



IBM BladeCenter HS23E is an all-purpose blade with flexible configuration options for performance for value

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At a glance

The IBM® BladeCenter® HS23E is a versatile blade server that offers outstanding performance for virtualization with new levels of memory capacity, CPU performance, and highly scalable I/O.

Overview

The IBM BladeCenter HS23E offers performance for value with energy efficiency and density in an all-purpose server that can run a wide variety of workloads.

All purpose:

- A feature-rich design enables the HS23E to run a broad range of workloads, including infrastructure, retail, and collaborative.
- Next-generation Intel Xeon™ processor E5-2400 product family.
- High memory capacity with 12 VLP memory DIMM slots supporting 1600 MHz memory and up to 192 GB of DDR3 memory.
- Support for running two DIMMs per memory channel at 1600 MHz.
- Integrated Dual port 1 GbE allows for scalable I/O solutions.
- An extensive choice of processors, memory, internal storage, and I/O options allows flexible configurations.

IBM BladeCenter HS23E is supported in the BladeCenter H chassis (#8852), the BladeCenter HT chassis (#8740, #8750), the BladeCenter E chassis (#8677), and the BladeCenter S chassis (#8886). Some configuration limitations apply; refer to the [Limitations](#) section.

Flexible:

- Two hot-swap storage bays support SAS and SATA (which includes solid-state) drives, enabling drives to be removed easily for quick replacement.
- An optional embedded hypervisor helps enable "instant virtualization."
- The Integrated Management Module provides remote supervision and cKVM functions as standard.
- Light path diagnostics and Predictive Failure Analysis help enable quick serviceability and maintenance.

Energy efficient:

- Optional low-power processor, solid-state drives, and low-power memory DIMMs.
- Energy-efficient 1.35 volt memory DIMM support.
- Support for IBM Systems Director Active Energy Manager™ to help monitor and cap power consumption.
- Innovative component layout and blade design to help keep the blade up and running even under demanding conditions.
- Backwards unbounded compatibility with all BladeCenter chassis for density and investment protection.

ServeRAID H1135 Controller for IBM Flex System and BladeCenter

The ServeRAID H1135 Controller for IBM Flex System and BladeCenter offers a low-cost solution to store critical RAID configuration information in multiple places. With the RAID hardware, the IBM ServeRAID software manager also provides small installations to large enterprise storage networks flexibility as well as protection for their critical data. IBM ServeRAID Controller provides a new level of reliability, availability, and performance to businesses that are facing storage challenges driven by unprecedented data growth.

Key prerequisites

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

Planned availability date

June 4, 2012

Description

BladeCenter HS23E

High-performance, blade server subsystem



The IBM BladeCenter HS23E blade server is high-throughput, two-way, SMP-capable, and highly scalable when you add memory and other options.

The BladeCenter HS23E can have up to two Intel Xeon processors. The processor board has the following major components:

- Two Socket B2 (LGA1356) sockets for two Intel Xeon E5-2400 processors (two processors may be shipped standard).
- Twelve DDR3 VLP DIMM memory sockets.
- One Broadcom BCM5718 10/100/1000BASE-T Ethernet LAN controller.
- On-board Software RAID solution using Intel C600 Series Chipset supporting SATA hard drives in RAID 0/1. SAS hard drives and solid-state drives supported by optional CIOv RAID card.
- Two SAS/SATA connectors for two 2.5-inch SAS or SATA storage drives.
- One Renesas SH7757 Super Baseboard Management Controller with Integrated VGA Controller.
- Two VHDM midplane connectors.
- One CFFh expansion connector.
- One CIOv daughter card connector.
- One TPM 1.2 chip.
- One internal USB connector for bootable flash key.

The HS23E server memory is contiguous and is shared by both processors when both processors are installed. It is Error Correction Code (ECC) protected and supports up to 192 GB using 2 GB, 4 GB, 8 GB, or 16 GB VLP DDR3 DIMMs on 12 DIMM connectors. The processors have integrated DDR3 memory controllers and interface directly with their six associated DDR3 DIMMs. For each CPU, a minimum of one DIMM must be installed. Additional DIMMs may be installed one at a time as needed.

The HS23E supports the Intel Xeon processor E5-2400 product family. For these processors, memory speed is a specific attribute of the processor. The system memory speed (that is, the speed at which the memory is actually running) depends on several factors including:

- CPU capability
- DIMM speed

Actual memory speed will be the lowest of the two.

The HS23E supports memory mirroring. Chipkill is supported in Independent mode when x4-based DIMMs are installed.

Additional features

- The BladeCenter HS23E system board contains 12 DIMM connectors (30 mm blade).
 - Chipkill is supported in Independent mode when x4-based DIMMs are installed.
- One or two hot-swap SATA hard drives are supported in the base blade. One or two SAS hard drives, SATA hard drives or solid-state drives are supported with CIOv RAID card.
- One Broadcom BCM5718 10/100/1000BASE-T Ethernet LAN controller

BladeCenter HS23E blade servers are designed for high throughput from processor to memory, and to bus I/O.

These features, combined with Symmetric Multi-Processing (SMP) capability and blade-thin density, make the HS23E an excellent choice for space- and power-constrained environments used for:

- Infrastructure applications
- Virtualization
- General enterprise applications

High-availability and serviceability features

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

The BladeCenter HS23E 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, 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 and memory to help alert the system administrator of imminent component failures.
- Support for Ethernet connections
 - Failover, adapter fault tolerance
 - PXE 2.0 Boot Agent
 - Wake on LAN
 - Load balancing or teaming
- Integrated management processor that supports diagnostic, reset, POST, and auto-recovery functions, and monitors temperature and voltage. Alerts are generated when certain thresholds are exceeded (refer to the [Limitations](#) section for restrictions).

Optional add-ons (available for an additional charge)

- Active Energy Manager (AEM) is positioned as a key component of the energy-efficient technologies and services of IBM, which are part of the IBM Project Green initiative that began May 2007. AEM measures, monitors, and manages

the energy management components built into IBM servers and provides a cross-platform management solution. AEM also retrieves temperature and power information through the use of wireless sensors and collects alerts, events, and data from certain facility providers related to power and cooling equipment.

- BladeCenter Open Fabric Manager offers to help you manage growth and complexity by making it easy to manage I/O and network interconnects for up to 100 BladeCenter chassis - up to 1,400 blade servers. BladeCenter Open Fabric Manager helps make blade deployment easy: once installed, the utility is resident in the Advanced Management Module (AMM) so you can preconfigure LAN and SAN connections. Thus, I/O connections are made automatically when you plug in a blade. And no special tools or training is required; just manage with the easy-to-use Graphical User Interface (GUI).

IBM ToolsCenter

The IBM System x® ToolsCenter is a collection of system management tools to help manage your HS23E blade servers and BladeCenter environment. ToolsCenter helps make managing your server environment less complicated, more productive, and more cost-effective.

These tools provide support for:

- Deployment

IBM ServerGuide is a tool that simplifies the process of installing and configuring IBM System x and BladeCenter servers. ServerGuide automates installation of Microsoft™ Windows™ server operating systems, device drivers, and other system components, with minimal user intervention.

The ServerGuide Scripting Toolkit enables you to tailor and build custom hardware deployment solutions. It provides hardware configuration utilities and operating system (OS) installation examples for IBM System x and BladeCenter x86-based hardware. The ServerGuide Scripting Toolkit, Windows Edition enables you to create a bootable Windows Preinstallation Environment (Windows PE) 2.1 CD or DVD.

BladeCenter Start Now Advisor is a configuration tool that can help you quickly configure components of the BladeCenter chassis. It automatically updates the firmware for selected chassis components, and provides you with the option of saving your configuration. The Start Now Advisor guides you through the process of connecting your computer to the chassis, either over a network or through a direct attachment to the Ethernet port on the Advanced Management Module.

- Configuration

An Advanced Settings Utility (ASU) systems configuration utility provides a command line interface, unattended scripting capability, and support on multiple operating-system platforms.

Storage Configuration Manager (SCM) is a scalable and integrated storage management tool for both internal and external storage subsystems for IBM System x and BladeCenter . Storage Configuration Manager is an open-standards-based management tool that provides a uniform and rich user interface that is easy to use.

- Updates

The UpdateXpress System Packs (UXSPs) contain a bundle of online firmware and device driver updates for your server. UXSPs facilitate the downloading and installation of drivers and firmware for a given system and verify that you are working with a complete set of updates which have been tested together.

Bootable Media Creator pulls current updates for firmware and drivers from an IBM website and creates custom bootable media to CD, DVD, or USB key.

- Diagnostics

Dynamic System Analysis (DSA) collects and analyzes system information to aid in diagnosing system problems. DSA creates a merged log that helps provide

easy identification of cause-and-effect relationships from different log sources in the system.

BladeCenter Advanced Management Module

The BladeCenter HS23E is supported on the Advanced Management Module.

Use the Advanced Management Module in the BladeCenter to manage the BladeCenter and obtain vital system information about your installed BladeCenter HS23E servers. The management module communicates with the blade servers within the BladeCenter using an RS-485 intermanagement network. This network relays vital information about individual blade servers, such as:

- Voltages
- Powersupply status
- Memory status
- Fan status
- HDD status
- Error and status log

You receive status and control of 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 to help administrators monitor, control, and maintain high availability.

BladeCenter HS23E model configurations

IBM BladeCenter HS23E

System SEO number	Processor	L2 cache	Memory
IBM BladeCenter HS23E			
8038-B1G	1 x 1.8 GHz Intel Xeon E5-2403	10 MB 4c	1x2 GB 80w
8038-B3G	1 x 2.2 GHz Intel Xeon E5-2407	10 MB 4c	3x4 GB 80w
8038-C2G	1 x 2.0 GHz Intel Xeon E5-2430	15 MB 6c	3x4 GB 95w
8038-C3G	1 x 2.4 GHz Intel Xeon E5-2440	15 MB 6c	3x4 GB 95w
8038-D1G	1 x 2.1 GHz Intel Xeon E5-2450	20 MB 8c	3x8 GB 95w
8038-D3G	1 x 2.0 GHz Intel Xeon E5-2470	20 MB 8c	3x8 GB 95w
8038-F1G	1 x 2.6 GHz Intel Xeon 1403	5 MB 2c	3x4 GB 80w
8038-F2G	1 x 2.8 GHz Intel Xeon 1407	5 MB 2c	1x2 GB 80w

Accessibility by people with disabilities

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

Product positioning

The BladeCenter HS23E offerings are positioned as high-density, compute-oriented blade servers offering lower-power-usage Intel Xeon processors.

The BladeCenter HS23E 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:

- Large enterprises
- Application service providers
- Scientific and technical computing businesses

Product number

The Single Entity Offerings (SEO)

Description	SEO Number
IBM BladeCenter HS23E	8038B1G 8038B3G 8038C2G 8038C3G 8038D1G 8038D3G 8038F1G 8038F2G

Options

Options Description	Part Number
Intel Xeon Processor E5-2403 4C 1.8GHZ 10MB Cache 1066MHZ 80W	90Y5292
Intel Xeon Processor E5-2407 4C 2.2GHZ 10MB Cache 1066MHZ 80W	90Y5291
Intel Xeon Processor E5-2420 6C 1.9GHZ 15MB Cache 1333MHZ 95W	90Y5290
Intel Xeon Processor E5-2430 6C 2.2GHZ 15MB Cache 1333MHZ 95W	90Y5288
Intel Xeon Processor E5-2430L 6C 2.0GHZ 15MB Cache 1333MHZ 60W	90Y5294
Intel Xeon Processor E5-2440 6C 2.4GHZ 15MB Cache 1333MHZ 95W	90Y5287
Intel Xeon Processor E5-2450 8C 2.1GHZ 20MB Cache 1600MHZ 95W	90Y5286
Intel Xeon Processor E5-2450L 8C 1.8GHZ 20MB Cache 1600MHZ 70W	90Y5293
Intel Xeon Processor E5-2470 8C 2.3GHZ 20MB Cache 1600MHZ 95W	90Y5284
Intel Xeon Processor E5-2418L 4C 2.0GHZ 10MB Cache 1333MHZ 50W	94Y6288
Intel Xeon Processor E5-2428L 6C 1.8GHZ 15MB Cache 1333MHZ 60W	94Y6289
Intel Xeon Processor E5-2448L 8C 1.8GHZ 20MB Cache 1600MHZ 70W	94Y6290
ServerRAID H1135 Controller for IBM Flex System and BladeCenter	90Y4750

Pseudo Options

Description	Part Number		
Intel Pentium™ Processor 1403 2C 2.6GHZ 5MB cache 1066MHZ 80W	00D8704		
Intel Pentium Processor 1407 2C 2.8GHZ 5MB cache 1066MHZ 80W	00D8705		
Intel Xeon Processor E5-2403 4C 1.8GHZ 10MB Cache 1066MHZ 80W	00D8701		
Intel Xeon Processor E5-2407 4C 2.2GHZ 10MB Cache 1066MHZ 80W	00D8700		
Intel Xeon Processor E5-2420 6C 1.9GHZ 15MB Cache 1333MHZ 95W	00D8699		
Intel Xeon Processor E5-2430 6C 2.2GHZ 15MB Cache 1333MHZ 95W	00D8698		
Intel Xeon Processor E5-2430L 6C 2.0GHZ 15MB Cache 1333MHZ 60W	00D8703		
Intel Xeon Processor E5-2440 6C 2.4GHZ 15MB Cache 1333MHZ 95W	00D8697		
Intel Xeon Processor E5-2450 8C 2.1GHZ 20MB Cache 1600MHZ 95W	00D8696		
Intel Xeon Processor E5-2450L 8C 1.8GHZ 20MB Cache 1600MHZ 70W	00D8702		
Intel Xeon Processor E5-2470 8C 2.3GHZ 20MB Cache 1600MHZ 95W	00D8695		
Intel Xeon Processor E5-2418L 4C 2.0GHZ 10MB Cache 1333MHZ 50W	00D8708		
Intel Xeon Processor E5-2428L 6C 1.8GHZ 15MB Cache 1333MHZ 60W	00D8706		
Intel Xeon Processor E5-2448L 8C 1.8GHZ 20MB Cache 1600MHZ 70W	00D8707		
Intel Pentium Processor E5-1410 4C 2.8GHZ 5MB Cache 1333MHZ 80W	00D8759		
Labels for HS23E Blade Base	00D8709		
Label GBM	00D8710		
Server RAID C105 for IBM BladeCenter	90Y4421		
System Documentation and Software-UK English	00D8720		
System Documentation and Software-French	00D8721		
System Documentation and Software-Spanish	00D8722		
System Documentation and Software-German	00D8723		
System Documentation and Software-Italian	00D8724		
MTM Starting Point Models			
Description	Machine	Model	Part number
BladeCenter HS23E	8038	FT1	8038FT1

Publications

Installation and User's Guide is shipped as softcopy on CD-ROM.

The publication *Installation and User's Guide*, in US English and translation versions, is available from

<http://www-304.ibm.com/systems/support/>

The IBM Systems Information Center provides you with a single information center where you can access product documentation for IBM systems hardware, operating systems, and server software. Through a consistent framework, you can efficiently find information and personalize your access. The IBM Systems Information Center is at

IBM Publications Center Portal

<http://www.ibm.com/shop/publications/order>

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Global Technology Services

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These services help you learn about, plan, install, manage, or optimize your IT infrastructure to be an on-demand business. They can help you integrate your high-speed networks, storage systems, application servers, wireless protocols, and an array of platforms, middleware, and communications software for IBM and many non-IBM offerings. IBM is your one-stop shop for IT support needs.

For details on available services, contact your IBM representative or visit

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For details on available IBM Business Continuity and Recovery Services, contact your IBM representative or visit

<http://www.ibm.com/services/continuity>

For details on education offerings related to specific products, visit

<http://www.ibm.com/services/learning/index.html>

Select your country, and then select the product as the category.

Technical information

Specified operating environment

BladeCenter HS23E

	8308-B1x
	8308-B1G
Processor	Intel xeon E5-2403
	4 core 80w
Int. speed	1.80 GHz
Max. mem. speed	1066 MHz
Interconnect speed	6.4 GT/s
Number standard	1
Maximum	2
L2 cache	10 MB
Memory (VLP ECC DDR3)	2 GB
DIMMs (Standard)	1 x 2 GB
DIMM sockets	12
Capacity	192 GB ¹
Video	SVGA
Memory	16 MB
Disk controller	SATA hard drive
	SAS hard drives and solid-state drives are supported with CIOV RAID card

Channels	2
Connector int.	2
Connector ext.	0 (Optional 2 With CIOv RAID card)
Storage drives	0
Connectors	2
Internal capacity	2 TB ²
Total storage drive bays	2
CFFh Expansion Slots	1
CIOv Expansion Slots	1
Management proc.	Standard
Ethernet controller	Dual 1Gb
FC card	Optional

8308-B3x
8308-B3G

Processor	Intel Xeon E5-2407
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	4 core 80w
Int. speed	2.20 GHz
Max. mem. speed	1066 MHz
Interconnect speed	6.4 GT/s
Number standard	1
Maximum	2
L2 cache	10 MB
Memory (VLP ECC DDR3)	12 GB
DIMMs (Standard)	3 x 4 GB
DIMM sockets	12
Capacity	192 GB ¹
Video	SVGA
Memory	16 MB
Disk controller	SATA hard drive
SAS hard drives and solid-state drives are supported with CIOv RAID card	

Channels	2
Connector int.	2
Connector ext.	0 (Optional 2 With CIOv RAID card)
Storage drives	0
Connectors	2
Internal capacity	2 TB ²
Total storage drive bays	2
CFFh Expansion Slots	1
Management proc.	Standard
CIOv Expansion Slots	1
Ethernet controller	Dual 1Gb
FC card	Optional

8308-C2x
8308-C2G

Processor	Intel Xeon E5-2430
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	6 core 95w
Int. speed	2.0 GHz
Max. mem. speed	1333 MHz
Interconnect speed	7.2 GT/s
Number standard	1
Maximum	2
L2 cache	15 MB
Memory (VLP ECC DDR3)	12 GB
DIMMs (Standard)	3 x 4 GB
DIMM sockets	12
Capacity	192 GB ¹
Video	SVGA
Memory	16 MB
Disk controller	SATA hard drive
SAS hard drives and solid-state drives are supported with CIOv RAID card	

Channels	2
Connector int.	2
Connector ext.	0 (Optional 2 With CIOv RAID card)
Storage drives	0
Connectors	2
Internal capacity	2 TB ²
Total storage drive bays	2

CFFh Expansion Slots	1
CIOv Expansion Slots	1
Management proc.	Standard
Ethernet controller	Dual 1Gb
FC card	Optional

8308-C3x
8308-C3G

Processor	Intel Xeon E5-2440
	6 core 95w
Int. speed	2.40 GHz
Max. mem. speed	1333 MHz
Interconnect speed	7.2 GT/s
Number standard	1
Maximum	2
L2 cache	15 MB
Memory (VLP ECC DDR3)	12 GB
DIMMs (Standard)	3 x 4 GB
DIMM sockets	12
Capacity	192 GB ¹
Video	SVGA
Memory	16 MB
Disk controller	SATA hard drive
	SAS hard drives and solid-state drives are supported with CIOv RAID card
Channels	2
Connector int.	2
Connector ext.	0 (Optional 2 with CIOv RAID card)
Storage drives	0
Connectors	2
Internal capacity	2 TB ²
Total storage drive bays	2
CFFh Expansion Slots	1
CIOv Expansion Slots	1
Management proc.	Standard
Ethernet controller	Dual 1Gb
FC card	Optional

8308-D1x
8308-D1G

Processor	Intel Xeon E5-2450
	8 core 95w
Int. speed	2.10 GHz
Max. mem. speed	1600 MHz
Interconnect speed	8.0 GT/s
Number standard	1
Maximum	2
L2 cache	20 MB
Memory (VLP ECC DDR3)	24 MB
DIMMs (Standard)	3 x 8 GB
DIMM sockets	12
Capacity	192 GB ¹
Video	SVGA
Memory	16 MB
Disk controller	SATA hard drive
	SAS hard drives and solid-state drives are supported with CIOv RAID card
Channels	2
Connector int.	2
Connector ext.	0 (Optional 2 with CIOv RAID card)
Storage drives	0
Connectors	2
Internal capacity	2 TB ²
Total storage drive bays	2
CFFh Expansion Slots	1
CIOv Expansion Slots	1
Management proc.	Standard
Ethernet controller	Dual 1Gb
FC card	Optional

8308-D3x
8308-D3G

Processor Intel Xeon E5-2470
8 core 95w
Int. speed 2.30 GHz
Max. mem. speed 1600 MHz
Interconnect speed 8.0 GT/s
Number standard 1
Maximum 2
L2 cache 20 MB
Memory (VLP ECC DDR3) 24 GB
DIMMs (Standard) 3 x 8 GB
DIMM sockets 12
Capacity 192 GB¹
Video SVGA
Memory 16 MB
Disk controller SATA hard drive
SAS hard drives and solid-state drives are supported with CIOV RAID card
Channels 2
Connector int. 2
Connector ext. 0 (Optional 2 with CIOV RAID card)
Storage drives 0
Connectors 2
Internal capacity 2 TB²
Total storage drive bays 2
CFFh Expansion Slots 1
CIOV Expansion Slots 1
Management proc. Standard
Ethernet controller Dual 1Gb
FC card Optional

8308-F1x
8308-F1G

Processor Intel™ Pentium 1403
2 core 80w
Int. speed 2.60 GHz
Max. mem. speed 1066 MHz
Interconnect speed 6.4 GT/s
Number standard 1
Maximum 1
L2 cache 5 MB
Memory (VLP ECC DDR3) 2 GB
DIMMs (Standard) 1 x 2 GB
DIMM sockets 6
Capacity 96 GB¹
Video SVGA
Memory 16 MB
Disk controller SATA hard drive
SAS hard drives and solid-state drives are supported with CIOV RAID card
Channels 2
Connector int. 2
Connector ext. 0 (Optional 2 with CIOV RAID card)
Storage drives 0
Connectors 2
Internal capacity 2 TB²
Total storage drive bays 2
CFFh Expansion Slots 1
CIOV Expansion Slots 1
Management proc. Standard
Ethernet controller Dual 1Gb
FC card Optional

8308-F2x
8308-F2G

Processor Intel Pentium 1407
2 core 80w
Int. speed 2.80 GHz

Max. mem. speed	1066 MHz
Interconnect speed	6.4 GT/s
Number standard	1
Maximum	1
L2 cache	5 MB
Memory (VLP ECC DDR3)	12 GB
DIMMs (Standard)	3 x 4 GB
DIMM sockets	6
Capacity	96 GB ¹
Video	SVGA
Memory	16 MB
Disk controller	SATA hard drive
SAS hard drives and solid-state drives are supported with CIOv RAID card	
Channels	2
Connector int.	2
Connector ext.	0 (Optional 2 with CIOv RAID card)
Storage drives	0
Connectors	2
Internal capacity	2 TB ²
Total storage drive bays	2
CFFh Expansion Slots	1
CIOv Expansion Slots	1
Management proc.	Standard
Ethernet controller	Dual 1Gb
FC card	Optional

¹Total system memory capacity is based on using 16 GB memory DIMMs.

²Capacities are based on installation of two 1 TB drives.

For latest information on supported HDD options, visit

<http://www.ibm.com/servers/eserver/serverproven/compat/us/>

Video subsystem

- Matrox video core
- Integrated on the blade

Supported HS23E video resolutions

Resolution	Maximum refresh rate supported	CRT support	CRT ISO	
			9241.3 Compliance	Flat panel support
640 x 480	85 Hz	Yes	Yes	Yes
800 x 600	85 Hz	Yes	Yes	Yes
1024 x 768	75 Hz	Yes	Yes	Yes

Note: For resolutions supported by different operating systems, refer to the operating system documentation.

Dimensions - BladeCenter HS23E

- Height: 24.5 cm (9.64 in)
- Depth: 44.6 cm (17.56 in)
- Width: 2.9 cm (1.14 in)
- Maximum weight: 4.63 Kg (10.2 lb)

Note: Above dimensions and weights refer to a single-wide HS23E. Addition of one or more Expansion Blades increases width and weight.

Electrical

- BladeCenter chassis: 200 to 240 (nominal) V ac; 50 Hz or 60 Hz
- BladeCenter HS23E: 12.2 (nominal) V dc

Standards

This system supports or complies with the following standards:

- Multiprocessor Specification (MPS) 1.4
- Hardware-enabled to meet the International Organization for Standardization (ISO) 9241, Part 3

Equipment approvals and safety

- Russia/GOST ME01, IEC-60950-1, GOST R 51318.22-99, GOST R 51318.24-99, GOST R 51317.3.2-2006, GOST R 51317.3.3-99,
- IEC 60950-1 (CB Certificate and CB Test Report)
- CE Mark (EN55022 Class A, EN60950-1, EN55024, EN61000-3-2, EN61000-3-3)
- CISPR 22, Class A

Operating environment

- ASHRAE class A2
- Temperature:
 - 10.0°C to 35.0°C (50°F to 95°F) at 0 to 914 m (0 to 3,000 ft)
 - 10.0°C to 32.0°C (50°F to 90°F) at 914 to 2,133 m (3,000 to 7,000 ft)
- Powered off: 10°C to 43°C (50°F to 109.4°F), maximum altitude: 2,133.6 m (7,000 ft.)
- Relative humidity: 8% to 80% (noncondensing)

Shipping environment

- Temperature: -40°C to 60°C (-40°F to 140°F)
- Relative humidity: 8% to 80%

Hardware requirements

For attended installation of an operating system, this server requires a compatible:

- Keyboard
- Mouse
- Display

Unattended or remote installation may be performed without requiring some or all of these components. Review your unattended software installation program information for specific hardware configuration requirements.

For service, the server requires a compatible:

- Keyboard
- Mouse
- Display

When having the unit serviced, plan to have these components attached to your server either directly or indirectly via a console switch.

Software requirements

Programming requirements

The following network operating systems have been tested for compatibility with the BladeCenter HS23E:

- Microsoft :
 - Windows Server 2008 R2 Service Pack 1

- Windows Server 2008, Datacenter x64 Edition Service Pack 2
- Windows Server 2008, Enterprise x64 Edition Service Pack 2
- Windows Server 2008 HPC Edition Service Pack 2
- Windows Server 2008, Standard x64 Edition Service Pack 2
- Windows Server 2008, Web x64 Edition Service Pack 2
- Linux™ :
 - Red Hat Enterprise Linux 6 Server x86 Edition - Update 2
 - Red Hat Enterprise Linux 6 Server x64 Edition - Update 2
 - Red Hat Enterprise Linux 5 Server x64 Edition - Update 7
 - Red Hat Enterprise Linux 5 Server with Xen x64 Edition - Update 7
 - SUSE LINUX Enterprise Server 11 for x86 Service Pack 2
 - SUSE LINUX Enterprise Server 11 for AMD64/EM64T Service Pack 2
 - SUSE LINUX Enterprise Server 11 with Xen for AMD64/EM64T Service Pack 2
- Other:
 - VMware ESXi 5.0 - (VMWare vSphere 5.0)
 - VMware ESX 4.1 - Update 2
 - VMware ESXi 4.1 - Update 2

For additional information, support, certification, and versions of network operating systems, access

<http://www.ibm.com/servers/eserver/serverproven/compat/us/>

Compatibility

For detailed information about IBM and non-IBM devices, adapters, software, and network operating systems supported with System x servers, visit

<http://www.ibm.com/servers/eserver/serverproven/compat/us/>

Contact your IBM representative or IBM Business Partner, or refer to the *IBM Sales Manual* for information on the compatibility of hardware and software for System x servers. The *Sales Manual* is updated periodically as new features and options are announced that support these servers.

Limitations

- The BladeCenter HS23E contains 12 DIMM sockets.
 - A maximum of 192 GB of system memory is supported by using a 16 GB DIMM of ECC DDR memory in each of the DIMM sockets.
 - A minimum of one DIMM per CPU must be installed; DIMMs may be added singly after that. DIMMs must be installed in matched pairs for Mirror Mode.

In BladeCenter E, not all Memory Option part numbers supported on HS23E are supported in all configurations. CPU throttling may occur within the BladeCenter E's ambient air temperature specification range if these limitations are not followed:

DIMMs:

- IBM Option (PN 90Y3221), 16GB (1x16GB, 4Rx4, 1.35V) PC3L-8500 CL7 ECC DDR3 1066MHz VLP RDIMM
- Not supported with two 95 W processors and two DIMMs per channel in BladeCenter E. Supported with one 95 W processor and two DIMMs per channel (up to six DIMMs attached to CPU1) or two 95 W processors with one DIMM per channel (up to three DIMMs attached to CPU1 and three DIMMs attached to CPU2) with DIMM fillers removed in empty DIMM connectors of CPU2. More information about DIMM placement and DIMM fillers can be found in *The BladeCenter HS23E Installation and User's Guide*, in US English and translation versions, on our website

<http://www-304.ibm.com/systems/support/>

Refer to the [Planning information](#) section or the System x server website for memory options.

- The onboard HDD controller and SW RAID supports SATA hard drives. SAS hard drives and solid-state drives require an optional CIOv RAID card.
- Microprocessors must be of the same type, power level, and clock speed on each BladeCenter HS23E. Mixing microprocessors of different speeds, power levels, or cache sizes or upgrading the base processors is not supported.
- Solid-state memory cells have an intrinsic, finite number of write cycles that each cell can incur. As a result each solid-state device has a maximum amount of write cycles it can be subjected to, documented as TBW (Total Bytes Written). IBM is not responsible for replacement of hard-ware that has reached the maximum guaranteed number of write cycles. This limit may be revealed as the device failing to communicate to system generated commands or become incapable of being written to.
- The latest BladeCenter hardware and software compatibility is available at <http://www.ibm.com/servers/eserver/serverproven/compat/us/>
- The new IBM BladeCenter HS23E is supported in the BladeCenter H chassis (#8852), the BladeCenter HT chassis (#8740, 8750), the BladeCenter E chassis (#8677), and the BladeCenter S chassis (#8886).
- The IBM BladeCenter HS23E contains built-in Software RAID, ServeRAID C105. It supports SATA hard drives and either a RAID 0 or RAID 1 array must be created. VMware does not support ServerRAID C105 and there is no native driver support for Linux distributions. The ServeRAID H1135 Controller for IBM Flex System and BladeCenter, Option Part Number 90Y4750, is a cost-optimized hardware RAID upgrade which supports SAS hard drives, SATA hard drives and solid-state drives and non-RAID and is supported natively by all operating systems supported on HS23E.

For the most current list of supported configurations, refer to the latest BladeCenter hardware configuration tools at

<http://www-03.ibm.com/systems/x/hardware/configtools.html>

Refer to the [Software requirements](#) section for operating system limitations.

Planning information

Customer responsibilities

This product is designated as customer setup. Customer setup instructions are shipped with the product.

Configuration information

BladeCenter HS23E models must be installed in a BladeCenter chassis.

BladeCenter configuration

Processor upgrades

For systems that come standard with one Intel Xeon E5-2400 series processor, an additional processor may be added by purchasing a supported processor option. The optional processor must match the initial processor in each system.

The following processor options are supported with the new BladeCenter HS23E models:

- Intel Xeon Processor E5-2403 4C 1.8GHz 10MB Cache 1066MHz 80W (90Y5292)
- Intel Xeon Processor E5-2407 4C 2.2GHz 10MB Cache 1066MHz 80W (90Y5291)
- Intel Xeon Processor E5-2418L 4C 2.0GHz 10MB Cache 1333MHz 50W (94Y6288)

- Intel Xeon Processor E5-2420 6C 1.9GHz 15MB Cache 1333MHz 95W (90Y5290)
- Intel Xeon Processor E5-2428L 6C 1.8GHz 15MB Cache 1333MHz 60W (94Y6289)
- Intel Xeon Processor E5-2430L 6C 2.0GHz 15MB Cache 1333MHz 60W (90Y5294)
- Intel Xeon Processor E5-2430 6C 2.2GHz 15MB Cache 1333MHz 95W (90Y5288)
- Intel Xeon Processor E5-2440 6C 2.4GHz 15MB Cache 1333MHz 95W (90Y5287)
- Intel Xeon Processor E5-2448L 8C 1.8GHz 20MB Cache 1600MHz 70W (94Y6290)
- Intel Xeon Processor E5-2450L 8C 1.8GHz 20MB Cache 1600MHz 70W (90Y5293)
- Intel Xeon Processor E5-2450 8C 2.1GHz 20MB Cache 1600MHz 95W (90Y5286)
- Intel Xeon Processor E5-2470 8C 2.3GHz 20MB Cache 1600MHz 95W (90Y5284)

Powerconsiderations

The BladeCenter HS23E is supported in the BladeCenter chassis.

Note: Consult specific chassis announcements for more information on setup and redundancy.

Cable orders

Each BladeCenter blade contains onboard Ethernet connections. An optional BladeCenter Ethernet Switch Module must be installed in the BladeCenter to support external Ethernet connections.

Cabling is not included with the server. Consult the Ethernet Switch module documentation for external cabling requirements.

Installability

Each BladeCenter HS23E requires approximately 10 minutes for installation. Installation includes unpacking, setting up, and powering on the system. Additional time is required to install an operating system, additional options, or features.

Packaging - BladeCenter HS23E

Product	Package Description	Boxes
BladeCenter	BladeCenter Carton	1
	Contents:	
	BladeCenter HS23E Publications/CD Package	1 1
BladeCenter	Publications Package	1
	Contents:	
	Documentation CD-ROM (softcopy of publications) Important Notices warranty Flyer	

The BladeCenter HS23E blades are shipped in a single package. The approximate shipping dimensions and weight are:

- Single pack dimensions: 60 x 33.3 x 17.3 cm (23.62 x 13.11 x 6.81 in)
- Single pack weight: 5.2 kg (11.47 lb)

Note: Above dimensions and weights refer to a single-wide HS23E. Addition of one or more Expansion Blades increases dimensions and weight.

Security, auditability, and control

Security and auditability features include:

- A power-on password function helps provide control of who has access to the data and server setup program on the server.
- A set unattended boot mode allows the system keyboard to be locked to all entries except the password and at the same time allows other computers on the network to access the system disk drive.
- A selectable boot sequence can be used to help prevent unauthorized installation of software or removal of data.

The BladeCenter HS23E blades have no security intrusion detection. Therefore, they should be installed in a rack environment that provides security through lockable doors or other security measures. It is the client's responsibility to ensure that the server is secure to protect sensitive data.

The customer is responsible for evaluation, selection, and implementation of security features, administrative procedures, and appropriate controls in application systems and communications facilities.

Global Technology Services

Contact your IBM representative for the list of selected services available in your country, either as standard or customized offerings, for the efficient installation, implementation, and/or integration of this product.

IBM Electronic Services

IBM has transformed its delivery of hardware and software support services to help you achieve higher system availability. Electronic Services is a web-enabled solution that offers an exclusive, no-additional-charge enhancement to the service and support available for IBM servers. These services are designed to provide the opportunity for greater system availability with faster problem resolution and preemptive monitoring. Electronic Services comprises two separate, but complementary, elements: Electronic Services news page and Electronic Services Agent.

The Electronic Services news page is a single Internet entry point that replaces the multiple entry points traditionally used to access IBM Internet services and support. The news page enables you to gain easier access to IBM resources for assistance in resolving technical problems.

The Electronic Service Agent™ is no-additional-charge software that resides on your server. It monitors events and transmits system inventory information to IBM on a periodic, client-defined timetable. The Electronic Service Agent automatically reports hardware problems to IBM. Early knowledge about potential problems enables IBM to deliver proactive service that may result in higher system availability and performance. In addition, information collected through the Service Agent is made available to IBM service support representatives when they help answer your questions or diagnose problems. Installation and use of IBM Electronic Service Agent for problem reporting enables IBM to provide better support and service for your IBM server.

To learn how Electronic Services can work for you, visit

<http://www.ibm.com/support/electronic>

Terms and conditions

To obtain copies of the IBM Statement of Limited Warranty, contact your reseller or IBM.

Warranty period

- Three years
- Optional features - One year

Note: For configurations that support the RAID Battery, the RAID battery will be warranted for 1 year effective on its "Date of Installation." All other product warranty terms for the machine remain unchanged.

An IBM part or feature installed during the initial installation of an IBM machine is subject to a full warranty effective on the date of installation of the machine. An IBM part or feature which replaces a previously installed part or feature assumes the remainder of the warranty period for the replaced part or feature. An IBM part or feature added to a machine without replacing a previously installed part or feature is subject to a full warranty effective on its date of installation. Unless specified otherwise, the warranty period, type of warranty service, and service level of a part or feature is the same as the machine it is installed.

The following have been designated as consumables or supply items and are, therefore, not covered by this warranty:

- Side cover
- Fillers
- Front bezels
- Air baffle

Warranty service

If required, IBM provides repair or exchange service, depending on the type of warranty service specified below for the machine. IBM will attempt to resolve your problem over the telephone or electronically by access to an IBM website. Certain machines contain remote support capabilities for direct problem reporting, remote problem determination, and resolution with IBM. You must follow the problem determination and resolution procedures that IBM specifies. Following problem determination, if IBM determines On-site Service is required, scheduling of service will depend upon the time of your call, machine technology and redundancy, and availability of parts. Service levels are response-time objectives and are not guaranteed. The specified level of warranty service may not be available in all worldwide locations. Additional charges may apply outside IBM's normal service area. Contact your local IBM representative or your reseller for country- and location-specific information.

The type of service is Customer Replaceable Unit (for example, keyboard, mouse, speaker, memory, or hard disk drive) Service and On-site Service.

Customer Replaceable Unit (CRU) Service

IBM provides a replacement CRU to you for you to install. CRU information and replacement instructions are shipped with your machine and are available from IBM at any time on your request. A CRU is designated as being either a Tier 1 (mandatory) or a Tier 2 (optional) CRU. Installation of Tier 1 CRUs, as specified in this announcement, is your responsibility. If IBM installs a Tier 1 CRU at your request, you will be charged for the installation. You may install a Tier 2 CRU yourself or request IBM to install it, at no additional charge, under the type of warranty service designated for your Machine.

Based upon availability, a CRU will be shipped for next-business-day (NBD) delivery. IBM specifies in the materials shipped with a replacement CRU whether a defective CRU must be returned to IBM. When return is required, return instructions and a container are shipped with the replacement CRU, and you may be charged for the replacement CRU if IBM does not receive the defective CRU within 15 days of your receipt of the replacement.

The following parts or features have been designated as Tier 2 CRUs for the BladeCenter HS23E:

- System Planar Board
- Processors (CPUs)/ Heatsink

Other parts, including the following have been designated as Tier 1 CRUs for the BladeCenter HS23E:

- Solid-state drive
- Hard disk
- Memory DIMM
- Daughter cards
- Service label
- System label
- CMOS Battery

On-site Service

At IBM's discretion you will receive CRU service or IBM or your reseller will repair the failing machine at your location and verify its operation. If required, On-site Repair is provided, 9 hours per day, Monday through Friday excluding holidays, NBD response. You must provide a suitable working area to allow disassembly and reassembly of the IBM machine. The area must be clean, well lit, and suitable for the purpose. On-site Service is not available in all countries, and some countries have kilometer or mileage limitations from an IBM service center. In those locations where On-site Service is not available, the normal in-country service delivery is used.

International Warranty Service (IWS)

IWS is available in selected countries or regions.

The warranty service type and the service level provided in the servicing country may be different from that provided in the country in which the machine was purchased.

Under IWS, warranty service will be provided with the prevailing warranty service type and service level available for the IWS-eligible machine type in the servicing country, and the warranty period observed will be that of the country in which the machine was purchased.

To determine the eligibility of your machine and to view a list of countries where service is available, visit

<http://www-947.ibm.com/support/entry/portal/docdisplay?Indocid=GCOR-3FBJK2>

For more information on IWS, refer to Services Announcement [ZS01-0168](#), dated September 25, 2001 .

Licensing

Programs included with this product are licensed under the terms and conditions of the License Agreements that are shipped with the system.

IBM hourly service rate classification

Two

Field-installable features

Yes

Model conversions

No

Machine installation

Customer setup. Customers are responsible for installation according to the instructions IBM provides with the machine.

Licensed Machine Code

IBM Machine Code is licensed for use by a customer on the IBM machine for which it was provided by IBM under the terms and conditions of the IBM License Agreement for Machine Code, to enable the machine to function in accordance with its specifications, and only for the capacity authorized by IBM and acquired by the customer. You can obtain the agreement by contacting your IBM representative or visiting

http://www.ibm.com/servers/support/machine_warranties/machine_code.html

If the machine does not function as warranted and your problem can be resolved through your application of downloadable Machine Code, you are responsible for downloading and installing these designated Machine Code changes as IBM specifies. If you would prefer, you may request IBM to install downloadable Machine Code changes; however, you may be charged for that service.

Prices

For all local charges, contact your IBM representative.

ServicePac Service Upgrades

The announced hardware products may also be eligible for ServicePac® warranty upgrades. ServicePac provides a higher level of service to enhance the base IBM Machine Warranty and a selection of Software Support Services.

ServicePac can be purchased from your IBM Business Partner and are specific to the machines/products listed.

The upgrade level of service is dependant on country.

For a full list of ServicePac offerings and prices, refer to the IBM ServicePac Product Selector Tool at

<https://www-304.ibm.com/sales/gss/download/spst/servicepac/extProductSelectorWWW.do>

Announcement countries for ServicePacs

Announcement is restricted to the following countries:

- Algeria
- Angola
- Austria
- Bahrain
- Belgium
- Botswana
- Bulgaria
- Croatia
- Czech Republic

- Denmark
- Egypt
- Estonia³
- Finland
- France (Except overseas territories)
- Germany
- Greece
- Hungary
- Ireland
- Israel
- Italy
- Jordan
- Kazakhstan
- Kenya
- Kuwait
- Latvia³
- Lebanon
- Lithuania³
- Libya
- Luxembourg
- Mauritius
- Morocco
- Mozambique
- Netherlands
- Nigeria
- Norway
- Oman
- Pakistan
- Poland
- Portugal
- Qatar
- Romania
- Russia
- Saudi Arabia
- Serbia
- Slovakia
- Slovenia
- South Africa
- Spain
- Sweden
- Switzerland
- Tanzania
- Tunisia
- Turkey
- UK (Mainland only)
- Ukraine.
- United Arab Emirates

³Order and registration via Finland.

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The products in this document are also covered by Maintenance Agreements and ServiceSuite® contracts.

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<http://www.ibm.com/financing>

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Announcement countries

All European, Middle Eastern, and African countries.

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<http://www.ibm.com/planetwide/>

Corrections

(Corrected on May 18, 2012)

Revisions to BladeCenter HS23E Model Configuration and Technical information sections.