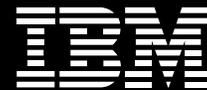


Innovative modular technology achieves outstanding performance density and affordable availability to create a new e-infrastructure paradigm



IBM *@server* BladeCenter solutions



Highlights

- ***Intelligent management tools help deliver on the promise of autonomic server computing, making it easier and more cost-effective to take control of your e-infrastructure.***
- ***IBM Director 4.1 provides comprehensive, integrated system management from a single graphical console.***
- ***Innovative modular technology achieves outstanding performance density and affordable availability. It features an effective scale-out architecture that is ideal for enterprise applications, allowing you to add capacity on demand and “pay as you grow.”***
- ***Open application architecture and simplified deployment of flexible industry-standard solutions gives you greater choice and 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, your goal is to control the many components of your IT organization and contribute to organizational success.

The problem? To keep pace with the growth of complex computing, servers and systems. It is becoming difficult to deploy, manage and maintain hundreds of systems. Dozens of different management schemes threaten your ability to efficiently use your infrastructure.

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 minimizing server overhead, achieving server consolidation and maintaining flexibility and adaptability.

Get back in the driver's seat. Discover IBM *@server* BladeCenter™ solutions.

Take control of your infrastructure

Tackle your server management challenges with IBM BladeCenter, the latest evolution of the IBM *@server* product line. A revolutionary 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 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

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. Because of tools such as Light Path Diagnostics™, Predictive Failure Analysis®, Remote Deployment Manager and Automated Event Action Plans, you can reduce administration costs.

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 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. Also, 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. RDM, which ships with IBM BladeCenter, helps you simplify server installation and save time and money by remotely deploying the installation and updating of hundreds of blades.

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 just a few minutes instead of hours.

Powerful tools for advanced management

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

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



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

- Software Rejuvenation

Predicts 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 devoted to remote management and tracking of server performance and availability.

- Rack Manager

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

Visit ibm.com/pc/ww/eserver/xseries/systems_management 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 take less time to install, fewer people to maintain them 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 today's 1U solutions.

IBM BladeCenter solutions make adding capacity simpler, and more affordable, than ever before.

BladeCenter's technology features deliver an effective scale-out architecture that lets you add server modules quickly using a "pay as you grow" approach.

- ***Industry-leading performance density***
BladeCenter provides a more efficient use of valuable data center floor space. Efficient design featuring leading-edge cooling technology, and the latest Intel® Xeon™ processors help maximize performance.
- ***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 gives you OnForever™ operation, helping to increase your productivity. Also, you get tight integration of key components such as networking services, centralized management and applications 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 the blade servers—accelerating data throughput while reducing cabling. The innovative IBM form factor allows for future expansion to leverage performance improvements of industry-standard components for exceptional investment protection.



IBM BladeCenter solutions deliver on a comprehensive vision for modular computing, putting at your command powerful, two-way SMP-capable Intel Xeon processors, high-speed memory, Gigabit Ethernet controllers and advanced high-availability and systems management features.

BladeCenter options

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

BladeCenter 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.

BladeCenter 4-port Gb Ethernet

Switch Module

Featuring Layer 2 switching technology, this option provides high-speed Ethernet connections between IBM BladeCenter HS20 blades and the outside network environment.

BladeCenter 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. This family of products reduces cable bulk and volume, speeds installation and is more affordable than KVM products.

Storage options

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

IBM HS20 40GB¹ 5400rpm

ATA-100 Hard Disk Drive (HDD)

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

IBM HS20 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.

IBM HS20 Fibre Channel (FC)

Expansion Card

This I/O expansion option adds dual-port FC connectivity at up to 2Gbps to each IBM BladeCenter HS20. It works in conjunction with the IBM BladeCenter 2-Port Fibre Channel Switch Module.

IBM BladeCenter 2-Port Fibre Channel

Switch Module

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

Additional remote storage capacity

NAS

NAS is a low-cost, remote storage solution giving you great flexibility and scalability for your storage needs. These connections can be made via the integrated Gigabit Ethernet connection and the optional Gigabit Ethernet switch module. Connecting 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. SAN fabrics require 2-port FC Switch Modules and IBM HS20 FC Expansion Cards to enable 2Gb connectivity to each blade server. Connecting to the IBM TotalStorage FASTT family of products is an ideal solution.

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	49P2683

BladeCenter at a glance

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 (IA 64/Infiniband/etc.)
- Proven server technology in an extreme density environment

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 industry-leading, comprehensive blade strategy and product plans, including:

- Industry-standard architecture for compatibility
- Alliances with leading technology partners through the IBM BladeCenter Alliance Program

4. A complete solution

- IBM stands behind its blades offering providing outstanding service and support
- IBM features interoperability between series and breadth of product line to make BladeCenter work together with your midrange, mainframe and existing Intel systems

IBM @server BladeCenter

Form factor	Rack/7U
Blade bays	14
Standard media	CD-ROM and diskette drive accessible from each blade server
Switch modules	Up to 4 FC or Gigabit Ethernet switch modules
Power supply module	Up to 4 hot-swap 1200W with load balancing and failover capabilities
Cooling modules	2 hot-swap and redundant blowers standard
Systems management hardware	Up to 2 management modules
I/O ports	Keyboard, video, mouse, Ethernet, USB

IBM BladeCenter HS20

Processor	Intel Xeon processor starting at 2.0GHz
Number of processors (std/max)	1/2
Level 2 cache	512KB
Front side bus	Starting at 400MHz
Memory	Up to 8GB ² 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 Broadcom 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 warranty ³ and support	3-year onsite limited warranty, 24x7 same day onsite repair
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, Novell Netware



Helping you achieve application flexibility

The industry-standard architecture of the BladeCenter platform combined with IBM support, BladeCenter alliances and open-industry standards, are working together to maximize your IT investment. IBM has joined with industry-leading technology companies through the BladeCenter Alliance Program to extend the functionality and openness of the BladeCenter family, and to deliver specific business solutions. Hardware standardization helps ensure that your blade solutions will “plug and play,” giving you more choice when creating custom business solutions. Application flexibility is provided by the Linux® operating system, Microsoft Windows, Novell NetWare and the support of thousands of industry-standard applications.

© Copyright IBM Corporation 2002

IBM Server Group Department X16B
3039 Cornwallis Road
Research Triangle Park, NC 27709

Printed in the United States of America
9-02

All Rights Reserved

IBM reserves the right to change specifications or other product information without notice. This publication could include technical inaccuracies or typographical errors. References herein to IBM products and services do not imply that IBM intends to make them available in other countries. IBM makes no representations or warranties regarding third-party products or services. IBM PROVIDES THIS PUBLICATION “AS IS” WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. SOME JURISDICTIONS DO NOT ALLOW DISCLAIMER OF EXPRESS OR IMPLIED WARRANTIES IN CERTAIN TRANSACTIONS; THEREFORE, THIS DISCLAIMER MAY NOT APPLY TO YOU.

IBM @server systems are assembled in the U.S., Great Britain, Japan, Australia and Brazil and are comprised of U.S. and non-U.S. components.

IBM, the IBM logo, the e-business logo, BladeCenter, Chipkill, Light Path Diagnostics, OnForever, Predictive Failure Analysis and TotalStorage are trademarks of IBM Corporation in the United States, other countries, or both.

Intel and Xeon are trademarks or registered trademarks of Intel Corporation in the United States, other countries, or both.

Linux is a registered trademark of Linus Torvalds.

Microsoft and Windows are registered trademarks of Microsoft Corporation in the United States, other countries, or both.

Other company, product and service names may be trademarks or service marks of others.

Printed on recycled paper containing 10% recovered post-consumer fiber.

Need 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

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 8GB when 2GB SDRAM DIMMs become available.

³ 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.



GM13-0173-00