DCS–M04–TEST SCENARIO'S

DETAILED DESCRIPTIONS

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1. INTRODUCTION

1.1 Scope

This document describes the Test Scenario's that will be used to test the following:

- *EMC DASD*
- *Related EMC Software*
- *GDDR Automation.*

1.2 Objectives

It is the intention of this document to describe in detail the various scenarios that will be tested inorder to verify the correct functioning of EMC Software and GDDR Automation inrelation to correctly managing Planned and Unplanned Outages in DC1, DC2 and DC3.

1.3 Intended audience

Euroclear Management, DCS Project Leaders and all stakeholders of the DCS program.

1.4 References

Ref. nbr.	Reference	Title
[1]		Project Definition Report
[2]		Project High Level Technical Design
[3]		

1.5 Change history

Version	Nature of change	Date
00.01	Create Document (draft)	20/08/04
00.02	Updated	30/08/04
00.03	Updated	21/09/04

1.6 Forecast changes

Version	Nature of change	Date

1.7 Abbreviations

Abbreviation	Full text
DCS	Data Center Strategy
HLTLS	High Level Test & Launch Strategy
GDDR	Geographically Dispersed Disaster Recovery
ConGroup	EMC Software Product Consistency Group
K1	GDDR K-System at the DC1 Site
K2	GDDR K-System at the DC2 Site

K3	GDDR K-System at the DC3 Site

1.8 Definitions

Terminology	Definition
Systems	The word system or systems used in this document refers to an z/OS Image and all systems tasks and applications running in it.
K-System	A controlling LPAR, one in each of DC1, DC2 and DC3. Monitors the status of the DASD and DASD mirroring to DC2 and DC3.
K-System Master Function	The K-System that is currently responsible for monitoring the status of DASD and DASD mirroring. Is also responsible for taking action when problems with DASD and DASD mirroring are detected.
Primary Site	The live site where the Production z/OS Images run. Usually DC1.
Secondary Site	The backup site that has a synchronous copy of the Production data. Usually DC2.
Tertiary Site	A backup site that has an asynchronous copy of the Production data. Always DC3.
Freeze	In terms of GDDR ONLY, a Freeze is the point immediately after a planned autoswap has completed successfully and upto and including the point at which SRDF/S is re-established successfully (in the opposite direction).
CA-OPS/MVS MSF	CA-OPS/MVS Multi System Facility
Trip	The action ConGroup takes when it detects that one or more R1 devices in a consistency group cannot propagate data to their corresponding secondary (R2) devices. During a trip, ConGroup suspends all the primary (R1) devices in the consistency group. This suspension ensures that the data flow to the secondary (R2) side is halted and the data on the remote side of the configuration is consistent.

2. BASIC ASSUMPTIONS

2.1 K-Systems are NOT in any Sysplex

The GDDR Controlling Systems (the K-Systems) are not part of any SYSPLEX, they will run independently, but will have OPS/MVS connections (via MSF/CCI/IP) to all Production and Development Systems that it will be managing.

OPS/MVS on each Production/Development system will send alerts (system messages) relating to events that GDDR is interested in to each K-System. GDDR will then take appropriate action.

2.2 ConGroup Autoswap Extension (CAX)

Consistency Group will be configured to use the ConGroup Autoswap Extension (CAX) for unplanned outages.

CAXOPTS will use AutoswapConditions=NOPATHS only.

2.3 Autoswap Server

Autoswap will be run in server mode on the three K-Systems only. The started task name is called EMCAUTO.

Note: As of September 15th 2004 the Autoswap Server (EMCAUTO) is nolonger being used. Planned Autoswaps will be triggered from DAS under Consistency Group (EMCCGRP).

2.4 BCVs and SNAP

At the present time, GDDR manages BCVs to provide point in time copies of R1 and R2 data and to free up a mirror position when SRDF/A moves from DC1 to DC2 (and back).

EMC SNAP can be used instead of BCVs, the advantage being that it does not require a mirror position. GDDR will be updated to use SNAP once it has been fully tested.

2.5 CAX Owner

The CAX owner (K2 System) runs on the Current Secondary DASD site.

The CAX Owner is specified by the GLOBAL=(OWNER=…) parameter in the ConGroup started task parameter member.

The CAX Owner CAN NOT as yet be transferred automatically, we are waiting upon EMC to provide this new feature.

As of …. CAX Ownership can be transferred via the TAKEOVER or MOVEOWNER ConGroup commands.

2.6 Automation Owner

The automation owner (the system that owns the GDDR K-System Master Function) always runs on the Current Secondary site.

2.7 Primary Site – DC1

The Primary Site is DC1, ie. The Production z/OS Images run from there and the R1 DASD resides there.

2.8 Consistency Group

In the final DCS configuration there will only be a single Consistency Group defined, it will encompass all relevant z/OS Production CKD disks and all relevant Distributed Systems FBA disks.

2.9 Distributed Systems

In the case of the following events, GDDR will trigger Distributed Systems Start/Stop (ESS):

a. Consistency Group Trip (TBD)

b. CAX swap (Unplanned SWAP)

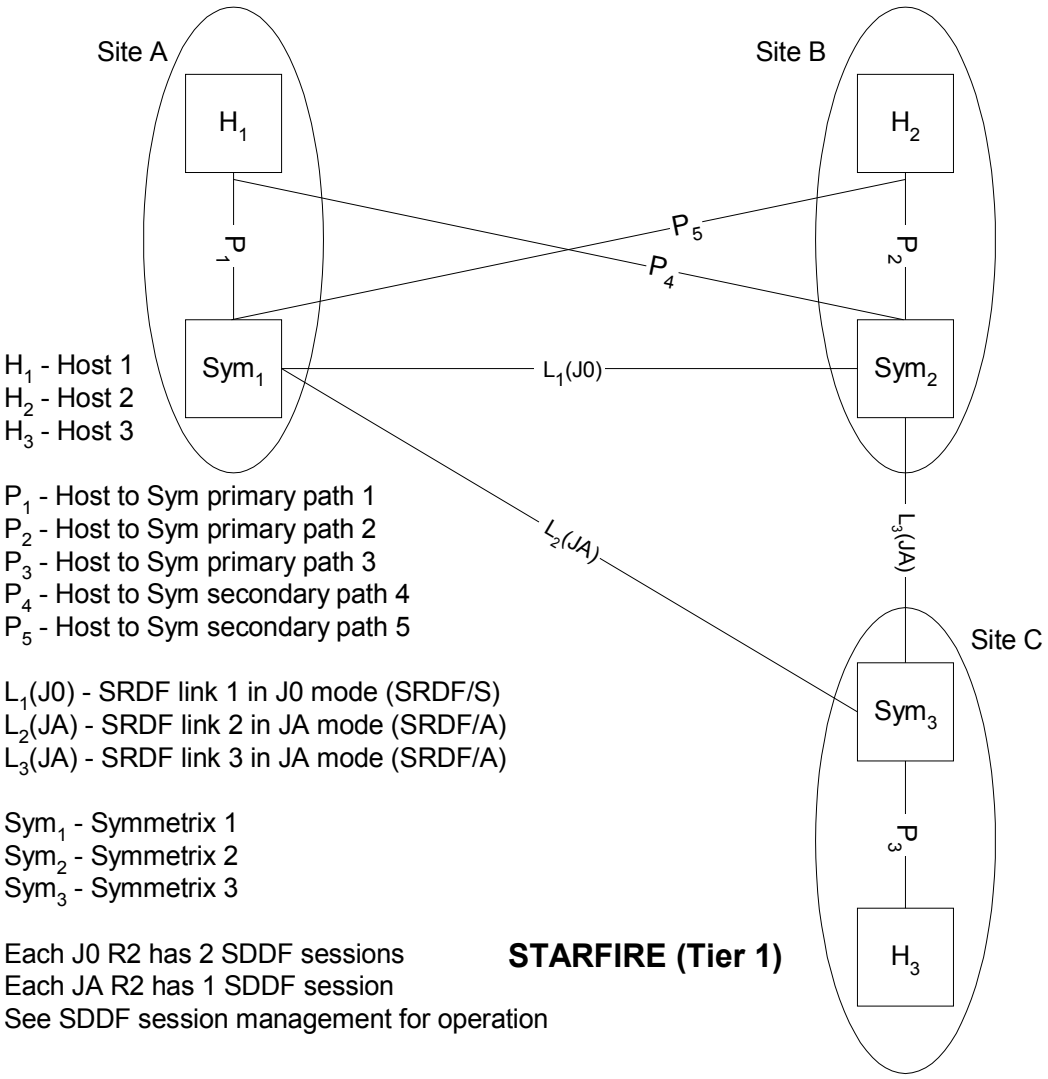
c. Planned Swap

d. RDR – Restart Workload at DC3 Only

e. RDR – Restart Workload at DC3 and JA to either DC1 or DC2

3. TESTING ENVIRONMENT DESCRIPTION

The following describes the hardware and software configuration in the DCS Lab that will be used to perform all scenario testing.



H_1 - Host 1
H_2 - Host 2
H_3 - Host 3

P_1 - Host to Sym primary path 1
P_2 - Host to Sym primary path 2
P_3 - Host to Sym primary path 3
P_4 - Host to Sym secondary path 4
P_5 - Host to Sym secondary path 5

L_1(J0) - SRDF link 1 in J0 mode (SRDF/S)
L_2(JA) - SRDF link 2 in JA mode (SRDF/A)
L_3(JA) - SRDF link 3 in JA mode (SRDF/A)

Sym_1 - Symmetrix 1
Sym_2 - Symmetrix 2
Sym_3 - Symmetrix 3

Each J0 R2 has 2 SDDF sessions
Each JA R2 has 1 SDDF session
See SDDF session management for operation

DCS Site	Host	DCS 'Production' System	DCS K-System
DC1	H_1	EOCJ	K1 – SYK1
DC2	H_2	EOCG	K2 – SYK2
DC3	H_3	n/a	K3 – SYK3

3.1 EMC Started Tasks

The following configuration of EMC Started tasks will be used.

On Each K system (one in each site DC1, DC2 and DC3):

- EMCRSPAK (SCF) using subsystem SDAS
- EMCCGRP (ConGroup with CAX) using SDAS subsystem SDAS
- EMCINIT (SRDF/HC)

On Each z/OS Production Image (in all 5 sysplex's):

- EMCRSPAK (SCF) using subsystem SDAS
- EMCINIT (SRDF/HC)
- EMCCGRP (ConGroup with CAX) using SDAS subsystem SDAS

4. THE SCENARIO'S

4.1 The Unplanned Scenario's

4.1.1 K-System Fails in DC1

4.1.1.1 Scenario Description

The K-System z/OS Image running in DC1 fails eg. z/OS failure

4.1.1.2 Equivalent Star/Starfire Scenario

N/A

4.1.1.3 How to Simulate or Test

The following tests will be run:

a. Deactivate the K-System LPAR at DC1.

b. Vary a local page volume offline (ie. Generates a system wait state)

c. IP Stack Abend

d. JES2 Failure

4.1.1.4 What are we Testing ?

GDDR Behaviour.

4.1.1.5 Expected Results

- Master K-System reports loss of DC1 System to Operators
- GDDR Event DC1.Unplanned.MHB set True
- GDDR Event DCN.Unplanned.LNK set True
- GDDR Event DCN.Unplanned.LNK.DC3vDC1 set True (from the Master K-Systems point of view)
- If this K-System was the CAX-owner, then CAX-Ownership will be transferred to another LPAR on the same Site.
- GDDR will report that it is running in degraded mode (reason: MHB event)
- K1 will be declared DEAD – this will disable all Planned Actions. Unplanned actions will not be affected.
- OPS/MVS on the failing system will be seen as failed on all other OPS/MVS's
- If it is the Current Master K-System, the Master Function ownership will transfer to another eligible K-System
- GDDR will notify the operators of the failed OPS/MVS connection
- GDDR performs no other recovery actions
- R1->R2 still synchronous

4.1.1.6 Actual Results

4.1.1.6.1 Test a;

The K-System LPAR in DC1, namely EOCR, was deactivated via the HMC. The following was observed:

- GDDR Event DCN.Unplanned.LNK set True

- GDDR Event DCN.Unplanned.LNK.DC3vDC1 set True
- GDDR Event DC1.Unplanned.MHB set True (by GDDRUA01)
- HB monitors on both K2 and K3 detect K1 gone and declare it DEAD via message GDDR999E (AOF rule runs GDDRUA01 and GDDRRR01)
- DC1.K.System.Alive=False (by GDDRRR01)
- HB monitors on K2 and K3 continue to report K1's missing heartbeat
- EV monitors on K2 and K3 continue to report the LNK and MHB events

4.1.1.7 Comments/Problems

4.1.2 K-System Fails in DC2

4.1.2.1 Scenario Description

The K-System z/OS Image running in DC2 fails eg. z/OS failure

4.1.2.2 Equivalent Star/Starfire Scenario

N/A

4.1.2.3 How to Simulate or Test

The following tests will be run:

a. Deactivate the K-System LPAR at DC2.

b. Vary a local page volume offline (ie. Generates a system wait state)

c. IP Stack Abend

d. JES2 Failure

4.1.2.4 What are we Testing ?

GDDR Behaviour, specifically the Transfer of K-System Master Function Ownership.

4.1.2.5 Expected Results

- Loss of Master K-System is detected by the other K-Systems
- The Operators are notified of this loss and prompted to confirm the transfer of ownership
- The Operators reply Yes and ownership should transfer to the K-System running on DC1 (assuming Master K-System is running at DC2)
- New Master K-System updates selected OPS/MVS Global variables on the remaining K-Systems
- GDDR Event DC2.Unplanned.MHB set True
- GDDR will report running in degraded modeOPS/MVS on the failing system will be seen as failed on all other OPS/MVS's
- GDDR will notify the operators of the failed OPS/MVS connection
- R1->R2 still synchronous

4.1.2.6 Actual Results

4.1.2.7 Comments/Problems

4.1.3 K-System Fails in DC3

4.1.3.1 Scenario Description

The K-System z/OS Image running in DC3 fails eg. z/OS failure

4.1.3.2 Equivalent Star/Starfire Scenario

N/A

4.1.3.3 How to Simulate or Test

The following tests will be run:

a. Deactivate the K-System LPAR at DC3.

b. Vary a local page volume offline (ie. Generates a system wait state)

c. IP Stack Abend

d. JES2 Failure

4.1.3.4 What are we Testing ?

GDDR Behaviour.

4.1.3.5 Expected Results

- Master K-System reports loss of DC3 System to Operators
- GDDR Event DC3.Unplanned.MHB set True
- GDDR performs no other recovery actions
- GDDR will report running in degraded modeOPS/MVS on the failing system will be seen as failed on all other OPS/MVS's
- If it is the Current Master K-System, the Master Function ownership will transfer to another eligible K-System
- GDDR will notify the operators of the failed OPS/MVS connection
- R1->R2 still synchronous

4.1.3.6 Actual Results

4.1.3.7 Comments/Problems

4.1.4 Master K-System Fails

4.1.4.1 Scenario Description

The Master K-System fails eg. z/OS failure

True, but here looking specifically at the transfer of Master Function Ownership. Testing scenarios will hopefully test individual features/aspects of GDDR and EMC Software and test them as a whole, ensuring the individual parts deliver the expected whole.

4.1.4.2 Equivalent Start/Starfire Scenario

N/A

4.1.4.3 How to Simulate or Test

Deactivate the Master K-System LPAR.

4.1.4.4 What are we Testing ?

GDDR Behaviour, specifically the Transfer of K-System Master Function Ownership.

4.1.4.5 Expected Results

- Loss of Master K-System is detected by the other K-Systems
- The Operators are notified of this loss and prompted to confirm the transfer of ownership
- The Operators reply Yes and ownership should transfer to the K-System running on DC1 (assuming Master K-System is running at DC2)
- New Master K-System updates selected OPS/MVS Global variables on the remaining K-Systems
- GDDR Event DC2.Unplanned.MHB set True
- GDDR reports running in degraded mode
- OPS/MVS on the failing system will be seen as failed on all other OPS/MVS's
- GDDR will notify the operators of the failed OPS/MVS connection
- R1->R2 still synchronous

4.1.4.6 Actual Results

4.1.4.7 Comments/Problems

4.1.5 Production z/OS Image Fails

4.1.5.1 Scenario Description

A Production z/OS Image fails eg. z/OS failure

4.1.5.2 Equivalent Start/Starfire Scenario

N/A

4.1.5.3 How to Simulate or Test

Deactivate or System Reset a Production LPAR.

4.1.5.4 What are we Testing ?

GDDR Behaviour.

4.1.5.5 Expected Results

- Message IXC402D sent to all K-Systems (from the other system in the sysplex) (GDDR could reply to this message if required ?)
- GDDR Event DCn.Unplanned.MXS set true
- Operators prompted by GDDR to perform a recovery action…SYSSITEn, SYSsysname, SYSRESET or Ignore…the combination presented to the operators depends upon the location of the failing system
- Recovery Action (if any selected) completes as expected
- OPS/MVS on the failing system will be seen as failed on all other OPS/MVS's
- GDDR will notify the operators of the failed OPS/MVS connection
- In case this LPAR had become the CAX-Owner, CAX-ownership needs to be transferred to another LPAR on the same site.
- Free failed system(s) from appropriate MIMplex
- Verify automation is still enabled
- (see separate scenario)

4.1.5.6 Actual Results

A system at each site, DC1 and DC2, was System Reset, the following documents the results that were observed:

4.1.5.6.1 Production System at the Primary Site (DC1) Fails

System EOCJ was System Reset.

{ After EOCJ fails, the following messages are seen on the K-Systems…}

MIM0061W System EOCJ in file 00 - possibly inoperative SITE=DC2 MIM=MIMGRI MSF=DCSG

SCF0645W CSC (0002874-60408) HOST DCSJ (010158AF2084001A) MISSING HEART BEAT FOR 30 SECONDS

CAS9861I Task 0006 closing 10.130.0.145/1060 1060 packets, 354142 bytes
CAS9603I - CAICCI DCSK DISCONNECT FROM CAICCI DCSJ

*31 IXC402D EOCJ LAST OPERATIVE AT 18:04:21. REPLY DOWN AFTER SYSTEM RESET, OR INTERVAL=SSSSS TO SET A REPROMPT TIME. SITE=DC2

{ The following GDDR Variables are updated on all K-Systems…}

GDDR001I GDDR Updating Global Variable GLOBAL.GDDR.Disaster.In.Progress on System=(DCSD). (GDDRKF0A).
GDDR001I GDDR Updating Global Variable GLOBAL.GDDR.Disaster.In.Progress on System=(DCSR). (GDDRKF0A).

GDDR001I GDDR Updating Global Variable GLOBAL.GDDR.DC1.Unplanned.MXS on System=(DCSD). (GDDRKF0A).
GDDR001I GDDR Updating Global Variable GLOBAL.GDDR.DC1.Unplanned.MXS on System=(DCSR). (GDDRKF0A).

GDDR001I GDDR Updating Global Variable GLOBAL.GDDR.DC1.Unplanned.MXS.EOCJ on System=(DCSD). (GDDRKF0A).
GDDR001I GDDR Updating Global Variable GLOBAL.GDDR.DC1.Unplanned.MXS.EOCJ on System=(DCSR). (GDDRKF0A).

{ On the Master K-System after the events triggered, firstly by the MIM0061W message and then by the IXC402D message, the following prompt is displayed on the console for the operators to reply…}

GDDR001I GDDR Starting UNPLANNED_ACTION_TAKEOVER_SYSTEM for Failed System EOCJ. (GDDRUA02).
GDDRUA02 GDDR Unplanned Event ===> 128
GDDR Detects Production System EOCJ has Failed at Site DC1,
You have the following choices...
  Reply SYSEOCJ - GDDR to restart EOCJ at Current Location DC1
       SYSSITEn- GDDR to Start Business Apps at Site DC2
       SYSRESET- GDDR to System Reset EOCJ at Site DC1 Only.
       Ignore - GDDR to Do Nothing.
*29 GDDRUA02 Enter desired Option...SYSEOCJ, SYSRESET, SYSSITEn or I:

I replied r 29,SYSRESET

{ GDDR will free the failed system from each MIM complex…}

OPS3092H 04345-65156 Starting MIM_EVENT_DETECTED. (GDDRMI01).
GDDR001I Starting MIM_EVENT_DETECTED. (GDDRMI01).
OPS1181H OPSOSF OPSS (DCSG) MVS N/A PMSG.MIM0061W f MIMGRI,free EOCJ
OPS3092H 04345-65156 GDDR Function MIM_EVENT_DETECTED completed RC=(0). (GDDRMI01).
GDDR001I GDDR Function MIM_EVENT_DETECTED completed RC=(0). (GDDRMI01).

MIM0061W System EOCJ in file 01 - possibly inoperative SITE=DC2 MIM=MIMGR MSF=DCSG
OPS3724O TSO PMSG.MIM0061W SENT CMD=OI GDDRMI01 MIM0061W System EOCJ in file 01 - possibly inoperative SITE=DC2 MIM=
OPS3092H OI GDDRMI01 MIM0061W System EOCJ in file 01 - possibly inoperative SITE=DC2 MIM=MIMGR MSF=DCSG
OPS3092H 04345-65182 Starting MIM_EVENT_DETECTED. (GDDRMI01).
GDDR001I Starting MIM_EVENT_DETECTED. (GDDRMI01).
OPS1181H OPSOSF OPSS (DCSG) MVS N/A PMSG.MIM0061W f MIMGR,free EOCJ
OPS3092H 04345-65182 GDDR Function MIM_EVENT_DETECTED completed RC=(0). (GDDRMI01).
GDDR001I GDDR Function MIM_EVENT_DETECTED completed RC=(0). (GDDRMI01).

{ GDDR Event Monitor detects that a Production System has failed…}

GDDR001I GDDR =====> Detected A System Failure, EOCJ at Site DC1.(GDDREM01).

{ GDDR Performs a System Reset…and replies DOWN once the RESET completes…}

GDDR001I GDDR Starting ISSUE_HWMCA_COMMANDS SINGLE_RESET_CLEAR for System EOCJ. (GDDRHMC1).
GDDR001I GDDR Issuing RESET_CLEAR on System EOCJ (1.3.6.1.4.1.2.6.42.2.0.4263020281). (GDDRHMC1).
OPS3724O USS GDDRHMC1 SENT CMD=USSCMD gddrc003 10.135.4.12 1.3.6.1.4.1.2.6.42.2.0.4263020281
GDDR001I GDDR RESET_CLEAR on System EOCJ was Successful. (GDDRHMC1).
GDDR001I GDDR Completed ISSUE_HWMCA_COMMANDS with RC=(0). (GDDRHMC1).
OPS3681H OPSOSF opsreply msgid(IXC402D) replyid(31) text(DOWN) system(DCSG) sysname(EOCG) sysplex cmdwait(5)
GDDR001I GDDR Function UNPLANNED_ACTION_TAKEOVER_SYSTEM completed successfully. (GDDRUA02).

{ GDDR Event Monitor detects and displays the EOCJ MIM and MXS events…}

GDDR001I GDDR Exception Event MIM at Site DC1. (GDDREM01).
GDDR001I GDDR Event GLOBAL.GDDR.DC1.Unplanned.MIM not eligible for reset at Site DC1. (GDDREM01).
GDDR001I GDDR Exception Event MIM at Site DC1. (GDDREM01).
GDDR001I GDDR Event GLOBAL.GDDR.DC1.Unplanned.MIM.EOCJ not eligible for reset at Site DC1. (GDDREM01).
GDDR001I GDDR Exception Event MXS at Site DC1. (GDDREM01).
GDDR001I GDDR Event GLOBAL.GDDR.DC1.Unplanned.MXS not eligible for reset at Site DC1. (GDDREM01).
GDDR001I GDDR Exception Event MXS at Site DC1. (GDDREM01).
GDDR001I GDDR Event GLOBAL.GDDR.DC1.Unplanned.MXS.EOCJ not eligible for reset at Site DC1. (GDDREM01).

{ Once the Problem with EOCJ has been fixed and the system re-IPLed, the following messages are seen on the K-Systems…}

IXC466I OUTBOUND SIGNAL CONNECTIVITY ESTABLISHED WITH SYSTEM EOCJ SITE=DC2 VIA STRUCTURE IXC1 LIST 9 SITE=DC2

GDDR001I Starting MXS_EVENT_DETECTED. (GDDRMX01).
OPS3092H 04345-65350 GDDR Function MXS_EVENT_DETECTED completed RC=(0). (GDDRMX01).
GDDR001I GDDR Function MXS_EVENT_DETECTED completed RC=(0). (GDDRMX01).

{ EOCJ has rejoined the sysplex so reset the MXS event…}

GDDR001I GDDR Event GLOBAL.GDDR.DC1.Unplanned.MXS reset to 0 for Site DC1. (GDDREM01).

GDDR001W GDDR found Remote System DCSJ, with Status=FAILED. (GDDRKF0A).

{ EOCJ has rejoined the MIM complex so reset the MIM event…}

MIM0366I system EOCJ joined established MIM complex SITE=DC2
OPS3724O TSO PMSG.MIM0366I SENT CMD=OI GDDRMI01 MIM0366I system EOCJ joined established MIM complex SITE=DC2

OPS3092H OI GDDRMI01 MIM0366I system EOCJ joined established MIM complex SITE=DC2
OPS3092H 04345-65486 Starting MIM_EVENT_DETECTED. (GDDRMI01).
GDDR001I Starting MIM_EVENT_DETECTED. (GDDRMI01).
OPS3092H 04345-65486 GDDR Function MIM_EVENT_DETECTED completed RC=(0). (GDDRMI01).
GDDR001I GDDR Function MIM_EVENT_DETECTED completed RC=(0). (GDDRMI01).

GDDR001I GDDR Exception Event MIM at Site DC1. (GDDREM01).
GDDR001I GDDR Event GLOBAL.GDDR.DC1.Unplanned.MIM reset to 0 for Site DC1. (GDDREM01).

{ EMCRSPAK (SCF) has started…}

SCF0690I CSC (0002874-60419) HOST DCSJ (010158AF208400B9) IS NOW REGISTERED

{ The OPS/MVS MSF Connection has been re-established…}

CAS9899I: CCI TCP/IP Task 0006 has connected from peer 10.130.0.145/1032
CAS9603I - CAICCI DCSK CONNECTED TO CAICCI DCSJ
CAS9603I - CAICCI DCSJ

OPS3504I SYSTEM ID DCSJ - ACCEPTING CCI SESSION ACTIVATE REQUEST
OPS3486O MSF SYSTEM DCSJ IS NOW ACTIVE - 04.04.04

4.1.5.6.2 Production System at the Secondary Site (DC2) Fails

System EOCG was System Reset.

- Message MIM0061W sent to the Master K System
- AOF Rule MIM0061W is triggered, invoking GDDRMI01
- GDDRMI01 takes the following actions:
  - Event DC2.Unplanned.MXS.EOCG true ?
  - No, do nothing, just exit
  - Otherwise…
  - Set event DC2.Unplanned.MIM true
  - Set event DC2.Unplanned.MIM.EOCG true
  - Issue free MIM command to system detecting original MIM0061W message
- Message IXC402D sent to the Master K System
- AOF Rule IXC402D is triggered, invoking GDDRUA02
- GDDRUA02 takes the following actions:
  - Set DIP true
  - Set events DC2.Unplanned.MXS true
  - Set events DC2.Unplanned.MXS.EOCG true
  - MXS events propagated to all K-Systems
  - Determine what site failing system runs at and prompt operators with appropriate list for site
  - Run selected action or do nothing
- Action SYSEOCG was selected which resulted in a straight load of EOCG at DC1

4.1.5.7 Comments/Problems

4.1.6 Normal Shutdown of a K-System

4.1.6.1 Scenario Description

Normal shutdown of a K-System eg. For a planned IPL

4.1.6.2 Equivalent Star/Starfire Scenario

N/A

4.1.6.3 How to Simulate or Test

Initiate the closedown of any K-System using standard procedures ie. OPS/MVS SHUTDOWN

4.1.6.4 What are we Testing ?

GDDR Behaviour

4.1.6.5 Expected Results

- If the K-System being shutdown is the Master K-System, this will be detected by the other K-Systems
- The Operators are notified of this loss and prompted to confirm the transfer of ownership
- The Operators reply Yes and ownership should transfer to the K-System running on DC1 (assuming Master K-System is running at DC2 and being shutdown)
- New Master K-System updates selected OPS/MVS Global variables on the remaining K-Systems
- If the K-System owns the CAX ownership, this will be transferred to another system at site DC1 (waiting upon this facility from EMC)
- GDDR Event DCn.Unplanned.MHB set True
- GDDR will report running in degraded mode
- GDDR Event DCn.Planned.IPL set True
- GDDR Event DCn.Planned.IPL.ssss set True
- OPS/MVS on the system being shutdown will be seen as failed on all other OPS/MVS's
- GDDR will notify the operators of the failed OPS/MVS connection
- R1->R2 still synchronous

After the IPL

- When K-System is IPL'ed and GDDR Heartbeat Monitor starts, Master K-System ownership will transfer automatically back to K2 (if this system was the one just rejoining)
- If the system rejoining is K1 then it will resume the CAX ownership
- GDDR event DCn.Unplanned.MHB set False
- GDDR Event DCn.Planned.IPL.sss set False

4.1.6.6 Actual Results

4.1.6.7 Comments/Problems

4.1.7 Normal Shutdown of a Production z/OS Image

4.1.7.1 Scenario Description

Normal shutdown of a Production z/OS Image eg. For a planned IPL

4.1.7.2 Equivalent Star/Starfire Scenario

N/A

4.1.7.3 How to Simulate or Test

Initiate the closedown of any Production z/OS Image using standard procedures ie. OPS/MVS SHUTDOWN

4.1.7.4 What are we Testing ?

GDDR Behaviour

4.1.7.5 Expected Results

- If the Production z/OS Image owns the CAX ownership, this will be transferred to another system at site DC1 (K1 if available)
- Missing XCF status messages for Production z/OS Image
- GDDR Event DCn.Unplanned.MXS set True
- GDDR Event DCn.Planned.IPL set True
- GDDR Event DCn.Planned.IPL.ssss set True
- GDDR Event DCn.Unplanned.MIM set True
- Free system from appropriate MIMplex
- OPS/MVS on the system being shutdown will be seen as failed on all other OPS/MVS's
- GDDR will notify the operators of the failed OPS/MVS connection

4.1.7.6 Actual Results

On the K-Systems the following messages are observed during a planned shutdown of a Production System…

- GDDR900I GDDR System EOCJ is Running a Planned Shutdown. (GDDRKF0M).
- GDDR001I GDDR Updating Global Variable GLOBAL.GDDR.DC1.Planned.IPL on System=(DCSD). (GDDRKF0A).
- GDDR001I GDDR Updating Global Variable GLOBAL.GDDR.DC1.Planned.IPL on System=(DCSR). (GDDRKF0A).
- GDDR001I GDDR Updating Global Variable GLOBAL.GDDR.DC1.Planned.IPL.EOCJ on System=(DCSD). (GDDRKF0A).
- GDDR001I GDDR Updating Global Variable GLOBAL.GDDR.DC1.Planned.IPL.EOCJ on System=(DCSR). (GDDRKF0A).
- GDDR001I GDDR Planned Event IPL at Site DC1 for System EOCJ. (GDDREM01).

Once the system has been completely closed down, the following messages appear on the K-Systems after been sent from the other system active in the same sysplex as the system being closed down:

- MIM0061W System EOCJ in file 00 - possibly inoperative SITE=DC2 MIM=MIMGRI MSF=DCSG
- 77 IXC402D EOCJ LAST OPERATIVE AT 18:53:41. REPLY DOWN AFTER SYSTEM RESET, OR INTERVAL=SSSSS TO SET A REPROMPT TIME. SITE=DC2

4.1.7.7 Comments/Problems

4.1.8 DC1 Site Failure

4.1.8.1 Scenario Description

Complete loss of Site DC1 .

4.1.8.2 Equivalent Start/Starfire Scenario

Star Unplanned Operations – Site A Failure – Workload restarted on H_2 Site B – Keep B Data

Star Unplanned Operations – Site A Failure – Workload restarted on H_2 Site B – Keep C Data

Starfire Unplanned Scenario – Site A Failure – Equivalent to ConGroup CAX LostOwner Process

4.1.8.3 How to Simulate or Test

The following tests will be run:

a. Power off the DC1 z/990 Processor

b. Power off or block all ports on the DC1 DWDM's (for I/O, SRDF, LAN, Sysplex Timer and Coupling Links)

Each of the above tests should return the same results.

In my view multiple scenario should be tested: depending of the sequence of events, different results might occur.

The role of K3 is not taken into account here: we need to discrimate between loss of communications and loss of DC1: only DC3 can tell.

4.1.8.4 What are we Testing ?

GDDR behaviour and EMC software – Autoswap and Consistency Group+CAX behaviour

4.1.8.5 Expected Results

- Detected by missing heartbeat of K1 system
- GDDR event DC1.Unplanned.MHB set true
- (Possible ConGroup trip and/or CAX swap if DC1 lost completely)
- (Possible GDDR event DC1.Unplanned.CGT set true)
- SRDF/A will go inactive or fail
- Get lost owner condition, Autoswap will issue WTOR to which GDDR will reply CONTINUE allowing the swap to complete
- CAX swap completes
- GDDR event DCN.Unplanned.CAX set true
- Missing XCF status messages for Production z/OS Images
- GDDR event DC1.Unplanned.MIM set true
- Free failed system(s) from appropriate MIMplex
- GDDR event DC1.Unplanned.MXS set true
- GDDR will declare site DEAD when MHB and CAX are True and (either CGT or MXS are True or both are True)
- GDDR will prompt operators for permission to run TAKEOVER_ALLSITEn

- TAKEOVER_ALLSITEn will move Production workloads to site DC2
- TAKEOVER_ALLSITEn will manage Open Systems via Start/Stop
- TAKEOVER_ALLSITEn will resume SRDF/A
- R1->R2 nolonger synchronous

4.1.8.6 Actual Results

4.1.8.7 Comments/Problems

4.1.9 DC2 Site Failure

4.1.9.1 Scenario Description

Complete loss of Site DC2 .

4.1.9.2 Equivalent Start/Starfire Scenario

Star Unplanned Operations – Site B Failure – Workload continues at Site A on Host H_1

Starfire Unplanned Scenario – Site B Failure – Equivalent to ConGroup CAX LostOwner Process

4.1.9.3 How to Simulate or Test

The following tests will be run:

a. Power off the DC2 z/990 Processor

b. Power off or block all ports on the DC2 DWDM's (for I/O and SRDF)

Each of the above tests should return the same results.

4.1.9.4 What are we Testing ?

GDDR behaviour and EMC software – Autoswap and Consistency Group+CAX behaviour

4.1.9.5 Expected Results

- Detected by missing heartbeat for K2 system (on K1 and K3)
- GDDR event DC2.Unplanned.MHB set true
- GDDR will declare site DEAD, this will trigger a transfer of the master function ownership (operators will be asked to confirm this), should go to K3
- (Possible ConGroup trip due to an SRDF link failure or ConGroup disabling CAX due to a secondary channel failure)
- Missing XCF status messages for backup systems running in DC2, sysplexed with their equivalent Production z/OS Images
- GDDR event DC2.Unplanned.MXS set true
- GDDR event DC2.Unplanned.MIM set true
- Free failed system(s) from appropriate MIMplex
- R1->R2 nolonger synchronous
- SRDF/A will be OK (DC1->DC3)
- GDDR will take no further action

4.1.9.6 Actual Results

4.1.9.7 Comments/Problems

4.1.10 DC3 Site Failure

4.1.10.1 Scenario Description

Complete loss of Site DC3 .

4.1.10.2 Equivalent Start/Starfire Scenario

Star Unplanned Operations – Site C Failure – Workload continues at Site A on Host H_1

Starfire Unplanned Operations – Site C Failure

4.1.10.3 How to Simulate or Test

The following tests will be run:

a. Power off the DC3 z/990 Processor

b. Power off or block all ports on the DC3 DWDM's (for I/O and SRDF)

c. Power off or block all ports on the DC3 CNT's (for I/O and SRDF)

Each of the above tests should return the same results.

4.1.10.4 What are we Testing ?

GDDR behaviour and EMC software behaviour

4.1.10.5 Expected Results

- Detected by missing heartbeat of K3 system (on K1 and K2) and SRDF/A going inactive
- GDDR event DC3.Unplanned.MHB set true
- GDDR will declare the site DEAD
- GDDR will take no further action

4.1.10.6 Actual Results

4.1.10.7 Comments/Problems

4.1.11 Failure in Communication between DC1 and DC2 (Variation 1)

4.1.11.1 Scenario Description

Loss of Communication between DC1 and DC2 (lost FICON and SRDF/S connectivity)

4.1.11.2 Equivalent Start/Starfire Scenario

Starfire Unplanned Scenario – Site A Failure – Equivalent to ConGroup CAX LostOwner Process

4.1.11.3 How to Simulate or Test

Block I/O channels and SRDF links between DC1 and DC2.

4.1.11.4 What are we Testing ?

GDDR behaviour and EMC software – Autoswap and Consistency Group+CAX behaviour

4.1.11.5 Expected Results

- Each of DC1/DC2 would have missing GDDR heartbeats for the other. DC3 would still have heartbeats for both (assuming Network communications still OK)
- GDDR on each will declare the other site DEAD
- Operators prompted for change of Master function ownership, operators should confirm this and it will move to DC3
- GDDR event DC1.Unplanned.MHB set to true (at DC2 and DC3***)
- GDDR event DC2.Unplanned.MHB set to true (at DC1 and DC3***)
- DC2 CAX will initiate an Autoswap, it will run into a lost ownership condition, issue a WTOR to which GDDR will reply either HOLDIO or SYSRESET (to hold IOSLEVEL high on all systems at DC2 or place all DC2 systems in a wait state)
- Assuming that the Primary site is DC1, then DC2 will be sacrificed
- GDDR event DC2.Unplanned.CAX set to true (at DC2 and DC3***)
- R1->R2 no longer synchronous
- DC1 will see a ConGroup trip
- GDDR event DC1.Unplanned.CGT set to true (at DC1 and DC3***)
- GDDR will perform no further actions

*** and DC3 – assumes DC3 still has Network connectivity to both DC1 and DC2

4.1.11.6 Actual Results

4.1.11.7 Comments/Problems

4.1.12 Failure in Communication between DC1 and DC2 (Variation 2)

4.1.12.1 Scenario Description

Loss of Communication between DC1 and DC2 (split brain problem) Difference with 4.1.12?

4.1.12.2 Equivalent Start/Starfire Scenario

Starfire Unplanned Scenario – Site B Failure – Equivalent to ConGroup CAX LostOwner Process

4.1.12.3 How to Simulate or Test

Block all ports in the DWDM's between DC1 and DC2 so that all communication between the two is stopped ie. ***Network***, I/O and SRDF

4.1.12.4 What are we Testing ?

GDDR behaviour and EMC software – Autoswap and Consistency Group+CAX behaviour

4.1.12.5 Expected Results

- Each of DC1/DC2 would have missing GDDR heartbeats for the other. DC3 would still have heartbeats for both
- GDDR on each will declare the other site DEAD
- GDDR on DC3 would declare DC1 and DC2 dead
- Operators prompted for change of Master function ownership, operators should confirm this and it will move to DC3
- GDDR event DC1.Unplanned.MHB set to true (at DC2 and DC3***)
- GDDR event DC2.Unplanned.MHB set to true (at DC1 and DC3***)
- DC2 CAX will initiate an Autoswap, it will run into a lost ownership condition, issue a WTOR to which GDDR will reply either HOLDIO or SYSRESET (to hold IOSLEVEL high on all systems at DC2 or place all DC2 systems in a wait state)
- Assuming that the Primary site is DC1, then DC2 will be sacrificed
- GDDR event DC2.Unplanned.CAX set to true (at DC2)(and DC3***)
- R1->R2 no longer synchronous
- DC1 will see a ConGroup trip
- GDDR event DC1.Unplanned.CGT set to true (at DC1 and DC3***)

*** and DC3 – assumes DC3 still has Network connectivity to both DC1 and DC2 (but there is no direct network connection between DC1 and DC2…is this possible ? can they communicate with each other via DC3 ?) yes according to network routing (but not now in DCS lab).

4.1.12.6 Actual Results

4.1.12.7 Comments/Problems

4.1.13Loss of R1 DASD

4.1.13.1 Scenario Description

Complete loss of access to the R1 DASD. (P_1 and/or P_5 failure)

4.1.13.2 Equivalent Start/Starfire Scenario

N/A

4.1.13.3 How to Simulate or Test

The following tests will be run:

a. Power off the R1 DMX DASD

b. Block all ports (or equivalent) on the P_1 links to the R1 DMX's.

c. Block all ports (or equivalent) on the P_5 links to the R1 DMX's.

d. Block all ports (or equivalent) on both the P_1 and P_5 links to the R1 DMX's.

4.1.13.4 What are we Testing ?

GDDR behaviour and EMC software – Autoswap and Consistency Group+CAX behaviour

4.1.13.5 Expected Results

- ConGroup invokes CAX to swap all R1 devices to their partner R2 devices
- There will be no automatic ConGroup trip
- GDDR event DCN.Unplanned.CAX set to true
- GDDR set mirroring status to NOT_OK
- GDDR will prompt operators to run TAKEOVER_DASDSITEn or TAKEOVER_ALLSITEn or perform no action
- GDDR will run the selected unplanned action script
- GDDR will trigger Open Systems Start/Stop (from what ever takeover script is run)
- Potentially large volume of error messages will be produced, need to ensure no important messages are missed and all are handled correctly

4.1.13.6 Actual Results

4.1.13.7 Comments/Problems

At the time of writing (18th November 2004) this will result in the loss of all systems running off the R1 DASD (due to loss of access to the paging volumes), systems affected are EOCJ, EOCG, SIC6 and EOCR.

4.1.14 Loss of R2 DASD

4.1.14.1 Scenario Description

Complete loss of access to the R2 DASD. (P_2 and/or P_4 failure)

4.1.14.2 Equivalent Start/Starfire Scenario

N/A

4.1.14.3 How to Simulate or Test

The following tests will be run:

a. Power off the R2 DMX DASD

b. Block all ports (or equivalent) on the P_2 links to the R2 DMX's.

c. Block all ports (or equivalent) on the P_4 links to the R2 DMX's.

d. Block all ports (or equivalent) on both the P_2 and P_4 links to the R2 DMX's.

4.1.14.4 What are we Testing ?

GDDR behaviour and EMC software – Autoswap and Consistency Group+CAX behaviour

4.1.14.5 Expected Results

- ConGroup will disable CAX
- GDDR will set mirroring status to NOT_OK
- GDDR will report that CAX has been disabled
- GDDR will report problem with R2 DASD
- GDDR will perform no further action
- Potentially large volume of error messages will be produced, need to ensure no important messages are missed and all are handled correctly

4.1.14.6 Actual Results

4.1.14.7 Comments/Problems

Will lose the usual Master K-System (EOCK) as its local volumes reside on the DC2 R2 DMX.

4.1.15Loss of All SRDF/S Links

4.1.15.1 Scenario Description

Complete loss of only the SRDF/S Links.

4.1.15.2 Equivalent Start/Starfire Scenario

Star Unplanned Scenario - Link L_1(J0) Failure – Workload continues at Site A on Host H_1

Starfire Unplanned Scenario - Link L_1(J0) Failure

4.1.15.3 How to Simulate or Test

- Suspend the SRDF/S links using SRDF/HC command susp-cgrp
- Block appropriate DWDM ports.

4.1.15.4 What are we Testing ?

GDDR behaviour and EMC software – SRDF/S, Consistency Group

4.1.15.5 Expected Results

- This will trigger a ConGroup trip (message CGRP051I)
- May also get a ConGroup state change message(s) CGRP349I
- GDDR event DCn.Unplanned.CGT will be set to true
- GDDR will set mirroring status to NOT_OK
- GDDR will notify the operators that there is a problem with the SRDF/S links
- GDDR will trigger Open Systems Start/Stop (to stop all the Open Systems)
- GDDR will perform no further actions

4.1.15.6 Actual Results

ConGroup was suspended using the SUSP-CGRP command.

The following was observed:

- Message CGRP051I seen
- GDDR Mirroring Status was set to NOT_OK
- GDDR message GDDR992E GDDR ConGroup Trip Detected
- GDDR Function Open_Systems_Stop Run
- GDDR Event DCN.Unplanned.CGT set True
- GDDR Event DCN.Unplanned.CGT.CGRPEOC1
- GDDR Event DCN.Unplanned.CGT.CGRPEOC3
- GDDR Event Monitor reports the SRDF/S Failure

4.1.15.7 Comments/Problems

4.1.16 Loss of All SRDF/A Links

4.1.16.1 Scenario Description

Complete loss of SRDF/A Links (to DC3).

4.1.16.2 Equivalent Start/Starfire Scenario

Star Unplanned Scenario - Link L_2(JA) Failure – Workload continues at Site A on Host H_1

Starfire Unplanned Scenario - Link L_2(JA) Failure

4.1.16.3 How to Simulate or Test

Vary offline the SRDF/A link(s) using SRDF/HC commands or block appropriate DWDM ports.

4.1.16.4 What are we Testing ?

GDDR behaviour and EMC software – SRDF/A, MSC

4.1.16.5 Expected Results

- GDDR will detect that SRDF/A has become inactive (message SCF1234I)
- MSC will still be active for all defined SRDF/A groups (and sessions)
- GDDR will set mirroring status to NOT_OK
- GDDR will notify the operators that there is a problem with SRDF/A
- GDDR will attempt restart of SRDF/A
- GDDR will take no further actions

4.1.16.6 Actual Results

4.1.16.7 Comments/Problems

4.1.17 Loss of All but One SRDF/A Link

4.1.17.1 Scenario Description

Loss of all but one SRDF/A Link (DC3).

4.1.17.2 Equivalent Start/Starfire Scenario

N/A

4.1.17.3 How to Simulate or Test

Vary offline all but one SRDF/A link using SRDF/HC commands.

4.1.17.4 What are we Testing ?

GDDR behaviour and EMC software – SRDFA, MSC

4.1.17.5 Expected Results

- Assuming that there is more than one SRDF/A link between each DMX, this will be completely transparent to GDDR
- Reduced bandwidth may result in SRDF/A to drop (host throttling).
- GDDR will inform operators that not all SRDF/A Links are active
- GDDR will perform no further actions.

4.1.17.6 Actual Results

4.1.17.7 Comments/Problems

4.1.18 Loss of All SRDF/S and SRDF/A Links

4.1.18.1 Scenario Description

Complete loss of SRDF/S and SRDF/A Links.

4.1.18.2 Equivalent Start/Starfire Scenario

N/A

4.1.18.3 How to Simulate or Test

Vary offline the SRDF/S and SRDF/A link(s) using SRDF/HC commands or block appropriate DWDM ports.

4.1.18.4 What are we Testing ?

GDDR behaviour and EMC software – SRDF/S, Consistency Group, SRDF/A, MSC

4.1.18.5 Expected Results

- This will trigger a ConGroup trip (message CGRP051I)
- GDDR event DCn.Unplanned.CGT will be set to true
- GDDR will detect that SRDF/A has become inactive (message SCF1234I)
- MSC will still be active for all defined SRDF/A groups (and sessions)
- GDDR will set mirroring status to NOT_OK
- GDDR will notify the operators that there is a problem with SRDF/S and SRDF/A
- GDDR will trigger Open Systems Start/Stop
- GDDR will take no further actions

4.1.18.6 Actual Results

4.1.18.7 Comments/Problems

4.1.19 Power Failure DC1 Processor

4.1.19.1 Scenario Description

Complete loss of DC1 Processor.

4.1.19.2 Equivalent Start/Starfire Scenario

N/A

4.1.19.3 How to Simulate or Test

Power off the DC1 Processor (while all systems are still running).

4.1.19.4 What are we Testing ?

GDDR behaviour and EMC software – Autoswap and Consistency Group+CAX behaviour

4.1.19.5 Expected Results

- Detected by missing heartbeat of K1 system
- GDDR event DC1.Unplanned.MHB set true
- GDDR will declare site DEAD
- (Possible ConGroup trip and/or CAX swap if DC1 lost completely)
- Missing XCF status messages for Production z/OS Images
- GDDR will free failed system(s) from appropriate MIMplex
- GDDR event DC1.Unplanned.MXS set true
- GDDR event DC1.Unplanned.MIM set true
- SRDF/A will go INACTIVE (this will only happen if MSC is active on a system located in DC1 – normally MSC should be active on K2).
- GDDR will prompt operators for permission to run TAKEOVER_ALLSITEn or TAKEOVER_DASDSITEn
- TAKEOVER_ALLSITEn will move Production workloads to site DC2 and swap the DASD to site DC2
- GDDR will move K-System Master function ownership to K3

4.1.19.6 Actual Results

4.1.19.7 Comments/Problems

4.1.20 Power Failure DC2 Processor

4.1.20.1 Scenario Description

Complete loss of DC2 Processor.

4.1.20.2 Equivalent Start/Starfire Scenario

N/A

4.1.20.3 How to Simulate or Test

Power off the DC2 Processor (while all systems are still running).

4.1.20.4 What are we Testing ?

GDDR behaviour and EMC software – Autoswap and Consistency Group+CAX behaviour

4.1.20.5 Expected Results

- Detected by missing heartbeat for K2 system
- GDDR event DC2.Unplanned.MHB set true
- GDDR will declare site DEAD, this will trigger a transfer of the master function ownership (operators will be asked to confirm this)
- (Possible ConGroup trip due to an SRDF link failure or ConGroup disabling CAX due to a secondary channel failure)
- Missing XCF status messages for backup systems running in DC2, sysplexed with their equivalent Production z/OS Images
- GDDR will free failed system(s) from appropriate MIMplex
- GDDR event DC2.Unplanned.MXS set true
- SRDF/A will go INACTIVE (assuming that MSC is active on K2 – which in normal circumstances it should be) (as part of the transfer of master function ownership, MSC will be re-enabled on K1).
- GDDR will inform the operators of the problem at DC2
- GDDR will take no further action

4.1.20.6 Actual Results

4.1.20.7 Comments/Problems

4.1.21 Power Failure DC3 Processor

4.1.21.1 Scenario Description

Complete loss of DC3 Processor.

4.1.21.2 Equivalent Start/Starfire Scenario

N/A

4.1.21.3 How to Simulate or Test

Power off the DC3 Processor (while all systems are still running).

4.1.21.4 What are we Testing ?

GDDR behaviour and EMC software – Autoswap and Consistency Group+CAX behaviour

4.1.21.5 Expected Results

- Detected by missing heartbeat of K3 system and SRDF/A going inactive
- GDDR event DC3.Unplanned.MHB set true
- GDDR will declare the site DEAD
- GDDR will inform the operators of the problem at DC3
- GDDR will take no further action

4.1.21.6 Actual Results

4.1.21.7 Comments/Problems

4.1.22Loss of both DC1 and DC2

4.1.22.1 Scenario Description

Simultaneous loss of DC1 and DC2, this would be a regional disaster, eg. The result of a major power failure.

4.1.22.2 Equivalent Start/Starfire Scenario

N/A

4.1.22.3 How to Simulate or Test

Cut link (or equivalent) to CNT boxes at DC3, could also deactivate all LPAR's at both DC1 and DC2.

4.1.22.4 What are we Testing ?

GDDR behaviour and EMC software – Autoswap and Consistency Group+CAX behaviour

4.1.22.5 Expected Results

- Detected by missing heartbeats for both K1 and K2 at K3
- Both K1 and K2 will be declared DEAD at K3
- GDDR event DC1.Unplanned.MHB will be set true
- GDDR event DC2.Unplanned.MHB will be set true
- GDDR will prompt the operators (operators at DC3?) to confirm the change in Master function ownership to the K3 system
- SRDF/A will go inactive
- GDDR will set mirroring status to NOT_OK
- GDDR will prompt the operators for permission to run TAKEOVER_ALLSITEn

Its now decision time…are DC1 and DC2 really inoperable ? If so, work will have to be restarted at DC3 using DASD at DC3.

4.1.22.6 Actual Results

4.1.22.7 Comments/Problems

4.1.23 Production z/OS Image Loss while Autoswap in Progress

4.1.23.1 Scenario Description

The loss of a Production System z/OS Image while an Autoswap is in Progress.

4.1.23.2 Equivalent Start/Starfire Scenario

N/A

4.1.23.3 How to Simulate or Test

Deactivate a Production System z/OS Image LPAR while an Autoswap is in progress.

4.1.23.4 What are we Testing ?

GDDR behaviour and EMC software – Autoswap and Consistency Group+CAX behaviour

4.1.23.5 Expected Results

- There will be a missing XCF status message for the failed system
- GDDR will detect the IXC402D message
- GDDR event DCn.Unplanned.MXS will be set true
- GDDR will report the system down
- GDDR will free failed system(s) from appropriate MIMplex
- Operators prompted by GDDR to perform recovery action
- Recovery action (if any selected) completes as expected
- Autoswap will see the number of systems decrease by 1, and as we have specified FORCE=LOSTSYS, Autoswap will continue on with the swap.

4.1.23.6 Actual Results

4.1.23.7 Comments/Problems

4.1.24 Autoswap Owner Fails while Autoswap in Progress

4.1.24.1 Scenario Description

The loss of the System that currently is the Autoswap Owner while an Autoswap is in progress. This is the same as the K1 System failing while an Autoswap is in Progress.

4.1.24.2 Equivalent Start/Starfire Scenario

N/A

4.1.24.3 How to Simulate or Test

Deactivate the LPAR where the Autoswap Owner is currently running from while an Autoswap is in progress.

4.1.24.4 What are we Testing ?

GDDR behaviour and EMC software – Autoswap and Consistency Group+CAX behaviour

4.1.24.5 Expected Results

- Master K-System reports loss of DC1 System to Operators
- GDDR Event DC1.Unplanned.MHB set True
- GDDR performs no other recovery actions
- Autoswap will see the owner getting lost, so raise LostOwnerPolicy, which is WTOR so GDDR will need to decide what to reply to this WTOR, and which subsequent recovery actions to take.

4.1.24.6 Actual Results

4.1.24.7 Comments/Problems

4.1.25 Loss of a Single FC Switch

4.1.25.1 Scenario Description

Loss of a single FICON Director, eg. Due to a power failure or a catastrophic hardware failure.

4.1.25.2 Equivalent Start/Starfire Scenario

N/A

4.1.25.3 How to Simulate or Test

Power Off a FICON director or block all ports on a FICON director.

4.1.25.4 What are we Testing ?

GDDR behaviour and EMC software – Autoswap and Consistency Group+CAX behaviour. Hardware configuration symmetry and redundancy.

4.1.25.5 Expected Results

- Assuming a symmetrical I/O configuration this should be transparent to all hosts.
- GDDR will not get involved in this scenario.

4.1.25.6 Actual Results

4.1.25.7 Comments/Problems

4.1.26 FICON Channel Failure

4.1.26.1 Scenario Description

Failure of a 6064 card (FICON card).

4.1.26.2 Equivalent Start/Starfire Scenario

N/A

4.1.26.3 How to Simulate or Test

Block all ports on a single card.

4.1.26.4 What are we Testing ?

GDDR behaviour and EMC software – Autoswap and Consistency Group+CAX behaviour. Hardware configuration symmetry and redundancy.

4.1.26.5 Expected Results

- Assuming a symmetrical I/O configuration this should be transparent to all hosts.
- GDDR will not get involved in this scenario.

4.1.26.6 Actual Results

4.1.26.7 Comments/Problems

4.1.27 Rolling Disaster – Loss of DC1, followed by Loss of DC2

4.1.27.1 Scenario Description

Rolling Disaster – Loss of DC1, followed by Loss of DC2

4.1.27.2 Equivalent Start/Starfire Scenario

N/A

4.1.27.3 How to Simulate or Test

Power off the DWDM's at DC1, a few minutes later, power off the DWDM's at DC2.

4.1.27.4 What are we Testing ?

GDDR behaviour and EMC software – Autoswap and Consistency Group+CAX behaviour

4.1.27.5 Expected Results

- Detected by missing heartbeat of K1 system
- GDDR event DC1.Unplanned.MHB set true
- GDDR will declare site DEAD
- (Possible ConGroup trip and/or CAX swap if DC1 lost completely)
- Missing XCF status messages for Production z/OS Images
- GDDR event DC2.Unplanned.MXS set true
- GDDR will free failed system(s) from appropriate MIMplex
- GDDR will prompt operators for permission to run TAKEOVER_ALLSITEn
- TAKEOVER_ALLSITEn will move Production workloads to site DC2, R1 DASD will also be moved to DC2.
- Detected by missing heartbeat for K2 system
- GDDR event DC2.Unplanned.MHB set true
- GDDR will declare site DEAD, this will trigger a transfer of the master function ownership (operators will be asked to confirm this)
- (Possible ConGroup trip due to an SRDF link failure or ConGroup disabling CAX due to a secondary channel failure)
- Missing XCF status messages for backup systems running in DC2, sysplexed with their equivalent Production z/OS Images
- GDDR event DC2.Unplanned.MXS set true
- GDDR will take no further action

What really happens in this scenario will depend upon what is happening at the time the loss of DC2 occurs.

4.1.27.6 Actual Results

4.1.27.7 Comments/Problems

4.1.28 Rolling Disaster – Loss of DC2, followed by Loss of DC1

4.1.28.1 Scenario Description

Rolling Disaster – Loss of DC2, followed by Loss of DC1

4.1.28.2 Equivalent Start/Starfire Scenario

N/A

4.1.28.3 How to Simulate or Test

Power off the DWDM's at DC2, a few minutes later, power off the DWDM's at DC1.

4.1.28.4 What are we Testing ?

GDDR behaviour and EMC software – Autoswap and Consistency Group+CAX behaviour

4.1.28.5 Expected Results

- Detected by missing heartbeat for K2 system
- GDDR event DC2.Unplanned.MHB set true
- GDDR will declare site DEAD, this will trigger a transfer of the master function ownership (operators will be asked to confirm this)
- (Possible ConGroup trip due to an SRDF link failure or ConGroup disabling CAX due to a secondary channel failure)
- Missing XCF status messages for backup systems running in DC2, sysplexed with their equivalent Production z/OS Images
- GDDR event DC2.Unplanned.MXS set true
- GDDR will free failed system(s) from appropriate MIMplex
- GDDR will take no further action
- Detected by missing heartbeat of K1 system
- GDDR event DC1.Unplanned.MHB set true
- GDDR will declare site DEAD
- (Possible ConGroup trip and/or CAX swap if DC1 lost completely)
- Missing XCF status messages for Production z/OS Images
- GDDR event DC2.Unplanned.MXS set true
- GDDR will prompt operators for permission to run TAKEOVER_ALLSITEn
- TAKEOVER_ALLSITEn will move Production workloads to site DC2, R1 DASD will also be moved to DC2.

What really happens in this scenario will depend upon what is happening at the time the loss of DC1 occurs.

4.1.28.6 Actual Results

4.1.28.7 Comments/Problems

4.1.29 CUU Failure on R1's

4.1.29.1 Scenario Description

A CUU failure on the Primary DASD (R1's).

4.1.29.2 Equivalent Start/Starfire Scenario

N/A

4.1.29.3 How to Simulate or Test

Pull a HDA/drawer in the R1 DMX.

4.1.29.4 What are we Testing ?

GDDR behaviour and EMC software – Autoswap and Consistency Group+CAX behaviour

4.1.29.5 Expected Results

- This should be transparent to all hosts. Will have implications for unprotected volumes such as BCV's.
- GDDR will not get involved in this scenario.

4.1.29.6 Actual Results

4.1.29.7 Comments/Problems

4.1.30CUU Failure on R2's

4.1.30.1 Scenario Description

A CUU failure on the Secondary DASD (R2's).

4.1.30.2 Equivalent Start/Starfire Scenario

N/A

4.1.30.3 How to Simulate or Test

Pull a HDA/drawer in the R2 DMX.

4.1.30.4 What are we Testing ?

GDDR behaviour and EMC software – Autoswap and Consistency Group+CAX behaviour

4.1.30.5 Expected Results

- This should be transparent to all hosts. Will have implications for unprotected volumes, such as BCV's.
- GDDR will not get involved in this scenario.

4.1.30.6 Actual Results

4.1.30.7 Comments/Problems

4.1.31 ConSistency Group Task Fails on any System

4.1.31.1 Scenario Description

EMC started task EMCCGRP fails or is stopped or not started on any Production Image or K-System.

4.1.31.2 Equivalent Start/Starfire Scenario

N/A

4.1.31.3 How to Simulate or Test

Issue the stop command for EMCCGRP on a Production System.

4.1.31.4 What are we Testing ?

GDDR behaviour and EMC software

4.1.31.5 Expected Results

- On a Production System, normal OPS/MVS automation will restart and/or alert the operators that the task couldn"t be restarted.
- On a K-System, normal OPS/MVS automation will restart, and/or alert the operators that the task couldn't be restarted.

4.1.31.6 Actual Results

4.1.31.7 Comments/Problems

4.1.32 ResourcePak Base Task Fails on any System

4.1.32.1 Scenario Description

EMC started task EMCRSPAK fails or is stopped or not started on any Production Image or K-System.

4.1.32.2 Equivalent Start/Starfire Scenario

N/A

4.1.32.3 How to Simulate or Test

Issue the stop command for EMCRSPAK on a Production System.

4.1.32.4 What are we Testing ?

GDDR behaviour and EMC software

4.1.32.5 Expected Results

- On a Production System, normal OPS/MVS automation will restart and/or alert the operators that the task couldn't be restarted.
- On a K-System, normal OPS/MVS automation will restart, and/or alert the operators that the task couldn't be restarted.
- Maybe need to transfer CAX-Ownership to another LPAR on the same site
- May also have lost SRDF/A MSC synchronization (unless EMC provides automatic failover capability for this function)
- GDDR will also detect the missing task and set the mirroring status to NOT_OK. The mirroring status will be set to OK once the missing task has been successfully restarted (assuming all other mirroring status criteria are met).

4.1.32.6 Actual Results

4.1.32.7 Comments/Problems

4.1.33 SRDF/HC Task Fails on any System

4.1.33.1 Scenario Description

EMC started task EMCINIT fails or is stopped or not started on any Production Image or K-System.

4.1.33.2 Equivalent Start/Starfire Scenario

N/A

4.1.33.3 How to Simulate or Test

Issue the stop command for EMCINIT on a Production System.

4.1.33.4 What are we Testing ?

GDDR behaviour and EMC software

4.1.33.5 Expected Results

- On a Production System, normal OPS/MVS automation will restart and/or alert the operators that the task couldn"t be restarted.
- On a K-System, normal OPS/MVS automation will restart, and/or alert the operators that the task couldn't be restarted.
- GDDR will also detect the missing task and set the mirroring status to NOT_OK. The mirroring status will be set to OK once the missing task has been successfully restarted (assuming all other mirroring status criteria are met).

4.1.33.6 Actual Results

4.1.33.7 Comments/Problems

4.1.34SRDF/A Fails

4.1.34.1 Scenario Description

SRDF/A becomes inactive by an operator command or a failure.

4.1.34.2 Equivalent Start/Starfire Scenario

N/A

4.1.34.3 How to Simulate or Test

The following tests will be run:

a. Vary the SRDF/A link(s) offline

b. Use the SRDF/A drop command

c. Use the SRDF/A drop_pend command

d. Block the DWDM port(s) having the SRDF/A link(s)

4.1.34.4 What are we Testing ?

GDDR behaviour and EMC software – Autoswap and Consistency Group+CAX behaviour

4.1.34.5 Expected Results

- When SRDF/A becomes inactive on a DMX Controller, message SCF1234I is issued. This will trigger GDDR to set the GDDR Mirroring status to NOT_OK. (But we should still be able to perform planned/unplanned Autoswaps!)
- GDDR will alert the operators that SRDF/A is inactive.
- Planned action Re_Establish_SRDFA will be run in an attempt to restart. This attempt will be retried a number of times before notifying the operators that a restart of SRDF/A has failed and manual intervention is required.
- In the SRDF/A MSC environment this type of failure may well result in an SRDF/A Host Intervention Required status on the R2-side, requiring usage of the SRDF/A Stand-Alone Recovery utility.

4.1.34.6 Actual Results

4.1.34.7 Comments/Problems

4.2 The Planned Scenario's

4.2.1 Controlled Failover to DC2 (from DC1)

4.2.1.1 Scenario Description

Autoswap to the DASD at DC2 (the R2's) and restart the business applications in the systems running at DC2. Do this for all z/OS and distributed systems.

4.2.1.2 Equivalent Star/Starfire Scenario

Star Planned Failover Operations – Site A to Site B switch over – Workload started on Site B H_2 after SRDF reconfiguration and Site B and Site C resynchronisation completed.

4.2.1.3 How to Simulate or Test

Run GDDR Planned Script ALLSITEn.

4.2.1.4 What are we Testing ?

GDDR behaviour and EMC software – Autoswap and Consistency Group+CAX behaviour

4.2.1.5 Expected Results

- After the successful run of GDDR Planned Action ALLSITEn, all business applications will be running from LPAR's at site DC2 and the primary DASD (R1's) will be located in DC2.
- SRDF/S will be synchronised with the secondary DASD (R2's) in DC1.
- SRDF/A will be active and synchronised with its secondary DASD (R2's) in DC3.

4.2.1.6 Actual Results

4.2.1.7 Comments/Problems

4.2.2 Swap to R2 DASD in DC2 (from R1's in DC1)

4.2.2.1 Scenario Description

Autoswap to the DASD at DC2 (the R2's) only.

4.2.2.2 Equivalent Star/Starfire Scenario

Starfire Planned – Site A to Site B I/O Swap – Workload continues at Site A Host H_1 until moved procedurally.

4.2.2.3 How to Simulate or Test

Run GDDR Planned Script DASDSITEn.

4.2.2.4 What are we Testing ?

GDDR behaviour and EMC software – Autoswap and Consistency Group+CAX behaviour

4.2.2.5 Expected Results

- After the successful run of GDDR Planned Action DASDSITEn, the primary DASD (R1's) will be located in DC2.
- SRDF/S will be synchronised with the secondary DASD (R2's) in DC1.
- SRDF/A will be active and synchronised with its secondary DASD (R2's) in DC3.

4.2.2.6 Actual Results

4.2.2.7 Comments/Problems

4.2.3 Controlled Failover to DC3 (from DC1)

4.2.3.1 Scenario Description

Stop workload running at DC1 and resume workload at DC3 following completion of successful failover steps.

4.2.3.2 Equivalent Star/Starfire Scenario

Star Planned – Site A to Site C switch over – Workload started on Site C on Host H_3 after SRDF reconfiguration and Site C is protected at Site B using SRDF/A

4.2.3.3 How to Simulate or Test

Stop business applications at DC1, stop SRDF/A sessions to DC3, stop SRDF/S to DC2, swap SRDF pairs DC3->DC1, restart SRDF/A DC3->DC2. Restart business applications in site DC3.

4.2.3.4 What are we Testing ?

This validates that site DC3 actually works.

4.2.3.5 Expected Results

- The primary DASD (R1's) will be located in DC3.
- SRDF/A will be active and synchronised with its secondary DASD (R2's) in DC2.
-
- SRDF/S is not being used.

4.2.3.6 Actual Results

4.2.3.7 Comments/Problems

4.2.4 DMX Upgrade/Update to the R1's

4.2.4.1 Scenario Description

Upgrade or maintain the Primary (R1) EMC DASD.

4.2.4.2 Equivalent Start/Starfire Scenario

N/A

4.2.4.3 How to Simulate or Test

Have the EMC engineers perform microcode upgrades, hardware changes and bin file changes without stopping the z/OS systems that are using them.

4.2.4.4 What are we Testing ?

Validate the DMX's ability to perform dynamic/concurrent microcode/hardware updates/upgrades transparently to the hosts with access to them.

4.2.4.5 Expected Results

- Changes to the Primary (R1) EMC DASD will not impact running systems.
- GDDR will not get involved in this scenario.

4.2.4.6 Actual Results

4.2.4.7 Comments/Problems

4.2.5 DMX Upgrade/Update to the R2's

4.2.5.1 Scenario Description

Upgrade or maintain the Secondary (R2) EMC DASD.

4.2.5.2 Equivalent Start/Starfire Scenario

N/A

4.2.5.3 How to Simulate or Test

Have the EMC engineers perform microcode upgrades, hardware changes and bin file changes without stopping the z/OS systems that are using them.

4.2.5.4 What are we Testing ?

Validate the DMX's ability to perform dynamic/concurrent microcode/hardware updates/upgrades transparently to the hosts with access to them.

4.2.5.5 Expected Results

- Changes to the Secondary (R2) EMC DASD will not impact running systems.
- GDDR will not get involved in this scenario.

4.2.5.6 Actual Results

4.2.5.7 Comments/Problems

4.3 Resumption Scenario's

4.3.1 SRDF/S Link Resumed

4.3.1.1 Scenario Description

The SRDF/S Link(s) are brought online after a failure or maintenance. Need to resynchronise Site DC1 to DC2 and resume ConGroup protection between DC1 and DC2.

4.3.1.2 Equivalent Star/Starfire Scenario

Star Resumption Operations – Link L_1(J0) Resumed – Workload continues at Site A on Host H_1

Starfire Resumption Operations – Link L_1(J0) Resumed

4.3.1.3 How to Simulate or Test

Configure the SRDF/S link(s) offline (invalids start building up), then configure SRDF/S link(s) online. Once the links are online, perform either of the following actions:

- Resume ConGroup consistency groups
- Run GDDR Planned Action Re_Establish_SRDFS

4.3.1.4 What are we Testing ?

GDDR behaviour and EMC software – SRDF/S and Consistency Group behaviour

4.3.1.5 Expected Results

- GDDR Planned Action Re_Establish_SRDFS will perform the resynchronisation procedure or resume the Consistency Groups, once synchronised the consistency groups will become enabled.
- GDDR Event DCN.Unplanned.CGT.CGRPEOC1 set False
- GDDR Event DCN.Unplanned.CGT.CGRPEOC3 set False
- GDDR Event DCN.Unplanned.CGT set False
- GDDR will trigger Open Systems Start/Stop (to restart all the Open Systems)

4.3.1.6 Actual Results

4.3.1.7 Comments/Problems

4.3.2 SRDF/A Link Resumed

4.3.2.1 Scenario Description

The SRDF/A Link(s) are brought online after a failure or maintenance. Need to resynchronise Site DC1 to DC3.

4.3.2.2 Equivalent Star/Starfire Scenario

Star Resumption Operations – Link L_2(JA) Resumed – Workload continues at Site A on Host H_1

Starfire Resumption Operations – Link L_2(JA) Resumed

4.3.2.3 How to Simulate or Test

Configure the SRDF/A link(s) offline (invalids start building up), then configure SRDF/A link(s) online. Once the links are online, then run GDDR Planned Action Re_Establish_SRDFA.

4.3.2.4 What are we Testing ?

GDDR behaviour and EMC software – SRDF/A

4.3.2.5 Expected Results

- GDDR Planned Action Re_Establish_SRDFA will perform the resynchronisation procedure and then Activate SRDF/A (as well as restart MSC).
- GDDR Event DCN.Unplanned.SRA set False
- Depending on the way SRDF/A was brought down, in the SRDF/A MSC environment, SRDF/A may well find itself in a Host Intervention Required status on the R2-side, requiring usage of the SRDF/A Stand-Alone Recovery utility.

4.3.2.6 Actual Results

4.3.2.7 Comments/Problems

4.3.3 Move Workload and R1 DASD from DC2 to DC1

4.3.3.1 Scenario Description

Return the business application workload and R1 DASD to site DC1 (from DC2).

4.3.3.2 Equivalent Star/Starfire Scenario

Star Resumption Operations – Planned Site Failback Operation

Starfire Resumption Operations – Planned Site Failback Operation

4.3.3.3 How to Simulate or Test

Run GDDR Planned Action ALLSITE1.

4.3.3.4 What are we Testing ?

GDDR behaviour and EMC software – Autoswap and Consistency Group+CAX behaviour

4.3.3.5 Expected Results

- After the successful run of GDDR Planned Action ALLSITE1, all business applications will be running from LPAR's at site DC1
- The primary DASD (R1's) will be located in DC1.

4.3.3.6 Actual Results

4.3.3.7 Comments/Problems

4.3.4 DC2 Available

4.3.4.1 Scenario Description

Need to resynchronise Site DC1 to DC2 and resume ConGroup protection between DC1 and DC2 (Perform normal SRDF/S recovery after site DC2 failure).

4.3.4.2 Equivalent Star/Starfire Scenario

Starfire Resumption Operations – Site B Available Operation

4.3.4.3 How to Simulate or Test

Configure the SRDF/S link(s) offline (invalids start building up), then configure SRDF/S link(s) online. Resume ConGroup consistency groups. Once the links are online, then run GDDR Planned Action Re_Establish_SRDFS.

4.3.4.4 What are we Testing ?

GDDR behaviour and EMC software – Autoswap and Consistency Group+CAX behaviour

4.3.4.5 Expected Results

- GDDR Planned Action Re_Establish_SRDFS will perform the resynchronisation procedure or resume the Consistency Groups, once synchronised the consistency groups will become enabled.

4.3.4.6 Actual Results

4.3.4.7 Comments/Problems

4.3.5 DC3 Available

4.3.5.1 Scenario Description

Need to resynchronise Site DC1 to DC3 (Perform normal SRDF/A recovery after site DC3 failure).

4.3.5.2 Equivalent Star/Starfire Scenario

Starfire Resumption Operations – Site C Available Operation

4.3.5.3 How to Simulate or Test

Configure the SRDF/A link(s) offline (invalids start building up), then configure SRDF/A link(s) online. Once the links are online, then run GDDR Planned Action Re_Establish_SRDFA.

4.3.5.4 What are we Testing ?

GDDR behaviour and EMC software – SRDF/A

4.3.5.5 Expected Results

- GDDR Planned Action Re_Establish_SRDFA will perform the resynchronisation procedure and then Activate SRDF/A.

4.3.5.6 Actual Results

4.3.5.7 Comments/Problems

5. EMC

5.1 EMC Software

5.1.1 Autoswap Functionality

5.1.1.1 Scenario Description

Test basic Autoswap functionality.

5.1.1.2 Equivalent Star/Starfire Scenario

N/A

5.1.1.3 How to Simulate or Test

Verify Autoswap accepts valid configuration parameters and processes them correctly. Verify the following operator commands work as expected:

- DEFINE GROUP
- DELETE GROUP
- DISPLAY
- SET
- SWAP
- VALIDATE GROUP

The list of commands is by no means exhaustive, it is merely the more frequently used commands and most relevant.

5.1.1.4 What are we Testing ?

Consistency Group and Autoswap software.

5.1.1.5 Expected Results

- Valid parameters are accepted and Autoswap initialises successfully. The operator commands work as documented.

5.1.1.6 Actual Results

Autoswap/DAS software has been extensively tested. All works as expected apart from the known problem with the interaction between the LOP invocation and OPS/MVS.

5.1.1.7 Comments/Problems

- Known problem of the interaction between the LOP invocation and OPS/MVS.
- There is also the known problem of Validate performance (lack of).

Note: Initial testing was done with AUtoswap running as a Server Address space. This is nolonger supported by EMC, as such, the Autoswap function now runs under the Consistency Group Address space (EMCCGRP).

5.1.2 SRDF/A Functionality

5.1.2.1 Scenario Description

Test basic SRDF/A functionality.

5.1.2.2 Equivalent Star/Starfire Scenario

N/A

5.1.2.3 How to Simulate or Test

Test SRDF/A Mode Transitions – NR/Inactive/Active.

- Start SRDF/A links
- All SRDF volumes in NR state
- Make all devices ready on the link(s)
- Now in INACTIVE SRDF/A state
- Switch to SRDF/A ACTIVE mode using Activate command
- Now in ACTIVE state when R2's are consistent
- Drop out of ACTIVE state into the NR using either DROP (puts devices into NR state immediately, but get invalids on both R1 and R2 side) or PEND-DROP (puts devices into NR state at the end of current in-process cycle, get invalids on R1 side only).
- In the SRDF/A MSC environment this may well result in an SRDF/A Host Intervention Required status on the R2-side, requiring usage of the SRDF/A Stand-Alone Recovery utility.

5.1.2.4 What are we Testing ?

SRDF/A software.

5.1.2.5 Expected Results

- SRDF/A will transition between its modes without problem or errors.

5.1.2.6 Actual Results

SRDF/A transitions between its modes as expected.

5.1.2.7 Comments/Problems

- As at the date of writing (2/6/2005) there is a known problem with SRDF/A, in that, periodically it will drop (for no apparent reason). To restart it requires a lot of manual effort (for a large configuration) or the running of a GDDR Planned Resumption Scenario.

5.1.3 SRDF/A Recovery Scenario's – Temporary Link Loss

5.1.3.1 Scenario Description

SRDF/A Recovery Scenario – Temporary Link Loss.

5.1.3.2 Equivalent Star/Starfire Scenario

N/A

5.1.3.3 How to Simulate or Test

Vary OFFLINE, then ONLINE the Link between the SRDF/A R1's and R2's, the time between the commands must be less than 10 seconds.

The amount of time SRDF waits until it declares a link loss permanent is configurable (between 0 and 10 seconds).

5.1.3.4 What are we Testing ?

SRDF/A software.

5.1.3.5 Expected Results

- SRDF/A state will remain active and data will continue to accumulate in global memory. May result in an elongated cycle, but remote consistency will not be compromised and the R1->R2 relationship will not be suspended, unless the temporary problem causes SRDF/A to drop because of Cache usage reaching a critical level.
- In the SRDF/A MSC environment this may well result in an SRDF/A Host Intervention Required status on the R2-side, requiring usage of the SRDF/A Stand-Alone Recovery utility.

5.1.3.6 Actual Results

5.1.3.7 Comments/Problems

5.1.4 SRDF/A Recovery Scenario's – Permanent Link Loss

5.1.4.1 Scenario Description

SRDF/A Recovery Scenario – Permanent Link Loss.

5.1.4.2 Equivalent Star/Starfire Scenario

N/A

5.1.4.3 How to Simulate or Test

Vary OFFLINE the Link between the SRDF/A R1's and R2's.

5.1.4.4 What are we Testing ?

SRDF/A software.

5.1.4.5 Expected Results

- SRDF/A will drop all the devices on the link to NR state. This will result in all data in the active and inactive R1 side cycles being changed from write pending for the remote mirror to invalid on the remote mirror. Any new work will result in tracks being marked invalid. At the R2 side, the inactive cycle tracks are marked invalid on the remote mirror, and the active cycle data completes its commit to local devices.
- In the SRDF/A MSC environment this may well result in an SRDF/A Host Intervention Required status on the R2-side, requiring usage of the SRDF/A Stand-Alone Recovery utility.

5.1.4.6 Actual Results

5.1.4.7 Comments/Problems

5.1.5 SRDF/A Recovery Scenario's – Fallback to R2's

5.1.5.1 Scenario Description

SRDF/A Recovery Scenario – Fallback to R2's.

5.1.5.2 Equivalent Star/Starfire Scenario

N/A

5.1.5.3 How to Simulate or Test

Make the R2's available (using documented procedures) or a copy of the R2's (BCV's) and verify the data on them is as expected and usable.

Another way of testing the data that is SRDF/A'ed correctly is to run GDDR Planned Scenario – Test Restart Production LPAR's at DC3.

5.1.5.4 What are we Testing ?

SRDF/A software.

5.1.5.5 Expected Results

- The R2 data is as expected ie. Consistent and the same as the R1 data (assuming you stop writing to the R1's prior to stopping the SRDF/A links, thus allowing the SRDF/A R2's to get in synch).

5.1.5.6 Actual Results

5.1.5.7 Comments/Problems

5.1.6 SRDF/A Data Consistency

5.1.6.1 Scenario Description

Verify SRDF/A Data Consistency on the R2 DASD.

5.1.6.2 Equivalent Star/Starfire Scenario

N/A

5.1.6.3 How to Simulate or Test

Write the same data containing incrementing sequence numbers to two SRDF/A'ed datasets, (the same record written to each before the sequence number is incremented), after several cycle switches stop SRDF/A with pend_drop.

Repeat the test each time using a different method of stopping SRDF/A – deactivate, drop, disable MSC, offline SRDF/A links.

The EMC supplied Consistency checker could also be used.

Another way of testing the data that is SRDF/A'ed is to run GDDR Planned Scenario – Test Restart Production LPAR's at DC3.

5.1.6.4 What are we Testing ?

SRDF/A software.

5.1.6.5 Expected Results

- The two datasets on the R1 DASD will be equal, take a note of the last written sequence number.
- Bring the R2 DASD online and examine the two datasets, they will be equal. Sequence numbers will be in order. They will not match the two datasets on the R1 DASD.

5.1.6.6 Actual Results

5.1.6.7 Comments/Problems

5.1.7 Consistency Group Functionality

5.1.7.1 Scenario Description

Verify basic Consistency Group Functionality.

5.1.7.2 Equivalent Star/Starfire Scenario

N/A

5.1.7.3 How to Simulate or Test

Verify Consistency Group accepts valid configuration parameters and processes them correctly. Verify the following operator commands work as expected:

- F emccgrp,dis con congroup_name nolist
- F emccgrp,resume congroup_name
- F emccgrp,disable congroup_name
- F emccgrp,dis con congroup_name
- F emccgrp,la (new command in ConGroup 6.1.0)
- F emccgrp,htslock query * (new command in ConGroup 6.1.0)

The list of commands is by no means exhaustive, it is merely the more frequently used commands and most relevant.

5.1.7.4 What are we Testing ?

Consistency Group software.

5.1.7.5 Expected Results

- The Consistency Group started task, EMCCGRP, starts and initialises correctly. All defined consistency groups show a status of ENABLED and ACTIVE.
- All defined SDAS consistency groups show 'THIS IS AN SDAS GROUP'.

5.1.7.6 Actual Results

The above commands were entered and the expected output was returned successfully.

```
RESPONSE=EOCK
 CGRP282I DIS CON NOLIST
 *** Begin Display from system DCSK ***
 GLOBAL SETTINGS:
   COUPLEDS_ALLOWED=YES
   DISABLE_AT_SHUTDOWN=ON
   PAGEDEV_ALLOWED=NO
   REMSPLIT_INTERVAL=10
   RESUME_INTERVAL=10
   SEMISYNC_ALLOWED=NO
 SRDFCGP=  CGRPEOC1   ENABLED      ACTIVE
   SUSPEND_FAILURE=FAIL     SUSPEND_RETRY_TIMEOUT=0
```

```
   THIS IS AN SDAS GROUP
  Current Lock: ( none)
   Queued Lock(s): (none)
   Lock(s) *** end of section ***
 SRDFCGP=  CGRPEOC3   ENABLED      ACTIVE
   SUSPEND_FAILURE=FAIL     SUSPEND_RETRY_TIMEOUT=0
   THIS IS AN SDAS GROUP
Current Lock: ( none)
  Queued Lock(s): (none)
  Lock(s) *** end of section ***
*** End Display from system DCSK ***
```

5.1.7.7 Comments/Problems

5.1.8 Consistency Group Autoswap Extension Functionality

5.1.8.1 Scenario Description

Verify basic Consistency Group Autoswap Extension (CAX) Functionality.

5.1.8.2 Equivalent Star/Starfire Scenario

N/A

5.1.8.3 How to Simulate or Test

Induce a CAX Autoswap by removing all paths to an R1 device, by either pulling cables or blocking all FICON Director ports to an R1 device in the Consistency Group/Swap Group.

5.1.8.4 What are we Testing ?

Consistency Group software.

5.1.8.5 Expected Results

- CAX will be triggered to perform a swap, the swap will complete successfully.

5.1.8.6 Actual Results

All paths to the R1 devices were removed, the following was observed:

- *IOS002A D000,NO PATHS AVAILABLE
- CGRS529I (00005) Group EOC1 unplanned swap from host DCSG (010158BF208400C1).
- CGRS513I (00005)(PID 00001) I/O suspend complete; swap commencing.
- CGRS512I (00005)(PID 00001) I/O resumption complete; swap cleanup commencing.

The CAX Swap was triggered and completed successfully.

5.1.8.7 Comments/Problems

Initial testing showed that at least one device in the swap group had to be online inorder for the swap group to be CAX armed. This was undesirable in the case of the K-Systems where all devices in the swap group are always OFFLINE. EMC changed the CAX group arming logic to allow devices to be OFFLINE and still be CAX armed.

5.1.9 SRDF/HC Functionality

5.1.9.1 Scenario Description

Verify basic SRDF/HC Functionality.

5.1.9.2 Equivalent Star/Starfire Scenario

N/A

5.1.9.3 How to Simulate or Test

Verify SRDF/HC accepts valid configuration parameters and processes them correctly. Verify the following operator commands work as expected:

- SC VOL…
- SC LINK…
- SC SRDFA…
- SC BCV…
- SQ STATE…
- SQ VOL…
- SQ LINK…
- SQ BCV…
- SQ SRDFA…

The list of commands is by no means exhaustive, it is merely the more frequently used commands and most relevant.

5.1.9.4 What are we Testing ?

SRDF/HC software.

5.1.9.5 Expected Results

- Each command produces the display as expected or performs the desired action as expected.

5.1.9.6 Actual Results

5.1.9.7 Comments/Problems

- Once GNS support is included in SRDF/HC, then all commands that will be used with the GNS group parameter (SCFG) will have to be retested. GNS will also have to support definition of GNS groups based upon RDF group. This support is not expected until the end of May 2005 (ECDROP3).

5.1.10SCF Functionality

5.1.10.1 Scenario Description

Verify basic SCF Functionality, ie. Verify SCF startup, communications and operator commands.

5.1.10.2 Equivalent Star/Starfire Scenario

N/A

5.1.10.3 How to Simulate or Test

Verify SCF accepts valid configuration parameters and processes them correctly. Verify the following operator commands work as expected:

- F emcrspak,csc,dis,hosts
- F emcrspak,csc,dis,listen
- F emcrspak,msc,display
- F emcrspak,msc,enable
- F emcrspak,msc,disable
- F emcrspak,msc,refresh
- F emcrspak,msc,global,parm_refresh

The list of commands is by no means exhaustive, it is merely the more frequently used commands and most relevant.

5.1.10.4 What are we Testing ?

SCF software.

5.1.10.5 Expected Results

- SCF initialises as expected and commands produce the desired output.
- All systems with EMC ResourcePak Base running show as being registered to each DMX Controller.

5.1.10.6 Actual Results

- SCF initialises as expected (Version 5.4.B)
- ResourcePak Base commands complete as expected
- All DCS systems show as being registered to each DMX Controller as expected

5.1.10.7 Comments/Problems

- This will be retested when ResourcePak Base 5.5.0 (BETA) is delivered. This is expected at the end of March 2005 (ECDROP1).
- ResourcePak Base 5.5.0 will have to be retested once the GA version becomes available.

5.2 EMC Future Functionality

5.2.1 Autoswap – Couple Dataset Support (2Q04)

5.2.1.1 Scenario Description

Test Logger Couple Datasets in the Autoswap/Consistency Group.

Euroclear Bank List of Requirements Document V01.09 Section 2.1.11.

5.2.1.2 Equivalent Star/Starfire Scenario

N/A

5.2.1.3 How to Simulate or Test

Specify the ALLOWCOUPLEDATASETS parameter in the Autoswap parameter deck and include the volumes containing the logger couple datasets in the Autoswap group(s) definitions.

5.2.1.4 What are we Testing ?

Autoswap software.

5.2.1.5 Expected Results

- Autoswap will successfully swap volumes containing logger couple datasets.

5.2.1.6 Actual Results

- ALLOWCOUPLEDATASETS has been successfully specified in Autoswap parameters
- A swap group has included volumes containing LOGR couple datasets and has been successfully swapped

5.2.1.7 Comments/Problems

- LOGR couple datasets must be located on separate volumes from non-LOGR couple datasets.

5.2.2 Autoswap – Page Dataset Support (end 1Q05)

Page volume support implements a high priority swap capability to swap page volumes. The support was received March 31st 2005 (ECDROP1).

ECDROP2A received April 30th 2005 implemented detection and handling of MVS page dataset page add and page delete in high priority swap support.

5.2.2.1 Scenario Description

Test page dataset support in Autoswap.

Euroclear Bank List of Requirements Document V01.09 Section 2.1.12.

5.2.2.2 Equivalent Star/Starfire Scenario

N/A

5.2.2.3 How to Simulate or Test

To be determined once EMC provides the feature and associated documentation.

5.2.2.4 What are we Testing ?

Autoswap software.

5.2.2.5 Expected Results

- To be determined once EMC provides the feature and associated documentation.

5.2.2.6 Actual Results

5.2.2.7 Comments/Problems

- The page datasets of any system participating in the Consistency Group/Swap Group must be on non-shared dedicated volumes. There must be NO non-page dataset data on these volumes.
- The feature is enabled by:
    - Placing the page dataset volumes in the consistency/swap group
    - Creating J0 RDF pairs for the page dataset volumes (if they are not already paired)
    - Ensuring parameter … is set in the Consistency Group parameter deck

5.2.3 Autoswap – "Extended Autoswap" (by 1Q05)

5.2.3.1 Scenario Description

Autoswap (planned or unplanned) to include Personality Swap and optionally split BCV's.

Euroclear Bank List of Requirements Document V01.09 Section 3.3.

5.2.3.2 Equivalent Star/Starfire Scenario

N/A

5.2.3.3 How to Simulate or Test

To be determined once EMC provides the feature and associated documentation.

5.2.3.4 What are we Testing ?

Autoswap software.

5.2.3.5 Expected Results

- To be determined once EMC provides the feature and associated documentation.

5.2.3.6 Actual Results

5.2.3.7 Comments/Problems

- EMC have since stated that Autoswap RDF Personality Swap support is for Non-STAR configurations only. For STAR/STARFIRE configurations, manual commands will have to be used or customer written automation will have to perform the desired actions.

5.2.4 Autoswap – GNS Support (end 1Q05)

5.2.4.1 Scenario Description

Test GNS support in Autoswap.

Euroclear Bank List of Requirements Document V01.09 Section 3.12.

5.2.4.2 Equivalent Star/Starfire Scenario

N/A

5.2.4.3 How to Simulate or Test

Define devices to Autoswap using one or more GNS groups, using the ….. parameter. Then perform a validate for the group (DAS VAL GRP group_name command), followed by a display group command. Verify that all expected devices are in the group and have the correct status.

A swap can then be performed, after it completes, use the display group detail command to verify all devices in the group have been successfully swapped to the correct device and all devices have the correct status.

5.2.4.4 What are we Testing ?

Autoswap software.

5.2.4.5 Expected Results

- To be determined once EMC provides the feature and associated documentation.

5.2.4.6 Actual Results

5.2.4.7 Comments/Problems

- To date (03/06/2005), user defined swap groups DO NOT support GNS groups.

5.2.5 Autoswap – Automation Interface (end 1Q05)

5.2.5.1 Scenario Description

Test automation interface, to change the Autoswap owner system.

Euroclear Bank List of Requirements Document V01.09 Section 3.14.

5.2.5.2 Equivalent Star/Starfire Scenario

N/A

5.2.5.3 How to Simulate or Test

Issue the MOVEOWNER and TAKEOVER Consistency Group commands.

5.2.5.4 What are we Testing ?

Autoswap software.

5.2.5.5 Expected Results

For the MOVEOWNER command, issue the following:

- F EMCCGRP,MOVEOWNER,DCSK,DCSR

And expect the following messages:

- EMCP001I MOVEOWNER,DCSK,DCSR
- CGRP605I ConGroup moveowner has begun.
- CGRP602I Moveowner/Takeover started
- CGRP606I Moveowner Takeover has completed.

For the TAKEOVER command, issue the following:

- F EMCCGRP,TAKEOVER

And expect the following messages:

- EMCP001I TAKEOVER
- CGRP604I ConGroup takeover has begun.
- CGRP602I Moveowner/Takeover started
- CGRP606I Moveowner Takeover has completed.

5.2.5.6 Actual Results

Commands were issued and completed as expected.

5.2.5.7 Comments/Problems

- The MOVEOWNER and TAKEOVER commands were delivered in Consistency Group 6.1.0 which we received November 2004.

- The commands can take several minutes to complete (I observed times ranging from 2-5 minutes)
- This feature was re-tested when ConGroup 6.2.0 (BETA) was delivered, it worked as expected. It will have to be re-tested once ConGroup 6.2.0 is GA.

5.2.6 Autoswap – Support Unavailable Primary Volumes (end 1Q05)

5.2.6.1 Scenario Description

Test support in Autoswap when primary volumes become unavailable ie. Autoswap will complete a swap to CKD and or FBA R2's even if the original R1's are unavailable (due to either a planned or unplanned event).

Euroclear Bank List of Requirements Document V01.09 Section 5.1.

5.2.6.2 Equivalent Star/Starfire Scenario

N/A

5.2.6.3 How to Simulate or Test

To be determined once EMC provides the feature and associated documentation.

5.2.6.4 What are we Testing ?

ConGoup/Autoswap software.

5.2.6.5 Expected Results

- To be determined once EMC provides the feature and associated documentation.

5.2.6.6 Actual Results

5.2.6.7 Comments/Problems

5.2.7 Autoswap – Support FBA Disks and Meta Volumes (end 1Q05)

FBA META specific support was delivered May 1st 2005 in drop ECDROP2A.

At the time of writing, 7th June 2005, the following exceptions and limitations are noted:

- FBA devices can only be supplied through ConGroup as a CAX group.
- ConGroup will not detect an extension to a group on a refresh, ie. no intelligent recognition.
- There is no current method to define symmetrix devices to Autoswap. This means we can nolonger use user defined swap groups.

5.2.7.1 Scenario Description

Test support in Autoswap for FBA Disks and Meta volumes ie, Personality Swap.

Euroclear Bank List of Requirements Document V01.09 Section 3.4 and 3.11.

5.2.7.2 Equivalent Star/Starfire Scenario

N/A

5.2.7.3 How to Simulate or Test

To be determined once EMC provides the feature and associated documentation.

5.2.7.4 What are we Testing ?

ConGroup/Autoswap software.

5.2.7.5 Expected Results

- To be determined once EMC provides the feature and associated documentation.

5.2.7.6 Actual Results

5.2.7.7 Comments/Problems

5.2.8 Autoswap – Support LOP Continue Parameter (end 1Q05)

The LOP "continue" option is implemented with the "TAKEOVERasowner" option. This was received in code drop ECDROP1A at the end of March 2005.

5.2.8.1 Scenario Description

Test support in Autoswap for the Continue Parameter when LOP is invoked.

Euroclear Bank List of Requirements Document V01.09 Section 5.4.

5.2.8.2 Equivalent Star/Starfire Scenario

N/A

5.2.8.3 How to Simulate or Test

To be determined once EMC provides the feature and associated documentation.

5.2.8.4 What are we Testing ?

Autoswap software.

5.2.8.5 Expected Results

- To be determined once EMC provides the feature and associated documentation.

5.2.8.6 Actual Results

5.2.8.7 Comments/Problems

5.2.9 Autoswap –Compatible with Concurrent SRDF/A and SRDF/S (end 1Q05)

5.2.9.1 Scenario Description

Test support in Autoswap for swapping volumes which are sources for concurrent SRDF/A and SRDF/S sessions.

Euroclear Bank List of Requirements Document V01.09 Section 3.5.

5.2.9.2 Equivalent Star/Starfire Scenario

N/A

5.2.9.3 How to Simulate or Test

To be determined once EMC provides the feature and associated documentation.

5.2.9.4 What are we Testing ?

ConGroup/Autoswap software.

5.2.9.5 Expected Results

- To be determined once EMC provides the feature and associated documentation.

5.2.9.6 Actual Results

5.2.9.7 Comments/Problems

- At the time of writing 7th June 2005, in a STARFIRE environment, Autoswap does not as yet communicate SWAP events with MSC. We must continue to use the MSC,PENDDROP command prior to issuing the SWAP command.

5.2.10 Autoswap – Support mix of CKD and FBA Devices

FBA-META specific support was delivered at the end of April 2005 in code drop ECDROP2A. A ConGroup definition referencing an Enterprise GNS group will protect all META members, the ConGroup definition resulting from theGNS group membership is passed to Autoswap.

There is no current method to define symmetrix devices directly to Autoswap ie. user defined swap groups do not support GNS.

5.2.10.1 Scenario Description

Test support in Autoswap for a mix of CKD and FBA devices in an Autoswap group.

5.2.10.2 Equivalent Star/Starfire Scenario

N/A

5.2.10.3 How to Simulate or Test

To be determined once EMC provides the feature and associated documentation.

5.2.10.4 What are we Testing ?

ConGroup/Autoswap software.

5.2.10.5 Expected Results

- To be determined once EMC provides the feature and associated documentation.

5.2.10.6 Actual Results

5.2.10.7 Comments/Problems

5.2.11 Autoswap – Support Swap of Devices with no UCB

In the code drop delivered May 1st 2005 ECDROP2A, implemented support for "ungenned devices" through use of symmetrix device numbers or through GNS in both ConGroup and Autoswap.

Ungenned devices:

- Are generally known as Not Defined or Ndef devices and include devices that are not genned to the LPAR (no UCB) or have been excluded explicitly from SCF.
- The controller for the FROM and TO device must be accessible from the current LPAR.
- Access to ungenned devices is either via another device in the group that is also on the same controller, or via the SCF-CSC gatekeeper device.

5.2.11.1 Scenario Description

Test support in Autoswap for swapping of devices with no UCB ie. Some devices will not be genned on some LPAR's.

5.2.11.2 Equivalent Star/Starfire Scenario

N/A

5.2.11.3 How to Simulate or Test

To be determined once EMC provides the feature and associated documentation.

5.2.11.4 What are we Testing ?

ConGroup/Autoswap software.

5.2.11.5 Expected Results

- To be determined once EMC provides the feature and associated documentation.

5.2.11.6 Actual Results

5.2.11.7 Comments/Problems

5.2.12 Autoswap - CAX – Support Offline Devices

5.2.12.1 Scenario Description

Test support in CAX for offline devices, ie. CAX will arm a group on a system that contains only offline devices.

5.2.12.2 Equivalent Star/Starfire Scenario

N/A

5.2.12.3 How to Simulate or Test

Induce a CAX Autoswap by removing all paths to an R1 device in the Consistency/Swap group, by either pulling cables or blocking all FICON director ports.

5.2.12.4 What are we Testing ?

ConGroup/Autoswap software.

5.2.12.5 Expected Results

- To be determined once EMC provides the feature and associated documentation.

5.2.12.6 Actual Results

5.2.12.7 Comments/Problems

- Initial testing of the Consistency Group Autoswap Extension (CAX) functionality showed that at least one device in the swap group had to be online inoder for the swap group to be CAX armed. In the the case of the K-Systems this was undesirable as all devices in the swap group are always OFFLINE.
- CAX group arming logic was changed to allow devices in a swap group to be OFFLINE and still be CAX armed.

5.2.13SRDF/A – SRDF/A and SRDF/S from a Single Source (end 1Q05)

5.2.13.1 Scenario Description

Test support for an R1 as a single source of an SRDF/A and SRDF/S pair.

Euroclear Bank List of Requirements Document V01.09 Section 3.1.1.

5.2.13.2 Equivalent Star/Starfire Scenario

N/A

5.2.13.3 How to Simulate or Test

The procedure to test is as follows:

- Define a dynamic RDFGRP between the Site A and Site B symms, to be used for J0
- Define a dynamic RDFGRP between the Site A and Site C symms, to be used for JA
- Createpairs using the J0 RDFGRP
- Createpairs using the JA RDFGRP, making sure to specify the same source devices as those specified on the createpair for the J0 RDFGRP
- Issue a SQ VOL command using the Site A gatekeeper to display all devices, source devices just paired up will display as having two target devices, one on the J0 RDFGRP, the other on the JA RDFGRP
- Once all newly paired devices have been synched up, SRDF/A can be started on the JA RDFGRP devices.

5.2.13.4 What are we Testing ?

SRDF/HC, SRDF/A and SRDF/S software.

5.2.13.5 Expected Results

- To be determined once EMC provides the feature and associated documentation.

5.2.13.6 Actual Results

5.2.13.7 Comments/Problems

5.2.14SRDF/A – Dynamic SRDF/A Support (end 2004)

Adding SRDF/A groups is called Dynamic SRDF support and allowing multiple SRDF/A groups in a symmetrix is called multi-SRDF/A group support. This was delivered at the end of 2004.

Dynamic SRDF/A support is defined as the ability to Add pairs to active SRDF/A sessions while maintaining consistency. This will be accomplished by adding a "consistency exempt" attribute to the device pair so that it will not be considered when reporting the consistency of the SRDF/A grpup until a new pair achieves a consistent state via the SRDF/A 'synchronisation' mechanism. CKD and FBA devices will be supported.

5.2.14.1 Scenario Description

Test Dynamic SRDF/A support and multi-SRDF/A group support.

Euroclear Bank List of Requirements Document V01.09 Section 3.8.

5.2.14.2 Equivalent Star/Starfire Scenario

N/A

5.2.14.3 How to Simulate or Test

To be determined once EMC provides the feature and associated documentation.

5.2.14.4 What are we Testing ?

SRDF/A and SRDF/HC Software

5.2.14.5 Expected Results

- To be determined once EMC provides the feature and associated documentation.

5.2.14.6 Actual Results

5.2.14.7 Comments/Problems

5.2.15SRDF – Star (end 4Q04)

5.2.15.1 Scenario Description

Test Symmetric Triangular Asynchronous Replication (STAR).

Euroclear Bank List of Requirements Document V01.09 Section 4.1.

5.2.15.2 Equivalent Star/Starfire Scenario

N/A

5.2.15.3 How to Simulate or Test

To be determined once EMC provides the feature and associated documentation.

5.2.15.4 What are we Testing ?

STAR.

5.2.15.5 Expected Results

- To be determined once EMC provides the feature and associated documentation.

5.2.15.6 Actual Results

5.2.15.7 Comments/Problems

5.2.16SRDF – Starfire (end 1Q05)

5.2.16.1 Scenario Description

Test Symmetric Triangular Asynchronous Replication for Instant Recovery Environment (STARFIRE).

5.2.16.2 Equivalent Star/Starfire Scenario

N/A

5.2.16.3 How to Simulate or Test

To be determined once EMC provides the feature and associated documentation.

5.2.16.4 What are we Testing ?

STARFIRE.

5.2.16.5 Expected Results

- To be determined once EMC provides the feature and associated documentation.

5.2.16.6 Actual Results

5.2.16.7 Comments/Problems

5.2.17 ConGroup – Enterprise Consistency Group Definition (end 1Q05)

This feature, better known as Global Configuration Support, will provide a single point of control for all ConGroup actions.

It is now scheduled for June 2005 delivery.

5.2.17.1 Scenario Description

Test Enterprise Consistency Group definition propagation.

Euroclear Bank List of Requirements Document V01.09 Section 3.2.

5.2.17.2 Equivalent Star/Starfire Scenario

N/A

5.2.17.3 How to Simulate or Test

To be determined once EMC provides the feature and associated documentation.

5.2.17.4 What are we Testing ?

Consistency Group software.

5.2.17.5 Expected Results

- To be determined once EMC provides the feature and associated documentation.

5.2.17.6 Actual Results

5.2.17.7 Comments/Problems

5.2.18 ConGroup – GNS Support (end 1Q05)

Exploitation of GNS in ConGroup was provided March 31st 2005 in drop ECDROP1A.

Known Limitations:

- Provides for definition only, not dynamic update of group changes.
- Dynamic add/delete of devices from STARFIRE configurations using GNS is now due June 2005.
- Global configuration support ie. single point of control for all ConGroup actions is now expected June 2005.

5.2.18.1 Scenario Description

Test GNS support in Consistency Group.

Euroclear Bank List of Requirements Document V01.09 Section 3.12.

5.2.18.2 Equivalent Star/Starfire Scenario

N/A

5.2.18.3 How to Simulate or Test

To be determined once EMC provides the feature and associated documentation.

5.2.18.4 What are we Testing ?

Consistency Group software.

5.2.18.5 Expected Results

- To be determined once EMC provides the feature and associated documentation.

5.2.18.6 Actual Results

5.2.18.7 Comments/Problems

5.2.19 ConGroup – ECA-RDF Support (end 1Q05)

A ConGroup task that is enabled for ECA-RDF, can provide consistency for any number of Control Units provided it has a path to each Control Unit, regardless of whether the data is CKD or FBA. A gatekeeper must be defined on each Control unit.

ECA-RDF incorporation into ConGroup will include FBA R1's being made N/R on an ECA timeout.

This feature is now due May 31st 2005 in ECDROP3.

5.2.19.1 Scenario Description

Test ECA-RDF support in Consistency Group.

Euroclear Bank List of Requirements Document V01.09 Section 3.2.

5.2.19.2 Equivalent Star/Starfire Scenario

N/A

5.2.19.3 How to Simulate or Test

To be determined once EMC provides the feature and associated documentation.

5.2.19.4 What are we Testing ?

Consistency Group software.

5.2.19.5 Expected Results

- To be determined once EMC provides the feature and associated documentation.

5.2.19.6 Actual Results

5.2.19.7 Comments/Problems

5.2.20SCF – Fault Tolerance (end 1Q05)

This feature is now due May 31st 2005 in ECDROP3.

5.2.20.1 Scenario Description

Test SCF MSC fault tolerance.

Euroclear Bank List of Requirements Document V01.09 Section 3.13.

5.2.20.2 Equivalent Star/Starfire Scenario

N/A

5.2.20.3 How to Simulate or Test

To be determined once EMC provides the feature and associated documentation.

5.2.20.4 What are we Testing ?

SCF software.

5.2.20.5 Expected Results

- To be determined once EMC provides the feature and associated documentation.

5.2.20.6 Actual Results

5.2.20.7 Comments/Problems

5.2.21 API to Compute Recovery Points (end 1Q05)

5.2.21.1 Scenario Description

Test EMC provided API's to compute recovery points at DC2 (end 1Q05) and DC3 (by 1Q05).

Euroclear Bank List of Requirements Document V01.09 Section 3.10 and 5.3.

5.2.21.2 Equivalent Star/Starfire Scenario

N/A

5.2.21.3 How to Simulate or Test

To be determined once EMC provides the API's and associated documentation.

5.2.21.4 What are we Testing ?

SRDF/HC 5.3.0

5.2.21.5 Expected Results

- To be determined once EMC provides the API's and associated documentation.

5.2.21.6 Actual Results

5.2.21.7 Comments/Problems