Reliable, innovative, open and easy to deploy, IBM BladeCenter gives you the right choice to fit your diverse business needs

IBM BladeCenter: The right choice

Highlights

- ***Make the right choice with enterprise-class reliability from a comprehensive portfolio of blade chassis, servers and switches***
- ***Build a flexible business foundation using IBM BladeCenter® Open Fabric***
- ***Help "green" your future with energy-efficient products and IBM Cool Blue™ technology and tools***
- ***Easily control your IT to help maximize productivity***

Overview

- *IBM BladeCenter provides flexibility with compatible chassis, blade types and multiple I/O fabrics easily managed from a common point*
- *Interoperate seamlessly across your data and storage network with IBM BladeCenter Open Fabric*
- *Harness the power of the industry with the BladeCenter ecosystem to delivers innovation for your business*
- *Save on power and cooling with IBM Cool Blue technology*
- *Simplify deployment and management of your IT infrastructure to help minimize the costs of consolidating and operating your data center*

Visit

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

Your priorities are clear: meet the challenges of today's on demand business, contain costs, deal with IT skill shortages and take full advantage of increasing technological complexity. In short, manage your IT organization and infrastructure for business success in today's demanding world. You need to make the right choice for today and for tomorrow. With proven leadership, IBM BladeCenter is the right choice for your business.

Right. Your business changes. One-size-fits-all solutions don't work for you. To meet your broad and diverse needs, you want your IT infrastructure to be flexible and modular to choose the solutions you need. IBM BladeCenter offers a comprehensive portfolio of chassis, servers, switches and fabrics all managed from a common point.

You need enterprise-class reliability to keep your business up and running. IBM BladeCenter is designed with extensive redundancy to help reduce failures. IBM Predictive Failure Analysis® enables application uptime. Other features help enable you to make decisions based on accurate data for quick problem diagnosis.

Open. You want a flexible business foundation that is both open and innovative. IBM BladeCenter delivers. You can match your data center needs with the appropriate interconnect, selecting from multiple I/O fabrics. You can choose from a myriad of offerings defined by Blade.org and created by other members of the most extensive ecosystem for blade solutions.

Green. You want to control your power and cooling environment. You want to minimize environmental impacts. BladeCenter offers energy-efficient designs and powerful Cool Blue tools to help understand, monitor, control and allocate power consumption. IBM also offers IBM Data Center Energy Efficiency services. All this helps you be more environmentally responsible. For example, BladeCenter E delivers up to 31% greater density and up to 11–19% better energy efficiency than other blades.

Easy. You want deployment simplicity and performance without tradeoffs. The Advanced Management Module provides a single point of control so that all server and I/O activity can be managed remotely from a single console. And, BladeCenter Open Fabric offers broad, fast and reliable networking and storage I/O to work with your existing network and storage infrastructure.

BladeCenter is the right choice, tailored to fit your diverse needs. Open and innovative for a flexible business foundation. Green answers to prepare for your tomorrow. Easy to deploy, integrate and manage.

BladeCenter options

IBM offers a range of options to help create customized solutions to meet your specific business needs.

Blade server options[1]

BladeCenter options	Part number
Ethernet Switches	
Cisco Systems Intelligent Gigabit Ethernet Switch Module	32R1892
Cisco Systems Intelligent Gigabit Fiber Ethernet Switch Module	32R1888
Nortel Layer 2/3 10 Gb Uplink Ethernet Switch Module	32R1783
Nortel Layer 2/3 Copper Gigabit Ethernet Switch Module	32R1860
Nortel Layer 2/3 Fiber Gigabit Ethernet Switch Module	32R1861
Nortel Layer 2-7 Gigabit Ethernet Switch Module	32R1859
Nortel 10 Gb Ethernet Switch Module	39Y9267
NetXen 10 Gb Ethernet Expansion Card	39Y9271
Gigabit Ethernet Expansion Card	73P9030
SFF Gigabit Ethernet Expansion Card	39R8624
Server Connectivity Module	39Y9324
Myrinet Cluster Expansion Card	73P6000
Copper Pass-thru Module	39Y9320

BladeCenter options	Part number
Optical Pass-thru Module	39Y9316
Optical Pass-thru Module SC Cable	39Y9171
Optical Pass-thru Module LC Cable	39Y9172
Fibre Channel Switches	
Brocade 20-port 4 Gb SAN Switch Module	32R1812
Brocade 10-port 4 Gb SAN Switch Module	32R1813
Brocade 10-port 4 Gb SAN Switch upgrade	32R1822
McDATA 10-Port 4 Gb FC Switch Module	32R1905
McDATA 20-Port 4 Gb FC Switch Module	32R1833
QLogic 10-Port 4 Gb FC Switch Module	32R1904
QLogic 20-Port 4 Gb FC Switch Module	26R0881
QLogic/McDATA 10-Port Switch Upgrade	32R1912
QLogic 4 Gb Standard FC Expansion Card	26R0884
QLogic 4 Gb SFF FC Expansion Card	26R0890
SFF Fibre Channel Expansion Card (2 Gb)	26K4841
QLogic iSCSI Expansion Card	32R1923

BladeCenter options	Part number
Cisco InfiniBand Switch Module	32R1900
Cisco HCA Expansion Card	32R1896
36 GB 10,000rpm SAS non-hot-swap hard disk drive	26K5776
73 GB 10,000rpm SAS non-hot-swap hard disk drive	26K5777
146 GB 10,000rpm SAS non-hot-swap hard disk drive	42D0421
73 GB 15,000rpm SAS non-hot-swap hard disk drive	43X0845
4 GB Modular Flash Drive	39R8697
IBM BladeCenter Concurrent KVM Feature Card	26K5939
PCI Expansion Unit II	25K8373
IBM BladeCenter Storage and I/O Expansion Blade	39R7563
36 GB 10,000rpm SAS hot-swap hard disk drive for SIO	39R7388
73 GB 10,000rpm SAS hot-swap hard disk drive for SIO	39R7389
146 GB 10,000rpm SAS hot-swap hard disk drive for SIO	43X0832
73 GB 15,000rpm SAS hot-swap hard disk drive for SIO	43X0853

BladeCenter chassis at a glance

	BladeCenter E	BladeCenter H	BladeCenter T	BladeCenter HT
Benefits	Maximum density and best energy efficiency	Blazing speed to run most demanding applications and simulations	Rugged servers to run under demanding conditions	High performance and durability–the ultimate combination
Customer needs	Infrastructure consolidation for space and power-constrained data centers	Financial services, research labs, academia, digital media	Industrial, military, telco and others operating in environmentally stressed locations	Telco, military, healthcare, government, needing long life, long-term continuity
Rack form factor	7U	9U	8U	12U
Blade bays	14	14	8	12
Standard media	DVD-ROM, floppy	DVD-ROM	DVD-ROM, floppy	USB externally attached
Number of switch fabrics	Up to 4	Up to 4 legacy, up to 4 high speed and up to 4 bridge modules	Up to 4	Up to 4 legacy, up to 4 high speed and up to 2 bridge modules
Power supply module	2000W AC	2900W AC	1300W AC or 1300W DC	3160W AC or 3160W DC
Thermal design	Two hot-swap blowers	Two hot-swap blowers plus up to 12 hot-swap fans	Four hot-swap blowers	Four hot-swap blowers plus up to 12 hot-swap fans
Systems management controller	Up to two Advanced Management Modules	Up to two Advanced Management Modules	Up to two BCT Advanced Management Modules	Up to two Advanced Management Modules
NEBS-/ETSI-characteristics	No	No	Yes	Yes
4X InfiniBand or 10 Gb Ethernet capability (internal)	No	Yes	No	Yes
External I/O ports	KVM, Ethernet, USB, Serial			
Systems management software	IBM Director with systems management and trial deployment tools			
IBM 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[2]	3-year customer replaceable unit and onsite limited warranty			

BladeCenter servers and workstations

The family of IBM blade servers is designed to support a wide variety of applications that customers demand in today's business and government settings. Together, these blade servers are ideal for a range of applications including collaboration, Citrix, Linux® clusters, compute-centric applications, commerce transactions, databases, ERP/CRM applications and next-generation network applications.

BladeCenter offers you a choice of server blades that are compatible with the various BladeCenter chassis. The IBM BladeCenter HS21 and HS21 XM have up to two high-performance dual-core or quad-core Intel® Xeon® Processors. Other popular server choices include scalable AMD Opteron LS21 and LS41 server blade solutions that allow you to expand from 2-socket to 4-socket and back as their requirements change—providing on demand flexibility. There are also the IBM BladeCenter JS20 and JS21 IBM PowerPC® 970 processor-based blade servers.

With the arrival of the IBM BladeCenter HC10, your BladeCenter choices continue to expand. This workstation blade is designed to support high-performance workstation applications as part of the server-based computing concept and is ideal for applications such as CAD engineering design, trading floor solutions, Geographic Information Systems (GIS) and hospital information systems.

At a glance	IBM BladeCenter HS21	IBM BladeCenter HS21 extended memory (XM)
Processor	Dual-Core Intel Xeon up to 3.0 GHz and up to 1333 MHz front-side bus or Quad-Core Intel Xeon X5355 up to 2.66 GHz and up to 1333 MHz front-side bus	Dual-Core Intel Xeon up to 3.0 GHz and up to 1333 Hz front-side bus or Quad-Core Intel Xeon E5345 up to 2.33 GHz and up to 1333 MHz front-side bus
Number of processors (std/max)	1/2	
Cache (max)	4 MB L2 shared (dual-core) or 2x4 MB L2 (quad-core)	4 MB L2 shared (dual-core) or 2x4 MB L2 (quad-core)
Front-side bus	Up to 1333 MHz	Up to 1333 MHz
Memory[3]	Up to 16 GB Fully Buffered DIMMs (internal)	Up to 32 GB Fully Buffered DIMMs (internal)
Internal hard disk drives	Up to two Small Form Factor (2.5") 10,000rpm SAS HDDs installed on each blade (plus support for up to 3 hot-swap SAS drives with optional Storage and I/O blade)	One NHS SAS HDD and one 4 GB Modular Flash Drive on each blade (plus support for up to 3 hot-swap SAS drives with optional Storage and I/O blade)
Maximum internal storage[3, 4]	734 GB[6] with optional Storage and I/O blade	586 GB with optional Storage and I/O blade
RAID support	Integrated RAID-0 or -1 standard on blade server, integrated RAID-1E or RAID-5 optional with Storage and I/O blade	Integrated RAID-1E or RAID-5 optional with Storage and I/O blade

At a glance	IBM BladeCenter HS21	IBM BladeCenter HS21 extended memory (XM)
Network	Dual Gigabit Ethernet (TOE-enabled)	Dual Gigabit Ethernet (TOE-enabled)
I/O upgrade	1 PCI-X expansion card connection (traditional) and 1 PCI-Express (high speed)	1 PCI-X expansion card connection (traditional) and 1 PCI-Express (high speed)
Systems management hardware	Integrated systems management processor	
Standards	NEBS-3/ETSI characteristics	NEBS/ETSI characteristics

At a glance	AMD Opteron LS21 for IBM BladeCenter	AMD Opteron LS20 for IBM BladeCenter
Processor[5]	AMD Opteron Model 2210HE, 2212, 2212HE, 2216HE and 2218 and 2220	AMD Opteron Model 250, 252, 254, 270 and 275
Number of processors (std/max)	1/2	
Cache (max)	1 MB L2 per processor core	
Memory[3]	Up to 32 GB DDR II VLP memory	Up to 16 GB DDR VLP memory
Internal hard disk drives	One SAS HDD	Up to two Ultra320 SCSI HDDs
Maximum internal storage[3, 4]	146.8 GB[6] internally; up to 587.2 GB[6] with Storage and I/O Expansion blade installed	146.8 GB
Network	Dual Gigabit Ethernet controllers (TOE-enabled)	
I/O upgrade	1 PCI-X expansion connector (traditional) and 1 PCI-Express expansion connector (high speed)	1 expansion card connection
Systems management hardware	Integrated systems management processor	
Standards	NEBS-3/ETSI characteristics	NEBS/ETSI characteristics

For more information

World Wide Web

U.S.	**ibm.com**/systems/bladecenter
Canada	**ibm.com**/systems/ca/en/bladecenter

AMD Opteron LS41 for IBM BladeCenter	
Processor[5]	AMD Opteron Model 8212, 8212HE, 8214HE, 8216HE, 8218, 8218HE and 8220
Number of processors (std/max)	2/4
Cache (max)	1 MB L2 per processor core
Memory[3]	Up to 64 GB DDR II VLP memory
Internal hard disk drives	2 SAS HDDs
Maximum internal storage[3, 4]	293.6 GB[6] internally; up to 734 GB[6] with Storage and I/O blade installed
Network	4 integrated Gigabit Ethernet controllers (TOE-enabled)
I/O upgrade	2 PCI-X expansion connectors and 1 PCI-Express expansion connector
Systems management hardware	Integrated systems management processor
Standards	NEBS-3/ETSI characteristics

IBM BladeCenter HC10 at a glance	
Processor[5]	Intel Core™ 2 Duo up to 2.66 GHz
Number of processors	1
Level 2 cache	Up to 4 MB
Front-side bus	1066 MHz
Memory[3]	Up to 8 GB DDR II (Non ECC)
Internal hard disk drives	One 60 GB 5200rpm SATA HDD
Graphics	NVIDIA FX1600M Advanced 3D Graphics and NVIDIA NVS120M Professional 2D Graphics
Network	Single Gigabit Ethernet (TOE-enabled)
I/O upgrade	N/A
Systems management hardware	Integrated systems management processor
Operating Systems	Microsoft® Windows Vista™ Business Blade PC Edition preloaded, Microsoft XP Professional, Microsoft XP Professional x64 edition supported

IBM BladeCenter JS21 at a glance	
Processor[5]	PowerPC 970MP up to 2.7 GHz (64-bit)
Number of processors	Up to 2 single- or dual-core
Level 2 cache	1 MB per core
Memory bus	1.1 GHz
Memory[3]	Up to 16 GB DDR II SDRAM per blade
Internal hard disk drives	Up to two 73.4 GB 2.5" SAS
Maximum internal storage[3,4]	293.6 GB[6]
Network	2 integrated Gigabit Ethernet controllers
I/O upgrade	Integrated PCI-Express connector for high-speed daughter cards
Systems management hardware	Integrated system management processor
Standards	NEBS-3/ETSI characteristics

[1] Options support varies by server and chassis platform. Based on IBM internal testing.

[2] IBM hardware products are made from new parts, or new and serviceable used parts. Regardless, our warranty terms apply. For a copy of applicable product warranties, write to: Warranty Information, P.O. Box 12195, RTP, NC 27709, Attn: Dept. JDJA/B203. IBM makes no representation or warranty regarding third-party products or services including those designated as ServerProven® or ClusterProven®.

[3] 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.

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

[5] Some machines are designed with a power management capability to provide customers with the maximum uptime possible for their systems. In extended thermal conditions, rather than shut down completely, or fail, these machines automatically reduce the frequency of the processor to maintain acceptable thermal levels.

[6] Supported with the availability of the 146.8 GB hard disk drive.

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