

The right choice. Open. Easy. Green



IBM X-Architecture®

IBM System x servers

Highlights

- **Realize innovation with technology that helps set you apart from the competition.**
- **Manage complexity, growth and risk with scalable systems and proactive tools that help simplify your IT.**
- **Cut costs and go green with leadership energy-efficient offerings, consolidation and virtualization.**
- **Get scalable, extreme performance with the new IBM System x3950 M2 built on fourth-generation IBM X-Architecture®, one of several new System x™ quad-core servers.**

Realize innovation

You've told us you're running multiple business-critical applications—all on x86 servers. You need a provider you can count on. IBM is the right choice. IBM System x is a portfolio of robust servers built on IBM X-Architecture—our blueprint for bringing innovation to x86 systems. Innovation that helps set you apart from the competition. For example, an IT infrastructure that is more reliable, more available and can be built in a more flexible manner can enable you to get your applications or products into production earlier. More affordable IT allows you to take the money that is saved and use it to fuel your innovation projects.

X-Architecture infuses System x servers with both innovation and industry standards for solutions that include:

- *System x enterprise servers with a balanced system design to enable maximum performance*
- *System x rack and tower servers that provide innovation as a standard concept in their design*

System x enterprise servers

IBM System x enterprise servers are the ideal platform for today's business-critical applications—like database

processing, customer relationship management and enterprise resource planning—and highly consolidated, virtual server environments. With multiple workloads running on the same server, performance remains important while reliability and availability become more critical than ever.

Next-generation enterprise servers

The enterprise server line boasts three new servers—the x3950 M2, x3850 M2 and x3755. Built on eX4 technology, the fourth generation of IBM X-Architecture, the x3950 M2 and x3850 M2 provide performance and scalability up to 64 cores, making them excellent platforms for consolidation and virtualization. An embedded VMware Server ESX 3i hypervisor means the x3850 M2 is ready for virtualization right out of the box. The new, entry 4-socket, quad-core x3755 is ideal for commercial applications and general business computing.

System x rack and tower servers

IBM delivers unmatched combinations of next-generation technology. Some server vendors view uni- and 2-socket servers as commodities, using off-the-shelf components to produce cookie-cutter servers with no added value.

Instead, IBM X-Architecture system design begins with standard parts and adds innovation, like light path diagnostics, which help minimize downtime, and IBM eXtended I/O™, which allows you to change I/O configuration as performance requirements increase.

New quad-core rack servers

The System x3455 provides outstanding performance in a 1U package for compute-intensive environments at an affordable price—great in clustered environments. With built-in reliability, the x3655 offers compelling performance for enterprise applications while minimizing deployment time and costs.

Manage complexity, growth and risk

The proliferation of servers makes it difficult to manage your data center.

Proactive, open tools—for tracking and deploying assets, optimizing performance and enabling remote maintenance—provide a single interface so you can better manage your IT. An intelligent system design that includes multiple layers of redundancy and memory protection, combined with advanced availability tools, helps keep your systems up and running. With the ability to scale up to 64 cores,

System x servers let you grow as needed to create a dynamic and scalable infrastructure. With a data center that's easier to manage, you can focus on growing your business.

Go green and save

Managing energy in the data center is a growing concern due to increasing numbers of servers, the incremental heat they generate and the rising cost of energy. With System x servers, IBM has created technologies that help increase performance per watt and help you budget, plan and control power usage. By consolidating and virtualizing on System x servers, you can increase the utilization of hardware and decrease the physical assets you need to watch over.

Virtualizing on System x allows you to create a highly flexible infrastructure that can quickly and easily adapt to business changes. System x supports a broad range of virtualization solutions from industry-leading partners, including VMware, Microsoft®, Red Hat and Novell, which allows you to consolidate

and simplify your heterogeneous workloads on a single platform. Together, virtualization and System x help reduce costs, increase business agility and boost IT resiliency.

Clustering solution

The IBM System Cluster 1350™ aggregates System x and BladeCenter® servers, storage and networking to run scientific, technical and commercial workloads with high-performance, highly scalable Linux® or Windows® clusters. All components of the Cluster 1350 portfolio are assembled in IBM factories, cluster-tested in IBM labs and shipped intact and ready for installation at your site.

Choose your operating system

System x offers a choice of operating systems, broadening the application offerings available and increasing the ways clients can put System x servers to work. Choose from Microsoft Windows Server®, Red Hat Enterprise Linux, SUSE Linux Enterprise Server, VMware infrastructure and Solaris 10. These operating systems are available in most countries at competitive prices when purchasing new servers from IBM or IBM Business Partners.

System x model	x3200 M2	x3400	x3500
Form factor	Tower, 5U rack mountable	Tower, 5U	Tower, rack/5U
Processor	Intel® Xeon® (quad-core) up to 2.83 GHz and 1333 MHz front-side bus or Intel Xeon (dual-core) up to 3.0 GHz and 1333 MHz front-side bus	Dual-Core Intel Xeon 5120 up to 1.83 GHz and up to 1333 MHz front-side bus or Quad-Core Intel Xeon E5430 up to 2.66 GHz	Dual-Core Intel Xeon 5160 up to 3.0 GHz and up to 1333 MHz front-side bus or Quad-Core Intel Xeon Processor X5460 up to 3.16 GHz and up to 1333 MHz front-side bus
Number of processors (std/max)	1/1	1/2	1/2
Cache (max)	Up to 12 MB (quad-core) or 6 MB (dual-core)	2x2 MB L2 (dual-core) or 2x4 MB L2 (quad-core)	2x2 MB L2 (dual-core) or 2x4 MB L2 (quad-core)
Memory¹ (std/max)	Up to 8 GB DDR II 667 MHz	1 GB/32 GB Fully Buffered DIMM 667 MHz via 8 DIMM slots	1 GB/48 GB Fully Buffered DIMM 667 MHz via 12 DIMM slots
Expansion slots	2 PCI (32-bit/33 MHz), 2 PCI-Express (x8, x1), optional PCI-X, dedicated Remote Supervisor Adapter II SlimLine slot, slotless hardware RAID-0, -1	3 PCI-Express, 2 PCI-X, and 1 PCI	3 PCI-Express, 2 PCI-X and 1 PCI
Disk bays (total/hot-swap)	Four 3.5" simple-swap or hot-swap SATA, four 2.5"/3.5" hot-swap SAS or eight 2.5" hot-swap SAS hard disk drives (HDDs)	4/0 or 8/8 (model dependent)	8/8 or 12/12 (SFF)
Maximum internal storage^{1,2}	Up to 1.17 TB SAS HDDs or up to 3.0 TB SATA HDDs	4.0 TB hot-swap SATA, 2.4 TB hot-swap SAS or 3.0 TB simple-swap SATA	2.4 TB hot-swap SAS, 4.0 TB hot-swap SATA, 1.76 TB hot-swap SFF
Network interface	Integrated Gigabit Ethernet	Integrated Gigabit Ethernet	Integrated dual Gigabit Ethernet
System management processor	IPMI 2.0-compliant mini-BMC2, IBM ServerGuide™, optional Remote Supervisor Adapter II SlimLine	Integrated IPMI System Management Processor, optional Remote Supervisor Adapter II SlimLine	Integrated IPMI System Management Processor, optional Remote Supervisor Adapter II SlimLine
Power supply (std/max)	400W 1/1 or 430W hot-swap redundant 2/2 (model dependent)	670W 1/1 or 835W 1/2	835W 1/2
Hot-swap components	Hard disk drives, power supplies (model dependent)	Power supply, fans, hard disk drives	Hard disk drives (HDDs), power supply, fans
Light path diagnostics	Limited	Limited	Yes
RAID support	Integrated hardware RAID-0, -1 and optional upgrade to RAID-5	Integrated RAID-0, -1, -10, optional RAID-5	Integrated RAID-0, -1, -1E, -5, -6, -10
OS support (Available for purchase)	Microsoft Windows Server, Red Hat Enterprise Linux, SUSE Linux Enterprise Server, IBM OS 4690	Microsoft Windows Server, Red Hat Enterprise Linux, SUSE Linux Enterprise Server, VMware Infrastructure	Microsoft Windows Server, Red Hat Enterprise Linux, SUSE Linux Enterprise Server, VMware Infrastructure

System x model	x3250 M2	x3350	x3450	x3455
Form factor	Rack/1U	Rack/1U	Rack/1U	1U
Processor	Intel Xeon 3300 (quad-core) up to 2.66 MHz and up to 1333 MHz or Intel Xeon 3100 (dual-core) up to 3.0 GHz and up to 1333 MHz or Intel Core™ 2 Duo E4600 up to 2.4 GHz and up to 800 MHz or Intel Celeron® up to 2.0 GHz and up to 800 MHz	Intel Xeon (dual-core) up to 3.0 GHz and up to 1333 MHz or Intel Xeon (quad-core) up to 2.83 GHz and up to 1333 MHz	Quad-Core Intel Xeon X5472 up to 3.0 GHz and up to 1600 MHz front-side bus or Dual-Core Intel Xeon X5272 up to 3.40 GHz and up to 1600 MHz front-side bus	Quad-Core AMD Opteron Model 2352, 2356, 2360 SE
Number of processors (std/max)	1/1	1/1	2/2	1/2
Cache (max)	Up to 12 MB (quad-core), 6 MB (dual-core), 1 GB Core 2 Duo or 512 KB Celeron	Up to 6 MB (quad-core) and up to 12 MB (dual-core)	2 MB per socket	2 MB per socket
Memory¹ (std/max)	1 GB/8 GB DDR II 667 MHz via 4 DIMM slots	1 GB or 2 GB standard/8 GB maximum, PC2-5300 DDR II 667 MHz, via 4 DIMM slots	2x2 GB/64 GB Fully Buffered DIMM 667 MHz	2x 1 GB/48 GB PC5300 ECC DDR II SDRAM IBM Chipkill™ 667 MHz via 12 DIMM slots
Expansion slots	1 PCI-Express (x8) or 1 PCI-Express (x4)	2 PCI-Express x8	PCI-Express (1) x16 standard; optional (1) x8	PCI-Express (1) x16 standard, optional (1) x8 or (1) HTx
Disk bays (total/hot-swap)	Two 3.5" simple-swap SATA, two 3.5" hot-swap SAS/SATA or four 2.5" hot-swap SAS HDDs	Up to four 2.5" simple-swap or hot-swap SATA or SAS HDDs	2	2
Maximum internal storage^{1,2}	1.5 TB SATA or 600 GB SAS	Up to 1.5 TB SATA or 600 GB SAS	1.5 TB simple-swap SATA (3.5" drives)	1.5 TB SATA II or 600 GB SAS (3.0 Gbps)
Network interface	Dual Gigabit Ethernet	Dual Gigabit Ethernet	Integrated dual Gigabit Ethernet	Integrated dual Gigabit Ethernet
System management processor	IPMI 2.0-compliant mini-BMC2, optional Remote Supervisor Adapter II SlimLine	IPMI 2.0-compliant full Base Management Controller	Baseboard Management Controller with full IPMI 2.0	Integrated BMC features Serial over LAN (IPMI 2.0-compliant), IBM Director, Cluster Systems Management
Power supply (std/max)	350W 1/1	450W 1/2	600W capacity	650W capacity
Hot-swap components	HDDs	Power supply, fans, HDDs	Not applicable	Not applicable
Light path diagnostics	Not applicable	Not applicable	Yes	Yes
RAID support	Integrated hardware RAID-0, -1 standard, optional RAID-5	Integrated hardware RAID-0, -1 standard; RAID-5 optional	Optional RAID-0, or -1 for internal drives using the IBM HBA Controller	Optional RAID-0, -1 for internal drives using the IBM HBA Controller
OS support (Available for purchase)	Microsoft Windows Server, Red Hat Enterprise Linux, SUSE Linux Enterprise Server	Microsoft Windows Server, Red Hat Enterprise Linux, SUSE Linux Enterprise Server	Microsoft Compute Cluster Server, Red Hat Enterprise Linux SUSE Linux Enterprise Server	Microsoft Windows Server, Red Hat Enterprise Linux, SUSE Linux Enterprise Server, VMware Infrastructure

System x model	x3550	x3650	x3655
Form factor	Rack/1U	Rack/2U	2U
Processor	Quad-Core Intel Xeon X5460 up to 3.16 GHz and up to 1333 MHz front-side bus or Dual-Core Intel Xeon 5160 up to 3.0 GHz and up to 1333 MHz front-side bus	Dual-Core Intel Xeon 5160 up to 3.0 GHz and up to 1333 MHz front-side bus or Quad-Core Intel Xeon X5460 up to 3.16 GHz and up to 1333 MHz front-side bus	Quad-Core AMD Opteron Model 2352 (2.1 GHz) or 2356 (2.3 GHz)
Number of processors (std/max)	1/2	1/2	1/2
Cache (max)	2x2 MB or 2x6 MB L2 (dual-core) or 2x6 MB L2 (quad-core)	2x2 MB or 2x6 MB L2 (dual-core) or 2x6 MB L2 (quad-core)	2 MB per socket
Memory ¹ (std/max)	1 GB/32 GB Fully Buffered DIMM 667 MHz	1 GB or 2 GB/48 GB Fully Buffered DIMM 667 MHz via 12 DIMM slots	64 GB DDR II 667 MHz via 16 DIMMs (max)
Expansion slots	2 PCI-Express (x8) half-length, full-height or optional riser card for 1 PCI-X (64-bit 133 MHz)	4 PCI-Express or 2 PCI-X and 2 PCI-Express	Standard: 2 PCI-Express x8 (low-profile) and 1 PCI-Express x4 (low-profile)
Disk bays (total/hot-swap)	2/2 (3.5" form factor) or 4/4 (2.5" form factor)	Six 3.5" or eight 2.5" (SFF)	Eight SFF 2.5" hot-swap SAS hard disk drives (HDDs) or six 3.5" hot-swap SAS/SATA HDDs
Maximum internal storage ^{1,2}	Up to 600 GB 3.5" hot-swap SAS or up to 2.0 TB simple-swap SATA or 293.6 GB 2.5" hot-swap SAS	Up to 1.8 TB hot-swap SAS or 6.0 TB hot-swap SATA	1.8 TB hot-swap SAS or 4.5 TB hot-swap SATA
Network interface	Integrated dual Gigabit Ethernet	Integrated dual Gigabit Ethernet	Integrated dual Gigabit Ethernet with TCP/IP Offload Engine (TOE)
System management processor	Integrated Service Processor, supports optional Remote Supervisor Adapter II SlimLine	Integrated Service Processor, optional Remote Supervisor Adapter II SlimLine	Baseboard Management Controller IPMI 2.0 standard, Remote Supervisor Adapter II SlimLine optional
Power supply (std/max)	670W 1/2	835W 1/2 AC standard, DC power supply optional	835W 1/2
Hot-swap components	Power supply, fans, HDDs (select models)	Power supply, fans and HDDs	Power supply, HDDs, cooling fans
Light path diagnostics	Yes	Yes	
RAID support	Integrated RAID-0, -1, -10, optional RAID-5, -6	Integrated RAID-0, -1, -10, optional RAID-5, -6	RAID-0, -1, -10 standard, RAID-5, -6, -10, -50, -60 and battery backup optional
OS support (Available for purchase)	Microsoft Windows Server, Red Hat Enterprise Linux, SUSE Linux Enterprise Server, VMware Infrastructure	Microsoft Windows Server, Red Hat Enterprise Linux, SUSE Linux Enterprise Server, VMware Infrastructure, Solaris 10 (planned)	Microsoft Windows Server, Red Hat Enterprise Linux, SUSE Linux Enterprise Server, VMware Infrastructure

System x model	x3755	x3850 M2	x3950 M2
Form factor	4U	Rack/4U per chassis	Rack/4U per chassis
Processor	Quad-Core AMD Opteron Model 8360 SE (up to 2.5 GHz)	Intel Xeon Series 7200 and 7300 up to 2.93 GHz (quad-core)/1066 MHz front-side bus	Intel Xeon 7200 and 7300 series up to 2.93 GHz (quad-core)/1066 MHz front-side bus
Number of processors (std/max)	1/4 or 2/4	2/4 per chassis (optional 2, 3, 4 chassis support)	2/4 per chassis (optional 2, 3, 4 chassis support)
Cache (max)	1 MB L2	Up to 8 MB (2x4 MB)	Up to 8 MB (2x4 MB)
Memory ¹ (std/max)	128 GB DDR II 667 MHz (max)	4 GB or 8 GB/256 GB PC2-5300 DDR II	4 GB or 8 GB/256 GB PC2-5300 DDR II
Expansion slots	7 total: 4 PCI-Express (1) x16; (2) x8; (1) x4 and 2 PCI-X (133 MHz/100 MHz); 1 HTx (half-length)	7 total PCI-Express half-length (2 hot-plug)	7 total PCI-Express half-length (2 Active PCI-Express)
Disk bays (total/hot-swap)	4/4	4/4 2.5" Serial Attached SCSI (SAS)	4/4 2.5" SAS
Maximum internal storage ^{1,2}	1.2 TB (4 x 300 GB)	587 GB SAS per chassis (supports 73.4 GB and 146.8 GB hard disk drives)	587 GB SAS per chassis (supports 73.4 GB and 146.8 GB HDDs)
Network	Integrated dual Gigabit Ethernet	Integrated dual Gigabit Ethernet with TCP-IP Offload engine	Integrated dual Gigabit Ethernet with TCP-IP Offload Engine
System management processor	Baseboard Management Controller IPMI 2.0 standard, Remote Supervisor Adapter II SlimLine optional	Integrated Remote Supervisor Adapter II SlimLine	Remote Supervisor Adapter II SlimLine
Power supply (std/max)	1500W 1/2	1440W 220V 2/2	1440W 220V 2/2
Hot-swap components	Power supply, HDDs, cooling fans	Power supplies, fans, memory, hard disk drives and PCI-Express adapters	Power supplies, fans, memory, hard disk drives and PCI-Express adapters
RAID support	Integrated RAID-0, -1, -10 standard, RAID-5 optional	Integrated RAID-0, -1, optional RAID-5	Integrated RAID-0, -1, optional RAID-5
OS support	Microsoft Windows Server, Red Hat Enterprise Linux, SUSE Linux Enterprise Server, VMware Infrastructure, Solaris 10	Microsoft Windows Server, Red Hat Enterprise Linux, SUSE Linux Enterprise Server, VMware Infrastructure, Solaris 10 (planned)	Microsoft Windows Server, Red Hat Enterprise Linux, SUSE Linux Enterprise Server, VMware Infrastructure

For more information:

World Wide Web

IBM System x	ibm.com/systems/x
BladeCenter	ibm.com/systems/bladecenter
IBM System Cluster 1350	ibm.com/servers/systems/clusters/
IBM Director	ibm.com/systems/management/director
IBM power and cooling	ibm.com/systems/x/about/power.html
IBM System Storage	ibm.com/servers/systems/clusters/

IBM Express Portfolio

Select configurations of System x servers are part of the IBM Express Advantage Portfolio™, designed and priced to meet the needs of mid-sized businesses. Reliable and easy to manage, Express models and configurations vary by country.

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¹ Maximum internal hard disk and memory capacities may require the replacement of any standard hard drives and/or memory and the population of all hard disk bays and memory slots with the largest currently supported drives available.

² When referring to storage capacity, GB = 1,000,000,000 bytes and TB = 1,000,000,000,000 bytes. Accessible capacity is less.



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