

IBM System Storage TS7620 ProtecTIER Appliance provides greater capacity

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At a glance



IBM® System Storage® TS7620 ProtecTIER® Deduplication Appliance Express® is designed to improve backup and recovery operations without requiring major changes to the existing infrastructure.

The TS7620 Appliance Express requires IBM System Storage ProtecTIER Entry Edition software, and may be configured as a virtual tape library, an OpenStorage system interfacing with Symantec NetBackup, or as the target for a Common Internet File System (CIFS) based backup application.

For ordering, contact your IBM representative, an IBM Business Partner, or IBM Americas Call Centers at 800-IBM-CALL (Reference: YE001).

Overview

IBM System Storage TS7620 ProtecTIER Deduplication Appliance Express, comprised of the IBM System Storage TS7620 Appliance Express and IBM System Storage ProtecTIER Entry Edition V3.2, is designed to improve backup and recovery operations without requiring major changes to the existing infrastructure. This is a great option for mid-size and enterprise customers with smaller remote offices that need to address rapid data growth.

Other enhancements included in ProtecTIER V3.2 are designed to provide Simple Network Management Protocol (SNMP) alerting improvements, and enhancements to the security interface for the ProtecTIER Manager GUI. When combined with the TS7620 ProtecTIER Express Model SM2 appliance, ProtecTIER Entry Edition V3.2 can help deliver up to twice the storage capacity of the TS7610 Model SM1.

ProtectTIER V3.2 continues support for the Symantec NetBackup OpenStorage (OST) API announced with ProtectTIER V2.5, and for the Virtual Tape Library (VTL) interface that has been the foundation of ProtectTIER offerings. Supported replication grid configurations for ProtectTIER OST and ProtectTIER VTL systems are unchanged with ProtectTIER V3.2.

IBM System Storage TS7620 ProtectTIER Deduplication Appliance Express includes:

- IBM ProtectTIER deduplication technology
- Integrated processing power and disk storage:
 - 3U Enclosure with mounting hardware and shelf
 - Fits in standard 19-inch rack
 - Twelve 2 TB Nearline SAS disks
 - One Intel Xeon™ E5645 Westmere 6 core 2.4 GHz processor
 - 48 GB RAM
 - Dual port Ethernet card
 - One power cord FC from the SM2 to the frame power supply
 - One external USB SATA DVD-ROM drive and cable (this will sit on the mounting shelf)
 - 8Gb FC Dual Port HBA - Host (added as a feature code)
- Virtual tape library functionality emulating:
 - Up to 4 virtual TS3500 tape libraries
 - Up to 64 virtual LTO3 tape drives
 - Up to 8,192 virtual tape cartridges
- Optional ProtectTIER Internet Protocol (IP) replication to electronically replicate to an off-site location for improved disaster recovery capabilities
- Reduction of data volume through deduplication of up to 25:1
- Function that is non-disruption, easy to deploy, and easy to scale

Key prerequisites

IBM System Storage ProtectTIER Entry Edition software is loaded on the IBM System Storage TS7620 ProtectTIER Deduplication Appliance Express to create a TS7620 ProtectTIER Deduplication Appliance solution.

A separate order for System Storage ProtectTIER Entry Edition software is required.

Planned availability date

June 8, 2012

Description

IBM System Storage ProtectTIER Entry Edition V3.2 software combined with TS7620 ProtectTIER Deduplication Appliance Express is a data deduplication and replication solution that compresses and stores backup data on a disk storage array. This combined software and hardware solution is referred to as TS7620 ProtectTIER Deduplication Appliance Express . The replication function allows ProtectTIER systems to be distributed across sites. To facilitate backup applications that are designed for use with tape storage, TS7620 Express emulates a TS3500 tape library unit containing LTO3 tape drives. This emulation capability is designed to help customers achieve the following operational and throughput efficiencies:

- Backup window reduction

- Restoration time reduction
- Data sharing and resource optimization
- Operational efficiency
- Improved sharing of virtual tape libraries across applications and servers

Data management and advanced features

ProtectTIER Entry Edition is designed with the following data management and advanced features.

HyperFactor®

ProtectTIER contains HyperFactor data factoring, or data deduplication, technology. This technology is designed to detect recurring data in multiple backups. The common data is merged into a single instance store, saving disk space needed to store multiple backups without sacrificing performance. HyperFactor is a breakthrough in several ways:

- The algorithm used to find the common data between backups does not affect the backup performance of the virtual tape engine.
- HyperFactor avoids the statistical possibility of data corruption due to hash collisions inherent in products based on hashing algorithms.
- Merged data is stored in a format that preserves restore performance.

HyperFactor saves space by taking advantage of the fact that only a very small percentage of data actually changes from backup to backup. Incremental backups include all files whose modification dates have changed since the last full or incremental backup; and full backups back up all data, changed or not. The amount of space saved is a function of many factors, but mostly of the backup policies and retention periods, and the variance of the data between them. The more full backups retained on ProtectTIER, and the more intervening incremental backups, the more space that will be saved overall.

Replication

Replication provides system backup across sites. The replication function allows ProtectTIER deployment to be distributed across sites when connected through the WAN for replication.

Many-to-one and many-to-many replication

ProtectTIER many-to-one replication supports both single node and clustered ProtectTIER configurations. Many-to-many, bidirectional replication between two to four Virtual Tape Library (VTL).

It provides the following functionality and support:

- **Setting replication performance limits:** This feature allows system-wide physical or nominal limits to be set in order to indicate to the replication engine the maximal replication transfer rate allowed in the network for a specific repository. The performance limits refer to overall resource consumption of the system, and is reflected on to the network transfer rate. Performance limits are based on the Replication Rate Control (RRC) mechanism. Current RRC is used when a time frame is not provided and the system replicates continuously. The enhancement is in the rate calculation. The rate calculation uses performance limits to understand the maximum rate possible in both levels of system usage (idle, busy) and then it normalizes the rate accordingly.
- **Reserving space for hub repository:** This feature provides the ability to exclusively assign a fragment of a hub repository's capacity for local backups. In large deployments with many spokes replicating, capacity management might cause a situation where replication is trying to occupy all the space in hub repository. Since the assumption is that backup has precedence over replication, this feature has been added so capacity is reserved only for local backup, and replication cannot be written to this storage fragment. Error notifications appear

in the event the capacity reserved for the local backup or the capacity reserved for replication on the repository hub is running out of space.

- **Enhanced monitoring of repository space consumption:** This enhancement is displayed in the GUI as a nominal data pie, where a user can get at a glance the proportion of the chart nominal data out of the repository and the internal capacity distribution of replication data versus local backup data and free space.
- **Additional Replication information in Repository cartridge view:** This feature adds cartridge replication properties, such as: last update time and destination, to a new replication view that adds replication properties for cartridges which are also displayed in the regular cartridge view. This feature allows the user to see replication properties for a batch of cartridges, each in a single row. Sorting capability for the new replication fields was added, to stay on par with the sorting capabilities for the rest of the cartridge fields.
- **Disaster Recovery site replaces production site operation:** This feature supports a scenario where a disaster recovery site (the hub) is chosen to replace one of its spokes permanently. The feature allows the user to take over the responsibility for the cartridges of the old spoke after running the replace repository wizard from the Replication Manager.
- **Enhanced Timeframe support:** This feature enhances the repository timeframe attribute to be a weekly scheduler on a repository level. The timeframe is a set of 30 minute time intervals across a full week. The user chooses at which time interval the replication should run during a single week. The new timeframe also uses the performance limits feature for normalizing the replication rate when in timeframe.
- **Command Line Interface (CLI) for Disaster Recovery:** This feature adds a CLI to enable a complex queries to be run on cartridges and provides cartridge batch move operation during a manual DR procedure. The feature allows the user to query ProtecTIER in order to obtain a list of cartridges that falls under specific criteria. The query criteria are cartridge replication properties and cartridge location properties.

Replication grid

The replication grid is defined as an entity that supports replication between its members. The replication grid members are ProtecTIER repositories and are configured using a Replication Manager. The Replication Manager is a software component that may be installed on a dedicated host or on a ProtecTIER machine. The Replication Manager should be able to see all the members of all the whole network the Replication Manager handles on both replication subnets.

A replication grid defines a set of ProtecTIER repositories and actions between them. The Replication Manager is server software that is separately deployed on a WAN or ProtecTIER machine. The Replication Manager can manage the configuration of multiple replication grids in an organization. An agent on each ProtecTIER system (specifically on every node) interacts with the server and maintains a table of its grid members.

Important: Be sure to coordinate between the replication sites to ensure that the servers at all locations are fully configured before using the ProtecTIER Replication Manager GUI to create the replication grid. Consult with Solution Assurance and your IBM representative for assistance and information.

Many-to-one replication defines the following two roles in a replication grid:

- Spoke
 - A backup target that can only replicate to a single hub
 - May not be a target for replication
- Hub
 - A replication and backup target
 - May receive replication from up to 12 spokes
 - May not replicate to another system except during failback

A group of 1 hub and 1 to 12 spokes is referred to as a topology group. A single grid may include up to eight hubs and therefore up to eight topology groups. Spokes do not need physical connections between them. All repositories need a network connection to the replication manager server.

Supported replication configurations

TS7620 ProtecTIER Deduplication Express systems may participate in topology groups with TS7650 Appliances, TS7650G Gateways, and other TS7620 Express systems.

ProtecTIER Virtual Tape

ProtecTIER Virtual Tape service emulates traditional tape libraries. By emulating tape libraries, ProtecTIER Virtual Tape enables a transition to disk backup without having to replace the entire backup environment. The existing backup application can access virtual robots to move virtual cartridges between virtual slots and drives. The backup application perceives that the data is being stored on cartridges while ProtecTIER actually stores data on a deduplicated disk repository on the storage fabric.

System Storage ProtecTIER Entry Edition emulates up to:

- 4 virtual TS3500 tape libraries
- 64 virtual LTO3 tape drives
- 8,192 virtual tape cartridges
- 64,000 virtual tape slots
- 1,022 virtual Import/Export cells

ProtecTIER Manager

The ProtecTIER Manager application can be installed on one or more workstations, enabling monitoring of the status of nodes and clusters in the ProtecTIER system, along with the accompanying repositories and services.

Accessibility by people with disabilities

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

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

Product positioning

TS7620 ProtecTIER Deduplication Appliance Express fits neatly into IBM's storage and tape product portfolio by expanding data protection offerings to the lower end of mid-size customers.

By enabling storage of up to 25 times more data on a given amount of physical disk capacity, ProtecTIER greatly changes the economics of data protection.

TS7620 ProtecTIER Deduplication Appliance is designed with capacity, price, performance, function, and reliability, availability and serviceability (RAS) characteristics to appeal to the mid-size customer, and to the enterprise customer with data backup and protection requirements in remote offices.

TS7620 ProtecTIER Deduplication Appliance integrates with and is complementary to many other IBM hardware and software offerings:

- IBM Tivoli® Storage Manager is fully compatible with TS7620 ProtecTIER Deduplication Appliance and can take advantage of a TS7620 ProtecTIER

Deduplication Appliance as a target to increase backup performance and reliability.

- IBM tape systems, such as the TS3500 Tape Library, can be used in conjunction with the TS7620 Appliance to provide a comprehensive end-to-end backup and recovery environment that takes advantage of the strengths of both disk and tape.

Reference information

For information on IBM System Storage ProtecTIER Entry Edition V3.2, refer to Software Announcement [212-195](#), dated June 04, 2012 .

Product number

Description	Machine	Model	Feature
TS7620 Appliance	3959	SM2	
Dual Port Ethernet Card			3448(1)
8Gb FC Dual Port HBA - Host			3458(1)
2TB HDD - 12 PACK			3709
VTL			9022(1)
OST			9023(1)
FSI			9024
ProtecTIER V3.2 Entry Ed preload			9315
SMB SW capacity 6 TB			9316
SMB SW capacity 12 TB			9317
C13 to 5-15P power cord			9950(1)
C13 to C14 power cord			9953(1)

(1) This feature has been previously announced in another product

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=112-101>

Publications

The following publications are shipped with the product:

Title	Order number	Part number
IBM System Storage TS7620 ProtecTIER Deduplication Appliance Express Introduction and Planning Guide, v.3.2	GA32-0913-02	N/A
IBM System Storage TS7620 ProtecTIER Deduplication Appliance Express Installation and Setup Guide, v.3.2	GA32-0914-02	95P8931
IBM System Storage TS7610 and TS7620 ProtecTIER Deduplication Appliance Express Service Guide, v.3.2	GA32-0915-03	95P8933
IBM System Storage TS7610 and TS7620 ProtecTIER Deduplication Appliance Express - ProtecTIER User's and Maintenance Guide, v.3.2	GA32-0916-03	N/A

IBM System Storage TS7610 and TS7620 ProtectTIER Deduplication Appliance Express Publications CD-ROM, v.3.2	LCD7-4787-03	95P8934
IBM System Storage TS7610 and TS7620 ProtectTIER Deduplication Appliance Express Customer Information Center CD-ROM	N/A	95P8935
IBM System Storage TS7600 ProtectTIER Deduplication Appliance Express Service Information Center CD-ROM	N/A	95P8936

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.

Publications are available on the IBM Publications Center website and are included on the *IBM System Storage TS7610 and TS7620 ProtectTIER Deduplication Appliance Express Publications CD-ROM, LCD7-4787-03 (part number 95P8934)*.

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

Specified operating environment

Physical specifications

3U total rack space

- Length: 707 mm (27.8 in)

- Width: 449 mm (17.67 in)
- Height: 132 mm (5.25 in)
- Weight: 36 kg (79.2 lb)

To assure installability and serviceability in non-IBM industry-standard racks, review the installation planning information for any product-specific installation requirements.

Operating environment

Operating temperature / Humidity / Altitude:

- 5° to 35° C (50° to 95° F) at 0 to 914 m (0 ft to 3,000 ft)
- 5° to 32° C (50° to 90° F) at 914 to 2,133 m (3,000 ft to 7,000 ft)
- Relative humidity: 20% to 80%
- Maximum altitude: 2,133 m (7,000 ft)

Electrical:

- 200 to 240 (nominal) V ac; 50 Hz or 60 Hz; System 8 A
- Input kilovolt-amperes (kVA) (approximately):
 - Configuration - Off: 0.10 kVA
 - Configuration - On and idle: 0.6 kVA
 - Configuration - On and typical: 1.0 kVA

Btu output:

- 1700 Watts

Noise level horizontal position: 7.2 bels

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, 1st Edition
- CAN/CSA C22.2 No. 60950-1-03
- GOST
- NOM-019 *

* This storage system is certified by the respective UL and NOM agencies.

Hardware requirements

General platform prerequisites

A TS7620 Appliance solution with IBM ProtecTIER Deduplication software requires IBM 3959 Model SM2 hardware with the following features:

VTL configuration:

- One 8Gb Fibre Channel dual port HBA - Host (feature #3458)
- One 9022 virtual tape library (feature #9022)
- One SW Capacity (feature #9316 or #9317)
- One Power cord (feature #9950 or #9953)

OpenStorage configuration:

- One dual-port Ethernet card (feature #3448)

- One 9023 open storage (feature #9023)
- One SW Capacity (feature #9316 or #9317)
- One power cord (feature #9950 or #9953)

FSI configuration:

- One dual-port Ethernet card (feature #3448)
- One 9024 File System Interface (feature #9024)
- One SW Capacity (feature #9316 or #9317)
- One power cord (feature #9950 or #9953)

Customer provided monitor and keyboard are required for system installation and maintenance.

ProtectTIER Manager

ProtectTIER Manager is required for service or maintenance of ProtectTIER systems, and must be installed on a customer provided workstation.

The customer provided workstation must be capable of operating one of the following operating systems:

- Windows™ 2003, Windows XP, or Windows 7
- Red Hat Enterprise 4 or 5

The workstation must also have:

- At least 1.2 GB of available disk space
- At least 256 MB of RAM

The workstation must have access to the ProtectTIER service nodes at IP address (port 3501 is open on the firewall). ProtectTIER Manager can support more than one ProtectTIER server. If the ProtectTIER Manager workstation is connected to more than one ProtectTIER server, they can be connected to a workstation via a switch box or via a terminal server. The workstation and switch box must be provided by the customer.

Contact your IBM representative for workstation configuration alternatives.

Supported configurations

TS7620 appliance offers two software configurations with usable repository sizes of approximately 6 TB and approximately 12 TB.

Tested platforms are listed in the Installation Guide under **Release Notes** .

Software requirements

Order the following ProtectTIER Entry Edition software license PID and maintenance PID when the TS7620 Appliance Express hardware is ordered.

- 5639-PTC, ProtectTIER Entry Edition V3.2 software
- One of the following software maintenance PIDs:
 - 5639-TAB 1 year renewal
 - 5639-TAC 1 year after license
 - 5639-TAD 3 year registration
 - 5639-TAE 3 year renewal
 - 5639-TAF 3 year after license
 - 5639-TAG 2 year registration
 - 5639-TAH 4 year registration

- 5639-TAI 5 year registration

Refer to IBM System Storage ProtecTIER Entry Edition V3.2 Software Announcement [212-195](#), dated June 04, 2012 .

Operating system prerequisites

The appropriate Linux™ operating system is included with ProtecTIER Appliance Edition V3.2 software and is loaded on the TS7650 Appliance with your initial order.

Connectivity prerequisites

The supported Fibre Channel switches are listed in the System Storage Operation Center (SSIC) located at

<http://www-03.ibm.com/systems/support/storage/config/ssic/>

If this IBM System Storage TS7620 ProtecTIER Deduplication Appliance Express is to be accessed via ProtecTIER Manager installed on another computer, network connections must be configured to allow access.

Compatibility

The IBM System Storage TS7620 ProtecTIER Appliance Express emulates, in both stand-alone and clustered configurations, the IBM System Storage TS3500 tape library with IBM Ultrium™ 3 Tape Drives.

Limitations

ProtecTIER Entry Edition V3.2 software is only supported for installation on TS7620 ProtecTIER Deduplication Appliance Express hardware (3959 Model SM2).

A TS7620 Express system serving as a replication hub may only support four spokes.

Planning information

Customer responsibilities

Physical planning is a customer responsibility. Detailed planning information is in the *IBM System Storage TS7610 and TS7620 ProtecTIER Deduplication Appliance Express Publications CD-ROM, LCD7-4787-03 (part number 95P8934)*.

This product is customer installable. This product can be easily installed in frame space at or below 52 inches. If installations are planned for higher frame space, it is recommended that the local service delivery center be contacted to have an IBM Service representative install the product under a local contract. This product carries limited on-site support, with mandatory CRU. The product must be installed at a reasonable height (52 inches or less) to enable easy access to CRUs. Products installed in higher frame space present accessibility problems. Should the customer desire IBM to service this hardware, warranty service upgrades are available.

Two person install: The total weight of this system is approximately 60 lbs and requires two people to install when fully assembled.

One person install: One person can install this if the twelve 1 TB HDDs and the two power supplies are removed making the total weight of the system approximately 39 lbs. The twelve 1 TB HDDs must be reinstalled in the order they were removed.

This product may not be certified in your country for connection by any means whatsoever to interfaces of public telecommunications networks. Further certification may be required by law prior to making any such connection. Contact IBM for information.

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

Customer has to provide Fibre Channel cables for ProtecTIER VTL systems to connect TS7620 ProtecTIER Deduplication Appliance Express and backup host.

Direct customer support

Eligible customers can obtain installation and usage assistance through ASK Support using the search words TS7620, 3959-SM2, or 5639-PTC.

IBM Global Services

IBM Technical Support Services provides comprehensive hardware and software support including hardware and software implementation for the IBM System Storage TS7620 ProtecTIER Deduplication Appliance Express . Technical Support Services are designed to support your installations of IBM Virtualization Engine hardware and software. Offering the best solutions for storage management and data migration, IBM Technical Support Services can assist you in developing and deploying storage solutions to enable your success and satisfaction. For more information, contact your IBM representative or Business Partner.

Security, auditability, and control

This product uses the security and auditability features of host hardware, host software, and/or application software to which it is attached.

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.

IBM Global Financing

Yes

Warranty period

One year

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

Extended Warranty Service

This product is provided with one year of standard warranty. For your convenience, IBM has provided additional year(s) of extended warranty services to make this offering. Please consult with your advisors about the appropriate financial treatment for this offering.

Warranty service

If required, IBM provides repair or exchange service depending on the types of warranty service specified for the machine. IBM will attempt to resolve your problem over the telephone, or electronically via 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. If applicable to your product, parts considered Customer Replaceable Units (CRUs) will be provided as part of the machine's standard warranty service.

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-specific and location-specific information.

CRU and IBM 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. The following on-site response-time objectives are available as warranty service upgrades for your machine. The customer must provide a workstation with a running copy of the ProtectTIER Manager GUI. A Keyboard and Monitor must also be available.

CRU Service

IBM provides replacement CRUs to you for you to install. CRU information and replacement instructions are shipped with your machine and are available from IBM upon your request. CRUs are designated as being either a Tier 1 (mandatory) or a Tier 2 (optional) CRU.

Tier 1 (mandatory) 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.

Tier 2 (optional) CRU

You may install a Tier 2 CRU yourself or request IBM to install it, at no additional charge.

Based upon availability, CRUs 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. 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:

- 3.0V Battery
- Intel™ Dual Port Ethernet adapter
- 850 WDC Power supply
- Fan
- 2TB NL SAS Hard disk drive
- 8GB DIMM Module
- Battery backup
- 2.8M Power cord
- USB Portable DVD/RW Kit
- Mounting tray (support tray)
- Air flow plastics
- Rails for tray (No screws)

On-site Service

This product carries limited on-site support, with mandatory CRU. The product must be installed at a reasonable height (52 inches or less) to enable easy access to CRU's. Products installed in higher frame space present accessibility problems. Should the customer desire IBM to service this hardware, warranty service upgrades are available.

FRU list:

- HBA Emulex
- LSI MegaRAID SAS9280-4i4e
- LSI MegaRAID SAS9240-4i
- Chassis FRU
- 500 GB Boot HDD
- Dual Boot Drive Cage assembly
- RAID SAS Expander mini-SAS cable
- Fan tray

- 9 hours per day, Monday through Friday, excluding holidays, next business day response. Calls must be received by 5 p.m. local time in order to qualify for next business day response.

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 their customers, and normal warranty service procedures for the IBM machine apply.

Warranty service upgrades

During the warranty period, warranty service upgrades provide an enhanced level of On-site Service for an additional charge. Service levels are response-time objectives and are not guaranteed. See the Warranty services section for additional details.

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.

Maintenance service options

Customer Replaceable Unit (CRU) Service

If your problem can be resolved with a CRU (for example, keyboard, mouse, speaker, memory, or hard disk drive), and depending upon the maintenance service offerings in your geography, IBM will ship the replacement CRU to you for you to install. CRU information and replacement instructions are shipped with your machine and are available from IBM upon your request.

Based upon availability, CRUs will be shipped for next business day delivery. IBM specifies, in the materials shipped with a replacement CRU, whether a defective CRU must be returned to IBM . When return is required, 1) return instructions and a container are shipped with the replacement CRU, and 2) 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.

CRUs may be provided as part of the machine's standard maintenance service except that you may install a CRU yourself or request IBM installation, at no additional charge, under any of the On-site Service levels specified above.

Available offerings are:

- 9 hours per day, Monday through Friday, excluding holidays, 4 hour average, same business day response
- 24 hours per day, 7 days a week, 4 hour average response
- 24 hours per day, 7 days a week, 2 hour average response

Customer Replaceable Units (CRUs) may be provided as part of the machine's standard warranty CRU Service except that you may install a CRU yourself or request IBM installation, at no additional charge, under one of the On-site Service levels specified above. For additional information on the CRU Service, see the warranty information.

Maintenance services

If required, IBM provides repair or exchange service depending on the types of maintenance service specified for the machine. IBM will attempt to resolve your problem over the telephone or electronically, via 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 maintenance 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 following service selections are available as maintenance options for your machine type.

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.

Service levels are:

- 9 hours per day, Monday through Friday, excluding holidays, next business day response
- 9 hours per day, Monday through Friday, excluding holidays, 4 hour average response
- 24 hours per day, 7 days a week, 4 hour average response
- 24 hours per day, 7 days a week, 2 hour average response

Machine Exchange Service

IBM will initiate shipment of a replacement machine to your location. You are responsible for its installation and verification of operation. You must pack the failed machine into the shipping container that contained the replacement machine and return the failed machine to IBM . Transportation charges, both ways, are paid by IBM . You may be charged for the replacement machine if IBM does not receive the failed machine within 15 days of your receipt of the replacement.

Non-IBM parts service

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

This service includes hardware problem determination (PD) on the non-IBM parts (for example, adapter cards, PCMCIA cards, disk drives, memory) installed within IBM machines and provides the labor to replace the failing parts at no additional charge.

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

Warranty service upgrades

Usage plan machine

No

IBM hourly service rate classification

Two

When a type of service involves the exchange of a machine part, the replacement may not be new, but will be in good working order.

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/servers/storage/support/>

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

A reduced charge is available to qualified education customers. The educational allowance may not be added to any other discount or allowance.

Pricing

Product charges

Description	Machine type	Model	Feature number
TS7620 Appliance	3959	SM2	
Dual Port Ethernet Card			3448
8Gb FC Dual Port HBA - Host			3458
2TB HDD - 12 PACK			3709
VTL			9022
OST			9023
FSI			9024
ProtectTIER V3.2 Entry Ed preload			9315

SMB sw capacity 6TB	9316
SMB sw capacity 12TB	9317
C13 to 5-15P power cord	9950
C13 to C14 power cord	9953

Model number	Feature number	Field install only	Plant install only	MES removal	MES removal charge
SM2	3448	N	Y	N	N
SM2	3458	N	Y	N	N
SM2	3709	N	Y	N	N
SM2	9022	N	Y	N	N
SM2	9023	N	Y	N	N
SM2	9024	N	Y	N	N
SM2	9315	N	Y	N	N
SM2	9316	N	Y	Y	N
SM2	9317	N	N	N	N
SM2	9950	N	Y	N	N
SM2	9953	N	Y	N	N

If field installed on a purchased machine, parts removed or replaced become the property of IBM and must be returned.

Pricing terms

Prices in the following PDF prices link are suggested list prices on day of announcement for the U.S. only. They are provided for your information only. Dealer prices may vary, and prices may also vary by country. IBM list price does not include tax or shipping and is subject to change without notice.

[ENUS-112-101-LIST_PRICES_2012_06_04.PDF](#)

ServicePac prices

For ServiceElect (ESA) maintenance service charges, contact IBM Global Services at 888-IBM-4343 (426-4343).

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Corrections

(Corrected on July 20, 2012)

The Overview and Physical specifications sections have been updated.

(Corrected on June 21, 2012)

The description for feature number 3709 has been updated in the Product number and Product charges sections.