

## Powering your business ... on demand



xSeries 460



xSeries 366



xSeries 206



xSeries 336



xSeries 346

## IBM @server xSeries systems

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### Highlights

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- **High-performance servers, such as the new IBM @server® xSeries® 460 and 366 are designed to simultaneously accommodate high-performance, dual-core Intel® Xeon™ Processors MP and run 32- and 64-bit applications, providing headroom and investment protection.**
- **Rack-optimized xSeries servers—like the IBM @server xSeries 346, 336 and models of the 306 feature 64-bit Intel Xeon Processors and support Intel Extended Memory 64 Technology (Intel EM64T). These rack-dense servers help solve data center space constraints with compact designs that don't sacrifice performance or manageability.**
- **Tower xSeries servers—such as the IBM @server xSeries 236 and 226 feature Intel Xeon Processors—and new models of the 206 support Intel EM64T. These servers deliver innovation and usability at entry-level prices for small businesses or distributed computing.**

### xSeries differentiation, innovation

A commitment to differentiation with the technology to fuel innovation. These are the reasons that are leading IBM @server xSeries systems to capture big gains in the industry today. By investing in innovation, bringing mainframe-inspired technologies to the industry-standard segment and providing exceptional systems management offerings, these tower and rack-optimized xSeries systems are gaining momentum with customers, edging out the competition and earning increased share.

### High-performance hardware

High-performance xSeries servers such as the new x460 and x366 deliver breakthrough performance with 64-bit memory addressability through IBM @server X3 Architecture, the third generation of mainframe-inspired IBM Enterprise X-Architecture™. At the crossroads of a major industry transition to mainstream 64-bit applications, X3 Architecture delivers a formidable combination of 64-bit performance, availability and investment protection not yet available in an industry-standard x86 server.

### Feature-rich functionality

xSeries tower and rack-dense servers feature IBM Xtended Design Architecture™ to deliver innovative industry-standard components that help increase IT productivity and help lower computing costs. For rack-dense environments, the x336 and x346

deliver Calibrated Vektored Cooling™, an IBM innovation that helps 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 x206 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.”*

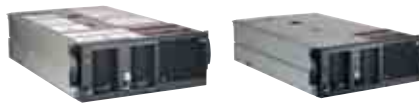
— Bryan Harwood, Director, Principal Architect, Enterprise Architecture, Cendant Corporation



	Universal			
xSeries model	x206	x226	x236	x255
<b>Form factor</b>	Tower, rack/4U	Tower, rack/4U	Tower, rack/5U	Tower, rack/7U
<b>Processor</b>	Intel® Pentium® 4 processor	Up to two Intel® Xeon® Processors	Intel® Xeon™ Processor up to 3.60 GHz/800 MHz front-side bus supports Intel® EM64T	Intel® Xeon™ Processor MP at up to 3.0 GHz
<b>Number of processors (std/max)</b>	1/1	1/2	1/2	1/4
<b>Cache (max)</b>	1MB L2	Up to 2MB L2	2MB L2	4MB L3
<b>Memory<sup>1</sup> (std/max)</b>	256MB/4GB PC2700/PC3200 DDR standard via 4 DIMM slots (model dependent)	512MB/16GB <sup>3</sup> PC2-3200 DDR2	512MB or 1GB/16GB PC2-3200 DDR2 via 8 DIMM slots	512MB/24GB PC1600 DDR Chipkill™
<b>Expansion slots</b>	2 PCI-X, 3 PCI	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)	6 Active PCI-X
<b>Disk bays (total/hot-swap)</b>	4 non-hot-swap SCSI 3 hot-swap SCSI 2 simple-swap SATA (optional 4)	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)	12/12 with optional 6-pack hot-swap hard disk drive kit
<b>Maximum internal storage<sup>1,2</sup></b>	587.2GB SCSI, 500GB SATA, 1TB SATA optional	1.8TB Ultra320 hot-swap, 1TB SATA	2.7TB Ultra320 SCSI	1.76TB Ultra320 SCSI
<b>Network</b>	Integrated 10/100/1000 Ethernet	Integrated 10/100/1000 Ethernet	Dual integrated 10/100/1000 Ethernet	Integrated 10/100/1000 Ethernet
<b>System management processor</b>	Supports optional Remote Supervisor Adapter II	Supports optional Remote Supervisor Adapter II	Integrated System Management Processor (supports optional Remote Supervisor Adapter II SlimLine)	Integrated System Management Processor (supports optional Remote Supervisor Adapter II)
<b>Power supply (std/max)</b>	340W 1/1	530W or (2) 514W hot-swap	670W 1/2	370W 2/4 hot-swap (redundant at 110V and 220V)
<b>Hot-swap components</b>	Hard disk drives (select models)	Power supply, hard disk drives (select models)	Drives, power supply, fans and 1 Active PCI slot	Power supply, fans, hard disk drives, PCI-X adapters
<b>Light path diagnostics</b>	Limited	Limited	Yes	Yes
<b>RAID support</b>	Integrated IBM ServeRAID™ -7E (RAID-0, -1) optional RAID-5 with adapter	IBM ServeRAID-7E (integrated RAID-0 or RAID-1), optional RAID-5	Integrated RAID-0, -1, -10, optional RAID-5	Optional
<b>xSeries OS compatibilities support</b>	Red Hat, SUSE LINUX, Microsoft® Windows®, Novell NetWare, OS 4690	Red Hat, SUSE LINUX, Microsoft Windows, Novell NetWare, OS/2	Red Hat, SUSE LINUX, Microsoft Windows, Novell NetWare	Red Hat, SUSE LINUX, Microsoft Windows, Novell NetWare, VMware™ ESX Server™



	<b>Rack-optimized</b>			
<b>xSeries model</b>	<b>x306</b>	<b>x336</b>	<b>x346</b>	<b>x366</b>
<b>Form factor</b>	Rack/1U	Rack/1U	Rack/2U	Rack/3U
<b>Processor</b>	Intel® Pentium® 4 processor	Two-way Intel® Xeon™ processors	Intel® Xeon™ Processor up to 3.60 GHz/800 MHz front-side bus supports Intel® EM64T	64-bit Intel® Xeon™ Processor MP up to 3.66 GHz/supports Intel® EM64T
<b>Number of processors (std/max)</b>	1/1	1/2	1/2	1/4
<b>Cache (max)</b>	1MB L2	Up to 2MB L2	Up to 2MB L2	1MB L2 per processor plus integrated XceL4v™ Dynamic Server Cache
<b>Memory<sup>1</sup> (std/max)</b>	512MB/4GB PC2700/PC3200 DDR standard (model dependent)	512MB or 1GB/16GB PC2-3200 DDR2	512MB or 1GB/4GB PC2-3200 DDR2 via 8 DIMM slots	2GB/64GB PC2-3200 DDR SDRAM
<b>Expansion slots</b>	2 PCI-X (66 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	6 available Active PCI-X 2.0 slots supporting up to 266 MHz
<b>Disk bays (total/hot-swap)</b>	2 non-hot-swap SCSI 2 simple-swap SATA	2/2 or 4/4	6/6	6/6 2.5" Serial Attached SCSI (SAS)
<b>Maximum internal storage<sup>1,2</sup></b>	500GB SATA or 293.6GB SCSI	600GB Ultra320 SCSI or 500GB simple-swap SATA	1.8TB Ultra320 SCSI	440.4GB SAS (supports 36.4GB and 73.4GB hard disk drives)
<b>Network interface</b>	Dual integrated 10/100/1000 Ethernet	Dual integrated 10/100/1000 Ethernet	Dual integrated 10/100/1000 Ethernet	Dual integrated 10/100/1000 Ethernet
<b>System management processor</b>	Supports optional Remote Supervisor Adapter II	Integrated System Management Processor (supports optional Remote Supervisor Adapter II Slimline)	Integrated System Management Processor (supports optional Remote Supervisor Adapter II SlimLine)	Remote Supervisor Adapter II SlimLine optional
<b>Power supply (std/max)</b>	300W 1/1	585W 1/2	625W 1/2	1300W 1/2 hot-swap
<b>Hot-swap components</b>	Simple-swap SATA drives	Power supply, fans, hard disk drives (select models)	Power supply, fans and hard disk drives	Power supplies, fans, memory, hard disk drives and PCI-X adapters
<b>Light path diagnostics</b>	N/A	Yes	Yes	Yes
<b>RAID support</b>	Integrated IBM ServeRAID-7e (RAID-0, -1)	Integrated RAID-1, -1E, optional RAID-5	Integrated RAID-0/-1, optional RAID-5	RAID-0, -1, -5 optional with ServeRAID-8i
<b>xSeries OS compatibilities support</b>	Red Hat, SUSE LINUX, Microsoft Windows	Red Hat, SUSE LINUX, Microsoft Windows, Novell NetWare, VMware™ ESX Server™	Red Hat, SUSE LINUX, Microsoft Windows, Novell NetWare, VMware ESX Server	Red Hat, SUSE LINUX, Microsoft Windows, VMware ESX Server



<b>High-performance scalable</b>		
<b>xSeries model</b>	<b>x455</b>	<b>x460</b>
<b>Form factor</b>	Rack/4U per chassis	Rack/3U per chassis
<b>Processor</b>	Intel® Itanium® 2 Processor at up to 1.6 GHz, with 1.5 GHz/4MB, 1.6 GHz/6MB and 1.6 GHz/9MB	64-bit Intel® Xeon™ Processor MP up to 3.33 GHz
<b>Number of processors (std/max)</b>	1/16 (up to 4 processors per x455 unit)	2/4 per chassis, 32 per configuration
<b>Cache (max)</b>	9MB L3, 64MB Xcel4 Server Accelerator Cache per 4-way for Itanium 2	1MB L2/up to 8MB L3 per processor, Xcel4v Dynamic Server Cache (up to 256MB per chassis)
<b>Memory<sup>1</sup> (std/max)</b>	56GB Chipkill DDR SDRAM per 4-way, up to 224GB Chipkill DDR SDRAM per 16-way	2GB/64GB PC2-3200 DDR2 per chassis, 512MB maximum
<b>Expansion slots</b>	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>	2/2 Supporting Ultra320 SCSI	6/6 (per chassis) 2.5" Serial Attached SCSI
<b>Maximum internal storage<sup>1,2</sup></b>	293.6GB	440.4GB SAS per chassis (supports 36.4GB and 73.4GB HDDs)
<b>Network</b>	Dual integrated 10/100/1000 Ethernet	Dual integrated 10/100/1000 Ethernet per chassis
<b>System management processor</b>	Remote Supervisor Adapter in dedicated slot, IBM Director	Remote Supervisor Adapter II SlimLine standard
<b>Power supply (std/max)</b>	1200W or 1050W 2/2 hot-swap (model dependent)	1300W 2/2 hot-swap
<b>Hot-swap components</b>	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
<b>RAID support</b>	Integrated RAID-1	RAID-0, -1, -5 optional with ServeRAID-8i
<b>xSeries OS compatibilities support</b>	Red Hat, SUSE LINUX, Microsoft Windows	Red Hat, SUSE LINUX, Microsoft Windows, VMware ESX Server

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## For more information:

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### 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)

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## 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™ Processor 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> <sup>1</sup>	Up to 8GB PC2-3200 DDR2
<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<sup>1</sup> 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 or plus 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 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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