

IBM System x3690 X5: Workload Optimized Solution for SAP HANA provides high performance, scalable, and flexible Intel Xeon processor-based systems for SAP HANA applications

Table of contents

2 Overview	13 Publications
5 Key prerequisites	15 Technical information
5 Planned availability date	22 Terms and conditions
5 Description	28 Prices
12 Product positioning	30 Order now
12 Product number	

At a glance



New workload optimized models for SAP HANA provide optimal solutions for SAP HANA applications. The IBM® System x3690 X5: Workload Optimized Solution for SAP HANA models offer a preinstalled, optimized appliance with 128 GB and 256 GB models sized for SAP HANA application requirements.

These models also include the following software: SUSE Linux™ Enterprise Server for SAP Applications operating system with 3-year SUSE priority support and the IBM General Parallel File System (GPFS™) on x86 Single Server for Integrated Offerings with 3-year software subscription and support.

Note: The SAP HANA software is included, but is sold separately by SAP.

Key features of the new x3690 X5 Workload Optimized Solution for SAP HANA models include:

- 128 GB or 256 GB single node SAP HANA configurations
- Seamless multi-node scalability
- Two processors with 10-core processing performance per socket
- Ten 200 GB eXFlash solid-state disk drives
- High-speed networking with support for four 10 GbE ports and six 1 GbE ports
- SUSE Linux Enterprise Server for SAP Applications operating system license and media with 3-year SUSE priority support
- IBM General Parallel File System (GPFS) on x86 Single Server for Integrated Offerings with 3-year software subscription and support
- IBM Director media

- System installation and recovery disk
- Three-year limited warranty¹

These Workload Optimized Solutions for SAP HANA are based on fifth-generation x5 technology features which include:

- 2U server, tool-free chassis that strikes the balance between rack density and ease of maintenance
- Rear access power supplies designed for easy accessibility
- Memory ProteXion with Chipkill, memory mirroring, memory sparing, Intel™ SMI lane failover, SMI packet retry, and SMI clock failover
- Serial Attach SCSI (SAS) plus RAID to maximize throughput and ease installation and data protection

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

Overview

These x3690 X5 servers are powered with 10-core Intel Xeon™ processors and eXFlash storage for a powerful 2-socket, scalable system.

The IBM System x3690 X5: Workload Optimized solution for SAP HANA models are an optimized appliance based on the 2-socket x3690 X5 server platform. These models include two processors, 128 GB or 256 GB of memory and solid-state disk. They are designed for use in small SAP HANA configurations. The 128 GB model can be upgraded to 256 GB to support growing needs of clients.

Key enhancements to the x3690 X5 Workload Optimized Solution for SAP HANA include:

- Increased solid-state storage capacity for scale-out and highly available (HA) configurations
- Additional 10 Gb networking ports for enhanced scale-out and high availability
- New GPFS software licensing for single node configurations

These models also include the following software: SUSE Linux Enterprise Server for SAP Applications with three-year priority support and the IBM General Parallel File System (GPFS) on x86 Single Server for Integrated Offerings with 3-year software subscription and 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 SAP application environments.

Benefits include:

- 128 GB and 256 GB single node SAP HANA configurations
- Seamless multi-node scalability
- Two processors with 10-core processing performance per socket
- Ten 200 GB eXFlash solid-state disk drives
- High-speed networking with support for four 10 Gb Ethernet ports and six 1 Gb Ethernet ports
- SUSE Linux Enterprise Server for SAP Applications operating system license and media with 3-year SUSE priority support
- IBM General Parallel File System (GPFS) on x86 Single Server for Integrated Offerings 3-year software subscription and support.
- IBM Director media

- System installation and recovery disk

These Workload Optimized Solutions for SAP HANA are based on fifth-generation eX5 technology features which include:

- 2U server, tool-free chassis that strikes the balance between rack density and ease of maintenance
- Rear access power supplies designed for easy accessibility
- Memory ProteXion with Chipkill, memory mirroring, memory sparing, Intel SMI lane failover, SMI packet retry, and SMI clock failover
- Serial Attach SCSI (SAS) plus RAID to maximize throughput and ease installation and data protection

Fifth-generation X5 technology features

- New leadership processor and memory scaling technology
- New eXFlash high-IOPS solid-state storage technology
- 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
- Four hot-swap, rear access, redundant power supply with 220 V ac input
- 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-site² service, limited warranty²; optional warranty service upgrades available.

SUSE Linux Enterprise Server for SAP Applications

Boost overall performance and accelerate time to value. SUSE Linux Enterprise Server for SAP Applications delivers improved uptime and performance, even under full CPU loads and high memory stress. Rely on integrated support from SAP and SUSE. SUSE Linux Enterprise Server for SAP Applications offers integrated priority support and maintenance from both SUSE and SAP through the SAP Solution Manager.

Protect your critical business operations with built-in business continuity. SUSE Linux Enterprise Server for SAP Applications includes high-availability components that help build SAP clustering solutions for physical and virtual Linux deployments. Save time with faster deployment. SUSE Linux Enterprise Server for SAP Applications is designed to enable deployment in hours instead of days.

SUSE Linux Enterprise Server for SAP Applications is the only operating system that provides an automated, end-to-end installation workflow. SUSE Linux Enterprise Server for SAP Applications subscriptions include SUSE Linux Enterprise High Availability Extension which ensures continuous access to your mission-critical applications and data. This flexible, policy-driven clustering solution is designed to virtually eliminate service outages. Service outages and interruptions to business processes can take a terrible toll on productivity, revenue, and customer relationships. In some cases, they can even have legal consequences. SUSE Linux Enterprise High Availability Extension helps clients ensure that their most mission-critical applications continue to deliver business value, 24 hours a day, every day. This is achieved through the use of high availability clustering to automate application and data recovery. Clients can use SUSE's flexible, policy-driven clustering solution to implement highly available Linux clusters and eliminate single points of failure. The servers are continuously monitored; and when a fault or failure occurs, the workload is transferred from one server to another, or the application is

automatically restarted on a known working system. This helps maintain business continuity and minimize unplanned downtime.

Subscription and Support offerings included with every SAP HANA configuration, the SUSE Linux Enterprise for SAP Applications offerings include an activation card which contains the unique product registration number that will be needed to access integrated priority support and maintenance from both SUSE and SAP through the SAP Solution Manager. The term of the SLES for SAP Application subscription that has been included is three years. Renewals are available through IBM and IBM Business Partners.

IBM GPFS on x86 Single Server for Integrated Offerings

IBM GPFS on x86 Single Server for Integrated Offerings, V3 is now included preinstalled on selected IBM SAP HANA models. Licenses for IBM GPFS on x86 Single Server for Integrated Offerings, V3 cannot be ordered independent of the select hardware for which it is included. Licenses for offerings in this announcement include three years of Software Subscription and Support. Software Subscription and Support contracts, including Subscription and Support renewals, are managed through Passport Advantage® or Passport Advantage Express® .

After receipt of an order for a x3690 X5 Workload Optimized Solution for SAP HANA model, the Business Partner or end-user customer will be required to register and accept Passport Advantage or Passport Advantage Express terms and conditions associated with IBM GPFS on x86 Single Server for Integrated Offerings, V3.

If a new release of the offering in this announcement is made generally available in Passport Advantage after the announcement of the offering in System x® ordering systems, clients with valid Software and Subscription contracts may elect to take electronic delivery of the latest release. During the registration process, the end-user customer will be provided with a website for the electronic download.

Licenses including Subscription and Support for IBM GPFS on x86 Single Server for Integrated Offerings, V3 are entitled in increments of 10 Processor Value Units (PVUs).

The following x3690 X5 Workload Optimized Solution models include IBM GPFS on x86 Single Server for Integrated Offerings, V3 based on the PVU values for each model below:

7147HAX	128 GB XS	1400PVU
7147HBX	256 GB S	1400PVU

Processor Value Unit (PVU)

Processor Value Unit (PVU) is a unit of measure by which the program can be licensed.

IBM continues to define a processor, for the purposes of PVU-based licensing, to be each processor core on a chip. A dual-core processor chip, for example, has two processor cores. Full Capacity Licensing requires the Licensee to obtain PVU entitlements sufficient to cover all activated processor cores in the physical hardware environment made available to, or managed by, the program except for those servers from which the program has been permanently removed.

The GPFS on x86 Single Server for Integrated Offerings, V3 provides file system capabilities for single-node integrated offerings. Clients with highly available, multi-node clustered scale-out configurations must also purchase the GPFS scale-out product.

For those models with SAP HANA included, the SAP software license terms apply:

SAP License Terms

This IBM computer system is preinstalled with the SAP HANA appliance Platform Edition, which has been integrated or preinstalled as part of the IBM hardware system. You are not licensed to use this copy of the 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. Use 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 preloaded SAP software to you. Contact your responsible SAP representative to obtain the applicable license rights to use the SAP software.

¹ For information on the IBM Statement of Limited Warranty, visit

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/>

² IBM sends a technician after attempting to diagnose and resolve the problem remotely.

Feature exchange

None

Key prerequisites

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

Planned availability date

- October 24, 2012: IBM System x3690 X5: Models HAx, HBx
- October 31, 2012: ServeRAID-MR10i/is/M Replacement Battery

Description

Related options

- Intel Xeon Processor E7-2870 10C 2.40 GHz 30 MB Cache 130w (88Y5663)

This processor supports internal processing speeds of 2.40 GHz and external processing operations to memory at 1066 MHz. This new SMP-capable server model contains integrated, full-speed, 30 MB level 2 cache and 10-core Intel Xeon-based processors. This 2.40 GHz processor for x3690 X5 supports the MAX5.

Note: MAX5 is not currently supported for SAP HANA configurations.

Memory options

- 16 GB (1x16 GB, 4Rx4, 1.35V) PC3L-8500 CL7 ECC DDR3 1066 MHz LP RDIMM (49Y1400)

These high-speed, DDR3 registered DIMMs are synchronized to the processor. Once addressed, data can be transferred on both edges of the clock signal.

Memory Expansion Card (60Y0323) provides the option to upgrade your machine with up to 16 memory expansion DIMMs.

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

High-performance server subsystems

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

Models are powered with 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:

- 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 GBps 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 eXFlash SSD bays
Note: SAP does not currently support MAX5 in SAP HANA configurations.
- 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 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.
Note: The standard configuration for SAP HANA includes 16 GB DIMMs. MAX5 is not supported for SAP HANA configurations. SAP HANA applications systems come standard with eight or sixteen 16 GB DIMMs.
- Up to four worldwide, voltage-sensing 675-watt, hot-swap power supplies with auto-restart, standard.
- Up to 16 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).
Note: SAP HANA configurations include ten 200 GB SSDs.
- Eight terabytes of external data storage supporting optional storage units, ServeRAID SCSI controllers, and Fibre Channel controllers and storage units.

Workload Optimized Solution for SAP HANA

The IBM System x3690 X5 Workload Optimized Solution for SAP HANA models offers a preconfigured, optimized appliance. These models include two processors and 128 GB or 256 GB of memory. They are designed for use in small SAP HANA deployments.

These models also include the following software: SUSE Linux Enterprise Server for SAP Applications operating system with 3-year SUSE priority support and the IBM

GPFS on x86 Single Server for Integrated Offerings, V3 with 3-year SW S&S. SAP HANA software is included, but sold separately by SAP.

For those models with SAP HANA included, the following SAP software license terms apply:

SAP License Terms

This IBM computer system is preinstalled with the SAP HANA appliance Platform Edition, which has been integrated or preinstalled as part of the IBM hardware system. You are not licensed to use this copy of the 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. Use 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 applicable license rights to use the SAP software.

IBM Tivoli® Storage Manager for ERP

IBM Tivoli Storage Manager for ERP is a simple, scalable data protection solution for SAP HANA and SAP ERP. Tivoli Storage Manager (TSM) for ERP V6.4 includes a one-step command that automates SAP HANA backup and TSM data protection.

Configurations

XpandOnDemand scalability

- Modular building-block scalability delivers the flexibility to scale to meet your business needs, providing configuration options that allow for system optimization according to 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™ 2008 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

The list is updated periodically. The Workload Optimized Solution for SAP HANA only supports SUSE Linux Enterprise Server for SAP Applications.

- 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®³ 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 ServerGuide³ 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.

³ 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.

IBM System x3690 X5 model configuration

System SEO Number	Processor	L3 Cache	Memory	HDD Iface	HDD	Power Supply
IBM System x3690 X5: workload Optimized Solution for SAP HANA						
7147-HAU	2 x 2.40 GHz Xeon E7-2870	30 MB	8x16 GB			four
	4 x 16 GB on DIMM Riser Card	6.40 GTS	10-core	130W	10 x 200 GB	1.8" MLC SSD
7147-HBU	2 x 2.40 GHz Xeon E7-2870	30 MB	16x16 GB	SAS		four
	8 x 16 GB on DIMM Riser Card	6.40 GTS	10-core	130W	10 x 200 GB	1.8" MLC SSD

IBM System x3690 X5: Workload Optimized Solution for SAP HANA

The IBM Systems solution for SAP HANA is a hardware and software solution which integrates the SAP HANA with IBM eX5 servers delivered as an optimized hardware appliance. These workload-optimized appliance models help provide super-charged analytics performance for businesses that 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: Workload Optimized Solution for SAP HANA model offers an optimized appliance based on the 2-socket x3690 X5 server platform. These models include two processors and 128 GB or 256 GB of memory, and ten 200 GB solid-state disks. They are designed for use in small SAP HANA configurations and can support multi-node scale-out cluster configurations meeting the growing needs of clients. When used in a multi-node scale-out cluster, additional GPFS software licenses are required.

These models also include the following software: SUSE Linux Enterprise Server for SAP Applications operating system with 3-year SUSE priority support and the and IBM GPFS on x86 Single Server for Integrated Offerings, V3 with 3-year SW S&S.

Note: The SAP HANA software is included, but is sold separately by SAP.

For the model with SAP HANA included, the SAP software license terms apply:

SAP License Terms

This IBM computer system is preinstalled with the SAP HANA appliance Platform Edition, which has been integrated or preinstalled as part of the IBM hardware system. You are not licensed to use this copy of the 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. Use 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 applicable license rights to use the SAP software.

Product positioning

This new IBM System x3690 X5 Workload Optimized Solution for SAP HANA models enhances the server line by providing new expanded support for single-node and scale-out cluster configurations for SAP HANA. The IBM System x3690 X5: Workload Optimized Solution for SAP HANA models offers an optimized appliance starting with a 2-processor x3690 X5 128 GB model and a 2-processor 256 GB model. These models of the System x3690 X5 servers are powered with 10-core Intel Xeon processors, for powerful 2-socket, highly scalable systems. Workload optimized models for SAP HANA provide optimal solutions for SAP HANA applications.

These models also include the following software: SUSE Linux Enterprise Server for SAP Applications operating system with 3-year SUSE priority support and IBM GPFS on x86 Single Server for Integrated Offerings, V3 with 3-year SW S&S.

Note: The SAP HANA software is included, but is sold separately by SAP.

The x3690 X5 servers are the fifth generation of the Enterprise X-Architecture (eX5), delivering innovation with enhanced reliability and availability features to enable optimal performance for databases and enterprise applications. The IBM System x3690 X5 server is designed for extremely complex, compute-intensive applications requiring 2-socket-plus processing power and large memory support.

These high-density, Intel Xeon-based servers are designed to handle complex applications such as SAP HANA which requiring high-speed computing power, advanced high availability functions, and a minimum amount of rack space.

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

Reference information

For information about GPS announcements, refer to IPLA Software Announcement [212-412](#), dated October 03, 2012 , IBM General Parallel File System on x86 Single Server for Integrated Offerings.

For information about support for IBM Tivoli Storage Manager for ERP V6.4, refer to Software Announcement [212-382](#), dated October 03, 2012 .

Business Partner information

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=112-142>

Product number

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

Description	MT	Model	Feature
HANA Refresh Software Stack XS	7147	AC1	A3H7
HANA Refresh Software Stack S	7147	AC1	A3H8

The following is a feature already announced for the 3331 machine type:

Description	MT	Model	Feature
ServerRAID-MR10i/is/M Replacement Battery	3331	HC1	A3MQ

Single Entity Offerings (SEOs)

Description	Machine	Model	SEO Number
IBM System x3690 X5: Workload Optimized Solution for SAP HANA	7147	HAU	7147HAU
	7147	HBU	7147HBU

Note: SUSE Linux Enterprise Server for SAP Applications with 3-year SUSE priority support and IBM GPFS on x86 Single Server for Integrated Offerings V3 with 3-year SW S&S is included.

Single Entity Options (SEOs)

Option parts	SEO Number
Description	Number
ServerRAID-MR10i/is/M Replacement Battery	46C9084

Publications

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

- *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>

IBM Publications Center Portal

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

The Publications Center is a worldwide central repository for IBM product publications and marketing material with a catalog of 70,000 items. Extensive search facilities are provided, as well as payment options via credit card. A large number of publications are available online in various file formats, which can currently be downloaded free of charge.

Global Technology Services

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.

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

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

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

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

For details on education offerings related to specific products, visit

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

IBM Systems Services provides offerings for SAP HANA to install, maintain and manage SAP HANA appliances. The x3690 X5 Workload Optimized Solution must be installed by qualified services personnel or qualified IBM Business Partners.

http://www.ibm.com/systems/services/labservices/platforms/labservices_x.html

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

System x and BladeCenter support services

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 is 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 will 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>

Technical information

Specified operating environment

Physical specifications

IBM System x3690 X5: Workload Optimized Solution for SAP HANA models

	7147HAU
Processor	Xeon E7 2870 130w
	Ten core
Internal speed	2.40 GHz
Memory bus speed	1066 MHz
Number standard	2
Maximum	2
Interconnect speed	6.4 GT/s
L3 cache total	30 MB
Memory (PC3-10600 DDR3)	128 GB ECC
DIMMs	8 x 16 GB
DIMM sockets standard	16
DIMM sockets maximum	16
DIMM Riser Cards	1
DIMM Riser Cards Maximum	1
DIMMs on Riser Cards	4 x 16 GB
Capacity	512 GB ^d
Video	SVGA
Memory	16 MB
SAS controller	ServerRAID-M5015
Ports	8
Connector internal	2
Connector external	0
HDD Bays available	0
1.8" SSD Controller	2
SSD Backplane maximum	3
SSD Backplane installed	2
SSDs maximum	24
SSD Bays available	14
SSDs installed	10 - 200 GB 1.8" MLC SSD
PCIE sockets	5
Management processor IMM	Standard
RAID 5	Standard
ServerRAID M5015 6Gb	2 Standard
+ battery	
Dual Ethernet controller	Standard
10/100/1000 Mbps	
Intel Ethernet Quad Port	Standard
Server Adapter I340-T4	
10GbE SW SFP+ Tranceiver	4 Standard
Emulex 10Gb Dual-port	2 Standard
Ethernet Adapter	
Optical disk drive	Standard
SLES for SAP Applications 11	Standard
SP1 and SAP stack	
IBM GPFS on x86 Single	Standard
Server for Integrated Offerings	
Offerings V3 with 3-year SW S&S	
Director DIB	Standard
Power supply	675 w
Number standard	4
Maximum	4
Hot-swap	Yes
Redundant power	Yes
Auto restart	Yes

7147HBU

Processor	Xeon E7 2870 130w
	Ten core

Internal speed	2.40 GHz
Memory bus speed	1066 MHZ
Number standard	2
Maximum	2
Interconnect speed	6.4 GT/s
L3 cache total	30 MB
Memory (PC3-10600 DDR3)	256 GB ECC
DIMMs	16 x 16 GB
DIMM sockets standard	16
DIMM sockets maximum	16
DIMM Riser Cards	1
DIMM Riser Cards maximum	1
DIMMs on Riser Cards	8 x 16 GB
Capacity	512 GB ⁴
Video	SVGA
Memory	16 MB
SAS controller	ServerRAID-M5015
Ports	8
Connector internal	2
Connector external	0
HDD Bays available	0
1.8" SSD Controller	2
SSD Backplane maximum	3
SSD Backplane installed	2
SSDs maximum	24
SSD Bays available	14
SSDs installed	10 - 200 GB 1.8" MLC SSD
PCIE sockets	5
Management processor IMM	Standard
RAID 5	Standard
ServerRAID M5015 6Gb + battery	2 Standard
Dual Ethernet controller 10/100/1000 Mbps	Standard
Intel Ethernet Quad Port Server Adapter I340-T4	Standard
10GbE SW SFP+ Transceiver	4 Standard
Emulex 10GbE Dual-port Ethernet Adapter	2 Standard
Optical disk drive	Standard
SLES for SAP Applications 11 SP1 and SAP stack	Standard
Director DIB	Standard
Power supply	675 W
Number standard	4
Maximum	4
Hot-swap	Yes
Redundant power	Yes
Auto restart	Yes

⁴ 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. 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: 443.6 mm (17.46 in.)
- Depth: 698.6 mm (27.5 in.)
- Height: 85.4 mm (3.36 in.)
- Minimum configuration: 18.5 kg (40.8 lb) without rack mounting hardware or 22.9 kg (50.5 lb) with rack mounting hardware
- Maximum configuration: 31.07 kg (68.5 lb) without rack mounting hardware or 35.5 kg (78.3 lb) with rack mounting hardware

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 (1,100 watts)
 - Full configuration: 7,336 Btu/hr (2,150 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-019⁵

⁵ This server is certified by the respective UL and NOM agencies.

Operating environment

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

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)
- 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)
 - SUSE Linux ES for SAP Applications v2
- VMware - vSphere Hypervisor

SAP HANA Statement

The x3690 X5: Workload Optimized Solution for SAP HANA includes SUSE Linux ES for SAP Applications V2. No other operating system is presently supported with the

SAP HANA application. Contact the IBM SAP International Competence Center for the latest SAP HANA support information.

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 .

The IBM x3690 X5 Workload Optimized Solution for SAP HANA models include specific software validated by SAP. This software includes:

- SUSE Linux Enterprise Server for SAP Applications operating system license and media with 3-year SUSE priority support
- IBM General Parallel File System (GPFS) on x86 Single Server for Integrated Offerings with 3-year software subscription and support

For information on additional support for the SAP HANA application, contact the IBM SAP International Competence Center (ISICC) at:

- isicc@de.ibm.com

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.

The IBM x3690 X5 Workload Optimized Solutions for SAP HANA models include specific software validated by SAP. This software includes:

- SUSE Linux Enterprise Server for SAP Applications operating system license and media with 3-year SUSE priority support
- IBM General Parallel File System (GPFS) on x86 Single Server for Integrated Offerings with 3-year software subscription and support

Limitations

Memory

The x3690 X5 servers are shipped with 128 GB or 256 GB of 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: Workload Optimized Solution for SAP HANA has RAID 0, 1, 5 and 10 standard.

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

Customer responsibilities

x3690 X5 Server and Related Options

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

Once the system is installed, IBM Systems Services, IBM GTS, or a qualified IBM Business Partner perform must perform the installation of SUSE Linux Enterprise Server for SAP Applications, IBM GPFS on x86 Single Server for Integrated Offerings, and the SAP HANA software.

Configuration information

Bay configuration

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

The 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 System x3690 X5: Workload Optimized Solution for SAP HANA model supports RAID 0, 1, 5, and 10 standard.

Processor option

The following processor option is supported:

- Intel Xeon Processor E7-2870 10C 2.40 GHz 30 MB Cache 130w (88Y5663)

Memory support

The following memory options are supported:

- 16 GB (1x16GB, 4Rx4, 1.35V) PC3L-8500 CL7 ECC DDR3 1066 MHz LP RDIMM (49Y1400)
- 32 GB (1x32GB, 4Rx4, 1.35V) PC3L-8500 CL7 ECC DDR3 1066 MHz LP RDIMM (90Y3101) (when available)

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

This System x3690 X5: Workload Optimized Solution for SAP HANA model includes four standard 675-watt hot-swap power supplies 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.

Installation services are required to install the SAP HANA software stack including SUSE Linux Enterprise Server for SAP Applications, IBM General Parallel File System (GPFS), and SAP HANA software. IBM Lab Services, IBM GTS and qualified IBM Business Partners can provide this software installation service.

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.

Related options

Processor upgrades

- Intel Xeon processor
- Heat sink
- Installation publications/warranty

Supplies

None

Security, auditability, and control

Security and auditability features include:

- Power-on and remote-control password functions provide control of users with 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.

Terms and conditions

IBM Global Financing

Yes

IBM System x3690 X5

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

- System x3690 X5 - Three years
- Optional features - One year

Note: For configurations that support the ServRAID MR10i/is/M replacement RAID battery, the RAID battery will be warranted for 1 year effective on its "Date of Installation". All other product warranty terms for the machine remain unchanged. The ServRAID SAS controller battery and any other RAID batteries have been designated as consumables or supply items and are, therefore, not covered by this warranty:

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.

Warranty service

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

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

Customer Replaceable Unit (CRU) Service

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

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 (IWS)

IWS is available in selected countries or regions.

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

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

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

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

For more information on IWS, refer to Services Announcement [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 Licence Terms

This IBM computer system is preinstalled with the SAP HANA appliance Platform Edition, which has been integrated or preinstalled as part of the IBM hardware system. You are not licensed to use this copy of the 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. Use 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 preloaded SAP software to you. Contact your responsible SAP representative to obtain the applicable license rights to use the SAP software.

Maintenance services

ServicePac , ServiceSuite , ServiceElect, and ServiceElite

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

Warranty service upgrade

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

IBM will attempt to resolve your problem over the telephone or electronically by access to an IBM website. Certain machines contain remote support capabilities for direct problem reporting, remote problem determination, and resolution with IBM . You must follow the problem determination and resolution procedures that IBM specifies. Following problem determination, if IBM determines On-site Service is required, scheduling of service will depend upon the time of your call, machine technology and redundancy, and availability of parts.

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

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

SAP provides support for the SAP HANA application.

Maintenance service

If required, IBM provides repair or exchange service, depending on the type of maintenance service specified below for the machine. IBM will attempt to resolve your problem over the telephone or electronically by access to an IBM website. Certain machines contain remote support capabilities for direct problem reporting, remote problem determination, and resolution with IBM . You must follow the problem determination and resolution procedures that IBM specifies. Following problem determination, if IBM determines On-site Service is required, scheduling of service will depend upon the time of your call, machine technology and redundancy,

and availability of parts. Service levels are response-time objectives and are not guaranteed.

CRU Service

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

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

On-site Service

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

Maintenance service (ICA)

Maintenance services are available for ICA legacy contracts.

Alternative service (warranty service upgrades)

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

IBM will attempt to resolve your problem over the telephone or electronically by access to an IBM website. Certain machines contain remote support capabilities for direct problem reporting, remote problem determination, and resolution with IBM . You must follow the problem determination and resolution procedures that IBM specifies. Following problem determination, if IBM determines On-site Service is required, scheduling of service will depend upon the time of your call, machine technology and redundancy, and availability of parts.

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

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

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Prices

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

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To locate the web price, search on the feature number in the Search field.

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

Description	Model Number	Feature Number	Initial/MES/Both/Support
HANA Refresh Software Stack XS	AC1	A3H7	Initial
HANA Refresh Software Stack S	AC1	A3H8	Initial

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

Description	Model Number	Feature Number	Initial/MES/Both/Support
ServerRAID-MR10i/is/M Replacement Battery	HC1	A3MQ	MES

Description	SEO Number	Initial/ MES/ Both/ Support CSU
IBM System x3690 X5: Workload Optimized Solution for SAP HANA		
x3690 X5 - 2x2.40 GHz/30 MB, 128 GB E7 2870 ten-core	7147HAU	Both Yes
x3690 X5 - 2x2.40 GHz/30 MB, 256 GB E7 2870 ten-core	7147HBU	Both Yes

Option SEOs

Description	SEO Number	Initial/ MES/ Both/ Support CSU
ServerAID-MR10i/is/M Replacement Battery	46C9084	Both Yes

IBM System x3690 X5 - 7147

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

Reference the following IBM website for applicable US ServicePac information

http://www-935.ibm.com/services/us/its/html/servicepac_americas.html

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