

## Powering your business ... on demand



xSeries 100



xSeries 306m



xSeries 206m



xSeries 346



xSeries 460



xSeries 366

## IBM @server xSeries systems

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### Highlights

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- ***A complete line of new entry servers, such as the IBM @server xSeries 100, x206m and x306m, provides enterprise-class capabilities for more small and medium business customers than ever before.***
- ***High-performance servers, such as the IBM @server xSeries 460 and 366, accommodate high-performance, dual-core Intel Xeon™ Processors MP and run 32- and 64-bit applications.***
- ***Rack-optimized servers like the IBM @server xSeries 346 and 336 now support dual-core Intel Xeon Processors helping provide investment protection, outstanding performance and reliability.***
- ***Tower xSeries servers such as the IBM @server xSeries 226 and 236 deliver innovation and usability at entry-level prices for small businesses or distributed computing.***

### **xSeries differentiation, innovation**

Maximize price/performance with IBM @server xSeries systems—powerful Intel and AMD Opteron™ processor-based platforms— that let your clients implement flexible, cost-effective IT infrastructures. By incorporating technology innovation and decades of business insight with industry-standard hardware and software, IBM provides platforms with mainframe-inspired power and scalability at attractive prices. The result: highly reliable hardware in servers that can be scaled quickly, easily and inexpensively, allowing you to do more with your IT dollars and helping to confidently execute your business objectives.

In addition, clients have the flexibility to choose from one of the largest variety of scale-up and scale-out solutions in the industry-standard environment. And with xSeries you have the ability to pay as you grow all the way up to 32 processors. No other tier-1 vendor currently offers that capability.

### **High-performance hardware**

High-performance x460 and x366 servers, now featuring dual-core processor models, deliver breakthrough performance with 64-bit memory addressability, providing headroom and investment protection for enterprise customers.

### **Feature-rich functionality**

For rack-dense environments, the x336 and x346 help maximize memory, I/O and storage capacity for maximum performance while providing increased availability. In addition, these systems feature an integrated management controller and a drop-down light path panel for reliable management. For distributed businesses, the x226 and x236 tower servers provide affordable performance and high-availability features such as redundant hot-swap power and cooling, support for large capacity I/O and storage and remote management capability via the Remote Supervisor Adapter II.

### **On demand ready**

Becoming an on demand business means finding ways to grow, adapt and respond in a dynamic business environment while managing costs. xSeries systems provide outstanding availability and systems management capabilities that help better manage and provision your computing resources, for a responsive IT environment that can grow with your business.

### **BladeCenter solutions**

Tackle your server management challenges with IBM @server BladeCenter™. Its modular design gathers computing resources into cost-effective, high-density enclosures that support hot-swappable, high-performance 2-way (HS20), (JS20), (LS20) and 4-way (HS40) blade servers.

BladeCenter has expanded to include the AMD Opteron LS20 for IBM **@server** BladeCenter. The LS20 blade supports single and dual-core AMD Opteron processors that deliver performance, density and availability for high-performance computing applications. Models of the HS20 blade support Intel EM64T, providing a smooth transition to 64-bit enabled applications while leveraging the price/performance of the existing application ecosystem.

#### **Clustering solution**

IBM **@server** Cluster 1350, the outstanding IBM Linux® cluster solution, is an integrated, factory-built and tested cluster solution that helps reduce client risk in configuring, deploying and managing Linux clusters. The Cluster 1350 combines advanced Intel Xeon, AMD Opteron and IBM PowerPC® and OpenPower™ processor-based server nodes, IBM Cluster Systems Management (CSM) and General Parallel File System (GPFS) for Linux, IBM TotalStorage systems, and leading third-party networking components to create powerful solutions for high performance computing and commercial application environments.

#### **Microsoft solutions**

xSeries servers provide outstanding performance and functionality running the Windows® operating system. xSeries supports a range of offers from select products preloaded with the Windows operating system for customers who desire one-stop shopping to distributing the Datacenter Edition for customers demanding scalability and reliability.

#### **Linux solutions**

IBM works with the leading Linux distribution companies, Red Hat®, Inc. and SUSE LINUX, a Novell® company, to offer tested and validated configuration for xSeries servers. This helps deliver outstanding xSeries performance and functionality. xSeries supports a broad range of server offerings preloaded with the Linux operating system for customers who desire one-stop shopping for Linux. The range of Linux offerings available on xSeries servers gives you the flexibility to choose the optimum Linux implementation for your needs.

#### **Leverage storage technology**

Data represents a critical component of business today. Efficiently handling the growing amounts of information is one of the keys to success for an on demand business.

The IBM TotalStorage® family of products offers a broad portfolio of scalable, open and innovative storage technology including disk and tape storage systems, storage networking solutions, and virtualization and storage management software. IBM can help you deploy and maintain storage infrastructures, providing solutions designed to improve business efficiency and continuity, while helping enhance productivity through automation.

#### **Affordable xSeries solutions**

xSeries systems are designed to match nearly any application workload environment, from the entry-level, uni-processor x100 to the enterprise-powered x460. Visit

**ibm.com**/eserver/xseries for more information.

*“With the launch of X3 Architecture, the x460 unlocks some phenomenal new capabilities for an x86 server. Incredible 64-bit performance, unmatched scalability and that continued commitment to availability leave little doubt what we’ll be deploying into the future.”*

— Bryan Harwood, Director, Principal Architect, Enterprise Architecture, Cendant Corporation



	Universal			
xSeries model	x100	x206m	x226	x236
<b>Form factor</b>	Tower	Tower, 5U	Tower, rack/4U	Tower, rack/5U
<b>Processor</b>	Intel® Pentium® D up to 2.8 GHz/800 MHz, Intel Pentium 4 up to 3.4 GHz/800 MHz, or Intel Celeron® up to 2.53 GHz/533 MHz)	Intel Pentium D (dual-core) up to 3.0 GHz or Intel Pentium 4 up to 3.4 GHz	Intel Xeon™ up to 3.4 GHz	Intel Xeon up to 3.80 GHz
<b>Number of processors (std/max)</b>	1/1	1/1	1/2	1/2
<b>Cache (max)</b>	2x1MB, 1MB or 256KB	2 x 1MB or 1MB or 2MB	Up to 2MB L2	2MB L2
<b>Memory<sup>1</sup> (std/max)</b>	256MB or 512MB/8GB PC2-4200 DDR II via 4 DIMM slots	Up to 8GB PC2-4200 DDR II	512MB/16GB <sup>3</sup> PC2-3200 DDR II	512MB or 1GB/16GB PC2-3200 DDR II via 8 DIMM slots
<b>Expansion slots</b>	2 PCI, 2 PCI-Express	2 PCI, 2 PCI-X (model dependent) and 2 PCI-Express	6 total (3 PCI-X, 2 PCI, 1 PCI-Express)	6 available (1x PCI-X 133 MHz Active PCI-X, 2x PCI-X 100 MHz, 2x PCI-Express, 1x 32-bit/33 MHz)
<b>Disk bays (total/hot-swap)</b>	2 fixed Serial ATA (SATA)	4 fixed simple swap or hot-swap Serial ATA hard disk drives or 4 hot-swap Serial Attached SCSI hard disk drives	9/6 up to 6 hot-swap SCSI up to four simple-swap Serial ATA (with adapter)	6/6 (9 bays via 3-pack option)
<b>Maximum internal storage<sup>1,2</sup></b>	80GB/500GB SATA	Up to 1.2TB hot-swap Serial Attached SCSI (SAS) HDDs, or up to 1TB hot-swap, simple-swap or fixed Serial ATA HDDs	1.8TB Ultra320 hot-swap, 1TB SATA	2.7TB Ultra320 SCSI
<b>Network interface</b>	Integrated Gigabit Ethernet	Integrated Gigabit Ethernet	Integrated Gigabit Ethernet	Dual Gigabit Ethernet
<b>System management processor</b>	IBM ServerGuide™	Supports optional Remote Supervisor Adapter II	Supports optional Remote Supervisor Adapter II	Integrated System Management Processor (supports optional Remote Supervisor Adapter II SlimLine)
<b>Power supply (std/max)</b>	310W 1/1	400W 1/1 or 430W hot-swap redundant 2/2 (model dependent)	530W or (2) 514W hot-swap	670W 1/2
<b>Hot-swap components</b>	Not applicable	Hard disk drives, power supplies (model dependent)	Power supply, hard disk drives (select models)	Disk drives, power supply, fans and 1 Active PCI slot
<b>Light path diagnostics</b>	Not applicable	Limited	Limited	Yes
<b>RAID support</b>	Optional	Integrated IBM ServeRAID™-8e (RAID-0, RAID-1), optional upgrade to RAID-5 and RAID-6	IBM ServeRAID-7E (integrated RAID-0 or RAID-1), optional RAID-5	Integrated RAID-0, -1, -10, optional RAID-5
<b>xSeries OS compatibilities support</b>	Red Hat Linux, SUSE LINUX, Microsoft® Windows®	Red Hat Linux, SUSE LINUX, Microsoft Windows, Novell NetWare, OS 4690	Red Hat Linux, SUSE LINUX, Microsoft Windows, Novell NetWare, OS/2	Red Hat Linux, SUSE LINUX, Microsoft Windows, Novell NetWare



	Universal		Rack-optimized	
xSeries model	x260	x306m	x336	x346
<b>Form factor</b>	Tower, rack/7U	Rack/1U	Rack/1U	Rack/2U
<b>Processor</b>	Intel Xeon Processor MP up to 3.66 GHz	Intel Pentium D (dual-core) up to 3.0 GHz or single-core Intel Pentium 4 up to 3.6 GHz	Intel Xeon up to 3.8 GHz and Dual-Core Intel Xeon Processor 2.8 GHz	Intel Xeon up to 3.80 GHz and Dual-Core Intel Xeon Processor 2.8 GHz
<b>Number of processors (std/max)</b>	1/4	1/1	1/2	1/2
<b>Cache (max)</b>	1MB L2 per processor	1MB or 2MB (dual-core and single-core)	Up to 2MB L2 per processor core	Up to 2MB L2 per processor core
<b>Memory<sup>1</sup> (std/max)</b>	1GB or 2GB/64GB PC2-3200 DDR II SDRAM	512MB/8GB PC4200 DDR II via 4 DIMM slots	512MB or 1GB/16GB <sup>1</sup> PC2-3200 DDR II	512MB, 1GB or 2GB/16GB PC2-3200 DDR II via 8 DIMM slots
<b>Expansion slots</b>	6 Active PCI-X 2.0	2 PCI-X 64-bit/100 MHz or 1 PCI-Express x8 and 1 PCI-X 64-bit/100 MHz	1 PCI-X (64-bit 100 MHz) and 1 PCI-X (64-bit 133 MHz) or 1 PCI-Express x8	4 PCI-X or 2 PCI-X and 2 PCI-Express
<b>Disk bays (total/hot-swap)</b>	12/12 3.5" Serial Attached SCSI	Up to 2 simple swap Serial ATA, or 2 hot-swap Serial ATA or Serial Attached SCSI hard disk drives	2/2 or 4/4	6/6
<b>Maximum internal storage<sup>1,2</sup></b>	3.6TB Serial Attached SCSI	500GB Serial ATA or 600GB Serial Attached SCSI	600GB Ultra320 SCSI or 500GB simple-swap SATA	1.8TB Ultra320 SCSI
<b>Network interface</b>	Integrated dual Gigabit Ethernet	Dual Gigabit Ethernet	Integrated dual Gigabit Ethernet	Integrated dual Gigabit Ethernet
<b>System management processor</b>	Integrated System Management Processor (supports optional Remote Supervisor Adapter II)	Supports optional Remote Supervisor Adapter II	Integrated System Management Processor (supports optional Remote Supervisor Adapter II SlimLine)	Integrated Systems Management Processor (supports optional Remote Supervisor Adapter II SlimLine)
<b>Power supply (std/max)</b>	775W 2/3 hot-swap (N+1)	350W 1/1	585W 1/2	625W 1/2
<b>Hot-swap components</b>	Power supply, fans, memory, hard disk drives, PCI-X adapters	Serial ATA and Serial Attached SCSI hard disk drives	Power supply, fans, hard disk drives (select models)	Power supply, fans and hard disk drives
<b>Light path diagnostics</b>	Yes	Not applicable	Yes	Yes
<b>RAID support</b>	RAID-0, -1, -5 optional (ServeRAID-8i)	Integrated ServeRAID-8e, ServeRAID-7t for simple-swap Serial ATA hard disk drives	Integrated RAID-1, -1E, optional RAID-5	Integrated RAID-0/-1, optional RAID-5
<b>xSeries OS compatibilities support</b>	Red Hat Linux, SUSE LINUX, Microsoft Windows, Novell NetWare, VMware™ ESX Server™	Red Hat Linux, SUSE LINUX, Microsoft Windows, Novell NetWare	Red Hat Linux, SUSE LINUX, Microsoft Windows, Novell NetWare, VMware™ ESX Server™	Red Hat Linux, SUSE LINUX, Microsoft Windows, Novell NetWare, VMware ESX Server



	<b>Rack-optimized</b>	<b>High-performance scalable</b>	
<b>xSeries model</b>	<b>x366</b>	<b>x455</b>	<b>x460</b>
<b>Form factor</b>	Rack/3U	Rack/4U per chassis	Rack/3U per chassis
<b>Processor</b>	Intel Xeon Processor MP up to 3.66 GHz (single-core) and 3.0 GHz (dual-core)/667 MHz front-side bus	Intel® Itanium® 2 up to 1.6 GHz, with 1.5 GHz/4MB, 1.6 GHz/6MB and 1.6 GHz/9MB	Intel Xeon Processor MP up to 3.33 GHz (single-core) and up to 3.0 GHz (dual-core)/667 MHz front-side bus
<b>Number of processors (std/max)</b>	1/4	1/16 (up to 4 processors per x455 unit)	2/4 per chassis, 32 per configuration
<b>Cache (max)</b>	1MB L2 per processor (single-core) and 2x2MB L2 (dual-core)	9MB L3, 64MB Xcel4 Server Accelerator Cache per 4-way for Itanium 2	1MB L2/up to 8MB L3 per processor (single-core) and 2x2MB L2 (dual-core) Xcel4v Dynamic Server Cache (up to 256MB per chassis)
<b>Memory<sup>1</sup> (std/max)</b>	2GB/64GB PC2-3200 DDR II SDRAM	56GB Chipkill™ DDR SDRAM per 4-way, up to 224GB Chipkill DDR SDRAM per 16-way	2GB/64GB PC2-3200 DDR II per chassis, 512GB maximum
<b>Expansion slots</b>	6 per chassis Active PCI-X 2.0 slots supporting up to 266 MHz	6/6 Active PCI-X per chassis (2 at 133 MHz, 2 at 100 MHz and 2 at 66 MHz) with optional 12 PCI-X slots via RXE-100 Remote Expansion Enclosure	6/6 (per chassis) Active PCI-X 2.0, all slots supporting up to 266 MHz
<b>Disk bays (total/hot-swap)</b>	6/6 2.5" Serial Attached SCSI (SAS)	2/2 Supporting Ultra320 SCSI	6/6 (per chassis) 2.5" Serial Attached SCSI
<b>Maximum internal storage<sup>1,2</sup></b>	440.4GB Serial Attached SCSI	293.6GB	440.4GB SAS per chassis (supports 36.4GB and 73.4GB HDDs)
<b>Network</b>	Integrated dual Gigabit Ethernet	Dual integrated 10/100/1000 Ethernet	Integrated dual Gigabit Ethernet
<b>System management processor</b>	Remote Supervisor Adapter II SlimLine optional	Remote Supervisor Adapter in dedicated slot, IBM Director	Remote Supervisor Adapter II SlimLine standard
<b>Power supply (std/max)</b>	1300W 1/2 hot-swap	1200W or 1050W 2/2 hot-swap (model dependent)	1300W 220V 2/2
<b>Hot-swap components</b>	Power supplies, fans, memory, hard disk drives and PCI-X adapters	Power supplies, cooling fans, hard disk drives, PCI-X adapters and memory DIMMs	Power supplies, fans, hard disk drives, PCI-X adapters and memory
<b>Light path diagnostics</b>	Yes	Yes	Yes
<b>RAID support</b>	RAID-5 optional	Integrated RAID-1	RAID-0, -1, -5 optional (ServeRAID-8i)
<b>xSeries OS compatibilities support</b>	Red Hat Linux, SUSE LINUX, Microsoft Windows, VMware ESX Server	Red Hat Linux, SUSE LINUX, Microsoft Windows	Red Hat Linux, SUSE LINUX, Microsoft Windows, VMware ESX Server

## For more information:

### World Wide Web

U.S. [ibm.com/eserver/xseries](http://ibm.com/eserver/xseries)

Canada [ibm.com/ca/eserver/xseries](http://ibm.com/ca/eserver/xseries)

### IBM @server xSeries Options

U.S. [ibm.com/pc/us/eserver/xseries/storage](http://ibm.com/pc/us/eserver/xseries/storage)

Canada [ibm.com/pc/ca/eserver/xseries/options](http://ibm.com/pc/ca/eserver/xseries/options)

### IBM TotalStorage Products

[ibm.com/totalstorage](http://ibm.com/totalstorage)

### IBM @server xSeries Systems Management

[ibm.com/servers/eserver/xseries/systems\\_management/xseries\\_sm.html](http://ibm.com/servers/eserver/xseries/systems_management/xseries_sm.html)

### IBM @server Cluster 1350

[ibm.com/servers/eserver/clusters/](http://ibm.com/servers/eserver/clusters/)

### On demand

[ibm.com/services/ondemand](http://ibm.com/services/ondemand)

## IBM Express Portfolio

Select configurations of xSeries and HS20 blade servers are part of the IBM Express Portfolio, designed, developed and priced to meet the specific needs of mid-sized businesses. The IBM Express Portfolio of solutions is easy to acquire, install and manage. And it leverages IBM technology to provide tangible solutions to help you solve business problems in an on demand world.

**ON DEMAND EXPRESS PORTFOLIO™**  
BUILT FOR MID-SIZED BUSINESS.

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**IBM @server BladeCenter at a glance**

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<b>Form factor</b>	Rack/7U, high-availability midplane
<b>Blade bays</b>	Up to 14 2-way, and up to 7 4-way
<b>Standard media</b>	DVD-ROM and diskette drive available from each server blade
<b>Switch modules</b>	4 switch module bays
<b>Power supply module</b>	Up to 4 (hot-swap and redundant 2000W with load balancing and failover capabilities)
<b>Cooling modules</b>	2 hot-swap and redundant blowers standard
<b>Systems management hardware</b>	1 management module standard, add an optional second module for redundancy
<b>I/O ports</b>	Keyboard, video, mouse, Ethernet, USB

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**IBM @server BladeCenter HS20 at a glance**

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<b>Processor</b>	Intel Xeon up to 3.60 GHz (some models support Intel Extended Memory 64 Technology)
<b>Number of processors</b> (std/max)	1/2
<b>Cache</b> (max)	1MB or 2MB (model dependent)
<b>Front side bus</b>	Up to 800 MHz
<b>Memory'</b>	Up to 8GB PC2-3200 DDR II
<b>Internal hard disk drives</b>	Up to 2 Ultra320 SCSI hard disk drives installed on each blade (or plus support for up to 2 hot-swap Ultra320 SCSI drives with optional SCSI Storage Expansion Unit)
<b>Maximum internal storage</b> <sup>1,2</sup>	746.8GB SCSI with optional SCSI Storage Expansion Unit
<b>RAID support</b>	Integrated SCSI RAID-1 standard on blade server, integrated RAID-1E with SCSI Expansion Unit 2 (on select blades)
<b>Network</b>	Dual Gigabit Ethernet
<b>I/O Upgrade</b>	1 expansion card connection
<b>Systems management hardware</b>	Integrated systems management processor
<b>Systems management software</b>	IBM Director with systems management and trial deployment tools, IBM Director Server Plus Pack optional
<b>Predictive Failure Analysis</b>	Hard disk drives, processors, blowers, memory
<b>Light path diagnostics</b>	Blade server, processor, memory, power supplies, blowers, switch module, management module, hard disk drives and expansion unit
<b>Limited warranty' and support</b>	3-year onsite limited warranty
<b>External storage</b>	Support for IBM TotalStorage solutions (including DS family of products)
<b>Operating systems supported</b>	Microsoft Windows Server 2003, Microsoft Windows 2000 Server/Advanced Server, Red Hat Linux, SUSE LINUX, Novell Netware, VMware ESX Server

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*“Compute-density and small footprint are very important for NYFIX. BladeCenter has the smallest footprint and the best engineering, making it a cost-effective choice among blade centers.”*

— Jim Strassenburgh, VP of Systems and Systems Architecture at NYFIX, an electronic trading solutions provider.

## IBM @server BladeCenter HS40 at a glance



<b>Processor</b>	Intel Xeon Processor MP up to 3.0 GHz
<b>Number of processors</b> (std/max)	1/4
<b>Cache</b> (max)	Up to 4MB
<b>Front side bus</b>	400 MHz
<b>Memory<sup>1</sup></b>	Up to 16GB DDR ECC Chipkill
<b>Internal hard disk drives</b>	Up to 2 non-hot-swap IDE drives and support for up to 2 hot-swap Ultra320 SCSI drives with optional SCSI Storage Expansion Unit
<b>Maximum internal storage<sup>1,2</sup></b>	600GB SCSI with optional Storage Expansion Unit or 120GB IDE
<b>RAID support</b>	Integrated RAID with SCSI Storage Expansion Unit option
<b>Network</b>	4 integrated Gigabit Ethernet controllers
<b>I/O Upgrade</b>	2 expansion card connections
<b>Systems management hardware</b>	Integrated system management processor
<b>Systems management software</b>	IBM Director with systems management and trial deployment tools, IBM Director Server Plus Pack optional
<b>Predictive Failure Analysis</b>	Hard disk drives, processors, blowers, memory
<b>Light path diagnostics</b>	Blade server, processor, memory, power supplies, blowers, switch module, management module, hard disk drives and expansion unit
<b>Limited warranty<sup>4</sup> and support</b>	3-year onsite limited warranty
<b>External storage</b>	Support for IBM TotalStorage solutions (including DS and NAS family of products)
<b>Operating systems supported</b>	Microsoft Windows Server 2003, Microsoft Windows 2000 Server/Advanced Server, Red Hat Linux, SUSE LINUX, Novell NetWare

<sup>1</sup> 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.

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

<sup>3</sup> When 4GB PC2-3200 DIMMs are available

<sup>4</sup> **Visit [ibm.com/pc/safecomputing](http://ibm.com/pc/safecomputing) periodically for the latest information on safe and effective computing.**  
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