GDPS/PPRC HyperSwap Manager: Providing continuous availability of consistent data

Overview

Today, IBM is announcing GDPS™/PPRC HyperSwap™ Manager (GDPS/PPRC HM). The GDPS/PPRC HyperSwap™ Manager services offering within the GDPS suite of offerings is designed to provide continuous availability of data by masking disk outages caused by disk maintenance and/or failures for IBM z/OS® and z/VM® customers. A Parallel Sysplex® environment has been designed to reduce outages by replicating hardware, operating systems, and application components. In spite of this redundancy, having only one copy on the data is an exposure. This offering provides management of the data replication environment and automates switching between the two copies of the data without causing an application outage, therefore providing near-continuous access to data. GDPS/PPRC HM simplifies the control of the storage environment in a single sysplex within a physical site or across two sites at supported distances. In a two-site configuration this offering provides an entry-level disaster recovery capability at the remote site. GDPS/PPRC HM uses the HyperSwap technology, a key component of a “full” GDPS/PPRC implementation. This also provides an effective entry-level offering for those zSeries® customers that have the need for very high levels of data availability.

Customers that implement GDPS/PPRC HyperSwap Manager today can increase their current availability and DR capability but can enhance their availability and DR capabilities further by migrating to full-function GDPS/PPRC.

IBM is also offering a customized version of Tivoli® NetView® for z/OS and Tivoli System Automation for z/OS that provide only the functionality needed to support GDPS/PPRC HM at a cost-effective price. These new customized products and the GDPS/PPRC HM offering are designed to bring new levels of affordability to customers who do not require the full-function products. This makes GDPS/PPRC HM an excellent entry-level offering for those single-site or multisite installations that need higher levels of IT availability.

Additional information on IBM Implementation Services for GDPS/PPRC HyperSwap Manager can be found in Services Announcement 605-002, dated February 15, 2005, and Software Announcement 205-035, dated February 15, 2005.

More detailed information on the GDPS service offerings is available on the Internet at:


At a glance

The new IBM Implementation Services for GDPS/PPRC HyperSwap Manager:

- Makes available the current GDPS/PPRC HyperSwap technology to customers using a single site to provide near-continuous data availability
- Allows DASD data to remain available to end-user applications during disk subsystem maintenance or disk subsystem failures
- Simplifies management of remote copy configuration, providing an automated single point of control and alerts to notify you of problems in the remote copy configuration
- Provides planning, installation, implementation, and training for GDPS/PPRC HyperSwap Manager

In addition, specially priced versions of IBM Tivoli NetView for z/OS and IBM Tivoli System Automation for z/OS that provide select functions needed to support GDPS/PPRC HM are being made available at an attractive price.

Key prerequisites

Refer to the Prerequisites section of this announcement.

For a complete description of GDPS software prerequisites, refer to GDPS: The e-business Availability Solution (GF22-5114).

Availability date

February 15, 2005
In e-business, two important objectives for survival are continuous availability and near-transparent disaster recovery (D/R). Systems that are designed to deliver continuous availability combine the characteristics of high availability and near-continuous operations to deliver high levels of service — targeted at 24x7x52. High availability is an attribute of a system that provides service at agreed upon levels and can mask unplanned outages from end users. Continuous operations, on the other hand, is the attribute of a system designed to continuously operate and mask planned and unplanned outages from end users. To attain high levels of continuous availability, it is important to avoid single points of failure (SPOFs). The GDPS/PPRC HM eliminates the disk subsystem as a SPOF. To attain even higher levels of availability and near-transparent D/R, the solution is based on geographical clusters and data mirroring. These technologies are the backbone of the GDPS solution.


GDPS/PPRC HyperSwap Manager is a new entry-level GDPS offering that is designed to provide data continuous availability for data within a single-site z/OS configuration, together with cost-effective disaster recovery when configured over two sites. This new GDPS offering makes available the current GDPS/PPRC HyperSwap technology to a single-site z/OS configuration. Utilizing GDPS HyperSwap Manager within a data center allows the disk data to remain available to end user applications during disk subsystem maintenance or disk subsystem failures. In addition, GDPS/PPRC HyperSwap Manager is a cost-effective way to manage the storage environment.

This offering provides a low-cost entry-level GDPS solution. A customer can then migrate to the full GDPS/PPRC capability across multiple sites as business requirements demand the higher availability provided by a second site. The initial investment in GDPS/PPRC HM is protected when customers choose to move to full-function GDPS/PPRC by leveraging the existing GDPS/PPRC HM implementation.

IBM Tivoli System Automation (SA) for z/OS and IBM Tivoli NetView for z/OS products are prerequisites for implementing GDPS HyperSwap Manager. Some customers do not have these IBM software products and have no requirements for their full function capabilities outside of GDPS. This new offering will include an option to deliver a new limited-function NetView and SA for GDPS/PPRC HyperSwap Manager at a lower attractive price:

- IBM Tivoli System Automation for GDPS/PPRC HyperSwap Manager, V1.1 for existing NetView installations, or
- IBM Tivoli System Automation for GDPS/PPRC HyperSwap Manager with NetView, V1.1 which includes the required NetView functions.

By containing only the functionality of the GDPS/PPRC automation code to the storage capabilities of GDPS the scope of the customization effort is reduced and allows a lower-priced offering. For more information on the Tivoli System Automation and NetView products, refer to Software Announcement 205-035, dated February 15, 2005.

The GDPS HyperSwap Manager Implementation Service includes on-site consultancy implementation assistance for IBM Tivoli System Automation for z/OS for GDPS/PPRC HyperSwap Manager with NetView, and the GDPS/PPRC HM automation code. These services are bundled together for one price.

**HyperSwap functionality**

Even with the multi-path and RAID architecture within DASD subsystems the single copy of the data continues to be a single point of failure (SPOF). A failure of a disk subsystem or even a single disk array failure can take down major applications, the system, or even the sysplex. GDPS/PPRC HyperSwap Manager is designed to remove this SPOF.

GDPS/PPRC HyperSwap function takes advantage of the Freeze function to help provide data consistency and stop the propagation of logical data corruption to secondary volumes.

GDPS/PPRC HyperSwap Manager exploits the PPRC Failover/Failback function. For planned swaps, Failover/Failback will reduce the overall elapsed time of the swap. For unplanned swaps, Failover/Failback eliminates the need to perform an initial copy to undamaged primary disk subsystems when reestablishing the PPRC mirror in the reverse direction. This effectively minimizes the window during which critical data is left without PPRC protection following an unplanned swap.

The existing full-function GDPS/PPRC offering includes support for HyperSwap. This is designed to transparently switch all primary PPRC disks with the secondary PPRC disks for a planned switch reconfiguration or an unplanned swap in the event of a primary disk subsystem failure, without requiring applications to be quiesced.

The HyperSwap function is completely automated which allows all aspects of the site and disk switch to be controlled by GDPS. The important ability to re-synchronize incremental disk data changes, in both directions, between primary/secondary PPRC disks is provided as part of this function. In addition to the DASD management the full-function GDPS/PPRC will manage the sysplex images and restart workload in the surviving site when more than just the disk subsystems fail. Large configurations can be supported, as HyperSwap has been designed with built-in parallelism to swap large numbers of disk devices very quickly.

The GDPS/PPRC HyperSwap Manager offering makes the full GDPS/PPRC HyperSwap capability described above available at a lower price for use in a single-site continuous availability or a multisite continuous availability and entry-level disaster recovery solution.

The GDPS HyperSwap Manager offering makes the capabilities described above available at an attractive price for use in a single-site near-continuous availability or a multisite near-continuous availability and disaster recovery solution.
Product positioning

This offering extends the GDPS family of solutions by providing an entry-level solution for single- and multisite customers at a cost-effective price. Adding the GDPS/PPRC HyperSwap Manager Service to the GDPS suite of services is designed to allow customers to increase availability and provide applications with continuous access to data. Today GDPS appeals to zSeries customers who require continuous availability and extremely fast recovery. This offering opens up a new market for GDPS in the single data center.

The GDPS/PPRC offerings deliver world-class solutions built on the z/OS platform and yet can manage a heterogeneous environment. GDPS/PPRC provides three solutions, depending upon customer needs. Remote Copy Management Facility (RCMF) provides management of the remote copy environment from a single point of control. GDPS/PPRC HyperSwap Manager builds upon RCMF with the addition of data consistency, the Freeze function, and the HyperSwap functionality for automated recovery of disk. GDPS/PPRC HM can be used as a single-site near-continuous availability or multisite near-continuous availability and entry-level disaster recovery solution. The full-function GDPS/PPRC offering includes the capabilities of GDPS/PPRC HM, and is designed to provide an automated end-to-end solution to dynamically manage storage system mirroring, processors, and network resources for planned and unplanned events that could interrupt continued IT business operations.

In e-business and the on demand world we live in, two of the most stringent demands for business survival are continuous availability and near-transparent disaster recovery (D/R). Systems that deliver continuous availability combine the characteristics of high availability and continuous operations to always deliver high levels of service (24x7x52). GDPS/PPRC is a continuous availability and disaster recovery solution for multisite customers with data consistency based upon synchronous data mirroring. GDPS/XRC is a disaster recovery solution for multisite customers with data consistency based upon asynchronous data mirroring.

IBM statement of direction

IBM plans to take the following actions in the future:

- IBM intends to provide GDPS/PPRC HyperSwap Manager capability for continuous data availability to customers operating with a single z/OS image without requiring a sysplex.
- IBM intends to provide new releases of GDPS on a yearly cycle.

These statements represent current intentions of IBM.

Any reliance on these statements of direction are at the relying party’s sole risk and will not create any liability or obligation for IBM.

All statements regarding IBM’s plans, directions, and intent are subject to change or withdrawal without notice.

Reference information

- Enhancements to the IBM @server® zSeries 900 Family of Servers, in Hardware Announcement 101-308, dated October 4, 2001
- New Functions for IBM @server® zSeries Servers Enhance Connectivity, in Hardware Announcement 102-209, dated August 13, 2002
- IBM Introduces the IBM @server® zSeries 990 Family of Servers, in Hardware Announcement 103-142, dated May 13, 2003
- IBM enhances the IBM @server® zSeries 990 family of servers, in Hardware Announcement 103-280, dated October 7, 2003
- IBM Implementation Services, Installation Services, and Operational Support Services Now Available for Selected IBM Products, in Services Announcement 603-015, dated June 17, 2003
- IBM TotalStorage® PtP VTS includes FICON™ connectivity for increased performance and distance, in Hardware Announcement 103-204, dated July 15, 2004
- IBM enhances the IBM @server® zSeries 990 family of servers, in Hardware Announcement 104-118, dated April 7, 2004
- Significant IBM @server® zSeries mainframe security, SAN, and LAN innovations, in Hardware Announcement 104-346, dated October 7, 2004
- IBM @server® zSeries 990 and 890 FICON enhancements, in Hardware Announcement 105-012, dated January 25, 2005

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).

BP Attachment for Announcement Letter 305-015

Trademarks

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**Education support**

GDPS™ skills transfer is provided to the customer from the GDPS installation team as the GDPS solution is being installed and customized. In addition, a two-day GDPS Technical Consulting Workshop service is available for customers by sending a note to GDPS@us.ibm.com.

IBM Global Services, Learning Services, education supports many related IBM offerings.

Visit

http://www.ibm.com/training/us

For descriptions of courses worldwide, go to

http://www.ibm.com/services/learning

Questions? Contact 800-IBM-TEACH (426-8322).

The following worldwide courses are available for classroom delivery:

- Advanced Parallel Sysplex® Operations and Recovery (ES902)
- Enterprise Storage Server™ Copy Services for S/390® and zSeries® (SS410)
- Enterprise Storage Server Copy Services for S/390 and zSeries (SS415)
- IBM TotalStorage® Enterprise Storage Server Implementation for zSeries (SS460)
- IBM Tivoli® System Automation for z/OS® 2.3 Implementation and Administration (SM930)
- IBM Tivoli NetView® for z/OS 5.1 Installation and Administration (TM720)

The following worldwide courses are available on Digital Video Library format:

- IBM Total Storage Ent. Storage Copy Serv. for OS/390® and zSeries (SS1SO)
- IBM Total Storage Enterprise Storage Services for zSeries (S46S0)

In the U.S. and Canada call 800-IBM-TEACH (426-8322) to enroll in one or more of these classes.

**Prerequisites**

**Hardware requirements**

GDPS/PPRC HyperSwap™ Manager requires Peer-to-Peer Remote Copy (PPRC) capable disk subsystems at PPRC Level 3 technology (disk subsystems that support Extended CQUERY).

If GDPS is running with z/OS V1.3 through z/OS V1.5, a 9672-G5, 9672-G6, or IBM ® zSeries is required.

An IBM ® zSeries is required if GDPS is running on z/OS V1.6 or later.

**Software requirements**

GDPS/PPRC HyperSwap Manager runs on the currently supported releases of z/OS and z/OS.e. The z/OS images must be a member of a multisystem sysplex. A Parallel Sysplex is not required. In addition, the following software products are required:

One of the following

- IBM Tivoli System Automation for GDPS/PPRC HyperSwap Manager with NetView, V1.1 or higher
- or Tivoli NetView for z/OS V5.1 or higher together with one of the following:
  - IBM Tivoli System Automation for GDPS/PPRC HyperSwap Manager, V1.1 or higher, or
  - IBM Tivoli System Automation for z/OS V2.2 or higher

For a complete description of software prerequisites for all GDPS offerings, refer to GDPS: The e-business Availability Solution (GF22-5114).

**Configuration considerations**

Using the GDPS/PPRC HM requires the DASD control units to be in a symmetric configuration. They are to be configured and mapped one to one. All volumes are to be aliased so that they can mirror data in either direction. Any two DASD control units to be mirrored will have the same number of volumes and the same size of volumes in each pair of Logical Control Units (LCUs). No LCU will be attached to more than one GDPS/PPRC HM at one time.

**Technical specifications**

GDPS gives you compatibility and flexibility as you migrate systems in a multisystem configuration by allowing two consecutive releases of GDPS to coexist.

Coexistence allows systems within a multisystem configuration to be upgraded to a new release level of GDPS one system at a time. This is contingent on the fact that the release you are migrating to can coexist with the lower release running in your multisystem configuration.

You can upgrade from GDPS/PPRC HyperSwap Manager to the full multisite GDPS/PPRC offering. When your business requires additional disaster recovery functions and you want to migrate to the full multisite IBM GDPS/PPRC high-availability solution, you can upgrade your current GDPS code.
Performance considerations

Using the GDPS/PPRC HyperSwap technology enables a switch to use the secondary remote copy devices in under one minute for an unplanned outage without needing to shut down the applications. Without HyperSwap, one is required to shut down the sysplex, switch the disk configuration, and restart systems and applications. The elapsed time for this is approximately two hours with significant application availability impact. For a list of customer experiences, refer to the IBM World Wide Customer Reference Database or contact the GDPS team by sending a note to GDPS@us.ibm.com.

Capacity and performance planning assistance for remote copy is available. Through the use of Disk Magic and RMF™ Magic, your disk marketing specialist or your ITS specialist (via a fee-based service) can help you plan and anticipate performance characteristics for specific workloads by modeling proposed configurations.

Planning information

Customer responsibilities: When ordering GDPS/PPRC HyperSwap Manager, the following fee offering is available to aid in GDPS planning activities.

- GDPS Technical Consulting Workshop

   The initial GDPS planning session usually held at the beginning of a GDPS installation can be held as a separate two-day workshop for customers who need help deciding which GDPS/PPRC solution to acquire. This is a stand-alone engagement that is intended to provide enough information and guidance for customers to make a decision to move forward with GDPS.

Direct customer support: Installation and technical support is provided by IBM Global Services. For more information on services, call 888-IBM-4343 (426-4343).

System integrity

IBM will accept APARs where the installation of GDPS/PPRC HM introduces an exposure to system integrity.

Program services

Central service for suspected defects in GDPS/PPRC HM code is provided by the IBM Support Center within your geography. On-site (local) support, although available in many geographies, is provided as part of the IBM portfolio of fee-based services.

Service policy

The GDPS/PPRC HyperSwap implementation services offering includes one year of support for the GDPS/PPRC HM automation code. This is a remotely delivered service that utilizes IBM RETAIN® for problem entry and management. After the initial year a fee services offering for Ongoing Support of GDPS/PPRC HM Automation Code will be available and is recommended. The current version and one level back of GDPS/PPRC HyperSwap Manager automation code will be supported (n,n-1). Appropriate prerequisite requirements apply.

Security, auditability, and control

Data security and auditability are provided by the functions available in the z/OS and z/OS.e products, including the optional Security Server for z/OS feature. The customer is responsible for evaluation, selection, and implementation of security features, administrative procedures, and appropriate controls in application systems and communication facilities.

The Integrated Cryptographic Service Facility (ICSF) provides application programs with callable service interfaces to support the encryption and decryption of data using the cryptographic hardware in the zSeries servers.

Ordering information

Ordering GDPS/PPRC HyperSwap Manager

GDPS/PPRC HyperSwap Manager implementation is provided only through IBM Global Services. Call 888-426-4343 or send a note to GDPS@us.ibm.com. For more details and availability, visit the GDPS Web site at http://www.ibm.com/servers/eServer/zseries/gdps.html

Key dates

- February 15, 2005: First date for ordering IBM Tivoli Systems Automation for GDPS/PPRC HyperSwap Manager with NetView
- February 15, 2005: First date for ordering IBM Tivoli System Automation for z/OS for GDPS/PPRC HyperSwap
- February 15, 2005: First date for ordering Implementation Services for GDPS/PPRC HyperSwap Manager

Prices

For local charges, contact your IBM representative.

Order now

To order, contact the Americas Call Centers, your local IBM representative, or your IBM Business Partner.

To identify your local IBM representative or IBM Business Partner, call 800-IBM-4YOU (426-4968).

Phone: 1-888-IBM-CALL
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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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