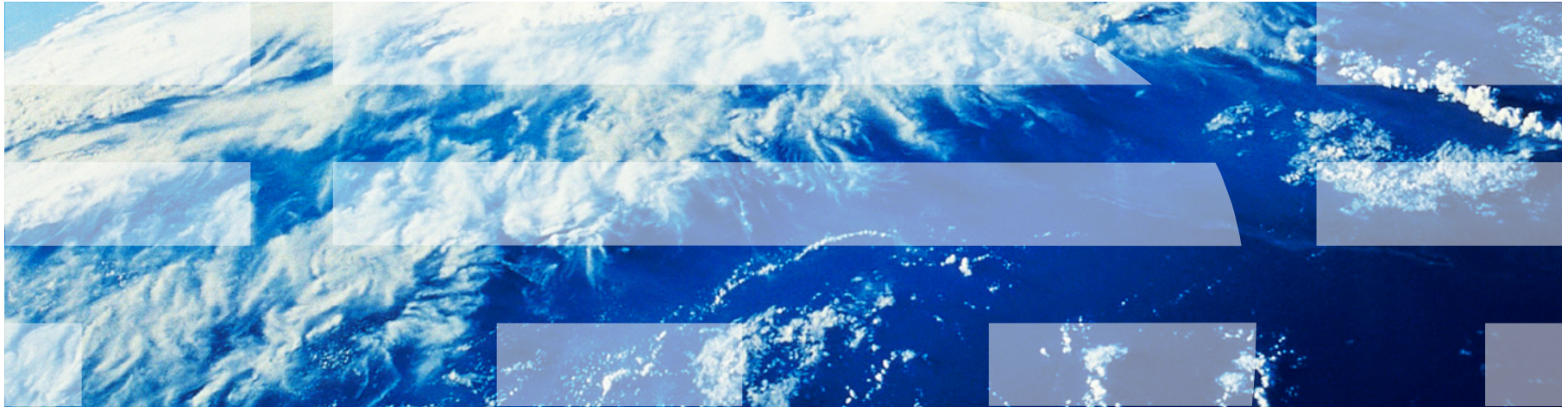


Continuous Availability and Disaster Recovery for Linux on IBM Z with GDPS



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Agenda:

What is GDPS?

GDPS Family

HyperSwap with GDPS

GDPS and Linux on Z

Linux on Z guest under z/VM

Requirements, Set up, Configuration

Native Linux on Z

KVM support

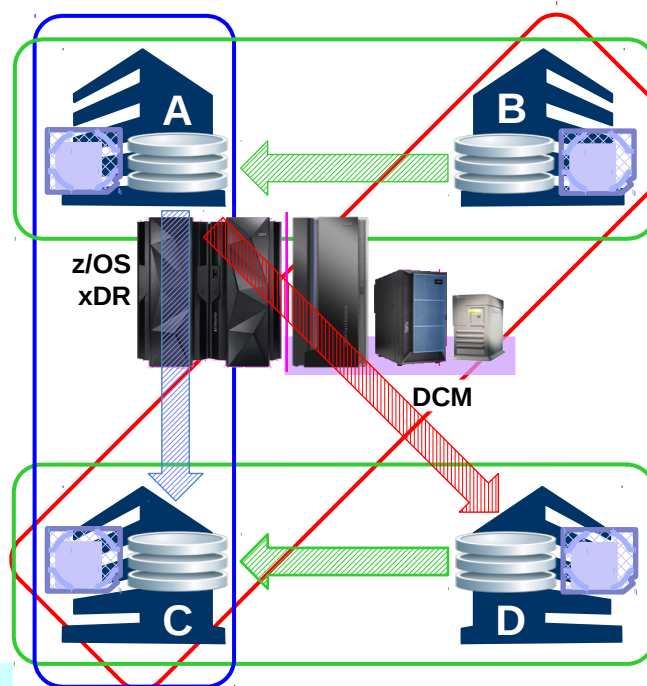
GDPS Virtual Appliance

GDPS GUI panels / demo

Global Continuous Availability & Disaster Recovery Offering for IBM z Systems – 20 years and still going strong

Manage & Automate

- Central Point of Control
z Systems and Distributed Servers
xDR for z/VM and Linux on z Systems
Replication Infrastructure
- Real-time Monitoring and Alert Management
- Automated Recovery
HyperSwap for Continuous Availability
Planned & Unplanned Outages
- Configuration Infrastructure Mgt
Single site, 2-site, 3-site, 4-site
- Automated Provisioning
z Systems CBU / OOCoD



Solutions

- GDPS Metro HM** HyperSwap Manager
- GDPS Metro** Metro Mirror single leg
- GDPS Metro** Metro Mirror dual leg
- GDPS Global GM** Global Mirror
- GDPS Global XRC** XRC (z/OS Global Mirror)
- GDPS Metro Global** Metro z Global Mirror 3-site and 4-site
- GDPS Metro Global** Metro Global Mirror 3-site and 4-site
- GDPS CA** Active-Active
- GDPS VA** Metro Mirror

Automation

System Automation for z/OS
NetView for z/OS
SA Multi-Platform
Multi-site Workload Lifeline

Replication

Disk & Tape
Metro Mirror
z/OS Global Mirror
Global Mirror
DS8000/TS7700

Software
IBM InfoSphere Data
Replication (IIDR) for DB2
IIDR for IMS
IIDR for VSAM

Technology

First GDPS installation 1998, now more than 900 in 49 countries

Multiple GDPS products meeting various requirements for Local/Metro/Remote CA with out-of-region DR



Continuous Availability and entry-level Disaster Recovery	Continuous Availability with DR within Metropolitan Region	Disaster Recovery Extended Distance	CA Regionally and Disaster Recovery Extended Distance	CA, DR, & Cross-site Workload Balancing Extended Distance
GDPS Metro HM RPO=0 [RTO secs] for disk only	GDPS Metro GDPS Virtual Appliance RPO=0 RTO mins / RTO<1h	GDPS Global RPO secs, RTO<1h	GDPS Metro Global RPO=0, RTO mins/<1h & RPO secs, RTO<1h	GDPS CA RPO secs, RTO secs
Single Data Center <i>(one or two sites)</i> Applications remain active Continuous access to data in the event of a storage outage	Two Data Centers <i>(2 server sites, 2 or 3 disk locations)</i> Systems remain active Multi-site workloads can withstand site and/or storage failures	Two Data Centers Rapid Systems DR with “seconds” of data loss Disaster Recovery for out of region interruptions	Two/Three/Four Data Centers High availability for site disasters Disaster recovery for regional disasters	Two or more Active Data Centers Automatic workload switch in seconds; seconds of data loss

Recovery Time Objective (RTO) is the time needed to recover from a disaster or how long the business can survive without the systems.

Recovery Point Objective (RPO) defines the amount of data that you can afford to recreate during a recovery, by determining the most recent point in time for data recovery.

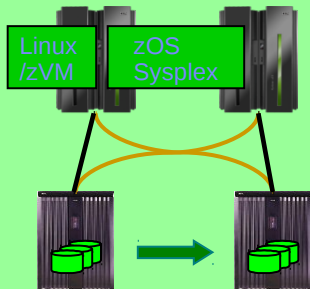
GDPS Metro (formerly GDPS/PPRC) for two sites – Metropolitan distance continuous availability (CA) and disaster recovery (DR) solution



Continuous
Availability / Disaster
Recovery within a
Metropolitan Region
Two Data Centers

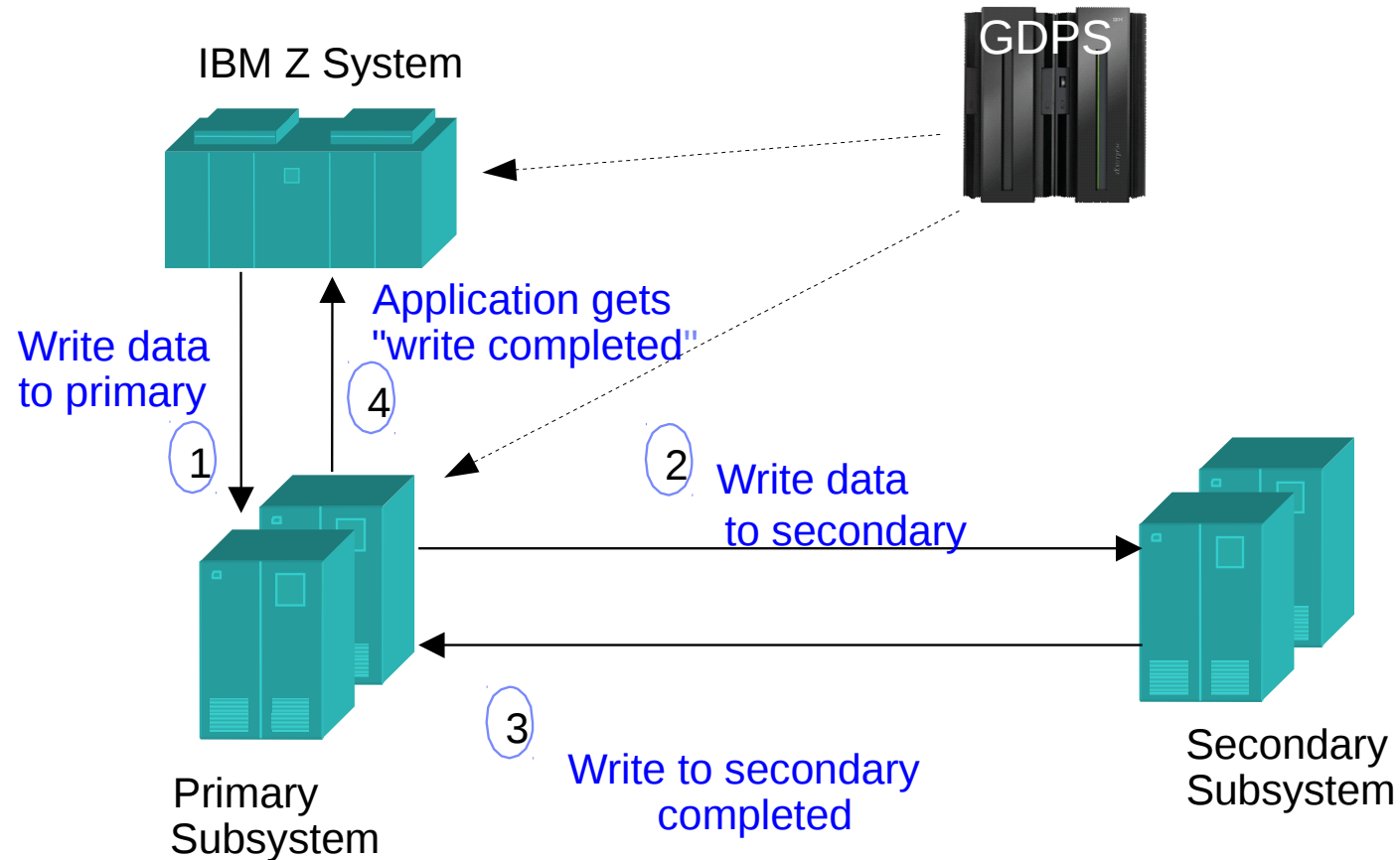
Systems remain active

Multi-site workloads can
withstand site and/or
storage failures

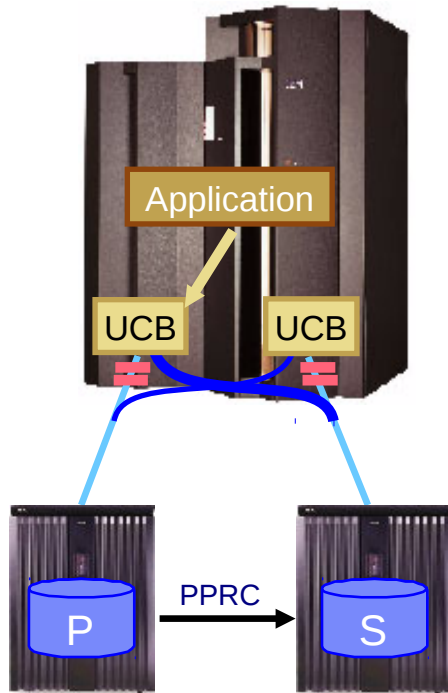


- Provides Server/LPAR management
- Simplifies and streamlines data replication management
- Manages remote copy environment using HyperSwap function and keeps data available for operating systems and applications
- Facilitates faster recovery time for planned and unplanned outages
- Ensures successful recovery via automated processes
- Enhances data consistency across all secondary volumes for both System z and distributed systems
- Enables high availability and DR for Linux on z environments
- Leverages Distributed Cluster Management (DCM) to interface with distributed environments to provide an enterprise-level disaster recovery solution
- Combines with GDPS Global to provide a three/four-site solution for higher availability and disaster recovery

Metro Mirror (PPRC) Operation



HyperSwap – the Technology

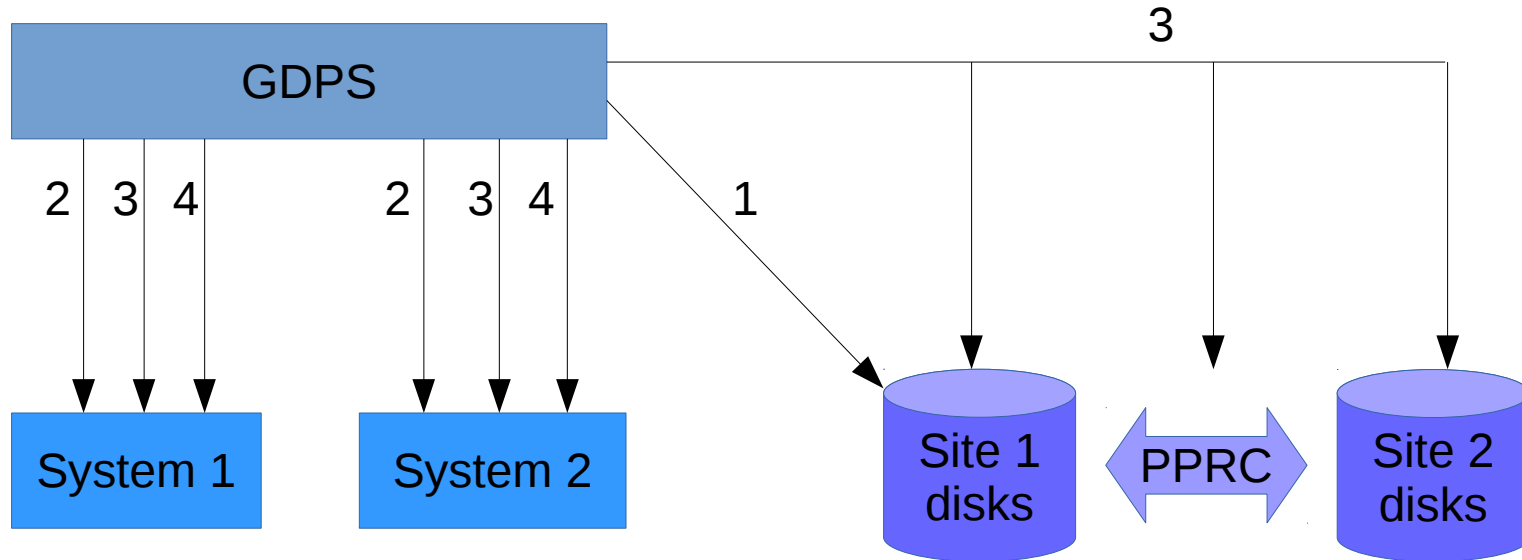


UCB = Unit Control Block

- Extends System availability to disk subsystems
- Substitutes Metro Mirror (PPRC) secondary for primary device
 - Automatic – No operator interaction
 - Fast – Can swap large number of devices → User Impact Time (UIT) 5-10 seconds
 - Non-disruptive – applications keep running
- Triggered by a primary disk failure
- **Disk no longer a single point of failure**

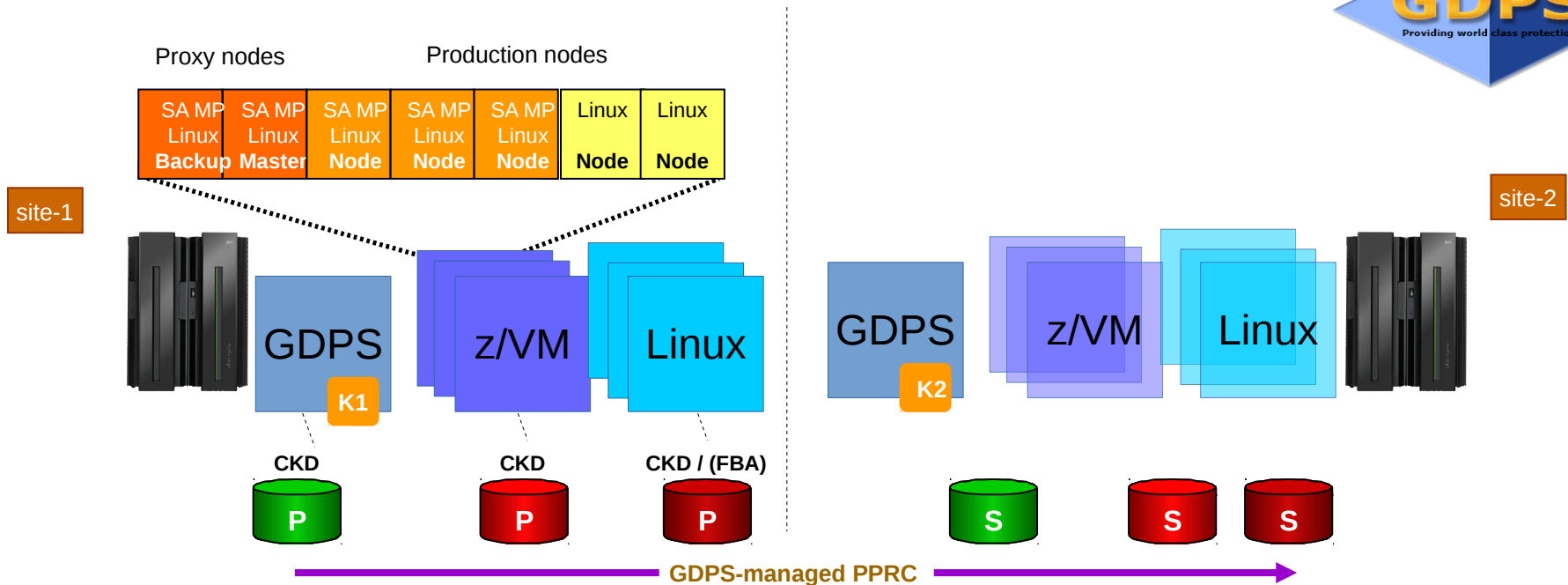
Comprehensive application and data availability solution

HyperSwap Phases



1. Freeze – ensure data consistency
2. Quiesce – suspend the disks – I/O is queued
3. Swap to secondary disks + leave mirroring terminated or suspended or resynch, according to policy and planned/unplanned case
4. Resume disk I/O

GDPS xDR: Linux guest & native Linux on Z



- Management of all disks —> control mirroring
- Management of all LPARs → start/stop...
- Coordinated HyperSwap – z/OS, z/VM with its guests, and native Linux
- Graceful shutdown and startup (re-IPL in place) of Linux clusters or nodes
- zVM SSI Live Guest relocation
- Graceful shutdown of z/VM
- Coordinated takeover in unplanned cases e.g. recovery from a node failure
- Coordinated takeover in planned cases for e.g. maintenance

Coordinated recovery for planned and unplanned events



xDR Expands the Scope of GDPS to:

- Include one or more z/VM systems.
 - Each z/VM system will require at least one Linux guest to act as a “proxy” for GDPS on the z/VM system.
 - This Linux proxy system must run System Automation for MultiPlatform (SA MP) for communications with the GDPS K-system(s).
 - SA MP is optional for other (non-proxy) guests, but would be required for:
 - Use of the GDPS AUTOIPL and AUTOGUESTIPL features.
 - GDPS system availability checking for the Linux guest system.
 - Automation of resources/services on the Linux guest system.
- Include one or more native Linux systems.
 - Each native Linux system must run SA MP.

xDR for Linux on z/VM



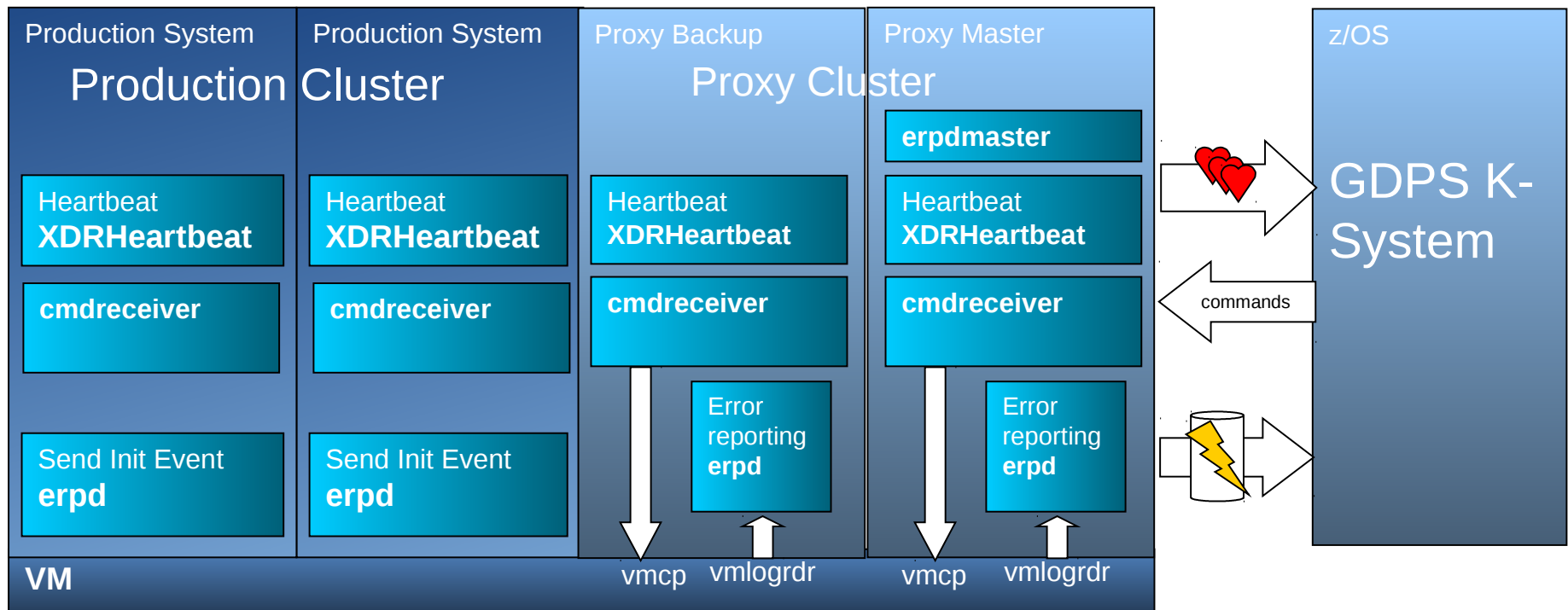
Supported Linux Distributions	Version of System Automation
SUSE SLES 11 + SLES 12	SA MP 4.1.0.4
Red Hat RHEL 6 + RHEL 7	SA MP 4.1.0.4

- Separately priced SA MP xDR feature is required
- Required VM Version
 - z/VM V6.4
 - Check GDPS PSP buckets for recommended maintenance
- Supported Disk Types
 - DASD ECKD

xDR on z/VM



- Proxy Guest(s)
 - At least one Linux system is configured as Proxy for GDPS which has special configuration (Memory locked, Access rights to VM, Separate Cluster...). Two recommended for high availability
 - erpdmaster resource denotes Proxy Master guest role
 - Heartbeat for system availability check
 - erpd sends system information and reports disk errors to GDPS
 - cmdreceiver to process commands from GDPS
- Production Nodes
 - Heartbeat from master node for system availability check
 - erpd sends system information
- The command interface to VM CP is vmcp
- The interface to retrieve disk errors from VM is vmlogrdr (Linux device)





xDR – restrictions Linux on z/VM

- HyperSwap is not supported in second level z/VM systems.
- Reserve/Release is only supported for minidisks and full pack minidisks defined with virtual reserve/release. Reserve/Release on dedicated disks will not be propagated during HyperSwap. Therefore, dedicated disks may only be used if you are positive that no Reserve/Release will be issued to these disks.
- Only DASD ECKD disks are supported (no SCSI disks)
- If two disks are shared by multiple VM systems, all systems must participate in xDR (to keep HyperSwap processing consistent)
- All guests belonging to one SA MP Cluster must be on the same VM system
- If GDPS is unable to communicate with all proxy guests on a VM system, it will disable planned HyperSwap across the whole GDPS.
- If a system is not enabled for HyperSwap, it is reset in case of an unplanned HyperSwap
- If a system is not responding in time to quiesce or swap command, it is reset in case of an unplanned HyperSwap



xDR – requirements for proxy guest

- Memory is locked
 - Proxy guest disks not mirrored
 - Network connectivity through directly attached dedicated OSA devices
 - ...other z/VM setup requirements
-
- → Only purpose of this guest is communication with GDPS – no other applications running on that guest

xDR – set up proxy guest RHEL or SLES



- Lock memory with startup:
 - `vmcp lock Inxprox1 0 1fff REAL`
- Create two-node SA MP proxy cluster – one node using disks in site 1, second node using disks in site 2:
 - `preprnode Inxprox2`
 - `mkrpdomain proxydomain Inxprox1 Inxprox2`
 - `startrpdomain proxydomain`
- Customize event sending to GDPS:
 - `ServerLocation=10.48.163.7`
 - `ServerPort=5529`
- Configure and start xDR proxy processes – `cmdreceiver` and `heartbeat`
 - copy service file from sample
 - `systemctl enable cmdreceiver`
 - `systemctl start cmdreceiver`
- Create SA MP resource for error reporting daemon:
 - run script `enableErpd`



xDR – set up proxy guest RHEL or SLES

- Run xDR configuration verification program to verify set up is correct:

```
vmproxy61:~ # xdrverifycfg
Starting xDR configuration verification @(#)67 1.10  src/sam/xdr/sles9/xdr_healthcheck.c, charm.xdr, sam_rsa41svc, rsa41svcs003e
Version: @(#)65 1.158  src/sam/xdr/common/xdr_hcutils.c, charm.xdr, sam_rsa41svc 1/30/18 12:15:06
SAMX0035W There are mixed versions of RSCT active in the cluster
SAMX0101E Insufficient authority to execute control command START
SAMX0101E Insufficient authority to execute control command DRAIN
SAMX0101E Insufficient authority to execute control command SET DUMP
SAMX0004E The memory of the xDR proxy is not completely locked. Total memory: 512MB. Pages that must be locked: 0 - 1FFFF
SAMX0136W Crashkernel is used and can prevent locking of memory
xDR healthcheck detected errors.
```

- Read message explanation and try to fix problem:

```
vmproxy61:~ # xdrhelpmsg SAMX0004E
SAMX0004E
SAMX0004E The memory of the xDR proxy is not completely locked. Total memory: <total size>. Pages that must be locked: 0 - <page number>

Explanation:
If not all memory pages of the xDR proxy are locked HyperSwap execution may fail.
The memory must be permanently locked on all proxy nodes.

Operator Response:
Add the LOCK command to the boot.local or rc.local file on all proxy nodes.
Ensure that the correct SA MP policy is active by issuing the command enableErpd on one proxy node.
```

- Verify if problem is fixed:

```
vmproxy62:~ # xdrverifycfg
Starting xDR configuration verification @(#)67 1.10  src/sam/xdr/sles9/xdr_healthcheck.c, charm.xdr, sam_rsa41svc, rsa41svcs003e
Version: @(#)65 1.158  src/sam/xdr/common/xdr_hcutils.c, charm.xdr, sam_rsa41svc 1/30/18 12:15:06
xDR healthcheck passed successfully
```



xDR – set up in GDPS

- Add mirrored disks to GDPS GEOPARM – disk configuration

```

GEOPLEX LINKS
SITE1='001D,001E,Y,NF,02300231'
SITE2='001E,001D,Y,NF,02310230'
*
GEOPLEX MIRROR
PPRCSSID='001D,001E'
* site 1 disks 5E35, 5E37, 5E18, 5E19, 5E1A, 5E1B
* site 2 disks 5D01, 5D02, 5D03, 5D04, 5D05, 5D06
PPRC='5E35,5D01,01,N'
PPRC='5E37,5D02,01,N'
PPRC='5E18,5D03,04,N'
*
GEOPLEX NONSHARE
NONSHARE='5E13,LSS=E0'
NONSHARE='5D00,LSS=D0'
  
```

→ LSS E0, SSID 001D – I/O port 0230

- Define systems in policy – CPC-name + LPAR-name

```

      UET Keyword-Data Specification                               Line 00000001 Col 001 075
Entry: GEOPLEX                                                    Type: DOMAINS
Mixed case . . . NO_      (YES NO)                               Keyword length. . . 20 (1-64)

Cmd Keyword      Data
---
SITE1            '(S=GABVM1/KIS1.GABVM1///VL),SITE 1'
SITE2            '(S=ZOS1/KIS1.ZOS1///YN),SITE 2'
***** Bottom of data *****
  
```



xDR – set up in GDPS

- Define GDPS scripts for planned scenarios e.g.: planned failover of disks to site 2

```

      UET Keyword-Data Specification                               Line 000000001 Col 001 075
Entry: CONTROL                                           Type: SWAP_SUSPEND
Mixed case . . . NO_ (YES NO)                        Keyword length. . . 20 (1-64)

Cmd Keyword      Data
---
  COMM           'PLANNED HYPERSWAP WITH SUSPEND'
  DASD           'SWITCH HYPERSWAP SUSPEND'
***** Bottom of data *****
  
```

- Add entries in GDPS load table for z/VM system:

```

IPL DEVICE 5B13 on VOLUME M03RES CPCNAME FSISKIS1
XDRLEVEL ON PROXY 4.1.0.4 18046

```

	Ipltype	Iplmode	Iplset	L-addr	L-parm	D-addr	D-parm
<input type="checkbox"/>	NORMAL	SITE1	VM62	153B	FNSITE1		
-	NORMAL	SITE2	VM62	953B	FNSITE2		
-	NORMAL	SITE1	VM64	5B13	FNSITE1		
-	NORMAL	SITE2	VM64	6B13	FNSITE2		
-							
-							
-							

- Installation verification program available – GDPSIVHP – checking GDPS set up and communication with all proxy systems

xDR for native Linux in LPAR



Supported Linux Distributions	Version of System Automation
SUSE SLES 11	SA MP 4.1.0.4

- Separately priced SA MP xDR feature is required
- Supported Disk Types
 - DASD ECKD
 - FB disk restricted for HyperSwap

xDR support for KVM



- Support for SLES12 and Ubuntu as KVM hypervisor
- Planned site switch (graceful shutdown, swap disks and start-up on other site) for maintenance scenarios
- Unplanned takeover
- Heartbeat for system availability checking
- Command Interface for Re-IPL, Start/Stop System, start/stop maintenance
- Graceful shutdown – guests + hypervisor
- KVM system disks controlled by GDPS – PPRC mirroring
- Freeze support
- HyperSwap only disruptive – KVM system is reset
- No SA MP needed

GDPS Virtual Appliance for Linux on Z



- **Fully integrated software solution**
- Provides **Continuous Availability & Disaster Recovery** functions for **Linux on Z guests of z/VM**
- **Intended for clients that do not have z/OS in their environments**
- Appliance image comprised of
 - Operating system → z/OS
 - Application components
 - Appliance management layer which makes the image self-containing
 - APIs / UIs for customization, administration, and operation tailored to the appliance function
- **Extends GDPS capabilities** into **z/VM and Linux on Z** clients that **do not have z/OS** in their environments
- **Improves both usability and time-to-value** for customers.

GDPS Virtual Appliance for Linux on Z



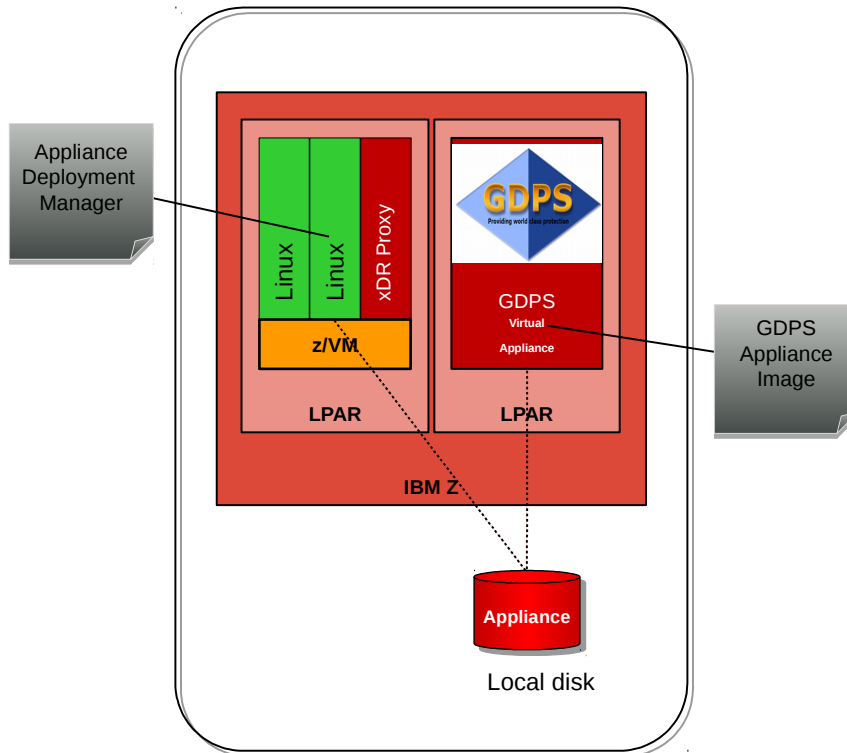
- Provides following functions for Linux on Z:
 - Coordinated planned and unplanned HyperSwap
 - Freeze support
 - Coordinated takeover in unplanned cases e.g. recovery from a node failure
 - Coordinated takeover in planned cases for e.g. maintenance
 - Live Guest relocation with z/VM SSI
 - Management of all disks --> control mirroring
 - Management of all LPARs → start/stop...
 - Graceful shutdown and start up



GDPS Virtual Appliance requirements

- Runs the GDPS control code to manage the environment and coordinate HyperSwap
- Requires:
 - 1 dedicated General Purpose engine:
CP (can not run on IFL)
 - 2 GB Central Storage
 - 4 3390 volumes:
 - ✓ 1 mod 9 + 3 mod 54
 - ✓ Fixed addresses 2030-2033
 - Access to all PPRC volumes (primary and secondary)

GDPS Virtual Appliance initial installation



1. Project kick off and technical training
2. Setup GDPS Virtual Appliance LPAR
3. Define/Install Deployment Manager on Linux on IBM z Systems® as a guest or native in LPAR
3. Copy appliance image to disk accessible by Deployment Manager
4. Implement and customize xDR on Managed z/VM systems
5. Specify customer specific values in configuration file e.g. IP address, gateway
6. Run Deployment Manager to patch + copy appliance image to one of its RES volumes
7. IPL LPAR from Appliance Disk
8. Complete customization of GDPS Appliance environment and policy including system, processor, mirroring configuration, and script definitions

Time to deploy: hours vs. days

IBM Systems



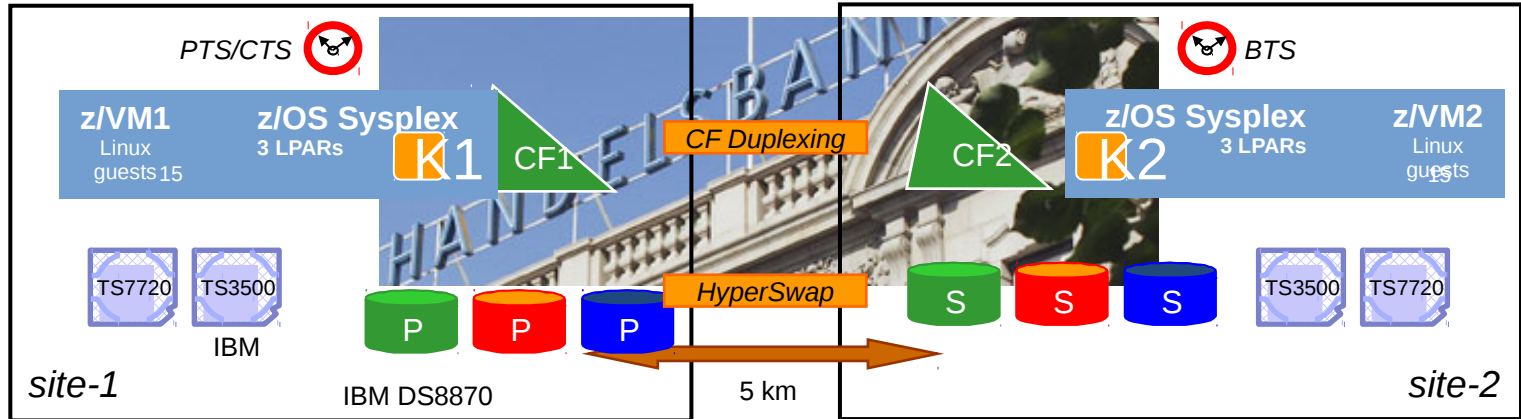
References



GDPS/PPRC xDR – MSW



6-way z/OS Parallel Sysplex (IMS, DB2, WAS) & 2 z/VM Clusters (30 Linux Guests)



PRIMARYFAILURE = SWAP,STOP
PPRCFAILURE = COND

z/OS 2.1, NV 6.2, SA 3.4, GDPS 3.11, z/VM 6.2
Linux RHEL 5.8, SA MP 3.2.2.7

Business requirements

- No data loss (RPO 0 sec)
- Continuous data availability for z/OS and Linux guests hosted by z/VM
- Supporting site maintenance without application outage
- Coordinated D/R for heterogeneous System z applications (RTO < 2 hr)

Perceived benefits

- DR site failure simulation every 6 months
- Avoiding outages due to single component failures or compound failure events

PPRC Volume Pairs	Logical Subsystems (LSS)	Planned HS Resynch UIT	Planned HS Suspend UIT	Unplanned HyperSwap UIT
2,295 (114TB)	29	8-12 sec	6-10 sec	5-7 sec

UIT = User Impact Time (seconds)

6/2014

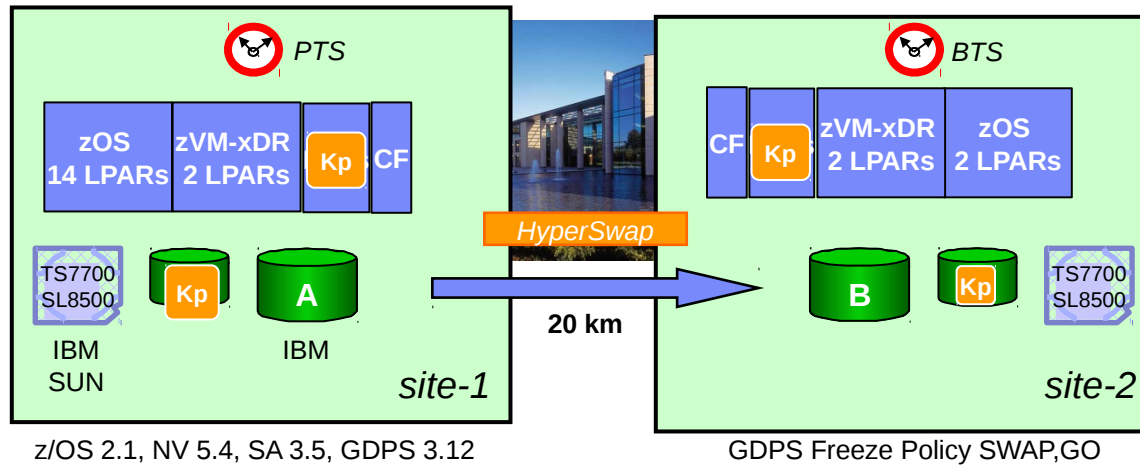
Web site: www.handelsbanken.se

RBS
Edinburgh, UK
[Finance]

GDPS/PPRC – SSW



20-way Parallel Sysplex/GDPS (CICS, DB2)



Business requirements

- RPO 0 sec (no data loss)
- RTO < 2 hours (failover time in the event of catastrophic systems or data center failure – loss of site-1)
- Recover all 20 systems to site-2, from frozen secondary disks

Perceived benefits

- Test DR scenario – twice a year, site swap for 24 hrs with planned HyperSwap
- Our Business users know we have a proven DR site

PPRC Volume Pairs	Logical Subsystems (LSS)	Unplanned HyperSwap UIT	Site Switch duration (hours)
10792	88	11 sec	< 2 hr

IBM Systems



New GDPS UI



GDPS GUI – main window



GDPS PPRC HyperSwap Manager

Actions ▾

Systems ▾

Help

anthony ▾

IBM

Dashboard

SITE 1
HOUSESITE 2
HOUSE

CKD

1142 pairs
Mirroring : OK
Primary dasd : SITE1
Freeze options :
Primary Failure : SWAPGO
PPRC Failure : GO

Duplex pairs : 100%

Health overview

HyperSwap :



FO/FB :



Dasd mirroring :



Parallel mode :



System

Current System : MVS3 DSS30

Current Master : DSS20

SDF Alerts



8



39



9



21

WTORs



10

GDPS GUI – PPRC configuration



GDPS Virtual Appliance
Actions ▾
Help
DRADMN2 ▾
IBM

Dashboard
Settings ×
Geoparm ×

Current GEOPARM

```

1 *****
2 *                GEOP1105 updated by DRADMN1                *
3 * This GEOPARM for GDPS/PPRC with XDR and GDPS 3.12          *
4 *   used in APPLIANCE testing                                *
5 *                *****                                    *
6 * XDR LITE DEFINITIONS (STAGE 1A)                             *
7 *   The xdr proxies disks are not mirrored                    *
8 *                *****                                    *
9 *
10 GEOPLEX LINKS  (appliance_proxy_clust)
11 *
12 *
13 SITE1='BE00,DE00,Y,NF,03010301'
14 SITE1='BF00,DF00,Y,NF,03010301'
15 *
16 SITE2='DE00,BE00,Y,NF,03010301'
17 SITE2='DF00,BF00,Y,NF,03010301'
18 *
19 *
20 GEOPLEX MIRROR
21 *
22 *
23 PPRCSSID='BE00,DE00'
24 PPRC='BE00,DE00,40,N'
25 PPRC='BE28,DE28,6,N'
26 PPRC='BE2F,DE2F,16,N'
27 *PPRC='BE40,DE40,6,N'
28 PPRC='BE46,DE46,168,N'
29 *

```

Display mode : Read only ▾

Actions :

Download
Add SSID
Upload geoparm
Dasd config

Health overview

HyperSwap : ✓
Dasd mirroring : ✓

SDF Alerts

✗ 0
⚠ 11
ℹ 0
✓ 11

WTORs

ℹ 0

GDPS GUI – PPRC operation - LSS



GDPS PPRC
Actions
Help
DRADMIN2
IBM

Dashboard
LSS Pairs x

Lss pairs : 2 **Total pairs : 469**
2 OK
0 Warning
0 Error

Actions Refresh Number Filter Clear filter Select all

Number	Status	Site 1	Links	Site 2	% Copied	Freeze	Critical/Protocol	Utility 1	Utility 2
230	OK	BE00	(1)	DE00	100%	Y	NF	BEEF	DEEF
239	OK	BF00	(1)	DF00	100%	Y	NF	BFEF	DFEF

Total :2 (no filter applied) Selected : 0
Last update: 2015/03/23 13:17:34

Health overview
HyperSwap : Warning
Dasd mirroring : OK

SDF Alerts
4 Error
12 Warning
7 Info
6 OK

WTORs
0 Info

GDPS GUI – PPRC operation -devices



GDPS Virtual Appliance Actions ▾ Help DRADMN2 ▾ IBM

Dashboard LSS Pairs × Pairs ×

Pairs : 230

- ✓ 230 DUPLEX
- ⚠ 0 PENDING
- ✗ 0 SIMPLEX or SUSPEND

Lss :

 BE00 → DE00

Site 1	Status	Site 2	% Copied	Volser
BE00 DUPLEX	➔	DE00 DUPLEX	100%	-----
BE01 DUPLEX	➔	DE01 DUPLEX	100%	-----
BE02 DUPLEX	➔	DE02 DUPLEX	100%	-----
BE03 DUPLEX	➔	DE03 DUPLEX	100%	-----
BE04 DUPLEX	➔	DE04 DUPLEX	100%	-----
BE05 DUPLEX	➔	DE05 DUPLEX	100%	-----

Total :230 (no filter applied) Selected : 0 Last update: 2015/04/10 14:11:24

Health overview

HyperSwap : ✓

Dasd mirroring : ✓

SDF Alerts

✗ 0 ⚠ 11

ℹ 0 ✓ 11

WTORs

ℹ 0

GDPS GUI – System + LPAR management



GDPS Virtual Appliance
Actions ▾
Help
serv2 ▾

Dashboard
Standard Actions ×

Site 1

✓ 1 Up
✗ 0 Down

Site 2

✓ 0 Up
✗ 0 Down

Actions ▾ Refresh System ▾ <input type="text"/> Filter Clear filter Select all Switch to actual view														
System	IND	Status	Site	IPL Type	Target Lpar	IPL Mode	Auto	Target loadParm	Target loadAddre	HyperSwa	DASD Config	GDPS Lev.	Debug	IPL time
✓ VM61APPL		XDR-A	SITE1	NORMAL	S298	SITE1	VL	FNSITE1	BE28	ENABLED	2015-04-20 11:13:55	NA	ON IP	NA
✓ ZOS1	C	MASTER	SITE2	NORMAL	ZOS1	NA	YN	NA	NA	ENABLED	2015-04-20 11:13:55	V3.R12.M0	ON	NA

Total :2 (no filter applied) Selected : 0
Last update: 2015/05/01 18:34:35

Health overview

HyperSwap : ✓

Dasd mirroring : ✓

SDF Alerts

✗ 0

⚠ 11

ℹ 10

✓ 12

WTORs

ℹ 0

GDPS GUI – guest management



GDPS Virtual Appliance
Actions ▾
Help
serv2 ▾

Dashboard
Standard Actions x
xDR Status x

System : VM61APPL
Clusters : 3

✓ 3
 ⚠ 0
 ✗ 0

Commands : xDR commands Run

VM PROXY : appliance_proxy_clust **Site :** Site1 **Status :** A **Heart beat Interval :** 10 **Heart beat Interval missing :** 60 **Time stamp :** 19:36:28 15/05/01

Nodes :

Name	Status	Type	File System	Last action	IP	Time stamp	User
s113c0ab	✓ A	PX/MASTER	1	Xdrmon	10.240.0.131 51113	19:31:54 15/05/01	S113C0AB
s113c0a0	✓ A	PX/BACKUP	2	Xdrmon	10.240.0.130 51113	19:31:54 15/05/01	S113C0A0

CLUSTER : appliance_prod_clust2 **Site :** Site1 **Status :** A **Heart beat Interval :** 10 **Heart beat Interval missing :** 60 **Time stamp :** 19:36:29 15/05/01

Nodes :

Health overview

HyperSwap : ✓

Dasd mirroring : ✓

SDF Alerts

✗ 0
 ⚠ 11

i 10
 ✓ 12

WTORs

i 0

GDPS GUI – planned action - scripts



GDPS GUI Screenshot:

Browser: GDPS
URL: https://9.69.176.40:9443/org.ibm.gdps/home
Navigation: GDPS PPRC, Actions, Help
User: DRADMIN2

Planned Actions x

Planned actions : 5 scripts

Currently selected: SWAP_RESYNCH
COMM='SWITCH HYPERSWAP RESYNCH'
DASD='SWITCH HYPERSWAP RESYNCH'

Script	Comment
STARTSEC	START SECONDARY
STOPSEC	DASD STOP SECONDARY
SWAP_RESYNCH	SWITCH HYPERSWAP RESYNCH
SWAP_SUSPEND	SWITCH HYPERSWAP SUSPEND
SWAP_TERMINATE	SWITCH HYPERSWAP TERMINATE

Actions Refresh Script Filter

Last update: 2014/10/30 14:10:32

Health overview

HyperSwap : ✗
Dasd mirroring : ✓

SDF Alerts

✗ 2	⚠ 1
i 6	✓ 1

WTORs

i 0

GDPS GUI – alert monitoring



GDPS Virtual Appliance Actions ▾ Help serv2 ▾ IBM

Dashboard Standard Actions × xDR Status × **SDF Alerts ×**

Site 1

Trace (20) Automation (0) Remote copy (0)

Site 2

Remote copy (12) Automation (1) All (33)

Date	Severity	Message	Component	Priority	Reference value	Reporter	Node
Thu Apr 30 2015 16:03:12	✓	HYPERSWAP RESUME COMPLETE	FLIP	650	FLIP	AUTSDF1	VPC01
Thu Apr 30 2015 16:03:12	✓	GEO383I IPLMODE UPDATE: SITE1 STARTED	FLIP	650	FLIP	AUTSDF1	VPC01
Thu Apr 30 2015 16:03:12	✓	GEO385I IPLMODE UPDATE: SITE1 VM61APPL IPLMODE=SITE1 IPLSET=SET1	FLIP	650	FLIP	AUTSDF1	VPC01
Thu Apr 30 2015 16:03:12	✓	GEO383I IPLMODE UPDATE: SITE1 ENDED RC=0	FLIP	650	FLIP	AUTSDF1	VPC01
Thu Apr 30 2015 16:03:21	✓	DASD='SWITCH HYPERSWAP RESYNCH' ENDED RC=0 /2	FLIP	650	FLIP	AUTSDF1	VPC01
Thu Apr 30 2015 16:03:21	✓	SWAP_RESYNCH PLANNED/STANDARD ACTION ENDED	FLIP	650	FLIP	AUTSDF1	VPC01
Thu Apr 30 2015 20:29:02	✓	XDR QNF ACTION INITIALIZED (1 TRANSACTIONS)	FLIP	650	FLIP	AUTSDF1	VPC01
Fri May 01 2015 18:36:53	✓	XDR XDRMON ACTION INITIALIZED (2 TRANSACTIONS)	FLIP	650	FLIP	AUTSDF1	VPC01

Total :20 (no filter applied) Selected : 0 Last update: 2015/05/01 18:36:25

Health overview

HyperSwap : ✓

Dasd mirroring : ✓

SDF Alerts

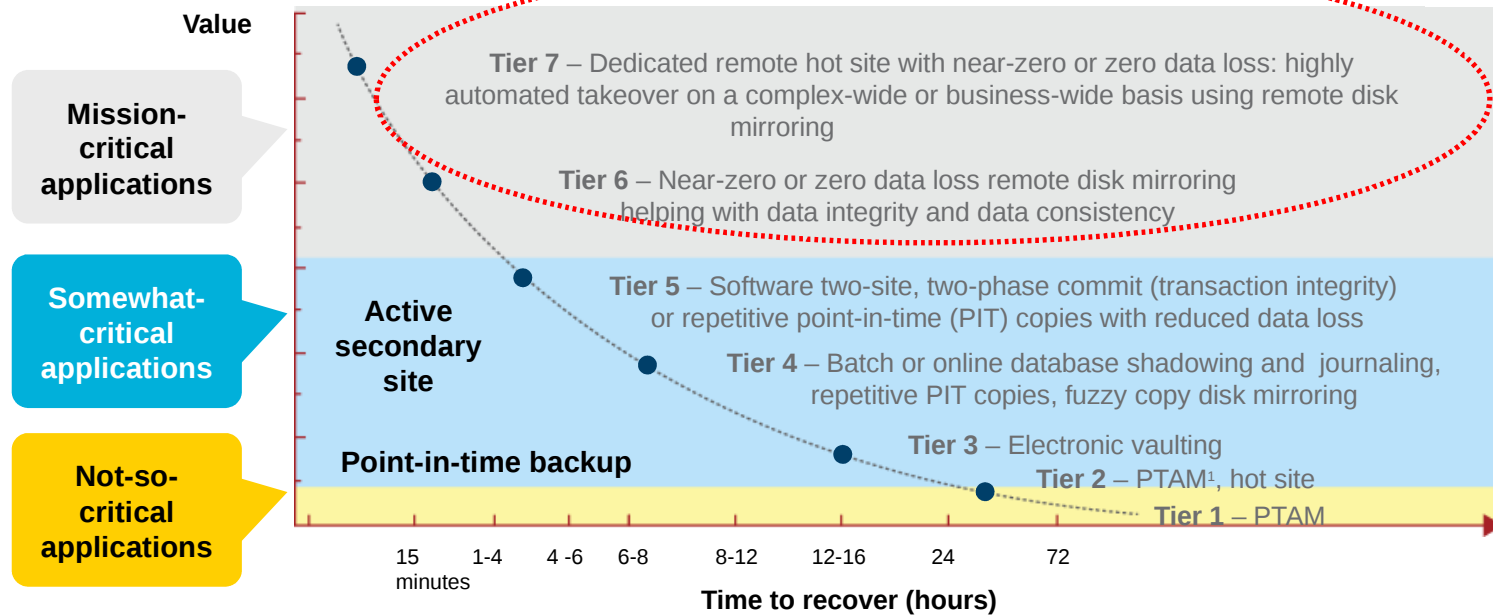
✗ 0 ⚠ 11

ℹ 10 ✓ 12

WTOs

ℹ 0

Within the seven tiers of disaster recovery, we classify IBM GDPS in the topmost tier.



One of the best data recovery practices involves blending tiers of solutions in order to optimize application coverage at a reduced cost. One size, technology or methodology may not fit all applications.

¹Pickup truck access method (PTAM) Note: More detail on this graph can be found at: <http://www.redbooks.ibm.com/abstracts/tips0057.html?Open>

Additional Information



Web sites:

- GDPS www.ibm.com/systems/z/gdps
- Parallel Sysplex www.ibm.com/systems/z/psa
- Bus Resiliency z www.ibm.com/systems/z/resiliency
- Bus Resiliency www.ibm.com/systems/business_resiliency
- System z www.ibm.com/systems/z/hardware
- Storage www.ibm.com/systems/storage
- Redbooks® GDPS Family: An Introduction to Concepts and Capabilities
 www.redbooks.ibm.com/abstracts/sq246374.html?Open
- **GDPS Web Site White Papers and Presentations**
 - GDPS: The Ultimate e-business Availability Solution
 - IBM Implementation Services for GDPS/Global Mirror
 - GDPS Business Continuity Solutions
 - Consistency Groups in a Nutshell
 - DS8000™ Data Replication
 - GDPS Solutions
- e-mail: gdps@us.ibm.com

