

## Powering your business ... on demand



xSeries 346



xSeries 336



xSeries 226



xSeries 236



xSeries 206



xSeries 306



xSeries 445



**xSeries servers deliver outstanding performance with high-performance Intel Xeon Processors**

## IBM @server xSeries systems

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### Highlights

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- **Rack-optimised xSeries servers – like the new IBM @server xSeries 346 and 336 feature Intel® Xeon Processors, the new model 306 feature Intel Xeon Pentium 4 and support Intel Extended Memory 64 Technology (Intel EM64T). These rack-dense servers help solve data centre space constraints with compact designs that don't sacrifice performance or manageability**
- **Tower xSeries servers – such as the new IBM @server xSeries 236 and 226 feature Intel Xeon Processors – and the new model 206 feature Intel Xeon Pentium 4 and support Intel EM64T. These servers deliver innovation and ease of use at entry-level prices for small businesses or distributed computing**
- **High-performance xSeries servers, such as the xSeries 445 with high-performance Intel Xeon Processors MP, feature 4-way and greater pay-as-you-grow scalability and investment protection.**

### 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 marketplace today: By investing in innovation, bringing mainframe-inspired technologies to the industry-standard market; and providing exceptional systems management tools. These tower and rack-optimised xSeries systems are gaining market momentum with customers, edging out the competition and earning increased market share.

### Feature-rich functionality

New 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 Vecteded Cooling, an IBM innovation that increases memory, I/O and storage scalability 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 new 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 RSA II.

### High-performance hardware

High-performance xSeries servers, many featuring high-performance Intel Xeon Processors, deliver XpandOnDemand capability providing a simple route to higher performance. Add processing, memory and storage capacity as your needs grow. IBM @server xSeries servers deliver revolutionary advancements to I/O, memory and processors, and a pay-as-you-grow approach to Intel 32- and 64-bit systems.

Representing the third generation of the original X-Architecture pioneering roadmap for IBM @server xSeries, X3 high-end servers offer blistering speed to power the transition to mainstream 64-bit. And importantly, they also help to protect the value of your current software investment by supporting new 64-bit enterprise applications along with 32-bit legacy applications.

### 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 can help you better manage and provision your computing resources, for a responsive IT environment that can grow with your business.



### **BladeCenter solutions (HS20/HS40)**

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) and 4-way (HS40) Intel processor-based blade servers.

New 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. And BladeCenter has expanded its hardware ecosystem by delivering new Cisco and Brocade switch modules to help clients lower the total cost of ownership.

### **Clustering solution**

IBM **@server** Cluster 1350, IBM's industry-leading Linux® cluster solution, now includes BladeCenter and the HS20 blade with Intel Xeon Processors to provide outstanding performance and density. The Cluster 1350 combines the power of BladeCenter and other xSeries and **@server** rack-optimised servers with IBM Cluster Systems Management for Linux software, IBM storage products, leading third-party networking components and a single contact for

warranty service for cluster components – creating powerful solutions for high-performance computing and commercial application environments.

### **Microsoft solutions**

IBM xSeries servers provide outstanding performance and functionality running the Windows® operating system (OS). xSeries supports a range of offers from select products preloaded with the Windows OS for customers who desire one-stop shopping to distributing the data centre 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 OS 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, virtualisation 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**

IBM **@server** xSeries systems are designed to match nearly any application workload environment, from the entry-level, uni-processor x206 to the enterprise-powered x445. Visit: [ibm.com/eserver/xseries](http://ibm.com/eserver/xseries) for more information.

*‘xSeries servers are simply more efficient than our legacy servers. We can multi-thread applications and they deliver better performance for our Web environment. We’re getting better performance for a lower investment.’*

– Mick Jennings, Chief Technology Officer, Campbell Soup Company.



	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 3.40 GHz/ 800 MHz front-side bus (select models include Intel EM64T)	Intel Xeon Processor up to 3.40 GHz/ 800 MHz front-side bus supports Intel EM64T	Intel Xeon Processor up to 3.60 GHz/ 800 MHz front-side bus supports Intel EM64T	Intel Xeon Processor MP at up to 3.00 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	Up to 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 total (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 4 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 Systems Management Processor (supports optional Remote Supervisor Adapter II SlimLine)	Integrated Systems 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



	<b>Rack-optimised</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 up to 3.40 GHz/ 800 MHz front-side bus (select models support Intel EM64T)	Intel Xeon Processor up to 3.60 GHz/800 MHz front-side bus supports Intel EM64T	Intel Xeon Processor up to 3.60 GHz/800 MHz front-side bus supports Intel EM64T	Intel Xeon Processor MP up to 3 GHz
<b>Number of processors (std/max)</b>	1/1	1/2	1/2	1/4 or 2/4
<b>Cache (max)</b>	1MB L2	Up to 2MB L2	Up to 2MB L2	1MB or 2MB
<b>Memory<sup>1</sup> (std/max)</b>	512MB/4GB PC2700/PC3200 DDR standard (model dependent)	512MB or 1GB/16GB PC2-3200 DDR2 via 8 DIMM slots	512MB or 1GB/16GB PC2-3200 DDR2 via 8 DIMM slots	1GB/32GB or 2GB/32GB PC2100 DDR Chipkill <sup>4</sup>
<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 slots (5 available) Active PCI-X with optional 12 PCI-X slots via RXE-100 Remote Expansion Enclosure
<b>Disk bays (total/hot-swap)</b>	2 simple-swap SATA	2/2 or 4/4 non-hot swap SCSI	6/6	6/6
<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	880GB Ultra320 SCSI
<b>Network</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 Systems Management Processor (supports optional Remote Supervisor Adapter II SlimLine)	Integrated Systems Management Processor (supports optional Remote Supervisor Adapter II)	Remote Supervisor Adapter II in dedicated slot
<b>Power supply (std/max)</b>	300W 1/1	585W 1/2	625W 1/2	950W 1 or 2/2 hot-swap
<b>Hot-swap components</b>	Simple-swap SATA drives	Power supply, hard disk drives (select models)	Power supply, fans and hard disk drives	Power supply, fans, 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 standard, RAID-5 optional
<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, Novell NetWare, VMware ESX Server




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**For more information:**


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**xSeries home**
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**Options**
[ibm.com/pc/europe/accessories](http://ibm.com/pc/europe/accessories)
**Contact a Reseller**
[ibm.com/pc/europe/buyibm](http://ibm.com/pc/europe/buyibm)


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	<b>High-performance scalable</b>	
<b>xSeries model</b>	<b>x445</b>	<b>x455</b>
<b>Form Factor</b>	Rack/4U per chassis	Rack/4U per chassis
<b>Processor</b>	Intel Xeon Processor MP up to 3 GHz or Intel Xeon Processor 3 GHz	Intel Itanium 2 Processor at up to 1.6 GHz, with 1.5 GHz/4MB, 1.6 GHz/6MB and 1.6 GHz/9MB
<b>Number of processors (std/max)</b>	2/32 with Intel Xeon Processor MP 2/4 with Intel Xeon Processor	1/16 (up to 4 processors per x455 unit)
<b>Cache (max)</b>	4MB L3, 64MB Xcel4 Server Accelerator Cache per 4-way for Intel Xeon Processor MP or 512MB L2, 64MB Xcel4 per 2-way for Intel Xeon Processor	9MB L3, 64MB Xcel4 Server Accelerator Cache per 4-way for Itanium 2
<b>Memory<sup>1</sup> (std/max)</b>	64GB Chipkill DDR SDRAM per chassis	56GB Chipkill DDR SDRAM per 4-way, up to 224GB Chipkill DDR SDRAM per 16-way
<b>Expansion Slots</b>	6/6 Active PCI-X per chassis with optional RXE-100 Remote Expansion Enclosure	6/6 Active PCI-X per chassis with optional RXE-100 Remote Expansion Enclosure
<b>Disk bays (total/hot-swap)</b>	2/2 Supporting Ultra320 SCSI	2/2 Supporting Ultra320 SCSI
<b>Maximum internal storage<sup>1,2</sup></b>	293.6GB	293.6GB
<b>Network</b>	Integrated Dual 10/100/1000 Ethernet	Integrated Dual 10/100/1000 Ethernet
<b>System Management processor</b>	Remote Supervisor Adapter II-EXA in dedicated slot	Remote Supervisor Adapter in dedicated slot, IBM Director
<b>Power supply (std/max)</b>	1200W 2/2 hot-swap	1200W or 1050W 2/2 hot-swap (model dependent)
<b>Hot-swap components</b>	Power supplies, cooling fans, hard disk drives, PCI-X adapters and memory DIMMs	Power supplies, cooling fans, hard disk drives, PCI-X adapters and memory DIMMs
<b>Light path diagnostics</b>	Yes	Yes
<b>RAID support</b>	Integrated RAID-1	Integrated RAID-1
<b>xSeries OS compatibilities support</b>	Red Hat, SUSE LINUX, Microsoft Windows, Novell NetWare, VMware ESX Server	Red Hat, SUSE LINUX, Microsoft Windows



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**IBM @server BladeCenter at a glance (HS20 and HS40 chassis)**

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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 and diskette drive accessible from each blade server
<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 (select models support Intel Extended Memory 64 Technology)
<b>Number of processors (std/max)</b>	1/2
<b>Level 2 cache</b>	Up to 2MB L3 cache
<b>Front side bus</b>	Up to 800 MHz
<b>Memory<sup>1</sup></b>	Up to 8GB PC2-3200 DDR2
<b>Internal hard disk drives</b>	Up to 2 IDE or SCSI 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<sup>1,2</sup></b>	438GB SCSI
<b>RAID support</b>	Integrated IDE 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 card
<b>Limited warranty<sup>6</sup> and support</b>	3-year on-site limited warranty
<b>External storage</b>	Support for IBM TotalStorage solutions (including DSD 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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*‘The main advantage of switching over to BladeCenter is cost-effective scalability. If we need more power, we can simply add another blade. For a fast-growing company like us, that’s a great selling point.’*

– Andy Makings, Senior Infrastructure Analyst, Virgin Money.



## IBM @server BladeCenter HS40 at a glance

<b>Processor</b>	Intel Xeon Processor MP up to 3 GHz
<b>Number of processors (std/max)</b>	1/4
<b>Level 3 cache</b>	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 IVE drives, Up to 2 hot-swap Ultra320 SCSI drives with optional SCSI storage expansion unit
<b>Maximum internal storage<sup>1,2</sup></b>	412GB SCSI
<b>RAID support</b>	Integrated RAID with SCSI storage expansion unit option
<b>Network</b>	4 integrated GB 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 card
<b>Limited warranty<sup>3</sup> and support</b>	3-year on-site 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

### IBM SystemSeller Program

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

<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> Using 2GB DIMMs.

<sup>5</sup> Visit [ibm.com/pc/safecomputing](http://ibm.com/pc/safecomputing) periodically for the latest information on safe and effective computing. Warranty Information: For a copy of applicable product warranties, contact your local IBM sales representative or visit: [ibm.com/servers/support/machine\\_warranties](http://ibm.com/servers/support/machine_warranties). IBM makes no representation or warranty regarding third-party products or services. Telephone support may be subject to additional charges. For on-site labour, IBM will attempt to diagnose and resolve the problem remotely before sending a technician.



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