IBM BladeCenter HS23 high-performance blade server

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At a glance

The IBM® BladeCenter® HS23 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 HS23 offers high performance balanced with flexible, scalable configuration options and simple management in an efficient server designed to run a broad range of workloads exceptionally well.

Versatile:

- A feature-rich design enables the HS23 to run a broad range of workloads, including infrastructure, virtualization, and enterprise applications. This makes it ideal for cloud computing.
- Integrated 10GbE Virtual Fabric allows for more scalable I/O solutions.
- An extensive choice of processors, memory, internal storage, and I/O options allows flexible configurations.
- The BladeCenter HS23 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.

Easy to use:

- Simplify deployment of infrastructure for faster time-to-value with IBM FastSetup.
- 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.

Performance optimized:

- Next-generation Intel Xeon™ processor E5-2600 product family
- High memory capacity with 16 DDR3 VLP memory DIMM slots supporting 1600 MHz memory and up to 256 GB of DDR3 memory

- High-speed I/O on the blade with integrated 10GbE Virtual Fabric
- Support for running two DIMMs per memory channel at 1600 MHz
- 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

Options included in this Announcement

The IBM BladeCenter GPU Expansion Blade II:

The IBM BladeCenter GPU Expansion Blade II provides the capability to attach next-generation graphics processing unit (GPU) technology on select server blades. This offering is ideal for applications requiring high levels of acceleration and visualization performance. This product ships integrated with the NVIDIA Tesla M2070Q, Tesla M2075, or Tesla M2090. In addition, the IBM BladeCenter GPU Expansion Blade II is stackable, allowing clients to stack up to four GPU Expansion Blades on a single compute blade (support for four GPU Expansion Blade stacking only via specific machine type for HS22 and only by contacting your IBM Sales Representative), thereby offering a unique density advantage versus the competition. This GPU expansion unit is supported only on selected server blades.

The IBM BladeCenter GPU Expansion Blade II:

- Is supported on the IBM BladeCenter HS22 (7870) or HS23 (7875).
- Offers a unique stacking capability that allows users to stack up to four GPU Expansion Blades on a single HS22 or HS23 server blade. HS22 stacking support is available for up to four GPU Expansion Blades on a single server blade via specific HS22 machine type. Contact your IBM Sales Representative for details.
- Provides users with access to the high-speed I/O slot (CFFh) in a stacked configuration.
- Ships integrated with the NVIDIA Tesla M2090, M2075, or M2070Q.

The Emulex 10GbE Virtual Fabric Adapter II for IBM BladeCenter HS23 (81Y3120) and Emulex 10GbE Virtual Fabric Adapter Advanced II for IBM BladeCenter HS23 (90Y9332) are new options available to the existing IBM BladeCenter Virtual Fabric portfolio. These adapters are supported on the new HS23 blade to enable up to four uplink/downlink ports for increased I/O bandwidth and maximum performance. The combination of HS23 and Emulex options enables clients to simplify their I/O infrastructure by reducing the number of switches needed inside the chassis while supporting Ethernet and Virtual NICs using the same hardware components.

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

- March 16, 2012:
  - IBM BladeCenter HS23 Models 91x, 92x, A1x, A2x, B1x, B2x, B3x, C1x, C2x, C3x, C4x, C5x, D1x, F1x

  - IBM BladeCenter Options:
    - -- Additional Intel Xeon Processor E5-2600 Options
    - -- 1600MHz VLP RDIMM Options
    - -- 10Gb Interposer Card for IBM BladeCenter HS23
    - -- IBM Virtual Fabric Advanced Software Upgrade (LOM)
    - -- IBM BladeCenter PCI Express® Gen 2 Expansion Blade II
    - -- IBM BladeCenter GPU Expansion Blade II with NVIDIA Tesla M2070Q
    - -- IBM BladeCenter GPU Expansion Blade II with NVIDIA Tesla M2075
    - -- IBM BladeCenter GPU Expansion Blade II with NVIDIA Tesla M2090
- March 30, 2012:
  - IBM BladeCenter Options:
    - -- Emulex 10GbE VFA II for IBM BladeCenter HS23
- June 8, 2012:
  - BladeCenter HS23 Models G1x, G2x
  - IBM BladeCenter Options:
    - -- Emulex 10GbE VFA Advanced II for IBM BladeCenter HS23
    - -- Virtual Fabric Advanced FOD Upgrade for IBM BladeCenter HS23

Description

BladeCenter HS23

High-performance, blade server subsystem

The IBM BladeCenter HS23 blade server is high-throughput, two-way, SMP-capable, and highly scalable when you add memory and other options.

The BladeCenter HS23 can have up to two Intel Xeon processors. The processor board has the following major components:

- Two Socket R (LGA2011) sockets for two Intel Xeon E5-2600 processors (two processors may be shipped standard).
- Sixteen DDR3 VLP DIMM memory sockets.
- One Emulex BladeEngine 3 (BE3) controller with Dual 10Gb + Dual 1Gb Ethernet and Features On Demand upgrading to FCoE and iSCSI Hardware Offload.
- One LSI 2004 SAS/SATA Controller.
- 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 HS23 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 to256 GB using 4 GB, 8 GB,or 16 GB VLP DDR3 DIMMs on 16 DIMM connectors. The processors have integrated DDR3 memory controllers and interface directly to their eight 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 HS23 supports the Intel Xeon processor E5-2600 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 HS23 supports memory mirroring. Chipkill is supported in Independent mode when x4-based DIMMs are installed.

Additional features

- The BladeCenter HS23 system board contains 16 DIMM connectors (30 mm blade).
  - Chipkill is supported in Independent mode when x4-based DIMMs are installed.
- One or two hot-swap SATA or SAS devices are supported in the base blade.
- One Emulex BladeEngine 3 (BE3) controller with Dual 10Gb + Dual 1Gb Ethernet is provided and can be upgraded with Features On Demand to FCoE and iSCSI Hardware Offload.

BladeCenter HS23 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 HS23 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 HS23 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 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)

- The Emulex 10GbE Virtual Fabric Adapter II for IBM BladeCenter HS23 (81Y3120) and Emulex 10GbE Virtual Fabric Adapter Advanced II for IBM BladeCenter HS23 (90Y9332) are new options available to the existing IBM BladeCenter Virtual Fabric portfolio. These adapters are supported on the new HS23 blade to enable up to four uplink/downlink ports for increased I/O bandwidth and maximum performance. The combination of HS23 and Emulex options enables clients to simplify their I/O infrastructure by reducing the number of switches needed inside the chassis while supporting Ethernet and Virtual NICs using the same hardware components.
- 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 via wireless sensors and collects alerts, events, and data from certain facility providers related to power and cooling equipment.
- BladeCenter Open Fabric Manager is designed 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 HS23 blade servers and BladeCenter environment. ToolsCenter helps make managing your server environment less complicated, more productive, and more cost-effective.

These tools include:

- 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 HS23 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 HS23 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
- 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 HS23 model configurations

IBM BladeCenter HS23

System SEO number	Processor	L2 cache	Memory
IBM BladeCenter HS23			
7875-A1x	1 x 1.8 GHz Intel Xeon E5-2603 4c 80w	10 MB	1x4 GB
7875-A2x	1 x 2.4 GHz Intel Xeon E5-2609 4c 80w	10 MB	4x4 GB
7875-B1x	1 x 2.0 GHz Intel Xeon E5-2620 6c 95w 10Gb Interposer Card	15 MB	4x4 GB
7875-B2x	1 x 2.5 GHz Intel Xeon E5-2640 6c 95w 10Gb Interposer Card	15 MB	4x4 GB

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 7875-B3x  1 x 2.3 GHz 15 MB       4x4 GB
            Intel Xeon E5-2630 6c 95w
             10Gb Interposer Card

 7875-C1x  1 x 2.0 GHz 20 MB       4x4 GB
            Intel Xeon E5-2650 8c 95w
             10Gb Interposer Card

 7875-C2x  1 x 2.2 GHz 20 MB       4x4 GB
            Intel Xeon E5-2660 8c 95w
             10Gb Interposer Card

 7875-C3x  1 x 2.4 GHz 20 MB       4x4 GB
            Intel Xeon E5-2665 8c 115w
             10Gb Interposer Card

 7875-C4x  1 x 2.6 GHz 20 MB       4x4 GB
            Intel Xeon E5-2670 8c 115w
             10Gb Interposer Card

 7875-C5x  1 x 2.7 GHz 20 MB       4x4 GB
            Intel Xeon E5-2680 8c 130w
             10Gb Interposer Card

 7875-D1x  1 x 1.8 GHz 20 MB       4x4 GB
            Intel Xeon E5-2650L 8c 70w   RAID
             10Gb Interposer Card

 7875-F1x  1 x 1.8 GHz 20 MB       4x4 GB
            Intel Xeon E5-2648L 8c 70w
             10Gb Interposer Card


IBM BladeCenter HS23 with Virtual Fabric

 7875-G1x      1 x 2.3 GHz 15 MB   4x4 GB
                Intel Xeon E5-2630 6c 95w
                 Virtual Fabric Advanced Software Upgrade (LOM)
                 Emulex 10GbE VFA Advanced II Adapter

 7875-G2x      1 x 2.6 GHz 20 MB   4x4 GB
                Intel Xeon E5-2670 8c 115w
                 Virtual Fabric Advanced Software Upgrade (LOM)
                 Emulex 10GbE VFA Advanced II Adapter

IBM BladeCenter HS23: Foundation for Cloud

 7875-91x      2 x 2.0 GHz 15 MB  16x8 GB
                Intel Xeon E5-2620 6c 95w
                 Virtual Fabric Advanced Software Upgrade (LOM)
                 IBM USB Memory Key for VMWare ESXi 5.0
                 IBM Systems Director Standard
                  Ed for X86 V6-Srvr Lic w/1 Yr S&S
                 10Gb Interposer Card

 7875-92x      2 x 2.0 GHz 20 MB  16x8 GB
                Intel Xeon E5-2650 8c 95w
                 Virtual Fabric Advanced Software Upgrade (LOM)
                 IBM USB Memory Key for VMWare ESXi 5.0
                 IBM Systems Director Standard
                  Ed for X86 V6-Srvr Lic w/1 Yr S&S
                 10Gb Interposer Card


 **  Power supplied through BladeCenter chassis
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BladeCenter HS23 Express Models

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System SEO
 number   Processor    L2 cache    Memory

 7875-E1U  2 x 2.0 GHz 15 MB       8x4 GB
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            Intel Xeon E5-2620 6c 95w
             10Gb Interposer Card

 7875-E2U  2 x 2.3 GHz 15 MB       8x8 GB
            Intel Xeon E5-2630 6c 95w
             10Gb Interposer Card

 7875-E3U  2 x 2.6 GHz 20 MB       8x8 GB
            Intel Xeon E5-2670 8c 115w
             10Gb Interposer Card


 **  Power supplied through BladeCenter chassis
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Accessibility by people with disabilities

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

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

Product positioning

The BladeCenter HS23 offerings are positioned as high-density, compute-oriented blade servers offering lower-power-usage Intel Xeon processors.

The BladeCenter HS23 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 following are newly announced features on the specified models of the IBM xSeries® 7875 machine type:

Description	MT	Model	Feature
7875-AC1	7875	AC1	
7875-MC1	7875	MC1	
Integrated SATA Mirroring - 2 identical HDDs required	7875	AC1 MC1	0030
Integrated SATA Striping - 2 identical HDDs required	7875	AC1 MC1	0031
China Warranty for MT 7875	7875	AC1 MC1	7599
IBM 200GB SATA 2.5" MLC HS SSD	7875	AC1 MC1	A2FN
IBM 256GB SATA 2.5" MLC HS Entry SSD	7875	AC1 MC1	A2U3
IBM 128GB SATA 2.5" MLC HS Entry SSD	7875	AC1 MC1	A2U4
2-port 40Gb InfiniBand Expansion Card (CFFh) for IBM BladeCenter	7875	AC1 MC1	0056
Broadcom 10Gb Gen2 4-port Ethernet Exp Cd (CFFh)			

for IBM BladeCenter	7875	AC1 MC1	0098
Broadcom 10Gb Gen2 2-port Ethernet Exp Cd (CFFh) for IBM BladeCenter	7875	AC1 MC1	0099
UID Asset Tag Label	7875	AC1 MC1	0747
Packaging - 3U Blade WW	7875	AC1 MC1	0764
Packaging - 4U Blade WW	7875	AC1 MC1	0765
Packaging - 1U Blade WW	7875	AC1 MC1	0785
Packaging - 2U Blade WW	7875	AC1 MC1	0786
Qlogic 8Gb Fibre Channel Expansion Card (CIOv) for IBM BladeCenter	7875	AC1 MC1	1462
SAS Connectivity Card (CIOv) for IBM BladeCenter	7875	AC1 MC1	1593
EMEA Long Leadtime Configurations	7875	AC1 MC1	1763
Hungary CHW plant 9SH	7875	AC1 MC1	1764
Guad CHW plant 9KQ	7875	AC1 MC1	1765
ISTC CHW 9K2	7875	AC1 MC1	1766
RTP CHW 9NR	7875	AC1 MC1	1767
Offload Manufacturing to Guadalajara HVEC	7875	AC1 MC1	1768
Offload Manufacturing to RTP HVEC	7875	AC1 MC1	1769
Offload Manufacturing to ISTC	7875	AC1 MC1	1770
Capacity Scheduling Service	7875	AC1 MC1	1772
Custom SLA Scheduling Service	7875	AC1 MC1	1796
Custom Asset Tagging - Standard	7875	AC1 MC1	2200
Custom Asset Tagging - Enhanced	7875	AC1 MC1	2201
Custom Image Load - Server	7875	AC1 MC1	2204
Custom Media Shipgroup	7875	AC1 MC1	2206
Request for Global Trade Number (UPC or EAN)	7875	AC1 MC1	2207
Custom Software/Firmware Setting - Standard	7875	AC1 MC1	2208
Custom Software/Firmware Setting - Enhanced	7875	AC1 MC1	2209
Custom RAID Configuration	7875	AC1 MC1	2212
Custom Labeling	7875	AC1 MC1	2220
Custom Palletization	7875	AC1 MC1	2221
Request for a new Vendor Logo Hardware	7875	AC1 MC1	2247
Request for an existing IBM Feature	7875	AC1 MC1	2248
Request for an existing Public RPQ	7875	AC1 MC1	2249
RAID Configuration	7875	AC1 MC1	2302
Department of Defense UID Label	7875	AC1 MC1	2320
16GB (1x16GB, 2Rx4, 1.35V) PC3L-10600 CL9 ECC DDR3 1333MHz VLP RDIMM	7875	AC1 MC1	2422
Rack 01	7875	AC1	3101

		MC1	
Rack 02	7875	AC1	3102
		MC1	
Rack 03	7875	AC1	3103
		MC1	
Rack 04	7875	AC1	3104
		MC1	
Rack 05	7875	AC1	3105
		MC1	
Rack 06	7875	AC1	3106
		MC1	
Rack 07	7875	AC1	3107
		MC1	
Rack 08	7875	AC1	3108
		MC1	
Rack 09	7875	AC1	3109
		MC1	
Rack 10	7875	AC1	3110
		MC1	
Rack 11	7875	AC1	3111
		MC1	
Rack 12	7875	AC1	3112
		MC1	
Rack 13	7875	AC1	3113
		MC1	
Rack 14	7875	AC1	3114
		MC1	
Rack 15	7875	AC1	3115
		MC1	
Rack 16	7875	AC1	3116
		MC1	
Rack 17	7875	AC1	3117
		MC1	
Rack 18	7875	AC1	3118
		MC1	
Rack 19	7875	AC1	3119
		MC1	
Rack 20	7875	AC1	3120
		MC1	
Rack 21	7875	AC1	3121
		MC1	
Rack 22	7875	AC1	3122
		MC1	
Rack 23	7875	AC1	3123
		MC1	
Rack 24	7875	AC1	3124
		MC1	
Rack 25	7875	AC1	3125
		MC1	
Rack 26	7875	AC1	3126
		MC1	
Rack 27	7875	AC1	3127
		MC1	
Rack 28	7875	AC1	3128
		MC1	
Rack 29	7875	AC1	3129
		MC1	
Rack 30	7875	AC1	3130
		MC1	
Rack 31	7875	AC1	3131
		MC1	
Rack 32	7875	AC1	3132
		MC1	
Rack 33	7875	AC1	3133
		MC1	
Rack 34	7875	AC1	3134
		MC1	
Rack 35	7875	AC1	3135
		MC1	
Rack 36	7875	AC1	3136
		MC1	
Rack 37	7875	AC1	3137
		MC1	
Rack 38	7875	AC1	3138

		MC1	
Rack 39	7875	AC1	3139
		MC1	
Rack 40	7875	AC1	3140
		MC1	
Rack 41	7875	AC1	3141
		MC1	
Rack 42	7875	AC1	3142
		MC1	
Rack 43	7875	AC1	3143
		MC1	
Rack 44	7875	AC1	3144
		MC1	
Rack 45	7875	AC1	3145
		MC1	
Rack 46	7875	AC1	3146
		MC1	
Rack 47	7875	AC1	3147
		MC1	
Rack 48	7875	AC1	3148
		MC1	
Rack 49	7875	AC1	3149
		MC1	
Rack 50	7875	AC1	3150
		MC1	
Rack 51	7875	AC1	3151
		MC1	
Rack 52	7875	AC1	3152
		MC1	
Rack 53	7875	AC1	3153
		MC1	
Rack 54	7875	AC1	3154
		MC1	
Rack 55	7875	AC1	3155
		MC1	
Rack 56	7875	AC1	3156
		MC1	
Rack 57	7875	AC1	3157
		MC1	
Rack 58	7875	AC1	3158
		MC1	
Rack 59	7875	AC1	3159
		MC1	
Rack 60	7875	AC1	3160
		MC1	
Rack 61	7875	AC1	3161
		MC1	
Rack 62	7875	AC1	3162
		MC1	
Rack 63	7875	AC1	3163
		MC1	
Rack 64	7875	AC1	3164
		MC1	
BladeCenter 01	7875	AC1	3301
		MC1	
BladeCenter 02	7875	AC1	3302
		MC1	
BladeCenter 03	7875	AC1	3303
		MC1	
BladeCenter 04	7875	AC1	3304
		MC1	
BladeCenter 05	7875	AC1	3305
		MC1	
BladeCenter 06	7875	AC1	3306
		MC1	
BladeCenter 07	7875	AC1	3307
		MC1	
BladeCenter 08	7875	AC1	3308
		MC1	
BladeCenter 09	7875	AC1	3309
		MC1	
BladeCenter 10	7875	AC1	3310
		MC1	
BladeCenter 11	7875	AC1	3311

		MC1	
BladeCenter 12	7875	AC1	3312
		MC1	
BladeCenter 13	7875	AC1	3313
		MC1	
BladeCenter 14	7875	AC1	3314
		MC1	
BladeCenter 15	7875	AC1	3315
		MC1	
BladeCenter 16	7875	AC1	3316
		MC1	
BladeCenter 17	7875	AC1	3317
		MC1	
BladeCenter 18	7875	AC1	3318
		MC1	
BladeCenter 19	7875	AC1	3319
		MC1	
BladeCenter 20	7875	AC1	3320
		MC1	
BladeCenter 21	7875	AC1	3321
		MC1	
BladeCenter 22	7875	AC1	3322
		MC1	
BladeCenter 23	7875	AC1	3323
		MC1	
BladeCenter 24	7875	AC1	3324
		MC1	
BladeCenter 25	7875	AC1	3325
		MC1	
BladeCenter 26	7875	AC1	3326
		MC1	
BladeCenter 27	7875	AC1	3327
		MC1	
BladeCenter 28	7875	AC1	3328
		MC1	
BladeCenter 29	7875	AC1	3329
		MC1	
BladeCenter 30	7875	AC1	3330
		MC1	
BladeCenter 31	7875	AC1	3331
		MC1	
BladeCenter 32	7875	AC1	3332
		MC1	
BladeCenter 33	7875	AC1	3333
		MC1	
BladeCenter 34	7875	AC1	3334
		MC1	
BladeCenter 35	7875	AC1	3335
		MC1	
BladeCenter 36	7875	AC1	3336
		MC1	
BladeCenter 37	7875	AC1	3337
		MC1	
BladeCenter 38	7875	AC1	3338
		MC1	
BladeCenter 39	7875	AC1	3339
		MC1	
BladeCenter 40	7875	AC1	3340
		MC1	
BladeCenter location 01	7875	AC1	3401
		MC1	
BladeCenter location 02	7875	AC1	3402
		MC1	
BladeCenter location 03	7875	AC1	3403
		MC1	
BladeCenter location 04	7875	AC1	3404
		MC1	
BladeCenter location 05	7875	AC1	3405
		MC1	
BladeCenter location 06	7875	AC1	3406
		MC1	
BladeCenter location 07	7875	AC1	3407
		MC1	
BladeCenter location 08	7875	AC1	3408

		MC1	
BladeCenter location 09	7875	AC1	3409
		MC1	
BladeCenter location 10	7875	AC1	3410
		MC1	
BladeCenter location 11	7875	AC1	3411
		MC1	
BladeCenter location 12	7875	AC1	3412
		MC1	
BladeCenter location 13	7875	AC1	3413
		MC1	
BladeCenter location 14	7875	AC1	3414
		MC1	
QLogic 2-pt 10Gb Converged Network Adapter(CFFh) for IBM BladeCenter	7875	AC1	3592
		MC1	
Intel 10Gb 2-port Ethernet Expansion Card (CFFh) for IBM BladeCenter	7875	AC1	3593
		MC1	
QLogic 4Gb Fibre Channel Expansion Card (CIOv) for IBM BladeCenter	7875	AC1	3594
		MC1	
Emulex 8Gb Fibre Channel Expansion Card (CIOv) for IBM BladeCenter	7875	AC1	3598
		MC1	
2.5" HDD Filler Bezel	7875	AC1	4069
		MC1	
Dummy DIMM for improved airflow	7875	AC1	4916
		MC1	
IBM 500GB 7200 6Gbps NL SAS 2.5" SFF Slim-HS HDD	7875	AC1	5409
		MC1	
IBM 600GB 10K 6Gbps SAS 2.5" SFF Slim-HS HDD	7875	AC1	5433
		MC1	
Brocade 2 port 10GbE Converged Network Adapter for IBM BladeCenter	7875	AC1	5437
		MC1	
2/4 Port Ethernet Expansion Card (CFFh) for IBM BladeCenter	7875	AC1	5476
		MC1	
Ethernet Expansion Card (CIOv) for IBM BladeCenter	7875	AC1	5477
		MC1	
QLogic Eth and 8Gb Fibre Channel Exp Card (CFFh) for IBM BladeCenter	7875	AC1	5485
		MC1	
IBM 146GB 15K 6Gbps SAS 2.5" SFF Slim-HS HDD	7875	AC1	5536
		MC1	
IBM 300GB 10K 6Gbps SAS 2.5" SFF Slim-HS HDD	7875	AC1	5599
		MC1	
SOFS Solution Code MFG Instruction	7875	AC1	6124
		MC1	
InfoSphere-BWA Solution Code MFG Instruction	7875	AC1	6126
		MC1	
GMAS Solution Code MFG Instruction	7875	AC1	6127
		MC1	
IBW-SSD Solution Code MFG Instruction	7875	AC1	6128
		MC1	
Cloudburst Solution Code MFG Instruction	7875	AC1	6129
		MC1	
SoNAS Solution Code MFG Instruction	7875	AC1	6130
		MC1	
BladeCenter Office Solution	7875	AC1	7019
		MC1	
Customer Solution Center Services	7875	AC1	7831
		MC1	
Integrated Solid State Mirroring	7875	AC1	7859
		MC1	
Integrated Solid State Striping	7875	AC1	7860
		MC1	
e1350 Special Bid Solution Component	7875	AC1	7929
		MC1	
No HDD Selected	7875	AC1	8026
		MC1	
No Processor Selected	7875	AC1	8028
		MC1	

No Memory Selected	7875	AC1 MC1	8029
Consolidate Shipment	7875	AC1 MC1	8031
e1350 Solution Component	7875	AC1 MC1	8034
Compute Node	7875	AC1 MC1	8036
Management Node	7875	AC1 MC1	8037
Storage Node	7875	AC1 MC1	8038
Integrated SAS Mirroring - 2 identical HDDs required	7875	AC1 MC1	8039
Integrated SAS Striping - 2 identical HDDs required	7875	AC1 MC1	8040
TAA Compliant Order	7875	AC1 MC1	8067
General Racking Solution	7875	AC1 MC1	8072
Integrate BladeCenter in Manufacturing	7875	AC1 MC1	8077
No 2.5" SAS HDD Selected	7875	AC1 MC1	8081
No Publications Selected	7875	AC1 MC1	8086
8GB (1x8GB, 2Rx4, 1.35V) PC3L-10600 CL9 ECC DDR3 1333MHz VLP RDIMM	7875	AC1 MC1	8644
No Internal RAID	7875	AC1 MC1	9012
Memory Sparing	7875	AC1 MC1	9016
Enable Memory Mirroring	7875	AC1 MC1	9017
Storage Subsystem ID 01	7875	AC1 MC1	9170
Storage Subsystem ID 02	7875	AC1 MC1	9171
Storage Subsystem ID 03	7875	AC1 MC1	9172
Storage Subsystem ID 04	7875	AC1 MC1	9173
Storage Subsystem ID 05	7875	AC1 MC1	9174
Storage Subsystem ID 06	7875	AC1 MC1	9175
Storage Subsystem ID 07	7875	AC1 MC1	9176
Storage Subsystem ID 08	7875	AC1 MC1	9177
Storage Subsystem ID 09	7875	AC1 MC1	9178
Storage Subsystem ID 10	7875	AC1 MC1	9179
Storage Subsystem ID 11	7875	AC1 MC1	9180
Storage Subsystem ID 12	7875	AC1 MC1	9181
Storage Subsystem ID 13	7875	AC1 MC1	9182
Storage Subsystem ID 14	7875	AC1 MC1	9183
Storage Subsystem ID 15	7875	AC1 MC1	9184
Storage Subsystem ID 16	7875	AC1 MC1	9185
Storage Subsystem ID 17	7875	AC1 MC1	9186
Storage Subsystem ID 18	7875	AC1 MC1	9187
Storage Subsystem ID 19	7875	AC1	9188

		MC1	
Storage Subsystem ID 20	7875	AC1 MC1	9189
Preload Specify	7875	AC1 MC1	9200
Windows Specify	7875	MC1	9201
Red Hat Specify	7875	AC1	9202
SuSE Specify	7875	AC1	9203
Drop-in-the-Box Specify	7875	AC1 MC1	9205
No Preload Specify	7875	AC1 MC1	9206
VMWare Specify	7875	AC1 MC1	9207
Preload by Hardware Feature Specify	7875	AC1 MC1	9220
Software Application (Not Preinstalled) Specify	7875	AC1 MC1	A0UF
4GB (1x4GB, 1Rx4, 1.35V) PC3L-10600 CL9 ECC DDR3 1333MHz VLP RDIMM	7875	AC1 MC1	A0WY
4GB (1x4GB, 2Rx8, 1.35V) PC3L-10600 CL9 ECC DDR3 1333MHz VLP RDIMM	7875	AC1 MC1	A0WZ
Packaging - 5U Blade WW	7875	AC1 MC1	A0YU
System x Cluster Upgrade	7875	AC1 MC1	A103
Integrated Solutions - Microsoft	7875	AC1 MC1	A192
Integrated Solutions	7875	AC1 MC1	A193
IBM 1TB 7.2K 6Gbps NL SATA 2.5" SFF HS HDD	7875	AC1 MC1	A1AV
High Performance Analytics Appliance	7875	AC1	A1NN
Mellanox 2-port 10Gb Enet Expansion Card (CFFh) - IBM BladeCenter	7875	AC1 MC1	A1NW
IBM 250GB 7.2K 6Gbps NL SATA 2.5" SFF HS HDD	7875	AC1 MC1	A1NX
IBM 500GB 7.2K 6Gbps NL SATA 2.5" SFF HS HDD	7875	AC1 MC1	A1NZ
IBM 1TB 7.2K 6Gbps NL SAS 2.5" SFF HS HDD	7875	AC1 MC1	A1P3
Broadcom 2-port 10Gb Virtual Fabric Adapter for IBM BladeCenter	7875	AC1 MC1	A1QR
7875 Blade Base	7875	AC1 MC1	A1RG
Blade Cover	7875	AC1 MC1	A1RH
CPU Heat Sink Filler	7875	AC1 MC1	A1RJ
Labels for HS23 Blade Base	7875	AC1 MC1	A1RK
System Documentation and Software-US English	7875	AC1 MC1	A1RL
Intel Xeon Processor E5-2603 4C 1.8GHz 10MB Cache 1066MHz 80W	7875	AC1 MC1	A1S3
Intel Xeon Processor E5-2609 4C 2.4GHz 10MB Cache 1066MHz 80W	7875	AC1 MC1	A1S5
Intel Xeon Processor E5-2620 6C 2.0GHz 15MB Cache 1333MHz 95W	7875	AC1 MC1	A1S6
Intel Xeon Processor E5-2650 8C 2.0GHz 20MB Cache 1600MHz 95W	7875	AC1 MC1	A1S9
Intel Xeon Processor E5-2660 8C 2.2GHz 20MB Cache			

1600MHz 95W	7875	AC1 MC1	A1SA
Intel Xeon Processor E5-2680 8C 2.7GHz 20MB Cache 1600MHz 130W	7875	AC1 MC1	A1SB
Intel Xeon Processor E5-2667 6C 2.9GHz 15MB Cache 1600MHz 130W	7875	AC1 MC1	A1SD
Intel Xeon Processor E5-2630L 6C 2.0GHz 15MB Cache 1333MHz 60W	7875	AC1 MC1	A1SF
Intel Xeon Processor E5-2650L 8C 1.8GHz 20MB Cache 1600MHz 70W	7875	AC1 MC1	A1SG
Intel Xeon Processor E5-2648L 8C 1.8GHz 20MB Cache 1600MHz 70W	7875	AC1 MC1	A23R
Intel Xeon Processor E5-2658 8C 2.1GHz 20MB Cache 1600MHz 95W	7875	AC1 MC1	A23S
Intel Xeon Processor E5-2637 2C 3.0GHz 5MB Cache 1600MHz 80W	7875	AC1 MC1	A23T
Intel Xeon Processor E5-2640 6C 2.5GHz 15MB Cache 1333MHz 95W	7875	AC1 MC1	A23U
Intel Xeon Processor E5-2630 6C 2.3GHz 15MB Cache 1333MHz 95W	7875	AC1 MC1	A23V
Intel Xeon Processor E5-2670 8C 2.6GHz 20MB Cache 1600MHz 115W	7875	AC1 MC1	A241
IBM 900GB 10K 6Gbps SAS 2.5" SFF HS HDD	7875	AC1 MC1	A282
IBM 300GB 15K 6Gbps SAS 2.5" SFF HS HDD	7875	AC1 MC1	A283
Label KC	7875	AC1 MC1	A2CM
Schedule Instruction	7875	AC1 MC1	A2GW
Intel Xeon Processor E5-2665 8C 2.4GHz 20MB Cache 1600MHz 115W	7875	AC1 MC1	A2MW
IBM USB Memory Key for VMWare ESXi 5.0	7875	AC1 MC1	A2VC
Essential Package	7875	AC1 MC1	A2WD
Enhanced Package	7875	AC1 MC1	A2WE
Elite Package	7875	AC1 MC1	A2WF
Essential Package	7875	AC1 MC1	A2WG
Enhanced Package	7875	AC1 MC1	A2WH
Elite Package	7875	AC1 MC1	A2WJ
IBM 146GB 15K 6Gbps SAS 2.5" SFF G2HS HDD	7875	AC1 MC1	A2XB
IBM 300GB 10K 6Gbps SAS 2.5" SFF G2HS HDD	7875	AC1 MC1	A2XC
IBM 600GB 10K 6Gbps SAS 2.5" SFF G2HS HDD	7875	AC1 MC1	A2XD
IBM 500GB 7.2K 6Gbps NL SAS 2.5" SFF G2HS HDD	7875	AC1 MC1	A2XE

The following are features already announced for the 7870, 7873, and 7875 machine types:

Description	MT	Model	Feature
7870-AC1	7870	AC1	
7870-MC1	7870	MC1	

7873-AC1	7873	AC1	
7873-MC1	7873	MC1	
7875-AC1	7875	AC1	
7875-MC1	7875	MC1	
4GB (1x4GB, 1Rx4, 1.5V) PC3-12800 CL11 ECC DDR3 1600MHz VLP RDIMM	7875	AC1 MC1	A1S0
4GB (1x4GB, 2Rx8, 1.5V) PC3-12800 CL11 ECC DDR3 1600MHz VLP RDIMM	7875	AC1 MC1	A1S1
8GB (1x8GB, 2Rx4, 1.5V) PC3-12800 CL11 ECC DDR3 1600MHz VLP RDIMM	7875	AC1 MC1	A1S2
Addl Intel Xeon Processor E5-2603 4C 1.8GHz 10MB Cache 1066MHz 80W	7875	AC1 MC1	A1SH
Addl Intel Xeon Processor E5-2609 4C 2.4GHz 10MB Cache 1066MHz 80W	7875	AC1 MC1	A1SK
Addl Intel Xeon Processor E5-2620 6C 2.0GHz 15MB Cache 1333MHz 95W	7875	AC1 MC1	A1SL
Addl Intel Xeon Processor E5-2650 8C 2.0GHz 20MB Cache 1600MHz 95W	7875	AC1 MC1	A1SP
Addl Intel Xeon Processor E5-2660 8C 2.2GHz 20MB Cache 1600MHz 95W	7875	AC1 MC1	A1SQ
Addl Intel Xeon Processor E5-2680 8C 2.7GHz 20MB Cache 1600MHz 130W	7875	AC1 MC1	A1SR
Addl Intel Xeon Processor E5-2667 6C 2.9GHz 15MB Cache 1600MHz 130W	7875	AC1 MC1	A1ST
Addl Intel Xeon Processor E5-2630L 6C 2.0GHz 15MB Cache 1333MHz 60W	7875	AC1 MC1	A1SV
Addl Intel Xeon Processor E5-2650L 8C 1.8GHz 20MB Cache 1600MHz 70W	7875	AC1 MC1	A1SW
Addl Intel Xeon Processor E5-2637 2C 3.0GHz 5MB Cache 1600MHz 80W	7875	AC1 MC1	A23W
Addl Intel Xeon Processor E5-2640 6C 2.5GHz 15MB Cache 1333MHz 95W	7875	AC1 MC1	A23X
Addl Intel Xeon Processor E5-2630 6C 2.3GHz 15MB Cache 1333MHz 95W	7875	AC1 MC1	A23Y
Addl Intel Xeon Processor E5-2658 8C 2.1GHz 20MB Cache 1600MHz 95W	7875	AC1 MC1	A23Z
Addl Intel Xeon Processor E5-2648L 8C 1.8GHz 20MB Cache 1600MHz 70W	7875	AC1 MC1	A240
Addl Intel Xeon Processor E5-2670 8C 2.6GHz 20MB Cache 1600MHz 115W	7875	AC1 MC1	A242
10Gb Interposer Card for IBM BladeCenter HS23	7875	AC1 MC1	A244
IBM BladeCenter GPU Expansion Blade II with NVIDIA Tesla M2075	7870	AC1 MC1	A245
IBM BladeCenter GPU Expansion Blade II with NVIDIA Tesla M2075	7875	AC1 MC1	
IBM BladeCenter GPU Expansion Blade II with NVIDIA Tesla M2070Q	7870	AC1 MC1	A246
IBM BladeCenter GPU Expansion Blade II with NVIDIA Tesla M2070Q	7875	AC1 MC1	
IBM BladeCenter PCI Express Gen 2 Expansion Blade II	7870	AC1	A247

		MC1	
IBM BladeCenter PCI Express Gen 2 Expansion Blade II	7873	AC1	
		MC1	
IBM BladeCenter PCI Express Gen 2 Expansion Blade II	7875	AC1	
		MC1	
Emulex 10GbE VFA II for IBM BladeCenter HS23	7875	AC1	A287
		MC1	
Addl Intel Xeon Processor E5-2665 8C 2.4GHz 20MB Cache 1600MHz 115W	7875	AC1	A2MX
		MC1	
IBM Virtual Fabric Advanced Software Upgrade (LOM)	7875	AC1	A2TD
		MC1	
IBM BladeCenter GPU Expansion Blade II with NVIDIA Tesla M2090	7870	AC1	A2VW
		MC1	
IBM BladeCenter GPU Expansion Blade II with NVIDIA Tesla M2090	7875	AC1	
		MC1	
Emulex 10GbE VFA Advanced II for IBM BladeCenter HS23	7875	AC1	A2ZN
		MC1	
Virtual Fabric Advanced FOD Upgrade for IBM BladeCenter HS23	7875	AC1	A2ZP
		MC1	

The following are features already announced for the 3331 machine type:

Description	MT	Model	Feature
4GB (1x4GB, 1Rx4, 1.5V) PC3-12800 CL11 ECC DDR3 1600MHz VLP RDIMM	3331	HC1	A1S0
4GB (1x4GB, 2Rx8, 1.5V) PC3-12800 CL11 ECC DDR3 1600MHz VLP RDIMM	3331	HC1	A1S1
8GB (1x8GB, 2Rx4, 1.5V) PC3-12800 CL11 ECC DDR3 1600MHz VLP RDIMM	3331	HC1	A1S2
Addl Intel Xeon Processor E5-2603 4C 1.8GHz 10MB Cache 1066MHz 80W	3331	HC1	A1SH
Addl Intel Xeon Processor E5-2609 4C 2.4GHz 10MB Cache 1066MHz 80W	3331	HC1	A1SK
Addl Intel Xeon Processor E5-2620 6C 2.0GHz 15MB Cache 1333MHz 95W	3331	HC1	A1SL
Addl Intel Xeon Processor E5-2650 8C 2.0GHz 20MB Cache 1600MHz 95W	3331	HC1	A1SP
Addl Intel Xeon Processor E5-2660 8C 2.2GHz 20MB Cache 1600MHz 95W	3331	HC1	A1SQ
Addl Intel Xeon Processor E5-2680 8C 2.7GHz 20MB Cache 1600MHz 130W	3331	HC1	A1SR
Addl Intel Xeon Processor E5-2667 6C 2.9GHz 15MB Cache 1600MHz 130W	3331	HC1	A1ST
Addl Intel Xeon Processor E5-2630L 6C 2.0GHz 15MB Cache 1333MHz 60W	3331	HC1	A1SV
Addl Intel Xeon Processor E5-2650L 8C 1.8GHz 20MB Cache 1600MHz 70W	3331	HC1	A1SW
Addl Intel Xeon Processor E5-2637 2C 3.0GHz 5MB Cache 1600MHz 80W	3331	HC1	A23W
Addl Intel Xeon Processor E5-2640 6C 2.5GHz 15MB Cache 1333MHz 95W	3331	HC1	A23X
Addl Intel Xeon Processor E5-2630 6C 2.3GHz 15MB Cache 1333MHz 95W	3331	HC1	A23Y
Addl Intel Xeon Processor E5-2658 8C 2.1GHz 20MB Cache 1600MHz 95W	3331	HC1	A23Z
Addl Intel Xeon Processor E5-2648L 8C 1.8GHz 20MB Cache 1600MHz 70W	3331	HC1	A240
Addl Intel Xeon Processor E5-2670 8C 2.6GHz 20MB Cache 1600MHz 115W	3331	HC1	A242
10Gb Interposer Card for IBM BladeCenter HS23	3331	HC1	A244
IBM BladeCenter GPU Expansion Blade II with NVIDIA Tesla M2075	3331	HC1	A245
IBM BladeCenter GPU Expansion Blade II with NVIDIA Tesla M2070Q	3331	HC1	A246

IBM BladeCenter PCI Express Gen 2 Expansion Blade II	3331	HC1	A247
Emulex 10GbE VFA II for IBM BladeCenter HS23	3331	HC1	A287
Addl Intel Xeon Processor E5-2665 8C 2.4GHz 20MB Cache 1600MHz 115W	3331	HC1	A2MX
IBM Virtual Fabric Advanced Software Upgrade (LOM)	3331	HC1	A2TD
IBM BladeCenter GPU Expansion Blade II with NVIDIA Tesla M2090	3331	HC1	A2VW
Emulex 10GbE VFA Advanced II for IBM BladeCenter HS23	3331	HC1	A2ZN
Virtual Fabric Advanced FOD Upgrade for IBM BladeCenter HS23	3331	HC1	A2ZP

The Single Entity Offerings (SEO)

Description	SEO number
IBM BladeCenter HS23	
	7875A1U
	7875A2U
	7875B1U
	7875B2U
	7875B3U
	7875C1U
	7875C2U
	7875C3U
	7875C4U
	7875C5U
	7875D1U
	7875F1U
IBM BladeCenter HS23 with Virtual Fabric	
	7875G1U
	7875G2U
IBM BladeCenter HS23 Express Models	
	7875E1U
	7875E2U
	7875E3U
IBM BladeCenter HS23: Foundation for Cloud	
	787591U
	787592U

Options

Options

Description	Part number
Intel Xeon Processor E5-2603 4C 1.8GHz 10MB Cache 1066MHz 80W	81Y9292
Intel Xeon Processor E5-2609 4C 2.4GHz 10MB Cache 1066MHz 80W	81Y9294
Intel Xeon Processor E5-2620 6C 2.0GHz 15MB Cache 1333MHz 95W	81Y9295
Intel Xeon Processor E5-2650 8C 2.0GHz 20MB Cache 1600MHz 95W	81Y9298
Intel Xeon Processor E5-2660 8C 2.2GHz 20MB Cache 1600MHz 95W	81Y9299
Intel Xeon Processor E5-2680 8C 2.7GHz 20MB Cache 1600MHz 130W	81Y9300
Intel Xeon Processor E5-2667 6C 2.9GHz 15MB Cache 1600MHz 130W	81Y9302
Intel Xeon Processor E5-2630L 6C 2.0GHz 15MB Cache 1333MHz 60W	81Y9304
Intel Xeon Processor E5-2650L 8C 1.8GHz 20MB Cache 1600MHz 70W	81Y9305
Intel Xeon Processor E5-2648L 8C 1.8GHz 20MB Cache 1600MHz 70W	94Y8562
Intel Xeon Processor E5-2658 8C 2.1GHz 20MB Cache 1600MHz 95W	94Y8565
Intel Xeon Processor E5-2637 2C 3.0GHz 5MB Cache 1600MHz 80W	94Y8570

Intel Xeon Processor E5-2640 6C 2.5GHz 15MB Cache 1333MHz 95W	94Y8571
Intel Xeon Processor E5-2630 6C 2.3GHz 15MB Cache 1333MHz 95W	94Y8572
Intel Xeon Processor E5-2670 8C 2.6GHz 20MB Cache 1600MHz 115W	94Y8589
Intel Xeon Processor E5-2665 8C 2.4GHz 20MB Cache 1600MHz 115W	94Y8671
IBM BladeCenter GPU Expansion Blade II with NVIDIA Tesla M2075	68Y7478
IBM BladeCenter GPU Expansion Blade II with NVIDIA Tesla M2070Q	68Y7479
IBM BladeCenter PCI Express Gen 2 Expansion Blade II	68Y7484
10Gb Interposer Card for IBM BladeCenter HS23	94Y8550
IBM BladeCenter GPU Expansion Blade II with NVIDIA Tesla M2090	00D6881
IBM Virtual Fabric Advanced Software Upgrade (LOM)	90Y9310
Emulex 10GbE VFA II for IBM BladeCenter HS23	81Y3120
Emulex 10GbE VFA Advanced II for IBM BladeCenter HS23	90Y9332
Virtual Fabric Advanced FOD Upgrade for IBM BladeCenter HS23	90Y9350
4GB (1x4GB, 1Rx4, 1.5V) PC3-12800 CL11 ECC DDR3 1600MHz VLP RDIMM	90Y3147
4GB (1x4GB, 2Rx8, 1.5V) PC3-12800 CL11 ECC DDR3 1600MHz VLP RDIMM	90Y3148
8GB (1x8GB, 2Rx4, 1.5V) PC3-12800 CL11 ECC DDR3 1600MHz VLP RDIMM	90Y3149

The following feature numbers are automatically added to the 5372-SWX HIPO order whenever one of the hardware system units is configured in an order.

HIPO feature number	Description
4269	7875-AC1 Routing Code
4270	7875-MC1 Routing Code

Publications

The *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/

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http://publib14.boulder.ibm.com/infocenter/systems

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For details on education offerings related to specific products, visit

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

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When you buy IBM System x technology, include the support services you need -- to help keep both your hardware and software working for you, day after day, at peak performance. It's your first step toward helping to protect your investment and sustain high levels of system availability. We offer service-level and response-time options to fit your business needs. And we'll help you get started with a core support package that includes:

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  Electronic monitoring that helps speed up problem-solving with automated, early detection of potential problems and system errors.

- **Hardware maintenance**

  World-class remote and on-site hardware problem determination and repair services.

- **Software technical support**

  Access to help line calls for fast, accurate answers to your questions during installation and throughout ongoing operations.

For more information, visit

http://www.ibm.com/servers/eserver/xseries/services.html

Technical information

Specified operating environment

Physical specifications

BladeCenter HS23

	7875-A1x
Processor	Intel Xeon E5-2603
	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)	4 GB
DIMMs (Standard)	1 x 4 GB
DIMM sockets	16
Capacity	256 GB [1]
Video	SVGA
Memory	16 MB
Disk controller	SAS/SATA
Channels	4
Connector int.	2
Connector ext.	2 (Optional)
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 + Dual 10Gb
FC card	Optional

	7875-A2x
Processor	Intel Xeon E5-2609
	4 core 80w
Int. speed	2.40 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)	16 GB
DIMMs (Standard)	4 x 4 GB
DIMM sockets	16
Capacity	256 GB [1]
Video	SVGA
Memory	16 MB
Disk controller	SAS/SATA
Channels	4
Connector int.	2

Connector ext.	2 (Optional)
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 + Dual 10Gb
FC card	Optional

IBM BladeCenter HS23

	7875-B1x
Processor	Intel Xeon E5-2620 6 core 95w
Int. speed	2.93 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)	16 GB
DIMMs (Standard)	4 x 4 GB
DIMM sockets	16
Capacity	256 GB [1]
Video	SVGA
Memory	16 MB
Disk controller	SAS/SATA
Channels	4
Connector int.	2
Connector ext.	2 (Optional)
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 + Dual 10Gb
10Gb Interposer Card	Standard
FC card	Optional

	7875-B2x
Processor	Intel Xeon E5-2640 6 core 95w
Int. speed	2.50 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)	16 GB
DIMMs (Standard)	4 x 4 GB
DIMM sockets	16
Capacity	256 GB [1]
Video	SVGA
Memory	16 MB
Disk controller	SAS/SATA

Channels	4
Connector int.	2
Connector ext.	2 (Optional)
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 + Dual 10Gb
10Gb Interposer Card	Standard
FC card	Optional

	7875-B3x
Processor	Intel Xeon E5-2630 6 core 95w
Int. speed	2.30 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)	16 MB
DIMMs (Standard)	4 x 4 GB
DIMM sockets	16
Capacity	256 GB [1]
Video	SVGA
Memory	16 MB
Disk controller	SAS/SATA
Channels	4
Connector int.	2
Connector ext.	2 (Optional)
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 + Dual 10Gb
10Gb Interposer Card	Standard
FC card	Optional

IBM BladeCenter HS23

	7875-C1x
Processor	Intel Xeon E5-2650 8 core 95w
Int. speed	2.00 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)	16 GB
DIMMs (Standard)	4 x 4 GB
DIMM sockets	16
Capacity	256 GB [1]

Video	SVGA
Memory	16 MB
Disk controller	SAS/SATA
Channels	4
Connector int.	2
Connector ext.	2 (Optional)
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 + Dual 10Gb
10Gb Interposer Card	Standard
FC card	Optional

7875-C2x

Processor	Intel Xeon E5-2660 8 core 95w
Int. speed	2.20 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)	16 GB
DIMMs (Standard)	4 x 4 GB
DIMM sockets	16
Capacity	256 GB [1]
Video	SVGA
Memory	16 MB
Disk controller	SAS/SATA
Channels	4
Connector int.	2
Connector ext.	2 (Optional)
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 + Dual 10Gb
10Gb Interposer Card	Standard
FC card	Optional

7875-C3x

Processor	Intel Xeon E5-2665 8 core 115w
Int. speed	2.40 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)	16 GB
DIMMs (Standard)	4 x 4 GB
DIMM sockets	16

Capacity	256 GB [1]
Video	SVGA
Memory	16 MB
Disk controller	SAS/SATA
Channels	4
Connector int.	2
Connector ext.	2 (Optional)
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 + Dual 10Gb
10Gb Interposer Card	Standard
FC card	Optional

7875-C4x

Processor	Intel Xeon E5-2670 8 core 115w
Int. speed	2.60 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)	16 GB
DIMMs (Standard)	4 x 4 GB
DIMM sockets	16
Capacity	256 GB [1]
Video	SVGA
Memory	16 MB
Disk controller	SAS/SATA
Channels	4
Connector int.	2
Connector ext.	2 (Optional)
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 + Dual 10Gb
10Gb Interposer Card	Standard
FC card	Optional

7875-C5x

Processor	Intel Xeon E5-2680 8 core 130w
Int. speed	2.70 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)	16 GB
DIMMs (Standard)	4 x 4 GB

DIMM sockets	16
Capacity	256 GB [1]
Video	SVGA
Memory	16 MB
Disk controller	SAS/SATA
Channels	4
Connector int.	2
Connector ext.	2 (Optional)
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 + Dual 10Gb
10Gb Interposer Card	Standard
FC card	Optional

IBM BladeCenter HS23

7875-D1x

Processor	Intel Xeon E5-2650L 8 core 70w
Int. speed	1.80 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)	16 GB
DIMMs (Standard)	4 x 4 GB
DIMM sockets	16
Capacity	256 GB [1]
Video	SVGA
Memory	16 MB
Disk controller	SAS/SATA
Channels	4
Connector int.	2
Connector ext.	2 (Optional)
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 + Dual 10Gb
10Gb Interposer Card	Standard
FC card	Optional

IBM BladeCenter HS23

7875-F1x

Processor	Intel Xeon E5-2648L 4 core 80w
Int. speed	1.80 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)	16 GB
DIMMs (Standard)	4 x 4 GB
DIMM sockets	16
Capacity	256 GB [1]
Video	SVGA
Memory	16 MB
Disk controller	SAS/SATA
Channels	4
Connector int.	2
Connector ext.	2 (Optional)
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 + Dual 10Gb
10Gb Interposer Card	Standard
FC card	Optional

IBM BladeCenter HS23 with Virtual Fabric

7875-G1x

Processor	Intel Xeon E5-2630 6 core 95w
Int. speed	2.30 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)	16 GB
DIMMs (Standard)	4 x 4 GB
DIMM sockets	16
Capacity	256 GB [1]
Video	SVGA
Memory	16 MB
Disk controller	SAS/SATA
Channels	4
Connector int.	2
Connector ext.	2 (Optional)
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 + Dual 10Gb
FC card	Optional
Virtual Fabric Advanced Software Upgrade (LOM)	Standard
Emulex 10GbE VFA Advanced II Adapter for IBM BladeCeter HS23	1

7875-G2x

Processor	Intel Xeon E5-2670 8 core 115w
Int. speed	2.60 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)	16 GB
DIMMs (Standard)	4 x 4 GB
DIMM sockets	16
Capacity	256 GB [1]
Video	SVGA
Memory	16 MB
Disk controller	SAS/SATA
Channels	4
Connector int.	2
Connector ext.	2 (Optional)
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 + Dual 10Gb
FC card	Optional
Virtual Fabric Advanced Software Upgrade (LOM)	Standard
Emulex 10GbE VFA Advanced II Adapter for IBM BladeCeter HS23	1

IBM BladeCenter HS23: Foundation for Cloud

7875-91x

Processor	Intel Xeon E5-2620 6 core 95w
Int. speed	2.00 GHz
Max. mem. speed	1333 MHz
Interconnect speed	7.2 GT/s
Number standard	2
Maximum	2
L2 cache	15 MB
Memory (VLP ECC DDR3)	128 MB
DIMMs (Standard)	16 x 8 GB
DIMM sockets	16
Capacity	256 GB [1]
Video	SVGA
Memory	16 MB
Disk controller	SAS/SATA
Channels	4
Connector int.	2
Connector ext.	2 (Optional)
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 + Dual 10Gb
10Gb Interposer Card	Standard
FC card	Optional
Virtual Fabric Advanced Software Upgrade (LOM)	Standard

IBM USB Memory Key for VMWare ESXi 5.0	Standard
IBM Systems Director Standard Ed for X86 V6-Srvr Lic w/1 Yr S&S	Standard

	7875-92x
Processor	Intel Xeon E5-2650 8 core 95w
Int. speed	2.00 GHz
Max. mem. speed	1600 MHz
Interconnect speed	8.0 GT/s
Number standard	2
Maximum	2
L2 cache	20 MB
Memory (VLP ECC DDR3)	128 GB
DIMMs (Standard)	16 x 8 GB
DIMM sockets	16
Capacity	256 GB [1]
Video	SVGA
Memory	16 MB
Disk controller	SAS/SATA
Channels	4
Connector int.	2
Connector ext.	2 (Optional)
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 + Dual 10Gb
10Gb Interposer Card	Standard
FC card	Optional
Virtual Fabric Advanced Software Upgrade (LOM)	Standard
IBM USB Memory Key for VMWare ESXi 5.0	Standard
IBM Systems Director Standard Ed for X86 V6-Srvr Lic w/1 Yr S&S	Standard

BladeCenter HS23 Express Models

	7875-E1U
Processor	Intel Xeon E5-2620 6 core 95w
Int. speed	2.00 GHz
Max. mem. speed	1333 MHz
Interconnect speed	7.2 GT/s
Number standard	2
Maximum	2
L2 cache	15 MB
Memory (VLP ECC DDR3)	32 GB
DIMMs (Standard)	8 x 4 GB
DIMM sockets	16
Capacity	256 GB [1]
Video	SVGA
Memory	16 MB
Disk controller	SAS/SATA
Channels	4
Connector int.	2
Connector ext.	2 (Optional)
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 + Dual 10Gb
10Gb Interposer Card	Standard
FC card	Optional

	7875-E2U
Processor	Intel Xeon E5-2630 6 core 95w
Int. speed	2.30 GHz
Max. mem. speed	1333 MHz
Interconnect speed	7.2 GT/s
Number standard	2
Maximum	2
L2 cache	15 MB
Memory (VLP ECC DDR3)	64 GB
DIMMs (Standard)	8 x 8 GB
DIMM sockets	16
Capacity	256 GB [1]
Video	SVGA
Memory	16 MB
Disk controller	SAS/SATA
Channels	4
Connector int.	2
Connector ext.	2 (Optional)
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 + Dual 10Gb
10Gb Interposer Card	Standard
FC card	Optional

	7875-E3U
Processor	Intel Xeon E5-2670 8 core 115w
Int. speed	2.60 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)	64 GB
DIMMs (Standard)	8 x 8 GB
DIMM sockets	16
Capacity	256 GB [1]
Video	SVGA
Memory	16 MB
Disk controller	SAS/SATA
Channels	4
Connector int.	2
Connector ext.	2 (Optional)
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 + Dual 10Gb
10Gb Interposer Card	Standard
FC card	Optional

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

[2]Capacities 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 HS23 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 HS23

- Height: 24.5 cm (9.7 in)
- Depth: 44.6 cm (17.6 in)
- Width: 2.9 cm (1.14 in)
- Maximum weight: 5.4 kg (12 lb)

Note: Above dimensions and weights refer to a single-wide HS23. 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 HS23: 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

- FCC - Verified to comply with Part 15 of the FCC Rules, Class A
- Canada ICES-003, issue 4, Class A
- UL/IEC 60950-1
- CSA C22.2 No. 60950-1-03

Operating environment

- ASHRAE class A2
- Temperature: 10° to 35°C (50° to 95°F) to 914 m (3,000 ft)
- Relative humidity: 8% to 80% (noncondensing)

NEBS environment

- Air temperature:

  - Chassis on: 5° to 40°C (41° to 104°F) at altitude of -60 m (-197 ft) to 1,800 m (6,000 ft)
  - Chassis on (short term*): -5° to 55°C (23° to 131°F) at altitude of -60 m (-197 ft) to 1,800 m (6,000 ft)
  - Chassis on: 5° to 30°C (41° to 86°F) at altitude of 1,800 m (600 ft) to 4,000 m (13,000 ft)
  - Chassis on (short term*): -5° to 45°C (23° to 113°F) at altitude of 1,800 m (6,000 ft) to 4,000 m (13,000 ft)
  - Chassis off: -40° to 70°C (-40° to 158°F)
- Rate of temperature change: 30°C/hr (54°F/hr)
- Humidity:
  - Chassis on: 5% to 85%
  - Chassis on (short term*): 5% to 90% but not to exceed 0.024 kg water/kg of dry air
  - Chassis off: uncontrolled

(*) Note: A period of not more than 96 consecutive hours and a total of not more than 15 days in one year. (This refers to a total of 360 hours in any given year, but, no more than 15 occurrences during that one-year period.)

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

The following network operating systems have been tested for compatibility with the BladeCenter HS23:

- Microsoft :
  - Windows Server 2008 R2
  - Windows Server 2008 (32-bit) - Web/Std/Ent/DC
  - Windows Server 2008 (64-bit) - Web/Std/Ent/DC
  - Windows HPC Server 2008
  - Windows Server 2008 HPC Edition 2008
  - Windows Small Business Server 2008 - Std/Prem
  - Windows Server 2003 R2 (64-bit) - Web/Std/Ent/DC
- Linux™ :
  - Red Hat EL 6 (Server) 32-bit - Update 2
  - Red Hat EL 6 (Server) 64-bit (includes KVM) - Update 2

  - Red Hat EL 5 (Server) 32-bit - Update 7
  - Red Hat EL 5 (Server) 64-bit (includes KVM) - Update 7
  - Red Hat EL 5 (Server) 64-bit w/ Xen - Update 7
  - SUSE Linux ES 11 32-bit Service Pack 2
  - SUSE Linux ES 11 64-bit Service Pack 2
  - SUSE Linux ES 11 64-bit w/ Xen Service Pack 2
  - SUSE Linux ES 10 32-bit Service Pack 4
  - SUSE Linux ES 10 64-bit Service Pack 4
  - SUSE Linux ES 10 64-bit w/ Xen Service Pack 4
- 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 HS23 contains 16 DIMM sockets.

  A maximum of 256 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.

  Refer to the Planning information section or the System x server website for memory options.
- Microprocessors must be of the same type, power level, and clock speed on each BladeCenter HS23. Mixing microprocessors of different speeds, power levels, or cache sizes or upgrading the base processors is not supported.
- Not all microprocessors are supported in all chassis. The latest BladeCenter hardware and software compatibility is available at

  http://www.ibm.com/servers/eserver/serverproven/compat/us/
- The new IBM BladeCenter HS23 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).

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.

Customer responsibilities

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

Configuration information

BladeCenter HS23 models must be installed in a BladeCenter chassis.

BladeCenter configuration

Processor upgrades

For systems that come standard with one Intel Xeon 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 HS23 models:

- Intel Xeon Processor E5-2603, 1.8 GHz, 10MB Cache, 4c, 80w, 1066 MHz (81Y9292)
- Intel Xeon Processor E5-2609, 2.4 GHz, 10MB Cache, 4c, 80w, 1066 MHz (81Y9294)
- Intel Xeon Processor E5-2620, 2.0 GHz, 15MB Cache, 6c, 95w, 1333 MHz (81Y9295)
- Intel Xeon Processor E5-2630, 2.3 GHz, 15MB Cache, 6c, 95w, 1333 MHz (94Y8572)
- Intel Xeon Processor E5-2640, 2.5 GHz, 15MB Cache, 6c, 95w, 1333 MHz (94Y8571)
- Intel Xeon Processor E5-2650, 2.0 GHz, 20MB Cache, 8c, 95w, 1600 MHz (81Y9298)
- Intel Xeon Processor E5-2660, 2.2 GHz, 20MB Cache, 8c, 95w, 1600 MHz (81Y9299)
- Intel Xeon Processor E5-2643, 3.3 GHz, 10MB Cache, 4c, 130w, 1600 MHz (81Y9301)
- Intel Xeon Processor E5-2667, 2.9 GHz, 15MB Cache, 6c, 130w, 1600 MHz (81Y9302)
- Intel Xeon Processor E5-2630L, 2.0 GHz, 15MB Cache, 6c, 60w, 1333 MHz (81Y9304)
- Intel Xeon Processor E5-2650L, 1.8 GHz, 20MB Cache, 8c, 70w, 1600 MHz (81Y9305)
- Intel Xeon Processor E5-2670, 2.6 GHz, 20MB Cache, 8c, 115w, 1600 MHz (81Y9418)
- Intel Xeon Processor E5-2637, 3.0 GHz, 5MB Cache, 2c, 80w, 1600 MHz (94Y8570)
- Intel Xeon Processor E5-2648L, 1.8 GHz, 20MB Cache, 8c, 70w, 1600 MHz (94Y8562)
- Intel Xeon Processor E5-2658, 2.1 GHz, 20MB Cache, 8c, 95w, 1600 MHz (94Y8565)

Powerconsiderations

The BladeCenter HS23 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 HS23 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 HS23

Product	Package description	Boxes
BladeCenter	BladeCenter Carton	1
	Contents:	
	BladeCenter HS23	1
	Publications/CD Package	1
BladeCenter	Publications Package	1
	Contents:	
	Documentation CD-ROM (softcopy of publications) Important Notices Warranty Flyer	

The BladeCenter HS23 blades are shipped in a single package. The approximate shipping dimensions and weight are:

- Single pack dimensions: 60.32 x 33.4 x 15.57 cm (23.75 x 13.13 x 6.13 in)
- Single pack weight: 4.2 kg (9.2 lb)

Note: Above dimensions and weights refer to a single-wide HS23. 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 HS23 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.

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

IBM Global Financing

Yes

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

In the United States, call 800-IBM-SERV (426-7378), or write to:

Warranty Information
P.O. Box 12195
Research Triangle Park, NC 27709
Attn: Dept JDJA/B203

Warranty period

- Three years
- Optional features: One year

Note: For configurations that support the RAID battery, the RAID battery will be warranted for one 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 that 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 are the same as those for the machine in which it is installed.

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

- Top cover
- Fillers
- Front bezels

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 HS23:

- System Planar Board
- Processors (CPUs)

Other parts, including the following have been designated as Tier 1 CRUs for the BladeCenter HS23:

- Solidstate drive
- 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.

Call IBM at 1-800-IBM-SERV (426-7378) to assist with problem isolation for hardware to determine if warranty service is required. Telephone support may be subject to additional charges, even during the limited warranty period.

Calls must be received by 5:00 p.m. local time in order to qualify for NBD service.

International Warranty Service

International Warranty Service (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?lndocid=GCOR-3FBJK2

For more information on IWS, refer to Services Announcement 601-034, 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.

Maintenance services

ServicePac , ServiceSuite , ServiceElect, and ServiceElite

ServicePac® , ServiceSuite® , ServiceElect, and ServiceElite provide hardware warranty service upgrades, maintenance, and selected support services in one agreement.

Warranty service upgrade

During the warranty period, a warranty service upgrade provides an enhanced level of On-site Service for an additional charge. A warranty service upgrade must be purchased during the warranty period and is for a fixed term (duration). It is not refundable or transferable and may not be prorated. If required, IBM will provide the warranty service upgrade enhanced level of On-site Service acquired by the customer. Service levels are response-time objectives and are not guaranteed.

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.

CRUs will be provided as part of the machine's standard warranty CRU Service except that you may install a Tier 1 CRU yourself or request IBM installation, at no additional charge, under one of the On-site Service levels specified below.

IBM will repair the failing machine at your location and verify its operation. 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.

Maintenance service

If required, IBM provides repair or exchange service, depending on the type of maintenance 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.

CRU Service

If your problem can be resolved with a CRU (for example, keyboard, mouse, speaker, memory, or hard disk drive), IBM will ship the 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.

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.

On-site Service

IBM will repair the failing machine at your location and verify its operation. 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.

Maintenance service (ICA)

Maintenance services are available for ICA legacy contracts.

Alternative service (warranty service upgrades)

During the warranty period, a warranty service upgrade provides an enhanced level of On-site Service for an additional charge. A warranty service upgrade must be purchased during the warranty period and is for a fixed term (duration). It is not refundable or transferable and may not be prorated. If required, IBM will provide the warranty service upgrade enhanced level of On-site Service acquired by the customer. Service levels are response-time objectives and are not guaranteed.

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.

A CRU will be provided as part of the machine's standard warranty CRU Service except that you may install a Tier 1 CRU yourself or request IBM to install it, at no additional charge, under the type of warranty service designated for your machine.

IBM will repair the failing machine at your location and verify its operation. 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.

Maintenance service

If required, IBM provides repair or exchange service, depending on the type of maintenance 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.

CRU Service

If your problem can be resolved with a CRU (for example, keyboard, mouse, speaker, memory, or hard disk drive), IBM will ship the 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.

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.

On-site Service

IBM will repair the failing machine at your location and verify its operation. 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.

Non-IBM parts support

Warranty service

IBM is now shipping machines with selected non-IBM parts that contain an IBM field replaceable unit (FRU) part number label. These parts are to be serviced during the IBM machine warranty period. IBM is covering the service on these selected non-IBM parts as an accommodation to its customers, and normal warranty service procedures for the IBM machine apply.

Warranty service upgrades and maintenance services

Under certain conditions, IBM Integrated Technology Services repairs selected non-IBM parts at no additional charge for machines that are covered under warranty service upgrades or maintenance services.

IBM Service provides hardware problem determination on non-IBM parts (for example, adapter cards, PCMCIA cards, disk drives, or memory) installed within IBM machines covered under warranty service upgrades or maintenance services and provides the labor to replace the failing parts at no additional charge.

If IBM has a Technical Service Agreement with the manufacturer of the failing part, or if the failing part is an accommodations part (a part with an IBM FRU label), IBM may also source and replace the failing part at no additional charge. For all other non-IBM parts, customers are responsible for sourcing the parts. Installation labor is

provided at no additional charge, if the machine is covered under a warranty service upgrade or a maintenance service.

Warranty service upgrades

IBM hourly service rate classification

One

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.

Graduated program license charges apply

No

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.

Pricing

For current prices, contact IBM at 888-Shop-IBM (746-7426) or visit

http://www-03.ibm.com/systems/x/

The following are features already announced for the 3331 machine type:

Description	Model number	Feature number	Initial/ MES/ Both support	CSU	RP MES
4GB (1x4GB, 1Rx4, 1.5V) PC3-12800 CL11 ECC DDR3 1600MHz VLP RDIMM	HC1	A1S0	MES		
4GB (1x4GB, 2Rx8, 1.5V) PC3-12800 CL11 ECC DDR3 1600MHz VLP RDIMM	HC1	A1S1	MES		
8GB (1x8GB, 2Rx4, 1.5V) PC3-12800 CL11 ECC DDR3 1600MHz VLP RDIMM	HC1	A1S2	MES		

Addl Intel Xeon Processor E5-2603 4C 1.8GHz 10MB Cache 1066MHz 80W
HC1 A1SH MES
Addl Intel Xeon Processor E5-2609 4C 2.4GHz 10MB Cache 1066MHz 80W
HC1 A1SK MES
Addl Intel Xeon Processor E5-2620 6C 2.0GHz 15MB Cache 1333MHz 95W
HC1 A1SL MES
Addl Intel Xeon Processor E5-2650 8C 2.0GHz 20MB Cache 1600MHz 95W
HC1 A1SP MES
Addl Intel Xeon Processor E5-2660 8C 2.2GHz 20MB Cache 1600MHz 95W
HC1 A1SQ MES
Addl Intel Xeon Processor E5-2680 8C 2.7GHz 20MB Cache 1600MHz 130W
HC1 A1SR MES
Addl Intel Xeon Processor E5-2667 6C 2.9GHz 15MB Cache 1600MHz 130W
HC1 A1ST MES
Addl Intel Xeon Processor E5-2630L 6C 2.0GHz 15MB Cache 1333MHz 60W
HC1 A1SV MES
Addl Intel Xeon Processor E5-2650L 8C 1.8GHz 20MB Cache 1600MHz 70W
HC1 A1SW MES
Addl Intel Xeon Processor E5-2637 2C 3.0GHz 5MB Cache 1600MHz 80W
HC1 A23W MES
Addl Intel Xeon Processor E5-2640 6C 2.5GHz 15MB Cache 1333MHz 95W
HC1 A23X MES
Addl Intel Xeon Processor E5-2630 6C 2.3GHz 15MB Cache 1333MHz 95W
HC1 A23Y MES
Addl Intel Xeon Processor E5-2658 8C 2.1GHz 20MB Cache 1600MHz 95W
HC1 A23Z MES
Addl Intel Xeon Processor E5-2648L 8C 1.8GHz 20MB Cache 1600MHz 70W
HC1 A240 MES
Addl Intel Xeon Processor E5-2670 8C 2.6GHz 20MB Cache 1600MHz 115W
HC1 A242 MES
10Gb Interposer Card for IBM BladeCenter HS23
HC1 A244 MES
IBM BladeCenter GPU Expansion Blade II with NVIDIA Tesla M2075
HC1 A245 MES
IBM BladeCenter GPU Expansion Blade II with NVIDIA Tesla M2070Q
HC1 A246 MES
IBM BladeCenter PCI Express Gen 2 Expansion Blade II
HC1 A247 MES
Emulex 10GbE VFA II for IBM BladeCenter HS23
HC1 A287 MES
Addl Intel Xeon Processor E5-2665 8C 2.4GHz 20MB Cache 1600MHz 115W
HC1 A2MX MES
IBM Virtual Fabric Advanced Software Upgrade (LOM)
HC1 A2TD MES
IBM BladeCenter GPU Expansion Blade II with NVIDIA Tesla M2090
HC1 A2VW MES
Emulex 10GbE VFA Advanced II for IBM BladeCenter HS23
HC1 A2ZN MES
Virtual Fabric Advanced FOD Upgrade for IBM BladeCenter HS23
HC1 A2ZP MES

The following are features already announced for the 7870 machine type:

Description	Model number	Feature number	Initial/ MES/ Both support	CSU	RP MES
AC1					
	AC1			Yes	
MC1					
	MC1			Yes	
IBM BladeCenter GPU Expansion Blade II with NVIDIA Tesla M2075					
	AC1	A245	Initial		
	MC1		Initial		
IBM BladeCenter GPU Expansion Blade II with NVIDIA Tesla M2070Q					
	AC1	A246	Initial		
	MC1		Initial		
IBM BladeCenter PCI Express Gen 2 Expansion Blade II					
	AC1	A247	Initial		
	MC1		Initial		
IBM BladeCenter GPU Expansion Blade II with NVIDIA Tesla M2090					
	AC1	A2VW	Initial		
	MC1		Initial		

The following are features already announced for the 7873 machine type:

Description	Model number	Feature number	Initial/ MES/ Both support	CSU	RP MES
AC1					
	AC1			Yes	
MC1					
	MC1			Yes	
IBM BladeCenter PCI Express Gen 2 Expansion Blade II					
	AC1	A247	Initial		
	MC1		Initial		

The following are newly announced features on the specified models of the IBM xSeries 7875 machine type:

Description	Model number	Feature number	Initial/ MES/ Both support	CSU	RP MES
IBM BladeCenter HS23					
	AC1			Yes	
IBM BladeCenter HS23					
	MC1			Yes	
Integrated SATA Mirroring - 2 identical HDDs required					
	AC1	0030	Initial		
	MC1		Initial		
Integrated SATA Striping - 2 identical HDDs required					
	AC1	0031	Initial		
	MC1		Initial		
China Warranty for MT 7875					
	AC1	7599	Initial		
	MC1		Initial		
IBM 200GB SATA 2.5" MLC HS SSD					
	AC1	A2FN	Initial		
	MC1		Initial		
IBM 256GB SATA 2.5" MLC HS Entry SSD					

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                              AC1      A2U3          Initial
                              MC1                    Initial
IBM 128GB SATA 2.5" MLC HS Entry SSD
                              AC1      A2U4          Initial
                              MC1                    Initial
2-port 40Gb InfiniBand Expansion Card (CFFh) for
IBM BladeCenter
                              AC1      0056          Initial
                              MC1                    Initial
Broadcom 10Gb Gen2 4-port Ethernet Exp Cd (CFFh)
for IBM BladeCenter
                              AC1      0098          Initial
                              MC1                    Initial
Broadcom 10Gb Gen2 2-port Ethernet Exp Cd (CFFh)
for IBM BladeCenter
                              AC1      0099          Initial
                              MC1                    Initial
UID Asset Tag Label
                              AC1      0747          Initial
                              MC1                    Initial
Packaging - 3U Blade WW
                              AC1      0764          Initial
                              MC1                    Initial
Packaging - 4U Blade WW
                              AC1      0765          Initial
                              MC1                    Initial
Packaging - 1U Blade WW
                              AC1      0785          Initial
                              MC1                    Initial
Packaging - 2U Blade WW
                              AC1      0786          Initial
                              MC1                    Initial
Qlogic 8Gb Fibre Channel Expansion Card (CIOv) for
IBM BladeCenter
                              AC1      1462          Initial
                              MC1                    Initial
SAS Connectivity Card (CIOv) for IBM BladeCenter
                              AC1      1593          Initial
                              MC1                    Initial
EMEA Long Leadtime Configurations
                              AC1      1763          Initial
                              MC1                    Initial
Hungary CHW plant 9SH
                              AC1      1764          Initial
                              MC1                    Initial
Guad CHW plant 9KQ
                              AC1      1765          Initial
                              MC1                    Initial
ISTC CHW 9K2
                              AC1      1766          Initial
                              MC1                    Initial
RTP CHW 9NR
                              AC1      1767          Initial
                              MC1                    Initial
Offload Manufacturing to Guadalajara HVEC
                              AC1      1768          Initial
                              MC1                    Initial
Offload Manufacturing to RTP HVEC
                              AC1      1769          Initial
                              MC1                    Initial
Offload Manufacturing to ISTC
                              AC1      1770          Initial
                              MC1                    Initial
Capacity Scheduling Service
                              AC1      1772          Initial
                              MC1                    Initial
Custom SLA Scheduling Service
                              AC1      1796          Initial
                              MC1                    Initial
Custom Asset Tagging - Standard
                              AC1      2200          Initial
                              MC1                    Initial
Custom Asset Tagging - Enhanced
                              AC1      2201          Initial
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                              MC1                   Initial
Custom Image Load - Server
                              AC1      2204         Initial
                              MC1                   Initial
Custom Media Shipgroup
                              AC1      2206         Initial
                              MC1                   Initial
Request for Global Trade Number (UPC or EAN)
                              AC1      2207         Initial
                              MC1                   Initial
Custom Software/Firmware Setting - Standard
                              AC1      2208         Initial
                              MC1                   Initial
Custom Software/Firmware Setting - Enhanced
                              AC1      2209         Initial
                              MC1                   Initial
Custom RAID Configuration
                              AC1      2212         Initial
                              MC1                   Initial
Custom Labeling
                              AC1      2220         Initial
                              MC1                   Initial
Custom Palletization
                              AC1      2221         Initial
                              MC1                   Initial
Request for a new Vendor Logo Hardware
                              AC1      2247         Initial
                              MC1                   Initial
Request for an existing IBM Feature
                              AC1      2248         Initial
                              MC1                   Initial
Request for an existing Public RPQ
                              AC1      2249         Initial
                              MC1                   Initial
RAID Configuration
                              AC1      2302         Initial
                              MC1                   Initial
Department of Defense UID Label
                              AC1      2320         Initial
                              MC1                   Initial
16GB (1x16GB, 2Rx4, 1.35V) PC3L-10600 CL9 ECC DDR3
1333MHz VLP RDIMM
                              AC1      2422         Initial
                              MC1                   Initial
Rack 01
                              AC1      3101         Initial
                              MC1                   Initial
Rack 02
                              AC1      3102         Initial
                              MC1                   Initial
Rack 03
                              AC1      3103         Initial
                              MC1                   Initial
Rack 04
                              AC1      3104         Initial
                              MC1                   Initial
Rack 05
                              AC1      3105         Initial
                              MC1                   Initial
Rack 06
                              AC1      3106         Initial
                              MC1                   Initial
Rack 07
                              AC1      3107         Initial
                              MC1                   Initial
Rack 08
                              AC1      3108         Initial
                              MC1                   Initial
Rack 09
                              AC1      3109         Initial
                              MC1                   Initial
Rack 10
                              AC1      3110         Initial
                              MC1                   Initial
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Rack 11
                    AC1     3111        Initial
                    MC1                 Initial
Rack 12
                    AC1     3112        Initial
                    MC1                 Initial
Rack 13
                    AC1     3113        Initial
                    MC1                 Initial
Rack 14
                    AC1     3114        Initial
                    MC1                 Initial
Rack 15
                    AC1     3115        Initial
                    MC1                 Initial
Rack 16
                    AC1     3116        Initial
                    MC1                 Initial
Rack 17
                    AC1     3117        Initial
                    MC1                 Initial
Rack 18
                    AC1     3118        Initial
                    MC1                 Initial
Rack 19
                    AC1     3119        Initial
                    MC1                 Initial
Rack 20
                    AC1     3120        Initial
                    MC1                 Initial
Rack 21
                    AC1     3121        Initial
                    MC1                 Initial
Rack 22
                    AC1     3122        Initial
                    MC1                 Initial
Rack 23
                    AC1     3123        Initial
                    MC1                 Initial
Rack 24
                    AC1     3124        Initial
                    MC1                 Initial
Rack 25
                    AC1     3125        Initial
                    MC1                 Initial
Rack 26
                    AC1     3126        Initial
                    MC1                 Initial
Rack 27
                    AC1     3127        Initial
                    MC1                 Initial
Rack 28
                    AC1     3128        Initial
                    MC1                 Initial
Rack 29
                    AC1     3129        Initial
                    MC1                 Initial
Rack 30
                    AC1     3130        Initial
                    MC1                 Initial
Rack 31
                    AC1     3131        Initial
                    MC1                 Initial
Rack 32
                    AC1     3132        Initial
                    MC1                 Initial
Rack 33
                    AC1     3133        Initial
                    MC1                 Initial
Rack 34
                    AC1     3134        Initial
                    MC1                 Initial
Rack 35
                    AC1     3135        Initial
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	MC1		Initial
Rack 36			
	AC1	3136	Initial
	MC1		Initial
Rack 37			
	AC1	3137	Initial
	MC1		Initial
Rack 38			
	AC1	3138	Initial
	MC1		Initial
Rack 39			
	AC1	3139	Initial
	MC1		Initial
Rack 40			
	AC1	3140	Initial
	MC1		Initial
Rack 41			
	AC1	3141	Initial
	MC1		Initial
Rack 42			
	AC1	3142	Initial
	MC1		Initial
Rack 43			
	AC1	3143	Initial
	MC1		Initial
Rack 44			
	AC1	3144	Initial
	MC1		Initial
Rack 45			
	AC1	3145	Initial
	MC1		Initial
Rack 46			
	AC1	3146	Initial
	MC1		Initial
Rack 47			
	AC1	3147	Initial
	MC1		Initial
Rack 48			
	AC1	3148	Initial
	MC1		Initial
Rack 49			
	AC1	3149	Initial
	MC1		Initial
Rack 50			
	AC1	3150	Initial
	MC1		Initial
Rack 51			
	AC1	3151	Initial
	MC1		Initial
Rack 52			
	AC1	3152	Initial
	MC1		Initial
Rack 53			
	AC1	3153	Initial
	MC1		Initial
Rack 54			
	AC1	3154	Initial
	MC1		Initial
Rack 55			
	AC1	3155	Initial
	MC1		Initial
Rack 56			
	AC1	3156	Initial
	MC1		Initial
Rack 57			
	AC1	3157	Initial
	MC1		Initial
Rack 58			
	AC1	3158	Initial
	MC1		Initial
Rack 59			
	AC1	3159	Initial
	MC1		Initial
Rack 60			

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                          AC1      3160          Initial
                          MC1                    Initial
Rack 61
                          AC1      3161          Initial
                          MC1                    Initial
Rack 62
                          AC1      3162          Initial
                          MC1                    Initial
Rack 63
                          AC1      3163          Initial
                          MC1                    Initial
Rack 64
                          AC1      3164          Initial
                          MC1                    Initial
BladeCenter 01
                          AC1      3301          Initial
                          MC1                    Initial
BladeCenter 02
                          AC1      3302          Initial
                          MC1                    Initial
BladeCenter 03
                          AC1      3303          Initial
                          MC1                    Initial
BladeCenter 04
                          AC1      3304          Initial
                          MC1                    Initial
BladeCenter 05
                          AC1      3305          Initial
                          MC1                    Initial
BladeCenter 06
                          AC1      3306          Initial
                          MC1                    Initial
BladeCenter 07
                          AC1      3307          Initial
                          MC1                    Initial
BladeCenter 08
                          AC1      3308          Initial
                          MC1                    Initial
BladeCenter 09
                          AC1      3309          Initial
                          MC1                    Initial
BladeCenter 10
                          AC1      3310          Initial
                          MC1                    Initial
BladeCenter 11
                          AC1      3311          Initial
                          MC1                    Initial
BladeCenter 12
                          AC1      3312          Initial
                          MC1                    Initial
BladeCenter 13
                          AC1      3313          Initial
                          MC1                    Initial
BladeCenter 14
                          AC1      3314          Initial
                          MC1                    Initial
BladeCenter 15
                          AC1      3315          Initial
                          MC1                    Initial
BladeCenter 16
                          AC1      3316          Initial
                          MC1                    Initial
BladeCenter 17
                          AC1      3317          Initial
                          MC1                    Initial
BladeCenter 18
                          AC1      3318          Initial
                          MC1                    Initial
BladeCenter 19
                          AC1      3319          Initial
                          MC1                    Initial
BladeCenter 20
                          AC1      3320          Initial
                          MC1                    Initial
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BladeCenter 21
                          AC1      3321          Initial
                          MC1                    Initial
BladeCenter 22
                          AC1      3322          Initial
                          MC1                    Initial
BladeCenter 23
                          AC1      3323          Initial
                          MC1                    Initial
BladeCenter 24
                          AC1      3324          Initial
                          MC1                    Initial
BladeCenter 25
                          AC1      3325          Initial
                          MC1                    Initial
BladeCenter 26
                          AC1      3326          Initial
                          MC1                    Initial
BladeCenter 27
                          AC1      3327          Initial
                          MC1                    Initial
BladeCenter 28
                          AC1      3328          Initial
                          MC1                    Initial
BladeCenter 29
                          AC1      3329          Initial
                          MC1                    Initial
BladeCenter 30
                          AC1      3330          Initial
                          MC1                    Initial
BladeCenter 31
                          AC1      3331          Initial
                          MC1                    Initial
BladeCenter 32
                          AC1      3332          Initial
                          MC1                    Initial
BladeCenter 33
                          AC1      3333          Initial
                          MC1                    Initial
BladeCenter 34
                          AC1      3334          Initial
                          MC1                    Initial
BladeCenter 35
                          AC1      3335          Initial
                          MC1                    Initial
BladeCenter 36
                          AC1      3336          Initial
                          MC1                    Initial
BladeCenter 37
                          AC1      3337          Initial
                          MC1                    Initial
BladeCenter 38
                          AC1      3338          Initial
                          MC1                    Initial
BladeCenter 39
                          AC1      3339          Initial
                          MC1                    Initial
BladeCenter 40
                          AC1      3340          Initial
                          MC1                    Initial
BladeCenter location 01
                          AC1      3401          Initial
                          MC1                    Initial
BladeCenter location 02
                          AC1      3402          Initial
                          MC1                    Initial
BladeCenter location 03
                          AC1      3403          Initial
                          MC1                    Initial
BladeCenter location 04
                          AC1      3404          Initial
                          MC1                    Initial
BladeCenter location 05
                          AC1      3405          Initial
```

```
                              MC1                    Initial
BladeCenter location 06
                              AC1      3406          Initial
                              MC1                    Initial
BladeCenter location 07
                              AC1      3407          Initial
                              MC1                    Initial
BladeCenter location 08
                              AC1      3408          Initial
                              MC1                    Initial
BladeCenter location 09
                              AC1      3409          Initial
                              MC1                    Initial
BladeCenter location 10
                              AC1      3410          Initial
                              MC1                    Initial
BladeCenter location 11
                              AC1      3411          Initial
                              MC1                    Initial
BladeCenter location 12
                              AC1      3412          Initial
                              MC1                    Initial
BladeCenter location 13
                              AC1      3413          Initial
                              MC1                    Initial
BladeCenter location 14
                              AC1      3414          Initial
                              MC1                    Initial
QLogic 2-pt 10Gb Converged Network Adapter(CFFh)
for IBM BladeCenter
                              AC1      3592          Initial
                              MC1                    Initial
Intel 10Gb 2-port Ethernet Expansion Card (CFFh)
for IBM BladeCenter
                              AC1      3593          Initial
                              MC1                    Initial
QLogic 4Gb Fibre Channel Expansion Card (CIOv) for
IBM BladeCenter
                              AC1      3594          Initial
                              MC1                    Initial
Emulex 8Gb Fibre Channel Expansion Card (CIOv) for
IBM BladeCenter
                              AC1      3598          Initial
                              MC1                    Initial
2.5" HDD Filler Bezel
                              AC1      4069          Initial
                              MC1                    Initial
Dummy DIMM for improved airflow
                              AC1      4916          Initial
                              MC1                    Initial
IBM 500GB 7200 6Gbps NL SAS 2.5" SFF Slim-HS HDD
                              AC1      5409          Initial
                              MC1                    Initial
IBM 600GB 10K 6Gbps SAS 2.5" SFF Slim-HS HDD
                              AC1      5433          Initial
                              MC1                    Initial
Brocade 2 port 10GbE Converged Network Adapter for
IBM BladeCenter
                              AC1      5437          Initial
                              MC1                    Initial
2/4 Port Ethernet Expansion Card (CFFh) for IBM
BladeCenter
                              AC1      5476          Initial
                              MC1                    Initial
Ethernet Expansion Card (CIOv) for IBM BladeCenter
                              AC1      5477          Initial
                              MC1                    Initial
QLogic Eth and 8Gb Fibre Channel Exp Card (CFFh)
for IBM BladeCenter
                              AC1      5485          Initial
                              MC1                    Initial
IBM 146GB 15K 6Gbps SAS 2.5" SFF Slim-HS HDD
                              AC1      5536          Initial
                              MC1                    Initial
```

```
IBM 300GB 10K 6Gbps SAS 2.5" SFF Slim-HS HDD
                              AC1      5599          Initial
                              MC1                    Initial
SOFS Solution Code MFG Instruction
                              AC1      6124          Initial
                              MC1                    Initial
InfoSphere-BWA Solution Code MFG Instruction
                              AC1      6126          Initial
                              MC1                    Initial
GMAS Solution Code MFG Instruction
                              AC1      6127          Initial
                              MC1                    Initial
IBW-SSD Solution Code MFG Instruction
                              AC1      6128          Initial
                              MC1                    Initial
Cloudburst Solution Code MFG Instruction
                              AC1      6129          Initial
                              MC1                    Initial
SoNAS Solution Code MFG Instruction
                              AC1      6130          Initial
                              MC1                    Initial
BladeCenter Office Solution
                              AC1      7019          Initial
                              MC1                    Initial
Customer Solution Center Services
                              AC1      7831          Initial
                              MC1                    Initial
Integrated Solid State Mirroring
                              AC1      7859          Initial
                              MC1                    Initial
Integrated Solid State Striping
                              AC1      7860          Initial
                              MC1                    Initial
e1350 Special Bid Solution Component
                              AC1      7929          Initial
                              MC1                    Initial
No HDD Selected
                              AC1      8026          Initial
                              MC1                    Initial
No Processor Selected
                              AC1      8028          Initial
                              MC1                    Initial
No Memory Selected
                              AC1      8029          Initial
                              MC1                    Initial
Consolidate Shipment
                              AC1      8031          Initial
                              MC1                    Initial
e1350 Solution Component
                              AC1      8034          Initial
                              MC1                    Initial
Compute Node
                              AC1      8036          Initial
                              MC1                    Initial
Management Node
                              AC1      8037          Initial
                              MC1                    Initial
Storage Node
                              AC1      8038          Initial
                              MC1                    Initial
Integrated SAS Mirroring - 2 identical HDDs
required
                              AC1      8039          Initial
                              MC1                    Initial
Integrated SAS Striping - 2 identical HDDs required
                              AC1      8040          Initial
                              MC1                    Initial
TAA Compliant Order
                              AC1      8067          Initial
                              MC1                    Initial
General Racking Solution
                              AC1      8072          Initial
                              MC1                    Initial
Integrate BladeCenter in Manufacturing
```

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                              AC1      8077          Initial
                              MC1                    Initial
No 2.5" SAS HDD Selected
                              AC1      8081          Initial
                              MC1                    Initial
No Publications Selected
                              AC1      8086          Initial
                              MC1                    Initial
8GB (1x8GB, 2Rx4, 1.35V) PC3L-10600 CL9 ECC DDR3
1333MHz VLP RDIMM
                              AC1      8644          Initial
                              MC1                    Initial
No Internal RAID
                              AC1      9012          Initial
                              MC1                    Initial
Memory Sparing
                              AC1      9016          Initial
                              MC1                    Initial
Enable Memory Mirroring
                              AC1      9017          Initial
                              MC1                    Initial
Storage Subsystem ID 01
                              AC1      9170          Initial
                              MC1                    Initial
Storage Subsystem ID 02
                              AC1      9171          Initial
                              MC1                    Initial
Storage Subsystem ID 03
                              AC1      9172          Initial
                              MC1                    Initial
Storage Subsystem ID 04
                              AC1      9173          Initial
                              MC1                    Initial
Storage Subsystem ID 05
                              AC1      9174          Initial
                              MC1                    Initial
Storage Subsystem ID 06
                              AC1      9175          Initial
                              MC1                    Initial
Storage Subsystem ID 07
                              AC1      9176          Initial
                              MC1                    Initial
Storage Subsystem ID 08
                              AC1      9177          Initial
                              MC1                    Initial
Storage Subsystem ID 09
                              AC1      9178          Initial
                              MC1                    Initial
Storage Subsystem ID 10
                              AC1      9179          Initial
                              MC1                    Initial
Storage Subsystem ID 11
                              AC1      9180          Initial
                              MC1                    Initial
Storage Subsystem ID 12
                              AC1      9181          Initial
                              MC1                    Initial
Storage Subsystem ID 13
                              AC1      9182          Initial
                              MC1                    Initial
Storage Subsystem ID 14
                              AC1      9183          Initial
                              MC1                    Initial
Storage Subsystem ID 15
                              AC1      9184          Initial
                              MC1                    Initial
Storage Subsystem ID 16
                              AC1      9185          Initial
                              MC1                    Initial
Storage Subsystem ID 17
                              AC1      9186          Initial
                              MC1                    Initial
Storage Subsystem ID 18
                              AC1      9187          Initial
```

```
                              MC1                   Initial
Storage Subsystem ID 19
                              AC1      9188         Initial
                              MC1                   Initial
Storage Subsystem ID 20
                              AC1      9189         Initial
                              MC1                   Initial
Preload Specify
                              AC1      9200         Initial
                              MC1                   Initial
Windows Specify
                              MC1      9201         Initial
Red Hat Specify
                              AC1      9202         Initial
SuSE Specify
                              AC1      9203         Initial
Drop-in-the-Box Specify
                              AC1      9205         Initial
                              MC1                   Initial
No Preload Specify
                              AC1      9206         Initial
                              MC1                   Initial
VMWare Specify
                              AC1      9207         Initial
                              MC1                   Initial
Preload by Hardware Feature Specify
                              AC1      9220         Initial
                              MC1                   Initial
Software Application (Not Preinstalled) Specify
                              AC1      A0UF         Initial
                              MC1                   Initial
4GB (1x4GB, 1Rx4, 1.35V) PC3L-10600 CL9 ECC DDR3
1333MHz VLP RDIMM
                              AC1      A0WY         Initial
                              MC1                   Initial
4GB (1x4GB, 2Rx8, 1.35V) PC3L-10600 CL9 ECC DDR3
1333MHz VLP RDIMM
                              AC1      A0WZ         Initial
                              MC1                   Initial
Packaging - 5U Blade WW
                              AC1      A0YU         Initial
                              MC1                   Initial
System x Cluster Upgrade
                              AC1      A103         Initial
                              MC1                   Initial
Integrated Solutions - Microsoft
                              AC1      A192         Initial
                              MC1                   Initial
Integrated Solutions
                              AC1      A193         Initial
                              MC1                   Initial
IBM 1TB 7.2K 6Gbps NL SATA 2.5" SFF HS HDD
                              AC1      A1AV         Initial
                              MC1                   Initial
High Performance Analytics Appliance
                              AC1      A1NN         Initial
Mellanox 2-port 10Gb Enet Expansion Card (CFFh) -
IBM BladeCenter
                              AC1      A1NW         Initial
                              MC1                   Initial
IBM 250GB 7.2K 6Gbps NL SATA 2.5" SFF HS HDD
                              AC1      A1NX         Initial
                              MC1                   Initial
IBM 500GB 7.2K 6Gbps NL SATA 2.5" SFF HS HDD
                              AC1      A1NZ         Initial
                              MC1                   Initial
IBM 1TB 7.2K 6Gbps NL SAS 2.5" SFF HS HDD
                              AC1      A1P3         Initial
                              MC1                   Initial
Broadcom 2-port 10Gb Virtual Fabric Adapter for IBM
BladeCenter
                              AC1      A1QR         Initial
                              MC1                   Initial
7875 Blade Base
```

```
                              AC1      A1RG          Initial
                              MC1                    Initial
Blade Cover
                              AC1      A1RH          Initial
                              MC1                    Initial
CPU Heat Sink Filler
                              AC1      A1RJ          Initial
                              MC1                    Initial
Labels for HS23 Blade Base
                              AC1      A1RK          Initial
                              MC1                    Initial

System Documentation and Software-US English
                              AC1      A1RL          Initial
                              MC1                    Initial



Intel Xeon Processor E5-2603 4C 1.8GHz 10MB Cache
1066MHz 80W
                              AC1      A1S3          Initial
                              MC1                    Initial
Intel Xeon Processor E5-2609 4C 2.4GHz 10MB Cache
1066MHz 80W
                              AC1      A1S5          Initial
                              MC1                    Initial
Intel Xeon Processor E5-2620 6C 2.0GHz 15MB Cache
1333MHz 95W
                              AC1      A1S6          Initial
                              MC1                    Initial
Intel Xeon Processor E5-2650 8C 2.0GHz 20MB Cache
1600MHz 95W
                              AC1      A1S9          Initial
                              MC1                    Initial
Intel Xeon Processor E5-2660 8C 2.2GHz 20MB Cache
1600MHz 95W
                              AC1      A1SA          Initial
                              MC1                    Initial
Intel Xeon Processor E5-2680 8C 2.7GHz 20MB Cache
1600MHz 130W
                              AC1      A1SB          Initial
                              MC1                    Initial
Intel Xeon Processor E5-2667 6C 2.9GHz 15MB Cache
1600MHz 130W
                              AC1      A1SD          Initial
                              MC1                    Initial
Intel Xeon Processor E5-2630L 6C 2.0GHz 15MB Cache
1333MHz 60W
                              AC1      A1SF          Initial
                              MC1                    Initial
Intel Xeon Processor E5-2650L 8C 1.8GHz 20MB Cache
1600MHz 70W
                              AC1      A1SG          Initial
                              MC1                    Initial
Intel Xeon Processor E5-2648L 8C 1.8GHz 20MB Cache
1600MHz 70W
                              AC1      A23R          Initial
                              MC1                    Initial
Intel Xeon Processor E5-2658 8C 2.1GHz 20MB Cache
1600MHz 95W
                              AC1      A23S          Initial
                              MC1                    Initial
Intel Xeon Processor E5-2637 2C 3.0GHz 5MB Cache
1600MHz 80W
                              AC1      A23T          Initial
                              MC1                    Initial
Intel Xeon Processor E5-2640 6C 2.5GHz 15MB Cache
1333MHz 95W
                              AC1      A23U          Initial
                              MC1                    Initial
Intel Xeon Processor E5-2630 6C 2.3GHz 15MB Cache
1333MHz 95W
                              AC1      A23V          Initial
                              MC1                    Initial
```

Intel Xeon Processor E5-2670 8C 2.6GHz 20MB Cache 1600MHz 115W			
	AC1	A241	Initial
	MC1		Initial
IBM 900GB 10K 6Gbps SAS 2.5" SFF HS HDD			
	AC1	A282	Initial
	MC1		Initial
IBM 300GB 15K 6Gbps SAS 2.5" SFF HS HDD			
	AC1	A283	Initial
	MC1		Initial
Label KC			
	AC1	A2CM	Initial
	MC1		Initial
Schedule Instruction			
	AC1	A2GW	Initial
	MC1		Initial
Intel Xeon Processor E5-2665 8C 2.4GHz 20MB Cache 1600MHz 115W			
	AC1	A2MW	Initial
	MC1		Initial
IBM USB Memory Key for VMWare ESXi 5.0			
	AC1	A2VC	Initial
	MC1		Initial
Essential Package			
	AC1	A2WD	Initial
	MC1		Initial
Enhanced Package			
	AC1	A2WE	Initial
	MC1		Initial
Elite Package			
	AC1	A2WF	Initial
	MC1		Initial
Essential Package			
	AC1	A2WG	Initial
	MC1		Initial
Enhanced Package			
	AC1	A2WH	Initial
	MC1		Initial
Elite Package			
	AC1	A2WJ	Initial
	MC1		Initial
IBM 146GB 15K 6Gbps SAS 2.5" SFF G2HS HDD			
	AC1	A2XB	Initial
	MC1		Initial
IBM 300GB 10K 6Gbps SAS 2.5" SFF G2HS HDD			
	AC1	A2XC	Initial
	MC1		Initial
IBM 600GB 10K 6Gbps SAS 2.5" SFF G2HS HDD			
	AC1	A2XD	Initial
	MC1		Initial
IBM 500GB 7.2K 6Gbps NL SAS 2.5" SFF G2HS HDD			
	AC1	A2XE	Initial
	MC1		Initial

The following are features already announced for the 7875 machine type:

Description	Model number	Feature number	Initial/ MES/ Both support	CSU	RP MES
AC1					
	AC1			Yes	
MC1					
	MC1			Yes	
4GB (1x4GB, 1Rx4, 1.5V) PC3-12800 CL11 ECC DDR3 1600MHz VLP RDIMM					
	AC1	A1S0	Initial		
	MC1		Initial		
4GB (1x4GB, 2Rx8, 1.5V) PC3-12800 CL11 ECC DDR3 1600MHz VLP RDIMM					
	AC1	A1S1	Initial		
	MC1		Initial		

8GB (1x8GB, 2Rx4, 1.5V) PC3-12800 CL11 ECC DDR3
1600MHz VLP RDIMM
AC1 A1S2 Initial
MC1 Initial
Addl Intel Xeon Processor E5-2603 4C 1.8GHz 10MB
Cache 1066MHz 80W
AC1 A1SH Initial
MC1 Initial
Addl Intel Xeon Processor E5-2609 4C 2.4GHz 10MB
Cache 1066MHz 80W
AC1 A1SK Initial
MC1 Initial
Addl Intel Xeon Processor E5-2620 6C 2.0GHz 15MB
Cache 1333MHz 95W
AC1 A1SL Initial
MC1 Initial
Addl Intel Xeon Processor E5-2650 8C 2.0GHz 20MB
Cache 1600MHz 95W
AC1 A1SP Initial
MC1 Initial
Addl Intel Xeon Processor E5-2660 8C 2.2GHz 20MB
Cache 1600MHz 95W
AC1 A1SQ Initial
MC1 Initial
Addl Intel Xeon Processor E5-2680 8C 2.7GHz 20MB
Cache 1600MHz 130W
AC1 A1SR Initial
MC1 Initial
Addl Intel Xeon Processor E5-2667 6C 2.9GHz 15MB
Cache 1600MHz 130W
AC1 A1ST Initial
MC1 Initial
Addl Intel Xeon Processor E5-2630L 6C 2.0GHz 15MB
Cache 1333MHz 60W
AC1 A1SV Initial
MC1 Initial
Addl Intel Xeon Processor E5-2650L 8C 1.8GHz 20MB
Cache 1600MHz 70W
AC1 A1SW Initial
MC1 Initial
Addl Intel Xeon Processor E5-2637 2C 3.0GHz 5MB
Cache 1600MHz 80W
AC1 A23W Initial
MC1 Initial
Addl Intel Xeon Processor E5-2640 6C 2.5GHz 15MB
Cache 1333MHz 95W
AC1 A23X Initial
MC1 Initial
Addl Intel Xeon Processor E5-2630 6C 2.3GHz 15MB
Cache 1333MHz 95W
AC1 A23Y Initial
MC1 Initial
Addl Intel Xeon Processor E5-2658 8C 2.1GHz 20MB
Cache 1600MHz 95W
AC1 A23Z Initial
MC1 Initial
Addl Intel Xeon Processor E5-2648L 8C 1.8GHz 20MB
Cache 1600MHz 70W
AC1 A240 Initial
MC1 Initial
Addl Intel Xeon Processor E5-2670 8C 2.6GHz 20MB
Cache 1600MHz 115W
AC1 A242 Initial
MC1 Initial
10Gb Interposer Card for IBM BladeCenter HS23
AC1 A244 Initial
MC1 Initial
IBM BladeCenter GPU Expansion Blade II with NVIDIA
Tesla M2075
AC1 A245 Initial
MC1 Initial
IBM BladeCenter GPU Expansion Blade II with NVIDIA
Tesla M2070Q
AC1 A246 Initial

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                              MC1                    Initial
IBM BladeCenter PCI Express Gen 2 Expansion Blade
II
                              AC1      A247          Initial
                              MC1                    Initial
Emulex 10GbE VFA II for IBM BladeCenter HS23
                              AC1      A287          Initial
                              MC1                    Initial
Addl Intel Xeon Processor E5-2665 8C 2.4GHz 20MB Cache
1600MHz 115W
                              AC1      A2MX          Initial
                              MC1                    Initial
IBM Virtual Fabric Advanced Software Upgrade (LOM)
                              AC1      A2TD          Initial
                              MC1                    Initial
IBM BladeCenter GPU Expansion Blade II with NVIDIA
Tesla M2090
                              AC1      A2VW          Initial
                              MC1                    Initial
Emulex 10GbE VFA Advanced II for IBM BladeCenter
HS23
                              AC1      A2ZN          Initial
                              MC1                    Initial
Virtual Fabric Advanced FOD Upgrade for IBM
BladeCenter HS23
                              AC1      A2ZP          Initial
                              MC1                    Initial
```

Single Entity Offerings (SEO)

Description	SEO number	Initial/ MES/ Both support	CSU	RP MES
IBM BladeCenter HS23				
1 x 1.8 GHz 10 MB 1x4 GB Intel Xeon E5-2603 4c 80w	7875-A1x	Both	Yes	
1 x 2.4 GHz 10 MB 4x4 GB Intel Xeon E5-2609 4c 80w	7875-A2x	Both	Yes	
1 x 2.0 GHz 15 MB 4x4 GB Intel Xeon E5-2620 6c 95w	7875-B1x	Both	Yes	
1 x 2.5 GHz 15 MB 4x4 GB Intel Xeon E5-2640 6c 95w	7875-B2x	Both	Yes	
1 x 2.3 GHz 15 MB 4x4 GB Intel Xeon E5-2630 6c 95w	7875-B3x	Both	Yes	
1 x 2.0 GHz 20 MB 4x4 GB Intel Xeon E5-2650 8c 95w	7875-C1x	Both	Yes	
1 x 2.2 GHz 20 MB 4x4 GB Intel Xeon E5-2660 8c 95w	7875-C2x	Both	Yes	
1 x 2.4 GHz 20 MB 4x4 GB Intel Xeon E5-2665 8c 115w	7875-C3x	Both	Yes	
1 x 2.6 GHz 20 MB 4x4 GB Intel Xeon E5-2670 8c 115w	7875-C4x	Both	Yes	
1 x 2.7 GHz 20 MB 4x4 GB Intel Xeon E5-2680 8c 130w	7875-C5x	Both	Yes	
1 x 1.8 GHz 20 MB 4x4 GB Intel Xeon E5-2650L 8c 70w	7875-D1x	Both	Yes	
1 x 1.8 GHz 20 MB 4x4 GB	7875-F1x	Both	Yes	

Intel Xeon E5-2648L 8c 70w			
IBM BladeCenter HS23 with Virtual Fabric			
1 x 2.3 GHz 15 MB 4x4 GB Intel Xeon E5-2630 6c 95w	7875-G1x	Both	Yes
1 x 2.6 GHz 20 MB 4x4 GB Intel Xeon E5-2670 8c 115w	7875-G2x	Both	Yes
IBM BladeCenter HS23: Foundation for Cloud			
2 x 2.0 GHz 15 MB 16x8 GB Intel Xeon E5-2620 6c 95w	7875-91U	Both	Yes
2 x 2.0 GHz 20 MB 16x8 GB Intel Xeon E5-2650 8c 95w	7875-92U	Both	Yes

BladeCenter HS23 Express Models

Description	SEO number	Initial/ MES/ Both support	CSU	RP MES
2 x 2.0 GHz 15 MB 8x4 GB Intel Xeon E5-2620 6c 95w	7875-E1U	Both	Yes	
2 x 2.3 GHz 15 MB 8x8 GB Intel Xeon E5-2630 6c 95w	7875-E2U	Both	Yes	
2 x 2.6 GHz 20 MB 8x8 GB Intel Xeon E5-2670 8c 115w	7875-E3U	Both	Yes	

Option SEOs

Description	SEO number	Initial/ MES/ Both/ Support	CSU	RP MES
Intel Xeon Processor E5-2603 4C 1.8GHz 10MB Cache 1066MHz 80W	81Y9292	Both	Yes	
Intel Xeon Processor E5-2609 4C 2.4GHz 10MB Cache 1066MHz 80W	81Y9294	Both	Yes	
Intel Xeon Processor E5-2620 6C 2.0GHz 15MB Cache 1333MHz 95W	81Y9295	Both	Yes	
Intel Xeon Processor E5-2650 8C 2.0GHz 20MB Cache 1600MHz 95W	81Y9298	Both	Yes	
Intel Xeon Processor E5-2660 8C 2.2GHz 20MB Cache 1600MHz 95W	81Y9299	Both	Yes	
Intel Xeon Processor E5-2680 8C 2.7GHz 20MB Cache 1600MHz 130W	81Y9300	Both	Yes	
Intel Xeon Processor E5-2667 6C 2.9GHz 15MB Cache 1600MHz 130W	81Y9302	Both	Yes	
Intel Xeon Processor E5-2630L 6C 2.0GHz 15MB Cache 1333MHz 60W	81Y9304	Both	Yes	
Intel Xeon Processor E5-2650L 8C 1.8GHz 20MB Cache 1600MHz 70W	1Y93055	Both	Yes	
Intel Xeon Processor E5-2648L 8C 1.8GHz 20MB Cache 1600MHz 70W	94Y8562	Both	Yes	
Intel Xeon Processor E5-2658 8C 2.1GHz 20MB Cache 1600MHz 95W	94Y8565	Both	Yes	
Intel Xeon Processor E5-2637 2C 3.0GHz 5MB Cache 1600MHz 80W	94Y8570	Both	Yes	
Intel Xeon Processor E5-2640 6C 2.5GHz 15MB Cache 1333MHz 95W	94Y8571	Both	Yes	
Intel Xeon Processor E5-2630 6C 2.3GHz 15MB Cache 1333MHz 95W	94Y8572	Both	Yes	
Intel Xeon Processor E5-2670 8C 2.6GHz 20MB Cache 1600MHz 115W	94Y8589	Both	Yes	
Intel Xeon Processor E5-2665 8C				

2.4GHz 20MB Cache 1600MHz 115W	94Y8671	Both	Yes
IBM BladeCenter GPU Expansion Blade II with NVIDIA Tesla M2075	68Y7478	Both	Yes
IBM BladeCenter GPU Expansion Blade II with NVIDIA Tesla M2070Q	68Y7479	Both	Yes
IBM BladeCenter PCI Express Gen 2 Expansion Blade II	68Y7484	Both	Yes
10Gb Interposer Card for IBM BladeCenter HS23	94Y8550	Both	Yes
IBM BladeCenter GPU Expansion Blade II with NVIDIA Tesla M2090	00D6881	Both	Yes
IBM Virtual Fabric Advanced Software Upgrade (LOM)	90Y9310	Both	Yes
Emulex 10GbE VFA II for IBM BladeCenter HS23	81Y3120	Both	Yes
Emulex 10GbE VFA Advanced II Adapter for IBM BladeCenter HS23	90Y9332	Both	Yes
Virtual Fabric Advanced FOD Upgrade for IBM BladeCenter HS23	90Y9350	Both	Yes
4GB (1x4GB, 1Rx4, 1.5V) PC3-12800 CL11 ECC DDR3 1600MHz VLP RDIMM	90Y3147	Both	Yes
4GB (1x4GB, 2Rx8, 1.5V) PC3-12800 CL11 ECC DDR3 1600MHz VLP RDIMM	90Y3148	Both	Yes
8GB (1x8GB, 2Rx4, 1.5V) PC3-12800 CL11 ECC DDR3 1600MHz VLP RDIMM	90Y3149	Both	Yes

ServicePac for Warranty And Maintenance Option

MT-Mod	Description	ServicePac SEO	MTM
7875	3 Year Onsite Repair 9x5 4 Hour Response	00A4373	67567Y6
7875	3 Year Onsite Repair 24x7 4 Hour Response	00A4374	67567Y7
7875	3 Year Onsite Repair 24x7 2 Hour Response	00A4375	67567Y8
7875	4 Year Onsite Repair 9x5 Next Business Day	00A4376	67567Y9
7875	4 Year Onsite Repair 9x5 4 Hour Response	00A4377	67567YA
7875	4 Year Onsite Repair 24x7 4 Hour Response	00A4378	67567YB
7875	4 Year Onsite Repair 24x7 2 Hour Response	00A4379	67567YC
7875	5 Year Onsite Repair 9x5 Next Business Day	00A4380	67567YD
7875	5 Year Onsite Repair 9x5 4 Hour Response	00A4381	67567YF
7875	5 Year Onsite Repair 24x7 4 Hour Response	00A4382	67567YG
7875	5 Year Onsite Repair 24x7 2 Hour Response	00A4383	67567YH
7875	3 Year Onsite Repair 24x7 4 Hour Response with HDDR	00A4384	67567YJ
7875	4 Year Onsite Repair 24x7 4 Hour Response with HDDR	00A4385	67567YK
7875	4 Year Onsite Repair 9x5 Next Business Day Response with HDDR	00A4386	67567YM
7875	5 Year Onsite Repair 24x7 4 Hour Response with HDDR	00A4387	67567YN
7875	5 Year Onsite Repair 9x5 Next Business Day Response with HDDR	00A4388	67567YP

ServicePac for Maintenance Agreement

MT-Mod	Description	ServicePac SEO	MTM
7875	1 Year Onsite Repair 9x5 Next Business Day	00A4389	6756MWH
7875	1 Year Onsite Repair 9x5 4 Hour Response	00A4390	6756MWJ
7875	1 Year Onsite Repair 24x7 4 Hour Response	00A4391	6756MWK
7875	1 Year Onsite Repair 24x7 2 Hour Response	00A4392	6756MWM
7875	2 Year Onsite Repair 9x5 Next Business Day	00A4393	6756MWN
7875	2 Year Onsite Repair 9x5 4 Hour Response	00A4394	6756MWP
7875	2 Year Onsite Repair 24x7 4 Hour Response	00A4395	6756MWQ
7875	2 Year Onsite Repair 24x7 2 Hour Response	00A4396	6756MWR
7875	1 Year Onsite Repair 24x7 4 Hour Response with HDDR	00A4397	6756MWS

```
7875  2 Year Onsite Repair 24x7 4 Hour Response
       with HDDR                                    00A4398 6756MWT
7875  1 Year Onsite Repair 9x5 Next Business
       Day Response with HDDR                       00A4399 6756MWU
7875  2 Year Onsite Repair 9x5 Next Business
       Day with HDDR                                00A4400 6756MWV
```

ServicePac for Essential Support

```
Warranty and Maintenance Option plus Remote Technical Support

                                                     ServicePac
MT-Mod    Description                               SEO     MTM

7875  3 Year Essential Support 24x7 4 Hour Response 00A4401 N/A

Maintenance plus Remote Technical Support

                                                     ServicePac
MT-Mod    Description                               SEO     MTM

7875  1 Year Essential Support 24x7 4 Hour Response 00A4402 N/A
7875  1 Year Essential Support 9x5 Next Business
       Day Response                                 00A4403 N/A
```

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Corrections

(Corrected on May 18, 2012)
Warranty period information was revised.