<sup>14</sup> toll-free support forwarranty issues during the warranty period3

L3

Frontside

Disk

Disk

SCSI support with

IBM<sup>®</sup>

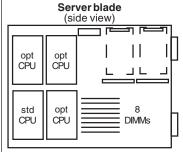
Required

Available

Mech-

Slots

Type-model Qty x Pro	cessor¹ Cache Me	mory Bus Mhz			tional expansion unit	x bays		chassis	date
8839-21X 1 x Xeon <sup>T</sup>	<sup>™</sup> 2.0GHz MP 1MB 1	GB 400Mh	z None None	None 2	hot-swap Ultra320	0x2	7U4 blade	BladeCenter	Apr 2004
Positioning Processor(s) L2/L3 cache SMP support Implementation	Ultra-dense, highly in 1 x Intel® Xeon 2.00 512KB L2 Cache / 4-way SMP / up to 1 Server blade contain one SCSI expansion.	GHz MP with 4 IMB L3 Cach four Xeon Pro is four Intel 60 connector, one	HOOMHz frontside e / on die of pro- cessors (same D4-pin micro-PG e I/O expansion of	e bus / Hyp ocessor / a speed/cach A ZIF sock option conn	per-Threading techi t processor speed ne size) kets, eight memory ector, and integrate	nology /	NetBurst™ slots,		ture
Memory	1GB std / 16GB max PC2100 266MHz reg DIMMs must be insta 100MHz / Error Che same chip and detect	gistered 184-p alled in match ecking and C	in ECC DDR-S ed pairs [a bank orrecting (ECC	DRAM DIM (] / 2-way n () via <b>16-bi</b>	lMs / eight DIMM onemory interleave of the checksum Chip	<sup>7</sup> dual ch <b>kill</b> ™ (c	nannel / me orrects 1, 2	emory bus run	is at 2 x
	None / <b>supports op</b> via one connector / CIOB-ES I/O Bridge 3.5" one-inch high S	LSI Logic® 53 (IMB2 bus to L SCSI disks	C1020 Ultra320 Host Bridge) / in front bays /	) SCSI con supports one 16-bit	troller [LVD 320Ml RAID-1 mirroring internal channel /	3/sec] / [Embed no cable	64-bit 133 dded Mirro es or exter	BMHz PCI-X B oring] with two mal connector	lus B fron hot-swa
SCSI disk bays	Supports max of two 80-pin SCA-2 connections of the Support for IRM Total	ctors / all SCS	l bays Ultra320	-enabled		-	oansion Ur	IIT /	
External storage  Mechanical	Support for IBM Total Supported in IBM Blad			-		-	as the IBM I	NetBAY™ Bac	k products
Architecture / chipsets	ServerWorks® Gran sone CIOB-X2 I/O Br ethernet and the I/O bus to Super I/O, ar	nd Champion idge (IMB2 bu expansion op id PCI 2.2 Bu		IC-LE5 Ho je) for two / CSB6 So cs controlle	st Bridge (memory PCI-X Buses with uth Bridge (Thin II er / National Semic	control Bus A f MB to H conductor	ller and I/C or etherne lost Bridge or® PC874	D Bridge) / do t and Bus B f ) for EIDE, US	uble slot or SB, LPC
Bus slots Ethernet controllers	No PCI or PCI-X slo Four gigabit 10/100/10	` '					,	MHz huege / ful	l dunley /
Network-interface CD / diskette / USB	Wake on LAN® / Alert 4-port GB Ethernet & One connector for blades in a single Bl None / requests for	Standard Form Switch Module I/O expansion adeCenter mu	nat 1.0 / teaming to (the second co noption / requi st contain the s	and failover entroller req res same i same expar	support / one of the juires a second op nterface modules i nsion card (or no e	controlle tional Et n bays ( xpansio	ers connects thernet Sw 3 and 4 of n card)	s to an optional itch Module) BladeCenter	/ all
Kybd / video / mouse Graphics	panel None / requests for ke SVGA / ATI® Radeor							nt control pane	I
Systems mgmt  Diagnostics	Intel integrated Bas / on blade / provides event recording, ale communication with Light Path Diagnos component) and on-l	s system and rt capability / BladeCenter stics™ (LED li	environmental i RS-485 interfact management m ghts indicate fa	monitoring, ce for lodule liling	Xeon 2.0Ghz/1l 512MB PC2100	CL2.5 E	CC DDR-S	DRAM DIMM	13N065 <sup>-</sup> 33L5038 33L5039
Security Software ship group	Power-on password unattended boot / se Documentation CD,	/ administratelectable boot	or password / / unattended st	tart mode	2GB PC2100 CL IBM HS40 SCS IBM HS40 Fibre	2.5 ECC I Storge Chanr	DDR-SDF Expansionel Expans	RAM RDIMM on Unit (blade)	33L5040 26K4847 1 two
Cooling fans Power supply Prerequisites	Uses cooling from Bi on each processor a Uses power module Monitor, keyboard, r disk, BladeCenter (t	nd BladeCente (s) in BladeC nouse for set	er modules and enter (type 867 up; ethernet sw	front panel 7) ritch modul	36.4GB 15K Ultr 36.4GB 15K Ultr 73.4GB 10K Ultr	ra160 S a320 SC ra160 S Itra320 S	CSI Hot-Sv SI Hot-Swa CSI Hot-Sv SCSI Hot-S	wap SL HDD* ap SL HDD* wap SL HDD* Swap SL HDD*	06P5768 06P5776 06P5756



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

- Blade location
- Overtemperature
- Information
- Powergood
- · 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)
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Maximum internal disk capacity for each HS40 blade server13

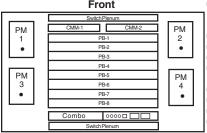
293.6GB\* with two 146.8GB SL SCSI disks

- 3 year parts and labor
- International Warranty Service<sup>3</sup>
- On site, 8 am 5 pm, Mon Fri coverage excluding holidays,
- next business day response time<sup>7</sup> 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

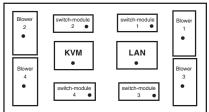
  - (ServicePac part num 69P9518)

    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
- 24x7<sup>14</sup> toll-free support forwarranty issues during the warranty period3

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



Rear



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

Weight: 98 to 192 lb; 44.5 to 87.38kg

Stealth black color bezel

Tool-free customer serviceability

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

Air Intake Filtering

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

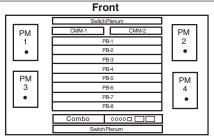
Bay	Switch Function
1 2 3	Ethernet link 1 for all blade servers Ethernet link 2 for all blade servers Network connection 1 for all blade server
	I/O expansion options (Gb Ethernet/Fibre Channel)
4	Network connection 2 for all blade server I/O expansion options (Gb ethernet/Fibre Channel)

#### **LIMITED WARRANTY**<sup>3</sup>

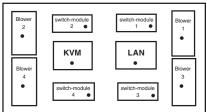
- ⇒ 3 year parts and labor
   ⇒ International Warranty Service³
   ⇒ On site, 8 am 5 pm, Mon Fri coverage excluding holidays, next business day response time next business day response time7
- On site service upgrade options (in
  - 3 year IOR 24x7, 2 hr avg response
     (ServicePac® part num 21P2065)
     3 year IOR 24x7, 4 hr avg response
  - (ServicePac part num 30L9185)
  - 3 year IOR 9x5, 4 hr avg response (ServicePac part num 41L2736)
    5 year IOR 9x5, 4 hr avg response
  - (ServicePac part num 69P9207) 5 year IOR 24x7, 2 hr avg response
  - (ServicePac part num 69P9205) Other ServicePac options at http://www.ibm.com/services/us/
- 24x7<sup>14</sup> toll-free support for warranty issues during the warranty period3

its/pdf/wamomxeu.pdf

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



Rear



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

Weight: 98 to 192 lb; 44.5 to 87.38kg

Stealth black color bezel

Tool-free customer serviceability

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

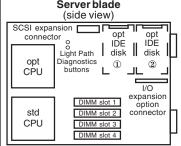
Air Intake Filtering

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

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

- ⇒ 3 year parts and labor
   ⇒ International Warranty Service³
   ⇒ On site, 8 am 5 pm, Mon Fri coverage excluding holidays, novt business day response times. next business day response time7
- On site service upgrade options (in
  - 3 year IOR 24x7, 2 hr avg response
     (ServicePac® part num 21P2065)
     3 year IOR 24x7, 4 hr avg response
  - (ServicePac part num 30L9185) 3 year IOR 9x5, 4 hr avg response (ServicePac part num 41L2736)
  - 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
- 24x7<sup>14</sup> toll-free support for warranty issues during the warranty period3

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



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

- 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 Service<sup>3</sup>
- On site, 8 am 5 pm, Mon Fri coverage excluding holidays,
- next business day response time<sup>7</sup> 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
- 24x7<sup>14</sup> toll-free support forwarranty issues during the warranty period3

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IBM® Type-GAV Processor	GHz <sup>1</sup>	L2 cache	FSB MHz	Memory	Disk	Disk controller	Disk bays	SCSIS optional	stor exp u	n slots nit x bays	Mech- s anical	Ethernet	Available date
8843-LTy 1 x Xeon <sup>T</sup> 8843-4Ty 1 x Xeon	<sup>™</sup> 2.8 Low Vo 3.6GHz		800									2 x Gigabit 2 x Gigabit	Feb 2005 Feb 2005
Processor(s) SMP - L2 Cache Implementation	1 x Intel® Xee Threading tec 2-way SMP / Systemboard expansion op	chnology up to to contain	y / Lo\ wo Xe ıs two	w Voltage on Proce Intel 604	e Proce essors I-pin m	cessors re (same spe iicro-PGA	duce heat ed/cache ZIF socke	output fo size) / <b>1N</b> ts, four D	r increased <b>1B</b> std and IMM slots, (	rack den: I max / at	sity without ir processor sr	CC Cache / H ncreased cool peed connector, one	ing capacity
Memory	512MB/1GB PC2-3200 40 installed in m	OMHz (	CL2.5	ECC DD	R2-SD	RAM DIM	IMs / four	240 pin g	old-connect nnel /	or slots or	n systemboa	rd / DIMMs m	iust be
SCSI disk controller	LSI Logic® 58 PCI-X / supported channel: one	orts <b>RA</b> l 2-drop	I <b>D-1 &amp;</b> 16-bit	: <b>1E mirr</b> 68-pin I \	oring( /D.SC:	(supported SL cable	l in 32-bit l	egacy mo	de only) /	One 16-bi	t channel (or	ne internal) / <i>Ii</i>	nternal
SCSI Disk bays External Storage	Two 2.5-inch disks in optio Support for IE	nal SCS	SI Stor	age Expa	ansion	Unit (80-p	in SCA-2	connector	s; <b>all SCSI</b>	bays Ultr	two hot-swap a320-enable	p 3.5" SL Ultr <b>ed</b> ) /	a320 SCSI
Mechanical Architecture/Chipset	7U Blade / St Intel E7520 d BUS / ICH5R interface	chipset	/ E752	25 MCH	(Memo	ory Contro	ller Hub) fo	or PCI-Exi	oress bridge ow Pin Cou	e to PXH, unt Interfac	ICH5R / PXI ce / NS PC87	H BUS suppo 7366 Super I/0	rts PCI-X O off LPC
BUS slots		CI-X slo	ts (exp	oansion v	ria mod	dules or ne	etwork-inte	rface opti	on connect	or)			
Network Interface  CD / Diskette / USB Kybd / video / mouse Graphics controller	No PCI or PCI-X slots (expansion via modules or network-interface option connector)  Dual gigabit 10/100/1000 ethernet controller / Broadcom 5704S / two full gigabit ethernet MAC and PHY layer functions / chip on blade / PCI-X 64-bit 100MHz / full duplex / Wake on LAN® / PXE 2.0 Boot agent / Alert Standard Format 2.0 / Failover, adapter fault tolerance / Load balancing or teaming / one of the dual controllers connects to an optional, supported Ethernet switch or Optical Passthrough Module (the second controller requires a second optional switch or OPM)  One connector for I/O expansion option (Fibre Channel Expansion Card) / requires same interface modules in bays 3 and 4 of BladeCenter / all blades in a single BladeCenter must contain the same expansion card (or no expansion card) / ethernet and serial I/O expansion cards planned for future release <sup>20</sup> None / requests for CD-ROM, diskette drive, and USB port in BladeCenter by pressing CD select button on front control panel None / requests for keyboard, mouse, and video in BladeCenter by pressing the display button on front control panel SVGA / ATI® Radeon™7000M on Planar / 16MB SDRAM std and max / 15 pin connector												
Systems Mgmt	IBM Basebo recording, ale intermanager Management	ert capal nent co	oility / mmun	RS-485 i	nterfac	e`for ´	H8S2168	on blade	e / provides	system a	nd environm	ental monitori	ng, event
Diagnostics	Light Path D component) a BIOS)	)iagnos	tics™	(LED ligi diagnosti	hts ind ics (via	icate failin PC-Doct	g or in	Xeon 3. 512MB	6 GHz/800 (2x256) PC	/1MB L2 ( )2-3200 E	Volt EM64T Cache EM64 CC DDR2	T Proc Upg	13N0699 13N0659 73P3522
Security	No security ir administrator selectable bo	ntrusion passwo	proted ord / ui ttende	ction / Ponattended	wer-or d boot ode	n passwor	d /	2GB (2) 4GB (2)	k1GÉ) PC2 k2GB) PC2	-3200 EC	C DDR2 Chi	pK RDIMM K pK RDIMM K	it 73P2867
Software ship group	Documentation	on CD,	Broad	com CD				IBM 730	GB 10K Ult	ra320 SC	CSI 2.5"SFF SI 2.5" SFF N	NHS HDD NHS HDD	90P1312 90P1313
Cooling Fans  Power supply(s)  Prerequisites	Uses cooling sensors on e front panel Uses power i Monitor, keyb disk, BladeCo	ach pro module( ooard, m	cesso s) in E nouse	r and Bla BladeCen for setup	ídeCer ter T (f ; ether	nter modul type 8720 net switch	es and /30)	BladeCo BladeCo BladeCo BladeCo 17-inch	enter SFF ( enter Optica enter SCSI Flat Panel	Fibre Char Gigabit Ethal Pass-th Storage E Monitor Co	nnel Exp Car nernet Exp C	ard nit US Kybd	26K4817 26K4841 26K4842 02R9080 26K4817 17231UX

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SCSI Support with

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

#### Server blade (side view) SCSI expansion عالت opt SFF opt S | SFF | SFF | SFF | SFF | SFF | L Diagnostics JL <sup>②</sup> opt CPU buttons I/O expansion DIMM slot 1 option std DIMM slot 2 connector CPU DIMM slot 3 DIMM slot 4

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

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

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

- 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 server<sup>13</sup>: 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 Service<sup>3</sup>
- On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time
- On site service upgrade
- options (in eligible locations):<sup>7</sup>
   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 24x7<sup>14</sup> toll-free support for warranty issues during the warranty period<sup>3</sup>

Frontside

L3

IBM<sup>®</sup>

Required

Available

Mech-

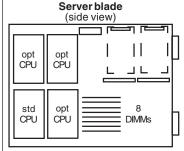
Type-model Qty x Pro	cessor¹ Cache Memo	ory Bus Mhz	Disk controller		optional exp. unit	x bays	anical	chassis	date
8839-6TX 1 x Xeon <sup>T</sup>	<sup>™</sup> 2.8GHz MP 2MB 2GI	3 400Mhz	None None	None	2 H-S Ultra320	0x2	8U4 blade	BladeCenter T	Mar 2004
Positioning Processor(s) L2/L3 cache SMP support Implementation	Ultra-dense, highly may Up to 1 x Intel® Xeon 512KB L2 Cache / 2M 4-way SMP / up to fou Server blade contains one SCSI expansion c	<b>2.8GHz MP B L3 Cache</b> or Xeon MP four Intel 60	with 400MHz fro / on die of pro Processors (sar 4-pin micro-PG	ontside bus cessor / at me speed/o A ZIF sock	/ Hyper-Threadi processor spee cache size) ets, four memor	ng techr d y DIMM	nology / Noslogy	etBurst™ microa	
Memory	2GB std / 16GB max¹³ / two slots used / six slots available / eight total slots PC2100 266MHz registered 184-pin ECC DDR-SDRAM DIMMs / four DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / memory bus runs at 2 x 100MHz / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill™ (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips) / memory can be mixed								
SCSI disk controller	None / supports optional SCSI Storage Expansion Unit (a blade occupying adjacent blade slot / connects to HS20 via one connector / LSI Logic® 53C1020 Ultra320 SCSI controller [LVD 320MB/sec] / 64-bit 133MHz PCI-X Bus B from CIOB-ES I/O Bridge (IMB2 bus to Host Bridge) / supports RAID-1 mirroring [Embedded Mirroring] with two hot-swap 3.5" one-inch high SL SCSI disks in front bays / one 16-bit internal channel / no cables or external connector) Supports max of two hot-swap 3.5" SL Ultra320 SCSI disks in optional SCSI Storage Expansion Unit / 80-pin SCA-2 connectors / all SCSI bays Ultra320-enabled								
External storage	Support for IBM TotalS				NAS family of p	roducts)			
Mechanical	Supported in IBM Blade	Center (type	8677) / BladeCe	nter suppor	ted in 28" deep ra	cks sucl	n as the IB	M NetBAY™ Ra	ck products
Architecture / chipsets Bus slots	ServerWorks® Grand sone CIOB-X2 I/O Bridg ethernet and the I/O e bus to Super I/O, and No PCI or PCI-X slots	je (IMB2 bu: kpansion op PCI 2.2 Bus	s to Host Bridge tion 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 otor® PC87	net and Bus B ae) for EIDE. U	JSB. LPC
Ethernet controllers	Four gigabit 10/100/1000 ethernet controllers / Intel 82545GM/82546EB / on blade / two PCI-X 64-bit 100MHz buses / full duplex / Wake on LAN® / Alert Standard Format 1.0 / teaming and failover support / one of the controllers connects to an optional 4-port GB Ethernet Switch Module (the second controller requires a second optional Ethernet Switch Module)  Two connectors for I/O expansion option (Fibre Channel Expansion Card) / requires same interface modules in bays 3 and 4 of BladeCenter / all blades in a single BladeCenter must contain the same expansion card (or no expansion card) / ethernet and serial I/O expansion cards planned for future release <sup>20</sup>								
Network-interface									
	None / requests for KD-expansion cards planned for intuite release.  None / requests for CD-ROM, diskette drive, and USB port in BladeCenter by pressing CD select button on front control panel by None / requests for keyboard, mouse, and video in BladeCenter by pressing the display button on front control panel SVGA / ATI® Radeon 7000 / on blade / 16MB SDRAM std/max / 32-bit 33MHz PCI 2.2 bus								
Systems mgmt	Intel integrated Basel / on blade / provides sevent recording, alert communication with Bl	ystem and e capability / F	environmental n RS-485 interfac	nonitòring, i e for	512MB PC210 1GB PC2100 (	0 CL2.5 CL2.5 E0	ECC DDR	I-SDRAM DIMM DRAM RDIMM	13N0653 33L5038 33L5039 33L5040
Diagnostics	Light Path Diagnostic component) and on-box	s™ (LED liç	ghts indicate fai	iling	2GB PC2100 CL2.5 ECC DDR-SDRAI IBM HS40 SCSI Storge Expansion IBM HS40 Fibre Channel Expansion		sion Unit (blade Insion Card (wi	e) 26K4847 th two	
Security Software ship group	Power-on password / unattended boot / sele Documentation CD, IB	ctable boot	/ unattended sta	art mode Driver CD	ports; each port requires a FC Switch Module) 48P7061 IBM HS40 40GB <sup>2</sup> 5400 rpm ATA-100 HDD 48P7063 36.4GB 15K Ultra160 SCSI Hot-Swap SL HDD* 06P5768 36.4GB 15K Ultra320 SCSI Hot-Swap SL HDD* 06P5776 73.4GB 10K Ultra160 SCSI Hot-Swap SL HDD* 06P5756 146.8GB 10K Ultra320 SCSI Hot-Swap SL HDD* 32P0728 * Disk requires SCSI Storage Expansion Unit				
Cooling fans Power supply Prerequisites	Uses cooling from Blac on each processor and Uses power module(s) Monitor, keyboard, mo disk, BladeCenter (typ	eCenter (typ BladeCente in BladeCe use for setu	pe 8677) / therm r modules and f enter (type 8677 p; ethernet swi	nal sensors ront panel 7)					

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 Service<sup>3</sup>
   On site, 8 am 5 pm, Mon Fri coverage excluding holidays,
- next business day response time<sup>7</sup> 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
- 24x7<sup>14</sup> toll-free support for warranty issues during the warranty period3

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

- MHz/GHz only measures microprocessor internal clock speed; many factors affect application perfomance.
- MB/GB/TB = 1 million/billion/trillion bytes when referring to storage capacity. Accessible capacity is less; up to 3GB is used in service partition.
- For terms and conditions or a copy of IBM's Statement of Limited Warranty, call 1 800 772-2227 in the U.S. Copies available upon request. Telephone support may be subject to additional charges. For onsite labor, IBM will attempt to diagnose and resolve the problem remotely before sending a technician. International Warranty Service is available in any country in which this product is sold and serviced. Service delivery methods and parts availability vary by country, may be different from that in the country of purchase, and are subject to change without notice. Fees and restrictions may apply in some countries.
- <sup>4</sup> 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.
- <sup>6</sup> 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.
- <sup>9</sup> Some software may differ from retail version (if any) and may not include user manuals or all program functionality. Software license agreements may apply.
- <sup>10</sup> Updated drivers and hot-swap services for certain operating systems may be required to support PCI hot-swap functions.
- <sup>11</sup> Fire GL1, Fire GL2 and Fire GL4 are trademarks of ATI Technologies, Inc., and are used under license.
- <sup>12</sup> 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.
- <sup>14</sup> Response times may vary. May exclude some holidays. Telephone support may be subject to additional charges.
- <sup>15</sup> 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.
- <sup>17</sup> 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.
- <sup>22</sup> 16GB Memory max with PC2700 DIMMs, 8GB Max with PC3200 DIMMs



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