



New features for IBM System Storage TS7650 ProtecTIER Deduplication Appliance (3958 AP1) and IBM System Storage TS7650G Server (3958 DD1 and 3958 DD3)

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At a glance

IBM® Systems Storage Division introduces a new server and a new disk cache controller for the TS7650 ProtecTIER® Deduplication Appliance, and a memory upgrade for the IBM System Storage® TS7650G Server.

Overview

IBM Systems Storage Division offers a new server and a new disk cache controller for the TS7650 ProtecTIER Deduplication Appliance, and a memory upgrade for the IBM System Storage TS7650G Server.

New IBM System Storage TS7650 ProtecTIER Deduplication Appliance features:

- IBM server with sixteen 2.27 GHz processor cores and a total of 64 GB RAM
- IBM Storage Controller with 450 GB Fibre Channel drives

The IBM System Storage ProtecTIER Appliance Edition V2.5 software that is loaded on the IBM System Storage TS7650 Appliance to create a valid TS7650 ProtecTIER Deduplication Appliance solution has been enhanced to support the OpenStorage interface with Symantec NetBackup.

ProtecTIER V2.5 systems may be configured as a virtual tape library (VTL) or as an OpenStorage enabled system. At this time, a ProtecTIER system may only function as a VTL system or an OpenStorage system; it cannot function as both.

For additional information, refer to Hardware Announcement [109-088](#), dated February 10, 2009.

Key prerequisites

IBM System Storage ProtecTIER Appliance Edition V2.5 software is loaded on the IBM System Storage TS7650 Appliance to create a valid TS7650 ProtecTIER Deduplication Appliance solution.

A separate order for ProtecTIER Appliance Edition is required.

Planned availability date

December 3, 2010

Description

IBM System Storage TS7650 ProtecTIER Deduplication Appliances are designed to be enterprise-class data protection solutions that help reduce the requirement for backup disk capacity by up to 25 times without disrupting the existing backup infrastructure. Powered by a revolutionary new HyperFactor® technology, ProtecTIER appliances can help eliminate redundant data. TS7650 ProtecTIER Deduplication Appliances are integrated solutions of IBM servers, storage, and ProtecTIER software. These three elements combine to offer a high-capacity, high-performance, and scalable target for backup and archive data.

A new server and a new disk cache controller is being introduced to support IBM System Storage ProtecTIER Appliance Edition V2.5 software enhancements.

IBM System Storage ProtecTIER Appliance Edition V2.5 software that is loaded on the IBM System Storage TS7650 Appliance to create a valid TS7650 ProtecTIER Deduplication Appliance solution has been enhanced to support the OpenStorage interface with Symantec NetBackup.

ProtecTIER V2.5 systems may be configured as a virtual tape library (VTL) or as an OpenStorage enabled system. At this time, a ProtecTIER system may only function as a VTL system or an OpenStorage system; it cannot function as both.

Virtual tape library

The IBM System Storage TS7650 ProtecTIER Deduplication Appliances are designed to provide an enterprise-class data protection solution that combines an IBM Systems storage system, TS7650 ProtecTIER data deduplication software, and a multicore IBM server to help meet the performance and capacity needs of a wide variety of environments.

All IBM System Storage TS7650 ProtecTIER Deduplication Appliances VTL feature:

- IBM ProtecTIER software with HyperFactor data deduplication technology
- Support for up to 500 MB/sec or more inline data deduplication
- Support for emulation of up to 12 virtual libraries, 256 virtual drives, and 128,000 virtual cartridges
- Simplified configuration and deployment

The TS7650 VTL solution provides the following capabilities:

- Improve backup and recovery operations without changing existing backup processes, procedures, or policies
- Shorten the backup window and simplify data management
- Consolidate heterogeneous tapes and gain control of decentralized open systems data

OpenStorage API

OpenStorage interface is a NetBackup appliance programming interface (API) supporting communication between NetBackup systems and OpenStorage enabled ProtecTIER systems. The OpenStorage interface provides the following capabilities:

- NetBackup software directs ProtecTIER systems when to create, copy, delete or restore backup images
- Backup images may be replicated to up to 12 different ProtecTIER systems

- Workloads and performance are balanced between NetBackup media servers and ProtecTIER systems
- Detailed statistics on the state of the ProtecTIER systems are available through the API

For additional information, refer to Hardware Announcement [109-088](#), dated February 10, 2009, and Software Announcement [210-375](#), dated October 26, 2010.

Accessibility by people with disabilities

A U.S. 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

Reference information

For information on IBM System Storage ProtecTIER Appliance Edition V2, refer to Software Announcement [209-030](#), dated February 10, 2009.

Product number

Description	Machine type	Model	Feature
TS3000 System Console	3958	AP1	2722
16 2.27GHz processor cores	3958	AP1	3170
1Gb quad port optical Ethernet adapter	3958	AP1	3456
8Gb FC Dual Port HBA - Host	3958	AP1	3458
4.8 TB FC Disk Controller	3958	AP1	3708
Install KVM Switch	3958	AP1	5510
KVM Display, Keyboard, Mouse	3958	AP1	5512
KVM adjacent frame connection	3958	AP1	5513
2nd server in adjacent frame	3958	AP1	5514
VTL	3958	AP1	9022
OST	3958	AP1	9023
Memory Upgrade	3958	DD1, DD3	3467

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=110-234>

Publications

The following publications are shipped with the product.

Title	Order number	Part number
IBM System Storage TS7600 with ProtecTIER Introduction and Planning Guide for the TS7650 (Appliance, 3958 AP1)	GC53-1193	N/A
IBM System Storage TS7600 with ProtecTIER Installation Roadmap Guide for the TS7650 (Appliance, 3958 AP1)	GC53-1194	46X4254

IBM System Storage ProtecTIER User's Guide for Enterprise Edition & Appliance Edition	GC53-1156	N/A
IBM System Storage TS7600 with ProtecTIER Problem Determination Guide for the TS7650 Appliance and TS7650G Gateway (3958 DD1, 3958 DD3, 3958 DD4, & 3958 AP1)	GC53-1157	N/A
ProtecTIER V2.5 Software Upgrade and Replication Enablement Guide	GC53-1196	46X6053
IBM System Storage TS7650 with ProtecTIER Service Information Center CD-ROM	N/A	46X6058
IBM System Storage TS7650 with ProtecTIER Customer Information Center CD-ROM	N/A	46X6057

IBM Publications Center Portal

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

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Publications are available on the IBM Publications Center Web site and are included on the *IBM System Storage TS7600 ProtecTIER - TS7650 & TS7650G Publications CD-ROM LCD8-1271-09 (part number 46X6056)*.

To order additional selected hardcopy publications for a fee or download free PDF format publications, visit the IBM Publications Center website

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

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

Specified operating environment

Hardware requirements**General platform prerequisites**

IBM System Storage TS7650 ProtecTIER Deduplication Appliance is based on the IBM System x3850 X5 server technology and is designed to support the necessary performance required for enterprise-level data protection and high availability.

Every TS7650 Appliance must be connected to a TS3000 System Console (TSSC) that can be used for system installation and maintenance.

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

A TS7650 clustered solution, with IBM ProtecTIER Deduplication software, requires the following hardware included in the Cluster Connection Kit (feature number 3447):

- **Power switch:** A network power switch, which is used to automatically control the power to a failed node
- **Network switch:** Two Ethernet switches, which are used to connect the TS7650 appliances with the network power switch, the user console, and the TSSC

ProtecTIER Manager

ProtecTIER Manager is required for service or maintenance of ProtecTIER 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:

- Microsoft 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 ProtecTIER service nodes at IP address (port 3501 is open on the firewall).

ProtecTIER Manager can support more than one ProtecTIER server. If the ProtecTIER Manager workstation is connected to more than one ProtecTIER 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.

Confer with your IBM representative for workstation configuration alternatives.

VTL Supported configurations**TS7650 ProtecTIER Deduplication Appliance 7 TB configuration plant features**

Feature number	Description	Quantity
3170	16 2.27 GHz processor cores	1
3458	8 Gb FC Dual Port HBA - Host	2
3707	4.8 TB FC Disk Expansion	1
3708	4.8 TB FC Disk Controller	1

9022	VTL	1
9308	ProtectTIER (AE software version) V2	1
9700	No Factory Cables	1
99xx	Power Cord (select power cord)	1

One of the following Console features is required:

2714	Console Expansion
2715	Console Attachment
2722	TS3000 System Console

The following KVM features are optional:

5510	Install KVM Switch
5512	KVM Display, Keyboard, Mouse
5513	KVM adjacent frame connection
5514	2nd server in adjacent frame

TS7650 ProtectTIER Deduplication Appliance 18 TB configuration plant features

Feature number	Description	Quantity
3170	16 2.27 GHz processor cores	1
3458	8 Gb FC Dual Port HBA - Host	2
3707	4.8 TB FC Disk Expansion	3
3708	4.8 TB FC Disk Controller	1
9022	VTL	1
9308	ProtectTIER (AE software version) V2	1
9700	No Factory Cables	1
99xx	Power Cord (select power cord)	1

One of the following Console features is required:

2714	Console Expansion
2715	Console Attachment
2722	TS3000 System Console

The following KVM features are optional:

5510	Install KVM Switch
5512	KVM Display, Keyboard, Mouse
5513	KVM adjacent frame connection
5514	2nd server in adjacent frame

TS7650 ProtectTIER Deduplication Appliance 36 TB configuration plant features

Feature number	Description	Quantity
3170	16 2.27 GHz processor cores	1
3458	8 Gb FC Dual Port HBA - Host	2
3707	4.8 TB FC Disk Expansion	6
3708	4.8 TB FC Disk Controller	2
9022	VTL	1
9308	ProtectTIER (AE software version) V2	1
9700	No Factory Cables	1
99xx	Power Cord (select power cord)	1

One of the following Console features is required:

2714	Console Expansion
2715	Console Attachment
2722	TS3000 System Console

The following KVM features are optional:

5510	Install KVM Switch
5512	KVM Display, Keyboard, Mouse

5513 KVM adjacent frame connection
 5514 2nd server in adjacent frame

TS7650 ProtecTIER Deduplication Appliance 36 TB Cluster configuration plant features

Feature number	Description	Quantity
3170	16 2.27 GHz processor cores	2
3447	Cluster Connection Kit	1
3458	8 Gb FC Dual Port HBA - Host	4
3707	4.8 TB FC Disk Expansion	6
3708	4.8 TB FC Disk Controller	2
9022	VTL	1
9308	ProtecTIER (AE software version) V2	1
9700	No Factory Cables	1
99xx	Power Cord (select power cord)	1

One of the following Console features is required:

2714 Console Expansion
 2715 Console Attachment
 2722 TS3000 System Console

The following KVM features are optional:

5510 Install KVM Switch
 5512 KVM Display, Keyboard, Mouse
 5513 KVM adjacent frame connection
 5514 2nd server in adjacent frame

VTL Field (MES) configuration upgrades

Field features (MES) that can be ordered in order to upgrade the configuration:

From 7 TB Configuration to 18 TB Configuration

Feature	Description	Field FC Qty	Final Qty (Total)
3707	4.8 TB FC Disk Expansion	2	3
9022	VTL	1	1

From 7 TB Configuration to 36 TB Configuration

Feature	Description	Field FC Qty	Final Qty (Total)
3706 or 3708	4.8 TB FC Disk Controller	1	2
3707	4.8 TB FC Disk Expansion	5	6
9022	VTL	1	1

From 7 TB Configuration to 36 TB Cluster Configuration

Feature	Description	Field FC Qty	Final Qty (Total)
3120 or 3170	18 1.66GHz processor cores or 16 2.27 GHz processor cores	1	2
3447	Cluster Connection Kit	1	1
3449	4Gb FC Dual Port HBA - Disk	2	4
3459 or 3458	4Gb FC Dual Port HBA - Host or 8Gb FC Dual Port HBA - Host	2	4
3706 or 3708	4.8 TB FC Disk Controller	1	2
3707	4.8 TB FC Disk Expansion	5	6
9022	VTL	1	1

From 18 TB Configuration to 36 TB Configuration

Feature	Description	Field FC Qty	Final Qty (Total)
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3706 or 3708	4.8 TB FC Disk Controller	1	2
3707	4.8 TB FC Disk Expansion	3	6
9022	VTL	1	1

From 18 TB Configuration to 36 TB Cluster Configuration

Feature	Description	Field FC Qty	Final Qty (Total)
3120 or 3170	18 1.66GHz processor cores or 16 2.27 GHz processor cores	1	2
3447	Cluster Connection Kit	1	1
3449	4Gb FC Dual Port HBA - Disk	2	4
3459 or 3458	4Gb FC Dual Port HBA - Host or 8Gb FC Dual Port HBA - Host	2	4
3706 or 3708	4.8 TB FC Disk Controller	1	2
3707	4.8 TB FC Disk Expansion	3	6
9022	VTL	1	1

From 36 TB Configuration to 36 TB Cluster Configuration

Feature	Description	Field FC Qty	Final Qty (Total)
3120 or 3170	18 1.66GHz processor cores or 16 2.27 GHz processor cores	1	2
3447	Cluster Connection Kit	1	1
3449	4Gb FC Dual Port HBA - Disk	2	4
3459 or 3458	4Gb FC Dual Port HBA - Host or 8Gb FC Dual Port HBA - Host	2	4
9022	VTL	1	1

Optional Field FC(s) that can be ordered

Feature	Description	Max FC Qty
6025	25 Meter LC/LC Fibre Channel Cable	4 or 8 with Cluster support

Note: This cable is for attaching a TS7600 server (that have an LC duplex connector) to switches, or hosts with LC duplex fibre channel connectors. (host cables only)

Power Cord FC(s) list for Plant or Field

Feature	Description
9954	NEMA L6-30 Power Cord
9955	RS 3750DP Power Cord
9956	IEC 309 Power Cord
9957	PDL 4.3m Power Cord
9958	Korean 4.3m Power Cord
9959	Unterminated Power Cord
9966	Unterminated Power Cord - China

OST Supported configurations

TS7650 ProtecTIER Deduplication Appliance 7 TB configuration plant features

Feature number	Description	Quantity
3170	16 2.27 GHz processor cores	1
3456	1 GB quad port optical Ethernet adapter	2
3707	4.8 TB FC Disk Expansion	1
3708	4.8 TB FC Disk Controller	1
9023	OST	1
9308	ProtecTIER (AE software version) V2	1
9700	No Factory Cables	1
99xx	Power Cord (select power cord)	1

One of the following console features is required:

- 2714 Console Expansion
- 2715 Console Attachment
- 2722 TS3000 System Console

The following KVM features are optional:

- 5510 Install KVM Switch
- 5512 KVM Display, Keyboard, Mouse
- 5513 KVM adjacent frame connection
- 5514 2nd server in adjacent frame

TS7650 ProtecTIER Deduplication Appliance 18 TB configuration plant features

Feature number	Description	Quantity
3170	16 2.27 GHz processor cores	1
3456	1 GB quad port optical Ethernet adapter	2
3707	4.8 TB FC Disk Expansion	3
3708	4.8 TB FC Disk Controller	1
9023	OST	1
9308	ProtecTIER (AE software version) V2	1
9700	No Factory Cables	1
99xx	Power Cord (select power cord)	1

One of the following console features is required:

- 2714 Console Expansion
- 2715 Console Attachment
- 2722 TS3000 System Console

The following KVM features are optional:

- 5510 Install KVM Switch
- 5512 KVM Display, Keyboard, Mouse
- 5513 KVM adjacent frame connection
- 5514 2nd server in adjacent frame

TS7650 ProtecTIER Deduplication Appliance 36 TB configuration plant features

Feature number	Description	Quantity
3170	16 2.27 GHz processor cores	1
3456	1 GB quad port optical Ethernet adapter	2
3707	4.8 TB FC Disk Expansion	6
3708	4.8 TB FC Disk Controller	2
9023	OST	1
9308	ProtecTIER (AE software version) V2	1
9700	No Factory Cables	1
99xx	Power Cord (select power cord)	1

One of the following console features is required:

- 2714 Console Expansion
- 2715 Console Attachment
- 2722 TS3000 System Console

The following KVM features are optional:

- 5510 Install KVM Switch
- 5512 KVM Display, Keyboard, Mouse
- 5513 KVM adjacent frame connection
- 5514 2nd server in adjacent frame

TS7650 ProtecTIER Deduplication Appliance 36 TB Cluster configuration plant features

Feature number	Description	Quantity
3170	16 2.27 GHz processor cores	2
3447	Cluster Connection Kit	1
3456	1 GB quad port optical Ethernet adapter	4
3707	4.8 TB FC Disk Expansion	6
3708	4.8 TB FC Disk Controller	2
9023	OST	1
9308	ProtecTIER (AE software version) V2	1
9700	No Factory Cables	1
99xx	Power Cord (select power cord)	1

One of the following Console features is required:

2714	Console Expansion
2715	Console Attachment
2722	TS3000 System Console

The following KVM features are optional:

5510	Install KVM Switch
5512	KVM Display, Keyboard, Mouse
5513	KVM adjacent frame connection
5514	2nd server in adjacent frame

OpenStorage Field (MES) configuration upgrades

Field features (MES) that can be ordered in order to upgrade the configuration:

From 7 TB Configuration to 18 TB Configuration

Feature	Description	Field FC Qty	Final Qty (Total)
3707	4.8 TB FC Disk Expansion	2	3

From 7 TB Configuration to 36 TB Configuration

Feature	Description	Field FC Qty	Final Qty (Total)
3707	4.8 TB FC Disk Expansion	5	6
3708	4.8 TB FC Disk Controller	1	2

From 7 TB Configuration to 36 TB Cluster Configuration

Feature	Description	Field FC Qty	Final Qty (Total)
3170	16 2.27 GHz processor cores	1	2
3447	Cluster Connection Kit	1	1
3456	1 GB quad port optical Ethernet adapter	2	4
3707	4.8 TB FC Disk Expansion	5	6
3708	4.8 TB FC Disk Controller	1	2

From 18 TB Configuration to 36 TB Configuration

Feature	Description	Field FC Qty	Final Qty (Total)
3707	4.8 TB FC Disk Expansion	3	6
3708	4.8 TB FC Disk Controller	1	2

From 18 TB Configuration to 36 TB Cluster Configuration

Feature	Description	Field FC Qty	Final Qty (Total)
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3170	16 2.27 GHz processor cores	1	2
3447	Cluster Connection Kit	1	1
3456	1 GB quad port optical Ethernet adapter	2	4
3707	4.8 TB FC Disk Expansion	3	6
3708	4.8 TB FC Disk Controller	1	2

From 36 TB Configuration to 36 TB Cluster Configuration

Feature	Description	Field FC Qty	Final Qty (Total)
3170	16 2.27GHz processor cores	1	2
3447	Cluster Connection Kit	1	1
3456	1 GB quad port optical Ethernet adapter	2	4

Optional Field FC(s) that can be ordered

Feature	Description	Max FC Qty
6025	25 Meter LC/LC Fibre Channel Cable	4 or 8 with Cluster support

Note: This cable is for attaching a TS7600 server (that has an LC duplex connector) to switches, or hosts with LC duplex fibre channel connectors. (host cables only)

Power Cord FC(s) list for Plant or Field

Feature	Description
9954	NEMA L6-30 Power Cord
9955	RS 3750DP Power Cord
9956	IEC 309 Power Cord
9957	PDL 4.3m Power Cord
9958	Korean 4.3m Power Cord
9959	Unterminated Power Cord
9966	Unterminated Power Cord - China

Planning information

Customer responsibilities

Physical planning is a customer responsibility. Detailed planning information is in the *IBM System Storage TS7600 ProtecTIER - TS7650 & TS7650G Publications CD-ROM LCD8-1271-09 (part number 46X6056)*.

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 Web site 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

Fibre Channel cables are required to attach the TS7650 Appliance (3958 Model AP1) to various server adapters. The cables can be customer supplied or ordered with the TS7650 with feature number 6025.

25 Meter LC/LC Fibre Channel Cable (#6025)

This feature provides a 25 meter (82 ft.) 50.0/125 micrometer short wavelength multimode fiber-optic cable with LC duplex connectors on both ends.

Note: This cable is for attaching a TS7650 (that has an LC duplex connector) to switches, or hosts with LC duplex Fibre Channel connectors.

Direct customer support

Eligible customers can obtain installation and usage assistance through ASK Support using the search words TS7650, 3958-AP1, or 5639-XXP.

IBM Global Services

IBM Technical Support Services provides comprehensive hardware and software support including hardware and software implementation for the IBM System Storage TS7650 Appliance. 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.

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To learn how Electronic Services can work for you, visit

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

Terms and conditions

MES discount applicable

No

Field installable feature

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 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.

Customer setup

No

Machine code

Same license terms and conditions as base machine

Optional features warranty period

- Optional feature(s) - One year

Pricing

Description	Machine type	Model	Feature number
TS3000 System Console	3958	AP1	2722
16 2.27GHz processor cores	3958	AP1	3170
1Gb quad port optical ethernet adapter	3958	AP1	3456
8Gb FC Dual Port HBA - Host	3958	AP1	3458
4.8 TB FC Disk Controller	3958	AP1	3708
Install KVM Switch	3958	AP1	5510
KVM Display, Keyboard, Mouse	3958	AP1	5512
KVM adjacent frame connection	3958	AP1	5513
2nd server in adjacent frame	3958	AP1	5514
VTL	3958	AP1	9022
OST	3958	AP1	9023
Memory Upgrade	3958	DD1, DD3	3467

Feature number	Field install only	Plant install only	MES removal	MES removal charge
2722	N	N	Y	N/C
3170	N	N	N	N/C
3456	N	N	N	N/C
3458	N	N	N	N/C
3708	N	N	N	N/C
5510	N	N	Y	N/C
5512	N	N	Y	N/C
5513	N	N	Y	N/C
5514	N	N	Y	N/C
9022	N	N	N	N/C
9023	N	Y	N	N/C
3467	Y	N	N	N/C

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

Description	Type	Model	Feature	List Price
TS3000 System Console	3958	AP1	2722	\$5150
16 2.27GHz processor cores	3958	AP1	3170	22260
1Gb quad port Ethernet adap	3958	AP1	3456	2400
8Gb FC Dual Port HBA - Host	3958	AP1	3458	4350
4.8 TB FC Disk Controller	3958	AP1	3708	39000
PLANT INSTALL KVM SWITCH	3958	AP1	5510	1600
KVM DISPL, Keyboard, Mouse	3958	AP1	5512	4500
KVM adj frame connection	3958	AP1	5513	490
2nd server in adj frame	3958	AP1	5514	290
VTL	3958	AP1	9022	0
OST	3958	AP1	9023	0
Memory Upgrade	3958	DD1	3467	7000
Memory Upgrade	3958	DD3	3467	7000

For current prices visit

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

or contact us at 1-888-Shop-IBM.

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For the most current information regarding IBM products, consult your IBM representative or reseller, or visit the IBM worldwide contacts page

<http://www.ibm.com/planetwide/us/>

Corrections

(Corrected on December 21, 2010)

The IBM server description in the Overview has been updated.

(Corrected on November 9, 2010)

The description for feature number 3170 has been updated throughout the Technical information section.

(Corrected on November 5, 2010)

The Hardware requirements section has been updated.