# IBM @server™xSeries Education

## **xSeries Reference (xREF)**

including

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

## June 09, 2005

xref@us.ibm.com

This document is available at: http://www-1.ibm.com/servers/eserver/education/cust/xseries/xref.html

#### 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
<ul> <li>№ 8482 1Rx 14X Pe</li> <li>№ 8482 1Sx 15X Pe</li> <li>№ 8482 2Mx 21X Pe</li> <li>№ 8482 2Rx 24X Pe</li> <li>№ 8482 2Sx 25X Pe</li> <li>№ 8482 3Mx 31X Pe</li> <li>№ 8482 3Rx 34X Pe</li> </ul>	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         512MB           1MB         800         556MB           128KB         800         556MB           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 <sup>®</sup> Pentium 4 2 Up to 1MB std and Motherboard conta one AGP slot, ethe		<b>n 800MHz front</b> d cket (processor/	<b>side bus</b> (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 <sup>6</sup> 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 (5v) I 2.2 (5v) Pass, CD-ROM Pass, Open (no disk) Pass, Open (no disk) Pass	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 <sup>13</sup> (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 <sup>3</sup> olidays, seponse time ade ocations): <sup>7</sup> 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 <sup>®</sup> 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 <sup>13</sup> 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 <sup>4</sup> 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 <sup>®</sup> / <i>CD-ROM:</i> 48X-20X <sup>6</sup> 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	32-bit 33MHz, PCI 2.2 (5v)       memory) invoke startup         32-bit 33MHz, PCI 2.2 (5v)	<ul> <li>a tyear parts and labor</li> <li>I year parts and labor</li> <li>International Warranty Service<sup>3</sup></li> <li>On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time</li> <li>On site service upgrade options (in eligible locations):<sup>7</sup></li> <li>3 year IOR 24x7, 2 hr avg response (ServicePac part num 69P9512)</li> <li>3 year IOR 24x7, 4 hr avg response (ServicePac part num 69P9511)</li> <li>3 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9510)</li> <li>3 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9510)</li> <li>3 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9509)</li> <li>Other ServicePac options at http://www.ibm.com/ services/us/its/pdf/wamomxeu.pdf</li> </ul>

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 <sup>1</sup> 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 <sup>+</sup> 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	<ul> <li>▲ 2.67 512KB</li> <li>2.67 512KB</li> <li>2.67 512KB</li> <li>2.88 512KB</li> <li>2.88 512KB</li> <li>2.88 512KB</li> <li>3.06 512KB</li> <li>3.06 512KB</li> <li>3.06 512KB</li> <li>3.06 512KB</li> </ul>	533 512MB 533 512MB 533 512MB	36.4GB <sup>2</sup> 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 / <b>Error (</b> 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 <sup>4</sup> 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 <sup>6</sup> 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 <sup>®</sup> / 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	<ul> <li>Rem.</li> <li>Conf.</li> <li>press</li> <li>BIOS</li> <li>BIOS</li> <li>Conf.</li> <li>press</li> <li>BIOS</li> <li>Conf.</li> <li>Press</li> <li>DM12</li> <li>Poly</li> <li>DM12</li> <li>Poly</li> <li>DM12</li> <li>Poly</li> <li>DM12</li> <li>Poly</li> <li>Conf.</li> <li>Poly</li> <li>Conf.</li> <li>Poly</li> <li>Conf.</li> <li>Poly</li> <li>Conf.</li> <li>Poly</li> <li>Conf.</li> <li>Poly</li> <li>Conf.</li> <li< td=""><td>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</td><td>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</td><td>by → 1 → in → 0 M 1.0a → 0 op • • • • • • • • • • • • • • • •</td><td>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<sup>14</sup> toll-free sup sues during the</td><td>bor nty Service<sup>3</sup> holidays, response time rade locations):<sup>7</sup> 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</td></li<></ul>	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 <sup>14</sup> toll-free sup sues during the	bor nty Service <sup>3</sup> holidays, response time rade locations): <sup>7</sup> 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 <sup>1</sup> 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) / <b>1MB</b> 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 <b>16-bit Checks</b>	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 <sup>®</sup> 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 <sup>4</sup> 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		$\mu$ in planal / more	illois system and p	ocessor temperature, r	an speed and failure, and voltages / monitoring and control)
Graphics controller Security	SVGA / ATI® Radeon <sup>1</sup> 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 / htrol / 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 <sup>6</sup> 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	<ul> <li>BIOS Setup Uti</li> <li>Adaptec Config startup by pres</li> <li>DMI 2.2-compli</li> </ul>	lity via F1 at startup uration Utility near sing CTRL+I ant	LIMITED WARRANTY <sup>3</sup> → 1 year parts and labor → International Warranty Service <sup>3</sup> → 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 pacity<sup>13</sup>: 250GB); 1TB veRAID 7t</td><td><ul> <li>Adv Config Pow</li> <li>Device Driver a Diagnostics CE</li> <li>Four stabilizing</li> <li>Handle grip on 1</li> <li>H 18.4" x W 6.5</li> <li>H 467mm x W</li> <li>44 to 57 pound</li> <li>Fixed disk mode bays 4,5,6,7 rot easy access for</li> <li>Predictive Failu with IBM Direct</li> </ul></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><ul> <li>Mon-Fri excluding holidays, next business day response time</li> <li>On site service upgrade options (in eligible locations):<sup>7</sup></li> <li>3 year IOR 9x5, NBD response (ServicePac® part num 96P2248)</li> <li>3 year IOR 9x5, 4 hr avg response (ServicePac part num 96P2249)</li> <li>3 year IOR 24x7, 4 hr avg response (ServicePac part num 96P2250)</li> <li>3 year IOR 24x7, 2 hr avg response (ServicePac part num 96P2251)</li> <li>Other ServicePac options at http://www.ibm.com/</li> <li>ServiceS/us/its/pdf/wamomxeu.pdf</li> </ul></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 <sup>13</sup> : 250GB); 1TB veRAID 7t	<ul> <li>Adv Config Pow</li> <li>Device Driver a Diagnostics CE</li> <li>Four stabilizing</li> <li>Handle grip on 1</li> <li>H 18.4" x W 6.5</li> <li>H 467mm x W</li> <li>44 to 57 pound</li> <li>Fixed disk mode bays 4,5,6,7 rot easy access for</li> <li>Predictive Failu with IBM Direct</li> </ul>	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	<ul> <li>Mon-Fri excluding holidays, next business day response time</li> <li>On site service upgrade options (in eligible locations):<sup>7</sup></li> <li>3 year IOR 9x5, NBD response (ServicePac® part num 96P2248)</li> <li>3 year IOR 9x5, 4 hr avg response (ServicePac part num 96P2249)</li> <li>3 year IOR 24x7, 4 hr avg response (ServicePac part num 96P2250)</li> <li>3 year IOR 24x7, 2 hr avg response (ServicePac part num 96P2251)</li> <li>Other ServicePac options at http://www.ibm.com/</li> <li>ServiceS/us/its/pdf/wamomxeu.pdf</li> </ul>

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 <sup>1</sup> 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 <sup>2</sup> 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	<ul> <li>320 6 hot-swap</li> <li>320 6 hot-swap</li> <li>3 simple-swap</li> <li>320 6 hot-swap</li> <li>320 6 hot-swap</li> <li>3 simple-swap</li> <li>320 6 hot-swap</li> <li>320 6 hot-swap</li> <li>320 6 hot-swap</li> </ul>	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 in   (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; Exte	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 <sup>4</sup> 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 <sup>6</sup> 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 36.4GB 15K Ultr IBM 73GB 10K Ultra IBM 146GB 10K Ultra 40X/12X/40X Max <sup>6</sup> ( IBM Remote Superv IBM 4U Extended D	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           a320 SCSI Hot-Swap SL HDD         32P0727           a320 SCSI Hot-Swap SL HDD         32P0728           D-RW internal (black)         22P6976           isor Adapter II (PCI adapter)         59P2984           epth Tower-to-Rack Kit         26K6095           controller (adapter for Slot 5)         13N2190
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 ⇒ Adaptec Config. M startup by press ⇒ DMI 2.2-complia e ⇒ Adv Config Pow ⇒ Device Driver an Diagnostics CD hot-swp ⇒ Four stabilizing 1 up to 4 ⇒ Handle grip on ta rveRAID ⇒ H 18.4" x W 6.5 ⇒ H 467mm x W 1 ⇒ 44 to 57 pounds <i>Fixed disk model</i> bays 4,5,6,7 rota easy access for TB ⇒ Predictive Failu with IBM Director	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)	<ul> <li>LIMITED WARRANTY<sup>3</sup></li> <li>→ 1 year parts and labor</li> <li>→ International Warranty Service<sup>3</sup></li> <li>→ On site, 8 am-5 pm, Mon-Fri excluding holidays, next business day response time</li> <li>→ On site service upgrade options (in eligible locations):<sup>7</sup></li> <li>→ 3 year IOR 9x5, NBD response (ServicePac® part num 96P2248)</li> <li>→ 3 year IOR 9x5, 4 hr avg response (ServicePac part num 96P2249)</li> <li>→ 3 year IOR 24x7, 4 hr avg response (ServicePac part num 96P2250)</li> <li>→ 3 year IOR 24x7, 2 hr avg response (ServicePac part num 96P2251)</li> <li>→ Other ServicePac options at http://www.ibm.com/</li> </ul>

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	<ul> <li><sup>®</sup> 2.67GHz 512KB 0MB 512MB None 2 x Ultra320 Tower</li> <li><sup>®</sup> 2.67GHz 512KB 0MB 512MB None 2 x Ultra320 Tower</li> <li><sup>®</sup> 2.8BGHz 512KB 0MB 512MB None 2 x Ultra320 Tower</li> <li><sup>®</sup> 2.8BGHz 512KB 0MB 512MB None 2 x Ultra320 Tower</li> <li><sup>®</sup> 3.06GHz 512KB 0MB 512MB None 2 x Ultra320 Tower</li> <li><sup>®</sup> 3.06GHz 512KB 0MB 512MB None 2 x Ultra320 Tower</li> <li><sup>®</sup> 3.06GHz 512KB 0MB 512MB None 2 x Ultra320 Tower</li> <li><sup>®</sup> 3.06GHz 512KB 0MB 512MB None 2 x Ultra320 Tower</li> <li><sup>®</sup> 3.06GHz 512KB 0MB 512MB None 2 x Ultra320 Tower</li> <li><sup>®</sup> 3.06GHz 512KB 0MB 512MB None 2 x Ultra320 Tower</li> </ul>	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 <sup>®</sup> Xeon <sup>™</sup> 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 <sup>™</sup> 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 <sup>®</sup> 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	Tower / conversion to or EIA 19" Rack (5U <sup>4</sup> ) via optional kit fo ServerWorks <sup>®</sup> Grand Champion <sup>™</sup> 4.0 LE / CMIC LE Host Br 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 for PCI 2.2 bus A with slot 1 and graphics controller, EIDE, US	ridge (memory controller and I/O Bridge) / 1.0 Bus B with slots 2, 3, 4 and Ultra320 and ethernet slots 5 and 6) / CSB5 South Bridge (Thin IMB to Host Bridge
Ethernet controller CD-ROM / diskette Rear ports Front port / graphics	10/100/1000 gigabit / Broadcom® BCM 5703 / on planar / PCI-X 48X-20X <sup>6</sup> 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, <b>two</b> 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 Kit02R201Other options at <b>ibm.com</b> /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 <sup>+</sup> , SL 1 <sup>+</sup> , access, hot-swap y © 3.5 <sup>+</sup> , SL 1 <sup>+</sup> , access, hot-swap y © 3.5 <sup>+</sup> , SL 1 <sup>+</sup> , access, hot-swap y © 3.5 <sup>+</sup> , SL 1 <sup>+</sup> , access, hot-swap y © 5.25 <sup>+</sup> , HH 1.6 <sup>+</sup> access, open <sup>++</sup> y © 5.25 <sup>+</sup> , HH 1.6 <sup>+</sup> access, open <sup>++</sup> y © 5.25 <sup>+</sup> , HH 1.6 <sup>+</sup> access, open <sup>++</sup> y © 5.25 <sup>+</sup> , HH 1.6 <sup>+</sup> access, open <sup>++</sup> y © 5.25 <sup>+</sup> , HH 1.6 <sup>+</sup> access, open <sup>++</sup> y © 5.25 <sup>+</sup> , HH 1.6 <sup>+</sup> access, open <sup>++</sup> y © 5.25 <sup>+</sup> , HH 1.6 <sup>+</sup> access, open <sup>++</sup> y © 5.25 <sup>+</sup> , HH 1.6 <sup>+</sup> access, open <sup>++</sup> y © 5.25 <sup>+</sup> , HH 1.6 <sup>+</sup> access, open <sup>++</sup> y © 5.25 <sup>+</sup> , HH 1.6 <sup>+</sup> access, open <sup>++</sup> y © 5.25 <sup>+</sup> , HH 1.6 <sup>+</sup> access, open <sup>++</sup> y © 5.25 <sup>+</sup> , HH 1.6 <sup>+</sup> access, open <sup>++</sup> y © 5.25 <sup>+</sup> , HH 1.6 <sup>+</sup> access, open <sup>++</sup> y © 5.25 <sup>+</sup> , HH 1.6 <sup>+</sup> access, open <sup>++</sup> y © 5.25 <sup>+</sup> , HH 1.6 <sup>+</sup> access, open <sup>++</sup> y © 5.25 <sup>+</sup> , HH 1.6 <sup>+</sup> access, open <sup>++</sup> y © 5.25 <sup>+</sup> , HH 1.6 <sup>+</sup>	LIMITED WARRANTY <sup>3</sup> ⇒ 3 year parts and labor ⇒ 1nternational Warranty Service <sup>3</sup> ⇒ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time <sup>7</sup> ⇒ 3 year on site warranty service upgrade options (in eligible locations): <sup>7</sup> • 9 hour coverage, Mon-Fri excluding holidays, 4 hour average response (ServicePac <sup>®</sup> part num 21P2083) • 24 hr x 7 day coverage,

See footnotes for important warranty information<br/>US models announced January 20, 2004<br/>≈ = 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 thernet 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	eon 3.0GHz1MB1GBeon 3.2GHz1MB1GBeon 3.4GHz1MB1GBeon 3.4GHz1MB1GBeon 3.6GHz1MB1GB	None2 x Ultra320Tower6None2 x Ultra320Tower6None2 x Ultra320Tower6None2 x Ultra320Tower6None2 x Ultra320Tower6None2 x Ultra320Tower6None2 x Ultra320Tower6	5x10 (6 hot-swap std; 9 ma 5x10 (6 hot-swap std; 9 ma	x) 1 x 670W hot-swap 2x x) 1 x 670W hot-swap 2x x) 1 x 670W hot-swap 2x x) 2 x 670W hot-swap 2x x) 1 x 670W hot-swap 2x x) 1 x 670W hot-swap 2x	Giğabit Auğ 2004 Gigabit Aug 2004 Gigabit Aug 2004 Gigabit Aug 2004 Gigabit Aug 2004
Positioning Processor	Up to 1 x Intel <sup>®</sup> Xeon <sup>™</sup> Pro (EM64T) / Simultaneous I	server using the Xeon processo ocessor 2.8, 3.0, 3.2, 3.4, 3.6 G Multi-threading (SMT) / Hyper-	Hz with 800MHz frontside the Threading technology /		
L2 cache SMP support Implementation	2-way SMP / up to two Xe Systemboard contains two	f processor / at processor speed on Processors (same speed/cao Intel 604-pin micro-PGA ZIF so o Active™ PCI slots), and integra	che size) ckets, eight memory gold-co		
Memory	DIMMs / DIMMs must be in 2x200MHz / Error Checkin errors contained in two chip	B max / two slots used / six slots Istalled in matched pairs [a bank Ing and Correcting (ECC) (correcting) (FCC) (correcting) / Active Memory™: memo ring 512MB DIMMs or greater	] / 2-way memory interleave acts 1, 2, 3, or 4-bit errors o	/ dual channel / memory b n same chip and detects 2	ous runs at 2- through 8-bit
SCSI disk controller	HostRAID supports RAID-	channel Ultra320 SCSI control	ot-spare disk / optional IBM		
SCSI channels	Two 16-bit channels / SCS/ Bay 8 and 9 (may require a knockout in rear (cable req	0, 5, 00, 10, 50 (installed on inter <i>Channel B:</i> 16-bit 68-pin LVD c a cable) or with optional 3-Pack H 24P7973) or via opt ServeRAIL broken Collector ServeRAIL	able from controller to backp Kit (cable included); supports adapter with external conr	s external SCSI devices via nector(s)	external SCSI
IDE controller / cable Disk - capacity Disk - bays	None std / supports 7200-1	ntroller in ICH5R South Bridge / 5000 rpm disks / one backplane 2 connectors / three additional h	e / all disk bays Ultra320-ena	abled	,
Slots	Two PCI-Express (one hot- Intel E7520 chipset / Intel (slots 2 & 3) / PXH: Bus A,	19" Rack (5U <sup>4</sup> ) via optional kit fo plug), three PCI-X 64-bit (one 1: E7520 Memory Controller Hub ( two 64-bit/100MHz PCI-X slots ( Hz slot (slot 1), ATI video, EIDE,	33MHz and two 100MHz), ( (MCH): PXH, ICH5R, Dual I slots 4 & 5), Adaptec SCSI	one 32-bit/33MHz slot Broadcom ethernet, two PC Bus B, one 64-bit/133MHz	Hot-Plug slot (slot
Ethernet controller CD-ROM / diskette	Dual 10/100/1000 gigabit / I Format (2.0) / IPMI (1.5) 48X-20X <sup>6</sup> CD-ROM / IDE /	Broadcom <sup>®</sup> BCM 5721 / on plana 1.6" HH; <i>Diskette:</i> 3.5" 1.44MB	ar / PCI-X 64-bit 100MHz / fi diskette drive / dust cover	ull duplex / Wake on LAN® ,	/ Alert Standard
Rear ports Front port / graphics Security	Front: one USB (Vers 2.0);	keyboard, mouse, parallel, one Graphics: SVGA / ATI® Radeor nistrator password / hinged and	16M / on planar / 16M	B DDR std/max / 32-bit/33	3MHz PCI 2.2
	unattended boot / selectable			uisk bays, power button, a	
Systems mgmt Diagnostics	H8S2148 <sup>7</sup> / on planar / prov monitoring such as temp, o supports opt. Remote Supe 20-pin connector on planar (no ext pwr reqd) Light Path Diagnostics™ failing part (under side cove	anagement processor (ISMP) ides system and environmental ptional disks, fans, power supp / rvisor Adapter II Slimline with for continuous power (std on 3 panel providing LED map to r) / Information LED Panel in	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 \$	Cache Proc Upg Cache Proc Upg 00 CL3 ECC DDR2 non-Cł CL3 ECC DDR2 non-Chip CL3 ECC DDR2 RDIMM CL3 ECC DDR2 RDIMM SCSI Hot-Swap SL HDD	k 73P3522 73P2865 73P2866 32P0727
Software	front ServerGuide™ (CD-ROM i utilities), IBM Director, other	installation and configuration	36.4GB 15K Ultra320 \$	SCSI Hot-Swap SL HDD SCSI Hot-Swap SL HDD SCSI Hot-Swap SL HDD	32P0728 06P5776 32P0735 71K8642
Keyboard / mouse Power supply Fans	Fan in each std/max: four/s	/ voltage-sènsing / auto-restart / ix/ two fans (front), two fans on ) / variable speed / hot-swap / ar fans / PFA /	IBM Remote Superviso IBM T541 15" Flat Pan 3-Pack Ultra320 Hot-S IBM 670W Hot-Swap F	or Adapter II Slimline el Color Monitor (black)	73P9341 9512AB1 33P2751 25K9560
Slot 2: full, PCI-Exp Slot 3: full, PCI-Exp Slot 3: full, PCI-Exp Slot 4: full, 64-bit 10 Slot 5: full, 64-bit 13 Slot 6: full, 64-bit 13 Bay Bay Bay Bay Bay Bay Bay Bay	ress x8, Bus C 10MHz 3.3v PCI-X, Bus D 10MHz 3.3v PCI-X, Bus D 13MHz 3.3v PCI-X, hot-swa 1 3.5", SL 1", access, 2 3.5", SL 1", access, 3 3.5", SL 1", access, 3 3.5", SL 1", access, 3 3.5", SL 1", access, 6 3.5", SL 1", access, 6 3.5", SL 1", access, 1 3.5", S	<ul> <li>Configuration/Set pressing F1 at sta</li> <li>Adaptec Configu- by pressing CTF</li> <li>Diagnostics (PC-L F2 at startup</li> <li>ACPI 2.0-compliar</li> <li>Operator Informat hot-swap</li> <li>Predictive failure memory, process supplies, and fans</li> <li>Director can alert of an imminent co</li> <li>Tower: H 17.31"</li> <li>74 to 101 pounds</li> <li>Stealth black color</li> </ul>	rtup ration Utility near startup RL+I Doctor™) by pressing nt ion Panel (in front) analysis on disk options, ors, VRMs, power s in conjunction with IBM the system administrator mponent failure x W 8.5" x D 27.6"	LIMITED WARI ⇒ 3 year parts and labo ⇒ International Warrant ⇒ On site, 8 am - 5 pm, coverage excluding business day respor ⇒ 3 year on site warrant upgrade options (in locations): <sup>7</sup> • 9 hour coverage, Mon-Fri excluding 4 hour average res (ServicePac® part nu • 24 hr x 7 day cove 2 hour average res (ServicePac part nu • 24 hr x 7 day cove 2 hour average res (ServicePac part nu	or ty Service <sup>3</sup> Mon - Fri holidays, next nse time <sup>7</sup> ty service eligible holidays, sponse num 21P2083) erage, sponse nmber 21P2084) rrage, sponse
**Ba	ays 8 and 9 support three 3 sks via 3-Pack Kit 33P2751		46.4GB SL disks with ot-Swap Expansion Kit	24x7 <sup>14</sup> toll-free support issues during the water and	

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## IBM @server™ xSeries™ 236 - February 2005

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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 8841-E1y-E1x 1 x Xx	eon® 3.0GHz 2MB 1GB None 2 x U eon 3.2GHz 2MB 1GB None 2 x U eon 3.4GHz 2MB 1GB None 2 x U eon 3.6GHz 2MB 1GB None 2 x U eon 3.0GHz 2MB 1GB None 2 x U eon 3.0GHz 2MB 1GB 3x73.4GB 2 x U	Diler         Mechanical           Ultra320         Tower         6x11           Ultra320         Tower         6x11	<u> </u>	x) 1 x 670W hot-swap x) 1 x 670W hot-swap	2xGiğabit Mar 2005 2xGigabit Mar 2005 2xGigabit Mar 2005 2xGigabit Mar 2005 2xGigabit Mar 2005
Positioning Processor L2 cache SMP support Implementation	Universal server; two-way server using the Up to 1 x Intel <sup>®</sup> Xeon <sup>™</sup> Processor 3.0, 3.1 (EM64T) / Simultaneous Multi-threading 2MB / all models / on die of processor / at 2-way SMP / up to two Xeon Processors Systemboard contains two Intel 604-pin m six PCI slots (one hot-swap Active <sup>™</sup> PCI s	2, 3.4, 3.6 GHz with g (SMT) / Hyper-Three processor speed (same speed/cache iicro-PGA ZIF socket	800MHz frontside bus / eading technology / size) s, eight memory gold-co	Extended Memory 64	
Memory	1GB std / 16GB max / two slots used / six DIMMs must be installed in matched pairs Error Checking and Correcting (ECC) (o in two chips) / Active Memory™: memory	slots available / PC: [a bank] / 2-way mer corrects 1, 2, 3, or 4-	3200 400MHz registered mory interleave / dual ch bit errors on same chip	240-pin ECC <b>DDR2</b> -SI annel / memory bus run	is at 2x200MHz /
SCSI disk controller SCSI channels IDE controller / cable Disk - capacity	Adaptec AIC 7902 / dual channel Ultra32 HostRAID supports RAID-0, 1 mirroring v low-cost RAID 0, 1, 1E, 1E0, 5, 00, 10, 50 Two 16-bit channels / SCSI Channel B: 16 Bay 8 and 9 (may require a cable) or with o knockout in rear (cable req 24P7973) or vi Enhanced IDE ATA-100 controller in ICH5F None std / supports 7200-15000 rpm disks	20 SCSI controller ( with up to one hot-sp (installed on internal of -bit 68-pin LVD cable optional 3-Pack Kit (c ia opt ServeRAID ad R South Bridge / one s / 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 Il disk bays Ultra320-ena	ServeRAID <sup>TM</sup> -6i Controll lane; <i>Channel A</i> : 16-bit external SCSI devices ector(s) ne 1-drop IDE cable (C ibled	ler for 68-pin interface for via external SCSI D-ROM)
Disk - bays Mechanical Slots Chipset (see below)	Six hot-swap / 80-pin SCA-2 connectors / ti Tower / conversion to EIA 19" Rack (5U <sup>4</sup> ) Two PCI-Express (one hot-plug), three PC Intel E7520 Chipset / Intel E7520 Memory (slots 2 & 3) / PXH: Bus A, two 64-bit/100W 6) / ICHSR: one 32-bit/33MHz slot (slot 1),	via optional kit for su I-X 64-bit (one 133M v Controller Hub (MC /IHz PCI-X slots (slots	pport in IBM NetBAY™ I Hz and two 100MHz), o H): PXH, ICH5R, Dual E s 4 & 5), Adaptec SCSI E	Racks (13N0956) ne 32-bit/33MHz slot Broadcom ethernet, two Bus B, one 64-bit/133MI	PCI-Express x8 slots Hz Hot-Plug slot (slot
Ethernet controller CD-ROM / diskette Rear ports Front port / graphics	Dual 10/100/1000 gigabit / Broadcom® BCN Format (2.0) / IPMI (1.5) 48X-20X <sup>6</sup> CD-ROM / IDE / 1.6" HH; <i>Diske</i> <i>Rear:</i> two USB (Vers 2.0), keyboard, mous <i>Front:</i> one USB (Vers 2.0); <i>Graphics:</i> SVG	M 5721 / on planar / I ette: 3.5" 1.44MB disk se, parallel, <b>one</b> seri	PCI-X 64-bit 100MHz / fu kette drive / dust cover al (9-pin),graphics (DB-1	ill duplex / Wake on LAN 5), two ethernet (RJ-45	N <sup>®</sup> / Alert Standard 5), RJ-45 (sys mgmt)
Security	Power-on password / administrator password unattended boot / selectable boot	ord / hinged and lock	able front door to cover	disk bays, power buttor	, and reset button /
Systems mgmt Diagnostics Software	IBM Integrated system management pr H8S2148 / on planar / provides system and monitoring such as temp, optional disks, fa supports opt. Remote Supervisor Adapter I 20-pin connector on planar for continuous (no ext pwr reqd) Light Path Diagnostics™ panel providing failing part (under side cover) / Information I front ServerGuide™ (CD-ROM installation and utilities), IBM Director, others	d environmental Ins, power supp / Il Slimline with power <b>(std on 32y)</b> I LED map to LED Panel in		Cache Proc Upg Cache Proc Upg O CL3 ECC DDR2 non CL3 ECC DDR2 non-C CL3 ECC DDR2 RDIM CL3 ECC DDR2 RDIM CL3 ECC DDR2 RDIM GCSI Hot-Swap SL HDD SCSI Hot-Swap SL HDD	hipk <sup>'</sup> 73P3522 M 73P2865 M 73P2866 M 73P2866 M 32P0727 D 32P0728
Keyboard / mouse Power supply Fans	IBM 101-key keyboard / IBM mouse (both std/max: one/two 670 watt / voltage-sensin Fan in each std/max: four/six/ two fans (fro planar, (Opt) two fans (rear) / variable spee redundant with optional rear fans / PFA / fan in each power supply	ng / auto-restart / ont), two fans on ed / hot-swap /	73.4GB 15K Ultra320 S IBM ServeRAID-7k Co IBM Remote Superviso IBM T541 15" Flat Panu 3-Pack Ultra320 Hot-Su IBM 670W Hot-Swap P	SCSI Hot-Swap SL HDE ntroller r Adapter II Slimline el Color Monitor (black) wap Expansion Kit	) 32P0735 71K8642 73P9341 9512AB1 33P2751 25K9560
Slot 2: full, PCI-Exp Slot 3: full, PCI-Exp Slot 3: full, 64-bit 10 Slot 5: full, 64-bit 11 Slot 6: full, 64-bit 11 D Slot 6: full, 64-bit 11 D Bay Bay Bay Bay Bay Bay Bay Bay Bay Bay	ress x8, Bus B       C         ress x8, Bus C       pi         00MHz 3.3v PCI-X, Bus D       A         33MHz 3.3v PCI-X, Bus D       b         33MHz 3.3v PCI-X, Bus D       b         33MHz 3.3v PCI-X, Bus D       b         33MHz 3.3v PCI-X, hot-swap, Bus E       D         (1) 3.5", SL 1", access, diskette       A         (2) 3.5", SL 1", access, hot-swap       C         (3) 3.5", SL 1", access, hot-swap       C         (4) 3.5", SL 1", access, hot-swap       M         (5) 3.5", SL 1", access, hot-swap       M         (5) 3.5", SL 1", access, hot-swap       M         (6) 3.5", SL 1", access, hot-swap       M         (7) 3.5", SL 1", access, open**       T         (7) 3.5", SL 1", access, open**       T         (9) 5.25", HH 1.6" access, open**       T         (9) 5.25", HH 1.6" access, CD-ROM       S         (9) 5.25", HH 1.6" access, CD-ROM       S         SCA-2 connectors.       A <t< td=""><td>y pressing CTRL+1 iagnostics (PC-Doct 2 at startup CPI2.0-compliant perator Information redictive failure ana nemory, processors, upplies, and fans in o</td><td>Jtility invoked by on Utility near startup or™) by pressing Panel (in front) lysis on disk options, VRMs, power conjunction with IBM system administrator onent failure / 8.5" x D 27.6" disk capacity: 4GB SL disks with</td><td><ul> <li>24 hr x 7 day co 2 hour average</li> </ul></td><td>abor anty Service<sup>3</sup> m, Mon - Fri g holidays, next bonse time<sup>7</sup> ranty service (in eligible e, ing holidays, response t num 21P2083) overage, response number 21P2084) overage, response number 21P2085) port for warranty</td></t<>	y pressing CTRL+1 iagnostics (PC-Doct 2 at startup CPI2.0-compliant perator Information redictive failure ana nemory, processors, upplies, and fans in o	Jtility invoked by on Utility near startup or™) by pressing Panel (in front) lysis on disk options, VRMs, power conjunction with IBM system administrator onent failure / 8.5" x D 27.6" disk capacity: 4GB SL disks with	<ul> <li>24 hr x 7 day co 2 hour average</li> </ul>	abor anty Service <sup>3</sup> m, Mon - Fri g holidays, next bonse time <sup>7</sup> ranty service (in eligible e, ing holidays, response t num 21P2083) overage, response number 21P2084) overage, response number 21P2085) port for warranty

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#### IBM @server™ xSeries™ 255 (June 2003)

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IBM <sup>®</sup> 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           Tower         7 x10         6/12         C           Rack         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 <sup>®</sup> Xeon <sup>™</sup> 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 <b>mi</b>	to <b>3GB</b> std / 24GB <sup>13</sup> 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) / <b>Error</b> (	n 12 DIMM gold- ory interleave / <b>H</b> o ttching failed ban <b>Checking and C</b>	connector slots / DIMM ot Spare Memory (acti k) / Active Memory™ correcting (ECC) via 1	s must <sup>*</sup> be vated by failure <b>via memory</b> 6-bit Checksum
SCSI connectors Ch Ch IDE controller / cabling En Disk - capacity No	laptec <sup>®</sup> 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 D-ROM
Rack / conversion Ra Architecture / chipset Se two ett SM	A 19" rack (7U <sup>4</sup> ) 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 <sup>™</sup> racks npion <sup>™</sup> 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 <b>it replace, hot upgrade, h</b>					ower to slot) /
CD-ROM / diskette CL Rear ports Fo	/100/1000 gigabit ethernet D-ROM: 48X-20X <sup>6</sup> 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 <b>IBI</b> H8 mc su co Diagnostics Lic fail Software <b>Se</b>	Mintegrated system man 3S2148 / on planar / provide onitoring such as temp, op pports optional Remote Su nnector on planar for contin ght Path Diagnostics <sup>™</sup> pa ling part (under top cover) / rrverGuide <sup>™</sup> (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 <b>hot-swap redundant f</b> 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 <b>ibm.com</b> /pc/us/acces	bays) 10K2340 Adapter 37L6889 wap SL 06P5755 wap SL 06P5756 59P2984 (black) 9512AB1
<ul> <li>⇒ Rack dim: H12.0" x W</li> <li>Standard hot- swap disk bays</li> <li>Optional hot- swap disk bays</li> <li>Bay ① 3.5", SL 1", at Bay ② 5.25", HH 1.6" at Bay ③ 5.25", SL 1" hot</li> </ul>	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 5: full, 64-bit 1         Slot 6: full, 64-bit 1         Slot 7: fu	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),	<ul> <li>B ⇒ International Warn</li> <li>B ⇒ On site, 8 am-5 pr</li> <li>C coverage excludir</li> <li>C business day resp</li> <li>D ⇒ On site service up</li> <li>(in eligible locatio</li> <li>• 3 year IOR 9x5, (ServicePac® part</li> <li>• 5 year IOR 9x5, (ServicePac part</li> <li>• 5 year IOR 9x5, (ServicePac part</li> <li>• Other ServicePac</li> <li>http://www.ibm.co</li> <li>its/pdf/wamomxeu</li> <li>≈ 24x7<sup>14</sup> toll-free sup</li> </ul>	abor ranty Service <sup>3</sup> n, Mon-Fri ng holidays, next porse time <sup>7</sup> ograde options ns): <sup>7</sup> 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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## IBM @server<sup>™</sup> xSeries<sup>™</sup> 255 (March 2004)

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-									States in a summer	and the second second
IBM <sup>®</sup> 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 <sup>T</sup> 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 <b>4MB</b> / 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 <b>mirroring</b> (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) / <b>Error</b>	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 <b>mory</b> Checksum
SCSI disk controller SCSI connectors IDE controller / cablin Disk - capacity Disk - bays	Adaptec <sup>®</sup> 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 <sup>4</sup> ) or t s supporte s <sup>®</sup> 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 <sup>10</sup> 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	<ul> <li>hinged and loc</li> <li>/ kit available to</li> <li>IC Host Bridge (</li> <li>one with two P</li> <li>buth Bridge (Thi</li> <li>er PCI buses / N</li> <li>rer and attention</li> </ul>	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 <sup>6</sup> CI ers 1.1), or r integrate	nernet / E D-ROM, ne serial ed systen	Broadcom <sup>®</sup> 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 <b>Light Path Di</b> failing part (ur	n planar / p uch as tem onal Remo planar for <b>iagnostic</b> nder top co ™ (CD-RC	orovides s np, optior ote Super 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 <b>hot-swa</b>	BM 103-k watt hot-s th four pov tage sens ap redund	ey keybo swap; <i>Ma</i> ver supp ling) / fan <b>lant fans</b>	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 DS	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),	<ul> <li>a y</li> <li>a y</li> <li>a not</li> <li>cov</li> <li>bu</li> <li>bu</li> <li>bu</li> <li>cov</li> <li>bu</li> <li>a on</li> <li>(in</li> <li>a on</li> <li>a on</li> <li>(in</li> <li>a on</li> <li>a on</li></ul>	ear part ernation site, 8 verage of sites se eligible year IO ServiceF 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): <sup>7</sup> IR 9x5, 4 hr avg ac <sup>®</sup> part num 4 <sup>1</sup> VR 9x5, 4 hr avg Pac part num 3 <sup>1</sup> Pa 9x5, 4 hr avg Pac part num 6 w.ibm.com/sei momxeu.pdf ssues during period <sup>3</sup>	ervice <sup>3</sup> Fri lays, next ime <sup>7</sup> 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

## IBM @server™ xSeries™ 305 (May 2003)

xREF by eServer Field Skills Enablement Team

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 <sup>TM</sup> -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 <sup>®</sup> 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 <sup>1</sup> 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	<b>2100</b> 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 <sup>4</sup> ) / rac orks <sup>®</sup> 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 33, 1-4MB States diver duslower / DE: DA 26 PX CA 20 PX CA 25-bit 200 PX CA 25-bit 2	National	Semiconductor® I	PC87414 Super	<sup>.</sup> 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 <sup>6</sup> 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       129CB ATA-100 EIDE HDD ' 64 GB 15K UltratI60 SCSI SL 68-pin HDD' 06P5766 ServeFAID <sup>M-4</sup> Lx Ultra160 SCSI Adapter ServeFAID <sup>M-4</sup> Lx Ultra160 SCSI Adapter 09N7585         Back       Slot 1: halfsize, 64-bit 133MHz PCIX 1.0 (3.3v)       Slot 2: halfsize, 64-bit 133MHz PCIX 1.0 (3.3v) Slot 2: halfsize, 10w-profile, 64-bit 133MHz PCIX 1.0 (3.3v)       Slot 2: halfsize, 64-bit 133MHz PCIX 1.0 (3.3v)         Slot 1: halfsize, 64-bit 133MHz PCIX 1.0 (3.3v)       Slot 2: halfsize, 64-bit 133MHz PCIX 1.0 (3.3v)       Slot 2: halfsize, 64-bit 133MHz PCIX 1.0 (3.3v)         Slot 2: halfsize, 10w-profile, 64-bit 133MHz PCIX 1.0 (3.3v)       Slot 2: halfsize, 64-bit 133MHz PCIX 1.0 (3.3v)       Slot 2: halfsize, 64-bit 133MHz PCIX 1.0 (3.3v)         Slot 2: halfsize, 64-bit 133MHz PCIX 1.0 (3.3v)       Slot 2: halfsize, 64-bit 133MHz PCIX 1.0 (3.3v)       Slot 2: halfsize, 64-bit 133MHz PCIX 1.0 (3.3v)       Slot 2: halfsize, 64-bit 133MHz PCIX 1.0 (3.3v)         Slot 2: halfsize, 64-bit 133MHz PCIX 1.0 (3.3v)<	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)       Stot 3: halfsize, 10W-profile, 64-bit 133MHz PCI X 1.0 (3.3v)       Stot 1: halfsize, 10W-profile, 64-bit 133MHz PCI X 1.0 (3.3v)         Fan       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 1: halfsize, 10W profile, 64-bit 133MHz PCI X 1.0 (3.3v)       Stot 1: halfsize, 10W profile, 64-bit 133MHz PCI X 1.0 (3.3v)       Stot 1: halfsize, 10W profile, 64-bit 133MHz PCI X 1.0 (3.3v)       Stot 1: halfsize, 10W profile, 64-bit 133MHz PCI X 1.0 (3.3v)       Stot 1: halfsize, 10W profile, 64-bit 133MHz PCI X 1.0 (3.3v)       Stot 1: halfsize, 10W profile, 64-bit 133MHz PCI X 1	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: A 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 <sup>13</sup> (model do	v) CI X 1.0 (3. D-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 co co co co co co co co ca ilure	SI	LIN year pa internation overage ext busions ( 3 year (Service 3 year (Service 3 year) (Service 3 year) (Service 4 year) (Serv	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 <sup>3</sup> Fri s, time <sup>7</sup> s): <sup>7</sup> 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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1 A

For GAV systems, lowerca:	se "x" should be replaced with a	a country-specific code.			
IBM <sup>®</sup> Machine Type GAV model	Processor	L2 FSB cache MHz Memory Disk	Disk Disk controller bays		Slots Ltd Available x bays Ethernet warr <sup>3</sup> date
8836 1Mx 11X 8836 1Sx 15X 8836 2Mx 21X 8836 2Sx 25X 8836 3Mx 31X 8836 3Sx 35X	Pentium 4 <sup>®</sup> 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 <sup>®</sup> Pentium 4 u 1MB / on die of pr No SMP support Systemboard conta	uni-processor, 1U rack-optimized <b>up to 3.2GHz</b> <sup>1</sup> 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 <sup>13</sup> / 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 <sup>®</sup> 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 <sup>6</sup> 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 <sup>™</sup> -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 <b>ibm.con</b>	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 <sup>3</sup>
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 ③ Say ④ Say ⑥ Say ④ Say ⑥ Say ④ Say ④ Say ⑥ Say ⑥ Say ⑥ 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):	<ul> <li>Interna</li> <li>On site</li> <li>Covera</li> <li>next bu</li> <li>On site</li> <li>option:</li> <li>3 yea</li> <li>(Serv</li> <li>(Serv<td>parts and labor ational Warranty Service<sup>3</sup> e, 8 am - 5 pm, Mon - Fri age excluding holidays, usiness day response time<sup>7</sup> e service upgrade s (in eligible locations):<sup>7</sup> ar IOR 9x5, NBD avg response vicePac<sup>®</sup> 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<sup>3</sup></td></li></ul>	parts and labor ational Warranty Service <sup>3</sup> e, 8 am - 5 pm, Mon - Fri age excluding holidays, usiness day response time <sup>7</sup> e service upgrade s (in eligible locations): <sup>7</sup> ar IOR 9x5, NBD avg response vicePac <sup>®</sup> 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 <sup>3</sup>

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 "y" should be replaced with a country-specific code.											
IBM <sup>®</sup> 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 <sup>®</sup> 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 <sup>®</sup> Pentium 4 1MB min and m No SMP support Systemboard cor	at 3.20 ax / at potential	GHz <sup>1</sup> & 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 <sup>13</sup> 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 <sup>®</sup> <b>7901 chips</b> 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 <b>et</b> / 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 <sup>6</sup> 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 <sup>TM</sup> -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
Top         Bay ① 5.25", UltraSlim 0.5", access, std CD-ROM         Bay ② 3.5", UltraSlim 0.5", access, std diskette         Bay ③ 3.5", SL 1", no access, std fixed disk         Bay ③ 3.5", SL 1", no access, std fixed disk         Bay ③ 3.5", SL 1", no access, std fixed disk         Bay ④ 3.5", SL 1", no access, std fixed disk         Bay ④ 3.5", SL 1", no access, std fixed disk         Bay ④ 3.5", SL 1", no access, open for fixed disk         Bay ④ 3.5", SL 1", no access, open for fixed disk         Bay ④ 3.5", SL 1", no access, open for fixed disk         Bay ④ 3.5", SL 1", no access, open for fixed disk         Bay ④ 3.5", SL 1", no access, open for fixed disk         Bay ④ 3.5", SL 1", no access, open for fixed disk         Bay ④ 3.5", SL 1", no access, open for fixed disk         Bay ④ 3.5", SL 1", no access, open for fixed disk         Bay ④ 3.5", SL 1", no access, open for fixed disk         CPU System-       Fan         Fan       Fan         Fan       Fan         Diskette       (top) /         Disk       Doperator Information Panel in front         SCISIBelect near startup by pressing CTRL+A (SCSI models)         Ships with Diagnostics CD, ServerGuide Setup and Installation CD         Predictive Failure Analysis on disk(s) with IBM Director can alert the administrator of an imminent component failure									ime <sup>7</sup> 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	ng the war	ranty	period <sup>3</sup>
Modele ennounce	od January 18 200	5					(X	3U0B)	© IBM Cor	p. Jan	uary 200

## IBM @server<sup>™</sup> 325 (8835)

xREF by eServer Field Skills Enablement Team

IBM <sup>®</sup> 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 <sup>3</sup> 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 <sup>2</sup> EIDE None (open) 80GB <sup>2</sup> EIDE None (open) 80GB <sup>2</sup> 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 / <b>Errc</b>	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 <b>16-bit</b>
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 <sup>®</sup> 53 orts RAID- 68-pin LVI Iller in CSB cable to tw to 15000 r n SCA-2 co	<b>C1020 / Ultra3</b> <b>1 mirroring</b> (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 <sup>®</sup> 813 bridge B fo HyperTrans National Se	1 PCI-X or PCI-X sport clo emicond	Bridge expans ock (PCI uctor <sup>®</sup> F	Chip p ion slot , AC '9 C8736	oroviding tw ts) / <b>8111</b> 7, Etherne 6 Super I/0	vo PCI-X bridg <b>I/O HyperTrar</b> t, SMBus, USE	es running <b>sport Bri</b> 3, EIDE, L	g at 100Mhz d <b>ge Chip</b> 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 <sup>6</sup> 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 <sup>®</sup> 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 <b>de</b> ™ (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	<sup>r</sup> 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: half-length, 64-bit 100MHz PCI X 1.0 (3.3v); Bus C         Image: Construct the state of									ervice <sup>3</sup> n - Fri days, nse time <sup>7</sup> 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 <sup>3</sup> 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 <sup>1</sup> 2.2Ghz 2.4Ghz		1GB 1GB 1GB 1GB	Chipkill Chipkill Chipkill Chipkill Chipkill	None (open) 80GB <sup>2</sup> EIDE None (open) 80GB EIDE	Ultra320 EIDE Ultra320 EIDE	2 hot-swap 2 fixed	2x3 2x3 2x3	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 <b>and Corr</b> e	gistered ed pairs <b>ecting</b>	184-pin [a bank ( <b>ECC)</b> vi	ECC DDR- ] / 2-way me a <b>16-bit Ch</b>	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 lels: 36.40	X Bus hannel TA-10 2-drop 3B sup	B / supp I / 16-bit 0 contro 0 EIDE ( ports up	oorts <b>RAID-</b> 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 <b>AMD® 813</b> bridge B fo HyperTran National S	31 PCI-X or PCI-X nsport clo Semicond	<b>Bridge</b> expan ck (PC uctor®	e Chip p sion slo Cl, AC '9 PC8736	providing tv ts) / <b>8111</b>   07, Etherne 66 Super  /(	vo PCI-X bridg I <b>/O HyperTran</b> t, SMBus, USE	es runnir I <b>sport Br</b> 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 24X-10X <sup>6</sup> CD-ROM / IDE / <i>Diskette and keyboard</i> : none (USB diskette and keyboard optional); legacy not supported Rear ports Front ports / graphics Console interconnect™ cabling not supported / NetBay Local Console Manager (LCM), NetBay Remote Console Manager (RCM), and USB Conversion Option (UCO) are supported											
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 <b>ide</b> ™ (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		MITED WARRA	NTY <sup>3</sup>
Top       Bay @ 3.5", SL 1", access, std icbd-HOM         Bay @ 3.5", SL 1", access, std icbd-HOM         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         Systemboard       PCI slot         #2       PCI slot         #1       Power         CPU       DIMM sockets         Power       Stealth black color front bezel         Utility tray in front slides out from under middle bay (USB devices)         H 1.72" (1U) x W 17.3" x D 25.7"; 43.7mm x 439.9mm x653.3mm         26 to 32 lbs; 11.8kg to 14.6kg (minimum to max configuration)         Configuration/Setup Utility: F1 at startup         System Partition Boot: ALT+F1 at startup         Operator Information Panel in front         LSI Logic Configuration Utility: CTRL+C at startup         Operator Information Panel in front         LSI Logic Configuration Utility: CTRL+C at startup         Operator Information Panel in front         LSI Logic Configuration Warranty SevicePac part num 69P950         Year IOR 9x5, NBD resport         Not HEC plug)         Predictive Failure Analysis® on processor(s), voltage regulator         Mith IEC plug)         Predictive Failure Analysis® on processor(s), voltage regulator         Mittp://www.ibm.com/							n - Fri lays, nse time <sup>7</sup> 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 3 with tv	two 14		v <sup>13</sup> (model depe SCSI disks or ks	endent):	4	24x7 <sup>14</sup> to issues o	oll-free support f during the warrar	or warranty hty period <sup>3</sup>

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 <sup>®</sup> 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 <sup>3</sup>	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 <sup>2</sup> 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	<ul> <li>2x3 2 x Gigabit</li> </ul>	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 <sup>6</sup> CD-ROI <i>Rear:</i> two USB ( <i>Front:</i> two USB ( C2T Interconnect <sup>†</sup> (RCM), and USB	64-bit 100MHz E M / IDE / <i>Disket</i> Vers 1.1), serial Vers 1.1); <i>Grap</i> i <sup>M</sup> _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 <sup>®</sup> 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 D-ROM installa	/ 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 <sup>13</sup> (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): <sup>7</sup> 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 <sup>3</sup> 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

The by eserver herd skins chablement ream												
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 <sup>3</sup> 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 <sup>2</sup> EIDE None (open) 40GB <sup>2</sup> 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 <sup>1</sup> 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 <b>cking an</b>	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 Checksum 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 <b>RAID-1</b> 58-pin LVD er in CSB5 ble to two d orts up to 1	<b>C1020 / Ultra</b> <b>mirroring</b> (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 <b>ServerWo</b> 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 <b>mpion</b> ™ 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 <sup>6</sup> ( <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); <sup>1</sup> cable ( <sup>-</sup>	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† <b>stics</b> ™ (	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 <b>de</b> ™(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	<ul> <li>Inter</li> <li>On s</li> <li>cove</li> <li>next</li> <li>On s</li> <li>eligit</li> <li>3 y</li> <li>(Se</li> <li>3 y</li> <li>(Se</li> <li>3 y</li> <li>(Se</li> <li>othe</li> <li>http://servi</li> <li>24x7</li> </ul>	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	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 <sup>3</sup> Fri s, time <sup>7</sup> 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.

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## 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 alog) 400 Hit mgistand 240 per ECO DDR2.SDR4M DIMMs (alog) 400 Hit connector data and systemboart () 400 Hit mark () alors () al	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 <sup>™</sup> : online spare and memory miror / Error Checking and Correcting (ECC) via 16-bit Checksum Chipkel <sup>™</sup> : 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 <sup>10</sup> / 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 <sup>(™)</sup> : 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 <sup>1</sup> ) / rack-mount only / supported in 26" deep racks such as the IBM NetBAY™ Back products Architecture / chipses         Mechanical Architecture / chipses       EIA 19" Rack (1U <sup>1</sup> ) / 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 <b>SCS</b>			
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 <sup>11</sup> 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 <sup>2</sup> / 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 <sup>2</sup> 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 <sup>2</sup> 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 <sup>3</sup> 32P0796         Stot 2: fullsze, 64-bit 130MH2 PCI X 1.0 (3.3%); Bus B       System Daritional Warranty Service <sup></sup>	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 <sup>10</sup> , and configuration utilities), IBM Director <sup>10</sup> , 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 <sup>™</sup> , 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 <sup>3</sup> Vertue       Slot 2: fullsize, 64-bit 133MHz PCI X 1.0 (3.3v); Bus A       LIMITED WARRANTY <sup>3</sup> 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 <sup>3</sup> Power       Fort Differentiation and the sockets       Stot 1: low-profile, halfsize, 64-bit 130MHz PCI X 1.0 (3.3v); Bus B       LIMITED WARRANTY <sup>3</sup> Systemboard       Poil       Poil       Poil       Poil       Stot 2: fullsize, 64-bit 132MHz PCI X 1.0 (3.3v); Bus B       LIMITED WARRANTY <sup>3</sup> Systemboard       Poil       Poil       Poil       Poil       Stot 2: fullsize, 64-bit 132MHz PCI X 1.0 (3.3v); Bus B       LIMITED WARRANTY <sup>3</sup> 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		·····, ··· <b>·</b> , ···· <b>·</b> , ······	,, ()	,, -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 <sup>3</sup>
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,				
<ul> <li>Stealth black color front bezel</li> <li>Cable Management Arm</li> <li>Cable Management Arm</li> <li>H 1.69" (1U) x W 17.32" x D 27"; 43mm x 440mm x686mm</li> <li>Cable Management Arm</li> <li>H 1.69" (1U) x W 17.32" x D 27"; 43mm x 440mm x686mm</li> <li>Configuration/Setup Utility: F1 at startup</li> <li>Configuration/Setup Utility: F1 at startup</li> <li>Configuration Setup Utility: F1 at startup</li> <li>System Partition Boot: ALT+F1 at startup</li> <li>System Partition Boot: ALT+F1 at startup</li> <li>System Partition Boot: ALT+F1 at startup</li> <li>Operator Information Panel in front</li> <li>LSI Logic Configuration Utility: CTRL+C at startup</li> <li>Includes two line cords (9 ft 110v cable with NEMA plug and 9 ft universal interrack HV cable with IEC plug)</li> <li>Predictive Failure Analysis® on processor(s), voltage regulator modules, memory, fans, power supply, and disk options</li> </ul>			,			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		<sup>2PU</sup> 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				<ul> <li>3 year IOR 24x7, 2 hr avg response</li> </ul>
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)
<ul> <li>Includes two line cords (9 ft 110v cable with NEMA plug and 9 ft universal interrack HV cable with IEC plug)</li> <li>Front 2.5 HDD</li> <li>Predictive Failure Analysis<sup>®</sup> on processor(s), voltage regulator modules, memory, fans, power supply, and disk options</li> <li>disk bay</li> <li>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></li></ul>		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 <sup>14</sup> 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

	L2 x Processor cache M		Disk controller Opti		Diskbays	Slots x bays	Ethernet		Available date			
8837-1Vy-1Vx 1 x	Xeon <sup>®</sup> 3.0GHz 2MB 10 Xeon 3.0GHz 2MB 10 Xeon 3.0GHz 2MB 10	GB None (open 2.5	5) Ultra320 Noi	D 585W ne 585W	2 hot-swap 4 hot-swap 2 simple-sp	2x4	2 x Gigabit 2 x Gigabit 2 x Gigabit	3 year	Mar 2005			
8837-35ý-35x 1 x 2	Xeon 3.2GHz 2MB 10 Xeon 3.4GHz 2MB 10 Xeon 3.4GHz 2MB 10	GB None (open 3.5	) Ultra320 DV	D 585W	2 hot-swap 2 hot-swap 4 hot-swap	2x3	2 x Gigabit 2 x Gigabit 2 x Gigabit	3 year	Mar 2005			
8837-36ý-36x 1 x 2 8837-45y-45x 1 x 2	Xeon 3.4GHz 2MB 10 Xeon 3.6GHz 2MB 10 Xeon 3.6GHz 2MB 20	GB None (open 3.5 GB None (open 3.5	) SATA DV ) Ultra320 DV	D 585W D 585W	2 simple-sp 2 hot-swap 2 hot-swap	2x3 2x3	2 x Gigabit 2 x Gigabit 2 x Gigabit	3 year 3 year	Mar 2005 Mar 2005			
8837-E2ý-E2x 1 x 2 Positioning Processor(s)	Xeon 3.6GHz 2MB 20 A highly manageable, 1 x Intel <sup>®</sup> Xeon 3.0, 3.	<u>GB None (open 2.5</u> ultra-dense 1U, 2-way	) Ultra320 Noi server that deliver	ne 585W rers performar	2 simple-sp	2x3 g in space	2 x Gigabit ce-constraine	<u>3 year</u> d enviror	Mar 2005			
Cache SMP support Implementation	2MB L2 cache on all n 2-way SMP / up to two Systemboard contains low-profile 100MHz) an	nodels / on die of proc o Xeon Processors (sa two Intel 604 pin micro	essor / at proces ame speed/cach p-PGA ZIF socke	sor speed / E e size) ts, eight DIMN	CC /I slots, two P(		0,7 (	,	MHz, one			
Memory	1GB std / 16GB max <sup>13</sup> connector slots on syst Active Memory <sup>(™)</sup> : on	/ 8 slots (6 avail) / PC emboard / DIMMs mu	2-3200 400MHz st be installed in	registered 240 matched pairs	)-pin ECC DD s [a bank] / 2-\	way mer	AM DIMMs / nory interleav	′ eight DI /e / dual	MM gold- channel /			
SCSI disk controller	LSI Logic <sup>®</sup> 53C1020 / Mirroring) with two SCS	SI disks in front bays /	one 16-bit interna	al channel / n	o external con	nector	1 mirroring	(Embedo	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	e to DVD-RÓM two 146GB HDD <b>SCS</b>	<b>12.5</b> :four 2.5" 73	BGB HDD <b>SA</b>	<b>TA</b> : 500GB wi	th two 2	50GB HDD					
Mechanical Architecture / chipsets	EIA 19" Rack (1U <sup>4</sup> ) / r Intel E7520 / Intel Men 32bit/33MHz PCI) / Inte to Host Bridge for grap	nory Controller Hub (N PCI-X Bridge (suppo	ICH) / 3 PCI bus orts 133MHz PCI	es (one 64bit/ X slots 1 & 2.	133MHz PCI-) LSI Logic 530	K1.0, one C1020) /	e 64bit/100M ICH5R Sout	Hz PCI-> h Bridae	(Thin IMB			
Bus slots Ethernet controllers	components; keyboard (See below) two availal Two gigabit 10/100/100	l, mouse, serial) ble PCI-X 1.0 / no hot· 00 ethernet ports / Broa	-swap Active™ P adcom BCM5721	CI slots / optio / two full giga	nal full-length bit ethernet M	PCI-Exp AC and	ress x8 Rise PHY layer fu	r Avail nctions /				
DVD-ROM / diskette Rear ports Graphics	on planar / PCI-X 64-bit 100MHz / full duplex / Wake on LAN <sup>®</sup> / Alert Standard Format 2.0 / two rear RJ-45 ports OM / diskette ints DVD-ROM / IDE; <i>Diskette:</i> none <i>Rear:</i> Two USB (2.0), serial (9-pin), video, two ethernet (RJ-45), one RJ-45 (sys mgmt) / mouse ps2 / keyboard ps2											
Systems mgmt	IBM Baseboard Mana as temp, memory, option on planar for continuou	onal disks, fans, power is 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 OM installation and co	d start mode	512MB ( 1GB (2x	6GHz/2MB L2 2x256) PC320 512) PC3200 1GB) PC3200	00 CL3 İ CL3 EC	EČC DDR2 F C DDR2 Chi	pKill	13N0667 73P3523 73P2865 73P2866			
Cooling fans Power supply	seven-nine fans / varial 585 watt hot-swap (sec			80GB S/ 160GB S	ATA 7.2K Sim SATA 7.2K Sin 10K Ultra320	ple Swaj nple Swa	o HDD ap HDD		73P8002 73P8003 90P1304			
Prerequisites	auto re-start Monitor, keyboard, mo	use, rack, disk (some	), operating sys	ServeRA	10K Ultra320 ND 6i+ adapto Supervisor Ac	or		HDD	32P0796 13N2190 73P9341			
				Second PCI-Exp	585W Power ress x8 full-ler ptions availabl	supply ngth rise	r card	oc/us/acc	90P5280 22R9293 cessories			
		v-profile, halfsize, 64 size, 64-bit 133MHz		I X 1.0 (3.3v	); Bus A	LI	MITED WA	RRANT				
Fan Fan Power Supply	board DIMM bt_sockets Bay 3 3.5" Bay 3 3.5" Bay 4 ba	5", UltraSlim 0.5", acc , SL 1", acc , SL 1", acc ays only available wit	cess,std fixed o cess,open for f	or hot-swap c xed or hot-sv	del) lisk vap disk VD-	Internati On site, coverag next bus	ional Warrar 8 am - 5 pm e excluding siness day re	nty Servi , Mon - F holidays esponse	Fri S, time <sup>7</sup>			
1 & 2       Length       □ <td< td=""></td<>												
Disk (opt) DVD Drost)	FanFanFanFan Drop Down Light Path Diagnostics Panel → Configu ⇒ Diagnos System → Network	ration/Setup Ütility: F stics (PC-Doctor™): Partition Boot: ALT+ s Boot: F12 at startu	F1 at startup F2 at startup F1 at startup p	o max coming		<ul> <li>3 year</li> <li>(Servio</li> <li>4 year</li> </ul>	cePac part nu <b>IOR 24x7, 2</b> cePac part nu <b>IOR 24x7, 4</b> cePac part nu	hr avg r m 21P20 hr avg r	response 174) response			
Front 3.5 HI		r Information Panel ic Configuration Utili s two line cords (9 ft	in front ty: CTRL+C at s 110v cable with		and 9 ft 🚙 (	<ul> <li>5 year</li> <li>(Servio</li> <li>Other Set</li> </ul>	IOR 9x5, NE cePac part n ervicePac o	<b>3D respo</b> um 69P9 <b>ptions a</b>	<b>onse</b> 9246)			
	Iniversal 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     or disk bay											
See footnotes for imp						()/00	6B) © IBM (		0.00			

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 <sup>®</sup> Type-model Qty x Pro	DODEEOK	L2 cache	FSB MHz	Memory	Memory	Disk	Disk	Hot -swap o fixed disk bay		Ethornot	Limited Availa warranty <sup>3</sup> 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	<sup>1</sup> 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 <b>nd Corr</b>	ed 184-pin ed pairs [a	ECC DDF bank] / 2- <b>CC)</b> via <b>16</b>	way memory i <b>-bit Checksu</b>	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 <b>RAID-</b> 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 <b>ánd Ch</b> Bridge (I 0 / CSB to Super	ampion™ IMB2 bus 5 South B 1/O) / Nat	<b>4.0 LĖ</b> / ( 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 <sup>6</sup> <i>Rear:</i> on <i>Front:</i> two C2T Inter	/ PCI-X 6 CD-ROM e USB (\ o USB (\ connect <sup>1</sup>	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 <sup>®</sup> / 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/ <b>uide</b> ™(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 <sup>™</sup> -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 PIL Blot 2 Panel #2 DIMM sockets Opt 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 <sup>-</sup> 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	<ul> <li>3 year   International international internationa</li></ul>	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 <sup>3</sup> n, Mon - Fri g holidays, response time <sup>7</sup> grade options is): <sup>7</sup> 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 <sup>Lar</sup> 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 <b>512MB</b> etd / 68B max <sup>41</sup> / two slots used / two slots available / <b>PC2100</b> 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 <sup>®</sup> 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				
Processoria (in the processoria (in the standard processor greater (in L3 carcher) (in the processor greater (in the procesor greater (in the processor greater	equipme	nt to suppo	ort DC powe	er environi	nents							
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 <sup>1</sup> with 53 sor / at proc eon Proces vo Intel 603-	3MHz froi essor 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 <b>rrecting (E</b>	ECC DDF bank] / 2- CC) via 16	R-SDRAM DIM -way memory i <b>6-bit Checksu</b>	Ms / four nterleave <b>m Chipki</b>	/ 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 <sup>6</sup> Grand Champion <sup>14</sup> 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 <b>RAID</b> 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 <sup>™</sup> / 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 <sup>wi</sup> (CD-ROM installation and configuration utilities), IBM Director <sup>™</sup> , 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 <sup>®</sup> 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 <sup>w</sup> (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 <sup>™</sup> (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 <sup>6</sup> 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 <sup>™</sup> (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 <sup>™</sup> (CD-ROM installation and configuration utilities), IBM Director <sup>™</sup> , 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 <sup>™</sup> .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	<b>managem</b> 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	<b>s</b> ™ (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 <sup>TM-4</sup> 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 <sup>3</sup> 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	( <b>-48 to -60 V</b> lual input sou lant / not hot	dc [direct arces (two p -swap / aut	current] power so to-restart	) / auto-sensir urces) / support	<sup>ng /</sup> Rem Serv	note Superv /eRAID <sup>™</sup> -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			-		<b>V</b> 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 <sup>13</sup> (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	<ul> <li>Interna</li> <li>On site covera next bu</li> <li>On site (in elig</li> <li>3 yea (Serv</li> <li>3 yea (Serv</li> <li>4 yea (Serv</li> <li>5 yea (Serv</li> <li>2 yea</li> </ul>	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): <sup>7</sup> 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 Drespo num 69P92 BD respo num 69P92 ptions a n/ wamom: port for v	Fri s, time <sup>7</sup> 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 <sup>®</sup> 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 <sup>®</sup> 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	<b>s</b> d L2 cache in Flip Ch	ip Pin Grid Array (FC	-PGA2)
Memory	2GB std / 6GB <sup>13</sup> 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. <sup>5</sup> les out from front	) k drive carrier	4-bit PCI
Mechanical Rack support PCI bus slots Chipset Bays	EIA 19" Rack (2U <sup>4</sup> ) 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 <sup>6</sup> 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	<sup>®</sup> , 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 <sup>®</sup> 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 <b>urrent])</b> / 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 <b>2U Rack</b> <b>2U Rack</b> access, std diskette access, std diskette access, std disk no access, optional disk	<ul> <li>Raven black color (front b Configuration/Setup Utility pressing F2 at startup</li> <li>SCSISelect near startup I CTRL+A</li> <li>PC-Doctor™ diagnostics of Several hardcopy publica</li> <li>H 3.5" x W 17.5" x D 20.0</li> <li>H 89 mm x W 445 mm x I</li> <li>34 to 37 pounds (15.4 to 3</li> <li>IPMI 1.5 and WfM 2.0-cord</li> </ul>	/ invoked by by pressing on diskette tions " 0 508 mm 16.8 kg)	<ul> <li>1 year parts ar</li> <li>International W</li> <li>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)</li> <li>24 hr x 7 day 4 hour avera (No ServiceP)</li> <li>24 hr x 7 day 2 hour avera (No ServiceP)</li> </ul>	arranty Service <sup>3</sup> 5 pm, Mon - Fri ding holidays, day response time <sup>7</sup> varranty service is (in eligible e, Mon-Fri excluding ir response time ac <sup>®</sup> part number) coverage, ge response time ac part number) ge response time ac part number)
		All models: Max int disk of 72.8GB <sup>2</sup> with two 36.4GB			support for warrant he warranty period <sup>3</sup>
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

IBM® Type-model Qty	x Processor cache Memo	Ultra320 SCS ory SCSI disk contro			Power Availabl supply Compliant dat
3847-24X 2 x Pentiu	Im <sup>®</sup> Xeon 2.4GHz 512KB 1G Im Xeon 2.4GHz 512KB 2G 7 models are designed for net	B 1 x 146.8GB 10K 2 x Ult	a320 2U rack 6x	32HS Yes[	DC power NEBS-3 Jul 2004 DC power NEBS-3 Jul 2004 C power environments
Positioning Processor(s) L2 cache Implementation SMP support	Network Equipment Building S 2 x Intel® Pentium® Xeon 2. 512KB std and max / ECC / at Motherboard contains two Int subsystems 2-way SMP via	ystem (NEBS) level 3-comple 4GHz with 533MHz frontsi processor speed / processor tel Socket 604 INT3/FCPGA	nt for telecommunic de bus and L2 cache in Fli six DIMM sockets	<i>cations carrier-gra</i> p Chip Pin Grid A	ade environments Array (FC-PGA2)
Memory	Up to 2GB std / 12GB <sup>13</sup> ma ships with two 512 GB or 1G matched pairs required / two-	B DIMMs / Error Checking	and Correcting (E	ECC) memory co	
SCSI channels SCSI disk SCSI disk bays	Adaptec <sup>®</sup> AIC-7902W / dual SCSI Channel A: external 16 SCSI Channel B: one interna 1 x 73.4GB or 146.8GB Ultra Two fixed disk bays (not hot- EIDE ATA-66 controller in Sc	6-bit .8mm VHDCI 68-pin exi al 16-bit 68-pin LVD cable fro a320 SCSI, 10K rpm, 4.9ms swap) in disk drive carrier th	ernal connector (no m controller to two read seek, S.M.A.F at slides out from	o cables) I-bay disk drive c R.T. <sup>5</sup> front	carrier
Mechanical Rack support PCI bus slots Chipset Bays	EIA 19" Rack (2U <sup>4</sup> ) x 20-inc Designed for installation in a t (See below) three full height t PCI 2.2 / peer PCI buses / n Intel® E7501 chipset / E750 South Bridge) / P64Hz PCI E ICH3-S South Bridge for EID Baseboard Management Cor (See diagram below): 3 bays	wo-post, 19" rack unit only (r full length 64-bit 133MHz slo o hot-swap Active™ PCI slot 1 MCH North Bridge for CIO Bus B (slots, SCSI) and C (s E, USB, LPC bus for Super I troller	s / three low-profile 3 3 and PCI A 64-bit ots) / O National Semico	e half length 64-b 33MHz (graphic onductor PC8741	oit 66MHz PCI slots / cs, ethernet,
10/100 ethernet CD-ROM / diskette Rear ports Graphics controller	2 x Intel 82546 / on planar / f 24X-10X <sup>6</sup> CD-ROM / multises Two USB ports (Version 1.1); connector for front panel alarm Y-splitter cable) SVGA / PCI bus / ATI <sup>®</sup> Rage X	ssion / IDE interface / bootab RJ-45 serial; PS/2 keyboard; n relay contacts / no parallel p	le wo RJ-45 ethernet; ort / mouse connect	DB-15 graphics s to USB port (or	; 68-pin SCSI; DB-15 male keyboard port with standard
Security	Power-on password / admin				
Alarm panel	External alarm panel in front			2	
Status LEDs Systems mgmt Diagnostics OS support Software ship group	four alarm panel LEDs: power Operator Information Panel Integrated service processon processors, temperature, volt LED diagnostics and on-boar Microsoft Windows 2000, Win Resource CD (CD-ROM inst Product Guide)	(in front) / includes switches ( · (Baseboard Management Co age, and power supplies acti- d diagnostics providing an L dows 2003 Advanced Server	MI, power, reset) a htroller) / on planar / vate alarm panel LE ED map to a failing / Red Hat AS 2.1 /	and status LEDs ( / failures or thresh Ds / component SLES	olds in fans, memory,
Keyboard / mouse Power supply	None (since rack-based) Std: one (14X) or two (24X); 480 watt (-48 to -60 V dc [4 supports dual input sources (1 redundant / hot-swap / auto-	direct current]) / wo power sources)/		DDR ECC RDIN available via sp	
Fans Prerequisites	Four fans / multispeed / not ho fan failure signals front panel a fan in each power supply / fan Appropriate DC power source monitor, keyboard, mouse, ra	alarm LED / on each Pentium III processo e and customer supplied w	or ring,		
Slot 2: fullsize, 64 Slot 3: fullsize, 64 Slot 4: low-profile,64 Slot 5: low-profile,64	-bit 64MHz PCI-X (5v), Bus B -bit 64MHz PCI-X (5v), Bus B -bit 64MHz PCI-X (5v), Bus B -bit 133MHz PCI-X (3.3v), Bus -bit 133MHz PCI-X (3.3v), Bus -bit 133MHz PCI-X (3.3v), Bus	s C s C s C c	Utility invoked by tup tartup by pressing ostics on diskette publications ' x D 20.0"	<ul> <li>⇒ 3/3 yea</li> <li>⇒ Interna</li> <li>⇒ On site</li> <li>covera</li> <li>next bu</li> <li>⇒ 2 year</li> <li>upgrad</li> </ul>	AITED WARRANTY <sup>3</sup> ar parts and labor tional Warranty Service <sup>3</sup> e, 8 am - 5 pm, Mon - Fri ge excluding holidays, usiness day response time <sup>7</sup> on site warranty service le options (in eligible
Slot 6: low-profile,64 CD-ROM disk bay Bay @ 3.5", 0.5", Bay @ 3.5", SL 1",	2U Rack disk bay access, std CD-ROM no access, std disk no access, optional disk	<ul> <li>⇒ H 87.6 mm x W 43</li> <li>⇒ 34 to 37 pounds (1</li> </ul>	5.4 to 16.8 kg)	• 9 holid 96P2 • 24 h 4 ho 96P2 • 24 h 2 ho 96P2 • 24 h 2 ho 96P2	

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)

xREF by eServer Field Skills and Education Team

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							States & Contract	
IBM <sup>®</sup> Type-GAV-model Qt	y x Processor	L2 Cache Memory	SCS Disk contro	il Form Iler Facto	Slots x bays r (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	: 1MB 512MB 1MB 1GB 1MB 1GB 1MB 1GB 1MB 1GB 1MB 1GB	None 2 x Ultra None 2 x Ultra None 2 x Ultra None 2 x Ultra None 2 x Ultra	1320 2U 1320 2U	4x8 (6 hot-swap) 1 4x8 (6 hot-swap) 1 4x8 (6 hot-swap) 1 4x8 (6 hot-swap) 1 4x8 (6 hot-swap) 1	1 x 625W hot-swap 1 x 625W hot-swap	2 x Giğabit	Auă 2004
Positioning Processor	1 x Intel® Xec	on™ Processor 2	.8, 3.0, 3.2, 3.4,	<b>3.6Ghz</b> wi	bility and expandabilit th 800MHz frontside Simultaneous multi	bus / Optimized for	rving Web en or Extended	vironments Memory
L2 cache SMP support Implementation	1MB L2 Cache 2-way SMP / u Systemboard of	e / on die of proce up to two Xeon P contains two Intel	essor / at process rocessors (same PGA604 micro-F	sor speed speed/cad GA ZIF so		DIMM slots, two lo		I-X
Memory	pin ECC DDR2 pairs [a bank] Checking and	2-SDRAM DIMMs / 2-way memory i	/ eight DIMM go nterleave / dual o <b>C) /</b> optional <b>16-k</b>	ld-connect channel / /	s available / DIMMs / or slots on systembo Active Memory™: Me sum Chipkill™ correc	ard / DIMMs must emory mirroring, ho	be installed ir t-spare memo	n matched ory <b>/ Error</b>
SCSI disk controller	supports RAID	<b>)-0, 1,10</b> with up t	to one hot-spare	e disk / op	oller (LVD 320MB/settional IBM ServeRAID			
SCSI channels	Two 16-bit cha backplane for	six disks; Chann	al and one extent al A: 16-bit 68-p	nal) / <i>SĆS</i> in interfac	<i>BI Channel B:</i> 16-bit ( e to support external rs with external conr	SCSI devices via	external SCS	
Disk - capacity Disk - bays	Enhanced IDE None standard Six hot-swap /	ATA-100 control / supports 7200-1 80-pin SCA-2 con	İer in ICH5 Sout 5000 rpm disks / nectors / filler pa	n Bridge / one backp nels install	one connector on pla plane ed in each disk bay / a	anar /`one 1-drop I all disk bays Ultra32	DE cable (CI 20-enabled	
Mechanical Chipset	Intel E7520 / I slots 3 & 4) / ServeRAID 7k	Memory Controlle Intel Dodson I/O	r Hub (MCH) / Iı Proccesor (supp South Bridge (Th	ntel I/O Co orts 100M	NetBAY™ Rack proc ontroller Hub 5 (ICH5 Hz PCI-X slots 1 & 2 Host Bridge for graph	) / Two Intel PCI-X 2, Adaptec AIC-790	Hubs (133M) 2 and option	IHz PCI-X nal
Bus slots	(See below) F	our available PCI	-X 1.0 / no hot-s	wap Activ	e™ PCI slots			
Ethernet controller					721 / two full gigabit			
Optical / diskette Front & Rear ports	8X-24X <sup>6</sup> DVD- Front: one US	ROM / IDE; Disk	<i>ette:</i> 3.5 <sup>rr</sup> 1.44ME a <i>r:</i> two USB (Vers	diskette o	N <sup>®</sup> / Alert Standard F drive / dust cover board, mouse, serial (			
Graphics	ŠVGA / ATI® F	Radeon™7000m′/	on planar / 16MI	3 DDR SD	RAM std/max / 32-bit	33MHz PCI 2.2 bu	IS	
Security	Power-on pass	sword / administrat	tor password / un	attended b	oot / selectable boot s	sequence		
Systems mgmt Diagnostics Software	H8S2168 / on environmental fans, power su Adapter II slim continuous por <b>Drop down lig</b> map to failing p	ard Management planar / provides monitoring such upp / supports op nline with reseven wer (no ext powe ght path diagnos part (located on frr (DC Add on frr	system and as temp, optiona tional Remote S ved connector for er reqd) stics panel provisiont panel)	l disks, upervisor r ding LED	Xeon 2.8GHz 800MH Xeon 3.0GHz 800MH Xeon 3.2GHz 800MH Xeon 3.4GHz 800MH Xeon 3.6GHz 800MH 512MB (2x256) PC32 1GB (2x512) PC3200 2GB (2x1GB)PC3200 IBM ServeRAID-7k A	IZ/1MB L2 Proc Upg IZ/1MB L2 Proc Upg IZ/1MB L2 Proc Upg IZ/1MB L2 Proc Upg 000 CL3 ECC DDR2 00 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 I None standard Std/Max: one/tw restart / reduct	<sup>M</sup> (CD-ROM insta Director systems d (because rack-b wo 625 watt hot-sy dant with two powe ctored Cooling™	mgmt, others ased) wap / rear access er supplies / auto	s / auto -sensing	IBM Remote Supervis 73.4GB 10K Ultra320 146.8GB 10K Ultra320 625W (N. Amreica) H NetBAY Local Consol NetBAY Remote Con	sor Adapter II Slim SCSI Hot-Swap SL 0 SCSI Hot-Swap SI lot-Swap Power Sup le Manager	_ HDD	73P9341 90P1305 90P1306 26K5097 1735L04 1735R16
	(six fans with c	optional second po is installed; All: vari	wer supply) / red	undant	Other options at <b>ibm</b>		ries	1755610
Prerequisites		ard, mouse, SCS					WARRANT	<b>'Y</b> 3
Slot 2: low-profile, Slot 3: full. 64-bit 1	64-bit 100MHz 3 33MHz 3.3v PCI 33MHz 3.3v PCI	3.3v PCI-X non hot I-X, not hot-swap, I-X. not hot-swap.	, Bus A⇔ Configu Bus B*⇔ Diagno Bus B*⇔ System s riser ⇔ Networ	iration/Set stics (PC-I Partition E k Boot: F1	upter slots (no screws) up Utility: F1 at startup Doctor™): F2 at startup 3oot: ALT+F1 at startu 2 at startup .EDs: Power-on LED	<ul> <li>⇒ 3 year parts</li> <li>⇒ Internationa</li> <li>⇒ On site, 8 ar</li> <li>coverage ex</li> <li>business da</li> </ul>	and labor I Warranty Se n - 5 pm, Mon cluding holid y response til	rvice³ - Fri ays, next me <sup>7</sup>
Opt disk     Opt disk     Opt disk	Opt disk     Opt disk	Drop Down light pathpanel D diskette D D D D D D D D D D D D D D D D D D	Rack identific system ≎ Predict	ation LEĎ -error LEI ve failure	LED, system , information LED, an D analysis on disk optio ors, VRMs, power	ons, • 9 hr cover holidays,	ions (in eligib age, Mon-Fri ( 4 hr response	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 ⑤ 3.5", SL 1" Bay ⑥ 3.5", SL 1" Bay ⑥ 3.5", SL 1"	, access, hot-s , access, hot-s , access, hot-s	DVD-ROM swap, open for disk swap, open for disk swap, open for disk swap, open for disk	supplie Directo of an im ≎ Rack: (H 85.4 ≎ 46.5 to	s, and fans r can alert minent cor H 3.36" x mm x W 4 62 pound	in conjunction with IB the system administra mponent failure W 17.5" x D 27.5" 143.6mm x D 698mm s	<ul> <li>24 hr x 7 d 4 hour ave (ServicePa</li> <li>24 hr x 7 d 2 hour ave</li> </ul>	c <sup>®</sup> 21P2077) ay coverage, rage respons c 21P2078) ay coverage, rage respons c 21P2093)	
Bay ⑦ 3.5", SL 1" Bay ⑧ 3.5", SL 1" Bays 3 through 8 su (2 slots used, addition via SCA-2 connector	', access, hot-s upport six SL disk onal PCI SCSI ad	swap, open for disk swap, open for disk ks; or 1 DDS5 Tape laptor req)	e drive		nt disk capacity:	Other Service http://www.i	cePac option bm.com/ /its/pdf/wamc	omxeu.pdf
See footnotes for imp		nformation	• = Hot-sw		146.8GB SL disks	issues durin	g the warrant IBM Corp. A	y period <sup>3</sup>

See footnotes for important warranty information

## IBM @server™ xSeries™ 360 (June 2003)

xREF by eServer Field Skills Enablement Team

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IBM <sup>®</sup> <u>Type-model</u> Qty x Pr 8686-1RQ 1 x Xeon <sup>™</sup> < 8686-1SQ 2 x Xeon   < 8686-1TQ 2 x Xeon	MP 2.0GHz 1MB 1GB Chipkill None Ultra160	0 3U <sup>4</sup> 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 <sup>1</sup> 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 <b>3GB</b> std / 16GB max <sup>12,13</sup> / 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 <b>Error Checking and Correcting (ECC)</b> via <b>16-bit Check</b> 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 <sup>4</sup> ) 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 <sup>6</sup> CD-ROM / 3.5" 1.44MB diskette drive Intel 82559 10/100 ethernet controller / on systemboard / full SVGA / S3 <sup>®</sup> 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 <sup>TM</sup> / 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 /	<ul> <li>2GB PC1600 ECC DDR SDRAM RDIMM<sup>12</sup> 33L3287</li> <li>Xeon MP 2.0GHz/1MB L3 Cache Proc Upg</li> <li>Xeon MP 2.5GHz/1MB L3 Cache Proc Upg</li> <li>Xeon MP 2.8GHz/2MB L3 Cache Proc Upg</li> <li>370 watt Hot-Swap Redundant Power Supply</li> <li>31P6108</li> </ul>
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
<ul> <li>Six available 3.3 volt A</li> <li>Bus 2 (B) with two slope</li> </ul>	Active PCI-X slots: ots supports (slots 1, 2): bit 122MHz PCI X bot swap	Other options at ibm.com/pc/us/accessories
<ul> <li>or two fullsize, 64-b</li> <li>or two fullsize, 64-b</li> <li>or two fullsize, 64-b</li> <li>or two fullsize, 64-b</li> <li>Bus 1 (A) with four ski</li> <li>four fullsize, 64-b</li> <li>or two fullsize, 64-b</li> <li>or four fullsize, 64-b</li> <li>or four fullsize, 64-b</li> <li>on four fullsize, 64-b</li> <li>or standard Re</li> </ul>	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	<ul> <li>LIMITED WARRANTY<sup>3</sup></li> <li>31.8kg</li> <li>31.8kg</li> <li>3 year parts and labor</li> <li>3 year parts and labor</li> <li>3 year parts and labor</li> <li>9 on site, 8 am - 5 pm, Mon - Fricoverage excluding holidays, next business day response time<sup>7</sup></li> <li>On site service upgrade options (in eligible locations):<sup>7</sup></li> <li>On site service upgrade options (in eligible locations):<sup>7</sup></li> <li>On site service ac<sup>®</sup> part num 96P2253)</li> <li>3 year IOR 24x7, 2 hr avg response (ServicePac<sup>®</sup> part num 96P2254)</li> <li>4 year IOR 9x5, NBD response</li> <li>(ServicePac<sup>®</sup> part num 96P2254)</li> <li>4 year IOR 9x5, NBD response</li> </ul>
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:         Mack       Mack</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:       * 24x7<sup>14</sup> toll-free support for warranty period<sup>3</sup></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:         Mack       Mack	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 <sup>14</sup> toll-free support for warranty period <sup>3</sup>
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

xREF by eServer Field Skills Enablement Team

IBM <sup>®</sup> Type-model Qty x Pro	L3 cessor cache		MM ots Disks	SCSI controller	Mechan- ical		RXE Exp Ports	Hot-swap pwr supplies	Warrant (yrs.)	y Available date
8861-1RX 1 x Xeon™ 8862-1RX 1 x Xeon M 8862-2RX 2 x Xeon M 8862-3RX 2 x Xeon M	IP 2.0GHz 1MB 2 IP 2.5GHz 1MB 2 IP 2.8GHz 2MB 2	GB Chipkill GB Chipkill GB Chipkill 1	8 None 8 None 6 None	Ultra320 Ultra320 Ultra320 Ultra320	3U rack 3U rack 3U rack	6x8 6x8 6x8	One One One	One (not redu One (not redu Two redundar Two redundar	in) 3 it 3 it 3	Dec 2003 Dec 2003 Dec 2003 Dec 2003
Processors L2 cache L3 cache Processor upgrade Implementation Memory	1 or 2 x Intel® Xeon 512KB / on die of pro 1MB or 2MB / on die 4-way SMP / up to fo Systemboard contai slots, and integrated Up to 2GB std / 320 DIMMs installed / or matched pairs / PC2 (ECC) via 16-bit CP and Active Memory	ocessor / at proce of processor / at ur Xeon Processin s four Intel 603 LSCSI, ethernet, BB max <sup>12,13</sup> using the memory board 2100 200MHz reti eccksum Chipki	ssor speed processor sp ors MP (sam -pin micro-P graphics high-capaci I standard w gistered 184	beed e speed/ca GA ZIF so ty memory ith 8 or 16 -pin DDR- 5 DIMMs i	ache size ockets, o / card / tv 5 DIMM g SDRAM nstalled:	) ne memo wo (1GB old-conn RDIMMs <b>Memory</b>	ory board model) ( ector slo	d slot, six Acti or four (2GB r ts / DIMMs m <b>Checking an</b>	ve™ PC nodels) ust be ir <b>d Corre</b>	51/PCI-X 512MB Installed in
SCSI disk controller SCSI connectors SCSI cabling IDE controller / cabling Disk - capacity Disk - bays	LSI Logic <sup>®</sup> 53C1030 Supports Raid 0/1 One internal and on One standard 16-bit L SCSI RAID adapter Enhanced IDE ATA- None standard / sup <b>Six</b> hot-swap bays /	e external SCSI VD cable can be r 68-pin connector 33 controller in C ports up to 15,0	connector / i eattached to o r on systemb CSB6 South 00 rpm disks	nternal co optional Se ooard for t Bridge	ntroller w rveRAID a his cable	vired to S adapter fro	SCSI bac om six-ba	kplane Ny backplane ins	stead of r	
Mechanical	EIA 19" rack mode	Is (3U4) x 28" de	ep / support	ed in Netl	BAY™ Ra	acks (suc	h as Net	BAY42 SR, N	etBAY42	2 ER)
Chipset Slots (Active™ PCI-X) RXE Expansion Port	IBM XA-32 <sup>™</sup> chipse Bridges provide six p graphics), and Serve / PCI-X Bus 1 suppo Six total PCI-X slots (c sensors control power One port to support	beer PCI-X buses rWorks® CSB6 S rts gigabit Ethern ne unavailable) / 5 to slot) / hot repla	FCI-X Bus South Bridge et, SCSI, an hot-swap PC ce, hot upgrad	s 0 suppor (IDE, USE d slot for c I-X 1.0 slot de, hot exp	ts adapte 3, bus for optional S s <sup>10</sup> availat ansion / s	er slot wit Super I/ ServeRAII ble with po separated	h Remot O NS 87 D adapte ower and by insula	te Supervisor / 7417 [diskette, er attention indica tive plastic divid	Adapter keyboar tor lights lersbv	II (inc. ˈd, mouse] (optical
CD-ROM / diskette Ethernet Graphics controller Ports	24X-10X <sup>6</sup> CD-ROM Broadcom <sup>®</sup> 5704 10/1 onboard graphics di <i>Rear:</i> RXE-100 Expa two USB (Ver 1.1), ke	00/1000 dual ethe sabled / uses vid ansion Port (to co	rnet / on syste leo on Remo nnect option	ote Superv al RXE-10	visor Ada 0), RXE	pter II Manager	nent Por	t (to manage c	ptional I	RXE-100),
Security	Power-on and admin	istrator password	s/unattende	ed boot / se	lectable	boot				
Systems management Diagnostics Software	console and mgmt / Light Path Diagnos IBM Real Time Diagn available even while ServerGuide <sup>™</sup> (CD-	power on/off syste stics™ / primary nostics (operated server running ROM installation a	em / monitor indicator on through IBM	s power st informatio Director)	atus, op n panel 512ME 1GB P	system, t with LED PC2100 C2100 E	emperatu s associ ECC DI CC DDR	ure, disks, fans ated with failir DR SDRAM R SDRAM RDII	, power ng comp DIMM MM	supplies onents / 33L5038 73P2031
Keyboard / mouse Power supplies Cooling fans	utilities), IBM Directo None standard (beca Std: one or two 950 redundant with two p worldwide / voltage- fans in each power s Six hot-swap, redunc one additional fan in fan failure signals Dia	use rack-based) watt hot-swap; <i>I</i> ower supplies (so sensing / auto-re upply / PFA lant, multi-speed each power supp	me configura estart / rear fans / ly / PFA /	ations)/ accessible	IBM x3 Xeon N Xeon N 950 wa IBM S IBM 73 IBM In IBM T	365Memc MP 2.0GI MP 2.5GI MP 2.8GI att Hot-Si erveRAIE 3.4GB 15 tegrated 541 15" F	ry Upgra Hz/1MB I Hz/1MB I Hz/2MB I wap Pow m-4Mx I K Ultra32 xSeries Flat Pane	I SDRAM RDII ade Card L3 Cache Proc L3 Cache Proc L3 Cache Proc L3 Cache Proc rer Supply (WV Ultra160 SCSI 20 SCSI Hot-S Adapter for IS A Color Monito nsion Enclosu	: Upg : Upg : Upg V) Adapte wap eries r (black)	32P0735 1519100
- one fullsize, 64-bit Optional ServeRAID Optional iSeries IXA - three fullsize, 64-bit Optional iSeries IXA - three fullsize, 64-bit ●Opt disk ●Opt disk ●	lots 1 - 6: , 33MHz PCI, hot-sw ppervisor Adapter inst ,100MHz PCI-X, hot-s adapter to install ,133MHz PCI-X, hot-s adapter to install , 133MHzPCI-X, hot-s execution of the sector of the sec	Alled Jimens	ions: H5.25" sions: H133.4 63 to 83lbs; black color e serviceabili adapters, pro board from to power suppli Program by pr stics (PC-Doo elect by press ver Light Path stic panel) for ny without rem- tion LED pan nponent LED well-being well-being swith IBM E sisting Maximu with six 146	mm x W44 28.6 to 3 ty bccessors, r p es and dis ressing F1 tor) by pre- tor) by pre	Other x D27.6' 42.0mm x 7.6kg memory, a ks from fr at startup essing F2 essing F3 essing F	options i D701mn and ont at startup anel, ions of ks, RMs, pacity:	at ibm.c at or at or	om/pc/us/acce LIMITED W. 3 year parts a rnational Warrs site, 8 am - 5 p verage exclud business day site service up ligible location rear IOR 24x7, 0L9186 (8861) rear IOR 9x5, N 9P9210 (8661) rear IOR 9x5, N 9P9214 (8661) er ServicePac c://www.ibm.co vices/us/its/pd	ARRAN and labo anty Ser m, Mon- ing holic respons grade op ns): <sup>2</sup> 4 hr avg / 96P22! 2 hr avg / 96P22! 8D resp / 96P22 9D resp / 96P22 gbD resp / 69P22 options m/ f/wamor oport for	TY <sup>3</sup> or vice <sup>3</sup> - Fri lays, se time <sup>7</sup> otions response 53 (8862) ) onse 55 (8862) ) onse 55 (8862) ) at

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)

xREF by eServer Field Skills Enablement Team

	L3 rocessor cache Mem	DIMM ory slots Disks		nan- Slots x F al bays Exp	RXE Hot-swap Ports pwr supplies	Warranty Available (yrs.) date
8862-5RX 2 x Xeon	MP         2.0GHz         1MB         4GB C           MP         2.2GHz         2MB         2GB C           MP         2.7GHz         2MB         2GB C           MP         3.0GHz         4MB         2GB C	hipkill 8 None hipkill 8 None hipkill 8 None	0k Ultra320 3l Ultra320 3l Ultra320 3l Ultra320 3l	J rack 6x8 J rack 6x8 J rack 6x8 J rack 6x8	One One (not red One One (not red One One (not red One Two redunda One Two redunda One Two redunda	un) 1 Nov 2004 un) 3 Mar 2004 nt 3 Mar 2004 nt 3 Mar 2004
Processors L2 cache L3 cache Processor upgrade Implementation	1,2 or 4 x Intel <sup>®</sup> Xeon <sup>™</sup> Proc 512KB / on die of processor 1MB, 2MB or 4MB / on die d 4-way SMP / up to four Xeo Systemboard contains four li integrated SCSI, ethernet, gr	/ at processor speed of processor / at process n Processors MP (sam ntel 603-pin micro-PGA	sor speed e speed/cache size	e)		0 07
Memory	Up to 4GB std / 32GB max <sup>12</sup> / DIMMs must be installed in Correcting (ECC) via 16-bit and Active Memory™ supp	matched pairs / PC210 Checksum Chipkill™	0 200MHz register / With 16 DIMMs i	ed 184-pin DDR- installed: Memor	-SDRAM RDIMMs / <b>E</b> I	ror Checking and
SCSI disk controller SCSI connectors SCSI cabling IDE controller / cabling Disk - capacity Disk - bays	LSI Logic <sup>®</sup> 53C1030 / Wide L One internal and one externa One standard 16-bit LVD cat SCSI RAID adapter 68-pin c Enhanced IDE ATA-33 contro <i>1Ex</i> : 3 x 36.4GB-10k <i>5Ex</i> : 6 <b>Six</b> hot-swap bays / converg	al SCSI connector / inter ble can be reattached to onnector on systemboa oller in CSB6 South Brid x 36.4GB-15K / suppor	mal controller wired o optional ServeRA rd for this cable to dge ts up to 15,000 rpn	I to SCSI backpla ID adapter from a get signals to six	ane six-bay backplane inst	
Mechanical	EIA 19" rack models (3U4)	x 28" deep / supported	in NetBAY™ Racks	s (such as NetBA	AY42 SR, NetBAY42 E	R)
Chipset Slots (Active™ PCI-X) RXE Expansion Port	IBM XA-32 <sup>™</sup> chipset / IBM provide six peer PCI-X buses ServerWorks <sup>®</sup> CSB6 South B gigabit Ethernet, SCSI, and s Six total PCI-X slots (one una sensors control power to slot One port to support up to 12	s / PCI-X Bus 0 suppor Bridge (IDE, USB, bus 1 lot for optional ServeRA available) / 5 hot-swap F ) / hot replace, hot upg	ts adapter slot with for Super I/O NS 87 ND adapter PCI-X 1.0 slots <sup>10</sup> ava rade, hot expansior	Remote Supervi 7417 [diskette, ke ailable with powe n / separated by	isor Adápter II (inc. gra eyboard, mouse]) / PC r and attention indicato insulative plastic divide	phics), and I-X Bus 1 supports r lights (optical ersbv
CD-ROM / diskette Ethernet Graphics controller Ports	24X-10X <sup>6</sup> CD-ROM / 3.5" 1.4 Broadcom <sup>®</sup> 5704 10/100/100 onboard graphics disabled / <i>Rear:</i> RXE-100 Expansion P (Ver 1.1), keyboard, mouse, a	0 dual ethernet / on sys uses video on Remote ort (to connect optional	Supervisor Adapter RXE-100), RXE Ma	r II anagement Port (	(to manage optional R	XE-100), two USB
Security	Power-on and administrator	passwords / unattended	l boot / selectable k	boot		
Systems managemen Diagnostics Software	t Remote Supervisor Adapte and mgmt / power on/off sys Light Path Diagnostics™ / IBM Real Time Diagnostics ( available even while server n ServerGuide™ (CD-ROM in	tem / monitors power s primary indicator on info operated through IBM I unning stallation and configura	tatus, op system, te ormation panel with Director)	emperature, disk LEDs associate 2MB PC2100 E 3B PC2100 EC0	s, fans, power supplies	s nts / DIMM 33L5038 MM 73P2031
Keyboard / mouse Power supplies Cooling fans	utilities), IBM Director, and ot None standard (because ra <i>Std:</i> one or two 950 watt hot- redundant with two power su worldwide / voltage-sensing / fans in each power supply / F Six hot-swap, redundant, mu one additional fan in each pow	ck-based) swap; <i>Max:</i> two hot-sw pplies (some configurat / auto-restart / rear acc PFA lti-speed fans /	ap / Xe tions) / Xe essible 95 IBI IBI	M x365 Memory oon MP 2.2GHz oon MP 2.7GHz oon MP 3.0GHz 0 watt Hot-Swa M ServeRAID™ M 73.4GB 15K	2 Upgrade Card 2MB L3 Cache Proc 2MB L3 Cache Proc 2MB L3 Cache Proc p Power Supply (WV -6M Ultra320 SCSI A Ultra320 SCSI Hot-S Series Adapter for ISe	73P9710 Upg 13N0712 Upg 13N0711 Upg 13N0710 V) 73P7214 Vapter 32P0033 wap 32P0735
	fan failure signals Diagnostic	LED and mgmt proces	isor IBI	M T541 15" Flat	t Panel Color Monito	r (black) 9512AB1
Six available 3.3 volt •Buses 0-5 supports - one fullsize, 64-b		♀ Dimensions: H5.2	RX Ot	KE-100 Remote ther options at	Expansion Enclosur ibm.com/pc/us/acce	e 86841RX essories
Standard Remote S - one fullsize, 64-t Optional ServeRAII - one fullsize, 64-t Optional iSeries IXA - three fullsize, 64-t	Supervisor Adapter installed bit,100MHz PCI-X,hot-swap D adapter to install bit,133MHz PCI-X,hot-swap	<ul> <li>Weight: 63 to 83I</li> <li>Stealth black colo</li> <li>Tool-free servicea</li> <li>Access adapters, systemboard from</li> <li>Access power sup</li> <li>Setup Program by</li> <li>Diagnostics (PC-I</li> </ul>	r bility processors, memo top opplies and disks fro pressing F1 at sta Doctor) by pressing	ory, and om front artup g F2 at startup	LIMITED W 1 or 3 year parts a International Warra 0 n site, 8 am - 5 pr coverage excludi next business day 0 n site service upg (in eligible location • 3 year IOR 24x7,	nd labor nty Service <sup>3</sup> n, Mon - Fri ng holidays, response time <sup>7</sup> jrade options s): <sup>7</sup>
Opt disk     Opt disk     JU	• Opt disk Rack	problem without re	ath Diagnostics (le for outside view of emoving cover	potential	( 30L9186 (8861) • 3 year IOR 24x7,	/ 96P2253 (8862) ) <b>2 hr avg response</b> / 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 ⑤ 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	<ul> <li>Information LED p and component L system well-being</li> <li>Predictive Failure power supplies, m and fans with IBM</li> <li>All models: Maxin</li> </ul>	banel, diagnostic LI EDs give visual inc Analysis® alerts o hemory, processor d Director mum internal disk	dications of n disks, 's, VRMs, capacity:	( 69P9210 (8661) • 5 year IOR 9x5, N	/ 96P2255 (8862) ) IBD response / 69P2259 (8862) ) options at n/ /wamomxeu.pdf port for warranty
Cae factuates far impa	rtant warranty information	878.4GB with six 1	46.8GB <sup>2</sup> hot-swa	p SUSI disks		A Corp March 2004

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)

xREF by eServer Field Skills and Education Team

IBM®		12	DIMM	SCSI	Mechan-	Slots x	Hot-swap	Warrant	y Available
Type-model Qty x P		cache Memo	ory slots Dis	sks controller	ical	bays	pwr supplies	(yrs.)	date
8863-1RY 1 x Xeon <sup>1</sup> 8863-2RY 1 x Xeon 8863-E1X 2 x Xeon	MP 3.66GHz MP 3.66GHz	1MB 2GB(2 1MB 4GB(4	x1GB) 4 No x1GB) 4 3x	ne SAS 36.4-10k SAS w/ 8		6x7 6x7 6x7	One 1 x 1300 One 1 x 1300 One 2 x 1300	) 3 ) 3	Apr 2005 Apr 2005 Jun 2005
Processors			rocessor MP 3. /per-Threading to	16 or 3.66GHz <sup>1</sup> with echnology	667MHz fror	ntside bus	s / NetBurst™ / Ex	tended Me	emory 64
L2 cache Processor upgrade Implementation	1MB / on die o 4-way SMP / u	of processor / a up to four Xeor contains four li	at processor spee n Processors MP ntel 604-pin micr	ed / <b>XceL4v</b> ™ Dynar (same speed/cache o-PGA4 ZIF sockets	size) / Dual (	Core Cap		CI-X 2.0 slo	ts, and
Active Memory™	/ DIMMs must I and Correcting	be installed in g (ECC) via 10	matched pairs / 6-bit Checksum	acity memory card / PC2-3200 400MHz r Chipkill™ / With 16 swap (non-OS specif	registered 240 6 DIMMs insta	)-pin DDF alled: <b>Me</b> i	R2-SDRAM RDIMN mory ProteXion™	ls / Error ( (redundani	<b>Checking</b> t bit
SCSI disk controller SCSI connectors SCSI cabling IDE controller / cabling Disk - capacity Disk - bays	Controller wired One standard S Enhanced IDE E1x: 3 x 36.4G	d to SAS backp SAS cable atta ATA-33 contro B-10k / suppo	blane Iched to six-bay Iller in CSB6 Sou rts up to 73GB 1	ıth Bridge	<b>`</b>	4-bit 266N	/IHz PCI-X 2.0 <i>E1)</i>	K: ServeRa	aid 8i
Mechanical	EIA 19" rack n	nodels (3U4) >	28" deep / supp	oorted in NetBAY™ F	Racks (such a	s NetBA	42 SR, NetBAY42	2 ER)	
Chipset Slots (Active™)	models) / 2 IBM graphics), Serv Broadcom 5704 Six total PCI-X	A PCI-X 2.0 Ho verWorks® CSE 4, and 2 PCI- 2.0 slots availa	ost Bridges /1 s 36 South Bridge X 2.0 slots / Host able with power a	I Integrated Process upports adapter PCI (IDE, USB, bus for S Bridge supports 4 P and attention indicato ive plastic dividers, a	33MHz and 6 Super I/O NS PCI-X 2.0 slots r lights (optica	66MHz, sl 87417 [d al sensors	ot for optional Serv iskette, keyboard, r control power to s	reRaid 8i (ir mouse]), Di	nc. ual Port
CD-ROM / diskette Ethernet Graphics controller Ports	8X <sup>6</sup> Slim DVD-I Broadcom <sup>®</sup> 570 SVGA / ATI <sup>®</sup> 70	ROM / none 04 10/100/100 000m / on plar ernet, RSA ser	0 dual ethernet / nar / 16MB SDR/ ial, two USB (Ve	on systemboard / 64 M std/max / 32-bit 3 r 2.0), keyboard, mo	1-bit 266Mhz I 3MHz PCI 2.2	PCI-X 2.0 2 bus	) / Wake on LAN® /		
Security	Power-on and	administrator p	asswords / unat	tended boot / selecta	able boot				
Systems managemen Diagnostics	remote console Drop down Lig IBM Real Time	e and mgmṫ / p <b>ght Path Diag</b> e Diagnostics (o	oower on/off syst nostics / primar operated through	Cl adapter / includes em / monitors power y indicator on inform IBM Director) availa figuration utilities), IE	r status, op sy ation panel wi ıble even whil	ystem, ter ith LEDs	nperature, disks, fa associated with fai	ans, power	supplies
Software	None standard								
Keyboard / mouse Power supplies	redundant with	two power sup tage-sensing /	t-swap; <i>Max:</i> two oplies (some cor auto-restart / rea FA	figurations) /	4GB PC2- 8GB PC2-	3200 CL	3 ECC RDIMM (2 3 ECC RDIMM (2 3 ECC RDIMM (2 lot Expansion Ca	2x2GB) 2x4GB)	73P2866 73P2867 30R5145 13M7409
Cooling fans	one additional f fan failure signa	an in each pov als Diagnostic	ulti-speed fans / ver supply / PFA LED and mgmt		Xeon MP 3 Xeon MP 3 1300 watt IBM Serve IBM Serve IBM 36.4G IBM 73.4G IBM Remo	3.16GHz 3.66GHz Hot-Swa RAID™-{ RAID 6N B 10K 2 B 10K 2 B 10K 2 be Super	/1MB L2 Cache F /1MB L2 Cache F p Power Supply ( 3i SA-SCSI Adap 4 U320 256MB Ad .5" SAS Hot-swa .5" SAS Hot-swa visor Adapter II S	Proc Upg Proc Upg (WW) ter dapter o HDD p HDD p HDD ilimline	13N0694 13N0695 13M7413 13N2227 02R0988 26K5654 26K5655 73P9341
Six available 3.3 volt Slot 1 - fullsize, 64-b						uns al I	bm.com/pc/us/ac	cessones	
Slot 2 - fullsize, 64-t Slot 3 - fullsize, 64-t Slot 4 - fullsize, 64-t Slot 5 - fullsize, 64-t Slot 6 - fullsize, 64-t *exclusive slot availa	bit, 266MHzPCI bit, 266MHzPCI bit, 266MHzPCI bit, 266MHzPCI bit, 266MHzPCI ble for ServeRA	I-X, hot-swap I-X, hot-swap I-X, hot-swap I-X, hot-swap I-X, hot-swap AID 8i adapter	<ul> <li>Dimensions</li> <li>Weight: 63</li> <li>Stealth blac</li> <li>Tool-free se</li> <li>Access ada systemboar</li> </ul>	rviceability pters, processors, n d from top	2.0mm x D7( 7.6kg nemory, and	000	LIMITED 3 year parts and International Wa On site, 8 am - 5 coverage exclu next business d	labor rranty Ser pm, Mon uding holi ay respon	rvice <sup>3</sup> - Fri days, se time <sup>7</sup>
Opt disk     Opt disk	Opt disk	CD-ROM Light Path Diag	<ul> <li>⇒ Access pov</li> <li>⇒ Setup Progitive</li> <li>⇒ Diagnostics</li> <li>⇒ SCSISelect</li> <li>⇒ Drop Down</li> </ul>	ver supplies from to ram by pressing F1 a (PC-Doctor) by pre by pressing Ctrl+A Light Path Diagnos	at startup ssing F2 at s at startup stics (level 2	tartup	On site service of (in eligible locat • 3 year IOR 24x 96P2253 • 3 year IOR 24x	upgrade o ions): <sup>7</sup> 7, 4 hr avg	ptions I response
Bay (0, 5.25, 0.5, , Bay (2,25", SL 1", Bay (3, 2.5", SL 1", Bay (3, 2.5", SL 1", Bay (3, 2.5", SL 1", Bay (3, 2.5", SL 1", Bay (7, 2.5", SL 1",	access,std ( access,hot-s access,hot-s access,hot-s access,hot-s access,hot-s access,hot-s	swap, open swap, open swap, open swap, open swap, open	<ul> <li>problem with</li> <li>⇒ Information</li> <li>and comport</li> <li>system well</li> <li>⇒ Predictive F</li> <li>power supp</li> </ul>	anel) for outside vie hout removing cov LED panel, diagno hent LEDs give visus being ailure Analysis® ale lies, memory, proce h IBM Director	er stic LED pan al indications rts on disks,	nel, s of	96P2254 • 4 year IOR 9x5 96P2255 • 5 year IOR 9x5 69P2259 Other ServicePa http://www.ibm.c services/us/its/p	, NBD res c options com/	oonse at
Max BTU Output: Ship Configuration: Full Configuration:			All models:	Maximum internal six 73.4GB <sup>2</sup> hot-s		ty:	24x7 <sup>14</sup> toll-free su issues during the	pport for	warranty
See footnotes for impo	rtant warranty in	formation	<ul> <li>= Hot-swap</li> </ul>				(X366A) © I	BM Corn	March 2004

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

## 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 <sup>®</sup> Up to 4MB e 64MB XceL4 64MB in each 4-way SMP ( One SMP Exc for Xeon, 64MI Expansion Por	Xeon <sup>™</sup> 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 <sup>1</sup> 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 <sup>13</sup> (up -connector sl <b>sing and Cor</b> t once; redur oring <sup>™</sup> (non-	to <b>64GB</b> per cha ots / must install recting (ECC) a indant bit steering OS specific)	assis usin two inde nd <b>Chipk</b> g) / <b>Activ</b>	g optional S ntical DIMM iII™ via <b>Me</b> i <b>e Memory</b> ™	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 <b>wap</b> 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 for 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 <b>RIC</b>	sulative pla en two x445 <b>O sharing</b> 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 bot-swap, Bu hot-swap, Bu hot-swap, Bu bot-swap, Bu bot-swap, Bu hot-swap, Bu hot-swa	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): <sup>7</sup> 24 hr x 7 day co 2 hour respons (No ServicePac a ost warranty ma rrvices availab ther ServicePad	labor ranty Service <sup>3</sup> day coverage, se time <sup>7</sup> 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 <sup>®</sup>							
	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 <sup>1</sup> 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 <sup>™</sup> Proces each proce <sup>™</sup> 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 <sup>1</sup> with 4 processor / at pro e (up to 128MB v CC / 64-bit 400M for adding additic / each contains f P Expansion Porte ttes 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	<b>0GB</b> std / <b>64</b> 32 DIMM gol PC2100 DDF (1, 2, 3, or 4	<b>GB</b> max <sup>13</sup> (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 <b>Memory ProteXion</b> ™ ng) / <b>Active Memory</b> ™ 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 <sup>10</sup> available wit <b>de, hot expansio</b> 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-wa	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 <sup>å</sup> 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 <b>Diagnostics</b> 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 <sup>3</sup> 3 year parts and labor International Warranty Service On site, 9 hr x 5 day coverage next day response time <sup>7</sup> 1 year on site warranty service upgrade option (in eligible locations): <sup>7</sup> 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

1 AV

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 <sup>†</sup> 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	Up to 16-way power for high-end databases, server cons 4 x Intel <sup>®</sup> Itanium 2 <sup>™</sup> Processor 1.5GHz or1.6GHz with 4 256KB each processor / on die of processor / at process 4MB, 6MB or 9MB each processor / on die of processor / 64MB XceL4 <sup>™</sup> 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	100MHz frontside bus or speed / at processor speed troller iate 8-way or 16-way kits ics, 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- <b>Ind Correcting (ECC), Chipkill</b> <sup>TM</sup> , <b>Memory ProteXion</b> <sup>TM</sup> (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 <sup>TM</sup> / primary indicator on information IBM Real Time Diagnostics (operated through IBM Director) available even while server running ServerGuide <sup>TM</sup> (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	<ul> <li>W440mm x D713mm iOkg</li> <li>⇒ 3 year parts and labor</li> <li>⇒ 3 year parts and labor</li> <li>⇒ international Warranty Service<sup>3</sup></li> <li>⇒ IBM On Site (IOR), 9-5 Next- Business-Day coverage<sup>7</sup></li> <li>⇒ 3 year on site warranty service upgrade option (in eligible locations):<sup>7</sup></li> <li>• 24 hr x 7 day coverage, 2 hour response time 96P2689</li> <li>⇒ Post warranty maintenance services available</li> <li>⇒ Other ServicePac options at http://www.ibm.com/services/us/ its/pdf/wamomxeu.pdf</li> <li>⇒ 24x7<sup>14</sup> toll-free support for warranty issues during the warranty period<sup>3</sup></li> </ul>
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

		•	-										1.100	
	rocessor	L2 L3 cache cach			; Disks	con	CSI troller	ica		ys	Hot-sup			Available / date
8872-1RY 2 x Xeon <sup>T</sup> 8872-2RY 2 x Xeon 8872-3RY 2 x Xeon	MP 3.00GHz MP 3.33GHz	1MB 8ME 1MB 8ME	3 2GB(2x) 3 2GB(2x)	1GB) 8 1GB) 8	None None None	SAS SAS SAS	S S	3U ra 3U ra	ack 6x ack 6x ack 6x	(7 (7	2 x <sup>-</sup> 2 x <sup>-</sup>	1300 1300 1300	3 3 3	Jun 2005 Jun 2005 Jun 2005
Processors L2 cache L3 cache	Two 64-bit Int 64 Technolog 1MB / on die 0	tel <sup>®</sup> Xeon™ gy™ (EM64) of processor	Processor ) / Hyper- / at processor	MP 2.83, 3 Threading t sor speed	<b>3.00 or 3.33</b> echnology / <b>XceL4v™</b> [	<b>GHz</b> <sup>1</sup> w Dynamie	/ith 667 c Serve	MHz f r Cach	rontside ne (256	e bus / SMB per	NetBurs	s <b>t™ / I</b> s start	Extende	ed Memory way)
Processor upgrade Implementation	4 or 8MB / int 4-way SMP / chassis interc System board	contains fou	ur Intel 604-	-pin micro-F	PGA4 ZIF so									
Active Memory™	integrated Seri 2GB std / 64C cards standard 400MHz regis / Memory Pro only with Micro					emory c each / r <b>Checl</b>	ard / 5 <sup>-</sup> DIMMs <b>king ar</b>	12GB i s must	nax (e be ins <b>recting</b>	ight cha talled in <b>g (ECC</b> )	ssis inte matche via <b>16-</b>	rconn d pairs bit Ch	ect) / tw s / PC2- <b>ecksur</b>	o memory 3200 n <b>∫Chipkill</b> ™
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-sv	l slot ed to SAS ba SAS cable a ATA-33 cou ts up to 730	attached to attached to ntroller in Ca B 10,000 r	six-bay ba SB6 South pm disks	ckplane Bridge	,		;) / 04-1	JIL 2001		<i>л-</i> ∧ <i>2</i> .0 ,	Servi		optional
Mechanical	EIA 19" rack chassis (x460	models (3U or MXE-460	4) x 28" dee )) to achiev	ep / suppor e 32-way ir	ted in NetBA າ 24U	∖Y™ Ra	cks (su	ch as	NetBA	Y42 SR	, NetBA`	Y42 E	R) / con	nect eight
Chipset	IBM XA-64e <sup>™</sup> models) / 2 IB / Host bridge ( South Bridge ( slots / Host Br	M PCI-X 2.0 One support (IDE, USB, b idge Two si	) Host Bridg s adapter P ous for Supe upports 4 P	jes / Integr CI 33MHz er I/O NS 8 CI-X 2.0 sl	ated Proc/M and 66MHz 7417 [disket ots	lem Cor , slot fo te, keyb	nt. prov r optior board, n	ides si nal Ser nouse]	upport i veRaid ), Dual	for exter 8i (inc. Port Br	nal scal graphic oadcom	ability s), Sei 5704,	and Me rverWor and 2	mory contro ks <sup>®</sup> CSB6 PCI-X 2.0
Slots (Active™)	Six total PCI-X upgrade, hot e	(2.0 slots av expansion / s	ailable with eparated b	power and y insulative	l attention in plastic divid	dicator l lers, all	lights (c slots si	ptical : upporte	sensors ed up to	s contro o 266M	l power Hz	to slot)	) / hot re	place, hot
CD-ROM / diskette Ethernet	8X <sup>6</sup> Slim DVD Broadcom <sup>®</sup> 57 LAN <sup>™</sup> 2	704 10/100/1	000 dual et							hz PCI-	X 2.0 / V	Vake	on LAN®	/ Alert on
Graphics controller Ports	SVGA / ATI® 7 Rear: Three S ethernet, std. s	calability poi	ts, RSA etł	nernet, RSA	serial, two	2-bit 331 USB (V	VIHz P0 (er 2.0)	, keybo	ous bard, m	iouse, a	nalog D	B-15 g	graphics	, two
Security	Power-on and	administrato	or password	ds / unatten	ded boot / s	electab	le boot							
Systems managemen Diagnostics	t Remote Super remote consol Drop down L IBM Real Time ServerGuide	ight Path D	lagnostics	/ primary ii	ndicator on II	nformat	ion par	iel with	LEDS	associa	ated with	nnecto s, fans failing	ors / pro s, power g compo	nents /
Software	utilities), IBM E	Director	Installation		Juralion		4GB F	PC2-32	200 CL	_3 ECC	RDIM	И (2x2	2GB)	73P2866 73P2867
Keyboard / mouse Power supplies	None standard Std: Two 1300 redundant with auto-restart / r	) watt hot-sw	ap; <i>Max:</i> tv	vo hot-swar	o / fully /oltage-sens / supply / PF	ing /	Active Xeon Xeon	Memo MP 2.8 MP 3.0	ory 4-s 83GHz 00GHz	slot Exp /1MB L /1MB L	2 8MB	Càrd L3 Pr L3 Pr	oc Upg oc Upg	30R5145 13M7409 13N0715 13N0714
Cooling fans	Eight hot-swap one additional fan failure sign	fan in each i	oower supp	lv / PFA /	cessor		IBM S IBM S	erveR erveR	AID™- AID 6ľ	8i SA-8 // U320	SCSI Ac 256ME S Hot-s	dapter 3 Adaj	pter	13N0713 13N2227 02R0988 26K5654
8W = 2 x XpandOnDe 16W = 6 x XpandOnD 32W = 8 x XpandOnD Six available 3.3 volt	Demand Scalabi Demand Scalabi PCI-X 2.0 slots	lty kits 2.3m lty kits 2.3m s:					Xpand Xpand MXE-4	IOnDe IOnDe 160 M	mand <sup>⊤</sup> mand <sup>⊤</sup> odular	<sup>™</sup> Scala <sup>™</sup> Scala Expan	S Hot-S bility Ca bility Ca sion En <b>m</b> /pc/us	ablė - able - closui	2.3M 2.9M re	26K5655 13M7414 13M7416 8874-1R`
Slot 1 - fullsize, 64-1 Slot 2 - fullsize, 64-1 Slot 3 - fullsize, 64-1 Slot 5 - fullsize, 64-1 Slot 6 - fullsize, 64-1 *exclusive slot availa •Opt disk •Opt disk •Opt disk •Opt disk	bit, 266MHzPC bit, 266MHzPC bi	CI-X, hot-sw CI-X, hot-sw CI-X, hot-sw CI-X, hot-sw CI-X, hot-sw CI-X, hot-sw CI-X, hot-sw AID 8i adag CD-ROM Swap, open Swap, open Swap, open Swap, open Swap, open Swap, open Swap, open Swap, open Swap, open	ap Dim ap Stea ap Stea ap Stea ap Stea ap Stea Solution Acco Setu Solution Solution Acco Solution Solution Acco Solution Solution Solution All m	ensions: H ght: 70 to 8 alth black c l-free servi emboard fr ess adapte emboard fr ess power <u>up Program</u> <u>gnostics</u> (Pr <u>SiSelect by</u> p Down Lig <u>nostic pane</u> blem withou rmation LEI componen em well-be dictive Failu rer supplies fans with II	ceability rs, processo om top supplies froi by pressing C-Doctor) by pressing Cti ht Path Diag el) for outsidé th removing D panel, diag	x W440. to 38.5k prs, me m back y F1 at : y pressi r1+A at : gnostics e view c cover gnostic I visual in <sup>∞</sup> alerts process ernal d	Omm x g startup ng F2 startup (level : of poten LED pa ndicatic on disk ors, VF	and at star 2 nel, ons of s, RMs, cacity:	tup	<ul> <li>Interna</li> <li>On sit</li> <li>cove</li> <li>next b</li> <li>On sit</li> <li>(in elig</li> <li>3 yea</li> <li>96P2</li> <li>3 yea</li> <li>96P2</li> <li>4 yea</li> <li>96P2</li> <li>5 yea</li> <li>96P2</li> <li>0 ther</li> <li>http:// servic</li> <li>24x7<sup>14</sup></li> </ul>	e servic gible lo ar IOR 2 2688 ar IOR 2 2689 ar IOR 9 2690 Service www.ib ces/us/it toll-free	and la Warra - 5 pr xcludi s day ce up catior 24x7, 2 24x7, 2 2 24x7, 2 2 24x7, 2 2 24x7, 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	bor anty Se m, Mon ing hol respor grade c 1s):' 4 hr ave 2 hr ave 1BD res 1BD res 1BD res poptions n/ /wamor port for	rvice <sup>3</sup> - Fri idays, use time <sup>7</sup> pptions g response g response ponse ponse
See footnotes for impo				ot-swap							(X460A		244.04	11 000

See footnotes for important warranty information

• = Hot-swap

#### IBM @server™ BladeCenter™

xREF by eServer Field Skills Enablement Team

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								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			nd 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 <sup>®</sup> 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 redundation 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 <sup>6</sup> interface / not remov	CD-RÓM <i>3X</i> vable / front a	<sup>t</sup> deep / supported in NetB, X: 8X-24X <sup>6</sup> DVD-ROM / 3.5 ccess / shared by up to 14 server blade front panel	5" 1.44MB diè	skette drive / o	ne USB p	bort (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 <sup>`</sup> Etherne rating syste	t <sup>'</sup> 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	íit (with kýbd/i 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 <b>Ibm.com</b> /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 <sup>3</sup>
	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,	<ul> <li>➢ Interr</li> <li>➢ On si cov next  </li> <li>➢ On si elig</li> <li>· 3 yo (Se</li> <li>· 3 yo (Se</li> </ul>	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): <sup>7</sup> 7, 2 hr avg art num 21P 7, 4 hr avg rt num 21P	- Fri days, se time <sup>7</sup> 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 • <b>5 y</b> o (Se • <b>5 y</b> o (Se	ear IOR 9x5 rvicePac pa ear IOR 9x5 rvicePac pa ear IOR 24x rvicePac pa er Servicel	rt num 21P2 5, <b>4 hr avg</b> rt num 69P9 7 <b>7, 2 hr avg</b> rt num 69P9	2072) <b>response</b> 9247) <b>3 respons</b> 9249)
Switch Power modules modules	()	lanagement module (std)	<ul> <li>3 Network connection</li> <li>1/O expansion option</li> <li>4 Network connection</li> <li>1/O expansion option</li> </ul>	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 <sup>4</sup> toll-free s ues during	n.com/ser nxeu.pdf support fo	rvices/us/ rwarrant

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#### IBM @server BladeCenter<sup>™</sup> 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 <sup>4</sup> 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 <sup>®</sup> 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 <sup>13</sup> / 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 <sup>™</sup> (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 / <b>supports optional SCSI Storage Expansion Unit</b> (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 <b>RAID-1 mirroring</b>	option kit) / Supports max of two IDE channel] / <b>RAID-1 mirroring</b> standard ng adjacent blade slot / connects to HS20 IB/sec] / 64-bit 133MHz PCI-X Bus B fron <b>g</b> [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 / <b>all SCSI bays Ultra320-enabled</b> 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 <sup>®</sup> Grand Champion <sup>™</sup> 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 <sup>20</sup> 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 <sup>2</sup> 5400 rpm ATA-100 HDD         48P7063           tra160 SCSI Hot-Swap SL HDD*         06P5766           ocs21 Hot-Swap SL HDD*         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 <sup>®</sup> Type-GAV-model Proce	L2 essor GHz <sup>1</sup> 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 512MB 800 2GB 800 1GB 800 1GB	None Ultra320 None Ultra320 None Ultra320	2-fixed 2-fixe	<ul> <li>Hot-swap Ultra320</li> </ul>	$\begin{array}{c} 0 \times 2 & 7 \\ 0 \times 2 & 7 \\ 0 \times 2 & 7 \\ 0 \times 2 & 7 \\ 0 \times 2 & 7 \\ 0 \times 2 & 7 \\ 0 \times 2 & 7 \\ 0 \times 2 & 7 \\ 0 \times 2 & 7 \\ 0 \times 2 & 7 \\ 0 \times 2 & 7 \\ 0 \times 2 & 7 \end{array}$	U <sup>4</sup> 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 <b>SB)</b> / 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 <sup>13</sup> 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	<b>mirroring</b> (supporte n LVD SCSI cable t <b>or (SFF)</b> 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 <b>iys Ultra3</b>	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 <b>icon option</b> (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 <sup>20</sup> ISB port in E BladeCente	/ two full gigabit ethern \% / PXE 2.0 Boot ager dual controllers connec a second optional switc pansion Card) / require st contain the same exp BladeCenter by pressing rby 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 <b>iostics</b> ™ (LEI	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 <b>ibr</b>	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	<ul> <li>H 9.7" x W H 24.5cm</li> <li>12 lbs; 5.4</li> <li>Configurat</li> <li>Diagnostic</li> <li>System Pa</li> <li>Network B</li> <li>PXE Boot</li> <li>Blade continedia sele and indica activity, ar</li> <li>Predictive and option</li> </ul>	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> <sup>13</sup> : deCenter SCSI	<ul> <li>Inferson</li> <li>Mon</li> <li>Mon</li> <li>next</li> <li>option</li> <li>4</li> <li>(S)</li> /ul>	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 <sup>3</sup> ays, onse time tions): <sup>7</sup> 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<sup>™</sup> HS40

xREF by eServer Field Skills Enablement Team

		ATTEL By	eserver Field Skills Enablement Team
IBM <sup>®</sup> Type-model Qty x Pro < 8839-41X 1 x Xeon™	L3 Frontside Disk cessor <sup>1</sup> Cache Memory Bus Mhz Disk contro 12.8GHz MP 2MB 2GB 400Mhz None Non	ller bays optional expansion unit	Slots         Mech- anical         Required chassis         Available date           0         0x2         6U <sup>4</sup> blade         BladeCenter         Mar 2004
Positioning Processor(s) L2/L3 cache SMP support Implementation	Ultra-dense, highly manageable modular comp 1 x Intel® Xeon 2.8GHz MP with 400MHz fronts 512KB L2 Cache / 2MB L3 Cache / on die of 4-way SMP / up to four Xeon MP Processors ( Server blade contains four Intel 604-pin micro-fone SCSI expansion unit connector, two I/O ex-	side bus / Hyper-Threading techi processor / at processor speed same speed/cache size) PGA ZIF sockets, eight memory	nológy / NetBurst™ microarchitecture v DIMM slots,
Memory	2GB std / 16GB max <sup>13</sup> / two slots used / six slot PC2100 266MHz registered 184-pin ECC DDR DIMMs must be installed in matched pairs [a ba 100MHz / Error Checking and Correcting (EC same chip and detects 2- through 8-bit errors c	-SDRAM DIMMs / eight DIMM ( ank] / 2-way memory interleave / C <b>C)</b> via <b>16-bit Checksum Chip</b>	/ dual channel / memory bus runs at 2 x kill™ (corrects 1, 2, 3, or 4-bit errors on
SCSI disk controller	None / supports optional SCSI Storage Exp via one connector / LSI Logic <sup>®</sup> 53C1020 Ultra3 CIOB-ES I/O Bridge (IMB2 bus to Host Bridge 3.5" one-inch high SL SCSI disks in front bays	320 SCSI controller [LVD 320MI ) / supports RAID-1 mirroring	B/sec] / 64-bit 133MHz PCI-X Bus B from [Embedded Mirroring] with two hot-swa
SCSI disk bays Externalstorage	Supports max of two hot-swap 3.5" SL Ultra320 80-pin SCA-2 connectors / <b>all SCSI bays Ultra3</b> Support for IBM TotalStorage™ solutions (includ	SCSI disks in optional SCSI Stor 20-enabled	rage Expansion Unit /
Mechanical	Supported in IBM BladeCenter (type 8677) / Blade	Center supported in 28" deep racl	ks such as the IBM NetBAY™ Rack products
	ServerWorks <sup>®</sup> Grand Champion <sup>™</sup> 4.0 LE / C one CIOB-X2 I/O Bridge (IMB2 bus to Host Bri ethernet and the I/O expansion option connect bus to Super I/O, and PCI 2.2 Bus C with grap	dge) for two PCI-X Buses with or / CSB6 South Bridge (Thin II hics controller / National Semic	Bus A for ethernet and Bus B for MB to Host Bridge) for EIDE, USB, LPC conductor® PC87417 Super I/O chip
Bus slots	No PCI or PCI-X slots (expansion via modules	· · ·	,
Ethernet controllers Network-interface	Four gigabit 10/100/1000 ethernet controllers / Intel Wake on LAN <sup>®</sup> / Alert Standard Format 1.0 / teamir 4-port GB Ethernet Switch Module (the second <b>Two connectors for I/O expansion option</b> / re	ng and failover support / one of the controller requires a second op quires same interface modules i	controllers connects to an optional tional Ethernet Switch Module) n bays 3 and 4 of BladeCenter /
CD / diskette / USB Kybd / video / mouse Graphics	all blades in a single BladeCenter must contain None / requests for CD-ROM, diskette drive, and U None / requests for keyboard, mouse, and vide SVGA / ATI® Radeon 7000 / on blade / 16MB S	SB port in BladeCenter by pressin o in BladeCenter by pressing th	g CD select button on front control panel e display button on front control panel
Systems mgmt Diagnostics	Intel integrated Baseboard Management Cor / on blade / provides system and environmenta event recording, alert capability / RS-485 inter communication with BladeCenter management Light Path Diagnostics™ (LED lights indicate component) and on-board diagnostics (via PC-D	al monitoring, face for module failing boctor in BIOS) face for IGB PC2100 CL 2GB PC2100 CL IBM HS40 SCS IBM HS40 Fibre	MB L3 Cache Proc Upg       13N065         CL2.5 ECC DDR-SDRAM DIMM       33L503         2.5 ECC DDR-SDRAM RDIMM       33L503         2.5 ECC DDR-SDRAM RDIMM       33L504         31 Storge Expansion Unit (blade) 26K484         e Channel Expansion Card (with two
Security	Power-on password / administrator password	/ 36.4GB 15K Ult	ort requires a FC Switch Module) 48P706 ra160 SCSI Hot-Swap SL HDD* 06P576
Software ship group	unattended boot / selectable boot / unattended Documentation CD, IBM Director 4.1 CD, Dev	start mode 36.4GB 15K Ultr	a320 SCSI Hot-Swap SL HDD* 06P577 ra160 SCSI Hot-Swap SL HDD* 06P575
Cooling fans	Uses cooling from BladeCenter (type 8677) / the	armal sensors 146.8GB 10K U	Itra320 SCSI Hot-Swap SL HDD* 32P0728
Power supply Prerequisites	on each processor and BladeCenter modules ar Uses power module(s) in BladeCenter (type 8 Monitor, keyboard, mouse for setup; ethernet disk, BladeCenter (type 8677), operating syste	677) switch module,	SCSI Storage Expansion Unit
			LIMITED WARRANTY <sup>3</sup>
Server bl			→ 3 year parts and labor         → International Warranty Complexity
(side vie opt CPU CPU CPU CPU CPU	<ul> <li>Stealth black front bezel</li> <li>H 9.7" x W 1.14" x D 17.6"; H 24.5cm x W 2.9cm x D 44.4</li> <li>12 lbs; 5.4kg (max configuration/Setup Utility: F</li> <li>Diagnostics (PC-Doctor™): F</li> <li>System Partition Boot: A</li> <li>Network Boot: F</li> <li>PXE Boot Agent Utility: C</li> <li>Blade control panel on each media select button, keyboard and indicators for blade error,</li> </ul>	ion) 1 at startup 2 at startup LT+F1 at startup 12 at startup trl+S at startup HS40 blade server provides d/mouse/video select button,	<ul> <li>International Warranty Service<sup>3</sup></li> <li>On site, 8 am - 5 pm, Mon - Fricoverage excluding holidays, next business day response time<sup>7</sup></li> <li>On site service upgrade options (in eligible locations):<sup>7</sup></li> <li>3 year IOR 24x7, 2 hr avg response (ServicePac® part num 69P9518)</li> <li>3 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9517)</li> <li>5 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9517)</li> <li>5 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9517)</li> </ul>
A control panel on to has following LEDs: • Power good • Blade location • Over temperature • Information • General fault	pp front of blade activity, and power ⇔ Predictive Failure Analysis® a and optional disk(s) with IBM	alerts on memory, processor(s), Director y for each HS40 blade server <sup>13</sup> :	<ul> <li>5 year IOR 24x7, 2 hr avg response (ServicePac part num 69P9527)</li> <li>Other ServicePac options at http://www.ibm.com/</li> </ul>

#### IBM @server BladeCenter<sup>™</sup> HS40 (March 2004)

xREF by eServer Field Skills Enablement Team

8839-61X 1 x Xeon <sup>-</sup>	Image: Construct of the state of	SI 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	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 processor 4-way SMP / up to four Xeon MP Processors (same speed/car Server blade contains four Intel 604-pin micro-PGA ZIF sockets	Ta-dense, highly manageable modular computing platform with superior 4-way performance Intel <sup>®</sup> Xeon MP up to 3.0GHz with 400MHz frontside bus / Hyper-Threading technology / NetBurst™ microarchitecture IKB L2 Cache / Up to 4MB L3 Cache / on die of processor / at processor speed ray SMP / up to four Xeon MP Processors (same speed/cache size) ver blade contains four Intel 604-pin micro-PGA ZIF sockets, eight memory DIMM slots, one SCSI expansion unit nector, two I/O expansion option connectors, integrated graphics and four ethernet ports									
Memory	Up to 2GB std / 16GB max <sup>13</sup> / 51X: two slots used 61X/71X: fo PC2100 266MHz registered 184-pin ECC DDR-SDRAM DIMMs DIMMs must be installed in matched pairs [a bank] / 2-way mer 100MHz / Error Checking and Correcting (ECC) via 16-bit C same chip and detects 2- through 8-bit errors contained in two	s / 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	None / supports optional SCSI Storage Expansion Unit (a via one connector / LSI Logic® 53C1020 Ultra320 SCSI contro CIOB-ES I/O Bridge (IMB2 bus to Host Bridge) / supports RA 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 op	bller [LVD 320MB/sec] / 64-bit 133MHz PCI-X Bus B from AID-1 mirroring [Embedded Mirroring] with two hot-swap ernal channel / no cables or external connector)									
External storage Mechanical	80-pin SCA-2 connectors / all SCSI bays Ultra320-enabled Support for IBM TotalStorage™ solutions (including FAStT and N Supported in IBM BladeCenter (type 8677) / BladeCenter supported	d in 28" deep racks such as the IBM NetBAY™ Rack products									
Architecture / chipsets Bus slots	ServerWorks <sup>®</sup> Grand Champion <sup>™</sup> 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 South 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/825460 Wake on LAN <sup>®</sup> / Alert Standard Format 1.0 / teaming and failover su 4-port GB Ethernet Switch Module (the second controller requir	EB / on blade / two PCI-X 64-bit 100MHz buses / full duplex / pport / 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 expansion None / requests for CD-ROM, diskette drive, and USB port in E	erface modules in bays 3 and 4 of BladeCenter / all on 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	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	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 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									
Server bl (side vice) opt CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU	BW)         C       Stealth black front bezel         C       H 9.7" x W 1.14" x D 17.6"; H 24.5cm x W 2.9cm x D 44.6cm         C       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         DIMMs         Op front of blade	<ul> <li>(ServicePac part num 69P9518)</li> <li>3 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9517)</li> <li>5 year IOR 9x5, 4 hr avg response (ServicePac part num 69P9525)</li> <li>5 year IOR 24x7, 2 hr avg response</li> </ul>									
<ul> <li>Blade location</li> <li>Over temperature</li> <li>Information</li> <li>General fault</li> </ul>	293.6GB* with two 146.8GB SL SCSI disks	0 blade server <sup>13</sup> :									
See feetnetee for imp	ortant warranty information	(HS40B) © IBM Corp. March 2004									

## IBM @server BladeCenter™ HS40 (April 2004)

xREF by eServer Field Skills Enablement Team

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IBM <sup>®</sup> Qty x Pro           Type-model         Qty x Pro           8839-21X         1 x Xeon <sup>™</sup>	cessor <sup>1</sup> Cache Memory Bus Mhz Disk controller bays option	SI support with Slots Mech- nal expansion unit x bays anical chassis date ot-swap Ultra320 0x2 7U <sup>4</sup> blade BladeCenter Apr 2004
Positioning Processor(s) L2/L3 cache SMP support Implementation	Ultra-dense, highly manageable modular computing platform 1 x Intel® Xeon 2.0GHz MP with 400MHz frontside bus / Hyper 512KB L2 Cache / 1MB L3 Cache / on die of processor / at p 4-way SMP / up to four Xeon Processors (same speed/cache Server blade contains four Intel 604-pin micro-PGA ZIF socket one SCSI expansion connector, one I/O expansion option connect	r-Threading technology / NetBurst™ microarchitecture processor speed size) ts, eight memory DIMM slots,
Memory	1GB std / 16GB max <sup>13</sup> / two slots used / six slots available / eig 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	s / 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	via one connector / LSI Logic <sup>®</sup> 53C1020 Ultra320 SCSI contro CIOB-ES I/O Bridge (IMB2 bus to Host Bridge) / supports <b>R</b> / 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 op 80-pin SCA-2 connectors / <b>all SCSI bays Ultra320-enabled</b>	bller [LVD 320MB/sec] / 64-bit 133MHz PCI-X Bus B from AID-1 mirroring [Embedded Mirroring] with two hot-swap ternal channel / no cables or external connector) otional SCSI Storage Expansion Unit /
External storage	Support for IBM TotalStorage™ solutions (including FAStT and N	NAS family of products)
	Supported in IBM BladeCenter (type 8677) / BladeCenter supporte ServerWorks <sup>®</sup> Grand Champion <sup>™</sup> 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 Sout bus to Super I/O, and PCI 2.2 Bus C with graphics controller / No PCI et PCI X, alots (currencies via methods are network) and	Bridge (memory controller and I/O Bridge) / double slot 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
Bus slots	No PCI or PCI-X slots (expansion via modules or network-int	, ,
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	pport / one of the controllers connects to an optional res a second optional Ethernet Switch Module)
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 the panel	ion card (or no expansion card)
Kybd / video / mouse Graphics	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 2.0Ghz/1MB L3 Cache Proc Upg 13N0651 512MB PC2100 CL2.5 ECC DDR-SDRAM DIMM 33L5038 1GB PC2100 CL2.5 ECC DDR-SDRAM RDIMM 33L5039
Security Software ship group	Power-on password / administrator password / unattended boot / selectable boot / unattended start mode Documentation CD, IBM Director 4.1 CD, Device Driver CD	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
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	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
		LIMITED WARRANTY <sup>3</sup>
Server bi (side vie (side vie CPU Opt CPU		<ul> <li>⇒ 3 year parts and labor</li> <li>⇒ International Warranty Service<sup>3</sup></li> <li>⇒ On site, 8 am - 5 pm, Mon - Fri coverage excluding holidays, next business day response time<sup>7</sup></li> <li>⇒ On site service upgrade options (in eligible locations):<sup>7</sup></li> <li>• 3 year IOR 24x7, 2 hr avg response</li> </ul>
Std opt CPU CPU	<ul> <li>B</li> <li>B</li> <li>DIMMs</li> <li>Constraints</li> <li>System Partition Boot:</li> <li>ALT+F1 at startup</li> <li>Network Boot:</li> <li>F12 at startup</li> <li>PXE Boot Agent Utility:</li> <li>Ctrl+S at startup</li> <li>Blade control panel on each HS40 blade see media select button, keyboard/mouse/video s and indicators for blade error, information, loc</li> </ul>	erver provides elect button, action, disk (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)
<ul><li>has following LEDs:</li><li>Power good</li><li>Blade location</li></ul>	<ul> <li>Predictive Failure Analysis® alerts on memory and optional disk(s) with IBM Director</li> </ul>	Other ServicePac options at http://www.ibm.com/
<ul> <li>Over temperature</li> <li>Information</li> <li>General fault</li> </ul>	Maximum internal disk capacity for each HS4 server <sup>13</sup> : 293.6GB* with two 146.8GB SL SCSI disks	40 blade services/us/its/pdf/wamomxeu.pdf ⇒ 24x7 <sup>14</sup> toll-free support for warranty issues during the warranty period <sup>3</sup>
See footnotes for imp	ortant warranty information	(HS40C) © IBM Corp. April 2004

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

## IBM @server<sup>™</sup> BladeCenter<sup>™</sup> T 8720 (DC power)

xREF by eServer Field Skills Enablement Team

	ported ades	Blade bays m std / max		Switch module bays (type)	Management modulebays 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 Etł	nernet, Fibre Cha	annel 1/2	2/4	1300W	4/4	8U <sup>4</sup> rack	Jul 2004
Positioning Description	Flexible, innov Provides comr expansion, ext keyboard, vide	mon resour ternal Fibre	n provides in rces shared l Channel sto	vestment protection by blade servers survers survers survers and servers and servers and servers and servers and servers and servers	n and reduces d uch as power, sy I 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-	0 (8832), Ĥ	IS40 (8839) k server bays	plades with Low Pr / front access	ofile Handle, SCS	SI Storage Ex	pansion L	Inits and PC	I I/O Expa	nsion
Switch modules Ethernet Switch Module Fibre Channel Switch Module	Std: none; ma. 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 Lintegrated	Ethernet Swite nodules to su ethernet cor	<i>ch Modules</i> in bays upport both etherne trollers / four extern	s 1 and 2 / one E to controllers on F nal ports / conne r <i>lles</i> in bays 3 an	thernet Switcl IS20 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 red in bays
Management module	s Std: one; max. controller / con connectivity / c	the HS20 two / hot- mmunicates	swap / rear a s with integra ernal Telco a	access (I/O ports) / ted system manag larm panel / ports:	comprehensive ement processo DB-15 analog vie	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	<i>Std:</i> two in bay 4-Lug Termina modules, blade	/s 1 and 2 al Block / 13 e bays 1 - 4	, <i>max:</i> four / 300 watts / Tr 4, and the me	tion port / all ports hot-swap / front ac wo standard modul edia tray; two additi 8 <i>All</i> : load balancin	cess / input volta es (in slots 1 & 2 onal power mod	ges between 2) supply pow ules provide fi	-38/-75 VI er to switc ull system	DC Min/Max h bays 1 & t redundent p	(-48 VDC 2, both ma	nominal) / nagement
Blower modules	<i>Std:</i> four; <i>max:</i> air intake	: four / hot-	swap / redun	dant / variable spe	ed / rear access	/ 330 cubic ft	per min ((	CFM) / front	to back air	flow; filtered
Mechanical Optical / USB	EIA 19" rack 24X-10X-24X- blade servers	models (80 8X <sup>6</sup> Combo / requests 1	U⁴) x 20" dee o / Two USB for optical cd	ep / designed for E port (Version 1.1) / and USB port(s) b	A-310D and UTI all USB interfactory 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 t anel	to eight
Keyboard / mouse Ports	None standard server blade fr	d / provides ront panel rd (PS/2), r	KVM conso mouse (PS/2)	le support / reques	ts for keyboard,	mouse, and v	ideo by p	ressing the	display but	
Security	Login passwor recommended	rd for remo I in rack en	te connection	n / secure socket la oviding security th	ayer (SSL) secur rough lockable d	ity for remote oors or other	manager security r	nent access neasures	; /	
Ethernet Systems mgmt System LED panel	Module (the se Provides remo blowers, powe	econd <sup>-</sup> HS2 ote console er modules	0/HS40 ethe and mgmt / / system dia	ernet controllers on rnet controller requ power on/off blade gnostic programs p , location, critical, r	ires a second op s/modules / mor provided through	itional <i>4-port (</i> itors power s IBM Director	GB Ethern tatus, ope software	iet Switch M	lodule)	
IBM BladeCenter T I IBM BladeCenter HS IBM BladeCenter HS IBM Sleek 2-Button NetBAY42 Enterpris Four Post Rack Mou Two Post Rack Mou	20 Low Profile 40 Low Profile Stealth Black N e Rack Cabine Int Kit	Handle Handle louse	Module	25K8358 25K8359 28L3673 930842S 90P3775 90P3774	BM 1300W DC BM BladeCente BM BladeCente BM BladeCente BM FAStT700 I BM FAStT700 I BM FAStT200 3 BM External US BM T541 15" F • Other options	er PCI I/O Ex er 1GB Flash er 2GB Flash Fibre Channe Storage Serv SB Floppy Dr lat Panel Col at <b>ibm.com</b>	pansion l Disk Driv Disk Driv Disk Driv el Storage rer ver ver or Monito l/pc/us/ac	Jnit ve ve e Server r (black) cessories		90P3742 90P3721 90P3771 90P3772 90P3773 17421RU 35421RU 05K9276 9512AB1
F	ront			ns: H13.76"(8U) x		'(front	VI BIAGEC			· ·
PM 1 • PM 3 • Combo Sw	itch/Plenum           CMM-2           PB-1           PB-2           PB-3           PB-5           PB-6           PB-7           PB-8           cococ           tch/Plenum   Rear           switch-module           1	• PM 4 • ·	D508mm > Weight: 96 > Stealth bla > Tool-free > Access se media tray > Access sw > Fits into S > Air Intake > Predictive server me	Failure Analysis® mory, processor( h IBM Director	<ul> <li>87.38kg</li> <li>ability</li> <li>er supplies, mg</li> <li>units from front</li> <li>blowers from</li> <li>Office enviromed</li> <li>alerts on blowers), and optiona</li> <li>Function</li> <li>for all blade ser</li> <li>for all blade ser</li> <li>or all blade ser</li> </ul>	mt modules, rear hts ers, blade l vers vers ade server	<ul> <li>Intern</li> <li>On si</li> <li>cov</li> <li>next 1</li> <li>On si</li> <li>elig</li> <li>3 ye</li> <li>(Se</li> <li>3 ye</li> <li>(Se</li> <li>3 ye</li> <li>(Se</li> <li>5 ye</li> <li>(Se</li> <li>5 ye</li> <li>(Se</li> <li>5 ye</li> <li>(Se</li> </ul>	ar parts and hational Wa te, 8 am - 5 rerage exclu- business da te service u gible locatio ear IOR 24x rvicePac <sup>®</sup> p. ear IOR 9x5 rvicePac pa ear IOR 9x5 rvicePac pa ear IOR 9x5 rvicePac pa ear IOR 24x rvicePac pa ear IOR 24x rvicePac pa ear IOR 24x	rranty Ser pm, Mon uding holid ay respons pgrade op ns): <sup>7</sup> 7, 2 hr avg art num 2 <sup>3</sup> 7, 2 hr avg rt num 30 rt num 41 , 4 hr avg rt num 41 , 4 hr avg rt num 69 Pac option	- Fri days, se time <sup>7</sup> otions (in g response L9185) response L2736) response P9207) g response P9205)

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

= Hot-swap

(BC1TA) © IBM Corp. March 2004

## IBM @server<sup>™</sup> BladeCenter<sup>™</sup> T 8730 (AC power)

xREF by eServer Field Skills and Education Team

1 AV

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)		odulebays N	Power Blower Nodule modulebay Nattage std / max		Available date
Descriptifin Provides common regularies shared by blade servers such as power, system management, adding, etc., et						-		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)	rces shared by blade servers channel storage switching an	such as power, syst nd connectivity, and	tem manageme I/O (combo CE	ent, cabling, ethe D/DVD and ports	for 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				
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 l ethernet controllers / four exte on card on Server Blade	net controllers on HS ernal ports / connects	520 and for faile to std mgmt m	over redundancy) nodule / supporte	/ bays 1 an d in bays 3 a	d 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, blade bays were / requests for optical / power / requests for optical / power / requests for optical / power / requests for optical / power / requests for optical / power / requests for optical / power / requests for optical / power / requests for optical / power / requests for optical / power / requests for optical / power / requestays for optical / power / requestays for optical		s Std: one: max: two / hot-	swap / rear access (I/O ports)	or / two external 2GE / comprehensive sv	sps small form t stem manager	nent functions / F	ports PowerPC® 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 voltage vo std modules (in sl /; Two addititional po	e range 180VA ots 1 & 2) supp wer modules p	C - 264VAC Min bly power to switc provide full system	/Max at 50/6 ch bays 1 & 2 n 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 / v	ariable speed /	/ rear access / 33	80 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 <sup>6</sup> Comb blade servers / requests	U <sup>4</sup> ) 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 Rack front access (i lect button on s	ks types A & C) / sh server blade front	nared by up t t panel	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         90P3773 11BM BladeCenter 4GB Flash Disk Drive         90P3775 11BM BladeCenter 4GB Flash Disk Drive         90P3775 11BM BladeCenter 4GB Flash Disk Drive         90P3775 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			,	<i>y</i> 1 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>								
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 '       90P3772         IBM BladeCenter PCI I/O Expansion Unit '       90P3772         IBM BladeCenter PCI I/O Expansion Unit '       90P3772         IBM BladeCenter 4GB Flash Disk Drive 90P3772       90P3774         IBM FASIT200 Storage Server 172       90P3774         IBM FASIT200 Fibre Channel Storage Server 35421RU       90P3774         ACC Ss and Dor       90P3774         IBM EadeCenter AGB Flash Disk Drive 90P307       95807         IBM EadeCenter AGB Flash Disk Drive 90P307       95807         IBM EadeCenter AGB Flash Disk Drive 90P377       907374         IBM EadeCenter AGB Flash Disk Drive 90P307	, ,	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 require des/modules / monito provided through IE	es a second op ors power statu BM Director sof	tional 4-port GB	Ethernet 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 int Kit nt Kit	25K8358 25K8359 28L3673 930842S 90P3775 90P3774	IBM BladeCenter IBM BladeCenter IBM BladeCenter IBM FAStT700 Fit IBM FAStT200 St IBM FAStT200 St IBM External USB IBM T541 15" Flat • Other options a	PCI I/O Expan 1GB Flash Dis 2GB Flash Dis 2GB Flash Dis 2GB Flash Dis 2Floppy Drive 4 Panel Color I 1 <b>ibm.com</b> /pc	nsion Unit sk Drive sk  ance 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					ont	LIMITED	WARRAN	ITY <sup>3</sup>
	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: Constraint of the second sec	<ul> <li>Weight: 98 to 192 lb; 44.5 f</li> <li>Stealth black color bezel</li> <li>Tool-free customer servic</li> <li>Access server blades, por modules, media tray and e front</li> <li>Access switch modules ar</li> <li>Fits into Standard Central</li> <li>Air Intake Filtering</li> <li>Predictive Failure Analysis processor(s), and optional di</li> <li>Bay</li> <li>Switc funct</li> <li>Ethernet link 1 for 2 Ethernet link 2 for Network connectii I/O expansion op</li> <li>Network connectii</li> </ul>	eability wer supplies, mgmt expansion units from nd blowers from rea Office enviroments * alerts blade serve sk(s) with IBM Direc ch ion r all blade servers r all blade servers on 1 for all blade se tions (Gb Ethernet on 2 for all blade se	r r erver /Fibre) erver	International W On site, 8 am - coverage exc next business of On site service eligible locat • 3 year IOR 24 (ServicePac P • 3 year IOR 92 (ServicePac p • 5 year IOR 92 (ServicePac p • 5 year IOR 24 (ServicePac p • 5 year IOR 24 (ServicePac p • 5 year IOR 24 (ServicePac p • 5 year IOR 24	arranty Ser 5 pm, Mon cluding holid day respons upgrade op ions): <sup>7</sup> tx7, 2 hr avg part num 2 <sup>1</sup> tx7, 4 hr avg part num 301 t5, 4 hr avg part num 491 tx7, 2 hr avg part num 691 tx7, 2 hr avg tx7, 4 hr avg	Fri days, se time <sup>7</sup> otions (in g response 1P2065) g response _2185) response _22736) response P9207) g response P9205) s at vices/us/

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

## IBM @server BladeCenter<sup>™</sup> HS20 (Low Profile Handle)

xREF by eServer Field Skills Enablement Team

IBM <sup>®</sup> Type-model Qty x Pro		Frontside ory Bus Mhz	Cache Disk		-	option		nit x ba		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	<b>3.2GHz</b> with L3 Cache / con Processor el 604-pin mic	533MHz on die of p s (same s cro-PGA Z	frontside processor speed/cae /IF socket	bus / r / at   che s ts, fou	' Hyper-Threa processor sp ize) ır memory DI	ading te eed MM slo	echnology /	connectors,	itecture
Memory	1GB std / 8GB n 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 <b>16-bit C</b>	AM DIMN nemory in hecksum	Ms / fo nterlea	ave / dual cha	nnel / r	nemory bus	runs at 2 x 100M	/IHz /
IDE controller/bays	Enhanced IDE IDE disk / no ca	able as IDE o	disk attaches	to riser of	card and	tray	(included wit	h optio	n kit) / Sup	ports max of tw	/o IDE
SCSI disk controller	via one connect CIOB-ES I/O BI	t <b>s optional S</b> tor / LSI Logi ridge (IMB2 I	SCSI Storag ic <sup>®</sup> 53C1020 ous to Host I	<b>e Expans</b> Ultra320 Bridge) /	sion Unit SCSI co supports	t (a b ontroll <b>RAI</b>	er [LVD 320] D-1 mirrorir	ring adj MB/sec ng [Em	acent blad ] / 64-bit 1 bedded Mi	e slot / connect 33MHz PCI-X E rroring] with two	s to HS20 Bus B from hot-swap
SCSI disk bays External storage	3.5" one-inch hi Supports max of 80-pin SCA-2 cc Support for IBM	f two hot-swa onnectors / <b>al</b>	p 3.5" SL Ulti I SCSI bays I	ra320 SC <b>Ultra320-</b>	SI disks i <b>enabled</b>	in opti	onal SCSI Si	torage	Expansion	ternal connecto Unit /	r)
Mechanical	Supported in IBM										
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 wit th Bridge (Tl ler / Nationa	th Bus hin IME I Semio	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-inter	face 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	ptional, supporte	
Network-interface	One connector 3 and 4 of Blade card) / ethernet	for I/O exp	<b>ansion optic</b> blades in a s	<b>on</b> (Fibre ingle Blac	Channel leCenter	Expa must	nsion Card) contain the	/ requi	res same iı	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 be button on fr	utton on front con ront 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	/512KE	L2 / 1MB	L3 Cache	13N0650
Diagnostics	for communication Light Path Diag component) and	on with Blade <b>Jnostics</b> ™ (L	Center mana ED lights indi	gement m cate failin	nodule g	S)	512MB PC210 1GB PC2100 2GB PC2100	CL2.5 CL2.5	ECC DDR-S	R-SDRAM DIMM SDRAM RDIMM SDRAM RDIMM Ision Unit (blade	33L5038 33L5039 33L5040 48P7058
Security Software ship group	Power-on passw unattended boot Documentation	t / selectable	boot/unatter	nded start			BM HS20 Fil ports; each BM HS20 40	ore Cha i port re )GB <sup>2</sup> 54	nnel Expar equires a FC 00 rpm AT	nsion Card (with C Switch Module A-100 HDD	two 48P7061 48P7063
Cooling fans	Uses cooling fro sensors on eac front panel					d 3	36.4GB 15K l 73.4GB 10K	Jltra320 Ultra16	SCSI Hot-S SCSI Hot	-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		*			l Storage E	ot-Swap SL HDD Expansion Unit	
Server b (side vi		Bay 1 3.5",	7), operating 9.5mm, no fro 9.5mm, no fro	ont acces					3 year part	ED WARRANT ts 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	<ul> <li>H 9.7" x H 24.5cn</li> <li>12 lbs; 5.</li> <li>Configura</li> <li>Diagnost</li> <li>System F</li> <li>Network</li> <li>PXE Boco</li> <li>Blade coordination</li> <li>Blade coordination</li> <li>Articlas and indice activity, a</li> <li>Predictive and optice</li> <li>Maximum i</li> </ul>	lack front bez W 1.14" x D 1 n x W 2.9cm 3 4kg (max con ation/Setup U Partition Boot: Boot: t Agent Utility ntrol panel or lect button, ka ators for blad and power e Failure Ana onal disk(s) wi nternal disk (s)	7.6"; < D 44.6cr ifiguration tility: F1 a por™): F2 a ALT F12 r: Ctrl- n each HS3 e error, inf lysis® aleu th IBM Dir capacity fo	) tt startup +F1 at startup +F1 at startup at startup +S at startup 20 blade s nouse/vid formation rts on merector or each F	artup o tup serve leo se n, loca mory,	lect button, tion, disk processor(s)	<b>ф</b> ), r <sup>13</sup> .	coverage e next busin On site ser eligible loc • 3 year IO (ServiceP • 3 year IO (ServiceP • 3 year IO (ServiceP • 5 year IO (ServiceP • 5 year IO (ServiceP • 5 year IO (ServiceP • 5 year IO (ServiceP) • 0 ther Se http://www.services.	R 24x7, 2 hr avg ac <sup>®</sup> 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 rac part num 69P6 R 24x7, 2 hr avg ac part num 69P9 rvicePac options rv.ibm.com/ /us/its/pdf/wam	ys, e time <sup>7</sup> tions (in response 9519) response 9518) response 9517) response 9525) response 9527) s at
<ul> <li>Information</li> <li>General fault</li> </ul>			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<sup>™</sup> HS20 Low Profile Handle (8843) January 2005

xREF by eServer Field Skills and Education Team

1 10-

(8843) January 2005										
IBM® Type-GAV Processor				-	SCSI Support w optional stor exp	unit x		Mech- anical	Ethernet	Available date
8843-L1y 1 x Xeon 8843-4Ty 1 x Xeon	<sup>™</sup> 2.8 Low Volt 1MB 8 3.6GHz 1MB 8	800 512MB 800 1GB	None Ultra320 None Ultra320	2-fixed 2-fixed	2 Hot-swap Ultra 2 Hot-swap Ultra	a320 ( a320 (	) x 2 ) x 2	7U <sup>4</sup> blade 7U <sup>4</sup> blade	2 x Gigabit 2 x Gigabit	Feb 2009 Feb 2009
Processor(s) SMP - L2 Cache Implementation	1 x Intel® Xeon 2.8 L Threading technology 2-way SMP / up to tw Systemboard contains expansion option cont	/ Low Voltage vo Xeon Proce s two Intel 604	e Proccessors rec ssors (same spe -pin micro-PGA 2	luce heat ed/cache ZIF socket	output for increase size) / <b>1MB</b> std a s, four DIMM slots	ed rack	densit	y without in	creased coolir	ig capacity
Memory	512MB/1GB std / 8GI PC2-3200 400MHz C installed in matched p	<b>B</b> <sup>13</sup> max / two s L2.5 ECC DD airs [a bank] / 2	slots used / two s R2-SDRAM DIM 2-way memory in	lots availa Vls / four 2 terleave /	ble / 240 pin gold-conne dual channel /	ector slo	ts on s	systemboard	d / DIMMs mu	ust be
SCSI disk controller SCSI Disk bays External Storage	LSI Logic <sup>®</sup> 53C1020 PCI-X / supports RAII <i>channel:</i> one 2-drop 1 Two 2.5-inch Small I disks in optional SCS Support for IBM Total	i Siorage Expa	ansion Unit (80-pi	11 SUA-2 (	connectors; an SC	o bays	320ME 6-bit c x of tw <b>Ultra</b>	3/sec) / on p channel (one vo hot-swap <b>320-enable</b>	olanar / 64-bit e internal) / Int 3.5" SL Ultra d) /	100MHz ternal 320 SCSI
Mechanical Architecture/Chipset BUS slots	7U Blade / Supported Intel E7520 chipset / BUS / ICH5R supports interface No PCI or PCI-X slots	s USB (1.0) / L	(Memory Controll SI 1020 / Dual B	er Hub) fo roadcom {	r PCI-Express bric 5704S / Low Pin C	ige to P ount Inte	to 20 XH, IC erface	00W power CH5R / PXH / NS PC87	supply option I BUS support 366 Super I/O	26K4816) ts PCI-X off LPC
Ethernet	Dual gigabit 10/100/10 chip on blade / PCI-X adapter fault tolerance	000 ethernet co 64-bit 100MHz / Load balance	ontroller / Broadc / full duplex / Wa cing or teaming /	om 5704S ake on LA	/ two full gigabit e N <sup>®</sup> / PXE 2.0 Boot dual controllers co	hernet I agent /	VIAC a Alert S to an o or OP	and PHY lay Standard For optional, sup M)	er functions / rmat 2.0 / Failo oported Etherr	over, net switch
Network Interface CD / Diskette / USB Kybd / video / mouse Graphics controller	or Optical Passthroug One connector for U 3 and 4 of BladeCent and serial I/O expansi None / requests for C None / requests for ks SVGA / ATI® Radeon									
Systems Mgmt Diagnostics	IBM Baseboard Man recording, alert capab intermanagement con Management module Light Path Diagnost component) and on-b BIOS)	ility / RS-485 ii nmunication wi	nterface for th BladeCenter		on blade / provid Xeon 2.8 GHz/80 Xeon 3.6 GHz/80 512MB (2x256)	0/1MB	Low V L2 Ca	/olt EM64T ache EM64T	Proc Upg	g, event 13N0699 13N0659 73P3522
Security Software ship group Cooling Fans Power supply(s) Prerequisites	No security intrusion p administrator passwor selectable boot / unati Documentation CD, E Uses cooling from Bla on each processor an Uses power module(s Monitor, keyboard, m disk, BladeCenter (typ	d / unattended tended start m Broadcom CD adeCenter (typ d BladeCenter ) in BladeCenter ) in BladeCenter ) setup	l boot / ode e 8677) / therma r modules and fro ter (type 8677) ; ethernet switch	l sensors nt panel	1GB (2x512) PC 2GB (2x1GB) PC 4GB (2x2GB) PC IBM 36.4GB 10k IBM 73GB 10k BladeCenter SC BladeCenter SFF BladeCenter SFF BladeCenter SC 17-inch Flat Pane	2-3200 22-3200 22-3200 Ultra32 Ultra320 SI Stora Fibre ( Gigabi ical Pas SI Stora	CL3 E ECC ECC SCSI ge Exp Chann t Ethe ss-thru ge Exp	ECC DDR2 DDR2 Chip DDR2 Chip SI 2.5"SFF I 2.5" SFF N p Unit el Exp Carc met Exp Carc Module pansion Uni	K RDIMM Kit NHS HDD HS HDD ard t	73P3522 73P2866
Baý 2 3.5",9.5mm Server to (side vi SCSI expansion connector Opt Opt CPU Std CPU	iew)       i	tional 2.5-inch Stealth black f H 9.7" x W 1.1 H 24.5cm x W 2 lbs; 5.4kg ( Configuration/ Diagnostics (F System Partitial Jetwork Boot: PXE Boot Age Blade control   nedia select L and indicators individuators indindividuators	n SFF SCSI disk ront bezel 4" x D 17.6"; 2.9cm x D 44.0 (max configurati Setup Utility: F1 2C-Doctor™): F2 Dn Boot: ALT+F F12 at startup nt Utility: Ctrl+S banel on each H button, keyboard for blade error, ower ure Analysis® a isk(s) with IBM	Scm on) at startup 2 at startup 1 at startup IS20 blac I/mouse/v informati lerts on i Director or each H (with Blac	up up le server provide ideo select butto on, location, disk nemory, process S20 blade servel	s n, or(s),	> 3 yee > Inter > On : > On : optic > 0 + 4 (§ - 4 (§	LIMITED ar parts an mational W site, 8 am- to-Fri exclud tousiness site service ons (in eliq year IOR 9 ServicePac® year IOR 9 ServicePac 10 ServicePac	WARRANT Id labor /arranty Serv 5 pm, ling holidays day respons	ice <sup>3</sup> s, e time ns): <sup>7</sup> ponse P9520) response 9521) response 9522)

## IBM @server BladeCenter<sup>™</sup> HS40 (Low Profile Handle)

xREF by eServer Field Skills Enablement Team

IBM <sup>®</sup> Type-model Qty x Pro	L3 ocessor <sup>1</sup> 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 n Up to 1 x Intel® Xeor 512KB L2 Cache / 2 4-way SMP / up to fo Server blade contains one SCSI expansion	<b>1 2.8GHz MP</b> ( <b>MB L3 Cache</b> our Xeon MP I s four Intel 604	vith 400MHz fr / on die of pro Processors (sa 4-pin micro-PG	ontside bu ocessor / a me speed A ZIF soc	s / Hyper-Threadin at processor speed /cache size) kets, four memory	g techno DIMM	ology / Ne slots,	etBurst™ micro	
Memory	2GB std / 16GB max PC2100 266MHz regis must be installed in ma Error Checking and detects 2- through 8-	stered 184-pin atched pairs [a <b>Correcting (E</b>	ECC DDR-SDF bank] / 2-way r CC) via 16-bit (	RAM DIMM memory inf Checksum	ls / four DIMM gold erleave / dual chan a <b>Chipkill</b> ™ (correct	nel / me s 1, 2, 3	mory bus	runs at 2 x 100	)MHz /
SCSI disk controller	None / supports op via one connector / L CIOB-ES I/O Bridge 3.5" one-inch high SI	.SI Logic <sup>®</sup> 530 (IMB2 bus to	020 Ultra 1020 Ultra 1020 Host Bridge) /	) SCSI col supports	ntroller [LVD 320N RAID-1 mirroring	IB/sec] / g [Embe	64-bit 13 dded Mir	33MHz PCI-X roring] with tw	Bus B from o hot-swap
SCSI disk bays	Supports max of two l 80-pin SCA-2 connec	not-swap 3.5" tors / <b>all SCSI</b>	SL Ultra320 SC bays Ultra320	SI disks ir <b>-enabled</b>	n optional SCSI Sto	orage Ex	pansion l	Jnit /	01)
External storage	Support for IBM Total	•	· · ·	•	, , ,	,			
Mechanical Architecture / chipsets Bus slots	Supported in IBM Blad ServerWorks® Gran. sone CIOB-X2 I/O Brid ethernet and the I/O bus to Super I/O, and No PCI or PCI-X slo	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	0 ethernet con	trollers / Intel 82	545GM/82	546EB / on blade / tv	vo PCI-X	(64-bit 10		
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	at 1.0 / teaming a (the second co option (Fibre C ale 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 CI 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	Intel integrated Bas / on blade / provides event recording, aler communication with I Light Path Diagnoss	system and e capability / F BladeCenter n tics™ (LED lig	nvironmental i S-485 interfaction nanagement minhts indicate fa	monitoring ce for iodule iiling	, 512MB PC2100 1GB PC2100 C 2GB PC2100 C IBM HS40 SC	CL2.5 E L2.5 EC L2.5 EC SI Storg	ECC DDR- C DDR-SI C DDR-SI e Expans	-SDRÀM DIMM DRAM RDIMM DRAM RDIMM sion Unit (blad	33L5039 33L5040 e) 26K4847
Security Software ship group	component) and on-b Power-on password unattended boot / se Documentation CD, I	/ administrato	r password / unattended st	art mode	ports; each p IBM HS40 40G 36,4GB 15K UI	ort requ iB <sup>2</sup> 5400 tra160 S	ires a FC rpm ATA SCSI Hot-	Switch Modul A-100 HDD Swap SL HDD	e) 48P7061 48P7063
Cooling fans Power supply Prerequisites	Uses cooling from Bla on each processor an Uses power module( Monitor, keyboard, m disk, BladeCenter (ty	d BladeCenter s) in BladeCe louse for setu	modules and nter (type 867 p; ethernet sw	front pane 7) ritch modu	s 73.4GB 10K UI 146.8GB 10K U * <i>Disk requires</i>	tra160 S Jltra320	SCSI Hot- SCSI Hot	Swap SL HDD' -Swap SL HDI	
Serverb	lade							ED WARRAN <sup>®</sup> and labor	<b>TY</b> <sup>3</sup>
(side vie opt CPU CPU CPU CPU CPU CPU CPU A control panel on thas following LEDs: Power good Blade location Over temperature Information General fault	Si     Si	2 Ibs; 5.4kg (ma onfiguration/Se agnostics (PC- ystem Partition etwork Boot: KE Boot Agent ade control pa edia select butti di indicators fo etivity, and pow edictive Failuri di optional disk imum internal	x D 17.6"; 9cm x D 44.6cr tx configuration tup Utility: F1 a Doctor™): F2 a Boot: ALT F12 Utility: Ctrl- inel on each H con, keyboard/n r blade error, in er e Analysis® ale c(s) with IBM Di	i) at startup +F1 at star at startup +S at startup +S at startup S40 blade formation, rts on mem rector for each H	p server provides select button,	a       Int         a       Or         co       or         a       Or         eli       • (         • (       • (	ernationa site, 8 an verage ex- xt busine site servi gible loca 3 year IOF ServicePa 3 year IOF ServicePa 5 year IOF ServicePa 5 year IOF ServicePa her Servi p://www. x7 <sup>14</sup> toll-f	Il Warranty Ser m - 5 pm, Mon ccluding holida ss day respons rice upgrade op	- Fri iys, se time <sup>7</sup> otions (in g response 9518) gresponse 9517) response 9525) g response P9527) at mxeu.pdf r warranty

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.

- <sup>1</sup> MHz/GHz only measures microprocessor internal clock speed; many factors affect application perfomance.
- <sup>2</sup> 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.
- <sup>3</sup> For terms and conditions or a copy of IBM's Statement of Limited Warranty, call 1 800 772-2227 in the U.S. Copies available upon request. Telephone support may be subject to additional charges. For onsite labor, IBM will attempt to diagnose and resolve the problem remotely before sending a technician. International Warranty Service is available in any country in which this product is sold and serviced. Service delivery methods and parts availability vary by country, may be different from that in the country of purchase, and are subject to change without notice. Fees and restrictions may apply in some countries.
- <sup>4</sup> A single "U", or rack unit, is 1.75" or 44.45mm.
- <sup>5</sup> S.M.A.R.T. stands for Self-Monitoring, Analysis and Reporting Technology.
- <sup>6</sup> CD and DVD drives speeds are variable and are often less than the maximum.
- These services are available for machines normally used for business, professional, or trade purposes, rather than personal, family or household purposes. Not all 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.

- <sup>8</sup> Subject to conditions.
- <sup>9</sup> Some software may differ from retail version (if any) and may not include user manuals or all program functionality. Software license agreements may apply.
- <sup>10</sup> Updated drivers and hot-swap services for certain operating systems may be required to support PCI hot-swap functions.
- <sup>11</sup> Fire GL1, Fire GL2 and Fire GL4 are trademarks of ATI Technologies, Inc., and are used under license.
- <sup>12</sup> Installation of 2GB RDIMMs requires BIOS and diagnostic firmware version 1.08 or later. When more than 8GB of memory is installed, the integrated SCSI controller must be disabled.
- <sup>13</sup> Maximum memory and internal hard disk capacities may require the replacement of standard component with largest supported component available.
- <sup>14</sup> Response times may vary. May exclude some holidays. Telephone support may be subject to additional charges.
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- <sup>17</sup> Some software may differ from its retail version (if available), and may not include user manual or all program functionality. Software license agreements may apply.
- <sup>18</sup> Diskettes and hard copy documentation available at extra charge.
- <sup>19</sup> For combination drives, maximum possible speeds only are given in the following order: CD read, CD write, CD re-write, DVD read.
- <sup>20</sup> Statement of direction and subject to availability.
- <sup>21</sup> 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.
- <sup>22</sup> 16GB Memory max with PC2700 DIMMs, 8GB Max with PC3200 DIMMs

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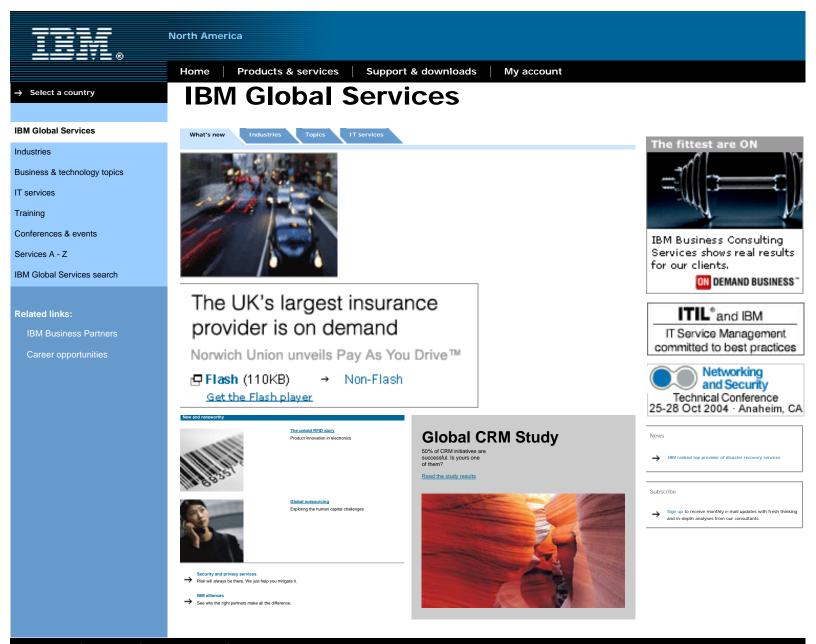
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