



IBM BladeCenter HS12 blade server offers performance efficiency with powerful, dual-core processor performance

Description2
Product positioning7



At a glance

BladeCenter HS12 blade servers support the economics of application server deployment with power, scalability, control, and serviceability.

These new blade server models include:

- Powerful, high-performance 3.0 GHz/1333 MHz dual-core Intel processor
- 3.0 GHz dual-core processor features 6 MB L2
- Standard models with high-speed 2 GB (2 x 1 GB DIMMs) PC2-5300 VLP 667 MHz high-performance double data rate (DDR2) ECC memory; maximum system memory 24 GB²
- Dual Gigabit Ethernet connections
- Support for Ethernet or Fibre Channel expansion cards
- Integrated systems management processor
- Support for up to two hot-swap SAS/solid state drives, and RAID 0 and 1 support with RAID card

Overview

BladeCenter® HS12 blade servers, coupled with the BladeCenter chassis, deliver advanced application serving with performance, density, and scalability ideal for enterprise environments.

Features, functions, support, and services at your command include:

- Powerful dual-core 3.0 GHz/1333 MHz/6 MB L2 cache E3113 Intel® processor¹
- Dual Gigabit Ethernet connections
- Up to 24 GB of high-speed memory with ECC DDR2 RDIMMs (six DIMM slots x 4 GB DIMM) very low profile (VLP) memory
- Up to two hot-swap SAS SFF HDDs (up to 292 GB)/solid state drives (up to 62.8 GB) with RAID 0 and 1 via a RAID card
- Optional IBM BladeCenter Storage and I/O Expansion Blade with two additional I/O expansion slots
- Advanced high-availability and systems management features
- Service and support capabilities for business requirements
 - IBM Director and Remote Deployment Manager™
 - ServerProven® compatibility testing and Web support
 - Warranty: Three years, customer replaceable unit (CRU) and on-site service³, limited warranty⁴; optional warranty service

upgrades available on the 8028 models

These features make BladeCenter HS12 models an attractive, economical approach to the deployment of large numbers of powerful servers that effectively use space and power resources.

- 1 GHz and MHz denote the internal and/or external clock speed of the microprocessor only, not application performance. Many factors affect application performance.
- 2 Using 4 GB DIMMs.
- 3 IBM sends a technician after attempting to diagnose and resolve the problem remotely.
- 4 For information on the IBM Statement of Limited Warranty, contact your IBM representative or reseller. Copies are available upon request.

Key prerequisites

- BladeCenter chassis
- Monitor, keyboard, and mouse for setup
- Network switch module
- Boot device, such as on-board HDD or network storage device
- Management module with latest level firmware
- Rack with appropriate PDUs and main power distribution

Planned availability date

BladeCenter HS12 Blade SB model: May 30, 2008

Description

BladeCenter HS12

High-performance, blade-server subsystems: The BladeCenter HS12 blade servers are high-throughput, uniprocessor blade servers

High-speed PC2-5300 667 MHz high-performance double data rate (DDR2) ECC memory is synchronized to the processor-to-memory subsystem performance with current processors.

The BladeCenter HS12 uses the Intel San Clemente +ICH9 system chipset that includes:

- Memory and I/O Controller (MCH) (North Bridge)
- ICH9 (South Bridge)

The MCH includes:

- Integrated high-performance main memory subsystem
- Integrated PCI Express interface, providing connectivity to GigArray connector and LSI 1064E SAS
- High throughput between processors and main memory

The ICH9 includes:

- USB interface
- Local on-blade service processor interface

- PCI bus interface to the ATI ES1000 (RN50) video controller
- Systems management bus, supporting Philips I2C two-wire protocol interface
- Low-power controller interface for POST/BIOS EEPROM
- Dual Gigabit Ethernet connections

Standard BladeCenter HS12 configuration

CPU Information by model

Model	Intel CPU Name	CPU Speed	CPU Power	FSB Speed	CPU Cache
802827x	E3113	3.0 GHz	65W	1333MHz	6MB

Model configurations

Model	Intel CPU Name	CPUs	Standard Memory	DIMM Slots	HDDs	Blade Width	Chassis Supported
802827x	E3113	1	2x 1 GB	6	Open	30mm	

Note: Chassis supported: BC E (8677), BC H (8852), BC S (8886). Telco chassis support: BC T (8720/8730) and BC HT (8740/8750)

Additional features

- BladeCenter HS12 system board contains six DIMM connectors.
- Each DIMM connector supports 512 MB, 1 GB, 2 GB, or 4 GB DIMM options:
 - Up to 24 GB of system memory is supported with six DIMM connectors.
 - Memory is two-way interleaved (recommend to install in matched pairs)
 - Memory sizes can be mixed in matched pairs.
 - Chipkill™ function is supported.
- Up to two hot-swap SAS HDDs (146 GB each)/ solid state drives (up to two hot-swap (up to 62.8 GB)
- Two full-duplex, dual Gigabit Ethernet PCI connections are included.

BladeCenter HS12 blade servers are designed for high throughput from processor to memory, and to bus I/O.

These features make it an excellent choice for space- and power-constrained environments used for:

- Web caching
- Collaboration
- Terminal serving
- Dynamic Web serving
- Firewall
- Telecommunications
- Active directory services
- Scientific and technical computing
- Linux™ clustering
- Virtualization

High-availability and serviceability features

- Hot-swap blades enable easy access to each blade server
- Management module interfaces with each blade server for single systems management control

The BladeCenter HS12 blade servers deliver reliability and serviceability.

Features include:

- High-performance ECC memory, combined with an integrated ECC memory controller, to help correct soft and hard single-bit memory errors, while reducing disruption of service to LAN clients.
- Chipkill memory correction for up to four bits per DIMM to help keep your blade server up and running.
- Memory hardware scrubbing, designed to correct many soft memory errors automatically without software intervention.
- ECC L2 cache processors to help improve data reliability and reduce downtime.
- PFA on SAS HDD options, memory, and processors to help alert the system administrator of an imminent component failure.
- Support for dual Gigabit Ethernet connections
 - PXE 2.0 Boot Agent
 - Wake on LAN®
- Integrated management processor supports diagnostic, reset, POST, and auto-recovery functions; also monitors temperature and voltage. Alerts are generated when certain thresholds are exceeded (refer to the **Limitations** section for restrictions).

BladeCenter storage and I/O expansion option

The BSE-3 blade (SIO) is an option attaching via the PCI Express (PCI-E) bus to selected BladeCenter processor blades, including the HS12. When installed, this option will add one blade slot width to the width of the host processor blade it is attached to. The SIO option consists of a RAID-based storage subsystem, two I/O expansion slots for BladeCenter PCI-X adapter options, and a PCI-E unique connector to enable the installation of a High-Speed I/O Expansion Card adapter or a PCI Expansion Unit option (39R7563).

The SIO storage subsystem is a self-contained intelligent RAID solution, consisting of an I/O Processor (IOP), a cache memory, or an optional battery-backed data cache, and support for up to two SFF hot-swap Serial Attached SCSI (SAS) hard drives. The RAID subsystem is capable of annexing the SAS drives on the host blade resulting in all local system drives controlled by a single disk controller.

To accommodate this feature, the BladeCenter PCI-E option interface connector is defined with two SAS links, which will be connected to the secondary ports of the SAS drives on the processor blade. Both form factors of BladeCenter PCI-X adapter options (large and small) will be supported; however, the PCI-E connector on the topside of the SIO Blade will allow another BladeCenter PCI-E option to be attached, such as a high-speed I/O expansion card or a PCI Expansion Unit (BPE3 option 43W4391). Either two PCI-X adapter options (in any combination of small or large form factor) or one PCI-X adapter (large or small) and one HSDC can be supported. However, if the SIO blade is attached to an BladeCenter I/O Expansion Blade, then **only** an HSDC is supported on the SIO.

Features of the BSE-3 blade include:

RAID support: The SIO blade provides RAID levels 0 and 1, along with all supported RAID 0 and 1 sublevels for the drives in the SIO. Optional support (25R8064), which replaces the base RAID support, will add battery-backed data cache and support for RAID 5 and all supported RAID 5 sublevels.

Hard drives: BSE-3 blade delivers three bays for hot-swap, 2.5-inch SFF SAS hard drives.

- SAS interface will run at up to 3.0 Gbps, full duplex.
- Drives are mounted on hot-swap trays, and will fit side-by-side across the front of the option

blade.

- All three drive bays must be populated with either a drive or with a blank tray insert.
- Drives include 73 and 146 GB. These drives can be mixed or matched as needed.
- Only drives and tray inserts released for BSE-3 blade may be used in this option.

I/O expansion card option support: BSE-3 blade supports the addition of I/O expansion cards, PCI-E.

- PCI-E High-Speed I/O Expansion Card (HSDC)
 - The HSDC options will be designed to use PCI-E link B.
 - PCI-E attached Expansion Card (HSDC) electrically interfaces directly to the host blade that the SIO is attached to.
 - The power budget for the HSDC option is 25-watts maximum.
 - HSDC options supported include the Cisco 4xIB Host Channel Adapter Expansion Card (32R1760).
- BSE-3 blade will support a maximum of any two I/O expansion card options.

Systems management

IBM Director

BladeCenter HS12 blade servers include IBM Director. This powerful, highly integrated systems management software solution is built on industry standards and designed for ease of use.

The solution exploits your existing enterprise or workgroup management environments and uses rich security features to access and manage physically dispersed IT assets more efficiently over the Internet.

It can help reduce costs through potentially:

- Reduced downtime
- Increased productivity of IT personnel and end users
- Reduced service and support costs

IT administrators can view the hardware configuration of remote systems in detail and monitor the usage and performance of critical components, such as processors, HDDs, and memory. IBM Director can be extended with optional add-ons for advanced server management, deployment, and software distribution. All of these tools smoothly integrate into IBM Director for a consistent look-and-feel and single point of management, while taking advantage of the IBM Director monitoring, scheduling, alerting, event management, and group management capabilities.

Optional add-ons (available for an additional charge)

- Capacity Manager is an optional IBM Director extension that helps optimize server performance and availability. It monitors the utilization of the server resources, helps identify existing or future bottlenecks, and makes recommendations for improvement. Its predictive, proactive capabilities help reduce downtime costs, and its built-in, intelligent features optimize server throughput, utilization, and performance, helping maximize server investment.
- Remote Deployment Manager (RDM) is an effective tool for the initial deployment phase of a system's life cycle with its ability to remotely send out complete software images for installation in a reboot environment.
- Software Distribution Premium Edition enables you to create and distribute software packages to systems on your network, helping save travel and labor costs.

IBM Director also enables integration into leading workgroup and enterprise systems management environments via its Upward Integration Modules. This enables the advanced management capabilities built into System x™ servers to be accessed from:

- IBM Tivoli® Enterprise and IBM Tivoli NetView®

- Computer Associates CA Unscented T.G.
- HP Overview
- Microsoft® SMS
- BMC Patrol
- NetIQ

For more information about IBM Director, refer to Hardware Announcement [ZG05-0572](#), dated September 27, 2005.

IBM SMASH Proxy

With the SMASH Proxy, IBM continues to deliver innovative solutions based on industry standards. The SMASH Proxy software provides management of the BladeCenter through a command line protocol (CLP). This offering simplifies the management of BladeCenter, making it easier to automate datacenter operations in a standardized way. The SMASH Proxy is based on the Distributed Management Task Force (DMTF) draft specification for Systems Management Architecture for Server Hardware (SMASH) and supports both the BladeCenter Management Module as well as the Advanced Management Module.

The SMASH Proxy provides direct access to BladeCenter management functions as an alternative to using the existing command line or Web-based user interfaces. The SMASH Proxy CLP allows you to view and manage the components by issuing commands that display the management objects, and enables you to control the power and configuration of the MM and other components in the BladeCenter unit. You can also access the text-console command prompt on each blade server through a serial over LAN (SOL) connection. Users can access the SMASH CLP interface by using a standard Telnet connection or a Secure Shell (SSH) connection, making it easy to fit into existing environments.

The SMASH Proxy is available to BladeCenter customers at no additional charge as a software download from IBM.com.

Remote Deployment Manager (RDM) for BladeCenter

BladeCenter can use RDM, which enables the configuration and deployment of BladeCenter HS21 blade servers within a single BladeCenter. This highly flexible and powerful tool enables you to deploy system images that include the operating system and configuration detail to one or more blade servers at one time from an IBM Director console on the network.

With RDM you can:

- Add instructions for loading firmware or specific operating systems
- Deploy multiple blade servers in a BladeCenter at one time
- Store various images on the RDM server for target server installations
- Restore an initial or incremental disk image locally with a few keystrokes
- Deploy images using drop and drag

BladeCenter management module

BladeCenter HS12 is supported on both the IBM BladeCenter Management Module and the newer Advanced Management Module.

Use the management module in the BladeCenter to manage the BladeCenter and obtain vital system information about your installed BladeCenter HS12 servers. The management module communicates with the blade servers within the BladeCenter via an RS-485 intermanagement network. This network relays vital information about individual blade servers, such as:

- Voltages
- Power supply status
- Memory status
- Fan status
- HDD status

- Error and status log

You receive status and control all blade servers within the BladeCenter. You can shut down and restart any blade server from anywhere on the network to help save time and costs associated with travel to the actual installation.

These manageability functions are provided through a self-contained Web page, creating an easy and familiar way for administrators to monitor, control, and maintain high availability.

Accessibility by people with disabilities

A U.S. Section 508 Voluntary Product Accessibility Template (VPAT) containing details on accessibility compliance can be requested at

http://www-3.ibm.com/able/product_accessibility/index.html

Product positioning

The BladeCenter HS12 offerings are positioned as high-density BladeCenter servers. They represent a new approach to the deployment of application servers where uniprocessor processing, high-availability design, systems management, and easy setup features are combined in an extremely dense package.

The BladeCenter and BladeCenter HS12 blades can require less space and power resources than traditional rack offerings because of their high-density design, reduced power requirements, and single environment systems management. This is an extremely important consideration for:

- SMB enterprises
- Application service providers
- Retail businesses

They are an excellent fit for applications such as:

- Branch offices and departmental servers
- General business applications including file and print
- Application running currently on uni systems

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