IBM @server™xSeries Education

xSeries Reference (xREF)

including

IBM @server™ IntelliStation™ / xSeries™ / BladeCenter™

August 30, 2005

xref@us.ibm.com

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IBM @server™ xSeries™ 206

xREF by eServer Field Skills Enablement Team

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For GAV systems, lowercase ">	x" should be replaced with a	country-specific code			eserver rield skills i	and the second second
IBM® Machine		L2 FSB cache MHz Memory	Disk	Disk Maximum controller Capacity	PCI slots Hard x bays disk bays	Available Ethernet date
 № 8482 1Rx 14X Pe № 8482 1Sx 15X Pe № 8482 2Mx 21X Pe № 8482 2Rx 24X Pe № 8482 2Sx 25X Pe № 8482 3Mx 31X Pe № 8482 3Rx 34X Pe 	entium 4 2.8 entium 4 3.0 entium 4 3.0 entium 4 3.0 eleron® 2.4	1MB 800 512MB 1MB 800 512MB 1MB 800 256MB 1MB 800 512MB 1MB 800 512MB 1MB 800 512MB 1MB 800 256MB 128KB 800 512MB 1MB 800 512MB 1MB 800 512MB 1MB 800 512MB 1MB 800 512MB	None 36.4GB U320 None 36.4GB U320 None 80GB SATA None 36.4GB U320 None	SCSI 440.4GB SCSI 587.2GB SATA 320GB SCSI 440.4GB SCSI 587.2GB SATA 320GB SATA 320GB SATA 320GB SATA 320GB SCSI 440.4GB SCSI 587.2GB SATA 320GB SCSI 587.2GB SATA 320GB SCSI 587.2GB SATA 320GB	5 x 7 4 fixed 5 x 7 2 simple-swap 5 x 7 3 hot-swap 5 x 7 4 fixed 5 x 7 2 simple-swap 5 x 7 2 simple-swap 5 x 7 3 hot-swap 5 x 7 4 fixed	Gigabit Apr 2004 Gigabit Jun 2004 Gigabit Jun 2004 Gigabit Jun 2004
Positioning Processor(s) L2 cache Implementation SMP support	Intel [®] Pentium 4 2 Up to 1MB std and Motherboard conta one AGP slot, ethe		n 800MHz front d cket (processor/	side bus (FSB) or L2 cache in FC-PG		
Memory	PC2700 333MHz E0 All Error Checking	CC DDR-SDRAM (model and Correcting (ECC) /	Is 1xx and 2xx) / DIMMs and EC	PC3200 400MHz EC C memory controller	et used / PC3200 support CC DDR-SDRAM (models / industry std / unbuffered e added in matched pairs	s 3xx) / /
SCSI disk controller IDE disk controller SATA disk controller Cables Disk RAID Controller	Enhanced IDE / AT Some: dual chann One 2-drop EIDE (Some: 36.4GB U32 IBM ServeRAID™ 7	20 SCSI / 10,000 rpm / -	O Controller Hul (150MB/sec) Some: one 5-dr 4.7 ms seek / 5 anar / supports	o / one connector o op LVD SCSI cable Some: 80GB SATA /	n planar e / <i>Some:</i> two 1-drop S/ / 7,200 rpm / 9.0 ms / A/ rface / supports ServeF	<i>l:</i> S.M.A.R.T.
Rack support Bus slots (see below) Chipset	One PCI bus / three Intel E7210 chipse	e 32-bit 33MHz 5v PCI 2 et / Memory Controller C, USB, Low Pin Count	2.2 slots / two 64 Hub (MCH) / I/C	Controller Hub (IC	CI-X slots / no hot-swap / CI-S) for PCI 2.2 and P(PLPC47M192 Super I/O	CI-X bus, ATA-100
Ethernet CD-ROM / diskette Ports	Preboot eXecution CD-ROM: 48X-20X		/ake on LAN® / / k <i>ette:</i> 3.5" 1.44	Alert Standard Form MB diskette drive		hernet (RJ-45),
Diagnostics Systems mgmt cntrl	Monitors system a	nd processor temperat	ure, fan speed	and failure, and vo	tored on IBM Enhanced E Itages / s health monitoring and	Ū į
Graphics controller Security	PCI 2.2 32-bit 33MH	l / 16MB SDRAM std/max lz / on planar / analog 15- .nel key lock / optional L	pin D-Sub conn	512MB PC2700 CI 1GB PC2700 CL2.	L2.5 ECC DDR UDIMM L2.5 ECC DDR UDIMM 5 ECC DDR UDIMM	06P4053 06P4054 06P4055
	via knockout / pow	ver-on password / boot without keyboard/mou	sequence	512MB PC3200 Cl 1GB PC3200 CL2. IBM 80GB 7200 rp	L2.5 ECC DDR UDIMM L2.5 ECC DDR UDIMM 5 ECC DDR UDIMM om simple-swap SATA-	
Software	installation and cor	D-based automated ne nfiguration tool), IBM D mgmt software) and m	irector	32X/10X/40X/16X) rpm hot-swap U320 H Max ⁶ CD-RW/DVD (bla rvisor Adapter II (PCI a er-to-Rack Kit	ck) 22P6973
Keyboard / mouse Cooling fans Power supply	Three fans (fansink on SCSI models / r 340 watts / univers Restart (ASR) / no	bard / IBM mouse (both s, rear, pwr supply) plus not redundant / not hot- ial / auto switch / Auton t hot-swap /no redunda er supply (variable spee	s additional fan swap natic Server Incy /	IBM 40/80GB DLT IBM NetBAY11 Sta		9306110
Slot 2: fullsize Slot 3: fullsize Slot 4: fullsize Slot 5: fullsize Slot 5: fullsize Bay 0 Bay 0 Bay 3 Bay 4 Bay 6 Bay 6 Bay 6 Bay 7 (some disk Mini-tower Stealth black	3.5", SL 1", acce 3.5", SL 1", acce 3.5", SL 1", acce 3.5", SL 1", acce 3.5", SL 1", acce	I-X (3.3v) I 2.2 (5v) I 2.2	memory) invoke startup Advanced Confii Interface (ACPI) Device Drivers a CD-ROM include Four stabilizing fi Handle grip on to H 17.25" x W 6. H 448mm x W 1 35 to 42 pounds Iaximum SATA 20GB ¹³ (2 disks	etup Utility (in flash d by pressing F1 at guration Power 1.0 nd Diagnostics ed bet 5" x D 19.0" 65mm x D 483mm (15.9 to 19.1kg) <i>capacity:</i> x 160GB) <i>ap SCSI capacity:</i> is x 146.4GB) <i>CSI capacity:</i>	LIMITED WA 1 year parts and labs 1 year parts and labs 1 year parts and labs 1 year parts and labs 1 year lona Warrar 0 n site, 8 am-5 pm, Mon-Fri excluding h next business day ra 0 n site service upgr options (in eligible la 1 year lOR 24x7, 2 (ServicePac part nu 1 year IOR 9x5, 4 (ServicePac part nu 1 year IOR 9x5, Ni (ServicePac part nu 2 year IOR 9x5, Ni (ServicePac part nu 2 year IOR 9x5, Ni (ServicePac part nu 1 year IOR 9x5, Ni (ServicePac part nu 2 year IOR 9x5, Ni (ServicePac part nu 2 year IOR 9x5, Ni (ServicePac part nu 1 year IOR 9x5, Ni (ServicePac part nu 2 year IOR 9x5, Ni (ServicePac part nu 1 year IOR 9x5, Ni (ServicePac part nu 1 year IOR 9x5, Ni (ServicePac part nu 2 year IOR 9x5, Ni (ServicePac part nu 1 year IOR 9x5, Ni 1 year	Ity Service ³ olidays, seponse time ade ocations): ⁷ thr avg response im 69P9512) thr avg response im 69P9510) BD response ium 69P9509) ptions at i/ wamomxeu.pdf port for warranty

IBM @server™ xSeries™ 206 (August 2004)

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For GAV systems, lowercase "v	" should be replaced with a country-specific code.	
IBM [®] Machine Type GAV model	L2 FSB	Disk Maximum PCI slots Hard Available controller Capacity x bays disk bays Ethernet date
8482 - 4My -41x Pent 8482 - 4Ry -44x Pent 8482 - 4Sy -45x Pent 8482 - 5My -51x Pent 88842 - 5My -51x Pent 8842 - 5Sy -55x Pent	ium 4 EM64T 3.2 1MB 800 512MB 36.4GB U320 ium 4 EM64T 3.2 1MB 800 256MB None ium 4 EM64T 3.4 1MB 800 512MB None ium 4 EM64T 3.4 1MB 800 512MB 36.4GB U320	SATA 500GB 5 x 7 2 simple-swap Gigabit Aug 2004 SCSI 440.4GB 5 x 7 3 hot-swap Gigabit Jan 2005
L2 cache Implementation	Up to 1MB std and max / ECC / full speed	ness needs and budgets timized for Extended Memory 64 Technology (EM64T) /L2 cache in FC-PGA2), four DIMM sockets, three 33MHz
SMP support	No SMP support / no processor upgrade	
	256MB or 512MB / 4GB ¹³ max / four 184-pin gold-plated DIM SDRAM / All Error Checking and Correcting (ECC) / DIM Latency 3 (CL3) / apart from single-DIMM configurations, mem	Vis and ECC memory controller / industry std / unbuffered / CAS
IDE disk controller SATA disk controller Cables Disk	One 2-drop EIDE cables (to CD-ROM) / 4My & 4Ry: one 4Ry: 36.4GB U320 SCSI / 10,000 rpm / 4.7 ms seek / S.	b / one connector on planar supports 2 drives standard / supports 4 drives with adapter e 5-drop LVD SCSI cable / <i>4Sy</i> : one 2-drop SATA cable
Rack support Bus slots (see below) Chipset	4U ⁴ rack mount support via tower-to-rack kit option One PCI bus / three 32-bit 33MHz 5v PCI 2.2 slots / two 6-	i4-bit 66MHz 3.3v PCI-X slots / no hot-swap Active™ PCI slots O Controller Hub (ICH-S) for PCI 2.2 and PCI-X bus, ATA-100
CD-ROM / diskette Ports Diagnostics	10/100/1000 gigabit / Intel Kenai II / on planar / full duplex Preboot eXecution Environment (PXE) / Wake on LAN [®] / <i>CD-ROM:</i> 48X-20X ⁶ CD-ROM, IDE / <i>Diskette:</i> 3.5" 1.44I <i>Front:</i> two USB (Ver 2.0); <i>Back:</i> two serial (9-pin), paralle monitor (analog DB-15) Diagnostic LEDs / error LEDs for fans and memory / server d Monitors system and processor temperature, fan speed	Alert Standard Format 2.0 MB diskette drive lel, two USB (Ver 2.0), keyboard, mouse, ethernet (RJ-45), diagnostic programs stored on IBM Enhanced Diagnostics CD
	support for optional Remote Supervisor Adapter II (SVGA / ATI® Radeon™ 7000M / 16MB SDRAM std/max / on p	(provides continuous health monitoring and control)
Security	Mechanical side panel key lock / optional U-Bolt support via knockout / power-on password / boot sequence control / operation without keyboard/mouse / cover tamper detect switch / ASF 2.0	256MB PC3200 CL3 ECC DDR UDIMM 06P4049 512MB PC3200 CL3 ECC DDR UDIMM 06P4050 1GB PC3200 CL3 ECC DDR UDIMM 06P4050 1BM 80GB SATA-150 (7.2K) simple-swap HDD 73P8002
	ServerGuide™ (CD-based automated network OS installation and configuration tool), IBM Director (system hardware mgmt software) and many utilities	IBM 160GB SATA-150 (7.2K) simple-swap HDD 73P8003 IBM 250GB SATA-150 (7.2K) simple-swap HDD 73P8006 IBM 36.4GB 10K hot-swap U320 HDD 32P0726 IBM 73.4GB 10K hot-swap U320 HDD 32P0724
Cooling fans Power supply	IBM 101 key keyboard / IBM mouse (both black) Three fans (fansink, rear, pwr supply) plus additional fan on SCSI models / not redundant / not hot-swap 340 watts / universal / auto switch / Automatic Server Restart (ASR) / not hot-swap /no redundancy / cooling fan in power supply (variable speed)	IBM 146.8GB 10K hot-swap U320 HDD 32P0725
Slot 2: fullsize, Slot 3: fullsize, Slot 4: fullsize, Slot 5: fullsize, Slot 5: fullsize, and the state of the state and the state of the state of the state and the state of the state of the state Stealth black of the state of	32-bit 33MHz, PCI 2.2 (5v) memory) invoke startup 32-bit 33MHz, PCI 2.2 (5v)	 a tyear parts and labor I year parts and labor International Warranty Service³ On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time On site service upgrade options (in eligible locations):⁷ 3 year IOR 24x7, 2 hr avg response (ServicePac part num 69P9512) 3 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9511) 3 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9510) 3 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9510) 3 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9509) Other ServicePac options at http://www.ibm.com/ services/us/its/pdf/wamomxeu.pdf

See footnotes for important warranty information = Models announced January 18, 2005

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IBM @server™ xSeries™ 225 (8649) (January 2004)

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		•	c) (canaary	,				a de la seconda de
IBM® Type-model Processor	L2 GHz ¹ cache	FSB MHz Memory	Disk	Disk controlle	Hot-swap er disk bays	PCI slots x bays	Power supply number and type	Availa Ethernet d
8649-42X 1 x Xeon ⁺ 8649-4AX 1 x Xeon 8649-52X 1 x Xeon 8649-52X 1 x Xeon 8649-52X 1 x Xeon 8649-62X 1 x Xeon 8649-62X 1 x Xeon 8649-62X 1 x Xeon	 ▲ 2.67 512KB 2.67 512KB 2.67 512KB 2.88 512KB 2.88 512KB 2.88 512KB 3.06 512KB 3.06 512KB 3.06 512KB 3.06 512KB 	533 512MB 533 512MB 533 512MB	36.4GB ² Ultra320 None (open-bay 36.4GB Ultra320 None (open-bay None (open-bay 36.4GB Ultra320 None (open-bay None (open-bay) Ultra32 10K Ultra32) Ultra32) Ultra32 10K Ultra32) Ultra32) Ultra32	0 6 hot-swap 0 None (4 fixed 0 6 hot-swap 0 6 hot-swap 0 None (4 fixed 0 6 hot-swap	6 x 9 6 x 9 6 x 7 6 x 9 6 x 9 6 x 9	One fixed One fixed Two redundant One fixed Two redundant One fixed One fixed Two redundant	Gigabit Feb 20 Gigabit Feb 20 Gigabit Feb 20 Gigabit Feb 20 Gigabit Feb 20 Gigabit Feb 20
Processor(s) SMP - L2 Cache Implementation	1 x Intel® Xeou 2-way SMP / u Systemboard o PCI [used by g	n up to 3.06 G up to two Xeon contains two Inte raphics], one ur	Hz with 533MHz fr Processors (same s el 604-pin micro-PG navailable AGP), an	rontside bus speed/cache s A ZIF sockets d integrated S	(FSB) / Hyper-Thr ize) / 512KB std a , four DIMM slots, CSI and ethernet	eading tec and max / seven slot	hnology at processor spee s (one PCI 2.2, fou	d ur PCI-X, one Mir
Memory	DDR-SDRAM	DIMMs / four D	slots used / two slot IMM gold-connector al channel / Error (and detects 2- thro	r slots on svste	emboard / DIMMs i	must be in	stalled in matched	pairs [a bank] / kill™ (corrects 1 ind greater DIMN
IDE disk controller SCSI disk controller SCSI channels and cables	SCSI cable to (6-bay backplan	A-100 / integrated i hannel Ultra320 S(imbedded Mirroring) ly in Slot 4) Two 16 SCSI cable from sy c; External channel , one 2-drop EIDE / / 10K rpm / 4.7 ms	l: cable availab	ble as option pn 24	P7929 from	models, one i-ard	ע וווע-סט ווט-טו ע
Disk - features Rack support Bus slots (see below) Chipset	4U ⁴ rack moun	nt support via to		n Mini PCI /one	AGP 8X (not avai	lahle) / no	hot-swap Active™ P64H2 for two PC ntroller Hub (ICH4 6 Super I/O off LP(PCI slots I-X buses (Bus A) for PCI 2.2 bus C interface
Ethernet CD-ROM / diskette Ports Diagnostics Systems mgmt cntrl	One gigabit 10/ chip on planar / <i>CD-ROM:</i> 48X <i>Front:</i> two USI monitor (analog Diagnostic LED	/100/1000 ether / PCI-X 64-bit 1 -20X ⁶ CD-ROM B (Ver 2.0); <i>Ba</i> g DB-15), micro Ds / error LEDs	net controller / Broa 00MHz / full duplex I, IDE / <i>Diskette:</i> 3.5 <i>ick:</i> two USB (Ver 2 phone-in (mono), lir for fans and memo	dcom BCM57(/ Wake on LAI 5" 1.44MB disk 2.0), two serial ne-in (stereo), ny / server dia	D3i / full gigabit ethe N [®] / Alert Standard (ette drive (9-pin), parallel, ke line-out (stereo) gnostic programs s	ernet MAC Format 1. yboard, m stored on I	and PHY layer fur 0 / one rear RJ-45 ouse, ethernet (RJ BM Enhanced Dia	nctions / port -45), gnostics CD
Graphics controller Security	Mechanical sid hot-swap mode power-on pass	le panel key loc els) / optional U word / boot sec	k (locks hot-swap c Bolt support via kno juence control / ope urity slot (for opt ca	disks on ockout / eration ble lock)	Xeon 2.67 GHz/53	33/512KB 33/512KB 33/512KB) CL2.5 EC	L2 Cache Proc Up L2 Cache Proc Up L2 Cache Proc Up CC non-Chipkill DIN	og 24P786 og 24P805 og 24P812
Software	ServerGuide™ and configuration software) and r	on tool), IBM D	tomated network O irector (system hard	S installation ware mgmt	1GB PC2100 CL2 2GB PC2100 CL2 IBM 73.4GB 10K	2.5 ECC D 2.5 ECC D Ultra320 S	DR-SDRAM DIMM DR-SDRAM DIMM CSI 68-pin (not ho	1 33L503 1 33L504 t-swp) 32P072
Keyboard / mouse Cooling fans Power supply(s)	up to six / three power supply c <i>All:</i> not reduce <i>Some:</i> one 42! <i>xBX:</i> two 514 <i>All:</i> univers. Restart (ASR)	e for processor age fans (three dant / not hot-sv 5 watt std and r 4 watt std and n al / voltage-sen / cooling fan in	nouse (both black, ('s), memory, and di in dual power supp vap / all variable spe nax / not hot-swap nax / hot-swap / red sing / Automatic Se power supply(s) (va	s-pin PS/2) sk bays / two bly model) eed undant erver ariable sod)	IBM 146GB 10K U 40X/12X/40X Max IBM Remote Supe IBM 4U Extended IBM ServeRAID-5	Ultra320 S tra320 SC Jltra320 SC & CD-RW ervisor Ada Depth To i Controlle i Controlle	CSI Hot-Swap SL SI Hot-Swap SL H CSI Hot-Swap SL I internal (black) apter II (PCI adapte wer-to-Rack Kit r (adapter for Slot 4 r (adapter for Slot 4	HDD 06P577 DD 32P072 HDD 32P072 22P697 er) 59P298 59P48 4) 25P348
CD-ROM Bay Bay Hot-size	t 100MHz, PCI-) t 100MHz, PCI-) t 100MHz, PCI-) t 100MHz, PCI-) t 11, 32-bit 33MH 8X Pro50 (1.5v) pt IBM ServeRA 1 5.25", HH 1.6 2 5.25", HH 1.6 3 3.5", SL 1", n 5 3.5", SL 1", n 6 3.5", SL 1", n 6 3.5", SL 1", n 6 3.5", SL 1", n 7 3.5", SL 1", n	X 1.0 (3.3v) X 1.0 (3.3v) X 1.0* (3.3v) exx X 1.0 (3.3v) Iz (5v) - used gr) - unavailable ND-5i 5", access, CD- 5", access, Oper access, oper access, diskr AX and 6BX: ", SL 1", acces 62X: to access, not h to access, not h	 Rem. Conf. press BIOS BIOS Conf. press BIOS Conf. Portes DM12 Portes DM12 Portes DM12 Portes DM12 Portes Portes Portes Portes Portes Portes Portes Pred portes Pred portes Pred portes Pred portes Pred press Pred portes press press	sing F1 at star Setup Utility Configuration I sing CTRL+C 2.2-compliant Config Power <i>ce Driver and I</i> <i>nostics</i> CD-RC stabilizing fee lle grip on top 4.4" x W 6.5" x 7mm x W 165 57 pounds (2 d disk models: 4,5,6,7 rotate access for ca active Failure IBM Director	le panel up Utility invoked k tup via F1 at startup Utility near startup Interface (ACPI) <i>IBM Enhanced</i> DM included t D 26.0" mm x D 660mm 0 to 25.8kg) metal cage for dis out of chassis for	by → 1 → in → 0 M 1.0a → 0 op • • • • • • • • • • • • • • • •	LIMITED WA year parts and la ternational Warra n site, 8 am-5 pm, on-Fri excluding l ext business day in n site service upg ptions (in eligible 3 year IOR 9x5, A (ServicePac® part 3 year IOR 9x5, 4 (ServicePac® part 3 year IOR 9x5, 4 (ServicePac part 3 year IOR 24x7, (ServicePac part 3 year IOR 24x7, (ServicePac part ther ServicePac ervices/us/its/pdf tx7 ¹⁴ toll-free sup sues during the	bor nty Service ³ holidays, response time rade locations): ⁷ IBD response num 96P2249) 4 hr avg respon num 96P2250) 2 hr avg respon num 96P2251) options at m/ //wamomxeu.pd port for warran warranty period

See footnotes for important warranty information

US models announced January 20, 2004 • = Hot-swap bays in some models

IBM @server™ xSeries™ 226 (8648) (August 2004)

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IBM® Type-GAV-model Proc	L2 FSE essor GHz ¹ cache MH			sk Hot-swap I roller disk bays	PCI slots Power supply Available x bays number and type Ethernet date
8648-00y-00x 1 x 8648-0Ay-0Ax 1 x 8648-0By-0Bx 1 x 8648-10Y-10x 1 x 8648-10Y-10x 1 x 8648-1AY-1Ax 1 x 8648-1BY-1Bx 1 x 8648-20Y-20x 1 x 8648-20Y-20x 1 x 8648-2BY-2Bx 1 x	Xeon 2.8 1MB 800 Xeon 2.8 1MB 800 Xeon 3.0 1MB 800 Xeon 3.0 1MB 800 Xeon 3.0 1MB 800 Xeon 3.0 1MB 800 Xeon 3.2 1MB 800 Xeon 3.2 1MB 800 Xeon 3.2 1MB 800 Xeon 3.2 1MB 800	512MB None 512MB None 512MB 80GB 512MB None 512MB None	(open-baý) Ultra SATA 7200 SAT (open-bay) Ultra (open-bay) Ultra SATA 7200 SAT (open-bay) Ultra (open-bay) Ultra	a320 6 hot-swap a320 6 hot-swap A 3 simple-swap a320 6 hot-swap a320 6 hot-swap A 3 simple-swap a320 6 hot-swap a320 6 hot-swap a320 6 hot-swap	6 x 9One fixedGigabit Sept 20046 x 9Two redundantGigabit Sept 20046 x 7One fixedGigabit Sept 20046 x 9One fixedGigabit Sept 20046 x 9Two redundantGigabit Sept 20046 x 7One fixedGigabit Sept 20046 x 9One fixedGigabit Sept 20046 x 9One fixedGigabit Sept 20046 x 9Two redundantGigabit Sept 20046 x 9Two redundantGigabit Sept 2004
Processor(s) SMP - L2 Cache Implementation	2-way SMP / up to tw	o Xeon Processor	s (same speed/cacł	ne size) / 1MB std and	3 L2 ECC Cache / Hyper-Threading technology max / at processor speed x slots (3 PCI-X, 2 PCI, 1 PCI Express x16)
Memory	connector slots on sys Error Checking and	stemboard / DIMMs Correcting (ECC)	via 16-bit Checks	l when 4GB DIMMs are 2-3200 400MHz ECC I n matched pairs [a ban um Chipkill™ (corrects ble on 1GB (2x512) DIM	e supported, 12GB is the maximum with less DDR2-SDRAM DIMMs / Six 240 pin gold- c] / 2-way memory interleave / dual channel / 1, 2, 3, or 4-bit errors on same chip and /M Kit and greater
SATA disk controller SCSI disk controller Cables	Adaptec [®] 7902 / dual supports RAID-0 & 1 drop 16-bit 68-pin LVE to rear external 68-pir	I channel Ultra320 mirroring / Two 1 D SCSI cable to 6-b n connector	6-bit channels (one bay backplane; Exte	internal and one extern	anar / 64-bit 100MHz PCI-X / ServeRAID /e hal) / Internal channel: Hot-swap models: one 1- ailable as option pn 24P7929 from systemboard
RAID Controller	IBM ServeRAID 7e (F	RAID 0 0r 1) / on pla	anar / supports SAT	A or SCSI interface / si	upports ServeRAID 6i+ controller
Mechanical Bus slots (see below) Chipset	4U ⁴ Tower (rack mou One PCI-Express / thr Intel E7520 chipset / supports Adaptec 790 bit/33MHz PCI slots (s	nt support via towe ree 64-bit (one 133 E7525 MCH (Men 2, 2 64bit/100MHz slots 2 & 3), video, 5	er-to-rack kit option) MHz, 2 100MHz) P hory Controller Hub PCI-X slots (5 & 6) SATA, 4xUSB(2.0),	CI-X 1.0 / two 32-bit/33 for PCI-Express x16(v BUS B supports one 6 Low Pin Count Interfac	MHz / no hot-swap Active™ PCI slots id), Broadcom, PXH, ICH5R / PXH BUS A i4bit/133MHz PCI-X slot (4) / ICH5R for two 32- e / NS PC87366 Super I/O off LPC interface
Ethernet CD-ROM / diskette Ports	Front: two USB (Ver	2.0): Back: two US	5B (Ver 2.0). two se	rial (9-pin), parallel, kev	IAC and PHY layer functions / Format 2.0 / one rear RJ-45 port board, mouse, ethernet (RJ-45), ored on IBM Enhanced Diagnostics CD
Diagnostics Systems mgmt cntrl		μ inport planar / mor	illois system and p	ocessor temperature, r	an speed and failure, and voltages / monitoring and control)
Graphics controller Security	SVGA / ATI® Radeon ¹ and max / 15 pin conr Mechanical side pane hot-swap models) / or power-on password / without keyboard/mou	nector el key lock (locks ho ptional U-Bolt suppo boot sequence cor	ot-swap disks on ort via knockout / ntrol / operation	Xeon 2.80 GHz/80 Xeon 3.00 GHz/80 Xeon 3.2 GHz/800 512MB (2x256) PC 1GB (2x512) PC2-	0/1MB L2 Cache EM64TProc Upg 13N0671 0/1MB L2 Cache EM64TProc Upg 13N0672 1MB L2 Cache EM64TProc Upg 13N0672 2/300 ECC DDR2 73P3523 3200 ECC DDR2 73P3522
Software	ServerGuide™ (CD-b and configuration tool) software) and many u), IBM Director (sys	etwork OS installati stem hardware mgn	nt 2GB (2x1GB) PC2 1t IBM 80GB SATA-1	3200 ECC DDR2 Chipk DIMM Kit 73P2865 -3200 ECC DDR2 DIMM Kit 73P2866 50 (7.2K) simple-swap HDD 73P8002 150 (7.2K) simple-swap HDD 73P8003
Keyboard / mouse Cooling fans Power supply(s) Slot 1: fullsize, PCI-I Slot 2: fullsize, 32-bi	Restart (ASR) / coolin Express x16 (3.3v)*	rocessor(s), memor ns (three in dual po ot hot-swap / all var std and max / not h std and max / hot-su tage-sensing / Auto	y, and disk bays / f wer supply model) iable speed ot-swap wap / redundant omatic Server	IBM 250GB SATA- IBM 36.4GB 15K U IBM 73GB 10K Ult IBM 146GB 10K U 40X/12X/40X Max ⁶ IBM Remote Supe IBM 4U Extended IBM ServeRAID-6i- IBM ServeRAID 7t	1150 (7.2K) simple-swap HDD73P8006Itra320 SCSI Hot-Swap SL HDD06P5776a320 SCSI Hot-Swap SL HDD32P0727tra320 SCSI Hot-Swap SL HDD32P0728CD-RW internal (black)22P6976visor Adapter II (PCI adapter)59P2984Depth Tower-to-Rack Kit26K6095+ controller (adapter for Slot 5)13N2190
Slot 3: fullsize, 32-bi Slot 4: fullsize, 64-bi Slot 5: fullsize, 64-bi Slot 6: fullsize, 64-bi	t/33MHz, PCI (5v) t 133MHz, PCI-X 1.0 (3 t 100MHz, PCI-X 1.0 (3 t 100MHz, PCI-X 1.0 (3	3.3v)́**	pressing F1 at	side panel etup Utility invoked by startup	
* support only for x8 ** slot for opt IBM Se	adaptors erveRAID-6i+ ① 5.25", HH 1.6", acce	ess, CD-ROM	 BIOS Setup Uti Adaptec Config startup by pres DMI 2.2-compli 	lity via F1 at startup uration Utility near sing CTRL+I ant	LIMITED WARRANTY ³ → 1 year parts and labor → International Warranty Service ³ → On site, 8 am-5 pm,
2 Bay diskette Six • ④ Six • ⑤ 7t c • ⑥ Bay • ⑧ Bay • ⑧ Bay Bay Bay Bay <td< td=""><td>© 5.25", HH 1.6", acce © 3.5", SL 1", acce -swap models: bays @ to @ 3.5", SL 1 ple-swap models: 2 si TA HDDs maybe adde controller) (@ 3.5", SL 1", simple (@ 3.5", SL 1", simple (© 3.5", simple (© 3.5", simple</td><td>ess, diskette ", access, hot-swp td, 2 avail(up to 4 ed with ServeRAIL -swap -swap -swap pacity¹³: 250GB); 1TB veRAID 7t</td><td> Adv Config Pow Device Driver a Diagnostics CE Four stabilizing Handle grip on 1 H 18.4" x W 6.5 H 467mm x W 44 to 57 pound Fixed disk mode bays 4,5,6,7 rot easy access for Predictive Failu with IBM Direct </td><td>ver Interface (ACPI) 1.0 Ind IBM Enhanced I-ROM included feet op " x D 25.9" 165mm x D 658mm s (20 to 25.8kg) els: metal cage for disk ate out of chassis for</td><td> 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 </td></td<>	© 5.25", HH 1.6", acce © 3.5", SL 1", acce -swap models: bays @ to @ 3.5", SL 1 ple-swap models: 2 si TA HDDs maybe adde controller) (@ 3.5", SL 1", simple (@ 3.5", SL 1", simple (© 3.5", simple (© 3.5", simple	ess, diskette ", access, hot-swp td, 2 avail(up to 4 ed with ServeRAIL -swap -swap -swap pacity ¹³ : 250GB); 1TB veRAID 7t	 Adv Config Pow Device Driver a Diagnostics CE Four stabilizing Handle grip on 1 H 18.4" x W 6.5 H 467mm x W 44 to 57 pound Fixed disk mode bays 4,5,6,7 rot easy access for Predictive Failu with IBM Direct 	ver Interface (ACPI) 1.0 Ind IBM Enhanced I-ROM included feet op " x D 25.9" 165mm x D 658mm s (20 to 25.8kg) els: metal cage for disk ate out of chassis for	 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

See footnotes for important warranty information

• = Hot-swap bays in some models

IBM @server™ xSeries™ 226 (8648) (February 2005)

xREF by eServer Field Skills and Education Team

2

IBM® Type-GAV-model Proc	L2 FSB essor GHz ¹ cache MHz Memory	Disk contr		Cl slots Power supply Available bays number and type Ethernet date			
8648-40y-40x 1 x 8648-4Ay-4Ax 1 x 8648-4By-4Bx 1 x 8648-50Y-50x 1 x 8648-5AY-5Ax 1 x 8648-5AY-5Ax 1 x 8648-6AY-60x 1 x 8648-6AY-6Ax 1 x 8648-6BY-6Bx 1 x	Xeon 3.0 2MB 800 512MB Xeon 3.0 2MB 800 512MB Xeon 3.2 2MB 800 512MB Xeon 3.4 2MB 800 512MB Xeon 3.4 2MB 800 512MB Xeon 3.4 2MB 800 512MB	80GB ² SATA 7200 SAT None (open-bay) Ultra None (open-bay) Ultra 80GB SATA 7200 SAT None (open-bay) Ultra 80GB SATA 7200 SAT None (open-bay) Ultra None (open-bay) Ultra None (open-bay) Ultra	 320 6 hot-swap 320 6 hot-swap 3 simple-swap 320 6 hot-swap 320 6 hot-swap 3 simple-swap 320 6 hot-swap 320 6 hot-swap 320 6 hot-swap 	6 x 7One fixedGigabitMar 20056 x 9One fixedGigabitMar 20056 x 9Two redundantGigabitMar 20056 x 7One fixedGigabitMar 20056 x 9Two redundantGigabitMar 20056 x 9Two redundantGigabitMar 20056 x 9One fixedGigabitMar 20056 x 7One fixedGigabitMar 20056 x 9One fixedGigabitMar 20056 x 9Two redundantGigabitMar 20056 x 9Two redundantGigabitMar 2005			
Processor(s) SMP - L2 Cache Implementation	1 x Intel® Xeon up to 3.4 GHz w 2-way SMP / up to two Xeon Pro Systemboard contains two Intel 6	vith 800MHz frontside bus ocessors (same speed/cach 604-pin micro-PGA ZIF sock	(FSB) / EM64T / 2MB e size) / 2MB std and r ets, six DIMM slots, six	L2 ECC Cache / Hyper-Threading technology nax / at processor speed slots (3 PCI-X, 2 PCI, 1 PCI Express x16)			
Memory	than 4GB DIMMs) / two slots use	ed / four slots available / PC2 / DIMMs must be installed ir (ECC) via 16-bit Checksu	2-3200 400MHz ECC DE matched pairs [a bank] m Chipkill™ (corrects 1	supported, 12GB is the maximum with less DR2-SDRAM DIMMs / Six 240 pin gold- / 2-way memory interleave / dual channel / , 2, 3, or 4-bit errors on same chip and V Kit and greater			
SATA disk controller SCSI disk controller Cables	drop 16-bit 68-pin LVD SCSI cab to rear external 68-pin connector	Jltra320 SCSI controller (L Two 16-bit channels (one le to 6-bay backplane; <i>Exte</i>	VD 320MB/sec) / on pla internal and one externa <i>mal channel:</i> cable avail	nar / 64-bit 100MHz PCI-X / ServeRAID 7e I) / Internal channel: Hot-swap models: one 1- able as option pn 24P7929 from systemboard			
RAID Controller	One SCSI cable (listed above), to IBM ServeRAID 7e (RAID 0 0r 1)) / on planar / supports SAT	A or SCSI interface / sup	oportś ServeRAID 6i+ controller			
Mechanical Bus slots (see below) Chipset	4U ⁴ Tower (rack mount support One PCI-Express / three 64-bit (Intel E7520 chipset / E7525 MC supports Adaptec 7902, 2 64bit/1 bit/33MHz PCI slots (slots 2 & 3),	one 1.33MHz 2 1.00MHz) P(CI-X 1.0 / two 32-bit/33N for PCI-Express x16(vid BUS B supports one 64 Low Pin Count Interface	/IHz / no hot-swap Active™ PCI slots I), Broadcom, PXH, ICH5R / PXH BUS A bit/133MHz PCI-X slot (4) / ICH5R for two 32- / NS PC87366 Super I/O off LPC interface			
Ethernet CD-ROM / diskette Ports	One gigabit 10/100/1000 etheme chip on planar / PCI-X 64-bit 1000 <i>CD-ROM</i> : 48X-20X ⁶ CD-ROM, II <i>Front</i> : two USB (Ver 2.0); <i>Back</i> monitor (analog DB-15) Discrete LEDe (arro) LEDe for	DE / <i>Diskette:</i> 3.5" 1.44MB (: two USB (Ver 2.0), two sei	liskette drive ial (9-pin), parallel, keyb	oard, mouse, ethernet (RJ-45),			
Diagnostics Systems mgmt cntrl Graphics controller	Winbond® W791D / chip on plan support for optional Remote S SVGA / ATI® Radeon™7000M or	ar / monitors system and pr Supervisor Adapter II (prov	ocessor temperature, far des continuous health n	red on IBM Enhanced Diagnostics CD n speed and failure, and voltages / nonitoring and control) ector			
Security	Mechanical side panel key lock hot-swap models) / optional U-Bo power-on password / boot seque without keyboard/mouse / securit	blt support via knockout / ence control / operation	Xeon 3.2 GHz/800/2 Xeon 3.4 GHz/800/2 512MB (2x256) PC2	MB L2 Cache EM64TProc Upg 25R8900 MB L2 Cache EM64TProc Upg 25R8901 MB L2 Cache EM64TProc Upg 25R8901 MB L2 Cache EM64TProc Upg 13N0676 -3200 ECC DDR2 73P3523			
Software	ServerGuide™ (CD-based autor and configuration tool), IBM Direc software) and many utilities		t 2GB (2x1GB) PC2-3	200 ECC DDR2 73P3522 200 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 mor Up to six / three for processor(s) power supply cage fans (three in <i>All:</i> not redundant / not hot-swap <i>Some:</i> one 530 watt std and max <i>xBx:</i> two 514 watt std and max <i>All:</i> universal / voltage-sensin Restart (ASR) / cooling fan in po	, memory, and disk bays / tr dual power supply model) / all variable speed x / not hot-swap < / hot-swap / redundant g / Automatic Server	IBM 160GB SATA-1 IBM 250GB SATA-1 IBM 26.4GB 15K Ult IBM 73GB 10K Ultra IBM 146GB 10K Ultra 40X/12X/40X Max ⁶ (IBM Remote Superv	50 (7.2K) simple-swap HDD 73P8003 50 (7.2K) simple-swap HDD 73P8006 ra320 SCSI Hot-Swap SL HDD 06P5776 320 SCSI Hot-Swap SL HDD 32P0727 ra320 SCSI Hot-Swap SL HDD 32P0727 ra320 SCSI Hot-Swap SL HDD 32P0727 ra320 SCSI Hot-Swap SL HDD 32P0727 sor Adapter II (PCI adapter) 59P2984 sort Name-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 Bay Giskette • @ • @ • @ • @ • @ • @ • @ • @ • @ • @	V33MHz, PCI (5v) V33MHz, PCI (5v) t 133MHz, PCI-X 1.0 (3.3v) t 100MHz, PCI-X 1.0 (3.3v)** t 100MHz, PCI-X 1.0 (3.3v) adaptors	pressing F1 at s BIOS Setup Util	or side panel tup Utility invoked by tartup ty via F1 at startup iration Utility near ing CTRL+1 int er Interface (ACPI) 1.0a <i>ind IBM Enhanced</i> ROM included eet 'x D 25.9" 65mm x D 658mm (20 to 25.8kg)	 LIMITED WARRANTY³ → 1 year parts and labor → International Warranty Service³ → On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time → On site service upgrade options (in eligible locations):⁷ → 3 year IOR 9x5, NBD response (ServicePac® part num 96P2248) → 3 year IOR 9x5, 4 hr avg response (ServicePac part num 96P2249) → 3 year IOR 24x7, 4 hr avg response (ServicePac part num 96P2250) → 3 year IOR 24x7, 2 hr avg response (ServicePac part num 96P2251) → Other ServicePac options at http://www.ibm.com/ 			

See footnotes for important warranty information

• = Hot-swap bays in some models

IBM @server™ xSeries™ 235 (January 2004)

xREF by Field Skills Enablement Team

8671-K1X 1 x Xeor	L2 L3 SCSI	Olata u kaus Bauran Ausilakla										
	Processor cache cache Memory Disk controller Mechanica	Slots x bays Power Available I (hot-swap bays) supply Ethernet date										
8671-L1X 1 x Xeor 8671-LAX 1 x Xeor 8671-M1X 1 x Xeor 8671-MAX 1 x Xeor	 [®] 2.67GHz 512KB 0MB 512MB None 2 x Ultra320 Tower [®] 2.67GHz 512KB 0MB 512MB None 2 x Ultra320 Tower [®] 2.8BGHz 512KB 0MB 512MB None 2 x Ultra320 Tower [®] 2.8BGHz 512KB 0MB 512MB None 2 x Ultra320 Tower [®] 3.06GHz 512KB 0MB 512MB None 2 x Ultra320 Tower [®] 3.06GHz 512KB 0MB 512MB None 2 x Ultra320 Tower [®] 3.06GHz 512KB 0MB 512MB None 2 x Ultra320 Tower [®] 3.06GHz 512KB 0MB 512MB None 2 x Ultra320 Tower [®] 3.06GHz 512KB 0MB 512MB None 2 x Ultra320 Tower [®] 3.06GHz 512KB 0MB 512MB None 2 x Ultra320 Tower 	6x10 (6 hot-swap std; 9 max)560W hotGigabitJan 20046x10 (6 hot-swap std; 9 max)560W fixedGigabitJan 20046x10 (6 hot-swap std; 9 max)560W hotGigabitJan 20046x10 (6 hot-swap std; 9 max)660W fixedGigabitJan 20046x10 (6 hot-swap std; 9 max)660W fixedGigabitJan 20046x10 (6 hot-swap std; 9 max)660W hotGigabitJan 20046x10 (6 hot-swap std; 9 max)660W hotGigabitJan 2004										
Positioning Processor(s) L2 cache L3 cache SMP support Implementation	Universal server; two-way server using the Xeon processor Up to 1 x Intel [®] Xeon [™] Processor 3.06 GHz with 533MHz f 512KB / all models / on die of processor / at processor spee 1MB / available on some models / on die of processor / at p 2-way SMP / up to two Xeon Processors (same speed/cach Systemboard contains two Intel 603-pin micro-PGA ZIF soc six PCI slots (two hot-swap Active [™] PCI slots), and integrat	frontside bus / Hyper-Threading technology d rocessor speed le size) kets, six memory gold-connector DIMM slots,										
Memory	512MB std / 12GB max / two slots used / four slots available PC2100 266MHz registered 184-pin ECC DDR-SDRAM DIM DIMMs must be installed in matched pairs [a bank] / 2-way n 2x100MHz / Error Checking and Correcting (ECC) (corrective through 8-bit errors contained in two chips) / 16-bit Checksu	1Ms nemory interleave / dual channel / memory bus runs at ts 1, 2, 3, or 4-bit errors on same chip and detects 2-										
SCSI channels	r LSI Logic [®] 53C1030 / dual channel Ultra320 SCSI contro supports RAID-1 mirroring with up to one hot-spare disk / low-cost RAID 0, 1, 1E, 5, 00, 10, 1E0, 50 (installed only in 3 Two 16-bit channels / SCSI Channel A: 16-bit 68-pin LVD c; interface for Bay 8 and 9 (may require a cable) or with optit devices via external SCSI knockout in rear (cable req 32P816 leEnhanced IDE ATA-100 controller in CSB5 South Bridge / o None standard / supports 7200-15000 rpm disks / one backple Six hot-swap / 80-pin SCA-2 connectors / three additional hot-	shared with optional IBM ServeRAID™-6i Controller for Slot 4) able from controller to backplane; <i>Channel B:</i> 16-bit 68-pin onal 3-Pack Kit (cable included); supports external SCSI 34) or via opt ServeRAID adapter with external connector(s) one connector on planar / one 1-drop IDE cable (CD-ROM) ane / all disk bays Ultra320-enabled										
Mechanical Chipset	ServerWorks [®] Grand Champion [™] 4.0 LE / CMIC LE Host Bi two CIOB-X2 I/O Bridges (IMB2 bus to Host Bridge for PCI-X controllers; IMB2 bus to Host Bridge for PCI-X 1.0 Bus C with	<pre>k hot-swap / 80-pin SCA-2 connectors / three additional hot-swap bays with Kit 33P2751 for up to nine 15K rpm disks wer / conversion to or EIA 19" Rack (5U⁴) via optional kit for support in IBM NetBAY™ Racks rverWorks® Grand Champion™ 4.0 LE / CMIC LE Host Bridge (memory controller and I/O Bridge) / o CIOB-X2 I/O Bridges (IMB2 bus to Host Bridge for PCI-X 1.0 Bus B with slots 2, 3, 4 and Ultra320 and ethernet ntrollers; IMB2 bus to Host Bridge for PCI-X 1.0 Bus C with slots 5 and 6) / CSB5 South Bridge (Thin IMB to Host Bridge PCI 2.2 bus A with slot 1 and graphics controller, EIDE, USB, SMBus, LPC bus to Super I/O) / NS PC87417 Super I/O</pre>										
Ethernet controller CD-ROM / diskette Rear ports Front port / graphics	10/100/1000 gigabit / Broadcom® BCM 5703 / on planar / PCI-X 48X-20X ⁶ CD-ROM / IDE / 1.6" HH; <i>Diskette:</i> 3.5" 1.44MB c <i>Rear:</i> two USB (Vers 1.1), keyboard, mouse, parallel, two serial <i>Front:</i> one USB (Vers 1.1); <i>Graphics:</i> SVGA / ATI® Rage XL / on	liskette drive / dust cover (9-pin),graphics (DB-15), ethernet (RJ-45), two RJ-45 (sys mgmt										
Security	Power-on password / administrator password / hinged and loc button / unattended boot / selectable boot	kable front door to cover disk bays, power button, and reset										
Systems mgmt Diagnostics Software Keyboard / mouse Power supply	IBM Integrated system management processor (ISMP) / H8S2148 / on planar / provides system and environmental monitoring such as temp, optional disks, fans, power supp / supports optional Remote Supervisor Adapter with 20-pin connector on planar for continuous power (no ext pwr reqq) Light Path Diagnostics™ panel providing LED map to failing part (under side cover) / Information LED Panel in front ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director, others IBM 101-key keyboard / IBM mouse (both black) MAX: std/max: two/two 660 watt xAX: std/max: two/two 560 watt xAX: std/max: one/two 560 watt fan in each	Xeon 2.67GHz/512KB L2 Cache Proc Upg71P8960Xeon 2.8BGHz/512KB L2 Cache Proc Upg71P8960Xeon 3.06GHZ/512KB L2 Cache Proc Upg02R1982x256MB PC2100 Non-Chipkill DDR-SDRAM Kit73P2860512MB PC2100 CL2.5 ECC DDR-SDRAM DIMM33L50381GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM33L50382GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM33L5040IBM ServeRAID-6i Controller (adapter for slot 4)71P8959IBM Remote Supervisor Adapter II (PCI adapter)59P298-36.4GB 15K-2 80 Ultra320 SCSI Hot-Swap SL HDD06P57763-Pack Ultra320 Hot-Swap Expansion Kit33P2751IBM 560W Hot-Swap Power Upgrade Kit*02R187IBM 660W Hot-Swap Power Upgrade Kit (3.06 Only)02R201Other options at ibm.com /pc/us/accessories*Not backward compatible with 400Mhz FSB x235										
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 * Extended slot for 5.25" HH 5.25" HH CD-ROM	Four fans and two blowers / variable speed / hot-swap / redundant / PFA / fan in each power supply 3MHz 5v PCI-2, Bus A 00MHz 3.3v PCI-X, not hot, Bus B 00MHz 3.3v PCI-X, not hot, Bus B 00MHz 3.3v PCI-X, not hot, Bus B 33MHz 3.3v PCI-X, hot-swap, Bus C 33MHz 3.3v PCI-X, hot-swap, Bus C 33S ⁺ , SL 1 ⁺ , access, hot-swap y © 3.5 ⁺ , SL 1 ⁺ , access, hot-swap y © 3.5 ⁺ , SL 1 ⁺ , access, hot-swap y © 3.5 ⁺ , SL 1 ⁺ , access, hot-swap y © 5.25 ⁺ , HH 1.6 ⁺ access, open ⁺⁺ y © 5.25 ⁺ , HH 1.6 ⁺ access, open ⁺⁺ y © 5.25 ⁺ , HH 1.6 ⁺ access, open ⁺⁺ y © 5.25 ⁺ , HH 1.6 ⁺ access, open ⁺⁺ y © 5.25 ⁺ , HH 1.6 ⁺ access, open ⁺⁺ y © 5.25 ⁺ , HH 1.6 ⁺ access, open ⁺⁺ y © 5.25 ⁺ , HH 1.6 ⁺ access, open ⁺⁺ y © 5.25 ⁺ , HH 1.6 ⁺ access, open ⁺⁺ y © 5.25 ⁺ , HH 1.6 ⁺ access, open ⁺⁺ y © 5.25 ⁺ , HH 1.6 ⁺ access, open ⁺⁺ y © 5.25 ⁺ , HH 1.6 ⁺ access, open ⁺⁺ y © 5.25 ⁺ , HH 1.6 ⁺ access, open ⁺⁺ y © 5.25 ⁺ , HH 1.6 ⁺ access, open ⁺⁺ y © 5.25 ⁺ , HH 1.6 ⁺ access, open ⁺⁺ y © 5.25 ⁺ , HH 1.6 ⁺ access, open ⁺⁺ y © 5.25 ⁺ , HH 1.6 ⁺ access, open ⁺⁺ y © 5.25 ⁺ , HH 1.6 ⁺	LIMITED WARRANTY ³ ⇒ 3 year parts and labor ⇒ 1nternational Warranty Service ³ ⇒ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time ⁷ ⇒ 3 year on site warranty service upgrade options (in eligible locations): ⁷ • 9 hour coverage, Mon-Fri excluding holidays, 4 hour average response (ServicePac [®] part num 21P2083) • 24 hr x 7 day coverage,										

See footnotes for important warranty information
US models announced January 20, 2004
≈ = Models withdrawn from marketing effective December 30, 2004

IBM @server™ xSeries™ 236 - August 2004

xREF by Field Skills and Education Team

	L2 Processor cache Memory		Slots x bays (hot-swap bays)		Available Ethernet date		
8841-11ý-11x 1 x Xe 8841-21y-21x 1 x Xe 8841-31y-31x 1 x Xe 8841-32y-32x 1 x Xe 8841-41y-41x 1 x Xe	State 1000 Hz 1100 Hz <th1100 hz<="" th=""> <th1100 hz<="" th=""> <th110< td=""><td>None2 x Ultra320Tower6None2 x Ultra320Tower6None2 x Ultra320Tower6None2 x Ultra320Tower6None2 x Ultra320Tower6None2 x Ultra320Tower6</td><td>x10 (6 hot-swap std; 9 ma x10 (6 hot-swap std; 9 ma</td><td>x) 1 x 670W hot-swap 2 x) 1 x 670W hot-swap 2 x) 1 x 670W hot-swap 2 x) 2 x 670W hot-swap 2 x) 1 x 670W hot-swap 2 x) 1 x 670W hot-swap 2</td><td>2xGiğabit Auğ 2004 2xGigabit Aug 2004 2xGigabit Aug 2004 2xGigabit Aug 2004 2xGigabit Aug 2004 2xGigabit Aug 2004</td></th110<></th1100></th1100>	None2 x Ultra320Tower6None2 x Ultra320Tower6None2 x Ultra320Tower6None2 x Ultra320Tower6None2 x Ultra320Tower6None2 x Ultra320Tower6	x10 (6 hot-swap std; 9 ma x10 (6 hot-swap std; 9 ma	x) 1 x 670W hot-swap 2 x) 1 x 670W hot-swap 2 x) 1 x 670W hot-swap 2 x) 2 x 670W hot-swap 2 x) 1 x 670W hot-swap 2 x) 1 x 670W hot-swap 2	2xGiğabit Auğ 2004 2xGigabit Aug 2004 2xGigabit Aug 2004 2xGigabit Aug 2004 2xGigabit Aug 2004 2xGigabit Aug 2004		
Processor	Up to 1 x Intel [®] Xeon [™] Pro (EM64T) / Simultaneous M	erver using the Xeon processor cessor 2.8, 3.0, 3.2, 3.4, 3.6 Gi lulti-threading (SMT) / Hyper-	Hz with 800MHz frontside b				
SMP support	2-way SMP / up to two Xeo Systemboard contains two Ir	processor / at processor speed n Processors (same speed/cac ntel 604-pin micro-PGA ZIF soc Active™ PCI slots), and integrat	kets, eight memory gold-co				
,	DIMMs / DIMMs must be ins 2x200MHz / Error Checking errors contained in two chips	max / two slots used / six slots stalled in matched pairs [a bank] g and Correcting (ECC) (corre s) / Active Memory™: memor ng 512MB DIMMs or greater	/ 2-way memory interleave cts 1, 2, 3, or 4-bit errors o	/ dual channel / memory n same chip and detects	bus runs at 2- through 8-bit		
	HostRAID supports RAID-0,	nannel Ultra320 SCSI controlle , 1 mirroring with up to one ho	t-spare disk / optional IBM				
SCSI channels	Two 16-bit channels / SCSI (Bay 8 and 9 (may require a knockout in rear (cable req 2	5, 00, 10, 50 (installed on interr <i>Channel B:</i> 16-bit 68-pin LVD ca cable) or with optional 3-Pack K 24P7973) or via opt ServeRAID	able from controller to backp it (cable included); supports adapter with external conr	s external SCSI devices vi nector(s)	a external SCSI		
Disk - capacity	None std / supports 7200-15	troller in ICH5R South Bridge / 000 rpm disks / one backplane connectors / three additional ho	/ all disk bays Ultra320-ena	abled .	,		
Slots Chipset (see below)	Two PCI-Express (one hot-p Intel E7520 chipset / Intel E (slots 2 & 3) / PXH: Bus A, tv	9" Rack (5U ⁴) via optional kit foi lug), three PCI-X 64-bit (one 13 7520 Memory Controller Hub (1 wo 64-bit/100MHz PCI-X slots (s z slot (slot 1), ATI video, EIDE,	B3MHz and two 100MHz), (MCH): PXH, ICH5R, Dual I slots 4 & 5), Adaptec SCSI	one 32-bit/33MHz slot Broadcom ethernet, two P Bus B, one 64-bit/133MH:	z Hot-Plug slot (slot		
Ethernet controller	Dual 10/100/1000 gigabit / B Format (2.0) / IPMI (1.5)	roadcom [®] BCM 5721 / on plana	r / PCI-X 64-bit 100MHz / f	,			
Rear ports	Rear: two USB (Vers 2.0), k	.6" HH; <i>Diskette:</i> 3.5" 1.44MB eyboard, mouse, parallel, one <i>Graphics:</i> SVGA / ATI® Radeon	serial (9-pin), graphics (DB-	15), two ethernet (RJ-45), B DDR std/max / 32-bit/3	RJ-45 (sys mgmt) 33MHz PCI 2.2		
	Power-on password / admini unattended boot / selectable	strator password / hinged and le boot	ockable front door to cover	disk bays, power button,	and reset button /		
Diagnostics	H8S2148 ⁷ / on planar / provid monitoring such as temp, op supports opt. Remote Super 20-pin connector on planar f (no ext pwr reqd) Light Path Diagnostics™ p failing part (under side cover)	or continuous power (std on 32 anel providing LED map to	Xeon 3.4GHz/1MB L2 Xeon 3.6GHZ/1MB L2 512MB (2x256) PC320 1GB (2x512) PC3200 1GB (2x512) PC3200 2GB (2x1GB) PC3200 73.4GB 10K Ultra320 \$	L2 Cache Proc Upg 13N06 L2 Cache Proc Upg 13N06 3200 CL3 ECC DDR2 non-Chipk 73P35 00 CL3 ECC DDR2 non-Chipk 73P35 00 CL3 ECC DDR2 RDIMM 73P28 00 SCSI Hot-Swap SL HDD 32P07			
Software	front ServerGuide™ (CD-ROM in utilities), IBM Director, others		36.4GB 15K Ultra320 3 73.4GB 15K Ultra320 3	SCSI Hot-Swap SL HDD SCSI Hot-Swap SL HDD SCSI Hot-Swap SL HDD	06P5776 32P0735		
Power supply Fans	Fan in each std/max: four/six	voltage-sensing / auto-restart / two fans (front), two fans on<br / variable speed / hot-swap /	3-Pack Ultra320 Hot-S IBM 670W Hot-Swap F	or Adapter II Slimline el Color Monitor (black)	71K8642 73P9341 9512AB1 33P2751 25K9560 pries		
Slot 2: full, PCI-Expr Slot 3: full, PCI-Expr Slot 3: full, PCI-Expr Slot 4: full, 64-bit 100 Slot 5: full, 64-bit 133 5.25" HH 5.25" HH CD-ROM	ess x8, Bus C 0MHz 3.3v PCI-X, Bus D 0MHz 3.3v PCI-X, Bus D	 Configuration/Setu pressing F1 at star Adaptec Configur by pressing CTR biagnostics (PC-D F2 at startup COPerator Informati Operator Informati Operator Informati Director can alert f of an imminent cor Tower: H 17.31" 74 to 101 pounds Stealth black colo 	tup ation Utility near startup L+I octor™) by pressing t on Panel (in front) analysis on disk options, ors, VRMs, power in conjunction with IBM the system administrator nponent failure x W 8.5" x D 27.6" r	 LIMITED WAF ⇒ 3 year parts and lab ⇒ International Warrar ⇒ On site, 8 am - 5 pm coverage excluding business day respoc ⇒ 3 year on site warrar upgrade options (ir locations):⁷ • 9 hour coverage, Mon-Fri excludin 4 hour average m (ServicePac[®] part • 24 hr x 7 day cov 4 hour average m (ServicePac part m • 24 hr x 7 day cov 2 hour average m 	oor hty Service ³ h, Mon - Fri holidays, next onse time ⁷ hty service n eligible g holidays, esponse num 21P2083) rerage, esponse number 21P2084) erage, esponse		
	ys 8 and 9 support three 3.5 sks via 3-Pack Kit 33P2751		46.4GB SL disks with ot-Swap Expansion Kit	24x7 ¹⁴ toll-free supprises during the ways and the superior of the superi			

See footnotes for important warranty information

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8841-15y-15x 1 x Xx 8841-25y-25x 1 x Xx 8841-35y-35x 1 x Xx 8841-35y-35x 1 x Xx 8841-45y-45x 1 x Xx 8841-16y-16x 1 x Xx	eon [®] 3.0GHz 2MB 1GB None 2 eon 3.2GHz 2MB 1GB None 2 eon 3.4GHz 2MB 1GB None 2 eon 3.6GHz 2MB 1GB None 2	2 x Ultra320 Tower 6x10 2 x Ultra320 Tower 6x10 2 x Ultra320 Tower 6x10 2 x Ultra320 Tower 6x10 2 x Ultra320 Tower 6x10	0 (6 hot-swap std; 9 ma 0 (6 hot-swap std; 9 ma 0 (6 hot-swap std; 9 ma 0 (6 hot-swap std; 9 ma	Power supplyEthernerx) 1 x 670W hot-swap2xGigabix) 1 x 670W hot-swap2xGigabi	t Mar 2005 t Mar 2005 t Mar 2005 t Mar 2005 t Mar 2005			
Positioning Processor L2 cache SMP support Implementation	Universal server; two-way server usin Up to 1 x Intel [®] Xeon [™] Processor 3. (EM64T) / Simultaneous Multi-threa 2MB / all models / on die of processo 2-way SMP / up to two Xeon Proces Systemboard contains two Intel 604-p six PCI slots (one hot-swap Active [™] F	g the Xeon processor to 0, 3.2, 3.4, 3.6 GHz with ading (SMT) / Hyper-Thra r / at processor speed sors (same speed/cache = bin micro-PGA ZIF sockets	violate power and perfect 800MHz frontside bus / eading technology / size) s, eight memory gold-cc	ormance at an affordable price Extended Memory 64 Technolo onnector DIMM slots,				
Memory	1GB std / 16GB max / two slots used DIMMs must be installed in matched p Error Checking and Correcting (EC in two chips) / Active Memory™: me	pairs [a bank] / 2-way mer C) (corrects 1, 2, 3, or 4-l	nory interleave / dual ch bit errors on same chip	annel / memory bus runs at 2x20	0MHz /			
SCSI disk controller SCSI channels IDE controller / cable Disk - capacity Disk - bays	Adaptec AIC 7902 / dual channel U HostRAID supports RAID-0, 1 mirror low-cost RAID 0, 1, 1E, 1E0, 5, 00, 10 Two 16-bit channels / SCSI Channel B Bay 8 and 9 (may require a cable) or knockout in rear (cable req 24P7973) Enhanced IDE ATA-100 controller in I None std / supports 7200-15000 rpm Six hot-swap / 80-pin SCA-2 connector	Itra320 SCSI controller (ring with up to one hot-sp), 50 (installed on internal of 3: 16-bit 68-pin LVD cable with optional 3-Pack Kit (c or via opt ServeRAID ad CH5R South Bridge / one disks / one backplane / al	LVD 320MB/sec) / on pl pare disk / optional IBM connector) from controller to backp cable included); supports apter with external conn connector on planar / o I disk bays Ultra320-ena	ServeRAID TM -7k Controller for lane; <i>Channel A:</i> 16-bit 68-pin int ector(s) ne 1-drop IDE cable (CD-ROM) abled				
Mechanical Slots Chipset (see below)	Tower / conversion to EIA 19" Rack (Two PCI-Express (one hot-plug), three Intel E7520 chipset / Intel E7520 Me (slots 2 & 3) / PXH: Bus A, two 64-bit/ 6) / ICH5R: one 32-bit/33MHz slot (slot	e PCI-X 64-bit (one 133M mory Controller Hub (MCI 100MHz PCI-X slots (slots	Hz and two 100MHz), c H): PXH, ICH5R, Dual E 3 4 & 5), Adaptec SCSI I	one 32-bit/33MHz slot Broadcom ethernet, two PCI-Expre Bus B, one 64-bit/133MHz Hot-Plu	ug slot (slot			
Ethernet controller CD-ROM / diskette Rear ports Front port / graphics	Dual 10/100/1000 gigabit / Broadcom ⁴ Format (2.0) / IPMI (1.5) 48X-20X ⁶ CD-ROM / IDE / 1.6" HH; <i>Rear:</i> two USB (Vers 2.0), keyboard, <i>Front:</i> one USB (Vers 2.0); <i>Graphics:</i>	<i>Diskette:</i> 3.5" 1.44MB disk mouse, parallel, one seri	tette drive / dust cover al (9-pin),graphics (DB-1	15), two ethernet (RJ-45), RJ-45 ((sys mgmt)			
Security	Power-on password / administrator pa unattended boot / selectable boot	assword / hinged and lock	able front door to cover	disk bays, power button, and rese	et button /			
Systems mgmt Diagnostics Software	IBM Integrated system management H8S2148 / on planar / provides system monitoring such as temp, optional disk supports opt. Remote Supervisor Ada 20-pin connector on planar for continue (no ext pwr reqd) Light Path Diagnostics [™] panel prov failing part (under side cover) / Information front ServerGuide [™] (CD-ROM installation utilities), IBM Director, others	m and environmental ks, fans, power supp / pter II Slimline with Jous power (std on 32y) riding LED map to ation LED Panel in	Xeon 3.0GHz/2MB L2 Cache Proc Upg 25R8 Xeon 3.2GHz/2MB L2 Cache Proc Upg 25R8 Xeon 3.4GHZ/2MB L2 Cache Proc Upg 13N0 Xeon 3.6GHz/2MB L2 Cache Proc Upg 13N0 Xeon 3.6GHz/2MB L2 Cache Proc Upg 13N0 512MB (2x256) PC3200 CL3 ECC DDR2 non-Chipk 73P3 1GB (2x512) PC3200 CL3 ECC DDR2 non-Chipk 73P3 1GB (2x512) PC3200 CL3 ECC DDR2 RDIMM 73P2 2GB (2x1GB) PC3200 CL3 ECC DDR2 RDIMM 73P2 73.4GB 10K Ultra320 SCSI Hot-Swap SL HDD 32PC 36.4GB 15K Ultra320 SCSI Hot-Swap SL HDD 32PC					
Keyboard / mouse Power supply Fans	IBM 101-key keyboard / IBM mouse (std/max: one/two 670 watt / voltage-se Fan in each std/max: four/six/ two fan planar, (Opt) two fans (rear) / variable redundant with optional rear fans / F fan in each power supply	ensing / auto-restart / s (front), two fans on speed / hot-swap /	IBM ServeRAID-7k Co IBM Remote Superviso IBM T541 15" Flat Pan 3-Pack Ultra320 Hot-Sv IBM 670W Hot-Swap F	r Adapter II Slimline el Color Monitor (black)	32P0735 71K8642 73P9341 9512AB1 33P2751 25K9560			
Slot 2: full, PCI-Exp Slot 3: full, PCI-Exp Slot 4: full, 64-bit 10 Slot 5: full, 64-bit 11 Slot 6: full, 64-bit 11 Slot 6: full, 64-bit 11 <u>5.25" HH</u> <u>5.25" HH</u> <u>5.25" HH</u> <u>9 (2)</u> (0) (0) (0) (0) (0) (0) (0) (0) (0) (0)		 F2 at startup ACPI2.0-compliant Operator Information I Predictive failure anal memory, processors, supplies, and fans in o Director can alert the of an imminent compco Tower: H 17.31" x W 74 to 101 pounds 	Itility invoked by Itility invoked by 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" disk capacity:	LIMITED WARRANT ⇒ 3 year parts and labor ⇒ International Warranty Serv ⇒ On site, 8 am - 5 pm, Mon - coverage excluding holidar business day response tim ⇒ 3 year on site warranty serv upgrade options (in eligibl locations):7 • 9 hour coverage, Mon-Fri excluding holid 4 hour average response (ServicePac® part number 2 • 24 hr x 7 day coverage, 4 hour average response (ServicePac part number 2 • 24 hr x 7 day coverage, 5 hour average response (ServicePac part number 2 • 24 hr x 7 day coverage, 5 hour average response (ServicePac part number 2 • 24 hr x 7 day coverage, 5 hour average response • 24 hr x 7 day coverage, • 3 hr x 7	rice ³ Fri ys, next le ⁷ rice e ays, b P2083) b 21P2084) b 21P2085)			
Tower di	isks via 3-Pack Kit 33P2751	3-Pack Ultra160 Hot-S		24x7 ¹⁴ toll-free support for warranty issues during the warranty period ³				

See footnotes for important warranty information

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IBM [®] Type-model Qty x Proce	L3 essor cache Memory	ECC memory features	Disk	SCSI controller	Mech-Slots x disk bays anical bays (std/max)	Available Ethernet date		
	2.0GHz 1MB 3GB 2.5GHz 1MB 1GB 2.5GHz 1MB 1GB 2.8GHz 2MB 1GB		None None	2 x Ultra160 2 x Ultra160 2 x Ultra160 2 x Ultra160 2 x Ultra160	Tower 7 x10 6/12 C Rack 7 x10 6/12 C Tower 7 x10 6/12 C Rack 7 x10 6/12 C	Aigabit Jun 2003 Aigabit Nov 2003 Aigabit Nov 2003 Aigabit Jun 2003 Aigabit Jun 2003 Aigabit Jun 2003		
Processors 1 of L2 cache 51: L3 cache 11M Processor upgrade 4-o Implementation Sy	or 2 x Intel [®] Xeon [™] Proc 2KB / on die of processor / IB or 2MB / on die of proce way SMP / up to four Xeon stemboard contains four Ir e PCI slot, and integrated S	/ at processor speed essor / at processor s Processors MP (san tel 603-pin micro-PG	speed ne speed/cache s 3A ZIF sockets, o	size)		0 07		
18 ins of mi	to 3GB std / 24GB ¹³ max 4-pin ECC DDR-SDRAM stalled in matched pairs or a pair or quad of DIMMs irroring (memory mirrorir hipkill™ (corrects 1, 2, 3,	DIMMs / one memor quads [a bank] / 2- [a bank]; reqs addition g supported with a	ory-board std with or 4-way memo onal memory ma ny OS) / Error (n 12 DIMM gold- ory interleave / H o ttching failed ban Checking and C	connector slots / DIMM ot Spare Memory (acti k) / Active Memory™ correcting (ECC) via 1	s must [*] be vated by failure via memory 6-bit Checksum		
SCSI connectors Ch Ch IDE controller / cabling En Disk - capacity No	laptec [®] AIC-7899 / Wide U nannel B: 68-pin connector nannel A: 68-pin connector nanced IDE ATA-100 cont one (or two) standard / su d: six hot-swap disk bays; r	on planar to SCSI ba on planar for optiona roller in CSB5 South pports up to 15,000	ackplane (one-dro al one-drop 16-bit Bridge / one one rpm disks / 80-p	op 16-bit LVD cab LVD cable (32P8 -drop IDE cable fr bin SCA-2 conne	le) / 164) to rear 0.8mm VHE rom IDE controller to CD ctors	DCI connector -ROM		
Rack / conversion Ra Architecture / chipset Se two ett SM	A 19" rack (7U ⁴) or tower ack systems supported in I rrverWorks® Grand Chan o CIOB-X I/O Bridges (IMI ernet and one PCI 2.2 bu /Bus, IOAPIC, LPC bus to	BM NetBAY [™] racks npion [™] 4.0 HE / CM B bus to Host Bridge s for SCSI / CSB5 So Super I/O) / five pee	/ kit available to IC Host Bridge (I , one with two PC outh Bridge (Thir er PCI buses / NS	convert tower to Memory Controlle CI-X buses C and IMB to Host Brid S PC87417 Supe	rack (use NetBAY11 fo er and I/O Bridge) and fi I D, other with one PCI- dge, one PCI 2.2 bus A, r I/O (diskette, keyboar	ve REMCs / X bus B and EIDE, USB, d, mouse)		
	x hot-swap PCI-X 1.0 slots it replace, hot upgrade, h					ower to slot) /		
CD-ROM / diskette CL Rear ports Fo	/100/1000 gigabit ethernet D-ROM: 48X-20X ⁶ CD-ROI our USB (Vers 1.1), one ser o RJ-45 (for integrated syst	M, IDE (ATAPI), 1.6" ial (9-pin), keyboard tem management pro	HH, bootable / D (PS/2), mouse (P ocessor) / no para	<i>iskette drive:</i> 3.5" PS/2), ethernet (Ra allel port	1.44 MB diskette drive, J-45), graphics (DB-15),	dust cover		
Security Po	/GA / ATI® Rage XL / on pl wer-on password / admini tton (tower only) / unattend	strator password / hi	inged and lockab					
Systems management IBI H8 mc su co Diagnostics Lic fail Software Se	Mintegrated system man 3S2148 / on planar / provide onitoring such as temp, op pports optional Remote Su nnector on planar for contin ght Path Diagnostics [™] pa ling part (under top cover) / rrverGuide [™] (CD-ROM ins lities), IBM Director, and ot	agement processol es system and enviro tional disks, fans, pov pervisor Adapter with nuous power (no exte nel providing LED ma 'Information LED Pa stallation and configur	r (ISMP) / nmental wer supplies / 120-pin ernal power req) ap to nel in front	1GB PC1600 EC 2GB PC1600 EC Xeon MP 2.0GH Xeon MP 2.5GH Xeon MP 2.8GH 6-pack Ultra320 370 watt Hot-Sw	ECC DDR SDRAM RI CC DDR SDRAM RDIN CC DDR SDRAM RDIN Iz/1MB L3 Cache Proc Iz/1MB L3 Cache Proc Iz/2MB L3 Cache Proc Hot-Swap Expansion vap Redundant Power wer-to-Rack Conversion	AM 33L3285 AM 33L3287 Upg 73P8805 Upg 73P8806 Upg 73P8807 Kit 32P8163 Supply 31P6133		
Keyboard/mouse To Power supply Sta rec un Fans Nir	wer only: IBM 103-key key d: two 370 watt hot-swap; dundant with four power su iversal (voltage sensing) / ne hot-swap redundant f riable speed / PFA / fan fail	yboard / IBM mouse (Max: four 370 watt h pplies / tool-free insta fans in each power s ans / plus fan in each	hot-swap / all / upply / PFA power supply/	Media Bay Cable IBM ServeRAID IBM 36.4GB 10P IBM 73.4GB 10P IBM Remote Sup IBM T541 15" Fla	SI Interface Kit (for rear S Kit (2-drop SCSI to HH b ™-4H Ultra160 SCSI A < Ultra160 SCSI Hot-S Servisor Adapter II at Panel Color Monitor (t ibm.com /pc/us/acces	bays) 10K2340 Adapter 37L6889 wap SL 06P5755 wap SL 06P5756 59P2984 (black) 9512AB1		
 ⇒ Rack dim: H12.0" x W Standard hot- swap disk bays Optional hot- swap disk bays Bay ① 3.5", SL 1", at Bay ② 5.25", HH 1.6" at Bay ③ 5.25", SL 1" hot 	wer tte ROM 5.25" 5.25" 5.25" 5.25" 0 Orange compo- nents and labels indicate hot-swar options ⇔ Vital Product Dat ⇔ Backup BIOS ccess, diskette ccess, open* ccess, ope	Ib primarily for Slot 2: full, 64-bit 1 Slot 3: full, 64-bit 1 Slot 3: full, 64-bit 1 Slot 5: full, 64-bit 1 Slot 6: full, 64-bit 1 Slot 6: 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 a Setup Program i startup; Diagnos F2 at startup; CT > Removeable top Access adapters > Predictive Failur by mgmt process processor(s),VR and fans Maximum internal 880GB ² with twelv	for optional Rem 00MHz 3.3v PCI- 00MHz 3.3v PCI- 00MHz 3.3v PCI- 00MHz 3.3v PCI- 00MHz 3.3v PCI- 00MHz 3.3v PCI- 00MHz 3.3v PCI- is available by pre stics (PC-Doctor) I FRL+A for SCSIS 0 cover s, memory, CPUs e Analysis®: alert sor for IBM Direct M(s), power supp disk capacity:	ote Supervisor Ad X, hot-swap, Bus X, hot-swap, Bus X, hot-swap, Bus X, hot-swap, Bus X, hot-swap, Bus X, hot-swap, Bus ssing F1 at by pressing elect Utility s from top s generated or for DIMM(s), bly(s), disk(s),	 B ⇒ International Warn B ⇒ On site, 8 am-5 pr C coverage excludir C business day resp D ⇒ On site service up (in eligible locatio • 3 year IOR 9x5, (ServicePac® part • 5 year IOR 9x5, (ServicePac part • 5 year IOR 9x5, (ServicePac part • Other ServicePac http://www.ibm.co its/pdf/wamomxeu ≈ 24x7¹⁴ toll-free sup 	abor ranty Service ³ n, Mon-Fri ng holidays, next porse time ⁷ ograde options ns): ⁷ 4 hr avg resp. t num 41L2738) , 2 hr avg resp num 69P9223) options at om/services/us/ u.pdf opport for luring the		

See footnotes for important warranty information • = Hot-swap (2) US models announced June 2003 or November 2003 ➢ Models withdrawn from marketing effective March 2004 (72X, 73X) and June 29, 2004 (81X, 8RX, 91X, 9RX)

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-						TREF by eserver Field Skills Enablement Te					
IBM [®] Type-model Qty x F	Processor c	L3 cache Mei	mory	ECC memory features	Disk	SCSI controller			lisk bays std/max) Ethernet	Available date	
8685-A1X 1 x Xeon ^T 8685-ARX 1 x Xeon 8685-B1X 1 x Xeon 8685-B1X 1 x Xeon 8685-C1X 1 x Xeon 8685-C1X 1 x Xeon 8685-CRX1 x Xeon 8685-7EX 2 x Xeon	MP 2.2GHz MP 2.2GHz MP 2.7GHz MP 2.7GHz MP 3.0GHz MP 3.0GHz	2MB 512 2MB 512 2MB 1G 2MB 1G 4MB 1G 4MB 1G	2MB Ho 2MB Ho iB Ho iB Ho iB Ho iB Ho	t Spare/Chipkill™ t Spare/Chipkill t Spare/Chipkill t Spare/Chipkill t Spare/Chipkill t Spare/Chipkill t Spare/Chipkill	None None None None None None	2 x Ultra160 2 x Ultra160 2 x Ultra160 2 x Ultra160 2 x Ultra160 2 x Ultra160 2 x Ultra160	Tower Rack Tower Rack Tower Rack	7 x10 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	Mar 2004 Mar 2004 Mar 2004 Mar 2004 Mar 2004 Mar 2004	
Processors L2 cache L3 cache Processor upgrade Implementation	512KB / on o 1MB, 2MB or 4-way SMP / Systemboard	die of proo r 4MB / o up to four I contains	cessor / n die of Xeon Pr four Intel	at processor spec processor / at pro ocessors MP (san	ed ocessor speed ne speed/cache &A ZIF sockets, o	400MHz frontside size) one memory board			Ū	nology	
Memory	184-pin ECC installed in m of a pair or q mirroring (m	DDR-SD natched pa juad of DI nemory m	RAM DII airs or qu MMs [a hirroring	MMs / one memo uads [a bank] / 2- bank]; reqs additions supported with a	ry-board std wit or 4-way memo onal memory ma ny OS) / Error	4 slots used / twelv h 12 DIMM gold-co ory interleave / Ho atching failed bank Checking and Co etects 2- through 8	onnect t Spar () / Act orrecti	or slots e Memo ive Me ng (EC	/ DIMMs mus ory (activated mory™ via me C) via 16-bit (t be by failure e mory Checksum	
SCSI disk controller SCSI connectors IDE controller / cablin Disk - capacity Disk - bays	Adaptec [®] AIC Channel B: 68 Channel A: 68 gEnhanced ID 7EX: 3 x 730	C-7899 / W 8-pin conr 8-pin conr E ATA-10 GB - 10K	/ide Ultra nector on nector on 00 contro / support	160 SCSI (LVD 16 planar to SCSI ba planar for optiona iller in CSB5 Sout ts up to 15,000 rp	50MB/sec) / two ackplane (one-dr l one-drop 16-bi h Bridge / one o m disks / 80-pir	channel / 64-bit 661 op 16-bit LVD cable t LVD cable (32P81	MHz P(e) / l64) to i e from rs	CI 2.2 / i rear 0.8i IDE cor	ntegrated on pl mm VHDCI cor ntroller to CD-F	anar nnector ROM	
Mechanical Rack / conversion Architecture / chipset	EIA 19" rack Rack systems ServerWorks two CIOB-X I ethernet and SMBus, IOAF Six hot-swap	x (7U ⁴) or t s supporte s [®] Grand //O Bridge one PCI 2 PIC, LPC I PCI-X 1.0	tower / to ed in IBN Champi es (IMB b 2.2 bus fo bus to Si 0 slots ¹⁰ a	ower models have M NetBAY™ racks ion™ 4.0 HE / CM us to Host Bridge or SCSI / CSB5 Si uper I/O) / five pee available with pow	 hinged and loc / kit available to IC Host Bridge (one with two P buth Bridge (Thi er PCI buses / N rer and attention 	kable front door, si convert tower to ra Memory Controller CI-X buses C and I n IMB to Host Brid S PC87417 Super indicator lights (op	de pan ack (us r and I/ D, othe ge, one I/O (di otical s	els, cas se NetB O Bridg er with o e PCI 2.3 skette, I ensors o	sters AY11 for rack t e) and five RE ne PCI-X bus 2 bus A, EIDE, keyboard, mou control power t	to tower) MCs / B and USB, ISB)	
Ethernet controller CD-ROM / diskette Rear ports Graphics controller	10/100/1000 (<i>CD-ROM:</i> 48) Four USB (Ve two RJ-45 (for	gigabit eth X-20X ⁶ CI ers 1.1), or r integrate	nernet / E D-ROM, ne serial ed systen	Broadcom [®] BCM 5 IDE (ATAPI), 1.6" (9-pin), keyboard n management pro	703 / on PCI Bus HH, bootable / <i>E</i> (PS/2), mouse (f ocessor) / no para	tive plastic dividers B / full duplex / Wa Diskette drive: 3.5" 1 PS/2), ethernet (RJ: allel port 280x1024 at 85Hz.	ake on 1.44 MI -45), gi	LAN® / A 3 disket raphics	Alert Standard I te drive, dust c (DB-15),	over	
Security				ator password / hi boot / selectable b		ble front door to co	ver dis	k bays,	power button,	and reset	
Systems managemer Diagnostics Software	H8S2148 / on monitoring su supports optic connector on Light Path Di failing part (ur	n planar / p uch as tem onal Remo planar for iagnostic nder top co ™ (CD-RC	orovides s np, optior ote Supe continuc s™ pane over) / In OM instal	system and enviro nal disks, fans, pov rvisor Adapter with ous power (no exte l providing LED may formation LED Par lation and configur	nmental wer supplies / 20-pin mal power req) ap to nel in front	512MB PC1600 E 1GB PC1600 EC 2GB PC1600 EC Xeon MP 2.0GHz Xeon MP 2.5GHz Xeon MP 2.8GHz 6-pack Ultra320 370 watt Hot-Swa IBM 7U x 26D Tow	C DDF C DDF z/1MB z/1MB z/2MB Hot-Sw ap Rec	R SDRA R SDRA L3 Cach L3 Cach L3 Cach L3 Cach vap Exp Jundant	M RDIMM M RDIMM The Proc Upg The Proc Upg The Proc Upg Dansion Kit Power Supply	33L3283 33L3285 33L3287 73P8805 73P8806 73P8807 32P8163 (31P6133 32P1474	
Keyboard / mouse Power supply Fans	<i>Tower only:</i> If <i>Std:</i> two 370 redundant wit universal (volt Nine hot-swa	BM 103-k watt hot-s th four pov tage sens ap redund	ey keybo swap; <i>Ma</i> ver supp ling) / fan lant fans	pard / IBM mouse (ax: four 370 watt h lies / tool-free insta s in each power su s / plus fan in each e signals diagnosti	hot-swap / all / upply / PFA power supply/	IBM External SCSI Media Bay Cable H IBM ServeRAID™ IBM 36.4GB 10K IBM 73.4GB 10K IBM Remote Sup IBM T541 15" Fla Other options at	Kit (2-dr ™-4H U Ultra1 Ultra1 ervisor t Panel	op SCS Iltra160 60 SCS 60 SCS Adapte Color N	I to HH bays) SCSI Adapte SI Hot-Swap S SI Hot-Swap S r II Monitor (black)	L 06P5755	
Standard hot- swap disk bays	x W17.6" x D27 Rack or Tower iskette CD-ROM H 5.25" H 5.25" access, disk " access, disk " access, oper " access, op	7.7"; 104 t Black color CPI 1.0 Drange cor lents and lindicate hof ptions fital Produ Backup BIC cette -ROM n* n*	o 150 lb npo- abels t-swap ct Data OS	primarily for 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 6: full, 64-bit 1 Slot 7:	for optional Rem 00MHz 3.3v PCI: 00MHz 3.3v PC	note Supervisor Adp -X, hot-swap, Bus B -X, hot-swap, Bus C -X, hot-swap, Bus C -X, hot-swap, Bus C -X, hot-swap, Bus D -X, hot-swap, Bus D essing F1 at by pressing iselect Utility s from top ts generated tor for DIMM(s),	 a y a y a not cov bu bu bu cov bu a on (in a on a on (in a on a on	ear part ernation site, 8 verage of sitese eligible year IO ServiceF year IO ServiceF year IO ServiceF year IO ServiceF year IO ServiceF year IO	ED WARRAN ts and labor nal Warranty Se am-5 pm, Mon- excluding holic day response ti locations): ⁷ IR 9x5, 4 hr avg ac [®] part num 4 ¹ VR 9x5, 4 hr avg Pac part num 3 ¹ Pa 9x5, 4 hr avg Pac part num 6 w.ibm.com/sei momxeu.pdf ssues during period ³	ervice ³ Fri lays, next ime ⁷ options g response 1L2738) /g resp L2723) g response 9P9223) rvices/us/ or	

See footnotes for important warranty information • = Hot-swap US models announced March 2004

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8865-11Y 1 x Xeo 8865-12Y 1 x Xeo 8865-1RY 1 x Xeo 8865-1SY 1 x Xeo 8865-2IY 1 x Xeo 8865-2RY 1 x Xeo 8865-2RY 1 x Xeo 8865-E1Y 2 x Xeo	Processor n™MP 3.160 n™MP 3.160 n™MP 3.160 n™MP 3.660 n™MP 3.660 n™MP 3.660 n™MP 3.660	Hz1MBHz1MBHz1MBHz1MBHz1MBHz1MBHz1MBHz1MB	Memory 2GB(2x1GB) 1GB(2x512M 2GB(2x1GB) 1GB(2x512M 2GB(2x1GB) 2GB(2x1GB) 4GB(4x1GB) 1GB(2x512M	slots 4 B) 4 4 B) 4 4 4 4 8	Memory Cards One One One One One One Two Two	Disks None None None None None None None	SCSI controller SAS SAS SAS SAS SAS SAS SAS SAS SAS	Mechan- ical Tower Tower 7U Rack Tower 7U Rack Tower 7U Rack Tower 7U Rack	6x12 6x12	Hot-swap pwr supplies 2 x775W 2 x775W 2 x775W 2 x775W 2 x775W 2 x775W 2 x775W 2 x775W 2 x775W		ty Available date Sep 2005 Sep 2005 Sep 2005 Sep 2005 Sep 2005 Sep 2005 Sep 2005 Sep 2005 Sep 2005
Processors L2 cache Processor upgrade Implementation	Memory 64 1MB / on die 4-way SMP / System board	Technology [⊤] of processor ' up to four X d contains fou	Keon™ Process M (EM64T) / Hy / at processor s eon Processors Ir Intel 604-pin r SI (SAS), ether	per-Thr peed / MP (sa nicro-P	eading t XceL4v ame spe GA4 ZIF	echnolo ™ Dynar ed/cache sockets	gy nic Server e size)	Cache				
Active Memory™	gold-connector / Error Chec	or slots / DIM king and Co	x ^{12,13} (with 4GB Ms must be inst rrecting (ECC) Hot-swap (non-	alled in via 16-	matche	d pairs / cksum (PC2-3200 ∕ Chipkill ™	400MHz re Memory P	gistered roteXio	240-pin DDR: n ™ (redundan	2-SDRA t bit ste	AM RDIMMs ering) and
SAS disk controller SAS connectors SAS cabling IDE controller / cabling Disk - capacity Disk - bays Mechanical	Dual channel Hot-swap bay Enhanced IDI Max: 3.6TB-1 Up to Twelve	Controller win /s connect to E ATA-33 con 0k / supports e 3.5" hot-swa	^t Dual-channel red to dual SAS integrated SAS troller in CSB6 S up to 15,000 rp ap bays / Six sta ^t) x 28" deep / s	backpla control South Br om disk andard	anes ler throu ridge s converge	gh SAS ed tray /	expander, 80-pin SC	1 cable for A-2 connect	each of tors / Or	the 2 SAS ba le FH (or 2 HI	ckplane H) Tape	
Chipset I/O Slots	models) / 2 IE graphics), Se Broadcom 57 Six total Activ	3M PCI-X 2.0 rverWorks® C 04, and 2 P0 /e™ PCI-X 2.0	ation chipset / Host Bridges / SB6 South Brid CI-X 2.0 slots / H 0 64-bit slots ava not expansion / s	1 supp Ige (IDE Iost Brid ailable v	orts adap E, USB, I dge supp vith pow	oter PCI ous for \$ oorts 4 F er and a	33MHz an Super I/O N PCI-X 2.0 s Ittention inc	ld 66MHz, s NS 87417 [d lots licator lights	ot for op iskette, ł (optical :	itional ServeR keyboard, mou sensors contro	AID 8i (use]), D ol powe	inc. ual Port
CD-ROM/diskette Ethernet Graphics controller Ports	Broadcom [®] 5 SVGA / ATI [®]	704 10/100/1 Radeon Mob hernet, RSA	-ROM, IDE (AT 000 dual ethern lity 7000 / on pla serial, two USB	et / on : anar / 1	systemb 6MB SD	oard / 64 RAM sto	4-bit 266Mł d/max / 32-	nz PCI-X 2.0 bit 33MHz F) / Wake PCI 2.2 b	us		
Security Systems management Diagnostics Software	t BMC standar connectors / fans, power s Drop-down L IBM Real Tim	d / Remote S provides remo supplies _ight Path D i ne Diagnostics	or passwords / u Supervisor Ada ote console and agnostics / prir (operated through the stallation and of the stallation and the stallation	pter II s mgmt nary ind ugh IBM	slimline (/ power dicator o l Director	optional) on/off sy n inform r) availat	/ PCI ada /stem / mo ation pane ble even wh	nitors powe I with LEDs nile server ru	r status, associat	op system, te	mperati	ure, disks,
Keyboard / mouse Power supplies Cooling fans	Rack model: Std: two 775 accessible far Eight hot-swa	none standar watt hot-swap ns in each po ip, redundant,	d / Tower mode / redundant with wer supply / PF multi-speed fan ostic LED and r	el: IBM th three A is / One	104-key power s cooling	keyboa supplies fan in e	ard (PS/2) (N+1) / wo	/ IBM 3-bi rldwide / vol	tage-ser	sing / auto-re	start / re	
Options	1GB PC2-3 2GB PC2-3 4GB PC2-3 Active Mem Xeon MP 3. Xeon MP 3. 775 watt Ho	200 CL3 EC 200 CL3 EC 200 CL3 EC ory 4-slot E 16GHz/1MB 66GHz/1MB vt-Swap Pow	C RDIMM (2x5 C RDIMM (2x1 C RDIMM (2x2 cpansion Card L2 Cache Pro L2 Cache Pro er Supply (WW -SCSI Adapter	512MB) IGB) 2GB) c Upg c Upg /)		865 866 867 409 694 695 415	IBM 73.4 IBM 146 IBM 300 Remote SAS 3.5 IBM 73.4	4GB 10K 3. GB 10K 3.5 GB 10K 3.5 Supervisor " 6-drive Ba 4GB 15K 3.	5" SAS 5" SAS 5" SAS Adapte ackplane 5" SAS			02R0988 26K5709 26K5710 26K5711 59P2984 13M7864 26K5698 26K5699
LIMITED WARF ⇒ 3 year parts and labor ⇒ International Warrant ⇒ On site, 8 am - 5 pm, 1 coverage excluding he next business day res ⇒ On site service upgra- (in eligible locations) • 3 year IOR 24x7, 4 hr (ServicePac partnum • 3 year IOR 94x5, NBD (ServicePac partnum • 4 year IOR 9x5, NBD (ServicePac partnum • 5 year IOR 9x5, NBD (ServicePac partnum • 5 year IOR 9x5, NBD (ServicePac partnum • 0 Other ServicePac opti http://www.ibm.com/s us/its/pdf/wamomxeu.] ⇒ 24x7 ¹⁴ toll-free suppor issues during the warr	y Service ³ Mon - Fri Didays, ponse time ⁷ de options ? ⁷ ravg response 96P2253) avg response 96P2254) response 96P2255) response 69P2259) ons at ervices/ odf t for warranty	Bay 2 5. Bay 3 5. Bay 4 5. Bays 5 to standa Bays 11	5", SL 1", ac 25", HH 1.6" ac	CCESS, CCESS, CCESS, CCESS, CCESS, CCESS, CCESS, CCESS, CESS, CESS	CD-ROI open* open* ap disk	M bays ays ower	 Stealt Tool-f Tower Tower Tower Rack Rack Rack Access Access Setup Diagn SCSIS Drop diagn Predia power 	h black coli ree service r Dimension r Weight: 14 Dimension Weight: 14 is adapters is processo program b ostics (PC- Select by p Down Light ostic panel) em without ctive Failure	or eability 19 to 18 5: H12" 5: H12" 5: H306 4 to 158 6, fans, a rs and upplies for outs for outs removing Analys memory memory	.5" x W18.2" Olbs; 67.6 to x W17.5" x I imm x W444 ibs; 65.4 to 7 and memory systemboarce from back ing F1 at sta by pressing trl+A at sta iagnostics (le side view of p g cover sis® alerts on , processors or	x D30 81.7Kg 228.2" mm x I 1.7Kg from tc I from F2 at rtup F2 at rtup vel 2 potentia disks, , VRM	"(762mm)) D715mm op front startup al s,
All models: M			acity: 3.6TB w	ith 12x	300GB	² hot-s	wap SAS	disks			,346 Btu/ł	/hr (588 watts) hr (1860 watts)

See footnotes for important warranty information • = Hot-swap

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IBM @server™ xSeries™ 260 (August 2005)

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-											2.00	
IBM [®] Type-model Qty x	Processor	L2 cache	Memory		Memory		SCSI controller	Mechan- ical	Slots x bays	Hot-swap pwr supplies		
	on™ MP 3.160		2GB(2x1GB)		One	None	SAS	Tower	6x12	2 x775W	3	Sep 200
	on™MP 3.160		1GB(2x512M		One	None	SAS	Tower	6x12	2 x775W	3	Sep 200
	on™ MP 3.160 on™ MP 3.160		2GB(2x1GB) 1GB(2x512M)		One One	None None	SAS SAS	7U Rack 7U Rack		2 x775W 2 x775W	3 3	Sep 200 Sep 200
	on™ MP 3.660		2GB(2x1GB)		One	None	SAS	Tower	6x12	2 x775W	3	Sep 200
	on™ MP 3.660		2GB(2x1GB		One	None	SAS	7U Rack		2 x775W	3	Sep 200
	on™MP 3.660		4GB(4x1GB)		Two	None	SAS	Tower	6x12	2 x775W	3	Sep 200
	on™MP 3.160		1GB(2x512M	,	Two	None	SAS	7U Rack	6x12	2 x775W	3	Sep 200
Processors	One or two	64-bit Intel®	Xeon™ Process ™ (EM64T) / Hy	SOR MP	3.16 or	3.66GH	\mathbf{Iz}^1 with 667	MHz frontsi	de bus s	std / NetBurst	/ Ex	tended
_2 cache			/ at processor s					Cache				
Processor upgrade	4-way SMP	/ up to four X	eon Processors	MP (s	ame spe	ed/cach	ne size)					
mplementation			ur Intel 604-pin i				s, one mer	nory board s	slot, six /	Active™ PCI-X	2.0 slc	ots,
	0		CSI (SAS), ether		0 1							
Active Memory [™]	Up to 4GB s	td / 64GB ma	x ^{12,13} (with 4GB	DIMM	s) using l	high-cap	acity memo	ory card / on	e memo	ry board stand	lard wit	n 4 DIMM
			IMs must be inst prrecting (ECC)									
	Memory Mir	roring [™] and	Hot-swap (non-	OS sp	ecific) /	Hot-add	(supported	only with N	licrosoft®	Windows [™] S	erver 2	003 ^{™)}
SAS disk controller			/ Dual-channel									
SAS connectors			red to dual SAS			u 3031	(3A3) 3.00	ai iz (300/56	c)/04-L		/FA 2.0	
SAS cabling	Hot-swap ba	ys connect to	integrated SAS	contro	oller throu	ugh SAS	expander,	1 cable for	each of	the 2 SAS ba	ckplane	s
DE controller / cabling												
Disk - capacity Disk - bays			s up to 15,000 ŋ ׳ap bays / Six st			nod trav	/ 90 nin SC	A 2 connoc	tore / Or			
Vechanical			4) x 28" deep / s									; Drive Da
Chipset		-	ation chipset /								-	arliar
Jiipset) Host Bridges /									
	graphics), Se	erverWorks® C	CSB6 South Brid	lge (ID	E, USB,	bus for	Super I/O I	NS 87417 [c				
(O. O			CI-X 2.0 slots / I									
/O Slots			0 64-bit slots av hot expansion / :									r to slot) /
		10	•	•			·			ieu up io 2001		
CD-ROM/diskette Ethernet	Broadcom [®] P	3 SIIMLINE CL 5704 10/100/1	D-ROM, IDE (AT 1000 dual ethern	API), 1	.6" HH,	DOOTADIE	2/3.5°1.44 3∕-bit 266M		arive) / Waka	on LAN®/Ala	ort on L	ANITM 2
Graphics controller			pility 7000 / on pl									4IN Z
Ports			serial, two USB								d. seria	l, RS-485
	Front: USB (Ver 2.0)							-			
Security			or passwords / ι									
Systems managemen												
	fans, power :		ote console and	i myrm	/ power		system / mc		i status,	op system, te	mperat	uie, uisks,
Diagnostics	Drop-down	Light Path D	iagnostics / pri							ted with failing	compo	nents /
Software			s (operated throu installation and									
Keyboard / mouse		ard (because		cornige		es), ii	SIVI DITECIOI					
Power supplies			p / redundant wi	th thre	e power	supplies	; (N+1) / wc	orldwide / vo	tage-ser	nsing / auto-re	start / re	ear
Occline force			ower supply / PF									- 111 /
Cooling fans			, multi-speed far nostic LED and r				each power	supply filler	when po	ower supply is	not inst	alled /
Options			C RDIMM (2x				IBM Ser		11320 3	256MB Adapt	er	02R0988
optiono	2GB PC2-3	200 CL3 EC	C RDIMM (2x	1GB)	73P2					Hot-swap HI		26K5709
			C RDIMM (2x2		73P2		IBM 146	GB 10K 3.	5" SAS	Hot-Swap HD	D	26K5710
	Active Mem	ory 4-slot E	xpansion Card 3 L2 Cache Pro		13M7					Hot-Swap HE	D	26K5711
			L2 Cache Pro					" 6-drive B		r II Slimline		59P2984 13M7864
			ver Supply (WV		13M7					Hot-swap HI	DD	26K5698
			-SCSI Adapter		13N2	227				Hot-Swap HD		26K5699
LIMITED WAR		Bay 1 3	.5", SL 1", a	ccess	, diskette	Э.		h black col				
3 year parts and lab			.25", HH 1.6" a .25", HH 1.6" a			M		ree service				
International Warrand On site 8 am - 5 pm			.25", HH 1.6" a							.5" x W18.2" 0lbs; 67.6 to		
On site, 8 am - 5 pm coverage excluding			o 10 (six bays)		, open					x W17.5" x [1
next business day r	• •	stand	lard 3.5" SL 1"	hot-sv	vap disk	bays				6 mm x W444		D715mm
On site service upgr			to 16 (six bay		n diale le	0.10				Blbs; 65.4 to 7		
(in eligible locations	,	option	al 3.5" SL 1" h							and memory systemboard		
 3 year IOR 24x7, 4 (ServicePacpartnu) 			Light Path Diag	7U4 R	ack or `	Tower		s processo s power s				nont
• 3 year IOR 24x7, 2 h							Setup	<u>Program</u> b	by press	ing F1 at sta	rtup	
(ServicePac part nu			Removable Processo	or Board Tray	/		Diagn	ostics (PC-	Doctor)	by pressing	F2 at	startup
 4 year IOR 9x5, NBI (ServicePac part null) 		Opt disk	Opt disk							Ctrl+A at sta iagnostics (le		
(ServicePac partnu • 5 year IOR 9x5, NB	,	Opt disk Opt disk	Opt disk Opt disk	┤┝──╵	loppy Drive					side view of p		վ
(ServicePacpartnu		Opt disk Opt disk	Opt disk	-11	CD-ROM		proble	em without	removir	ng cover		
Other ServicePac op		Opt disk	Opt disk	1┣──	F. 41 C		🗢 Predie	ctive Failure	e Analys	sis® alerts on		_
http://www.ibm.com		Opt disk	Opt disk	┥┝ .	Full High Tape I			r supplies, ans with IBI		, processors	, VRM	s,
us/its/pdf/wamomxet		Opt disk	Opt disk Opt disk	11	or 2 Half High B	ays		and with ID	VI DIIEC			
issues during the wa	•						1			BTU Output:	2 006 8+	/hr (588 watts)
All models: N	laximum inter	nal disk car	acity: 3.6TB w	ith 12	x 300Gl	3 ² hot-s	wap SAS	disks				nr (1860 watts)
See footnotes for impo			• - Hot-sv							(X260A) © IF		

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^{• =} Hot-swap

IBM @server™ xSeries™ 305 (May 2003)

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1 A

Cooling TansFive Tans (three tans for system, one blower in rear, one on power supply) / variable speed / not redundant or hot-swap 200 watt / universal / auto-sensing / auto-restart support Monitor, keyboard, mouse, rack, operating system / supports IBM ACT CAT-5 chaining solutions36.4GB 15K Ultra160 SCSI SL 68-pin HDD* 73.4GB 10K Ultra160 SCSI SL 68-pin HDD* 86.4GB 15K Ultra160 SCSI SL 68-pin HDD* 86.4GB 15K Ultra160 SCSI SL 68-pin HDD* 9007585 ServeRAID TM -4Lx Ultra160 SCSI Adapter 86.4GB 15K Ultra160 SCSI SL 68-pin HDD* 86.4GB 15K Ultra160 SCSI SL 6											
B873-328 Perilum 4 2.886.4/5 1248 533 256MB ECC 40.8 ECC 10.1 ECC 24.8 2.4 2.4 3.0 Edgeb 1 year May 2005 B673-828 Perilum 4 3.0664/5 1248 533 256MB ECC 40.6 EDE A1.0 EDE 24.4 2.4 3.0 Edgeb 1 year May 2005 B673-828 Perilum 4 3.0664/5 1248 533 256MB ECC 40.6 EDE A1.0 EDE 24.4 2.4 3.0 Edgeb 1 year May 2005 Positioning Positioning Market May 2005 A1.0 EDE 53.0 EDE 40.6 EDE <				Disk					Ethernet		
Processor(s) Elización Mapapenentiation Intel [®] Pentium 4 up to 2.80CH2 vith S33MHz frontside bus (FSB) Starde of an el construction mechanismo de of processor at processors specific bus calculated in the set work of the pentium 4 FC-PC42 and heatsink), four memory DIMM slots, connector for one PCLX slot, fair integrated chipset, two Elize connectors, elibernet, and graphics connector for one PCLX slot, fair integrated chipset, two Elize connectors, elibernet, and graphics SCSI models: Constructions and the set work of the set work of the set work of the set of the	8673-73X Pentium 4 2.8BGHz 8673-82X Pentium 4 3.06GHz	512KB 533 250 512KB 533 250	6MB ECC 6MB ECC	18.2GB SCSI 40GB EIDE	Ultra160 ATA-100	2 fixed 2 fixed	1U rack 1U rack	2x4 2x4	2 x Gigabi 2 x Gigabi	t 1 year t 1 year	May2003 Sep 2003
DIMMs / four DIMMs pick-connector sigls on systemboard / memory bus runs at 2 × 133MHz / Error Checking and Correcting (ECC) memory controller SCSI disk controller SCSI models: Adaptec * 29160LP / single channel Wide Ultra160 SCSI (LVD 160MB/sec) / 64-bit 66MHz PC ladapter to one 68-bit 66MHz PC ladapter to one 68-bit 66MHz PC ladapter / one channel with up to 15 dovice support SCSI connectors SCSI models: On adapter one 68-bit 66MHz PC ladapter / one channel with up to 15 dovice support SCSI connectors SCSI models: On adapter one 68-bit 66MHz PC ladapter / 140p 47DE cable (socend disk bay) Disk - totaures SCSI SCR SCR SCR Bit Bit SCSI (SCR SCR Bit Bit SCR SCR SCR Bit SCR	Processor(s) Intel® Perocessor(s) Intel® Perocessor(s) SI2KB / SMP support No SMP support Systembolismed System	ntium 4 up to 2. on die of process support pard contains one	8BGHz ¹ with 53 sor / at process Intel mPGA478	33MHz frontside for speed (no L 3B socket (with P	bus (FSE 3 cache) entium 4 F	- C-PGA2					
SCSI connectors SCSI models: Challes: Consult in the scale of	DIMMs /	four DIMM gold-	connector slots	on systemboar	d / memo	2100 26 ry bus ru	6MHz reg ins at 2 x	istered 133MH	184-pin E0 lz /	C DDR	-SDRAM
Bus slots National Semiconductor* PC37414 Super I/O chip (serial, keyboard, mouse, diskette) Ethernet controllers Two glapht 10/100/1000 ethernet ports / Braadcom* BCMS703 / two full glapht telement MAC and PHV layer functions / no planar / PC-X 54-101 100MHz bas b/ full duplay r VPEX / Wake on LAN* / Alert Standard Format 1.0 / two rear RJ-45 ports CD-ROM / diskette Face: restal (9-pin), two ethernet (RJ-45), keyboard, mouse, analog DB-15 monitor, no paralleli port Front ports / graphics Front: two USB (Vers 1.1); Graphics: SVGA / ATI* Rage XL / on planar / AMB SDRAM std/max / 32-bit 33MHz PC1 2.2 bus Console interconnects No system interconnect clab esperiate Method (support for optional Remote Supervisor Adapter with 20-pin conn on planar for confinuous power (no external power required) Systems mgmt Diagnostics was PC-Doctor on a standard IBM Enhanced Diagnostics DD (diskette can be created) / support for optional Remote Supervisor Adapter with 20-pin conn on planar for confinuous power (no external power required) Socurity Power-on password / administrator password / unattended start mode supervisor Adapter with 20-pin was addited bod / selectable bod / nuntended start mode supervisor Adapter with 20-pin was addited bod / selectable bod / nuntended start mode supply) / variable speed / not rear, one on power supply / variable speed / not rear, one on power supply / variable speed / not rearge system and start was addited was add	SCSI connectors IDE disk controller Cables Disk - features Mechanical Architecture / chipsets ServerW one CIOE	64-bit 66M dels: On adapte d IDE busmaster dels: one 2-drop dels: one 2-drop 2GB/36.4GB Ultra Rack (1U ⁴) / rac orks [®] Grand Ch 3-X2 I/O Bridge (1	IHz PCI adapte er: one 68-pin / ATA-100 supp o 16-bit LVD SC o EIDE cable (to a160 SCSI, 10K k-mount only / ampion™ SL / (MB bus to Hosi	r / one channel v SCSI connector oort / two connector SI cable, one 1- o CD-ROM and d rpm, 5.2ms read supports 16.75 CMIC-SL (Supe Bridge for PCI-	vith up to ctors on sy drop 40-c disk), one seek; <i>EID</i> deep rac r Lite) Hos X Bus A w	15 device vstemboa onductor 1-drop E E: 40GB ks for te t Bridge vith slots	E Support TEIDE cab IDE cable ATA-100, 7 Ico and cc (memory c and PCI-2	ole (con e (to sec 7200 rpr olocatior controllo & Bus B	nected to C cond disk b n, 8.7ms re n implemen er and I/O E with dual e	ay) ad; <i>All:</i> S tations Bridge) / thernet)	.M.A.R.T.⁵
Ethernet controllers Two glagbit 10/100/1000 ethernet ports / Broadcom® BCM5703 / two full glagbit ethermet MAC and PHY layer functions / or planar / PC/S K64-bit 100MHz Bus B / full duplex / PXE / Wake on LAN* / Alert Standard Format 1.0 / two rear RJ-45 ports or paralle port PX CA 16-both / DE: Dokenter 33, 1-4MB States diver duslower monitor / no parallel port PX CA 16-both / DE: Dokenter 33, 1-4MB States diver duslower monitor / no parallel port PX CA 16-both / DE: Dokenter 33, 1-4MB States diver duslower monitor / no parallel port PX CA 16-both / DE: Dokenter 33, 1-4MB States diver duslower monitor / no parallel port PX CA 16-both / DE: Dokenter 33, 1-4MB States diver duslower monitor / no parallel port PX CA 16-both / DE: Dokenter 33, 1-4MB States diver duslower monitor / no parallel port PX CA 16-both / DE: Dokenter 33, 1-4MB States diver duslower monitor / no paralle port PX CA 16-both / DE: Dokenter 33, 1-4MB States diver duslower monitor / no paralle port PX CA 16-both / DE: Dokenter 33, 1-4MB States diver duslower / PX CA 16-both / DE: Dokenter 34, 2-bit 33MHz PC12 2.2 bus Console interconnects No system-interconnect cable is supervisor Adapter with 20-bit no or no palanar for continuous power (no external power realed) / support for optional Remote Supervisor Adapter with 20-bit no or no palanar for Continuous power (no external power realed) / support for Optional Supervisor Adapter with 20-bit no or no paralle post / no 0.5 access is distant mode supervisor Adapter with 20-bit no or no paralle post / no occess, sub field disk with PX CI 10 (3.3v) Cooling fans Five fans (three fans for system, one blower in rear, one on power supply / variable spead / no ton-swap 200 watt / universal / auto-restart support / supports IBM ACT CAT-5 chaining solutions States T12 States T2.20 Co CL 2. SECC DDR-SDRAM DIMM32L5038 States diver disk 24 CB 15K Utrat 160 SCSI L 64-bit 133/MHz PCI X 1.0 (3.3v) - SCSI	National	Semiconductor® I	PC87414 Super	[.] I/O chip (serial,	keyboard	í, mouse,		22,00	, 0		
Systems mgmt Diagnostics WinBond® W83791D / on planar / monitors system and processor temperature, fan speed and failure, and voltages Diagnostics via PC-Doctor on a standard IBM Enhanced Diagnostics CD (diskette can be created) / support for optional Remote Supervisor. Adapter with 20-pin conn on planar for continuous power (not external power required) Security Power-on password / administrator password / unattended back / selectable boot / selectable	Ethernet controllers Two giga on planar CD-ROM / diskette 24X-10X ⁶ Rear ports <i>Rear:</i> se Front ports / graphics <i>Front:</i> tw	bit 10/100/1000 e / PCI-X 64-bit 10 CD-ROM / IDE; rial (9-pin), two et o USB (Vers 1.1)	thernet ports / B 0MHz Bus B / fu <i>Diskette:</i> 3.5" 1 hernet (RJ-45), ; <i>Graphics:</i> SV(roadcom® BCM III duplex / PXE / 44MB diskette o keyboard, mouse GA / ATI® Rage 2	5703 / two ' Wake on Irive / dust e, analog [KL / on pla	full gigat LAN® / A t cover DB-15 mo nar / 8Ml	lert Stand: onitor / no j B SDRAM	ard Fori parallel std/ma	mat 1.0 / tw port	o rear R	J-45 ports
Software Unattended boot / selectable boot / unattended start mode software ServerGuide™ (CD-RQM installation and configuration utilities), IBM Director™, and others 512MB PC2100 CL2.5 ECC DDR-SDRAM DIMM33L5038 Cooling fans Five fans (three fans for system, one blower in rear, one on power supply) / variable speed / not redundant or hot-swap 200 watt / universal / auto-sensing / auto-restart support supports IBM ACT CAT-5 chaining solutions 152MB PC2100 CL2.5 ECC DDR-SDRAM DIMM33L5038 Power supply Prover supply/ Wonitor, keyboard, mouse, rack, operating system / supports IBM ACT CAT-5 chaining solutions 168 PC2100 CL2.5 ECC DDR-SDRAM DIMM33L5038 Power supply You waitbe speed / not redundant or hot-swap 200 watt / universal / auto-sensing / auto-restart support supports IBM ACT CAT-5 chaining solutions 180 REA 1206B ATA-100 EIDE HDD ' 96 4GB 15K UltratI60 SCSI L68-pin HDD' 06P5762 ServeFAID ^{™-4} Lx Ultra160 SCSI L68-pin HDD' 06P5762 Brenct Supervisor Adapter Supports IBM ACT CAT-5 chaining solutions 180 REA 180 RCA 180 REA 180 REA 180 REA 9308425 ServeFAID ^{™-4} Lx Ultra160 SCSI L68-pin HDD' 06P5762 Brenct Supervisor Adapter 080 SCSI L68-pin HDD'	Systems mgmt WinBond Diagnostics Diagnost	® W83791D / on p cs via PC-Doctor	olanar / monitor on a standard	s system and pro IBM Enhanced I	ocessor te Diagnostic	mperatu s CD (di	re, fan spe skette can	eed and be crea	ated) / supp		
Cooling fans power supply Prerequisites Five fans (three fans for system, one blower in rear, one on power supply) / variable speed / not redundant or hot-swap gower supply) 18.2GB 15K Ultra 160 SCS1 SL 68-pin HDD* 06P5762 06P5762 Power supply Prerequisites 200 watt / universal / auto-resart support Monitor, keyboard, mouse, rack, operating system / supports IBM ACT CAT-5 chaining solutions 18.2GB 15K Ultra 160 SCS1 SL 68-pin HDD* 06P5762 06P5762 Back Stot 1: halfsize, 64-bit 133MHz PCI X 1.0 (3.3v) Stot 1: halfsize, 64-bit 133MHz PCI X 1.0 (3.3v) Stot 2: halfsize, 10W-profile, 64-bit 133MHz PCI X 1.0 (3.3v) Stot 3: halfsize, 10W-profile, 64-bit 133MHz PCI X 1.0 (3.3v) Stot 3: halfsize, 10W-profile, 64-bit 133MHz PCI X 1.0 (3.3v) Back Stot 1: halfsize, 64-bit 133MHz PCI X 1.0 (3.3v) Stot 3: halfsize, 10W-profile, 64-bit 133MHz PCI X 1.0 (3.3v) Stot 3: halfsize, 10W-profile, 64-bit 133MHz PCI X 1.0 (3.3v) - SCSI adapter in some models 18M ACT Local Console Manager 0 the rational Warranty Service ³ Top Stot 2: halfsize, 10W, profile, 64-bit 133MHz PCI X 1.0 (3.3v) Stot 3: halfsize, 10W, profile, 64-bit 133MHz PCI X 1.0 (3.3v) - SCSI adapter in some models LIMITED WARRANTY ³ Bay @ 3.5," SL 1", no access, std fixed disk wg @ 3.5," SL 1", no access, open for fixed disk Stot 1: halfsize, 64-bit 12.9Kg (minimum to max configuration) International Warranty Service ³ On site service acp ant num 69P5050 Disk Disk Stot 1: halfsize 1: 1.8 (to 1: 1.2 %g (1.1) x W 1.3	Software ServerG	ed boot / selectab µide™ (CD-ROM	le boot / unatter installation and	nded start mode	51 1G	2MB PC2 B PC210	2100 CL2. 00 CL2.5 E	5 ECC ECC DE	DDR-SDR/ R-SDRAN	AM DIMN RDIMM	M33L5038 33L5039
Image: Diskette Slot 2: halfsize, low-profile, 64-bit 133MHż PCl X 1.0 (3.3v) - SCSI adapter in some models Top Image: Diskette Bay @ 3.5", UltraSlim0.5", access, std diskette Bay @ 3.5", SL 1", no access, std fixed disk std CD-ROM Bay @ 3.5", SL 1", no access, std fixed disk mo access, open for fixed disk © Prediatize Power Point Power <	power su Power supply 200 watt Prerequisites Monitor, I	pply) / variable sp / universal / auto- keyboard, mouse	beed / not redun sensing / auto-i , rack, operating	dant or hot-swa estart support g system /	n 36 p 73 Re Se IBI IBI IBI IBI Oti	2GB 15k 4GB 15k 4GB 10k mote Su rveRAID M T541 1 M NetBA M NetBA M ACT L her optio	K Ultra160 K Ultra160 K Ultra160 Furster A K Ultra160 Furster A K Ultra160 Furster A K Ultra160 <pk p="" ultra160<=""> <pk< td=""><td>SCSI S SCSI SI SCSI SI dapter ra160 S nel Cole dard Ra rprise F sole Ma com/pc</td><td>SL`68-pin HI _68-pin HDI _68-pin HDI GCSI Adapt or Monitor ck Rack unager /us/access</td><td>DD* D* D* er (black) ories</td><td>06P5752 09N7585 06P5740 9512AB1</td></pk<></pk></pk></pk></pk></pk></pk></pk>	SCSI S SCSI SI SCSI SI dapter ra160 S nel Cole dard Ra rprise F sole Ma com/pc	SL`68-pin HI _68-pin HDI _68-pin HDI GCSI Adapt or Monitor ck Rack unager /us/access	DD* D* D* er (black) ories	06P5752 09N7585 06P5740 9512AB1
	Fan PCI slot 1 DIMM Slot Sockets #1 CPU System- board CPU System- board CD-ROM Diskette (top) / Disk Disk Fan Fan Front Front	Slot 2: halfsiz adapta Bay ① 3.5", ↓ Bay ② 5.25", ↓ Bay ③ 3.5", \$ Bay ④ 3.5", \$ Bay ④ 3.5", \$ Bay ④ 3.5", \$ Configuratic Configuratic Configuratic Configuratic Configuratic Configuratic Configuratic Configuratic CD, and IB CD, and	e, low-profile, 6 er in some mode JltraSlim 0.5", a JltraSlim 0.5", a SL 1", r sSL 1", r k front bezel) x W 17.3" x D ps; 11.8kg to 12 pn/Setup Utility: stem Partition: <i>A</i> ot: F12 at startu formation Panel t near startup b Diagnostics CD, M Director CD, Failure Analysis Iministrator of a	4-bit 133MHż PC laccess, std d loccess, std d lo access, std f lo access, oper 16.75"; 43.7mm .9kg (minimum to F1 at startup ALT+F1 at startup y pressing CTRI ServerGuide Se and Broadcom s on disk(s) with n imminent corr acity ¹³ (model do	v) CI X 1.0 (3. iskette 2D-ROM xed disk for fixed of x 439.9mi o max con p -+A (SCS) etup and Ir Ethernet i IBM Dire ponent fa	3v) - SC disk m x425.5 figuratior l models) istallatior CD ctor can ilure	SI	LIN year pa internation overage ext busions (3 year (Service 3 year (Service 3 year) (Service 3 year) (Service 4 year) (Service)	IITED WAI Irts and lab onal Warran 3 am - 5 pm e excluding iness day r ervice upg in eligible I IOR 9x5, NI Pac° part n IOR 9x5, 4 Pac part n IOR 24x7, 4 Pac part n IOR 24x7, 2 Pac part n rvicePac o w.ibm.com 'us/its/pdf/ II-free sup	RRANT or ity Servi , Mon - F holidays esponse ade ocations 8D avg rr um 69P95 hr avg re im 69P95 hr avg r um 69P95 hr avg r hr av	ce ³ Fri s, time ⁷ s): ⁷ esponse 505) (

See footnotes for important warranty information US models announced May 13, 2003 or September 9, 2003

IBM @server™ xSeries™ 306

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For GAV systems, lowerca:	se "x" should be replaced with a	a country-specific code.			
IBM [®] Machine Type GAV model	Processor	L2 FSB cache MHz Memory Disk	Disk Disk controller bays		Slots Ltd Available x bays Ethernet warr ³ date
8836 1Mx 11X 8836 1Sx 15X 8836 2Mx 21X 8836 2Sx 25X 8836 3Mx 31X 8836 3Sx 35X	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 800 512MB 36.4GB SC 1MB 800 512MB open bay 1MB 800 512MB 36.4GB SC 1MB 800 512MB open bay 1MB 800 512MB open bay	SATA 2 simple-swa SI Ultra320 2 fixed SATA 2 simple-swa SI Ultra320 2 fixed	1U rack p 1U rack 1U rack	2x4 Dual Gb 1 yr Apr 2004 2x4 Dual Gb 1 yr Jun 2004 2x4 Dual Gb 1 yr Jun 2004
Positioning Processor(s) L2 cache SMP support Implementation	Intel [®] Pentium 4 u 1MB / on die of pr No SMP support Systemboard conta	uni-processor, 1U rack-optimized up to 3.2GHz ¹ with 800MHz from occessor / at processor speed (n ains one Intel mPGA478B socked slots, and integrated chipset, of	<i>I server</i> side bus (FSB) o L3 cache) t (with Pentium 4 FC-PGA2	and heatsi	ink), four memory DIMM slots,
Memory	registered 184-pin	max ¹³ / one slot used / three slot ECC DDR-SDRAM DIMMs / fot or Checking and Correcting (E	r DIMM gold-connector slot	ts on syster	mboard / memory bus runs at
SCSI disk controller SCSI connectors IDE disk controller Cables Disk - features	on SCSI models: On Enhanced IDE bus SCSI models: on SATA models: two	laptec [®] chipset / single chann PCI adapter / one channel with PCI adapter: one 68-pin SCSI smaster / ATA-100 support / or e 2-drop 16-bit LVD SCSI cable o 1-drop SATA cables, one 1-di 320 SCSI, 10K rpm, 4.7ms read s	up to 15 device support / I connector e connector on systemboa , one 1-drop EIDE cable (c op EIDE cable (connected	ntegrated F and connected to to CD-ROM	Raid 7e (Raid 0-1) to CD-ROM)
Mechanical Architecture / chipse Bus slots	ets Intel E7210 chips EIDE, ethernet MA parallel, serial, key	(4) / rack-mount only et / Memory Controller Hub (MC ,C, USB, Low Pin Count Interfac /board, mouse vailable PCI-X 1.0 66MHz / no	e / Firmware Hub / SMSC®	LPC47M192	I 2.2 and PCI-X bus, ATA-100 2 Super I/O for diskette,
	port one is CSA, po 24X-10X ⁶ CD-ROM <i>Rear:</i> serial (9-pin) ics <i>Front:</i> two USB (V 33MHz PCI 2.2 bu	0/1000 ethernet ports / Intel Kena ort two is PCI 2.2 / full duplex / PX // IDE; <i>Diskette:</i> 3.5" 1.44MB (), two ethernet (RJ-45),keyboard, /ers 2.0); <i>Graphics:</i> SVGA / AT Is em interconnect cable (separat	E / Wake on LÃN® / Alert Sta liskette drive / dust cover mouse, analog DB-15 moni ® Radeon 7000 / on planar	ndard Forma itor / no para r / 18MB DI	at 2.0 / two rear RJ-45 ports allel port / two USB (Vers 2.0) DR SDRAM std/max / 32-bit
Systems mgmt Diagnostics	Diagnostics via PC	ors system and processor temp -Doctor on a standard IBM Enha r Adapter with 20-pin conn on pla	nced Diagnostics CD (disket	tte can be cr	
Security Software Cooling fans	unattended boot / s ServerGuide™ (CI utilities), IBM Direc	d / administrator password / electable boot / unattended start D-ROM installation and configura tor™, and others s for system, two on power sup	mode ion 1GB PC2700 CL 1GB PC3200 CL 80GB SATA sir	CL2.5 ECC 2.5 ECC DE 2.5 ECC DE nple-swap	DDR-SDRAM DIMM 06P4053 DDR-SDRAM DIMM 06P4054 DR-SDRAM DIMM 06P4055 DR-SDRAM DIMM 06P4055 DR-SDRAM DIMM 06P4051 HDD (7200 rpm)* 73P8002 OHDD (7200 rpm)* 73P8003
Power supply Prerequisites	/ variable speed / / universal / auto-s	not redundant or hot-swap 300 sensing / auto-restart support , mouse, rack, operating syster	watt 36.4GB 10K Ult 73.4GB 10K Ult 73.4GB 10K Ult 146.4GB 10K U Remote Superv ServeRAID [™] -6i ServeRAID-7T IBM NetBAY25 IBM NetBAY42 IBM ACT Local	ra320 SCSI ra320 SCSI ltra320 SCS visor Adapte i+ Ultra320 SATA Con Standard F Enterprise Console M at ibm.con	SL 68-pin HDD* 32P0723 SL 68-pin HDD* 32P0724 SI SL 68-pin HDD* 32P0725 er II 59P2984 SCSI Adapter 13N2190 ttroller 71P8648 Rack 9306250 Rack 930842S Anager 1735L04 m/pc/us/accessories 1735L04
Bac	Slot 2:	3/4 size, 64-bit 66MHz PCI X 1 half size, low-profile, 64-bit 66M		L	IMITED WARRANTY ³
Top PCI Slot DIMM #1 CPU Slot DIMM #2 socket CPU Slot Fan Fan Fan CD-ROM (top) / Disk Front	Bay ① Bay ② Bay ③ Bay ③ Say ④ Say ③ Say ④ Say ⑥ Say ④ Say ⑥ Say ④ Say ④ Say ⑥ Say ④ Say ⑥ Say ④ Say ⑥ Say ④ Say ⑥ Say ⑥ Say ④ Say ⑥ Say ④ Say ⑥ Say ④ Say ⑥ Say ⑥ Say ④ Say ⑥ Say ⑦ Say § Say ⑦ Say § Say §		num to max configuration) p CTRL+A (SCSI models) e Setup and Installation CD) with IBM Director can t component failure del dependent):	 Interna On site Covera next bu On site option: 3 yea (Serv (Serv<td>parts and labor ational Warranty Service³ e, 8 am - 5 pm, Mon - Fri age excluding holidays, usiness day response time⁷ e service upgrade s (in eligible locations):⁷ ar IOR 9x5, NBD avg response vicePac[®] part num 69P9505) ar IOR 9x5, 4 hr avg response vicePac part num 69P9506) ar IOR 24x7, 4 hr avg response vicePac part num 69P9507) ar IOR 24x7, 2 hr avg response vicePac part num 69P9508) ServicePac options at www.ibm.com/ es/us/its/pdf/wamomxeu.pdf toll-free support for warranty s during the warranty period³</td>	parts and labor ational Warranty Service ³ e, 8 am - 5 pm, Mon - Fri age excluding holidays, usiness day response time ⁷ e service upgrade s (in eligible locations): ⁷ ar IOR 9x5, NBD avg response vicePac [®] part num 69P9505) ar IOR 9x5, 4 hr avg response vicePac part num 69P9506) ar IOR 24x7, 4 hr avg response vicePac part num 69P9507) ar IOR 24x7, 2 hr avg response vicePac part num 69P9508) ServicePac options at www.ibm.com/ es/us/its/pdf/wamomxeu.pdf toll-free support for warranty s during the warranty period ³

US models announced March 16, 2004 (1xx, 2xx) and June 8, 2004 (3xx) % = withdrawn product

IBM @server™ xSeries™ 306 (August 04)

xREF by eServer Field Skills and Education Team

For GAV systems, lowercase		•	-)		XREF by es	berver Fi	ela Sk	this and E	ducat	ion rean
IBM [®] Machine Type GAV model		L2	FSB e MHz Memor	y Disk	Disk controller	Disk bays	Mech- anical		Ethernet		Available date
8836 - 4Sý -45x P ● 8836 - 5My -51x P	Pentium 4 [®] 3.2GHz Pentium 4 3.2GHz Pentium 4 3.4GHz Pentium 4 3.4GHz	1MB 1MB	800 512MB 800 512MB	open bay 36.4GB	SCSI Ultra320	2 simple-swap	1U rack 1U⁴ rac	x 2x4 x 2x4	Dual Gb	1 ýr / 1 yr .	Aug 2004 Jan 2005
Positioning Processor(s) L2 cache SMP support Implementation	A highly affordab Intel [®] Pentium 4 1MB min and m No SMP support Systemboard cor	at 3.20 ax / at potential	GHz ¹ & 3.4GH processor spe ne Intel PGA6	z with 800 ed / ECC 604 socket	MHz FSB optim	4 FC-PGA2 and	heatsink	, four	memory D	IMM s	
Memory	PCI-X slots, and 512MB std / 4GE DIMMs / four DIM	3 max ¹³ MM gold	/ one slot use d-connector sl	d / three s	lots available /	PC3200 400Mhz	registere	d 184	-pin ECC [DR-S	
SCSI disk controller SATA disk controller Cables Disk - features	one channel with	dapted up to ller (150 usmast ne 2-dr wo 1-dr	c [®] 7901 chips 15 device sup 0MB/sec) / on ter / ATA-100 rop 16-bit LVE rop SATA cab	set / single port / Integ planar / or support / D SCSI cal les, one 1	grated Raid 7e ne connector on one connector ole, one 1-drop -drop EIDE cat	(Raid 0-1) / 68 p systemboard / In on systemboard EIDE cable (cor ble (connected to	oin conne itegrated nnected f CD-RO	ector of Raid 7 to CD- M)	n PCI ada 7e (Raid 0-	oter	dapter /
Mechanical Architecture / chipsets Bus slots	EIA 19" Rack (1 Intel E7210 chip EIDE, ethernet M parallel, serial, ke (See below) two	s et / M IAC, US eyboard	lemory Contro SB, Low Pin C d, mouse	Íler Hub (N ount Interf	ace / Firmware	Hub / SMSC® LF	PC47M19	2 Sup	nd PCI-X er I/O for c	ous, A liskette	TA-100 e,
Ethernet controllers CD-ROM / diskette Rear ports Front ports / Graphics	Dual Gigabit 10/ integrated / port of ports (2) 24X-10X ⁶ CD-RC <i>Rear:</i> serial (9-pi <i>Front:</i> two USB SVGA / ATI® Rad	one is C OM Slim in), two (Vers 2	CSA, port two i n/ IDE; <i>Disket</i> ethernet (RJ-4 2.0)	is PCI 2.2 / te: 3.5" 1.4 45),keyboa	/ full duplex / PXE I4MB diskette d rd, mouse, anal	E / Wake on LAN® Irive / dust cover og DB-15 monito	/ Alert Sta	andard	Format 2.0	/ Rea	r RJ-45
Console interconnects	s No system-to-sys	stem in	iterconnect ca	able (sepa	rate keyboard,	video, mouse po	orts on t	ack)			
Systems mgmt Diagnostics	On planar / mon Diagnostic LEDS Diagnostics CD (planar for contine	6/ Error (diskette	LEDS for fan e can be crea	s and mer ted) / supp	nory/ Diagnosti ort for optional required)	cs via PC-Docto Remote Superv	r on a st isor Ada	pter II	with 20-pi	n coni	n on
Security Software	Power-on passwo unattended boot Secure Remote ServerGuide™ (utilities), IBM Dir	ord / adi / select pwr on/ CD-RO	ministrator pastable boot / ur table boot / ur off via ASF 2 M installation	ssword / nattended	start mode / 1 guration 1	56MB PC3200 CL 12MB PC3200 CL GB PC3200 CL3 I 0GB SATA simp 60GB SATA sim 50GB SATA sim	3 ECC D ECC DDF ble-swap ple-swap	DR-SD -SDR/ HDD HDD	RAM DIMN AM DIMM (7200 rpm (7200 rpn	/ (() 7 n) 7	06P4049 06P4050 06P4051 73P8002 73P8003 73P8006
Cooling fans Power supply Prerequisites	Six fans (four fai / variable speed / universal / auto Monitor, keyboar	ns for s / not re >-sensir	system, two o edundant or he ng / auto-resta	ot-swap 30 art support	upply) 7 10 watt 1 tem 7 S	64.GB 10K Ultra 3.4GB 10K Ultra 46.4GB 10K Ultra 66.4GB 15K Ultra 3.4GB 15K Ultra aremote Supervis ServeRAID TM -6i+ ServeRAID-7t SA BM NetBAY25 S Other options av	320 SCS 320 SCS 320 SCS 320 SCS 320 SCS or Adapt Ultra320 TA Cont tandard	SL 68 SL 68 SI SL 6 SI SL 6 SI SL 6 er II SCSI roller Rack	⊢pin HDD ⊢pin HDD 88-pin HDD 88-pin HDD 88-pin HDD 88-pin HDD) 33 33 33 33 33 33 33 33 33 33 33 33 33	32P0723 32P0724 32P0725 32P0784 32P0785 59P2984 3N2190 71P8648 9306250
Back	0.01		size, 64-bit 66 size, low-profi		X 1.0 (3.3v) 6MHz PCI X 1.	0 (3.3v)	1	_IMITE	ED WARR	ΑΝΤΥ	/3
Fan Fan Fan CD-ROM Disk (top) /	Baý the Bay t	② 3.5", ③ 3.5", ④ 3.5", ④ 3.5", aven bla 1.72" (` borfigura etwork E borator CSISele hips with edictive ert the a	Ibs; 11.8kg to tion/Setup Util Boot: F12 at s Information Present ect near startuu Diagnostics C Failure Analy administrator o	, access, no acces no acces x D 20"; 4 12.7kg (mi ity: F1 at sta tartup anel in fror p by pressi D, ServerG ysis on dis of an immir	std diskette ss, std fixed dis ss, open for fixe 13.7mm x 439.9 inimum to max artup ng CTRL+A (SC uide Setup and I k(s) with IBM D nent component	k ed disk mm x 508mm configuration) CSI models) nstallation CD birector can failure	 International International Internatione International International International International Inte	ational e, 8 am age exc usines e servi is (in el ar IOR vicePac ar IOR vicePac ar IOR vicePac Servic Servic www.ik	and labor Warranty - 5 pm, M. cluding hol is day resp ce upgrade ligible loca 9x5, NBD a ^o part num 6 24x7, 4 hr c part num 6 24x7, 2 hr c part num ePac optic pm.com/ ats/pdf/war	on - Fr idays, onse t tions) avg res 69P950 avg re 99P950 avg re 69P950 avg re 69P950 avg re 69P950 avg re	ime ⁷ sponse 05) ponse 06) sponse 77) sponse 08) eu.pdf
See footnotes for imp	292. 5000	.8GB wi GB with	ith two 146.4G two 250GB SA	ib SL SCS	model depende I disks or up to 15K rpm S	int).	issues	durin	ee support	ranty	period ³
Modele ennounce	od January 18 200	5					(X	3U0B)	© IBM Cor	p. Jan	uary 200

IBM @server[™] 325 (8835)

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IBM [®] Type-model Qty x Proc	essor	Proc. Speed	L2 Cache I	Memory	Memory type	Disk	Disk controller	Hot -swap o fixed disk ba			ited Availabl anty ³ dat
< 8835-21X 1 x Optero < 8835-22X 1 x Optero 8835-31X 1 x Optero 8835-32X 1 x Optero 8835-51X 1 x Optero 8835-52X 1 x Optero < 8835-5DX 2 x Optero	n 240 1 n 242 1 n 242 1 n 246 2 n 246 2	.6Ghz .6Ghz 2.0Ghz 2.0Ghz		1GB 1GB 1GB 1GB 1GB 1GB 2GB	Chipkill Chipkill Chipkill Chipkill Chipkill Chipkill Chipkill	None (open) 80GB ² EIDE None (open) 80GB ² EIDE None (open) 80GB ² EIDE 36.4GB 10K	Ultra320 EIDE	2 hot-swa 2 fixed 2 hot-swa 2 fixed 2 hot-swa 2 fixed 2 hot-swa	2x3 2x3 2x3 2x3 2x3 2x3	2 x Gigabit 1 y 2 x Gigabit 1 y	ear Oct 2003 ear Oct 2003 ear Oct 2003 ear Oct 2003 ear Oct 2003
L2 cache SMP support Implementation	1MB / on d 2-way SMF Systemboa	die of pro P / up to ard conta	ocessor two Op tins two	/ at pro oteron F AMD S	ocessor spe Processors Socket 940	ed (no L3 cac (same speed/	he) cache size = sockets,	e required) six memory	DIMM s	ruction set / 32-1 lots, two 64-bit 1	
,	slots used (f SDRAM DIM memory inte	four slots MMs / six erleave /	used in DIMM g dual cha	5DX mo gold-con nnel / m	odel) / four s inector slots nemory bus	slots available (t on systemboar runs at 2 x 100	wo avail. in d / DIMMs MHz / Errc	5DX) / PC27 must be insta or Checking	00 333Mi alled in ma and Corre	processor, six with Hz registered 184- atched pairs [a ba ecting (ECC) via errors contained in	-pin ECC DDF nk] / 2-way 16-bit
SCSI disk controller IDE controller / cable Disk - capacity Disk - bays	All (not use 64-bit 100M one 16-bit i All: Enhance EIDE mode SCSI mode SCSI mode	ed on EIL MHz PCI- nternal c ced IDE / els: One els: 36.40 els: two h	DE mode -X Bus E channel ATA-100 2-drop GB supp not-swap	e/s): LSI 3 / supp / 16-bit 0 contro EIDE c orts up 0 / 80-pi	I Logic [®] 53 orts RAID- 68-pin LVI Iller in CSB cable to tw to 15000 r n SCA-2 co	C1020 / Ultra3 1 mirroring (E D cable from sy 5 South Bridge o disk bays (p pm disks; <i>EIDE</i> pnnectors / fille	20 SCSI c mbedded stemboard / two conr rimary) / c models: { panels in	ontroller (L Mirroring) wi d to backplar nectors on pl one 1-drop E 30GB / 7200 each disk b	VD 320M th two SC ne for two anar / one IDE cab rpm / AT ay / all di	B/sec) / on plana CSI disks in front disks / no extern e 1-drop IDE cab le to CD-ROM (s 'A-100 / 8.7ms so sk bays Ultra320	ar / bays / lal connector le (CD-ROM) secondary) eek -enabled
Architecture / chipsets	AMD [®] 813 bridge B fo HyperTrans National Se	1 PCI-X or PCI-X sport clo emicond	Bridge expans ock (PCI uctor [®] F	Chip p ion slot , AC '9 C8736	oroviding tw ts) / 8111 7, Etherne 6 Super I/0	vo PCI-X bridg I/O HyperTrar t, SMBus, USI	es running sport Bri 3, EIDE, L	g at 100Mhz d ge Chip si PC to BIOS	lbridge (bridgeupporting	a 200 Mhz dou	Ethernet;
CD-ROM/diskette/kbd Rear ports Front ports / graphics Console interconnects	on planar / 24X-10X ⁶ C <i>Rear:</i> two <i>Front:</i> two I C2T Interco	PCI-X 6 CD-ROM USB (Ve USB (Ve onnect™	64-bit 100 I / IDE / ers 1.1), rs 1.1); cabling	0MHz E Diskett serial (Graphic not su	Bus B / full te and keyl 9-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 n planar / 8	' Alert Stand e and keybo l port not su 3MB SDRAM	ard Form ard optic pported std/max /	32-bit 33MHz PC	RJ-45 ports supported
Systems mgmt Diagnostics	Standard M connector of Adapter II of	AS-9549 on plana card not LEDs fo	QLogic ar / optio support or fans,	system nal Rer ed memor	n managem mote Super	nent /	Optero Optero 512ME 1GB F	C2700 CL2.	essor Up essor Up 2.5 ECC 5 ECC D	oğrade ograde DDR-SDRAM RD DR-SDRAM RDI	MM 73P226
Software		l boot / s de ™ (C[selectab D-ROM	le boot installa	/ unattend tion and c	rd / led start mode onfiguration	80GB 120GE 36.4GI 73.4GI	ATA-100 EI 3 ATA-100 E 3 15K Ultra3 3 15K Ultra3	DE HDD IDE HDD 20 SCSI 20 SCSI		09N4226 09N423 0D* 32P0734 0D* 32P0735
Power supply	variable sp 411 watt /	èed / no universa	ot redun al / auto	dant or -sensin	^r hot-swap g / auto-re	ver supply) / estart support e), operating s	IBM S USB F NetBA NetBA 1.5M U	erveRAID-6 Portable Dis Y ACT Loca Y Remote (JSB Conversion	M SCSI kette Driv al Consol Console I sion Optic	(256MB Cache) /e le Manager (LCN Manager (RCM)	02R0988 05K9270 M) 1735L04
Back	slot #1	Slot 2: Bay ① Bay ② Bay ③ Bay ③ Bay ③ Ster Utili Cor Cor Sys Net LSI Cor Cor Sys Net LSI Cor Pre mod	full-len 5.25", L 3.5", S 3.5", S 3.5", S alth blac ity tray ir 72" (1U to 32 lbs figuratic stem Par work Bo erator Inf Logic Co udes on 1 IEC plu dictive F dules, m mum inte GB with	gth, 6 JItraSlin SL 1", SL 1", SL 1", k color ti front s) x W 17 s; 11.8k on/Setu tition B ot: F12 formatic onfigura e line c Jg) Failure emory, ernal di two 146	4-bit 100M n 0.5", acc access, st access, op front bezel lides out fro 7.3" x D 25. g to 14.6kg p Utility: F- oot: ALT+F oot: ALT+F oot: ALT+F at startup on Panel in f attion Utility: cord (9 ft ur Analysis® of fans, powe sk capacity	CTRL+C at sta niversal interra on processor(s r supply, and di / ¹³ (model depe SCSI disks or	3.3v); Bus DM swap disk r hot-swap e bay (USE 39.9mm x6 max config rtup ck HV cab ck HV cab), voltage sk options	disk devices) 53.3mm guration)	1 year p Internation On site, coverage next bus On site (in eligit • 1 year (Servic • 2 year (Servic • 3 year (Servic • 3 year (Servic • 3 year (Servic • 3 year (Servic • 3 year (Servic • 3 year (Servic) • 3 ye	MITED WARRA barts and labor ional Warranty S 8 am - 5 pm, Mo e excluding holid siness day respo service upgrade ble locations): ⁷ r IOR 9x5, 4 hr acePac [®] part num r IOR 24x7, 4 hr cePac part num S r IOR 24x7, 8 hr cePac part num S scePac option ww.ibm.com/ s/us/its/pdf/wam oll-free support	ervice ³ n - Fri days, nse time ⁷ options avg response 69P9399) avg respons 96P2119) avg respons 96P2120) avg respons 99P9507) response 99P9506) ns at

See footnotes for important warranty information • = Hot-swap in some models US models announced August 5, 2003

 \succ US models withdrawn effective May 28, 2004 (21X, 22X) and June 29, 2004 (5DX)

IBM @server™ 325 (8835) (January 2004)

xREF by eServer Field Skills Enablement Team

IBM® Type-model Qty x Pro	cessor	Proc. Speed	L2 Cache	Memory	Memory type	Disk	Disk	Hot -swap or fixed disk bays	Slots		ited Availabl anty ³ dat
8835-61X 1 x Optero 8835-62X 1 x Optero 8835-71X 1 x Optero 8835-72X 1 x Optero	on™ 248 2 on 248 2 on 250 2	2.2Ghz ¹ 2.2Ghz 2.4Ghz		1GB 1GB 1GB 1GB	Chipkill Chipkill Chipkill Chipkill Chipkill	None (open) 80GB ² EIDE None (open) 80GB EIDE	Ultra320 EIDE Ultra320 EIDE	2 hot-swap 2 fixed	2x3 2x3 2x3	2 x Gigabit 1 ye	ear Jan 200 ear Jan 200 ear Jun 200
Processor(s) L2 cache SMP support	1MB / on (die of pro	cesso	r / at pro	ocessor spe	z HyperTransp eed (no L3 cac (same speed/	he)	0,	x86 Instr	ruction set / 32-b	it compatible
Implementation	Systemboa	ard conta	ins two	AMD S	Socket 940	micro-PGA ZII MD Opteron H	= sockets	, six memory I	DIMM s	lots, two 64-bit 1	00Mhz PCI-
Memory	PC2700 33 be installed	33MHz reg I in matche and Corr e	gistered ed pairs ecting	184-pin [a bank (ECC) vi	ECC DDR-] / 2-way me a 16-bit Ch	SDRAM DIMMs emory interleave	s / six DIN / dual cha	IM gold-connec innel / memory	tor slots bus runs	slots available / on systemboard / at 2 x 100MHz / rs on same chip a	Error
SCSI disk controller IDE controller / cable Disk - capacity Disk - bays	64-bit 1001 one 16-bit All: Enhand EIDE mod SCSI mode	MHz PCI- internal c ced IDE A dels: One dels: 36.40	X Bus hannel TA-10 2-drop 3B sup	B / supp I / 16-bit 0 contro 0 EIDE (ports up	oorts RAID- t 68-pin LVI oller in CSB cable to two to 15000 r	1 mirroring (E C cable from sy 5 South Bridge o disk bays (p pm disks; <i>EIDE</i>	mbedded stemboai / two con rimary) / <i>models:</i>	Mirroring) with d to backplane nectors on pla one 1-drop El 80GB / 7200 r	n two SC e for two nar / one DE cabl pm / AT	SI disks in front l disks / no extern	bays / al connector e (CD-ROM) secondary) eek
Mechanical Architecture / chipsets Bus slots	s AMD® 813 bridge B fo HyperTran National S	31 PCI-X or PCI-X nsport clo Semicond	Bridge expan ck (PC uctor®	e Chip p sion slo Cl, AC '9 PC8736	providing tv ts) / 8111 07, Etherne 66 Super /(vo PCI-X bridg I /O HyperTran t, SMBus, USE	es runnir I sport Br 3, EIDE, I	ig at 100Mhz (idge Chip sup _PC to BIOS a	bridge /	a 200 Mhz dou	Ethernet;
Ethernet controllers CD-ROM/diskette/kbd Rear ports Front ports / graphics Console interconnects	on planar / 24X-10X ⁶ (<i>Rear:</i> two <i>Front:</i> two sC2T Interc	/ PCI-X 6 CD-ROM USB (Ve USB (Ver connect™	4-bit 1(/ IDE) ers 1.1) rs 1.1); cabline	00MHz E / <i>Disket</i> , serial (<i>Graphic</i> a not su	Bus B / full te and keyt (9-pin), two s: SVGA / A pported / N	duplex / Wake board: none (U ethernet (RJ-4 TI [®] Rage XL / c	on LAN® SB disket 5) / parall on planar /	/ Alert Standa te and keyboa el port not sup 8MB SDRAM s	rd Form rd optio ported std/max /	32-bit 33MHz PC	RJ-45 ports supported I 2.2 Bus A
Systems mgmt Diagnostics	connector Adapter II	on plana card not c LEDs fo	r / Rer suppor or fans	note Su rted , memoi	ry DIMMs a	nent / and processors	Opter 512M 1GB 2GB	PC2700 CL2.5 PC2700 CL2.5	ssor U 5 ECC ECC D ECC D	ograde DDR-SDRAM RD DR-SDRAM RDI DR-SDRAM RDI	MM 73P226
Security Software	unattendeo	ḋ boot / s ide ™ (CE	selectal	ble boot installa	ation and c	rd / led start mode onfiguration	120G 36.40 73.40 IBM	BB 15K Ultra32 TotalStorage F	DE HDD 0 SCSI 0 SCSI C2-133)* Hot-Swap SL HE Hot-Swap SL HD Host Bus Adap	D* 32P073
Cooling fans Power supply Prerequisites	variable sp 411 watt /	pèed / nc ' universa	ot redu al / auto	ndant or o-sensir	r hot-swap ng / auto-re	ver supply) / estart support e), operating s	USB NetB ys, NetB 1.5M	Portable Diske AY ACT Local	ette Driv Consol onsole I on Optic	le Manager (LCN Manager (RCM) on	02R098 05K927 /) 1735L0 1735R1 73P583
Back						Hz PCI X 1.0 (Hz PCI X 1.0 (sC			NTY ³
Top Systemboard PC slc #2 CPU DIM cPU copt cPU copt cPU copt cPU copt cPU copt cPU copt cD-ROM copt	ot slot 2 #1 IM	Bay @ Bay @ Bay @ D Stee D Utili D H 1. D 26 t D Con D Sys D Net D Cope D LSI D Incli With D Pree mod	3.5", 3.5", alth bla ty tray i 72" (1U o 32 lb figurati tem Pa work Bo erator Ir Logic C udes o IEC p dictive dules, n	SL 1", SL 1", ck color in front s J) x W 1 s; 11.8k ion/Setu artition E configura ne line c lug) Failure nemory,	access, st access, op front bezel lides out fro 7.3" x D 25. gg to 14.6kg p Utility: F1 at startup on Panel in f ation Utility: cord (9 ft ur Analysis® of fans, powe	⁻¹ at startup front CTRL+C at sta niversal interration pn processor(s r supply, and dia	swap dis r hot-swa e bay (US 39.9mm x max confi rtup ck HV ca ck HV ca sk options	k p disk B devices) 653.3mm guration) ble regulator	Internati On site, coverag next bus On site s (in eligit • 1 year (Servic • 2 year (Servic • 2 year (Servic • 3 year (Servic) •	aarts and labor ional Warranty Se 8 am - 5 pm, Mor e excluding holic siness day respon- service upgrade of ole locations): ⁷ r IOR 9x5, 4 hr a pePac [®] part num r IOR 24x7, 4 hr pePac part num 9 r IOR 24x7, 2 hr pePac part num 9 r IOR 24x7, 4 hr pePac part num 6 r IOR 9x5, NBD r pePac part num 6 ervicePac option ww.ibm.com/ s/us/its/pdf/wamo	n - Fri lays, nse time ⁷ options vg response 69P9399) avg respons 6P2119) avg respons 6P2120) avg respons 9P9507) response 9P9506) is at
See footnotes for imp		293.60 240GE	GB with B with tv	two 14		v ¹³ (model depe SCSI disks or ks	endent):		24x7 ¹⁴ to issues o	oll-free support f during the warrar	or warranty hty period ³

See footnotes for important warranty information • = Hot-swap in some models US models announced January 2004 (61X, 62X), and May 25, 2004 (71X, 72X)

IBM @server™ 326 (8848) September 2004

xREF by eServer Field Skills and Education Team

IBM [®] Type-GAV Qty x Proce	Proc. ssor Speed	L2 Cache Memory	Memory type	Disk c		lot -swap or ed disk bays	Slots x bays Ethernet	Limited warranty ³	Available date
8848-51Y 1 x Opteror 8848-52Y 1 x Opteror 8848-61Y 1 x Opteror 8848-62Y 1 x Opteror 8848-71Y 1 x Opteron 8848-72Y 1 x Opteron 8848-81Y 1 x Opteron 8848-82Y 1 x Opteron	246 2.0Ghz 248 2.2Ghz 248 2.2Ghz 250 2.4Ghz 250 2.4Ghz 250 2.4Ghz 252 2.6Ghz	1MB 1GB 1MB 1GB	Chipkill Chipkill Chipkill Chipkill Chipkill Chipkill Chipkill	80GB ² SATÁ None (open) 80GB SATA None (open) 80GB SATA None (open)	SATA 2 Ultra320 2 SATA 2 Ultra320 2 SATA 2 Ultra320 2	fixed hot-swap fixed hot-swap fixed hot-swap	 2x3 2 x Gigabit 	1 year 1 year 1 year 1 year 1 year 1 year	Sept 2004 Sept 2004
Processor(s) L2 cache SMP support Implementation	Up to 2 x AMD® bit compatible 1MB / ECC / on co 2-way SMP / up 1 Systemboard cont PCI-X slots, integr	lie of processor to two Opteron I ains two AMD S	/ at process Processors Socket 940	sor speed (no L3 (same speed/ca micro-PGA ZIF	3 cache) ache size re sockets, eig	equired) ght memory	DIMM slots, two 6		
Memory	1GB std / 16GB n PC2700 or PC320 DIMMs must be ir 100MHz / Chipkil	istalled in match	s enabled v 4-pin ECC ed pairs [a	vith uni-processo DDR-SDRAM DI bank] / 2-way m	r, eight with IMMs / eigh emory interl	i dual / two s it DIMM gold leave / dual	slots used / six slo l-connector slots o channel / memory	ots availal on system v bus runs	ble / hboard / s at 2 x
SCSI disk controller SATA controller/cable Disk - capacity Disk - bays	All (not used on S 64-bit 100MHz PC one 16-bit internal All: SATA-150 cor SCSI models: ope SCSI models: two supports 15k driv	hot-swap / 80-p	5. 60GD / /	200 fpm / ATA-T	00/9.005	Seek			
Mechanical Architecture/chipsets Bus slots	EIA 19" Rack (1L AMD® 8131 PCI-X for PCI-X expansi HyperTransport cl National Semicon (See detail below) no hot-swap Activ	on slots) / 8111 ock (PCI, AC '97 ductor® PC8736 two available P	7, Ethernet, 6 Super I/C	SMBus, USB, S	SATA, IDE, I	LPC to BIOS	S and Super I/O)	npea /	
Ethernet controllers Optical/diskette/kbd Rear ports Front ports / graphics Console interconnects	Two gigabit 10/10 on planar / PCI-X 24X-10X ⁶ CD-ROI <i>Rear:</i> two USB (<i>Front:</i> two USB (C2T Interconnect [†] (RCM), and USB	64-bit 100MHz E M / IDE / <i>Disket</i> Vers 1.1), serial Vers 1.1); <i>Grap</i> i ^M _cabling not_su	Bus B / full te and keyl (9-pin), two hics: SVGA pported / N	duplex / Wake on board: none (USI ethernet (RJ-45 / ATI [®] Rage XL letBay Local Cor	n LAN® / Ale B diskette a	ert Standard	Format 1.0 / two	rear RJ-4	5 ports
Systems mgmt Diagnostics	Standard MS-954 connector on plan Adapter II card no Diagnositic LEDs only / Light Path E	ar / Remote Su t supported for fans, memo	pervisor ry DIMMs a		Opteron Opteron Opteron	248 Process 250 Process 252 Process	sor Upgrade sor Upgrade sor Upgrade sor Upgrade ECC DDR-SDRAI	VI kit	13N0705 13N0706 13N0702 13N0703 73P2269
Security Software	Power-on passwo unattended boot / ServerGuide™ (C utilities), IBM Dire	selectable boot	/ unattende tion and co	ed start mode	1GB PC3 80GB SA 160GB S 36.4GB 1	3200 CL3 E0 ATA-150 7.21 ATA-150 7.2 ATA-150 7.2 15K Ultra320	CC DDR-SDRAM k HDD*	kit SL HDD*	73P3233 25R6902 25R6903 32P0734
Cooling fans Power supply Prerequisites	Eight fans (five for variable speed / n 411 watt / univers Monitor, keyboard	ot redundant or al / auto-sensing	hot-swap g / auto-res	tart support	IBM Tota IBM Serv USB Port NetBAY / NetBAY I 1.5M US	alStorage FC veRAID-6M S table Diskett ACT Local C Remote Con B Conversio	2-133 Host Bus A SCSI (256MB Cad te Drive Console Manager Isole Manager (Re	Adapter che) (LCM) CM)	24P0960 02R0988 05K9276 1735L04 1735R16 73P5832
Back	Slot 2 Bay 0 Bay 0 Bay 0 Bay 0 Bay 0 Bay 0 Power Supply Fan Fan Fan Disk (std or opt) ● disk bay ■ disk bay	t: full-length, 6 5.25", UltraSlir 3.5", SL 1", 3.5", SL 1", alth black color- lity tray in front s .72" (1U) x W 17 to 32 lbs; 11.8k nfiguration/Setu stem Partition B twork Boot: F12 erator Informatic I Logic Configura Judes one line of h IEC plug) edictive Failure dules, memory,	4-bit 133/1 n 0.5", acc access, st access, op front bezel lides out fro 7.3" x D 25. g to 14.6kg p Utility: F1 oot: ALT+F oot: ALT+F at startup on Panel in f ation Utility: cord (9 ft ur Analysis® of fans, powe sk capacity 5.8GB SL S	1 at startup ront CTRL+C at start niversal interrack on processor(s), r supply, and disk r ¹³ (model depen CCSI disks or	 .0 (3.3v); Bi .0 (3.3v); Bi M wap disk hot-swap di bay (USB di 9.9mm x653 ax configur. up < HV cable voltage rec < options	us C us C isk evices) 3.3mm ation) gulator	LIMITED W/ year parts and I nternational Warra on site, 8 am - 5 pr coverage excludin text business day on site service up in eligible locatior 1 year IOR 9x5, (ServicePac Part 2 year IOR 24x7 (ServicePac part 2 year IOR 24x7 (ServicePac part 3 year IOR 24x7 (ServicePac part 3 year IOR 24x7 (ServicePac part 3 year IOR 24x7 (ServicePac part 3 year 1 year 3 year 1 year 3 year	ARRANT abor anty Servi g holiday response grade opt ns): ⁷ 4 hr avg t num 69F , 4 hr avg num 96F2 , 4 hr avg num 96P2 NBD resp num 69F9 NBD resp num 69F9 num 69F9 NBD resp num 69F9	ice ³ Fri s, s, ions '93399) g response 2120) g response 2507) ponse 9507) ponse 9505) at xeu.pdf warranty

See footnotes for important warranty information • = Hot-swap in some models • = Models announced February 2005

IBM @server™ xSeries™ 335 (8830) - February 2003

xREF by eServer Field Skills Enablement Team

											Sum but and	-
IBM® Type-model Qty x P	rocessor	L2 cache	FSB MHz	Memory	Memory type	Disk	Disk controller	Hot -swa fixed disk		ots ays Etherne		Availab ³ dat
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 3.06 GHz	512KB 512KB 512KB 512KB	533& 533& 533& 533& 533&	512MB 512MB 512MB 512MB 512MB	Chipkill Chipkill Chipkill Chipkill	None (open) 40GB ² EIDE None (open) 40GB ² EIDE	Ultra320 EIDE Ultra320 EIDE	2 fixed	vap 2 2 vap 2 2	x4 2 x Giga x4 2 x Giga x4 2 x Giga x4 2 x Giga	abit 1 year abit 1 year abit 1 year abit 1 year abit 1 year	May 200 May 200 Apr 200 May 200
Positioning Processor(s) L2 cache SMP support Implementation	1 x Intel® 512KB / or 2-way SMI Systemboa	Xeon 2.8 n die of pr P / up to t ard contai	BB or 3 rocessor wo Xeor ins two I	.06GHz ¹ r / at proc n Process ntel 603-	with 533N essor spea sors (same pin micro-F	rver that delive IHz frontside I ed (no L3 cach speed/cache PGA ZIF socke hernet, graphi	ous / Hyp e) size) ets, four m	er-Threadii	ng techn	ology		
Memory	PC2100 26 must be ins	6MHz re stalled in cking an	gistered matched d Corre	l 184-pin d pairs [a cting (E	ECC DDR bank] / 2-v CC) via 16-	slots availabl -SDRAM DIMI vay memory in bit Checksun chips)	Vis / four E iterleave /	dual chanr	nel / merr	ory bus runs	at 2 x 100	MHz /
SCSI disk controller IDE controller / cable Disk - capacity Disk - bays	64-bit 1001 one 16-bit All: Enhand EIDE mode SCSI mode	VHz PCI- internal c ced IDE / els: One : els: none	-X Bus E channel ATA-100 2-drop E standa	3 / suppo / 16-bit 6 0 controll EIDE cab rd / supp	orts RAID-1 58-pin LVD er in CSB5 ble to two d orts up to 1	C1020 / Ultra mirroring (E cable from sy South Bridge isk bays / one 5000 rpm dis connectors / f	mbeddeo vstemboa / two cor 1-drop E ks; <i>EIDE</i>	I Mirroring) rd to backp inectors on IDE cable t <i>models:</i> 40	with two lane for t planar / o CD-RC GB / 720	SCSI diśks i wo disks / no one 1-drop I M 0 rpm / ATA	n front bay external c DE cable (100 / 8.7m	connector CD-ROM
Mechanical Architecture / chipsets Bus slots	s ServerWo one CIOB- slot 2 and I SMBus, LF	rks® Gra X2 I/O B Ultra320 PC bus to	ind Cha ridge (IN / CSB5 Super I	I mpion ™ MB2 bus South B I/O) / Nat	to Host Bri ridge (Thir ional Semi	ted in 26" dee MIC LE Host I dge for PCI-X I IMB to Host I conductor® P(wap Active™ F	Bridge (m Bus A wi Bridge for C87417 S	emory con th slot 1 an PCI 2.2 Bu	troller an d dual et is C with	d I/O Bridge) hernet and F	/ 'CI-X Bus I	
Ethernet controllers CD-ROM / diskette Rear ports Front ports / graphics Console interconnects	on planar / 24X-10X ⁶ (<i>Rear:</i> one <i>Front:</i> two sC2T Interc	PCI-X 64 CD-ROM USB (Ve USB (Ve onnect™	4-bit 100 / IDE; <i>L</i> ers 1.1), ers 1.1); ¹ cable (⁻	MHz Bus Diskette: C2T in, C Graphic 10 inch, 2	s A / full du 3.5" 1.44M C2T out, se <i>s:</i> SVGA / <i>i</i> 245mm) is	com BCM5703 olex / Wake or B diskette driv erial (9-pin), tw ATI® Rage XL standard (Key (a cable with s	n LAN® / A re / dust c ro etherne / on plana rboard Vic	lert Standa over et (RJ-45), c ar / 8MB SD deo Mouse	rd Forma one RS-4 RAM std (KVM) cł	at 1.0 / two re 85 (sys mgm /max / 32-bit naining cable	ar RJ-45 p t) / no para 33MHz PC) / one Cal	orts Ilel port Cl 2.2 bus
Systems mgmt Diagnostics	monitoring with 20-pin Light Path	such as conn on Diagno	temp, m planar† stics ™ (nemory, c for contir (LED ligh	optional dis nuous pwr its indicate	sor (ISMP) / I ks, fans, pow (no ext pwr req failing Doctor in BIO	er supply) Xeor S) Xeor	/ support fo 2.4GHz/5 2.8GHz/5	or optiona 12KB L2 12KB L2	al Remote Si 2 Cache Pro 2 Cache Pro	upervisor A c Upg c Upg	
Security Software	Power-on p unattended ServerGui utilities), IE	d boot/se i de ™(CD	electabl D-ROM in	e boot / u nstallatio	inattended	start mode	512N 1GB 2GB 80GI	IB PC2100 PC2100 C PC2100 C B ATA-100	CL2.5 E L2.5 EC L2.5 EC EIDE H	.2 Cache Pr CC DDR-SDR/ C DDR-SDR/ C DDR-SDR/ DD* SI Hot-Swap	RAM ĎIMI Am Rdima Am Rdima	M 33L50 1 33L50
Cooling fans Power supply Prerequisites	Monitor, ke	beed / no universa byboard, Chain Te	ot redun al / auto mouse, echnolog	idant or o-sensing rack, dis gy (C2T)	hot-swap / auto-res k (some), c Kit per cha	ply) / start support operating sys, ain of servers o	73.40 Rem xSer brea or NetB	GB 10K-4 U ote Supervi ies Cable (kout cable a AY ACT Lo	ltra160 S sor Adap Chain Te and2 met cal Cons	CSI Hot-Swa	pSLHDD* able Kit (2 ningcable)	06P575 09N755 meter
Back	Fan Disk (std or opt)	Slot 2: Bay ① Bay ② Bay ③ Bay ③ Bay ④ Ster Ottili Ottili Ottili Sys Net Opp Clai Opp Clai Sys Net Sur Sher Sher Sher Sher Sher Sher Sher She	fullsize 3.5", 1 5.25", 1 3.5", 5 3.5", 5 3.5", 5 3.5", 5 3.5", 5 alth blac ty tray ir .72" (1U to 28.4 lk nfiguratic gnostics tem Par work Bo erator In Logic C udes tw. versal in dictive F dules, m mum int	e, 64-bit UltraSlim JItraSlim SL 1", SL 1", sk color fr in front sli V W 17. Ds; 11.8k On/Setup s (PC-Do- tition Boc of (PC-Do- tition Boc ot: F12 a formatior onfigurat o line cor terrack H Failure Ar eemory, fa ernal dis	100MHz P 0.5", acce acce acce ont bezel des out froi 3" x D 25.7 g to 12.9kg Utility: F1 a ot: ALT+F1 t startup Panel in fr ion Utility: (ds (9 ft 110 V cable wi aalysis® on ans, power k capacity	at startup at startup	; Bus B e DM r hot-swa ked or hot e bay (US 39.9mm) nax config nax config retup IEMA plug voltage re sk option	-swap disk B devices) (653.3mm guration) g and 9 ft egulator	 Inter On s cove next On s eligit 3 y (Se 3 y (Se 3 y (Se othe http://servi 24x7 	LIMITED W ar parts and national War ite, 8 am - 5 rage excludi business da ite service u jole locations ear IOR 9x5, envicePac part ear IOR 24x7 envicePac part ear ServicePac f/www.ibm.cr ces/us/its/put toll-free si es during th	labor ranty Servi om, Mon - I mg holiday y response ograde opt y? NBD respo t num 69P95 4 hr avg re num 69P95 4 hr avg re num 69P95 5 options a om/ df/wamom: upport for	ce ³ Fri s, time ⁷ ions (in 5505) seponse 506) response 507) response 9508) tt xeu.pdf warranty

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

(X335B) © IBM Corp. April 2003

IBM @server™ xSeries™ 336 (8837) - August 2004

xREF by eServer Field Skills and Education Team

Bit Op: Disk Power Store Line Automation 8837 01/011 1 × 00071 2014						
68/37-01/2 1. X Noorth 25 Staff 2 2 Staff 2 2 X Staff 2 X Staff 2 <td< td=""><td></td><td></td><td></td><td>Diek</td><td></td><td></td></td<>				Diek		
8837-027-024. 1 x Xeon 2.05Hz 110B 152H 110B 152H 110B 152H						
8837-347-24. 1 × Xeon 3.3GHz 11MB 1GB tid None (open 3.5) Ultra320 958W 2 holewap 2.43 2.6 Gigabit 3 year Oct 2004 8837-347-24. Xeon 3.3GHz 11MB 1GB tid None (open 3.5) Ultra320 958W 2 holewap 2.43 2.6 Gigabit 3 year Oct 2004 8837-347-34. Xeon 3.3GHz 11MB 1GB tid None (open 3.5) Ultra320 958W 2 holewap 2.43 2.6 Gigabit 3 year Oct 2004 8837-347-44. Xeon 3.3GHz 11MB 1GB tid None (open 3.5) Ultra320 958W 2 holewap 2.43 2.6 Gigabit 3 year Oct 2004 8837-404. Xeon 3.3GHZ 11MB 1 2 Gotto 11 Yean 3.6 Gigabit 3 year Oct 2004 Oct 2004 970cessor(s) 1 × hole 3.6 Gigabit 3 year Oct 2004 Oct 2004 Oct 2004 1 × hole 3.6 Gigabit 3 year Oct 2004 1 × hole 3.6 Gigabit 3 year Oct 2004 Oct 2004 1 × hole 3.6 Gigabit 3 year Oct 2004 1 × hole 3.6 Gigabit 3 year Oct 2004 Oct 2004 970cessor(s) 1 × hole 3.6 Gigabit 3 year Oct 2004 Year Oct 2004 Oct 2004 970cessor(s) 1 × hole 3.6 Gigabit 3 year Oct 2004 Year Oct 2004 Year Oct 2004 970cessor(s) 1 × hole 3.6 Gigabit 3 year Oct 2004 Year Oct 2004 Year Oct 2004 Year Oc	8837-02y-02x 1 x	Xeon 2.8GHz 1MB 51	2MB std No	one (open 3.5) S	ATA 585W 2 s	imple-sp 2x3 2 x Gigabit 3 year Oct 20
8837-264-27. 1x Xeon 3.3CHz 1NB 1GB cdl None (open 2.5) Ultra200 SSW 2 synthesize 2.3 2.5 Gligabit 3 year Oct 2004 8837-264-27. 1x Xeon 3.3CHz 1NB 1GB std None (open 3.5) Nume SSW 2 synthesize 2.3 2.5 Gligabit 3 year Oct 2004 8837-404-4X 1x Xeon 3.3CHz 1NB 1GB std None (open 3.5) SIATA SSW 2 synthesize 2.3 2.5 Gligabit 3 year Oct 2004 8837-464-4X 1x Xeon 3.3CHz 1NB 1GB std None (open 3.5) SIATA SSW 2 synthesize 2.3 2.5 Gligabit 3 year Oct 2004 8837-464-4X 1x Xeon 3.3CHz 1NB 1GB std None (open 3.5) SIATA SSW 2 synthesize 2.3 2.5 Gligabit 3 year Oct 2004 Records 1x Mark Xeon 3.3CHz 1NB TA Mark Xeon 3.3CHz None (open 3.5) Nume Nume SSW 2 synthesize 2.3 2.5 Gligabit 3 year Oct 2004 Cache 1x Mark Xeon 3.3CHz Nume (open 3.5) Nume						
8837-311-31 1 X Xeon 3.4GHz 110B 1GB tdl None (opn 3.5) Uttra320 SSW 2 None way 2.3 2.5 Glgabil 3 Year Oct 2004 8837-414-41 X Xeon 3.6GHz 110B 1GB None (opn 3.5) SATA SSW 2 None way 2.3 X.5 Glgabil 3 Year Oct 2004 8837-447-42 X Xeon 3.6GHz 110B 1GB None (opn 3.5) SATA SSW 2 None way 2.3 X.5 Glgabil 3 Year Oct 2004 8837-447-42 X Xeon 3.6GHz 110B Glgabil 3 Year Oct 2004 Chi 2	8837-2Ay-2Ax 1 x 2	Xeon 3.2GHz 1MB 10	B std No	one (open 2.5) U	ltra320 585W 4 h	ot-swap 2x4 2 x Gigabit 3 year Oct 20
8837-41/-41.k 1 x Xeon 3.6Ch2 HMB 10B edit None (open 3.5.) Utra320 BSW 2 hot-wap 2x4.3 x Gligabit 3 year Cot 2004 8837-44/-4X.A X Xeon 3.6Ch2 HMB 10B Image: Advance Adva						
8837-42% 1 x Xeon 3, 3, 60 Hz 1 MB 1 GB std None (open 3, 5) SATA 988/W 2 simple-sp 2x 2 x Glight 3 year Oct 2004 Prodestoring A highly managabia, util-active inter with advises proformance computing in space-constained and inviewments Processors (same with advises proformance computing in space-constained and inviewments Processors (same space) (EOC SMP support Systemboard contains two Intel 604 pm intro-PGA 2/F sockets, spirit DIMM site, the instained part is bankl / 2-way memory interieser / due to Xeon Processors (same space) (Same State (Same	8837-41y-41x 1 x 2	Xeon 3.6GHz 1MB 10	B std No	one (open 3.5) U	ltra320 585W 2 h	ot-swap 2x3 2 x Gigabit 3 year Oct 20
Pecaesoning Processories Proces						
Cache SMP support		A highly manageable, ul	tra-dense 1U, 2-wav	server that delive	rs performance com	outing in space-constrained environments
SMP support 2-wwy SMP / up to two Xeon Processon (same specific dische size) Systemboard contains kwo Intel 600 pn more-PGA 2JP sockes, sight DIMM slots, two PCLX slots (one full length 133MHz, one box-profile 100MHz) and integrated SGS, dual Ge ethernet, graphics Memory 5120B or 1GB add 1/GES and MP / CS 2dd Odd MP registered 240-pin ECC DDR2-SDFAM DIMMs / eight DIMMs must be installed in matched gains (b tank) / 2-way memory interfacer / dual Chipatility - comparison (b comparison) / DIMMs must be installed in matched gains (b tank) / 2-way memory interfacer / dual Chipatility - comparison (b comparison) / DIMMs must be installed in matched gains (b tank) / 2-way memory interfacer / dual Chipatility - comparison (b comparison) / DIMMs must be installed in matched gains (b tank) / 2-way memory interfacer / dual Chipatility - comparison (b comparison) / DIMMs must be installed in matched gains (b tank) / 2-way memory interfacer / dual Chipatility - comparison (b comparison) / DIMMs must be installed in matched gains (b tank) / 2-way memory interfacer / dual Chipatility - comparison (b comparison) / DIMMs must be installed in matched gains (b tank) / 2-way memory interfacer / dual Chipatility - comparison (b comparison) / DIMMs must be installed in matched gains (b tank) / 2-way memory interfacer / dual Chipatility - comparison (b comparison) / DIMMs must be installed in matched gains (b tank) / 2-way memory interfacer / dual Chipatility - comparison (b comparison) / DIMMs must be installed in matched gains (b tank) / 2-way memory interfacer / dual Chipatility - comparison / DIMMs must be installed in matched gains (b comparison) / DIMMs must be installed in matched gains (b comparison) / DIMMs must be installed in matched gains (b comparison) / DIMMs must be installed in matched gains (b comparison) / DIMMs must be installed and matched gainstalled foremathed datterfacer / dual distalled foremathed datt						ed Memory 64 Technology (EM64T)
Interpreter Disk	SMP support	2-way SMP / up to two	Xeon Processors (sa	ame speed/cache	sizė)	
Memory Size is on a cytemboart () 46G max? / 8 alos (6 and / PC-2020 at 040/Hz mgistand 240 per ECO DDR2.SDR4M DIMMs (at eight and a cytemboart () and a systemboart () MMS Memory Size is on a cytemboart () MMS Size is a cytemboart () MMS Size is a cytemboart () MMS SCS () disk controller LSI Logic SSI202 () Literators 20 CSI controller (LVD 230MB/keg) () no planar / two on-edors on allard () in work of the size is a cytemboart () and cytemb	Implementation					wo PCI-X slots (one full length 133MHz, one
DIMM gold-connector slots on systemboard / DIMMs must be installed in mitched pairs [bank] (2-way memory interfexe? dual charmel / Active Memory?" in colles spate and memory miror / Error Checking and Correcting (ECC) will show this, optional on some 162 (26712) and gradee DIMMS SCSI disk controller DISK - MAX capacity of the CSC disk in hort basy, or the bit internal charmel / no sternal corrector on 1-drop EIDE controller (able DISK - MAX capacity of the CSC disk in hort basy, or the bit internal charmel / no sternal corrector on 1-drop EIDE cable to DV-ROM. Disk - MAX capacity of the CSC disk in hort basy, or fuel and the more controls on planer / two one-drop cables on 1-drop EIDE cable to DV-ROM. Bell Net SCC disk in the CSC disk CSC disk in the CSC disk CSC disk CSC disk in the CSC disk CSC d		• • •	0	. 0	•	
channel / Active Memory [™] : online spare and memory miror / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkel [™] : orients 2, 3 or 4-bit miros as same chip and decides 2+ through 8-bit errors contained in two chips, copilinal on some 1G8 (25:12) and greater DIMMS SCSI disk controller LSL Logi: 52:01:02 / MIMS LSL Logi: 52:01:02 / MIMS Enhanced SUTA: 150 (15:00HSec) controller (LVD 320/MS/ec) / on planar / soupports RAD-1 mirroring (Embedded Mirroring) with two 5CSI daks in front bays / one 16-bit internal channel / no external concector SATA dak Controller Disk - MAX sparality SCSI 4.53 (25:02 MIM Mon 146/3E HDD SCSI 2:5100 (25: 7:36E HDD SCSI 2:500 (25:02 MIM Mon 25:05E HDD SCSI 4.52 (25:02 MIM Mon 146/3E HDD SCSI 2:5100 (25:02 MIME FC):X10 one 6:MIM PC FC): 10:00 moders of ATA: 2: 510 (5:00 MIME FC):X10 one 6:MIM PC): 13:00 moders (one 504471:32C) user 10:00 (19:00H12 FC): 20:00 / 10:HSI South Bridge (Trin MIMS SCSI 4.52 (25:02 MIM Mon 146/3E HDD SCSI 2:500 (25:02 MIME FC):X10 one 6:MIM PC): 13:00 (25:02 MIME FC):X10 one 6:MIM PC): 14:00 (19:02 MIME FC):X10 one 6:MIM PC): 14:00 (19:02 MIME FC): 10:00 (19:02 MIME FC): 10:0	Memory	DIMM gold-connector slo	aB max ¹⁰ / 8 slots (6 its on systemboard /	DIMMs must be in	4001VIHz registered 2 Installed in matched r	240-pin ECC DDR2-SDRAM DIMMS / eight pairs [a bank] / 2-way memory interleave / di
Sec I disk controller LSL Logic 53C1020 / LINAS20 SCSI controller (LVD 320/MB/sec) controller (JVD 320/MB/sec) controller / no enternal concorder SATA disk Controller Enhanced SATA:150 (150/MB/sec) controller / lwo connectors on planar / two on-odrop cables Bisk - MAX appendix Controller SCSI 32 S2CB with two LSCB disks in from bars / one 14-drop EIDE cable to DVD-ROM Disk - MAX appendix PC LSTB, two hold-warp or bur 2.5° hote-warp / 80-pin S2A-2 connectors SATA: 2 simple-swap SCSI 32 S2CB with two 250GB with tw		channel / Active Memor	y ^(™) : online spare ar	nd memory mirror	/ Error Checking an	nd Correcting (ECC) via 16-bit Checksum
SCSI disk controller SL Logic* SoC1220 / Ums202 OSSI controller (/ b0 200/B/sec) (on planar / supports RLD-1 mirroring (Embedded Mirroring) with vo SCSI disk in front pairs (one 16-bit thermal channel / now comeding contextiler / two				same chip and de	tects 2- through 8-bit	errors contained in two chips; optional on
SATA disk Controller / box SCS1 disks in from bays / one 16-bit internal channel / no external connector DE controller / cable Enhanced SATA 150 (10KB/sec) controller / two connectors on planar / two one-drop cables Dek - MAX capacity SCS1 two hotewap or four 2.5 inclexing / Box 2000 string / Bo	SCSI diek controllor	. ,	-		(sec) / on planar / or	inports RAID-1 mirroring (Embaddad
DE controller / cable Disk - MAX caps SSR two hotswap or four 2.5' notswap / 80-pin SCA-2 connectors SATA : 2 simple-swap SSR two hotswap or four 2.5' notswap / 80-pin SCA-2 connectors SATA : 2 simple-swap SSR two hotswap or four 2.5' notswap / 80-pin SCA-2 connectors SATA : 2 simple-swap SSR two hotswap or four 2.5' notswap / 80-pin SCA-2 connectors SATA : 2 simple-swap SSR two hotswap or four 2.5' notswap / 80-pin SCA-2 connectors SATA : 2 simple-swap SSR two hotswap or four 2.5' notswap / 80-pin SCA-2 connectors SATA : 2 simple-swap SSR two hotswap or four 2.5' notswap / 80-pin SCA-2 connectors SATA : 2 simple-swap SSR two hotswap or four 2.5' notswap / 80-pin SCA-2 connectors SATA : 2 simple-swap SSR two hotswap or four 2.5' notswap / 80-pin SCA-2 connectors SATA : 2 simple-scale to start SSR two hotswap or four 2.5' notswap / 80-pin SCA-2 connectors SATA : 2 simple-scale to start SSR two hotswap or four 2.5' notswap / 80-pin SCA-2 connectors SATA : 2 simple-scale to start SSR two hotswap or four 2.5' notswap / 80-pin SSR two start SSR two hotswap or four 2.5' notswap / 20-pin SSR two start SSR two start in the STAR in the STAR start SSR two start in the start SSR tw		Mirroring) with two SCSI	disks in front bays / o	one 16-bit internal	channel / no externa	al connector
Disk - MAX cepacity SCS1 3.5 / 292.6B with two 146/3B PLD SCR12.5 four 2.5 ' 73GB HDD SATA: 500.6B with two 290.8B With two 290.8B HDD SATA: 500.6B with two 290.8B With two 290.8B HDD SATA: 500.6B with two 290.8B With two 290.8B HDD SATA: 500.6B With two 290.8B With Withwo 290.8B With two 290.8B With Withwo 290.				/ two connectors of	on planar / two one-c	Irop cables
Mechanical Architecture / chipses EIA 19" Rack (1U ¹) / rack-mount only / supported in 26" deep racks such as the IBM NetBAY™ Back products Architecture / chipses Mechanical Architecture / chipses EIA 19" Rack (1U ¹) / rack-mount only / supported in 26" deep racks such as the IBM NetBAY™ Back products Architecture / chipses Bus Sots Some Chipses / Support (2) / rack-mount only / supported (2) / 20 + 67 Support (2) / 20 +		SCSI 3.5: 292GB with tw	o 146GB HDD SCS			
Architecture / chipests Intel E7520 / Intel Memory Controller / Hub (MCH) /3 PCI busics (one 64bit/30MHz PCI/X10, and 32bit/33MHz PCI // Intel PCI X Bitdle (BUEX 10, / no hot-swap Active ¹¹ PCI x bits (a busic) / National PC3742 Super 1/0 (supports legacy components, keyboard, mouse, serial Two glagabit 10100/100 dethermet ports / Boadcom BCM5721 / two full glagabit ethermet MAC and PHY layer functions / on planar / PCX 64-bit 100MHz / full duplex / Wake on LAN ² / Alert Slandard Format 2.0 / two rear RL45 ports Some DVD-ROM / Leg. Disknet: none we dethered IR (L45), one PLA5 (sys mgmt) / mouse ps2 / keyboard ps2 (SrGA / Al ² 7000 dethermet ports / Boadcom BCM5721 / two full glagabit ethermet MAC and PHY layer functions / on planar / BCM5 (SrGA / Alert Slandard Format 2.0 / two rear RL45 ports Some DVD-ROM / L22 (D), senai (9-n), vice wo ethermet (R1-45), one PLA5 (sys mgmt) / mouse ps2 / keyboard ps2 (SrGA / Al ² 7000 nd glast, fains power supply / suport for optional Remote Supervisor Adapter II Similine with 2.0 pin com on planar for continuous pur (no est pur req) issued and management Controller (BMC) / H825168 / on planar / provide system and environmental monitoring such as temp, memory, optional disk, fains power supply / suport for optional Remote Supervisor CAlapter II Similine with 2.0 pin com on planar for continuous pur (no est pur req) issued a variant startor password / administrator password / addition Simple in the system and environmental monitoring suph Power on password / administrator password / addition Simple in the system and environmental monitoring suph Power administrator password / addition Simple in the system and environmental monitoring suph Power administrator password / addition Simple in the system and environmental monitoring suph Power administrator password / addition to the system addition in the s	Disk - bays	SCSI: two hot-swap or for	our 2.5" hot-swap / 8	0-pin SCA-2 conn	ectors SATA: 2 simp	le-swap
Szbit/33MHz PC1/ ks lotdy 1 & 2, LS jois 520120/1/CHSR South Bridge (Thin IMB bidge CT Nin IVB super I/D (supports legacy components; keyboard, mouse, serial) Bus slots Ethermet controllers OVD-POM / kiskette OVD-POM / kiskette Part of the status of						
to Host Bridge for graphics controller, EDE, USB, SMBus, LPC bus to Super I/O, Kational PC87427 Super I/O (supports legacy components; keyboard, mouse, serial) Bus slots Ethemet controllers DVD-ROM / diskets Bear ports Stora / ATP 7000m / on planar / PC1X 84-bit 100MHz / full duplex / Wake on LAN+ / Alert Standard Format 2.0 / two rear RJ-45 ports SVGA / ATP 7000m / on planar / PC1X 84-bit 100MHz / full duplex / Wake on LAN+ / Alert Standard Format 2.0 / two rear RJ-45 ports SVGA / ATP 7000m / on planar / PC1X 84-bit 100MHz / full duplex / Wake on LAN+ / Alert Standard Format 2.0 / two rear RJ-45 ports SVGA / ATP 7000m / on planar / PC1X 84-bit 100MHz / full duplex / Wake on LAN+ / Alert Standard Format 2.0 / two rear RJ-45 ports Svstems mmt IBM Baseboard Management Controller (BMC) / H8S2186 / on planar / PC122 bus Systems mgmt IBM Baseboard Management Controller (BMC) / H8S2186 / on planar / PC122 bus Systems mgmt / IBM Baseboard Management Controller (BMC) / H8S2186 / on planar / PC124 / bus 2 Proc Upg 130N0665 Security Powero password / administrator password /	Architecture / chipsets					
Bus slots See below) two available PCLX 1.0 / no hot-swap Active™ PCI slots / optional full-length PCI-Express x8 Riser Avail DVD-ROM / disket Two luggabit 10/10/10/00 etheret ports / Broadcome BCM5721 / two lug iggabit etheret MAC and PHY layer functions / on planar / PCLX 64-bit 100MHz / full duplex / Wake on LAN* / Aftert Standard Format 2.0 / two rear RJ-45 ports DVD-ROM / disket SWG4 / ATT* 7000 more planar / PCLX 64-bit 100MHz / full duplex / Wake on LAN* / Aftert Standard Format 2.0 / two rear RJ-45 ports Systems mgmt IBM Baseboard Management Controller (BMC) / HBS2168 / on planar / provides system and environmental monitoring such as temp, memory, optional disks, fars, power supply / support for optional Renote Supervisor Adapter I Slimine with 20-pin conn control optional Renote Supervisor Adapter I Slimine with 20-pin conn control optional Renote Supervisor Adapter I Slimine with 20-pin conn control optional Renote Supervisor Adapter I Slimine with 20-pin conn control optional Renote Supervisor Adapter I Slimine with 20-pin conn control optional Renote Supervisor Adapter I Slimine with 20-pin conn control optional Renote Supervisor Adapter I Slimine with 20-pin conn control optional Renote Supervisor Adapter I Slimine with 20-pin control optional Renote Supervisor Adapter I Slimine with 20-pin control optional Renote Supervisor Adapter I Slimine with 20-pin control optional Renote Supervisor Adapter I Slimine with 20-pin Slimine with 20-pin Slimine S		to Host Bridge for graphi	cs controller, ÈIDÉ, L			
Ethemet controllers Two gigabit 10/100/1000 ethemet ports / Broadcoin BCM5721 / two full gigabit 44 standard Format 2.0 / two rear RU-45 ports DVD-ROM / diskette Some: DVD-ROM / DE; Diskette: none Rear ports Some: DVD-ROM / DE; Diskette: none Rear ports SVGA / ATT 7000m / on planar / 16MB SDRAM stdmax / 32-bit 33MHz PC122 bus Systems mgmt IBM Baseboard Management Controller (BMC/ H2/1482186 / on planar / provides system and environmental monitoring such as temp, memory, optional disks, fans, power supply / support for optional Femote Supervisor Adapter II Slimilne with 20-pin conn on planar for continuous bwr (nee ytw req) Diagnostics Drop down light path diagnostics Pull out Front panel Xeon 3.2GHz/11MB L2 Proc Upg 13N0663 Security Power-on password / administrator password / administ	Bus slots			swap Active™ PC	l slots / optional full-le	ength PCI-Express x8 Riser Avail
DVD-ROM / diskette Some DVD-ROM / IDE; Diskette: none Pear ports Server Two USB (20), serai (2-pni), video, two ethernet (RJ-45), one RJ-45 (sys mgmt) / mouse ps2 / keyboard ps2 Systems mgmt IBM Baseboard Management Controller (BMC) / H8S2168 / on planar / provides system and environmental monitoring such as temp, memory, optional disks, fans, power supply / support for optional Remote Supervisor Adapter II Similine with 20-pin conn on planar for continuous pwr (no ext pwr red). Diagnostics Drop down light path diagnostics Pull out Front panel (LED lights indicate failing component) Xeon 3.GGH2/TMB L2 Proc Upg 13N0665 Security Prover on password / administration password / unattended boot / selectable boot / unattended start mode Xeon 3.GGH2/TMB L2 Proc Upg 13N0665 Software ServerRolube** (CD-ROM installation and configuration utilities), IBM Director™, and others Xeon 3.GGH2/TMB L2 Proc Upg 13N0665 Cooling fans seven-nine fans / variable speed / hot-swap / redundant Secord B0X/V Power supply 36.468 10K Ultra320 SCSI Hot-Swap 2.5* HDD 32P0796 Power supply satt hot-swap (second Dpl/) universal / auto sensing / auto restart 36.468 10K Ultra320 SCSI Hot-Swap 2.5* HDD 32P0796 Stot 1: low-profile, halfsize, 64-bit 130MH2 PCI X 1.0 (3.3%); Bus A ILMITED WARRANTY ³ 32P0796 Stot 2: fullsze, 64-bit 130MH2 PCI X 1.0 (3.3%); Bus B System Daritional Warranty Service	Ethernet controllers	Two gigabit 10/100/1000	ethernet ports / Broa	adcom BCM5721 /	two full gigabit ether	net MAC and PHY layer functions /
Prear Dords Rear: Two USB (2.0), serial (9-pin), video, two ethermet (R)-45, yone R1-45 (sys mgmt) / mouse ps2 / keyboard ps2 Systems mgmt IBM Baseboard Management Controller (BMC) / H8S2168 / on planar / forvides system and environmental monitoring such as temp, memory, optional disks, fans, power supply / support for optional Femote Supervisor Adapter II Similine with 20-pin conn on planar for continuous pwr (no ex plwr req) in analter for continuous pwr (no ex plwr req) indented boot / sectable boot / unattended boot / sectable boot / unattended boot / sectable boot / unattended start mode ServerGuide™ (CD-ROM installation and configuration utilities). IBM Director™, and others Xeon 320Hz/1MB L2 Proc Upg 13N0663 Cooling fans ServerGuide™ (CD-ROM installation and configuration states server. Set (2) (2) (2) (2) (2) (2) (2) (2) (2) (2)	DVD-ROM / diskette			/ wake on LAIN® /	Alert Standard Form	at 2.07 two rear RJ-45 ports
Systems mgmt IBM Baseboard Management Controller (BMC) / H8S2168 / on planar / provides system and environmental monitoring such as term, memory, optional disks, fans, power supply / support for optional Remote Supervisor Adapter II Slimline with 20-pin conn on planar for continuous pur (no ext pur req). Diagnostics Drop down light path diagnostics PUI out Front panel (LED lights indicate failing component) Monitor, ext pur require and power on password / administrator password / ad	Rear ports	Rear: Two USB (2.0), s	erial (9-pin), video, t			
Diagnostics Drop down light path diagnostics Pull out Front panel (LED lights indicate failing component) Xeon 3.2GHz/1/MB L2 Proc Upg 13N0663 Xeon 3.6GHz/1/MB L2 Proc Upg Security Power-on password / administrator password / unattended boot / unattended start mode ServerGuidde™ (CD-ROM installation and configuration utilities), IBM Director™, and others 16B (2s.512) PC3200 CL3 ECC DDR2 ChipKill (26B (2s.612) PC3200 CL3 ECC DDR2 ChipKill (-		•			
Diagnostics Diagnostics PWI cold Front panel (LED lights indicate failing component) Front 25 Hz/1MB 12 Proc Upg 13N06651 Security Power-on password / administrator password / unattended boot / selectable boot / unattended start mode Security Xcon 3.2GHz/1MB 12 Proc Upg 13N06651 Software ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director™, and others 1300665 1300665 Cooling fans seven-nine fans / variable speed / hot-swap / redundant auto re-start 364.061 DKU Utira220 SCSI Hot-Swap SL HDD 73P2065 Power supply Seven-Anine fans / variable speed / hot-swap / redundant auto re-start 364.061 DKU Utira220 SCSI Hot-Swap SL HDD 32P0796 Prerequisites Monitor, keyboard, mouse, rack, disk (some), operating sys 364.061 DKU Utira220 SCSI Hot-Swap SL HDD 32P0796 Stot 1: low-profile, halfsize, 64-bit 133MHz PCI X 1.0 (3.3v); Bus 8 Stot 1: low-profile, halfsize, 64-bit 133MHz PCI X 1.0 (3.3v); Bus 8 2H2933 Stot 2: fullisize, 64-bit 133MHz PCI X 1.0 (3.3v); Bus 8 Stot 1: low-profile, halfsize, 64-bit 133MHz PCI X 1.0 (3.3v); Bus 8 2H2976 Stot 1: low-profile, halfsize, 64-bit 133MHz PCI X 1.0 (3.3v); Bus 8 Stot 2: fullisize, 64-bit 133MHz PCI X 1.0 (3.3v); Bus 8 2H2976 Stot 1: low-profile, halfsize, 64-bit 133MHz PCI X 1.0 (3.3v); Bus 8 Stot 2: fullisize, 64-bit 133MHz PCI X 1.0 (3.3v); Bu	Systems mgmt					
Diagnostics Drop down light pain diagnostics Pull out Profit panel (LED lights indicate falling component) Security Secur		on planar for continuous	pwr (no ext pwr req)			· · · ·
Security Power-on password / administrator password / uniatended boot / unatended start mode Software	Diagnostics			Front panel	Xeon 3.6GHz/1N	1B L2 Proc Upg 13N06
Software Unattended boor / selectable boor / Junattended staft mode willities), IBM Director ¹⁰ , and configuration utilities), IBM Director ¹⁰ , and others 2GB (2x1GB); PC3200 CL3 ECC DDP2 ChipKill 73P28602 Cooling fans sever-nine fans / variable speed / hot-swap / redundant 36.4GB 10K Ultra320 SCSI Hot-Swap SL HDD 73P8002 Prerequisites seven-nine fans / variable speed / hot-swap / redundant 36.4GB 10K Ultra320 SCSI Hot-Swap SL HDD 32P0796 Prerequisites Monitor, keyboard, mouse, rack, disk (some), operating sys 36.4GB 10K Ultra320 SCSI Hot-Swap 2.5" HDD 32P0796 Second 585W Power supply Stot 1: low-profile, halfsize, 64-bit 100MHz PCI X 1.0 (3.3V); Bus B 36.4GB 10K Ultra320 SCSI Hot-Swap 2.5" 32P0796 Systemboard Stot 2: fullsize, 64-bit 133MHz PCI X 1.0 (3.3V); Bus B Stot 2: fullsize, 64-bit 133MHz PCI X 1.0 (3.3V); Bus B 2 32802 5.5", SL 1", access, std DVD-ROM (3.5 model) 38.4GB ms 5m, Mon - Fri coverage excluding holdays, mext business day response time" 30 Not 2.5 model Systemboard System Partino Boot: RL 1-F1 at startup System Partino Robit: RL 4T+F1 at startup 38 wit 10 Page 2.4 har 2gresponse (ServicePac part num 21P2072) 3 year 10P 287.4 har 2gresponse (ServicePac part num 21P2072) 3 year 10P 287.4 har 2gresponse (ServicePac part num 39P244) 3 year 10P 287.4 har 2gresponse (ServicePac part num 39P244) 3 year 10P 287.4 har 2gresponse (ServicePac part num 39P244)	Security	Power-on password / ad	ministrator password			
utilities), IBM Director [™] , and others 0 00000 R1AT 27.2K Simple Swap HDD 73P80035 Cooling fans seven-nine fans / variable speed / hot-swap / redundant 585 wath hot-swap (second Opt)/ universal / auto sensing / auto re-stat 36.4GB 10K Ultra320 SCSI Hot-Swap 2.5." HDD 90P1304 Prerequisites Monitor, keyboard, mouse, rack, disk (some), operating sys 36.4GB 10K Ultra320 SCSI Hot-Swap 2.5." HDD 90P1304 Stot 1: Iow-profile, halfsize, 64-bit 100MHz PCI X 1.0 (3.3v); Bus 8 Second 585W Power supply 90P5280 U Top Slot 1: Iow-profile, halfsize, 64-bit 100MHz PCI X 1.0 (3.3v); Bus 8 A Bay @ 5.25", UltraSlim 0.5", access, std DVD-ROM (3.5 model) Bay @ 3.5", SL 1", access, open for fixed or hot-swap disk Bay @ 3.5", SL 1", access, open for fixed or hot-swap disk Bay @ 3.5", SL 1", access, open for fixed or hot-swap disk Bay @ 3.5", SL 1", access, open for fixed or hot-swap disk Bay @ 4 bays only available with 2.5" drive model and no DVD- Coble Management Arm • Stealth black color front bezel • On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, mext business day response time" • Diagnostics (PC-Doctrim): F2 at startup • Stealth black tool in cortim: F2 at startup • System Partition Boot: ALT+F1 at startup • 3 year IOR 24X7, 4 hr avg response (ServicePac part num 21P2072) • 3 year IOR 24X7, 4 hr avg response (ServicePac part num 69P9244) • System Response (ServicePac part num 69P9246) • System Continortimo to mato c	Software	ServerGuide™ (CD-ROI	ble boot / unattended	d start mode		
Cooling fans Power supply seven-nine fans / variable speed / hot-swap / redundant 585 watt hot-swap (second Opt)/ universal / auto sensing / auto re-start Monitor, keyboard, mouse, rack, disk (some), operating sys 36.4GB 10K Ultra320 SCSI Hot-Swap 2.5" HDD ServeRAID 61+ adaptor 90P1304 36.4GB 10K Ultra320 SCSI Hot-Swap 2.5" HDD ServeRAID 61+ adaptor Prerequisites Monitor, keyboard, mouse, rack, disk (some), operating sys SecveRAID 61+ adaptor 13N2190 Back Slot 1: low-profile, halfsize, 64-bit 133MHz PCI X 1.0 (3.3v); Bus A LIMITED WARRANTY ³ Vertue Slot 2: fullsize, 64-bit 133MHz PCI X 1.0 (3.3v); Bus A LIMITED WARRANTY ³ Systemboard Power Slot 1: low-profile, halfsize, 64-bit 100MHz PCI X 1.0 (3.5 model) Bay © 3.5", SL 1", access, std fixed or hot-swap disk Bay © 3.5", SL 1", access, std fixed or hot-swap disk Bay © 3.5", SL 1", access, std fixed or hot-swap disk Bay © 3.5", SL 1", access, std fixed or hot-swap disk Bay © 3.5", SL 1", access, std fixed or hot-swap disk Bay © 3.5", SL 1", access, std fixed or hot-swap disk Bay © 3.5", SL 1", access, std fixed or hot-swap disk Bay © 3.5", SL 1", access, std fixed or hot-swap disk Bay © 3.5", SL 1", access, std fixed or hot-swap disk Bay © 3.5", SL 1", access, std fixed or hot-swap disk Bay © 3.5", SL 1", access, std fixed or hot-swap disk Bay © 3.5", SL 1", access, std fixed or hot-swap disk Bay © 3.5", SL 1", access, std fixed or hot-swap disk Bay © 3.5", SL 1", access, std fixed or hot-swap disk Bay © 3.5", SL 1", access, std fixed or hot-swap disk Bay © 3.5", SL 1", access std fixed or hot-swap disk Bay © 3.5", SL 1", access std fixed or hot-swap disk Bay © 3.5", SL 1", access std fixed or hot-swap disk Bay © 3.5", SL 1", access s				gerener		
Power supply 585 watt hot-swap (second Opt) universal / auto sensing / auto re-start 13k2190 Prerequisites Monitor, keyboard, mouse, rack, disk (some), operating sys ServeFAID 6i+ adaptor 13k2190 Back Stot 1: low-profile, halfsize, 64-bit 100MHz PCI X 1.0 (3.3v); Bus B Stot 1: low-profile, halfsize, 64-bit 100MHz PCI X 1.0 (3.3v); Bus B LIMITED WARRANTY ³ Power Fort Differentiation and the sockets Stot 1: low-profile, halfsize, 64-bit 130MHz PCI X 1.0 (3.3v); Bus B LIMITED WARRANTY ³ Systemboard Poil Poil Poil Poil Stot 2: fullsize, 64-bit 132MHz PCI X 1.0 (3.3v); Bus B LIMITED WARRANTY ³ Systemboard Poil Poil Poil Poil Stot 2: fullsize, 64-bit 132MHz PCI X 1.0 (3.3v); Bus B LIMITED WARRANTY ³ Systemboard Poil Poil <poil< td=""> Poil<poil< td=""> Poil<poil< td=""> Poil<poil< td=""> Poil<poil< t<="" td=""><td>Cooling fans</td><td>seven-nine fans / variable</td><td>e speed / hot-swap /</td><td>redundant</td><td>36.4GB 10K Ultra</td><td>a320 SCSI Hot-Swap SL HDD 90P13</td></poil<></poil<></poil<></poil<></poil<>	Cooling fans	seven-nine fans / variable	e speed / hot-swap /	redundant	36.4GB 10K Ultra	a320 SCSI Hot-Swap SL HDD 90P13
Percequisites Monitor, keyboard, mouse, rack, disk (some), operating sys Include big vision daget in summer 701-904-1 Power Stot 1: low-profile, halfsize, 64-bit 100MHz PCI X 1.0 (3.3v); Bus B Stot 2: fullsize, 64-bit 103MHz PCI X 1.0 (3.3v); Bus B Stot 2: fullsize, 64-bit 103MHz PCI X 1.0 (3.3v); Bus B Image: Stot 2: fullsize, 64-bit 103MHz PCI X 1.0 (3.3v); Bus B Stot 2: fullsize, 64-bit 103MHz PCI X 1.0 (3.3v); Bus B Stot 2: fullsize, 64-bit 103MHz PCI X 1.0 (3.3v); Bus B Image: Stot 2: fullsize, 64-bit 103MHz PCI X 1.0 (3.3v); Bus B Stot 2: fullsize, 64-bit 103MHz PCI X 1.0 (3.3v); Bus B Stot 2: fullsize, 64-bit 103MHz PCI X 1.0 (3.5v); Bus B Image: Stot 2: fullsize, 64-bit 103MHz PCI X 1.0 (3.5v); Bus B Stot 2: fullsize, 64-bit 103MHz PCI X 1.0 (3.5v); Bus B Stot 2: fullsize, 64-bit 103MHz PCI X 1.0 (3.5v); Bus B Bay @ 5.25°, UltraSim 0.5°, access, std fixed or hot-swap disk Bay @ 5.25°, SL 1°, access, std fixed or hot-swap disk Construction 100-100-100-100-100-100-100-100-100-100		585 watt hot-swap (seco				
Back Stot 1: low-profile, halfsize, 64-bit 100MHz PCI X 1.0 (3.3v); Bus B Cher options available at www.ibm.com/pc/us/accessories Image: transman state transman stransman state transman stransmastreate transman strate transman state transman	Prerequisites		e, rack, disk (some)), operating sys		
Back Stot 1: low-profile, halfsize, 64-bit 100MHz PCI X 1.0 (3.3v); Bus A Image: store of the		·····, ··· · , ···· · , ······	,, ()	,, -p	PCI-Express x8	full-length riser card 22R92
Image: Store in the store	Back	Clat 1. Januar	profile helfeize 64		Other options av	vailable at www.ibm.com/pc/us/accessories
Top Bay ① 5.25", UltraSlim 0.5", access, std DVD-ROM (3.5 model) FanFan PCL DIMM Bay ② 3.5", SL 1", access, std fixed or hot-swap disk Bay ③ 3.5", SL 1", access, std fixed or hot-swap disk Bay ③ 3.5", SL 1", access, std fixed or hot-swap disk Bay ④ 5.25", UltraSlim 0.5", access, std fixed or hot-swap disk Bay ④ 5.25", UltraSlim 0.5", access, std fixed or hot-swap disk Bay ④ 5.25", UltraSlim 0.5", access, std fixed or hot-swap disk Bay ④ 5.25", UltraSlim 0.5", access, std DVD-ROM (3.5 model) Bay ④ 5.25", UltraSlim 0.5", access, std DVD-ROM (3.5 model) Bay ④ 5.25", UltraSlim 0.5", access, std fixed or hot-swap disk Bay ④ 5.25", UltraSlim 0.5", access, std DVD-ROM (3.5 model) Bay ④ 5.25", UltraSlim 0.5", access, std fixed or hot-swap disk Bay ④ 5.25", UltraSlim 0.5", access, std fixed or hot-swap disk Bay ④ 5.25", UltraSlim 0.5", access, std fixed or hot-swap disk Bay ④ 1.5", Sup 0.5 Bay ④ 1.5", Sup 0.5 Bay ④ 1.5", Sup 0.5 Bay ⑤ 1.5.2 Bay ⑥ 1.5.5 Bay ⑧ 1.5.5 Bay ⑧ 1.5.5 Bay ⑧ 1.5.2 Corliguration/Setup Util						LIMITED WARRANTY ³
Fan Fan Systemboard Baý @ 3.5", SL 1", access,std fixed or hot-swap disk Power Soft 2 PCI DIMM Isot z Soft 2 Soft 2 Fuil Internet Soft 2 Soft 2 Power Soft 2 Soft 2 Soft 2 Fuil Internet Soft 2 Soft 2 Soft 2 Soft 2 Soft 2 Soft 2 Fuil Internet Soft 2 Soft 2 Soft 2 Soft 2 Soft 2 Soft 2 Soft 2 Soft 2 Soft 2 Soft 2 Soft 2 Soft 2 Soft 2 Soft 2 Soft 2 Soft 2 Soft 2 Soft 2 Soft 2 Soft 2 Soft 2 Soft 2 Soft 2 <	Тор	Bay ① 5.25"		. ,		
Power slot #2	FanFan System	board Bay 2 3.5",	SL 1", acc	cess, std fixed or	hot-swap disk	🗢 On site, 8 am - 5 pm, Mon - Fri
Supply Full #1		Day @ 3.5,				
 Stealth black color front bezel Cable Management Arm Cable Management Arm H 1.69" (1U) x W 17.32" x D 27"; 43mm x 440mm x686mm Cable Management Arm H 1.69" (1U) x W 17.32" x D 27"; 43mm x 440mm x686mm Configuration/Setup Utility: F1 at startup Configuration/Setup Utility: F1 at startup Configuration Setup Utility: F1 at startup System Partition Boot: ALT+F1 at startup System Partition Boot: ALT+F1 at startup System Partition Boot: ALT+F1 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 			,			On site service upgrade options
GPU CPU CPU CPU CPU Cable Management Arm (ServicePac Part num 21P2072) FanFanFan (opt) FanFanFanFanFan Configuration/Setup Utility: F1 at startup Set to 28.4 lbs; 11.8kg to 12.9kg (minimum to max configuration) Set to 28.4 lbs; 11.8kg to 12.9kg (minimum to max configuration) Disk Disk Disk System Partition Boot: ALT+F1 at startup				el		
FanFanFan (opt) Disk Disk (opt) Disk Dignostics (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 • disk bay • disk bay • disk bay • disk bay		^{2PU} CPU ⇔ Cable Ma		27": 43mm x 44	0mm x686mm	(ServicePac® part num 21P2072)
Disk (opt) Disk (std (std) FanFanFanFan Disk (std) Configuration/Setup Utility: F1 at startup DD Down Light Path Disgnostics (PC-Doctor™): F2 at startup DVD System Partition Boot: ALT+F1 at startup DVD <		(opt) 🗢 26 to 28.4	l lbs; 11.8kg to 12.9	9kg (minimum to		
(up)1 Up and iteration Degratorial interrack Parel System Partition Boot: ALT+F1 at startup (Up at the startup) DVD Or opt) Disgnostics Panel System Partition Boot: ALT+F1 at startup (Up at the startup) (U		FanFanFanFan ♀ Configura				 3 year IOR 24x7, 2 hr avg response
BOM or opt) Parter C NetWork Boot: F12 at startup Operator Information Panel in front Operator Information Panel in front Startup Image: Construction of the startup Image: Construction of the startup Startup Startup Image: Construction of the startup Image: Construction of the startup Startup Startup Image: Construction of the startup Image: Construction of the startup Startup Startup Image: Construction of the startup Image: Construction of the startup Startup Startup Image: Construction of the startup Image: Construction of the startup Startup Startup Image: Construction of the startup Image: Construction of the startup Startup Startup Image: Construction of the startup Image: Construction of the startup Startup Startup Image: Construction of the startup Image: Construction of the startup Startup Startup Image: Construction of the startup Image: Construction of the startup Startup Startup Image: Construction of the startup Image: Construction of the startup Startup Startup Image: Construction of the startup Image: Construction of the	(opt) (otd	Diagnostics System P	artition Boot: ALT+	F1 at startup		
Front 3.5 HDD ⇒ LŚI Logic Configuration Utility: CTRL+C at startup ⇒ Section Pac part num 69P9246 • disk bay • disk						(ServicePac part num 69P9244)
 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 disk bay disk bay<td></td><td>ĎĎ</td><td>Configuration Utilit</td><td>y: CTRL+C at sta</td><td></td><td>(ServicePac part num 69P9246)</td>		ĎĎ	Configuration Utilit	y: CTRL+C at sta		(ServicePac part num 69P9246)
Front 2.5 HDD Predictive Failure Analysis® on processor(s), voltage regulator modules, memory, fans, power supply, and disk options services/us/its/pdf/wamomxeu.pdf • disk bay	disk bay disk bay				NEMA plug and 9 ft	Other ServicePac options at
Image: state disk bay image: state	Front 2.5 HD				voltage regulator	
		• modules,	memory, fans, pow	ver supply, and c	lisk options	24x7 ¹⁴ toll-free support for warranty
	disk bay					• • • •

See footnotes for important warranty information • = Hot-swap in some models

IBM @server™ xSeries™ 336 (8837) - February 2005

xREF by eServer Field Skills and Education Team

								a but there	10 Ale 10
	L2 x Processor cache M		Disk controller Opt		Diskbays	Slots x bays	Ethernet		³ Available date
8837-1Vy-1Vx 1 x 2 8837-16y-16x 1 x 2	Xeon [®] 3.0GHz 2MB 10 Xeon 3.0GHz 2MB 10 Xeon 3.0GHz 2MB 10 Xeon 3.2GHz 2MB 10	GB None (open 2.5 GB None (open 3.5 GB None (open 3.5	5) Ultra320 No) SATA D\) Ultra320 D\	ne 585W /D 585W /D 585W	2 hot-swap 4 hot-swap 2 simple-sp 2 hot-swap	2x4 2x3	2 x Gigabit 2 x Gigabit 2 x Gigabit 2 x Gigabit	3 year 3 year	Mar 2005 Mar 2005
8837-3Vý-3Vx 1 x 2 8837-36y-36x 1 x 2	Xeon 3.4GHz 2MB 10 Xeon 3.4GHz 2MB 10 Xeon 3.4GHz 2MB 10 Xeon 3.6GHz 2MB 10	GB None (open 2.5 GB None (open 3.5) Ultra320 No) SATA D\	ne 585W /D 585W	2 hot-swap 4 hot-swap 2 simple-sp 2 hot-swap	2x4 2x3	2 x Gigabit 2 x Gigabit 2 x Gigabit 2 x Gigabit	3 year 3 year	Mar 2005 Mar 2005
8837-E1y-E1x 1 x)	Xeon 3.0GHz 2MB 20 Xeon 3.0GHz 2MB 20 A highly manageable,	GB None (open 3.5 GB None (open 2.5 ultra-dense 1U, 2-way) Ultra320 D\) Ultra320 No / server that del	/D 585W ne 585W ivers performa	2 hot-swap 4 hot-swap nce computing	2x3 <u>2x4</u> g in spac	2 x Gigabit 2 x Gigabit ce-constraine	3 year <u>3 year</u> d enviror	Mar 2005 Mar 2005
Processor(s) Cache SMP support Implementation	1 x Intel® Xeon 3.0, 3. 2MB L2 cache on all n 2-way SMP / up to two Systemboard contains	nodels / on die of proc o Xeon Processors (sa two Intel 604 pin micro	essor / at proce ame speed/cach o-PGA ZIF sock	ssor speed / E ne size) ets, eight DIMI	CC VI slots, two P			,	VIHz, one
Memory	IGB std / 16GB max ¹³ connector slots on syst Active Memory [™] : on	/ 8 slots (6 avail) / PC emboard / DIMMs mu	2-3200 400MHz ist be installed in	registered 24 matched pair	0-pin ECC DD s [a bank] / 2-v	way mer	AM DIMMs / mory interleav	/ eight DI /e / dual	MM gold- channel /
SCSI disk controller	LSI Logic [®] 53C1020 / Mirroring) with two SCS	Ultra320 SCSI contr SI disks in front bays /	oller (LVD 320) one 16-bit interr	/IB/sec) / on pl nal channel / n	anar / support o external con	ts RAID -	1 mirroring	(Embedd	led
SATA disk Controller IDE controller / cable Disk - MAX capacity Disk - bays	Enhanced SATA-150 (one 1-drop EIDE cable SCSI 3.5 : 292GB with t SCSI : two hot-swap or	to DVD-RÓM wo 146GB HDD SCS	2.5 :four 2.5" 7	3GB HDD SA	TA : 500GB wi	th two 2	50GB HDD		
Mechanical Architecture / chipsets	EIA 19" Rack (1U ⁴) / r Intel E7520 / Intel Men 32bit/33MHz PCI) / Inte to Host Bridge for grap	nory Controller Hub (N I PCI-X Bridge (suppo hics controller, EIDE, I	1CH) / 3 PCI bu orts 133MHz PC	ses (one 64bit/ I-X slots 1 & 2	133MHz PCI- LSI Logic 530	X1.0, on C1020) /	e 64bit/100M ICH5R Sout	Hz PCI-X h Bridae	(Thin IMB
Bus slots Ethernet controllers	components; keyboard (See below) two availal Two gigabit 10/100/100 on planar / PCI-X 64-bi	ole PCI-X 1.0 / no hot 0 ethernet ports / Broa	adcom BCM572	1 / two full giga	abit ethernet M	IAC and	PHY layer fu	nctions /	
DVD-ROM / diskette Rear ports Graphics	<i>Some</i> : DVD-ROM / IDI <i>Rear:</i> Two USB (2.0), SVGA / ATI® 7000m / d	E; <i>Diskette:</i> none serial (9-pin), video, t	two ethernet (R	I-45), one RJ-4	l5 (sys mgmt)				
Systems mgmt	IBM Baseboard Mana as temp, memory, option on planar for continuou	onal disks, fans, power s pwr (no ext pwr req	r supply / suppo)						
Diagnostics Security	Drop down light path (LED lights indicate faili Power-on password / a	ng component)	•		2GHz/2MB L2				25R8905
Software	unattended boot / select ServerGuide™ (CD-R0 utilities), IBM Director™	table boot / unattende	ed start mode	512MB 1GB (2)	6GHz/2MB L2 (2x256) PC32 (512) PC3200 (1GB) PC3200	00 CL3 CL3 EC	ECC DDR2 F C DDR2 Chi	pKill	13N0667 73P3523 73P2865 73P2866
Cooling fans Power supply	seven-nine fans / varial 585 watt hot-swap (sec auto re-start			160GB 36.4GB	ATA 7.2K Sim SATA 7.2K Sir 10K Ultra320 10K Ultra320	nple Swa SCSI Ho	ap HDD ot-Swap SL H		73P8002 73P8003 90P1304 32P0796
Prerequisites	Monitor, keyboard, mo	use, rack, disk (some), operating sys	ServeR/ Remote Second	AID 6i+ adapto Supervisor Ac 585W Power	or dapter II supply	slimline		13N2190 73P9341 90P5280
Back	0 1 · · · · ·			Other o	ress x8 full-le			pc/us/acc	22R9293 cessories
	Slot 2: full	/-profile, halfsize, 64 size, 64-bit 133MHz	PCI X 1.0 (3.3	sv); Bus B	-	3 year p	MITED WA	bor	
Fan Fan System Power PCI Supply slot#2 1 & 2 Length	board DIMM bt_sockets Bay 3 3.5" Bay 3 3.5" Bay 4 ba	s", UltraSlim 0.5", aco , SL 1", aco , SL 1", aco , SL 1", aco ays only available wit	cess,std fixed cess,open for	or hot-swap of fixed or hot-s	disk wap disk VD-	On site, coverag next bus On site	ional Warrar 8 am - 5 pm je excluding siness day ro service upgr	, Mon - F holidays esponse rade opti	Fri S, time ⁷
FanFanFan (CPU CPU Cable M CPU CPU Cable M CPU CPU Cable M CPU CPU Cable M CPU Cable M Cable M CPU Cable M Cable M CPU Cable M Cable M Cable M Cable M Cable M	black color front bez lanagement Arm (1U) x W 17.32" x D 3.4 lbs; 11.8kg to 12.) 27"; 43mm x 9kg (minimum	440mm x686 to max config	nm	 3 year (Servio) 3 year 	ble locations r IOR 9x5, 4 I cePac® part n r IOR 24x7, 4 cePac part nu	hr avg re um 21P2 hr avg r	072) esponse
Disk(opt)DiskDVD(std-ROMor opt)	Light Path Diagnostics Panel Diagnostics Panel	ration/Setup Ŭtility: F tics (PC-Doctor™): Partition Boot: ALT+ Boot: F12 at startu r Information Panel	F2 at startup -F1 at startup p			 3 year (Servio) 4 year (Servio) 	r IOR 24x7, 2 cePac part nu r IOR 24x7, 4 cePac part nu	hr avg r m 21P20 hr avg r m 69P92	esponse 174) esponse 144)
Front 3.5 HE	⊃⊃	two line cords (9 ft al interrack HV cable	ty: CTRL+C at 110v cable wit	h NEMA plug	and 9 ft 🥃	(Servio Other S	r IOR 9x5, NE cePac part n ervicePac o ww.ibm.com	um 69P9 ptions a	246)
Front 2.5 HD	D ♀ Predictive	ve Failure Analysis® s, memory, fans, pov	on processor(s), voltage re	gulator	services 24x7 ¹⁴ t	s/us/its/pdf/v oll-free supp during the w	wamom>	varranty
See footnotes for imp						()/00	6B) © IBM (0005

See footnotes for important warranty information • = Hot-swap in some models

IBM @server™ xSeries™ 335 (DC power model)

xREF by eServer Field Skills Enablement Team

(X335DC-A) © IBM Corp. February 2003

IBM [®] Type-model Qty x Pro	DODEEOK	L2 cache	FSB MHz	Memory	Memory	Disk	Disk	Hot -swap o fixed disk bay		Ethornot	Limited Availa warranty ³ c
8676-1AX 1 x Xeon 2			533		type Chipkill						bit 3 year Mar 2
DC powe equipmer						tructures req	uiring ne	twork			
Positioning Processor(s) L2 cache SMP support Implementation	1 x Intel® 512KB / c 2-way SN Systembo	Xeon 2 on die of p IP / up to bard cont	2.8BGHz processo two Xeo ains two	¹ with 533 or / at proc on Process Intel 603-	3MHz fror essor spe sors (sam pin micro-	ntside bus / H ed (no L3 cacl e speed/cache	yper-Threa ne) e size) ets, four m	ading technol	ogy		ined environmen one PCI-X slot,
Memory	PC2100 2 must be in Error Che	266MHz r nstalled in ecking a	registere n matche nd Corr	ed 184-pin ed pairs [a	ECC DDF bank] / 2- CC) via 16	way memory i -bit Checksu	Ms / four E nterleave /	dual channel	/ memory	/ bus runs a	emboard / DIMMs at 2 x 100MHz / on same chip and
SCSI disk controller IDE controller / cable Disk - capacity Disk - bays	64-bit 100 one 16-bi All: Enhar EIDE mod SCSI mod	MHz PC t internal nced IDE <i>dels:</i> One <i>dels:</i> non	CI-X Bus channe ATA-1(e 2-drop ie stand	B / suppo I / 16-bit 6 00 controll EIDE cab ard / supp	rts RAID- 68-pin LVI er in CSB le to two o orts up to	5 South Bridg disk bays / one 15000 rpm dis	Embeddec ystemboa e / two cor e 1-drop E sks; <i>EIDE</i>	l Mirroring) wi rd to backplar inectors on pl IDE cable to (<i>models:</i> 40GI	th two S0 ne for two anar / on CD-ROM 3 / 7200 r	CSI diśks in disks / no e e 1-drop ID pm / ATA-1	
Mechanical Architecture / chipsets Bus slots	ServerWe one CIOE slot 2 and SMBus, L	orks® Gi 3-X2 I/O I I Ultra320 .PC bus 1	r ánd Ch Bridge (I 0 / CSB to Super	ampion™ IMB2 bus 5 South B ⁻ I/O) / Nat	4.0 LĖ / (to Host Bı ridge (Thi ional Serr	ridge for PCI-)	Bridge (m K Bus A wi Bridge for C87417 S	emory contro th slot 1 and o PCI 2.2 Bus	ller and l/ dual ethe C with gra	O Bridge) / met and PC	
Ethernet controllers CD-ROM / diskette Rear ports Front ports / graphics Console interconnects	on planar 24X-10X ⁶ <i>Rear:</i> on <i>Front:</i> two C2T Inter	/ PCI-X 6 CD-ROM e USB (\ o USB (\ connect ¹	64-bit 10 M / IDE; /ers 1.1) /ers 1.1) ™ cable	0MHz Bus Diskette: 3 , C2T in, C ; Graphic (10 inch, 2	s A / full du 3.5" 1.44N 22T out, s <i>s:</i> SVGA / 245mm) is	ATI® Rage XL	n LAN [®] / A ve / dust co vo etherne / on plana yboard Vic	lert Standard over t (RJ-45), one r / 8MB SDR/ leo Mouse (K	Format 1 RS-485 AM std/m VM) chai	.0 / two rear (sys mgmt) ax / 32-bit 3 ning cable)	r RJ-45 ports / no parallel port 3MHz PCI 2.2 bu / one Cable Cha
Systems mgmt Diagnostics	monitorin with 20-pi	g such a in conn c	s temp, on plana	memory, c r for contir	ptional di nuous pwr	sks, fans, pow (no ext pwr ree	ver supply q)	/ support for	optional F	Remote Sup	environmental pervisor Adapter C-Doctor in BIO
Security Software	unattende ServerGu	eḋboot/ uide ™(C	selectat D-ROM	ministrato ble boot / u installatio and others	nattendeo n and con	d start mode	512M 1GB		2KB L2 2.5 ECC .5 ECC D	DDR-SDRA	M DIMM 33L50. M RDIMM 33L50
Cooling fans Power supply Prerequisites	variable s 332 watt supports not redur Monitor, I	speed / r (-48 to dual inp dant / n keyb., m	not redu -60 V d out source iot hot-se iouse, ra	ces (two p wap / aut ack, disk,	hot-swap current]) oower sou o-restart operating) / auto-sensir urces) / support g sys,	ng / 36.40 Rem Serve Cable break	PC2100 CL2 BB 15K Ultra ote Supervisc PRAID [™] -4Mx Chain Techn out cable and AY ACT Loc	320 SCSI or Adapte Ultra160 ology (C2 2 meter k	Hot-Swap : r) SCSI Ada T) Cable Kit (VM chainin	09N7 apter 06P5 (2 meter g cable) 06P4
Back	one C2T	-				Ź AĆŤ CAT-5 PCI X 1.0 (3.3v				g-	
PCI slot 1 PCI slot 1 PCI slot 2 Top Systemboard PC Light Path slo Diagnostics slo Panel #2 PILING Panel #2 DIMM sockets CPU CPU	t slot	Slot : Bay ' Bay ' Bay ' Bay ' Bay ' Bay ' C C C C C C C C C C C C C C C C C C C	2: fullsiz (1) 3.5", (2) 5.25", (2) 5.25", (3) 3.5", (4) 3.5", (5) 3.5", (4) 3.5", (5) 3.5"	ze, 64-bit UltraSlim UltraSlim SL 1", SL 1", in front slic U) x W 17. Ibs; 11.8kg tion/Setup cs (PC-Doc artition Boc oot: F12 a nformatior Configurat wo line cor nterrack H Failure Ar memory, fa nternal disl	100MHz F 0.5", acce acce acce acce ont bezel des out fro 3" x D 25. g to 12.9kg Utility: F1 totor™): F2 tot ALT+F ⁻ t startup Panel in 1 ion Utility: ds (9 ft 11 V cable w ialysis® or ans, powe k capacity	PCI X 1.0 (3.3v ess, std disket ess, std CD-R ess, std fixed c ess, open for f om under midd 7"; 43.7mm x 4 g (minimum to at startup at startup 1 at startup	j; Bus B te OM or hot-swa ixed or hot le bay (US 439.9mm > max config artup NEMA plug voltage re lisk options	o disk -swap disk B devices) (653.3mm guration) g and 9 ft gulator	 3 year International international internationa	barts and la ional Warra 8 am - 5 pr e excluding siness day service upg ble location r IOR 9x5, 4 cePac part n IOR 24x7, cePac part n IOR 24x7, cePac part n IOR 24x7, cePac part n IOR 24x7, cePac part n IOR 9x5, N cePac part n IOR 9x5, N cePac part servicePac	Inty Service ³ n, Mon - Fri g holidays, response time ⁷ grade options is): ⁷ hr avg response num 21P2072) 4 hr avg response num 21P2073) 2 hr avg response num 21P2074) 4 hr avg response num 69P9244) IBD response num 69P9246) options at

See footnotes for important warranty information • = Hot-swap ^{Lar} US models announced February18, 2003

Type-model Oty x Processor Cache Meter Memory type Disk controller fixed disk bays x bays Ethernet warranty' date B876-LAX 1X Xeon 2.88 GHz 512KB 533 512MB Chipkill None (open) Ultra320 2 hol-swap 2x4 2 x Gigabit 3 year Jan 2004 DC power models are designed for network infrastructures requiring network equipment to support DC power environments Positioning A highly manageable, ultra-dense 1U 2-way server that delivers performance computing in space-constrained environments Desidencie(s) 13KB (on dian of processor spaced to b1 / about the performance computing in space-constrained environments SMP support 2way SMP up to to two con Processor (same specificathe size) Systemboard contains two Intel 603-pin micro-PGA ZIF sockets, four memory DIMM slots, connector for one PCL x slot, niser for one PCL x slot, and integrated SCIS, letternet, graphics Memory 512MB etd / 68B max ⁴¹ / two slots used / two slots available / PC2100 26MHz registered 184-pin ECC DPR-SDRAM DIMMs / four DIMM gold-connector slots on systemboard / DIMMs SCSI disk controller / cable All (not used on EDC models): LSI Logg/cs 53C1020 / Ultra320 SCI controller (UD 320MB sec) / on planz / delatchs / sec apacity SCSI disk controller / cable All (not used on EDC models): LSI Logg/cs 53C1020 / Ultra320 SCI controller (UD 320MB sec) / on planz / delatchs / sec apacity SCSI disk												
DC power models are designed for network infrastructures requiring network Desiloning Processing A highly manageable, uitra-donse 1U, 2-way server that delivers performance computing in space-constrained environments 11 kmielt account 2000 (2000) (IBM [®] Type-model Qty x Pi	rocessor		Memory						Ethernet		
equipment to support DC power environments Pesitioning Processor(s) 12 cache SMP support A highly manageable uiter-dense 1U_2-way serve that deliver performance computing in space-constrained environments to state in state on statements and statement of the statement of the statements processor is a processor in a processor state processor speed (no.13 cache) Winney State and integrated SSU, elternet, graphics. Memory State and integrated SSU, elternet, graphics. SGSI disk controller All point used to insufficient and integrated SSU, elternet, graphics. SGSI disk controller All point used to insufficient and integrated SSU, elternet, graphics. SGSI disk controller All point used to insufficient and integrated SSU, elternet, graphics. SGSI disk controller All point used to insufficient and integrated SSU supports RAU-1 microring (Embedded Minoring) with two SSG sides in four bays / one 16-bit integrated channel / field Sepin LU Cache State from systembated to backplane to two disks in or thanks / SCG models: two hot-swap / 8D-in SCA-2 connectors / filler panels in each disks by / all disk bay / a		2.8B GHz 5	512KB 533	512MB		None (open)					it 3 year	Jan 2004
Positioning Positioning Locache SNP support A holdy manageable, ultimediates for factors in the SNP support SNP support A holdy manageable, ultimediates for factors in the SNP support SNP support SNP support SNP support SNP support STARE (or not el processors right for the SS and help Systemboard contains two intel dispan intic- PGA 22 sockets, four memory DIAM slots, connector for one PCI X slot, market for owe PCA X slot, and tinggated SCSL atternal, graphics. Memory State (a contains two intel acts used / two slots available / must be installed in matched pairs [a bank] / 2 way memory interleave / dual channel / memory DIAM slots, connector for one PCI X slot, must be installed in matched pairs [a bank] / 2 way memory interleave / dual channel / memory DIAM solts, connector for one PCI X slot. SCSI disk controlls All (or used in FAC MERCON LINE Concessor (FBC MCI MeRCON Ultrag20 SCS Controlls (LV 200 PM VATA-100 / 8 T2MB or end to the slot slot and slot and format 10.1 We rear function in SBS Slot and slot slot and slot and format 10.1 We rear function in SBS Slot and slot slot and slot and format 10.1 We rear function in SBS Slot and slot slot and						tructures req	uiring ne	etwork				
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PC2100 266MHz registered 184-pin ECC DDR-SDRAM DIMMs / four DIMM gold-connector softs on systemboard / DIMMs SCSI disk controller All front used on EIDE models / LSI Logic' 53C1020 / Utra320 SCSI controller (LDD 320MBzec) / on planar / deteds 2 - through 8 bit mess contained in two chips). Ohybit weitable on DIMbs of 512MB or greater only. SCSI disk controller All front used on EIDE models / LSI Logic' 53C1020 / Utra320 SCSI controller (LDD 320MBzec) / on planar / one 1-6p tittemal channel / heat heat heat heat heat heat heat heat	Processor(s) L2 cache SMP support	1 x Intel® 2 512KB / on 2-way SMF Systemboa	Xeon 2.8BGI die of proces / up to two X ard contains tv	Hz ¹ with 53 sor / at proc eon Proces vo Intel 603-	3MHz froi sessor spe sors (sam pin micro	ntside bus / H eed (no L3 cacl e speed/cache -PGA ZIF sock	yper-Thre ne) size) ets, four r	ading techr	ology			
64-bit 100MHz PC1X Bus B / supports TADD-1 mirroring (Embedded Mirroring) with two SCS1 disks in non tays / one 16-bit internal channel (16-bit 82) mirroring (Embedded Mirroring) with two SCS1 disks in non tays / Disk - capacity (16-bit 82) mirroring (Embedded Mirroring) with two SCS1 disks in non tays / Disk - bays Disk - spacing Disk - bays EIA 19* Rack (10*) / rack-mount only / supported in 20* deep racks such as the IBM NetBA/™ Rack products Architecture / chipsels Architecture / chipsels EIA 19* Rack (10*) / rack-mount only / supported in 20* deep racks such as the IBM NetBA/™ Rack products Architecture / chipsels Mechanical Architecture / chipsels EIA 19* Rack (10*) / rack-mount only / supported in 20* deep racks such as the IBM NetBA/™ Rack products Architecture / chipsels SMBus, LPC bus to Super / LON attring Bays (100 Mirz) rack products Architecture / chipsels Form thou / two products Architecture / Chipsels Bus slots Two glaphit 10/100/1000 Herment ports / Rackodrom BCMX730 / two full glaphit tehment MAC and PHY layer functions / on planar / PC1X 54-bit 100MHz Bus Ar full duplex / Wake on LAN* / Alert Standard FCH245, one RS-485 (sys mmt), no parallel port Form tors / graphics CD-ROM / disketter Rear ont USB (Vers 11), C2T in C2T out, serial (9-pin), two ethermet (R2-45), none RS-485 (sys mmt), no parallel port Form tors / graphics System Bays Hill Integrated system management processor (ISMP) / H822149 / on planar / provides system and environmental monitoring such as temp, memory, optional (Acky board Vides Mouse (NVM) daining cable) (10 memo	Memory	PC2100 26 must be ins Error Chec	6MHz registe stalled in matc cking and Co	red 184-pin hed pairs [a rrecting (E	ECC DDF bank] / 2- CC) via 16	R-SDRAM DIM -way memory i 6-bit Checksu	Ms / four nterleave m Chipki	/ dual chanr II™ (corrects	nel / memoi 5 1, 2, 3, or -	y bus runs at 4-bit errors o	t 2 x 100ľ n same c	MHz /
Architecture / chipsets ServerWorks ⁶ Grand Champion ¹⁴ 4.0 LE / CMIC LE Host Bridge for PC12-X Bus with slot 1 and dual etherent and I/O Bridge / Thin IMB to Host Bridge for PC12-X Bus A with slot 1 and dual etherent and PC1-X Bus B with slot 1 and dual etherent and PC1-X Bus B with slot 1 and dual etherent and PC1-X Bus B with slot 2 and Ultras20 / CSB5 South Bridge (Thin IMB to Host Bridge for PC12-X Bus A with slot 1 and dual etherent and PC1-X Bus B with slot 1 and dual etherent and PC1-X Bus B with slot 1 and dual etherent and PC1-X Bus B with slot 2 and Ultras20 / CSB5 South Bridge (Thin IMB to Host Bridge for PC12-X Bus A with slot 1 and dual etherent and PC1-X Bus B with Slot 2 and Ultras20 / CSB5 South Bridge (Thin IMB to Host Bridge for PC12-X Bus A with slot 1 and dual etherent and PC1-X Bus B with Slot 2 and Slot 2 Bus C with graphics controller, EIDE, USB, etfa: 35, 1-44MB disketted five / Alus cover Bins Interconnect PC 27 Int C2T int C2T out, senail (9-pin), two stement (RI-45), one RS-485 (sys mgm) / no parallel port Front ports (graphics Front: two USB (Ves 11); C2T int, C2T out, senail (9-pin), two stement (RI-45), one RS-485 (sys mgm) / no parallel port Front ports (graphics Front: two USB (Ves 11); C2T int, C2T out, senail (9-pin), two stement (RI-45), one RS-485 (sys mgm) / no parallel port for poticides Science (KMM) chaina (able) / one Cable Chain Technology Cable Kit would set (1); Carphica (able, 2); and comparison one planar (or continuous pwr (no ext pwr req)) Systems mgmt IBM Integrated system management processor (ISMP) / HBS2148 / on planar / provides system and environmental monto connectors) Security (B-PC100 CL2 S enc CDPR-SDRAM DIMM S16030 SCI Hot-Swap SL dapter with 20-pin out and service way and 20 sci Hot-Swap SL dapter (DC -ROM installation and configuration structure) / autosensing / supervisor Adapter (B-PC100 CL2 S ECC DDR-SDRAM DIMM S16030	IDE controller / cable Disk - capacity	64-bit 100N one 16-bit i All: Enhance EIDE mode SCSI mode	MHz PCI-X Bu internal chani ced IDE ATA- els: One 2-dro els: none stan	us B / suppo nel / 16-bit (100 controll op EIDE cat idard / supp	orts RAID 68-pin LV ler in CSE ole to two orts up to	-1 mirroring (I D cable from s 35 South Bridg disk bays / one 15000 rpm dis	Embedde ystemboa e / two co e 1-drop E sks; <i>EIDE</i>	d Mirroring) ard to backp nnectors on EIDE cable t <i>models:</i> 40	with two S lane for two planar / or o CD-ROM GB / 7200	CSI disks in o disks / no e le 1-drop IDE l rpm / ATA-10	front bay xternal c E cable ((00 / 8.7m	connector CD-ROM) ns seek
on plainar / PCI-X 64-bit 100MHz Bus A / Iuli duplex / Wake on LAN [™] / Affis Standard Format 1.0 / two reair RL-45 ports Rear: one USB (Vers 1.1); Carpin; 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); Carpin; 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); Carpin; 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); Carpin; C2T out, serial (9-pin), two ethernet (RJ-45), one RS-485 (sys mgmt) / no parallel port Technology Cable Kit required at end of chain (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, tans, power supply / support for optional Remote Supervisor Adapter with 20-pin comn on planar for continuous pwr (ino ext pwr real) Security Power on password / administrator password / unattended boot / selectable boot / unattended start mode ServerFulde ^{wi} (CD-ROM installation and configuration utilities), IBM Director [™] , and others Supports dual input sources (two power sources) / Prerequisites Monitor, keyb, mouse, rack, disk, operating support Monitor, keyb, mouse, rack, disk, operating sources (two power sources) / NetRAY ACT LCacl Console Manager Top Monitor, keyb, mouse, rack, disk, operating sources, std Gixed or hot-swap disk Bay @ 3.5", St. 1", access, std Gixed or hot-swap disk Bay @ 3.5", St. 1", access, std Gixed or hot-swap disk Bay @ 3.5", St. 1", access, std Gixed or hot-swap disk Bay @ 3.5", St. 1", access, std Gixed or hot-swap disk Bay @ 3.5", St. 1", access, std Gixed or hot-swap disk Bay @ 3.5", St. 1", access, std Gixed to hot-swap disk Bay @ 3.5", St. 1", access, std Gixed to hot-swap disk Bay @ 3.5", St. 1", access, std Gi	Architecture / chipset	s ServerWo one CIOB- slot 2 and U SMBus, LP	rks [®] Gránd C X2 I/O Bridge Ultra320 / CS PC bus to Sup	Champion™ (IMB2 bus B5 South B er I/O) / Nat	to Host B ridge (Th ional Sen	CMIC LE Host ridge for PCI-> in IMB to Host niconductor® P	Bridge (n Bus A w Bridge fo C87417 \$	nemory cont rith slot 1 an r PCI 2.2 Bu Super I/O ch	troller and d dual ethe is C with gi	/O Bridge) / rnet and PC	I-X Bus I	
CD-ROM / diskette Rear ports Front tow USB (Vers 1.1); <i>C2T</i> indicated (Ppin), two etherent (R)-445, one RS-485 (sys mgmt) / no parallel port Front ports / graphics Front: two USB (Vers 1.1); <i>C3T</i> indicated (Ppin), two etherent (R)-445, one RS-485 (sys mgmt) / no parallel port Front ports / graphics Front: two USB (Vers 1.1); <i>C3T</i> indicated (Ppin), two etherent (R)-445, one RS-485 (sys mgmt) / no parallel port Technology Cable K1 required at end of chain (a cable with separate keyboard, mouse, monitor connectors) Systems mgmt IBM Integrated system management processor (ISMP) / H852148 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 noon non planar for continuous pwr (no ext pwr reg) Security Power-on password / administrator password / unattende boot / selectable boot / unattended start mode ServerGuide ^w (CD-ROM installation and configuration supports dual input sources (Iwo power sources) / Nerrequisites Frenequisites Top Prerequisites Top Prerequisites Top Prerequisites Back Solt 1: halfsize, 64-bit 100MHz PCI X 1.0 (3.3v); Bus A Bay 0.3.5', SL 1'', access, std CD-ROM Bay 0.3.5', SL 1'', access, std CD-ROM DIMM Diskette Bay 0.3.5', SL 1'', access, std CD-ROM Bay 0.3.5', SL 1'', access, std CD-ROM Diversite and alabor Diversite and alabor Diversi	Ethernet controllers	Two gigabi	t 10/100/1000	ethernet po	orts / Broa	dcom BCM570	3 / two ful	l gigabit ethe				
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 red) Diagnostics Light Path Diagnostics [™] (LED lights indicate failing component) and on-board diagnostics (via PC-Doctor in BIOS) Security Power on password / administrator passwor	Rear ports Front ports / graphics	24X-10X ⁶ C <i>Rear:</i> one <i>Front:</i> two s C2T Interce	CD-ROM / IDE USB (Vers 1. USB (Vers 1. onnect™ cabl	E; <i>Diskette:</i> 1), C2T in, (1); <i>Graphic</i> e (10 inch, 2	3.5" 1.44ľ C2T out, s <i>s:</i> SVGA / 245mm) is	VB diskette dri serial (9-pin), tv / ATI® Rage XL s standard (Ke	ve / dust o vo ethern / on plan vboard Vi	cover et (RJ-45), c ar / 8MB SD deo Mouse	ne RS-485 RAM std/m (KVM) cha	(sys mgmt) ax / 32-bit 33 ining cable) /	/ no para 3MHz PC / one Cat	llel port Cl 2.2 bus
Diagnostics Light Path Diagnostics [™] (LED lights indicate failing component) and on-board diagnostics (via PC-Doctor in BIOS) Security Power-on password / administrator password / unattended boot / selectable boot / unattended start mode ServerGuide [™] (CD-ROM installation and configuration utilities), IBM Director [™] , and others OPTIONS Cooling fans Eight fans (five for system, three on power supply) / variable speed / not redundant or hot-swap supports dual input sources (two power sources) / vortedundant / not hot-swap / auto-restart support not redundant / not hot-swap / auto-restart support Xeon 2.8BGHz/512KB L2 Cache Proc Upg 73P2886 BPC2100 CL2.5 ECC DDR-SDRAM DIMM 33L5030 38.4GB 15K Ultra320 SCSI Hot-Swap SL HDD 06P5776 Cable Chain Technology (C2T) Cable Kit (2 meter montor, keyb., mouse, rack, disk, operating sys, one CZT Kit per chain of servers or NetBAY ACT CAT-5 YeareRAID [™] .4MX. Ultra160 SCSI Adapter Cable Chain Technology (C2T) Cable Kit (2 meter Dealer Cable SC) Ultra Slim 0.5°, access, std fixed or hot-swap fisk ag @ 3.5°, SL 1°, access, std fixed or hot-swap fisk ag @ 3.5°, SL 1°, access, std fixed or hot-swap disk ag @ 3.5°, SL 1°, access, std fixed or hot-swap disk ag @ 3.5°, SL 1°, access, std fixed or hot-swap disk ag @ 3.5°, SL 1°, access, std fixed or hot-swap disk ag @ 3.5°, SL 1°, access, std fixed or hot-swap disk bay @ 3.5°, SL 1°, access, std fixed or hot-swap fisk ag @ 3.5°, SL 1°, access, std fixed or hot-swap disk ag @ 3.5°, SL 1°, access, open for fixed hot-swap disk ag @ 3.5°, St 1°, access, std fixed or hot-swap disk ag @ 3.5°, St 1°, access, std fixed or hot-swap disk ag @ 3.5°, St 1°, access, std fixed or hot-swap disk bay @ 3.5°, St 1°, access, std fixed or hot-swap disk ag @ 3.5°, St 1°, access, open for fixed hot bisk (fot) Fan Fan Fan Fan Fan Fan Fan	Systems mgmt	IBM Integr monitoring	rated system such as temp	managem o, memory, o	ent proc	essor (ISMP) / isks, fans, pow	H8S214	8 / on planar	/ provides	system and	environn	
Software unattended boot//installation and configuration utilities), IBM Director™, and others Xeon 2.88GH2/512KB L2 Cache Proc Upg 73PE38E 2266MB PC2100 CL2.5 ECC DDR-SDRAM DIMM 33L5039 Cooling fans Eight fans (five for system, three on power supply) / variable speed / not redundant or hot-swap Xeon 2.88GH2/512KB L2 Cache Proc Upg 73PE38E 2266MB PC2100 CL2.5 ECC DDR-SDRAM DIMM 33L5039 Power supply 322 watt (-48 to -60 V dc [direct current]) / auto-sensing supports dual input sources (two power sources) / not redundant / not hot-swap / auto-restart support Monitor, keyb., mouse, rack, disk, operating sys, one C2T Kit per chain of servers or NetBAY ACT CAT-5 Xeon 2.88GH2/512KB L2 Cache Proc Upg 73PE38E 512MB PC2100 CL2.5 ECC DDR-SDRAM PDIMM 33L5039 Stot 1: halfsize, 64-bit 100MHz PCI X 1.0 (3.3V); Bus A sup 3.5', SL 1', access, std clack and 2 meter KVM chaining cable ag @ 3.5', SL 1', access, std fixed or hot-swap disk Bay @ 3.5', SL 1', access, std fixed or hot-swap disk Bay @ 3.5', SL 1', access, std fixed or hot-swap disk Bay @ 3.5', SL 1', access, std fixed or hot-swap disk Bay @ 3.5', SL 1', access, std fixed or hot-swap disk Bay @ 3.5', SL 1', access, std fixed or hot-swap disk Bay @ 3.5', SL 1', access, std fixed or hot-swap disk Bay @ 3.5', SL 1', access, std fixed or hot-swap disk Bay @ 3.5', SL 1', access, std fixed or hot-swap disk Bay @ 3.5', SL 1', access std fixed or hot-swap disk Bay @ 3.5', SL 1', access std fixed or hot-swap disk Bay @ 3.5', SL 1', access std fixed or hot-swap disk Bay @ 3.5', SL 1', access std fixed or hot-swap disk Bay @ 3.5', SL 1', access std fixed or hot-swap disk Bay @ 3.5', SL 1', access std fixed or hot-swap disk Bay @ 3.5', SL 1', access std fixed or hot-swap disk Bay @ 3.5', SL 1', access std fixed or hot-swap disk Bay @ 3.5', SL 1', access std fix	Diagnostics	Light Path	n Diagnostic	s ™ (LED lię	ghts indic	ate failing cor		and on-boa			C-Doctor	in BIOS)
Cooling fans Variable speed / not redundant or hot-swap Power supply Power supply Prerequisites Prot P		unattended ServerGui	d boot / select de™ (CD-RO	able boot / ι M installatio	inattende on and cor	d start mode	2x25 512	6MB PC210 MB PC2100	512KB L2 0 CL2.5 no CL2.5 ECC	Cache Proc n-Chipkill DIM DDR-SDRAI	1M V DIMM	
Power supply 332 watt (-48 to -60 V dc [direct current]) / auto-sensing/ supports dual input sources (two power sources) / not redundant / not hot-swap / auto-restart support Monitor, keyb., mouse, rack, disk, operating sys, one C2T Kit per chain of servers or NetBAY ACT CAT-5 Remote Supervisor Adapter ServeRAID ^{TM-4} MX Ultra160 SCS1 Adapter Cable Chain Technology (C2T) Cable Kit (2 meter breakout cable and 2 meter KVM chaining cable) NetBAY ACT Local Console Manager 06P4732 06P4732 Back Slo11: halfsize, 64-bit 100MHz PCI X 1.0 (3.3v); Bus A Slo12: fullsize, 64-bit 100MHz PCI X 1.0 (3.3v); Bus B Bay @ 3.5", SL 1", access, std diskette Bay @ 3.5", SL 1", access, std CD-ROM Bay @ 3.5", SL 1", access, std fixed or hot-swap disk Bay @ 3.5", SL 1", access, std fixed or hot-swap disk Bay @ 3.5", SL 1", access, std fixed or hot-swap disk Bay @ 3.5", SL 1", access, std fixed or hot-swap disk Bay @ 3.5", SL 1", access, std fixed or hot-swap disk Bay @ 3.5", SL 1", access, std fixed or hot-swap disk Bay @ 3.5", SL 1", access, std fixed or hot-swap disk Bay @ 3.5", SL 1", access, std fixed or hot-swap disk Bay @ 3.5", SL 1", access, std fixed or hot-swap disk Bay @ 3.5", SL 1", access, std fixed or hot-swap disk Bay @ 3.5", SL 1", access, std fixed or hot-swap disk Bay @ 3.5", SL 1", access, std fixed or hot-swap disk Bay @ 3.5", SL 1", access, std fixed or hot-swap disk Bay @ 3.5", SL 1", access, std fixed or hot-swap disk Bay @ 3.5", SL 1", access, std fixed or hot-swap disk Bay @ 3.5", SL 1", access, std fixed or hot-swap disk Bay @ 3.5", SL 1", access, std fixed or hot-swap disk Bay @ 3.5", SL 1", access, std fixed or hot-swap disk Bay @ 3.5", SL 1", access disk etter Bay @ 0.5Ckets IIIMITED WARRANTY ³ S 3 year IOR 94X, A tr avg response (ServicePac part num 21P2073) 3 year IOR 94X, A tr avg response (ServicePac part num 21P2074) S yea	Cooling fans						2GB	PC2100 C	L2.5 ECC	DDR-SDRAM	1 RDIMN	1 33L5040
Prerequisites 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) 06P4792 NoteBAY ACT Local Console Manager 1735L04 Back Slot 1: halfsize, 64-bit 100MHz PCI X 1.0 (3.3v); Bus A NetBAY ACT Local Console Manager 1735L04 Image: Console Manager 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 9 year Darat and labor 9 year parts and labor Image: Console Manager Slot 1: halfsize, 64-bit 100MHz PCI X 1.0 (3.3v); Bus B 8 ag 0.3.5°, SL 1°, access, std diskette 9 year Darat and labor 9 year Darat and labor Image: Systemboard PCI Light Path Slot I ag 0.3.5°, SL 1°, access, std fixed or hot-swap disk Bay 0.3.5°, SL 1°, access, std fixed or hot-swap disk Bay 0.3.5°, SL 1°, access, std fixed or hot-swap disk Bay 0.3.5°, SL 1°, access, std fixed or hot-swap disk Bay 0.3.5°, SL 1°, access, std fixed or hot-swap disk Bay 0.3.5°, SL 1°, access, std fixed or hot-swap disk Bay 0.3.5°, SL 1°, access, std fixed or hot-swap disk Bay 0.3.5°, SL 1°, access, std fixed or hot-swap disk Bay 0.3.5°, SL 1°, access, std fixed or hot-swap disk Bay 0.3.5°, SL 1°, access, std fixed or hot-swap disk Bay 0.3.5°, SL 1°, access, std fixed or hot-swap disk Bay 0.3.5°, SL 1°, access, std fixed or hot-swap disk Bay 0.3.5°, SL 1°, access, std fixed or hot-swap disk Bay 0.3.5°, SL 1°, access, std fixed or hot-swap disk Bay 0.3.5°, SL 1°, access, std fixed or hot-swap disk Bay 0.3.5°, SL 1°, access, std fixed or hot-swap disk Bay 0.3.5°, SL 1°, access, std fixed or hot-swap disk		332 watt (supports d not redund	(-48 to -60 V lual input sou lant / not hot	dc [direct arces (two p -swap / aut	current] power so to-restart) / auto-sensir urces) / support	^{ng /} Rem Serv	note Superv /eRAID [™] -4ľ	isor Adapt Mx Ultra16	er 0 SCSI Ada	pter	06P5776 09N7585 06P5736
Back Slot 1: halfsize, 64-bit 100MHz PCI X 1.0 (3.3v); Bus A Dignostics 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 3.5", SL 1", access, std CD-ROM Bay ③ 3.5", SL 1", access, std fixed or hot-swap disk 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 disk Bay ④ 3.5", SL 1", access, open for fixed or hot-swap disk Bay ④ 3.5", SL 1", access, open for fixed or hot-swap disk Bay ⊕ 3.5", SL 1", access, open for fixed or hot-swap disk Bay ⊕ 3.5", SL 1", access, open for fixed or hot-swap disk Bay ⊕ 3.5", SL 1", access, open for fixed or hot-swap disk Bay ⊕ 3.5", SL 1", access, open for fixed or hot-swap disk Bay ⊕ 3.5", SL 1", access, open for fixed or hot-swap disk Bay ⊕ 3.5", SL 1", access, open for fixed or hot-swap disk Bay ⊕ 3.5", SL 1", access, open for fixed or hot-swap disk Bay ⊕ 3.5", SL 1", access, open for fixed or hot-swap disk Bay ⊕ 3.5", SL 1", access, std (ixed or hot-swap disk Bay ⊕ 3.5", SL 1", access, open for fixed or hot-swap disk Bay ⊕ 3.5", SL 1", access, open for fixed or hot-swap disk Bay ⊕ 3.5", SL 1", access, open for fixed or hot-swap disk Bay ⊕ 1.72"(1U) x W 1.3" x D 25.7"; 43.7mm x 439.9mm x653.3mm	Prerequisites						brea	kout cable a	nd 2 meter	KVM chaining	j cable)	06P4792 1735L04
Image: Point and the point of the construction of the point point of the point of the point of the poin	Back); Bus A			-		V 3
	Periodicit Systemboard Light Path Diagnostics Panel # DIMM sockets Opt CPU Ean Fan Fan Fan Diskette Diskette	CI ot 2 PCI slot #1 Power Supply Fan Fan Fan Fan Disk (std or opt)	Baý ② 5.25 Bay ③ 3.5" Bay ④ 3.5" Stealth £ Utility tra Configur Configur Configur Configur System Configur System Configur Network Coperato LSI Logi Conficuresa Predictiv modules Maximum 293.6GB w	", UltraSlim , SL 1", , SL 1", , SL 1", , SL 1", , Jlack color fr y in front sli 1(1) x W 17. 4 lbs; 11.8k ration/Setup tics (PC-Do Partition Bod Boot: F12 a r Information c Configurat t two line cor l interrack F re Failure Ar , memory, fr internal dis rith two 146.	0.5", acc acc acc ont bezel des out fr 3" x D 25 g to 12.9k Utility: F1 ctor™): F2 tot: ALT+F t startup n Panel in tion Utility ds (9 ft 11 IV cable w nalysis® of ans, power k capacit .8GB SL	ess, std CD-Ri ess, std fixed of ess, open for f om under midd .7"; 43.7mm x 4 g (minimum to at startup 2 at startup 1 at startup front : CTRL+C at st IOv cable with I IC CTRL+C at st IOv cable with I n processor(s), er supply, and c y ¹³ (model dep SCSI disks or	OM or hot-swa ixed or ho le bay (US 139.9mm max confi artup NEMA plu voltage n isk optior	t-swap disk SB devices) x653.3mm iguration) Ig and 9 ft egulator	 Interna On site covera next bu On site (in elig 3 yea (Serv 3 yea (Serv 4 yea (Serv 5 yea (Serv 	tional Warral , 8 am - 5 pm ge excluding Isiness day r service upg Ible locations r IOR 9x5, 4 icePac® part r r IOR 24x7, 2 icePac part nu r IOR 24x7, 2 icePac part nu r IOR 24x7, 2 icePac part nu r IOR 9x5, Ni icePac part r ServicePac co s(us/its/pdf/ toll-free sup	nty Servi 1, Mon - I holiday; esponse rade opti s): ⁷ hr avg re hum 21P22 hr avg r um 21P22 hr avg r um 21P22 hr avg r um 21P22 br avg r um 21P22 Dresponum 69P9 ptions a h/ wamom: port for V	Fri s, time ⁷ ions esponse 072) response 073) response 244) onse 244) onse 244) onse 244) ot t xeu.pdf warranty
See footnotes for important warranty information (X335DC-B) © IBM Corp. January 200	See footnotes for im-	ortant warra			י בוטב uis	NƏ						•

• = Hot-swap US models announced January 20, 2004

IBM @server[™] xSeries[™] 343

xREF by eServer Field Skills Enablement Team

eserver ** x	Series 545			eserver Field Skills	Enablement Team
IBM [®] Type-model Qty 2	L2 x Processor cache Memory	Ultra160 SCSI SCSI disk controller	Mech- Slots x Fix anical bays disk l	ed Alarm Power bays Panel supply	Available Compliant date
DC power	m [®] III 1.26GHz 512KB 2GB 1 x models are designed for network to support DC power environment	infrastructures requiring net		ed Yes DC powe	r NEBS-3 Apr 2002
Positioning Processor(s) L2 cache Implementation SMP support	Network Equipment Building Syste 2 x Intel® Pentium® III 1.26GHz-S 512KB std and max / ECC / at pro Motherboard contains two Intel PC 2-way SMP via second identical	with 133MHz frontside bus ocessor speed / processor an GA370 sockets, six DIMM soc	s d L2 cache in Flip Ch	ip Pin Grid Array (FC	-PGA2)
Memory	2GB std / 6GB ¹³ max / 6 sockets Error Checking and Correcting SDRAM / 133MHz / six 168-pin g	(ECC) memory controller / ma	atched pairs required	/ two-way interleavin registered SDRAM E	g / ECC DIMMs only
SCSI disk controller SCSI channels SCSI disk SCSI disk bays IDE controller / cable	Adaptec® AHA-7899W / dual cha SCSI Channel A: external 16-bit . SCSI Channel B: one internal 16- 1 x 36GB Ultra160 SCSI, 10K rpn Two fixed disk bays (not hot-swap EIDE ATA-33 controller in South B	8mm VHDCI 68-pin external bit 68-pin LVD cable from con n, 4.9ms read seek, S.M.A.R.) in disk drive carrier that slid	connector (no cables) ntroller to two-bay dis T. ⁵ les out from front) k drive carrier	4-bit PCI
Mechanical Rack support PCI bus slots Chipset Bays	EIA 19" Rack (2U ⁴) x 20-inch der Designed for installation in a two-p (See below) three full height full le PCI 2.2 / peer PCI buses / no hot- ServerWorks® III HE-SL chipset South Bridge / NB6555 Champio CSB5 South Bridge for EIDE, USE Baseboard Management Controlle (See diagram below): 4 bays / two	ep post, 19" rack unit only (not singth 64-bit 33MHz slots / thre swap Active™ PCI slots / CNB20HE-SL North Bridge n I/O Bridge (CIOB20) for PC 3, LPC bus for Super I/O Natio pr	upported in IBM NetB se low-profile half leng for CIOB and PCI A (Distance of the second second second and Semiconductor P	BAY™ Racks) / ships v gth 64-bit 66MHz PC 32-bit 33MHz (graphi and C (slots) / °C8741(diskette, seri	slots / cs, ethernet,
10/100 ethernet CD-ROM / diskette Rear ports	2 x Intel 82550 / on planar / full du 24X-10X ⁶ CD-ROM / multisession Two USB ports (Version 1.1); RJ- connector for front panel alarm rel Y-splitter cable)	plex / supports Wake on LAN / IDE interface / bootable; <i>D</i> 45 serial; PS/2 keyboard; two ay contacts / no parallel port	[®] , PXE 2.0 Boot Ager <i>biskette:</i> 3.5" 1.44MB b RJ-45 ethernet; DB- / mouse connects to b	nt, Adapter Fault Tole diskette drive / dust c -15 graphics; 68-pin s USB port (or keyboar	over SCSI; DB-15 male d port with standard
Graphics controller	SVĠA / PCI bus / ATI® Rage XL (
Security	Power-on password / admin pass				•
Alarm panel Status LEDs Systems mgmt Diagnostics OS support Software ship group	External alarm panel in front bez four alarm panel LEDs: power alar Operator Information Panel (in f Integrated service processor (Ba processors, temperature, voltage LED diagnostics and on-board dia Red Hat Linux [®] 7.1 Resource CD (CD-ROM installat Product Guide), PC-Doctor™ diag	rm fault, critical alarm fault, m ront) / includes switches (NM aseboard Management Contre e, and power supplies activate gnostics providing an LED m ion and configuration utilities	ajor alarm fault, mino II, power, reset) and s oller) / on planar / failu e alarm panel LEDs / ap to a failing compor s, Intel Server Control	r alarm fault status LEDs (NIC, dis ires or thresholds in fa nent I server managemen	k, main power) Ins, memory,
Keyboard / mouse Power supply	None (since rack-based) Std: two; max: two / accessible fr 350 watt (-48 to -60 V dc [direct supports dual input sources (two redundant / hot-swap / auto-res	c urrent]) / power sources)/	1GB SDRAM ECC 36.4GB 10K Ultra IBM E54 (13.8" vie IBM Sleek Two-Bu	ewable) FST Monitor utton Mouse (black)	MM 33L3326 06P5751 (black) 633147N 28L3673
Fans Prerequisites	Four fans / multispeed / not hot-sw fan failure signals front panel alarr fan in each power supply / fan on Appropriate dc power source and monitor, keyboard, mouse, rack,	n LED / each Pentium III processor customer supplied wiring,		Saver Keyboard (bla m.com/pc/us/acces: m.com/pc/us/acces:	
Slot 2: fullsize, 64 Slot 3: fullsize, 64 Slot 4: low-profile, 64 Slot 5: low-profile, 64 Slot 6: low-profile, 64 <u>CD-ROM</u> disk bay Bay ① 3.5", 0.5", Bay ② 3.5", 0.5", Bay ③ 3.5", SL 1".	-bit 33MHz PCI 2.2 (5v), Bus B -bit 33MHz PCI 2.2 (5v), Bus B -bit 33MHz PCI 2.2 (5v), Bus B -bit 66MHz PCI 2.2 (3.3v), Bus C -bit 66MHz PCI 2.2 (3.3v), Bus C -bit 66MHz PCI 2.2 (3.3v), Bus C 2U Rack 2U Rack access, std diskette access, std diskette access, std disk no access, optional disk	 Raven black color (front b Configuration/Setup Utility pressing F2 at startup SCSISelect near startup I CTRL+A PC-Doctor™ diagnostics of Several hardcopy publica H 3.5" x W 17.5" x D 20.0 H 89 mm x W 445 mm x I 34 to 37 pounds (15.4 to 3 IPMI 1.5 and WfM 2.0-cord 	/ invoked by by pressing on diskette tions " 0 508 mm 16.8 kg)	 1 year parts ar International W On site, 8 am - coverage excluent next business of the second second second part of the second second second part of the second second second part of the second second second (No ServiceP) 24 hr x 7 day 4 hour avera (No ServiceP) 24 hr x 7 day 2 hour avera (No ServiceP) 	arranty Service ³ 5 pm, Mon - Fri ding holidays, day response time ⁷ varranty service is (in eligible e, Mon-Fri excluding ir response time ac [®] part number) coverage, ge response time ac part number) ge response time ac part number)
		All models: Max int disk of 72.8GB ² with two 36.4GB			support for warrant he warranty period ³
See footnotes for impo	ortant warranty information			(X343A) ©	BM Corp. March 200

US model announced March 19, 2002

IBM @server™ xSeries™ 343 (June 2004)

xREF by eServer Field Skills Enablement Team

8847-14X 2 × Pentum ² Xeon 2.4GHz 512KB (GB 1 x 73.4GB ² 10K 2 x Ulm320 2U ² rack 633 2 HS Yes DC power NEB53-JU 2 DC power models are designed to network infrastructures regulting network equipment to support DC power NEB53-JU 2 DC power models are designed to network infrastructures regulting network equipment to support DC power NEB53-JU 2 De power models are designed to network infrastructures regulting network equipment to support DC power NEB53-JU 2 De power models are designed to network infrastructures regulting network equipment to support DC power NEB53-JU 2 De power models are designed to network infrastructures regulting network equipment to support DC power NEB53-JU 2 Memory Up to 2G St 12 KI 2GB ³ max / Staff For Checking and Correcting (ECC) memory controller / designed to regulting the support infrastructure (sobiet 504 MT 2GC) memory controller / designed to regulting the support infrastructure of power heads 20 Support Mail and Correcting (ECC) memory controller / designed to regulting the support infrastructure of power heads 20 Support with two 512 GB or 1GB DMMs / Error Checking and Correcting (ECC) memory controller / designed to regulting the life sign 10 Cole and the support DC power heads 20 SUB Staff	IBM® Type-model G	ty x Processor	L2 cache Memory	Ultra320 SCSI disk	SCSI controller	Mech- anical	Slots x bays	Disk Bays		Power supply	Compliant	Available date
Castoning Concessor(s) 2 acids Processor(s) 2 acids Processor(s) 2 acids Processor(s) 5 1XKB sid and max / ECC / at processor and L2 acids in File Chip Pri Grd Aray (FC-FGA2) 5 1XKB sid and max / ECC / at processor and L2 acids in File Chip Pri Grd Aray (FC-FGA2) 5 1XKB sid and max / ECC / at processor and L2 acids in File Chip Pri Grd Aray (FC-FGA2) 5 1XKB sid and max / ECC / at processor and L2 acids in File Chip Pri Grd Aray (FC-FGA2) 5 1XKB sid and max / ECC / at processor and L2 acids in File Chip Pri Grd Aray (FC-FGA2) 5 1XKB sid and max / ECC / at processor is standard Key Constraints Key Constraints												
Jernory Up to 20B atd / 120B ¹¹ max / 26BMHr 5DFAM / 5W 168-pin sockets / Two sockets available ships with vois 120 Bo 116B DIMMs / Error Checking and Correcting (ECC) memory controller / 100 SCB (Channels on 512 Bo 116B DIMMs / Error Checking and Correcting (ECC) memory controller / 100 SCB (Channels & setting 14bit 8pm VHDCI 88-pin external connector (no cables) SCSI disk controller SCSI Channel B: one internal 16-bit 8pm VHDCI 88-pin external connector (no cables) SCSI Channel B: one internal 16-bit 8pm VHDCI 88-pin external connector (no cables) SCSI disk haves SCSI Channel B: one internal 16-bit 8pm VHDC able from connector on planar / one 1-drop DIE cable (to CD-ROM) Beck nabitity Two 340B or 146.800 Ultrazio SCAI, 10K pm, 4.5ms; read seek. SM AR 17. SCSI disk haves EI A 19* Rack (20*) x 20-inch deep Descintorior / cable EIDE ATA/FX 60 controller in two-post, 19* rack unit only (not supported in IBM NetBAY** Facks) / ships with rack mour (See below) three full height full length 40-bit 133MHz solts / three low-profile half length 64-bit 53MHz (graphics, ethernet, CicH-35 South Bridge / on DicKWaP PCI ables Charler EF60T ethipset / E760T MCH hom Single for Supports VAke on LAN*, PXE 2.0 Boot Agent, Adapter Fault Tolerance Falo. SUP-DE Visasian / 116/bit 8pm VHO SUB Adapter Fault Tolerance Falo. SUP-DE Visasian / 116/bit 8pm VHO SUB Adapter / Supports VAke on LAN*, PXE 2.0 Boot Agent, Adapter Fault Tolerance Falo. SUP-DE Visasian / 116/bit 8pm VHO SUB Adapter / Supports VAke on LAN*, PXE 2.0 Boot Agent, Adapter Fault Tolerance Falo. Supports Vakes and PSZ Alphorated boot visbout webpoat port with stands. Derontor (Wereard)	Positioning Processor(s) _2 cache mplementation	Network Equipri 2 x Intel [®] Pent 512KB std and Motherboard co	nent Building Syste ium [®] Xeon 2.4GH max / ECC / at proportains two Intel S	em (NEBS) level 3 Iz with 533MH cessor speed / p cocket 604 INT3	3-compiant for z frontside bu rocessor and L /FCPGA, six [<i>telecomr</i> Js .2 cache DIMM so	<i>nunicat</i> in Flip (<i>ions car</i> Chip Pin	<i>rier-gra</i> Grid A	<i>de envir</i> rray (FC	onments -PGA2)	
SCSI channels SCSI Channel &: external 16-bit. Jamm VHDCI 68-pin external connector (no cables) SCSI disk to the scale of		Up to 2GB std ships with two	/ 12GB ¹³ max / 2 512 GB or 1GB D	66MHz SDRAN IMMs / Error C	/ / Six 168-pi hecking and	n socket Correcti	ng (EC	C) mem	ory co	/ Four : htroller /	sockets av	ailable /
Back support Designed for installation in a two-poist, 19" rack unit only (not supported in IBM MeRABY" Racks) / ships with rack mount (See below) three dit Height tull length 64-bit 133MHz stols / three low-profile half length 64-bit 66MHz PCI slots Chipset Intel® E7501 tCH) source / TCO is and PCI A 64-bit 33MHz (graphics, ethernet, South Bridge) / P64Hz PCI Bus (Slots, SCS) and C (slots) / Basebace Management C controller South Bridge in COB and PCI A 64-bit 33MHz (graphics, ethernet, South Bridge) / P64Hz PCI Bus (Slots, SCS) and C (slots) / Basebace Management Controller 10/100 ethernet Bear Data Management Controller 2 x Intel 826H on planar / full diplex / supports Wake on LAN®, PXE 2.0 Boot Agent, Adapter Fault Tolerance Failon work (See below): 3 bays / two disk bays (hort-swap) / one CD-ROM bay 10/100 ethernet Bear ports 2 x Intel 826H on planar / full diplex / supports Wake on LAN®, PXE 2.0 Boot Agent, Adapter Fault Tolerance Failon work (See DoPint (Nersion 1.1); FJ-45 brid; FS2 beyboard; two PL-45 ethernet: DB-15 graphics; 68-pin SCSI; DB-15 mail connector for front panel alarm relay contacts / no parallel port / mouse connects to USB port (or keyboard alarm panel LEDs; power alarm text, critical alarm fault, mior and minor errors and power outages / four alarm panel in front bezel provides 24x7 surveillance of critical, major and minor errors and power outages / four alarm panel (In Cort), includes switches (MM, power; resel) and status LEDs (NC, disk, main power) integress temperature voltage, and and were supplice toxid alarm fault, mior alarm fault, mior atms mault. South integress temperature voltage, and and were supplice for the stolarm fault. The full models: maximum bar error and power outages / four alarm panel LEDs; power alarm fault, mior alarm fault. Bay B 3.5°, SL *, no ac	SCSI channels SCSI disk SCSI disk bays	SCSI Channel SCSI Channel 1 x 73.4GB or Two fixed disk	A: external 16-bit B: one internal 16 146.8GB Ultra320 bays (not hot-swa	.8mm VHDCI 6 bit 68-pin LVD SCSI, 10K rpm p) in disk drive	8-pin external cable from co n, 4.9ms read carrier that slig	connectentroller te seek, S.I des out f	or (no c o two-b M.A.R.1 from fro	ables) ay disk ^{7,5} ont	drive c	arrier		CI
CD-ROM / diskette: 24X-10X° CD-ROM / multisession / IDE interface / bootable Rear ports Two USB ports (Version 1.); RJ-45 esrial, PS2 keyboard; two RJ-45 ethernet; DE-15 graphics; 68-pin SCSI; DB-15 maik connector for front panel alarm relay contacts / no parallel port / mouse connects to USB port (or keyboard port with stands / spilter cable) Graphics: SVGA / PCI bus / ATI" Rage XL (on planar) / 8MB SDRAM std/max / 1600x1280 at 16M colors at 55Hz / 15-pin D-shell Security Power-on password / admin password / unattended boot / selectable boot / boot without keyboard Alarm panel External alarm panel in front bzeal provides 24X7 surveillance of critical, major and minor errors and power outges / four alarm panel LEDs: power alarm fault, critical alarm fault, major alarm fault minor alarm fault Status LEDs Soft information Panel (in front) includes switches (NIII, power, resel) and status LEDs (NIC, disk, main power) Systems mgmt Integrated service processor (Baseboard Management Controller) / on planar, failures or thresholds in fans, memory, processors, temperature, voltage, and power suplies activata alarm panel LEDs Software ship group Resource CD (CD-ROM installation and configuration utilities, Intel Server Control server management software, Product Guide) Power supply Std: to icos rack-based) Std: to icos rack-based) Soft 1: fullisze, 64-bit 64MHz PCI-X (SV), Bus B Std: to icos rack operating system Side than a sech power sources (requindant / fain in each power sources) / redundant / fain in each p	Mechanical Rack support PCI bus slots Chipset	EIA 19" Rack (Designed for in: (See below) thr PCI 2.2 / peer Intel [®] E7501 cl South Bridge) / ICH3-S South B Baseboard Mar	(2U ⁴) x 20-inch de stallation in a two-r ee full height full le PCI buses / no ho hipset / E7501 MC P64Hz PCI Bus Bridge for EIDE, U nagement Controll	beep Dost, 19" rack ur ength 64-bit 133 t-swap Active™ CH North Bridge B (slots, SCSI) a SB, LPC bus for er	hit only (not su MHz slots / th PCI slots for CIOB and and C (slots) / Super I/O Na	oported i ree low-p PCI A 6 tional Se	n IBM N profile h 64-bit 3 emicond	NetBAY alf leng 3MHz ((™ Rack th 64-bi graphic	s) / ship it 66MH s, ether	es with rack z PCI slots net,	s /
Security Power-on password / admin password / unitended boot / selectable boot / boot without keyboard Alarm panel External alarm panel in front bezel provides 24x7 surveillance of critical, major and minor errors and power outages / four alarm panel. EDEs: power alard alarm fault, major alarm fault, minor alarm fault. Status LEDs Operator Information Panel (in front) / includes switches (NMI, power, reset) and status LEDs (NLC, disk, main power) Unagnostics Depresentation Panel (in front) / includes switches (NMI, power, reset) and status LEDs (NLC, disk, main power) Operator Information Panel (in front) / includes switches (NMI, power, reset) and status LEDs (NLC, disk, main power) International panel (in front) / includes switches (NMI, power, reset) and status LEDs (NLC, disk, main power) Diagnostics Diagnostics and on-board diagnostics providing an LED map to a failing component Status LEDs Software ship group Resource CD (CD-ROM installation and configuration utilities, Intel Server Control server management software, Product Guide) ZdB PC2100 DDR ECC RDIMM Memory Kit 73P4: Keyboard / mouse None (since rack-based) Optome seath participation and configuration setup on power supples and status leads ZdB PC2100 DDR ECC RDIMM Memory Kit 73P4: Status LEDs Status LEDs (NLC, disk, main power) Configuration/Setup on power supples and value restarts upport Configuration/Setup on power suporestim seath participatin andit (Status PCLX (Status P	CD-ROM / diskett Rear ports	e 24X-10X ⁶ CD-F Two USB ports connector for fro Y-splitter cable)	ROM / multisession (Version 1.1); RJ-4 ont panel alarm rela	n / IDE interface 5 serial; PS/2 ke ay contacts / no p	/ bootable eyboard; two R parallel port / m	J-45 ethe ouse cor	ernet; D nnects t)B-15 gr o USB p	aphics; ort (or l	68-pin \$ keyboar	SCSI; DB-1 d port with	5 male standard
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 and minor errors and power outages / four alarm panel LEDs: power alarm fault, critical alarm fault, major and minor errors and power outages / four alarm panel LEDs: power alarm fault, critical alarm fault, major and minor errors and power outages / four alarm panel LEDs: provides switches (MM), power, reselvand thand status LEDs (NIC, disk, main power) Status LEDs Operator information Panel (in front) / includes switches provides switches partice, voltages, and power supplies activate alarm panel LEDs (NIC, disk, main power) Diagnostics Diagnostics and on-board diagnostics providing an LED map to a failing component Software ship group None (since rack-based) Software ship group None (since rack-based) Keyboard / mouse None (since rack-based) Stati one (14X) or two (24X); max: two / accessible from read 480 watt (-48 to -60 V dc [direct current]) / supports dual input sources (two power sources) / redundant / fan failure signals front panel alar melled. 2GB PC2100 DDR ECC RDIMM Memory Kit 73P4: 2000 Chore source and customer supplied wiring Frans Four fans / multispeed / not hot-swap / not redundant / fan in each power supply / fan on each Pentium III processor group or site 2 de -bit 64MHz PCI-X (5V), Bus B Slot 3: fullisze, 64-bit 64MHz PCI-X (5V), Bus B Slot 3: fullisze, 64-bit 64MHz PCI-X (5V), Bus B Slot 3: fullisze, 64-bit 64MHz PCI-X (5V), Bus B Slot 3: fullisze, 64-bit 64MHz PCI-X (SV), Bus C Slot 6: ow-profile,64-bit 133	•		0 (, ,							5-pin D-sn	ell
four alarm panel LEDs: power alarm fault, critical alarm fault, maior alarm fault four alarm panel LEDs: NUC, disk, main power) Status LEDs Operator Information Panel (in font) / includes switches (NM), power, resel) and status LEDs (NIC, disk, main power) Diagnostics 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 Software ship group Resource CD (CD-ROM installation and configuration utilities, Intel Server Control server management software, Product Guide) Keyboard / mouse None (since rack-based) Power supply Std: one (ince rack-based) Soft : fullsize, 64-bit 64MHz PCI-X (5V), Bus B Stot 1: fullsize, 64-bit 64MHz PCI-X (5V), Bus B Stot 1: fullsize, 64-bit 64MHz PCI-X (5V), Bus B	,	•	•								vor outoro	<u></u>
Power supply Std: one (14X) or two (24X); max: two / accessible from reat 480 watt (-48 to -60 V dc [direct current]) / supports dual input sources (two power sources) / redundant / hot-swap / auto-restart support Other options available via special Bid Fans Four fans / multispeed / not hot-swap / not redundant / fan ialure signals front panel alarm LED / fan in each power source and customer supplied wiring monitor, keyboard, mouse, rack, operating system IIMITED WARRANTY ³ Slot 1: fullsize, biot 3: fullsize, 64-bit 64MHz PCI-X (5v), Bus B Slot 3: fullsize, 64-bit 64MHz PCI-X (5v), Bus B Slot 3: fullsize, 64-bit 64MHz PCI-X (5v), Bus B Slot 4: low-profile, 64-bit 133MHz PCI-X (3.3v), Bus C Slot 6: low-profile, 64-bit 133MHz PCI-X (3.3v), Bus C Slot 7: low arge excluding holidays, 9: 4 H 37.6 mm x W 435.3 mm x D 508 mm > 34 to 37 pounds (15.4 to 16.8 kg)	Status LEDs Systems mgmt Diagnostics OS support	four alarm pane Operator Inform Integrated servy processors, ten LED diagnostic Microsoft Windd up Resource CD (LEDs: power alari mation Panel (in fr ice processor (Ba, nperature, voltage, s and on-board dia ows 2000, Windows CD-ROM installat	m fault, critical al cont) / includes su seboard Manage and power supp agnostics provid s 2003 Advance	arm fault, majo witches (NMI, p ement Controlle blies activate a ing an LED ma d Server / Rec	r alarm fa oower, re r) / on pla larm pan ap to a f l Hat AS	ault, mir set) and anar / fa el LEDs ailing co 2.1 / S	nor alarr d status ilures or s / ompone LES	n fault LEDs (thresho nt	NIC, dis olds in fa	k, main po ins, memo	wer) ry,
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, Slot 2: fullsize, Slot 2: fullsize, Slot 3: fullsize, Slot 4: low-profile, 64-bit 64MHz PCI-X (5v), Bus B Slot 4: low-profile, 64-bit 133MHz PCI-X (3.3v), Bus C Slot 5: low-profile, 64-bit 133MHz PCI-X (3.3v), Bus C Slot 6: low-profile, 64-bit 133MHz PCI-X (3.3v), Bus C May @ 3.5", SL 1", no access, std CD-ROM Bay @ 3.5", SL 1", no access, std disk Bay @ 3.5", SL 1", no access, std disk Bay @ 3.5", SL 1", no access, optional disk		Std: one (14X) 480 watt (-48 supports dual ir	or two (24X); ma. to -60 V dc [dired aput sources (two p	ct current]) / power sources)/	ble from rear	2GB PC Other op	2100 D ptions a	DR EC vailable	C RDIN <i>via sp</i> e	IM Men ecial Bio	nory Kit d	73P4126
 Slot 1: fullsize, 64-bit 64MHz PCI-X (5v), Bus B Slot 2: fullsize, 64-bit 64MHz PCI-X (5v), Bus B Slot 4: low-profile, 64-bit 133MHz PCI-X (3.3v), Bus C Slot 5: low-profile, 64-bit 133MHz PCI-X (3.3v), Bus C Slot 6: low-profile, 64-bit 133MHz PCI-X (3.3v), Bus C Slot 6: low-profile, 64-bit 133MHz PCI-X (3.3v), Bus C Slot 6: low-profile, 64-bit 133MHz PCI-X (3.3v), Bus C Slot 6: low-profile, 64-bit 133MHz PCI-X (3.3v), Bus C Slot 6: low-profile, 64-bit 133MHz PCI-X (3.3v), Bus C Slot 7: no access, std CD-ROM Bay @ 3.5", SL 1", no access, std disk Bay @ 3.5", SL 1", no access, optional disk All models: Max int disk capacity: Climation of the start of t		fan failure signa fan in each pow Appropriate DC	ls front panel alarm er supply / fan on e C power source ar	า LED / each Pentium III าd customer suj	processor oplied wiring,							
All models: Max int disk capacity: issues during the warranty peri	Slot 2: fullsize, Slot 3: fullsize, Slot 4: low-profile, Slot 5: low-profile, Slot 6: low-profile, disk bay Bay (2) 3.5", 0.5", Bay (3) 3.5", SL 1	64-bit 64MHz PCI- 64-bit 64MHz PCI- 64-bit 133MHz PC 64-bit 133MHz PC 64-bit 133MHz PC disk bay disk bay access, std o ", no access, std o	X (5v), Bus B X (5v), Bus B I-X (3.3v), Bus C I-X (3.3v), Bus C CD-ROM	 Configurat pressing F SCSISelec CTRL+A PC-Doctor Several has Several has H 3.45" x H 87.6 mn 	ion/Setup`Utilit 2 at startup t near startup ™ diagnostics ardcopy public W 17.14" x D n x W 435.3 m	y invoke by pres on diskations 20.0" m x D 5	ssing kette 08 mm		3/3 yea Internation On site coverage next bu 2 year upgrado location • 9 hr holid 96P2 • 24 hi 96P2 • 24 hi 2 ho 96P2	r parts tional W , 8 am - ge exclu siness o on site e option hs): ⁷ coverac lays, 4 h 122 r x 7 da ur avera 123 r x 7 da ur avera 124	and labor arranty Se 5 pm, Mon ding holida day respon warranty s is (in eligib ge, Mon-Fri nr respons y coverag age respon y coverag	rvice ³ - Fri ays, ise time ⁷ service le i excludin e time e, ise time e, ise time
							S					

See footnotes for important warranty information US model announced June 15, 2004 ☞ Model withdrawn from marketing effective April 2005

IBM @server™ xSeries™ 346 (August 2004)

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IBM [®] Type-GAV-model Qt	y x Processor	L2 Cache Memo	y 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 8840-21y-21U 1 x 8840-31y-31U 1 x 8840-41y-41U 1 x	Xeon 3.0GHz Xeon 3.2GHz Xeon 3.4GHz Xeon 3.6GHz	1MB 1GB 1MB 1GB 1MB 1GB 1MB 1GB 1MB 1GB	None None None None	2 x Ultra320 2 x Ultra320 2 x Ultra320 2 x Ultra320 2 x Ultra320 2 x Ultra320	2U 2U 2U 2U	4x8 (6 hot-swap) 4x8 (6 hot-swap) 4x8 (6 hot-swap) 4x8 (6 hot-swap) 4x8 (6 hot-swap)	1 x 625W not-swap	2 x Gigabit 2 x Gigabit 2 x Gigabit 2 x Gigabit	Aug 2004 Aug 2004 Aug 2004 Aug 2004 Aug 2004
Positioning Processor L2 cache	1 x Intel [®] Xec 64 Technolog 1MB L2 Cache	on™ Processor gy (EM64T) / Hy e / on die of prod	2.8, 3.0, 3 per-Threa cessor / a	3.2, 3.4, 3.6G Iding technol t processor s	hz wit ogy / peed	bility and expandabili h 800MHz frontside Simultaneous mult	bus / Optimized for		
SMP support Implementation	Systemboard of		I PGA604	micro-PGA	ZIF so	he size) ckets, eight memory ntegrated SCSI, dua			CI-X
Memory	pin ECC DDR2 pairs [a bank] Checking and	2-SDRAM DIMM / 2-way memory	s / eight E interleave C) / optic	DIMM gold-co e / dual chan onal 16-bit C	onnecto nel / A hecks	available / DIMMs / or slots on systembo ctive Memory™: M um Chipkill™ correct	erd / DIMMs must l emory mirroring, ho	be installed in t-spare mem	n matched ory / Error
SCSI disk controller	supports RAID 5, 00, 10, 1E0,	D-0 and 1 with u , 50 (installed on	p to one reserved i	hot-spare di internal conne	sk / op ector)	otional IBM ServeRA	ID [™] -7k Adaptor for I	ow-cost RAI	O 0, 1, 1E,
SCSI channels	Two 16-bit cha backplane for VHDCI connect	annels (one inter six disks; <i>Char</i> ctor / supports	nal and o <i>nel A:</i> 16 optional S	ne external) -bit 68-pin in ServeRAID a	/ <i>SĆS</i> terface dapter	I Channel B: 16-bit to support externa s with external con	I SCSI devices via nector(s) for extern	external SCS al devices	SI 0.8mm
IDE controller/cable Disk - capacity Disk - bays	None standard Six hot-swap /	d / supports 7200 80-pin SCA-2 co	15000 rpi nnectors /	n disks / one filler panels	backp installe	ane ed in each disk bay /	all disk bays Ultra32	0-enabled	,
Mechanical Chipset	Intel E7520 / I slots 3 & 4) / ServeRAID 7k	Memory Control Intel Dodson I/C	er Hub (N) Procces South Br	/ICH) / Intel I or (supports idge (Thin IN	/O Co 100M	NetBAY™ Rack pro htroller Hub 5 (ICH5 Hz PCI-X slots 1 & łost Bridge for grap	 Two Intel PCI-X Adaptec AIC-790 	Hubs (133N 2 and optior	1Hz PCI-X nal
Bus slots	(See below) F	our available PC	;I-X 1.0 /	no hot-swap	Active	PCI slots			
Ethernet controller						721 / two full gigabit			
Optical / diskette Front & Rear ports	8X-24X ⁶ DVD- Front: one US (RJ-45), two R	ROM / IDE; Dis SB (Vers 2.0) Re SJ-45 (sys mgmt)	<i>kette:</i> 3.5' <i>ar:</i> two US / no para	['] 1.44MB disl SB (Vers 2.0) allel port	kette d , keyb	N [®] / Alert Standard F rive / dust cover oard, mouse, serial	(9-pin), graphics (D	B-15), two et	
Graphics	SVGA / ATI® F	Radeon [™] 7000m	/ on plana	ar / 16MB DD	R SDF	RAM std/max / 32-bi	t 33MHz PCI 2.2 bu	S	
Security	Power-on pass	sword / administr	ator passv	vord / unatter	nded be	oot / selectable boot	sequence		
Systems mgmt Diagnostics Software	H8S2168 / on environmental fans, power su Adapter II slim continuous po Drop down lig map to failing p	rd Managemen planar / provide monitoring such upp / supports o nline with reseve wer (no ext pow ght path diagno part (located on i M (CD-ROM inst	s system as temp ptional Re rved conr er reqd) stics par ront pane	and , optional dis emote Super nector for nel providing I)	LED	Xeon 2.8GHz 800MH Xeon 3.0GHz 800MH Xeon 3.2GHz 800MH Xeon 3.4GHz 800MH 512MB (2x256) PC32 1GB (2x512) PC3200 2GB (2x1GB)PC3200 IBM ServeRAID-7k /	Iz/1MB L2 Proc Upg Iz/1MB L2 Proc Upg Iz/1MB L2 Proc Upg Iz/1MB L2 Proc Upg 200 CL3 ECC DDR2 0 CL3 ECC DDR2 No 0 CL3 ECC DDR2-S	on-Chpk Kit	13N0681 13N0688 13N0683 13N0684 13N0685 73P3523 73P3522 73P2866 71P8642
Keyboard / mouse Power supply Fans	utilities), IBM None standard Std/Max: one/tr restart / redund Calibrated Ver (six fans with c with twelve fan	Director systems d (because rack- wo 625 watt hot- dant with two poo ctored Cooling ^T optional second p is installed; <i>All:</i> va	s mgmt, c based) swap / rea ver supplie <i>^{II} Std:</i> six ower supp	ar access / au es / auto-sen fans; <i>Max:</i> tw ply) / redunda	uto sing velve ant	IBM Remote Supervia 73.4GB 10K Ultra320 146.8GB 10K Ultra32 625W (N. Amreica) F NetBAY Local Conso NetBAY Remote Cor Other options at ibm	sor Adapter II Slim) SCSI Hot-Swap SL 20 SCSI Hot-Swap SL łot-Swap Power Supj le Manager Isole Manager	_ HDD oly	73P9341 90P1305 90P1306 26K5097 1735L04 1735R16
Prerequisites	PFA Monitor, keybo	ard, mouse, SC	SI disk. ra	ck					
Slot 1: low-profile, 6 Slot 2: low-profile, 6 Slot 3: full, 64-bit 1	54-bit 100MHz 3 64-bit 100MHz 3 33MHz 3.3v PCI 33MHz 3.3v PCI	3.3v PCI-X, non h 3.3v PCI-X non ho I-X, not hot-swap I-X, not hot-swap	ot, Bus A ot, Bus A , Bus B* , Bus B* ss riser	 Quick release Configuration Diagnostics System Par Network Book 	on/Setu (PC-D tition B oot: F1	pter slots (no screws ip Utility: F1 at startup octor™): F2 at startup oot: ALT+F1 at startu 2 at startup EDs: Power-on LEI	y → 3 year parts → International → On site, 8 an coverage ex business dat	l Warranty Se n - 5 pm, Mon cluding holid y response ti	ervice ³ I - Fri ays, next me ⁷
Opt disk Opt disk Opt disk Opt disk Opt disk	Opt disk Opt disk	Drop Down light path panel	2U Rack	identification system-erro Predictive fa memory, pro	n LEĎ, or LED ailure a ocesso	LED, system information LED, ar analysis on disk opti rs, VRMs, power in conjunction with IE	ons, • 9 hr cover holidays, 4	e warranty se ions (in eligik age, Mon-Fri I hr response c® 21P2077)	ole excluding
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 6 3.5", SL 1" Bay 6 3.5", SL 1" Bay 7 3.5", SL 1" Bay 9 3.5", SL 1"	 access, hot-s access, hot-s access, hot-s access, hot-s access, hot-s access, hot-s 	DVD-ROM swap, open for dis swap, open for dis	k ^c k c k c k	Director car of an immine Rack: H 3.	alert t ent con 36" x \ x W 4 pounds	he system administra hponent failure N 17.5" x D 27.5" 43.6mm x D 698mm	 24 hr x 7 d 4 hour ave (ServicePa 24 hr x 7 d 2 hour ave 2 hour ave 	ay coverage, rage respons c 21P2078) ay coverage, rage respons c 21P2093) cePac option	e time e time
Bays 3 through 8 su (2 slots used, addition via SCA-2 connector	onal PCI SCSI ad ors	laptor req)		880.0GB ² wit		t disk capacity: 46.8GB SL disks	services/us/ ⇔ 24x7 ¹⁴ toll-fr issues durin	its/pdf/wamo ee support fo g the warrant	or warranty ty period ³
See footnotes for imp	portant warrantv i	Intormation	•	= Hot-swap			(X346A) ©	IBM Corp. A	ugust 2004

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IBM [®] Type-GAV-model Qt	y x Processor	L2 Cache Memory Disk	SCSI controller	Form Factor	Slots x bays (hot-swap bays)	Power supply	Available Ethernet date
8840-15y-15U 1 x 8840-16y-16U 1 x 8840-25y-25U 1 x 8840-35y-35U 1 x 8840-36y-35U 1 x 8840-36y-36U 1 x 8840-45y-45U 1 x 8840-E1y-E1U 1 x	Xeon 3.0GHz Xeon 3.2GHz Xeon 3.4GHz Xeon 3.4GHz Xeon 3.6GHz	2MB 1GB None 2MB 1GB None 2MB 1GB None 2MB 1GB None 2MB 1GB None 2MB 1GB None 2MB 1GB 3x73.4GI	2 x Ultra320 2 x Ultra320 2 x Ultra320 2 x Ultra320 2 x Ultra320 2 x Ultra320 2 x Ultra320 3 2 x Ultra320	2U 2U 2U 2U 2U	4x8 (6 hot-swap) 2 4x8 (6 hot-swap) 1 4x8 (6 hot-swap) 1 4x8 (6 hot-swap) 2	2 x 625W hot-swap x 625W hot-swap x 625W hot-swap x 625W hot-swap x 625W hot-swap	2 x Gigabit Mar 200 2 x Gigabit Mar 200
Positioning Processor	1 x Intel [®] Xeo 64 Technolog	2-way server delivering on™ Processor 2.8, 3. Jy (EM64T) / Hyper-Th	0, 3.2, 3.4, 3.6G	hz with bgy / S	800MHz frontside	bus / Optimized for	
L2 cache SMP support Implementation	2-way SMP / Systemboard of	e / on die of processor up to two Xeon Proces contains two Intel PGA s, two full-length PCI-X	sors (same spec 604 micro-PGA 2	ed/cach ZIF soc	kets, éight memory		
Memory	DDR2-SDRAM bank] / 2-way Checking and	B ¹³ max / two slots use I DIMMs / eight DIMM memory interleave / du I Correcting (ECC) / d through 8-bit errors co	gold-connector s al channel / Act optional 16-bit Ch	lots on ive Me necksu	systemboard / DIM mory™: Memory m	Ms must be installe irroring, hot-spare i	ed in matched pairs [a memory / Error
SCSI disk controller	supports RAID	-7902 / dual channel D-0 and 1 with up to 0 50 (installed on reserv	one hot-spare dis	sk / opt	ller (LVD 320MB/setional IBM ServeRAI	ec) / on planar / 64 D™-7k Adaptor for	-bit 100MHz PCI-X / low-cost RAID 0, 1, 1[
Disk - capacity	Two 16-bit cha backplane for VHDCI connect Enhanced IDE None standard	annels (one internal ar six disks; <i>Channel A:</i> ctor / supports option ATA-100 controller in / supports 7200-15000	d one external) / 16-bit 68-pin int al ServeRAID ac ICH5 South Brid rpm disks / one b	/ <i>SĆSI</i> erface dapters dge / ol backpla	to support external with external conr ne connector on pla ane	SĊSI devices via lector(s) for extern anar / one 1-drop I	external SCSI 0.8mm al devices DE cable (CD-ROM)
Disk - bays Mechanical Chipset	EIA 19" Rack Intel E7520 / slots 3 & 4) / ServeRAID 7k bus to Super	80-pin SCA-2 connector (204) / rack-mount or Memory Controller Hul Intel Dodson I/O Proc Adapter / ICH5 South I/O) / LPC-SIO 8742x	ly / supported in o (MCH) / Intel I/ cesor (supports Bridge (Thin IM Super I/O	IBM N O Con 100MH B to Ho	NetBAY™ Rack prod troller Hub 5 (ICH5 Iz PCI-X slots 1 & 2 ost Bridge for graph	ducts / no rack to t) / Two Intel PCI-X 2, Adaptec AIC-790	ower conversion Hubs (133MHz PCI- 2 and optional
Bus slots	, ,	our available PCI-X 1.	· · ·				
Ethernet controller Optical / diskette Front & Rear ports Graphics	on planar / PC 8X-24X ⁶ DVD- Front: one US (RJ-45), two R	//100/1000 ethernet por I-X 64-bit 100MHz / ful ROM / IDE; <i>Diskette:</i> SB (Vers 2.0) <i>Rear</i> two IJ-45 (sys mgmt) / no µ Radeon™7000m / on p	l duplex / Wake c 3.5" 1.44MB disk USB (Vers 2.0), parallel port	on LAN ette dri keybo	Ø / Alert Standard F ive / dust cover ard, mouse, serial (ormat 2.0 / two RJ- 9-pin), graphics (D	45 ports in rear B-15), two ethernet
Security	Power-on pass	sword / administrator pa	ssword / unatten	ded bo	ot / selectable boot s	equence	
Systems mgmt Diagnostics Software	H8S2168 / on environmental fans, power su Adapter II slim continuous po Drop down lig map to failing	rd Management Con planar / provides syst monitoring such as te upp / supports optiona nline with reseverved of wer (no ext power rec ght path diagnostics part (located on front p (CD POM instruction)	em and mp, optional disl l Remote Superv connector for d) panel providing l anel)	ks, > visor > LED 1	1GB (2x512) PC3200 2GB (2x1GB)PC3200	z/1MB L2 Proc Upg z/1MB L2 Proc Upg z/1MB L2 Proc Upg z/1MB L2 Proc Upg 00 CL3 ECC DDR2 CL3 ECC DDR2 No 0 CL3 ECC DDR2 No	DRAM 73P286
Keyboard / mouse Power supply Fans	utilities), IBM None standard Std/Max: one/tr restart / redund Calibrated Ver (six fans with o	^M (CD-ROM installation Director systems mgm d (because rack-based) wo 625 watt hot-swap / dant with two power su ctored Cooling™ Std: optional second power s is installed;All: variable	t, others rear access / au oplies / auto-sens six fans; <i>Max:</i> tw supply) / redunda	ito sing velve nt	BM ServeRAID-7k A BM Remote Supervis 73.4GB 10K Ultra320 146.8GB 10K Ultra32 225W (N. Amreica) H VetBAY Local Consol VetBAY Remote Con Dither options at ibm	or Adapter II Slim SCSI Hot-Swap SL 0 SCSI Hot-Swap SI ot-Swap Power Supj e Manager sole Manager	HDD 90P130 bly 26K509 1735L04 1735R1
Slot 2: low-profile, Slot 3: full, 64-bit 1 slot 4: full, 64-bit 1 *slots 3 & 4 riser r • Opt disk • Opt disk • Opt disk • Opt disk Bay ① 3.5", 0.5", Bay ② 5.25", 0.5" Bay ③ 3.5", SL 1" Bay ④ 3.5", SL 1" Bay ⑥ 3.5", SL 1" Bay ③ 3.5", SL 1"	64-bit 100MHz 3 64-bit 100MHz 3 33MHz 3.3v PC 33MHz 3.3v PC asy be replaced • Opt disk •	DVD-ROM swap, open for disk swap, open for disk ss; or 1 DDS5 Tape drive	A → Quick releas A → Configuratio 3* → Diagnostics 3* → System Parti r → Network Boo → Front indicat SCSI bus ac identification ⇒ ScSI bus ac identification ⇒ Predictive fa memory, pro supplies, and Director can of an immine → Rack: H 3.3. (H 85.4mm 2 → 46.5 to 62 p → Stealth black	n/Setup (PC-Do ition Bo ot: F12 tors LE tors LE tivity L LED, i r LED illure au cessor d fans ir alert th alert th nt com % X W 44 ounds coor Max int	o Utility: F1 at startup octor™): F2 at startup oot: ALT+F1 at startu	 ⇒ 3 year parts ⇒ Internationa ⇒ On site, 8 an coverage ex business da ⇒ 3 year on sit upgrade opt locations):⁷ • 9 hr cover, holidays, 4 (ServicePa • 24 hr x 7 d 4 hour ave (ServicePa • 24 hr x 7 d 2 hour ave (ServicePa • Other Service (ServicePa • Other Service (ServicePa • 24 x7¹⁴ toll-fr 	I Warranty Service ³ n - 5 pm, Mon - Fri cluding holidays, next y response time ⁷ e warranty service ions (in eligible age, Mon-Fri excluding 4 hr response time c [®] 21P2077) ay coverage, orage response time c 21P2078) ay coverage, orage response time c 21P2093) cePac options at

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• = Hot-swap

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		the second se
IBM [®] <u>Type-model</u> Qty x Pr 8686-1RQ 1 x Xeon [™] < 8686-1SQ 2 x Xeon < 8686-1TQ 2 x Xeon	MP 2.0GHz 1MB 1GB Chipkill None Ultra160	0 3U ⁴ rack 6x5 One One (not redun) PCI Jun 2003 0 3U rack 6x5 One Two redundant PCI Nov 2003
8686-2RQ 2 x Xeon 8686-3RQ 2 x Xeon	MP 2.5GHz 1MB 2GB Chipkill None Ultra160 MP 2.8GHz 2MB 2GB Chipkill None Ultra160) 3U rack 6x5 One Two redundant PCI Jun 2003) 3U rack 6x5 One Two redundant PCI Jun 2003
Processors L2 cache L3 cache Processor upgrade Implementation	1 or 2 x Intel® Xeon™ Processor MP 2.0, 2.5, or 2.8GHz ¹ 512KB / on die of processor / at processor speed 1MB or 2MB / on die of processor / at processor speed 4-way SMP / up to four Xeon Processors MP (same speed/c Systemboard contains four Intel 603-pin micro-PGA ZIF sock and integrated SCSI, ethernet, graphics	ache size)
Memory	Up to 3GB std / 16GB max ^{12,13} / two (1GB model), four (2G 1.7-inch tall / one memory board standard with 8 DIMM go pairs / 128-bit simultaneous transfer from two DIMMs / PC Error Checking and Correcting (ECC) via 16-bit Check chip and detects 2- through 8-bit errors contained in two c	Id-connector slots / DIMMs must be installed in matched C1600 200MHz registered 184-pin DDR-SDRAM RDIMMs / sum Chipkill™ (corrects 1, 2, 3, or 4-bit errors on same
SCSI disk controller SCSI connectors SCSI cabling IDE controller / cabling Disk - capacity	Adaptec® AIC-7892 / Wide Ultra160 SCSI (LVD 160MB/sec). Controller hard-wired to SCSI backplane (no cable) / no exter One standard 16-bit LVD cable included for attaching an optic SCSI RAID adapter 68-pin connector on systemboard for this Enhanced IDE ATA-33 controller in OSB4 South Bridge None standard / supports up to 15,000 rpm disks	nal ŠCSI connector onal ServeRAID adapter to the three-bay backplane;
Disk - bays	Three hot-swap bays / converged tray / 80-pin SCA-2 connect	
Mechanical	EIA 19" rack models (3U ⁴) x 28" deep / supported in NetBA'	
Chipset	ServerWorks® OSB4 South Bridge (IDE, USB, ISA bus for Sup	IBM PCI-X Host Bridge provides three peer PCI buses (two cs, ethernet, adapter slot with Remote Supervisor Adapter, and er I/O NS PC97317VUL [diskette, keyboard, mouse])
Slots (Active™ PCI-X)	hot replace, hot upgrade, hot expansion / separated by ins	sulative plastic dividers
RXE Expansion Port	One port to support up to 12 additional PCI-X slots via an	optional IBM RXE-100 Remote Expansion Enclosure
CD-ROM / diskette Ethernet Graphics controller Ports	24X-10X ⁶ CD-ROM / 3.5" 1.44MB diskette drive Intel 82559 10/100 ethernet controller / on systemboard / full SVGA / S3 [®] Savage4 LT / on systemboard / 8MB SDRAM st <i>Rear:</i> RXE-100 Expansion Port (to connect optional RXE-100) USB (Ver 1.1), keyboard, mouse, analog DB-15 graphics, ethe	d/max / up to 1280x1024 at 64K colors at 85Hz , RXE Management Port (to manage optional RXE-100), two
Security	Power-on and administrator passwords / unattended boot / se	
Systems management Diagnostics	Remote Supervisor Adapter / PCI adapter / includes 10/100 console and mgmt / power on/off system / monitors power stat Light Path Diagnostics TM / primary indicator on information p	us, op system, temperature, disks, fans, power supplies
Software	IBM Real Time Diagnostics (operated through IBM Director) available even while server running ServerGuide™ (CD-ROM installation and configuration utilities), IBM Director, and others	RXE-100 Remote Expansion Enclosure86841RX512MB PC1600 ECC DDR SDRAM RDIMM33L32831GB PC1600 ECC DDR SDRAM RDIMM33L3285000 PC1600 ECC DDR SDRAM RDIMM33L3285
Keyboard / mouse Power supplies	None standard (because rack-based) Std: one or two 370 watt hot-swap; Max: three hot-swap / redundant with two power supplies (some configurations) / worldwide / voltage-sensing / auto-restart /	 2GB PC1600 ECC DDR SDRAM RDIMM¹² 33L3287 Xeon MP 2.0GHz/1MB L3 Cache Proc Upg Xeon MP 2.5GHz/1MB L3 Cache Proc Upg Xeon MP 2.8GHz/2MB L3 Cache Proc Upg 370 watt Hot-Swap Redundant Power Supply 31P6108
Cooling fans	fans in each power supply / PFA Six hot-swap, redundant, multi-speed fans / one additional fan in each power supply / PFA / fan failure signals Diagnostic LED and mgmt processor	IBM ServeRAID™-4Mx Ultra160 SCSI Adapter 06P5736 IBM 73.4GB 10K Ultra160 SCSI Hot-Swap SL 06P5756 IBM NetBAY42 Standard Rack (SR) 9306420 IBM Integrated xSeries Adapter for iSeries 1519100 IBM T541 15" Flat Panel Color Monitor (black) 9512AB1
 Six available 3.3 volt A Bus 2 (B) with two slope 	Active PCI-X slots: ots supports (slots 1, 2): bit 122MHz PCI X bot swap	Other options at ibm.com/pc/us/accessories
 or two fullsize, 64-b or two fullsize, 64-b or two fullsize, 64-b or two fullsize, 64-b Bus 1 (A) with four ske four fullsize, 64-b or two fullsize, 64-b or four fullsize, 64-b or four fullsize, 64-b on four fullsize, 64-b or standard Re 	Dit, 100MHz PCI-X, hot-swap bit, 66MHz PCI, hot-swap bit, 66MHz PCI, hot-swap ots supports (slots 3, 4, 5, 6): bit, 66MHz PCI, hot-swap bit, 6	 LIMITED WARRANTY³ 31.8kg 31.8kg 3 year parts and labor 3 year parts and labor 3 year parts and labor 9 on site, 8 am - 5 pm, Mon - Fricoverage excluding holidays, next business day response time⁷ On site service upgrade options (in eligible locations):⁷ On site service upgrade options (in eligible locations):⁷ On site service ac[®] part num 96P2253) 3 year IOR 24x7, 2 hr avg response (ServicePac[®] part num 96P2254) 4 year IOR 9x5, NBD response (ServicePac[®] part num 96P2254) 4 year IOR 9x5, NBD response
Supply Suply Suply </td <td>● Opt disk 30 Hack system well-being ● Opt disk Predictive Failure Analysis® al power supplies, memory, proc and fans with IBM Director access, hot-swap access, hot-swap access, hot-swap All models: Maximum internal 220.2GB with three 73.4GB² ho</td> <td>eerts on disks, * 5 year ION 93,6, NBD response gerts on disks, * ServicePac part num 96P2259) * Other ServicePac options at http://www.ibm.com/ services/us/its/pdf/wamomxeu.pdf disk capacity: * 24x7¹⁴ toll-free support for warranty period³</td>	● Opt disk 30 Hack system well-being ● Opt disk Predictive Failure Analysis® al power supplies, memory, proc and fans with IBM Director access, hot-swap access, hot-swap access, hot-swap All models: Maximum internal 220.2GB with three 73.4GB ² ho	eerts on disks, * 5 year ION 93,6, NBD response gerts on disks, * ServicePac part num 96P2259) * Other ServicePac options at http://www.ibm.com/ services/us/its/pdf/wamomxeu.pdf disk capacity: * 24x7 ¹⁴ toll-free support for warranty period ³
See footnotes for impor	rtant warranty information • = Hot-swap	(X360E) © IBM Corp. November 200

See footnotes for important warranty information ● = Hot-swap US models announced June 30, 2003 or November 11, 2003 (1SQ, 1TQ) Sec US models withdrawn effective December 30, 2003 (1SQ, 1TQ)

IBM @server™ xSeries™ 365

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								and the second	
IBM [®] Type-model Qty x Pro	L3 cessor cache Mei	DIMM mory slots	SCSI Disks controlle	Mechan- ical		RXE xp Ports	Hot-swap pwr supplies	Warranty (yrs.)	Available date
8862-1RX 1 x Xeon M 8862-2RX 2 x Xeon M 8862-3RX 2 x Xeon M	P 2.5GHz 1MB 2GB P 2.8GHz 2MB 2GB	Chipkill 8 Chipkill 8 Chipkill 16	None Ultra320 None Ultra320 None Ultra320 None Ultra320	3U rack 3U rack 3U rack	6x8 6x8 6x8	One One One	One (not redu One (not redu Two redundan Two redundan	n) 1 n) 3 it 3 it 3	Dec 2003 Dec 2003 Dec 2003 Dec 2003
L2 cache L3 cache Processor upgrade Implementation Memory	1 or 2 x Intel® Xeon™ P 512KB / on die of proces 1MB or 2MB / on die of p 4-way SMP / up to four X Systemboard contains f slots, and integrated SC Up to 2GB std / 32GB r DIMMs installed / one m matched pairs / PC2100 (ECC) via 16-bit Check	sor / at processor : cocessor / at proce (con Processors M our Intel 603-pin i 2SI, ethernet, grap max using high-ca hemory board stan 0 200MHz register (sum Chipkill ^M /	speed essor speed IP (same speed/ micro-PGA ZIF blics pacity memory idard with 8 or red 184-pin DDI with 16 DIMMs	cache size sockets, o card / two 6 DIMM g S-SDRAM installed:) ne memo (1GB mo old-conne RDIMMs Memory	ory board del) or f ector slo / Error	d slot, six Acti our (2GB moo ts / DIMMs mu Checking an	ve™ PCl/ lels) 512l ust be ins d Correc	/PCI-X MB stalled in
SCSI disk controller SCSI connectors SCSI cabling IDE controller / cabling Disk - capacity Disk - bays	and Active Memory [™] s LSI Logic [®] 53C1030 / Wi Supports Raid 0/1 One internal and one ex One standard 16-bit LVD of SCSI RAID adapter 68- Enhanced IDE ATA-33 of None standard / suppor Six hot-swap bays / cor	de Ultra320 SCSI (ternal SCSI conne cable can be reattace pin connector on s controller in CSB6 ts up to 15,000 pp	(LVD 320MB/sec ector / internal of ched to optional S systemboard for South Bridge om disks) / dual cha ontroller w erveRAID a this cable	annel / 64 vired to S adapter fro	CSI bac m six-ba	kplane Ny backplane ins	stead of m	·
Mechanical	EIA 19" rack models (3	3U4) x 28" deep /	supported in Ne	tBAY™ Ra	acks (such	h as Net	BAY42 SR, N	etBAY42	ER)
Slots (Active™ PCI-X)	IBM XA-32 [™] chipset / Bridges provide six peer graphics), and ServerWo / PCI-X Bus 1 supports (Six total PCI-X slots (one u sensors control power to s One port to support up 1	PCI-X buses / PC orks® CSB6 South gigabit Ethernet, S unavailable) / 5 hot-s slot) / hot replace, ho	CI-X Bus 0 supp Bridge (IDE, US CSI, and slot for swap PCI-X 1.0 sl ot upgrade, hot e	orts adapte SB, bus for optional S ots ¹⁰ availat pansion / s	er slot with Super I/C ServeRAIE ble with po separated	h Remot O NS 87 O adapte wer and by insula	te Supervisor A 7417 [diskette, r attention indicat tive plastic divic	Adapter II keyboard or lights (d lersbv	(inc. I, mouse] optical
Graphics controller Ports	24X-10X ⁶ CD-ROM / 3.5 Broadcom [®] 5704 10/100/1 onboard graphics disabl <i>Rear:</i> RXE-100 Expansio two USB (Ver 1.1), keyboa	000 dual ethernet / ed / uses video o on Port (to connec	on systemboard n Remote Supe t optional RXE-	rvisor Ada 00), RXE	pter II Managem	nent Port	t (to manage o	ptional R	XE-100).
Security	Power-on and administra	ator passwords / un	attended boot / s	electable	boot				
Diagnostics	Remote Supervisor Ada console and mgmt / pow Light Path Diagnostics IBM Real Time Diagnosti available even while serv ServerGuide TM (CD-ROM	er on/off system / s™ / primary indica cs (operated throu rer running M installation and c	monitors power ator on informat gh IBM Director	status, op on panel 512ME 1GB P	system, te with LEDs PC2100 C2100 E0	emperatus s associ ECC DI CC DDR	ure, disks, fans ated with failir DR SDRAM RI SDRAM RDI	, power s ng compo DIMM	supplies onents / 33L5038 73P2031
Keyboard / mouse Power supplies Cooling fans	utilities), IBM Director, ar None standard (because <i>Std:</i> one or two 950 wat redundant with two powe worldwide / voltage-sen fans in each power suppl Six hot-swap, redundant, one additional fan in eacl fan failure signals Diagno	rack-based) t hot-swap; <i>Max:</i> t r supplies (some c sing / auto-restart ly / PFA , multi-speed fans / h power supply / Pl	onfigurations)/ / rear accessib / FA/	IBM x3 Xeon M Xeon M 950 wa IBM S IBM 73 IBM In IBM TS	365Memo MP 2.0GH MP 2.5GH MP 2.8GH att Hot-Sw erveRAID 3.4GB 15H tegrated 5 541 15" F	ry Upgra Iz/1MB I Iz/1MB I Iz/2MB I Vap Pow ™-4Mx I K Ultra32 KSeries J lat Pane	L3 Cache Proc L3 Cache Proc	Upg Upg Upg V) Adapter wap eries r (black)	32P0735 1519100
Standard Remote SL - one fullsize, 64-bit Optional ServeRAID - one fullsize, 64-bit Optional iSeries IXA - three fullsize, 64-bit Optional iseries IXA - three fullsize, 64-bit • Opt disk • Opt d	lots 1 - 6: , 33MHz PCI, hot-swap <u>ippervisor Adapter installec</u> ,100MHz PCI-X,hot-swap adapter to install ,133MHz PCI-X,hot-swap adapter to install , 133MHzPCI-X,hot-swap <u>infom</u> <u>iskette</u> <u>isk</u> Opt disk <u>isk</u> Opt disk	 Dimensions: Weight: 63 to Stealth black Tool-free ser Access adap Systemboard Access power Setup Progradies Diagnostics (SCSISelect to Top cover Lig diagnostic pa problem with Information L and compone system well-to Predictive Fa power suppli and fans witi 	viceability ters, processors from top er supplies and d am by pressing F (PC-Doctor) by p by pressing Ctrl+ ght Path Diagnos anel) for outside v out removing cov ED panel, diagn ent LEDs give vis	" x D27.6' #42.0mm x 37.6kg memory, a sks from fr 1 at startup ressing F2 A at startup ressing F2 A at startup iew of pote er ostic LED p ual indicati lerts on dis cessors, Vf 	and cont at startup 2 ential anel, ions of ks, RMs, pacity:	 ⇒ 1 or ⇒ 1 nter ⇒ On s co next ⇒ On s (in e • 3 y (4 y (6 o 5 y (6 o (7 o <li< td=""><td>om/pc/us/acce LIMITED W/ 3 year parts a rnational Warra- site, 8 am - 5 pi verage excludi t business day site service upg- ligible location rear IOR 24x7, ; 0L9186 (8861) rear IOR 24x7, ; 0L9186 (8861) rear IOR 9x5, N 9P9210 (8661) rear IOR 9x5, N 9P9214 (8661) rear IOR 9x5, N 9P9214 (8661) reservicePac ://www.ibm.co rices/us/its/pd rid toll-free sup es during the</td><td>ARRANT and labor anty Serv m, Mon - ing holida response grade opt ns):⁷ 4 hr avg rr / 96P225 2 hr avg r / 96P225 8D respo / 96P225 9D respo / 69P225 options a m/ f/wamom oport for</td><td>ice³ Fri ays, e time⁷ tions esponse 3 (8862)) esponse 4 (8862)) nse 9 (8862)) at xeu.pdf warranty</td></li<>	om/pc/us/acce LIMITED W/ 3 year parts a rnational Warra- site, 8 am - 5 pi verage excludi t business day site service upg- ligible location rear IOR 24x7, ; 0L9186 (8861) rear IOR 24x7, ; 0L9186 (8861) rear IOR 9x5, N 9P9210 (8661) rear IOR 9x5, N 9P9214 (8661) rear IOR 9x5, N 9P9214 (8661) reservicePac ://www.ibm.co rices/us/its/pd rid toll-free sup es during the	ARRANT and labor anty Serv m, Mon - ing holida response grade opt ns): ⁷ 4 hr avg rr / 96P225 2 hr avg r / 96P225 8D respo / 96P225 9D respo / 69P225 options a m/ f/wamom oport for	ice ³ Fri ays, e time ⁷ tions esponse 3 (8862)) esponse 4 (8862)) nse 9 (8862)) at xeu.pdf warranty

See footnotes for important warranty information US models announced December 9, 2003 See Hot-swap (X3 See US models withdrawn effective May 28, 2004 (8662-2RX, 3RX)

IBM @server™ xSeries™ 365 (March 2004)

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					the bull sector of the sector
	MP 2.7GHz 2MB 2GB C	nipkill™ 8 N nipkill 8 N nipkill 8 N	SCSI I Disks controller Jone Ultra320 (Jone Ultra320 (Jone Ultra320 (Jone Ultra320 (3U⁴ rack 6x8 3U rack 6x8 3U rack 6x8	RXE xp PortsHot-swap pwr suppliesWarranty Availabl (yrs.)OneOne (not redun)1Mar 200OneOne (not redun)3Mar 200OneTwo redundant3Mar 200OneTwo redundant3Mar 200OneTwo redundant3Mar 200
Processors L2 cache L3 cache Processor upgrade Implementation	512KB / on die of process 2MB or 4MB / on die of pr 4-way SMP / up to four Xeo	or / at processor s ocessor / at proce n Processors MP (Intel 603-pin mic	speed essor speed same speed/cac ro-PGA ZIF soc	he size)	de bus / Hyper-Threading technology y board slot, six Active™ PCI/PCI-X
Memory	DIMMs installed / one men matched pairs / PC2100 2	nory board standa 00MHz registered m Chipkill™ / Wi	rd with 8 DIMM 184-pin DDR-S th 16 DIMMs ins	gold-connector sl DRAM RDIMMs / stalled: Memory	el) or four (2GB models) 512MB ots / DIMMs must be installed in / Error Checking and Correcting ProteXion™ (redundant bit steering)
SCSI disk controller SCSI connectors SCSI cabling IDE controller / cabling Disk - capacity Disk - bays	One internal and one exter	nal SCSI connector le can be reattacher connector on sys itroller in CSB6 Sc up to 15,000 rpm	or / internal cont d to optional Serv temboard for thi outh Bridge disks	roller wired to SC eRAID adapter fror s cable to get sig	n six-bay backplane instead of motherboard
Mechanical	EIA 19" rack models (3U	¹) x 28" deep / sur	poorted in NetBA	Y™ Racks (such	as NetBAY42 SR, NetBAY42 ER)
Chipset	IBM XA-32 [™] chipset / IBM Bridges provide six peer Po graphics), and ServerWork / PCI-X Bus 1 supports aig	A Memory I/O Con CI-X buses / PCI-X © CSB6 South Bri abit Ethernet. SCS	troller (improved Bus 0 supports dge (IDE, USB, I. and slot for op	performance fror adapter slot with bus for Super I/O tional ServeRAID	n earlier models) / IBM PCI-X Host Remote Supervisor Adapter II (inc. NS 87417 [diskette, keyboard, mouse]]
	sensors control power to slot	/ hot replace, hot u	ıpgrade, hot expai	nsion / separated b	y insulative plastic dividersby 00 Remote Expansion Enclosure
CD-ROM / diskette Ethernet Graphics controller Ports	onboard graphics disabled <i>Rear:</i> RXE-100 Expansion	0 dual ethernet / on / uses video on F Port (to connect op	systemboard / 64 Remote Supervis ptional RXE-100)	or Adapter II), RXE Manageme	/ Wake on LAN [®] / Alert on LAN [™] 2 ent Port (to manage optional RXE-100), ne parallel ports / <i>Front:</i> one USB (Ver 1.1)
Security	Power-on and administrator	passwords / unatte	ended boot / sele	ctable boot	· · · · · · · ·
Systems managemer					and serial connectors / provides remote
Diagnostics	Light Path Diagnostics™ IBM Real Time Diagnostics	 / primary indicator (operated through) 	r on information	panel with LEDs	mperature, disks, fans, power supplies associated with failing components / ECC DDR SDRAM RDIMM 33L5038
Software	available even while server ServerGuide™ (CD-ROM in utilities), IBM Director, and o	nstallation and conf	iguration	1GB PC2100 E0 2GB PC2100 E0	CC DDR SDRAM RDIMM 73P2031 CC DDR SDRAM RDIMM 73P2031 CC DDR SDRAM RDIMM ¹² 73P2030 ory Upgrade Card 73P9710
Keyboard / mouse Power supplies	None standard (because ra Std: one or two 950 watt h redundant with two power s worldwide / voltage-sensin fans in each power supply /	ot-swap; <i>Max:</i> two upplies (some conf g / auto-restart / r PFA	igurations) /	Xeon MP 2.2GH Xeon MP 2.7GH Xeon MP 3.0GH 950 watt Hot-Sw	Iz/2MB L3 Cache Proc Upg Iz/2MB L3 Cache Proc Upg Iz/2MB L3 Cache Proc Upg Iz/4MB L3 Cache Proc Upg I3N0712 Iz/4MB L3 Cache Proc Upg I3N0710 Iz/4MB L3 Cache Proc Upg I3N0712 I3N0711 I3N0711 I3N0711 I3N0711 I3N0711 I3N0711 I3N0711 I3N0711 I2N0711 I3N071 I3N0711
Cooling fans	Six hot-swap, redundant, m one additional fan in each p fan failure signals Diagnost	ower supply / PFA		IBM 73.4GB 15F IBM Integrated > IBM T541 15" F	K Ultra320 SCSI Hot-Swap 32P0735 KSeries Adapter for iSeries 1519100 lat Panel Color Monitor (black) 9512AB
Six available 3.3 volt	PCI/PCI-X slots:				te Expansion Enclosure 86841RX at ibm.com/pc/us/accessories
	slots 1 - 6: bit, 33MHz PCI, hot-swap Supervisor Adapter installed	Dimensions: H Dimensions: H			
- one fullsize, 64-I Optional ServeRAII - one fullsize, 64-I Optional iSeries IX/ - three fullsize, 64-	bit,100MHz PCI-X,hot-swap D adapter to install Dit,133MHz PCI-X,hot-swap A adapter to install Dit, 133MHzPCI-X,hot-swap	 Weight: 63 to 8 Stealth black co Tool-free servic Access adapte systemboard fr Access power service 	83lbs; 28.6 to 37 olor ceability rs, processors, m rom top supplies and disk	.6kg nemory, and ss from front	 A or 3 year parts and labor International Warranty Service³ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷ On site service upgrade options
Opt disk O	cc-ROM diskette pt disk • Opt disk pt disk • Opt disk rdisk • Opt disk	 SCŠISelect by Top cover Ligh diagnostic panel 	C-Doctor) by pres pressing Ctrl+A	ssing F2 at startup at startup s (level 2 w of potential	(in eligible locations): ⁷ • 3 year IOR 24x7, 4 hr avg respons (30L9186 (8861) / 96P2253 (8862) • 3 year IOR 24x7, 2 hr avg respons (31L2722 (8861) / 96P2254 (8862)
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 ⑥ 3.5", SL 1", Bay ⑥ 3.5", SL 1", Bay ⑦ 3.5", SL 1", Bay ⑧ 3.5", SL 1",	access,std diskette access,std CD-ROM access,hot-swap, open access,hot-swap, open access,hot-swap, open access,hot-swap, open access,hot-swap, open access,hot-swap, open	 Information LE and componen system well-be Predictive Failu power supplies and fans with All models: Ma 	D panel, diagnosi It LEDs give visua ing ure Analysis® alei s, memory, proces IBM Director aximum internal	tic LED panel, al indications of ts on disks, ssors, VRMs,	 4 year IOR 9x5, NBD response (69P9210 (8661) / 96P2255 (8862) 5 year IOR 9x5, NBD response (69P9214 (8661) / 69P2259 (8862) Other ServicePac options at http://www.ibm.com/ services/us/its/pdf/wamomxeu.pdf 24x7¹⁴ toll-free support for warranty issues during the warranty period³
Saa faataataa far imaa	rtant warranty information	• = Hot-swap			(X365B) © IBM Corp. March 200

See footnotes for important warranty information • = Hot-swap US models announced March 2, 2004 (8661-4RX, 8662-4RX, 5RX, 6RX)

IBM @server™ xSeries™ 366 (March 2005)

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BM [®] Гype-model Qty x Pr	ocessor	L2 cache Memory	DIMM y slots Disks	SCSI controller	Mechan- ical	Slots x bays		-swap upplies	Warran (yrs.)	ty Available date
3863-1RY 1 x Xeon™ 3863-2RY 1 x Xeon	⁴ MP 3.16GHz MP 3.66GHz	1MB 2GB(2x 1MB 2GB(2x	1GB) 4 None 1GB) 4 None	SAS SAS	3U⁴ rack 3U rack	6x7 6x7	One One	1 x 1300 1 x 1300	3	Apr 2005 Apr 2005
<u>3863-E1X 2 x Xeon</u> Processors			/	or 3.66GHz ¹ with		6x7 ntside bu	One s / NetBı	<u>2 x 1300</u> urst [™] / Exte	3 ended M	Jun 2005 emorv 64
_2 cache Processor upgrade mplementation	Technology [™] (1MB / on die of 4-way SMP / up	(EM64T) / Hyp f processor / at p to four Xeon F contains four Inte	er-Threading tech processor speed Processors MP (s el 604-pin micro-F		nic Server Ca size) / Dual (ache Core Caj	bable			2
Active Memory™	DIMMs must be and Correcting	e installed in ma g (ECC) via 16-	tched pairs / PĆ2 bit Checksum C	nemory card / one -3200 400MHz re hipkill™ / With 16 p (non-OS specifi	gistered 240- DIMMs insta	pin DDR: alled: Me	2-SDRAN mory Pr	/I RDIMMs / oteXion™ (r	edundan	hecking t bit
SCSI disk controller SCSI connectors SCSI cabling DE controller / cabling Disk - capacity Disk - bays	Controller wired One standard S Enhanced IDE A E1x: 3 x 36.4GE	I to SAS backpla SAS cable attach ATA-33 controlle B-10k / supports	ane ned to six-bay bac er in CSB6 South s up to 73GB 10K	Bridge	,	4-bit 2661	MHz PCI	-X 2.0 <i>E1X</i> :	ServeR	aid 8i
Vechanical	EIA 19" rack m	nodels (3U4) x 2	28" deep / suppor	ed in NetBAY™ F	Racks (such a	s NetBA	Y42 SR,	NetBAY42	ER)	
Chipset Slots (Active™)	models) / 2 IBM graphics), Serve Broadcom 5704 Six total PCI-X 2	1 PCI-X 2.0 Hos erWorks® CSB6 1, and 2 PCI-X 2 2.0 slots availab	t Bridges / 1 supp South Bridge (ID 2.0 slots / Host Br le with power and	ntegrated Process ports adapter PCI E, USB, bus for S idge supports 4 P attention indicator plastic dividers, a	33MHz and 6 Super I/O NS CI-X 2.0 slots r lights (optica	6MHz, s 87417 [c al sensors	lot for op liskette, k s control	tional Serve keyboard, m power to slo	Raid 8i (ii ouse]), D	nc. ual Port
CD-ROM / diskette Ethernet Graphics controller Ports	SVGA / ATI® 70	04 10/100/1000 000m / on planai ernet, RSA seria	r / 16MB SDRAM	systemboard / 64 std/max / 32-bit 3 .0), keyboard, mo	3MHz PCI 2.2	2 bus				
Security	Power-on and a	administrator pa	sswords / unatten	ded boot / selecta	ble boot					
Systems management	Remote Superv	visor Adapter I	I Slimline / PCI a	dapter / includes	10/100 ether	net, RJ-1	1, and se	erial connec	tors / pro	vides
Diagnostics	Drop down Lig	ght Path Diagno	ostics / primary ir	/ monitors power idicator on informa M Director) availa	ation panel w	ith LEDs	associate			
Software	ServerGuide™	(CD-ROM insta	llation and config	uration utilities), IE	3M Director					
Keyboard / mouse Power supplies	redundant with t	1300 watt hot-s two power supp tage-sensing / a	wap; <i>Max:</i> two ho lies (some config uto-restart / rear a	urations) /	4GB PC2- 8GB PC2- Active Mer Xeon MP Xeon MP	3200 CL 3200 CL mory 4-s 3.16GHz 3.66GHz	_3 ECC _3 ECC slot Expa z/1MB L2 z/1MB L2	RDIMM (2) RDIMM (2) RDIMM (2) ansion Carc 2 Cache Pr 2 Cache Pr	(2GB) (4GB) d oc Upg oc Upg	73P2866 73P2867 30R5145 13M7409 13N0694 13N0695
Cooling fans		an in each powe als Diagnostic LE		cessor	IBM Serve IBM Serve IBM 36.4G IBM 73.4G IBM Remo	RAID™- RAID 6N iB 10K 2 iB 10K 2 ite Supe	8i SA-S0 M U320 2 2.5" SAS 2.5" SAS 2.5" SAS rvisor Ac	r Supply (V CSI Adapte 256MB Ada Hot-swap Hot-Swap lapter II Slin 1/pc/us/acc	er apter HDD HDD mline	13M7413 13N2227 02R0988 26K5654 26K5655 73P9341
Six available 3.3 volt I Slot 1 - fullsize, 64-b					Other opti	uns ai		1/pc/us/acc	65501165	
Slot 2 - fullsize, 64-b Slot 3 - fullsize, 64-b Slot 4 - fullsize, 64-b Slot 5 - fullsize, 64-b Slot 6 - fullsize, 64-b *exclusive slot availab	it, 266MHzPCI- it, 266MHzPCI- it, 266MHzPCI- it, 266MHzPCI- it, 266MHzPCI- le for ServeRAI Opt disk Opt disk Rack access, hot-sv access, hot-sv access, hot-sv access, hot-sv access, hot-sv	-X, hot-swap -X, hot-swap -X, hot-swap -X, hot-swap D 8i adapter CD-ROM wap, open wap, open wap, open wap, open wap, open wap, open	Dimensions: F Weight: 63 to Stealth black c Tool-free servi Access adapte systemboard f Access power Setup Program Diagnostics (P SCSISelect by Drop Down Li diagnostic pan problem witho Information LE and componer system well-be Predictive Fail	ceability rs, processors, rr om top supplies from b jby pressing F1 a C-Doctor) by pre- pressing Ctrl+A a ght Path Diagnos el) for outside vie ut removing cove D panel, diagnos t LEDs give visua	2.0mm x D70 .6kg nemory, and back at startup ssing F2 at s at startup stics (level 2 w of potentia er stic LED par al indications rts on disks,	tartup I of	 3 year International On site cover next but On site (in eligi 3 year 96P22 3 year 96P22 4 year 96P22 5 year 69P22 Other 2 	r IOR 24x7, 254 r IOR 9x5, 255 r IOR 9x5,	abor anty Se om, Mon ling hol y respon ograde cons): ⁷ 4 hr avg 2 hr avg NBD res NBD res options	rvice ³ - Fri idays, ise time ⁷ ptions g response g response ponse

See footnotes for important warranty information Express model available June 30, 2005

IBM @server™ xSeries™ 366 (August 2005)

xREF by eServer Field Skills and Education Team

IBM [®]		L2		DIM		SCSI	Mechan-	Slots x		-swap	Warrant	/ Available
Type-model Qty x Pr 8863-1RY 1 x Xeon ^T	MP 3 16GH:	cache 7 1MB	Memory 2GB(2x1G		ts Disks None	controller SAS	ical 3U⁴ rack	bays 6x7	pwrs One	upplies 1 x 130	(yrs.) 0 3	date Apr 2005
8863-2RY 1 x Xeon 8863-E1Y 2 x Xeon 8863-E5Y 2 x Xeon	MP 3.66GHz MP 3.66GHz	1MB 1MB	2GB(2x1G 4GB(4x1G	B) 4 B) 8	None 3x36.4-1	SAS 0k SAS w/ 8i SAS	3U rack	6x7 6x7 6x7 6x7	One Two Two	1 x 130 2 x 130 2 x 130	0 3 0 3	Apr 2005 Jun 2005 Aug 2005
Processors L2 cache Processor upgrade Implementation	1 or 2 64-bit I Technology™ 1MB / on die o 4-way SMP / o System board integrated SCS	(EM64 of proce up to for contain	IT) / Hyper-7 essor / at pro ur Xeon Proo s four Intel 6	Threadi cessor cessors 604-pin	ing technolo speed / Xc MP (same	gy eL4v ™ Dynam speed/cache :	ic Server Ca size) / Dual	ache Core Cap	bable			-
Active Memory™	Up to 4GB std DIMMs must b and Correctin steering) and I Server 2003 TM	e install g (ECC Memory	led in match C) via 16-bit	ed pair Check	s / PC2-320 sum Chipk	0 400MHz reg ill™ / With 16	istered 240- DIMMs insta	pin DDR: alled: Me	2-SDRAN mory Pr	/I RDIMN oteXion™	ls / Error Ch // (redundant	ecking bit
SCSI disk controller SCSI connectors SCSI cabling IDE controller / cabling Disk - capacity Disk - bays	ALL: Adapted Controller wire One standard Enhanced IDE <i>E1x</i> : 3 x 36.40 Six 2.5" hot-sw	d to SA SAS ca ATA-3 B-10k /	S backplane able attached 3 controller ir / supports up	l to six- n CSB6 o to 730	bay backpla South Bride GB 10K rpm	ine ge i disks		4-bit 2661	MHz PCI	-X 2.0 E1	/X: ServeRa	id 8i
Mechanical Chipset Slots (Active™) CD-ROM / diskette Ethernet Graphics controller Ports	EIA 19" rack i IBM XA-64e [™] models) / 2 IBI graphics), Sen Broadcom 570 Six total PCI-X upgrade, hot e 8X ⁶ Slim DVD- Broadcom [®] 57 SVGA / ATI [®] 7 <i>Rear</i> : RSA eth <i>Front</i> : USB (Vo	3rd Ge M PCI-X verWork 4, and 2.0 slot xpansio ROM / 704 10/1 7000m / ernet, F	eneration cl < 2.0 Host Br <pre>S[®] CSB6 Sc 2 PCI-X 2.0 on / separate none 100/1000 dua on planar / 1</pre>	hipset ridges buth Bri slots / with pov d by in al ether 16MB S	/ IBM Integr / 1 supports idge (IDE, U Host Bridge wer and atte sulative plas net / on syst SDRAM std/r	ated Processo adapter PCI 3 SB, bus for Si supports 4 PC ntion indicator tic dividers, all remboard / 64- nax / 32-bit 33	or/Memory C 33MHz and 6 uper I/O NS CI-X 2.0 slots lights (optica slots suppo bit 266Mhz MHz PCI 2.2	Controller 56MHz, s 87417 [c al sensors rted up to PCI-X 2.0 2 bus	(improve lot for op liskette, k s control o 266MH) / Wake	d perform tional Ser keyboard, power to z on LAN [®]	hance from e veRaid 8i (in mouse]), Du slot) / hot rep / Alert on LA	c. ial Port blace, hot .N™ 2
Systems managemen Diagnostics Software Keyboard / mouse	Themote Supe remote console Drop down Li IBM Real Time ServerGuide™ None standard	e and m ight Pat e Diagno (CD-R	ngmt / power th Diagnost ostics (opera ROM installat	r on/off ics / pr ited thr ion and	system / m imary indica ough IBM D	onitors power tor on informa irector) availab	status, op sy tion panel w ble even whil M Director 2GB PC2-	vstem, te ith LEDs le server 3200 CL	mperatur associate running -3 ECC	e, disks, f ed with fa RDIMM	fans, power a niling compor (2x1GB)	supplies
Power supplies Cooling fans	Std: one or two redundant with worldwide / vo Eight hot-swap one additional fan failure sign	two po ltage-se , redune fan in ea	ower supplies ensing / auto dant, multi-sp ach power su	s (some -restart peed fa upply /	e configuratio / PFA ans / PFA /	ons) /	4GB PC2- 8GB PC2- Active Mer Xeon MP 1300 watt IBM Serve	3200 CL 3200 CL mory 4-s 3.16GHz 3.66GHz Hot-Swa RAID TM -	3 ECC 3 ECC slot Expa /1MB L2 /1MB L2 ap Powe 8i SA-S0	RDIMM RDIMM ansion C 2 Cache 2 Cache r Supply CSI Ada	2x2GB) (2x4GB) ard Proc Upg Proc Upg (WW) oter	73P2867 30R5145 13M7409 13N0694 13N0695 13M7413 13N2227
Six available 3.3 volt Slot 1 - fullsize, 64-I Slot 2 - fullsize, 64-I Slot 3 - fullsize, 64-I Slot 4 - fullsize, 64-I	oit, 266MHzPC oit, 266MHzPC oit, 266MHzPC	l-X, ho l-X, ho l-X, ho	ot-swap ot-swap				•	B 10K 2 B 10K 2 ote Supe	2.5" SAS 2.5" SAS rvisor Ac	Hot-swa Hot-Swa dapter II	ap HDD ap HDD	02R0988 26K5654 26K5655 73P9341
Slot 5 - fullsize, 64-I Slot 6 - fullsize, 64-I *exclusive slot availa	bit, 266MHzPC bit, 266MHzPC ble for ServeR	CI-X, ho CI-X, ho AID 8i a	pt-swap bt-swap adapter bt bt adapter bt bt bt bt bt bt bt bt bt bt bt bt bt	Dimens Weight Stealth Fool-fre Access System Access Setup F	sions: H133 : 63 to 83lb black color e serviceat adapters, p board from power sup Program by	processors, m top oplies from ba pressing F1 a	2.0mm x D7 6kg emory, and ack t startup	0 0 0 0 0 0	3 year Internat On site cover next bu On site (in elig	parts and tional W , 8 am - 4 age exc usiness o service ible loca	arranty Ser 5 pm, Mon luding holi day respons upgrade o tions): ⁷	vice ³ Fri days, se time ⁷ otions
11				Jiagno	<u>stics</u> (PC-D	octor) by pres ssing Ctrl+A a	sing F2 at s t startup		 3 yea 96P22 		k7, 4 hr avg	response
3U 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", Bay 7 2.5", SL 1", Max BTU Output: Ship Configuration:		swap, c swap, c swap, c swap, c swap, c swap, c	OM Copen Cop	Drop D diagnos problen nforma and cor system Predict power s and far	Nown Light F stic panel) for my without re- ation LED p mponent LE well-being ive Failure A supplies, me ns with IBM	Path Diagnos or outside view emoving cove anel, diagnos Ds give visua Analysis® alert emory, proces	tics (level 2 v of potentia r tic LED par l indications ts on disks, sors, VRMs	il nel, of s,	 3 yea 96P22 4 yea 96P22 5 yea 69P22 Other S http://w service 	r IOR 242 254 r IOR 9x3 255 r IOR 9x3 259 ServicePa vww.ibm. es/us/its/	k7, 2 hr avg 5, NBD resp 5, NBD resp ac options com/ pdf/wamom upport for v	oonse oonse at xeu.pdf

See footnotes for important warranty information Express model available Aug 12, 2005

 ⁼ Hot-swap

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

IBM® Type-model Qty x	Processor	L3 L4 cache cacl		Disk	SCSI controller	Mech- anical		SMP/RXE Exp Ports	Hot-swap pwr supplies	Mgmt Available adapter date
8870-11X 2 x Xeor 8870-12X 2 x Xeor 8870-22X 2 x Xeor 8870-22X 4 x Xeor 8870-3EX 2 x Xeor 8870-3EX 4 x Xeor	MP 2.2GHz MP 2.7GHz MP 3.0GHz	2MB 64N 2MB 64N 4MB 64N	IB 2GB Chibkil	None None None	2xUltra320 2xUltra320 2xUltra320 2xUltra320 2xUltra320 2xUltra320	0 4U rack	6x4 6x4 6x4	3/1 3/1 3/1 3/1 3/1 3/1	Two redundan Two redundan Two redundan Two redundan Two redundan Two redundan	t PCI Mar 2004 t PCI Mar 2004 t PCI Mar 2004 t PCI Mar 2004 t PCI Mar 2004
Positioning Processors L3 cache L4 cache Processor upgrade SMP Expansion Module Additional boards	2 or 4 Intel [®] Up to 4MB e 64MB XceL4 64MB in each 4-way SMP (One SMP Exc for Xeon, 64MI Expansion Por	Xeon [™] Proc ach process Server Ac SMP Expar up to 8-way vanion Modul B L4 cache, s b) / each SM	essor DP or MI	P 2.0Ghz odels onl e (up to CC / 64- nal SMP I for Xeon I kets, three	- 3.0GHz ¹ y) / on die o 128MB with bit 400MHz Expansion M MP models o SMP Expar tes one BXE	with 400Ml of process bus from Module, for only / each sion Ports Expansion	Hz fron or / at Cache r Xeon contains (second Port (c	ntside bus processo (pansion and Sca MP mod s four Inte t module one RXE	s / supports Hy or speed Module) / lability Controll els only) el 603-pin micro-l connected via o Expansion Port s	er PGA ZIF sockets ne or two SMP supported)
Memory	2GB std / 32G 16 DIMM gold / Error Check to two chips a Memory Mirr	B max ¹³ (up -connector sl sing and Cor t once; redur oring [™] (non-	to 64GB per cha ots / must install recting (ECC) a indant bit steering OS specific)	assis usin two inde nd Chipk g) / Activ	g optional S ntical DIMM iII™ via Me i e Memory ™	MP Expanses s at same to mory Protect supporting	sion Mo time / 2 eXion™ g hot-s	odule) / fo 2-way inte 4 (1, 2, 3, 5 wap and	our 512MB DIM rleaving / PC21 or 4-bit errors hot-add (OS s	Ms installed / 00 DDR SDRAM on same chip; up specific) and
SCSI disk controller SCSI implementation IDE controller Disk - capacity/bays	one standard Enhanced IDI	lei to one ext (longer) 16-l E ATA-100 c	oit LVD cable in ontroller in Sout	cluded fo b Bridge	n connector or attaching / one one-c	an optiona	D cabl al Serv able to	e from 1/0 eRAID a backpla	dapter to the tw ne for diskette	connector) / vo-bay backplane and CD-ROM
Mechanical	EIA 19" rack	models (4U	4) x 28" deep /	supporte	d in NetBA	/™ Racks	(such a	as NetBA	Y42 SR, NetBA	Y42 ER)
Chipset Slots (Active™ PCI-X)	IBM XA-32TM	2nd Generat	ion chinset / IB	M Cache	and Scalabi	ility Control	` lor with	14 cach	e controller and	three SMP
RXE Expansion Port	One RXE-100 attached alone	Remote Expa . Both PCI-X	e, not expansion Insion Enclosure 6-packs must be	can be sh installed to	ared by Inated by Inated between between between between by a support RIC	sulative pla en two x445 O sharing a	astic di 5 4-way as each	, 8-way, c server w	or 16-way xSerie ill access six ado	s 445 servers or ditional PCI-X slots
CD-ROM / diskette Ethernet Graphics controller Ports	Dual Broadco SVGA / ATI®	mª 5704 10/1 Rage XL / on	1.44MB diskett 00/1000 etherne I/O Board / 8M Port (to connec phics, ethernet /	t controlle B SDRAN	er / on I/O B /I std/max /	oard / full c up to 1280	luplex / x1024	64-bit 66 at 85Hz	6MHz PCI bus /	Wake on LAN®
Security	Power-on and	l administrato	or passwords / u	inattende	d boot / sele	ectable boo	ot			
Systems mgmt Diagnostics Software	console and r Light Path D IBM Real Tim available eve	ngmt / powe iagnostics™ ne Diagnostic n while serve ™_(CD-ROM	r on/off system / primary indica s (operated thr er running installation and	/ monitors ator on in ough IBN	s power stat formation p I Director) ation	tus, op sys anel with I xSeries SM 1GB DDR 2GB DDR	tem, te LEDs a NP Exp PC210 PC210	emperatu associate ansion M 0 ECC S 0 ECC S	re. disks. fans.	02R1870 33L5039 33L5040
Keyboard / mouse Power supplies Cooling fans	watts at 110v front access / fans in each Four hot-swa one additiona	:: two / hot-s / redundant / worldwide / oower supply p, redundant I fan in each	wap / 1050 watt at 220v with tw voltage-sensing / PFA , multi-speed fa power supply / stic LED and m	o power s g / auto-r .ns / PFA / gmt proce	v or 550 supplies / estart / essor	Xeon MP 2 Xeon MP 3 IBM 73.4G IBM Serve IBM Remo NetBAY11 8X/4X/24X IBM T540 Other optio	2.7GHz 3.0GHz B 10K RAID™ te Sup Standa Max 0 15" Fla	2/2MB L3 2/4MB L3 Ultra160 -6M Ultra ervisor A ard Rack D-RW U t Panel (Cache Proc U Cache Proc U SCSI Hot-Swa a320 SCSI Ada dapter II-EXA Cabinet Iltrabay 2000	pg 13N0722 pg 13N0721 p 06P5756 pter 32P0033 13N0382 9306110 22P9101 lack) 9511AG4
	66MHz PCI-X 66MHz PCI-X 100MHz PCI-X 100MHz PCI-X 133MHz PCI-X 133MHz PCI-X te Supervisor Ac access, diskett access, cD-Rc access, hot-sw	hot-swap Bu hot-swap Bu hot-swap, Bu hot-swap, Bu hot-swap, Bu hot-swap, Bu p, 32-bit 33M 4U Rack	s A Dimensi, s A Dimensi, s B → Max weig s B → Stealth b s B → Tool-free s C → Access p s D SMP Exp → Access p → Diagnosi → ScSISel → Informati out Light diagnost → Predictiv XceL4 S 000) 1BM Dire	ons: H178 ght: 110 lb lack color serviceal processors bower sup oogram by tics (PC-E ect by pre on LED pre on LED pre on LED pre erver Acco pplies, ar ctor		adapters, a op sks from fro at startup essing F2 a A at startup nt-accessib cover) erts on proo be, memor isks with nal disk ca	nd ont at startu ile pull- cessors y, fans		ext day responsive year on site w ograde option (i cations): ⁷ 24 hr x 7 day co 2 hour respons (No ServicePac a ost warranty ma rrvices availab ther ServicePad	labor ranty Service ³ day coverage, se time ⁷ arranty service in eligible overage, e time available) intenance ole c options at com/services/us/ eu.pdf during the

See footnotes for important warranty information • = Hot-sw US models announced March 2, 2004 and May 11, 2004 (11X)

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

IBM [®]							
	Processor		_4 che Memory	SCSI Disk controll		Slots SMP x bays Exp I	/RXE Hot-swap Mgmt Availa Ports pwr supplies adapter d
8870-1BX 2 x Xeor 8870-2BX 2 x Xeor 8870-4BX 2 x Xeor	n MP 2.7GHz	2MB 64	MB 0GB Chipkill ¹ MB 0GB Chipkill MB 0GB Chipkill	None 2xUltra None 2xUltra None 2xUltra		6x4 3/	1 Two redundant PCI Mar 2
Positioning Processors L3 cache L4 cache Processor upgrade SMP Expansion Module Additional boards	2 x Intel® Xee 2MB or 4MB 64MB XceL4 64MB in each SMP Expans One SMP Ex L4 cache, six Ports) / each One I/O Boar	on [™] Proces each proce [™] Server A n SMP Expa ion Module panion Moo teen DIMM s SMP Expan rd (PCI-X H	sor MP 2.2, 2.7, essor / on die of p accelerator Cache ansion Module / E standard / ready t dule std / two max sockets, three SMI sion Module activa ost Bridge, SCSI,	or 3.0GHz ¹ with 4 processor / at pro e (up to 128MB v CC / 64-bit 400M for adding additic / each contains f P Expansion Ports tites one RXE Exp ethernet, graphic	400MHz from ocessor spee vith optional Hz bus from nal processo our Intel 603 s (second mo ansion Port (es, South Bri-	tside bus / s d SMP Expan Cache and ors (up to 8 -pin micro-Pr dule connec one RXE Ex dge, Super 1	Scalability Controller total) and memory GA ZIF sockets for Xeon MP, 64N ted via one or two SMP Expansic pansion Port supported) I/O, slot for Mgmt Adapter), one
Memory	0GB std / 64 32 DIMM gol PC2100 DDF (1, 2, 3, or 4	GB max ¹³ (u d-connector R SDRAM / -bit errors o	uses standard SM slots / must insta Error Checking	P Expansion Moo Il two indentical I and Correcting o two chips at or	dule) / no DI DIMMs at sa (ECC) and (ice; redunda	MMs installe me time / 2- Chipkill™ via nt bit steerir	ixp Modules, I/O Board, PCI Board ed / way interleaving / a Memory ProteXion ™ ng) / Active Memory ™ supporting
IDE controller	First channel second chann one standard Enhanced ID	to internal 2 nel to one ext (longer) 16- E ATA-100 c	-port SCSI backpla ternal .8mm VHDC bit LVD cable inclu controller in South	ane for internal ho I 68-pin connector Ided for attaching Bridge / one one-o	t-swap disks (16-bit LVD) an optional S drop IDE cab	(16-bit LVD c cable from I/0 erveRAID a le to backpla	integrated RAID-1 on I/O Board cable to SCSI backplane) / O Board to ext connector) / dapter to the two-bay backplane ine for diskette and CD-ROM ed tray / 80-pin SCA-2 connectors
Mechanical	EIA 19" rack	models (4L	J4) x 28" deep / sup	ported in NetBA	/™ Racks (su	ch as NetBA	Y42 SR, NetBAY42 ER)
	Expansion Pc X Host Bridge Adapter, VIA PCI 2.2 Bus F) Six hot-swap hot replace, C One RXE-100	orts / IBM Me provides th 82C686B S supports S PCI-X 1.0 s hot upgrad Remote Exp	emory I/O Controlle ree peer PCI buse South Bridge (IDE / CSI, ethernet / PC iots ¹⁰ available wit de, hot expansio pansion Enclosure of	er with two remote s / PCI 2.2 Bus E ATA-100, USB, Si I-X Bus A, B, C, I h power and atte n / separated by xan be shared betw	I/O ports (ea supports gr uper I/O PC9 support PC ntion indicato insulative p veen two x44	ach to a IBM aphics, adap 7317VUL [ke I-X slots / de or lights (opti lastic divide 5 4-way, 8-way	cache controller and three SMP PCI-X Host Bridge) / each IBM P ter slot with Remote Supervisor eyboard, mouse]) / signed to the PCI-X 1.0 specificat cal sensors control power to slot) rs ay, or 16-way xSeries 445 servers of er will access six additional PCI-X s
CD-ROM / diskette Ethernet Graphics controller Ports	Dual Broadco SVGA / ATI® Rear: RXE-10 mouse, analo	m ^å 5704 10/ Rage XL / c 00 Expansio 19 DB-15 gra	/100/1000 ethernet on I/O Board / 8ME n Port (to connect aphics, ethernet / r	controller / on I/C 3 SDRAM std/max coptional RXE-10 no serial or paralle	Board / full (/ up to 1280 0), RXE Mar el ports / <i>Fro</i>	duplex / 64-b 0x1024 at 85 nagement Po <i>nt:</i> one USB	ort, two USB (Vers 1.1), keyboard
Security	Power-on and	d administra	tor passwords / ur	nattended boot / s	selectable bo	ot	
Systems mgmt Diagnostics Software Keyboard / mouse Power supplies	console and Light Path D IBM Real Tin available eve ServerGuide utilities), IBM None standa Std: two; max watts at 110v	mgmt / pow Diagnostics ne Diagnost n while sen ™ (CD-ROM Director, and rd (because x: two / hot- y / redundan	er on/off system / ™ / primary indica ics (operated thro ver running ⁄I installation and	monitors power s tor on informatio ugh IBM Director configuration s at 220v or 600 power supplies	status, op syn n panel with () IBM Prelo Microsc IBM Softw Microsc 1GB DDR 2GB DDR 2GB DDR Xeon MP	stem, tempe LEDs associated ad Kit for 1- ft Windows are Subscrij ft Windows PC2100 EC PC2100 EC 2.2GHz/2ME	d serial connectors / provides ren rature, disks, fans, power supplic ciated with failing components / 8 Processors 48166B Server Datacenter 2003 Dition Update for 4816DB Server Datacenter 2003 DC SDRAM RDIMM 33L503 CC SDRAM RDIMM 33L5044 3 L3 Cache Proc Upg 13N072
Cooling fans	fans in each Four hot-swa one additiona	power supp p, redundar Il fan in eac		ns / PFA /	Xeon MP IBM 73.40 IBM Serve	3.0GHz/4ME B 10K Ultra1 RAID™-4H U	3 L3 Cache Proc Upg 13N072 160 SCSI Hot-Swap 06P5756 Jitra 160 SCSI Adapter 37L6889 com/pc/us/accessories
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 6: fullsize, 64-bit Slot 8: used by Remo	66MHz PCI-X 66MHz PCI-X 100MHz PCI-X 100MHz PCI-X 133MHz PCI-X 133MHz PCI-X	, hot-swap B , hot-swap B , hot-swap, E , hot-swap, E , hot-swap, E , hot-swap, E	us A Dimensio us A ▷ Max weig ▷ Stealth bl. bus B ▷ Tool-free ▷ Access pr SMP Exp. MHz ▷ Access pr ○ Access pr ○ Setup Pro ○ Diagnosti ○ SCSISele ○ Informatio	ns: H7.0" x W19.0 ns: H178mm x W ht: 110 lbs; 50kg ack color serviceability rocessors, memor ansion Module fro ower supplies and ogram by pressing cs (PC-Doctor) by ect by pressing Ctr on LED panel and P Path panel (1st an	483mm x D69 y, adapters, a m top disks from fr F1 at startup pressing F2 I+A at startup ront-accessil	and ont at startup ole pull-	LIMITED WARRANTY ³ 3 year parts and labor International Warranty Service On site, 9 hr x 5 day coverage next day response time ⁷ 1 year on site warranty service upgrade option (in eligible locations): ⁷ 24 hr x 7 day coverage, 2 hour response time (No ServicePac available) Post warranty maintenance

See footnotes for important warranty information (X445D8B) © IBM Corp. March 200 US models announced March 2, 2004 • = Hot-swap # = Memory, HDDs and Preload Kit for Microsoft Windows 2000 or 2003 Datacenter Edition must be ordered as part of the IBM Datacenter Solution for these models.

IBM @server™ xSeries™ 455 (November, 2004)

xREF by eServer Field Skills and Education Team

IBM® Type-model Qty x Processor	L3 cache	L4 cache	Memory	Disk	SCSI controller	Mech- anical		SMP/RXE Exp Ports		Mgmt adapter	Available date
	4MB 6MB 9MB	64MB	2GB Chipkill [†] 2GB Chipkill 2GB Chipkill	None	2 x Ultra320	4U rack	6x2	0/1	Two redundant Two redundant Two redundant	PCI	Dec 2004

Positioning Processors L2 cache L3 cache L4 cache Processor upgrade SMP Exp. Module Additional boards	4 x Intel [®] Itanium 2 [™] Processor 1.5GHz or 1.6GHz with 4 256KB each processor / on die of processor / at process 4MB, 6MB or 9MB each processor / on die of processor / 64MB XceL4 [™] Server Accelerator Cache ECC / 64-bit 400MHz bus from Cache and Scalability Con 4-way SMP per chassis Up to 16-way using four x455 chassis / requires appropri One I/O Board (PCI-X Host Bridge, SCSI, ethernet, graphi	ECC / 64-bit 400MHz bus from Cache and Scalability Controller I-way SMP per chassis Jp to 16-way using four x455 chassis / requires appropriate 8-way or 16-way kits Dne I/O Board (PCI-X Host Bridge, SCSI, ethernet, graphics, South Bridge, Super I/O, slot for Mgmt Adapter), one						
Memory	2GB std (using 2 x 1GB DIMMs)/ 56GB max when installing PC2100 266MHz registered 184-pin ECC DDR-SDRAM DIM way interleaving / Active Memory™ with Error Checking a	Ms / DIMMs must be installed in matched pairs [a bank] / 2- Ind Correcting (ECC), Chipkill TM , Memory ProteXion TM (1, 2, undant bit steering) / via memory mirroring (memory mirroring						
IDE controller	LSI® 53C1030 / Ultra320 SCSI (LVD 320MB/sec) / dual cha Two channel backplane for internal hot-swap disks (16-bit ServeRAID adapter and SCSI cable required if attaching of Enhanced IDE ATA-100 controller in South Bridge / one one No disks standard / supports up to 15K rpm SCSI disks / two	LVD cable to SCSI backplane) / external storage enclosures -drop IDE cable to backplane for diskette and CD-ROM						
Mechanical	EIA 19" rack models (4U4) x 28" deep / supported in NetBA	Y™ Racks (such as NetBAY42 SR, NetBAY42 ER)						
		a IBM PCI-X Host Bridge) / each IBM PCI-X Host Bridge hics, adapter slot with Remote Supervisor Adapter, (297317VUL [keyboard, mouse]) / support PCI-X slots / designed to the PCI-X 1.0 specification ion indicator lights (optical sensors control power to slot) /						
CD-ROM / diskette Ethernet Graphics controller Ports	SVGA / ATI® Rage XL / on I/O Board / 8MB SDRAM 125MI	O Board / full duplex / 64-bit 66MHz PCI bus / Wake on LAN® Hz std/max / up to 1280x1024 at 64K colors at 85Hz 00), RXE Management Port, two USB (Vers 1.1), analog DB-						
Security	Power-on and administrator passwords / unattended boot / set	ectable boot						
Systems mgmt Diagnostics Software	console and mgmt / power on/off system / monitors power star Light Path Diagnostics TM / primary indicator on information IBM Real Time Diagnostics (operated through IBM Director) available even while server running ServerGuide TM (CD-ROM installation and configuration	panel with LEDs associated with failing components / Itanium 2 1.3GHz/3MB L3 Cache Proc Upg 73P7076 Itanium 2 1.4GHz/4MB L3 Cache Proc Upg 73P7077 Itanium 2 1.5GHz/6MB L3 Cache Proc Upg 73P7078						
Keyboard / mouse Power supplies Cooling fans	utilities), IBM Director, and others None standard (because rack-based) / USB only Std: two; max: two / hot-swap / 1050 watts at 220v or 550 watts at 110v / redundant at 220v with two power supplies / front access / worldwide / voltage-sensing / auto-restart / fans in each power supply / PFA Four hot-swap, redundant, multi-speed fans /	512MB PC2100 CL2.5 ECC DDR SDRAM 33L5038 1GB PC2100 CL2.5 ECC DDR SDRAM 33L5039 2GB PC2100 CL2.5 ECC DDR SDRAM 33L5040 IBM 73.4GB 15K Ultra320 SCSI Hot-Swap 32P0735 IBM 146.8GB 10K Ultra320 SCSI Hot-Swap 32P0735 IBM ServeRAID™ 6M Ultra320 256MB Cache 02R0988 IBM RXE-100 Remote Storage Enclosure 86841RX 4-way to 8-way Expansion Option 73P9911						
	one additional fan in each power supply / PFA	8-way to 16-way Supplemental Option 73P9715						
Slot 2: fullsize, 64-bit Slot 3: fullsize, 64-bit Slot 4: fullsize, 64-bit Slot 5: fullsize, 64-bit Slot 6: fullsize, 64-bit Slot 6: fullsize, 64-bit Slot 1: used by Remo Slot 1: used by Remo Bay 1: Slot 1:	66MHz PCI-X, hot-swap Bus A 66MHz PCI-X, hot-swap, Bus A	 W440mm x D713mm iOkg ⇒ 3 year parts and labor ⇒ 3 year parts and labor ⇒ international Warranty Service³ ⇒ IBM On Site (IOR), 9-5 Next- Business-Day coverage⁷ ⇒ 3 year on site warranty service upgrade option (in eligible locations):⁷ • 24 hr x 7 day coverage, 2 hour response time 96P2689 ⇒ Post warranty maintenance services available ⇒ Other ServicePac options at http://www.ibm.com/services/us/ its/pdf/wamomxeu.pdf ⇒ 24x7¹⁴ toll-free support for warranty issues during the warranty period³ 						
Bay ④ 3.5", SL 1",	access, hot-swap 293.6GB with two 146.8G							

See footnotes for important warranty information • = Hot-swap

IBM @server™ xSeries™ 460 (May 2005)

xREF by eServer Field Skills and Education Team

1 1

	rocessor	L2 L3 cache cach			ts Disks	SCSI control	ler ica		pwr suppl	p Warranty ies (yrs.)	date
8872-1RY 2 x Xeon ¹ 8872-2RY 2 x Xeon 8872-3RY 2 x Xeon	MP 3.00GHz	1MB 8M	3 2GB(2x	:1GB) 8	None None None	SAS SAS SAS	3U ra	ack 6x7 ck 6x7 ck 6x7	2 x 13 2 x 13 2 x 13	00 3	Jun 2005 Jun 2005 Jun 2005
Processors	Two 64-bit Int 64 Technolog 1MB / on die 0	tel® Xeon™	Processo	MP 2.83.	3.00 or 3.33	GHz ¹ with	667MHz f	ontside bu	s / NetBurst ™	/ Extende	d Memory
L2 cache L3 cache Processor upgrade	4 or 8MB / Inte 4-way SMP / 1	up to four X	processor	ssor speed speed ssors MP (same speed	/cache size)) per chas	ie (2561VIB sis / Dual (Core Capable	up to 32-w	way) ⁄ay (eight
Implementation	chassis interce System board integrated Seri	contains for	ur Intel 604	-pin micro	-PGA4 ZIF s						
Active Memory [™]	2GB std / 64C cards standard 400MHz regist / Memory Pro only with Micro	B max per l (up to four tered 240-pi oteXion™ (re osoft® Windo	chassis us) with 4 DII n DDR2-S edundant b ws™ Serv	ing high-ca MM gold-ca DRAM RD it steering er 2003™	apacity memo onnector slot IMMs / Erro) and Memo	ory card / 5 s each / DIN r Checking ry Mirroring	12GB max MMs must g and Cor g ™ and H	k (eight cha be installe recting (E ot-swap (n	assis interconr d in matched r CC) via 16-bi on-OS specifio	ect) / two n bairs / PC2- Checksun c) / Hot-add	nemory 3200 ∩ Chipkill ™ (supported
SCSI disk controller SCSI connectors SCSI cabling IDE controller / cabling Disk - capacity Disk - bays	ALL: Adaptec with dedicated Controller wire One standard Enhanced IDE None / suppor Six 2.5" hot-sw	slot d to SAS ba SAS cable ATA-33 co ts up to 730	ackplane attached to ntroller in C B 10.000	six-bay b SB6 South	ackplane n Bridge	,	/sec) / 64-ł	bit 266MHz	2 PCI-X 2.0 / S	erveRaid 8i	optional
Mechanical	EIA 19" rack i chassis (x460	models (3U or MXE-460	⁴) x 28" de)) to achiev	ep / suppo ve 32-way	rted in NetB in 24U	AY™ Racks	(such as I	VetBAY42	SR, NetBAY4	2 ER) / con	nect eight
Chipset Slots (Active™)	IBM XA-64e [™] models) / 2 IBI / Host bridge (South Bridge (slots / Host Bri Six total PCI-X upgrade, hot e	3rd Gener M PCI-X 2.0 Dne support IDE, USB, t dge Two s 2.0 slots av	ation chip Host Brid s adapter l bus for Sup upports 4 f vailable with	set / IBM ges / Integer PCI 33MH er I/O NS PCI-X 2.0 s	Integrated P grated Proc/N z and 66MHz 87417 [diske slots id attention in	rocessor/Me lem Cont. p , slot for op tte, keyboar dicator light	emory Cor provides su ptional Ser rd, mouse]	ntroller (imp opport for e veRaid 8i (), Dual Por sensors co	proved perform external scalab inc. graphics), t Broadcom 57	hance from lity and Mer ServerWork '04, and 2 slot) / hot re	earlier mory contro (s® CSB6 PCI-X 2.0 place, hot
<u>CD-ROM</u> / diskette	upgrade, hot e 8X ⁶ Slim DVD-			by insulativ	e plastic divi	ders, all slot	ts supporte	d up to 26	6MHz		
Graphics controller	Broadcom [®] 57 LAN [™] 2 SVGA / ATI® 7	'04 10/100/1 '000m / on r	1000 dual e blanar / 161	/IB SDRAN	/I std/max / 3	2-bit 33MH;	7 PCI 2 2 ł	suis			
Ports	Rear: Three Se ethernet, std. s	calability po serial, RS-48	rts, RSA et 35 / <i>Front:</i>	hernet, RS One USB	A serial, two (Ver 2.0)	USB (Ver 2	2.0), keybo	ard, mous	e, analog DB-	15 graphics,	two
Systems managemen Diagnostics Software	t Remote Supe remote console Drop down Li IBM Real Time ServerGuide™ utilities), IBM D	 Diagnostic (CD-ROM) 	pter II slim t / power o iagnostics is (operated installation	lline / PCI n/off system / primary d through I n and conf	adapter / inc m / monitors indicator on BM Director) iguration	avaliable e	iB PC2-32	200 CL3 E	nd serial conn rature, disks, f ociated with fa ing CC RDIMM	(2x1GB)	vides supplies nents / 73P2866 73P2867
Keyboard / mouse Power supplies	None standard <i>Std:</i> Two 1300 redundant with auto-restart / re	watt hot-sw	/ap: Max:t	vo hot-swa	ap / fully voltage-sens er supply / Pl	8G Act sing / Xe FA Xe	B PC2-32 tive Memo on MP 2.8 on MP 3.0	200 CL3 E bry 4-slot 33GHz/1M 00GHz/1M	CC RDIMM Expansion C IB L2 4MB L3 IB L2 8MB L3 IB L2 8MB L3	(2x4GB) ard Proc Upg Proc Upg	30R5145 13M7409 13N0715 13N0714
Cooling fans	Eight hot-swap one additional fan failure sign	fan in each	power sup	lv / PFA /	ocessor	IBN IBN	M ServeR	AID™-8i S AID 6M U	SA-SCSI Ada 320 256MB A SAS Hot-swa	oter dapter	13N2227 02R0988 26K5654
8W = 2 x XpandOnDe 16W = 6 x XpandOnD 32W = 8 x XpandOnD Six available 3.3 volt	Demand Scalabil Demand Scalabil PCI-X 2.0 slots	lty kits 2.3m Ity kits 2.3m s:	+ 4 x2.9m			Xp Xp MX	andOnDe andOnDe (E-460 Me	mand™ So mand™ So odular Exp	SAS Hot-Swa calability Cabl calability Cabl cansion Enclo .com/pc/us/a	e - 2.3M e - 2.9M osure	26K5655 13M7414 13M7416 8874-1R`
Slot 1 - fullsize, 64- Slot 2 - fullsize, 64- Slot 3 - fullsize, 64- Slot 5 - fullsize, 64- Slot 6 - fullsize, 64- 'exclusive slot availa Opt disk Opt disk Opt disk	bit, 266MHzPC bit, 266MHzPC bit, 266MHzPC bit, 266MHzPC bit, 266MHzPC ble for ServeR Opt disk	CD-ROM wap, open wap, open wap, open wap, open wap, open	iap ⇒ Din iap ⇒ We iap ⇒ Ste iap ⇒ Acc oter sys ⇒ Acc ⇒ Dia ⇒ Sel ⇒ Dia ⇒ Sel ⇒ Dia ⇒ Sce ⇒ Cor ⇒ Sce ⇒ Sce > Sce	nensions: H ight: 70 to alth black bl-free sen cess adapt temboard cess powe gnostic par gnostic par gnostic par follown Li gnostic par pown Li gnostic par gnostic par tem witho tem well-b dictive Fai ver supplie	<i>i</i> ceability ers, process from top r supplies frc p by pressin C-Doctor) b y pressing C ght Path Dia nel) for outsid ut removing ED panel, dia nt LEDs give	x W440.0m to 38.5kg ors, memoi m back g F1 at star y pressing rl+A at star gnostics (ler e view of pc cover gnostic LEE visual indic	m x D715 ry, and fup F2 at star tup vel 2 otential D panel, cations of disks,	a 3 y a Intu o On c o On (in 0 0 0 0 0 0 0 0 0 0 0 0 0	LIMITED rear parts and ernational W site, 8 am - 1 overage exc xt business of site service eligible loca year IOR 243 6P2688 year IOR 243 6P2689 year IOR 9x3 6P2690 year IOR 9x3 6P2694 her ServicePa p://www.ibm. rvices/us/its/	arranty Se 5 pm, Mon luding hol lay respon upgrade o tions):7 (7, 4 hr avg (7, 2 hr avg (7, 2 hr avg (7, 2 hr avg (7, 2 hr avg (7, 10 hr avg (7, 2 hr avg))))))))))))))))))))))))))))))))))))	rvice ³ - Fri idays, se time ⁷ ptions g response g response ponse at

See footnotes for important warranty information

• = Hot-swap

IBM @server™ BladeCenter™

xREF by eServer Field Skills Enablement Team

2

								States & Commission	
		Switch module bays std / max	Switch module bays (type)	Management modulebays std / max	Power modulebays std / max	Power Module Wattage	Blower module bays std / max	Mech- anical	Available date
8677-1XX 8678 / 88 8677-2XX All: HS20 8677-3XX All: HS20		0 / 4 0 / 4 0 / 4	Ethernet, Fibre Channel Ethernet, Fibre Channel Ethernet, Fibre Channel	1 / 1 1 / 2 1 / 2	2 / 4 2 / 4 2 / 4	1200W 1800W 2000W	2/2	7U⁴ rack 7U⁴ rack 7U⁴ rack	Nov 200 Oct 200 Oct 2004
Positioning Description	Provides common r	esources sha Fibre Channe	les investment protection a red by blade servers such el storage switching and co	as power, sy	/stem manage	ement, ca			
Blade bays			ind SCSI Storage Expansion	n Units / 14	hot-pluggable	bays / fro	nt access		
Switch modules Ethernet Switch Module Fibre Channel Switch Module	HS20 blade server (the HS20 dual integ Supports two 2-port ports on optional Fit	GB Ethernet (two modules rated ethernet Fibre Channe ore Channel E	Switch Modules in bays 1 a to support both ethernet co t controllers / four external p el Switch Modules in bays 3 Expansion Card (two modul	ntrollers on H ports / connection and 4 / one es to support	HS20 and for f cts to std mgm Fibre Channel both ports an	ailover re nt module Switch N d for failo	dundancy) / /lodule requ ver redunda	' bays 1 an ired for one ancy) /	d 2 wired e of two
Management modules	Std: one; max: one communicates with	or two / hot-su integrated sys video port, F	/O expansion option conne wap / rear access / compre- stem management process S/2 keyboard port, PS/2 n ervers	hensive syst or on each H	em managem IS20 server bl	ent functi ade / mu	ons / Power Itiplexor for	PC [®] 401 c console co	controller /
Power modules	Std: two in bays 1 a / hot-swap / rear acc std modules supply	nd 2 (two 9ft l cess / <i>1XX:</i> 12 power to all m	IEC 320-C13 to C14 or two 200 2XX: 1800 3XX: 2000 nodules and blade bays 1 th ant to each other) / worldw	watts at 220v nrough 6 / po	/ both redund wer for bays 7	ant to ea ' through	ch other (N⊦ 14 requires	N redundative two addition	ancy) / two onal power
Blower modules	Std: two; max: two /	hot-swap / re	dundant / variable speed /	rear access /	325 cubic ft p	er min (C	CFM) / front	to back airf	flow
Mechanical CD / diskette / USB	1XX/2XX: 24X-10X ⁶ interface / not remov	CD-RÓM <i>3X</i> vable / front a	^t deep / supported in NetB, X: 8X-24X ⁶ DVD-ROM / 3.5 ccess / shared by up to 14 server blade front panel	5" 1.44MB diè	skette drive / o	ne USB p	ort (Versior	n 1.1) / all U	JSB USB port
Keyboard / mouse Ports	None standard / pro server blade front pa	ovides KVM co anel / supports S/2), mouse (F	onsole support / requests fo s NetBAY ACT CAT5 chair PS/2), analog DB-15 graphi	ning solutions					
Security	Login password for	remote conne	ection / secure socket layer nt providing security throug					s /	
Ethernet Systems mgmt System LED panel	Ethernet Switch Mo Provides remote con blowers, power mod	<i>dule</i> (the seconsole and mg dules / system	ethernet controllers on eac ond HS20 ethernet controlle mt / power on/off blades/m n diagnostic programs prov er-on, location, over-tempe	er requires a odules / mor ided through	second option hitors power st IBM Director	al <i>4-port</i> atus, ope software	GB [`] Etherne rating syste	t ['] Switch Me m, tempera	<i>odule</i>) ature, disk
NetBAY 1U Flat Pane NetBAY 2U Flat Pane NetBAY ACT Local C NetBAY ACT Remote NetBAY ACT 250mm NetBAY ACT 1.5m K IBM Sleek 2-Button S NetBAY42 Enterprise NetBAY42 Standard NetBAY42 Standard APC Smart-UPS 500	el Monitor Console K console Manager (C, e Console Manager i h KVM Conversion O VM Conversion Opti Stealth Black Mouse e Rack Cabinet Rack Cabinet Rack Cabinet	ĩit (with kýbd/ı AT5 KVM cab (CAT5 KVM c ption on	monitor) 32P1702 IBM Jing) 1735L04 IBM sabling) 1735R16 IBM 32P1636 IBM 32P1652 IBM 930842S IBM 9306420 IBM 9306250 • O	1800W Pow 2000W Pow KVM/Redun BladeCenter BladeCenter FAStT700 F T541 15" Fla her options	er Supply Moo er Supply Moo dant Manager 4-port GB Ett 2-port Fibre C Acoustic Atte ibre Channel at Panel Color at Ibm.com /p ble from IBM	dule (inclu dule (inclu nent Mod nernet Sv Channel S nuation N Storage S Monitor (c/us/acce	ides two mo ides two mo ule vitch Module Switch Modu Aodule (for i Server black) ssories	odules) odules) 2 e 2 ile 4 rear) 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	48P7052 13N0570 26K4816 48P7055 48P7054 48P7062 49P2694 17421RU 9512AB1 artners
LED panel Bay	· ·	[Dimensions: H12.0" x W1 Dimensions: H304.2mm > Weight: 99 to 240 lb; 44.91	W444mm x		😅 3 vea	LIMITED		ITY ³
	D-ROM USB Diskette B	B Blade 14 • •	Stealth black color bezel Tool-free customer service Access server blades an Jnits from front Access modules from rea Midplane in center of syste major system components Predictive Failure Analysis blade server memory, prod disk(s) with IBM Director	eability d SCSI Exp ar em to interfac ® alerts on b	ansion ce for all lowers,	 ➢ Interr ➢ On si cov next ➢ On si elig · 3 yo (Se · 3 yo (Se 	national Wa te, 8 am - 5 verage excli- business da te service to jible locatic ear IOR 24x rvicePac® pa ear IOR 24x rvicePac pa	rranty Ser pm, Mon uding holid ay respons upgrade op ons): ⁷ 7, 2 hr avg art num 21P 7, 4 hr avg rt num 21P	- Fri days, se time ⁷ otions (in g respons 22074) g respons 2073)
	Blower (std) PM 1 • Blower podule 2 •		Switch bodule bay 1 Ethernet link 1 for 2 Ethernet link 2 for	le on all blade serv		(Se • 5 y o (Se • 5 y o (Se	ear IOR 9x5 rvicePac pa ear IOR 9x5 rvicePac pa ear IOR 24x rvicePac pa er Servicel	rt num 21P2 5, 4 hr avg rt num 69P9 7 7, 2 hr avg rt num 69P9	2072) response 9247) 3 respons 9249)
Switch Power modules modules	()	lanagement module (std)	 3 Network connection I/O expansion opion 4 Network connection I/O expansion opion 	n 1 for all bla ions (Fibre C n 2 for all bla	ade server Channel) ade server	htt∣ its/ ≈ 24x7	o://www.ibi pdf/wamon ⁴ toll-free s ues during	n.com/ser nxeu.pdf support fo	rvices/us/ rwarrant

 See footnotes for important warranty information

 = Hot-swap
 US models announced September 24, 2002 (1XX) or October 14, 2003 (2XX)
 ✓ US models withdrawn effective December 30, 2003 (1XX). 1200W Power module withdrawn effective February 24, 2004

 (BC1) (©

(BC1) © IBM Corp. January 2004

Reserved

AMD Opteron LS20 for IBM @server BladeCenter™

xREF by eServer Field Skills Enablement Team

IBM® Type-model Qty x Pro	ocessor ¹ Speed/	Core Memory	L2 Cache Disk	Disk controlle	Disk r bays	SCSI support	Slots x bays	Mech- anical	Required chassis	Available date
8850-51U 1 x Opte 8850-55U 1 x Opte 8850-65U 1 x Opte 8850-71U 1 x Opte 8850-81U 1 x Opte	eron 270 2.0 GH eron 275 2.2 GH eron 250 2.4 GH	z/DC 1GB z/DC 1GB z/SC 1GB	1MB 0MB 1MB 0MB 1MB 0MB	SCSI SCSI SCSI SCSI SCSI	2 fixed 7 2 fixed 7 2 fixed 7	We 2.5-inch SFF We 2.5-inch SFF We 2.5-inch SFF We 2.5-inch SFF We 2.5-inch SFF	0x2 0x2 0x2	$7U^4$ blade $7U^4$ blade $7U^4$ blade $7U^4$ blade $7U^4$ blade $7U^4$ blade	BladeCenter BladeCenter BladeCenter	Apr 2005 Jul 2005 Apr 2005
Positioning Processor(s) L2/L3 Cache SMP support Implementation	Up to 2 x AMD 1MB L2 Cache 2-way SMP / up	Opteron 275 per core, AMI to two Opter ntains two AN	5 Dual Core D Direct Co ron processo 1D 940 micro	2.2GHz, onnect A ors (same	simultaned rchitectur e speed/ca	g platform with sup pusly supports 32-b e ensures lower lat the size) , four memory DIM	it and 6 tency 1/0	4-bit comp C	outing	
Memory	DIMMs must be	z registered 1 installed in m and Correct	84-pin ECC atched pairs ing (ECC) v	DDR VL [a bank] /ia 16-bit	P SDRAM 2-way m Checksu	RDIMMs / four DI nemory interleave / m Chipkill ™ (corre	dual ch	annel	-	
IDE controller/bays SCSI disk controller SCSI disk bays Other controllers External storage	on planar / sup drives / one 16 Supports max of 40-pin SCA-2 c Support for SFF	ports RAID-1 b-bit internal cl of two not hot- onnectors / a l or legacy Et	mirroring hannel / no swap 2.5" S Il SCSI bay hernet or Fi	[Embedd cables o L Ultra32 s Ultra3 2 bre Char	ed Mirrorir r external 20 SCSI d 20-enable nnel I/O ca	ísks d	ot-swap	2.5" / sm		
Mechanical Architecture / chipsets Bus slots	AMD 8131 PCI- PCI-X expansio HyperTransport Super I/O chip	•X Bridge Chi n slots) / AMI clock (PCI, S	i p providing D 8111 Hyp MBus, USB	two PCI erTrans , LPC to	-X buses r port Bridg BIOS and	deep racks such a unning at 600Mhz e Chip supporting I Super I/O) / Nation nterface option con	(bus A a 200 onal Sei	for SCSI a Mhz doub miconduct	and Ethernet, I ble-pumped	
Ethernet controllers Network-interface CD / diskette / USB Kybd / video / mouse	Two gigabit Ether / Alert Standard F switch or Passti One connector 3 and 4 of Blade card) / ethernet None / requests	met controllers / Format 1.0 / tea hrough Module for I/O expan eCenter / all bl and serial I/O for CD-ROM, c for keyboard, r	/ Broadcom® ming and fail e (the secon nsion optio ades in a sin expansion o diskette drive nouse, and v	BCM5704 over supp d control n (Fibre ngle Blac cards pla e, and US rideo in B	4S / on blac ort / one of ler require Channel E leCenter m nned for fu B port in Bl ladeCenter	le / two PCI-X 64-bit the dual controllers of s a second optiona xpansion Card) / roust contain the san uture release ²⁰ adeCenter by press by pressing the dis	133MHz connects I switch equires ne expa ing CD s play but	buses / fu to an optio or PM) same inte nsion caro select butto ton on from	onal, supported erface modules d (or no expans on on front cont at control panel	Etherne in bays sion
Graphics Systems mgmt Diagnostics	IBM integrated H8S2148 / on bl monitoring, ever for communicatii Light Path Diag component) and	system mana ade / provides nt recording, al on with BladeC nostics™ (LE	gement pro system and ert capability Center manag D lights indic	environn / RS-48 gement m cate failin	ISMP) / nental 5 interface nodule g	AM std/max / 32-bit Low Power Opte Low Power Opte Low Power Opte Low Power Opte Low Power Opte Low Power Opte Low Power Opte	eron 246 eron 270 eron 275 eron 250 eron 252 (2x1GB	6 Processo 9 Processo 5 Processo 9 Processo 2 Processo kit) DDR-S	or Upgrade or Upgrade or Upgrade or Upgrade or Upgrade DRAM DIMM	
Security Software ship group		t/selectable be CD, IBM Dire	oot/unatten ctor CD, De	ded start evice Driv	ver CD	4GB Memory Kit IBM 36.4GB SFI IBM 73.4GB SFI AMD Opteron LS IBM SFF Fibre	È Non-h F Non-h S20 Lov	not-swap 1 not-swap 1 v Profile H	IOK SCSI HD IOK SCSI HD landle	90P1312
Cooling fans Power supply Prerequisites	Uses cooling fro on each process Uses power moo Monitor, keyboa disk, BladeCent	or and BladeC dule(s) in Blade rd, mouse for s	Center modul eCenter (typ setup; etherr	les and fr e 8677) net switch	ont panel	IBM SFF Gigabi IBM HS20 Fibre Bladecenter 200	t Etherr Chann	et Expans el Expans wer Suppy	sion Card	26K4842 48P7061 26K4816
DIMM slot 3	ew) opt opt SCSI SCSI disk disk U vo expansion option connector Light Path Diagnostics op front of blade	Bay 2.5", 9 ⇒ Stealth bla ⇒ H 9.7" x W H 24.5cm : ⇒ 11 lbs; 5.0 ⇒ Configurat ⇒ Diagnostic ⇒ System Pa ⇒ Network B. ⇒ PXE Boot ⇒ Blade com media sele	9.5mm, no fro ck front beze 1.14" x D 17 x W 2.9cm x kg (max co ion/Setup Uti s; (PC-Docto artition Boot: oot: Agent Utility: trol panel or cct button, ke tors for blade	nt access el 7.6"; D 44.6cn nfiguratio ility: F1 a r™): F2 a ALT F12 Ctrl+ n each LS yboard/m	n n) t startup +F1 at startup -S at startup	•	44	Internation On site, 8 a coverage next busine • 3 year IO (ServiceF • 4 year IO (ServiceF • 4 year IO (ServiceF • 4 year IO (ServiceF • 5 year IO (ServiceF	al Warranty Service im - 5 pm, Mon - Fri excluding holidays ass day response tii vice upgrade option ocations): ⁷ R 9x5, 4 hr avg resp ³ acpart num 41C590 R 9x5, 4 hr avg resp ³ acpart num 41C590 R 24x7, 4 hr avg resp ³ acpart num 41C590 R 24x7, 4 hr avg resp ³ acpart num 41C590 R 9x5, 4 hr avg resp ³ acpart num 41C590	s, me ⁷ ns (in onse 06) ponse 7) oonse 8) ponse 9) oonse 0)
 Power good Blade location Over temperature Information General fault 		Predictive and option	Failure Analy al disk(s) wit ternal disk ca	h IBM Dir <i>apacity fo</i>	ector or each LS	ory, processor(s), 20 blade server ¹³ :	4	(ServiceF • Other Se http://ww services/ 24x7 ¹⁴ toll-	R 24x7, 4 hr avg res Pac part num 41C591 rvicePac options at vw.ibm.com/ /us/its/pdf/wamomx free support for wa uring the warranty	1) teu.pdf arranty

See footnotes for important warranty information US models announced May 3, 2005 and July 12, 2005

IBM @server BladeCenter[™] HS20 (July 2003)

xREF by eServer Field Skills Enablement Team

	Frontside L3 Disk Disk SCSI support with	Slots Mech- Required Available
		x bays anical chassis date
8832-31X 1 x Xeon 8832-G1X1 x Xeon		0 0x2 7U ⁴ blade BladeCenter Oct 2003
Positioning Processor(s) L2/L3 Cache SMP support Implementation	Ultra-dense, highly manageable modular computing platform with superior pu Up to 1 x Intel [®] Xeon 3.2GHz with 533MHz frontside bus / Hyper-Threading te 512KB L2 Cache / 1MB L3 Cache (some) / on die of processor / at processor 2-way SMP / up to two Xeon Processors (same speed/cache size) Server blade contains two Intel 604-pin micro-PGA ZIF sockets, four memory DIN one SCSI expansion connector, one I/O expansion option connector, and integrate	echnology / NetBurst™ microarchitecture r speed 1M slots, two IDE connectors,
Memory	512MB or 1GB std / 8GB max ¹³ / two slots used / two slots available / PC2100 266MHz registered 184-pin ECC DDR-SDRAM DIMMs / four DIMM gold must be installed in matched pairs [a bank] / 2-way memory interleave / dual chan Error Checking and Correcting (ECC) via 16-bit Checksum ChipkilI [™] (correct detects 2- through 8-bit errors contained in two chips)	inel / memory bus runs at 2 x 100MHz /
IDE controller/bays	Enhanced IDE ATA-100 controller in CSB6-U South Bridge / two connectors, IDE disk / no cable as IDE disk attaches to riser card and tray (included with disks / space for only one IDE disk if an I/O expansion option installed [Fibre None / supports optional SCSI Storage Expansion Unit (a blade occupyin via one connector / LSI Logic® 53C1020 Ultra320 SCSI controller [LVD 320M CIOB-ES I/O Bridge (IMB2 bus to Host Bridge) / supports RAID-1 mirroring	option kit) / Supports max of two IDE channel] / RAID-1 mirroring standard ng adjacent blade slot / connects to HS20 IB/sec] / 64-bit 133MHz PCI-X Bus B fron g [Embedded Mirroring] with two hot-swap
SCSI disk bays Externalstorage	3.5" one-inch high SL SCSI disks in front bays / one 16-bit internal channel / Supports max of two hot-swap 3.5" SL Ultra320 SCSI disks in optional SCSI Sto 80-pin SCA-2 connectors / all SCSI bays Ultra320-enabled Support for IBM TotalStorage™ solutions (including FAStT and NAS family of pro	orage Expansion Unit /
Mechanical Architecture / chipset Bus slots	Supported in IBM BladeCenter (type 8677) / BladeCenter supported in 28" deep rac ServerWorks [®] Grand Champion [™] 4.0 LE / CMIC LE Host Bridge (memory sone CIOBE-S I/O Bridge (IMB2 bus to Host Bridge) for two PCI-X Buses with ethernet and the I/O expansion option connector / CSB6-U South Bridge (Thi LPC bus to Super I/O, and PCI 2.2 Bus C with graphics controller / National No PCI or PCI-X slots (expansion via modules or network-interface option c	controller and I/O Bridge) / single-slot n Bus A for ethernet and Bus B for in IMB to Host Bridge) for EIDE, USB, Semiconductor® PC87417 Super I/O chip
Ethernet controllers	Two gigabit Ethernet controllers / Broadcom® BCM5704S / on blade / two PCI-X 64-b	,
Network-interface CD / diskette / USB Kybd / video / mouse	/ Alert Štandard Format 1.0 / teaming and failover support / one of the dual controllers switch or Optical Passthrough Module (the second controller requires a secon One connector for I/O expansion option (Fibre Channel Expansion Card) / 3 and 4 of BladeCenter / all blades in a single BladeCenter must contain the sa card) / ethernet and serial I/O expansion cards planned for future release ²⁰ None / requests for CD-ROM, diskette drive, and USB port in BladeCenter by press None / requests for keyboard, mouse, and video in BladeCenter by pressing the d	s connects to an optional, supported Etherne d optional switch or OPM) requires same interface modules in bays ame expansion card (or no expansion ssing CD select button on front control pane isplay button on front control panel
Graphics Systems mgmt Diagnostics	H8S2148 / on blade / provides system and environmental monitoring, event recording, alert capability / RS-485 interface for communication with BladeCenter management module Light Path Diagnostics™ (LED lights indicate failing 1GB PC2100 C	/512KB L2 Cache Proc Upg 73P907 /512KB L2 Cache Proc Upg 73P907 /512KB L2 Cache Proc Upg 13P007 12KB L2 / 1MB L3 Proc Upg 13N065 0 CL2.5 ECC DDR-SDRAM DIMM 33L5038 L2.5 ECC DDR-SDRAM RDIMM 33L5038
Security Software ship group	Power-on password / administrator password / unattended boot / selectable boot / unattended start mode ports; each p	L2.5 ECC DDR-SDRAM RDIMM 33L5040 SI Storge Expansion Unit (blade) 48P7056 e Channel Expansion Card (with two port requires a FC Switch Module) 48P7061
Cooling fans Power supply Prerequisites	Uses cooling from BladeCenter (type 8677) / thermal sensors on each processor and BladeCenter modules and front panel Uses power module(s) in BladeCenter (type 8677) Monitor, keyboard, mouse for setup: ethernet switch module 146.8GB 10K U	B ² 5400 rpm ATA-100 HDD 48P7063 tra160 SCSI Hot-Swap SL HDD* 06P5776 ofpsziational strategy 06P5776 tra160 SCSI Hot-Swap SL HDD* 06P5776 tra160 SCSI Hot-Swap SL HDD* 06P5776 jltra320 SCSI Hot-Swap SL HDD* 06P5728 SCSI Storage Expansion Unit 32P0728
ScSI expansion connector opt CPU Std CPU A control panel on t has following LEDs • Powergood	ew) Bay © 3.5", 9.5mm, no front access, optional ThinkPad IDE disk opt opt IDE IDE disk H9.7" x W 1.14" x D 17.6"; H 24.5cm x W 2.9cm x D 44.6cm 1 IO iot 1 iot 2 slot 3 opt option slot 3 opt opt opt disk op front of blade PXE Boot Agent Utility: Chronic fibrate PXE Boot Agent Utility: Chronic fibrate PXE Boot Agent Utility: Chronic fibrate System Partition Boot: All 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	

Solution Model withdrawn from marketing effective March 2004

Several Model withdrawn from marketing effective April 2005

IBM @server BladeCenter™ (8843) October 2004

xREF by eServer Field Skills and Education Team

(HS20E) © IBM Corp. February 2005

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IBM [®] Type-GAV-model Proce	L2 essor GHz ¹ cache	FSB MHz Memory	Disk Disk controller	Diskbays	SCSI Support with optional stor exp unit	slots x bays	Mech- anical	Ethernet	Available date
8843-01y-01x 1 x) 8843-11y-11x 1 x X 8843-21y-21x 1 x X 8843-21y-31x 1 x X 8843-31y-31x 1 x X € 8843-41y-41x 1 x X ★ 8843-L1y-L1x 1 x X ★ 8843-L2y-E2x 1 x X ★ 8843-25y-25x 1 x X ★ 8843-35y-35x 1 x X ★ 8843-35y-45x 1 x X	Image: Constraint of the second stateImage: Con	800 512MB 800 1GB 800 1GB 800 1GB 800 1GB 800 512MB 800 2GB 800 1GB 800 1GB 800 1GB	None Ultra320 None Ultra320 None Ultra320	2-fixed 2-fixe	 Hot-swap Ultra320 	$\begin{array}{c} 0 \times 2 & 7 \\ 0 \times 2 & 7 \end{array}$	U ⁴ blade U blade U blade U blade U blade U blade U blade U blade U blade	2 x Gigabit 2 x Gigabit	Sept 2004 Sept 2004 Sept 2004 Sept 2004 Feb 2005 Mar 2005 Mar 2005 Mar 2005 Mar 2005
Processor(s) SMP - L2 Cache Implementation	2-way SMP / up t Systemboard cont	o two Xeon P tains two Intel	rocessors (same sp	tside bus (I for reduced beed/cache VZIF socket	F SB) / EM64T / 1-2MB heat ouput allowing gr size) / 1MB std and m s, four DIMM slots, one	E L2 ECC eater rack ax / at pr	Cache / oppulation ocessor s	Hyper-Thread on speed	
Memory	512MB/1GB std / PC2-3200 400MH installed in matche	8GB ¹³ max / 1 Iz CL2.5 ECC ed pairs [a bar	wo slots used / two DDR2-SDRAM DII k] / 2-way memory	slots availa MMs / four 2 interleave /	ble / 240 pin gold-connector dual channel	slots on s	systemboa	ard / DIMMs r	nust be
SCSI disk controller SCSI Disk bays External Storage	PCI-X / supports F channel: one 2-dro Two 2.5-inch Sm disks in optional S	RAID-1 & 1E i op 16-bit 68-pi all Form Fac SCSI Storage I	mirroring (supporte n LVD SCSI cable t or (SFF) Ultra320 Expansion Unit (80-	ed in 32-bit le internal fixed pin SCA-2 d	0 SCSI controller (LV egacy mode only) / On d disk bays / Supports i connectors; all SCSI ba NAS family of products	e 16-bit c max of tw iys Ultra3	hannel (o o hot-swa	ne internal) / . ap 3.5" SL Ult	it 100MHz I <i>nternal</i> ra320 SCSI
Mechanical Architecture/Chipset BUS slots	Intel E7520 chips BUS / ICH5R supp interface	set / E7525 M ports USB (1.0	CH (Memory Control) / LSI 1020 / Dual	oller Hub) fo Broadcom t	XX/2XX (requires upgra r PCI-Express bridge to 5704S / Low Pin Count face option connector)	D PXH, IC Interface	00W pow H5R / P) / NS PC8	er supply optic (H BUS supp 17366 Super I/	on 26K4816) orts PCI-X O off LPC
Ethernet Network Interface CD / Diskette / USB Kybd / video / mouse Graphics controller	chip on blade / PC adapter fault tolera or Optical Passthr One connector fr 3 and 4 of BladeC and serial I/O exp None / requests fc None / requests fc	CI-X 64-bit 100 ance / Load ba ough Module or I/O expans center / all blac ansion cards p or CD-ROM, c or keyboard, n	MHz / full duplex / V lancing or teaming (the second control icon option (Fibre (les in a single Blad planned for future re iskette drive, and U ouse, and video in	Vake on LAI / one of the ler requires Channel Exp eCenter mus elease ²⁰ ISB port in E BladeCente	/ two full gigabit ethem N° / PXE 2.0 Boot ager dual controllers connec a second optional switc pansion Card) / require st contain the same exp BladeCenter by pressing the displa ind max / 15 pin connec	nt / Alert S cts to an c ch or OPN s same ir pansion ca g CD sele av button	itandard F optional, s vI) nterface n ard (or no	Format 2.0 / Fa supported Ethe nodules in bay expansion ca	ailover, ernet switch /s rd) / ethernet
Systems Mgmt Diagnostics	recording, alert ca intermanagement Management mod Light Path Diagn	pability / RS-4 communicatic lule iostics ™ (LEE	Controller (BMC) 85 interface for n with BladeCenter 0 lights indicate faili nostics (via PC-Doc	ng	on blade / provides sy Xeon 2.8 GHz/800/1M Xeon 3.0 GHz/800/1M Xeon 3.2 GHz/800/1M Xeon 3.6 GHz/800/1M Xeon 3.6 GHz/800/1M	/IB L2 Ca /IB L2 Ca /IB L2 Ca /IB L2 Ca	che EM6 che EM6 che EM6 che EM6	4T Proc Upg 4T Proc Upg 4T Proc Upg 4T Proc Upg 4T Proc Upg	ing, event 13N0692 13N0693 13N0657 13N0658 13N0659
Security Software ship group	No security intrusi administrator pass selectable boot / u Documentation CI	inattended sta		ord /	512MB (2x256) PC2- 1GB (2x512) PC2-32 2GB (2x1GB) PC2-32 4GB (2x2GB) PC2-32 IBM 36.4GB 10K Ultra	3200 EC0 00 CL3 E 200 ECC 200 ECC	C DDR2 CC DDR DDR2 Ch DDR2 Ch	2 hipK RDIMM k hipK RDIMM k	73P3522 73P3522 (it 73P2866
Cooling Fans Power supply(s) Prerequisites Bay ① 3.5",9.5mm	on each processo Uses power modu Monitor, keyboard disk, BladeCenter	r and BladeCe ule(s) in Blade , mouse for s (type 8677), (front panel h module,	IBM 73GB 10K Ultra3 BladeCenter SCSI Stt BladeCenter SFF Fib) BladeCenter SFF Gig BladeCenter Optical 1 BladeCenter SCSI Stt 17-inch Flat Panel Mc Other options at ibr	20 SCSI prage Exp re Channe pabit Ether Pass-thru prage Exp ponitor Con	2.5" SFF o Unit el Exp Ca met Exp (Module bansion U sole Kit w	NHS HDD ard Card Init // US Kybd	90P1313 26K4817 26K4841 26K4842 02R9080 26K4817 17231UX
Bay @ 3.5",9.5mm Server b	, no front access,	optional 2.5	inch SFF SCSI di	sk					
opt Diagnostics	re M	 H 9.7" x W H 24.5cm 12 lbs; 5.4 Configurat Diagnostic System Pa Network B PXE Boot Blade continedia sele and indica activity, ar Predictive and option 	ect button, keyboa tors for blade erro id power Failure Analysis® al disk(s) with IBN	ation) 1 at startup F2 at startup F1 at startup S at startup HS20 blacu ard/mouse/V r, information alerts on r A Director for each H cs (with Blace	up de server provides rideo select button, on, location, disk nemory, processor(s) <i>S20 blade server</i> ¹³ : deCenter SCSI	 Inferson Mon Mon next option 4 (S) (S)	ar parts rnational site, 8 ar- -Fri exc. busine: busine: busine: busine: busine: busine: busine: busine: busine: pervicePa year IOF ervicePa year IOF sponse ervicePa year IOF sponse ervicePa year IOF sponse ervicePa pervicePa year IOF sponse ervicePa year IOF sponse ervicePa ervicePa year IOF sponse ervicePa	D WARRAN and labor Warranty S n-5 pm, luding holid ss day respo rice upgrade eligible loca 3 9x5, NBD r 8 9x5, NBD r 8 9x5, 4 hr an c part num 6 24x7, 4 hr a c part num 6 24x7, 2 hr a c part num c part num c part num 6 24x7, 2 hr a c part num 7 (its/pdf/wam es support f	ervice ³ ays, onse time tions): ⁷ esponse 69P9520) /g response 69P9521) ivg 69P9522) ivg 69P9522) ivg 69P9523) is at omxeu.pdf or warranty

See footnotes for important warranty information \bullet = models announced January 2005 \Rightarrow = models announced February 2005

IBM @server BladeCenter[™] HS40

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IBM ®	L3		Frontside	Disk	Disk	SCS	Isuppo	rt with	Slots	Mech-	Required	Available
Type-model Qty x Pro	cessor ¹ Cache	-	Bus Mhz	Disk controlle	r bays	optiona	alexpan	sion unit	x bays	anical	chassis	date
8839-41X 1 x Xeon™		2GB	400Mhz N	lone None	None	2 not	-swap	Ultra320) UX2	60ª blade	BladeCenter	Mar 2004
Positioning Processor(s) L2/L3 cache SMP support Implementation	Ultra-dense, high 1 x Intel® Xeon 2 512KB L2 Cache 4-way SMP / up 1 Server blade cont one SCSI expans	.8GHz N / 2MB I to four X tains fou	IP with 400 L 3 Cache / Ceon MP Pr r Intel 604-	MHz frontsic on die of pr ocessors (s pin micro-P0	le bus / I ocessor ame spe GA ZIF s	-lyper- / at pro ed/cacl ockets	Thread ocesso he size , eight	ing techr r speed e) memory	nology	[/] NetBurst™ slots,		
Memory	2GB std / 16GB n PC2100 266MHz DIMMs must be ir 100MHz / Error (same chip and de	nax ¹³ / tv registere nstalled i Checkin g	vo slots use ed 184-pin n matched g and Cori	ed / six slots ECC DDR-S pairs [a ban recting (ECC	available DRAM E k] / 2-wa) via 16	e / eigh DIMMs y mem -bit Cl	it total / eight lory int	slots DIMM (erleave) m Chip	gold-co ′ dual c kill ™ (ɗ	nnector slo hannel / m corrects 1,	ts on systemb emory bus rur	oard / ns at 2 x
SCSI disk controller SCSI disk bays	None / supports via one connecto CIOB-ES I/O Bric 3.5" one-inch higi Supports max of th	r / LSI L Ige (IMB h SL SC wo hot-s	ogic® 53C1 2 bus to H SI disks in wap 3.5" SI	020 Ultra32 ost Bridge) front bays / _ Ultra320 S	0 SCSI o [/] support one 16-I CSI disks	controll s RA I bit inte s in opt	er [LV I D-1 m rnal ch	D 320MI i irroring nannel /	B/sec] [Embe no cab	64-bit 133 dded Mirro les or exte	BMHz PCI-X E pring] with two rnal connecto	Bus B fror hot-swa
Externalstorage	80-pin SCA-2 con Support for IBM Te	nectors / otalStora	′ all SCSI b a ade™ solutio	ays Ultra320 ons (includin)-enable a FAStT :	d and NA	AS fam	ilv of pro	ducts)			
Mechanical Architecture / chipsets Bus slots	Supported in IBM E ServerWorks® G	BladeCer rand Ch Bridge (I/O expa and PC	nter (type 86 ampion™ (IMB2 bus Insion optic I 2.2 Bus 0	677) / BladeC 4.0 LE / CM to Host Brid on connector C with graph	enter sup IIC-LE5 ge) for tv / CSB6 ics contro	ported Host B vo PCI South oller / I	in 28" (ridge -X Bus Bridge Nation	deep rack (memory ses with e (Thin II al Semic	ks such contro Bus A MB to H conduct	ller and I/0 for etherne lost Bridge or® PC874	D Bridge) / do et and Bus B f e) for EIDE, U	ouble slot or SB, LPC
Ethernet controllers	Four gigabit 10/100	,	•							,	MHz buses / fu	ll duplex /
Network-interface	Wake on LAN® / Al 4-port GB Etherno Two connectors all blades in a sin	ert Stand et Switch for I/O e	lard Format In <i>Module</i> (tl Expansion	1.0 / teaming he second c option / req	and failov ontroller uires sam	ver sup require ne inter	port / o es a se face m	ne of the cond op iodules i	controll tional E n bays	ers connect Ethernet Sw 3 and 4 of	s to an optiona /itch Module)	
CD / diskette / USB Kybd / video / mouse Graphics	None / requests for None / requests for SVGA / ATI® Rad	or keybo	ard, mouse	, and video	in Blade	Center	by pre	ssing th	e displa	ay button o		
Systems mgmt Diagnostics	Intel integrated I / on blade / provi event recording, a communication w Light Path Diagr component) and c	des syst alert cap ith Blade ∩ostics ™	em and en ability / RS eCenter ma M (LED ligh	vironmental 3-485 interfa anagement r ts indicate f	monitòrii ce for nodule ailing	ng, 5 1 2	612MB IGB PC 2GB PC BM HS BM HS	PC2100 2100 CL 2100 CL 340 SCS 340 Fibre	CL2.5 E 2.5 EC 2.5 EC I Storg e Chan	C DDR-SDI C DDR-SDI e Expansionel Expansionel	DRAM DIMM RAM RDIMM RAM RDIMM on Unit (blade sion Card (wit	h two
Security Software ship group	Power-on passwo unattended boot / Documentation C	selecta	ble boot / u	inattended s		e 3	36.4GB 36.4GB	15K Ült 15K Ültr	ra160 S a320 S	SCSI Hot-S CSI Hot-Sw	Switch Module wap SL HDD* ap SL HDD* wap SL HDD*	06P576 06P5776
Coolingfans	Uses cooling from	BladeC	enter (type	8677) / ther	nal sens	ors 1	46.8G	B 10K U	ltra320	SCSI Hot-S	Swap SL HDD ansion Unit	
Power supply Prerequisites	on each processo Uses power mod Monitor, keyboard disk, BladeCente	ule(s) in d, mouse	BladeCent for setup	ter (type 86) ; ethernet sv	77) vitch mo		2.0			lorage _/p		
Server bl (side vie opt CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU	w)	 H 9.7" H 24.5 12 lbs; Config Diagno. System Netwoo PXE B Blade media and inco activity Predic and op Maximun 	5.4kg (max uration/Setu ostics (PC-D n Partition B rk Boot: oot Agent U control pan select butto dicators for h r, and powel tive Failure tional disk(s n internal di	D 17.6"; cm x D 44.6c configuratio µD Utility: F1 boctor™): F2 boot: AL F12 tility: Ctr el on each n, keyboard/ blade error, in	n) at startup at startup (F+F1 at s 2 at startu +S at startu HS40 bla mouse/vi informatio erts on me irector for each	tartup p rtup de serv deo sel n, locat emory, <i>HS40</i>	lect but tion, dis proces	ton, sk ssor(s),	 Intianal Arrows Intianal Arrows Or coordinate Or c	year parts ternational a site, 8 am verage exc gible locati 3 year IOR 2 ServicePac 3 year IOR 2 ServicePac 5 year 1 ServicePac 5	Warranty Serv - 5 pm, Mon - luding holiday s day response ce upgrade opf ons): ⁷ 24x7, 2 hr avg [®] part num 69P9 24x7, 4 hr avg r part num 69P9 24x7, 4 hr avg r part num 69P9 24x7, 2 hr avg r part num 69P9 24x7, 2 hr avg part num 69P9 cePac options	ice ³ Fri s, e time ⁷ tions (in response 518) esponse 517) esponse 525) response 527) at

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8839-61X 1 x Xeon	Decessor ¹ Cache Memory Bus Mhz Disk controller bays option M 2.2GHz MP 2MB 1GB 400Mhz None None 2 ho M 2.7GHz MP 2MB 2GB 400Mhz None None 2 ho	Sl support with nal expansion unitSlots x baysMech- anicalRequired chassisAvailable dateot-swapUltra3200x27U4 bladeBladeCenterMar 2004ot-swapUltra3200x27U4 bladeBladeCenterMar 2004ot-swapUltra3200x27U4 bladeBladeCenterMar 2004ot-swapUltra3200x27U4 bladeBladeCenterMar 2004ot-swapUltra3200x27U4 bladeBladeCenterMar 2004										
Positioning Processor(s) L2/L3 cache SMP support Implementation	Ultra-dense, highly manageable modular computing platform 1 x Intel® Xeon MP up to 3.0GHz with 400MHz frontside bus / Hy 512KB L2 Cache / Up to 4MB L3 Cache / on die of processo 4-way SMP / up to four Xeon MP Processors (same speed/ca Server blade contains four Intel 604-pin micro-PGA ZIF sockets connector, two I/O expansion option connectors, integrated gravity	/per-Threading technology / NetBurst™ microarchitecture or / at processor speed ache size) s, eight memory DIMM slots, one SCSI expansion unit										
Memory	Up to 2GB std / 16GB max ¹³ / 51X: two slots used 61X/71X: fo PC2100 266MHz registered 184-pin ECC DDR-SDRAM DIMM: DIMMs must be installed in matched pairs [a bank] / 2-way men 100MHz / Error Checking and Correcting (ECC) via 16-bit C same chip and detects 2- through 8-bit errors contained in two	Is / eight DIMM gold-connector slots on systemboard / mory interleave / dual channel / memory bus runs at 2 x Checksum Chipkill™ (corrects 1, 2, 3, or 4-bit errors on										
SCSI disk controller SCSI disk bays	via one connector / LSI Logic [®] 53C1020 Ultra320 SCSI contro CIOB-ES I/O Bridge (IMB2 bus to Host Bridge) / supports R/ 3.5" one-inch high SL SCSI disks in front bays / one 16-bit int Supports max of two hot-swap 3.5" SL Ultra320 SCSI disks in or	ne / supports optional SCSI Storage Expansion Unit (a blade occupying adjacent blade slot / connects to HS40 one connector / LSI Logic® 53C1020 Ultra320 SCSI controller [LVD 320MB/sec] / 64-bit 133MHz PCI-X Bus B from DB-ES I/O Bridge (IMB2 bus to Host Bridge) / supports RAID-1 mirroring [Embedded Mirroring] with two hot-swap " one-inch high SL SCSI disks in front bays / one 16-bit internal channel / no cables or external connector) pports max of two hot-swap 3.5" SL Ultra320 SCSI disks in optional SCSI Storage Expansion Unit / -pin SCA-2 connectors / all SCSI bays Ultra320-enabled										
External storage Mechanical	in SCA-2 connectors / all SCSI bays Ultra320-enabled port for IBM TotalStorage [™] solutions (including FAStT and NAS family of products) ported in IBM BladeCenter (type 8677) / BladeCenter supported in 28" deep racks such as the IBM NetBAY [™] Rack products verWorks[®] Grand Champion[™] 4.0 LE / CMIC-LE5 Host Bridge (memory controller and I/O Bridge) / double slot											
Architecture / chipsets Bus slots	ServerWorks [®] Grand Champion [™] 4.0 LE / CMIC-LE5 Host sone CIOB-X2 I/O Bridge (IMB2 bus to Host Bridge) for two PC ethernet and the I/O expansion option connector / CSB6 Souldr / bus to Super I/O, and PCI 2.2 Bus C with graphics controller / No PCI or PCI-X slots (expansion via modules or network-int	CI-X Buses with Bus A for ethernet and Bus B for h Bridge (Thin IMB to Host Bridge) for EIDE, USB, LPC / National Semiconductor® PC87417 Super I/O chip										
Ethernet controllers	Four gigabit 10/100/1000 ethernet controllers / Intel 82545GM/82546 Wake on LAN [®] / Alert Standard Format 1.0 / teaming and failover su 4-port GB Ethernet Switch Module (the second controller require	EB / on blade / two PCI-X 64-bit 100MHz buses / full duplex / upport / one of the controllers connects to an optional										
Network-interface CD / diskette / USB	One connector for I/O expansion option / requires same inter- blades in a single BladeCenter must contain the same expansi- None / requests for CD-ROM, diskette drive, and USB port in B	erface modules in bays 3 and 4 of BladeCenter / all ion card (or no expansion card)										
Kybd / video / mouse Graphics	panel None / requests for keyboard, mouse, and video in BladeCenter b SVGA / ATI® Radeon 7000 / on blade / 8MB SDRAM std/max /											
Systems mgmt Diagnostics	Intel integrated Baseboard Management Controller (BMC) / on blade / provides system and environmental monitoring, event recording, alert capability / RS-485 interface for communication with BladeCenter management module Light Path Diagnostics™ (LED lights indicate failing component) and on-board diagnostics (via PC-Doctor in BIOS)	Xeon 2.2Ghz/2MB L3 Cache Proc Upg 13N0656 Xeon 2.7Ghz/2MB L3 Cache Proc Upg 13N0655 Xeon 3.0Ghz/4MB L3 Cache Proc Upg 13N0654										
Security Software ship group	Power-on password / administrator password / unattended boot / selectable boot / unattended start mode Documentation CD, IBM Director 4.1 CD, Device Driver CD	512MB PC2100 CL2.5 ECC DDR-SDRAM DIMM 33L5038 1GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM 33L5039 2GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM 33L5040 IBM HS40 SCSI Storge Expansion Unit (blade) 26K4847										
Cooling fans Power supply Prerequisites	Uses cooling from BladeCenter (type 8677) / thermal sensors on each processor and BladeCenter modules and front panel Uses power module(s) in BladeCenter (type 8677) Monitor, keyboard, mouse for setup; ethernet switch module, disk, BladeCenter (type 8677), operating system	IBM HS40 Fibre Channel Expansion Card (with two ports; each port requires a FC Switch Module) 48P7061 36.4GB 15K Ultra160 SCSI Hot-Swap SL HDD* 06P5768 36.4GB 15K Ultra20 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										
Server bl (side vice) opt CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU	BW) 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 Configuration/Setup Utility: F1 at startup Diagnostics (PC-Doctor™): F2 at startup System Partition Boot: Network Boot: F12 at startup Network Boot: F12 at startup PXE Boot Agent Utility: Chrl y 2 At startup Blade control panel on each HS40 blade se media select button, keyboard/mouse/video s and indicators for blade error, information, loc activity, and power	 (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 										
 Blade location Over temperature Information General fault 		0 blade server ¹³ :										
		(HS40B) © IBM Corp. March 2004										

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ocessor ¹ Cache Memory Bus Mhz Disk controller bays optic	CSI support with Slots Mech- Bandexpansion unit x bays anical chassis date not-swap Ultra320 0x2 7U ⁴ blade BladeCenter Apr 2004
Ultra-dense, highly manageable modular computing platform 1 x Intel [®] Xeon 2.0GHz MP with 400MHz frontside bus / Hype 512KB L2 Cache / 1MB L3 Cache / on die of processor / at 4-way SMP / up to four Xeon Processors (same speed/cache Server blade contains four Intel 604-pin micro-PGA ZIF socke one SCSI expansion connector, one I/O expansion option connect	er-Threading technology / NetBurst™ microarchitecture processor speed e size) ets, eight memory DIMM slots,
1GB std / 16GB max ¹³ / two slots used / six slots available / ei PC2100 266MHz registered 184-pin ECC DDR-SDRAM DIMM DIMMs must be installed in matched pairs [a bank] / 2-way me 100MHz / Error Checking and Correcting (ECC) via 16-bit same chip and detects 2- through 8-bit errors contained in two	As / eight DIMM gold-connector slots on systemboard / emory interleave / dual channel / memory bus runs at 2 x Checksum Chipkill ™ (corrects 1, 2, 3, or 4-bit errors on
None / supports optional SCSI Storage Expansion Unit (a via one connector / LSI Logic® 53C1020 Ultra320 SCSI contr CIOB-ES I/O Bridge (IMB2 bus to Host Bridge) / supports R 3.5" one-inch high SL SCSI disks in front bays / one 16-bit in Supports max of two hot-swap 3.5" SL Ultra320 SCSI disks in o 80-pin SCA-2 connectors / all SCSI bays Ultra320-enabled	roller [LVD 320MB/sec] / 64-bit 133MHz PCI-X Bus B from AID-1 mirroring [Embedded Mirroring] with two hot-swap hternal channel / no cables or external connector) optional SCSI Storage Expansion Unit /
Support for IBM TotalStorage ^{IM} solutions (including FASt Land	NAS family of products)
Supported in IBM BladeCenter (type 8677) / BladeCenter supported ServerWorks [®] Grand Champion [™] 4.0 LE / CMIC-LE5 Host ts one CIOB-X2 I/O Bridge (IMB2 bus to Host Bridge) for two P ethernet and the I/O expansion option connector / CSB6 Sour bus to Super I/O, and PCI 2.2 Bus C with graphics controller	t Bridge (memory controller and I/O Bridge) / double slot CI-X Buses with Bus A for ethernet and Bus B for th Bridge (Thin IMB to Host Bridge) for EIDE, USB, LPC / National Semiconductor® PC87417 Super I/O chip
NO PCI or PCI-X slots (expansion via modules or network-in	iterace option connector)
Four gigabit 10/100/1000 ethernet controllers / Intel 82545GM/82540 Wake on LAN® / Alert Standard Format 1.0 / teaming and failover si 4-port GB Ethernet Switch Module (the second controller requ	upport / one of the controllers connects to an optional irres a second optional Ethernet Switch Module)
blades in a single BladeCenter must contain the same expans None / requests for CD-ROM, diskette drive, and USB port in panel	sion card (or no expansion card)
e None / requests for keyboard, mouse, and video in BladeCenter I SVGA / ATI® Radeon 7000 / on blade / 8MB SDRAM std/max /	
Intel integrated Baseboard Management Controller (BMC) / on blade / provides system and environmental monitoring, event recording, alert capability / RS-485 interface for communication with BladeCenter management module Light Path Diagnostics™ (LED lights indicate failing component) and on-board diagnostics (via PC-Doctor in BIOS)	Xeon 2.0Ghz/1MB L3 Cache Proc Upg 13N0651 512MB PC2100 CL2.5 ECC DDR-SDRAM DIMM 33L5038
Power-on password / administrator password / unattended boot / selectable boot / unattended start mode Documentation CD, IBM Director 4.1 CD, Device Driver CD	2GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM 33L5040 IBM HS40 SCSI Storge Expansion Unit (blade) 26K4847 IBM HS40 Fibre Channel Expansion Card (with two ports; each port requires a FC Switch Module) 48P7061
Uses cooling from BladeCenter (type 8677) / thermal sensors on each processor and BladeCenter modules and front panel Uses power module(s) in BladeCenter (type 8677) Monitor, keyboard, mouse for setup; ethernet switch module, disk, BladeCenter (type 8677), operating system	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
ew)	LIMITED WARRANTY ³
 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 s media select button, keyboard/mouse/video s and indicators for blade error, information, loo activity, and power Predictive Failure Analysis® alerts on memor and optional disk(s) with IBM Director 	 coverage excluding holidays, next business day response time? 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 69P9525)
	Decessori Cache Memory Bus Mhz Disk controller bays optit **** 2.0GHz MP 11MB 1GB 400Mhz None None None 2.1 Ultra-dense, highly manageable modular computing platform 1 Intel® Xeon 2.0GHz MP Yeth Vapto 12KB L2 Cache / 1MB L3 Cache / on die of processor / at 4-way SMP / up to four Xeon Processors (same speed/cache Server blade contains four Intel 604-pin micro-PGA ZIF socke one SCSI expansion connector, one I/O expansion option conner 1GB std / 16GB max ¹³ / two slots used / six slots available / e PC2100 266MHz registered 184-pin ECC DDR-SDRAM DIMM DIMMs must be installed in matched pairs [a bank] / 2-way mi None / supports optional SCSI Storage Expansion Unit (Yeth Yapto Yeth Yapto Supports optional SCSI Storage Expansion Unit (Yeth Yapto Yeth Yapto None / supports optional SCSI Storage Expansion Unit (Yeth Yapto Yeth Yapto Supports max of two hot-swap 3.5° SL Ultra320 SCSI disks in C Yeth Yapto Yeth Yapto Supported in IBM BladeCenter (type 8677) / BladeCenter support Supported in IBM BladeCenter (type 8677) / BladeCenter support Supported in IBM DidEX to appain yeth Yapto Yeth Yapto Yeth Yapto Suported in IBM BladeCenter (type 8677) / BladeCente

See footnotes for important warranty information US models announced April 20, 2004

IBM @server[™] BladeCenter[™] T 8720 (DC power)

xREF by eServer Field Skills Enablement Team

	ported ades	Blade bays m std / max		Switch module bays (type)	Management module bays std / max	Power modulebays std / max	Power Module Wattage	Blower modulebays std / max	Mech- anical	Available date
8720-1RX 8832 HS2	0 / 8839 HS40	0/8	0/4 Et	nernet, Fibre Cha	annel 1/2	2/4	1300W	4/4	8U ⁴ rack	Jul 2004
Positioning Description	Flexible, innova Provides commexpansion, externation, ext	non resour ernal Fibre	n provides ir ces shared l Channel sto	vestment protection by blade servers s rage switching and	n and reduces of uch as power, sy d connectivity, an	<i>leployment co</i> /stem manag d I/O (combo	ement, ca CD/DVD	EBS environ bling, etherr drive, and p	<i>ments</i> net managorts for US	ement and SB,
Blade bays	Supports HS20 Blades / 8 hot-) (8832), Ĥ	S40 (8839) I server bays	plades with Low Pr / front access	ofile Handle, SC	SI Storage Ex	pansion L	Inits and PC	I I/O Expa	nsion
Switch modules Ethernet Switch Module Fibre Channel Switch Module	Std: none; mail Supports two 4 HS20 blade set the HS20 dual 3-4 with option Supports two 2	<i>4-port GB E</i> erver (two r integrated	Ethernet Swit	<i>ch Modules</i> in bays upport both etherne trollers / four extern	s 1 and 2 / one E et controllers on F nal ports / conne er ules in bays 3 an	thernet Switcl HS20 and for cts to std mgr d 4 / one Fibr	h Module failover re nt module e Channe	required for dundancy) / e / GB etherr	ethernet si bays 1 an net support dule requir	upport on d 2 wired to ted in bays ed for one
Management module	s Std: one; max: controller / con connectivity / c	two / hot- nmunicates	swap / rear a with integra ernal Telco a	n option connector access (I/O ports) / ted system manag larm panel / ports:	comprehensive jement processo DB-15 analog vi	system mana r on each ser deo port, PS/	rm factor igement fu ver blade 2 keyboa	pluggable po unctions / Po / multiplexor rd port, PS/	ons owerPC® 4 r for conso 2 mouse p	01 le ort, 10/100
Power modules	ethernet remot Std: two in bay 4-Lug Termina modules, blade	e manager /s 1 and 2 Il Block / 13 e bays 1 - 4	ment connec , <i>max:</i> four / 800 watts / T 4, and the me	tion port / all ports hot-swap / front ac wo standard modu edia tray; two addit 8 <i>All</i> : load balancir	shared by up to cess / input volta les (in slots 1 & 2 ional power mod	8 blade serve ges between 2) supply pow ules provide fi	ers / ports -38/-75 VI er to switc ull system	all located c DC Min/Max h bays 1 & t redundent p	on rear of c (-48 VDC 2, both ma power and	nominal) / nagement
Blower modules			,	dant / variable spe	<u> </u>	0			()	flow; filtered
Mechanical Optical / USB	EIA 19" rack I 24X-10X-24X-8	models (8 8X ⁶ Combo	J⁴) x 20" dee → / Two USB or optical cd	ep / designed for E port (Version 1.1) / and USB port(s) k	IA-310D and UT / all USB interfac by pressing CD s	F Four Post F e (types A & (elect button o	Racks C) / front a n server b	access / sha blade front p	red by up tanel	to eight
Keyboard / mouse Ports	server blade fr	ont panel rd (PS/2), r	nouse (PS/2	le support / reques), analog DB-15 gra ersion 1.1) /						
Security	Login passwor recommended	d for remo in rack en	te connection vironment pr	n / secure socket l oviding security th	ayer (SSL) secu rough lockable d	rity for remote oors or other	manager security r	nent access neasures	; /	
Ethernet Systems mgmt	Module (the se Provides remo	econd ⁻ HS2 te console	0/HS40 ethe and mgmt /	ernet controllers on rnet controller requ power on/off blade gnostic programs p	ires a second op es/modules / mor	ntional <i>4-port (</i> nitors power s	<i>GB Etherr</i> tatus, ope	iet Switch M	lodule)	
System LED panel IBM BladeCenter T IBM BladeCenter HS IBM BladeCenter HS IBM Sleek 2-Button NetBAY42 Enterpris Four Post Rack Mou Two Post Rack Mou	Redundent Man 20 Low Profile 340 Low Profile Stealth Black M e Rack Cabine int Kit	nagement I Handle Handle Iouse		25K8358 25K8359 28L3673 930842S 90P3775 90P3774	IBM 1300W DC IBM BladeCente IBM BladeCente IBM BladeCente IBM FAStT700 IBM FAStT700 IBM FAStT200 IBM T541 15" F Other options Solutions avail	Power Supp er PCI I/O Ex er 1GB Flash er 2GB Flash Fibre Channe Storage Serv 5B Floppy D BB Floppy D lat Panel Col at ibm.com	ly Module pansion L Disk Driv Disk Driv Disk Driv el Storage er ive or Monito v/pc/us/ac	Jnit ve ve e Server r (black) cessories	ce progra	90P3742 90P3721 90P3771 90P3772 90P3773 17421RU 35421RU 05K9276 9512AB1 m partners
	itch Plenum	¢		ns: H13.76"(8U) x ar I/O); H349.5m	W17.4" x D20	"(front				· ·
PM 1 • PM 3 • Combo Sv	CMM-2 PB-1 PB-2 PB-3 PB-4 PB-5 PB-6 PB-7 PB-8 00000 tch/Plenum Rear switch-module 1 •	• PM 4 • ·	D508mm Weight: 98 Stealth bla Tool-free Access se media tray Access sw Fits into S Air Intake Predictive server me	a to 192 lb; 44.5 tr ack color bezel customer service rver blades, pow r and expansion tr itch modules and tandard Central (Filtering Failure Analysis [®] mory, processor(h IBM Director	b 87.38kg ability er supplies, mg units from front d blowers from Office enviromen alerts on blow s), and optiona Function for all blade ser for all blade ser ton 1 for all bl options (Gb Eth ction 2 for all bl	Imt modules, rear nts ers, blade Il vers vers ade server ernet/Fibre ade server	 Intern On si cov next l On si elig 3 yy (Se 3 yy (Se 5 yy (Se 5 yy (Se 0 th http://its/ 	rr parts and hational Wa te, 8 am - 5 verage exclu- business da te service u gible locatio ear IOR 24x rvicePac ⁹ p. ear IOR 24x rvicePac pa ear IOR 9x5 rvicePac pa ear IOR 24x rvicePac pa	rranty Ser pm, Mon uding holin ay respons pgrade op ns): ⁷ 7, 2 hr avg art num 20 7, 4 hr avg rt num 411 , 4 hr avg rt num 691 7, 2 hr avg rt num 691	- Fri days, se time ⁷ otions (in g response l1P2065) g response L2736) response P9207) g response P9205) s at rvices/us/

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

= Hot-swap

(BC1TA) © IBM Corp. March 2004

IBM @server[™] BladeCenter[™] T 8730 (AC power)

xREF by eServer Field Skills and Education Team

B730-TRX B832 HS20 / 8839 HS40 0 / 8 0 / 8 D / 4 Ethernel. Thise Channel 1 / 2 2 / 4 1300W 4 / 4 BU + rack. Jul 2004 Deallioung Description Deal			Switch nodule bays Switch module bay std / max (type)	Management ys modulebays r std / max		Power Module Wattage	Blower modulebays std / max	Mech- anical	Available date
Descriptifin Provides common regularies shared by blade servers such as power, system management, adding, etc., et				nannel 1/2		-			Jul 2004
Expansion Blades /8 hotpluggable server tays / front access Strict model Strict model regression Fibre Channel Switch Strict model regression Module Strict model regression And and a strict model regression Strict model regression Module Strict model regression Bibbe Commel Spatial Capable optimics Management modules Strict model regression Strict model regression Strict model regression Prover modules Strict model regression Strict model regression Strict model regression Strict model regression Strict model regression Bibwer modules Strict model regression Strict model regression Strict model regression Strict model regression Bibwer modules Strict model regression Strict model regression Strict model regression Strict model regression Bibwer modules Strict model regression Strict model regression Strict model regresin strict model regression S	Description	Provides common resou expansion, external Fibre video, mouse)	rcés shared by blade servers channel storage switching ar	such as power, sys nd connectivity, and	stem manager I I/O (combo (nent, ca CD/DVD	abling, etherr and ports fo	et manag or USB, ke	
Ethernel Switch Supports two 4-port G2 Ethernel Switch Modules in bays 1 and 2 / one Ethernel Switch Module support on the HSG Supports two 4-port G2 Ethernel Controls to and program on Lies Supports to Septon 14 Supports to severe Bide Supports two 4-port G2 Ethernel Switch Modules in bays 3 and 4 / one Ethernel Switch Modules Supports to Severe Bide Supports two 4-port G2 Ethernel Switch Modules in bays 3 and 4 / one Ethernel Switch Modules Supports to Severe Bide Supports two 4-port G2 Ethernel Switch Modules in bays 3 and 4 / one Ethernel Switch Modules Supports two 4-port G2 Ethernel Switch Modules in bays 3 and 4 / one Ethernel Switch Modules in bays 3		Expansion Blades / 8 ho	t-pluggable server bays / front	access		g-			
and 4 wired to the HS20 UD expansion option connector? I wire advised symal tom tactors puggebe points Management modules Stit one; max two / hot-swap / rear access / to each same backer backer management functions / Power C* 401 optimized termate management connector (10) values / towards / towa	Ethernet Switch Module	Supports two 4-port GB HS20 blade server (two the HS20 dual integrated optional Gigabit expansion	Ethernet Switch Modules in bay modules to support both etherri ethernet controllers / four exte on card on Server Blade	net controllers on H ernal ports / connect	S20 and for fa s to std mgmt	ilover re module	dundancy) / / supported	bays 1 an in bays 3	id 2 wired to and 4 with
Power modules Sid: two in bays 1 and 2, max four / hot-swap / Front access / input voltage range 18004 - 264VAC - MinNax at 50(60Hz / two EG300 wats / two additional power notules, blade bays 1 - 4 and media tays. Two additional power notules, blade bays 1 - 4 and media tays. Two additional power notules, blade bays 1 - 4 and media tays. Two additional power notules, blade bays 1 - 4 and media tays. Two additional power notules, blade bays 1 - 4 and media tays. Two additional power modules, blade bays 1 - 4 and media tays. Two additional power modules, blade bays 1 - 4 and media tays. Two additional power modules, blade bays 1 - 4 and media tays. Two additional power modules, blade bays 1 - 4 and media tays. Two additional power modules, blade bays 1 - 4 and media tays. Two additional power modules, blade bays 1 - 4 and media tays. Two additional power modules, blade bays 1 - 4 and media tays. Two additional power modules, blade bays 1 - 4 and media tays. Two additional power modules, blade bays 1 - 4 and media tays. Two additional power modules, blade bays were / requests for optical / power modules, blade bays were / requests for optical / power modules, blade bays were / requests for optical / power modules, blade bays were / requests for optical / power modules, blade bays were / requests for optical / power modules, blade bays were / requests for optical / power modules, blade bays were / requests for optical / power modules, blade bays were / requests for optical power modules, blade bays were / requests for optical / power modules, blade bays were / requests for optical / power modules /		s Std: one: max: two / hot-	I/O expansion option connectors	or / two external 2G	Bps small forn vstem manag	n factor ement fi	pluggable po unctions / Po	orts owerPC® 4	.01
CPEN/1 front to back airflow, filtered air intake Optical / USB ELA 1971 rack models (BUT) & 201 deep / designed for EIA-310D and UTF Four Post Racks Keyboard / mouse None standard / provides KVM console support / requests for keyboard, mouse, and video by pressing the display button on server blade front panel Ports Fear: Keyboard (PS2), mouse (PS2), analog DB-15 graphics (on standard mgmt module) / no serial or parallel ports / DB15 Security Login password for remote connection / secure socket layer (SSL) security for remote management access / recommended in rack wincomnet providing security through lockable doors or other security measures Ethernet One of the dual integrated glabit ethernet controller requires a second optional 4-port dB Ethernet Switch Module (the second HS20HS40 ethernet controller requires a second optional 4-port dB Ethernet Switch Module (the second HS20HS40 ethernet controller requires a second optional 4-port dB Ethernet Switch Module (the second HS20HS40 ethernet controller requires a second optional 4-port dB Ethernet Switch Module (the second HS20HS40 ethernet controller requires a second optional 4-port dB Ethernet Switch Module (the second HS20HS40 ethernet controller requires a second optional 4-port dB Ethernet Switch Module (the second HS20HS40 ethernet controller requires a second optional 4-port dB Ethernet Switch Module (the second HS20HS40 ethernet controller requires a second optional 4-port dB Ethernet Switch Module (the second HS20HS40 ethernet controller requires a second optional 4-port dB Ethernet Switch Module (the second HS20HS40 ethernet controller requires a second optional 4-port dB Ethernet Switch Module (the second HS20HS40 ethernet controller requires a second optional 4-port dB Ethernet	Power modules	Std: two in bays 1 and 2 IEC320 C14 male applia management modules, b	, <i>max:</i> four / hot-swap / Front a nce connector / 1300 watts / tw lade bays 1 - 4 and media tray	access / input voltac vo std modules (in s /; Two addititional p	ge range 180V slots 1 & 2) su ower modules	AC - 26 oply pov provide	4VAC Min/N ver to switch full system	lax at 50/6 bays 1 & redundent	0Hz / two 2, both power and
Mechanical Optical / USB EA 19" rack models (8U*) x 20" deep / designed for EIA-3100 and UTF Four Post Backs Optical / USB EXA: 10X-24X-SXC composition on sever blade front panel Keyboard / mouse None attandar / provides KVM console support / requests for keyboard, mouse, and video by pressing the display button on server blade front panel Ports Provides EXVM console support / requests for keyboard, mouse, and video by pressing the display button on server blade front panel Ports Provides EXVM console support / requests for keyboard, mouse, and video by pressing the display button on server blade front panel Security Login password for remote connection / secure socket layer (SSL) security for remote management access / recommended in rack environment providing security through lockable doors or other security measures Ethernet One of the dual integrated igdabil tehrenet controller requires a second optional 4-port GB Ethernet Switch Module (the second HS20HS40 ethernet controller requires a second optional 4-port GB Ethernet Switch Module (the second HS20HS40 ethernet controllers moved through IBM Director software System LED panel System LED panel provides power-on, location, critical, major and minor alarm conditions IBM BladeCenter H S40 Low Profile Handle EBM BladeCenter H S40 Low Profile Handle ESM S330 IBM BladeCenter 4GB Flash Disk Drive 9093771 IBM BladeCenter H S40 Low Profile Handle EBM BladeCenter H S40 Low Profile Handle ESM S330 IBM BladeCenter 4GB Flash Disk Drive 9093771	Blower modules			swap / redundant /	variable speed	l / rear a	access / 330	cubic ft pe	er min
Ports Server blade front panel Provide front pastword for remote connection / secure socket layer (SEL) security for remote management access / recommended in rack environment providing security through lockable doors or other security measures Ethernet One of the dual integrated gigabit themet controllers requires a second optional 4-port GB Ethernet Switch Module (the second HS20HS40 ethernet controller requires a second optional 4-port GB Ethernet Switch Module (the second HS20HS40 ethernet controller requires a second optional 4-port GB Ethernet Switch Module (front badgerscie programs provided through IBM Diactor software System LED panel System LED panel provides power-on, location, critical, major and minor alarm conditions IBM BladeCenter T Redundent Management Module 90P3771 IBM BladeCenter HS40 Low Profile Handle 25K8351 IBM BladeCenter HS40 Low Profile Handle 25K8351 IBM BladeCenter HS40 Low Profile Handle 25K8351 IBM BladeCenter HS40 Low Profile Handle 25K8351 IBM BladeCenter HS40 Low Profile Handle 25K8351 IBM BladeCenter HS40 Low Profile Handle 25K8351 IBM BladeCenter HS40 Loo Profile		EIA 19" rack models (8 24X-10X-24X-8X ⁶ Comb blade servers / requests	U ⁴) x 20" deep / designed for o / Two USB port (Version 1.1) for optical cd, and USB port(s)	EIA-310D and UTF) / all USB interface) by pressing CD se	Four Post Ra / front access elect button or	cks (types / server	A & C) / sha blade front p	red by up	to eight
Leto Alarm Panel Front: Two USB (Version 1.1) Security Login password for remote connection / secure socket layer (SSL) security for remote management access / recommended in rack environment providing security through lockable docrs or other security measures Ethemet One of the dual integrated gigabit ethemet controller requires a second optional 4-port GB Ethemet Switch Module (the Second HS20H540 ethemet controller requires a second optional 4-port GB Ethemet Switch Module (the Second HS20H540 ethemet controller requires a second optional 4-port GB Ethemet Switch Module (the Second HS20H540 ethemet controller requires a second optional 4-port GB Ethemet Switch Module (the Second HS20H540 ethemet controller requires a second optional 4-port GB Ethemet Switch Module (the Second HS20H540 ethemet controller requires a second optional 4-port GB Ethemet Switch Module (the Second HS20H540 ethemet controller requires a second optional 4-port GB Ethemet Switch Module) System LED panel System LED panel provides power-on, location, critical, major and minor alarm conditions IBM BladeCenter T Redundent Management Module 90P3774 11BM BladeCenter HS4 Disk Drive 90P3774 11BM BladeCenter 4GB Flash Disk Drive 90P3775 11BM FlastCent Flash Losk Mourk Kit 90P3775 11BM FlastCent Allance Prior 2GB Flash Disk Drive 90P3772 11BM FlastCent Allance Prior 2GB Flash Disk Drive 90P3772 11BM FlastCent Allance Prior 2GB Flash Disk Drive 90P3772 11BM FlastCent Allance Allance Allance Allance Allance Prior 2GB Flash Disk Dr	_	server blade front panel		,	,	, ,	0		
Ethernet One of the dual integrated gigabit ethernet controllers on each blade servers connects to an optional 4-port GB Module) System regret Provides remote console and mgmt / power on/of blades/modules / monitors power status, operating system, temperature, disks, blowers, power modules / system diagnostic programs provided through IBM Director software System LED panel System LED panel provides power-on, location, critical, major and minor alarm conditions IBM BladeCenter T Redundent Management Module 90P3741 IBM BladeCenter T Redundent Management Module 90P3741 IBM BladeCenter HS40 Low Profile Handle 25K8358 IBM BladeCenter HS40 Low Profile Handle 25K8358 IBM BladeCenter HS40 Low Profile Handle 25K8358 System LED panel 29093771 IBM BladeCenter HS40 Low Profile Handle 25K8358 System LED panel 29093771 IBM BladeCenter HS40 Low Profile Handle 25K8358 IBM BladeCenter HS40 Low Profile Handle 25K8359 IBM BladeCenter HS40 Low Profile Handle 25K8359 IBM BladeCenter 4GB Flash Disk Drive 90P3772 IBM BladeCenter HS40 25K8358 IBM BladeCenter 4GB Flash Disk Drive 90F3721 IBM FASTIT200 Fibre Disk		Telco Alarm Panel Front	Two USB (Version 1.1)						
Ethemet Switch Module (this second HS20/HS40 ethemet controller requires a second optional 4-port GB Ethemet Switch blowers, power modules / system diagnostic programs provided through IBM Director software System LED panel System LED panel provides power-on, location, critical, major and minor alarm conditions IBM BladeCenter T Redundent Management Module 90P3741 IBM BladeCenter SGB Flash Disk Drive 90P3774 IBM BladeCenter CGB Flash Disk Drive 90P3773 IBM BladeCenter 4GB Flash Disk Drive 90P3774 IBM FASIT200 Storage Server 17421RU Yuo Post Rack Mount Kit 90P3774 APC Smart-UPS 5000RMB 37L6861 IPM IPM IPM <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>									
IBM BladeCenter HS20 Low Profile Handle 25K8358 IBM BladeCenter PCI I/O Expansion Unit ' 90P3721 IBM BladeCenter HS40 Low Profile Handle 25K8358 IBM BladeCenter PCI I/O Expansion Unit ' 90P3772 IBM BladeCenter PCI I/O Expansion Unit ' 90P3772 IBM BladeCenter PCI I/O Expansion Unit ' 90P3772 IBM BladeCenter PCI I/O Expansion Unit ' 90P3772 IBM BladeCenter PCI I/O Expansion Unit ' 90P3772 IBM BladeCenter PCI I/O Expansion Unit ' 90P3772 IBM BladeCenter PCI I/O Expansion Unit ' 90P3772 IBM BladeCenter PCI I/O Expansion Unit ' 90P3772 IBM BladeCenter PCI I/O Expansion Unit ' 90P3773 IBM BladeCenter PCI I/O Expansion Unit ' 90P3774 IBM FASIT200 Storage Server 17421RU Yor Post Rack Mount Kit 90P3774 APC Smart-UPS 5000RMB 37L6861 IBM East Inst Panel Color Monitor (black) 9512AB1 • Other options at ibm.com/pc/us/accessories • Solutions available from IBM BladeCenter Allance program partners • Dimensions: H13.76'(8U) x W17.4" x D20'(front bezel • On site service and labor • Mergin Pas PM • On site service upgrade options (in other services) • Access switch modules and blowers fro	, ,	Ethernet Switch Module Module) Provides remote console blowers, power modules	(the second HS20/HS40 ether and mgmt / power on/off blac / system diagnostic programs	net controller requir des/modules / monit provided through I	es a second c tors power sta BM Director s	ptional tus, ope oftware	4-port GB Ei	thernet Sw	
Blower Swetch-Pierum PM PM Point PM Point Point PM Point Point PM Point	IBM BladeCenter HS IBM BladeCenter HS IBM Sleek 2-Button 3 NetBAY42 Enterprise Four Post Rack Mou Two Post Rack Mou	20 Low Profile Handle 40 Low Profile Handle Stealth Black Mouse e Rack Cabinet nt Kit nt Kit	25K8358 25K8359 28L3673 930842S 90P3775 90P3774	IBM BladeCenter IBM BladeCenter IBM BladeCenter IBM FAStT700 F IBM FAStT200 S IBM External USI IBM T541 15" Fla • Other options a	PCI I/O Expansion 1GB Flash I 2GB Flash I 4GB Flash I torage Serve B Floppy Driv at Panel Color at ibm.com /p	ansion l Disk Driv Disk Driv Disk Driv Storage r Storage r Monitcoc/us/ac	Jnit ve ve e Server or (black) ccessories	ce progra	90P3721 90P3771 90P3772 90P3773 17421RU 35421RU 05K9276 9512AB1
PM CMMA1 CMMA2 PM PH PH PH PH PH PH PH PH PH PH PH PH PH PH PH PH PH					front			WARRAN	ITY ³
	PM 3 • Blower 4 Blower 4	PB-1 PB-1 PB-2 PB-3 PB-3 PB-4 PB-5 PM PB-7 PB-8 00000 Image: Comparison of the second sec	 Weight: 98 to 192 lb; 44.5 f Stealth black color bezel Tool-free customer servic Access server blades, por modules, media tray and e front Access switch modules ar Fits into Standard Central Air Intake Filtering Predictive Failure Analysis processor(s), and optional di Bay Switc funct Ethernet link 1 for 2 Ethernet link 2 for Network connection Vetwork connection 	eability wer supplies, mgmt expansion units from nd blowers from rea Office enviroments s [®] alerts blade servers sk(s) with IBM Dire ch ion r all blade servers on 1 for all blade servers tions (Gb Etherne on 2 for all blade	ar er memory, ctor server t/Fibre) server	 Intern On si On si eliq 3 y (Se 3 y (Se 5 y (Se 5 y (Se 5 y (Se 6 y (Se 7 y (Se 7 y (Se 9 y (Se 10 y 10 y<	national Wai ite, 8 am - 5 verage exclu- business da ite service u gible locatio ear IOR 24x ervicePac® pa ear IOR 24x ervicePac pa ear IOR 9x5 rrvicePac pa ear IOR 9x5 rrvicePac pa ear IOR 9x5 rrvicePac pa ear IOR 9x5 rrvicePac pa ear IOR 24x rrvicePac pa ear IOR 24x rrvicePac pa ear ServiceF	rranty Ser pm, Mon Iding holi by respons pgrade of ns): ⁷ 7, 2 hr avg art num 20 7, 4 hr avg rt num 41 9, 4 hr avg rt num 69 7, 2 hr avg rt num 69 7, 1 hr avg rt num 7, 1 hr avg rt num 7, 1 hr avg rt num 69 7, 1 hr avg rt num 7, 1 hr avg	- Fri days, se time ⁷ otions (in g response L92065) g response L2736) response P9207) g response P9205) is at rvices/us/

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

IBM @server BladeCenter[™] HS20 (Low Profile Handle)

xREF by eServer Field Skills Enablement Team

IBM [®] Type-model Qty x Pro		Frontside ory Bus Mhz	Cache Disk		-	optior	-	nit x bay		Required chassis	Available date	
8832-GTX 1 x Xeor 8832-9TX 1 x Xeor		B 533Mhz B 533Mhz	2MB None 2MB None					0x2 0x2		e BladeCenter 1 e BladeCenter 1		
Positioning Processor(s) L2/L3 Cache SMP support Implementation	Ultra-dense, hig 1 x Intel® Xeon 512KB L2 Cach 2-way SMP / up Server blade cor one SCSI expan	2.5 HGz or he / 0 - 2MB o to two Xeo htains two Inte	3.2GHz with L3 Cache / con Processor el 604-pin mic	533MHz on die of p s (same s cro-PGA Z	frontside processor speed/ca /IF socket	bus / r / at che s ts, fou	/ Hyper-Threa processor sp size) ur memory DI	ading te eed MM slo	echnology / ts, two IDE	connectors,	itecture	
Memory	1GB std / 8GB PC2100 266MH must be installed Error Checking detects 2- throug	z registered 1 d in matched and Correct	84-pin ECC [pairs [a bank] ing (ECC) via	DDR-SDR / 2-way m a 16-bit C	AM DIMM nemory in hecksun	Ms / fo nterlea	ave / dual cha	nnel/n	nemory bus	runs at 2 x 100M	/IHz /	
IDE controller/bays	IDE disk / no ca	hanced IDE ATA-100 controller in CSB6-U South Bridge / two connectors/buses on planar / each supports one 2.5" E disk / no cable as IDE disk attaches to riser card and tray (included with option kit) / Supports max of two IDE ks / space for only one IDE disk if an I/O expansion option installed [Fibre Channel] / RAID-1 mirroring standard										
SCSI disk controller	None / support via one connect CIOB-ES I/O B	ne / supports optional SCSI Storage Expansion Unit (a blade occupying adjacent blade slot / connects to HS20 one connector / LSI Logic® 53C1020 Ultra320 SCSI controller [LVD 320MB/sec] / 64-bit 133MHz PCI-X Bus B from DB-ES I/O Bridge (IMB2 bus to Host Bridge) / supports RAID-1 mirroring [Embedded Mirroring] with two hot-swap " one-inch high SL SCSI disks in front bays / one 16-bit internal channel / no cables or external connector)										
SCSI disk bays External storage	3.5" one-inch hi Supports max o 80-pin SCA-2 cc Support for IBM	f two hot-swa onnectors / al	p 3.5" SL Ulti I SCSI bays I	ra320 SC Ultra320-	SI disks i enabled	in opti	ional SCSI St	torage I	Expansion l	ernal connecto Jnit/	r)	
Mechanical	Supported in IBN											
Architecture / chipsets	ServerWorks® one CIOBE-S I/ ethernet and the LPC bus to Sup	O Bridge (IN e I/O expans per I/O, and I	IB2 bus to H ion option co PCI 2.2 Bus	ost Bridge onnector / C with gra	e) for two ' CSB6-U aphics co	o PCI J Sou ontrol	-X Buses with th Bridge (Th ler / Nationa	th Bus hin IMB I Semic	A for ether to Host Bi conductor®	net and Bus B i ridge) for EIDE,	or USB,	
Bus slots	No PCI or PCI-	X slots (expa	ansion via m	odules or	network	k-inte	rface option	connec	tor)			
Ethernet controllers	Two gigabit Ether / Alert Standard F switch or <i>Optica</i>	Format 1.0 / te	aming and fai	lover supp	ort / one o	of the	dual controlle	rs conn	ects to an o	otional, supporte		
Network-interface	One connector 3 and 4 of Blade card) / ethernet	for I/O exp	ansion optic blades in a s	on (Fibre ingle Blac	Channel leCenter	Expa must	nsion Card) contain the s	/ requi	res same ir	nterface module		
CD / diskette / USB Kybd / video / mouse Graphics	None / requests	for CD-ROM, for keyboard,	diskette drive mouse, and	e, and ÚS video in B	B port in I ladeCent	Blade ter by	Center by pre pressing the	display	CD select bu button on fr	utton on front con ont control pane	ntrol panel I	
Systems mgmt	IBM integrated H8S2148 / on bl monitoring, ever	ade / provide	s system and	lenvironn	nental		Xeon 3.2Ghz Proc Upg	/512KB	5 L2 / 1MB I	_3 Cache	13N0650	
Diagnostics	for communicati Light Path Diag component) and	on with Blade Jnostics ™ (L	Center mana ED lights indi	gement m cate failin	nodule g		512MB PC210 1GB PC2100 2GB PC2100	CL2.5 I CL2.5 I	ECC DDR-S ECC DDR-S	R-SDRAM DIMM DRAM RDIMM DRAM RDIMM sion Unit (blade	33L5038 33L5039 33L5040 48P7058	
Security Software ship group	Power-on passy unattended boo Documentation	t / selectable	boot/unatter	nded start			IBM HS20 Fit ports; each IBM HS20 40	ore Cha 1 port re 0GB ² 54	nnel Expar quires a FC 00 rpm AT	ision Card (with Switch Module A-100 HDD	two 48P7061 48P7063	
Cooling fans	Uses cooling fro sensors on eac front panel					d	36.4GB 15K L 73.4GB 10K	Jltra320 Ultra16	SCSI Hot-S	-Swap SL HDD* Swap SL HDD* -Swap SL HDD*	06P5776 06P5756	
Power supply Prerequisites	Uses power mo Monitor, keyboa	ard, móuse fo	or setup; eth	ernet swi		+			I Storage E	t-Swap SL HDD xpansion Unit		
Server b (side vi		Bay 1 3.5",	, 9.5mm, no fr	ont acces			nkPad®IDE di nkPad IDE di		3 year part	ED WARRANT s and labor al Warranty Serv		
Std DIMM CPU DIMM	L C L/C C C C C C C C C C C C C C C C C	 H 9.7" x H 24.5cn 12 lbs; 5. Configura Diagnost System F Network PXE Boco Blade coordination Blade coordination Article and indice activity, a Predictive and optice Maximum i 	ot Agent Utility ntrol panel or lect button, ke ators for blad and power e Failure Ana onal disk(s) wi	7.6"; < D 44.6cr ifiguration tility: F1 a por™): F2 a ALT F12 : Ctrl- n each HS3: e error, inf lysis® aleu th IBM Dir capacity fo) t startup +F1 at star at startup +F1 at star at startup +S at star 20 blade formation rector or each F	artup p tup serve deo se n, loca	lect button,	, r13 :	coverage e next busine On site serr eligible loc: • 3 year IO (ServiceP • 3 year IO (ServiceP • 5 year IO (ServiceP) • 0 ther Ser http://www services/	R 24x7, 2 hr avg ac [®] part num 69P R 24x7, 4 hr avg ac part num 69P9 R 9x5, 4 hr avg r ac part num 69P6 R 9x5, 4 hr avg ac part num 69P6 R 24x7, 2 hr avg ac part num 69P6 rvicePac options w.ibm.com/ /us/its/pdf/wam	ys, e time ⁷ tions (in response 9519) response 9518) response 9517) response 9525) response 9527) s at	
 Information General fault 			with two 146.8			S		4		free support for ing the warranty		

See footnotes for important warranty information US model announced February 17, 2004

IBM @server BladeCenter[™] HS20 Low Profile Handle (8843) January 2005

xREF by eServer Field Skills and Education Team

/ A

(8843) Ja	nuary 2005									Same Same	
IBM [®] Type-GAV Processor		he MHz		Disk Disk controller	-		exp unit		Mech- anical	Ethernet	Available date
8843-LTy 1 x Xeon⊺ 8843-4Ty 1 x Xeon	™ 2.8 LOW VOIT TM 3.6GHz 1M	B 800 B 800	1GB	None Ultra320 None Ultra320	2-fixed	2 Hot-swap 2 Hot-swap	Ultra320 Ultra320	0 x 2 0 x 2	70 ⁴ blade 7U ⁴ blade	2 x Gigabit 2 x Gigabit	Feb 200 Feb 200
Processor(s) SMP - L2 Cache Implementation	1 x Intel® Xeon 2.8 Threading technolo 2-way SMP / up to Systemboard conta expansion option c	ogy / Lov two Xe ains two	w Voltage on Proce Intel 604	e Proccessors ree essors (same spe -pin micro-PGA 2	duce heat ed/cache ZIF socke	output for incl size) / 1MB s ts. four DIMM	reased rac	ck densi	ty without in	creased coolir	ig capacit
Memory	512MB/1GB std / 8 PC2-3200 400MHz installed in matched	3GB ¹³ m 2 CL2.5 d pairs [a	ax / two ECC DD a bank] /	slots used / two s R2-SDRAM DIM 2-way memory ir	slots availa Ms / four terleave /	ble / 240 pin gold-c dual channel /	onnector s	slots on	systemboar	d / DIMMs mu	ist be
SCSI disk controller SCSI Disk bays External Storage	LSI Logic [®] 53C102 PCI-X / supports R <i>channel:</i> one 2-dro Two 2.5-inch Sma disks in optional SC Support for IBM To	AID-1 & p 16-bit I II Form CSI Stor	68-pin L\ Factor (age Expa	oring (supported /D SCSI cable (SFF) Ultra320 in ansion Unit (80-pi	in 32-bit I ternal fixe in SCA-2	egacy mode o d disk bays / S connectors; al l	nly) / One Supports n I SCSI ba y	e 16-bit nax of tr ys Ultra	channel (on wo hot-swap	e internal) / Ini 0 3.5" SL Ultra	100MHz <i>ternal</i> 320 SCSI
Mechanical Architecture/Chipset BUS slots	7U Blade / Support Intel E7520 chipse BUS / ICH5R supp interface No PCI or PCI-X s	et / E752 orts USI	25 MCH B (1.0) / l	(Memory Control SI 1020 / Dual B	ler Hub) fo roadcom	or PCI-Express 5704S / Low F		PXH, I	CH5R / PXH / NS PC87	HBUS suppor 366 Super I/O	ts PCI-X off LPC
Ethernet Network Interface CD / Diskette / USB Kybd / video / mouse Graphics controller	Dual gigabit 10/100 chip on blade / PCI adapter fault tolerar or Optical Passthro One connector fo 3 and 4 of BladeCe and serial I/O expa None / requests foi None / requests foi SVGA / ATI® Rade	0/1000 e -X 64-bi nce / Lo bugh Mc r I/O ex enter / al nsion ca r CD-RC r keyboa	thernet c t 100MH; ad baland dule (the pansion I blades i ards plan DM, diske ard, mous	ontroller / Broadc z / full duplex / W bing or teaming / second controlle option (Fibre Cl na single BladeC ned for future rele ted drive, and US e. and video in E	om 5704S ake on LA one of the r requires hannel Ex Center mu ease ²⁰ B port in 1 BladeCent	b) / two full giga N [®] / PXE 2.0 f dual controlle a second opti pansion Card) st contain the BladeCenter b er by pressing	bit etherne Boot agent rs connect onal switc / requires same expanse y pressing the displa	ts to an h or OF s same ansion c l CD sel v buttor	optional, sup PM) interface mc card (or no e	pported Etherr odules in bays xpansion card	net switch) / etherne
Systems Mgmt Diagnostics	IBM Baseboard M recording, alert cap intermanagement of Management modu Light Path Diagno component) and or BIOS)	lanagen ability / commun ule	nent Cor RS-485 i ication w	ntroller (BMC) / I nterface for ith BladeCenter	H8S2168	/ on blade / pr Xeon 2.8 GH Xeon 3.6 GH 512MB (2x2	ovides sys 1z/800/1M 1z/800/1M 56) PC2-3	stem an B Low ¹ B L2 C 3200 EC	Volt EM64T ache EM641 C DDR2	Proc Upg	g, event 13N0699 13N0659 73P3522 73P3522
Security Software ship group Cooling Fans Power supply(s) Prerequisites	No security intrusic administrator passy selectable boot / ur Documentation CD Uses cooling from sensors on each p front panel Uses power modul Monitor, keyboard, disk, BladeCenter	vord / un nattende 9, Broad BladeCe rocesso e(s) in E mouse	nattendeo d start m com CD enter T (t r and Bla BladeCen for setup	t boot / ode ype 8720/30) / th deCenter module ter T (type 8720/ ; ethernet switch	ermal es and 30)	1GB (2x512 2GB (2x1GE 4GB (2x2GE IBM 36.4GB IBM 73GB 1 BladeCenter BladeCenter BladeCenter BladeCenter BladeCenter BladeCenter T7-inch Flat Other optior	 PC2-32(3) PC3-32(3) PC2-32(3) PC2-32(3) PC2-32(3) PC2-32(3) PC2-32(3) PC3-32(3) PC3-32(3)	00 ECC 00 ECC 320 SCS 20 SCS orage Ex e Chani abit Ethe Pass-thru orage Ex nitor Co	DDR2 Chip DDR2 Chip SI 2.5"SFF I I 2.5" SFF N p Unit nel Exp Carc emet Exp Carc emet Exp Carc au Module pansion Unit nsole Kit w/	d ard It US Kybd	73P2866
Bay ① 3.5",9.5mm Bay ② 3.5",9.5mm Server b (side vi SCSI expansion opt CPU Std CPU DIMM DIMM DIMM DIMM DIMM DIMM DIMM DIM	, no front access, plade ew) SFF SFF disk disk U VO expansion option option option option connector slot 2 slot 4 top front of pLEDs: Ma Str	 Stealt H 9.7' H 24.3 12 lbs Config Diagn Syste Network PXE E Blade media and ir activiti Predic and o aximum 6GB wi 	I 2.5-incl h black f " x W 1." 5cm x W s; 5.4kg guration/ ostics (f m Partiti ork Boot: Boot Age control select I adicators y, and p ctive Fai ptional c <i>internal</i> th two 73	n SFF SCSI disk ront bezel (4" x D 17.6"; ' 2.9cm x D 44.0 (max configurati Setup Utility:F1 CC-Doctor™): F2 on Boot: ALT+F F12 at startup nt Utility: Ctrl+S panel on each H potton, keyboarr for blade error,	6cm ion) at startur 2 at start 1 at startur HS20 blac d/mouse/ informat at startur HS20 blac d/mouse/ informat ulerts on Director or each H (with Bla	up up de server pro <i>v</i> ideo select t on, location, memory, prod <i>IS20 blade se</i> deCenter SCS	outton, disk cessor(s), e <i>rver</i> ¹³ :	 ⇒ inter ⇒ On Mo nex ⇒ On opt • 4 (• 4<!--</td--><td>ear parts ar rmational M site, 8 am- n-Fri exclut t business site service ions (in elia year IOR 9 ServicePac year IOR 2 ServicePac year IOR 2 ServicePac year IOR 2 ServicePac ner ServicePac ner ServicePac tyear IOR 2 ServicePac servicePac</td><td>Varranty Serv 5 pm, ding holidays day respons e upgrade gible location 2x5, NBD resp part num 69P 24x7, 4 hr avg part num 69P 24x7, 2 hr avg part num 69P Pac options a</td><td>ice³ s, e time rs):⁷ ponse P9520) response 9521) respons 9522) respons 9522) at xeu.pdf</td>	ear parts ar rmational M site, 8 am- n-Fri exclut t business site service ions (in elia year IOR 9 ServicePac year IOR 2 ServicePac year IOR 2 ServicePac year IOR 2 ServicePac ner ServicePac ner ServicePac tyear IOR 2 ServicePac servicePac	Varranty Serv 5 pm, ding holidays day respons e upgrade gible location 2x5, NBD resp part num 69P 24x7, 4 hr avg part num 69P 24x7, 2 hr avg part num 69P Pac options a	ice ³ s, e time rs): ⁷ ponse P9520) response 9521) respons 9522) respons 9522) at xeu.pdf

IBM @server BladeCenter[™] HS40 (Low Profile Handle)

xREF by eServer Field Skills Enablement Team

IBM [®] Type-model Qty x Pro	L3 ocessor ¹ Cache Mer M 2.8GHz MP 2MB 20	-	Disk Disk controller None None	Disk r bays None	SCSI support with optional exp. unit 2 H-S Ultra320	Slots x bays	Mech- anical	Required chassis BladeCenter	Available date	
0000-017 1 X Xe017			None None	NONE	211-3 01118320	0,72 0	o biade	DiadeCenter	1 1112002	
Positioning Processor(s) L2/L3 cache SMP support Implementation	Ultra-dense, highly manageable modular computing platform with superior 4-way performance Up to 1 x Intel [®] Xeon 2.8GHz MP with 400MHz frontside bus / Hyper-Threading technology / NetBurst [™] microarchitecture 512KB L2 Cache / 2MB L3 Cache / on die of processor / at processor speed 4-way SMP / up to four Xeon MP Processors (same speed/cache size) Server blade contains four Intel 604-pin micro-PGA ZIF sockets, four memory DIMM slots, one SCSI expansion connector, two I/O expansion option connector, integrated graphics and four ethernet ports									
Memory	2GB std / 16GB max ¹³ / two slots used / six slots available / eight total slots PC2100 266MHz registered 184-pin ECC DDR-SDRAM DIMMs / four DIMM gold-connector slots on systemboard / DIMMs must be installed in matched pairs [a bank] / 2-way memory interleave / dual channel / memory bus runs at 2 x 100MHz / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkill [™] (corrects 1, 2, 3, or 4-bit errors on same chip and detects 2- through 8-bit errors contained in two chips) / memory can be mixed									
SCSI disk controller	None / supports optional SCSI Storage Expansion Unit (a blade occupying adjacent blade slot / connects to HS20 via one connector / LSI Logic® 53C1020 Ultra320 SCSI controller [LVD 320MB/sec] / 64-bit 133MHz PCI-X Bus B from CIOB-ES I/O Bridge (IMB2 bus to Host Bridge) / supports RAID-1 mirroring [Embedded Mirroring] with two hot-swap 3.5" one-inch high SL SCSI disks in front bays / one 16-bit internal channel / no cables or external connector)									
SCSI disk bays	Supports max of two k 80-pin SCA-2 connect	not-swap 3.5" tors / all SCSI	SL Ultra320 SC bays Ultra320	SI disks ir -enabled	n optional SCSI Sto	orage Ex	pansion l	Jnit /	01)	
External storage	Support for IBM Total	Storage™ solu	tions (including	g FAStT an	d NAS family of pro	oducts)				
Mechanical Architecture / chipsets Bus slots	Supported in IBM Blad ServerWorks® Gram- s one CIOB-X2 I/O Brid ethernet and the I/O bus to Super I/O, and No PCI or PCI-X slot	d Champion™ dge (IMB2 bus expansion opt d PCI 2.2 Bus	4.0 LE / CM to Host Bridg ion connector C with graphic	IC-LE5 Ho e) for two / CSB6 Se cs controll	ost Bridge (memor PCI-X Buses with outh Bridge (Thin I er / National Semi	y contro Bus A MB to F conduct	ller and I for etherr lost Brido or® PC87	/O Bridge) / net and Bus B ge) for EIDE, l	for JSB, LPC	
Ethernet controllers	Four gigabit 10/100/100						-	0MHz buses / f	ull duplex /	
Network-interface	Wake on LAN® / Alert S 4-port GB Ethernet S Two connectors for I/ of BladeCenter / all b	Standard Forma witch Module O expansion of lades in a sing	tt 1.0 / teaming (the second co option (Fibre C le BladeCente	and failover Introller re- hannel Exp r must cor	r support / one of the quires a second op pansion Card) / requ ntain the same exp	e controlle otional E ires sam	ers conne thernet S e interface	cts to an option Switch Module) e modules in ba	al ays 3 and 4	
CD / diskette / USB Kybd / video / mouse Graphics	ethernet and serial I/0 None / requests for CE None / requests for ke SVGA / ATI® Radeon	D-RÓM, disketi yboard, mouse	e drive, and US , and video in E	SB port in E BladeCente	BladeCenter by preserved by preserved by pressing the d	isplay bι	utton on fr			
Systems mgmt Diagnostics	/ on blade / provides system and environmental monitoring, event recording, alert capability / RS-485 interface for communication with BladeCenter management module Light Path Diagnostics™ (LED lights indicate failing) 512MB PC2100 CL2.5 ECC DDR-SDRAM RDIMM 33L503 2GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM 33L503							33L5039 33L5040 e) 26K4847		
Security Software ship group	Power-on password / administrator password / unattended boot / selectable boot / unattended start mode Desumentation CD IDM Director 4.1 CD Device Driver CD						port requires a FC Switch Module) 48P7061 GB ² 5400 rpm ATA-100 HDD 48P7063 Jltra160 SCSI Hot-Swap SL HDD* 06P5768 Itra320 SCSI Hot-Swap SL HDD* 06P5776			
Cooling fans Power supply Prerequisites	Uses cooling from BladeCenter (type 8677) / thermal sensors on each processor and BladeCenter modules and front panel Uses power module(s) in BladeCenter (type 8677) Monitor, keyboard, mouse for setup; ethernet switch module, disk, BladeCenter (type 8677), operating system									
Serverb	lada							ED WARRAN	TY ³	
iside view) iside view)						 3 year parts and labor International Warranty Service³ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time⁷ On site service upgrade options (in eligible locations):⁷ 3 year IOR 24x7, 2 hr avg response (ServicePac® part num 69P9519) 3 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9518) 3 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9517) 5 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9525) 5 year IOR 24x7, 2 hr avg response (ServicePac part num 69P9525) 5 year IOR 24x7, 2 hr avg response (ServicePac part num 69P9527) Other ServicePac options at http://www.ibm.com/ services/us/its/pdf/wamomxeu.pdf 24x7¹⁴ toll-free support for warranty issues during the warranty period³ 				

See footnotes for important warranty information US models announced February 17, 2004

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

- ¹ MHz/GHz only measures microprocessor internal clock speed; many factors affect application perfomance.
- ² MB/GB/TB = 1 million/billion/trillion bytes when referring to storage capacity. Accessible capacity is less; up to 3GB is used in service partition.
- ³ For terms and conditions or a copy of IBM's Statement of Limited Warranty, call 1 800 772-2227 in the U.S. Copies available upon request. Telephone support may be subject to additional charges. For onsite labor, IBM will attempt to diagnose and resolve the problem remotely before sending a technician. International Warranty Service is available in any country in which this product is sold and serviced. Service delivery methods and parts availability vary by country, may be different from that in the country of purchase, and are subject to change without notice. Fees and restrictions may apply in some countries.
- ⁴ A single "U", or rack unit, is 1.75" or 44.45mm.
- ⁵ S.M.A.R.T. stands for Self-Monitoring, Analysis and Reporting Technology.
- ⁶ CD and DVD drives speeds are variable and are often less than the maximum.
- These services are available for machines normally used for business, professional, or trade purposes, rather than personal, family or household purposes. Not all machine types and models are covered. Service period begins with the equipment date of purchase. Service must be purchased during the original limited product warranty period. Service levels are response time objectives and are not guarantees. A service technician is scheduled to arrive at your location within two or four business hours or the next business day (depending on service) after remote problem determination is completed. For the 9x5x4-hour service, calls dispatched after 1:00 p.m. local time, you can expect the service technician to arrive by the morning of the next business day. For non-critical service requests, a service technician will arrive by the end of the following business day. If the machine problem turns out to be a Customer Replaceable Unit (CRU), IBM will express ship the part to you for quick replacement. Onsite 24x7x2-hour service is not available in all locations. External peripherals, such as racks, tape drives, and channel controllers, require their own, separate service coverage, they are not covered under the attached Machine. Service activation is required immediately following purchase. For ThinkPad notebooks requiring LCD or other component replacement, IBM may choose to perform service at the depot repair center. For failing non-IBM components, customer must provide replace-ment part unless IBM has a Technical Support Agreement with the manufacturer. Service does not cover accessories, supply items and certain parts such as batteries, frames and covers. Not available in all states; call your IBM representative for details.

- ⁸ Subject to conditions.
- ⁹ Some software may differ from retail version (if any) and may not include user manuals or all program functionality. Software license agreements may apply.
- ¹⁰ Updated drivers and hot-swap services for certain operating systems may be required to support PCI hot-swap functions.
- ¹¹ Fire GL1, Fire GL2 and Fire GL4 are trademarks of ATI Technologies, Inc., and are used under license.
- ¹² Installation of 2GB RDIMMs requires BIOS and diagnostic firmware version 1.08 or later. When more than 8GB of memory is installed, the integrated SCSI controller must be disabled.
- ¹³ Maximum memory and internal hard disk capacities may require the replacement of standard component with largest supported component available.
- ¹⁴ Response times may vary. May exclude some holidays. Telephone support may be subject to additional charges.
- ¹⁵ IBM makes no respresentations or warranties regarding non-IBM products and services that are ServerProven, including but not limited to the implied warranties of merchantability and fitness for particular purpose. These products are offered and warranted by third parties, not IBM.
- ¹⁶ Asset ID allows your computer to be scanned by various radio frequency emitting devices which must be purchased separately from independent companies.
- ¹⁷ Some software may differ from its retail version (if available), and may not include user manual or all program functionality. Software license agreements may apply.
- ¹⁸ Diskettes and hard copy documentation available at extra charge.
- ¹⁹ For combination drives, maximum possible speeds only are given in the following order: CD read, CD write, CD re-write, DVD read.
- ²⁰ Statement of direction and subject to availability.
- ²¹ Max physical memory is currently 16GB contingent on general availability of 4GB memory DIMMS, running under select 64bit Linux distributions; addressable capacity is less. Under select 32-bit Linux distributions, maximum physical memory is 16GB contingent on general availability of 4GB memory modules, with a maximum of 3GB allocated per thread. Maximum physical memory is 4GB running under Microsoft Windows XP Professional operating system; addressable capacity is less.
- ²² 16GB Memory max with PC2700 DIMMs, 8GB Max with PC3200 DIMMs

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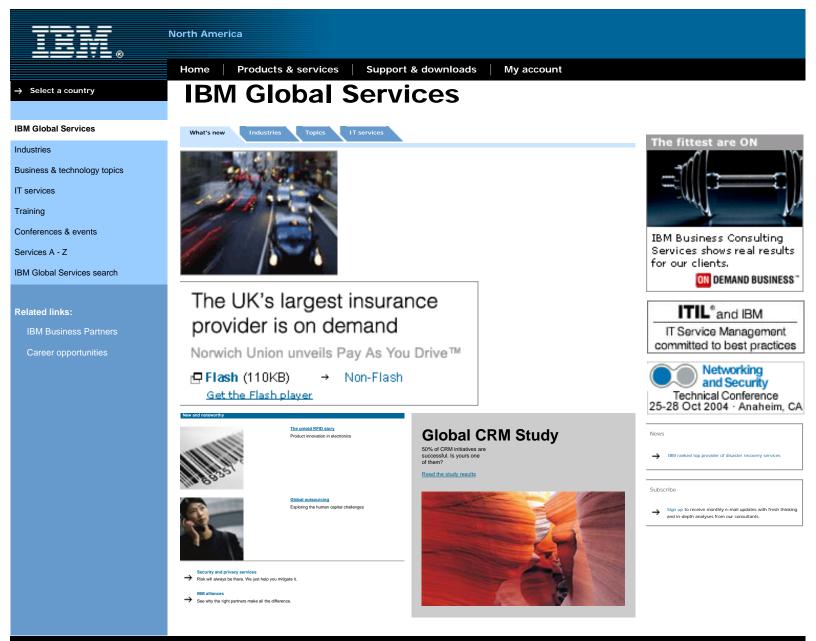
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