

# IBM System x3690 X5 SMP-capable rack servers support new 6 to 10-core Intel Xeon processors for higher performance

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## At a glance



New IBM® System x3690 X5 servers incorporate high performance up to 10-core Xeon® processors (supports from 6-10 core processors) and:

- Up to 32 DIMM slots per chassis, with memory expansion board, delivering up to 1 TB of high-speed PC3-10600I 1066 MHz double data rate (DDR3) low voltage memory using 32 GB DIMMs
- Support for low voltage DIMMs and new power states to optimize power usage
- Optional MAX5 for an additional 32 DIMM slots available for most models
- Optional Emulex 10 Gb Ethernet Integrated Virtual Fabric Adapter
- Five PCIe Gen 2 I/O adapter slots (1-three-quarter length/full height, 1-half-length/full height, 3-half-length/low profile) Gen 2 slots
- Serial Attached SCSI (SAS) controller
- Integrated Broadcom 5709 Dual-port 10/100/1000 Megabit Ethernet
- Up to sixteen 2.5-inch hot-swap bays for flexible installation of HDDs, or twenty-four 1.8-inch SAS SSDs, supporting up to 16 TB<sup>1</sup> internal data storage
- eXFlash for high performance solid state drive storage
- Standard Integrated Management Module
- One 675-watt, voltage sensing, rear access, hot-swap power supply, up to four hot-swap power supplies
- Optional Enhanced SATA CD-RW/DVD-ROM Combo drive
- Eight USB ports (two can be used for USB keyboard and mouse), SVGA video port, one serial port, and two 1 Gb Ethernet ports per chassis
- Three-year limited warranty<sup>3</sup>

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## Overview

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These models of the x3690 X5 server are powered with 6-, 8-, and 10-core Intel® Xeon processors, with optional IBM MAX5 memory expansion and eXFlash storage for powerful 2-socket, memory scalable systems. Workload models for database, and for SAP In-Memory Appliances provide additional choices.

IBM MAX5 for System x® is a scalable, 1U, memory expansion drawer. It delivers an additional 32 DIMM slots to the x3690 X5. It has a memory controller for added performance. MAX5 is available as an option for most x3690 X5 models.

The IBM System x3690 X5: SAP In-Memory Appliance models offer a preloaded and optimized appliance based on the two socket x3690 X5 server platform. These models include two processors, 256 GB of memory and choice of all eXFlash solid state disk or a combination of solid state and spinning disk. They are designed for use in small to mid-sized SAP HANA configurations. These models also include the following software: Novell SLES for SAP Applications operating system with three year priority support and the IBM General Parallel File System™ (GPFS™) with 3 year support. Note, SAP HANA software is included, but sold separately by SAP.

The x3690 X5 server is the latest generation of the Enterprise X-Architecture®, delivering innovation with enhanced reliability and availability features to enable optimal performance for databases and enterprise applications environments.

Potential benefits include:

- Increased performance, reliability, and availability
- Highly scalable memory
- High-performing databases and fast time to value for database workloads with preconfigured database optimized systems
- Up to two processors and 32 DIMM slots in the base system, for larger databases, enterprise applications, and mission-critical workloads
- Advanced networking capabilities with two Broadcom 5709 1 Gb Ethernet adapters standard in all models, and Emulex 10 Gb dual-port Virtual Fabric Adapter optional
- Low-power cost-effective memory with Advanced Buffer eXecution chip
- Integrated Management Module (IMM) for enhanced systems management capabilities
- Power management savings
- Up to 10-core processing performance (supports 6-10 core processors)
- Memory ProteXion with Chipkill™, memory mirroring, memory sparing, Intel SMI lane failover, SMI packet retry, and SMI clock failover
- Up to 32 DIMM slots per chassis, with memory expansion board, delivering up to 1 TB of high-speed PC3-10600I 1066 MHz double data rate (DDR3) low voltage memory using 32 GB DIMMs
- Support for low voltage DIMMs and new power states to optimize power usage
- Serial Attach SCSI (SAS) plus RAID 0, 1, and 10 to maximize throughput and ease installation; RAID 5 or 6 optional
- Up to sixteen 2.5-inch SAS HDDs or twenty-four 1.8-inch SAS SSDs, or a combination of both; up to 16 TB<sup>1</sup> of maximum internal storage standard with one HDD backplane that can hold four 2.5-inch drives; second and third backplane optional for additional HDD or SSD
- High-performance integrated dual 1 Gb Ethernet built-in, high-speed networking with support for latest technologies
- Integrated Emulex 10 Gb Dual-port Ethernet Adapter optional

- 2U rack-optimized, tool-free chassis that strikes the balance between rack density and ease of maintenance
- Rear access, hot-swap power supplies for easy maintenance

#### *Fifth-generation X5 technology features*

- New leadership and scaling technology, with memory capacity above and beyond industry standard with MAX5
- New eXFlash high-IOPS solid-state storage technology for larger, faster databases
- Advanced fifth-generation Chipkill ECC memory controller to help correct single-bit, 2-bit, 3-bit, and 4-bit memory errors
- Memory ProteXion and memory mirroring support
- High-performance PCIe Gen 2 (5 GHz) I/O slots
- Hot-swap drive bays and redundant fans to replace select components without powering down the server
- One hot-swap, rear access, redundant power supply with 220 V ac input, up to four power supplies
- Predictive Failure Analysis® (PFA) on processors, memory, fans, power supply, and HDD options to help warn of problems before they occur
- Innovative light path diagnostics and top access design; easy to service and configure

**Warranty:** Three years, customer replaceable unit (CRU) and on-site<sup>2</sup> service, limited warranty<sup>3</sup>; optional warranty service upgrades available.

<sup>1</sup> When referring to hard drive or tape backup capacity, GB stands for one billion bytes, and TB stands for terabyte, or 1,000 billion bytes. Total user capacity may vary depending on operating environments.

<sup>2</sup>IBM sends a technician after attempting to diagnose and resolve the problem remotely.

<sup>3</sup> For information on the IBM Statement of Limited Warranty, visit

[http://www.ibm.com/servers/support/machine\\_warranties/](http://www.ibm.com/servers/support/machine_warranties/)

Alternatively, this information is also available by contacting your IBM representative or reseller. Copies are available upon request. For the latest information on safe and effective computing, visit

<http://www.ibm.com/pc/safecomputing/>

#### **Feature exchange**

None

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## **Key prerequisites**

Refer to the [Hardware requirements](#) section for details.

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## **Planned availability date**

- May 20, 2011: System x3690 X5 most new models (7147-A1x, A2x, A3x, A5x, A6x, A7x, C1x, D1x, D2x)
- May 27, 2011: SAP In-Memory Appliance models (7147-H2U, H2x, H3U, H3x, H2L, H3L, H8U, H9U, FT1 )
- May 20, 2011: All announcing options
- May 20, 2011: All announcing Pseudo Options

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## Description

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### Related options

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- Intel Xeon Processor E7-8867L 10C 2.13GHz 30MB Cache 105w (88Y5654)
- Intel Xeon Processor E7-8837 8C 2.67GHz 24MB Cache 130w (88Y5657)
- Intel Xeon Processor E7-4807 6C 1.86GHz 18MB Cache 95w (88Y5662)
- Intel Xeon Processor E7-2870 10C 2.40GHz 30MB Cache 130w (88Y5663)
- Intel Xeon Processor E7-2860 10C 2.26GHz 24MB Cache 130w (88Y5664)
- Intel Xeon Processor E7-2830 8C 2.13GHz 24MB Cache 105w (88Y5665)
- Intel Xeon Processor E7-2820 8C 2.00GHz 18MB Cache 105w (88Y5666)
- Intel Xeon Processor E7-2803 6C 1.73GHz 18MB Cache 105w (88Y5667)
- Intel Xeon Processor E7-2850 10C 2.00GHz 24MB Cache 130w (88Y5720)

These processors support internal processing speeds of up to 2.67 GHz and external processing operations to memory at 1066 MHz. These new SMP- capable server models contain integrated, full-speed, 18 MB, 24 MB, or 30 MB level 2 cache and up to 10-core Intel Xeon based processors, model dependent.

**Note:** If the E7-2803 or the E7-2820 processors are installed, the system will not be able to support a MAX5 memory expansion drawer. These two processors do not have the extra lanes available to support that drawer. All other processors supported for x3690 X5 support the MAX5.

### Memory Options

- 2GB (1x2GB, Dual Rank x8) PC3-10600 CL9 ECC DDR3-1066 LP RDIMM (44T1481)
- 2GB MAX5 (1x2GB, 1Rx8, 1.5V) PC3-10600 CL9 ECC DDR3 1333MHz LP RDIMM (44T1592)
- 4GB (1x4GB, Quad Rankx8) PC3-8500 CL7 ECC DDR3 1066MHz LP RDIMM (46C7448)
- 4GB MAX5 (1x4GB, Dual Rankx8) PC3-10600 CL9 ECC DDR3 1333MHz LP RDIMM (44T1599)
- 8GB (1x8GB, Quad Rankx8) PC3-8500 CL7 ECC DDR3 1066MHz LP RDIMM (46C7482)
- 16GB (1x16GB, Quad Rankx4) PC3-8500 CL7 ECC DDR3 1066MHz LP RDIMM (46C7483)
- 4GB (1x4GB, 2Rx8, 1.35V) PC3L-10600 CL9 ECC DDR3 1333MHz LP RDIMM (49Y1407)
- 8GB (1x8GB, 4Rx8, 1.35V) PC3L-8500 CL7 ECC DDR3 1066MHz LP RDIMM (49Y1399)
- 16GB (1x16GB, 4Rx4, 1.35V) PC3L-8500 CL7 ECC DDR3 1066MHz LP RDIMM (49Y1400)
- 32GB (1x32GB, 4Rx4, 1.35V) PC3L-8500 CL7 ECC DDR3 1066MHz LP RDIMM (90Y3101)(when available)

These high-speed, DDR3 registered DIMMs are synchronized to the processor. Once addressed, data can be transferred on both edges of the clock signal. This significantly improves performance of the 1333 MHz front-side bus Xeon processor.

**Memory Expansion Card (60Y0323)** provides the option to upgrade your machine with up to 16 memory expansion DIMMs. System memory can be expanded to 1 TB by adding 32 GB PC3-10600 CL4 ECC DDR3 SDRAM RDIMM in each of the 32 DIMM sockets. The MAX5 option provides an additional 32 DIMM slots.

### Memory ProteXion

- Utilizes unused bits in each memory DIMM (hot-spare bits)

- Doubles the amount of Chipkill memory sustainable per server
- Is included at no additional cost, requires no additional hardware, and works independently of the operating system
- Is similar to the "hot-spare" of a DASD array

Memory mirroring:

- Propels Intel-based servers toward continuous operations
- Dramatically helps to increase uptime and allow scheduled maintenance
- Helps provide capability and reliability approaching a mainframe
- Is operating system independent; does not require drivers or operating system support

Chipkill memory:

- Offers integrated XA-64e chipsets for using off-the-shelf DIMMs
- Provides better memory reliability to support in-memory databases
- Increases availability by detecting and helping to correct single-bit, two-bit, three-bit, and four-bit memory errors

**IBM Systems Director CD** with 20 agent license proofs of entitlement includes support for the IBM System x3690 X5 server.

## **IBM System x3690 X5 server description**

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### ***High-performance server subsystems***

x3690 X5 servers are high-throughput, scalable, SMP-capable, up to 10-core Intel Xeon-based new servers. They deliver excellent scalability for adding memory, adapter cards, storage and up to two processors.

Models are powered with up to 10-core Intel Xeon processors that use 64-byte cache lines. EMT64T architecture supports 64-bit extensions. Two connectors for Intel Xeon MP processors are standard on the system board. High-speed PC3-10600 ECC SDRAM provides excellent processor-to-memory subsystem performance.

The x3690 X5 system architecture is fine tuned and engineered to optimize the powerful Intel Xeon processors. This architecture consists of the following components:

- 6, 8, or 10-core Intel Xeon processors
- System memory cards with Intel Scalable Memory Buffers
- Intel host-bridge I/O controllers

Each processor supports four independent buses to the memory, for a total of 16 GB/s of potential memory bandwidth per CPU.

### ***High-availability and serviceability features***

Many enterprise on-demand environments run around the clock to supply information around the globe. These environments require ruggedly dependable servers designed with features that can tolerate a component failure without total shutdown. x3690 X5 servers pack numerous fault-tolerant and high-availability features into a high-density, rack-optimized package that helps significantly reduce the space needed to support massive network computing operations.

Features include:

- Five PCIe Gen 2 I/O adapter slots
- Up to 16 Serial Attach SCSI (SAS) HDD bays or 24 eFlash SSD bays
- MAX5 memory expansion option with 32 additional DIMM slots

- ECC DIMMs combined with an integrated advanced ECC memory controller with fifth-generation Chipkill support to correct many single-bit, 2-bit, 3-bit, and 4-bit memory errors to minimize disruption of service to LAN clients
- Memory ProteXion and memory mirroring
- Memory hardware scrubbing to correct many soft memory errors automatically without software intervention down time
- PFA on disk drive options, memory, processors, power supply, and fans, in conjunction with IBM Systems Director, to help alert the system administrator of an imminent component failure
- Up to four 675-watt power supplies that support typical configuration redundancy or full configurations requiring redundancy when operating with 240 V ac
- Hot-swap, multispeed fans to provide cooling redundancy and enable individual fan replacement without powering down the server, plus one fan in each of the hot-swap power supplies
- Standard IMM enabling diagnostic, reset, POST, and auto-recovery functions from remote locations and monitoring of temperature, voltage, and fan speed; alerts generated when thresholds are exceeded without utilizing an I/O slot
- Information LED panel, diagnostics LED panel, and component LEDs for visual indications of system well-being without removing the cover, to help reduce downtime and service costs
- Easy top access to system board, adapter cards, and memory
- CPU failure recovery in SMP configurations, allowing a failed processor to be forced offline, the server rebooted, an alert generated, and operation continued with the working processor

The servers include:

- Up to 2-socket for SMP powerful up to 10-core Intel Xeon processors
- Up to 32 GB high-speed PC3-10600 DDR3 ECC memory standard, supporting up to 1 TB of system memory per chassis (up to 2 TB with MAX5)
- Up to four worldwide, voltage-sensing 675-watt, hot-swap power supplies with auto-restart, standard
- Up to sixteen hot-swap HDD bays, supporting up to 16 TB of internal data storage (using 1 TB SAS hot-swap drives)
- Up to 24 hot-swap eXFlash SSD bays, supporting up to 4.8 TB of internal data storage (using 200 GB drives)
- Eight terabytes of external data storage supporting optional storage units, ServeRAID™ SCSI controllers, and Fibre Channel controllers and storage units

## **Configurations**

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### **XpandOnDemand scalability**

- Modular building-block scalability delivers the flexibility to scale to meet your business needs, allowing you to configure your system to optimize your system for your application needs.

### **Systems management**

x3690 X5 servers feature IBM Systems Director, a powerful, highly integrated, systems-management software solution built on industry standards and designed for ease of use.

With IBM Systems Director, a network administrator can perform the following tasks:

- View the hardware configuration of remote systems in detail
- Monitor the usage and performance of critical components such as microprocessors, disks, and memory
- Centrally manage individual or large groups of IBM and non-IBM, Intel-based servers, desktop computers, workstations, and mobile computers on a variety of platforms

IBM Systems Director provides a comprehensive entry-level workgroup hardware manager. It has the following key features:

- Advanced self-management capabilities for maximum system availability.
- Support for multiple operating systems, including certain versions of Microsoft® Windows® 2003 Server, Windows XP Professional, Red Hat Linux®, SUSE Linux, and Novell NetWare. For a complete list of operating systems that support IBM Systems Director, visit

[http://publib.boulder.ibm.com/infocenter/eserver/v1r2/index.jsp?topic=/dirinfo\\_5.20/fqm0\\_r\\_supported\\_operating\\_systems.html](http://publib.boulder.ibm.com/infocenter/eserver/v1r2/index.jsp?topic=/dirinfo_5.20/fqm0_r_supported_operating_systems.html)

The list is updated periodically.

- Support for IBM and non-IBM servers, desktop computers, workstations, and mobile computers. (Not all IBM Systems Director features are supported on non-IBM servers)
- Support for systems-management industry standards.
- Integration into leading workgroup and enterprise systems-management environments.
- Ease of use, training, and setup.

IBM Systems Director also provides an extensible platform that supports advanced servers that are designed to help reduce the total cost of managing and supporting networked systems. By deploying IBM Systems Director, you may achieve reductions in ownership costs through the following potential benefits:

- Reduced down time
- Increased productivity of IT personnel and users
- Reduced service and support costs

For more information about IBM Systems Director, refer to the CD that comes with the server or the IBM Systems Director documentation on the CD, or visit

<http://www.ibm.com/systems/management/director/resources/>

IBM Systems Director includes IBM Systems Director Extensions, a portfolio of server tools that integrates into the IBM Systems Director interface and works with the Integrated Management Module, or other systems-management monitoring functions contained in IBM System x servers. Typical functions and monitoring capabilities can include:

- PFA-enabled critical hardware components
- Temperature
- Voltage
- Fan speed
- Light path diagnostics

The IT administrator gains comprehensive, virtual on-site control of IBM System x3690 X5 servers through the ability to remotely:

- Access the server, in many cases regardless of its status
- Inventory and display detailed system and component information
- View server bootup during POST
- Browse and delete logs of events and errors
- Reset or power cycle the server
- Run diagnostics, SCSI, and RAID setup during POST
- Monitor thresholds on server health including:
  - Operating system load

- POST time-out
- Voltage
- Temperature
- Set proactive alerts for critical server events including PFA on:
  - Processors
  - Memory
  - Fans
  - Power supplies
  - HDDs
- Define automated actions such as:
  - Send an email or page to an administrator
  - Execute a command or program
  - Deliver an error message to the IBM Director console
- Flash BIOS
- Monitor and graph the utilization of server resources such as:
  - Memory
  - Processor
  - HDDs
- Identify potential performance bottlenecks and react to prevent down time

### ***Active Energy Manager tools and programs***

The IBM Active Energy Manager tool is available on the System x3690 X5 server. IBM Systems Director Active Energy Manager™ V3.1 is the next-generation product of IBM PowerExecutive™, which was previously available from IBM for x86 systems only. IBM Systems Director Active Energy Manager now supports multiple IBM platforms and provides new capabilities that build upon the functions previously available with IBM PowerExecutive V2.1. Enhancements to existing function include:

- Cross-system monitoring and management support
- Dynamic polling rate
- Discovery and monitoring of intelligent PDUs

The Active Energy Manager V3.1 offering has both no-charge (free) monitoring functions and optional chargeable (fee-based) management functions.

### **No-charge monitor functions**

- Power Trending
- Thermal Trending
- iPDU Support

### **Priced Management functions**

- Power Capping
- Power Savings Mode

For more information refer to

<http://www-03.ibm.com/systems/management/director/extensions/actengmrg.html>

### ***World-class support tools and programs***

x3690 X5 servers include tools and programs designed to make ownership a positive experience. From the start, IBM programs help you purchase servers, get them



running, and keep them running. IBM can help your company maintain ownership of technology leadership network servers.

The IBM ToolsCenter is a collection of server management tools to help manage your IBM System x and BladeServer environment. ToolsCenter makes managing your server environment less complicated, more productive and cost-effective.

<http://www-947.ibm.com/support/entry/portal/docdisplay?brand=5000008&Indocid=TOOL-CENTER>

- IBM customer replaceable unit (CRU) and on-site, three-year limited warranty with next-business-day service (same-business-day service optionally available) protects your investment if a problem occurs. This service also includes replacement of parts identified through PFA.
- The ServerProven<sup>4</sup> program lets you confidently configure your server with various devices and operating systems. This web-based program provides compatibility information from actual testing of the x3690 X5 server with various adapters and devices.
- The ServerGuide<sup>5</sup> CD library includes online publications and utilities and drivers that help you load popular network operating systems.
- Electronic support on the web offers additional support in an easy-to-use format.

<sup>4</sup> IBM makes no warranties, expressed or implied, regarding non-IBM products and services that are ServerProven®, including but not implied warranties and of merchantability and fitness for a particular purpose. These products are offered and warranted solely by third parties.

<sup>5</sup> IBM makes no warranties, expressed or implied, regarding non-IBM products that are ServerProven, including but not implied warranties and of merchantability and fitness for a particular purpose. These products are offered and warranted solely by third parties. The Microsoft Windows Preinstallation Environment software, included as part of ServerGuide™ software, may be used for boot diagnostic, setup, restoration, installation, configuration, test, or disaster recovery purposes only. To download the ServerGuide, visit

<http://www-03.ibm.com/systems/management/serverguide/sub.html>

### IBM System x3690 X5 model configuration

System Number	SEO	Processor	L3 Cache	Memory	HDD Iface	HDD	Power Supply
7147-A1x	1x1	1.73 GHz Xeon E7-2803	18 MB 4.8 GTS	2 x 4 GB 6-core	SAS 105W	open bay	one
7147-A2x	1 x	2.0 GHz Xeon E7-2820	18 MB 5.86 GTS	2 x 4 GB 8-core	SAS 105W	open bay	two
7147-A3x	1 x	2.13 GHz Xeon E7-2830	24 MB 6.4 GTS	2 x 4 GB 8-core	SAS 105W	open bay	two
7147-A5x	1 x	2.00 GHz Xeon E7-2850	24 MB 6.4 GTS	2 x 4 GB 10-core	SAS 130W	open bay	two
7147-A6x	1 x	2.26 GHz Xeon E7-2860	24 MB 6.4 GTS	2 x 4 GB 10-core	SAS 130W	open bay	two
7147-A7x	1 x	2.40 GHz Xeon E7-2870	30 MB 6.4 GTS	2 x 4 GB 10-core	SAS 130W	open bay	two
7147-C1x	1 x	2.67 GHz Xeon E7-8837	24 MB 6.4 GTS	2 x 4 GB 8-core	SAS 130W	open bay	two

IBM System x3690 X5: workload optimized Systems for Database -

7147-D1x	2 x	2.26 GHz Xeon E7-2860	24 MB 6.4 GTS	16 x 4 GB 10-core	SAS 130W	16 x 200GB 1.8" MLC SSD	four
7147-D2x	2 x	2.26 GHz Xeon E7-2860	24 MB 6.4 GTS	16 x 4 GB 10-core	SAS 130W	16 x 200GB 1.8" MLC SSD	four

## IBM System x3690 X5: SAP In-Memory Appliance (SAP HANA)

7147-H2x	2 x 2.40 GHz Xeon E7-2870	30 MB 6.40 GTS	16x16 GB 10-core	SAS 130W	8 x 50GB 1.8" MLC SSD + 8 x 300GB 10k SAS HDD	four
7147-H8U	2 x 2.40 GHz Xeon E7-2870	30 MB 6.40 GTS	16x16 GB 10-core	SAS 130W	8 x 50GB 1.8" MLC SSD + 8 x 300GB 10k SAS HDD	four
7147-H3x	2 x 2.40 GHz Xeon E7-2870	30 MB 6.4 GTS	16x16 GB 10-core	SAS 130W	10 x 200GB 1.8" MLC SSD	four
7147-H9U	2 x 2.40 GHz Xeon E7-2870	30 MB 6.4 GTS	16x16 GB 10-core	SAS 130W	10 x 200GB 1.8" MLC SSD	four

**Note:** Configured as two RAID 0 clusters of four 50GB 1.8" MLC SSDs and one RAID 5 cluster of eight 300GB 10k SAS HDDs for SAP HANA H2,H8 models.

Configured as two RAID 5 clusters of five 200GB 1.8" MLC SSDs each, for SAP HANA H3 and H9 models.

### Workload Optimized Solution for SAP In-Memory Appliance

The IBM Systems solution for SAP In-Memory Appliance is a hardware and software solution which integrates the new SAP In-Memory Database with IBM eX5 servers delivered as an optimized hardware appliance. These workload optimized appliance models help provide super-charged analytics performance for businesses who need timely answers to vital business questions resulting in faster access to data and information with near real-time visibility into business operations and improved management decision-making capability.

The IBM System x3690 X5: SAP In-Memory Appliance models offer a preloaded and optimized appliance based on the two socket x3690 X5 server platform. These models include two processors, 256 GB of memory using memory expansion board and choice of all eXFlash solid state disk or a combination of solid state and spinning disk. They are designed for use in small to mid-sized SAP HANA configurations. These models also include the following software: Novell SLES for SAP Applications operating system with three year priority support and the IBM General Parallel File System (GPFS) with 3 year support. Note. SAP HANA software is included, but sold separately by SAP.

For those models with SAP In-Memory Appliance, SAP HANA preinstalled, the SAP software license terms apply:

#### SAP License Terms

These IBM computer systems are preinstalled with a copy of the SAP High-Performance Analytic Appliance software which includes SYBASE REPLICATION SERVER 15, SAP HOST AGENT 7.2, APACHE TOMCAT 5.5, PERL 5.8, SAP InMemory Database which has been integrated, or preinstalled, as part of the IBM hardware system. You are not licensed to use the copy of SAP software contained in the IBM hardware system until you have purchased or licensed the use of the SAP software from SAP or its authorized distributors. Usage of the SAP software is subject to the applicable SAP end-user license agreement. Your purchase of the IBM hardware system does not include a license to use the SAP software to be preinstalled, or to any other SAP software. SAP is under no obligation to license the preinstalled SAP software to you. Contact your responsible SAP representative to obtain the appropriate license rights to use the SAP software.

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## Product positioning

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These new IBM System x3690 X5 models enhance the server line by providing new levels of performance and price/performance. The IBM System x3690 X5 server

features a high-density, 2U mechanical platform that supports up to 10-core Intel Xeon processors, PCIe architecture, and high-speed DDR3 memory.

IBM System x3690 X5 servers deliver additional processing, expandability, and high-availability features. These features make them ideal for handling complex, business-critical on-demand business applications that must be supported by space-saving, rack-optimized servers.

The IBM System x3690 X5 server is designed for extremely complex, compute-intensive applications requiring two-socket plus processing power and large memory support.

This makes the IBM System x3690 X5 server an excellent fit for current and future enterprise on-demand applications.

Applications include:

- On-demand business
- Business intelligence
- Transaction processing
- Enterprise resource planning
- Collaboration applications (Microsoft Exchange and Lotus Notes®)
- Server consolidation
- Internet or intranet front-end serving
- Web content serving
- Database storage as a SAN solution

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## Product number

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Description	SEO number
Single Entity Offerings (SEOs)	
Base Models -	
IBM System x3690 X5	7147A1U
IBM System x3690 X5	7147A2U
IBM System x3690 X5	7147A3U
IBM System x3690 X5	7147A5U
IBM System x3690 X5	7147A6U
IBM System x3690 X5	7147A7U
IBM System x3690 X5	7147C1U
IBM System x3690 X5: workload optimized solution for SAP In-Memory Appliance, SAP HANA	
IBM System x3690 X5 for SAP HANA	7147H2U
IBM System x3690 X5 for SAP HANA	7147H3U
workload optimized systems for Database -	
IBM System x3690 X5	7147D1U
IBM System x3690 X5	7147D2U

## CTO Offering

Description	Machine Type	Model	Part Number
System x3690 x5	7147	CTO	7147CTO

### Option SEOs

Description	SEO number
IBM x3690 X5 16-DIMM Internal Memory Expansion	81Y8926
IBM MAX5 V2 for System x	88Y6529
Intel Xeon Processor E7-8867L 10C 2.13GHz 30MB Cache 105w	88Y5654
Intel Xeon Processor E7-8837 8C 2.67GHz 24MB Cache 130w	88Y5657
Intel Xeon Processor E7-4807 6C 1.86GHz 18MB Cache 95w	88Y5662
Intel Xeon Processor E7-2870 10C 2.40GHz 30MB Cache 130w	88Y5663
Intel Xeon Processor E7-2860 10C 2.26GHz 24MB Cache 130w	88Y5664
Intel Xeon Processor E7-2830 8C 2.13GHz 24MB Cache 105w	88Y5665
Intel Xeon Processor E7-2820 8C 2.00GHz 18MB Cache 105w	88Y5666
Intel Xeon Processor E7-2803 6C 1.73GHz 18MB Cache 105w	88Y5667
Intel Xeon Processor E7-2850 10C 2.00GHz 24MB Cache 130w	88Y5720

The following are features already announced for the 7147 machine type.

Description	MT	Model	Feature
7147-AC1	7147	AC1	
7147-MC1	7147	MC1	
QLogic 10Gb SFP+ SR Optical Transceiver	7147	AC1	0064
		MC1	
Brocade 10Gb SFP+ SR Optical Transceiver	7147	AC1	0069
		MC1	
ServerRAID M5015 SAS/SATA Controller (Battery not included)	7147	AC1	0093
		MC1	
ServerRAID M5025 SAS/SATA Controller	7147	AC1	0094
		MC1	
ServerRAID M1015 SAS/SATA Controller	7147	AC1	0095
		MC1	
IBM 160GB High IOPS SS Class SSD PCIe Adapter	7147	AC1	0096
		MC1	
IBM 320GB High IOPS SD Class SSD PCIe Adapter	7147	AC1	0097
		MC1	
eX5 MAX5 Packaging	7147	AC1	0746
		MC1	
NetXtreme II 1000 Express® G Ethernet Adapter- PCIe	7147	AC1	1485
		MC1	
Brocade 10Gb CNA for IBM System x	7147	AC1	1637
		MC1	
IBM 320GB High IOPS MS Class SSD PCIe Adapter	7147	AC1	1649
		MC1	
Emulex 4Gb FC Single-Port PCI-E HBA for IBM System x	7147	AC1	1698
		MC1	
Emulex 4Gb FC Dual-Port PCI-E HBA for IBM System x	7147	AC1	1699
		MC1	
4GB (1x4GB, Quad Rankx8) PC3-8500 CL7 ECC DDR3 1066MHZ LP RDIMM	7147	AC1	1701
		MC1	
8GB (1x8GB, Quad Rankx8) PC3-8500 CL7 ECC DDR3 1066MHZ LP RDIMM	7147	AC1	1706
		MC1	
16GB (1x16GB, 4Rx4, 1.5V) PC3-8500 CL7 ECC DDR3 1066MHZ LP RDIMM	7147	AC1	1707
		MC1	
2GB (1x2GB, 1Rx8, 1.5V) PC3-10600 CL9 ECC DDR3 1333MHZ LP RDIMM	7147	AC1	1712
		MC1	

4GB (1x4GB, Dual Rankx8) PC3-10600 CL9 ECC DDR3 1333MHZ LP RDIMM	7147	AC1 MC1	1713
Capacity Scheduling Service	7147	AC1 MC1	1772
IBM 8x 2.5" HS SAS HDD Backplane	7147	AC1 MC1	1790
Custom SLA Scheduling Service	7147	AC1 MC1	1796
x3690 X5 Bezel	7147	AC1 MC1	2123
MemCard Filler	7147	AC1 MC1	2124
QPI filler	7147	AC1 MC1	2126
SAS Riser Rear Bulkhead Filler	7147	AC1 MC1	2127
PCIe Riser Rear Bulkhead Filler	7147	AC1 MC1	2128
2U Bracket for NetXtreme II 1000 Express Quad Port Ethernet Adapter	7147	AC1 MC1	2141
2U Bracket for ServerRAID M1015 SAS/SATA Controller or 6Gb SSD HBA	7147	AC1 MC1	2145
Custom Asset Tagging - Standard	7147	AC1 MC1	2200
Custom Asset Tagging - Enhanced	7147	AC1 MC1	2201
Custom Image Load - Server	7147	AC1 MC1	2204
Custom Media Shipgroup	7147	AC1 MC1	2206
Request for Global Trade Number (UPC or EAN)	7147	AC1 MC1	2207
Custom Software/Firmware Setting - Standard	7147	AC1 MC1	2208
Custom Software/Firmware Setting - Enhanced	7147	AC1 MC1	2209
Custom RAID Configuration	7147	AC1 MC1	2212
Custom Labeling	7147	AC1 MC1	2220
Custom Palletization	7147	AC1 MC1	2221
Request for a new Vendor Logo Hardware	7147	AC1 MC1	2247
Request for an existing IBM Feature	7147	AC1 MC1	2248
Request for an existing Public RPQ	7147	AC1 MC1	2249
RAID Configuration	7147	AC1 MC1	2302
Rack Installation >1U Component	7147	AC1 MC1	2306
Department of Defense UID Label	7147	AC1 MC1	2320
Primary Array 12 HDDs	7147	AC1 MC1	2400
Primary Array 13 HDDs	7147	AC1 MC1	2401
Primary Array 14 HDDs	7147	AC1 MC1	2402
Primary Array 15 HDDs	7147	AC1 MC1	2403
Primary Array 16 HDDs	7147	AC1 MC1	2404
Secondary Array 9 HDDs	7147	AC1 MC1	2405
Secondary Array 10 HDDs	7147	AC1 MC1	2406
Secondary Array 11 HDDs	7147	AC1 MC1	2407
Secondary Array 12 HDDs	7147	AC1	2408

		MC1	
Secondary Array 13 HDDs	7147	AC1	2409
		MC1	
Secondary Array 14 HDDs	7147	AC1	2410
		MC1	
Tertiary Array 2 HDDs	7147	AC1	2411
		MC1	
Tertiary Array 3 HDDs	7147	AC1	2412
		MC1	
Tertiary Array 4 HDDs	7147	AC1	2413
		MC1	
Tertiary Array 5 HDDs	7147	AC1	2414
		MC1	
Tertiary Array 6 HDDs	7147	AC1	2415
		MC1	
Tertiary Array 7 HDDs	7147	AC1	2416
		MC1	
Tertiary Array 8 HDDs	7147	AC1	2417
		MC1	
2GB MAX5 1x2GB 1Rx8 1.5V PC3-10600 CL9 ECC DDR3 1333MHZ LP RDIMM	7147	AC1	2429
		MC1	
4GB MAX5 1x4GB DualRankx8 PC310600 CL9 ECC DDR3 1333MHZ LP RDIMM	7147	AC1	2431
		MC1	
8GB MAX5 1x8GB QuadRankx8 PC3-8500 CL7 ECC DDR3 1066MHZ LP RDIMM	7147	AC1	2432
		MC1	
16GB MAX5 1x16G QuadRankx4 PC3-8500 CL7 ECC DDR3 1066MHZ LP RDIMM	7147	AC1	2433
		MC1	
2U Bracket for Brocade 10Gb CNA for IBM System x	7147	AC1	2492
		MC1	
Optical Blank Filler	7147	AC1	2496
		MC1	
Enable selection of Solid State Drives for Secondary Array	7147	AC1	2498
		MC1	
Enable selection of Solid State Drives for Primary Array	7147	AC1	2499
		MC1	
4 pack 2.5" HDD Filler	7147	AC1	2504
		MC1	
System Packaging - WW	7147	AC1	2584
		MC1	
2U Bracket for Server RAID M5015 SAS/SATA Controller	7147	AC1	2591
		MC1	
x3690 with MAX5 System Packaging - WW	7147	AC1	2594
		MC1	
PRO/1000 PF Server Adapter	7147	AC1	2975
		MC1	
NetXtreme II 1000 Express Dual Port Ethernet Adapter	7147	AC1	2995
		MC1	
RAID 1 - Tertiary Array (SSD) - 2 SSDs required	7147	AC1	3034
		MC1	
Rack 01	7147	AC1	3101
		MC1	
Rack 02	7147	AC1	3102
		MC1	
Rack 03	7147	AC1	3103
		MC1	
Rack 04	7147	AC1	3104
		MC1	
Rack 05	7147	AC1	3105
		MC1	
Rack 06	7147	AC1	3106
		MC1	
Rack 07	7147	AC1	3107
		MC1	
Rack 08	7147	AC1	3108
		MC1	
Rack 09	7147	AC1	3109
		MC1	

Rack 10	7147	AC1	3110
		MC1	
Rack 11	7147	AC1	3111
		MC1	
Rack 12	7147	AC1	3112
		MC1	
Rack 13	7147	AC1	3113
		MC1	
Rack 14	7147	AC1	3114
		MC1	
Rack 15	7147	AC1	3115
		MC1	
Rack 16	7147	AC1	3116
		MC1	
Rack 17	7147	AC1	3117
		MC1	
Rack 18	7147	AC1	3118
		MC1	
Rack 19	7147	AC1	3119
		MC1	
Rack 20	7147	AC1	3120
		MC1	
Rack 21	7147	AC1	3121
		MC1	
Rack 22	7147	AC1	3122
		MC1	
Rack 23	7147	AC1	3123
		MC1	
Rack 24	7147	AC1	3124
		MC1	
Rack 25	7147	AC1	3125
		MC1	
Rack 26	7147	AC1	3126
		MC1	
Rack 27	7147	AC1	3127
		MC1	
Rack 28	7147	AC1	3128
		MC1	
Rack 29	7147	AC1	3129
		MC1	
Rack 30	7147	AC1	3130
		MC1	
Rack 31	7147	AC1	3131
		MC1	
Rack 32	7147	AC1	3132
		MC1	
Rack 33	7147	AC1	3133
		MC1	
Rack 34	7147	AC1	3134
		MC1	
Rack 35	7147	AC1	3135
		MC1	
Rack 36	7147	AC1	3136
		MC1	
Rack 37	7147	AC1	3137
		MC1	
Rack 38	7147	AC1	3138
		MC1	
Rack 39	7147	AC1	3139
		MC1	
Rack 40	7147	AC1	3140
		MC1	
Rack 41	7147	AC1	3141
		MC1	
Rack 42	7147	AC1	3142
		MC1	
Rack 43	7147	AC1	3143
		MC1	
Rack 44	7147	AC1	3144
		MC1	
Rack 45	7147	AC1	3145
		MC1	
Rack 46	7147	AC1	3146
		MC1	

Rack 47	7147	AC1	3147
		MC1	
Rack 48	7147	AC1	3148
		MC1	
Rack 49	7147	AC1	3149
		MC1	
Rack 50	7147	AC1	3150
		MC1	
Rack 51	7147	AC1	3151
		MC1	
Rack 52	7147	AC1	3152
		MC1	
Rack 53	7147	AC1	3153
		MC1	
Rack 54	7147	AC1	3154
		MC1	
Rack 55	7147	AC1	3155
		MC1	
Rack 56	7147	AC1	3156
		MC1	
Rack 57	7147	AC1	3157
		MC1	
Rack 58	7147	AC1	3158
		MC1	
Rack 59	7147	AC1	3159
		MC1	
Rack 60	7147	AC1	3160
		MC1	
Rack 61	7147	AC1	3161
		MC1	
Rack 62	7147	AC1	3162
		MC1	
Rack 63	7147	AC1	3163
		MC1	
Rack 64	7147	AC1	3164
		MC1	
Rack location U01	7147	AC1	3201
		MC1	
Rack location U02	7147	AC1	3202
		MC1	
Rack location U03	7147	AC1	3203
		MC1	
Rack location U04	7147	AC1	3204
		MC1	
Rack location U05	7147	AC1	3205
		MC1	
Rack location U06	7147	AC1	3206
		MC1	
Rack location U07	7147	AC1	3207
		MC1	
Rack location U08	7147	AC1	3208
		MC1	
Rack location U09	7147	AC1	3209
		MC1	
Rack location U10	7147	AC1	3210
		MC1	
Rack location U11	7147	AC1	3211
		MC1	
Rack location U12	7147	AC1	3212
		MC1	
Rack location U13	7147	AC1	3213
		MC1	
Rack location U14	7147	AC1	3214
		MC1	
Rack location U15	7147	AC1	3215
		MC1	
Rack location U16	7147	AC1	3216
		MC1	
Rack location U17	7147	AC1	3217
		MC1	
Rack location U18	7147	AC1	3218
		MC1	
Rack location U19	7147	AC1	3219
		MC1	



Rack location U20	7147	AC1	3220
		MC1	
Rack location U21	7147	AC1	3221
		MC1	
Rack location U22	7147	AC1	3222
		MC1	
Rack location U23	7147	AC1	3223
		MC1	
Rack location U24	7147	AC1	3224
		MC1	
Rack location U25	7147	AC1	3225
		MC1	
Rack location U26	7147	AC1	3226
		MC1	
Rack location U27	7147	AC1	3227
		MC1	
Rack location U28	7147	AC1	3228
		MC1	
Rack location U29	7147	AC1	3229
		MC1	
Rack location U30	7147	AC1	3230
		MC1	
Rack location U31	7147	AC1	3231
		MC1	
Rack location U32	7147	AC1	3232
		MC1	
Rack location U33	7147	AC1	3233
		MC1	
Rack location U34	7147	AC1	3234
		MC1	
Rack location U35	7147	AC1	3235
		MC1	
Rack location U36	7147	AC1	3236
		MC1	
Rack location U37	7147	AC1	3237
		MC1	
Rack location U38	7147	AC1	3238
		MC1	
Rack location U39	7147	AC1	3239
		MC1	
Rack location U40	7147	AC1	3240
		MC1	
Rack location U41	7147	AC1	3241
		MC1	
Rack location U42	7147	AC1	3242
		MC1	
No RAID - Primary Array set up by customer	7147	AC1	3270
		MC1	
No RAID - Secondary Array set up by customer	7147	AC1	3271
		MC1	
No RAID - Tertiary Array set up by customer	7147	AC1	3272
		MC1	
Battery Cable	7147	AC1	3275
		MC1	
QLogic 4Gb FC Single-Port PCIe HBA for IBM System x	7147	AC1	3567
		MC1	
QLogic 4Gb FC Dual-Port PCIe HBA for IBM System x	7147	AC1	3568
		MC1	
Server RAID-BR10i SAS/SATA Controller	7147	AC1	3577
		MC1	
QLogic 8Gb FC Single-port HBA for IBM System x	7147	AC1	3578
		MC1	
QLogic 8Gb FC Dual-port HBA for IBM System x	7147	AC1	3579
		MC1	
Emulex 8Gb FC Single-port HBA for IBM System x	7147	AC1	3580
		MC1	
Emulex 8Gb FC Dual-port HBA for IBM System x	7147	AC1	3581
		MC1	
Brocade 8Gb FC Single-port HBA for IBM System x	7147	AC1	3589
		MC1	
Brocade 8Gb FC Dual-port HBA for IBM System x	7147	AC1	3591
		MC1	
1m LC-LC Fiber Cable (networking)	7147	AC1	3700

5m LC-LC Fiber Cable (networking)	7147	AC1	3701
25m LC-LC Fiber Cable (networking)	7147	AC1	3702
IBM 1m SAS Cable	7147	AC1	3714
		MC1	
IBM 3m SAS Cable	7147	AC1	3716
		MC1	
0.5m QLogic Copper QDR InfiniBand QSFP 30AWG Cable	7147	AC1	3725
1m QLogic Copper QDR InfiniBand QSFP 30AWG Cable	7147	AC1	3726
3m QLogic Copper QDR InfiniBand QSFP 28AWG Cable	7147	AC1	3727
3m QLogic Optical QDR InfiniBand QSFP Cable	7147	AC1	3731
10m QLogic Optical QDR InfiniBand QSFP Cable	7147	AC1	3732
30m QLogic Optical QDR InfiniBand QSFP Cable	7147	AC1	3733
0.5m Molex Direct Attach Copper SFP+ Cable	7147	AC1	3735
1m Molex Direct Attach Copper SFP+ Cable	7147	AC1	3736
3m Molex Direct Attach Copper SFP+ Cable	7147	AC1	3737
7m Molex Direct Attach Copper SFP+ Cable	7147	AC1	3738
IBM 50GB SATA 2.5" SFF Slim-HS High IOPS SSD	7147	AC1	3745
		MC1	
3m Console Switch Cable (USB)	7147	AC1	3751
IBM Single Cable USB Conversion Option (UCO)	7147	AC1	3757
0.6m Yellow Cat5e Cable	7147	AC1	3791
1.5m Yellow Cat5e Cable	7147	AC1	3792
3m Yellow Cat5e Cable	7147	AC1	3793
10m Yellow Cat5e Cable	7147	AC1	3794
25m Yellow Cat5e Cable	7147	AC1	3795
0.6m Green Cat5e Cable	7147	AC1	3796
1.5m Green Cat5e Cable	7147	AC1	3797
3m Green Cat5e Cable	7147	AC1	3798
10m Green Cat5e Cable	7147	AC1	3799
25m Green Cat5e Cable	7147	AC1	3800
0.6m Blue Cat5e Cable	7147	AC1	3801
1.5m Blue Cat5e Cable	7147	AC1	3802
3m Blue Cat5e Cable	7147	AC1	3803
10m Blue Cat5e Cable	7147	AC1	3804
25m Blue Cat5e Cable	7147	AC1	3805
1m Mellanox Copper Cable for 4X IB and 10GbE	7147	AC1	3859
3m Mellanox Copper Cable for 4X IB and 10GbE	7147	AC1	3860
5m Mellanox Copper Cable for 4X IB and 10GbE	7147	AC1	3861
8m Mellanox Copper Cable for 4X IB and 10GbE	7147	AC1	3862
IBM 6Gb SSD HBA	7147	AC1	3876
		MC1	
Server RAID M5014 SAS/SATA Controller (Battery not included)	7147	AC1	3877
		MC1	
Brocade 4Gb FC Single-port HBA for IBM System x	7147	AC1	3885
		MC1	
Brocade 4Gb FC Dual-port HBA for IBM System x	7147	AC1	3886
		MC1	
Server RAID B5015 SSD Controller	7147	AC1	3889
		MC1	
2GB (1x2GB, Dual Rank x8) PC3-10600 CL9 ECC DDR3-1333 LP RDIMM	7147	AC1	3964
		MC1	
2U Bracket for NetXtreme II 10 GigE Express Fiber SR Adapter	7147	AC1	4029
		MC1	
Power Supply Blank Filler	7147	AC1	4042
		MC1	
2U bracket for Emulex 8Gb FC Single-port HBA for System x	7147	AC1	4047
		MC1	
2U bracket for QLogic 8Gb FC Single-port HBA for System x	7147	AC1	4049
		MC1	
2U Bracket for NetXtreme II 1000 Express Dual Port Ethernet Adapter	7147	AC1	4055
		MC1	
2U bracket for Server RAID-MR10M SAS/SATA Controller	7147	AC1	4057
		MC1	
2.5" HDD Filler Bezel	7147	AC1	4069
		MC1	
IBM UltraSlim Enhanced SATA Multi-Burner	7147	AC1	4163
		MC1	
IBM x3690 X5 RAID Expansion Adapter	7147	AC1	4164

Universal Slides Kit	7147	MC1 AC1	4178
IBM 675W HE Redundant Power Supply	7147	MC1 AC1	4782
IBM System x3690 X5 Ball Bearing Slide Kit	7147	MC1 AC1	4786
ServerRAID M5000 Series Advance Feature Key	7147	MC1 AC1	5106
IBM 50GB SATA 1.8" NHS SSD	7147	MC1 AC1	5314
IBM 500GB 7200 6Gbps NL SAS 2.5" SFF Slim-HS HDD	7147	MC1 AC1	5409
IBM 146GB 15K 6Gbps SAS 2.5" SFF Slim-HS SED	7147	MC1 AC1	5412
IBM 300GB 10K 6Gbps SAS 2.5" SFF Slim-HS SED	7147	MC1 AC1	5413
IBM 500GB 7200 SATA 2.5" SFF Slim-HS HDD	7147	MC1 AC1	5414
IBM 200GB SATA 1.8" MLC SSD	7147	MC1 AC1	5420
IBM 50GB SATA 1.8" MLC SSD	7147	MC1 AC1	5428
IBM 600GB 10K 6Gbps SAS 2.5" SFF Slim-HS HDD	7147	MC1 AC1	5433
IBM 73GB 15K 6Gbps SAS 2.5" SFF Slim-HS HDD	7147	MC1 AC1	5522
IBM 146GB 15K 6Gbps SAS 2.5" SFF Slim-HS HDD	7147	MC1 AC1	5536
IBM 146GB 10K 6Gbps SAS 2.5" SFF Slim-HS HDD	7147	MC1 AC1	5537
IBM 300GB 10K 6Gbps SAS 2.5" SFF Slim-HS HDD	7147	MC1 AC1	5599
IBM 10GbE SW SFP+ Transceiver	7147	MC1 AC1	5721
RAID 5 - Tertiary Array (SSD) - minimum of 3 SSDs required	7147	MC1 AC1	5731
ServerRAID M5000 Series Battery Assembly	7147	MC1 AC1	5744
Emulex 10GbE Virtual Fabric Adapter for IBM System x	7147	MC1 AC1	5749
QLogic 10Gb CNA for IBM System x	7147	MC1 AC1	5751
NetXtreme II 1000 Express Quad Port Ethernet Adapter	7147	MC1 AC1	5766
Intel Ethernet Dual Port Server Adapter I340-T2 for IBM System x	7147	MC1 AC1	5767
Intel Ethernet Quad Port Server Adapter I340-T4 for IBM System x	7147	MC1 AC1	5768
SSD Blank Filler	7147	MC1 AC1	5779
2U Bracket for QLogic 10Gb CNA for IBM System x	7147	MC1 AC1	5787
Remote Battery Cable	7147	MC1 AC1	5862
Select Storage devices - no IBM-configured RAID required	7147	MC1 AC1	5977
Select Storage devices - IBM-configured RAID	7147	MC1 AC1	5978
RAID 1 - Primary Array (SSD) - 2 SSDs required	7147	MC1 AC1	5979
RAID 5 - Primary Array (SSD) - minimum of 3 SSDs required	7147	MC1 AC1	5980
RAID 1 - Secondary Array (SSD) - 2 SSDs required	7147	MC1 AC1	5981
IBM 6Gb SAS HBA	7147	MC1 AC1	5982
640GB High IOPS MLC Duo Adapter for IBM System x	7147	MC1 AC1	5985

		MC1	
3m IBM Optical QDR InfiniBand QSFP Cable	7147	AC1	5989
10m IBM Optical QDR InfiniBand QSFP Cable	7147	AC1	5990
30m IBM Optical QDR InfiniBand QSFP Cable	7147	AC1	5991
Unique SBB for AC1/MC1 models	7147	AC1	6134
		MC1	
1.8" SAS Storage Support	7147	AC1	6138
		MC1	
SF Instruction	7147	AC1	6139
		MC1	
1.5m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable	7147	AC1	6201
		MC1	
2.8m, 10A/100-250V, C13 to IEC 320-C20 Rack Power Cable	7147	AC1	6204
		MC1	
Line cord - 4.3M, 10A/125V, C13 to NEMA 5-15P (US)	7147	AC1	6207
		MC1	
4.3m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable	7147	AC1	6263
		MC1	
2.8m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable	7147	AC1	6311
		MC1	
Line cord - 2.8m, 10A/250V, C13 to NEMA 6-15P (US)	7147	AC1	6372
		MC1	
2.8m, 10A/200-250V, 2xC13 to IEC 320-C14 Rack Power Y-Cable	7147	AC1	6406
		MC1	
Short SAS cable	7147	AC1	6428
		MC1	
Long SAS cable	7147	AC1	6429
		MC1	
IBM MAX5 for System x Memory DIMM Filler	7147	AC1	6437
		MC1	
2U Bracket for IBM 3Gb SAS HBA Controller v2	7147	AC1	6455
		MC1	
Drive ID label sheet	7147	AC1	6456
		MC1	
Friction slide	7147	AC1	6457
		MC1	
Friction CMA	7147	AC1	6458
		MC1	
HDD Backplane Filler	7147	AC1	6459
		MC1	
RAID 5 - Secondary Array (SSD) - minimum of 3 SSDs required	7147	AC1	6472
		MC1	
IBM CMA for Ball Bearing and Universal slides	7147	AC1	6473
		MC1	
IBM System x3690 X5 2U Cable Management Arm	7147	AC1	6474
		MC1	
Primary Array 2 HDDs	7147	AC1	7008
		MC1	
Primary Array 3 HDDs	7147	AC1	7009
		MC1	
Primary Array 4 HDDs	7147	AC1	7010
		MC1	
Primary Array 5 HDDs	7147	AC1	7011
		MC1	
Primary Array 6 HDDs	7147	AC1	7012
		MC1	
Primary Array 7 HDDs	7147	AC1	7013
		MC1	
Primary Array 8 HDDs	7147	AC1	7014
		MC1	
Secondary Array 2 HDDs	7147	AC1	7015
		MC1	

Secondary Array 3 HDDs	7147	AC1	7016
		MC1	
Secondary Array 4 HDDs	7147	AC1	7017
		MC1	
Secondary Array 5 HDDs	7147	AC1	7057
		MC1	
Secondary Array 6 HDDs	7147	AC1	7058
		MC1	
Secondary Array 7 HDDs	7147	AC1	7059
		MC1	
Secondary Array 8 HDDs	7147	AC1	7060
		MC1	
2U Bracket for IBM 6Gb SAS HBA	7147	AC1	7478
		MC1	
IBM MAX5 to x3690 X5 Cable Kit	7147	AC1	7481
		MC1	
eX5 MAX5 bezel	7147	AC1	7485
		MC1	
2U bracket for QLogic 8Gb FC Dual-port HBA for System x	7147	AC1	7550
		MC1	
2U Bracket for Brocade 8Gb FC Single-port HBA for IBM System x	7147	AC1	7594
		MC1	
2U Bracket for Brocade 8Gb FC Dual-port HBA for IBM System x	7147	AC1	7595
		MC1	
x3690 X5 Base	7147	AC1	7630
		MC1	
2U Bracket for Brocade 4Gb FC Single-port HBA for IBM System x	7147	AC1	7633
		MC1	
2U Bracket for Brocade 4Gb FC Dual-port HBA for IBM System x	7147	AC1	7634
		MC1	
Primary Array 9 HDDs	7147	AC1	7664
		MC1	
Grouped Product	7147	AC1	7830
		MC1	
Customer Solution Center Services	7147	AC1	7831
		MC1	
RAID 5 - Primary Array (SAS) - minimum of 3 HDDs required	7147	AC1	7853
		MC1	
RAID 5 - Secondary Array (SAS) - minimum of 3 HDDs required	7147	AC1	7854
		MC1	
RAID 6 - Primary Array (SAS) - minimum of 4 HDDs required	7147	AC1	7857
		MC1	
RAID 6 - Secondary Array (SAS) - minimum of 4 HDDs required	7147	AC1	7858
		MC1	
No HDD Selected	7147	AC1	8026
		MC1	
Consolidate Shipment	7147	AC1	8031
		MC1	
Compute Node	7147	AC1	8036
		MC1	
Management Node	7147	AC1	8037
		MC1	
Storage Node	7147	AC1	8038
		MC1	
TAA Compliant Order	7147	AC1	8067
		MC1	
General Racking Solution	7147	AC1	8072
		MC1	
No SATA HDD Selected	7147	AC1	8080
		MC1	
No 2.5" SAS HDD Selected	7147	AC1	8081
		MC1	
No Publications Selected	7147	AC1	8086
		MC1	
RAID 0 - Primary Array (SAS) - minimum of 2 HDDs			

required	7147	AC1 MC1	8141
RAID 1 - Primary Array (SAS) - 2 HDDs required	7147	AC1 MC1	8142
RAID 0 - Secondary Array (SAS) - minimum of 2 HDDs required	7147	AC1 MC1	8144
RAID 1 - Secondary Array (SAS) - 2 HDDs required	7147	AC1 MC1	8145
System Documentation and Software-US English	7147	AC1 MC1	8640
2GB (1x2GB, 2Rx8, 1.5V) PC3-10600 CL9 ECC DDR3 1333MHZ LP RDIMM	7147	AC1 MC1	8934
16GB (1x16GB, 4Rx4, 1.35V) PC3L-8500 CL7 ECC DDR3 1066MHZ LP RDIMM	7147	AC1 MC1	8939
4GB (1x4GB, 2Rx8, 1.35V) PC3L-10600 CL9A ECC DDR3 1333MHZ LP RDIMM	7147	AC1 MC1	8942
Performance Memory Configuration	7147	AC1 MC1	8957
Integrate in manufacturing	7147	AC1 MC1	8971
Ship Uninstalled (Safety)	7147	AC1 MC1	8972
Hot Spare	7147	AC1 MC1	9013
Enable Memory Mirroring	7147	AC1 MC1	9017
Preload Specify	7147	AC1 MC1	9200
Windows Specify	7147	MC1	9201
Red Hat Specify	7147	AC1	9202
SuSE Specify	7147	AC1	9203
Drop-in-the-Box Specify	7147	AC1 MC1	9205
No Preload Specify	7147	AC1 MC1	9206
VMware Specify	7147	AC1 MC1	9207
Preload by Hardware Feature Specify	7147	AC1 MC1	9220
IBM Power Interposer for 675W HE Redundant Power Supplies	7147	AC1 MC1	9279
IBM System x3690 X5 PCI-Express (3x8) Riser Card	7147	AC1 MC1	9280
IBM exFlash 8x 1.8" HS SAS SSD Backplane	7147	AC1 MC1	9281
IBM System x3690 X5 PCI-Express (1x16) Riser Card 3/4 length	7147	AC1 MC1	9282
IBM System x3690 X5 PCI-Express (1x16) Riser Card full length	7147	AC1 MC1	9283
IBM x3690 X5 Single SATA HDD Bay	7147	AC1 MC1	9284
IBM System x3690 X5 PCI-Express (2x8) Riser Card	7147	AC1 MC1	9285
IBM 4x 2.5" HS SAS HDD Backplane	7147	AC1 MC1	9287
2U Bracket for Emulex 10GbE Virtual Fabric Adapter for IBM System x	7147	AC1 MC1	9297
Primary Array 10 HDDs	7147	AC1 MC1	9714
Primary Array 11 HDDs	7147	AC1 MC1	9715
Server RAID M1000 Series Advance Feature Key	7147	AC1	9749

		MC1	
5m IBM QSFP -to- 4-SFP+ Copper cable	7147	AC1	A0R5
1m IBM QSFP -to- 4-SFP+ Copper cable	7147	AC1	A0R6
3m IBM QSFP -to- 4-SFP+ Copper cable	7147	AC1	A0R7
Software Application (Not Preinstalled) Specify	7147	AC1	A0UF
		MC1	
Server RAID M5000 Series Performance Accelerator Key	7147	AC1	A10C
		MC1	
Emulex 10GbE Integrated Virtual Fabric Adapter II for IBM System x	7147	AC1	A148
		MC1	
8GB (1x8GB, 4Rx8, 1.35V) PC3L-8500 CL7 ECC DDR3 1066MHz LP RDIMM	7147	AC1	A14E
		MC1	
Mfg Code	7147	AC1	A15E
		MC1	
x3690 X5 - 7147 CPU Planar	7147	AC1	A15G
		MC1	
IBM x3690 X5 16-DIMM Internal Memory Expansion	7147	AC1	A15H
		MC1	
Intel Xeon Processor E7-8867L 10C (2.13GHz 30MB L3 105w 8S)	7147	AC1	A15J
		MC1	
Intel Xeon Processor E7-8837 8C (2.67GHz 24MB L3 130w 8S)	7147	AC1	A15K
		MC1	
Intel Xeon Processor E7-2870 10C (2.40GHz 30MB L3 130w 2S)	7147	AC1	A15L
		MC1	
Intel Xeon Processor E7-2860 10C (2.26GHz 24MB L3 130w 2S)	7147	AC1	A15M
		MC1	
Intel Xeon Processor E7-2830 8C (2.13GHz 24MB L3 105w 2S)	7147	AC1	A15N
		MC1	
Intel Xeon Processor E7-2820 8C (2.00GHz 18MB L3 105w 2S)	7147	AC1	A15P
		MC1	
Intel Xeon Processor E7-2803 6C (1.73GHz 18MB L3 105w 2S)	7147	AC1	A15Q
		MC1	
Intel Xeon Processor E7-2850 10C (2.00GHz 24MB L3 130w 2S)	7147	AC1	A15R
		MC1	
Addl Intel Xeon Processor E7-8867L 10C 2.13GHz 30MB Cache 105w	7147	AC1	A15S
		MC1	
Addl Intel Xeon Processor E7-8837 8C 2.67GHz 24MB Cache 130w	7147	AC1	A15T
		MC1	
Addl Intel Xeon Processor E7-2870 10C 2.40GHz 30MB Cache 130w	7147	AC1	A15U
		MC1	
Addl Intel Xeon Processor E7-2860 10C 2.26GHz 24MB Cache 130w	7147	AC1	A15V
		MC1	
Addl Intel Xeon Processor E7-2830 8C 2.13GHz 24MB Cache 105w	7147	AC1	A15W
		MC1	
Addl Intel Xeon Processor E7-2820 8C 2.00GHz 18MB Cache 105w	7147	AC1	A15X
		MC1	
Addl Intel Xeon Processor E7-2803 6C 1.73GHz 18MB Cache 105w	7147	AC1	A15Y
		MC1	
Addl Intel Xeon Processor E7-2850 10C 2.00GHz 24MB Cache 130w	7147	AC1	A15Z
		MC1	
Addl Intel Xeon Processor E7-4807 6C 1.86GHz 18MB Cache 95w	7147	AC1	A191
		MC1	
Service label with Korea Country Certification	7147	AC1	A17V
		MC1	

Service label without Korea Country Certification	7147	AC1	A17W
		MC1	
IBM MAX5 v2 for System x	7147	AC1	A19H
		MC1	
ex5 MAX5 labels	7147	AC1	A19J
		MC1	
MAX5 code	7147	AC1	A19K
		MC1	
IBM MAX5 for System x Documentation	7147	AC1	A19L
		MC1	
32GB (1x32GB, 4Rx4, 1.35V) PC3L-8500 CL7 ECC DDR3 1066MHZ LP RDIMM	7147	AC1	A1CP
		MC1	
4GB MAX5 (1x4GB, 2Gb, 2Rx8, 1.35V) PC3L-10600R-999 LP ECC RDIMM	7147	AC1	A1MH
		MC1	
Intel Xeon Processor E7-4807 6C (1.86GHz 18MB L3 95w 4S)	7147	AC1	A1N6
		MC1	
8GB MAX5 1x8GB, 4Rx8, 1.35V PC3L-8500 CL7 ECC DDR3 1066MHZ LP RDIMM	7147	AC1	A1N7
		MC1	
16GB MAX5 1x16GB, 4Rx4, 1.35V PC3L-8500 CL7 ECC DDR3 1066MHZ LP RDIMM	7147	AC1	A1N8
		MC1	
1.28TB HIGH IOPS MLC DUO ADAPTER FOR IBM SYSTEM X	7147	AC1	A1NB
		MC1	
640GB HIGH IOPS MLC ADAPTER FOR IBM SYSTEM X	7147	AC1	A1NC
		MC1	
640GB HIGH IOPS SLC™ DUO ADAPTER FOR IBM SYSTEM X	7147	AC1	A1ND
		MC1	
320GB HIGH IOPS SLC ADAPTER FOR IBM SYSTEM X	7147	AC1	A1NE
		MC1	
SAP In-Memory Appliance	7147	AC1	A1NN
RAID 0 - Primary Array (SSD) - minimum of 2 SSDs required	7147	AC1	A1P4
		MC1	
RAID 0 - Secondary Array (SSD) - minimum of 2 SSDs required	7147	AC1	A1P5
		MC1	
RAID 0 - Tertiary Array (SSD) - minimum of 2 SSDs required	7147	AC1	A1P6
		MC1	
HANA SW Stack XS	7147	AC1	A1PA
HANA SW Stack S	7147	AC1	A1PB
HANA SW Stack SSD	7147	AC1	A1PC
32GB (4GB, 4Rx4, 1.35V) PC3L-8500 DDR3-1066MHZ LP RDIMM	7147	AC1	A1R2
		MC1	

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

HIPO feature number	Description
4254	7147-AC1 Routing Code
4255	7147-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=111-056>

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## Publications

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The following publications and CD-ROMs are shipped with the x3690 X5 servers.

- *x3690 X5 Installation Guide* contains an introduction to the computer, installation and setup, installing options, reference information, and problem determination. The installation guide has easy-to-use text and illustrations to enable you to quickly set up your x3690 X5 server.
- IBM Systems Director systems-management software is included.

**Note:** Software versions, features, and functions shipped with these systems may change as new releases become available or may be discontinued at any time.

The following publications are available immediately.

To order, contact your IBM representative.

The *x3690 X5 Installation Guide* and the *Problem Determination Guide*, in US English versions, are available from

<http://www-03.ibm.com/servers/eserver/serverproven/compat/us/indexsp.html>

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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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## 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**

#### **x3690 X5**

EMEA x=G

Model H2x and H3x are for US, LA, AP, EMEA only.

Model H8U and H9U are for Canada only same configuration as H2/H3.

	7147H2x/H8U	7147H3x/H9U
Processor	Xeon 10C E7 2870 130w Ten core	Xeon E7-2870 130W Ten core
Internal speed	2.40 GHz	2.40 GHz
Memory bus speed	1066 MHz	1066 MHz
Number standard	2	2
Maximum	2	2
Interconnect speed	6.4 GT/s	6.4 GTS
L3 cache total	30 MB	30 MB
Memory (PC3-10600 DDR3)	256 GB ECC	256 GB ECC
DIMMs	16 x 16 GB	16 x 16 GB
DIMM sockets standard	32	32
DIMM sockets maximum	32	32
Capacity	512 GB <sup>6</sup>	512 GB <sup>6</sup>
Video	SVGA	SVGA
Memory	16 MB	16 MB
SAS controller	ServerRAID-M5015	ServerRAID-M5015
Ports	8	8
Connector internal	2	2
Connector external	0	0
HDD standard	8-50 GB SSD	10-200 GB SSD

8-300 GB SAS 10K HDD

Bays available	24 Standard	16 Standard
2.5-inch slim	8 Standard	0 Standard
1.8-inch slim	8 Standard	10 Standard
Hot-swap	16 Standard	10 Standard
Internal capacity	400 GB SSD plus 2.1 TB SAS	1.6 TB SSD
PCIe sockets	5	5
Management processor IMM	Standard	Standard
RAID 5	Standard	Standard
ServerRAID M5015 6Gb	Standard	Standard
Dual Ethernet controller	Standard	Standard
10/100/1000 Mbps		
Emulex 10Gb Dual-port Ethernet Adapter	Standard	Standard
Optical disk drive	Optional	Optional
Power supply	675 W	675 W
Number standard	4	4
Maximum	4	4
Hot-swap	Yes	Yes
Redundant power	Yes	Yes
Auto restart	Yes	Yes

EMEA x=G

	7147A1x	7147A2x
Processor	Xeon E7 2803 Six-core 105 W	Xeon E7-2820 Eight-core 105 W
Internal speed	1.73 GHz	2.0 GHz
Memory bus speed	1066 MHz	1066 MHz
Number standard	1	1
Maximum	2	2
Interconnect speed	4.8 GT/s	5.86 GT/s
L3 cache total	18 MB	18
Memory (PC3-10600 DDR3)	8 GB ECC	8 GB ECC
DIMMs	2 x 4 GB	2 x 4 GB
DIMM sockets standard	16	16
DIMM sockets maximum	32 (Optional card)	32 (Optional card)
Capacity	512 GB <sup>6</sup>	512 GB <sup>6</sup>
Memory expansion card	1	1
Number standard	0	0
Maximum	1	1
MAX5	Optional	Optional
DIMMs	16x 16 GB	16 x 16 GB
DIMM sockets maximum	16	16
Video	SVGA	SVGA
Memory	16 MB	16 MB
SAS controller	ServerRAID-M5015	ServerRAID-M5015
Ports	8	8
Connector internal	2	2
Connector external	0	0
HDD standard	open bay	open bay
Bays available	4 Standard, 16 with upgrade kit	4 Standard, 16 with upgrade kit
2.5-inch slim	4 Standard, 16 with upgrade kit	4 Standard, 16 with upgrade kit
Hot-swap	4 Standard, 16 with upgrade kit	4 Standard, 16 with upgrade kit
Internal capacity	16 TB <sup>7</sup>	16 TB <sup>7</sup>
PCIe sockets	5	5
Management processor IMM	Standard	Standard
RAID 0/1/10	Standard	Standard
ServerRAID M5015 6Gb	Optional	Optional
Dual Ethernet controller	Standard	Standard
10/100/1000 Mbps		
Emulex 10Gb Dual-port Ethernet Adapter	Optional	Optional
Optical disk drive	Optional	Optional
Power supply	675 W	675 W
Number standard	1	2
Maximum	4	4
Hot-swap	Yes	Yes
Redundant power	Optional	Optional

Auto restart	Yes	Yes
MAX5 power supply	675 W	675 W
MAX5 number standard	2	2
MAX5 maximum	2	2
Hot-swap	Yes	Yes
Redundant power	Standard	Standard
Auto restart	Yes	Yes

EMEA x=G

	7147A3x	7147A5x
Processor	Xeon E7 2830 Eight-core 105 W	Xeon E7-2850 Ten-core 130 W
Internal speed	2.13 GHz	2.0 GHz
Memory bus speed	1066 MHz	1066 MHz
Number standard	1	1
Maximum	2	2
Interconnect speed	6.4 GT/s	6.4 GT/s
L3 cache total	24 MB	24
Memory (PC3-10600 DDR3)	8 GB ECC	8 GB ECC
DIMMs	2 x 4 GB	2 x 4 GB
DIMM sockets standard	16	16
DIMM sockets maximum	32 (Optional card)	32 (Optional card)
Capacity	512 GB <sup>6</sup>	512 GB <sup>6</sup>
Memory expansion card	1	1
Number standard	0	0
Maximum	1	1
MAX5	Optional	Optional
DIMMs	16x 16 GB	16 x 16 GB
DIMM sockets maximum	16	16
Video	SVGA	SVGA
Memory	16 MB	16 MB
SAS controller	ServerRAID-M5015	ServerRAID-M5015
Ports	8	8
Connector internal	2	2
Connector external	0	0
HDD standard	open bay	open bay
Bays available	4 Standard, 16 with upgrade kit	4 Standard, 16 with upgrade kit
2.5-inch slim	4 Standard, 16 with upgrade kit	4 Standard, 16 with upgrade kit
Hot-swap	4 Standard, 16 with upgrade kit	4 Standard, 16 with upgrade kit
Internal capacity	16 TB <sup>7</sup>	16 TB <sup>7</sup>
PCIe sockets	5	5
Management processor IMM	Standard	Standard
RAID 0/1/10	Standard	Standard
ServerRAID M5015 6Gb	Optional	Optional
Dual Ethernet controller	Standard	Standard
10/100/1000 Mbps		
Emulex 10Gb Dual-port Ethernet Adapter	Optional	Optional
Optical disk drive	Optional	Optional
Power supply	675 W	675 W
Number standard	2	2
Maximum	4	4
Hot-swap	Yes	Yes
Redundant power	Optional	Optional
Auto restart	Yes	Yes
MAX5 power supply	675 W	675 W
MAX5 number standard	2	2
MAX5 maximum	2	2
Hot-swap	Yes	Yes
Redundant power	Standard	Standard
Auto restart	Yes	Yes

EMEA x=G

	7147A6x	7147A7x
Processor	Xeon E7 2860 Ten-core 130 W	Xeon E7-2870 Ten-core 130 W
Internal speed	2.26 GHz	2.40 GHz

Memory bus speed	1066 MHz	1066 MHz
Number standard	1	1
Maximum	2	2
Interconnect speed	6.4 GT/s	6.4 GT/s
L3 cache total	24 MB	30
Memory (PC3-10600 DDR3)	8 GB ECC	8 GB ECC
DIMMs	2 x 4 GB	2 x 4 GB
DIMM sockets standard	16	16
DIMM sockets maximum	32 (Optional card)	32 (Optional card)
Capacity	512 GB <sup>6</sup>	512 GB <sup>6</sup>
Memory expansion card	1	1
Number standard	0	0
Maximum	1	1
MAX5	Optional	Optional
DIMMs	16x 16 GB	16 x 16 GB
DIMM sockets maximum	16	16
Video	SVGA	SVGA
Memory	16 MB	16 MB
SAS controller	ServerRAID-M5015	ServerRAID-M5015
Ports	8	8
Connector internal	2	2
Connector external	0	0
HDD standard	open bay	open bay
Bays available	4 Standard, 16 with upgrade kit	4 Standard, 16 with upgrade kit
2.5-inch slim	4 Standard, 16 with upgrade kit	4 Standard, 16 with upgrade kit
Hot-swap	4 Standard, 16 with upgrade kit	4 Standard, 16 with upgrade kit
Internal capacity	16 TB <sup>7</sup>	16 TB <sup>7</sup>
PCIe sockets	5	5
Management processor IMM	Standard	Standard
RAID 0/1/10	Standard	Standard
ServerRAID M5015 6Gb	Optional	Optional
Dual Ethernet controller	Standard	Standard
10/100/1000 Mbps		
Emulex 10Gb Dual-port	Optional	Optional
Ethernet Adapter		
Optical disk drive	Optional	Optional
Power supply	675 W	675 W
Number standard	2	2
Maximum	4	4
Hot-swap	Yes	Yes
Redundant power	Optional	Optional
Auto restart	Yes	Yes
MAX5 power supply	675 W	675 W
MAX5 number standard	2	2
MAX5 maximum	2	2
Hot-swap	Yes	Yes
Redundant power	Standard	Standard
Auto restart	Yes	Yes

EMEA x=G

	7147C1x	7147D1x
Processor	Xeon E7 8837 Eight-core 130 W	Xeon E7-2860 Ten-core 130 W
Internal speed	2.67 GHz	2.26 GHz
Memory bus speed	1066 MHz	1066 MHz
Number standard	1	2
Maximum	2	2
Interconnect speed	6.4 GT/s	6.4 GT/s
L3 cache total	24 MB	24
Memory (PC3-10600 DDR3)	8 GB ECC	64 GB ECC
DIMMs	2 x 4 GB	16 x 4 GB
DIMM sockets standard	16	16
DIMM sockets maximum	32 (Optional card)	32 (Optional card)
Capacity	512 GB <sup>6</sup>	512 GB <sup>6</sup>
Memory expansion card	1	1
Number standard	0	0
Maximum	1	1
MAX5	Optional	Optional
DIMMs	16x 16 GB	16 x 16 GB
DIMM sockets maximum	16	16

Video	SVGA	SVGA
Memory	16 MB	16 MB
SAS controller	ServerRAID-M5015	ServerRAID-M5015
Ports	8	8
Connector internal	2	2
Connector external	0	0
HDD standard	open bay	16-200 GB 1.8" MLC SSD
Bays available	4 Standard, 16 with upgrade kit	
2.5-inch slim	4 Standard, 16 with upgrade kit	
Hot-swap	4 Standard, 16 with upgrade kit	
Internal capacity	16 TB <sup>7</sup>	16 TB <sup>7</sup>
PCIe sockets	5	5
Management processor IMM	Standard	Standard
RAID 0/1/10	Standard	Standard
ServerRAID M5015 6Gb	Optional	Optional
Dual Ethernet controller	Standard	Standard
10/100/1000 Mbps		
Emulex 10Gb Dual-port	Optional	Optional
Ethernet Adapter		
Optical disk drive	Optional	Optional
Power supply	675 W	675 W
Number standard	2	4
Maximum	4	4
Hot-swap	Yes	Yes
Redundant power	Optional	Optional
Auto restart	Yes	Yes
MAX5 power supply	675 W	675 W
MAX5 number standard	2	2
MAX5 maximum	2	2
Hot-swap	Yes	Yes
Redundant power	Standard	Standard
Auto restart	Yes	Yes

EMEA x=G

7147D2x

Processor	Xeon E7-2860
	Ten-core 130 W
Internal speed	2.26 GHz
Memory bus speed	1066 MHz
Number standard	2
Maximum	2
Interconnect speed	6.4 GT/s
L3 cache total	24
Memory (PC3-10600 DDR3)	64 GB ECC
DIMMs	16 x 4 GB
DIMM sockets standard	16
DIMM sockets maximum	32 (Optional card)
Capacity	512 GB <sup>6</sup>
Memory expansion card	1
Number standard	0
Maximum	1
MAX5	Optional
DIMMs	16 x 16 GB
DIMM sockets maximum	16
Video	SVGA
Memory	16 MB
SAS controller	ServerRAID-M5015
Ports	8
Connector internal	2
Connector external	0
HDD standard	16-200 GB 1.8" MLC SSD
Bays available	4 Standard, 16 with upgrade kit
2.5-inch slim	4 Standard, 16 with upgrade kit
Hot-swap	4 Standard, 16 with upgrade kit
Internal capacity	16 TB <sup>7</sup>
PCIe sockets	5
Management processor IMM	Standard
RAID 0/1/10	Standard
ServerRAID M5015 6Gb	Optional

Dual Ethernet controller	Standard
10/100/1000 Mbps	
Emulex 10Gb Dual-port Ethernet Adapter	Optional
Optical disk drive	Optional
Power supply	675 w
Number standard	4
Maximum	4
Hot-swap	Yes
Redundant power	Optional
Auto restart	Yes
MAX5 power supply	675 w
MAX5 number standard	2
MAX5 maximum	2
Hot-swap	Yes
Redundant power	Standard
Auto restart	Yes

<sup>6</sup> Capacities are based on installation of the memory expansion card and 32 x 16 GB DIMMs installed on the planar and in the memory expansion card.

<sup>7</sup> Capacities are based on installation of sixteen 200 GB 1.8-inch MLC SSDs. For the latest information on supported SSDs/HDDs options, visit

<http://www-03.ibm.com/servers/eserver/serverproven/compat/us/indexsp.html>

Supported video mode capabilities for the SVGA PCI controller:

windows 2008 (32- and 64-bit) and Linux (all distributions)

Resolution	Colors	Refresh Rate (Hz)
640 x 480 x 8	256	60, 72, 75, 85, 90, 100, 120, 160, 200
640 x 480 x 16	64K	60, 72, 75, 85, 90, 100, 120, 160, 200
640 x 480 x 32	16M	60, 72, 75, 85, 90, 100, 120, 160, 200
800 x 600 x 8	256	60, 70, 72, 75, 85, 90, 100, 120, 160, 200
800 x 600 x 16	64K	60, 70, 72, 75, 85, 90, 100, 120, 160, 200
800 x 600 x 32	16M	60, 70, 72, 75, 85, 90, 100, 120, 160
1024 x 768 x 8	256	60, 70, 72, 75, 85, 90, 100, 120, 140, 150, 160, 200
1024 x 768 x 16	64K	60, 70, 72, 75, 85, 90, 100, 120, 140, 150, 160, 200
1024 x 768 x 32	16M	60, 70, 72, 75, 85, 90, 100
1280 x 1024 x 8	256	60, 72, 75
1280 x 1024 x 16	64K	60, 72, 75
1280 x 1024 x 32	16M	60, 72, 75

### **Dimensions**

2U rack drawer

- Width: 440 mm (17.32 in.)
- Depth: 712.1 mm (28.04 in.)
- Height: 86.4 mm (3.40 in.)
- Minimum configuration: 35.4 kg (78 lb)
- Maximum configuration: 49.90 kg (110 lb)

### **Electrical**

- 100 to 127 (nominal) V ac; 50 Hz or 60 Hz; System 20A (10A/PS)
- 200 to 208 (nominal) V ac; 50 Hz or 60 Hz; System 10A
- 200 to 240 (nominal) V ac; 50 Hz or 60 Hz; System 9A
  - Minimum configuration: 0.20 kVA (one power supply)
  - Minimum configuration: 0.26 kVA (two power supplies)

- Typical configuration: 1.12 kVA (two power supplies)
- Maximum configuration: 2.16 kVA (two power supplies)
- Btu output:
  - Ship configuration (1PS): 648 Btu/hr (190 watts)
  - Ship configuration (2PS): 802 Btu/hr (235 watts)
  - Typical configuration: 3,753 Btu/hr (1100 watts)
  - Full configuration: 7,336 Btu/hr (2150 watts)
- Noise level horizontal position: 6.3 bels

**Note:** The noise emission level stated is the declared (upper limit) sound power level, in bels, for a random sample of machines. All measurements made in accordance with ISO 7779 and reported in conformance with ISO 9296.

### ***Standards***

x3690 X5 servers are intended for use as rack-drawer servers and are tested and designed to operate in a horizontal position.

These systems support or comply with the following standards:

- Multiprocessor Specification (MPS) 1.4
- Hardware-enabled to meet ISO 9241, Part 3

In addition to the above standards, they are compatible with the PCI-E specification.

### ***Equipment approvals and safety***

- FCC - Verified to comply with Part 15 of the FCC Rules, Class A
- Canada ICES-003, issue 4, Class A
- IEC/UL 60950-1, 2nd Edition
- CAN/CSA - C22.2 No. 60950-1-07 2nd Edition
- NOM-019<sup>8</sup>

<sup>8</sup> This server is certified by the respective UL and NOM agencies.

### ***Operating environment***

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

The MAX5 option (feature code A19H) is not supported with Intel Xeon Processor E7-2820 (feature code A15X) and Intel Xeon Processor E7-2803 (feature code A15Y), and with Models 7147-A1x and 7147-A2x.

### **Software requirements**

#### **Programming requirements**

The following network operating systems have been tested for compatibility with the x3690 X5 server.

#### **Network operating systems**

- Microsoft
  - Windows Server 2008 R2 (64-bit)
  - Windows Server 2008 (64-bit)
  - Windows Server 2003/2003 R2, Datacenter Edition
  - Windows Server 2003/2003 R2, Datacenter x64 Edition
- Linux
  - Red Hat EL 5 Server for 64-bit
  - Red Hat EL 5 Server for 64-bit (with Xen)
  - Red Hat EL 6 Server for 64-bit
  - SUSE Linux ES 10 for x86-64
  - SUSE Linux ES 10 for x86-64 (with Xen)
  - SUSE Linux ES 11 for x86-64
  - SUSE Linux ES 11 for x86-64 (with Xen)
- VMware - vSphere Hypervisor™

Other - OS limitations

VMware statement

The MAX5 drawer is designed work seamlessly with the server and VMware and provides a high-speed low-latency path to additional memory. The connection, enabled by the IBM-exclusive eX5 technology, is fast and wide enough to ensure that operating systems and applications see just a single, large memory space, thus no software modifications are necessary to use MAX5. MAX5 is not currently supported with vSphere 4.0. We are working with VMware to build support for MAX5 in a future release of vSphere.

**Note:** For information on additional support, certification, and versions of network operating systems, visit

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

IBM makes no representation or warranty regarding third-party products, including those designated as ServerProven.

### **Compatibility**

The IBM System x3690 X5 server 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 System x3690 X5 server 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 IBM System x3690 X5 servers, visit

<http://www-03.ibm.com/servers/eserver/serverproven/compat/us/indexsp.html>

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 IBM System x3690 X5 servers. The Sales Manual is updated periodically as new features and options are announced that support these servers.

## ***Limitations***

### **Memory**

The x3690 X5 servers are shipped with 256 GB high-speed PC3-10600 DDR3 ECC memory standard. A maximum of 1 TB of system memory is supported by adding a 32 GB PC3-10600 CL4 ECC DDR3 SDRAM RDIMM in each of the 32 DIMM sockets when a memory expansion board is installed. All supported system memory is addressable through direct memory access (DMA). This server supports 2 GB, 4 GB, 8 GB, 16 GB, and 32 GB (when available) 1.5v or 1.35v 240-pin, PC3-10600 ECC DDR3 SDRAM RDIMMs. Supported DIMMs can coexist in the same server; however, memory DIMMs of the same capacity must be installed in matched pairs. Refer to the [Planning information](#) section or the IBM System x3690 X5 server web page for memory options.

The x3690 X5 has RAID 0, 1, and 10 standard. The optional ServeRAID M5015 SAS/SATA, ServeRAID BR10i, and ServeRAID M1015 Controllers provide additional RAID 5 or 6 level support.

### *ServerGuide*

Use the *ServerGuide*, available on the web, to load software and drivers. Earlier versions of *ServerGuide* may not be compatible with the server.

## **Planning information**

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### ***Customer responsibilities***

#### ***x3690 X5 Server and Related Options***

The x3690 X5 server is designated as customer setup. Customer setup instructions are shipped with systems.

### **Configuration information**

#### ***Bay configuration***

The x3690 X5 server contains 16 customer-accessible drive bays on the front of the server. A upper right bay is for the optional slim combo drive.

The optional disk drive is cabled directly to the SATA port.

#### ***Internal SCSI cabling***

Most models of the x3690 X5 server contain a DASD backplane supporting four hot-swap, SCA-2-compliant drive bays. The x3690 X5 models with the SAS controller support RAID 0, 1, and 10 standard. The optional ServeRAID-M5015 SAS/SATA, ServeRAID-M1015, and ServeRAID-BR10i Controllers provide additional RAID 5 or 6 level support.

#### ***Processor upgrade***

The following processor upgrade options are supported:

- Intel Xeon Processor E7-8867L 10C 2.13GHz 30MB Cache 105w (88Y5654)

- Intel Xeon Processor E7-8837 8C 2.67GHz 24MB Cache 130w (88Y5657)
- Intel Xeon Processor E7-4807 6C 1.86GHz 18MB Cache 95w (88Y5662)
- Intel Xeon Processor E7-2870 10C 2.40GHz 30MB Cache 130w (88Y5663)
- Intel Xeon Processor E7-2860 10C 2.26GHz 24MB Cache 130w (88Y5664)
- Intel Xeon Processor E7-2830 8C 2.13GHz 24MB Cache 105w (88Y5665)
- Intel Xeon Processor E7-2820 8C 2.00GHz 18MB Cache 105w (88Y5666)
- Intel Xeon Processor E7-2803 6C 1.73GHz 18MB Cache 105w (88Y5667)
- Intel Xeon Processor E7-2850 10C 2.00GHz 24MB Cache 130w (88Y5720)

### ***Memory support***

The following memory options are supported:

- 2 GB PC3-10600 CL4 ECC DDR3 SDRAM RDIMM (44T1481)
- 2GB MAX5 (1x2GB, 1Rx8, 1.5V) PC3-10600 CL9 ECC DDR3 1333MHz LP RDIMM (44T1592)
- 4GB MAX5 (1x4GB, Dual Rankx8) PC3-10600 CL9 ECC DDR3 1333MHz LP RDIMM (44T1599)
- 4 GB PC3-10600 CL4 ECC DDR3 SDRAM RDIMM (46C7448)
- 8 GB PC3-10600 CL4 ECC DDR3 SDRAM RDIMM (46C7482)
- 16 GB (2X8 GB KIT) PC3-10600 CL4 ECC DDR3 SDRAM RDIMM (46C7483)
- 4GB (1x4GB, 2Rx8, 1.35V) PC3L-10600 CL9 ECC DDR3 1333MHz LP RDIMM (49Y1407)
- 8GB (1x8GB, 4Rx8, 1.35V) PC3L-8500 CL7 ECC DDR3 1066MHz LP RDIMM (49Y1399)
- 16GB (1x16GB, 4Rx4, 1.35V) PC3L-8500 CL7 ECC DDR3 1066MHz LP RDIMM (49Y1400)
- 32GB (1x32GB, 4Rx4, 1.35V) PC3L-8500 CL7 ECC DDR3 1066MHz LP RDIMM (90Y3101) (when available)

Memory DIMMs should be plugged in order of size; largest first, followed by next size. When plug order moves to new DIMM numbers, start with the memory card with smallest total amount.

### ***PCIe adapter installations***

The x3690 X5 server contains PCIe architecture and five PCIe Gen 2 I/O slots.

### ***Rack installations***

x3690 X5 2U, rack-drawer models are designed to be installed in a 19-inch rack cabinet designed for 28-inch deep devices, such as the NetBAY42 ER, NetBAY42 SR, NetBAY25 SR, or NetBAY11.

If using a non-IBM rack, the cabinet must meet the EIA-310-D standards with a depth of at least 71.1 cm (28 in). Also, adequate space (approximately 5 cm (2 in) for the front bezel and 2.5 cm (1 in) for air flow) must be maintained from the slide assembly to the front door of the rack cabinet to allow sufficient space for the door to close and provide adequate air flow.

### ***Power considerations***

These x3690 X5 models include one standard 675-watt, hot-swap power supply with redundancy for all configurations when powered at 200 - 240 V ac.

### ***Cable orders***

The 10/100/1000 Mbps full-duplex, Dual Ethernet PCI-E Controller is standard with the x3690 X5 server. The RJ-45 connectors provide a 10Base-T or 100/1000Base-TX interface for connecting twisted-pair cable to the Ethernet network. Cabling is not included with the server. To connect the Ethernet controller to a repeater or switch,

use a UTP cable with RJ-45 connectors at both ends. For 100/1000 Mbps operation, Category 5 cabling must be used. For 10 Mbps operation, Category 3, or better, cabling must be used.

There are no additional cabling requirements, other than for system power, keyboard, mouse, and monitor connections.

### **Installability**

The x3690 X5 server requires about 60 minutes for installation. Installation includes unpacking, setting up, and powering on the system. Additional time is required to install an operating system, additional adapters, or features.

### **Packaging**

Product	Shipment group	Number of boxes
IBM System x3690 X5	System unit carton	1
	Contents:	
	System unit	
	Rack components:	
	Rails	
	Cable management hardware	
IBM System x3690 X5	Country kit carton	1
	Contents:	
	Two 2.8 m 220 V intra-rack cables	
	Safety booklet	
	IBM Systems Director	
	CD-ROM Packages	

The x3690 X5 system is shipped as a single package. The country kit carton is contained inside the top portion of the system unit carton, while the rack components are contained in the system unit carton.

The following publications will be available on the support website and on the Documentation CD.

The *IBM System x3690 X5 Installation and User's Guide*, the *IBM System x3690 X5 Problem Determination and Service Guide*, and the *Rack Installation Instructions*, in US English versions, are available from our website.

The following publication will be available as a hardcopy publication:

#### *Warranty Information*

<http://www.ibm.com/support/us/en/>

### **Related options**

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#### **Processor upgrades**

- Intel Xeon processor
- VRM and heat sink
- Installation publications/warranty

#### **Supplies**

None

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

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Security and auditability features include:

- Power-on and remote-control password functions provide control of who has access to the data and server setup program on the server.

It is a customer's responsibility to ensure that the server is secure to prevent sensitive data from being removed.

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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## **Terms and conditions**

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### ***IBM Global Financing***

Yes

### **IBM System x3690 X5**

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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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- System x3690 X5 - 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 which replaces a previously installed part or feature assumes the remainder of the warranty period for the replaced part or feature. An IBM part or feature added to a machine without replacing a previously installed part or is feature subject to a full warranty effective on its date of installation. Unless specified otherwise, the warranty period, type of warranty service and service level of a part or feature is the same as the machine it is installed in.

The following has been designated as a consumable or supply item and is, therefore, not covered by this warranty:

- ServeRAID SAS controller 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 specified below, On-site Service.

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: (Unless indicated otherwise)

- Enet Cd
- PRO/1000 (T2)
- Svr Adapter
- Svr Adapter
- 10 GbE Fibre
- 10 GB CNA
- 10 GB HBA (T2)
- 8 GB PCI-e
- 8 GB FC HBA
- 8 GB FC HBA
- 8 GB FC HBA
- 3U Adapter
- PCI-e
- 2 GB Memory
- 2 GB RDIMM
- 4 GB RDIM
- Backplane (FRU)
- Battery CMOS
- 8 GB FC SNG Adapter
- 8 GB FC DUA Adapter
- Exp Ethernet Adapter
- Quad Enet Adapter
- Dual Port Adapter
- Quad Port Adapter
- 10 GbE Adapter
- 4 GB FC Adapter
- 4 GB FC Dual

- Slide Kit (T2)
- CMA
- Dual Port Adapter
- Quad Port Adapter
- 2.8 m PDU Jumper
- Memory expansion card

### ***On-site Service***

This provides On-site Repair, 9 hours per day, Monday through Friday excluding holidays, NBD response. IBM or your reseller 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. On-site Service is not available in all countries, and some countries have kilometer or mileage limitations from an IBM service center. In those locations where On-site Service is not available, the normal in-country service delivery is used.

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

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

### ***International Warranty Service***

International Warranty Service (IWS) is available in selected countries or regions.

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

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

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

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

For more information on IWS, refer to Services Announcement [601-034](#), dated September 25, 2001.

### ***Licensing***

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

### ***SAP license terms***

This IBM computer system is preinstalled with a copy of the SAP In-Memory Computing software, which includes SYSDATABASE REPLICATION SERVER 15, SAP HOST AGENT 7.2, APACHE TOMCAT 5.5, PERL 5.8, and SAP In-Memory Database. This software has been integrated or preinstalled as part of the IBM hardware system. You are not licensed to use the copy of SAP software contained in the IBM hardware system until you have purchased or licensed the use of the SAP software from SAP or its authorized distributors. Usage of the SAP software is subject to the applicable SAP end-user license agreement. Your purchase of the IBM hardware system does not include a license to use the SAP software that is preinstalled, or any other SAP software. SAP is under no obligation to license the preloaded SAP software to you. Contact your responsible SAP representative to obtain the appropriate license rights to use the SAP software.

## **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.

### ***Maintenance service***

If required, IBM provides repair or exchange service, depending on the type of maintenance service specified below for the machine. IBM will attempt to resolve your problem over the telephone or electronically by access to an IBM website. Certain machines contain remote support capabilities for direct problem reporting, remote problem determination, and resolution with IBM. You must follow the problem determination and resolution procedures that IBM specifies. Following problem determination, if IBM determines On-site Service is required, scheduling of service will depend upon the time of your call, machine technology and redundancy, and availability of parts. Service levels are response-time objectives and are not guaranteed.

#### *CRU Service*

If your problem can be resolved with a CRU (for example, keyboard, mouse, speaker, memory, or hard disk drive), IBM will ship the CRU to you for you to install. CRU information and replacement instructions are shipped with your machine and are available from IBM at any time on your request.

IBM specifies in the materials shipped with a replacement CRU whether a defective CRU must be returned to IBM. When return is required, return instructions and a container are shipped with the replacement CRU, and you may be charged for the replacement CRU if IBM does not receive the defective CRU within 15 days of your receipt of the replacement.

#### *On-site Service*

IBM will repair the failing machine at your location and verify its operation. You must provide a suitable working area to allow disassembly and reassembly of the IBM machine. The area must be clean, well lit, and suitable for the purpose.



## **Maintenance service (ICA)**

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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 specified below, On-site Service.

IBM will repair the failing machine at your location and verify its operation. You must provide a suitable working area to allow disassembly and reassembly of the IBM machine. The area must be clean, well lit, and suitable for the purpose.

### ***Maintenance service***

If required, IBM provides repair or exchange service, depending on the type of maintenance service specified below for the machine. IBM will attempt to resolve your problem over the telephone or electronically by access to an IBM website. Certain machines contain remote support capabilities for direct problem reporting, remote problem determination, and resolution with IBM. You must follow the problem determination and resolution procedures that IBM specifies. Following problem determination, if IBM determines On-site Service is required, scheduling of service will depend upon the time of your call, machine technology and redundancy, and availability of parts. Service levels are response-time objectives and are not guaranteed.

#### ***CRU Service***

If your problem can be resolved with a CRU (for example, keyboard, mouse, speaker, memory, or hard disk drive), IBM will ship the CRU to you for you to install. CRU information and replacement instructions are shipped with your machine and are available from IBM at any time on your request.

IBM specifies in the materials shipped with a replacement CRU whether a defective CRU must be returned to IBM. When return is required, return instructions and a container are shipped with the replacement CRU, and you may be charged for the replacement CRU if IBM does not receive the defective CRU within 15 days of your receipt of the replacement.

#### ***On-site Service***

IBM will repair the failing machine at your location and verify its operation. You must provide a suitable working area to allow disassembly and reassembly of the IBM machine. The area must be clean, well lit, and suitable for the purpose.

## **Non-IBM parts support**

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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.

### ***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-304.ibm.com/systems/support/machine\\_warranties/machine\\_code.html](http://www-304.ibm.com/systems/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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## Prices

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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 are features already announced for the 7147 machine type.

Description	Model Number	Feature Number	Initial/MES/Both/Support
AC1	AC1		
MC1	MC1		
QLogic 10Gb SFP+ SR Optical Transceiver	AC1	0064	Initial
	MC1		Initial
Brocade 10Gb SFP+ SR Optical Transceiver	AC1	0069	Initial
	MC1		Initial
ServerRAID M5015 SAS/SATA Controller (Battery not included)	AC1	0093	Initial
	MC1		Initial
ServerRAID M5025 SAS/SATA Controller	AC1	0094	Initial
	MC1		Initial
ServerRAID M1015 SAS/SATA Controller	AC1	0095	Initial
	MC1		Initial
IBM 160GB High IOPS SS Class SSD PCIe Adapter	AC1	0096	Initial
	MC1		Initial
IBM 320GB High IOPS SD Class SSD PCIe Adapter	AC1	0097	Initial
	MC1		Initial
eX5 MAX5 Packaging	AC1	0746	Initial
	MC1		Initial
NetXtreme II 1000 Express G Ethernet Adapter- PCIe	AC1	1485	Initial
	MC1		Initial
Brocade 10Gb CNA for IBM System x	AC1	1637	Initial
	MC1		Initial
IBM 320GB High IOPS MS Class SSD PCIe Adapter	AC1	1649	Initial
	MC1		Initial
Emulex 4Gb FC Single-Port PCI-E HBA for IBM System x	AC1	1698	Initial
	MC1		Initial
Emulex 4Gb FC Dual-Port PCI-E HBA for IBM System x	AC1	1699	Initial
	MC1		Initial
4GB (1x4GB, Quad Rankx8) PC3-8500 CL7 ECC DDR3 1066MHZ LP RDIMM	AC1	1701	Initial
	MC1		Initial
8GB (1x8GB, Quad Rankx8) PC3-8500 CL7 ECC DDR3			

1066MHZ LP RDIMM	AC1	1706	Initial
	MC1		Initial
16GB (1x16GB, 4Rx4, 1.5V) PC3-8500 CL7 ECC DDR3			
1066MHZ LP RDIMM	AC1	1707	Initial
	MC1		Initial
2GB (1x2GB, 1Rx8, 1.5V) PC3-10600 CL9 ECC DDR3			
1333MHZ LP RDIMM	AC1	1712	Initial
	MC1		Initial
4GB (1x4GB, Dual Rankx8) PC3-10600 CL9 ECC DDR3			
1333MHZ LP RDIMM	AC1	1713	Initial
	MC1		Initial
Capacity Scheduling Service	AC1	1772	Initial
	MC1		Initial
IBM 8x 2.5" HS SAS HDD Backplane	AC1	1790	Initial
	MC1		Initial
Custom SLA Scheduling Service	AC1	1796	Initial
	MC1		Initial
x3690 X5 Bezel	AC1	2123	Initial
	MC1		Initial
MemCard Filler	AC1	2124	Initial
	MC1		Initial
QPI filler	AC1	2126	Initial
	MC1		Initial
SAS Riser Rear Bulkhead Filler	AC1	2127	Initial
	MC1		Initial
PCIe Riser Rear Bulkhead Filler	AC1	2128	Initial
	MC1		Initial
2U Bracket for NetXtreme II 1000 Express Quad Port Ethernet Adapter	AC1	2141	Initial
	MC1		Initial
2U Bracket for ServerRAID M1015 SAS/SATA Controller or 6Gb SSD HBA	AC1	2145	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
Rack Installation >1U Component	AC1	2306	Initial
	MC1		Initial
Department of Defense UID Label	AC1	2320	Initial
	MC1		Initial
Primary Array 12 HDDs	AC1	2400	Initial
	MC1		Initial
Primary Array 13 HDDs	AC1	2401	Initial
	MC1		Initial
Primary Array 14 HDDs	AC1	2402	Initial
	MC1		Initial
Primary Array 15 HDDs	AC1	2403	Initial
	MC1		Initial
Primary Array 16 HDDs	AC1	2404	Initial
	MC1		Initial
Secondary Array 9 HDDs	AC1	2405	Initial
	MC1		Initial
Secondary Array 10 HDDs	AC1	2406	Initial
	MC1		Initial
Secondary Array 11 HDDs	AC1	2407	Initial
	MC1		Initial
Secondary Array 12 HDDs	AC1	2408	Initial
	MC1		Initial
Secondary Array 13 HDDs	AC1	2409	Initial
	MC1		Initial
Secondary Array 14 HDDs	AC1	2410	Initial
	MC1		Initial
Tertiary Array 2 HDDs	AC1	2411	Initial
	MC1		Initial
Tertiary Array 3 HDDs	AC1	2412	Initial
	MC1		Initial
Tertiary Array 4 HDDs	AC1	2413	Initial
	MC1		Initial
Tertiary Array 5 HDDs	AC1	2414	Initial
	MC1		Initial
Tertiary Array 6 HDDs	AC1	2415	Initial
	MC1		Initial
Tertiary Array 7 HDDs	AC1	2416	Initial
	MC1		Initial
Tertiary Array 8 HDDs	AC1	2417	Initial

	MC1		Initial
2GB MAX5 1x2GB 1Rx8 1.5V PC3-10600 CL9 ECC DDR3 1333MHZ LP RDIMM	AC1	2429	Initial
	MC1		Initial
4GB MAX5 1x4GB DualRankx8 PC310600 CL9 ECC DDR3 1333MHZ LP RDIMM	AC1	2431	Initial
	MC1		Initial
8GB MAX5 1x8GB QuadRankx8 PC3-8500 CL7 ECC DDR3 1066MHZ LP RDIMM	AC1	2432	Initial
	MC1		Initial
16GB MAX5 1x16G QuadRankx4 PC3-8500 CL7 ECC DDR3 1066MHZ LP RDIMM	AC1	2433	Initial
	MC1		Initial
2U Bracket for Brocade 10Gb CNA for IBM System x	AC1	2492	Initial
	MC1		Initial
Optical Blank Filler	AC1	2496	Initial
	MC1		Initial
Enable selection of Solid State Drives for Secondary Array	AC1	2498	Initial
	MC1		Initial
Enable selection of Solid State Drives for Primary Array	AC1	2499	Initial
	MC1		Initial
4 pack 2.5" HDD Filler	AC1	2504	Initial
	MC1		Initial
System Packaging - WW	AC1	2584	Initial
	MC1		Initial
2U Bracket for ServerRAID M5015 SAS/SATA Controller	AC1	2591	Initial
	MC1		Initial
x3690 with MAX5 System Packaging - WW	AC1	2594	Initial
	MC1		Initial
PRO/1000 PF Server Adapter	AC1	2975	Initial
	MC1		Initial
NetXtreme II 1000 Express Dual Port Ethernet Adapter	AC1	2995	Initial
	MC1		Initial
RAID 1 - Tertiary Array (SSD) - 2 SSDs required	AC1	3034	Initial
	MC1		Initial
Rack 01	AC1	3101	Initial
	MC1		Initial
Rack 02	AC1	3102	Initial
	MC1		Initial
Rack 03	AC1	3103	Initial
	MC1		Initial
Rack 04	AC1	3104	Initial
	MC1		Initial
Rack 05	AC1	3105	Initial
	MC1		Initial
Rack 06	AC1	3106	Initial
	MC1		Initial
Rack 07	AC1	3107	Initial
	MC1		Initial

Rack 08	AC1 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	3132	Initial

	MC1		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 MC1	3152	Initial Initial
Rack 53	AC1 MC1	3153	Initial Initial
Rack 54	AC1 MC1	3154	Initial Initial
Rack 55	AC1 MC1	3155	Initial Initial
Rack 56	AC1 MC1	3156	Initial Initial
Rack 57			



	AC1 MC1	3157	Initial Initial
Rack 58			
	AC1 MC1	3158	Initial Initial
Rack 59			
	AC1 MC1	3159	Initial Initial
Rack 60			
	AC1 MC1	3160	Initial Initial
Rack 61			
	AC1 MC1	3161	Initial Initial
Rack 62			
	AC1 MC1	3162	Initial Initial
Rack 63			
	AC1 MC1	3163	Initial Initial
Rack 64			
	AC1 MC1	3164	Initial Initial
Rack location U01			
	AC1 MC1	3201	Initial Initial
Rack location U02			
	AC1 MC1	3202	Initial Initial
Rack location U03			
	AC1 MC1	3203	Initial Initial
Rack location U04			
	AC1 MC1	3204	Initial Initial
Rack location U05			
	AC1 MC1	3205	Initial Initial
Rack location U06			
	AC1 MC1	3206	Initial Initial
Rack location U07			
	AC1 MC1	3207	Initial Initial
Rack location U08			
	AC1 MC1	3208	Initial Initial
Rack location U09			
	AC1 MC1	3209	Initial Initial
Rack location U10			
	AC1 MC1	3210	Initial Initial
Rack location U11			
	AC1 MC1	3211	Initial Initial
Rack location U12			
	AC1 MC1	3212	Initial Initial
Rack location U13			
	AC1 MC1	3213	Initial Initial
Rack location U14			
	AC1 MC1	3214	Initial Initial
Rack location U15			
	AC1 MC1	3215	Initial Initial
Rack location U16			
	AC1 MC1	3216	Initial Initial
Rack location U17			
	AC1 MC1	3217	Initial Initial

Rack location U18	AC1 MC1	3218	Initial Initial
Rack location U19	AC1 MC1	3219	Initial Initial
Rack location U20	AC1 MC1	3220	Initial Initial
Rack location U21	AC1 MC1	3221	Initial Initial
Rack location U22	AC1 MC1	3222	Initial Initial
Rack location U23	AC1 MC1	3223	Initial Initial
Rack location U24	AC1 MC1	3224	Initial Initial
Rack location U25	AC1 MC1	3225	Initial Initial
Rack location U26	AC1 MC1	3226	Initial Initial
Rack location U27	AC1 MC1	3227	Initial Initial
Rack location U28	AC1 MC1	3228	Initial Initial
Rack location U29	AC1 MC1	3229	Initial Initial
Rack location U30	AC1 MC1	3230	Initial Initial
Rack location U31	AC1 MC1	3231	Initial Initial
Rack location U32	AC1 MC1	3232	Initial Initial
Rack location U33	AC1 MC1	3233	Initial Initial
Rack location U34	AC1 MC1	3234	Initial Initial
Rack location U35	AC1 MC1	3235	Initial Initial
Rack location U36	AC1 MC1	3236	Initial Initial
Rack location U37	AC1 MC1	3237	Initial Initial
Rack location U38	AC1 MC1	3238	Initial Initial
Rack location U39	AC1 MC1	3239	Initial Initial
Rack location U40	AC1 MC1	3240	Initial Initial
Rack location U41	AC1 MC1	3241	Initial Initial
Rack location U42	AC1	3242	Initial

	MC1		Initial
No RAID - Primary Array set up by customer	AC1	3270	Initial
	MC1		Initial
No RAID - Secondary Array set up by customer	AC1	3271	Initial
	MC1		Initial
No RAID - Tertiary Array set up by customer	AC1	3272	Initial
	MC1		Initial
Battery Cable	AC1	3275	Initial
	MC1		Initial
QLogic 4Gb FC Single-Port PCIe HBA for IBM System x	AC1	3567	Initial
	MC1		Initial
QLogic 4Gb FC Dual-Port PCIe HBA for IBM System x	AC1	3568	Initial
	MC1		Initial
Server RAID-BR10i SAS/SATA Controller	AC1	3577	Initial
	MC1		Initial
QLogic 8Gb FC Single-port HBA for IBM System x	AC1	3578	Initial
	MC1		Initial
QLogic 8Gb FC Dual-port HBA for IBM System x	AC1	3579	Initial
	MC1		Initial
Emulex 8Gb FC Single-port HBA for IBM System x	AC1	3580	Initial
	MC1		Initial
Emulex 8Gb FC Dual-port HBA for IBM System x	AC1	3581	Initial
	MC1		Initial
Brocade 8Gb FC Single-port HBA for IBM System x	AC1	3589	Initial
	MC1		Initial
Brocade 8Gb FC Dual-port HBA for IBM System x	AC1	3591	Initial
	MC1		Initial
1m LC-LC Fiber Cable (networking)	AC1	3700	Initial
5m LC-LC Fiber Cable (networking)	AC1	3701	Initial
25m LC-LC Fiber Cable (networking)	AC1	3702	Initial
IBM 1m SAS Cable	AC1	3714	Initial
	MC1		Initial
IBM 3m SAS Cable	AC1	3716	Initial
	MC1		Initial
0.5m QLogic Copper QDR InfiniBand QSFP 30AWG Cable	AC1	3725	Initial
1m QLogic Copper QDR InfiniBand QSFP 30AWG Cable	AC1	3726	Initial
3m QLogic Copper QDR InfiniBand QSFP 28AWG Cable	AC1	3727	Initial
3m QLogic Optical QDR InfiniBand QSFP Cable	AC1	3731	Initial
10m QLogic Optical QDR InfiniBand QSFP Cable	AC1	3732	Initial
30m QLogic Optical QDR InfiniBand QSFP Cable	AC1	3733	Initial
0.5m Molex Direct Attach Copper SFP+ Cable	AC1	3735	Initial
1m Molex Direct Attach Copper SFP+ Cable	AC1	3736	Initial
3m Molex Direct Attach Copper SFP+ Cable	AC1	3737	Initial
7m Molex Direct Attach Copper SFP+ Cable	AC1	3738	Initial
IBM 50GB SATA 2.5" SFF slim-HS High IOPS SSD	AC1	3745	Initial

	MC1		Initial
3m Console Switch Cable (USB)	AC1	3751	Initial
IBM Single Cable USB Conversion Option (UCO)	AC1	3757	Initial
0.6m Yellow Cat5e Cable	AC1	3791	Initial
1.5m Yellow Cat5e Cable	AC1	3792	Initial
3m Yellow Cat5e Cable	AC1	3793	Initial
10m Yellow Cat5e Cable	AC1	3794	Initial
25m Yellow Cat5e Cable	AC1	3795	Initial
0.6m Green Cat5e Cable	AC1	3796	Initial
1.5m Green Cat5e Cable	AC1	3797	Initial
3m Green Cat5e Cable	AC1	3798	Initial
10m Green Cat5e Cable	AC1	3799	Initial
25m Green Cat5e Cable	AC1	3800	Initial
0.6m Blue Cat5e Cable	AC1	3801	Initial
1.5m Blue Cat5e Cable	AC1	3802	Initial
3m Blue Cat5e Cable	AC1	3803	Initial
10m Blue Cat5e Cable	AC1	3804	Initial
25m Blue Cat5e Cable	AC1	3805	Initial
1m Mellanox Copper Cable for 4X IB and 10GbE	AC1	3859	Initial
3m Mellanox Copper Cable for 4X IB and 10GbE	AC1	3860	Initial
5m Mellanox Copper Cable for 4X IB and 10GbE	AC1	3861	Initial
8m Mellanox Copper Cable for 4X IB and 10GbE	AC1	3862	Initial
IBM 6Gb SSD HBA	AC1	3876	Initial
ServerRAID M5014 SAS/SATA Controller (Battery not included)	MC1		Initial
	AC1	3877	Initial
Brocade 4Gb FC Single-port HBA for IBM System x	MC1		Initial
	AC1	3885	Initial
Brocade 4Gb FC Dual-port HBA for IBM System x	MC1		Initial
	AC1	3886	Initial
ServerRAID B5015 SSD Controller	MC1		Initial
	AC1	3889	Initial
2GB (1x2GB, Dual Rank x8) PC3-10600 CL9 ECC DDR3-1333 LP RDIMM	MC1		Initial
	AC1	3964	Initial
2U Bracket for NetXtreme II 10 GigE Express Fiber SR Adapter	MC1		Initial
	AC1	4029	Initial
Power Supply Blank Filler	MC1		Initial
	AC1	4042	Initial
2U bracket for Emulex 8Gb FC Single-port HBA for System x	MC1		Initial
	AC1	4047	Initial
	MC1		Initial

2U bracket for QLogic 8Gb FC Single-port HBA for System x	AC1	4049	Initial
	MC1		Initial
2U Bracket for NetXtreme II 1000 Express Dual Port Ethernet Adapter	AC1	4055	Initial
	MC1		Initial
2U bracket for ServerRAID-MR10M SAS/SATA Controller	AC1	4057	Initial
	MC1		Initial
2.5" HDD Filler Bezel	AC1	4069	Initial
	MC1		Initial
IBM UltraSlim Enhanced SATA Multi-Burner	AC1	4163	Initial
	MC1		Initial
IBM x3690 X5 RAID Expansion Adapter	AC1	4164	Initial
	MC1		Initial
Universal Slides Kit	AC1	4178	Initial
	MC1		Initial
7147-AC1 Routing Code	AC1	4254	Initial
7147-MC1 Routing Code	MC1	4255	Initial
IBM 675W HE Redundant Power Supply	AC1	4782	Initial
	MC1		Initial
IBM System x3690 X5 Ball Bearing Slide Kit	AC1	4786	Initial
	MC1		Initial
ServerRAID M5000 Series Advance Feature Key	AC1	5106	Initial
	MC1		Initial
IBM 50GB SATA 1.8" NHS SSD	AC1	5314	Initial
	MC1		Initial
IBM 500GB 7200 6Gbps NL SAS 2.5" SFF Slim-HS HDD	AC1	5409	Initial
	MC1		Initial
IBM 146GB 15K 6Gbps SAS 2.5" SFF Slim-HS SED	AC1	5412	Initial
	MC1		Initial
IBM 300GB 10K 6Gbps SAS 2.5" SFF Slim-HS SED	AC1	5413	Initial
	MC1		Initial
IBM 500GB 7200 SATA 2.5" SFF Slim-HS HDD	AC1	5414	Initial
	MC1		Initial
IBM 200GB SATA 1.8" MLC SSD	AC1	5420	Initial
	MC1		Initial
IBM 50GB SATA 1.8" MLC SSD	AC1	5428	Initial
	MC1		Initial
IBM 600GB 10K 6Gbps SAS 2.5" SFF Slim-HS HDD	AC1	5433	Initial
	MC1		Initial
IBM 73GB 15K 6Gbps SAS 2.5" SFF Slim-HS HDD	AC1	5522	Initial
	MC1		Initial
IBM 146GB 15K 6Gbps SAS 2.5" SFF Slim-HS HDD	AC1	5536	Initial
	MC1		Initial
IBM 146GB 10K 6Gbps SAS 2.5" SFF Slim-HS HDD	AC1	5537	Initial
	MC1		Initial
IBM 300GB 10K 6Gbps SAS 2.5" SFF Slim-HS HDD	AC1	5599	Initial
	MC1		Initial
IBM 10GbE SW SFP+ Transceiver			

	AC1	5721	Initial
RAID 5 - Tertiary Array (SSD) - minimum of 3 SSDs required			
	AC1	5731	Initial
	MC1		Initial
ServerRAID M5000 Series Battery Assembly			
	AC1	5744	Initial
	MC1		Initial
Emulex 10GbE Virtual Fabric Adapter for IBM System x			
	AC1	5749	Initial
	MC1		Initial
QLogic 10Gb CNA for IBM System x			
	AC1	5751	Initial
	MC1		Initial
NetXtreme II 1000 Express Quad Port Ethernet Adapter			
	AC1	5766	Initial
	MC1		Initial
Intel Ethernet Dual Port Server Adapter I340-T2 for IBM System x			
	AC1	5767	Initial
	MC1		Initial
Intel Ethernet Quad Port Server Adapter I340-T4 for IBM System x			
	AC1	5768	Initial
	MC1		Initial
SSD Blank Filler			
	AC1	5779	Initial
	MC1		Initial
2U Bracket for QLogic 10Gb CNA for IBM System x			
	AC1	5787	Initial
	MC1		Initial
Remote Battery Cable			
	AC1	5862	Initial
	MC1		Initial
Select Storage devices - no IBM-configured RAID required			
	AC1	5977	Initial
	MC1		Initial
Select Storage devices - IBM-configured RAID			
	AC1	5978	Initial
	MC1		Initial
RAID 1 - Primary Array (SSD) - 2 SSDs required			
	AC1	5979	Initial
	MC1		Initial
RAID 5 - Primary Array (SSD) - minimum of 3 SSDs required			
	AC1	5980	Initial
	MC1		Initial
RAID 1 - Secondary Array (SSD) - 2 SSDs required			
	AC1	5981	Initial
	MC1		Initial
IBM 6Gb SAS HBA			
	AC1	5982	Initial
	MC1		Initial
640GB High IOPS MLC Duo Adapter for IBM System x			
	AC1	5985	Initial
	MC1		Initial
3m IBM Optical QDR InfiniBand QSFP Cable			
	AC1	5989	Initial
10m IBM Optical QDR InfiniBand QSFP Cable			
	AC1	5990	Initial
30m IBM Optical QDR InfiniBand QSFP Cable			
	AC1	5991	Initial
Unique SBB for AC1/MC1 models			
	AC1	6134	Initial
	MC1		Initial
1.8" SAS Storage Support			
	AC1	6138	Initial
	MC1		Initial
SF Instruction			
	AC1	6139	
	MC1		
1.5m, 10A/100-250V, C13 to IEC 320-C14 Rack Power			

Cable	AC1	6201	Initial
	MC1		Initial
2.8m, 10A/100-250V, C13 to IEC 320-C20 Rack Power Cable	AC1	6204	Initial
	MC1		Initial
Line cord - 4.3M, 10A/125V, C13 to NEMA 5-15P (US)	AC1	6207	Initial
	MC1		Initial
4.3m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable	AC1	6263	Initial
	MC1		Initial
2.8m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable	AC1	6311	Initial
	MC1		Initial
Line cord - 2.8m, 10A/250V, C13 to NEMA 6-15P (US)	AC1	6372	Initial
	MC1		Initial
2.8m, 10A/200-250V, 2xC13 to IEC 320-C14 Rack Power Y-Cable	AC1	6406	Initial
	MC1		Initial
Short SAS cable	AC1	6428	Initial
	MC1		Initial
Long SAS cable	AC1	6429	Initial
	MC1		Initial
IBM MAX5 for System x Memory DIMM Filler	AC1	6437	Initial
	MC1		Initial
2U Bracket for IBM 3Gb SAS HBA Controller v2	AC1	6455	Initial
	MC1		Initial
Drive ID label sheet	AC1	6456	Initial
	MC1		Initial
Friction slide	AC1	6457	Initial
	MC1		Initial
Friction CMA	AC1	6458	Initial
	MC1		Initial
HDD Backplane Filler	AC1	6459	Initial
	MC1		Initial
RAID 5 - Secondary Array (SSD) - minimum of 3 SSDs required	AC1	6472	Initial
	MC1		Initial
IBM CMA for Ball Bearing and Universal Slides	AC1	6473	Initial
	MC1		Initial
IBM System x3690 X5 2U Cable Management Arm	AC1	6474	Initial
	MC1		Initial
Primary Array 2 HDDs	AC1	7008	Initial
	MC1		Initial
Primary Array 3 HDDs	AC1	7009	Initial
	MC1		Initial
Primary Array 4 HDDs	AC1	7010	Initial
	MC1		Initial
Primary Array 5 HDDs	AC1	7011	Initial
	MC1		Initial

Primary Array 6 HDDs	AC1 MC1	7012	Initial Initial
Primary Array 7 HDDs	AC1 MC1	7013	Initial Initial
Primary Array 8 HDDs	AC1 MC1	7014	Initial Initial
Secondary Array 2 HDDs	AC1 MC1	7015	Initial Initial
Secondary Array 3 HDDs	AC1 MC1	7016	Initial Initial
Secondary Array 4 HDDs	AC1 MC1	7017	Initial Initial
Secondary Array 5 HDDs	AC1 MC1	7057	Initial Initial
Secondary Array 6 HDDs	AC1 MC1	7058	Initial Initial
Secondary Array 7 HDDs	AC1 MC1	7059	Initial Initial
Secondary Array 8 HDDs	AC1 MC1	7060	Initial Initial
2U Bracket for IBM 6Gb SAS HBA	AC1 MC1	7478	Initial Initial
IBM MAX5 to x3690 X5 Cable Kit	AC1 MC1	7481	Initial Initial
eX5 MAX5 bezel	AC1 MC1	7485	Initial Initial
2U bracket for QLogic 8Gb FC Dual-port HBA for System x	AC1 MC1	7550	Initial Initial
2U Bracket for Brocade 8Gb FC Single-port HBA for IBM System x	AC1 MC1	7594	Initial Initial
2U Bracket for Brocade 8Gb FC Dual-port HBA for IBM System x	AC1 MC1	7595	Initial Initial
x3690 X5 Base	AC1 MC1	7630	Initial Initial
2U Bracket for Brocade 4Gb FC Single-port HBA for IBM System x	AC1 MC1	7633	Initial Initial
2U Bracket for Brocade 4Gb FC Dual-port HBA for IBM System x	AC1 MC1	7634	Initial Initial
Primary Array 9 HDDs	AC1 MC1	7664	Initial Initial
Grouped Product	AC1 MC1	7830	Initial Initial
Customer Solution Center Services	AC1 MC1	7831	Initial Initial
RAID 5 - Primary Array (SAS) - minimum of 3 HDDs required	AC1	7853	Initial



	MC1		Initial
RAID 5 - Secondary Array (SAS) - minimum of 3 HDDs required	AC1	7854	Initial
	MC1		Initial
RAID 6 - Primary Array (SAS) - minimum of 4 HDDs required	AC1	7857	Initial
	MC1		Initial
RAID 6 - Secondary Array (SAS) - minimum of 4 HDDs required	AC1	7858	Initial
	MC1		Initial
No HDD Selected	AC1	8026	Initial
	MC1		Initial
Consolidate Shipment	AC1	8031	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
No SATA HDD Selected	AC1	8080	Initial
	MC1		Initial
No 2.5" SAS HDD Selected	AC1	8081	Initial
	MC1		Initial
No Publications Selected	AC1	8086	Initial
	MC1		Initial
RAID 0 - Primary Array (SAS) - minimum of 2 HDDs required	AC1	8141	Initial
	MC1		Initial
RAID 1 - Primary Array (SAS) - 2 HDDs required	AC1	8142	Initial
	MC1		Initial
RAID 0 - Secondary Array (SAS) - minimum of 2 HDDs required	AC1	8144	Initial
	MC1		Initial
RAID 1 - Secondary Array (SAS) - 2 HDDs required	AC1	8145	Initial
	MC1		Initial
System Documentation and Software-US English	AC1	8640	Initial
	MC1		Initial
2GB (1x2GB, 2Rx8, 1.5V) PC3-10600 CL9 ECC DDR3 1333MHZ LP RDIMM	AC1	8934	Initial
	MC1		Initial
16GB (1x16GB, 4Rx4, 1.35V) PC3L-8500 CL7 ECC DDR3 1066MHZ LP RDIMM	AC1	8939	Initial
	MC1		Initial
4GB (1x4GB, 2Rx8, 1.35V) PC3L-10600 CL9A ECC DDR3 1333MHZ LP RDIMM	AC1	8942	Initial
	MC1		Initial

Performance Memory Configuration	AC1	8957	Initial
	MC1		Initial
Integrate in manufacturing	AC1	8971	Initial
	MC1		Initial
Ship Uninstalled (Safety)	AC1	8972	Initial
	MC1		Initial
Hot Spare	AC1	9013	Initial
	MC1		Initial
Enable Memory Mirroring	AC1	9017	Initial
	MC1		Initial
Preload Specify	AC1	9200	Initial
	MC1		Initial
Windows Specify	MC1	9201	Initial
Red Hat Specify	AC1	9202	Initial
SuSE Specify	AC1	9203	Initial
Drop-in-the-Box Specify	AC1	9205	Initial
	MC1		Initial
No Preload Specify	AC1	9206	Initial
	MC1		Initial
VMWare Specify	AC1	9207	Initial
	MC1		Initial
Preload by Hardware Feature Specify	AC1	9220	Initial
	MC1		Initial
IBM Power Interposer for 675W HE Redundant Power Supplies	AC1	9279	Initial
	MC1		Initial
IBM System x3690 X5 PCI-Express (3x8) Riser Card	AC1	9280	Initial
	MC1		Initial
IBM exFlash 8x 1.8" HS SAS SSD Backplane	AC1	9281	Initial
	MC1		Initial
IBM System x3690 X5 PCI-Express (1x16) Riser Card 3/4 length	AC1	9282	Initial
	MC1		Initial
IBM System x3690 X5 PCI-Express (1x16) Riser Card full length	AC1	9283	Initial
	MC1		Initial
IBM x3690 X5 Single SATA HDD Bay	AC1	9284	Initial
	MC1		Initial
IBM System x3690 X5 PCI-Express (2x8) Riser Card	AC1	9285	Initial
	MC1		Initial
IBM 4x 2.5" HS SAS HDD Backplane	AC1	9287	Initial
	MC1		Initial
2U Bracket for Emulex 10GbE Virtual Fabric Adapter for IBM System x	AC1	9297	Initial
	MC1		Initial
Primary Array 10 HDDs	AC1	9714	Initial
	MC1		Initial
Primary Array 11 HDDs	AC1	9715	Initial
	MC1		Initial
Server RAID M1000 Series Advance Feature Key			

	AC1	9749	Initial
	MC1		Initial
5m IBM QSFP -to- 4-SFP+ Copper cable	AC1	A0R5	Initial
1m IBM QSFP -to- 4-SFP+ Copper cable	AC1	A0R6	Initial
3m IBM QSFP -to- 4-SFP+ Copper cable	AC1	A0R7	Initial
Software Application (Not Preinstalled) Specify	AC1	A0UF	Initial
	MC1		Initial
Server RAID M5000 Series Performance Accelerator Key	AC1	A10C	Initial
	MC1		Initial
Emulex 10GbE Integrated Virtual Fabric Adapter II for IBM System x	AC1	A148	Initial
	MC1		Initial
8GB (1x8GB, 4Rx8, 1.35V) PC3L-8500 CL7 ECC DDR3 1066MHz LP RDIMM	AC1	A14E	Initial
	MC1		Initial
Mfg Code	AC1	A15E	Initial
	MC1		Initial
x3690 X5 - 7147 CPU Planar	AC1	A15G	Initial
	MC1		Initial
IBM x3690 X5 16-DIMM Internal Memory Expansion	AC1	A15H	Initial
	MC1		Initial
Intel Xeon Processor E7-8867L 10C (2.13GHz 30MB L3 105w 8S)	AC1	A15J	Initial
	MC1		Initial
Intel Xeon Processor E7-8837 8C (2.67GHz 24MB L3 130w 8S)	AC1	A15K	Initial
	MC1		Initial
Intel Xeon Processor E7-2870 10C (2.40GHz 30MB L3 130w 2S)	AC1	A15L	Initial
	MC1		Initial
Intel Xeon Processor E7-2860 10C (2.26GHz 24MB L3 130w 2S)	AC1	A15M	Initial
	MC1		Initial
Intel Xeon Processor E7-2830 8C (2.13GHz 24MB L3 105w 2S)	AC1	A15N	Initial
	MC1		Initial
Intel Xeon Processor E7-2820 8C (2.00GHz 18MB L3 105w 2S)	AC1	A15P	Initial
	MC1		Initial
Intel Xeon Processor E7-2803 6C (1.73GHz 18MB L3 105w 2S)	AC1	A15Q	Initial
	MC1		Initial
Intel Xeon Processor E7-2850 10C (2.00GHz 24MB L3 130w 2S)	AC1	A15R	Initial
	MC1		Initial
Addl Intel Xeon Processor E7-8867L 10C 2.13GHz 30MB Cache 105w	AC1	A15S	Initial
	MC1		Initial
Addl Intel Xeon Processor E7-8837 8C 2.67GHz 24MB Cache 130w	AC1	A15T	Initial
	MC1		Initial
Addl Intel Xeon Processor E7-2870 10C 2.40GHz 30MB Cache 130w	AC1	A15U	Initial

	MC1		Initial
Addl Intel Xeon Processor E7-2860 10C 2.26GHz 24MB Cache 130w	AC1	A15V	Initial
	MC1		Initial
Addl Intel Xeon Processor E7-2830 8C 2.13GHz 24MB Cache 105w	AC1	A15W	Initial
	MC1		Initial
Addl Intel Xeon Processor E7-2820 8C 2.00GHz 18MB Cache 105w	AC1	A15X	Initial
	MC1		Initial
Addl Intel Xeon Processor E7-2803 6C 1.73GHz 18MB Cache 105w	AC1	A15Y	Initial
	MC1		Initial
Addl Intel Xeon Processor E7-2850 10C 2.00GHz 24MB Cache 130w	AC1	A15Z	Initial
	MC1		Initial
Addl Intel Xeon Processor E7-4807 6C 1.86GHz 18MB Cache 95w	AC1	A191	Initial
	MC1		Initial
IBM MAX5 V2 for System x	AC1	A19H	Initial
	MC1		Initial
ex5 MAX5 labels	AC1	A19J	Initial
	MC1		Initial
MAX5 code	AC1	A19K	Initial
	MC1		Initial
IBM MAX5 for System x Documentation	AC1	A19L	Initial
	MC1		Initial
32GB (1x32GB, 4Rx4, 1.35V) PC3L-8500 CL7 ECC DDR3 1066MHZ LP RDIMM	AC1	A1CP	Initial
	MC1		Initial
4GB MAX5 (1x4GB, 2Gb, 2Rx8, 1.35V) PC3L-10600R-999 LP ECC RDIMM	AC1	A1MH	Initial
	MC1		Initial
Intel Xeon Processor E7-4807 6C (1.86GHz 18MB L3 95w 4S)	AC1	A1N6	Initial
	MC1		Initial
8GB MAX5 1x8GB, 4Rx8, 1.35V PC3L-8500 CL7 ECC DDR3 1066MHZ LP RDIMM	AC1	A1N7	Initial
	MC1		Initial
16GB MAX5 1x16GB, 4Rx4, 1.35V PC3L-8500 CL7 ECC DDR3 1066MHZ LP RDIMM	AC1	A1N8	Initial
	MC1		Initial
1.28TB HIGH IOPS MLC DUO ADAPTER FOR IBM SYSTEM X	AC1	A1NB	Initial
	MC1		Initial
640GB HIGH IOPS MLC ADAPTER FOR IBM SYSTEM X	AC1	A1NC	Initial
	MC1		Initial
640GB HIGH IOPS SLC DUO ADAPTER FOR IBM SYSTEM X	AC1	A1ND	Initial
	MC1		Initial
320GB HIGH IOPS SLC ADAPTER FOR IBM SYSTEM X	AC1	A1NE	Initial
	MC1		Initial
SAP In-Memory Appliance	AC1	A1NN	Initial
RAID 0 - Primary Array (SSD) - minimum of 2 SSDs required	AC1	A1P4	Initial

	MC1		Initial
RAID 0 - Secondary Array (SSD) - minimum of 2 SSDs required	AC1	A1P5	Initial
	MC1		Initial
RAID 0 - Tertiary Array (SSD) - minimum of 2 SSDs required	AC1	A1P6	Initial
	MC1		Initial
HANA SW Stack XS	AC1	A1PA	Initial
HANA SW Stack S	AC1	A1PB	Initial
HANA SW Stack SSD	AC1	A1PC	Initial
32GB (4GB, 4Rx4, 1.35V) PC3L-8500 DDR3-1066MHZ LP RDIMM	AC1	A1R2	Initial
	MC1		Initial

Description	SEO Number	Initial/ MES/ Both/ Support	CSU
1x1 x 1.73 GHz 18 MB 2 x 4 GB Xeon E7-2803 4.8 GTS 6-core 105W	7147-A1U	Both	Yes
1 x 2.0 GHz 18 MB 2 x 4 GB Xeon E7-2820 5.86 GTS 8-core 105W	7147-A2U	Both	Yes
1 x 2.13 GHz 24 MB 2 x 4 GB Xeon E7-2830 6.4 GTS 8-core 105W	7147-A3U	Both	Yes
1 x 2.00 GHz 24 MB 2 x 4 GB Xeon E7-2850 6.4 GTS 10-core 130W	7147-A5U	Both	Yes
1 x 2.26 GHz 24 MB 2 x 4 GB Xeon E7-2860 6.4 GTS 10-core 130W	7147-A6U	Both	Yes
1 x 2.40 GHz 30 MB 2 x 4 GB Xeon E7-2870 6.4 GTS 10-core 130W	7147-A7U	Both	Yes
1 x 2.67 GHz 24 MB 2 x 4 GB Xeon 6.4 GTS 8-core 130W	7147-C1U	Both	Yes

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2 x 2.26 GHz 24 MB 16x 4 GB Xeon E7-2860 6.4 GTS 10-core 130W	7147-D1U	Both	Yes
2 x 2.26 GHz 24 MB 16x 4 GB Xeon E7-2860 6.4 GTS 10-core 130W	7147-D2U	Both	Yes

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x3690 X5 - 2x2.40 GHz/30 MB, 256 GB E7 2870 ten-core	7147H2U	Both	Yes
x3690 X5 - 2x2.40 GHz/30 MB, 256 GB E7 2870 ten-core	7147H3U	Both	Yes

Option SEOs

Description	SEO Numbers	Initial/ MES/ Both/ Support	CSU
IBM x3690 X5 16-DIMM Internal Memory Expansion	81Y8926	Both	Yes
IBM MAX5 V2 for System x	88Y6529	Both	Yes
Intel Xeon Processor E7-8867L 10C 2.13GHz 30MB Cache 105w	88Y5654	Both	Yes
Intel Xeon Processor E7-8837 8C 2.67GHz 24MB Cache 130w	88Y5657	Both	Yes

Intel Xeon Processor E7-4807 6C 1.86GHz 18MB Cache 95w	88Y5662	Both	Yes
Intel Xeon Processor E7-2870 10C 2.40GHz 30MB Cache 130w	88Y5663	Both	Yes
Intel Xeon Processor E7-2860 10C 2.26GHz 24MB Cache 130w	88Y5664	Both	Yes
Intel Xeon Processor E7-2830 8C 2.13GHz 24MB Cache 105w	88Y5665	Both	Yes
Intel Xeon Processor E7-2820 8C 2.00GHz 18MB Cache 105w	88Y5666	Both	Yes
Intel Xeon Processor E7-2803 6C 1.73GHz 18MB Cache 105w	88Y5667	Both	Yes
Intel Xeon Processor E7-2850 10C 2.00GHz 24MB Cache 130w	88Y5720	Both	Yes

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### IBM System x3690 X5 - 7147

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Hardware models announcing with this release will utilize existing US ServicePacs.

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## **Corrections**

### **(Corrected on May 12, 2011)**

Product number and Prices sections modified to include previously announced feature number 6139.

### **(Corrected on April 21, 2011)**

Physical specifications section modified to correct number of power supplies in IBM MAX5 V2 Memory Option.