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IBM System x3200 M3
IBM Redbooks Product Guide

The x3200 M3 supports the latest Intel Xeon quad-core and Celeron, Pentium, and Core i3 dual-core processors for exceptional performance. Because your organization must manage growing volumes of data while maintaining high performance, the x3200 M3 offers vast memory capacity and disk storage. To enable energy savings, the x3200 M3 offers high-efficiency power supplies and support for IBM® Systems Director Active Energy Manager™, an energy monitoring tool.

Suggested uses: Small and medium businesses, distributed large enterprises, retail, banking, and insurance companies seeking scalability, top performance, and enterprise class availability features at an entry-level price.

Figure 1. The IBM System x3200 M3

Did you know?

The System x3200 M3 features easy installation and management with a rich set of options for hard disk drives and memory. The efficient design helps to save energy and provide a better work environment with less heat and noise. Security features such as Trusted Platform Module 1.2 and management features such as the Virtual Media Key and the Integrated Management Module assist in meeting today's complex desk-side environment. The economical price point and total cost of ownership make acquisition easier.

Key features

The single-socket IBM System x3200 M3, incorporating IBM X-Architecture features, is an affordable, single-socket tower server that offers more performance, configuration flexibility and availability features than many other servers in its class. From network infrastructure to distributed applications to front-end workloads, the x3200 M3 is designed to meet a wide range of business needs and help you adapt to changing business requirements.

Performance

The x3200 M3 offers numerous features to boost performance and reduce costs:

- Supports a single processor, including the quad-core Intel® Xeon® 3400 Series processor, designed with fast 1333 MHz memory access and 8 MB of L3 cache, to help provide the computing power you need to match your business needs and growth.

- Six DIMMs of registered 1333 MHz DDR3 ECC memory provide speed, high availability. Supports up to 32 GB of memory with four 8GB DIMMs.

- High-performance 6 Gbps SAS RAID controllers and 15K RPM 6 Gbps SAS disk drives in a variety of capacities to suit your local storage requirements.

- The use of solid-state drives (SSDs) instead of or along with traditional spinning drives (HDDs) can significantly improve I/O performance. An SSD can support 20,000 I/O operations per second (IOPS) whereas a typical HDD handles fewer than 500 IOPS.

Flexibility and scalability

The x3200 M3 has the ability to grow with your application requirements with these features:

- Tower design that can be converted to a 5U rack system if needed.

- A choice of 2-core or 4-core processors with clock rates up to 3.06 GHz.

- Six DIMM sockets allowing memory expansion of up to 48 GB.

- A choice of power supplies either one fixed 401 W AC power supply or two 430 W AC hot-swap redundant power supplies (model dependent).

- Seven USB 2.0 ports available - two front, four rear, and one internal for an embedded hypervisor.

- Storage bay flexibility: Up to four 3.5" simple-swap SATA HDDs, or up to four 3.5" hot-swap SAS/SATA HDDs, or up to eight 2.5" hot-swap SAS HDDs (model dependent). Additional internal optical drive bay and tape drive bay.

- Direct-attach SAS storage with the EXP2512, EXP2524, and EXP3000 storage enclosures is supported. IBM System Storage servers, including network-attached storage (NAS), and iSCSI or Fibre Channel-attached storage, can also be attached.

- Six total PCI Express 2.0 (PCIe 2.0) and PCI-X I/O slots for increased network or storage connectivity. One slot dedicated to the optional RAID controller.

Manageability and security

Powerful systems management features simplify local and remote management of the x3200 M3:

- The x3200 M3 includes an Integrated Management Module (IMM) to monitor server availability, perform Predictive Failure Analysis, and trigger IBM Systems Director alerts.

- An optional Virtual Media Key enables additional systems management capabilities, including web-based out-of-band remote control (keyboard video and mouse), remote optical drive support, Windows "blue screen" error capture, and support for LDAP and SSL protocols.

- Text Console Redirection support allows the administrator to remotely view x3200 M3 text messages over Serial or LAN connections.

- Integrated industry-standard Unified Extensible Firmware Interface (UEFI) next-generation BIOS. New capabilities include:

  - Human readable event logs – no more beep codes.
  - Complete out-of-band coverage by the Advance Settings Utility to simplify remote setup.
  - A complete setup solution, allowing adapter configuration functions to be moved into UEFI.

- Integrated Trusted Platform Module (TPM) 1.2 support.

- Industry-standard AES NI support for faster, stronger encryption.

- Integrated IPMI 2.0 support alerts IBM Systems Director to anomalous environmental factors, such as voltage and thermal conditions. It also supports highly secure remote power control using data encryption.

- IBM Systems Director is included for proactive systems management. IBM Systems Director comes with a portfolio of tools, including IBM Systems Director Active Energy Manager, IBM Service and Support Manager, and others. IBM Systems Director also offers extended systems management tools for additional server management and increased availability. When a problem is encountered, IBM Systems Director can issue administrator alerts via email, pager, and other methods.

- IBM Systems Director Active Energy Manager provides advanced power management features with actual real-time energy monitoring, reporting, and capping features.

Availability and serviceability

The System x3200 M3 provides many features to simplify serviceability and increase system uptime:

- The x3200 M3 servers offer ECC memory protection. This can help reduce downtime caused by memory errors.

- Toolless cover removal provides easy access to upgrades and serviceable parts, such as HDDs and memory. Similarly, the Virtual Media Key and the ServeRAID controller can be installed and replaced without tools. This means less time (and therefore less money) spent servicing the x3200 M3.

- Certain models of the server offers the option of hot-swap and redundant power supplies and hot-swap disk drives (redundant when implemented in conjunction with a RAID controller). These features mean greater system uptime.

- Toolless slides ship with the server, together with a cable management arm (CMA), that allows the rack server to easily slide into place.

- Solid-state drives (SSDs) offer significantly better reliability than traditional mechanical HDDs for greater uptime.

- The three-year (parts and labor) limited onsite warranty provides peace of mind and greater investment protection than a one-year warranty does.

Energy efficiency

The System x3200 M3 has an energy-efficient design with features including the following:

- Low-voltage processors draw less energy and produce less waste heat than high-voltage processors, thus helping to reduce data center energy costs. The available dual-core Xeon L3406 processor use only 30 W.

- Optional solid-state drives (SSDs) use only 2 W of power per drive, compared to 9 - 10 W for 2.5-inch HDDs. This is as much as 80% less power than a 2.5-inch HDD would use, with a corresponding reduction in heat output that further improves the overall bottom line.

- Energy-efficient components, including low-voltage transistors and voltage regulator devices, and power supplies.
- The x3200 M3 uses hexagonal ventilation holes in the chassis. Hexagonal holes can be grouped more densely than round holes, providing more efficient airflow through the system chassis. This ultimately results in reduced operational costs.

Locations of key components

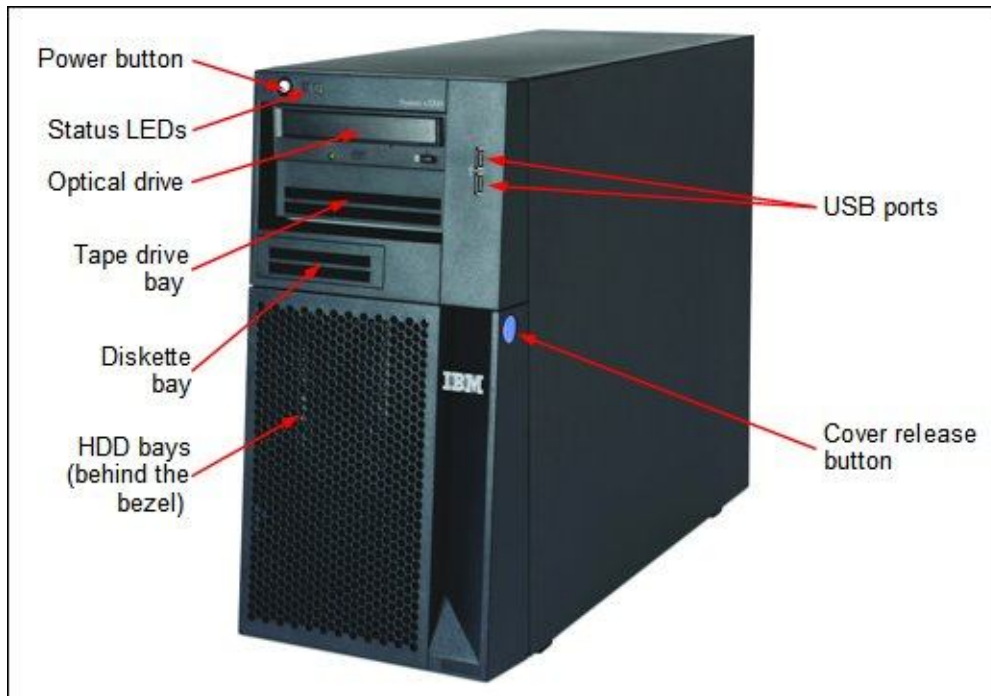Figures 2 and 3 show the front and rear of the server.

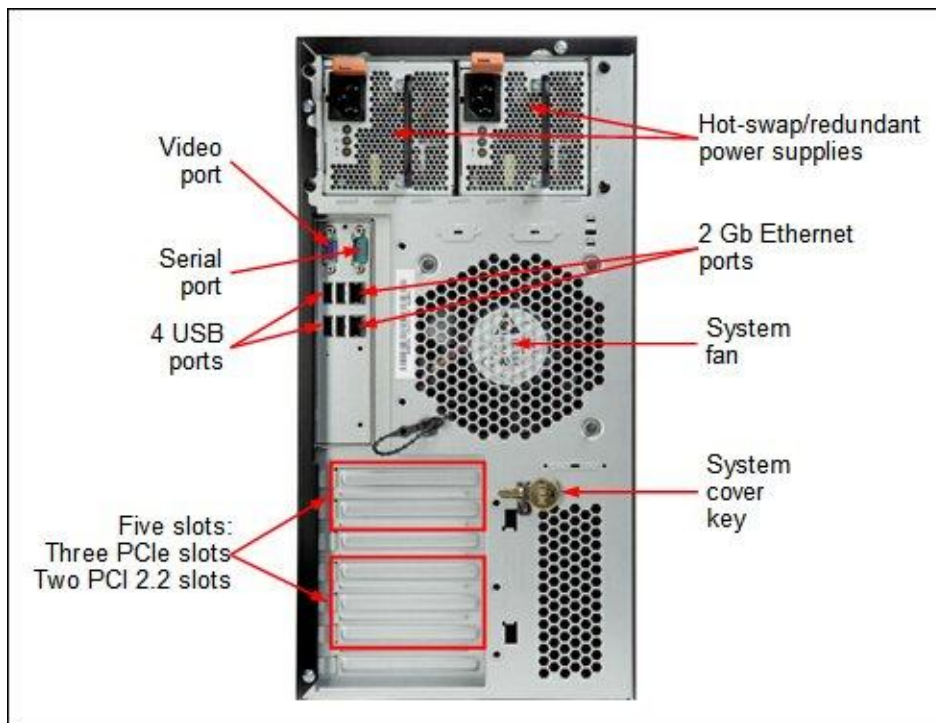Figure 2. Front view of the System x3200 M3

Figure 3. Rear view of the System x3200 M3

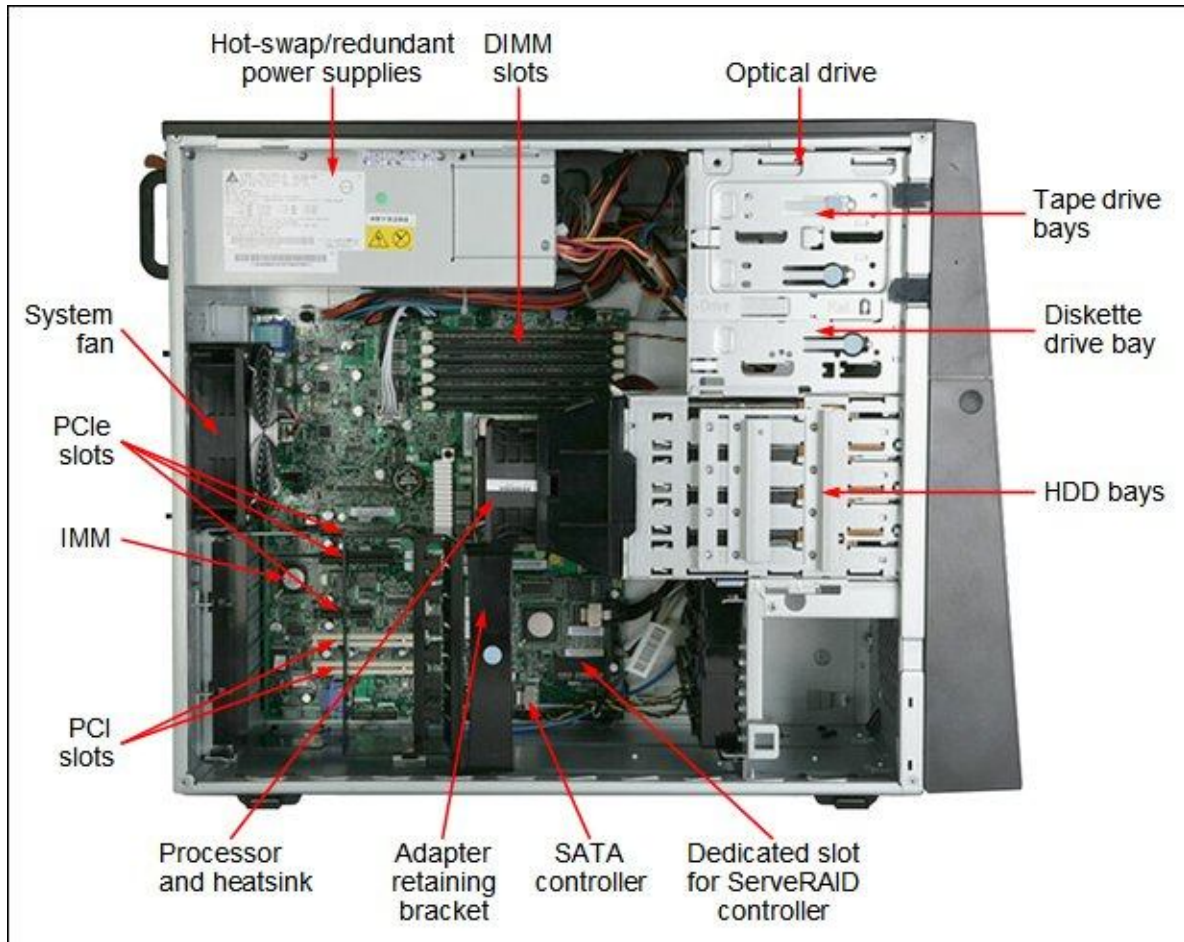Figure 4 shows the locations of key components inside the server.

Figure 4. Inside view of System x3200 M3

Standard specifications

Table 1. Standard specifications (part 1)

Components	Specification
Form factor	Tower (can be a 5U rack form factor using the optional Tower-to-Rack conversion kit).
Processor	One quad-core Intel Xeon 3400 series processor (up to 3.06 GHz/8 MB) or one dual-core Intel Core i3 series processor (up to 3.2 GHz/4 MB) with up to 1333 MHz memory speed; or one dual-core Intel Pentium G6950 (2.8 GHz/3 MB) or Celeron G1101 (2.26 GHz/2 MB) with up to 1066 MHz memory speed. Supports specific quad-core and dual-core processors via Configure-To-Order (CTO). One processor maximum
Memory cache	Up to 8 MB L3 for Intel Xeon 3400 series processors. Up to 4 MB L3 for Intel Core i3 series processors.
Chipset	Intel 3420.
Memory DIMM slots	6 DDR3 DIMM slots
Memory capacity	Up to 32 GB with 8 GB DDR3 RDIMMs and 4 populated DIMM slots, or up to 16 GB with 4 GB DDR3 UDIMMs and 4 populated DIMM slots. Dual-core processors only support UDIMMs.
Memory protection	ECC.
Disk drive bays	Up to four 3.5" Simple Swap SATA HDDs, or up to four 3.5" Hot-Swap SAS/SATA HDDs, or up to eight 2.5" hot-swap SAS HDDs (model dependent).
Maximum internal storage	Up to 7.2 TB with 900 GB 2.5" SAS HDDs, or up to 12 TB with 3 TB 3.5" SATA HDDs. Intermix of SAS/SATA is not supported.
RAID support	No RAID support on integrated SATA controller (used on simple-swap standard models); RAID 0, 1, 1E with ServeRAID-BR10il v2 (used on hot-swap standard models). Optional RAID 5, 50 with M5014 or M5015. Optional upgrade to RAID 6, 60 is available for M5014/M5015.
Optical drive bays	One 5.25" HH bay, support for DVD-ROM or Multiburner.
Tape drive bays	One 5.25 HH bay, support for internal tape drive, DVD-ROM, or Multiburner.
Network interfaces	Integrated 2 port Gigabit Ethernet (Intel 82574L) / 1 port is shared with IMM.
PCI Expansion slots	Six total with one PCIe x4 Gen 2 internal slot dedicated to the BR10il v2 RAID controller. Five externally accessible slots: ● Slot 1, PCIe x8 Gen 2 half-length ● Slot 2, PCIe x8 Gen 2 half-length ● Slot 3, PCIe x1 Gen 2 full-length ● Slot 4, PCI 32bit/33 MHz (5 V) full-length ● Slot 5, PCI 32bit/33 MHz (5 V) full-length
Ports	Two USB 2.0 ports on front. Four USB 2.0, one DB-15 video, one DB-9 serial, two RJ-45 Gigabit Ethernet network ports (one is dedicated, one is shared with IMM) on rear. One internal USB port for embedded hypervisor.
Cooling	Three speed-controlled non-redundant fans.
Power supply	One fixed 401 W AC power supply or two hot-swap redundant 430 W AC power supplies (model dependent).
Hot-swap components	Hard drives, power supplies (model dependent).

Table 1. Standard specifications (part 2)

Components	Specification
Systems management	UEFI, IBM Integrated Management Module (IMM), Predictive Failure Analysis, Automatic Server Restart, IBM Systems Director* and IBM Systems Director Active Energy Manager, IBM ServerGuide. Optional Virtual Media Key for remote presence (graphics, keyboard and mouse, virtual media).
Security features	Power-on password, Administrator's password, Trusted Platform Module (TPM).
Video	Matrox G200e integrated into IMM, maximum resolution is 1280x1024 @ 85 Hz.
Operating systems supported	Microsoft Windows Server 2008 R2 and 2008, DC/Windows Small Business Server 2008, Red Hat Enterprise Linux, SUSE Linux Enterprise Server, VMware ESX 4 and VMware ESXi 4 embedded hypervisor.
Limited warranty	1-year (7327) or 3-year (7328) customer replaceable unit and onsite limited warranty with 9x5/next business day (NBD) response time.
Service and support	Optional service upgrades are available through IBM ServicePacs®: 24x7/NBD or 4 hours onsite repair, 1-year or 2-year warranty extension, remote technical support for IBM hardware and selected IBM and third-party (Microsoft, Linux, VMware) software.
Dimensions	Height: 438 mm (17.25 in); width: 216 mm (8.5 in); depth: 540 (21.25 in)
Weight	Minimum ship configuration: 16.3 kg (36.0 lb), Maximum ship configuration: 25.2 kg (56.0 lb)

* Effective October 12, 2012, or until supply is depleted, IBM will discontinue the shipment of IBM Systems Director DVDs with IBM System x servers and IBM BladeCenter chassis. IBM Systems Director Express Edition and IBM Systems Director Standard Edition, which include software subscription and support, continue to be available for IBM System x servers and IBM Blade Centers.

The x3200 M3 servers are shipped with the following items:

● Statement of Limited Warranty.
● Important Notices.
● Documentation CD that contains the *Installation and User's Guide.*
● Country-specific models might have one or two (depending on number of power supplies in the server) country-specific line cords.

Standard models

The following lists the standard models.

Table 2. Standard models

Model†	Intel Processor** (one maximum)	Memory	Disk controller	HDD bays	Disks	Network	Optical	Power supply
7328-42x	1x Xeon X3440 2.53 GHz 4C 8MB 1333 MHz	2x 1 GB RDIMM	BR10il v2	4x 3.5" HS SAS/SATA	Open	2x GbE	DVD	1x 401W
7328-54x*	1x Xeon X3450 2.67 GHz 4C 8 MB 1333 MHz	2x 1 GB RDIMM	BR10il v2	4x 3.5" HS SAS/SATA	Open	2x GbE	DVD	2x 430W
7328-62x*	1x Xeon X3460 2. 8GHz 4C 8 MB 1333 MHz	2x 1 GB RDIMM	BR10il v2	4x 3.5" HS SAS/SATA	Open	2x GbE	DVD	1x 401W
7327/7328-A2x	1x Pentium G6950 2.8 GHz 2C 3 MB 1333 MHz	1x 1 GB UDIMM	Integrated SATA	4x 3.5" SS SATA	Open	2x GbE	DVD	1x 401W
7327/7328-B2x*	1x Core i3 540 3.06 GHz 2C 4 MB 1333 MHz	1x 1 GB UDIMM	Integrated SATA	4x 3.5" SS SATA	Open	2x GbE	DVD	1x 401W
7328-C1x	1x Xeon X3430 2.4 GHz 4C 8 MB 1333 MHz	2x 1 GB RDIMM	Integrated SATA	4x 3.5" SS SATA	Open	2x GbE	DVD	1x 351W
7328-C2x	1x Xeon X3430 2.4 GHz 4C 8 MB 1333 MHz	2x 1 GB RDIMM	BR10il v2	4x 3.5" HS SAS/SATA	Open	2x GbE	DVD	1x 351W

* Withdrawn from marketing
** Processor detail: Processor quantity, model, core speed, number of cores, L3 cache, front-side bus speed.
† The x3200 M3 is available as machine type 7327 with a 1-year warranty or as machine type 7328 with a 3-year warranty. This is the only difference between systems of the same model (for example, comparing 7327-42x and 7328-42x).

Express models

The following lists the express models.

Table 3. Express models

Model†	Intel Processor* (one maximum)	Memory	Disk controller	HDD bays	Disks	Network	Optical	Power supply
Europe Integrated Operating Team (IOT)								
7328-EAG	1x Xeon X3430 2.4 GHz 4C 8 MB 1333 MHz	1x 2 GB RDIMM	BR10il v2	4x 3.5" HS SAS/SATA	Open	2x GbE	Multi-burner	1x 401W
7328-EBG	1x Xeon X3440 2.53 GHz 4C 8 MB 1333 MHz	1x 2 GB RDIMM	M1015	4x 3.5" HS SAS/SATA	Open	2x GbE	Multi-burner	1x 401W
7328-K3G	1x Xeon X3430 2.4 GHz 4C 8 MB 1333 MHz	2x 2 GB RDIMM	M1015	4x 3.5" HS SAS/SATA	Open	2x GbE	Multi-burner	2x 430W
Central and Eastern Europe (CEE) and Middle East & Africa (MEA)								
7328-EAG	1x Xeon X3430 2.4 GHz 4C 8 MB 1333 MHz	1x 2 GB RDIMM	BR10il v2	4x 3.5" HS SAS/SATA	Open	2x GbE	Multi-burner	1x 401W
7328-K3G	1x Xeon X3430 2.4 GHz 4C 8 MB 1333 MHz	2x 2 GB RDIMM	M1015	4x 3.5" HS SAS/SATA	Open	2x GbE	Multi-burner	2x 430W
7328-K4G	1x Xeon X3440 2.53 GHz 4C 8 MB 1333 MHz	1x 4 GB RDIMM	BR10il v2	4x 3.5" SS SATA	2x 500 GB	2x GbE	Multi-burner	1x 401W
7328-K8G	1x Xeon X3440 2.53 GHz 4C 8 MB 1333 MHz	1x 2 GB UDIMM	BR10il v2	4x 3.5" HS SAS/SATA	2x 500 GB	2x GbE	Multi-burner	1x 401W
Russia/Commonwealth of Independent States (CIS)								
7328-KAG	1x Pentium G6950 2.80 GHz 2C 3 MB 1333 MHz	1x 2 GB UDIMM	BR10il v2	4x 3.5" HS SAS/SATA	Open	2x GbE	Multi-burner	1x 401W
7328-K7G	1x Xeon X3430 2.4 GHz 4C 8 MB 1333 MHz	1x 2 GB UDIMM	BR10il v2	4x 3.5" HS SAS/SATA	Open	2x GbE	Multi-burner	1x 401W
Latin America (LA)								
7328-E5U	1x Xeon X3450 2.67 GHz 4C 8 MB 1333 MHz	2x 2 GB RDIMM	BR10il v2	4x 3.5" HS SAS/SATA	2x 250 GB	2x GbE	DVD	2x 430W
7328-E7P	1x Xeon X3430 2.4 GHz 4C 8 MB 1333 MHz	1 x 2 GB RDIMM	BR10il v2	4x 3.5" HS SAS/SATA	1x 250 GB	2x GbE	Multi-burner	1x 401W
7328-E8P	1x Xeon X3430 2.4 GHz 4C 8 MB 1333 MHz	2 x 2 GB RDIMM	BR10il v2	4x 3.5" HS SAS/SATA	1x 250 GB	2x GbE	Multi-burner	1x 401W
Japan								
7328-PEX‡	1x Xeon X3440 2.53 GHz 4C 8 MB 1333 MHz	1x 4 GB RDIMM	M5104 + battery	4x 3.5" HS SAS/SATA	3x 450 GB 15K SAS‡	2x GbE	DVD	1x 401W

* Processor detail: Processor quantity, model, core speed, number of cores, L3 cache, front-side bus speed.
† The x3200 M3 is available as machine type 7327 with a 1-year warranty or as machine type 7328 with a 3-year warranty. This is the only difference between systems of the same model (for example, comparing 7327-42x and 7328-42x).
‡ 7328-PEX includes Windows Server 2008 R2 standard edition preinstalled on the three HDDs configured as a single RAID-5 array.

Processor options

The server supports only one processor, which is already installed in a standard or configure-to-order (CTO) model. Standard models use processors as listed in the table. Where a model is not listed, that processor is only available via CTO or special bid.

Table 4. Processor options

Feature code	Description	Standard models where used
A0QQ	Intel Celeron G1101 2.26 GHz 2C 2 MB 1066 MHz 73W	-
0736	Intel Core i3-530 2.93 GHz 2C 4 MB 1333 MHz 73W	-
0738	Intel Core i3 540 3.06 GHz 2C 4 MB 1333 MHz 73W	B2x
0740	Intel Core-i3 550 3.2 GHz 2C 4 MB 1333 MHz 73W	-
0737	Intel Pentium G6950 2.8 GHz 2C 3 MB 1333 MHz 73W	A2x
0739	Intel Xeon L3406 2.26 GHz 2C 4 MB 1066 MHz 30W	-
5842	Intel Xeon X3430 2.4 GHz 4C 8 MB 1333 MHz 95W	C1x, C2x
5844	Intel Xeon X3440 2.53 GHz 4C 8 MB 1333 MHz 95W	42x
5847	Intel Xeon X3450 2.67 GHz 4C 8 MB 1333 MHz 95W	54x
5849	Intel Xeon X3460 2. 8 GHz 4C 8 MB 1333 MHz 95W	62x
4511	Intel Xeon X3470 2.93 GHz 4C 8 MB 1333 MHz 95W	-
0741	Intel Xeon X3480 3.06 GHz 4C 8 MB 1333 MHz 95W	-

Memory options

IBM DDR3 memory is compatibility tested and tuned for optimal System x performance and throughput. IBM memory specifications are integrated into the light path diagnostics for immediate system performance feedback and optimum system uptime. From a service and support standpoint, IBM memory automatically assumes the IBM system warranty, and IBM provides service and support worldwide.

The server supports six DIMM slots. However, the maximum amount of DIMMs that can be installed is limited by type and rank of DIMM used, as follows:

- RDIMMs
    - Up to six single-rank RDIMMs for a maximum of 6 GB (6x 1 GB)
    - Up to six dual-rank RDIMMs for a maximum of 24 GB (6x 4 GB)
    - Up to six quad-rank RDIMMs for a maximum of 48 GB (6x 8 GB)
- UDIMMs
    - Up to four single-rank UDIMMs for a maximum of 4 GB (4x 1 GB)
    - Up to four dual-rank UDIMMs for a maximum of 16 GB (4x 4 GB)

Mixing of UDIMMs and RDIMMs is not supported. RDIMMs are only supported with Intel Xeon 3400 series processors. All DIMMs used in the x3200 M3 support ECC memory protection.

Memory speed is determined by type of processor used, number, and type of DIMMs installed, as follows:

- Intel Xeon 3400 series processors

  - 1333 MHz when one or two single-rank or dual-rank RDIMMs or UDIMMs per channel are installed
  - 1066 MHz when one quad-rank RDIMM per channel is installed
  - 800 MHz when three single-rank or dual-rank RDIMMs or two quad-rank RDIMMs per channel are installed

- Intel Celeron G, Pentium G, or Core i3

  - 1066 MHz when one or two single-rank or dual-rank UDIMM per channel are installed

The following table lists the memory options supported by the server.

Table 5. Memory options

Part number	Feature code	Description	Maximum supported
UDIMMs			
44T1570	1913	2 GB (1x 2 GB, 1Rx8, 1.5V) PC3-10600 CL9 ECC DDR3 1333MHz LP UDIMM	4
44T1571	1912	4 GB (1x 4 GB, 2Rx8) PC3-10600 CL9 ECC DDR3 1333MHz LP UDIMM	4
RDIMMs			
49Y1432	8933	1GB 1Rx8 1Gbit PC3-10600 LP RDIMM	4
49Y1405	8940	2GB (2Gb, 1Rx8, 1.35V) PC3L-10600R ECC LP RDIMM	4
49Y1433	8934	2GB (1x2GB, 2Rx8, 1.5V) PC3-10600 CL9 ECC DDR3 1333MHz LP	4
49Y1407	8942	4GB (2Gb, 2Rx8, 1.35V) PC3L-10600R ECC LP RDIMM	4
49Y1399	A14E	8GB (2Gb, 4Rx8,1.35V) DDR3-1066 LP RDIMM	4

Internal disk storage options

The IBM System x3200 M3 server supports the following internal disk storage configurations:

- Four 3.5" simple-swap SATA hard drive bays
- Four 3.5" hot-swap SAS/SATA hard drive bays
- Eight 2.5" SFF hot-swap SAS hard drive bays (only available via CTO)

The following table lists hard drive options for internal disk storage of x3200 M3 server. A mix of SAS and SATA drives is not supported by x3200 M3 server. For a comparison of drive technologies, see the IBM Redpaper, *IBM System x Server Disk Drive Interface Technology -* http://www.redbooks.ibm.com/abstracts/redp4791.html?Open

Table 6. Disk drive options (Part 1)

Part number	Feature code	Description	Maximum supported
3.5-inch NL SATA simple-swap			
81Y9778	A280	IBM 3TB 7.2K 6Gbps NL SATA 3.5" SS HDD	4
42D0787	5416	IBM 2TB 7200 NL SATA 3.5" SS HDD	4
3.5" SATA HDD simple-swap			
43W7622	5559	IBM 1TB 7.2K SATA 3.5" Simple-Swap HDD	4
39M4514	5288	500GB 3.5" Simple-Swap SATA II	4
3.5-inch NL SAS hot-swap			
81Y9758	A281	IBM 3TB 7.2K 6Gbps NL SAS 3.5" HS HDD	4
42D0767	5417	IBM 2TB 7.2K 6Gbps NL SAS 3.5" HS HDD	4
42D0777	5418	IBM 1TB 7.2K 6Gbps NL SAS 3.5" HS HDD	4
3.5-inch NL SATA hot-swap			
81Y9774	A27Z	IBM 3TB 7.2K 6Gbps NL SATA 3.5" HS HDD	4
42D0782	5415	IBM 2TB 7200 NL SATA 3.5" HS HDD	4
3.5-inch SAS hot-swap			
44W2244	5313	IBM 600GB 15K 6Gbps SAS 3.5" Hot-Swap HDD	4
44W2239	5312	IBM 450GB 15K 6Gbps SAS 3.5" Hot-Swap HDD	4
44W2234	5311	IBM 300GB 15K 6Gbps SAS 3.5" Hot-Swap HDD	4
3.5-inch SATA HDD hot-swap			
43W7626	5560	IBM Server 1TB 7200 SATA 3.5" HS HDD	4
39M4530	5196	500GB Hot-Swap SATA II	4
2.5-inch 15 K SAS hot-swap			
81Y9670	A283	IBM 300GB 15K 6Gbps SAS 2.5" SFF HS HDD	8
90Y8926	A2XB	IBM 146GB 15K 6Gbps SAS 2.5" SFF G2HS HDD	8
42D0677	5536	IBM 146GB 15K 6Gbps SAS 2.5" SFF Slim-HS HDD	8

Table 6. Disk drive options (Part 2)

Part number	Feature code	Description	Maximum supported
2.5-inch 10 K SAS hot-swap			
81Y9650	A282	IBM 900GB 10K 6Gbps SAS 2.5" SFF HS HDD	8
90Y8872	A2XD	IBM 600GB 10K 6Gbps SAS 2.5" SFF G2HS HDD	8
49Y2003	5433	IBM 600GB 10K 6Gbps SAS 2.5" SFF Slim-HS HDD	8
90Y8877	A2XC	IBM 300GB 10K 6Gbps SAS 2.5" SFF G2HS HDD	8
42D0637	5599	IBM 300GB 10K 6Gbps SAS 2.5" SFF Slim-HS HDD	8
42D0632	5537	IBM 146GB 10K 6Gbps SAS 2.5" SFF Slim-HS HDD	8
2.5-inch SAS hot-swap SED (10K and 15K)			
44W2294	5412	IBM 146GB 15K 6Gbps SAS 2.5" SFF Slim-HS SED	8
90Y8944	A2ZK	IBM 146GB 15K 6Gbps SAS 2.5" SFF G2HS SED	8
81Y9662	A3EG	IBM 900GB 10K 6Gbps SAS 2.5" SFF G2HS SED	8
90Y8908	A3EF	IBM 600GB 10K 6Gbps SAS 2.5" SFF G2HS SED	8
44W2264	5413	IBM 300GB 10K 6Gbps SAS 2.5" SFF Slim-HS SED	8
90Y8913	A2XF	IBM 300GB 10K 6Gbps SAS 2.5" SFF G2HS SED	8
2.5-inch NL SAS hot-swap			
81Y9690	A1P3	IBM 1TB 7.2K 6Gbps NL SAS 2.5" SFF HS HDD	8
81Y9730	A1AV	IBM 1TB 7.2K 6Gbps NL SATA 2.5" SFF HS HDD	8
90Y8953	A2XE	IBM 500GB 7.2K 6Gbps NL SAS 2.5" SFF G2HS HDD	8
42D0707	5409	IBM 500GB 7200 6Gbps NL SAS 2.5" SFF Slim-HS HDD	8
2.5-inch NL SATA hot-swap			
81Y9726	A1NZ	IBM 500GB 7.2K 6Gbps NL SATA 2.5" SFF HS HDD	8
81Y9722	A1NX	IBM 250GB 7.2K 6Gbps NL SATA 2.5" SFF HS HDD	8
Solid-state drives			
43W7718	A2FN	IBM 200GB SATA 2.5" MLC HS SSD	8
00W1125	A3HR	IBM 100GB SATA 2.5" MLC HS Enterprise SSD	8
49Y5844	A3AU	IBM 512GB SATA 2.5" MLC HS Enterprise Value SSD	8
49Y5839	A3AS	IBM 64GB SATA 2.5" MLC HS Enterprise Value SSD	8
90Y8648	A2U4	IBM 128GB SATA 2.5" MLC HS Enterprise Value SSD	8
90Y8643	A2U3	IBM 256GB SATA 2.5" MLC HS Enterprise Value SSD	8

For more information, see the list of IBM Redbooks Product Guides in the internal storage category
http://www.redbooks.ibm.com/Redbooks.nsf/portals/systemx?Open&page=pg&cat=internalstorage

The following table lists the RAID controllers and additional options used for internal disk storage of x3200 M3 server.

Table 7. RAID controllers for internal storage

Part number	Feature code	Description	Maximum supported	Where used
81Y4492	A1XL	ServeRAID H1110 SAS/SATA Controller	1	-
49Y4731	9742	ServeRAID-BR10il SAS/SATA Controller v2	1	42x, 52x, 62x, C2x
46M0831	0095	ServeRAID M1015 SAS/SATA Controller	1	-
46M0832	9749	ServeRAID M1000 Series Advance Feature Key	1	-
46M0916	3877	ServeRAID M5014 SAS/SATA Controller	1	-
46M0829	0093	ServeRAID M5015 SAS/SATA Controller	1	-
46M0917	5744	ServeRAID M5000 Series Battery Kit	1	-
46M0930	5106	ServeRAID M5000 Series Advanced Feature Key*	1	-
81Y4426	A10C	ServeRAID M5000 Series Performance Accelerator Key*	1	-

* Note: The Advanced Feature Key and Performance Accelerator Key cannot be used at the same time. Only one key can be installed onto the RAID controller.

The ServeRAID BR10il v2 RAID controller and ServeRAID H1110 occupy the dedicated PCI-E slot on x3200 M3 and does not consume regular PCI expansion slots. However, M1015, M5014, M5015, and MR10i RAID controllers occupy one of the standard PCI Express x8 Gen 2 slots, therefore limiting the maximum number of additional I/O adapter slots to 4. Only one RAID controller can be used with the server to support internal HDDs.

The ServeRAID H1110 SAS/SATA Controller has the following specifications:

● Four internal 6 Gbps SAS/SATA ports
● One x4 mini-SAS internal connector (SFF-8087)
● 6 Gbps throughput per port
● Based on LSI SAS2004 6 Gbps RAID on Chip (ROC) controller
● x4 PCI Express 2.0 host interface
● Supports RAID 0, 1, 1E, and 10
● Supports up to two integrated volumes
● Supports up to two global hot-spare drives
● Supports drive sizes greater than 2 TB for RAID 0, 1E, and 10 (not RAID 1)
● Fixed stripe size of 64 KB

The ServeRAID BR10il v2 SAS/SATA Controller has the following specifications:

● One Mini-SAS internal connector
● Supports RAID levels 0, 1, and 1E
● 3 Gbps throughput per port
● Based on the LSI 1064E controller
● PCI Express 2.0 x4 host interface
● Stripe size: 64 KB (fixed)

The ServeRAID M1015 SAS/SATA Controller has the following specifications:

- Two Mini-SAS internal connectors
- Supports RAID levels 0, 1, 10
- Supports RAID levels 5 and 50 with optional ServeRAID M1000 Series Advanced Feature Key
- 6 Gbps throughput per port
- Based on the LSI SAS2008 6 Gbps RAID on Chip (ROC) controller
- PCI Express 2.0 x8 host interface
- Configurable stripe size up to 64 KB

The ServeRAID M5014 SAS/SATA Controller has the following specifications:

- Two Mini-SAS internal connectors
- Supports RAID levels 0, 1, 5, 10, and 50
- Supports RAID 6 and 60 with the optional M5000 Advanced Feature Key
- Performance optimization for SSD drives with optional M5000 Series Performance Accelerator Key
- 6 Gbps throughput per port
- PCI Express 2.0 x8 host interface
- Based on the LSI SAS2108 6 Gbps ROC controller
- 256 MB of onboard cache
- Optional Intelligent Li-Ion-based battery backup unit with the ServeRAID M5000 Series Battery Kit

The ServeRAID M5015 SAS/SATA Controller has the following specifications:

- Two Mini-SAS internal connectors
- Supports RAID levels 0, 1, 5, 10, and 50
- Supports RAID 6 and 60 with the optional M5000 Advanced Feature Key
- Performance optimization for SSD drives with optional M5000 Series Performance Accelerator Key
- 6 Gbps throughput per port
- PCI Express 2.0 x8 host interface
- Based on the LSI SAS2108 6 Gbps ROC controller
- 512 MB of onboard cache
- Standard Intelligent Li-Ion-based battery backup unit with up to 48 hours of data retention

The ServeRAID-MR10i SAS/SATA Controller has the following specifications:

- Full-height (3U), half-length card
- Two internal x4 SFF-8087 connectors
- PCI Express x8 host interface
- SAS Controller: LSI 1078e
- 3 Gbps per port data transfer rate
- Supports SAS 3 Gbps and SATA 2
- 256 MB cache
- Optional Li-Ion battery backup
- Maximum stripe size: 1024 KB
- RAID levels: RAID 0, 1, 5, 6, 10, 50, and 60

For more information, see the list of IBM Redbooks Product Guides in the RAID adapters category:
http://www.redbooks.ibm.com/portals/systemx?Open&page=pg&cat=raid

Internal backup units

The server supports the internal tape drive options listed in the following table. Internal tape drives are installed in a 5.25" HH bay. A maximum of one tape drive is supported. SAS tape drives require SAS HBA to be installed in server. USB tape drives are connected to the dedicated USB tape drive connector on the motherboard. If an internal tape drive is installed, then the maximum number of optical drives is limited to one.

Table 8. Internal tape drives

Part number	Feature code	Description	Maximum supported
39M5636	5395	IBM DDS Generation 6 USB Tape Drive	1
43W8478	5393	IBM 400/800GB HH LTO3 SAS Tape Drive	1
44E8895	5397	IBM Half High LTO Gen 4 SAS Tape Drive	1
46C5399	5711	IBM DDS Generation 5 USB Tape Drive	1
49Y9898	5345	IBM Internal Half High LTO Gen 5 SAS Tape Drive	1
00D8935	A1VL	IBM RDX 1TB Cartridge	1
00D2786	A2VE	IBM RDX Internal USB 3.0 Dock with 320GB Cartridge	1
00D2787	A2VF	IBM RDX Internal USB 3.0 Dock with 500GB Cartridge	1
00D2788	A2VG	IBM RDX Internal USB 3.0 Dock with 1TB Cartridge	1

For more information, see the list of IBM Redbooks Product Guides in the Backup units category: http://www.redbooks.ibm.com/portals/systemx?Open&page=pg&cat=tape

Optical drives

The server supports the optical drive options listed in the following table. If two optical drives are installed, then an internal tape drive cannot be installed in the server.

Table 9. Optical drives

Part number	Feature code	Description	Maximum supported	Standard models where used
None*	4154	Half-High SATA DVD-ROM	2	22x, 32x, 42x, 54x, 62x, A2x, B2x, C1x, C2x
81Y6404	4155	Half-High SATA Multiburner	2	-

* This option is only available via CTO or is already installed in standard models.

Half-High SATA DVD-ROM supports the following media and speeds for reading:

- CD-ROM 48X
- CD-DA (DAE) 40X
- CD-R 48X
- CD-RW 40X
- DVD-ROM (single layer) 16X
- DVD-ROM (dual layer) 12X
- DVD-R (4.7 GB) 16X
- DVD-R DL 12X
- DVD+R 16X
- DVD+R DL 12X
- DVD-RW (4.7 GB) 12X
- DVD+RW 12X
- DVD-RAM (4.7/9.4 GB) 6X

Half-High SATA multiburner supports the same media and speeds for reading as HH DVD-ROM. In addition, this drive supports the following media and speeds for writing:

- CD-R 24X
- CD-RW 4X
- High Speed CD-RW 10X
- Ultra Speed CD-RW 16X
- DVD-R 8X
- DVD-R DL 8X
- DVD+R 8X
- DVD+R DL 8X
- DVD-RW 6X
- DVD+RW 8X
- DVD-RAM 3X

I/O expansion options

The server supports six PCI expansion slots. One slot is dedicated to the RAID controller. The form-factors of available slots are as follows:

- Slot 1, PCI-E x8 Gen 2 half-length
- Slot 2, PCI-E x8 Gen 2 half-length
- Slot 3, PCI-E x1 Gen 2 full-length
- Slot 4, PCI 32bit/33 MHz (5 V) full-length
- Slot 5, PCI 32bit/33 MHz (5 V) full-length

Network adapters

x3200 M3 supports two integrated Gigabit Ethernet ports. One port is shared with IMM.

Integrated NICs have the following features:

- Intel 82574L chip
- TCP/UDP, IPv4, and IPv6 checksum offloads
- TCP Segmentation/Transmit Segmentation Offloading (TSO)
- Wake on LAN support
- 802.1Q VLAN tagging support
- Support for jumbo frames up to 9 KBytes
- NIC Teaming (Load Balancing and Failover) with Intel PROSet software

The following table lists additional supported network adapters.

Table 10. Network adapters

Part number	Feature code	Description	Maximum supported
10 Gb Ethernet			
42C1820	1637	Brocade 10Gb CNA for IBM System x	2
42C1800	5751	QLogic 10Gb CNA for IBM System x	2
81Y9990	A1M4	Mellanox ConnectX-2 Dual Port 10GbE Adapter for IBM System x	2
49Y7950	A18Z	Emulex 10GbE Virtual Fabric Adapter II for IBM System x	2
95Y3751	A348	Emulex Dual Port VFAII Adapter & FCoE/iSCSI License for IBM System x	2
49Y7970	A2ED	Intel X540-T2 Dual Port 10GBaseT Adapter for IBM System x	
1 Gb Ethernet			
90Y9352	A2V3	Broadcom NetXtreme I Quad Port GbE Adapter for IBM System x	2
90Y9370	A2V4	Broadcom NetXtreme I Dual Port GbE Adapter for IBM System x	3
49Y4230	5767	Intel Ethernet Dual Port Server Adapter I340-T2 for IBM System x	3
49Y4240	5768	Intel Ethernet Quad Port Server Adapter I340-T4 for IBM System x	2
42C1780	2995	NetXtreme II 1000 Express Dual Port Ethernet Adapter	3
49Y4220	5766	NetXtreme II 1000 Express Quad Port Ethernet Adapter	2

For more information, see the list of IBM Redbooks Product Guides in the Networking adapters category:
http://www.redbooks.ibm.com/portals/systemx?Open&page=pg&cat=networkadapters

Storage host bus adapters

The following table lists the storage host bus adapters (HBAs) supported by x3200 M3 server.

Table 11. Storage adapters

Part number	Feature code	Description	Maximum supported
Fibre Channel			
81Y1655	A2W5	Emulex 16Gb FC Single-port HBA for IBM System x	2
81Y1662	A2W6	Emulex 16Gb FC Dual-port HBA for IBM System x	2
81Y1668	A2XU	Brocade 16Gb FC Single-port HBA for IBM System x	2
81Y1675	A2XV	Brocade 16Gb FC Dual-port HBA for IBM System x	2
00Y3337	A3KW	QLogic 16Gb FC Single-port HBA for IBM System x	2
00Y3341	A3KX	QLogic 16Gb FC Dual-port HBA for IBM System x	2
46M6050	3591	Brocade 8Gb FC Dual-port HBA for IBM System x	2
46M6049	3589	Brocade 8Gb FC Single-port HBA for IBM System x	2
42D0494	3581	Emulex 8Gb FC Dual-port HBA for IBM System x	2
42D0485	3580	Emulex 8Gb FC Single-port HBA for IBM System x	2
42D0510	3579	QLogic 8Gb FC Dual-port HBA for IBM System x	2
42D0501	3578	QLogic 8Gb FC Single-port HBA for IBM System x	2
59Y1993	3886	Brocade 4Gb FC Dual-port HBA for IBM System x	2
59Y1987	3885	Brocade 4Gb FC Single-port HBA for IBM System x	2
Converged Network Adapters (CNA)*			
42C1820	1637	Brocade 10Gb CNA for IBM System x	
42C1800	5751	QLogic 10 Gb Dual Port CNA for IBM System	2
iSCSI			
39Y6146	2976	QLogic iSCSI Single-Port PCIe HBA for IBM System x	3
42C1770	2977	QLogic iSCSI Dual-Port PCIe HBA for IBM System x	3
SAS			
46M0907	5982	IBM 6 Gb SAS HBA Controller	2
46M0912	3876	IBM 6 Gb Performance Optimized HBA	3

* Note: Converged Network Adapters require SFP+ optical transceivers or DAC cables that must be purchased separately.

For more information, see the list of IBM Redbooks Product Guides in the Host bus adapters category:
http://www.redbooks.ibm.com/portals/systemx?Open&page=pg&cat=hba

PCIe SSD I/O adapters

The server does not support High IOPS SSD adapters.

Power supplies

The server supports one fixed 401 W AC power supply or two 430 W AC hot-swap redundant power supplies (model dependent). Models come standard either with one fixed or two hot-swap power supplies. There is no need to order an additional redundant power supply, and such an option does not exist.

Integrated virtualization

The server supports VMware ESXi installed on a USB memory key. The key is installed in a USB socket inside the server. The following table lists the virtualization option.

Table 12. Virtualization option

Part number	Feature code	Description	Maximum supported
41Y8298	A2G0	IBM Blank USB Memory Key for VMWare ESXi Downloads	1
41Y8278	1776	IBM USB Memory Key for VMware ESXi 4	1
41Y8287	3033	IBM USB Memory Key for VMware ESXi 4.1	1
41Y8300	A2VC	IBM USB Memory Key for VMware ESXi 5.0	1
41Y8307	A383	IBM USB Memory Key for VMware ESXi 5.0 Update 1	1
41Y8311	A2R3	IBM USB Memory Key for VMWare ESXi 5.1	1

Remote management

The server contains IBM Integrated Management Module (IMM), which provides advanced service-processor control, monitoring, and alerting function. If an environmental condition exceeds a threshold or if a system component fails, the IMM lights LEDs to help you diagnose the problem, records the error in the event log, and alerts you to the problem. Optionally, the IMM also provides a virtual presence capability for remote server management capabilities.

The IMM provides remote server management through industry-standard interfaces:

- Intelligent Platform Management Interface (IPMI) Version 2.0
- Simple Network Management Protocol (SNMP) Version 3
- Common Information Model (CIM)
- Web browser

The optional virtual media key is required to enable the remote presence and blue-screen capture features. The remote presence feature provides the following functions:

- Remotely viewing video with graphics resolutions up to 1600x1200 at 75 Hz, regardless of the system state
- Remotely accessing the server, using the keyboard and mouse from a remote client
- Mapping the CD or DVD drive, diskette drive, and USB flash drive on a remote client, and mapping ISO and diskette image files as virtual drives that are available for use by the server
- Uploading a diskette image to the IMM memory and mapping it to the server as a virtual drive

The blue-screen capture feature captures the video display contents before the IMM restarts the server when the IMM detects an operating-system hang condition. A system administrator can use the blue-screen capture to assist in determining the cause of the hang condition. The following table lists the remote management option.

Table 13. Remote management option

Part number	Feature code	Description	Maximum quantity supported
46C7527	5891	IBM Virtual Media Key For Entry Systems	1

Physical and electrical specifications

- Height: 438 mm (17.25 in)
- Width: 216 mm (8.5 in)
- Depth: 540 (21.25 in)
- Weight::
  - Minimum ship configuration: 16.3 kg (36.0 lb)
  - Maximum ship configuration: 25.2 kg (56.0 lb)

Supported environment:

- Temperature
  - Server on
    - 10.0° to 35.0° C (50° to 95° F); altitude: 0 to 914.4 m (3,000 ft)
    - 10.0° to 32.0° C (50° to 89.6° F); altitude: 914.4 m (3,000 ft) to 2,133.6 m (7,000 ft)
  - Server off
    - 10.0° to 43.0° C (50° to 109.4° F); maximum altitude: 2,133.6 m (7,000 ft)
  - Shipping
    - -40° to 60° C (-40° to 140° F)
- Relative humidity: 8% to 80%
- Maximum altitude: 2,133.6 m (7,000 ft)

Electrical:

- 100 - 127 (nominal) V ac; 50 - 60 Hz; 6.0 A
- 200 - 240 (nominal) V ac; 50 - 60 Hz; 3.0 A
- Input kilovolt-amperes (kVA) (approximately)
  - Minimum configuration: 0.050 kVA
  - Maximum configuration: 0.550 kVA
- BTU output
  - Ship configuration: 171 Btu/hr (50 watts)
  - Full configuration: 1024 Btu/hr (300 watts)
- Noise level: Horizontal position
  - 6.5 bels (idle)
  - 6.5 bels (operating)

Supported operating systems

The server supports the following operating systems:

- IBM 4690 Operating System V6
- Microsoft Windows Server 2003, Web Edition
- Microsoft Windows Server 2003/2003 R2, Enterprise Edition
- Microsoft Windows Server 2003/2003 R2, Enterprise x64 Edition
- Microsoft Windows Server 2003/2003 R2, Standard Edition
- Microsoft Windows Server 2003/2003 R2, Standard x64 Edition
- Microsoft Windows Server 2008 Foundation
- Microsoft Windows Server 2008 R2
- Microsoft Windows Server 2008, Enterprise x64 Edition
- Microsoft Windows Server 2008, Enterprise x86 Edition
- Microsoft Windows Server 2008, Standard x64 Edition
- Microsoft Windows Server 2008, Standard x86 Edition
- Microsoft Windows Server 2008, Web x64 Edition
- Microsoft Windows Server 2008, Web x86 Edition
- Microsoft Windows Server 2012
- Microsoft Windows Small Business Server 2008 Premium Edition
- Microsoft Windows Small Business Server 2008 Standard Edition
- Red Hat Enterprise Linux 4 AS for AMD64/EM64T
- Red Hat Enterprise Linux 4 AS for x86
- Red Hat Enterprise Linux 4 ES for AMD64/EM64T
- Red Hat Enterprise Linux 4 ES for x86
- Red Hat Enterprise Linux 4 WS/HPC for AMD64/EM64T
- Red Hat Enterprise Linux 4 WS/HPC for x86
- Red Hat Enterprise Linux 5 Server Edition
- Red Hat Enterprise Linux 5 Server Edition with Xen
- Red Hat Enterprise Linux 5 Server with Xen x64 Edition
- Red Hat Enterprise Linux 5 Server x64 Edition
- Red Hat Enterprise Linux 6 Server Edition
- Red Hat Enterprise Linux 6 Server x64 Edition
- SUSE LINUX Enterprise Server 10 for AMD64/EM64T
- SUSE LINUX Enterprise Server 10 for x86
- SUSE LINUX Enterprise Server 10 with Xen for AMD64/EM64T
- SUSE LINUX Enterprise Server 11 for AMD64/EM64T
- SUSE LINUX Enterprise Server 11 for x86
- SUSE LINUX Enterprise Server 11 with Xen for AMD64/EM64T
- VMware ESX 4.0
- VMware ESX 4.1
- VMware ESXi 4.0
- VMware ESXi 4.1
- VMware vSphere 5
- VMware vSphere 5.1

See the IBM ServerProven® website for the latest information about the specific versions and service levels supported and any other prerequisites:
http://www.ibm.com/systems/info/x86servers/serverproven/compat/us/nos/matrix.shtml

Warranty options

The IBM System x3250 M3 has a 1-year (4251) or 3-year (4252) onsite warranty with 9x5/NBD terms. IBM offers warranty service upgrades through IBM ServicePacs. The IBM ServicePac is a series of prepackaged warranty maintenance upgrades and post-warranty maintenance agreements with a well-defined scope of services, including service hours, response time, term of service, and service agreement terms and conditions.

IBM ServicePac offerings are country-specific. That is, each country might have its own service types, service levels, response times, and terms and conditions. Not all covered types of ServicePacs might be available in a particular country. For more information about IBM ServicePac offerings available in your country, see the IBM ServicePac Product Selector at:
https://www-304.ibm.com/sales/gss/download/spst/servicepac

In general, the types of IBM ServicePacs are as follows:

- Warranty and maintenance service upgrades

    - 1, 2, 3, 4, or 5 years of 9x5 or 24x7 service coverage
    - Onsite repair from next business day to 4 or 2 hours (selected areas)
    - 1 or 2 years of warranty extension

- Remote technical support services

    - 1 or 3 years with 24x7 coverage (severity 1) or 9x5/NBD for all severities
    - Installation and startup support for System x® servers
    - Remote technical support for System x servers
    - Software support - Support Line
        - Microsoft or Linux software
        - VMware
        - IBM Systems Director

The following table explains warranty service definitions in more detail.

Table 14. Warranty service definitions

Term	Description
IBM onsite repair (IOR)	A service technician will come to the server's location for equipment repair.
24x7x2 hour	A service technician is scheduled to arrive at your customer's location within two hours after remote problem determination is completed. We provide service around the clock, every day, including IBM holidays.
24x7x4 hour	A service technician is scheduled to arrive at your customer's location within four hours after remote problem determination is completed. We provide service around the clock, every day, including IBM holidays.
9x5x4 hour	A service technician is scheduled to arrive at your customer's location within four business hours after remote problem determination is completed. We provide service from 8:00 a.m. to 5:00 p.m. in the customer's local time zone, Monday through Friday, excluding IBM holidays. If after 1:00 p.m. it is determined that onsite service is required, the customer can expect the service technician to arrive the morning of the following business day. For noncritical service requests, a service technician will arrive by the end of the following business day.
9x5 next business day	A service technician is scheduled to arrive at your customer's location on the business day after we receive your call, following remote problem determination. We provide service from 8:00 a.m. to 5:00 p.m. in the customer's local time zone, Monday through Friday, excluding IBM holidays.

Regulatory compliance

The server conforms to the following international standards:

- Russia/GOST ME01, IEC-60950-1, GOST R 51318.22-99, GOST R 51318.24-99, GOST R 51317.3.2-2006, GOST R 51317.3.3-99
- IEC 60950-1 (CB Certificate and CB Test Report)
- CE Mark (EN55022 Class A, EN60950-1, EN55024, EN61000-3-2, EN61000-3-3)
- CISPR 22, Class A
- TUV-GS (EN60950-1 /IEC60950-1,EK1-ITB2000)

External disk storage expansion

The external disk storage expansion enclosure listed in the following table are supported with x3200 M3 server.

Table 15. External storage expansion enclosure

Part number	Description	Maximum quantity supported per one M5025
172701X	IBM System Storage® EXP3000	18 (9 per port)
174724X	IBM System Storage EXP2524 Express Storage Enclosure	9 (9 per port)
174712X	IBM System Storage EXP2512 Express Storage Enclosure	18 (9 per port)

The hard disk drives listed in the following table are supported with external expansion enclosures.

Table 16. Hard drive options for external expansion enclosures (Part 1)

Part number	Description	Maximum quantity supported per one enclosure
EXP3000 Hot-Swap SATA 3.5" Hard Drives		
43W7630	1000 GB Dual Port Hot Swap SATA	12
49Y1940	IBM 2 TB 7200 Dual Port SATA 3.5" HS HDD	12
EXP3000 Hot-Swap SAS 3.5" Hard Drives		
44W2234	IBM 300 GB 15K 6 Gbps SAS 3.5" Hot-Swap HDD	12
44W2239	IBM 450 GB 15K 6 Gbps SAS 3.5" Hot-Swap HDD	12
44W2244	IBM 600 GB 15K 6 Gbps SAS 3.5" Hot-Swap HDD	12
EXP2512 Hot-Swap SAS 3.5" hard drives		
49Y1899	300 GB 15 K 6 Gb SAS 3.5" HDD	12
49Y1900	450 GB 15 K 6 Gb SAS 3.5" HDD	12
49Y1901	600 GB 15 K 6 Gb SAS 3.5" HDD	12
49Y1903	1 TB 7,200 RPM 6 Gb SAS NL 3.5" HDD	12
49Y1902	2 TB 7,200 RPM 6 Gb SAS NL 3.5" HDD	12

Table 16. Hard drive options for external expansion enclosures (Part 2)

Part number	Description	Maximum quantity supported per one enclosure
EXP2524 Hot-Swap SAS 2.5" hard drives		
49Y1896	146 GB 15K 6 Gb SAS 2.5" HDD	14
49Y1895	300 GB 10K 6 Gb SAS 2.5" HDD	14
81Y9596	600 GB 10K 6 Gb SAS 2.5" HDD	14
49Y1898	500 GB 7,200 RPM 6 Gb SAS NL 2.5" HDD	14
DS3524 2.5" hard drives		
49Y1841	146 GB 15K RPM 6 Gb SAS	24
49Y1836	300 GB 10K RPM 6 Gb SAS	24
49Y1952	300 GB 10K RPM 6 Gb SAS SED	24
49Y1851	500 GB 7.2K RPM 6 Gb NL SAS	24
49Y2048	600 GB 10K RPM 6 Gb SAS	24
81Y9915	900 GB 10K RPM 6 Gb NL SAS	24
81Y9872	1 TB 7.2K RPM 6 Gb NL SAS	24
81Y9903	200 GB SAS SSD	20
81Y9907	400 GB SAS SSD	20
DS3512 3.5" hard drives		
49Y1856	300 GB 15K RPM SAS	12
49Y1861	450 GB 15K RPM SAS	12
49Y1866	600 GB 15K RPM SAS	12
49Y1947	600 GB 15K RPM SAS SED	12
49Y1876	1 TB 7.2K RPM NL SAS	12
49Y1871	2 TB 7.2K RPM NL SAS	12
81Y9886	3 TB 7.2K RPM 6 Gb NL SAS	12

The RAID controllers listed in the following table are supported with external expansion enclosures.

Table 17. RAID controllers for external storage expansion enclosures

Part number	Description	Maximum quantity supported
46M0830	ServeRAID M5025 SAS/SATA Controller	1
46M0930	ServeRAID M5000 Series Advance Feature Key*	1 per one M5025
81Y4426	ServeRAID M5000 Series Performance Accelerator Key*	1 per one M5025

* Note: The Advanced Feature Key and Performance Accelerator Key cannot be used at the same time. Only one key can be installed onto a RAID controller.

The ServeRAID M5025 SAS/SATA Controller has the following specifications:

- Two Mini-SAS external connectors
- Supports RAID levels 0, 1, 5, 10, and 50
- Supports RAID 6 and 60 with the optional M5000 Advanced Feature Key
- Performance optimization for SSD drives with optional M5000 Series Performance Accelerator Key
- 6 Gbps throughput per port
- PCI Express 2.0 x8 host interface
- Based on the LSI SAS2108 6 Gbps ROC controller
- 512 MB of onboard cache
- Intelligent Li-Ion-based battery backup unit with up to 48 hours of data retention
- Supports connectivity to the EXP3000, EXP2512, and EXP2524 storage expansion enclosures

For more information, see the *ServeRAID M5025 SAS/SATA Controller for IBM System x* at-a-glance guide: http://www.redbooks.ibm.com/abstracts/tips0739.html?Open

The external SAS cables listed in the following table are supported with external expansion enclosures and M5025 RAID controllers.

Table 18. External SAS cables for external storage expansion enclosures

Part number	Description	Maximum quantity supported per enclosure*
39R6531	IBM 3 m SAS Cable	1
39R6529	IBM 1 m SAS Cable	1

* Note: The EXP3000 enclosures can be chained with each other. In such a case, one cable is used to connect first EXP3000 to the RAID controller, and every consecutive EXP unit is connected to the previous one by one cable.

External disk storage systems

The following table lists the external storage systems that are supported by the server and can be ordered through System x sales channel. The server may support other IBM disk systems that are not listed in this table. Refer to IBM System Storage Interoperability Center for further information, http://www.ibm.com/systems/support/storage/ssic.

Table 19. External disk storage systems

Part number	Description
1746A2D	IBM System Storage DS3512 Express Dual Controller Storage System
1746A2S	IBM System Storage DS3512 Express Single Controller Storage System
1746A4D	IBM System Storage DS3524 Express Dual Controller Storage System
1746A4S	IBM System Storage DS3524 Express Single Controller Storage System
181494H	IBM System Storage DS3950 Model 94
181498H	IBM System Storage DS3950 Model 98
181492H	IBM System Storage EXP395 Expansion Unit
1746A2E	IBM System Storage EXP3512 Express Storage™ Expansion Unit
1746A4E	IBM System Storage EXP3524 Express Storage Expansion Unit

For more information, see the list of IBM Redbooks Product Guides in the Storage Systems category: http://www.redbooks.ibm.com/portals/systemx?Open&page=pg&cat=externalstorage

External backup units

The server supports the external backup attachment options listed in the following table.

Table 20. External backup options (Part 1)

Part\number	Description
External tape expansion enclosures for internal tape drives	
87651UX	1U Tape Drive Enclosure
8767HHX	Half High Tape Drive Enclosure
87651NX	1U Tape Drive Enclosure (with Nema 5-15P LineCord)
8767HNX	Half High Tape Drive Enclosure (with Nema 5-15P LineCord)
Tape enclosure adapters (with cables)	
44E8869	USB Enclosure Adapter Kit
40K2599	SAS Enclosure Adapter Kit
Internal backup drives supported by external tape enclosures	
46C5399	IBM DDS Generation 5 USB Tape Drive
39M5636	IBM DDS Generation 6 USB Tape Drive
43W8478	IBM Half High LTO Gen 3 SAS Tape Drive
44E8895	IBM Half High LTO Gen 4 SAS Tape Drive
49Y9898	IBM Half High LTO Gen 5 Internal SAS Tape Drive

Table 20. External backup options (Part 2)

Part number	Description
External backup units*	
3628L3X	IBM Half High LTO Gen 3 External SAS Tape Drive (with US line cord)
3628L4X	IBM Half High LTO Gen 4 External SAS Tape Drive (with US line cord)
3628L5X	IBM Half High LTO Gen 5 External SAS Tape Drive (with US line cord)
3628N3X	IBM Half High LTO Gen 3 External SAS Tape Drive (without line cord)
3628N4X	IBM Half High LTO Gen 4 External SAS Tape Drive (without line cord)
3628N5X	IBM Half High LTO Gen 5 External SAS Tape Drive (without line cord)
3580S3V	System Storage TS2230 Tape Drive Express Model H3V
3580S4V	System Storage TS2240 Tape Drive Express Model H4V
3580S5E	System Storage TS2250 Tape Drive Express Model H5S
3580S5X	System Storage TS2350 Tape Drive Express Model S53
3572S4R	TS2900 Tape Library with LTO4 HH SAS drive & rack mount kit
3572S5R	TS2900 Tape Library with LTO5 HH SAS drive & rack mount kit
35732UL	TS3100 Tape Library Model L2U Driveless
35734UL	TS3200 Tape Library Model L4U Driveless
46X2682†	LTO Ultrium 5 Fibre Channel Drive
46X2683†	LTO Ultrium 5 SAS Drive Sled
46X2684†	LTO Ultrium 5 Half High Fibre Drive Sled
46X2685†	LTO Ultrium 5 Half High SAS Drive Sled
46X6912†	LTO Ultrium 4 Half High Fibre Channel Drive Sled
46X7117†	LTO Ultrium 4 Half High SAS DriveV2 Sled
46X7122†	LTO Ultrium 3 Half High SAS DriveV2 Sled

* Note: The external tape drives listed can be ordered through System x sales channel. Server may support other IBM tape drives that are not listed in this table. Refer to IBM System Storage Interoperability Center for further information.
† Note: These part numbers are the tape drives options for 35732UL and 35734UL.

For more information, see the list of IBM Redbooks Product Guides in the Backup units category:
http://www.redbooks.ibm.com/portals/systemx?Open&page=pg&cat=tape

Top-of-rack Ethernet switches

The server supports the top-of-rack Ethernet switches from IBM System Networking listed in the following table.

Table 21. IBM System Networking - Top-of-rack switches

Part number	Description
IBM System Networking - 1 Gb top-of-rack switches	
0446013	IBM System Networking RackSwitch G8000R
7309CFC	IBM System Networking RackSwitch G8000F
7309CD8	IBM System Networking RackSwitch G8000DC
7309G52	IBM System Networking RackSwitch G8052R
730952F	IBM System Networking RackSwitch G8052F
427348E	IBM Ethernet Switch J48E
6630010	Juniper Networks EX2200 24 Port
6630011	Juniper Networks EX2200 24 Port with PoE
6630012	Juniper Networks EX2200 48 Port
6630013	Juniper Networks EX2200 48 Port with PoE
IBM System Networking - 10 Gb top-of-rack switches	
7309DRX	IBM System Networking RackSwitch G8264CS (Rear to Front)
7309DFX	IBM System Networking RackSwitch G8264CS (Front to Rear)
7309BD5	IBM System Networking RackSwitch G8124DC
7309BR6	IBM System Networking RackSwitch G8124ER
7309BF7	IBM System Networking RackSwitch G8124EF
7309G64	IBM System Networking RackSwitch G8264R
730964F	IBM System Networking RackSwitch G8264F
7309CR9	IBM System Networking RackSwitch G8264TR
7309CF9	IBM System Networking RackSwitch G8264TF
0719410	Juniper Networks EX4500 - Front to Back Airflow
0719420	Juniper Networks EX4500 - Back to Front Airflow
IBM System Networking - 40 Gb top-of-rack switches	
8036ARX	IBM System Networking RackSwitch G8316R
8036AFX	IBM System Networking RackSwitch G8316F

For more information, see the list of IBM Redbooks Product Guides in the Top-of-rack switches category:
http://www.redbooks.ibm.com/portals/systemx?Open&page=pg&cat=tor

Uninterruptible power supply units

The server supports attachments to the uninterruptible power supply (UPS) units listed in the following table.

Table 22. Uninterruptible power supply units

Part number	Description
Rack-mounted UPS	
53951AX	IBM 1500VA LCD 2U Rack UPS (100 V/120 V)
53951KX	IBM 1500VA LCD 2U Rack UPS (230 V)
53952AX	IBM 2200VA LCD 2U Rack UPS (100 V/120 V)
53952KX	IBM 2200VA LCD 2U Rack UPS (230 V)
53953AX	IBM 3000VA LCD 3U Rack UPS (100 V/120 V)
53953JX	IBM 3000VA LCD 3U Rack UPS (200 V/208 V)
53953KX	IBM 3000VA LCD 3U Rack UPS (230 V)
53956AX	IBM 6000VA LCD 4U Rack UPS (200 V/208 V)
53956KX	IBM 6000VA LCD 4U Rack UPS (230 V)
53959KX	IBM 11000VA LCD 5U Rack UPS (200 V/208 V/230 V)
Tower UPS	
53961AX	IBM 1000VA LCD Tower UPS (120 V)
53961JX	IBM 1000VA LCD Tower UPS (100 V)
53961KX	IBM 1000VA LCD Tower UPS (230 V)
53962AX	IBM 1500VA LCD Tower UPS (120 V)
53962JX	IBM 1500VA LCD Tower UPS (100 V)
53962KX	IBM 1500VA LCD Tower UPS (230 V)

For more information, see the list of IBM Redbooks Product Guides in the Power infrastructure category:
http://www.redbooks.ibm.com/portals/systemx?Open&page=pg&cat=power

Power distribution units

The server supports attachments to the power distribution units (PDUs) when installed in rack.

Table 23. Power distribution units (part 1)

Part number	Description
Switched and Monitored PDUs	
46M4002	IBM 1U 9 C19/3 C13 Active Energy Manager DPI® PDU
46M4003	IBM 1U 9 C19/3 C13 Active Energy Manager 60A 3 Phase PDU
46M4004	IBM 1U 12 C13 Active Energy Manager DPI PDU
46M4005	IBM 1U 12 C13 Active Energy Manager 60A 3 Phase PDU
46M4167	IBM 1U 9 C19/3 C13 Switched and Monitored 30A 3 Phase PDU
46M4116	IBM 0U 24 C13 Switched and Monitored 30A PD
46M4119	IBM 0U 24 C13 Switched and Monitored 32A PDU
46M4134	IBM 0U 12 C19/12 C13 Switched and Monitored 50A 3 Phase PDU
46M4137	IBM 0U 12 C19/12 C13 Switched and Monitored 32A 3 Phase PDU
Enterprise PDUs	
71762MX	IBM Ultra Density Enterprise PDU C19 PDU+ (WW)
71762NX	IBM Ultra Density Enterprise PDU C19 PDU (WW)
71763MU	IBM Ultra Density Enterprise PDU C19 3 phase 60A PDU+ (NA)
71763NU	IBM Ultra Density Enterprise PDU C19 3 phase 60A PDU (NA)
39M2816	IBM DPI C13 Enterprise PDU without linecord
39Y8923	DPI 60A Three Phase C19 Enterprise PDU with IEC309 3P+G (208 V) fixed line cord
39Y8941	DPI Single Phase C13 Enterprise PDU without line cord
39Y8948	DPI Single Phase C19 Enterprise PDU without line cord
Front-End PDUs	
39Y8934	DPI 32amp/250V Front-end PDU with IEC 309 2P+Gnd connector
39Y8935	DPI 63amp/250V Front-end PDU with IEC 309 2P+Gnd connector
39Y8938	30amp/125V Front-end PDU with NEMA L5-30P connector
39Y8939	30amp/250V Front-end PDU with NEMA L6-30P connector
39Y8940	60amp/250V Front-end PDU with IEC 309 60A 2P+N+Gnd connector

Table 23. Power distribution units (part 2)

Part number	Description
Universal PDUs	
39Y8951	DPI Universal Rack PDU with US LV and HV line cords
39Y8952	DPI Universal Rack PDU with CEE7-VII Europe LC
39Y8953	DPI Universal Rack PDU with Denmark LC
39Y8954	DPI Universal Rack PDU with Israel LC
39Y8955	DPI Universal Rack PDU with Italy LC
39Y8956	DPI Universal Rack PDU with South Africa LC
39Y8957	DPI Universal Rack PDU with UK LC
39Y8958	DPI Universal Rack PDU with AS/NZ LC
39Y8959	DPI Universal Rack PDU with China LC
39Y8962	DPI Universal Rack PDU (Argentina)
39Y8960	DPI Universal Rack PDU (Brazil)
39Y8961	DPI Universal Rack PDU (India)
0U Basic PDUs	
46M4122	IBM 0U 24 C13 16A 3 Phase PDU
46M4125	IBM 0U 24 C13 30A 3 Phase PDU
46M4128	IBM 0U 24 C13 30A PDU
46M4131	IBM 0U 24 C13 32A PDU
46M4140	IBM 0U 12 C19/12 C13 60A 3 Phase PDU
46M4143	IBM 0U 12 C19/12 C13 32A 3 Phase PDU

For more information, see the list of IBM Redbooks Product Guides in the Power infrastructure category:
http://www.redbooks.ibm.com/portals/systemx?Open&page=pg&cat=power

Racks cabinets

The server supports the rack cabinets listed in the following table. Tower-to-Rack Conversion Kit (part number 42C8923, 5Ux20" Tower to Rack Conversion Kit for x3200 M3) is required for the server to be installed in the rack.

Table 24. Rack cabinets

Part number	Description
42C8923	Tower to 5U Rack Conversion Kit for IBM System x3200 M3
14104RX	IBM 42U S2 standard rack
14102RX	IBM 25RU standard rack
93072PX	IBM 25U Static S2 Standard Rack
93072RX	IBM 25U Standard Rack
93074RX	IBM 42U Standard Rack
93074XX	IBM 42U Standard Rack Extension
93084EX	IBM 42U Enterprise Expansion Rack
93084PX	IBM 42U Enterprise Rack
93604EX	IBM 42U 1200mm Deep Dynamic Expansion Rack
93604PX	IBM 42U 1200mm Deep Dynamic Rack
93614EX	IBM 42U 1200mm Deep Static Expansion Rack
93614PX	IBM 42U 1200mm Deep Static Rack
93624EX	IBM 47U 1200mm Deep Static Expansion Rack
93624PX	IBM 47U 1200mm Deep Static Rack
99564RX	IBM S2 42U Dynamic Standard Rack
99564XX	IBM S2 42U Dynamic Standard Expansion Rack

For more information, see the list of IBM Redbooks Product Guides in the Rack cabinets and options category:
http://www.redbooks.ibm.com/portals/systemx?Open&page=pg&cat=rack

Rack options

The server supports the rack console switches and monitor kits listed in the following table.

Table 25. Rack options

Part number	Feature code	Description
Monitor kits and keyboard trays		
17235RX		IBM Rack Keyboard Tray
Console switches		
1754D2X	1754HC2 fc 6695	IBM Global 4x2x32 Console Manager (GCM32)
1754D1X	1754HC1 fc 6694	IBM Global 2x2x16 Console Manager (GCM16)
1754A2X	1754HC4 fc 0726	IBM Local 2x16 Console Manager (LCM16)
1754A1X	1754HC3 fc 0725	IBM Local 1x8 Console Manager (LCM8)
Console cables		
43V6147	3757	IBM Single Cable USB Conversion Option (UCO)
39M2895	3756	IBM USB Conversion Option (4 Pack UCO)
39M2897	3754	IBM Long KVM Conversion Option (4 Pack Long KCO)
46M5383	5341	IBM Virtual Media Conversion Option Gen2 (VCO2)
46M5382	5340	IBM Serial Conversion Option (SCO)

For more information, see the list of IBM Redbooks Product Guides in the Rack cabinets and options category:
http://www.redbooks.ibm.com/portals/systemx?Open&page=pg&cat=rack

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Related publications and links

For more information see the following documents:

- IBM System x3200 M3 product page
  http://www.ibm.com/systems/x/hardware/tower/x3200m3/index.html

- *Installation and User's Guide - IBM System x3200 M3*
  http://ibm.com/support/entry/portal/docdisplay?lndocid=MIGR-5082567

- *Problem Determination and Service Guide - IBM System x3200 M3*
  http://ibm.com/support/entry/portal/docdisplay?lndocid=MIGR-5082568

- ServerProven® hardware compatibility page for the x3200 M3
  http://www.ibm.com/systems/info/x86servers/serverproven/compat/us/xseries/7327.html

- At-a-glance guides for IBM System x options
  http://www.redbooks.ibm.com/portals/systemx?Open&page=ataglance

- IBM System x DDR3 Memory Configurator
  http://www.ibm.com/systems/x/hardware/ddr3config/

- *Configuration and Option Guide*
  http://www.ibm.com/systems/xbc/cog/

- *xREF: IBM x86 Server Reference*
  http://www.redbooks.ibm.com/xref

- IBM System x Support Portal
  http://ibm.com/support/entry/portal/
  http://ibm.com/support/entry/portal/Downloads/Hardware/Systems/System_x/System_x3200_M3

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