

# IBM System x Family Brochure

*IBM System x rack and tower servers*



## IBM System x servers

### Highlights

- IBM® System x® and BladeCenter® servers help to deliver a dynamic infrastructure that provides leadership quality and service that you can trust, as well as:
  - Reduces operating costs with higher performance, energy efficiency, simplified management, virtualization and increased utilization
  - Manages present and future risk in challenging economic conditions with best-in-class RAS and future-proof IT
  - Improves service with an end-to-end approach to systems management.
- The new generation of System x and BladeCenter servers delivers business value and reduces costs for clients through industry-leading scalability, virtualization and management capabilities.

Recent economic conditions have changed the way that business operates. To adapt demands innovative ideas and solutions. At the same time, the world is becoming smarter—more instrumented, interconnected and intelligent. Businesses have to manage increasingly large data pools and a customer base with higher expectations, without spending more on IT. IBM delivers solutions—smarter systems built for a smarter planet to help you reduce costs and improve service while still managing risk.

### Reduce cost

IBM X-Architecture® infuses System x servers with both innovation and industry standards for solutions that help you significantly reduce operating 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

The proliferation of servers can make it difficult to manage your data center. Dynamic management tools and world-class service and support help deliver higher performance and drive your ability to respond quickly to changing business needs. Achieve integrated visibility, control and automation across all of your business and IT infrastructure components with the innovative systems management provided standard in System x and BladeCenter systems. Improve asset reliability, availability and uptime. These underpin the quality delivery of service while maximizing the return on lifetime asset investment.

### Manage risk

Business resilience from System x and BladeCenter systems provides the ability to rapidly adapt and respond to both risk and opportunity, in order to maintain continuous business operations, reduce operational costs, enable growth and be a more trusted partner. 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 get peace of mind with trusted IBM service and support.

### High-performance eX5 systems

New IBM eX5 systems deliver a portfolio of flexible enterprise servers that offer maximum memory, storage and performance for your most demanding applications. These eX5 systems deliver innovation and offer extraordinary value and investment protection, are available in multiple form factors and

include lower entry points for enterprise-level virtualization, database and transaction processing. The first eX5 server, the IBM System x3850 X5, can scale from four to eight sockets and up to 96 memory DIMMs per four-socket system. Choose a rack server that offers the performance your applications need, the flexibility the market demands, and the availability your customers expect—all at a cost business can afford.



*New eX5 systems help maximize memory, minimize cost and simplify deployment*

### **New generation of x86 servers**

The new IBM System x3650 M3 and x3550 M3 deliver 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.<sup>1</sup> Integrating two Intel® Xeon® 5600 series processors with QuickPath

Interconnect, Hyper-Threading and Turbo Boost technology, these servers dramatically improve performance compared to previous generation servers.

The x3500 M3 and x3400 M3 tower servers offer business-critical enterprise features in a tower platform. Rock-solid and reliable, these systems offer extensive flexibility, storage and security for servers that sit right beside a manager's desk. Built on the latest Intel Xeon 5600 series processors, these systems offer the performance speeds that are so critical to businesses with remote offices and a high number of transactions.

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.



*New System x servers feature extreme processing power and superior energy-management and cooling features.*

## 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 M3	x3400 M2	x3400 M3	x3500 M2	x3500 M3
<b>Form factor</b>	Tower, 5U rack mountable	Tower, 5U rack mountable	Tower, 5U rack mountable	Tower, 5U rack mountable	Tower, 5U rack mountable
<b>Processor</b>	Intel Xeon 3400 Series (quad-core) up to 2.93 GHz and 1333 MHz or Intel Celeron®, Pentium® or Core i3 (dual-core) up to 3.06 GHz and 1333 MHz	Intel Xeon E5540 up to 2.53 GHz and up to 8 MB cache	Four-core Intel Xeon E5640 2.66 GHz or six-core Intel Xeon X5670 2.93 GHz (configure to order only)	Intel Xeon X5570 up to 2.93 GHz and up to 8 MB cache	Intel Xeon 5500/5600 processors (six-core Intel Xeon X5680 3.33 GHz or four-core Intel Xeon X5677 3.46 GHz up to 6.4 GTps QPI system speed)
<b>Number of processors (std/max)</b>	1/1	1/2	1/2	1/2	1/2
<b>Cache (max)</b>	Up to 8 MB L3	4 MB or 8 MB per processor socket	4 MB or 12 MB per processor socket	8 MB per processor socket	12 MB per processor socket
<b>Memory (std/max)</b>	Up to 32 GB DDR-3 ECC memory, up to 1333 MHz; 1 GB, 2 GB and 4 GB UDIMMs and 1 GB, 2 GB, 4 GB and 8 GB RDIMMs	2 GB/96 GB registered DDR-3 DIMMs via 12 DIMM slots	16 DIMM slots maximum, 128 GB with DDR-3 1333 MHz RDIMMs <sup>2</sup> or 48 GB with DDR-3 1333 MHz UDIMMs <sup>2</sup>	2 GB/128 GB max 1333 MHz DDR-3 registered DIMMs via 16 DIMM slots	16 DIMM slots maximum, 192 GB with DDR-3 1333 MHz RDIMMs <sup>3</sup> or 48 GB with DDR-3 1333 MHz UDIMMs <sup>3</sup>

System x model	x3200 M3	x3400 M2	x3400 M3	x3500 M2	x3500 M3
<b>Expansion slots</b>	Two PCIe x8 Gen2, one PCIe x4, two PCI (32-bit/33 MHz), one dedicated PCIe x4 for RAID-0, -1 controller	Five PCIe and one PCI standard; additional two PCI-X or one PCIe (available via configure to order only)	Five PCIe and one PCI standard; additional two PCI-X or one PCIe (available via configure to order only)	Six PCIe and one PCI standard; additional two PCI-X available via configure to order and requires removal of one PCIe slot	Six PCIe and one PCI standard; additional two PCI-X available via configure to order and requires removal of one PCIe slot
<b>Maximum internal storage</b>	Up to 4.0 TB simple-swap/hot-swap 3.5" SAS/SATA HDDs or hot-swap 2.5" SAS HDDs (model dependent, 2.5" available via special bid only)	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	8 TB of 3.5" simple-swap SATA HDDs; 16 TB of 3.5" hot-swap SATA HDDs; 4.8 TB of 3.5" hot-swap SAS HDDs; or 8 TB of 2.5" hot-swap SATA/SAS HDDs (model dependent)	2.3 TB hot-swap SAS	8 TB of 2.5" hot swap SAS/SATA standard; 12 TB of 2.5" hot-swap SAS/SATA (model dependent)
<b>Network interface</b>	Dual Gigabit Ethernet	Integrated dual Gigabit Ethernet	Integrated dual Gigabit Ethernet	Integrated dual Gigabit Ethernet with TOE	Integrated dual Gigabit Ethernet with TOE
<b>Power supply (std/max)</b>	401 W fixed 1/1 or 430 W hot-swap redundant 2/2	670 W 1/1 or 920 W 2/2 by configure to order	920 W 1/2 or 670 W 1/1 (model dependent)	920 W 1/2	920 W 1/2
<b>Light path diagnostics</b>	Limited	Limited	Limited	Yes	Yes
<b>RAID support</b>	Hot-swap hardware RAID-0, -1 (standard), simple-swap hardware RAID-0, -1 (optional); upgrade to RAID-5 optional	Integrated RAID-0, -1, -1E (software or hardware, model dependent)	Integrated 6 Gbps or 3 Gbps RAID-0, -1, -1E (model dependent), optional RAID-10, -5, -50, -6, -60	Integrated Hardware RAID-0, -1, -1E, optional RAID-5, -6, -10, -50, -60	Integrated 6 Gbps or 3 Gbps hardware RAID-0, -1, -1E, optional RAID-5, -6, -10, -50, -60
<b>OS support (Available for purchase)</b>	Microsoft Windows Server, Red Hat Linux, SUSE Linux, VMware ESX and ESXi	Microsoft Windows, Red Hat Enterprise Linux, SUSE Linux Enterprise, VMware ESX	Microsoft Windows Server, Red Hat Enterprise Linux, SUSE Linux Enterprise Server, VMware ESX Server	Microsoft Windows, Red Hat Enterprise Linux, SUSE Linux Enterprise, VMware ESX and ESXi	Microsoft Windows Server, Red Hat Enterprise Linux, SUSE Linux Enterprise, VMware ESX and ESXi

System x model	x3250 M3	x3550 M2	x3550 M3	x3650 M2	x3650 M3
<b>Form factor</b>	Rack/1U	Rack/1U	Rack/1U	Rack/2U	Rack/2U
<b>Processor</b>	Intel Xeon 3400 Series (quad-core) up to 2.93 GHz and 1333 MHz or Intel Celeron, Pentium or Core i3 (dual-core) up to 3.06 GHz and 1333 MHz	Four-Core Intel Xeon 5500 Series with Intel QuickPath Interconnect (QPI) technology, up to 2.93 GHz and up to 6.4 GTps	Up to two 3.33 GHz six-core (3.46 GHz four-core) Intel Xeon 5600 series processors up to 1333 MHz memory access speed	Four-Core Intel Xeon 5500 Series with Intel QuickPath Interconnect (QPI) technology, up to 2.93 GHz and up to 6.4 GTps	Up to two 3.33 GHz six-core (3.46 GHz four-core) Intel Xeon 5600 series processors up to 1333 MHz memory access speed.
<b>Number of processors</b> (std/max)	1/1	1/2	1/2	1/2	1/2
<b>Cache</b> (max)	Up to 8 MB L3	Up to 8 MB L3	Up to 12 MB L3	Up to 8 MB L3	Up to 12 MB L3
<b>Memory</b> (std/max)	1 GB, 2 GB and 4 GB UDIMMs; 1 GB, 2 GB, 4 GB and 8 GB RDIMMs; up to 16 GB DDR-3 UDIMMs <sup>2</sup> via 4 DIMM slots or 32 GB DDR-3 RDIMMs <sup>2</sup> via 6 DIMM slots	1 GB, 2 GB, 4 GB or 8 GB DDR-3 RDIMMs with 16 DIMM slots—up to 128 GB	192 GB DDR-3 RDIMMs <sup>3</sup> via 18 DIMM slots or 48 GB DDR-3 UDIMMs <sup>3</sup> via 12 DIMM slots	1 GB, 2 GB, 4 GB or 8 GB DDR-3 RDIMMs with 16 slots up to 128 GB	192 GB DDR-3 RDIMMs <sup>3</sup> via 18 DIMM slots or 48 GB DDR-3 UDIMMs <sup>3</sup> via 12 DIMM slots
<b>Expansion slots</b>	2 PCIe x8 Gen2, dedicated PCIe x4 for RAID-0, -1, optional PCI-X (special bid only)	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)	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 (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.	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
<b>Maximum internal storage</b>	2.0 TB simple-swap/hot-swap 3.5" SAS/SATA HDDs or hot-swap 2.5" SAS HDDs (model dependent)	Up to 3 TB hot-swap SAS or up to 3 TB hot-swap SATA or up to 300 GB hot-swap solid state local storage	Up to 4 TB hot-swap SAS or up to 4 TB hot-swap SATA or up to 400 GB hot-swap SSD storage	Up to 6 TB hot-swap SAS or up to 6 TB hot-swap SATA or up to 600 GB hot-swap solid state local storage	Up to 8 TB hot-swap SAS or up to 8 TB hot-swap SATA or up to 800 GB hot-swap SSD storage
<b>Network interface</b>	Dual Gigabit Ethernet	Integrated 2 ports, plus 2 ports optional Gigabit Ethernet	Integrated 2 ports, plus 2 ports optional Gigabit Ethernet	Integrated 2 ports, plus 2 ports optional Gigabit Ethernet	Integrated 2 ports, plus 2 ports optional Gigabit Ethernet
<b>Power supply</b> (std/max)	351 W 1/1; optional high-efficiency power supply 1/1	675 W each 1/2	675 W each 1/2	675 W each 1/2	675 W each 1/2
<b>Light path diagnostics</b>	Limited	Yes	Yes	Yes	Yes

System x model	x3250 M3	x3550 M2	x3550 M3	x3650 M2	x3650 M3
<b>RAID support</b>	Hot-swap hardware RAID-0, -1 (standard), simple swap hardware RAID-0, -1 (optional); optional RAID-5	Four options (all hardware based) including RAID-0, -1 or RAID-0, -1, -10, -5, -50 (additional option RAID-6, -60 with Self Encrypting Disk (SED) function)	Hardware RAID-0, -1, -1E or RAID-0, -1, -10 or RAID-0, -1, -10, -5, -50 (additional option RAID-6, -60 with SED)	Four options (all hardware based) including RAID-0, -1 or RAID-0, -1, -10, -5, -50 (additional option RAID-6, -60 with SED)	Hardware RAID-0, -1, -1E or RAID-0, -1, -10 or RAID-0, -1, -10, -5, -50 (additional option RAID-6, -60 with SED)
<b>OS support (Available for purchase)</b>	Microsoft Windows Server, Red Hat Linux, SUSE Linux, VMware ESX and ESXi	Microsoft Windows Server, Red Hat Enterprise Linux, SUSE Linux Enterprise Server, VMware ESX, Sun Solaris 10	Microsoft Windows Server, Red Hat Enterprise Linux, SUSE Linux Enterprise Server, VMware ESXi 4.0 embedded hypervisor, Sun Solaris 10 <sup>4</sup>	Microsoft Windows Server, Red Hat Enterprise Linux, SUSE Linux Enterprise Server, VMware ESX, Sun Solaris 10	Microsoft Windows Server, Red Hat Enterprise Linux, SUSE Linux Enterprise Server, VMware ESXi 4.0 embedded hypervisor, Sun Solaris 10 <sup>4</sup>

System x model	x3755	x3850 M2	x3850 X5	x3950 M2
<b>Form factor</b>	4U	Rack/4U per chassis	Rack/4U per chassis	Rack/4U per chassis
<b>Processor</b>	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 up to 2.26 GHz (8-core)/1066 MHz memory access	Intel Xeon Series 7400 up to 2.66 GHz (six cores)/1066 MHz front-side bus
<b>Number of processors (std/max)</b>	2/4	2/4 per chassis (optional 2, 3, 4 chassis support)	2/4 per chassis (optional 2-, 3-, 4-chassis support)	2/4 per chassis (optional 2, 3, 4 chassis support)
<b>Cache (max)</b>	6 MB L3	Up to 16 MB	Up to 24 MB	Up to 16 MB
<b>Memory (std/max)</b>	128 GB DDR II 667 MHz (max)	4 GB or 8 GB/256 GB PC2-5300 DDR II	16 GB/1.0 TB max PC3-10600 DDR III	4 GB or 8 GB/256 GB PC2-5300 DDR II
<b>Expansion slots</b>	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 half-length, (2 hot-plug)	7 total PCI-Express half-length (2 Active PCI-Express)
<b>Maximum internal storage</b>	1.2 TB (4 x 300 GB)	587 GB SAS per chassis (supports 73.4 GB and 146.8 GB HDDs)	4.0 TB SAS per chassis (supports 8 x 73.4 GB, 146.8 GB, 300 GB and 500 GB HDDs or 16 x 50 GB SSDs)	587 GB SAS per chassis (supports 73.4 GB and 146.8 GB HDDs)
<b>Network</b>	Integrated dual Gigabit Ethernet	Integrated dual Gigabit Ethernet with TCP-IP Offload Engine	10 Gbps Fibre Channel over Ethernet Dual Channel Converged Network Adapter plus integrated dual Gigabit Ethernet with TCP-IP off-load engine	Integrated dual Gigabit Ethernet with TCP-IP Offload Engine
<b>Power supply (std/max)</b>	1500W 1/2	1440W 220V 2/2	1975 W 220 V 2/2	1440W 220V 2/2
<b>RAID support</b>	Integrated RAID-0, -1, -10, RAID-5 optional	Integrated RAID-0, -1, optional RAID-5	Integrated RAID-0, -1, -1E; optional RAID-5	Integrated RAID-0, -1, optional RAID-5
<b>OS support</b>	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 Server/ESXi 4.0	Microsoft Windows Server, Red Hat Enterprise Linux, SUSE Linux Enterprise Server and VMware ESX, Solaris 10

## For more information

### World Wide Web

IBM System x [ibm.com/systems/x](http://ibm.com/systems/x)

BladeCenter [ibm.com/systems/bladecenter](http://ibm.com/systems/bladecenter)

IBM System Cluster 1350 [ibm.com/systems/clusters/](http://ibm.com/systems/clusters/)

IBM Systems Director [ibm.com/systems/management/director](http://ibm.com/systems/management/director)

IBM System x iDataPlex [ibm.com/systems/x/hardware/icdataplex/](http://ibm.com/systems/x/hardware/icdataplex/)

IBM System Storage [ibm.com/systems/storage/](http://ibm.com/systems/storage/)

## IBM Express Portfolio™

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

IBM Maintenance and Technical Support solutions can help you get the most out of your IT investment by reducing support costs, increasing availability and simplifying management with integrated support for your multiproduct, multivendor hardware and software environment. For more information on hardware maintenance, software support, solution support and managed support, visit: [ibm.com/services/maintenance](http://ibm.com/services/maintenance)



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<sup>1</sup> IBM Power Engineering Research Study, February 2009

<sup>2</sup> Maximum RDIMM support for 128 GB when 8 GB DIMMs are available 2Q 2010, and maximum UDIMM support for 48 GB when 4 GB DIMMs are available 2Q 2010.

<sup>3</sup> Maximum RDIMM support for 192 GB when 16 GB DIMMs are available 2Q 2010, and maximum UDIMM support for 48 GB when 4 GB DIMMs are available 2Q 2010.

<sup>4</sup> OS support for Sun Solaris will be available in 2Q 2010.



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