IBM System x3250 M4

IBM Redbooks Product Guide

The System x3250 M4 single-socket 1U rack server is designed for small businesses and first-time server buyers looking for a solution to improve business efficiency. It delivers several IBM® innovative features in a compact 1U form factor with a competitive price. The IBM System x3250 M4 provides next-generation performance in an innovative and compact design with flexible configuration options, built-in security, and systems management capabilities. This server is designed for infrastructure applications such as firewall, security, disaster recovery, name server, authentication, credit card processing, email, domain controller, and more. It leverages the next-generation dual-core and quad-core Intel Xeon processor technology.

Suggested uses: Small-to-medium businesses looking for file and printer servers, Web serving, and small business infrastructure.

Figure 1. IBM System x3250 M4

Did you know?

The System x3250 M4 server is a compact, cost-effective, single-processor 1U rack server that has been optimized to provide outstanding availability, manageability, and performance features to small-to-medium-sized businesses, retail stores, or distributed enterprises. It supports the latest Intel Xeon E3-1200 v2 family of processors (formerly codenamed "Ivy Bridge") for applications that require performance and stability, and Core i3 processors for applications that require lower cost.

The system includes features not typically seen in this class of system, such as standard RAID-0/1 for simple-swap SATA models, remote control capabilities even when the machine is powered off, and Predictive Failure Analysis (PFA) on processor and memory. This flexible 1U rack-mountable server is also highly upgradable and expandable, scaling from low-cost, fixed-function models to feature-rich, highly available models.

Key features

Often small-to-medium sized businesses (SMBs) have limited IT budget and resources, and rely on partners or multitalented employees to help manage the company's network. Business needs for efficiency improvement and retention of critical data require the use of a server that is easy to get up and running quickly and is dependable. You need to squeeze as much as possible out of your IT dollars, while saving cost on features not needed in an SMB environment. The IBM System x3250 M4 is an ideal first server to meet those business needs. It was built for speed, yet eliminates costly design features found in general-purpose servers that are unnecessary for smaller businesses.

Scalability and performance

The x3250 M4 offers numerous features to boost performance, improve scalability, and reduce costs:

● The single-socket x3250 M4 supports the new quad-core Intel Xeon Processor E3-1200 v2 family of processors ("Ivy Bridge") in a compact 1U rack design.

● Choice of processors with up to 4 cores to enable the effective use of multi-threaded applications.

● Intel Xeon Processor E3-1200 v2 family supports Intel Hyer-Threading Technology (except the Xeon E3-1220L) and Intel Turbo Boost Technology 2.0 to maximize performance.

● Up to 32GB of high-speed DDR3 system memory with four DIMM sockets.

● Memory speeds up to 1600 MHz supported on models with Xeon Processor E3-1200 v2.

● Two available high-performance PCI Express expansion slots, one PCIe 3.0 slot and one PCIe 2.0 slot.

● Two internal 3.5-inch simple-swap SATA II drive bays or four 2.5" hot-swap SAS/SATA drive bays (model dependent) offer low-cost/high-capacity enterprise-class storage. Up to 8TB of internal storage. Configurations with four 2.5" simple-swap drive bays available via CTO.

● Integrated ServeRAID C100 software RAID controller supports RAID 0, 1 and 10. Some models offer ServeRAID BR10il V2 or H1110 hardware RAID controller standard. Other hardware RAID options available.

● Integrated dual-port Gigabit Ethernet provides increased network throughput and redundancy with efficient slot-saving integration.

● An optional optical drive for installing software or backing up data.

● Seven USB 2.0 ports, two on the front, four on the back, and one internal for a embedded hypervisor

Availability and serviceability

The x3250 M4 provides many features to simplify serviceability and increase system uptime:

● ECC memory provides error correction not available in PC-class "servers" that use parity memory. Avoiding system crashes (and data loss) due to soft memory errors can mean greater system uptime.

● Hot-swap drives supported on some models enable failed disk drives to be replaced without powering off the server.

● Hot-swap redundant power supplies available on some models maximizes system uptime even when one power supply fails.

● Tool-less cover removal provides easy access to upgrades and serviceable parts, such as CPU, memory, and adapter cards.

● The Predictive Failure Analysis (PFA) detects when system components (for example, processors, memory, hard disk drives) operate outside of standard thresholds and generates pro-active alerts in advance of possible failure, therefore increasing uptime.

- Built-in Integrated Management Module II (IMM2) with optional upgrade to Standard and Advanced levels, continuously monitors system parameters, triggers alerts, and performs recovering actions in case of failures to minimize downtime.

- Built-in diagnostics using Dynamic Systems Analysis (DSA) Preboot speeds up troubleshooting tasks to reduce service time.

- Three-year customer replaceable unit and onsite limited warranty, next business day 9x5. Optional service upgrades available.

Manageability and security

Powerful systems management features simplify local and remote management of the x3250 M4:

- The server includes an Integrated Management Module II (IMM2) to monitor server availability and, with IMM feature upgrades, perform remote management.

- Integrated industry-standard Unified Extensible Firmware Interface (UEFI) enables improved setup, configuration, and updates, and simplifies error handling.

- Integrated Trusted Platform Module (TPM) 1.2 support enables advanced cryptographic functionality, such as digital signatures and remote attestation.

- Intel Xeon Processor E3-1200 v2 family supports Industry-standard Advanced Encryption Standard (AES) NI support for faster, stronger encryption.

- IBM Systems Director is included for proactive systems management. It offers comprehensive systems management tools that help to increase up-time, reduce costs, and improve productivity through advanced server management capabilities.

- Intel Execute Disable Bit functionality can help prevent certain classes of malicious buffer overflow attacks when combined with a supporting operating system.

Energy efficiency

The x3250 M4 offers the following energy-efficiency features to save energy, reduce operational costs, increase energy availability, and contribute to the green environment:

- Energy-efficient planar components help lower operational costs.

- Efficient 300 W *80 PLUS* certified power supply or 460 W hot-swap redundant power supply options

- The Intel Xeon processor E3-1200 v2 product family offers significantly better performance over the previous generation while fitting into the same thermal design power (TDP) limits.

- Low-voltage Intel Xeon processors draw less energy to satisfy demands of power and thermally constrained data centers and telecommunication environments.

- The server uses hexagonal ventilation holes, a part of IBM Calibrated Vectored Cooling™ technology. Hexagonal holes can be grouped more densely than round holes, providing more efficient airflow through the system.

Locations of key components and connectors

Figure 2 shows the front of the server with two 3.5-inch simple-swap drives. Some models have up to four 2.5-inch hot-swap drive bays.
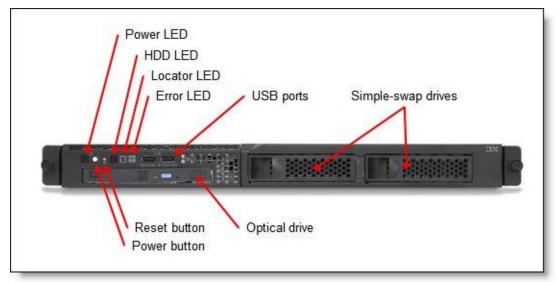

Figure 2. IBM System x3250 M4 rack server (front view)

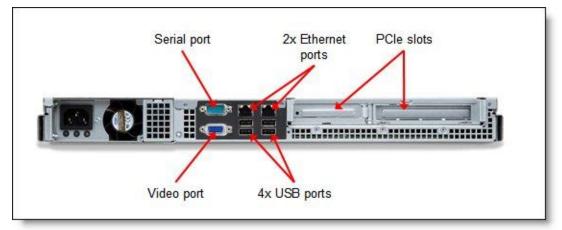Figure 3 shows the rear of the server.

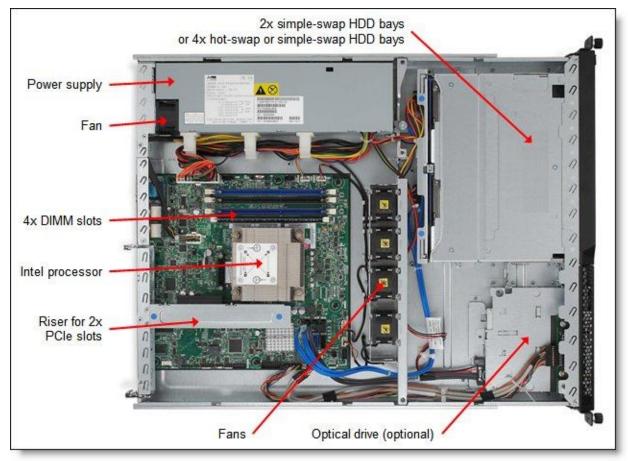Figure 3. IBM System x3250 M4 rack server (rear view)

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

Figure 4. IBM System x3250 M4 rack server (inside view)

Standard specifications

Table 1. Standard specifications (part 1)

Components	Specification
Form factor	1U rack system
Processor	One quad-core Intel Xeon E3-1200 or Xeon E3-1200 v2 series processor (up to 3.6 GHz/8 MB/1600 MHz) or one dual-core Intel Core i3 2100 series processor (up to 3.4 GHz/3 MB) with up to 1333 MHz memory speed. Supports specific quad-core and dual-core processors via Configure-To-Order (CTO).
Memory cache	Up to 8 MB L3 for Intel Xeon E3-1200 and E3-1200 v2 processors. Up to 3 MB L3 for Intel Core i3 2100 series processors.
Chipset	Intel C202.
Memory DIMM slots	4 DIMM slots supporting UDIMMs. RDIMMs are not supported.
Memory capacity	Up to 32 GB with four 8 GB DDR3 UDIMMs.
Memory protection	ECC.
Disk drive bays	Three configurations: ● Up to two 3.5" simple-swap SATA HDDs (some models) ● Up to four 2.5" hot-swap SAS HDDs (some models) ● Up to four 2.5" simple-swap SAS HDDs (CTO only)
Maximum internal storage	Up to 8 TB with 4 TB SATA HDDs, or up to 4.8 TB with 1.2 TB SAS HDDs. Up to 6.4 TB with 1.6 TB SSDs. Intermix of SAS/SATA is not supported.
RAID Support	Software RAID 0, 1 with ServeRAID C100 controller. Some models with hardware RAID 0, 1, 1E with ServeRAID-BR10il v2 or H1110. Optional RAID 5 with ServeRAID M1015. Optional RAID 5, 50 with ServeRAID M5014 and M5015.
Optical drive bays	One, support for optional DVD-ROM or multiburner.
Tape drive bays	No internal tape drive support.
Network interfaces	Integrated two-port Gigabit Ethernet using Intel 82574L controller. One port is shared with IMM2.
PCI Expansion slots	Two PCI Express slots: ● One PCI Express 2.0 x4 (for use only by compact adapters such as the ServeRAID BR10il v2 or H1110 controllers or the Broadcom NetXtreme Dual Port Ethernet Compact Adapter) ● One PCI Express 3.0 x8, full-height, half-length (PCIe 2.0 in models with processors announced September 2011 - see Table 4)
External ports	Front: Two USB 2.0 ports Rear: 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 IMM2) Internal: One USB 2.0 port for embedded hypervisor
Cooling	IBM Calibrated Vectored Cooling™ with 4 fans and N+1 redundancy.
Power supply	One fixed 300 W AC power supply; or up to two redundant 460 W AC power supplies (model dependent)
Hot-swap components	Hot-swap SAS drives (some models)

Table 1. Standard specifications (part 2)

Components	Specification
Systems management	UEFI, IBM Integrated Management Module II (IMM2), Predictive Failure Analysis, Automatic Server Restart, IBM Systems Director and IBM Systems Director Active Energy Manager™, IBM ServerGuide.
Security features	Power-on password, administrator's password, Trusted Platform Module (TPM).
Video	Matrox G200eR2 with 16 MB memory integrated into the IMM2. Maximum resolution is 1600x1200 at 75 Hz with 16 M colors.
Operating systems supported	Microsoft Windows Server 2008 R2, 2008, 2012, and 2012 R2; Red Hat Enterprise Linux 5 and 6; SUSE Linux Enterprise Server 10 and 11; VMware ESX 4.1, ESXi 4.1, vSphere 5.0, 5.1, 5.5
Limited warranty	Three-year (2583) 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 four 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: 43 mm (1.7 in), width: 439 mm (17.3 in), depth: 576 mm (22.7 in)
Weight	Minimum configuration: 9.3 kg (20.4 lb), maximum configuration: 10.7 kg (23.5 lb)

The x3250 M4 server ships with the following items:

● Statement of Limited Warranty
● Important Notices
● Rack installation instructions
● Documentation CD that contains the *Installation and User's Guide*
● Rack Mount Kit
● One 2.8 m C13 - C14 power cord

Standard models

The following table lists the standard models.

Table 2. Standard models

Model	Intel Processor* (one maximum)	Memory	ServeRAID controller	Disk bays	Disks	Network	Optical	Power supply
Models announced May 2012								
2583-A2x	1x Corei3-2120 3.3GHz 2C 3 MB 1333 MHz 65W	1x 4 GB (1333 MHz)†	C100	2x 3.5" SS	Open	2x GbE	Optional	1x 300 W
2583-B2x	1x Xeon E3-1220v2 3.1 GHz 4C 8MB 1600 MHz 69W	1x 4 GB 1600 MHz	C100	2x 3.5" SS	Open	2x GbE	Optional	1x 300 W
2583-C2x	1x Xeon E3-1230v2 3.3GHz 4C 8MB 1600 MHz 69W	1x 4 GB 1600 MHz	H1110	4x 2.5" HS	Open	2x GbE	Optional	1x 300 W
2583-F2x	1x Xeon E3-1270v2 3.5GHz 4C 8MB 1600 MHz 69W	1x 4 GB 1600 MHz	H1110	4x 2.5" HS	Open	2x GbE	Optional	1x 460 W redundant
Models announced September 2011								
2583-32x	1x Pentium G850 2.9 GHz 2C 3 MB 1333 MHz 65W	1x 2 GB 1333 MHz	C100	2x 3.5" SS	Open	2x GbE	Optional	1x 300 W
2583-42x	1x Corei3-2100 3.1 GHz 2C 3 MB 1333 MHz 65W	1x 2 GB 1333 MHz	C100	2x 3.5" SS	Open	2x GbE	Optional	1x 300 W
2583-62x	1x Xeon E3-1220 3.1 GHz 4C 8 MB 1333 MHz 80W	1x 2 GB 1333 MHz	C100	2x 3.5" SS	Open	2x GbE	Optional	1x 300 W
2583-72x	1x Xeon E3-1270 3.4 GHz 4C 8 MB 1333 MHz 80W	1x 4 GB 1333 MHz	BR10il v2	4x 2.5" HS	Open	2x GbE	Optional	1x 460 W redundant

* Processor detail: Processor quantity, processor model, core speed, number of cores, L3 cache, memory speed, thermal design power (TDP) rating
† For models A2x, the standard DIMM is rated at 1600 MHz, but operates at up to 1333 MHz to match the processor memory speed.

Express models

The following table lists the Express models that are available in certain regions. Express models are preconfigured with additional components such as processors, memory, and disks with the purpose of making the ordering and installation process simpler.

Table 3. Express models (Part 1)

Model	Intel Processor* (one maximum)	Memory	ServeRAID controller	Disk bays	Disks	GbE	Optical	Power supply
North America (NA)								
2583-ECU	1x Xeon E3-1220v2 3.1 GHz 4C 8 MB 1600 MHz 69W	1x 4 GB	C100	2x 3.5" SS	Open	2x GbE	Multiburner	1x 300 W
2583-EDU	1x Xeon E3-1230v2 3.3 GHz 4C 8 MB 1600 MHz 69W	1x 4 GB	H1110	4x 2.5" HS	Open	2x GbE	Multiburner	1x 460 W redundant
2583-EAU	1x Xeon E3-1220 3.1 GHz 4C 8 MB 1333 MHz 65W	1x 2 GB	C100	2x 3.5" SS	Open	2x GbE	Multiburner	1x 300 W
2583-EBU	1x Xeon E3-1230 3.2 GHz 4C 8 MB 1333 MHz 65W	1x 4 GB	BR10il V2	4x 2.5" HS	Open	2x GbE	Multiburner	1x 460 W redundant
Latin America (LA)								
2583-ECU	1x Xeon E3-1220v2 3.1 GHz 4C 8 MB 1600 MHz 69W	1x 4 GB	C100	2x 3.5" SS	Open	2x GbE	Multiburner	1x 300 W
2583-EDU	1x Xeon E3-1230v2 3.3 GHz 4C 8 MB 1600 MHz 69W	1x 4 GB	H1110	4x 2.5" HS	Open	2x GbE	Multiburner	1x 460 W Redundant
2583-EAU	1x Xeon E3-1220 3.1 GHz 4C 8 MB 1333 MHz 65W	1x 2 GB	C100	2x 3.5" SS	2x 250G	2x GbE	Multiburner	1x 300 W
2583-EBU	1x Xeon E3-1230 3.2 GHz 4C 8 MB 1333 MHz 65W	1x 4 GB	BR10il V2	4x 3.5" SS	Open	2x GbE	Multiburner	1x 460 W redundant
Europe Integrated Operating Team (IOT)								
2583-E1G	1x Corei3-2100 3.1 GHz 2C 3 MB 1333 MHz 65W	1x 2 GB	C100	2x 3.5" SS	Open	2x GbE	Multiburner	1x 300 W
2583-E2G	1x Xeon E3-1220 3.1 GHz 4C 8 MB 1333 MHz 65W	1x 2 GB	C100	2x 3.5" SS	Open	2x GbE	Multiburner	1x 300 W
2583-E3G	1x Xeon E3-1230 3.2 GHz 4C 8 MB 1333 MHz 65W	1x 4 GB	C100	2x 3.5" SS	1x 250G	2x GbE	Multiburner	1x 300 W
2583-K1G	1x Pentium G850 2.9GHz 2C 3 MB 1333 MHz 65W	1x 2 GB	C100	2x 3.5" SS	1x 250G	2x GbE	Multiburner	1x 300 W
2583-K4G	1x Xeon E3-1240 3.3 GHz 4C 8 MB 1333 MHz 80W	1x 4 GB	C100	2x 3.5" SS	Open	2x GbE	Multiburner	1x 300 W
Central and Eastern Europe (CEE) and Middle East & Africa (MEA)								
2583-E1G	1x Corei3-2100 3.1 GHz 2C 3 MB 1333 MHz 65W	1x 2 GB	C100	2x 3.5" SS	Open	2x GbE	Multiburner	1x 300 W
2583-E2G	1x Xeon E3-1220 3.1 GHz 4C 8 MB 1333 MHz 65W	1x 2 GB	C100	2x 3.5" SS	Open	2x GbE	Multiburner	1x 300 W
2583-E3G	1x Xeon E3-1230 3.2 GHz 4C 8 MB 1333 MHz 65W	1x 4 GB	C100	2x 3.5" SS	1x 250G	2x GbE	Multiburner	1x 300 W
2583-K1G	1x Pentium G850 2.9GHz 2C 3 MB 1333 MHz 65W	1x 2 GB	C100	2x 3.5" SS	1x 250G	2x GbE	Multiburner	1x 300 W

Table 3. Express models (Part 2)

Model	Intel Processor* (one maximum)	Memory	ServeRAID controller	Disk bays	Disks	GbE	Optical	Power supply
Russia/Commonwealth of Independent States (CIS)								
2583-E2G	1x Xeon E3-1220 3.1 GHz 4C 8 MB 1333 MHz 65W	1x 2 GB	C100	2x 3.5" SS	Open	2x GbE	Multiburner	1x 300 W
2583-E4G	1x Xeon E3-1240 3.3 GHz 4C 8 MB 1333 MHz 80W	1x 4 GB	C100	2x 3.5" SS	Open	2x GbE	Multiburner	1x 300 W

* Processor detail: Processor quantity, processor model, core speed, number of cores, L3 cache, memory speed, thermal design power (TDP) rating

Processor options

The server supports only one processor, which is already installed in all standard and Express models. No additional processor options are available. The following table lists all processors available in standard models of x3250 M4 or via CTO. If there is no corresponding *where-used* model for a particular processor, then that processor is only available through the configure-to-order (CTO) process.

Table 4. Processor options (Part 1)

Feature code*	Description**	Standard models where used
Processors announce September 2012		
A38R	Intel Core i3-3220 3.3GHz 2C 3MB 1600MHz 55W	-
A38S	Intel Core i3-3220T 2.8GHz 2C 3MB 1600MHz 35W	-
A38P	Intel Core i3-3240 3.4GHz 2C 3MB 1600MHz 55W	-
A38Q	Intel Core i3-3240T 2.9GHz 2C 3MB 1600MHz 35W	-
A38U	Intel Pentium G2100T 2.6GHz 2C 3MB 1600MHz 35W	-
A38T	Intel Pentium G2120 3.1GHz 2C 3MB 1600MHz 55W	-
Processors announce May 2012		
A2V0	Intel Xeon E3-1220v2 3.1GHz 4C 8MB 1600 MHz 69W	B2x
A2UZ	Intel Xeon E3-1230v2 3.3GHz 4C 8MB 1600 MHz 69W	C2x
A2UY	Intel Xeon E3-1240v2 3.4GHz 4C 8MB 1600 MHz 69W	-
A2V1	Intel Xeon E3-1265Lv2 2.5GHz 4C 8MB 1600 MHz 45W	-
A2UX	Intel Xeon E3-1270v2 3.5GHz 4C 8MB 1600 MHz 69W	F2x
A2UW	Intel Xeon E3-1280v2 3.6GHz 4C 8MB 1600 MHz 69W	-
A2HB	Intel Celeron G440 1.6GHz 1C 1MB 1066 MHz 35W	-

* No additional processor options are available. The server supports only one processor, which is already included in a standard, CTO or special bid configuration.
** Processor detail: Processor quantity, processor model, core speed, number of cores, L3 cache, memory speed, thermal design power (TDP) rating

Table 4. Processor options (Part 2)

Feature code*	Description**	Standard models where used
Processors announced September 2011		
A19B	Intel Pentium G840 2.8 GHz 2C 3 MB 1333 MHz 65W	-
A19A	Intel Pentium G850 2.9 GHz 2C 3 MB 1333 MHz 65W	32x
A2E2	Intel Pentium G860 3.0 GHz 2C 3 MB 1333 MHz 65W	-
A19C	Intel Pentium G620 2.6 GHz 2C 3 MB 1066 MHz 65W	-
A2E3	Intel Pentium G630 2.7 GHz 2C 3 MB 1066 MHz 65W	-
A0RG	Intel Corei3-2100, 3.1 GHz 2C 3 MB 1333 MHz 65W	42x
A145	Intel Corei3-2120, 3.3 GHz 2C 3 MB 1333 MHz 65W	A2x
A2E1	Intel Core i3-2130 3.4 GHz 2C 3MB 1333MHz 65W	-
A0RL	Intel Xeon E3-1220 3.1 GHz 4C 8 MB 1333 MHz 80 W	62x
A147	Intel Xeon E3-1220L 2.2 GHz 2C 3 MB 1333 MHz 20 W	-
A0RJ	Intel Xeon E3-1230 3.2 GHz 4C 8 MB 1333 MHz 80 W	-
A0RK	Intel Xeon E3-1240 3.3 GHz 4C 8 MB 1333 MHz 80 W	-
A146	Intel Xeon E3-1260L 2.3 GHz 4C 8 MB 1333 MHz 45 W	-
A0RH	Intel Xeon E3-1270 3.4 GHz 4C 8 MB 1333 MHz 80 W	72x
A144	Intel Xeon E3-1280 3.5 GHz 4C 8 MB 1333 MHz 95 W	-

* No additional processor options are available. The server supports only one processor, which is already included in a standard, CTO or special bid configuration.
** Processor detail: Processor quantity, processor model, core speed, number of cores, L3 cache, memory speed, thermal design power (TDP) rating

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 has four DIMM slots, and only DDR3 ECC UDIMMs are supported. The CPU has two memory channels, and there are two DIMMs per channel.

Configuration rules:

- If more than one DIMM is planned to be installed, then DIMMs must be installed in a pair, and both DIMMs in a pair must be identical in type and size.

- Models with Intel Xeon E3-1200 v2 series processors support DIMMs operating at up to 1600 MHz provided the processors support this memory speed and all DIMMs installed are rated at 1600 MHz.

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

Table 5. Memory options

Part number	Feature code	Description	Maximum supported	Models where used
1333 MHz memory DIMMs				
44T1568	1915	1 GB (1x 1 GB, 1Rx8) PC3-10600 CL9 ECC 1333 LP UDIMM	4	-
49Y1403	A0QS	2 GB (1x2GB, 1Rx8, 1.35V) PC3L-10600 ECC DDR3 1333MHz LP UDIMM	4	-
44T1570	1913	2 GB (1x 2 GB, 1Rx8) PC3-10600 CL9 ECC 1333 LP UDIMM	4	32x, 42x, 62x
49Y1404	8648	4GB (1x4GB, 2Rx8, 1.35V) PC3L-10600 CL9 ECC DDR3 1333MHz LP UDIMM	4	-
44T1571	1912	4 GB (1x 4 GB, 2Rx8) PC3-10600 CL9 ECC 1333 LP UDIMM	4	72x
90Y3165	A1MG	8 GB (4Gb, 2Rx8) PC3-10600 DDR3-1333 LP UDIMM	4	-
1600 MHz memory DIMMs				
00D4955	A2UL	4 GB (1x4GB, 2Rx8, 1.5V) PC3-12800 CL11 ECC DDR3 1600MHz LP UDIMM	4	A2x, B2x, C2x, F2x
00D4959	A2UM	8GB (1x8GB, 2Rx8, 1.5V) PC3-12800 CL11 ECC DDR3 1600MHz LP UDIMM	4	-

Internal drive options

The IBM System x3250 M4 supports the following internal disk storage configurations:

- Two 3.5-inch simple-swap SATA hard drive bays
- Four 2.5-inch hot-swap SAS/SATA drive bays
- Four 2.5-inch simple-swap SAS/SATA drive bays (CTO only)

The following table lists the hard drive options available for internal disk storage in the x3250 M4 server. Intermixing SAS and SATA drives is not supported.

Table 6. Disk drive options (Part 1)

Part number	Feature code	Description	Maximum supported
3.5" Simple-Swap SATA HDDs			
49Y6190	A3WC	IBM 4TB 7.2K 6Gbps NL SATA 3.5" SS HDD	2
81Y9778	A280	IBM 3TB 7.2K 6Gbps NL SATA 3.5" SS HDD	2
42D0787	5416	IBM 2TB 7200 NL SATA 3.5" SS HDD	2
43W7622	5559	IBM 1TB 7.2K SATA 3.5" Simple-Swap HDD	2
2.5" Simple-Swap 10K SAS HDDs (for CTO orders only)			
00AD080	A4CG	IBM 1.2TB 10K 6Gbps SAS 2.5" SS HDD	4
81Y9654	A24H	IBM 900GB 10K 6Gbps SAS 2.5" SFF SS HDD	4
49Y2027	5435	IBM 600GB 10K 6Gbps SAS 2.5" SFF SS HDD	4
90Y8890	A2ZJ	IBM 600GB 10K 6Gbps SAS 2.5" SFF G2SS HDD	4
90Y8895	A2ZH	IBM 300GB 10K 6Gbps SAS 2.5" SFF G2SS HDD	4
49Y1991	5427	IBM 300GB 10K 6Gbps SAS 2.5" SFF SS HDD	4
2.5" Simple-Swap 15K SAS HDDs (CTO only)			
81Y9674	A24J	IBM 300GB 15K 6Gbps SAS 2.5" SFF SS HDD	4
90Y8935	A2ZG	IBM 146GB 15K 6Gbps SAS 2.5" SFF G2SS HDD	4
49Y1996	5426	IBM 146GB 15K 6Gbps SAS 2.5" SFF SS HDD	4
2.5" Simple-Swap SATA HDDs (CTO only)			
81Y9742	A1P2	IBM 1TB 7.2K 6Gbps NL SATA 2.5" SFF SS HDD	4
81Y9738	A1P0	IBM 500GB 7.2K 6Gbps NL SATA 2.5" SFF SS HDD	4
81Y9734	A1NY	IBM 250GB 7.2K 6Gbps NL SATA 2.5" SFF SS HDD	4

Table 6. Disk drive options (Part 2)

Part number	Feature code	Description	Maximum supported
2.5" Simple-swap Enterprise Value SSDs (CTO only)			
00AJ020	A4KR	S3500 120GB SATA 2.5" MLC SS Enterprise Value SSD	4
00AJ025	A4KS	S3500 240GB SATA 2.5" MLC SS Enterprise Value SSD	4
00AJ030	A4KT	S3500 480GB SATA 2.5" MLC SS Enterprise Value SSD	4
00AJ035	A4KU	S3500 800GB SATA 2.5" MLC SS Enterprise Value SSD	4
49Y5849	A3AT	IBM 64GB SATA 2.5" MLC SS Enterprise Value SSD	4
49Y5854	A3AV	IBM 512GB SATA 2.5" MLC SS Enterprise Value SSD	4
2.5" Simple-swap Enterprise SSDs (CTO only)			
49Y6200	A4GJ	IBM 1.6TB SAS 2.5" MLC SS Enterprise SSD	4
49Y6154	A3F1	IBM 800GB SAS 2.5" MLC SS Enterprise SSD	4
49Y6149	A3EZ	IBM 400GB SAS 2.5" MLC SS Enterprise SSD	4
49Y6144	A3EX	IBM 200GB SAS 2.5" MLC SS Enterprise SSD	4
00W1130	A3HS	IBM 100GB SATA 2.5" MLC SS Enterprise SSD	4
41Y8361	A4FR	S3700 800GB SATA 2.5" MLC SS Enterprise SSD	4
41Y8356	A4FP	S3700 400GB SATA 2.5" MLC SS Enterprise SSD	4
41Y8351	A4FM	S3700 200GB SATA 2.5" MLC SS Enterprise SSD	4
2.5" Simple-swap Hybrid (CTO only)			
00AD107	A4G8	IBM 600GB 10K 6Gbps SAS 2.5" G2SS Hybrid	4
2.5" 15K SAS Hot-Swap HDDs			
81Y9670	A283	IBM 300GB 15K 6Gbps SAS 2.5" SFF HS HDD	4
42D0677	5536	IBM 146GB 15K 6Gbps SAS 2.5" SFF Slim-HS HDD	4
90Y8926	A2XB	IBM 146GB 15K 6Gbps SAS 2.5" SFF G2HS HDD	4
2.5" 10K SAS Hot-Swap HDDs			
00AD075	A48S	IBM 1.2TB 10K 6Gbps SAS 2.5" G2HS HDD	4
81Y9650	A282	IBM 900GB 10K 6Gbps SAS 2.5" SFF HS HDD	4
90Y8872	A2XD	IBM 600GB 10K 6Gbps SAS 2.5" SFF G2HS HDD	4
49Y2003	5433	IBM 600GB 10K 6Gbps SAS 2.5" SFF Slim-HS HDD	4
90Y8877	A2XC	IBM 300GB 10K 6Gbps SAS 2.5" SFF G2HS HDD	4
42D0637	5599	IBM 300GB 10K 6Gbps SAS 2.5" SFF Slim-HS HDD	4

Table 6. Disk drive options (Part 3)

Part number	Feature code	Description	Maximum supported
2.5" Hot-swap self-encrypting drives (SEDs)			
00AD085	A48T	IBM 1.2TB 10K 6Gbps SAS 2.5" G2HS SED	4
81Y9662	A3EG	IBM 900GB 10K 6Gbps SAS 2.5" SFF G2HS SED	4
90Y8908	A3EF	IBM 600GB 10K 6Gbps SAS 2.5" SFF G2HS SED	4
90Y8913	A2XF	IBM 300GB 10K 6Gbps SAS 2.5" SFF G2HS SED	4
90Y8944	A2ZK	IBM 146GB 15K 6Gbps SAS 2.5" SFF G2HS SED	4
2.5" Hot-swap SAS-SED Hybrid drives			
00AD102	A4G7	IBM 600GB 10K 6Gbps SAS 2.5" G2HS Hybrid	4
2.5" Hot-swap NL SAS HDDs			
81Y9690	A1P3	IBM 1TB 7.2K 6Gbps NL SAS 2.5" SFF HS HDD	4
90Y8953	A2XE	IBM 500GB 7.2K 6Gbps NL SAS 2.5" SFF G2HS HDD	4
42D0707	5409	IBM 500GB 7200 6Gbps NL SAS 2.5" SFF Slim-HS HDD	4
2.5" Hot-swap NL SATA HDDs			
81Y9730	A1AV	IBM 1TB 7.2K 6Gbps NL SATA 2.5" SFF HS HDD	4
81Y9726	A1NZ	IBM 500GB 7.2K 6Gbps NL SATA 2.5" SFF HS HDD	4
81Y9722	A1NX	IBM 250GB 7.2K 6Gbps NL SATA 2.5" SFF HS HDD	4
2.5" Hot-swap SSDs - Enterprise Value			
00AJ000	A4KM	S3500 120GB SATA 2.5" MLC HS Enterprise Value SSD	4
00AJ005	A4KN	S3500 240GB SATA 2.5" MLC HS Enterprise Value SSD	4
00AJ010	A4KP	S3500 480GB SATA 2.5" MLC HS Enterprise Value SSD	4
00AJ015	A4KQ	S3500 800GB SATA 2.5" MLC HS Enterprise Value SSD	4
49Y5839	A3AS	IBM 64GB SATA 2.5" MLC HS Enterprise Value SSD	4
49Y5844	A3AU	IBM 512GB SATA 2.5" MLC HS Enterprise Value SSD	4
90Y8643	A2U3	IBM 256GB SATA 2.5" MLC HS Enterprise Value SSD	4
90Y8648	A2U4	IBM 128GB SATA 2.5" MLC HS Enterprise Value SSD	4

Table 6. Disk drive options (Part 4)

Part number	Feature code	Description	Maximum supported
2.5" Hot-swap SSDs - Enterprise			
49Y6195	A4GH	IBM 1.6TB SAS 2.5" MLC HS Enterprise SSD	4
49Y6139	A3F0	IBM 800GB SAS 2.5" MLC HS Enterprise SSD	4
49Y6134	A3EY	IBM 400GB SAS 2.5" MLC HS Enterprise SSD	4
49Y6129	A3EW	IBM 200GB SAS 2.5" MLC HS Enterprise SSD	4
00W1125	A3HR	IBM 100GB SATA 2.5" MLC HS Enterprise SSD	4
41Y8341	A4FQ	S3700 800GB SATA 2.5" MLC HS Enterprise SSD	4
41Y8336	A4FN	S3700 400GB SATA 2.5" MLC HS Enterprise SSD	4
41Y8331	A4FL	S3700 200GB SATA 2.5" MLC HS Enterprise SSD	4

Controllers for internal storage

The following table lists the RAID controllers, SAS HBAs, and additional options used for internal disk storage of x3250 M4 server.

Table 7. RAID controllers and SAS HBAs for internal storage

Part number	Feature code	Description	Maximum supported	Standard models where used
Integrated	None	ServeRAID C100 for System x	1	32x, 42x, 62x, A2x, B2x
49Y4731	9742	ServeRAID-BR10il SAS/SATA Controller v2	1	72x
81Y4492	A1XL	ServeRAID H1110 SAS/SATA Controller	1	C2x, F2x
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	-
46M0912	3876	IBM 6Gb Performance Optimized HBA	1	-

The ServeRAID C100 is an integrated SATA controller with software RAID capabilities. It is a cost-effective way to provide reliability, performance, and fault-tolerant disk subsystem management to help safeguard your valuable data and enhance availability. The ServeRAID C100 has the following specifications:

- Onboard SATA controller with software RAID capabilities
- Supports 3 Gbps SATA ports
- RAID levels 0, 1, and 10 support
- Support for up to two virtual drives
- Support for virtual drive sizes greater than 2 TB
- Fixed stripe unit size of 64 KB
- Support for MegaRAID Storage Manager management software

The ServeRAID BR10il v2 or H1110 is standard on some models and offers basic hardware-based RAID functionality. If either of these is used, it is installed in slot 1 (PCIe x4). Other RAID controllers are installed in slot 2 (PCIe x8) and the Broadcom NetXtreme Dual Port Ethernet Compact Adapter can be installed in slot 1 instead, if desired. Only one RAID controller can be used with the server to support internal HDDs. Features of the supported RAID controllers are discussed below.

Note: Either a ServeRAID BR10il v2, H1110, M1015, M5014, or M5015 is required for models with 2.5" simple-swap SAS drive bays or 2.5" hot-swap SAS drive bays.

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)
- Support for MegaRAID Storage Manager management software

The ServeRAID H1110 adapter 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 the LSI SAS2004 6 Gbps RAID on Chip (ROC) controller
- PCIe 2.0 x4 host interface
- Supports RAID 0, 1, 1E, and 10
- Connects to up to four SAS or SATA drives (SAS expanders are not supported.)

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

- Two Mini-SAS internal connectors
- Supports RAID levels 0, 1, and 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
- 6 Gbps throughput per port
- PCI Express 2.0 x8 host interface
- Based on the LSI SAS2108 6 Gbps RAID on Chip (ROC) controller
- 256 MB of onboard cache

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

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 tape drives

The server does not support internal tape drive options.

Optical drives

The server supports the optical drive options listed in the following table.

Table 8. Optical drives

Part number	Feature code	Description	Maximum supported	Standard models where used
46M0901	4161	IBM UltraSlim Enhanced SATA DVD-ROM	1	-
46M0902	4163	UltraSlim Enhanced SATA Multi-Burner	1	-

IBM UltraSlim Enhanced SATA DVD-ROM (part number 46M0901) supports the following media and speeds for reading:

- CD-ROM 24X
- CD-DA (DAE) 20X
- CD-R 24X
- CD-RW 24X
- DVD-ROM (single layer) 8X
- DVD-ROM (dual layer) 8X
- DVD-R (4.7 GB) 6X
- DVD-R DL 4X
- DVD+R 6X
- DVD+R DL 4X
- DVD-RW (4.7 GB) 4X
- DVD+RW 4X
- DVD-RAM (4.7/9.4 GB) 4X

IBM UltraSlim Enhanced SATA Multi-Burner (part number 46M0902) supports the same media and speeds for reading as DVD-ROM (46M0901). 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
- Ultra Speed Plus CD-RW 16X
- DVD-R 8X
- DVD-R DL 6X
- DVD+R 8X
- DVD+R DL 6X
- DVD-RW 6X
- DVD+RW 8X
- DVD-RAM 5X

I/O expansion options

The server offers two PCI Express slots (one x4 and one x8). The slot form-factors are:

- Slot 1: PCIe 3.0 x4 (for use only by compact adapters such as the ServeRAID BR10il v2 or H1110 controllers or the Broadcom NetXtreme Dual Port Ethernet Compact Adapter)

- Slot 2: PCIe 3.0 x8, full-height, half-length (PCIe 2.0 in models with processors announced September 2011 - see Table 4)

Network adapters

The x3250 M4 offers two integrated Gigabit Ethernet ports. One port is shared with Integrated Management Module (IMM).

The 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 Broadcom NetXtreme Dual Port Ethernet Compact Adapter, SBB 90Y5381, feature code A1R5, is designed to fit in Slot 1 of the x3250 M4 server, thereby freeing up the PCIe x8 slot for other purposes. Use this adapter when you don't have the ServeRAID BR10il v2 or H1110 controller configured as it occupies the same slot. The Broadcom NetXtreme Dual Port Ethernet Compact Adapter is available CTO or special bid only and has these features:

- Broadcom 5718 ASIC
- Full-duplex (FDX) capability
- IEEE 802.3x FDX flow control
- I/O virtualization support for VMware NetQueue and Microsoft VMQ
- Function Level Reset (FLR)
- IPv4/IPv6 offload: TCP, IP, and UDP checksum offload
- Large send offload (LSO)
- TCP segmentation offload (TSO)
- Receive side scaling (RSS)
- Transmit-side scaling (TSS)
- IEEE 802.1Q VLAN tagging
- VLAN insertion and extraction
- Jumbo frames up to 9,600 bytes
- NIC Teaming (Load Balancing and Failover) with other Broadcom NX or NX2 adapters
- Wake On LAN support
- Message Signal Interrupt (MSI-X) support

Note: TCP Offload Engine (TOE) is not supported by the Broadcom NetXtreme Dual Port Ethernet Compact Adapter.

The following table lists additional supported network adapters. All adapters are supported only in Slot 2 with the exception of the Broadcom NetXtreme Dual Port Ethernet Compact Adapter which is installed in Slot 1.

Table 9. Network adapters

Part number	Feature code	Description (all install in slot 2 except where noted)	Maximum supported
10 Gb Ethernet			
94Y5180	A4Z6	Broadcom NetXtreme Dual Port 10GbE SFP+ Adapter for IBM System x	1
42C1820*	1637	Brocade 10 Gb Dual-port CNA for IBM System x	1
49Y7960	A2EC	Intel X520 Dual Port 10GbE SFP+ Adapter for IBM System x	1
49Y7970	A2ED	Intel X540-T2 Dual Port 10GBase-T Adapter for IBM System x	1
81Y9990	A1M4	Mellanox ConnectX-2 Dual Port 10GbE Adapter for IBM System x	1
42C1800	5751	QLogic 10 Gb Dual Port CNA for IBM System x	1
90Y4600	A3MR	Qlogic 8200 Dual Port 10GbE SFP+ VFA for IBM System x	1
Gigabit Ethernet			
None**	A1R5	Broadcom NetXtreme Dual Port Ethernet Compact Adapter (installs in slot 1)	1
90Y9352	A2V3	Broadcom NetXtreme I Quad Port GbE Adapter for IBM System x	1
42C1780	2995	NetXtreme II 1000 Express Dual Port Ethernet Adapter	1
49Y4220	5766	NetXtreme II 1000 Express Quad Port Ethernet Adapter	1
49Y4230	5767	Intel Ethernet Dual Port Server Adapter I340-T2 for IBM System x	1
49Y4240	5768	Intel Ethernet Quad Port Server Adapter I340-T4 for IBM System x	1

* Withdrawn from marketing
** This adapter is available via CTO or special bid only

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 x3250 M4 server.

Table 10. Storage adapters

Part number	Feature code	Description	Maximum supported
16 Gb Fibre Channel			
81Y1655	A2W5	Emulex 16Gb FC Single-port HBA for IBM System x	1
81Y1662	A2W6	Emulex 16Gb FC Dual-port HBA for IBM System x	1
81Y1668	A2XU	Brocade 16Gb FC Single-port HBA for IBM System x	1
81Y1675	A2XV	Brocade 16Gb FC Dual-port HBA for IBM System x	1
00Y3337	A3KW	QLogic 16Gb FC Single-port HBA for IBM System x	1
00Y3341	A3KX	QLogic 16Gb FC Dual-port HBA for IBM System x	1
8 Gb Fibre Channel			
46M6049	3589	Brocade 8 Gb FC Single-port HBA for IBM System x	1
46M6050	3591	Brocade 8 Gb FC Dual-port HBA for IBM System x	1
42D0485	3580	Emulex 8 Gb FC Single-port HBA for IBM System x	1
42D0494	3581	Emulex 8 Gb FC Dual-port HBA for IBM System x	1
42D0501	3578	QLogic 8 Gb FC Single-port HBA for IBM System x	1
42D0510	3579	QLogic 8 Gb FC Dual-port HBA for IBM System x	1
SAS			
46M0907	5982	IBM 6 Gb SAS HBA Controller	1

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 adapters

The server does not support the High IOPS SSD adapters.

Power supplies

Some models include one fixed 300 W AC 80 PLUS-certified power supply. This 300 W unit cannot be upgraded. Some models include one IBM 460W hot-swap power supply. With the addition of a second power supply, the two form a redundant pair. The following table lists the option for the second power supply.

Table 11. Power supply option

Part number	Feature code	Description
94Y6236	A2E8	IBM 460W Redundant Power Supply

Both the 300W and 460W power supply units support maximum configurations and support auto restart that minimizes operator intervention after a temporary power outage.

One 2.8-m C13 - C14 power cord is shipped for each included power supply.

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 options.

Table 12. Virtualization options

Part number	Feature code	Description	Maximum supported
41Y8298	A2G0	IBM Blank USB Memory Key for VMware ESXi Downloads	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
41Y8382	A4WZ	IBM USB Memory Key for VMware ESXi 5.1 Update 1	1
41Y8385	A584	IBM USB Memory Key for VMware ESXi 5.5	1

Remote management

The server contains IBM Integrated Management Module II (IMM2), which provides advanced service-processor control, monitoring, and an alerting function. If an environmental condition exceeds a threshold or if a system component fails, the IMM2 lights LEDs to help you diagnose the problem, records the error in the event log, and alerts you to the problem. The server includes IMM2 Basic and can be upgraded to IMM2 Standard and IMM2 Advanced with Feature on Demand (FoD) licenses, however, you may need to upgrade system firmware to the latest levels (at least level 28n) to support these upgrades.

IMM2 Basic has the following features:

● Industry-standard interfaces and protocols
● Intelligent Platform Management Interface (IPMI) Version 2.0
● Common Information Model (CIM)
● Advanced Predictive Failure Analysis (PFA) support
● Continuous health monitoring

- Choice of a dedicated or shared Ethernet connection
- Domain Name System (DNS) server support
- Dynamic Host Configuration Protocol (DHCP) support
- Embedded Dynamic System Analysis (DSA)
- LAN over USB for in-band communications to the IMM
- Serial over LAN
- Server console serial redirection

IMM2 Standard (as enabled using the Feature on Demand software license key using part number 90Y3900) has the following features in addition to the IMM2 Basic features

- Remote access via a secure Web console
- Access to server vital product data (VPD)
- Automatic notification and alerts
- Continuous health monitoring and control
- E-mail alerts
- Syslog logging support
- Enhanced user authority levels
- Event logs that are time stamped, saved on the IMM, and that can be attached to e-mail alerts
- OS watchdogs
- Remote configuration through Advanced Settings Utility (ASU)
- Remote firmware updating
- Remote power control
- User authentication using a secure connection to a Lightweight Directory Access Protocol (LDAP) server

IMM2 Advanced (as enabled using the Feature on Demand software license key using part number 90Y3901) adds the following features on top of those of IMM Standard:

- Remotely viewing video with graphics resolutions up to 1600x1200 at 75 Hz with up to 23 bits per pixel color depths, 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.

Note: The IMM2 Advanced upgrade requires the IMM2 Standard upgrade.

The following table lists the remote management option.

Table 13. Remote management option

Part number	Feature code	Description	Maximum supported
90Y3900	A1MK	IBM Integrated Management Module Standard Upgrade	1
90Y3901	A1ML	IBM Integrated Management Module Advanced Upgrade (requires Standard Upgrade, 90Y3900)	1

Supported operating systems

Operating systems supported by the server are:

- 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 Server 2012 R2
- Red Hat Enterprise Linux 5 Server Edition
- 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
- Toshiba 4690 Operating System V6
- VMware ESX 4.1
- VMware ESXi 4.1
- VMware vSphere 5.0 (ESXi)
- VMware vSphere 5.1 (ESXi)
- VMware vSphere 5.5 (ESXi)

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

Physical and electrical specifications

Dimensions:

- Height: 43 mm (1.7 in)
- Width: 439 mm (17.3 in)
- Depth: 576 mm (22.7 in)
- Weight:
  - Minimum configuration: 9.3 kg (20.4 lb)
  - Maximum configuration: 10.7 kg (23.5 lb)

Supported environment::

- Air temperature:

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

- Electrical

  - 300-watt power supply
    - 100 to 127 (nominal) V ac; 50 to 60 Hz; 6.0 A (maximum)
    - 200 to 240 (nominal) V ac; 50 to 60 Hz; 3.0 A (maximum)
  - Redundant 460-watt power supplies
    - 100 to 127 (nominal) V ac; 50 to 60 Hz; 5.3 A (maximum)
    - 200 to 240 (nominal) V ac; 50 to 60 Hz; 2.6 A (maximum)

  - Input kilovolt-amperes (kVA) (approximately)
    - Minimum configuration: 0.044 kVA
    - Maximum configuration: 0.416 kVA
  - BTU output
    - Ship configuration: 267 Btu/hr (78 watts)
    - Full configuration: 1058 Btu/hr (310 watts)
  - Acoustical noise emission level: Sound power levels
    - 6.5 bels (idling)
    - 6.5 bels (operating)

Warranty options

The IBM System x3250 M4 has a 3-year onsite warranty with 9x5/next-business-day 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 the following web page:

https://www-304.ibm.com/sales/gss/download/spst/servicepac

Warranty service definitions are explained in more detail in the following table.

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.

In general, the types of IBM ServicePacs are:

- Warranty and maintenance service upgrades

  - One, 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)
  - One or two years of warranty extension

- Remote technical support services

  - One or three years with 24x7 coverage (severity 1) or 9x5/next business day 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 Director

Regulatory compliance

The server conforms to the following international standards:

- FCC - Verified to comply with Part 15 of the FCC Rules, Class A
- Canada ICES-003, issue 4, Class A
- UL/IEC 60950-1
- CSA C22.2 No. 69950-1-07
- NOM-019
- Argentina IEC60950-1
- Japan VCCI, Class A
- Australia/New Zealand AS/NZS CISPR 22:2009, Class A
- IEC-60950-1:2001 (CB Certificate and CB Test Report)
- Taiwan BSMI CNS 13438, Class A; CNS 14336-1
- China CCC (4943-2001), GB 9254-2008 Class A, GB 17625.1:2003
- Korea KN22, Class A; KN24
- Russia/GOST ME01, IEC-60950-1, GOST R 51318.22-99, GOST R 51318.24-99, GOST R 51317.3.2-2006, GOST R 51317.3.3-2008
- 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 server supports attachment to EXP3000 external storage expansion enclosures using the ServeRAID M5025 SAS/SATA Controller. The server can also be attached to supported external storage systems, such as the IBM System Storage® DS3500 series, as described in the next section below.

The ServeRAID M5025 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

For more information about the M5025, see the *ServeRAID M5025 SAS/SATA Controller for IBM System x* Product Guide: http://www.redbooks.ibm.com/abstracts/tips0739.html?Open

The ServeRAID M5025 supports connectivity to the IBM System Storage external expansion enclosures listed in the following table. Up to nine expansion enclosures can be daisy-chained per one M5025 external port. For better performance, distribute expansion enclosures evenly across both M5025 ports.

The external disk storage expansion enclosures listed in the following table are available.

Table 15. External storage expansion enclosures

Part number	Description	Maximum quantity supported per one M5025
172701X	IBM System Storage® EXP3000	18 (9 per port)

The external SAS cables listed in the following table support connectivity between external expansion enclosures and the controller.

Table 16. External SAS cables for external storage expansion enclosures

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

The following table lists the drives supported by EXP3000 external expansion enclosures.

Table 17. Hard drive options for external expansion enclosures

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

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 18. 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 System Storage 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 19. External backup options

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	
46C5364	IBM RDX Removable Hard Disk Storage System - Internal USB 160 GB Bundle
46C5387	IBM RDX Removable Hard Disk Storage System - Internal USB 320 GB Bundle
46C5388	IBM RDX Removable Hard Disk Storage System - Internal USB 500 GB Bundle
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
00D8924	IBM Half High LTO Ultrium Gen 6 Internal SAS Tape Drive
External backup units*	
362516X	IBM RDX Removable Hard Disk Storage System - External USB 160 GB Bundle
362532X	IBM RDX Removable Hard Disk Storage System - External USB 320 GB Bundle
362550X	IBM RDX Removable Hard Disk Storage System - External USB 500 GB Bundle

* 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.

Internal tape drives are installed in a Half High Tape Drive Enclosure (up to one tape drive per enclosure) or in a 1U Tape Drive Enclosure (up to two tape drives). One USB Enclosure Adapter Kit is required per tape drive. (x3250 M4 only supports USB connections for internal USB tape drives in external tape enclosures.)

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 20. 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	
8036BRX	IBM System Networking RackSwitch G8332 (Rear to Front)
8036BFX	IBM System Networking RackSwitch G8332 (Front to Rear)
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 21. Uninterruptible power supply units

Part number	Description
Rack-mounted UPS	
21304RX	IBM UPS 10000XHV
53951AX	IBM 1500VA LCD 2U Rack UPS (100V/120V)
53951KX	IBM 1500VA LCD 2U Rack UPS (230V)
53952AX	IBM 2200VA LCD 2U Rack UPS (100V/120V)
53952KX	IBM 2200VA LCD 2U Rack UPS (230V)
53953AX	IBM 3000VA LCD 3U Rack UPS (100 V/120 V)
53953JX	IBM 3000VA LCD 3U Rack UPS (200 V/208 V)
53956AX	IBM 6000VA LCD 4U Rack UPS (200 V/208 V)
53956KX	IBM 6000VA LCD 4U Rack 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) listed in the following table.

Table 22. 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 PDU
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 22. Power distribution units (part 2)

Part number	Description
Universal PDUs	
39Y8951	DPI Universal Rack PDU w/ US LV and HV line cords
39Y8952	DPI Universal Rack PDU w/ CEE7-VII Europe LC
39Y8953	DPI Universal Rack PDU w/ Denmark LC
39Y8954	DPI Universal Rack PDU w/ Israel LC
39Y8955	DPI Universal Rack PDU w/Italy LC
39Y8956	DPI Universal Rack PDU w/South Africa LC
39Y8957	DPI Universal Rack PDU w/UK LC
39Y8958	DPI Universal Rack PDU with AS/NZ LC
39Y8959	DPI Universal Rack PDU w/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.

Table 23. Rack cabinets

Part number	Description
201886X	IBM 11U Office Enablement Kit
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 1200 mm Deep Dynamic Expansion Rack
93604PX	IBM 42U 1200 mm Deep Dynamic Rack
93614EX	IBM 42U 1200 mm Deep Static Expansion Rack
93614PX	IBM 42U 1200 mm Deep Static Rack
93624EX	IBM 47U 1200 mm Deep Static Expansion Rack
93624PX	IBM 47U 1200 mm Deep Static Rack
99564RX	IBM S2 42U Dynamic Standard Rack
99564XX	IBM S2 42U Dynamic Standard Expansion Rack
14102RX	IBM eServer Cluster 25U Rack
14104RX	IBM Linux Cluster Rack
201886X	IBM 11U Office Enablement Kit

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 24. Rack options

Part number	Feature code	Description
Monitor kits and keyboard trays		
17238BX	1723HC1 fc A3EK	IBM 1U 18.5" Standard Console
17238EX	1723HC1 fc A3EL	IBM 1U 18.5" Enhanced Media Console
172317X	1723HC1 fc 0051	1U 17in Flat Panel Console Kit
172319X	1723HC1 fc 0052	1U 19in Flat Panel Console Kit
Console switches		
3858D3X	3858HC1 fc A4X1	Avocent Universal Management Gateway 6000 for IBM
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		
00AK142	A4X4	UM KVM Module VGA+SD Dual RJ45
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

For more information see the following documents:

- IBM System x3250 M4 product page
  http://www.ibm.com/systems/x/hardware/rack/x3250m4/

- *IBM System x3250 M4 Installation and User's Guide*
  http://ibm.com/support/entry/portal/docdisplay?lndocid=MIGR-5088763

- *IBM System x3250 M4 Problem Determination and Service Guide*
  http://ibm.com/support/entry/portal/docdisplay?lndocid=MIGR-5088764

- ServerProven® hardware compatibility page for the x3250 M4
  http://www.ibm.com/systems/info/x86servers/serverproven/compat/us/xseries/2583.html

- IBM Redbooks Product Guides for IBM System x servers and options
  http://www.redbooks.ibm.com/portals/systemx?Open&page=pgbycat

- *Configuration and Option Guide*
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