

Reduce cost. Improve service. Manage risk.



IBM System x servers

Highlights

- ***Significantly reduce ownership costs with leadership energy-efficient offerings and management tools.***
- ***Get the tools to break out of the barriers presented by physical devices in your data center. IBM System x® servers and storage, virtualization tools, networking tools, and applications can lower operational costs, improve resiliency and deliver flexibility for a dynamic infrastructure.***
- ***Deliver up to twice the performance compared to previous generation servers.***

Reduce cost

IBM X-Architecture® infuses System x servers with both innovation and industry standards for solutions that help you significantly reduce costs. 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 innovative technology helps you lower energy usage and ownership costs. By consolidating and virtualizing on System x servers, you can increase the utilization of hardware and decrease the physical assets you need to manage.

Improve service, manage risk

The proliferation of servers makes it difficult to manage your data center. Proactive management tools in System x servers such as light path diagnostics and Predictive Failure Analysis deliver industry-leading capabilities to identify hardware problems before they happen and fix them quickly—helping keep your systems up and running. Also, you'll have peace of mind with trusted IBM service and support. Dynamic management tools and world-class service and support help deliver higher performance and drive your ability to respond quickly to changing business needs.

New generation of x86 servers

The IBM System x3650 M2 and x3550 M2 are built with energy-smart designs featuring low wattage energy-efficient power supplies, counter rotating fans,

altimeters and advanced power management—these servers help reduce power costs up to \$100 per server per year.¹ Integrating two Intel® Xeon® 5500 Series processors with QuickPath Interconnect, Hyper-Threading and Turbo Boost technology, these servers dramatically improve performance compared to previous generation servers.

More new generation x86 servers are the IBM System x3400 M2 and x3500 M2, dual-socket quad-core tower servers that offer maximum security to handle complex deskside environments. With great flexibility, high reliability, extraordinary performance and outstanding power efficiency, these servers are designed to address the needs of your business now—and into the future.

These servers offer new generation systems management capabilities:

- *UEFI BIOS with a consistent level code stack with advanced setup and configuration providing a richer management experience.*
- *Integrated management module (IMM) providing remote capability to manage and troubleshoot.*
- *ToolsCenter reduces complexity of choosing and learning management tools via a single Web site.*
- *IBM Systems Director is a powerful tool for managing both physical and virtual resources.*

Virtualizing on System x creates a highly flexible infrastructure that can quickly 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 and boost IT resiliency.

High performance systems

IBM System x enterprise servers are the ideal platform for today's business-critical applications. With multiple workloads running on the same server, performance remains important while reliability and availability become more critical than ever. 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. The x3950 M2 helps provide reliable performance such as:

- *Introduces the first Intel Xeon processor-based 8-socket system to achieve the 1,000,000 transactions per minute milestone for x86-64 systems and surpass it by more than 20%²*
- *Provides up to 1.5 times better 8-socket TPC-H performance for faster business decision analysis²*

New data center model

IBM System x iDataPlex™ addresses the needs of the data center with extreme density and simplified manageability while reducing power and cooling consumption. iDataPlex Intel Xeon processor-based servers help pack more processors into the same power and cooling envelope, better utilizing floor space, and creating the right-size data center design.

HPC clustered solutions

IBM HPC clusters incorporate System x rack, iDataPlex and BladeCenter® servers, with storage and networking to run scientific, technical and commercial workloads with high-performance, highly scalable Linux® or Windows® network Operating Systems. All components of the cluster are assembled in IBM factories, tested in IBM labs, shipped intact and ready for installation at your site, with a single point of contact for worldwide support.

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	x3400 M2	x3500	x3500 M2
Form factor	Tower, 5U rack mountable	Tower, 5U	Tower, 5U (rack-mountable)	Tower, rack/5U	Tower, rack/5U (rack mountable)
Processor	Intel Xeon (quad-core) up to 3.16 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 5205 up to 1.86 GHz and up to 1066 MHz front-side bus or Quad-Core Intel Xeon E5430 up to 2.66 GHz and up to 1333 MHz front-side bus	Intel Xeon E5540 up to 2.53 GHz and up to 8 MB cache	Up to two Quad-Core Intel Xeon X5460 up to 3.16 GHz and up to 1333 MHz front-side bus	Intel Xeon X5570 up to 2.93 GHz and up to 8 MB cache

System x model	x3200 M2	x3400	x3400 M2	x3500	x3500 M2
Number of processors (std/max)	1/1	1/2	1/2	1/2	1/2
Cache (max)	Up to 12 MB (quad-core) or 6 MB (dual-core)	2x6 MB L2 (dual-core) or 2x12 MB L2 (quad-core)	2 GB/96 GB registered DDR-3 DIMMs	2x12 MB L2 (quad-core)	8 MB per processor socket
Memory³ (std/max)	Up to 8 GB DDR II 667 or 800 MHz	1 GB/32 GB Fully Buffered DIMM 667 MHz via 8 DIMM slots	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	2 GB/128 GB max 1333 MHz DDR-3 registered DIMMs via 16 DIMM slots
Expansion slots	2 PCI (32-bit/33 MHz), 2 PCI-Express (x8, x1), optional PCI-X or hardware RAID-0, -1	3 PCI-Express, 2 PCI-X, and 1 PCI	5 PCI-Express and 1 PCI; 2 PCI-X or 1 PCI-Express (optional)	3 PCI-Express, 2 PCI-X and 1 PCI	6 PCI-Express, 1 PCI, 2 PCI-X (optional—requires removal of 1 PCI-Express)
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)	4/4 or 8/8 (model dependent)	8/8 or 12/12 (SFF)	16/16 (SFF) (8 standard with additional 8 available)
Maximum internal storage⁴	Up to 1.17 TB SAS HDDs or up to 4.0 TB SATA HDDs	6.0 TB hot-swap SATA, 2.4 TB hot-swap SAS or 3.0 TB simple-swap SATA	4.0 TB hot-swap SATA HDDs; 1.2 TB hot-swap SAS; 3.0 TB simple-swap SATA, or 1.17 TB hot-swap SFF SAS	2.4 TB hot-swap SAS, 6.0 TB hot-swap SATA, 1.76 TB hot-swap SFF	2.3 TB hot-swap SAS
Network interface	Integrated Gigabit Ethernet	Integrated Gigabit Ethernet	Integrated dual Gigabit Ethernet	Integrated dual Gigabit Ethernet	Integrated dual Gigabit Ethernet
System management processor	IPMI 2.0-compliant mini-BMC2, IBM ServerGuide, optional RSA II SlimLine	Integrated IPMI System Management Processor, optional RSA II SlimLine	Integrated management module (IMM); optional remote presence hardware key; IBM Systems Director; IBM Systems Director Active Energy Manager	Integrated IPMI System Management Processor, optional RSA II SlimLine	Integrated management module; remote presence; IBM Systems Director and IBM Systems Director Active Energy Manager
Power supply (std/max)	400W 1/1 or 430W hot-swap redundant 2/2	670W 1/1 or 835W 1/2	670W 1/1	835W 1/2	920W 1/2
Hot-swap components	HDDs, power supplies (model dependent)	Power supply, fans, HDDs	Fans and HDDs	HDDs, power supply, fans	HDDs, power supply, fans
Light path diagnostics	Limited	Limited	Limited	Yes	Yes
RAID support	Hot-swap hardware RAID-0, -1, upgrade to RAID-5	Integrated RAID-0, -1, -10, optional RAID-5	Integrated RAID-0, -1, -1E (software or hardware, model dependent)	Integrated RAID-0, -1, -1E, -5, -6, -10	Integrated Hardware RAID-0, -1, -1E, optional RAID-5, -6, -10, -50, -60
OS support (Available for purchase)	Microsoft Windows Server, Red Hat Enterprise Linux, SUSE Linux Enterprise Server, NetWare, 4690 OS	Microsoft Windows Server, Red Hat Enterprise Linux, SUSE Linux Enterprise Server, VMware ESX, NetWare	Microsoft Windows, Red Hat Enterprise Linux, SUSE Linux Enterprise, VMware ESX	Microsoft Windows Server, Red Hat Enterprise Linux, SUSE Linux Enterprise Server, VMware ESX	Microsoft Windows, Red Hat Enterprise Linux, SUSE Linux Enterprise, VMware ESX and ESXi

System x model	x3250 M2	x3350	x3450	x3455
Form factor	Rack/1U	Rack/1U	Rack/1U	1U
Processor	Intel Xeon (quad-core) up to 3.0 GHz and up to 1333 MHz or Intel Xeon (dual-core) up to 3.16 GHz and up to 1333 MHz or Intel Core 2 Duo up to 2.8 GHz and up to 1066 MHz or Intel Pentium® (dual-core) up to 2.66 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 3.16 GHz and up to 1333 MHz or Intel Xeon (quad-core) up to 3.0 GHz and up to 1333 MHz	Quad-Core Intel Xeon X5482 up to 3.20 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), 3 MB Core 2 Duo, 2 MB Pentium or 512 KB Celeron	Up to 6 MB (quad-core) and up to 12 MB (dual-core)	12 MB per socket	2 MB per socket
Memory³ (std/max)	1 GB/8 GB DDR II 667 or 800 MHz via 4 DIMM slots	1 GB or 2 GB/8 GB PC2-6400 DDR II 800 MHz, via 4 DIMM slots	2x2 GB/64 GB Fully Buffered DIMM 667 MHz, 2x2 GB/64 GB Fully Buffered DIMM 800 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	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^{3,4}	2.0 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, IBM Systems 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, NetWare	Microsoft Windows Server, Red Hat Enterprise Linux, SUSE Linux Enterprise Server, NetWare	Microsoft Windows Server, Red Hat Enterprise Linux, SUSE Linux Enterprise Server	Microsoft Windows Server, Red Hat Enterprise Linux, SUSE Linux Enterprise Server, VMware ESX

System x model	x3550	x3550 M2	x3650	x3650 M2	x3655
Form factor	Rack/1U	Rack/1U	Rack/2U	Rack/2U	2U
Processor	Quad-Core Intel Xeon up to 3.33 GHz and up to 1333 MHz front-side bus or Dual-Core Intel Xeon up to 3.50 GHz and up to 1333 MHz front-side bus	Quad-Core Intel Xeon 5500 Series with Intel QuickPath Interconnect (QPI) technology, up to 2.93 GHz and up to 6.4 GTps	Dual-Core Intel Xeon up to 3.50 GHz and up to 1333 MHz front-side bus or Quad-Core Intel Xeon up to 3.33 GHz and up to 1333 MHz front-side bus	Quad-Core Intel Xeon 5500 Series with Intel QuickPath Interconnect (QPI) technology, up to 2.93 GHz and up to 6.4 GTps	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	1/2	1/2
Cache (max)	2x2 MB or 2x6 MB L2 (dual-core) or 2x6 MB L2 (quad-core)	Up to 8 MB L3	2x2 MB or 2x6 MB L2 (dual-core) or 2x6 MB L2 (quad-core)	Up to 8 MB L3	2 MB per socket
Memory³ (std/max)	1 GB/32 GB Fully Buffered DIMM 667 MHz	1 GB, 2 GB, 4 GB or 8 GB DDR-3 RDIMMs with 16 DIMM slots—up to 128 GB	1 GB or 2 GB/48 GB Fully Buffered DIMM 667 MHz via 12 DIMM slots	1 GB, 2 GB, 4 GB or 8 GB DDR-3 RDIMMs with 16 slots up to 128 GB	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)	2 PCI-Express x16 Gen 2 slots; one is half-length, full-height and one is low-profile (each slot convertible to PCI-X with riser option)	4 PCI-Express or 2 PCI-X and 2 PCI-Express	4 PCI-Express (4x8) Gen 2 slots: 2x8 full-length, full-height; 1x8 half-length, full-height; 1x8 low-profile. 4x8 are convertible to 2x16 via optional risers.	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)	Up to six (2.5") hot-swap SAS/SATA or solid-state drives (SSD)	Six 3.5" or eight 2.5" (SFF)	Up to twelve (2.5") hot-swap SAS/SATA or solid state HDDs	Eight SFF 2.5" hot-swap SAS HDDs or six 3.5" hot-swap SAS/SATA HDDs
Maximum internal storage^{4,4}	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 up to 1.8 TB hot-swap SATA or up to 300 GB hot-swap solid state local storage	Up to 1.8 TB hot-swap SAS or 6.0 TB hot-swap SATA	Up to 3.6 TB hot-swap SAS or up to 3.6 TB hot-swap SATA or up to 600 GB hot-swap solid state local storage	1.8 TB hot-swap SAS or 4.5 TB hot-swap SATA
Network interface	Integrated dual Gigabit Ethernet	Integrated dual Gigabit Ethernet (2 ports standard, plus 2 ports optional)	Integrated dual Gigabit Ethernet	Integrated dual Gigabit Ethernet (2 ports standard, plus 2 ports optional)	Integrated dual Gigabit Ethernet with TCP/IP Offload Engine (TOE)
System management processor	Integrated Service Processor, supports optional RSA II SlimLine	Integrated Service Processor	Integrated Service Processor, optional RSA II SlimLine	Integrated Service Processor	BMC IPMI 2.0 standard, RSA II SlimLine optional
Power supply (std/max)	670W 1/2	675 W each 1/2	835W 1/2 AC	675 W each; 1/2	835W 1/2
Hot-swap components	Power supply, fans, HDDs (select models)	Power supplies, fans, HDDs	Power supply, fans and HDDs	Power supplies, fans and HDDs	Power supply, HDDs, cooling fans

System x model	x3550	x3550 M2	x3650	x3650 M2	x3655
Light path diagnostics	Yes	Yes	Yes	Yes	
RAID support	Integrated RAID-0, -1, -10, optional RAID-5, -6	Four options (all hardware based) including RAID-0, -1, and RAID-0, -1, -5	Integrated RAID-0, -1, -10, optional RAID-5, -6	Four options (all hardware based) including RAID-0, -1, and RAID-0, -1, -5	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 ESX, NetWare	Microsoft Windows Server, Red Hat Enterprise Linux, SUSE Linux Enterprise Server, VMware ESX	Microsoft Windows Server, Red Hat Enterprise Linux, SUSE Linux Enterprise Server, VMware ESX, Solaris 10 (planned), NetWare	Microsoft Windows Server, Red Hat Enterprise Linux, SUSE Linux Enterprise Server, VMware ESX	Microsoft Windows Server, Red Hat Enterprise Linux, SUSE Linux Enterprise Server, VMware ESX

System x model	x3755	x3850 M2	x3950 M2
Form factor	4U	Rack/4U per chassis	Rack/4U per chassis
Processor	Six-Core AMD Opteron Model 8435 (up to 2.6 GHz)	Intel Xeon Series 7400 up to 2.66 GHz (six cores)/1066 MHz front-side bus	Intel Xeon Series 7400 up to 2.66 GHz (six cores)/1066 MHz front-side bus
Number of processors (std/max)	2/4	2/4 per chassis (optional 2, 3, 4 chassis support)	2/4 per chassis (optional 2, 3, 4 chassis support)
Cache (max)	6 MB L3	Up to 16 MB	Up to 16 MB
Memory³ (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	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" SAS	4/4 2.5" SAS
Maximum internal storage^{3,4}	1.2 TB (4 x 300 GB)	587 GB SAS per chassis (supports 73.4 GB and 146.8 GB HDDs)	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, RSA II SlimLine optional	Integrated RSA II SlimLine	RSA 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, HDDs and PCI-Express adapters	Power supplies, fans, memory, HDDs and PCI-Express adapters
RAID support	Integrated RAID-0, -1, -10, 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	Microsoft Windows Server, Red Hat Enterprise Linux, SUSE Linux Enterprise Server and VMware ESX, Solaris 10	Microsoft Windows Server, Red Hat Enterprise Linux, SUSE Linux Enterprise Server and VMware ESX, Solaris 10



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¹ IBM Power Engineering Research Study, February 2009

² Visit www.tpc.org or ibm.com/systems/x/resources/benchmarks/index.html for more information.

³ 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.

⁴ 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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