

GDPS® Update: LSU 2007

The IBM On Demand Availability Solution

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Agenda

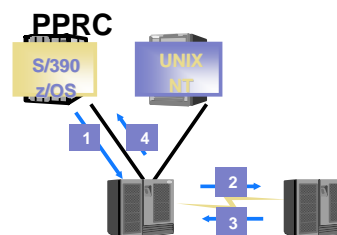
- **GDPS Current status**
 - ▶ GDPS 3.3
 - ▶ GDPS 3.4
- **GDOC (Veritas Clusters)**
 - ▶ Implementation projects
 - ▶ Where are we going with this solution?
- **Incremental resynch**
 - ▶ What it is
 - ▶ Metro Global Mirror (GDPS/PPRC with GDPS/GM)
 - ▶ Metro Global Mirror for Z (GDPS/PPRC with GDPS/XRC)
- **Some futures**
 - ▶ Short term / Long term



PPRC, XRC and GM Overview

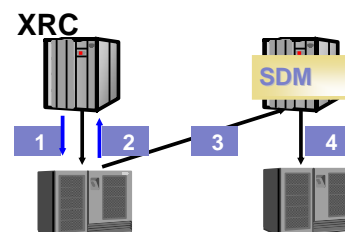
PPRC (Metro Mirror)

- Synchronous remote data mirroring
- Metropolitan Distance
- Latency of 10 μ Sec/km



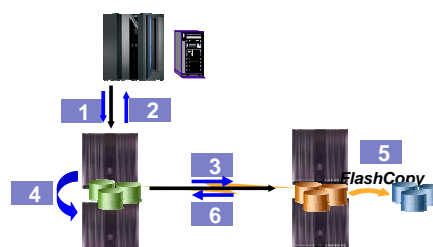
XRC (z/OS Global Mirror)

- Asynchronous remote data mirroring
- Unlimited distance support
- Performance impact negligible
- System Data Mover (SDM) provides Data consistency



GM (Global Mirror)

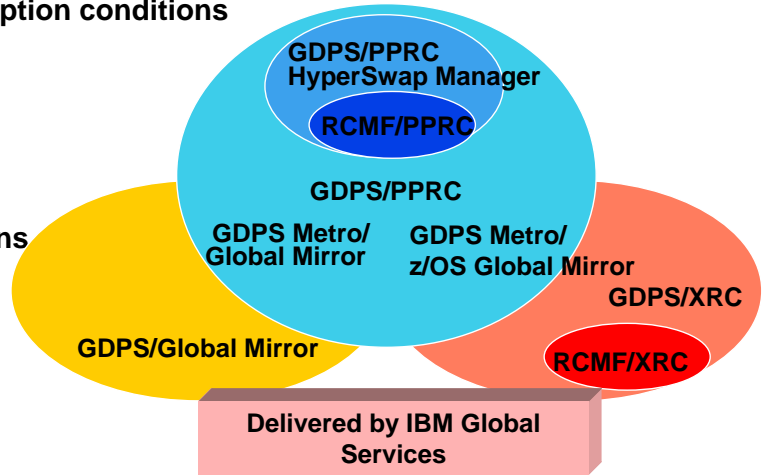
- Asynchronous remote data mirroring
- Unlimited distance support
- Performance impact negligible
- Up to 16 ESSs in GM session (w/RPQ)
- Supports System z and OPEN Systems data





What is GDPS?

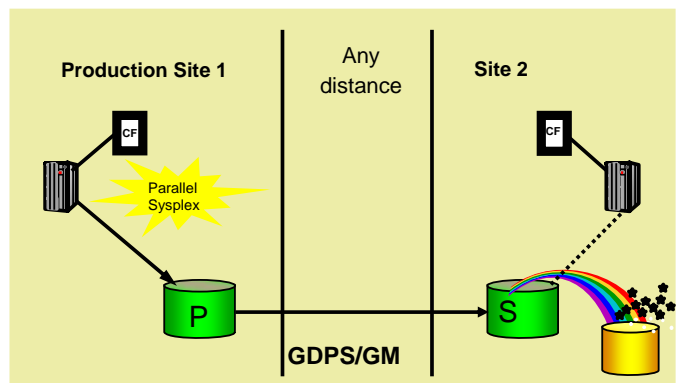
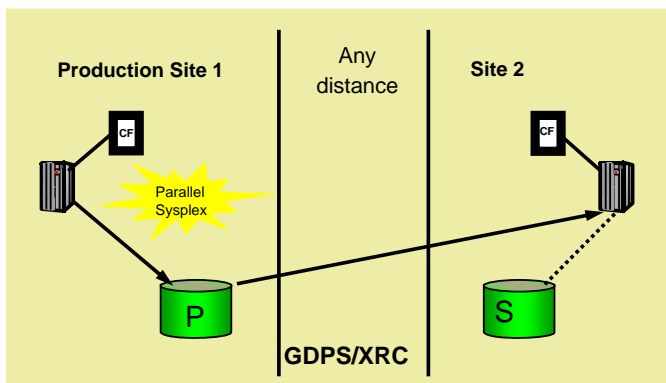
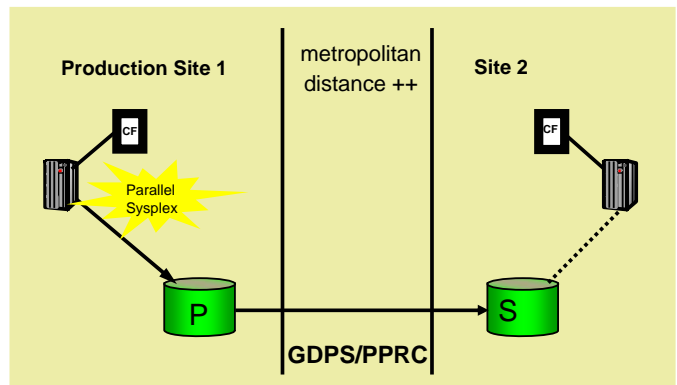
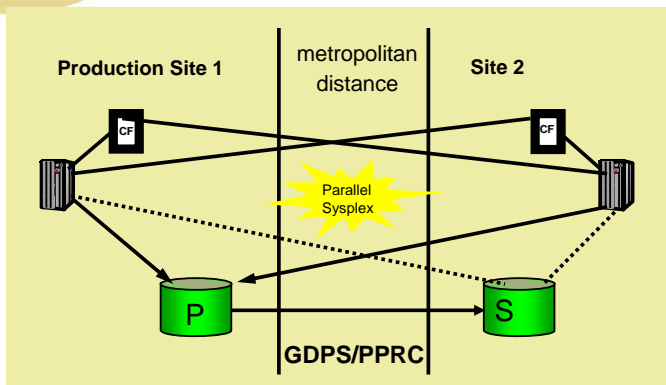
- **Automation that manages application and data availability in and across sites**
 - ▶ Monitors systems, disk & tape subsystems
 - ▶ Builds on (multi-site) Sysplex and data mirroring technologies
 - ▶ Manages planned and unplanned exception conditions
 - System maintenance / failure
 - Site maintenance / failure
- **User interface through**
 - ▶ Panels - status and planned actions
 - ▶ Scripts - planned and unplanned actions



Designed for Continuous Application & Data Availability
Single point of control
Delivered through IBM Services

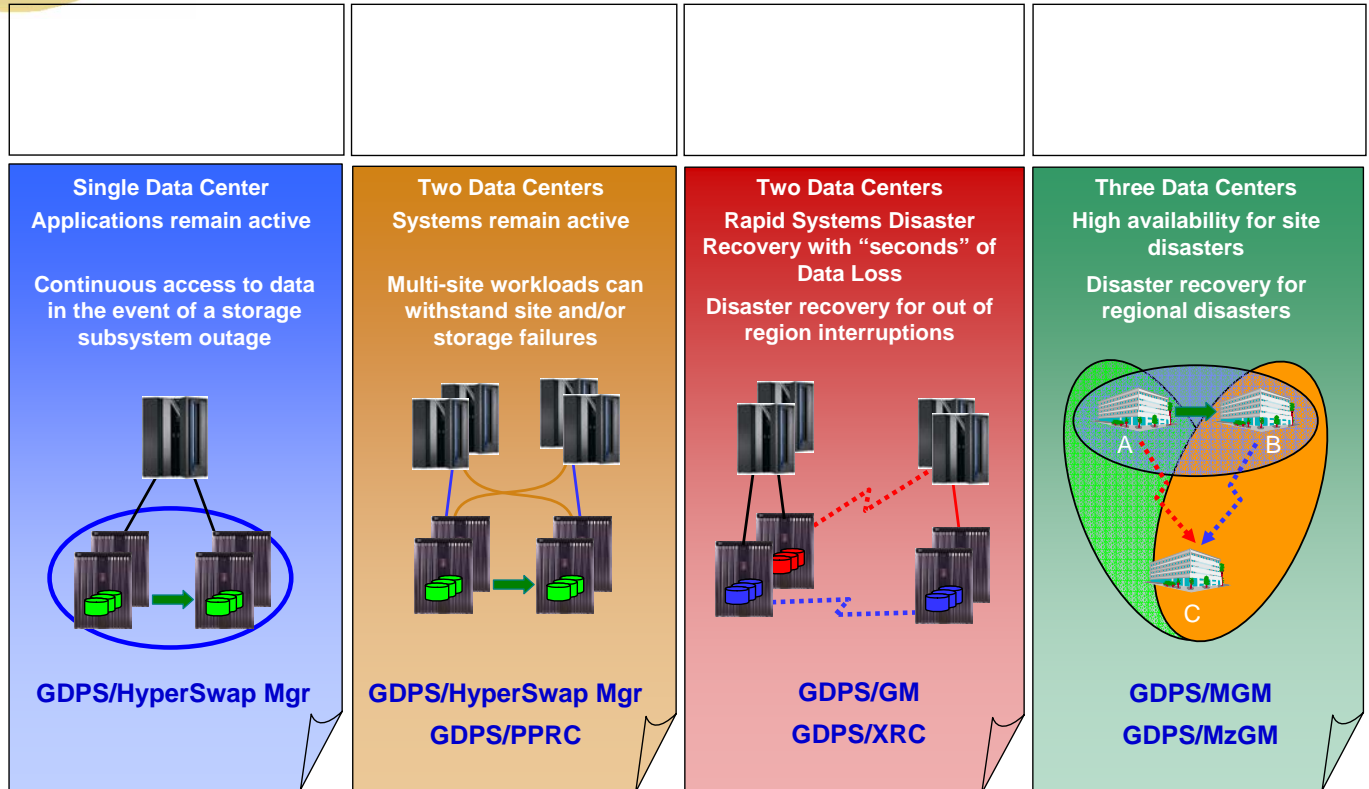


The 3 GDPS solutions





GDPS Family



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Current Release Status

- GDPS & RCMF V3.3 became GA January 2006
- GDPS & RCMF V3.4 became GA March 2007
- A new release expected to ship once pr year
- Functional packages might be delivered afterwards
- In general still N+1 support, but we are considering

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GDPS Enhancements (GDPS V3.3)

- **GDPS/PPRC HyperSwap Manager**
 - ▶ IOS Timing Trigger
- **GDPS/PPRC**
 - ▶ Enhanced Recovery Support (CF Duplexing)
 - ▶ Multi-Platform Resiliency for zSeries enhancements
- **GDPS/XRC**
 - ▶ XRC+ Support
 - ▶ Greater SDM Parallelism
 - ▶ Support for >14 SDMs
- **GDPS/Global Mirror**
 - ▶ Global Mirror Support
 - ▶ Metro/Global Mirror RPQ



GDPS V3.4 Major new functions

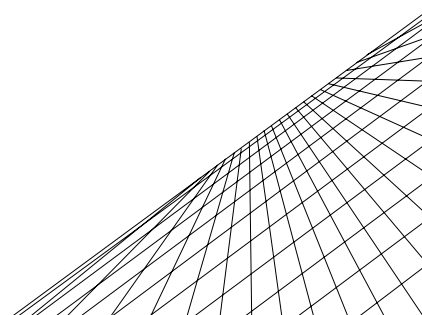
- **System Management**
 - ▶ GUI Interface
 - ▶ HealthChecks
- **GDPS/PPRC and HyperSwap Manager**
 - ▶ IMS/XRF Support
 - ▶ TDMF Support
- **GDPS/PPRC**
 - ▶ GDPS/PPRC Multi Platform Resiliency for zSeries
- **GDPS/XRC**
 - ▶ Zero Suspend FlashCopy
 - ▶ Additional IPL Automation
- **GDPS/Global Mirror**
 - ▶ FlashCopy disk management
 - ▶ Additional IPL Automation
- **GDPS Metro / Global Mirror**
 - ▶ Incremental Resynchronisation



GDPS/PPRC Web Graphical User Interface

- Intuitive, easy to use, modern Web GUI
 - ▶ Based on NetView Web Application (standard feature)
 - ▶ Webserver can run on many platforms including laptop
 - ▶ Coexists with existing 3270 interface
- Improved design based on customer feedback
 - ▶ Designed keeping existing customers in mind
- Removes many restrictions imposed by 3270 and NetView panel interface
- Extensible to other GDPS products
- *Simplified systems management*

Note: Full GDPS/PPRC only



GDPS/PPRC GUI Interface

Multiple Windows

Color coded alerts

GDPS Status Menu

Go directly to desired option

GDPS - Status Menu and commands			WTOBs	SDFAlerts	GDPS PPRC V3.R4.M0
RUNE	19 Feb 2007	19:02:55	A6P44	G4C2	GDPS Page: VPCWPMEN

System/Domain	G4C2 / A6P44	Primary DASD status	OK
Current Master	G4C2 / A6P44	Primary DASD site	SITE1 : SITE 1 KSYS
Parallel Mode	YES	Pri Open xDR	ANX SDO
Hyperswap	DISABLED	Pri Open LUN	OK SITE1
FO/FB	YES		
DEBUG	OFF		
WebDEBUG	No WEBdebug active.		

GDPS commands

HYPERSWAP commands

HYPERSW on HYPERSW disable HYPERSW off

- Remote Copy
- Standard Actions
- Planned Actions



GDPS (all flavors) Health Checker plugin

- Helps ensure best practices are adhered to
- Helps identify setup changes as environment changes
- Requested by customers
 - ▶ Healthchecks identified/prioritized by customers
- Complements GDPS monitoring capability
- New checks will be added over time

- *Improved systems management and availability*



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ON DEMAND



IPL Message Automation GDPS V3.4

- NIP console message automation at IPL
 - ▶ GDPS/XRC & GDPS/Global Mirror
 - ✓ IPL messages
 - ▶ GDPS/PPRC
 - ✓ zVM IPL prompt automation
- Minimizes operator interaction and risk of error
- Simplifies recovery procedures
- Potential RTO improvement



IEA213A	DUPLICATE VOLUME volname FOUND ON DEVICES..
IEA214A	DUPLICATE SYSRES volname FOUND ON DEVICE...
ILR031A	REPLY 'DENY' TO PREVENT ACCESS, 'CONTINUE' TO ALLOW USE OF dsname
IGGN505A	SPECIFY UNIT FOR dsname ON volser OR CANCEL
IXC247D	REPLY U to ACCEPT USE OR D TO DENY USE OF THE COUPLE DATA SET FOR typename
IXC405D	REPLY I TO INITIALIZE THE SYSPLEX, J TO JOIN SYSPLEX sysplex-name, OR R TO REINITIALIZE XCF .
ILR031A	REPLY 'DENY' TO PREVENT ACCESS, 'CONTINUE' TO ALLOW USE OF dsname

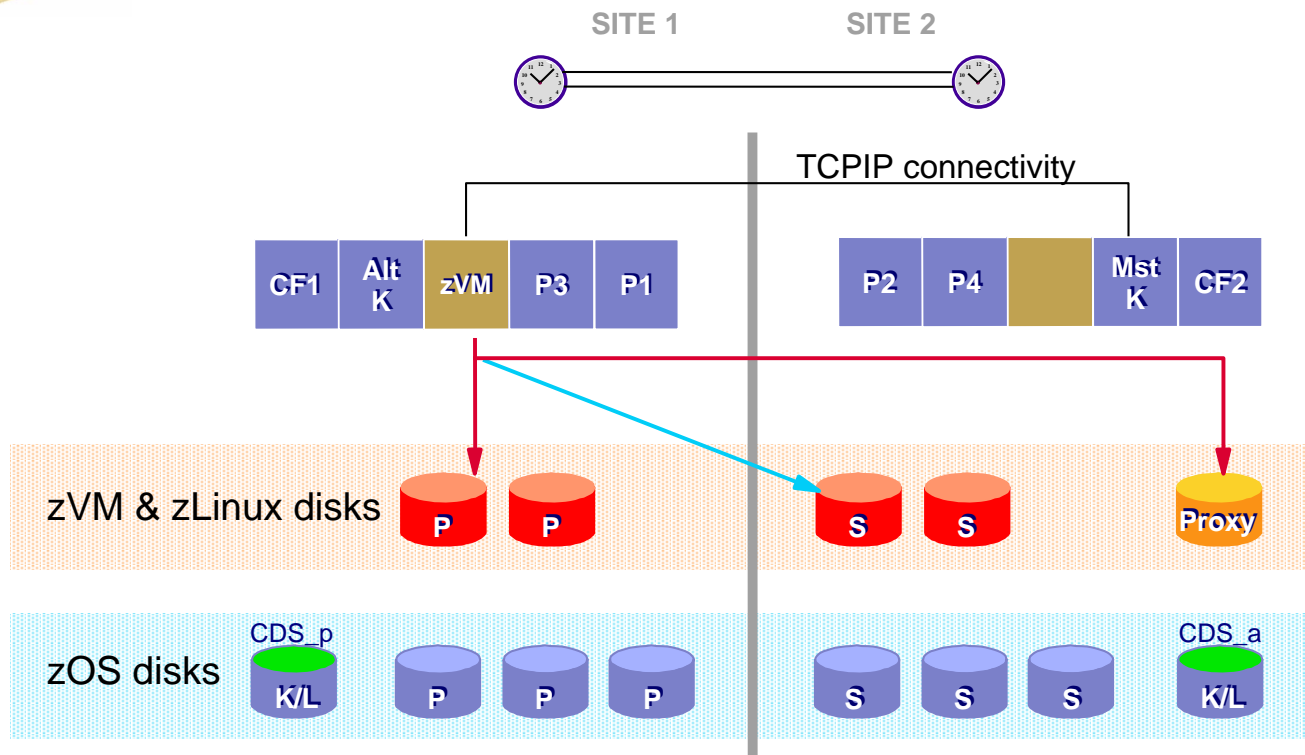
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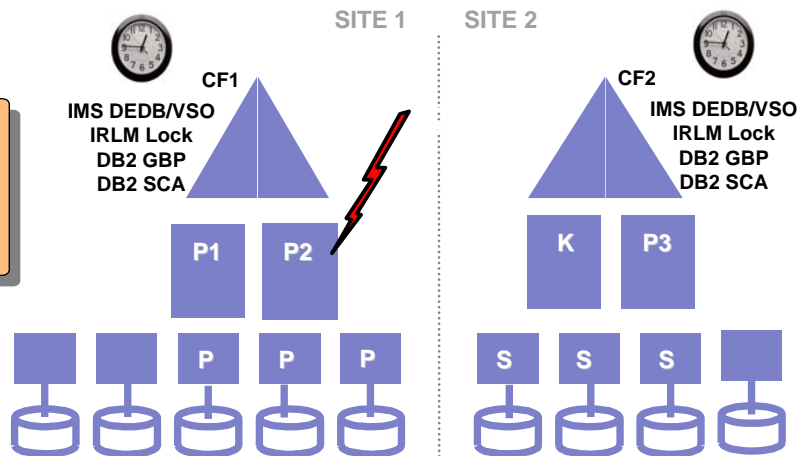


GDPS/PPRC xDR High level Configuration



GDPS/PPRC enhanced recovery support planned for GDPS V3.3

Should we keep Site1 or Site2 instance? "CF Hint"



- Avoids potentially long running recovery procedures to restore data
- Provides time-consistency between CF structures and disk
- Requires Freeze=STOP policy

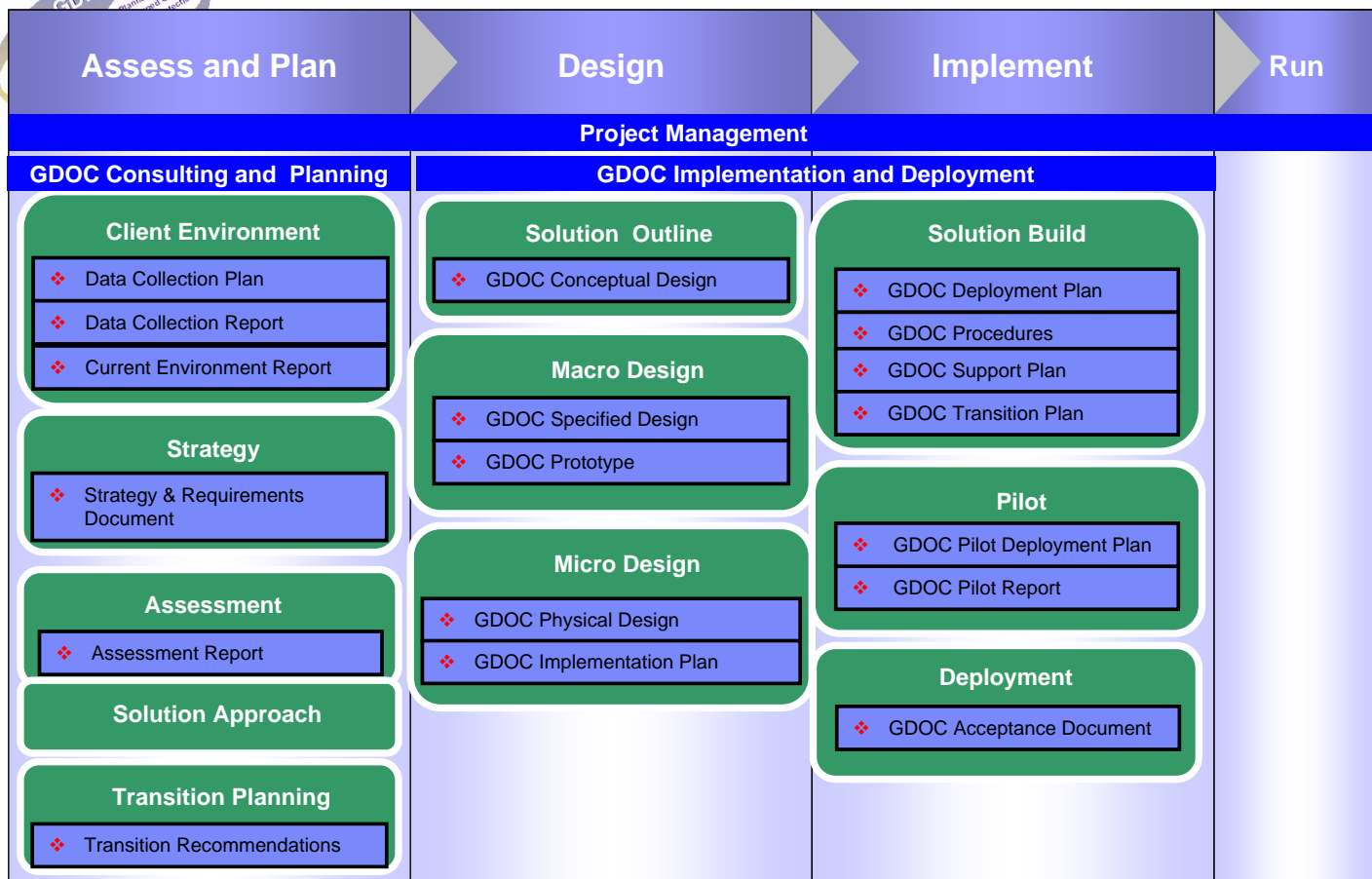
- No special recovery actions (e.g., GRECP) required
- Facilitates faster application restart (may improve RTO)
- Can provide consistent recovery time



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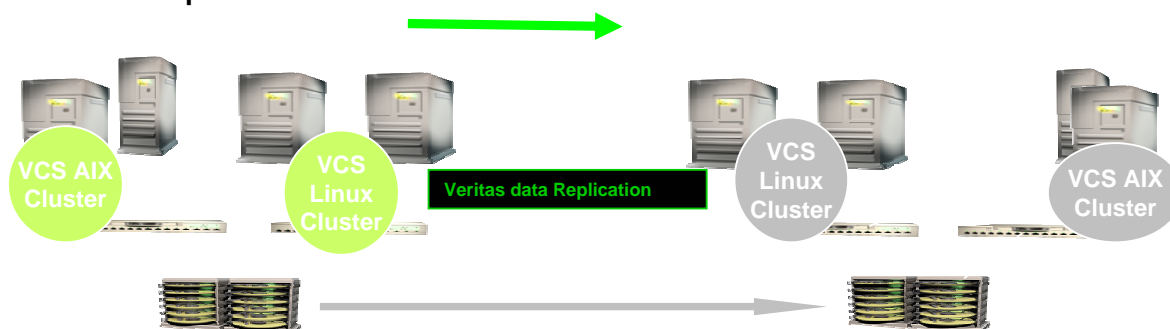
Phases and Deliverables





GDOC Implementation

- Single Site / Multisite Workload
- Data replication
- DR and Availability implementation
- Project planning and rollout
- Testing
- Operation and Documentation

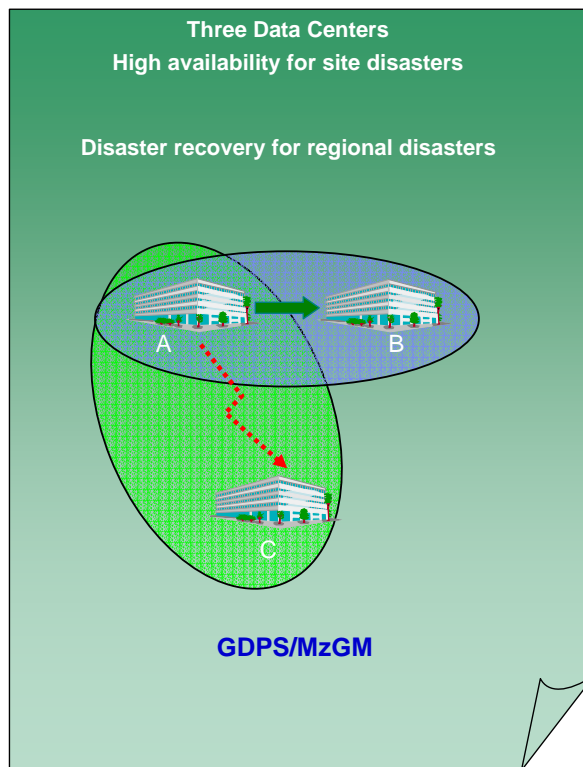
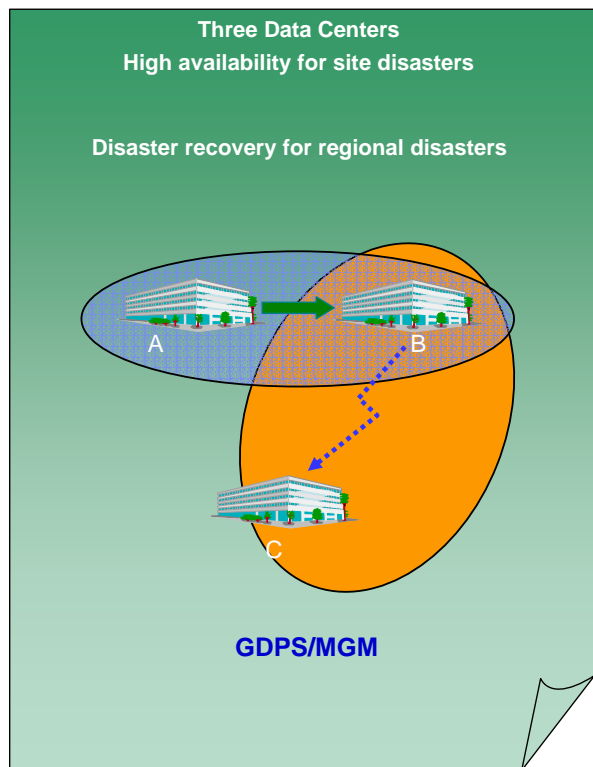


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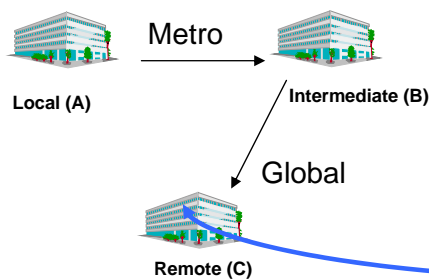
Continuous Availability Regionally Disaster Recovery Extended Distance



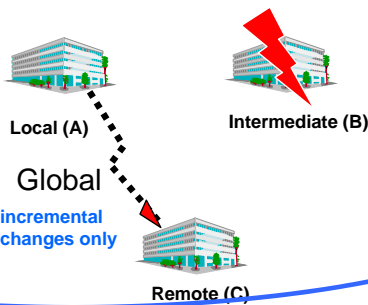
MGM Incremental Resync Overview

- Fast Failover / Failback to any other site
- Fast re-establishment of 3 site recovery, without production outages, with continuing D/R protection
- Quickly resynchronize any site with incremental changes only

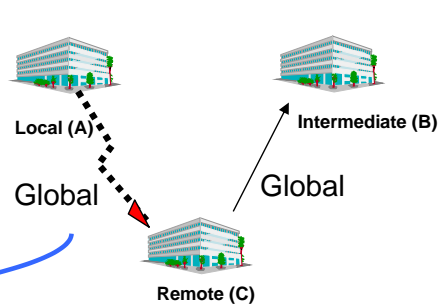
MGM w/ Incremental Resync
A->B->C



Intermediate Failure
A->C



Intermediate recover
A->C->B



incremental changes only

Return to Original Configuration



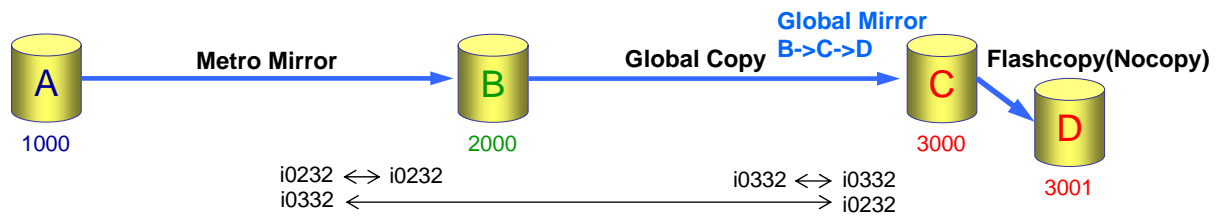
Step1) MGM Incremental Resync Setup

IBM.2107-7510001

Intermediate Site IBM.2107-7520001

Remote Site

IBM.2107-7530001



- 1) Create all PPRC paths
- 2) Create Global Copy with no copy from intermediate to remote site (B->C)
- 3) Create Metro Mirror with incremental resync (A->B)
- 4) Create Flashcopy at remote site (C->D)
- 5) Create GM sessions and add volumes to the GM session at intermediate site
- 6) Start Global Mirror at intermediate site (B->C->D)



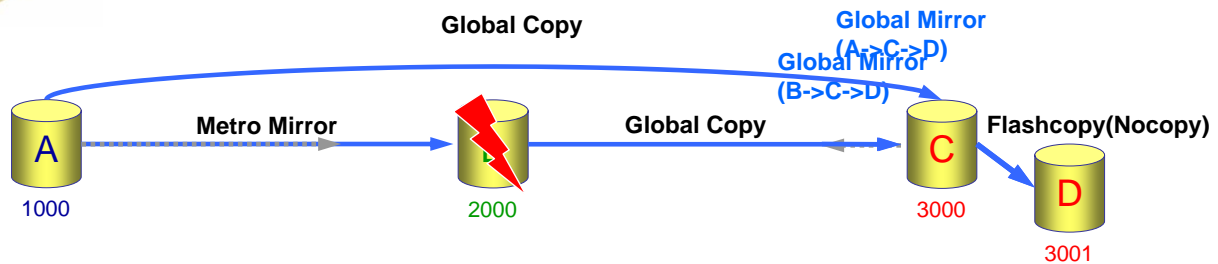
Step2) Intermediate Site Failure Scenario

IBM.2107-7510001

Intermediate Site IBM.2107-7520001

Remote Site

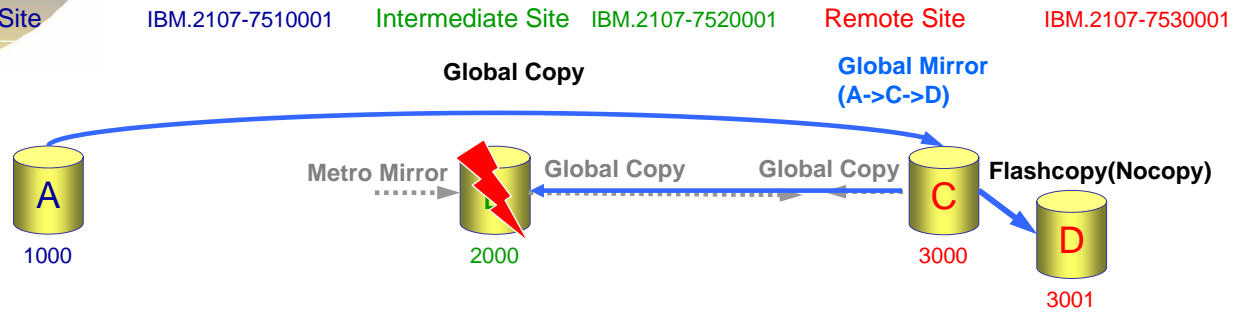
IBM.2107-7530001



- 1) Intermediate Site Failure (B crashed !!!)
- 2) Suspend Metro Mirror at local site if needed
- 3) Failover Global Copy at remote site (C->B)
- 4) Cleanup surviving components of former Global Mirror (if possible) (B->C->D)
- 5) Verify Global Mirror consistency group (C->D) revert or commit if needed
- 6) Start Global Copy at local site (A->C)
- 7) Create sessions and restart Global Mirror at local site (A->C->D)



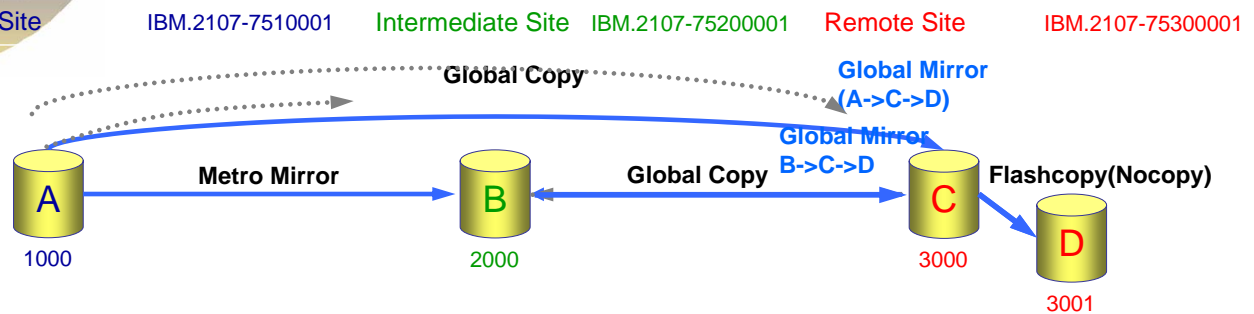
Step3) Intermediate Site Restore Scenario



- 1) Intermediate Site Recovered
- 2) Remove Metro Mirror at intermediate site if needed (B)
- 3) Suspend Global Copy at intermediate site if needed (B->C)
- 4) Cleanup surviving components of former Global Mirror (if necessary) (B->C->D)
- 5) Failback Global Copy at remote site (C->B)
- 6) Start incremental resync at local site (A->C)



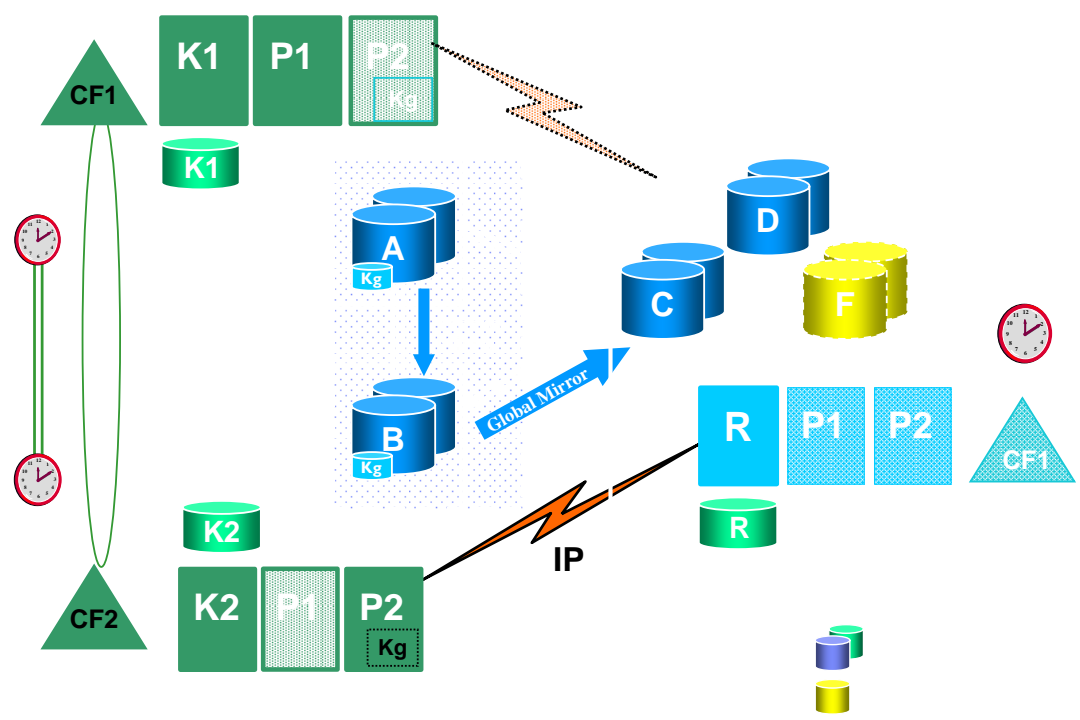
Step4) Return to Original Configuration Scenario



- 1) Stop Global Mirror at the local site (A->C->D)
- 2) Suspend Global Copy at local to remote site (A->C, C->B) cf.) wait until C=B
- 3) Stop Global Copy at the remote site (C)
- 4) Suspend Global Copy from remote to intermediate site (C->B)
- 5) Failover Global Copy at the intermediate site (B->C)
- 6) Failback Global Copy at the intermediate site (B->C)
- 7) Create Metro Mirror with incremental resync at local site (A->B)
- 8) Start incremental resync at local site (A->B)
- 9) Start Global Mirror at the intermediate site (B->C->D)

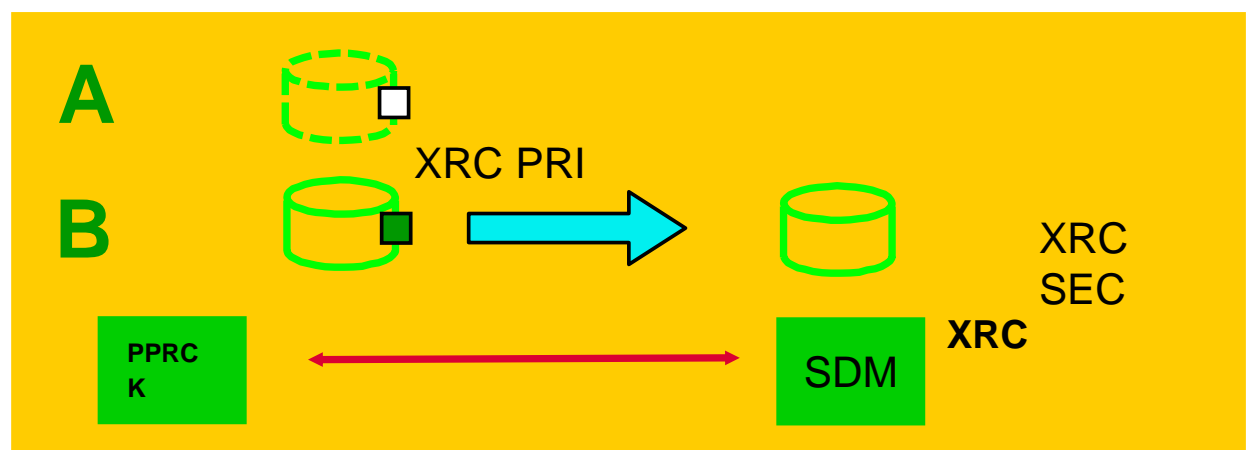
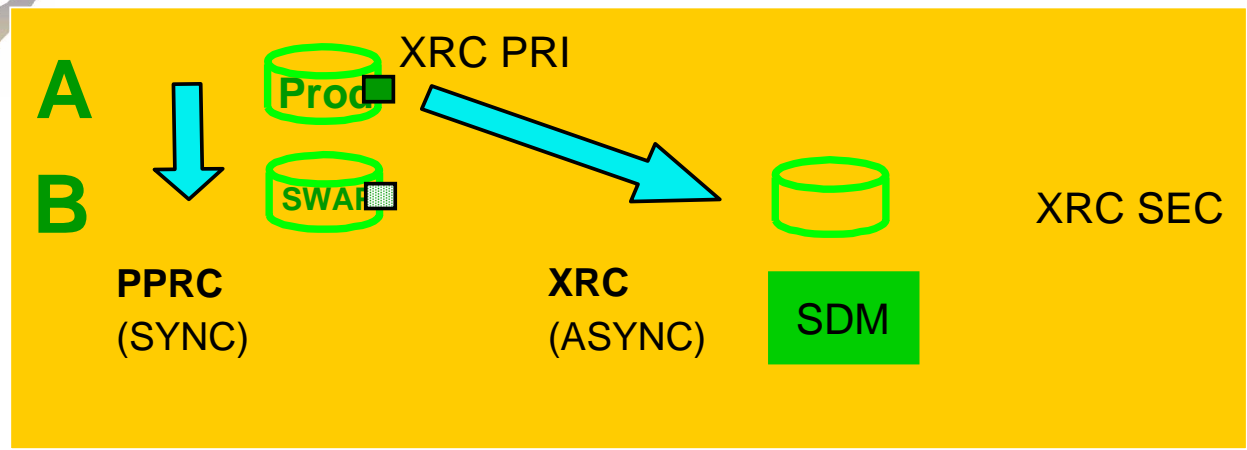


GDPS for Metro Global Mirror



GDPS for Metro Z Global Mirror ????

HYPERSWAP





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Short term

- **All versions of the offerings**
 - ▶ **New release 1Q 2008**
 - ▶ **Maintenance stream**
 - ▶ **Requirements**
 - ▶ **SPE 'catchup'**
 - ▶ **New functions**



Long Term

- **Active/Active Sites**
- **Service Continuity**
- **E2E Enterprise Data, Server, Workload and Network Management**
- **Enterprise Storage Management**
- **Extensions in new functions, Simplicity, Requirements and Useability**