

Innovative modular technology achieves outstanding performance density and affordable availability to create a new e-infrastructure paradigm



IBM @server BladeCenter solutions



Highlights

- ***Intelligent management tools make it easier to take control of your e-infrastructure.***
- ***IBM Director 4.1 provides comprehensive system management.***
- ***Innovative modular technology, ideal for enterprise applications, allows you to “pay as you grow.”***
- ***Open application architecture and industry-standard solutions give you greater flexibility.***

Your priorities are clear: contain costs, deal with a critical shortage of skilled people and keep up with the demands of sustained e-business innovation. In short, control the many components of your IT organization and contribute to organizational success.

The problem? To keep pace with the growth of complex computing, it is difficult to deploy, manage and maintain hundreds of servers and systems.

You're looking to regain the upper hand—to efficiently add resources, speed deployment of new applications and find a way to get the resources you need, when you need

them. You want to maximize your infrastructure's efficiency while maintaining flexibility and adaptability.

Take control of your infrastructure

Tackle your server management challenges with IBM @server BladeCenter, the latest evolution of the IBM @server product line. An evolutionary new form factor, BladeCenter's modular design gathers your computing resources into cost-effective, high-density enclosures that support hot-swappable, high-performance blade servers.

BladeCenter offers the performance and manageability you expect from IBM rack-optimized platforms—at twice the density of most of today's 1U servers. The result is a highly managed infrastructure that helps maximize resource productivity and minimize IT administration costs. BladeCenter gives control back to the information technology manager.

Visit

ibm.com to locate an IBM reseller or for more information.

Advanced manageability:

IBM Director 4.1

To deliver on the IBM autonomic computing initiative, IBM Director 4.1 unleashes the power of BladeCenter, giving you comprehensive remote management from a single graphical console. IBM Director 4.1, which ships with BladeCenter, automates and simplifies IT tasks, letting you deploy, configure, manage and maintain up to hundreds of blade servers.

Tools such as IBM Deployment Wizard, and functions such as Automatic Chassis Discovery and Event Action Plans, make infrastructure deployment easy. The Deployment Wizard allows you to save chassis configurations for easy replication. Another tool, Remote Deployment Manager (RDM), gives you the ability to create, maintain and deploy images from a single drag-and-drop user interface.

With BladeCenter's tight integration of storage, networking, servers and applications, and tapping into IBM Director's common interface for a rich portfolio of advanced management

tools, BladeCenter's design is both intelligent and simple. By adding functions such as Ethernet switch configuration and remote deployment capabilities to a single user interface, IBM has created an ideal environment to maintain your data center. Tools such as Light Path Diagnostics™, Predictive Failure Analysis®, Remote Deployment Manager and Automated Event Action Plans, can help reduce administration costs.

Advanced management capabilities boost administrator productivity and reduce skill-level requirements, which can help reduce costs, improve overall productivity and make administration easier. IBM Director 4.1 and BladeCenter deliver incredible control. Shared infrastructure means platform deployment is quicker and more cost-effective. Because installing a new blade server is fast and easy, expanding capacity for your application can be completed in as little as just a few minutes instead of hours.

Powerful tools for advanced management

IBM Director 4.1 delivers advanced, proactive management, providing rich and broad systems management capabilities. Some of the key optional enhancements in the new IBM Director Server Plus Pack include:

- ***Capacity Manager***
Helps predict future server bottlenecks and proactively alerts administrators, automating corrective actions to minimize downtime.

- ***Software Rejuvenation***
Helps predict pending software failures that could lead to costly downtime and automatically refreshes the software to help ensure optimal operation.

- ***System Availability***
Tracks and provides graphical views of system downtime or uptime for systems or groups of systems, helping save labor costs.

- ***Rack Manager***
Provides a graphical drag-and-drop interface that simplifies rack hardware management.

Visit ibm.com/eserver/xseries/systems_management/xseries_sm.html for more information about the self-managing capabilities of IBM Director 4.1 software.

Designed to solve real-world problems

The BladeCenter design addresses your most serious issues: space constraints, manageability, scalability, capacity, performance, cooling and power. BladeCenter servers are designed to take less time to install, fewer people to maintain and cost less than a traditional server solution, helping you reduce your IT infrastructure costs.

Your enterprise will benefit from simplified management, fast installation and deployment, modular scalability and high availability. What's more, BladeCenter delivers improved space efficiency when compared to most of today's 1U solutions.

IBM BladeCenter solutions make adding capacity simple and affordable. BladeCenter's technology features deliver an effective scale-out architecture that lets you add server modules quickly using a "pay as you grow" approach.

- **Outstanding performance density**

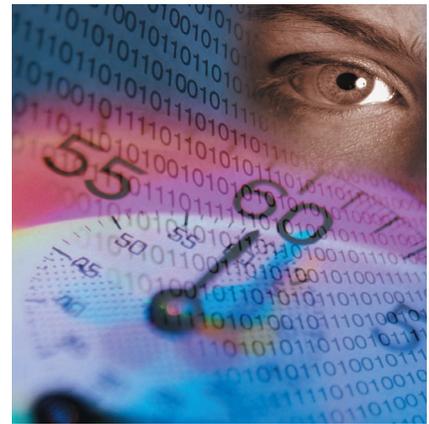
BladeCenter provides an efficient use of data center floor space with up to 84 2-way blades in an industry-standard (42U) rack. The efficient design features leading-edge cooling technology and the latest Intel® Xeon™ processors.

- **Affordable availability for your mission-critical applications**

Chassis features, such as high-availability midplanes and redundant hot-swap cooling and power, help ensure there is no single point of failure. This design is part of the OnForever™ features—designed to deliver outstanding operation, helping to increase your productivity. Tight integration of key components such as networking services, centralized management and applications help to ensure high availability.

- **Investment protection**

Intel Xeon processors provide top performance, while the optional IBM Gigabit Ethernet switches integrated into the chassis provide high bandwidth for efficient, centralized network access to each blade server.



IBM Director 4.1 software, included with your BladeCenter purchase, delivers comprehensive remote management from a single graphical console.

BladeCenter options

BladeCenter options give you choices so you can tune your hardware to create customized solutions to match your application needs.

1200W Power Supply Module

Bringing greater reliability to your BladeCenter solution and greater availability for your applications, the 1200W Power Supply Module provides both power and redundancy to your IBM @server BladeCenter.

4-port Gb Ethernet Switch Module

Featuring Layer 2 switching technology, it provides high-speed Ethernet connections between each blade server and the outside network environment.

Acoustic Attenuation Module

An ideal solution for sound-sensitive customers deploying multiple BladeCenters, this module is designed to minimize audio emissions.

IBM ACT products

The IBM Advanced Connectivity Technology (ACT) products, a less expensive alternative to traditional

keyboard, video and mouse (KVM) switch boxes, bring excellent scalability, manageability and functionality to your BladeCenter environment.

Storage options

IBM provides flexible blades storage offerings—supporting local IDE, local SCSI, network attached storage (NAS) and storage area network (SAN) implementations.

40GB' 5400rpm ATA-100 Hard Disk Drive (HDD)

Helping you achieve maximum density at a low cost, the ATA-100 HDD is a 2.5-inch, slim-high EIDE HDD. The HS20 blade server supports two HDDs for up to 80GB of storage capacity.

SCSI Storage Expansion Unit

Enable the use of high-performance Ultra320 HDDs in your blades environment. This unit provides integrated mirroring capabilities and uses standard IBM hot-swap HDDs.

Fibre Channel (FC) Expansion Card

This I/O expansion option adds dual-port FC connectivity at up to 2Gbps to each blade server. It works in conjunction with the IBM BladeCenter 2-Port Fibre Channel Switch Module.

2-Port FC Switch Module

Similar to the Ethernet switch, this option contains two FC uplinks capable of supporting transmissions up to 2Gbps².

BladeCenter options	Part number
BladeCenter 1200W Power Supply Module	48P7052
BladeCenter 4-Port Gb Ethernet Switch Module	48P7054
IBM HS20 SCSI Storage Expansion Module	48P7058
IBM HS20 Fibre Channel Expansion Card	48P7061
IBM BladeCenter 2-Port Fibre Channel Switch Module	48P7062
IBM HS20 40GB 5400rpm ATA-100 Hard Disk Drive	48P7063
BladeCenter Acoustic Attenuation Module	49P2694

Additional remote storage capacity

NAS

NAS is a low-cost, remote storage solution giving you great flexibility and scalability for your storage needs. Connecting the Gigabit Ethernet switch module to the IBM TotalStorage™ NAS family of products creates a solution that is easy to deploy and manage.

SAN

A SAN is a high-performance, highly flexible architecture for creating remote storage solutions, ideal for Microsoft® Exchange configurations. The FC switch modules and FC expansion cards enable connectivity to each blade server. Connecting to the IBM TotalStorage FAStT family of products is an ideal solution.

Helping you achieve application flexibility

Through the BladeCenter Alliance Program, IBM is working with industry-leading technology companies to develop innovative business solutions. The industry-standard architecture of the BladeCenter platform combined with IBM support and member solutions helps to maximize your IT investment. Hardware standardization helps ensure that your blade solutions will “plug and play,” giving you more choice when creating custom business solutions.

Choose IBM BladeCenter solutions

1. Innovative technology

- High-performance solution with high reliability targeted at business-critical application workloads
- Density and performance advantages
- Enabling future technology for investment protection

2. The tools you need

- Universal advanced manageability is the difference
- Network integration reduces cabling and installation time
- BladeCenter delivers on the IBM autonomic computing initiative

3. Application flexibility helps

ensure your success

- IBM blades feature a comprehensive blade strategy including:
- Industry-standard architecture for compatibility
 - Alliances with leading technology companies through the IBM BladeCenter Alliance Program

4. A complete solution

- IBM provides outstanding service and support
- IBM features interoperability between series to make BladeCenter work with your midrange, mainframe and existing Intel systems

For more information?

World Wide Web

U.S.	ibm.com/pc/us/eserver/xseries/bladecenter_family
Canada	ibm.com/pc/ca/eserver/xseries/bladecenter_family

Reseller locator and general information

U.S.	1 800 426-4968
Canada	1 800 426-2255
	ibm.com/pc/us/businesspartner



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¹ When referring to storage capacity, GB means 1,000,000,000 and TB means 1,000,000,000,000. Accessible capacity is less.

² Speed denotes maximum possible and is dependent on many factors. Actual speed may vary and be less than the maximum.

³ 8GB when 2GB SDRAM DIMMs become available.

⁴ For a copy of the IBM Statement of Limited Warranty, call 1 800 772-2227. Telephone support may be subject to additional charges. For onsite service, IBM sends a technician after attempting to diagnose and resolve the problem remotely.

IBM @server BladeCenter at a glance

Form Factor	Rack/7U, high-availability midplane
Blade bays	14
Standard Media	CD-ROM and diskette drive accessible from each blade server
Switch Modules	4 switch module bays (up to 2 FC and up to 2 Gigabit Ethernet switches)
Power supply module	Up to 4 hot-swap and redundant 1200W with load balancing and failover capabilities
Cooling modules	2 hot-swap and redundant blowers standard
Systems management hardware	1 management module standard, add an optional second module for redundancy
I/O ports	Keyboard, video, mouse, Ethernet, USB

IBM @server BladeCenter HS20 at a glance

Processor	Intel Xeon processor up to 2.8GHz
Number of processors (std/max)	1/2
Level 2 cache	512KB
Front side bus	Starting at 400MHz
Memory	Up to 8GB ³ DDR ECC Chipkill™
Internal hard disk drives	Up to 2 IDE (or up to 2 hot-swap Ultra320 SCSI drives with optional SCSI storage expansion unit)
Maximum internal storage	146.8GB SCSI/80GB IDE
RAID support	Integrated mirroring (with SCSI storage expansion unit option)
Network	2 Integrated Gigabit Ethernet controllers
I/O Upgrade	1 expansion card connection
Systems management hardware	Integrated system management processor
Systems management software	IBM Director 4.1 with systems management and trial deployment tools, IBM Director Server Plus Pack optional
Predictive Failure Analysis	Hard disk drives, processors, blowers, memory
Light Path Diagnostics	Blade server, processor, memory, power supplies, blowers, switch module, management module, hard disk drives and expansion card
Limited warranty⁴ and support	3-year onsite limited warranty
External storage	Support for IBM TotalStorage solutions (including FASiT and NAS family of products)
Operating systems supported	Microsoft Windows® 2000 Server/Advanced Server, Red Hat Linux, SuSE Linux