



IBM Storwize V3500 delivers simple, efficient, and affordable storage to meet needs of small and medium businesses

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At a glance

IBM® Storwize® V3500 delivers affordable, entry storage in a compact 2U rack mount design:

- Dual-active intelligent array node canisters with 8 GB cache
- Four 1Gb iSCSI host ports standard with eight optional 8Gb Fibre Channel (FC) host ports
- Support for twelve (3.5-inch) or twenty-four (2.5-inch) dual-port, hot-swappable 6Gb SAS drives
- Rich set of standard functions, including virtualized internal storage, thin provisioning, data migration, and data replication
- Innovative, intuitive web-based graphical user interface (GUI) for easy system setup and management
- Three-year warranty with customer replaceable units (CRU) and on-site service, along with optional warranty service upgrades

Overview

IBM Storwize V3500 is the newest addition to the family of entry disk systems. Designed to complement IBM System Storage® DS3500, Storwize V3500 delivers easy-to-use, entry-level configurations designed to meet the modest budgets of small and medium businesses.

Storwize V3500 features dual node canisters and 8 GB of cache packaged in a compact, 2U 19-inch rack mount enclosure. Host attachment is provided through four 1Gb iSCSI ports, with eight 8Gb FC ports available as an optional feature.

Storwize V3500 is offered in two models:

- Storwize V3500 LFF Control Enclosure supports up to twelve 3.5-inch (large form factor) high-capacity, low-cost nearline disk drives, providing up to 36 TB physical capacity within a single enclosure.
- Storwize V3500 SFF Control Enclosure supports up to twenty-four 2.5-inch (small form factor) drives. Both high-performance and high-capacity nearline disk drives are supported, providing the flexibility to address performance and capacity needs within a single enclosure.

Both models support dual-port, hot-swappable 6Gb SAS disk drives, and drives of the same form factor can be intermixed within an enclosure.

As a member of the Storwize family, Storwize V3500 leverages proven IBM Storwize V7000 and IBM SAN Volume Controller functions, management, and interoperability, including:

- RAID levels 0, 1, 5, 6, and 10 for data protection
- Virtualization of internal storage to enable rapid, flexible provisioning and simple configuration changes
- Thin provisioning for improved storage utilization
- FlashCopy® to create instant copies of data for backup or application testing
- One-way data migration to easily move your data onto the Storwize V3500 system
- Innovative and easy-to-use management capabilities with an embedded GUI
- Extensive interoperability support with support for most major server platforms and operating systems

Key prerequisites

Storwize V3500 is supported for attachment to selected:

- IBM System x® and IBM Power Systems™ servers
- IBM Flex System™ , IBM BladeCenter® , and IBM Power® System blades
- Intel™ and AMD processor-based servers
- HP Itanium™ and PA-RISC servers
- Oracle and Sun SPARC servers

Refer to the IBM System Storage Interoperation Center (SSIC) for additional details

<http://www.ibm.com/systems/support/storage/config/ssic>

Planned availability date

September 14, 2012

Availability of this product is limited to the following countries and regions:

- People's Republic of China
- Hong Kong
- Macao
- Taiwan

Description

Today's smarter planet is built with systems that are increasingly instrumented, interconnected, and intelligent, bringing challenges to businesses that want to stay responsive to dynamic environments. Data generated in huge volumes is becoming increasingly valuable, but storing this data can be costly and difficult to manage. IT organizations have limited resources and cannot afford to make investment mistakes. The smaller the company, the greater the impact of a mistake, potentially jeopardizing operational viability and endangering business sustainability. The new IBM Storwize V3500 system provides an affordable, simple, and efficient solution that allows businesses to overcome their storage challenges.

Storwize V3500 is the newest addition to the family of entry disk systems. Designed to complement IBM System Storage DS3500, Storwize V3500 delivers easy-to-use, entry-level configurations designed to meet the modest budgets of small and medium businesses.

Storwize V3500 is available in two models:

- **Storwize V3500 LFF Control Enclosure**

- Two node canisters (controllers)
- Four 1Gb iSCSI host interface ports, with eight 8Gb FC ports available as an optional feature.
- 8 GB cache (4 GB per node canister)
- Twelve 3.5-inch 6Gb SAS drive slots
- Two ac power supplies

- **Storwize V3500 SFF Control Enclosure**

- Two node canisters (controllers)
- Four 1Gb iSCSI host interface ports, with eight 8Gb FC ports available as an optional feature.
- 8 GB cache (4 GB per node canister)
- Twenty-four 2.5-inch 6Gb SAS drive slots
- Two ac power supplies

Targeted towards customers seeking an entry disk system that allows them to consolidate and share data, Storwize V3500 is intended for customers for whom cost is a primary decision factor and who have limited requirements for storage function and growth capability.

iSCSI and FC connectivity with intermix flexibility

With iSCSI host interface support, along with optional FC support, Storwize V3500 is designed to accommodate the most common storage network technologies:

- iSCSI allows you to capitalize on your existing IT skills and infrastructure by delivering block-based storage across the IP network. iSCSI provides an alternative to the investment in a storage-only, FC infrastructure.
- FC, a mature and proven technology, is the host interface of choice for high performance environments. Storwize V3500 with FC allows you to exploit the benefits offered by a SAN environment.

Tiered storage options with high performance and nearline SAS disk drives

Storwize V3500 is designed to support the complete range of data storage requirements, from highly utilized applications to high-capacity, low usage applications. The following 6Gb SAS disk drives are supported:

- High-performance, enterprise class drives
 - 2.5-inch: 146 GB and 300 GB 15,000 rpm
 - 2.5-inch: 300 GB, 600 GB, and 900 GB 10,000 rpm
- High-capacity, archival-class nearline drives
 - 3.5-inch: 2 TB and 3 TB 7,200 rpm
 - 2.5-inch: 500 GB and 1 TB GB 7,200 rpm

All drives are dual-port and hot-swappable. Drives of the same form factor can be intermixed within the appropriate enclosure.

With high-capacity, low-cost nearline drives, Storwize V3500 LFF Control Enclosure provides up to 36 TB of physical capacity.

Storwize V3500 SFF Control Enclosure, with the ability to intermix both high-performance and high-capacity nearline disk drives, provides the flexibility to address both performance and capacity needs within a single enclosure

Designed for high availability with data protection

Storwize V3500 is designed to offer high system and data availability with:

- Dual-active, intelligent node canisters with mirrored cache
- Dual port disk drives with automatic disk drive failure detection and RAID rebuild with global hot spares
- Redundant hardware, including power supplies and fans
- Hot-swappable and customer replaceable components
- Automated path failover support for the data path between the server and the disk drives

Data protection features include:

- RAID levels 0, 1, 5, 6, and 10 providing the flexibility to choose the level of protection required
- FlashCopy to create logical or physical copies of data for file restoration and backup

Rich set of functional capabilities standard with every system

As a member of the Storwize family, Storwize V3500 leverages proven Storwize V7000 and SAN Volume Controller functions and management tools. The following functions are included with every Storwize V3500:

Virtualization of internal storage to enable rapid, flexible provisioning and simple configuration changes.

Thin provisioning optimizes efficiency by allocating disk storage space in a flexible manner among multiple users, based on the minimum space required by each user at any given time. With thin provisioning, applications consume only the space they are actually using, not the total space that has been allocated to them.

Data migration is designed to easily and non-disruptively move volumes from another storage system onto the Storwize V3500 system using FC connectivity.

FlashCopy allows you to create copies of data for backup, parallel processing, testing, and development, and have the copies available almost immediately. Storwize V3500 supports up to 64 targets per system with the following FlashCopy functions:

- Full and incremental copy
- Multitarget FlashCopy
- Cascaded FlashCopy
- Reverse FlashCopy
- FlashCopy nocopy with thin provisioning (helps to reduce disk space requirements when making copies)
- Consistency groups

Innovative and easy-to-use management capabilities

Each Storwize V3500 system includes a simple and easy-to-use GUI designed to allow storage to be quickly deployed and efficiently managed. The GUI runs on the Storwize V3500 system, so there is no need for a separate console. All you need to do is point your web browser to the system. It is based on the Storwize V7000 management GUI and has a similar look and feel.

Accessibility by people with disabilities

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

Product number

Description	Machine type	Model	Feature number	SEO/part number
V3500 LFF Dual Control (Dual node canisters, four 1Gb iSCSI ports, 8 GB cache, 12 drive slots)	2071	02A	ACAE	2071CU2
V3500 SFF Dual Control (Dual node canisters, four 1Gb iSCSI ports, 8 GB cache, 24 drive slots)	2071	10A	ACBA	2071CU3

Description	Option SEO/part number
Host Interface Cards: 8Gb FC 4 Port Card	00Y2491
Hardware options:	
8Gb FC SFP SW Transceivers Rack Shipment Bracket	00Y2523 90Y8780 *
3.5-inch (LFF) drives:	
2TB 7.2K 3.5" NL HDD	00Y2471
3TB 7.2K 3.5" NL HDD	00Y2473
2.5-inch (SFF) drives:	
146GB 15K 2.5" HDD	00Y2497
300GB 15K 2.5" HDD	00Y2499
300GB 10K 2.5" HDD	00Y2501
600GB 10K 2.5" HDD	00Y2503
900GB 10K 2.5" HDD	00Y2505
500GB 7.2K 2.5" NL HDD	00Y2509
1TB 7.2K 2.5" NL HDD	00Y2511
Host interface cables:	
1m Fiber Cable (LC-LC)	39M5696 *
5m Fiber Cable (LC-LC)	39M5697 *
25m Fiber Cable (LC-LC)	39M5698 *
10m OM3 Fiber Cable (LC)	68Y7501 *
Line cords:	
Line Cord (China)	39Y7928 *
Line Cord (UK)	39Y7923 *
Line Cord (Taiwan)	23R7158 *

* This SEO / part number was previously announced on other machine type or model and is shown here only for completeness of the product structure.

Additional information

Storwize V3500 base configurations and options

Base system models consist of the following items:

- Storwize V3500 LFF Dual Control Enclosure (Model 02A, SEO / part number 2071CU2):

- 2U, 19-inch rack mount enclosure
- Two node canisters with 8 GB cache (4 GB per node canister)
- Four Ethernet ports for use as 1Gb iSCSI host interface ports and for system management (two per node canister)
- Twelve slots for 3.5-inch SAS disk drives
- Two ac power supplies and cooling units
- Two 2.8 meter rack power distribution (PDU) line cords (C13 to C14)
- Storwize V3500 SFF Dual Control Enclosure (Model 10A, SEO / part number 2071CU3):
 - 2U, 19-inch rack mount enclosure
 - Two node canisters with 8 GB cache (4 GB per node canister)
 - Four Ethernet ports for use as 1Gb iSCSI host interface ports and for system management (two per node canister)
 - Twenty-four slots for 2.5-inch SAS disk drives
 - Two ac power supplies and cooling units
 - Two 2.8 meter rack power distribution (PDU) line cords (C13 to C14)

All models include the following functions at no additional charge:

- RAID levels 0, 1, 5, 6, and 10
- Virtualization of internal storage
- Thin provisioning
- FlashCopy (up to 64 targets per system)
- One-way data migration
- Interoperability with all environments as listed within IBM System Storage Interoperation Center (SSIC) for Storwize V3500.
- Management GUI
- Command line interface (CLI)

The following items are optionally available for Storwize V3500. Refer to the [Product number](#) section for feature numbers and part numbers:

- 8Gb FC four port host interface card (with two SFP transceivers)
- 3.5-inch 6Gb SAS drives:
 - 2 TB and 3 TB 7,200 rpm disk drives
- 2.5-inch 6Gb SAS drives:
 - 146 GB and 300 GB 15,000 rpm disk drives
 - 300 GB, 600 GB, and 900 GB 10,000 rpm disk drives
 - 500 GB and 1 TB 7,200 rpm disk drives
- FC SFP transceivers (pair)
- Rack shipment bracket

Publications

The following Storwize V3500 publications are available:

- IBM Storwize V3500 Installation Poster
- IBM Storwize V3500 Quick Installation Guide
- IBM Storwize V3500 Read First flyer
- IBM Systems Safety Notices

The most up-to-date product documentation, including the Storwize V3500 information center, is available and downloadable at

<http://www.ibm.com/systems/support/storage/>

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.

When available, translated product documentation is downloadable from the following IBM support site:

<http://www.ibm.com/systems/support/storage/>

Services

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>

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

Technical information

EMC conformance

- Taiwan BSMI CNS13438 (Taiwan EMC Standard)
- ACA C-Tick (Australia and New Zealand)

Specified operating environment

Physical specifications

Storwize V3500 LFF Control Enclosure

- Height: 8.7 cm (3.4 in)
- Width: 48.3 cm (19.0 in)

- Depth: 55.6 cm (21.9 in)
- Approximate weight:
 - Empty: 18.0 kg (39.6 lb)
 - Fully configured: 28.3 kg (62.2 lb)

Storwize V3500 SFF Control Enclosure

- Height: 8.7 cm (3.4 in)
- Width: 48.3 cm (19.0 in)
- Depth: 55.6 cm (21.9 in)
- Approximate weight:
 - Empty: 19.0 kg (41.8 lb)
 - Fully configured: 27.3 kg (60.0 lb)

To assure installability and serviceability in non-IBM industry-standard racks, review Storwize V3500 publications for any product-specific installation requirements.

Operating environment

Air temperature:

- Operating: 10° to 35° C (50° to 95° F) at 30.5 below to 3,000 m above sea level (100 below to 9,840 ft above)
- Non-operating: -10° to 50° C (14° to 125° F)

Relative humidity:

- Operating: 20% to 80%
- Non-operating: 10% to 90%

Electrical power:

- Voltage range: 100-240 V ac
- Frequency: 50-60 Hz
- Power :
 - LFF Control Enclosure: 358 watts
 - SFF Control Enclosure: 405 watts

Heat dissipation (BTU per hour):

- LFF Control Enclosure: 1,222
- SFF Control Enclosure: 1,383

Acoustical noise emission:

- LFF Control Enclosure:
 - 6.0 bels (idling)
 - 6.0 bels (operating)
- SFF Control Enclosure:
 - 6.1 bels (idling)
 - 6.1 bels (operating)

Hardware requirements

Storwize V3500 requires licensed machine code level 6.4.1, or later.

Refer to Storwize V3500 product documentation and the IBM Systems Support site for additional information on licensed machine code levels and other requirements

<http://www.ibm.com/systems/support/storage/>

Compatibility

Refer to the IBM System Storage Interoperation Center (SSIC) for a comprehensive list of supported environments, devices, and configurations

<http://www.ibm.com/systems/support/storage/config/ssic>

Limitations

None

Planning information

Customer responsibilities

Physical configuration and installation planning, along with machine installation and configuration, are customer responsibilities.

You are responsible for downloading or obtaining from IBM , and installing designated Machine Code (microcode, basic input/output system code (called BIOS), utility programs, device drivers, and diagnostics delivered with an IBM machine) and other software updates in a timely manner from an IBM Internet website or from other electronic media, and following the instructions that IBM provides. You may request IBM to install Machine Code changes; however, you may be charged for that service.

Cable orders

As a convenience, a limited selection of cables can be ordered with the Storwize V3500 machine. Refer to the [Product number](#) section for features and part numbers.

Cables, along with installation services, are also available from IBM Network Integration and Deployment Services, an IBM Global Services offering.

Host interface cables: Host interface cables are required to connect Storwize V3500 host ports to server or fabric ports.

iSCSI: Storwize V3500 requires a Category 5 or Category 5E Ethernet cable terminated with an 8P8C modular connector (RJ45 compatible connector). This cable is not available for ordering with the machine and must be customer-supplied.

Fibre Channel: Storwize V3500 requires a 50.0/125 micrometer fiber optic cable terminated with an LC Duplex connector. The following fiber optic cables can be ordered with the machine:

- 1 m Fiber cable (LC-LC)
- 5 m Fiber cable (LC-LC)
- 25 m Fiber cable (LC-LC)
- 10 m OM3 Fibre cable (LC-LC)

Management cables: Storwize V3500 management requires a Category 5 or Category 5E Ethernet cable terminated with an 8P8C modular connector (RJ45 compatible connector). One cable is required per controller (node canister). This cable is not available for ordering with the machine and must be supplied by the customer.

Direct customer support

For technical support or assistance, contact your IBM representative for additional information or visit

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

Security, auditability, and control

This product uses the security and auditability features of host hardware.

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

IBM Electronic Services

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

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

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

To learn how Electronic Services can work for you, visit

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

Terms and conditions

Volume orders: Contact your IBM representative.

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

Warranty period

- System (including the battery): Three years
- Optional features: Three years, unless specified otherwise

An IBM part or feature installed during the initial installation of an IBM machine is subject to a full warranty effective on the date of installation of the machine. An IBM part or feature which replaces a previously installed part or feature assumes the

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

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

- None

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

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

Customer Replaceable Unit (CRU) Service

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

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

The following parts or features have been designated as Tier 1 CRUs:

- Battery
- Bezel
- Cache
- Canister
- Drive
- Filler panel
- I/O adapter
- I/O cable
- I/O transceiver
- Power cord
- Power supply unit

- Rack kit

On-site Service

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

International Warranty Service

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-304.ibm.com/systems/support/supportsite.wss/warrantyform?brandind=5000008>

For more information on IWS, refer to Services Announcement [AA01-3100](#), dated September 28, 2001 .

Licensing

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

Maintenance services

ServicePac , ServiceSuite , ServiceElect, and ServiceElite

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

Warranty service upgrade

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

IBM will attempt to resolve your problem over the telephone or electronically by access to an IBM Web site. 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 Web site. 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.

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

Three

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 at

http://www.ibm.com/servers/eserver/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 Storage technical support website

<http://www.ibm.com/systems/support/storage/>

You may also obtain updated code by contacting your IBM representative.

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.

Educational allowance

None

Pricing

For all local charges, contact your IBM representative.

IBM Global Financing

IBM Global Financing offers competitive financing to credit-qualified customers to assist them in acquiring IT solutions. Offerings include financing for IT acquisition, including hardware, software, and services, from both IBM and other manufacturers or vendors. Offerings (for all customer segments: small, medium, and large enterprise), rates, terms, and availability can vary by country. Contact your local IBM Global Financing organization or visit

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

IBM Global Financing offerings are provided through IBM Credit LLC in the United States, and other IBM subsidiaries and divisions worldwide to qualified commercial and government customers. Rates are based on a customer's credit rating, financing terms, offering type, equipment type, and options, and may vary by country. Other restrictions may apply. Rates and offerings are subject to change, extension, or withdrawal without notice.

Financing solutions from IBM Global Financing can help you stretch your budget and affordably acquire the new product. But beyond the initial acquisition, our end-to-end approach to IT management can also help keep your technologies current, reduce costs, minimize risk, and preserve your ability to make flexible equipment decisions throughout the entire technology life cycle.

AP distribution

Country/region	Announce
AP IOT	
ASEAN*	No
India/South Asia**	No
Australia	No
People's Republic of China	Yes
Hong Kong S.A.R of the PRC	Yes
Macao S.A.R of the PRC	Yes
Taiwan	Yes
Korea	No
New Zealand	No
Japan IOT	
Japan	No

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