



# IBM BladeCenter HX5 is a scalable blade server designed to provide new levels of utilization, performance, and reliability for compute- and memory-intensive workloads

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## At a glance

The IBM® BladeCenter® HX5 is a scalable blade server designed to provide new levels of utilization, performance, and reliability for compute- and memory-intensive workloads such as database, virtualization, business intelligence, modeling and simulation, and other enterprise applications.

Going beyond the industry standards with unique innovations from fifth-generation IBM X-Architecture® technology (eX5), the new IBM BladeCenter HX5 delivers unprecedented compute performance, memory footprint, and I/O bandwidth to enable new levels of utilization in a blade form factor for compute- and memory-intensive enterprise workloads.

The HX5 features:

- Single-wide (30 mm), scalable, high-performance blade server
- 2x Intel® Xeon® E7-8800, E7-4800, or E7-2800 series CPUs per single-wide node
- 16x DDR3 VLP DIMMs per single-wide node
- Scalable to 4-socket, 32 DIMM in double-wide form factor
- Support for additional Ethernet, SAS, Fibre Channel, and InfiniBand expansion cards and a total of eight I/O ports per blade
- Integrated dual Gigabit Ethernet connections
- Support for up to two solid-state drives and HW RAID 0 and 1 with SSD Expansion Card for IBM BladeCenter HX5
- Internal standard USB port for optional Embedded Hypervisor™
- Integrated Management Module for remote supervision with concurrent keyboard, video, and mouse (cKVM) standard
- Next-generation BIOS, Unified Extensible Firmware Interface (UEFI)
- Modular design, enabling standardization on same platform for 2- and 4-socket server needs to deliver faster time to value
- FlexNode partitioning and pay-as-you-grow expansion that offer great investment protection
- Mainframe-inspired reliability and FlexNode failover for optimal system uptime

For ordering, contact your IBM representative, an IBM Business Partner, or IBM Americas Call Centers at 800-IBM-CALL (Reference: SE001).

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## Overview

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IBM BladeCenter announces the addition of a 10Gb Ethernet Expansion Card from Mellanox (part number 90Y3570). Based on ConnectX-2 technology, the mezzanine card provides the lowest latency for high server productivity, and is ideal for HPC environments in industries including banking, finance, trading, research, utilities, and telecommunications.

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## Key prerequisites

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

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## Planned availability date

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- May 27, 2011: BladeCenter systems
- May 27, 2011: All BladeCenter features, options, and pseudo options

Except:

- April 19, 2011: Intel 10Gb 2-port Ethernet Expansion Card (CFFh) for IBM BladeCenter (MT 7872)
- May 6, 2011: Mellanox 2-port 10Gb E'net Expansion Card (CFFh) - IBM BladeCenter

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## Description

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### BladeCenter HX5

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#### ***High-performance, blade server subsystems***

The IBM BladeCenter HX5 is a scalable blade server designed to provide new levels of utilization, performance, and reliability for compute- and memory-intensive workloads such as database, virtualization, business intelligence, modeling and simulation, and other enterprise applications.

The BladeCenter HX5 server supports up to two Intel Xeon processors. The processor board has the following major components:

- Two 1567-pin LGA sockets for dual-processor operation.
- Two Enterprise Voltage Regulator-Down (EVRD) regulators. The EVRD supplies the processor core voltage, I/O voltage, and L2 cache voltage, and must adhere to the Intel Voltage Regulator Module (VRM) and EVRD 11.1 Specification.
- One Intel 7500 IOH I/O Controller.
- One Intel ICH10 South Bridge.
- Eight Intel 7500 Memory Buffers.
- Sixteen DDR-3 Very Low Profile (VLP) memory DIMM sockets.
- One Vitesse VSC452 Integrated Management Module (IMM) with Integrated VGA Controller.
- 128 MB DDR-2 Video Memory.
- One 8Mbit IMM Boot ROM.
- One Broadcom BCM5709S dual-port Gigabit Ethernet Controller.
- One Spartan 3E FPGA.
- One 128 Mb UEFI Flash ROM.
- One 4 Gb NAND Flash ROM and EEPROM for DSA, IMM Kernel, and IMM SDR/SER Logs.
- One TPM 1.2 Controller.
- Light Path LEDs.
- USB ports for keyboard, mouse, FDD, CD-ROM, and DVD-ROM.
- One CIOv Expansion Card Connector, which supports CIOv PCIe Expansion Cards.
- One CFFh Blade Expansion Connector, CFFh PCIe Expansion Cards, or Expansion Blades.
- One PCIe expansion connector to support the SSD Expansion Card option.
- One LGA Flex Scalability Connector, which interfaces with either the one-node speed burst card or the two-node scalability expansion cards.
- One USB Connector, which supports the USB Key for Embedded Hypervisor.

Each Intel processor contains six, eight, or ten cores, a memory controller, and QPI links to the other bridge chips. The Intel IOH provides PCI Express® links to the Blade Expansion Connectors and CIOv Expansion Connector. The Intel ICH10 provides a PCI Express link to the IMM and Broadcom BCM5709S Gigabit Ethernet Controller, an LPC bus interface to the IMM, and USB interfaces.

The I/O functions on BladeCenter HX5 include Video, I2C, USB, SATA, Gigabit Ethernet, USB (floppy, CD-ROM or DVD-ROM, keyboard, and mouse), and Serial over LAN.

The Intel I/O Hub (IOH) contains the following features:

- Dual independent processor QPI links - one processor per QPI link
- One ESI x4 bus to interface to the ICH10
- PCI Express features
  - Support for up to x36 PCI Express links operating at 5 GB/s
  - PCI Express 1.0 and 2.0 compliant

On the HX5, the PCI Express links on the IOH are configured as follows:

- Two x16 PCI Express links routed to CFFh expansion connector and SSD expansion option connector - one x16 PCIe link for each connector. Each x16 PCIe lane can be configured as one x16, or two x8. CFFh connector can also be configured as four x4 lanes.
- One x4 PCI Express link routed to a PCI Express switch which routes an x4 PCIe link to the CIOv Blade Expansion Connector.

## Intel ICH10

The Intel I/O Controller Hub 10 (ICH10) provides South bridge function to the system. It provides PCI Express, USB, SMBus, and LPC interfaces to peripherals and integrates functions such as timer, battery-backed SRAM, DMA, and interrupt controller.

The HX5 server memory is contiguous and is shared by both processors when both processors are installed. It is Error Correction Code (ECC) protected and supports 4 GB to 128 GB for each processor blade using 2 GB, 4 GB, 8 GB, or 16 GB industry-standard 240-pin, 72-bit, Very Low Profile (VLP) DDR-3 DIMMs on 16 DIMM connectors.

The operating speed of the memory is dependent on the SMI link speed of the processor.

The HX5 supports memory mirroring. Chipkill™ is supported in all memory configurations.

## Standard BladeCenter HX5 configuration

### Model information

Model	Intel Xeon name	Cores	CPU speed	CPU power	QPI speed	Cache
7873F2x	E7-4870	10	2.40 GHz	130w	6.40 GT/s	30 MB
7873D1x	E7-8867L	10	2.13 GHz	105w	6.40 GT/s	30 MB
7873B2x	E7-4830	8	2.13 GHz	105w	6.40 GT/s	24 MB
7873F1x	E7-4830	8	2.13 GHz	105w	6.40 GT/s	24 MB
7873C1x	E7-8837	8	2.67 GHz	130w	5.86 GT/s	24 MB
7873B1x	E7-4807	6	1.86 GHz	95w	4.80 GT/s	18 MB
7873A3x	E7-2870	10	2.40 GHz	130w	2.40 GT/s	30 MB
7873A2x	E7-2860	10	2.26 GHz	130w	2.26 GT/s	24 MB
7873A1x	E7-2830	8	2.13 GHz	105w	2.13 GT/s	24 MB
7873F3x	E7-4807	8	2.13 GHz	95w	1.86 GT/s	24 MB
7873G2x	E7-4830	8	2.13 GHz	105w	6.40 GT/s	24 MB

### Express Models

7873E1U	E7-4830	8	2.13 GHz	105w	6.40 GT/s	24 MB
7873E2U	E7-2860	10	2.26 GHz	130w	6.40 GT/s	24 MB

### Model configurations

Model	Intel Xeon name	CPU	Standard memory	DIMM slots	SSDs	Blade width	Chassis
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7873F2x	E7-4870	1	2 x 4 GB	16	Open	30 mm	See Below
7873D1x	E7-8867L	1	2 x 4 GB	16	Open	30 mm	
7873B2x	E7-4830	1	2 x 4 GB	16	Open	30 mm	
7873F1x	E7-4830	1	2 x 4 GB	16	Open	30 mm	
7873C1x	E7-8837	1	2 x 4 GB	16	Open	30 mm	
7873B1x	E7-4807	1	2 x 4 GB	16	Open	30 mm	
7873A3x	E7-2870	2	4 x 4 GB	16	Open	60 mm	
7873A2x	E7-2860	2	4 x 4 GB	16	Open	60 mm	
7873A1x	E7-2830	2	4 x 4 GB	16	Open	60 mm	
7873F3x	E7-4807	2	4 x 4 GB	16	Open	60 mm	
7873G2x	E7-4830	2	8 x 8 GB	16	Open	60 mm	

## Express Models

7873E1U	E7-4830	2	16 x 8 GB	24	Open	30 mm
7873E2U	E7-2860	2	28 x 8 GB	30	Open	60 mm

The models support the following chassis:

BladeCenter H Base Model (8852-4xx)  
 BladeCenter H Xccelerator Model (8852-HC1)  
 BladeCenter HT (Telco) AC Model (8750-1RX)  
 BladeCenter HT (Telco) DC Model (8740-1RX)  
 BladeCenter S Base Model (8886-1MX)  
 BladeCenter S Xccelerator Model (8886-AC1)  
 BladeCenter H-R3 Model (8852-4Tx)

## Additional features

- The BladeCenter HX5 system board contains 16 DIMM connectors (60 mm blade).
- Each DIMM connector supports 2 GB, 4 GB, 8 GB, or 16 GB DIMM options:
  - Chipkill is supported in all memory configurations.
- One or two solid state drives (50 GB each) are supported in each blade.
- Dual Gigabit Ethernet connections are provided.

BladeCenter HX5 blade servers are designed for high throughput from processor to memory, and to bus I/O.

These features, combined with SMP capability and blade-thin density, make it an excellent choice for space- and power-constrained environments used for:

- Database
- Virtualization
- General enterprise applications such as ERP and SCM
- Simulations

## 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 HX5 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 multi-bit memory errors, while reducing disruption of service to LAN clients.
- Chipkill memory correction for up to eight bits per DIMM to help keep your blade server up and running.
- Hardware memory scrubbing, designed to correct many soft memory errors automatically without software intervention.

- Processor L2 cache ECC to help improve data reliability and reduce downtime.
- CPU failure recovery in Symmetric Multi-Processing (SMP) configurations:
  - Forces failed processor offline
  - Automatically reboots server
  - Generates alerts
  - Continues operations with the working processor
- PFA on memory and processors to help alert the system administrator of an imminent component failure.
- Support for dual Gigabit 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).

### **Mellanox CX2 10Gb Ethernet Expansion Card (CFFh)**

Mellanox CX2 10Gb Ethernet Expansion Card (CFFh) functions as an PCI-Express blade server I/O card.

Key features are:

- Maximizes I/O consolidation with high-performance 10GbE ports
- Leverages existing IT investments
- Low Latency Ethernet for faster application completion, better server utilization
- Standards-based design to enable open architectures
- Proven, most deployed low latency technology
- Low cost
- Multiport connections to the network

### **IBM Systems Director**

BladeCenter HX5 blade servers include IBM Systems Director. IBM Systems Director is an easy-to-use, point-and-click, platform management solution that streamlines the way physical and virtual systems are managed across a multisystem environment. Leveraging industry standards, IBM Systems Director supports multiple operating systems and virtualization technologies across IBM and non-IBM x86 platforms. Through a single user interface, IBM Systems Director provides consistent views for visualizing managed systems and determining how these systems relate to one another while identifying their individual status, thus helping to correlate technical resources with business needs.

IBM Systems Director utilizes a modular and extensible platform services foundation, providing a way to easily add advanced platform management capabilities to the base offering. The IBM Systems Director offering provides the base function needed for platform management. Advanced platform management functions can be seamlessly added as they are required. Systems Director is based on industry standards and can report results to other tools. IBM Systems Director is a strategic platform management tool that grows with the needs of a business.

### **Optional add-ons (available for an additional charge)**

- Active Energy Manager (AEM) is positioned as a key component of IBM's energy-efficient technologies and services, which are part of IBM's Project Green that began May 2007. AEM can measure, monitor, and manage the energy management components built into IBM servers and can provide a cross-platform

management solution. AEM also retrieves temperature and power information via wireless sensors (SynapSense) and collects alerts, events, and data from 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 GUI.

## IBM ToolsCenter

The IBM System x® ToolsCenter is a collection of system management tools that can help manage your HX5 blade server and BladeCenter environment. ToolsCenter makes managing your server environment less complicated, more productive, and 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 S chassis. It automatically updates the firmware for selected chassis components, and provides you with the option of saving your configuration. 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

The Advanced Settings Utility (ASU) systems configuration utility provides a command line interface and unattended scripting capability, and is supported in multiple operating-system platforms such as DOS, Linux®, Solaris, Windows, and WinPE.

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 an integration-tested bundle of online firmware and device driver updates for your server. UXSPs facilitate the downloading and installation of all drivers and firmware for a given system and verify that you are working with a complete set of updates that have been tested together.

Bootable Media Creator pulls current updates for firmware and drivers from the 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 allows for easy identification of cause-and-effect relationships from different log sources in the system.

## BladeCenter Advanced Management Module

BladeCenter HX5 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 HX5 servers. The management module communicates with the blade servers within the BladeCenter via an RS-485 intermanagement network. This network relays vital information about individual blade servers, such as:

- Voltages
- Power supply status
- Memory status
- Fan status
- SSD status
- Error and status log

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

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

## Standard BladeCenter HX5 configuration

Model	Processor	CPU cache	Memory	SSD iface	SSD	Power supply
BladeCenter HX5 Scalable 2 Socket Server						
7873-F2x	1 x 2.40 GHz Intel Xeon E7-4870 Virtual Fabric Adapter	30 MB 10C	2x4 GB 130W S4S	SAS	Open bay	**
7873-D1x	1 x 2.13 GHz Intel Xeon E7-8867L	30 MB 10C	2x4 GB 105W S8S	SAS	Open bay	**
7873-B2x	1 x 2.13 GHz Intel Xeon E7-4830	24 MB 8C	2x4 GB 105W S4S	SAS	Open bay	**
7873-F1x	1 x 2.13 GHz Intel Xeon E7-4830 Virtual Fabric Adapter	24 MB 8C	2x4 GB 105W S4S	SAS	Open bay	**
7873-C1x	1 x 2.67 GHz Intel Xeon E7-8837	24 MB 8C	2x4 GB 130W S8S	SAS	Open bay	**
7873-B1x	1 x 1.86 GHz Intel Xeon E7-4807	18 MB 6C	2x4 GB 95W S4S	SAS	Open bay	**
BladeCenter HX5 - Memory Expanded Scalable Two Socket Server						
7873-A3x	2 x 2.40 GHz Intel Xeon E7-2870	30 MB 10C	4x4 GB 130W S2S + MAX5	SAS	Open bay	**
7873-A2x	2 x 2.26 GHz Intel Xeon E7-2860	24 MB 10C	4x4 GB 130W S2S + MAX5	SAS	Open bay	**



7873-A1x 2 x 2.13 GHz 24 MB 4x4 GB SAS Open bay \*\*  
Intel Xeon E7-2830 8C 105W S2S + MAX5

7873-F3x 2 x 2.13 GHz 18 MB 4x4 GB SAS Open bay \*\*  
Intel Xeon E7-4807 6C 95W S4S + MAX5  
Virtual Fabric Adapter

#### BladeCenter HX5 workload optimized offerings

7873-G2x 2 x 2.13 GHz 24 MB 8x8 GB SAS Open bay \*\*  
Intel Xeon E7-4830 8C 105W S4S  
Virtual Fabric  
BPE4, 2x320 GB Fusion IO

\*\* Power supplied through BladeCenter chassis

Model	Processor	CPU cache	Memory	SSD iface	SSD	Power supply
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#### BladeCenter HX5 Express Models

7873-E1x 2 x 2.13 GHz 24 MB 16x8 GB SAS Open bay \*\*  
Intel Xeon E7-4830 8C 105W S4S  
Virtual Fabric Adapter

7873-E2x 2 x 2.26 GHz 24 MB 28x8 GB SAS Open bay \*\*  
Intel Xeon E7-2860 10C 130W S2S + MAX5  
Virtual Fabric Adapter

\*\* Power supplied through BladeCenter chassis

### **Accessibility by people with disabilities**

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

[http://www-03.ibm.com/able/product\\_accessibility/index.html](http://www-03.ibm.com/able/product_accessibility/index.html)

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## **Product positioning**

The IBM BladeCenter HX5 is a scalable blade server designed to provide maximum utilization, performance, and reliability for compute- and memory-intensive workloads such as database, virtualization, business intelligence, modeling and simulation, and other enterprise applications.

The BladeCenter and BladeCenter HX5 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

They are an excellent fit for applications such as:

- Databases
- Virtualization
- General enterprise applications such as ERP and SCM
- Simulations

## Product number

The following features are already announced for the 7870, 7871, 7872, and 7873 machine types:

Description	MT	Model	Feature
7870-AC1	7870	AC1	
7870-MC1	7870	MC1	
7871-AC1	7871	AC1	
7871-MC1	7871	MC1	
7872-AC1	7872	AC1	
7872-MC1	7872	MC1	
7873-AC1	7873	AC1	
7873-MC1	7873	MC1	
2-port 40Gb InfiniBand Expansion Card (CFFh) for IBM BladeCenter	7873	AC1 MC1	0056
IBM 320GB High IOPS SD Class SSD PCIe Adapter	7873	AC1 MC1	0097
Broadcom 10Gb Gen2 4-port Ethernet Exp Cd (CFFh) for IBM BladeCenter	7873	AC1 MC1	0098
Broadcom 10Gb Gen2 2-port Ethernet Exp Cd (CFFh) for IBM BladeCenter	7873	AC1 MC1	0099
Packaging - Expansion Blade	7873	AC1 MC1	0743
UID Asset Tag Label	7873	AC1 MC1	0747
Packaging - 3U Blade WW	7873	AC1 MC1	0764
Packaging - 4U Blade WW	7873	AC1 MC1	0765
Packaging - 1U Blade WW	7873	AC1 MC1	0785
Packaging - 2U Blade WW	7873	AC1 MC1	0786
Qlogic 8Gb Fibre Channel Expansion Card (CIOv) for IBM BladeCenter	7873	AC1 MC1	1462
SAS Connectivity Card (CIOv) for IBM BladeCenter	7873	AC1 MC1	1593
IBM HX5 2-node scalability kit	7873	AC1 MC1	1737
IBM MAX5 for BladeCenter	7873	AC1 MC1	1740
IBM HX5 1-node Speed Burst card	7873	AC1 MC1	1741
IBM HX5 MAX5 1-node scalability kit	7873	AC1 MC1	1742
EMEA Long Leadtime Configurations	7873	AC1 MC1	1763
Hungary CHW plant 9SH	7873	AC1 MC1	1764
Guad CHW plant 9KQ	7873	AC1 MC1	1765
ISTC CHW 9K2	7873	AC1 MC1	1766
RTP CHW 9NR	7873	AC1 MC1	1767
Offload Manufacturing to Guadalajara HVEC	7873	AC1 MC1	1768
Offload Manufacturing to RTP HVEC	7873	AC1 MC1	1769
Offload Manufacturing to ISTC	7873	AC1	1770

Capacity Scheduling Service	7873	MC1 AC1	1772
IBM USB Memory Key for VMware ESXi 4	7873	MC1 AC1	1776
Custom SLA Scheduling Service	7873	MC1 AC1	1796
HX5 Power Jumper	7873	MC1 AC1	2011
CPU Heat Sink Filler	7873	MC1 AC1	2137
Memory Expansion Module Heat Sink Filler	7873	MC1 AC1	2138
HX5 Click and Scale Expansion Kit	7873	MC1 AC1	2139
Custom Asset Tagging - Standard	7873	MC1 AC1	2200
Custom Asset Tagging - Enhanced	7873	MC1 AC1	2201
Custom Image Load - Server	7873	MC1 AC1	2204
Custom Media Shipgroup	7873	MC1 AC1	2206
Request for Global Trade Number (UPC or EAN)	7873	MC1 AC1	2207
Custom Software/Firmware Setting - Standard	7873	MC1 AC1	2208
Custom Software/Firmware Setting - Enhanced	7873	MC1 AC1	2209
Custom RAID Configuration	7873	MC1 AC1	2212
Custom Labeling	7873	MC1 AC1	2220
Custom Palletization	7873	MC1 AC1	2221
Request for a new Vendor Logo Hardware	7873	MC1 AC1	2247
Request for an existing IBM Feature	7873	MC1 AC1	2248
Request for an existing Public RPQ	7873	MC1 AC1	2249
RAID Configuration	7873	MC1 AC1	2302
Department of Defense UID Label	7873	MC1 AC1	2320
IBM USB Memory Key for VMware ESXi 4.1 with MAX5	7873	MC1 AC1	2420
16GB (1x16GB, 2Rx4, 1.35V) PC3L-10600 CL9 ECC DDR3 1333MHZ VLP RDIMM	7873	MC1 AC1	2422
Emulex 10GbE Virtual Fabric Adapter Advanced for IBM BladeCenter	7873	MC1 AC1	2435
Emulex 10GbE Virtual Fabric Advanced Upgrade for IBM BladeCenter	7873	MC1 AC1	2436
Chelsio T420-BCH Dual-port 10GbE CFFh Expansion Card	7873	AC1	3027
IBM USB Memory Key for VMware ESXi 4.1	7873	MC1 AC1	3033
Rack 01	7873	MC1 AC1	3101
Rack 02	7873	MC1 AC1	3102
Rack 03	7873	MC1 AC1	3103
Rack 04	7873	MC1 AC1	3104
Rack 05	7873	MC1 AC1	3105
Rack 06	7873	MC1 AC1	3106
Rack 07	7873	MC1 AC1	3107

Rack 08	7873	AC1	3108
		MC1	
Rack 09	7873	AC1	3109
		MC1	
Rack 10	7873	AC1	3110
		MC1	
Rack 11	7873	AC1	3111
		MC1	
Rack 12	7873	AC1	3112
		MC1	
Rack 13	7873	AC1	3113
		MC1	
Rack 14	7873	AC1	3114
		MC1	
Rack 15	7873	AC1	3115
		MC1	
Rack 16	7873	AC1	3116
		MC1	
Rack 17	7873	AC1	3117
		MC1	
Rack 18	7873	AC1	3118
		MC1	
Rack 19	7873	AC1	3119
		MC1	
Rack 20	7873	AC1	3120
		MC1	
Rack 21	7873	AC1	3121
		MC1	
Rack 22	7873	AC1	3122
		MC1	
Rack 23	7873	AC1	3123
		MC1	
Rack 24	7873	AC1	3124
		MC1	
Rack 25	7873	AC1	3125
		MC1	
Rack 26	7873	AC1	3126
		MC1	
Rack 27	7873	AC1	3127
		MC1	
Rack 28	7873	AC1	3128
		MC1	
Rack 29	7873	AC1	3129
		MC1	
Rack 30	7873	AC1	3130
		MC1	
Rack 31	7873	AC1	3131
		MC1	
Rack 32	7873	AC1	3132
		MC1	
Rack 33	7873	AC1	3133
		MC1	
Rack 34	7873	AC1	3134
		MC1	
Rack 35	7873	AC1	3135
		MC1	
Rack 36	7873	AC1	3136
		MC1	
Rack 37	7873	AC1	3137
		MC1	
Rack 38	7873	AC1	3138
		MC1	
Rack 39	7873	AC1	3139
		MC1	
Rack 40	7873	AC1	3140
		MC1	
Rack 41	7873	AC1	3141
		MC1	
Rack 42	7873	AC1	3142
		MC1	
Rack 43	7873	AC1	3143
		MC1	
Rack 44	7873	AC1	3144
		MC1	

Rack 45	7873	AC1	3145
		MC1	
Rack 46	7873	AC1	3146
		MC1	
Rack 47	7873	AC1	3147
		MC1	
Rack 48	7873	AC1	3148
		MC1	
Rack 49	7873	AC1	3149
		MC1	
Rack 50	7873	AC1	3150
		MC1	
Rack 51	7873	AC1	3151
		MC1	
Rack 52	7873	AC1	3152
		MC1	
Rack 53	7873	AC1	3153
		MC1	
Rack 54	7873	AC1	3154
		MC1	
Rack 55	7873	AC1	3155
		MC1	
Rack 56	7873	AC1	3156
		MC1	
Rack 57	7873	AC1	3157
		MC1	
Rack 58	7873	AC1	3158
		MC1	
Rack 59	7873	AC1	3159
		MC1	
Rack 60	7873	AC1	3160
		MC1	
Rack 61	7873	AC1	3161
		MC1	
Rack 62	7873	AC1	3162
		MC1	
Rack 63	7873	AC1	3163
		MC1	
Rack 64	7873	AC1	3164
		MC1	
BladeCenter 01	7873	AC1	3301
		MC1	
BladeCenter 02	7873	AC1	3302
		MC1	
BladeCenter 03	7873	AC1	3303
		MC1	
BladeCenter 04	7873	AC1	3304
		MC1	
BladeCenter 05	7873	AC1	3305
		MC1	
BladeCenter 06	7873	AC1	3306
		MC1	
BladeCenter 07	7873	AC1	3307
		MC1	
BladeCenter 08	7873	AC1	3308
		MC1	
BladeCenter 09	7873	AC1	3309
		MC1	
BladeCenter 10	7873	AC1	3310
		MC1	
BladeCenter 11	7873	AC1	3311
		MC1	
BladeCenter 12	7873	AC1	3312
		MC1	
BladeCenter 13	7873	AC1	3313
		MC1	
BladeCenter 14	7873	AC1	3314
		MC1	
BladeCenter 15	7873	AC1	3315
		MC1	
BladeCenter 16	7873	AC1	3316
		MC1	
BladeCenter 17	7873	AC1	3317
		MC1	

BladeCenter 18	7873	AC1	3318
		MC1	
BladeCenter 19	7873	AC1	3319
		MC1	
BladeCenter 20	7873	AC1	3320
		MC1	
BladeCenter 21	7873	AC1	3321
		MC1	
BladeCenter 22	7873	AC1	3322
		MC1	
BladeCenter 23	7873	AC1	3323
		MC1	
BladeCenter 24	7873	AC1	3324
		MC1	
BladeCenter 25	7873	AC1	3325
		MC1	
BladeCenter 26	7873	AC1	3326
		MC1	
BladeCenter 27	7873	AC1	3327
		MC1	
BladeCenter 28	7873	AC1	3328
		MC1	
BladeCenter 29	7873	AC1	3329
		MC1	
BladeCenter 30	7873	AC1	3330
		MC1	
BladeCenter 31	7873	AC1	3331
		MC1	
BladeCenter 32	7873	AC1	3332
		MC1	
BladeCenter 33	7873	AC1	3333
		MC1	
BladeCenter 34	7873	AC1	3334
		MC1	
BladeCenter 35	7873	AC1	3335
		MC1	
BladeCenter 36	7873	AC1	3336
		MC1	
BladeCenter 37	7873	AC1	3337
		MC1	
BladeCenter 38	7873	AC1	3338
		MC1	
BladeCenter 39	7873	AC1	3339
		MC1	
BladeCenter 40	7873	AC1	3340
		MC1	
QLogic 2-pt 10Gb Converged Network Adapter(CFFh) for IBM BladeCenter	7873	AC1	3592
		MC1	
Intel 10Gb 2-port Ethernet Expansion Card (CFFh) for IBM BladeCenter	7872	AC1	3593
		MC1	
Intel 10Gb 2-port Ethernet Expansion Card (CFFh) for IBM BladeCenter	7873	AC1	
		MC1	
QLogic 4Gb Fibre Channel Expansion Card (CIOv) for IBM BladeCenter	7873	AC1	3594
		MC1	
Emulex 8Gb Fibre Channel Expansion Card (CIOv) for IBM BladeCenter	7873	AC1	3598
		MC1	
Scaled Blade 01	7873	AC1	4783
		MC1	
Scaled Blade 02	7873	AC1	4784
		MC1	
Dummy DIMM for improved airflow	7873	AC1	4916
		MC1	
IBM 50GB SATA 1.8" NHS SSD	7873	AC1	5314
		MC1	
IBM 50GB SATA 1.8" MLC SSD	7873	AC1	5428
		MC1	
Brocade 2 port 10GbE Converged Network Adapter for IBM BladeCenter	7873	AC1	5437
		MC1	

2/4 Port Ethernet Expansion Card (CFFh) for IBM BladeCenter	7873	AC1 MC1	5476
Ethernet Expansion Card (CIOv) for IBM BladeCenter	7873	AC1 MC1	5477
QLogic Eth and 8Gb Fibre Channel Exp Card (CFFh) for IBM BladeCenter	7873	AC1 MC1	5485
Chelsio 10GbE Expansion Card (CFFh) for IBM BladeCenter	7873	AC1	5495
Emulex 10GbE Virtual Fabric Adapter for IBM BladeCenter	7873	AC1 MC1	5755
SSD Expansion Card for IBM BladeCenter HX5	7873	AC1 MC1	5765
4S HX5 Conversion for Stand Alone 4S Blades	7873	AC1 MC1	5976
SOFS Solution Code MFG Instruction	7873	AC1 MC1	6124
SAP-BWA Solution Code MFG Instruction	7873	AC1 MC1	6125
InfoSphere-BWA Solution Code MFG Instruction	7873	AC1 MC1	6126
GMAS Solution Code MFG Instruction	7873	AC1 MC1	6127
IBW-SSD Solution Code MFG Instruction	7873	AC1 MC1	6128
Cloudburst Solution Code MFG Instruction	7873	AC1 MC1	6129
SONAS Solution Code MFG Instruction	7873	AC1 MC1	6130
4S HX5 Conversion	7873	AC1 MC1	6133
Side scale Filler	7873	AC1 MC1	6427
Filler Plates	7873	AC1 MC1	6470
Access Cover	7873	AC1 MC1	7493
Group ID 01	7873	AC1 MC1	7501
Group ID 02	7873	AC1 MC1	7502
Group ID 03	7873	AC1 MC1	7503
Group ID 04	7873	AC1 MC1	7504
Group ID 05	7873	AC1 MC1	7505
Group ID 06	7873	AC1 MC1	7506
Group ID 07	7873	AC1 MC1	7507
Group ID 08	7873	AC1 MC1	7508
Group ID 09	7873	AC1 MC1	7509
Group ID 10	7873	AC1 MC1	7510
Group ID 11	7873	AC1 MC1	7511
Group ID 12	7873	AC1 MC1	7512
Group ID 13	7873	AC1 MC1	7513
Group ID 14	7873	AC1 MC1	7514
Group ID 15	7873	AC1 MC1	7515
Group ID 16	7873	AC1 MC1	7516
Group ID 17	7873	AC1 MC1	7517
Group ID 18	7873	AC1	7518

		MC1	
Group ID 19	7873	AC1	7519
		MC1	
Group ID 20	7873	AC1	7520
		MC1	
Customer Solution Center Services	7873	AC1	7831
		MC1	
Integrated Solid State Mirroring	7873	AC1	7859
		MC1	
Integrated Solid State Striping	7873	AC1	7860
		MC1	
e1350 Special Bid Solution Component	7873	AC1	7929
		MC1	
No HDD Selected	7873	AC1	8026
		MC1	
No Processor Selected	7873	AC1	8028
		MC1	
No Memory Selected	7873	AC1	8029
		MC1	
Consolidate Shipment	7873	AC1	8031
		MC1	
e1350 Solution Component	7873	AC1	8034
		MC1	
Compute Node	7873	AC1	8036
		MC1	
Management Node	7873	AC1	8037
		MC1	
Storage Node	7873	AC1	8038
		MC1	
TAA Compliant Order	7873	AC1	8067
		MC1	
General Racking Solution	7873	AC1	8072
		MC1	
Integrate BladeCenter in Manufacturing	7873	AC1	8077
		MC1	
No Publications Selected	7873	AC1	8086
		MC1	
No Internal RAID	7873	AC1	9012
		MC1	
Memory Sparing	7873	AC1	9016
		MC1	
Enable Memory Mirroring	7873	AC1	9017
		MC1	
Storage Subsystem ID 01	7873	AC1	9170
		MC1	
Storage Subsystem ID 02	7873	AC1	9171
		MC1	
Storage Subsystem ID 03	7873	AC1	9172
		MC1	
Storage Subsystem ID 04	7873	AC1	9173
		MC1	
Storage Subsystem ID 05	7873	AC1	9174
		MC1	
Storage Subsystem ID 06	7873	AC1	9175
		MC1	
Storage Subsystem ID 07	7873	AC1	9176
		MC1	
Storage Subsystem ID 08	7873	AC1	9177
		MC1	
Storage Subsystem ID 09	7873	AC1	9178
		MC1	
Storage Subsystem ID 10	7873	AC1	9179
		MC1	
Storage Subsystem ID 11	7873	AC1	9180
		MC1	
Storage Subsystem ID 12	7873	AC1	9181
		MC1	
Storage Subsystem ID 13	7873	AC1	9182
		MC1	
Storage Subsystem ID 14	7873	AC1	9183
		MC1	
Storage Subsystem ID 15	7873	AC1	9184
		MC1	
Storage Subsystem ID 16	7873	AC1	9185



		MC1	
Storage Subsystem ID 17	7873	AC1	9186
		MC1	
Storage Subsystem ID 18	7873	AC1	9187
		MC1	
Storage Subsystem ID 19	7873	AC1	9188
		MC1	
Storage Subsystem ID 20	7873	AC1	9189
		MC1	
Preload Specify	7873	AC1	9200
		MC1	
Windows Specify	7873	MC1	9201
Red Hat Specify	7873	AC1	9202
SuSE Specify	7873	AC1	9203
AIX Specify	7873	AC1	9204
Drop-in-the-Box Specify	7873	AC1	9205
		MC1	
No Preload Specify	7873	AC1	9206
		MC1	
VMware Specify	7873	AC1	9207
		MC1	
Solaris Specify	7873	AC1	9208
Preload by Hardware Feature Specify	7873	AC1	9220
		MC1	
IBM BladeCenter PCI Express Gen 2 Expansion Blade	7873	AC1	9295
		MC1	
		MC1	
System Documentation and Software-US English	7873	AC1	9928
		MC1	
		MC1	
Software Application (Not Preinstalled) Specify	7873	AC1	A0UF
		MC1	
2GB (1x2GB, 1Rx8, 1.35V) PC3L-10600 CL9 ECC DDR3 1333MHZ VLP RDIMM	7873	AC1	A0WX
		MC1	
4GB (1x4GB, 2Rx8, 1.35V) PC3L-10600 CL9 ECC DDR3 1333MHZ VLP RDIMM	7873	AC1	A0WZ
		MC1	
4GB (1x4GB, 2Rx8, 1.5V) PC3-10600 CL9 ECC DDR3 1333MHZ VLP RDIMM	7873	AC1	A100
		MC1	
8GB (1x8GB, 4Rx8, 1.5V) PC3-8500 CL7 ECC DDR3 1066MHZ VLP RDIMM	7873	AC1	A101
		MC1	
System x Cluster Upgrade	7873	AC1	A103
		MC1	
HX5 EX Blade Base and Planar	7873	AC1	A16M
		MC1	
IBM BladeCenter HX5 with MAX5	7873	AC1	A16N
		MC1	
HX5 EX Code	7873	AC1	A16P
		MC1	
Intel Xeon Processor E7-2803 6C 1.73GHz 18MB Cache 105W	7873	AC1	A16Q
		MC1	
Intel Xeon Processor E7-2820 8C 2.00GHz 18MB Cache 105W	7873	AC1	A16R
		MC1	
Intel Xeon Processor E7-2830 8C 2.13GHz 24MB Cache 105W	7873	AC1	A16S
		MC1	
Intel Xeon Processor E7-2850 10C 2.00GHz 24MB Cache 130W	7873	AC1	A16T
		MC1	
Intel Xeon Processor E7-2850 10C 2.00GHz 24MB Cache 130W (MAX5)	7873	AC1	A16U
		MC1	

Intel Xeon Processor E7-2860 10C 2.26GHz 24MB Cache 130W	7873	AC1 MC1	A16V
Intel Xeon Processor E7-2860 10C 2.26GHz 24MB Cache 130W (MAX5)	7873	AC1 MC1	A16W
Intel Xeon Processor E7-4807 6C 1.86GHz 18MB Cache 95W	7873	AC1 MC1	A16X
Intel Xeon Processor E7-4820 8C 2.00GHz 18MB Cache 105W	7873	AC1 MC1	A16Y
Intel Xeon Processor E7-4830 8C 2.13GHz 24MB Cache 105W	7873	AC1 MC1	A16Z
Intel Xeon Processor E7-4850 10C 2.00GHz 24MB Cache 130W	7873	AC1 MC1	A170
Intel Xeon Processor E7-4850 10C 2.00GHz 24MB Cache 130W (MAX5)	7873	AC1 MC1	A171
Intel Xeon Processor E7-4860 10C 2.26GHz 24MB Cache 130W	7873	AC1 MC1	A172
Intel Xeon Processor E7-4860 10C 2.26GHz 24MB Cache 130W (MAX5)	7873	AC1 MC1	A173
Intel Xeon Processor E7-8837 8C 2.67GHz 24MB Cache 130W	7873	AC1 MC1	A174
Intel Xeon Processor E7-8837 8C 2.67GHz 24MB Cache 130W (MAX5)	7873	AC1 MC1	A175
Intel Xeon Processor E7-8867L 10C 2.13GHz 30MB Cache 105W	7873	AC1 MC1	A176
Additional Intel Xeon Processor E7-2803 6C 1.73GHz 18MB Cache 105W	7873	AC1 MC1	A177
Additional Intel Xeon Processor E7-2820 8C 2.00GHz 18MB Cache 105W	7873	AC1 MC1	A178
Additional Intel Xeon processor E7-2830 8C 2.13GHz 24MB Cache 105W	7873	AC1 MC1	A179
Additional Intel Xeon Processor E7-2850 10C 2.00GHz 24MB Cache 130W	7873	AC1 MC1	A17A
Additional Intel Xeon Processor E7-2850 10C 2.00GHz 24MB Cache 130W (MAX5)	7873	AC1 MC1	A17B
Additional Intel Xeon Processor E7-2860 10C 2.26GHz 24MB Cache 130W	7873	AC1 MC1	A17C
Additional Intel Xeon Processor E7-2860 10C			

2.26GHz 24MB Cache 130W (MAX5)	7873	AC1	A17D
		MC1	
Additional Intel Xeon Processor E7-4807 6C 1.86GHz 18MB Cache 95W	7873	AC1	A17E
		MC1	
Additional Intel Xeon Processor E7-4820 8C 2.00GHz 18MB Cache 105W	7873	AC1	A17F
		MC1	
Additional Intel Xeon processor E7-4830 8C 2.13GHz 24MB Cache 105W	7873	AC1	A17G
		MC1	
Additional Intel Xeon Processor E7-4850 10C 2.00GHz 24MB Cache 130W	7873	AC1	A17H
		MC1	
Additional Intel Xeon Processor E7-4850 10C			
2.00GHz 24MB Cache 130W (MAX5)	7873	AC1	A17J
		MC1	
Additional Intel Xeon Processor E7-4860 10C 2.26GHz 24MB Cache 130W	7873	AC1	A17K
		MC1	
Additional Intel Xeon Processor E7-4860 10C			
2.26GHz 24MB Cache 130W (MAX5)	7873	AC1	A17L
		MC1	
Additional Intel Xeon Processor E7-8837 8C 2.67GHz 24MB Cache 130W	7873	AC1	A17M
		MC1	
Additional Intel Xeon Processor E7-8837 8C 2.67GHz			
24MB Cache 130W (MAX5)	7873	AC1	A17N
		MC1	
Additional Intel Xeon Processor E7-8867L 10C 2.13GHz 30MB Cache 105W	7873	AC1	A17P
		MC1	
8GB 4R x 8, 2Gbit DDR-3 1333MHz VLP RDIMM	7873	AC1	A17Q
		MC1	
Intel Xeon E7-2870 Processor, 10C, 2.40GHz, 30M, 6.4GT/s, 130W	7873	AC1	A18Q
		MC1	
Intel Xeon E7-2870 Processor, 10C, 2.40GHz, 30M, 6.4GT/s, 130W (MAX5)	7873	AC1	A18R
		MC1	
Intel Xeon E7-4870 Processor, 10C, 2.40GHz, 30M, 6.4GT/s, 130W	7873	AC1	A18S
		MC1	
Intel Xeon E7-4870 Processor, 10C, 2.40GHz, 30M, 6.4GT/s, 130W (MAX5)	7873	AC1	A18T
		MC1	
Additional Intel Xeon processor E7-2870 10C 2.40GHz 30MB Cache 130W	7873	AC1	A18U
		MC1	
Additional Intel Xeon E7-2870 Processor, 10C,			

2.40GHz, 30M, 6.4GT/s, 130W (MAX5)	7873	AC1	A18V
		MC1	
Additional Intel Xeon Processor E7-4870 10C 2.40GHz 30MB Cache 130W	7873	AC1	A18W
		MC1	
Additional Intel Xeon E7-4870 Processor, 10C,			
2.40GHz, 30M, 6.4GT/s, 130W (MAX5)	7873	AC1	A18X
		MC1	
Labels for HX5 + BPE4	7873	AC1	A1MJ
		MC1	
HX5 EX Labels	7873	AC1	A1NR
		MC1	
HX5 EX Blade Cover	7873	AC1	A1NS
		MC1	
HX5 EX WOS Labels	7873	AC1	A1NT
		MC1	
Mellanox 2-port 10Gb E'net Expansion Card (CFFh) - IBM BladeCenter	7870	AC1	A1NW
		MC1	
Mellanox 2-port 10Gb E'net Expansion Card (CFFh) - IBM BladeCenter	7871	AC1	
		MC1	
Mellanox 2-port 10Gb E'net Expansion Card (CFFh) - IBM BladeCenter	7872	AC1	
		MC1	

The following are features already announced for the 7872 machine type:

Description	MT	Model	Feature
Intel 10Gb 2-port Ethernet Expansion Card (CFFh) for IBM BladeCenter	7872	AC3 AC4 MC3 MC4	3593
Mellanox 2-port 10Gb E'net Expansion Card (CFFh) - IBM BladeCenter	7872	AC3 AC4 MC3 MC4	

### The Single Entity Offerings (SEO)

Description	SEO number
BladeCenter HX5 scalable 2 socket server	7873F2U 7873D1U 7873B2U 7873F1U 7873C1U 7873B1U
BladeCenter HX5 Memory Expanded Scalable Two Socket Server	7873A3U 7873A2U 7873A1U 7873F3U
BladeCenter HX5 workload optimized offerings	7873G2U
BladeCenter HX5 Express Models	7873E1U

## Options SEOs

Description	Option part number
Intel Xeon Processor E7-2803 6C 1.73GHz 18MB Cache 105w	69Y3062
Intel Xeon Processor E7-2820 8C 2.00GHz 18MB Cache 105w	69Y3068
Intel Xeon Processor E7-2830 8C 2.13GHz 24MB Cache 105w	69Y3074
Intel Xeon Processor E7-2850 10C 2.00GHz 24MB Cache 130w	69Y3084
Intel Xeon Processor E7-2860 10C 2.26GHz 24MB Cache 130w	69Y3094
Intel Xeon processor E7-2870 10C 2.40GHz 30MB Cache 130w	88Y6150
Intel Xeon Processor E7-4807 6C 1.86GHz 18MB Cache 95w	88Y6070
Intel Xeon Processor E7-4820 8C 2.00GHz 18MB Cache 105w	88Y6076
Intel Xeon Processor E7-4830 8C 2.13GHz 24MB Cache 105w	88Y6082
Intel Xeon Processor E7-4850 10C 2.00GHz 24MB Cache 130w	88Y6092
Intel Xeon Processor E7-4860 10C 2.26GHz 24MB Cache 130w	88Y6102
Intel Xeon Processor E7-4870 10C 2.40GHz 30MB Cache 130w	88Y6160
Intel Xeon Processor E7-8837 8C 2.67GHz 24MB Cache 130w	88Y6112
Intel Xeon Processor E7-8867L 10C 2.13GHz 30MB Cache 105w	88Y6124
Mellanox 2-port 10Gb E'net Expansion Card (CFFh)	90Y3570
- IBM BladeCenter	
IBM BladeCenter HX5 with MAX5	88Y6128
8GB 4R x 8, 2Gbit DDR-3 1333MHZ VLP RDIMM	46C0570

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
4250	7873-AC1 Routing Code
4251	7873-MC1 Routing Code

### Business Partner information

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If you are a Direct Reseller - System Reseller acquiring products from IBM, you may link directly to Business Partner information for this announcement. A PartnerWorld® ID and password are required (use IBM ID).

<https://www.ibm.com/partnerworld/mem/sla.jsp?num=111-053>

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### Publications

An installation and user's guide, and safety and warranty publications are shipped with each IBM BladeCenter HX5 blade. The following publications are available immediately.

Title	Order number
BladeCenter Solutions	GM13-0127
System x Family Brochure	GM13-0128

The *IBM BladeCenter HX5 Installation and User's Guide and Hardware Maintenance Manual*, in US English, are available.

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

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

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## Services

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### Global Technology Services

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IBM services include business consulting, outsourcing, hosting services, applications, and other technology management.

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

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For details on education offerings related to specific products, visit

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

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

### System x and BladeCenter support services

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#### ***Recommended core technical support***

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:

- **Continuous system monitoring**  
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>

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## Technical information

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### Specified operating environment

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#### *Physical specifications*

#### **BladeCenter HX5**

7873-F2x

Processor	Intel Xeon E7-4870 10 core 130w
Int. speed	2.40 GHz
Max. mem. speed	1066 MHz
Interconnect speed	6.4 GT/s
Number standard	1
Maximum	2
L3 cache (full speed)	30 MB
Memory (VLP ECC DDR3)	8 GB
DIMMs (Standard)	2 x 4 GB
DIMM sockets	16
Capacity	256 GB <sup>1</sup>
IBM BladeCenter PCI Express Gen 2 Expansion Blade	Optional
IBM 320 GB High IOPS SD Class SSD PCIe Adapter	Optional <sup>2</sup>
Virtual Fabric Adapter	Standard
Video	SVGA
Memory	128 MB
Disk controller	SAS (optional)
Channels	4
Connector internal	2
Connector external	0
RAID	Yes (optional)
SSD	0
Connectors	2
Internal capacity	100 GB <sup>3</sup>
Total HDD bays	Up to 2
PCI slots	0
Management processor	Standard
Ethernet controller	Dual Gb
FC card	Optional
DVD-ROM (IDE)	0
Diskette drive	0
Power supply	0
Blade width	30 mm

7873-D1x

Processor	Intel Xeon E7-8867L 10 core 105w
Int. speed	2.13 GHz
Max. mem. speed	1066 MHz
Interconnect speed	6.4 GT/s
Number standard	1
Maximum	2
L3 cache (full speed)	30 MB
Memory (VLP ECC DDR3)	8 GB
DIMMs (Standard)	2 x 4 GB
DIMM sockets	16
Capacity	256 GB <sup>1</sup>
IBM BladeCenter PCI Express Gen 2 Expansion Blade	Optional
IBM 320 GB High IOPS SD Class SSD PCIe Adapter	Optional <sup>2</sup>
Virtual Fabric Adapter	Optional
Video	SVGA
Memory	128 MB

Disk controller	SAS (optional)
Channels	4
Connector internal	2
Connector external	0
RAID	Yes (optional)
SSD	0
Connectors	2
Internal capacity	100 GB <sup>3</sup>
Total HDD bays	Up to 2
PCI Slots	0
Management processor	Standard
Ethernet controller	Dual Gb
FC card	Optional
DVD-ROM (IDE)	0
Diskette drive	0
Power supply	0
Blade width	30 mm

7873-B2x

Processor	Intel Xeon E7-4830
	8 core 105w
Int. speed	2.13 GHz
Max. mem. speed	1066 MHz
Interconnect speed	6.4 GT/s
Number standard	1
Maximum	2
L3 cache (full speed)	24 MB
Memory (VLP ECC DDR3)	8 GB
DIMMs (Standard)	2 x 4 GB
DIMM sockets	16
Capacity	256 GB <sup>1</sup>
IBM BladeCenter PCI Express Gen 2 Expansion Blade	Optional
IBM 320 GB High IOPS SD Class SSD PCIe Adapter	Optional <sup>2</sup>
Virtual Fabric Adapter	Optional
Video	SVGA
Memory	128 MB
Disk controller	SAS (optional)
Channels	4
Connector internal	2
Connector external	0
RAID	Yes (optional)
SSD	0
Connectors	2
Internal capacity	100 GB <sup>3</sup>
Total HDD bays	Up to 2
PCI Slots	0
Management processor	Standard
Ethernet controller	Dual Gb
FC card	Optional
DVD-ROM (IDE)	0
Diskette drive	0
Power supply	0
Blade width	30 mm

7873-F1x

Processor	Intel Xeon E7-4830
	8 core 105w
Int. speed	2.13 GHz
Max. mem. speed	1066 MHz
Interconnect speed	6.4 GT/s
Number standard	1
Maximum	2
L3 cache (full speed)	24 MB
Memory (VLP ECC DDR3)	8 GB
DIMMs (Standard)	2 x 4 GB
DIMM sockets	16
Capacity	256 GB <sup>1</sup>



IBM BladeCenter PCI Express Gen 2 Expansion Blade	Optional
IBM 320 GB High IOPS SD Class SSD PCIe Adapter	Optional <sup>2</sup>
Virtual Fabric Adapter	Standard
Video	SVGA
Memory	128 MB
Disk controller	SAS (optional)
Channels	4
Connector internal	2
Connector external	0
RAID	Yes (optional)
SSD	0
Connectors	2
Internal capacity	100 GB <sup>3</sup>
Total HDD bays	Up to 2
PCI Slots	0
Management processor	Standard
Ethernet controller	Dual Gb
FC card	Optional
DVD-ROM (IDE)	0
Diskette drive	0
Power supply	0
Blade width	30 mm

7873-C1x

Processor	Intel Xeon E7-8837
	8 core 130w
Int. speed	2.67 GHz
Max. mem. speed	978 MHz
Interconnect speed	5.86 GT/s
Number standard	1
Maximum	2
L3 cache (full speed)	24 MB
Memory (VLP ECC DDR3)	8 GB
DIMMs (Standard)	2 x 4 GB
DIMM sockets	16
Capacity	256 GB <sup>1</sup>
IBM BladeCenter PCI Express Gen 2 Expansion Blade	Optional
IBM 320 GB High IOPS SD Class SSD PCIe Adapter	Optional <sup>2</sup>
Virtual Fabric Adapter	Optional
Video	SVGA
Memory	128 MB
Disk controller	SAS (optional)
Channels	4
Connector internal	2
Connector external	0
RAID	Yes (optional)
SSD	0
Connectors	2
Internal capacity	100 GB <sup>3</sup>
Total HDD bays	Up to 2
PCI Slots	0
Management processor	Standard
Ethernet controller	Dual Gb
FC card	Optional
DVD-ROM (IDE)	0
Diskette drive	0
Power supply	0
Blade width	30 mm

7873-B1x

Processor	Intel Xeon E7-4807
	6 core 95w
Int. speed	1.86 GHz
Max. mem. speed	800 MHz
Interconnect speed	4.8 GT/s

Number standard	1
Maximum	2
L3 cache (full speed)	18 MB
Memory (VLP ECC DDR3)	8 GB
DIMMs (Standard)	2 x 4 GB
DIMM sockets	16
Capacity	256 GB <sup>1</sup>
IBM BladeCenter PCI Express Gen 2 Expansion Blade	Optional
IBM 320 GB High IOPS SD Class SSD PCIe Adapter	Optional <sup>2</sup>
Virtual Fabric Adapter	Optional
Video	SVGA
Memory	128 MB
Disk controller	SAS (optional)
Channels	4
Connector internal	2
Connector external	0
RAID	Yes (optional)
SSD	0
Connectors	2
Internal capacity	100 GB <sup>3</sup>
Total HDD bays	Up to 2
PCI Slots	0
Management processor	Standard
Ethernet controller	Dual Gb
FC card	Optional
DVD-ROM (IDE)	0
Diskette drive	0
Power supply	0
Blade width	30 mm

7873-A3x

Processor	Intel Xeon E7-2870
	10 core 130w
Int. speed	2.40 GHz
Max. mem. speed	1066 MHz
Interconnect speed	6.4 GT/s
Number standard	2
Maximum	2
L3 cache (full speed)	30 MB
Memory (VLP ECC DDR3)	16 GB
DIMMs (Standard)	4 x 4 GB
DIMM sockets	40
Capacity	640 GB <sup>1</sup>
MAX5	Standard
Virtual Fabric Adapter	Optional
Video	SVGA
Memory	128 MB
Disk controller	SAS (optional)
Channels	4
Connector internal	2
Connector external	0
RAID	Yes (optional)
SSD	0
Connectors	2
Internal capacity	100 GB <sup>3</sup>
Total HDD bays	Up to 2
PCI Slots	0
Management processor	Standard
Ethernet controller	Dual Gb
FC card	Optional
DVD-ROM (IDE)	0
Diskette drive	0
Power supply	0
Blade width	60 mm

7873-A2x

Processor	Intel Xeon E7-2860
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	10 core 130w
Int. speed	2.26 GHz
Max. mem. speed	1066 MHz
Interconnect speed	6.4 GT/s
Number standard	2
Maximum	2
L3 cache (full speed)	24 MB
Memory (VLP ECC DDR3)	16 GB
DIMMs (Standard)	4 x 4 GB
DIMM sockets	40
Capacity	640 GB <sup>1</sup>
MAX5	Standard
Virtual Fabric Adapter	Optional
Video	SVGA
Memory	128 MB
Disk controller	SAS (optional)
Channels	4
Connector internal	2
Connector external	0
RAID	Yes (optional)
SSD	0
Connectors	2
Internal capacity	100 GB <sup>3</sup>
Total HDD bays	Up to 2
PCI Slots	0
Management processor	Standard
Ethernet controller	Dual Gb
FC card	Optional
DVD-ROM (IDE)	0
Diskette drive	0
Power supply	0
Blade width	60 mm

7873-A1x

Processor	Intel Xeon E7-2830
	8 core 105w
Int. speed	2.13 GHz
Max. mem. speed	1066 MHz
Interconnect speed	6.4 GT/s
Number standard	2
Maximum	2
L3 cache (full speed)	24 MB
Memory (VLP ECC DDR3)	16 GB
DIMMs (Standard)	4 x 4 GB
DIMM sockets	40
Capacity	640 GB <sup>1</sup>
MAX5	Standard
Virtual Fabric Adapter	Optional
Video	SVGA
Memory	128 MB
Disk controller	SAS (optional)
Channels	4
Connector internal	2
Connector external	0
RAID	Yes (optional)
SSD	0
Connectors	2
Internal capacity	100 GB <sup>3</sup>
Total HDD bays	Up to 2
PCI Slots	0
Management processor	Standard
Ethernet controller	Dual Gb
FC card	Optional
DVD-ROM (IDE)	0
Diskette drive	0
Power supply	0
Blade width	60 mm

7873-F3x

Processor	Intel Xeon E7-4807
	6 core 95w
Int. speed	1.86 GHz
Max. mem. speed	800 MHz
Interconnect speed	4.8 GT/s
Number standard	2
Maximum	2
L3 cache (full speed)	18 MB
Memory (VLP ECC DDR3)	16 GB
DIMMs (Standard)	4 x 4 GB
DIMM sockets	40
Capacity	640 GB <sup>1</sup>
MAX5	Standard
Virtual Fabric Adapter	Standard
Video	SVGA
Memory	128 MB
Disk controller	SAS (optional)
Channels	4
Connector internal	2
Connector external	0
RAID	Yes (optional)
SSD	0
Connectors	2
Internal capacity	100 GB <sup>3</sup>
Total HDD bays	Up to 2
PCI Slots	0
Management processor	Standard
Ethernet controller	Dual Gb
FC card	optional
DVD-ROM (IDE)	0
Diskette drive	0
Power supply	0
Blade width	60 mm
	7873-G2x

Processor	Intel Xeon E7-4830
	8 core 105w
Int. speed	2.13 GHz
Max. mem. speed	1066 MHz
Interconnect speed	6.4 GT/s
Number standard	2
Maximum	2
L3 cache (full speed)	24 MB
Memory (VLP ECC DDR3)	64 GB
DIMMs (Standard)	8 x 8 GB
DIMM sockets	16
Capacity	256 GB <sup>1</sup>
IBM BladeCenter PCI Express Gen 2 Expansion Blade (BPE4)	Standard
IBM 320 GB High IOPS SD Class SSD PCIe Adapter	Standard
320 GB Fusion IO	2
Virtual Fabric Adapter	Standard
Video	SVGA
Memory	128 MB
Disk controller	SAS (optional)
Channels	4
Connector internal	2
Connector external	0
RAID	Yes (optional)
SSD	0
Connectors	2
Internal capacity	100 GB <sup>3</sup>
Total HDD bays	Up to 2
PCI Slots	0
Management processor	Standard
Ethernet controller	Dual Gb
FC card	optional
DVD-ROM (IDE)	0
Diskette drive	0

Power supply	0
Blade width	60 mm

## BladeCenter HX5 Express Models

### 7873-E1U

Processor	Intel Xeon E7-4830 8 core 105w
Int. speed	2.13 GHz
Max. mem. speed	1066 MHz
Interconnect speed	6.4 GT/s
Number standard	2
Maximum	2
L3 cache (full speed)	24 MB
Memory (VLP ECC DDR3)	128 GB
DIMMs (Standard)	16 x 8 GB
DIMM sockets	16
Capacity	256 GB <sup>1</sup>
IBM BladeCenter PCI Express Gen 2 Expansion Blade (BPE4)	Optional
IBM 320 GB High IOPS SD Class SSD PCIe Adapter	Optional <sup>2</sup>
Virtual Fabric Adapter	Standard
Video	SVGA
Memory	128 MB
Disk controller	SAS (optional)
Channels	4
Connector internal	2
Connector external	0
RAID	Yes (optional)
SSD	0
Connectors	2
Internal capacity	100 GB <sup>3</sup>
Total HDD bays	Up to 2
PCI slots	0
Management processor	Standard
Ethernet controller	Dual Gb
FC card	Optional
DVD-ROM (IDE)	0
Diskette drive	0
Power supply	0
Blade width	30 mm

### 7873-E2U

Processor	Intel Xeon E7-2860 10 core 130w
Int. speed	2.26 GHz
Max. mem. speed	1066 MHz
Interconnect speed	6.4 GT/s
Number standard	2
Maximum	2
L3 cache (full speed)	24 MB
Memory (VLP ECC DDR3)	224 GB
DIMMs (Standard)	28 x 8 GB
DIMM sockets	40
Capacity	640 GB <sup>1</sup>
MAX5	Standard
Virtual Fabric Adapter	Standard
Video	SVGA
Memory	128 MB
Disk controller	SAS (optional)
Channels	4
Connector internal	2
Connector external	0
RAID	Yes (optional)
SSD	0
Connectors	2
Internal capacity	100 GB <sup>3</sup>
Total HDD bays	Up to 2
PCI slots	0
Management processor	Standard

Ethernet controller	Dual Gb
FC card	Optional
DVD-ROM (IDE)	0
Diskette drive	0
Power supply	0
Blade width	60 mm

<sup>1</sup> Total system memory capacity is based on using 16 GB memory DIMMs.

<sup>2</sup> The IBM 320 GB High IOPS SD Class SSD PCIe Adapter can only be installed when a IBM BladeCenter PCI Express Gen 2 Expansion Blade (BPE4) is present.

<sup>3</sup> Capacities are based on installation of two 50 GB SSDs.

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 BladeCenter HX5 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 HX5**

- Height: 24.5 cm (9.7 in)
- Depth: 44.6 cm (17.6 in)
- Width: 5.8 cm (2.28 in)
- Maximum weight: 9.5 kg (21 lb) (depending on the configuration when options are added)

### **Electrical**

- BladeCenter chassis: 200 to 240 (nominal) V ac; 50 Hz or 60 Hz
- BladeCenter HX5: 12.2 (nominal) V dc

### **Mellanox CX2 10Gb Ethernet Expansion card (CFFh)**

- Height: 159 mm (6.26 in)
- Width: 125 mm (4.92 in)
- Depth: 12.7 mm (0.50 in)
- Weight: .0975 kg (0.215 lb)

**Note:** All weights and measurements are approximate.

### **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 3, Class A
- UL 60950 Safety of Information Technology Equipment
- CSA C22.2 No.60950 Safety of Information Technology Equipment 60950
- NOM-019 Seguridad de Equipo de Procesamiento de Datos within 30 days of planned availability

The Mellanox CX2 10Gb Ethernet Expansion card (CFFh) supports or complies with the following standards:

- FCC - Verified to comply with Part 15 of the FCC Rules, Class A
- CSA C22.2 No.60950 Safety of Information Technology Equipment 60950

### ***Operating environment***

#### **BladeCenter HX5**

- Temperature:
  - 10.0 to 35.0 degrees C (50 to 95 degrees F) at 0 to 914 m (0 to 3,000 ft)
  - 10.0 to 32.0 degrees C (50 to 90 degrees F) at 914 to 2,133 m (3,000 to 7,000 ft)
- Relative humidity:
  - 8% to 80%
  - Maximum altitude: 2,133 m (7,000 ft)

#### **Mellanox CX2 10Gb Ethernet Expansion card (CFFh)**

Temperature and altitude:

- Operating:
  - 10 to 52 degrees C (50 to 125.6 degrees F) at an altitude of 0 to 914 m (0 to 3,000 ft)
  - 10 to 49 degrees C (50 to 120.2 degrees F) at an altitude of 0 to 3 000 m (0 to 10,000 ft)
- Nonoperating:
  - 40 to 65 degrees C (-40 to 149 degrees F) at an altitude of 0 to 12 000 m (0 to 39,370 ft)
- Humidity:
  - Operating: 8% to 80%, noncondensing
  - Nonoperating: 5% to 80%, noncondensing

### ***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 HX5:

- Microsoft:
  - Microsoft Windows Server 2008 R2
  - Microsoft Windows Server 2008, Datacenter x64 Edition
  - Microsoft Windows Server 2008, Enterprise x64 Edition
  - Microsoft Windows Server 2008 HPC Edition
  - Microsoft Windows Server 2008, Standard x64 Edition
  - Microsoft Windows Server 2008, Web x64 Edition
  - Windows Small Business Server 2008, Premium Edition
  - Windows Small Business Server 2008, Standard Edition
- Linux:
  - SUSE Linux Enterprise Server 10 for AMD64/EM64T
  - SUSE Linux Enterprise Server 10 with Xen for AMD64/EM64T
  - SUSE Linux Enterprise Server 11 for AMD64/EM64T
  - SUSE Linux Enterprise Server 11 with Xen for AMD64/EM64T
  - Red Hat Enterprise Linux 5 Server x64 Edition
  - Red Hat Enterprise Linux 5 Server with Xen x64 Edition
  - Red Hat Enterprise Linux 6 Server x64 Edition
- Other:
  - VMware ESX 4.1
  - VMware ESXi 4.1

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

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

### **Compatibility**

The IBM BladeCenter HX5 contains licensed system programs that include set configuration, set features, and test programs. IBM system BIOS is loaded from a "flash" EEPROM into system memory. This BIOS provides instructions and interfaces designed to support the standard features of the IBM BladeCenter HX5 and to maintain compatibility with many current software programs.

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**



- Minimum supported VMware version is vSphere 4.1.
- A minimum of two DIMMs per CPU must be installed; DIMMs must be installed in pairs after that. DIMMs must be installed in matched pairs for Mirror Mode.
  - Supports 2 GB, 4 GB, 8 GB and 16 GB DIMMs.

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

- Microprocessors must be of the same type, power level, and clock speed on each BladeCenter HX5. Mixing microprocessors of different speeds, power levels, or cache sizes or upgrading the base processors is not supported. The latest BladeCenter hardware and software compatibility is available via the website <http://www.ibm.com/servers/eserver/serverproven/compat/us/>
- The BladeCenter HX5 is supported in the BladeCenter H chassis (8852), the BladeCenter S chassis (8886), and the BladeCenter HT chassis (8740, 8750). For supported configurations, refer to the AC Model BladeCenter hardware configuration tools via the website <http://www-03.ibm.com/systems/x/hardware/configtools.html>

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

## Planning information

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### **Customer responsibilities**

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

### **Configuration information**

BladeCenter HX5 blades must be installed in a BladeCenter chassis.

### **BladeCenter configuration**

The BladeCenter contains 14 blade server bays supporting up to 14 hot-swap BladeCenter HX5 blades. A control panel, located at the top left of the unit, contains the following LEDs:

- Power good
- Blade location
- Over temperature
- Information
- General fault

### **Memory support**

The following memory options are supported with BladeCenter HX5:

Option description	Option
2 GB (1x2 GB, 1Rx8, 1.35V) PC3-10600 CL9 ECC DDR3 1333 MHz VLP RDIMM	46C0560
4 GB (1x4 GB, 2Rx8, 1.35V) PC3-10600 CL9 ECC DDR3 1333 MHz VLP RDIMM	46C0564
8 GB (1x8 GB, 4Rx8, 1.35V) PC3-8500 CL7 ECC DDR3 1066 MHz VLP RDIMM	46C0570
16 GB (1x16 GB, 4Rx8, 1.35V) PC3-10600 CL9 ECC DDR3 1066 MHz VLP RDIMM	46C0599

Memory must be installed in pairs of two identical DIMMs per processors installed. Although the DIMM pairs installed can be of different sizes, the pairs must be of the same speed.

## Power considerations

The BladeCenter HX5 is supported in the BladeCenter H chassis (8852), the BladeCenter S chassis (8886), and the BladeCenter HT chassis (8740, 8750). For supported configurations, refer to the AC Model BladeCenter hardware configuration tools via the web

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

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

## Cable orders

Each BladeCenter HX5 blade contains two Gigabit Ethernet connections. An optional BladeCenter Gigabit 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.

Installations using the BladeCenter Fibre Channel Switch Module require short- or long-wave small form factor pluggable (SFP) options and appropriate Fibre Channel cabling.

## Installability

Each IBM BladeCenter HX5 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 HX5

Product	Package description	Boxes
BladeCenter HX5	BladeCenter HX5 Carton	1
	Contents:	
	BladeCenter HX5	1
	Publications/CD Package	1
BladeCenter HX5	Publications Package	1
	Contents:	
	Documentation CD-ROM (softcopy of publications)	
	Safety flyer	
	Standard form factor I/O Expansion card tray kit	

The BladeCenter HX5 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: 9.0 kg (20 lb)

## Related options

### Mellanox CX2 10Gb Ethernet Expansion card (CFFh)

Product	Package description	Boxes
Mellanox CX2 10Gb Ethernet Expansion card (CFFh)	Mellanox Carton	1
	Contents:	

The Mellanox CX2 10Gb Ethernet Expansion cards are shipped in a single package. The approximate shipping dimensions and weight are:

- Single pack dimensions: 58 mm (2.28 in) x 147 mm (5.80 in) x 167 mm (6.57 in)
- Single pack weight: 0.9 kg (2 lb)

### **Security, auditability, and control**

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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 hard disk drive.
- A selectable boot sequence can be used to help prevent unauthorized installation of software or removal of data from the diskette drive.

The IBM BladeCenter HX5 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.

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## **IBM Electronic Services**

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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>

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## Terms and conditions

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### **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**

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- Three years
- Optional features - One year

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:

- RAID Battery

### **Warranty service**

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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 have been designated as Tier 1 CRUs:

- Blank filler
- Cable-management arm
- Solid state drive
- Hot-swap fan
- Hot-swap power supply
- Lift handle kit
- Memory DIMM card
- Optical drive
- PCI adapter
- Power cord
- Service label
- System label
- Top cover

### ***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.ibm.com/support>

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**

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#### ***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.

See the [Pricing](#) section for specific offerings.

#### ***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.

See the [Pricing](#) section for specific offerings.

### **Maintenance service (ICA)**

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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.

See the [Pricing](#) section for specific offerings.

#### ***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.

See the [Pricing](#) section for specific offerings.

### **Non-IBM parts support**

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#### ***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**

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#### ***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](http://www.ibm.com/servers/support/machine_warranties/machine_code.html)

IBM may release changes to the Machine Code. IBM plans to make the Machine Code changes available for download from the IBM System x technical support website

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

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.

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## Pricing

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

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

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

Description	Model number	Feature number	Initial/MES/Both support	RP CSU MES
AC1	AC1		Initial	
MC1	MC1		Initial	
Mellanox 2-port 10Gb E'net Expansion Card (CFFh) - IBM BladeCenter	AC1 MC1	A1NW	Initial Initial	

The following features are already announced for the 7871 machine type:

Description	Model number	Feature number	Initial/MES/Both support	RP CSU MES
AC1	AC1		Initial	
MC1	MC1		Initial	
Mellanox 2-port 10Gb E'net Expansion Card (CFFh) - IBM BladeCenter	AC1 MC1	A1NW	Initial Initial	

The following features are already announced for the 7872 machine type:

Description	Model number	Feature number	Initial/MES/Both support	RP CSU MES
AC1				

	AC1		
MC1			
	MC1		
Intel 10Gb 2-port Ethernet Expansion Card (CFFh) for IBM BladeCenter		3593	Initial
	AC1		Initial
	MC1		Initial
Mellanox 2-port 10Gb E'net Expansion Card (CFFh) - IBM BladeCenter		A1NW	Initial
	AC1		Initial
	MC1		Initial

The following features are already announced for the 7872 machine type:

Description	Model number	Feature number	Initial/ MES/ Both support	RP CSU MES
Intel 10Gb 2-port Ethernet Expansion Card (CFFh) for IBM BladeCenter		3593	Initial	
	AC3		Initial	
	AC4		Initial	
	MC3		Initial	
	MC4		Initial	
Mellanox 2-port 10Gb E'net Expansion Card (CFFh) - IBM BladeCenter		A1NW	Initial	
	AC3		Initial	
	AC4		Initial	
	MC3		Initial	
	MC4		Initial	

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

Description	Model number	Feature number	Initial/ MES/ Both support	RP CSU MES
AC1				
MC1				
	AC1			
	MC1			
7873-AC1 Routing Code				
	AC1	4250	Initial	
7873-MC1 Routing Code				
	MC1	4251	Initial	
2-port 40Gb InfiniBand Expansion Card (CFFh) for IBM BladeCenter		0056	Initial	
	AC1		Initial	
	MC1		Initial	
IBM 320GB High IOPS SD Class SSD PCIe Adapter		0097	Initial	
	AC1		Initial	
	MC1		Initial	
Broadcom 10Gb Gen2 4-port Ethernet Exp Cd (CFFh) for IBM BladeCenter		0098	Initial	
	AC1		Initial	
	MC1		Initial	
Broadcom 10Gb Gen2 2-port Ethernet Exp Cd (CFFh) for IBM BladeCenter		0099	Initial	
	AC1		Initial	
	MC1		Initial	
Packaging - Expansion Blade		0743	Initial	
	AC1		Initial	
	MC1		Initial	
UID Asset Tag Label		0747	Initial	
	AC1		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
IBM HX5 2-node scalability kit			
	AC1	1737	Initial
	MC1		Initial
IBM MAX5 for BladeCenter			
	AC1	1740	Initial
	MC1		Initial
IBM HX5 1-node Speed Burst card			
	AC1	1741	Initial
	MC1		Initial
IBM HX5 MAX5 1-node scalability kit			
	AC1	1742	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
IBM USB Memory Key for VMware ESXi 4			
	AC1	1776	Initial
	MC1		Initial
Custom SLA Scheduling Service			
	AC1	1796	Initial
	MC1		Initial
HX5 Power Jumper			
	AC1	2011	Initial
	MC1		Initial
CPU Heat Sink Filler			
	AC1	2137	Initial
	MC1		Initial
Memory Expansion Module Heat Sink Filler			
	AC1	2138	Initial
	MC1		Initial
HX5 Click and Scale Expansion Kit			
	AC1	2139	Initial

	MC1		Initial
Custom Asset Tagging - Standard	AC1	2200	Initial
	MC1		Initial
Custom Asset Tagging - Enhanced	AC1	2201	Initial
	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
IBM USB Memory Key for VMware ESXi 4.1 with MAX5	AC1	2420	Initial
	MC1		Initial
16GB (1x16GB, 2Rx4, 1.35V) PC3L-10600 CL9 ECC DDR3 1333MHZ VLP RDIMM	AC1	2422	Initial
	MC1		Initial
Emulex 10GbE Virtual Fabric Adapter Advanced for IBM BladeCenter	AC1	2435	Initial
	MC1		Initial
Emulex 10GbE Virtual Fabric Advanced Upgrade for IBM BladeCenter	AC1	2436	Initial
	MC1		Initial
Chelsio T420-BCH Dual-port 10GbE CFFh Expansion Card	AC1	3027	Initial
IBM USB Memory Key for VMware ESXi 4.1	AC1	3033	Initial
	MC1		Initial
Rack 01	AC1	3101	Initial
	MC1		Initial
Rack 02	AC1	3102	Initial
	MC1		Initial
Rack 03			

	AC1 MC1	3103	Initial Initial
Rack 04			
	AC1 MC1	3104	Initial Initial
Rack 05			
	AC1 MC1	3105	Initial Initial
Rack 06			
	AC1 MC1	3106	Initial Initial
Rack 07			
	AC1 MC1	3107	Initial Initial
Rack 08			
	AC1 MC1	3108	Initial Initial
Rack 09			
	AC1 MC1	3109	Initial Initial
Rack 10			
	AC1 MC1	3110	Initial Initial
Rack 11			
	AC1 MC1	3111	Initial Initial
Rack 12			
	AC1 MC1	3112	Initial Initial
Rack 13			
	AC1 MC1	3113	Initial Initial
Rack 14			
	AC1 MC1	3114	Initial Initial
Rack 15			
	AC1 MC1	3115	Initial Initial
Rack 16			
	AC1 MC1	3116	Initial Initial
Rack 17			
	AC1 MC1	3117	Initial Initial
Rack 18			
	AC1 MC1	3118	Initial Initial
Rack 19			
	AC1 MC1	3119	Initial Initial
Rack 20			
	AC1 MC1	3120	Initial Initial
Rack 21			
	AC1 MC1	3121	Initial Initial
Rack 22			
	AC1 MC1	3122	Initial Initial
Rack 23			
	AC1 MC1	3123	Initial Initial
Rack 24			
	AC1 MC1	3124	Initial Initial
Rack 25			
	AC1 MC1	3125	Initial Initial
Rack 26			
	AC1 MC1	3126	Initial Initial
Rack 27			
	AC1 MC1	3127	Initial Initial

Rack 28	AC1 MC1	3128	Initial Initial
Rack 29	AC1 MC1	3129	Initial Initial
Rack 30	AC1 MC1	3130	Initial Initial
Rack 31	AC1 MC1	3131	Initial Initial
Rack 32	AC1 MC1	3132	Initial Initial
Rack 33	AC1 MC1	3133	Initial Initial
Rack 34	AC1 MC1	3134	Initial Initial
Rack 35	AC1 MC1	3135	Initial Initial
Rack 36	AC1 MC1	3136	Initial Initial
Rack 37	AC1 MC1	3137	Initial Initial
Rack 38	AC1 MC1	3138	Initial Initial
Rack 39	AC1 MC1	3139	Initial Initial
Rack 40	AC1 MC1	3140	Initial Initial
Rack 41	AC1 MC1	3141	Initial Initial
Rack 42	AC1 MC1	3142	Initial Initial
Rack 43	AC1 MC1	3143	Initial Initial
Rack 44	AC1 MC1	3144	Initial Initial
Rack 45	AC1 MC1	3145	Initial Initial
Rack 46	AC1 MC1	3146	Initial Initial
Rack 47	AC1 MC1	3147	Initial Initial
Rack 48	AC1 MC1	3148	Initial Initial
Rack 49	AC1 MC1	3149	Initial Initial
Rack 50	AC1 MC1	3150	Initial Initial
Rack 51	AC1 MC1	3151	Initial 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	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 MC1	3313	Initial Initial
BladeCenter 14			
	AC1 MC1	3314	Initial Initial
BladeCenter 15			
	AC1 MC1	3315	Initial Initial
BladeCenter 16			
	AC1 MC1	3316	Initial Initial
BladeCenter 17			
	AC1 MC1	3317	Initial Initial
BladeCenter 18			
	AC1 MC1	3318	Initial Initial
BladeCenter 19			
	AC1 MC1	3319	Initial Initial
BladeCenter 20			
	AC1 MC1	3320	Initial Initial
BladeCenter 21			
	AC1 MC1	3321	Initial Initial
BladeCenter 22			
	AC1 MC1	3322	Initial Initial
BladeCenter 23			
	AC1 MC1	3323	Initial Initial
BladeCenter 24			
	AC1 MC1	3324	Initial Initial
BladeCenter 25			
	AC1 MC1	3325	Initial Initial
BladeCenter 26			
	AC1 MC1	3326	Initial Initial
BladeCenter 27			
	AC1 MC1	3327	Initial Initial
BladeCenter 28			
	AC1 MC1	3328	Initial Initial
BladeCenter 29			
	AC1 MC1	3329	Initial Initial
BladeCenter 30			
	AC1 MC1	3330	Initial Initial
BladeCenter 31			
	AC1 MC1	3331	Initial Initial
BladeCenter 32			
	AC1 MC1	3332	Initial Initial
BladeCenter 33			
	AC1 MC1	3333	Initial Initial
BladeCenter 34			
	AC1 MC1	3334	Initial Initial
BladeCenter 35			
	AC1 MC1	3335	Initial Initial
BladeCenter 36			
	AC1 MC1	3336	Initial Initial
BladeCenter 37			
	AC1 MC1	3337	Initial Initial



BladeCenter 38	AC1	3338	Initial
	MC1		Initial
BladeCenter 39	AC1	3339	Initial
	MC1		Initial
BladeCenter 40	AC1	3340	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
Scaled Blade 01	AC1	4783	Initial
	MC1		Initial
Scaled Blade 02	AC1	4784	Initial
	MC1		Initial
Dummy DIMM for improved airflow	AC1	4916	Initial
	MC1		Initial
IBM 50GB SATA 1.8" NHS SSD	AC1	5314	Initial
	MC1		Initial
IBM 50GB SATA 1.8" MLC SSD	AC1	5428	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
Chelsio 10GbE Expansion Card (CFFh) for IBM BladeCenter	AC1	5495	Initial
Emulex 10GbE Virtual Fabric Adapter for IBM BladeCenter	AC1	5755	Initial
	MC1		Initial
SSD Expansion Card for IBM BladeCenter HX5	AC1	5765	Initial
	MC1		Initial
4S HX5 Conversion for Stand Alone 4S Blades	AC1	5976	Initial
	MC1		Initial
SOFS Solution Code MFG Instruction	AC1	6124	Initial
	MC1		Initial
SAP-BWA Solution Code MFG Instruction	AC1	6125	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
4S HX5 Conversion			
	AC1	6133	Initial
	MC1		Initial
Side scale Filler			
	AC1	6427	Initial
	MC1		Initial
Filler Plates			
	AC1	6470	Initial
	MC1		Initial
Access Cover			
	AC1	7493	Initial
	MC1		Initial
Group ID 01			
	AC1	7501	Initial
	MC1		Initial
Group ID 02			
	AC1	7502	Initial
	MC1		Initial
Group ID 03			
	AC1	7503	Initial
	MC1		Initial
Group ID 04			
	AC1	7504	Initial
	MC1		Initial
Group ID 05			
	AC1	7505	Initial
	MC1		Initial
Group ID 06			
	AC1	7506	Initial
	MC1		Initial
Group ID 07			
	AC1	7507	Initial
	MC1		Initial
Group ID 08			
	AC1	7508	Initial
	MC1		Initial
Group ID 09			
	AC1	7509	Initial
	MC1		Initial
Group ID 10			
	AC1	7510	Initial
	MC1		Initial
Group ID 11			
	AC1	7511	Initial
	MC1		Initial
Group ID 12			
	AC1	7512	Initial
	MC1		Initial
Group ID 13			
	AC1	7513	Initial
	MC1		Initial
Group ID 14			
	AC1	7514	Initial
	MC1		Initial
Group ID 15			
	AC1	7515	Initial
	MC1		Initial
Group ID 16			
	AC1	7516	Initial

	MC1		Initial
Group ID 17	AC1	7517	Initial
	MC1		Initial
Group ID 18	AC1	7518	Initial
	MC1		Initial
Group ID 19	AC1	7519	Initial
	MC1		Initial
Group ID 20	AC1	7520	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
TAA Compliant Order	AC1	8067	Initial
	MC1		Initial
General Racking Solution	AC1	8072	Initial
	MC1		Initial
Integrate BladeCenter in Manufacturing	AC1	8077	Initial
	MC1		Initial
No Publications Selected	AC1	8086	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 MC1	9171	Initial Initial
Storage Subsystem ID 03			
	AC1 MC1	9172	Initial Initial
Storage Subsystem ID 04			
	AC1 MC1	9173	Initial Initial
Storage Subsystem ID 05			
	AC1 MC1	9174	Initial Initial
Storage Subsystem ID 06			
	AC1 MC1	9175	Initial Initial
Storage Subsystem ID 07			
	AC1 MC1	9176	Initial Initial
Storage Subsystem ID 08			
	AC1 MC1	9177	Initial Initial
Storage Subsystem ID 09			
	AC1 MC1	9178	Initial Initial
Storage Subsystem ID 10			
	AC1 MC1	9179	Initial Initial
Storage Subsystem ID 11			
	AC1 MC1	9180	Initial Initial
Storage Subsystem ID 12			
	AC1 MC1	9181	Initial Initial
Storage Subsystem ID 13			
	AC1 MC1	9182	Initial Initial
Storage Subsystem ID 14			
	AC1 MC1	9183	Initial Initial
Storage Subsystem ID 15			
	AC1 MC1	9184	Initial Initial
Storage Subsystem ID 16			
	AC1 MC1	9185	Initial Initial
Storage Subsystem ID 17			
	AC1 MC1	9186	Initial Initial
Storage Subsystem ID 18			
	AC1 MC1	9187	Initial Initial
Storage Subsystem ID 19			
	AC1 MC1	9188	Initial Initial
Storage Subsystem ID 20			
	AC1 MC1	9189	Initial Initial
Preload Specify			
	AC1 MC1	9200	Initial Initial
Windows Specify			
	MC1	9201	Initial
Red Hat Specify			
	AC1	9202	Initial
SuSE Specify			
	AC1	9203	Initial
AIX Specify			
	AC1	9204	Initial
Drop-in-the-Box Specify			
	AC1 MC1	9205	Initial Initial
No Preload Specify			
	AC1 MC1	9206	Initial Initial
VMware Specify			

	AC1	9207	Initial
	MC1		Initial
Solaris Specify			
	AC1	9208	Initial
Preload by Hardware Feature Specify			
	AC1	9220	Initial
	MC1		Initial
IBM BladeCenter PCI Express Gen 2 Expansion Blade			
	AC1	9295	Initial
	MC1		Initial
System Documentation and Software-US English			
	AC1	9928	Initial
	MC1		Initial
Software Application (Not Preinstalled) Specify			
	AC1	A0UF	Initial
	MC1		Initial
2GB (1x2GB, 1Rx8, 1.35V) PC3L-10600 CL9 ECC DDR3 1333MHZ VLP RDIMM			
	AC1	A0WX	Initial
	MC1		Initial
4GB (1x4GB, 2Rx8, 1.35V) PC3L-10600 CL9 ECC DDR3 1333MHZ VLP RDIMM			
	AC1	A0WZ	Initial
	MC1		Initial
4GB (1x4GB, 2Rx8, 1.5V) PC3-10600 CL9 ECC DDR3 1333MHZ VLP RDIMM			
	AC1	A100	Initial
	MC1		Initial
8GB (1x8GB, 4Rx8, 1.5V) PC3-8500 CL7 ECC DDR3 1066MHZ VLP RDIMM			
	AC1	A101	Initial
	MC1		Initial
System x Cluster Upgrade			
	AC1	A103	Initial
	MC1		Initial
HX5 EX Blade Base and Planar			
	AC1	A16M	Initial
	MC1		Initial
IBM BladeCenter HX5 with MAX5			
	AC1	A16N	Initial
	MC1		Initial
HX5 EX Code			
	AC1	A16P	Initial
	MC1		Initial
Intel Xeon Processor E7-2803 6C 1.73GHz 18MB Cache 105W			
	AC1	A16Q	Initial
	MC1		Initial
Intel Xeon Processor E7-2820 8C 2.00GHz 18MB Cache 105W			
	AC1	A16R	Initial
	MC1		Initial
Intel Xeon Processor E7-2830 8C 2.13GHz 24MB Cache 105W			
	AC1	A16S	Initial
	MC1		Initial
Intel Xeon Processor E7-2850 10C 2.00GHz 24MB Cache 130W			
	AC1	A16T	Initial
	MC1		Initial
Intel Xeon Processor E7-2850 10C 2.00GHz 24MB Cache 130W			
	AC1	A16U	Initial
	MC1		Initial
Intel Xeon Processor E7-2860 10C 2.40GHz 24MB Cache 130W			
	AC1	A16V	Initial
	MC1		Initial
Intel Xeon Processor E7-2860 10C 2.26GHz 24MB Cache 130W			

		AC1	A16W	Initial
		MC1		Initial
Intel Xeon Processor E7-4807	6C 1.86GHz 18MB Cache			
95W				
		AC1	A16X	Initial
		MC1		Initial
Intel Xeon Processor E7-4820	8C 2.00GHz 18MB Cache			
105W				
		AC1	A16Y	Initial
		MC1		Initial
Intel Xeon Processor E7-4830	8C 2.13GHz 24MB Cache			
105W				
		AC1	A16Z	Initial
		MC1		Initial
Intel Xeon Processor E7-4850	10C 2.00GHz 24MB Cache			
130W				
		AC1	A170	Initial
		MC1		Initial
Intel Xeon Processor E7-4850	10C 2.00GHz 24MB Cache			
130W				
		AC1	A171	Initial
		MC1		Initial
Intel Xeon Processor E7-4860	10C 2.26GHz 24MB Cache			
130W				
		AC1	A172	Initial
		MC1		Initial
Intel Xeon Processor E7-4860	10C 2.26GHz 24MB Cache			
130W				
		AC1	A173	Initial
		MC1		Initial
Intel Xeon Processor E7-8837	8C 2.67GHz 24MB Cache			
130W				
		AC1	A174	Initial
		MC1		Initial
Intel Xeon Processor E7-8837	8C 2.67GHz 24MB Cache			
130W				
		AC1	A175	Initial
		MC1		Initial
Intel Xeon Processor E7-8867L	10C 2.13GHz 30MB			
Cache 105w				
		AC1	A176	Initial
		MC1		Initial
Additional Intel Xeon Processor E7-2803	6C 1.73GHz			
18MB Cache 105W				
		AC1	A177	Initial
		MC1		Initial
Additional Intel Xeon Processor E7-2820	8C 2.00GHz			
18MB Cache 105W				
		AC1	A178	Initial
		MC1		Initial
Additional Intel Xeon processor E7-2830	8C 2.13GHz			
24MB Cache 105W				
		AC1	A179	Initial
		MC1		Initial
Additional Intel Xeon Processor E7-2850	10C 2.00GHz			
24MB Cache 130W				
		AC1	A17A	Initial
		MC1		Initial
Additional Intel Xeon Processor E7-2850	10C 2.00GHz			
24MB Cache 130W				
		AC1	A17B	Initial
		MC1		Initial
Additional Intel Xeon Processor E7-2860	10C 2.26GHz			
24MB Cache 130W				
		AC1	A17C	Initial
		MC1		Initial
Additional Intel Xeon Processor E7-2860	10C 2.26GHz			
24MB Cache 130W				
		AC1	A17D	Initial
		MC1		Initial
Additional Intel Xeon Processor E7-4807	6C 1.86GHz			
18MB Cache 95W				
		AC1	A17E	Initial
		MC1		Initial

Additional Intel Xeon Processor E7-4820 8C 2.00GHZ 18MB Cache 105W	AC1 MC1	A17F	Initial Initial
Additional Intel Xeon processor E7-4830 8C 2.13GHZ 24MB Cache 105W	AC1 MC1	A17G	Initial Initial
Additional Intel Xeon Processor E7-4850 10C 2.00GHZ 24MB Cache 130W	AC1 MC1	A17H	Initial Initial
Additional Intel Xeon Processor E7-4850 10C 2.00GHZ 24MB Cache 130W	AC1 MC1	A17J	Initial Initial
Additional Intel Xeon Processor E7-4860 10C 2.26GHZ 24MB Cache 130W	AC1 MC1	A17K	Initial Initial
Additional Intel Xeon Processor E7-4860 10C 2.26GHZ 24MB Cache 130W	AC1 MC1	A17L	Initial Initial
Additional Intel Xeon Processor E7-8837 8C 2.67GHZ 24MB Cache 130W	AC1 MC1	A17M	Initial Initial
Additional Intel Xeon Processor E7-8837 8C 2.67GHZ 24MB Cache 130W	AC1 MC1	A17N	Initial Initial
Additional Intel Xeon Processor E7-8867L 10C 2.13GHZ 30MB Cache 105W	AC1 MC1	A17P	Initial Initial
8GB 4R x 8, 2Gbit DDR-3 1333MHZ VLP RDIMM	AC1 MC1	A17Q	Initial Initial
Intel Xeon E7-2870 Processor, 10C, 2.40GHZ, 30M, 6.4GT/s, 130W	AC1 MC1	A18Q	Initial Initial
Intel Xeon E7-2870 Processor, 10C, 2.40GHZ, 30M, 6.4GT/s, 130W	AC1 MC1	A18R	Initial Initial
Intel Xeon E7-4870 Processor, 10C, 2.40GHZ, 30M, 6.4GT/s, 130W	AC1 MC1	A18S	Initial Initial
Intel Xeon E7-4870 Processor, 10C, 2.40GHZ, 30M, 6.4GT/s, 130W	AC1 MC1	A18T	Initial Initial
Additional Intel Xeon processor E7-2870 10C 2.40GHZ 30MB Cache 130W	AC1 MC1	A18U	Initial Initial
Additional Intel Xeon E7-2870 Processor, 10C, 2.40GHZ, 30M, 6.4GT/s, 130W	AC1 MC1	A18V	Initial Initial
Additional Intel Xeon Processor E7-4870 10C 2.40GHZ 30MB Cache 130W	AC1 MC1	A18W	Initial Initial
Additional Intel Xeon E7-4870 Processor, 10C, 2.40GHZ, 30M, 6.4GT/s, 130W	AC1 MC1	A18X	Initial Initial
Labels for HX5 + BPE4	AC1 MC1	A1MJ	Initial Initial

HX5 EX Labels	AC1 MC1	A1NR	Initial Initial	
HX5 EX Blade Cover	AC1 MC1	A1NS	Initial Initial	
HX5 EX WOS Labels	AC1 MC1	A1NT	Initial Initial	
			Initial/ MES/ Both	RP CSU MES
Description	SEO number		Both	Yes
1x E7-4870 10C 2.40 GHZ, 130w S4S, 2x4GB, Virtual Fabric	7873F2x		Both	Yes
1x E7-8867L 10C 2.13 GHZ, 105w S8S, 2x4 GB	7873D1x		Both	Yes
1x E7-4830 8C 2.13 GHZ, 105w S4S, 2x4 GB	7873B2x		Both	Yes
1x E7-4830 8C 2.13 GHZ, 105w S4S, 2x4 GB, Virtual Fabric	7873F1x		Both	Yes
1x E7-8837 8C 2.67 GHZ, 130w S8S, 2x4 GB	7873C1x		Both	Yes
1x E7-4807 6C 1.86 GHZ, 95w S4S, 2x4 GB	7873B1x		Both	Yes
2x E7-2870 10C 2.40 GHZ, 130w S2S + MAX5, 4x4 GB	7873A3x		Both	Yes
2x E7-2860 10C 2.26 GHZ, 130w S2S + MAX5, 4x4 GB	7873A2x		Both	Yes
2x E7-2830 8C 2.13 GHZ, 105w S2S + MAX5, 4x4 GB	7873A1x		Both	Yes
2x E7-4807 6C 1.86 GHZ, 95w S4S + MAX5, Virtual Fabric, 4x4 GB	7873F3x		Both	Yes
2x E7-4830 8C 2.13 GHZ, 105w S4S, 8x8 GB, Virtual Fabric , BPE4, 2x320 GB Fusion IO	7873G2x		Both	Yes
2x E7-4830 8C 2.13 GHZ, 105w S4S, 16x8 GB, Virtual Fabric	7873E1x		Both	Yes
2x E7-2860 10C 2.26 GHZ, 130w S2S + MAX5, 28x8 GB, Virtual Fabric	7873E2x		Both	Yes

#### Option SEOs

Intel Xeon Processor E7-2803 6C 1.73GHz 18MB Cache 105w	69Y3062		Both	Yes
Intel Xeon Processor E7-2820 8C 2.00GHz 18MB Cache 105w	69Y3068		Both	Yes
Intel Xeon Processor E7-2830 8C 2.13GHz 24MB Cache 105w	69Y3074		Both	Yes
Intel Xeon Processor E7-2850 10C 2.00GHz 24MB Cache 130w	69Y3084		Both	Yes
Intel Xeon Processor E7-2860 10C 2.26GHz 24MB Cache 130w	69Y3094		Both	Yes
Intel Xeon processor E7-2870 10C 2.40GHz 30MB Cache 130w	88Y6150		Both	Yes
Intel Xeon Processor E7-4807 6C 1.86GHz 18MB Cache 95w	88Y6070		Both	Yes
Intel Xeon Processor E7-4820 8C 2.00GHz 18MB Cache 105w	88Y6076		Both	Yes
Intel Xeon Processor E7-4830 8C 2.13GHz 24MB Cache 105w	88Y6082		Both	Yes
Intel Xeon Processor E7-4850 10C 2.00GHz 24MB Cache 130w	88Y6092		Both	Yes
Intel Xeon Processor E7-4860 10C 2.26GHz 24MB Cache 130w	88Y6102		Both	Yes
Intel Xeon Processor E7-4870 10C 2.40GHz 30MB Cache 130w	88Y6160		Both	Yes
Intel Xeon Processor E7-8837 8C 2.67GHz 24MB Cache 130w	88Y6112		Both	Yes
Intel Xeon Processor E7-8867L 10C 2.13GHz 30MB Cache 105w	88Y6124		Both	Yes
Mellanox 2-port 10Gb E'net Expansion	90Y3570		Both	Yes



Card (CFFh) - IBM BladeCenter			
IBM BladeCenter HX5 with MAX5	88Y6128	Both	Yes
8GB 4R x 8, 2Gbit DDR-3 1333MHZ VLP RDIMM	46C0570	Both	Yes

### ServicePac for Warranty and Maintenance

---

Machine type/Model	Service description	ServicePac SEO	ServicePac MTM
7872	3 Year Onsite Repair 9x5 4 Hour Response	84Y2399	67567D8
7872	3 Year Onsite Repair 24x7 4 Hour Response	84Y2400	67567D9
7872	3 Year Onsite Repair 24x7 2 Hour Response	84Y2401	67567DA
7872	4 Year Onsite Repair 9x5 Next Business Day	84Y2402	67567DB
7872	4 Year Onsite Repair 9x5 4 Hour Response	84Y2403	67567DC
7872	4 Year Onsite Repair 24x7 4 Hour Response	84Y2404	67567DD
7872	4 Year Onsite Repair 24x7 2 Hour Response	84Y2405	67567DF
7872	5 Year Onsite Repair 9x5 Next Business Day	84Y2406	67567DG
7872	5 Year Onsite Repair 9x5 4 Hour Response	84Y2407	67567DH
7872	5 Year Onsite Repair 24x7 4 Hour Response	84Y2408	67567DJ
7872	5 Year Onsite Repair 24x7 2 Hour Response	84Y2409	67567DK

### ServicePac for Maintenance Agreement

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Machine type/Model	Description	ServicePac SEO	ServicePac MTM
7872	1 Year Onsite Repair 9x5 Next Business Day	84Y2410	6756MD7
7872	1 Year Onsite Repair 9x5 4 Hour Response	84Y2411	6756MD8
7872	1 Year Onsite Repair 24x7 4 Hour Response	84Y2412	6756MD9
7872	1 Year Onsite Repair 24x7 2 Hour Response	84Y2413	6756MDA
7872	2 Year Onsite Repair 9x5 Next Business Day	84Y2414	6756MDB
7872	2 Year Onsite Repair 9x5 4 Hour Response	84Y2415	6756MDC
7872	2 Year Onsite Repair 24x7 4 Hour Response	84Y2416	6756MDD
7872	2 Year Onsite Repair 24x7 2 Hour Response	84Y2417	6756MDF

### ServicePac for Essential Support

Warranty and Maintenance Option plus Remote Technical Support

Machine type/Model	Description	ServicePac SEO
7872	3 Year Onsite Repair 24x7 4 Hour Response, Base Software Support, Hardware How-To 24x7	84Y2418

Maintenance plus Remote Technical Support

Machine	ServicePac
---------	------------

type/Model	Description	SEO
7872	1 Year Onsite Repair 24x7 4 Hour Response plus 1 Year Base Software Support and Hardware How To 24x7	84Y2419
7872	1 Year Onsite Repair 9x5 NBD plus 1 Year Base Software Support and Hardware How To 24x7	84Y2420

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