IBM TotalStorage Enterprise Storage Server delivers enhanced resiliency with Asynchronous Peer-to-Peer Remote Copy

Overview
To help you maintain business continuance for 24 x 7 operations, Peer-to-Peer Remote Copy (PPRC) Version 2 and FlashCopy® Version 2 for the IBM TotalStorage® Enterprise Storage Server™ (ESS) are enhanced. You can now be better prepared to proactively and rapidly respond to unanticipated events.

- **Asynchronous PPRC (PPRC Global Mirror),** a new function included in PPRC Version 2, is designed to enable a two-site disaster recovery and backup solution for the zSeries® and open systems environments. Using asynchronous technology, PPRC Global Mirror operates over high-speed, Fibre Channel communication links and is designed to maintain a consistent and restartable copy of data at a remote site that can be located at virtually unlimited distance from the local site. The data consistency can even be managed across multiple ESS machines configured in a single session, with data currency at the remote site lagging behind the local site an average of 3 to 5 seconds for many environments.

- **Synchronous PPRC (PPRC Metro Mirror) now supports a distance of up to 300 km between the local and remote site when used with Fibre Channel communication links, providing you greater flexibility when choosing your remote site location and enabling you to separate sites for added protection from localized disasters.

- **FlashCopy to a PPRC Primary,** a new function included in FlashCopy Version 2, lets you establish a FlashCopy relationship where the FlashCopy target is also a PPRC primary volume. This enables you to create full or incremental point-in-time copies at a local site and then use PPRC to copy the data to the remote site.

PPRC and FlashCopy are two key components of the IBM TotalStorage Resiliency Family, an extensive set of hardware, software, and integrated software and services packages designed to help you implement storage infrastructures to help keep your business running 24 hours a day, 7 days a week.

Additionally, the IBM Standby Capacity on Demand for ESS offering (Standby CoD) is enhanced to allow advanced function license capacity upgrades to occur as Standby CoD capacity is configured.

At a glance
Enhancements to PPRC Version 2 and FlashCopy Version 2, components of the IBM TotalStorage Resiliency Family, are designed to help you meet the challenge of providing a resilient IT infrastructure for an on demand world:

- Asynchronous PPRC (PPRC Global Mirror), a high-performance, remote copy solution designed to enable a long-distance, two-site disaster recovery and backup solution.

- Synchronous PPRC (PPRC Metro Mirror) distance support, extended to up to 300 km when used with Fibre Channel communication links.

- FlashCopy to a PPRC primary, a new FlashCopy relationship designed to allow point-in-time copies at a local site to be copied to a remote site using PPRC.

Key prerequisites
All features and functions in this announcement are supported on the ESS Model 750 and ESS Model 800, and require ESS LIC level 2.4.0, or later (unless noted otherwise).

Planned availability date
May 28, 2004

This announcement is provided for your information only. For additional information, contact your IBM representative, call 800-IBM-4YOU, or visit the IBM home page at: http://www.ibm.com.
<table>
<thead>
<tr>
<th>Description</th>
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<tr>
<td>Asynchronous PPRC (PPRC Global Mirror) delivers long-distance remote copy</td>
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</table>

PPRC Global Mirror is a new function included in PPRC Version 2 and is designed to enable a two-site disaster recovery and backup solution for both the zSeries and open systems environments using the ESS Model 750 or ESS Model 800.

PPRC Global Mirror operates over high-speed, Fibre Channel communication links and is designed to provide the following:

- A high-performance, long-distance remote copy solution using asynchronous technology.
- Support for virtually unlimited distance between the local and remote sites, with the distance typically limited only by the capabilities of the network and channel extension technologies. This can better enable you to choose your remote site location based on business needs and enables site separation to add protection from localized disasters.
- A consistent and restartable copy of the data at the remote site, created with minimal impact to applications at the local site. Compared to Asynchronous Cascading PPRC (PPRC Metro/Global Copy), PPRC Global Mirror eliminates the requirement to do a manual and periodic suspend at the local site order to create a consistent and restartable copy at the remote site.
- Data currency where, for many environments, the remote site lags behind the local site an average of 3 to 5 seconds, minimizing the amount of data exposure in the event of an unplanned outage. Data currency is also known as the recovery point objective (RPO). The actual lag in data currency experienced will depend upon a number of factors, including specific workload characteristics and bandwidth between the local and remote sites.
- Dynamic selection of the desired RPO based upon business requirements and optimization of available bandwidth.
- Session support whereby data consistency at the remote site is internally managed across up to eight ESS machines located among the local and remote sites.
- Efficient synchronization of the local and remote sites with support for PPRC failover and failback modes, helping to reduce the time required to switch back to the local site after a planned or unplanned outage.

Operational control is provided by the ESS Specialist, ESS API, and Copy Services CLI (all environments). ICKDSF provides support for z/OS, VM, and VSE environments. For z/OS, operational control is provided by ANTRQST API and TSO commands.

PPRC Version 2 is an optional feature for the ESS (#85xx).

Greater distance support with Synchronous PPRC (PPRC Metro Mirror)

PPRC Metro Mirror is a synchronous remote copy solution for real-time mirroring of logical volumes where write operations are completed on both copies (primary and secondary ESS) before they are considered to be done.

PPRC Metro Mirror now supports a distance of up to 300 km between the local and remote site when used with Fibre Channel communication links, providing you with greater flexibility in choosing your remote site location.

PPRC Metro Mirror support for Fibre Channel communication links is provided with PPRC Version 2. PPRC Version 2 is an optional feature for the ESS (#85xx).

New FlashCopy relationship enables integration with PPRC

FlashCopy is designed to provide a point-in-time copy capability for logical volumes. FlashCopy is also designed to create a physical point-in-time copy of the data, with minimal interruption to applications, and make it possible to access both the source and target copies immediately.

FlashCopy Version 2 now supports the ability to establish a FlashCopy relationship where the FlashCopy target is also a PPRC primary volume. This enables you to create full or incremental point-in-time copies of a LUN, volume, or data set at a local site, and then use PPRC to copy the data to a remote site. It also allows you to use the flexibility of FlashCopy Version 2 on a volume which is already set up for automatic copy to a remote site using PPRC.

Operational control is provided by the ESS Specialist, ESS API, and Copy Services CLI (all environments). ICKDSF provides support for z/OS, VM, and VSE environments. For z/OS, operational control is provided by ANTRQST API and TSO commands.

FlashCopy Version 2 is an optional feature for the ESS (#86xx).

IBM TotalStorage Resiliency Family

The IBM TotalStorage Resiliency Family is comprised of IBM TotalStorage Resiliency Core Technology, an extensive set of hardware and software features and products, and IBM TotalStorage Resiliency Automation, integrated software and services packages. The IBM TotalStorage Resiliency Family is designed to help you implement storage infrastructures to help keep your business running 24 hours a day, 7 days a week.

The following ESS functions are key components of the IBM TotalStorage Resiliency Core Technology and are ordered as optional features for the ESS:

- FlashCopy
- PPRC:
  - PPRC Metro Mirror (Synchronous PPRC)
  - PPRC Global Mirror (Asynchronous PPRC)
  - PPRC Metro/Global Copy (Asynchronous Cascading PPRC)
  - PPRC Global Copy (PPRC Extended Distance)
- Extended Remote Copy (XRC):
  - zSeries Global Mirror (XRC)
  - zSeries Metro/Global Mirror (three-site solution using Synchronous PPRC and XRC)

Contact your IBM representative or IBM Business Partner for more information on the IBM TotalStorage Resiliency Family.

Improved total cost of ownership for ESS Standby CoD

The ESS Standby CoD offering provides “standby” storage for the ESS and allows you to access the extra storage capacity when the need arises. This is particularly attractive if you experience rapid or unpredictable growth or if you simply want the knowledge that the storage will be there when you need it.

The ESS Standby CoD offering is enhanced to allow you to purchase ESS advanced function licenses based upon your machine’s physical capacity excluding Standby CoD disk eight-pack features. An advanced function license upgrade purchase is only required when the Standby CoD capacity is configured and your machine’s total physical
capacity (including the newly configured Standby CoD) exceeds the advanced function license. This can help improve your total cost of ownership since your license grows at the same time you need your disk capacity to grow.

Contact your IBM representative or IBM Business Partner to obtain additional information regarding ESS Standby CoD terms and conditions. If you currently participate in the ESS Standby CoD program, you may be required to execute new agreements to utilize this latest enhancement.

**IBM TotalStorage Enterprise Storage Server Expert support for Arrays Across Loops (AAL)**

The IBM TotalStorage Enterprise Storage Server Expert (ESS Expert) now supports AAL on the ESS Model 800.

Today’s announcement fulfills the preview statement as stated in Hardware Announcement 103-298, dated October 14, 2003, IBM TotalStorage Enterprise Storage Server delivers PPRC over Fibre Channel and Enhancements to the Enterprise Storage Server Application Programming Interface.

**Additional information**

All offers are subject to availability. IBM reserves the right to alter product offerings and specifications at any photographic or typographic errors.

**Product positioning**

PPRC Global Mirror is IBM’s premier ESS long-distance business continuance solution for open systems environments and environments that have a mix of open systems and zSeries servers. It is designed to provide improved performance and lower costs as compared to a two-site PPRC Metro/Global Copy implementation and should, therefore, be your first choice if you have one of these environments.

If you have a zSeries environment without any open systems servers, XRC is the better alternative at this present time because of the comprehensive support provided by z/OS and IBM’s Geographically Dispersed Parallel Sysplex™ (GDPS™) offering.

Finally, if you require a three-site business continuance solution, you should select PPRC Metro/Global Copy.

**Reference information**

Refer to:

- Hardware Announcement 102-201, dated July 15, 2002, IBM TotalStorage Enterprise Storage Server Model 800
- Hardware Announcement 104-119, dated April 7, 2004, IBM TotalStorage Enterprise Storage Server Model 750
- Hardware Announcement 103-141, dated May 13, 2003, IBM TotalStorage Enterprise Server Enhances Business Efficiency and Continuance with FlashCopy and PPRC Version 2

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Other company, product, and service names may be trademarks or service marks of others.
# Publications

The following publication has been updated to reflect this announcement and will be available by April 30, 2004.

<table>
<thead>
<tr>
<th>Title</th>
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<tr>
<td>IBM TotalStorage® Enterprise Storage Server Introduction and Planning Guide</td>
<td>GC26-7444</td>
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The following publications have been updated to reflect this announcement and have a planned availability date of May 28, 2004:

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<tr>
<td>IBM TotalStorage Enterprise Storage Server SC 26-7477</td>
<td>SC26-7445</td>
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ESS publications are available at


Publications can be ordered from your IBM representative, by direct order, or through the Publication Notification System (PNS) Web site at


The Publications Center is a worldwide central repository for IBM product publications and marketing material. This site offers customized search functions to locate publications. This site also offers access to the PNS, a site where you can subscribe to receive e-mail notifications regarding new or revised publications that are of interest to you.

The Publications Center can be accessed at


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IBM technology services help you learn about, plan, install, manage, or optimize your IT infrastructure for e-business. We 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.

Visit the appropriate link below for details on services available based on your product needs.

- **pSeries®**

- **iSeries™**

- **zSeries**

- **Storage Systems Group**

For details on education offerings related to the products listed, visit


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

For more details on IBM Global Services capabilities, contact your IBM representative, or visit


Your IBM representative can help you determine availability of standard and customized services.

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Technical information

Specified operating environment

Hardware requirements: The ESS ships with IBM Licensed Internal Code (LIC) that is licensed for use by a customer on a specific machine, designated by serial number, under the terms and conditions of the IBM Customer Agreement or the IBM Agreement for Licensed Internal Code.

All features and functions in this announcement are supported on the ESS Model 750 and ESS Model 800, and require ESS LIC level 2.4.0, or later, except as noted below.

- PPRC Metro Mirror support for distances of up to 300 km requires ESS LIC level 2.3.1, or later.
- For Standby CoD Indicator (#9510) and Flexible Capacity Indicator (#9610), ESS LIC level requirements are based upon disk eight-pack feature LIC requirements.

Not all ESS features and functions are available or supported in every environment; current information on supported environments and minimum operating systems levels is available at


Software requirements: Current information on servers, operating systems, host adapters, and connectivity products supported by the ESS is available at


The ESS Expert requires a PTF to support the ESS Model 800 with AAL. Refer to the IBM TotalStorage Expert V2.1 fixes entries at

http://www-1.ibm.com/support/search.wss?rs=563&tc=STFLM3+STCVQ5N+STCVQ5P&dc=D400

Planning information

Customer responsibilities

Physical configuration planning

Physical configuration planning is a customer responsibility. Your disk marketing specialist can help you plan and select the ESS physical configuration and features. Introductory information, including required and optional features, can be found in the IBM TotalStorage Enterprise Storage Server Introduction and Planning Guide (GC26-7444).

Capacity and performance planning assistance is also available. Through the use of Disk Magic, your disk marketing specialist can help you plan and anticipate performance characteristics for specific workloads by modelling proposed configurations.

Installation planning

Installation planning is a customer responsibility. Information about planning the installation of your ESS, including equipment, site, and power requirements can be found in the IBM TotalStorage Enterprise Storage Server Introduction and Planning Guide (GC26-7444).

Logical configuration planning and application

Logical configuration planning is a customer responsibility. Logical configuration refers to the creation of RAID ranks, volumes, and/or LUNs, and the assignment of the configured capacity to servers.

During the ESS installation, your disk marketing specialist can help you plan your initial logical configuration, and IBM will apply the logical configuration to the machine.

Following the ESS installation, all modifications to the logical configuration are a customer responsibility and can be performed using the ESS Specialist, ESS CLI, or ESS API. IBM Global Services (IGS) will also modify the logical configuration (fee-based services).

ESS advanced functions

PPRC and FlashCopy® are enabled and authorized based upon the physical capacity of the ESS:

- FlashCopy Version 2:
  - Enablement and authorization must be equal to or greater than the total physical capacity of the ESS.

- PPRC Version 2:
  - Enablement and authorization must be equal to or greater than the total physical capacity of the ESS.

Standby CoD Disk Eight-Packs can be excluded from the physical capacity calculation when the Standby CoD Indicator (#9510) is present on the machine.

Refer to the IBM TotalStorage Enterprise Storage Server Introduction and Planning Guide (GC26-7444) for physical capacity calculation guidelines.

The initial enablement of an ESS advanced function is designed to be a concurrent activity (assuming the appropriate level of microcode is installed on the machine for the given function). The removal of an ESS advanced function to deactivate the function is a disruptive activity and requires a machine IML.

Advanced functions require the selection of ESS Model 750 or ESS Model 800 feature numbers and the purchase of the matching IBM 2240 ESS Function Authorization feature numbers:

- The ESS Model 750 or ESS Model 800 feature number enables a given function on the ESS at a given capacity level.
- The ESS Function Authorization feature number authorizes use of the given advanced function at the given capacity level on the ESS machine for which it was purchased.

The ESS Model 750 or ESS Model 800 8xxx feature numbers and the ESS Function Authorization 8xxx feature numbers are corequisites and must always correspond to one another.

<table>
<thead>
<tr>
<th>ESS advanced function</th>
<th>ESS Model 750 feature numbers</th>
<th>ESS Function Authorization feature numbers</th>
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<tbody>
<tr>
<td>PPRC Version 2</td>
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<td>2240-PRC 85xx</td>
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<tr>
<td>FlashCopy Version 2</td>
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<td>2240-FLC 86xx</td>
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</table>
Advanced function licenses can be upgraded to higher capacity levels. The upgrade will be priced as the delta between the current purchase price of the feature removed and added.

FlashCopy and PPRC licenses can be upgraded to FlashCopy Version 2 and PPRC Version 2 licenses, respectively. The upgrade can be made to either the same or a higher capacity level. The upgrade will be priced as the delta between the current purchase price of the feature removed and added.

**Copy services planning and implementation**

The implementation and use of PPRC and FlashCopy require appropriate planning. Detailed information is available in ESS publications, as well as in the following IBM Redbooks™:

- IBM TotalStorage Enterprise Storage Server: Implementing Copy Services in an Open Environment (SG24-5757)
- IBM TotalStorage Enterprise Storage Server: Implementing ESS Copy Services with IBM @server zSeries (SG24-5680)

Planning and implementation services for ESS copy services are also offered by IBM Global Services (IGS). For additional information, contact your IBM representative or visit

http://www.ibm.com/services

**Asynchronous PPRC (PPRC Global Mirror)**

PPRC Global Mirror has the following prerequisites:

- PPRC Version 2 must be purchased for both the primary and secondary ESS machines.
- At least one Fibre Channel/FICON™ Host Adapter (#3024 or #3025) must be installed on each ESS in the PPRC configuration to serve as the PPRC communication link. For higher availability, IBM recommends that more than one host adapter per ESS be used for the PPRC connectivity.
- FlashCopy Version 2 must be purchased for the secondary ESS machines.
- If PPRC Global Mirror will be used during failback from the secondary ESS machines, FlashCopy Version 2 must also be purchased for the primary machines.

In the event of a planned or unplanned outage, recovery procedures are required to achieve a consistent and restartable copy of the data at the remote site. Scripts and software can be used to help automate these procedures.

PPRC Global Mirror is supported with the use of SAN fabric products, Dense Wavelength Division Multiplexing (DWDM), and channel extenders. A current list of supported environments, configurations, networks, and products is available at


Vendors should be consulted regarding hardware and software prerequisites when using their products in an ESS PPRC configuration. IBM is not responsible for third-party products.

When using channel extender products with PPRC, the channel extender vendor will determine the maximum distance supported between the primary and secondary ESS. The vendors should be contacted for their distance capability, line quality requirements, as well as SAN and WAN attachment capabilities.

**Synchronous PPRC (PPRC Metro Mirror):** PPRC Metro Mirror now supports a distance of up to 300 km between the local and remote site when used with Fibre Channel communication links. For additional information, refer to


Prior approval must be received from IBM if the distance between the local and remote sites will exceed 300 km. Approval can be requested by submitting a Request for Price Quotation (RPQ). The RPQ should include information on distance between sites, the channel extension technology, the type of telecom line, the amount of network bandwidth, the ESS capacity, and a general description of the workload.

**Direct customer support:** Direct customer support for the 2105 ESS is provided by IBM Operational Support Services — Support Line. This fee service can help enhance your productivity by providing voice and electronic access into the IBM support organization. IBM Operational Support Services — Support Line will help answer questions pertaining to product and feature usage ("how to"), configuration, and product compatibility for eligible products. For a list of the products supported via Support Line, visit the following Web site

http://www.ibm.com/services/sl/products

For more information on services, call 800-IBM-4YOU (426-4968).

**Security, auditability, and control**

This product uses the security and auditability features of the 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.

**Terms and conditions**

This product is available for purchase under the terms of the IBM Customer Agreement.

Each IBM machine is manufactured from parts that may be new or used. In some cases, a machine may not be new and may have been previously installed.

Regardless, IBM’s appropriate warranty terms apply.

**MES discount applicable:** No

**Field installable feature:** Yes

**Warranty period:** Three years
Customer setup: No

**Licensed Internal Code:** Same license terms and conditions as designated machine.

### Prices

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<th>Minimum monthly maintenance charge</th>
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NC = no charge

### Field Plant MES

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### ServiceSuite™ and ServiceElect maintenance charges

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NC = no charge

Reference: YE001

The Americas Call Centers, our national direct marketing organization, can add your name to the mailing list for catalogs of IBM products.

**Note:** Shipments will begin after the planned availability date.

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