



CATE Storage and Backup Engineering
CATE CitiSystems Engineered Systems
Citigroup Architecture and Technology Engineering

EMC VMAX3 Hypermax 5977.691.684 Certification

CSBE-15043-RN

Release Notes

1.0

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1 Version Control

Version	Date	Author	Reviewed	Comments
0.1	21-Nov-2015	Quang Le	Jeffrey Hernandez	Peer Review
0.2	25-Nov-2015	Quang Le	Global Stakeholders	Release for Comments
1.0	09-Dec-2015	Quang Le	-	Release for Production

2 Legal Notice

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3 Contact

Please address any comments or questions regarding the information contained in this document via email to the *CATE Storage and Backup Engineering distribution list.

4 Latest Versions

It is recommended that the latest version of the document be used from the CSBE website at the following URL:
<http://catecollaboration.citigroup.net/domains/platstor/gdse/products/default.aspx>.
Newer versions may include certification on additional platforms, or comments on issues discovered after deployment.

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6 Introduction

Hypermax is the name of the microcode for the EMC VMAX3 storage array. The VMAX3 provides enterprise class block-based SAN storage to application hosts. EMC has released a major Hypermax code version (5977.691.684) which provides feature/functionality enhancements, notably:

- Additional hardware upgrade capabilities
 - Non-disruptive addition of DAEs
 - Non-disruptive addition of engines
 - Non-disruptive addition of system bay
 - Add drives of different type and RAID type
 - On-line addition of I/O modules
 - Non-disruptive addition of Infiniband fabric
 - Engine memory upgrade
- On-line device expansion
- Max TDEV size increased from 16TB to 64TB
- SRDF Metro

VMAX3 management software, Unisphere 8.1 and Solutions Enabler 8.1, are required for VMAX3s running 5977.691.684. The new version of management software will allow for the management/configuration of new software features available in Hypermax 5977.691.684.

6.1 Scope

This project is classified as a “Script Lite” with Work-ID **CAT150064247** under the Planview Project Management System. Progress of this project can be tracked by looking at the status page in the Planview System at the following URL:
<https://planview.gsl.nsroot.net/pve11/PLP/EntityLandingPage.aspx?pt=PROJECT&score=1920867>

The following are within the scope of this project:

- Hypermax 5977.691.684
 - New hardware upgrade/expansion capabilities¹
- On-line device expansion
- Unisphere 8.1
- Solutions Enabler 8.1

The following features/functionality are out-of-scope for this project:

- SRDF Metro (will be evaluated in a later project)
- FAST.X integration with CloudArray and XtremIO
- ProtectPoint
- VMAX3 Unified (i.e. eNAS)

¹ EMC hardware test plans will be leveraged for hardware related tests.

7 Applicable Environments

All VMAX3 environments within Citi.

8 Component Certification Matrix

8.1 Certified Component and Functionality Matrix

Component Matrix	
Hypermax	5977.691.684 ePack 691
Unisphere for VMAX	8.1.0.6
Solutions Enabler	8.1.0.0

Upgrade Unisphere and Solutions enabler to version 8.1 before upgrading the Hypermax code to 5977.691.684 on the VMAX3 storage array.

Complete best practices, installation, and configuration instructions and details for all of the components listed in the above table can be found in the [EMC VMAX3 Solutions Guide](#).

9 Known Issues & Significant Changes

The following table lists the issues discovered in the certification testing:

Category	Description
Solutions Enabler upgrade	ECOM configuration doesn't persist through the upgrade. Need to reconfigure ECOM after the upgrade. An enhancement request has been submitted to EMC to persist these settings, tracking ID 91446060909168104.
Unisphere upgrade	The Unisphere keystore that contained the Citi signed security certificate was corrupted during the upgrade and had to be reconfigured.
Unisphere performance monitoring	Unisphere is only displaying real-time performance stats on one out of two VMAX 200Ks being managed. Historical statistics are being captured on all test arrays. EMC recommended to exclude the install_dir\SYMAPI\stp\spa and install_dir\SMAS\jboss\standalone\data\pgsql\data directories from the virus scan and restart the Unisphere and storstopd daemon. This resolved the issue and Unisphere was able to collect real-time performance stats on the array.
Audit logging	Symaudit log entries have a 32 char limit for username and 11 char limit for client hostname. Any entries beyond that will result in a truncated username or client hostname.
Solutions Enabler GNS	For environments running SE 8.0.3.x and 8.1.0.0 with GNS enabled, symdg commands may hang due to a coding error causing the storapid daemon to crash. EMC has released a break fix for this issue which will be applied to the production server experiencing the issue planned for January 2016. If the issue is fixed after applying the hotfix, CATE will certify the hotfix.

The following table lists the significant changes in the VMAX3 solution for this certification:

Category	Description
VMAX3 hardware upgrades	Hypermax 5977.691.684 adds the following hardware upgrade capabilities for VMAX3: ○ Non-disruptive addition of DAEs ○ Non-disruptive addition of engines

	○ Non-disruptive addition of system bay ○ Add drives of different type and RAID type ○ On-line addition of I/O modules ○ Non-disruptive addition of Infiniband fabric ○ Engine memory upgrade
LUN Expansion	Hypermax 5977.691.684 allows for LUNs to be expanded.
Unisphere server anti-virus exclusions	EMC recommended to exclude the install_dir\SYMAPI\stp\spa and install_dir\SMAS\jboss\standalone\data\pgsql\data directories from the virus scan to prevent against database corruption.

10 References

Document	Location
EMC documentation	
EMC Solutions Enabler Symmetrix SRDF Family CLI User Guide	http://support.emc.com
EMC Solutions Enabler TimeFinder Family CLI User Guide	http://support.emc.com
EMC Solutions Enabler Array Management CLI User Guide	http://support.emc.com
EMC Solutions Enabler CLI Command Reference	http://support.emc.com
EMC VMAX3 Family with HYPERMAX OS 5977 Release Notes	http://support.emc.com
EMC VMAX3 Reliability, Availability, and Serviceability	https://catecollaboration.citigroup.net/domains/platstor/gdse/products/platforms/Symmetrix/h13807-emc-vmax3-reliability-availability-and-serviceability-tech-note.pdf
CSBE documentation	
CSBE Symmetrix Storage Array Product Page	https://catecollaboration.citigroup.net/domains/platstor/gdse/products/techstdshmpgs/symmetrix.aspx

11 Appendices

11.1 Appendix A: Test Environments

The test environment comprises of the following components:

- 2 x VMAX3 200K running Hypermax 5977.691.684
- RHEL 6.5 Solutions Enabler 8.1 server
- Windows 2008 SP2 Unisphere 8.1 server
- Windows 2008 SP2 test server
- Cisco MDS switches for SAN connectivity
- Cisco MDS FCIP switches for SRDF testing

11.2 Appendix B: Test Plan/Results

Task	Code Drop	Pass/Fail	Comments
Installation			
Non-disruptive upgrade to Hypermax 5977.691.684	SE 8.1 5977.691.684	Pass	Hypermax upgrade was performed by EMC without disruption.
Install Solutions Enabler on the RHEL SOE server	SE 8.1.0.0 5977.691.684	Pass	
Install Solutions Enabler on the Windows SOE server	SE 8.1.0.0 5977.691.684	Pass	
Install Unisphere on the Windows SOE server	U4V 8.1.0.6 5977.691.684	Pass	
Upgrade Solutions Enabler on the RHEL SOE server	SE 8.1.0.0 5977.691.684	Partial Pass	ECOM configuration doesn't persist through the upgrade. Need to reconfigure ECOM after the upgrade. An enhancement request has been submitted to EMC to persist these settings, tracking ID 91446060909168104.
Upgrade Solutions Enabler on the Windows SOE server	SE 8.1.0.0 5977.691.684	Pass	
Upgrade Unisphere Enabler on the Windows SOE server	U4V 8.1.0.6 5977.691.684	Partial Pass	The keystore was corrupted during the upgrade and had to be reconfigured.
System/Functionality			
View the system configuration	SE 8.1.0.0 5977.691.684	Pass	<pre># symcfg -sid 973 list -v</pre> Symmetrix ID: 000196700973 (Local) Time Zone : EDT Product Model : VMAX200K Symmetrix ID : 000196700973 Microcode Version (Number) : 5977 (17590000) Microcode Registered Build : 1 Microcode Date : 09.23.2015 Microcode Patch Date : 09.23.2015 Microcode Patch Level : 691 Symmwin Version : 684 Enginuity Build Version : 5977.691.684 Service Processor Time Offset : - 00:01:21 Cache Size (Mirrored) : 985088 (MB) # of Available Cache Slots : 12102092 Max # of System Write Pending Slots : 9076569 Max # of DA Write Pending Slots : N/A Max # of Device Write Pending Slots : 453828 Replication Cache Usage (Percent) : N/A Max # of Replication Cache Slots : N/A Symmetrix Total Operating Time : 38 days, 06:05:14 Symmetrix Power ON Time : Mon Sep 21 09:52:10 2015 Symmetrix Last IPL Time (Cold) : Mon Sep 21 09:52:10 2015 Symmetrix Last Fast IPL Time (Hot) : Mon Dec 31 19:00:00 2012 Host DB Sync Time : Thu Oct 29 15:57:24 2015 Symmetrix CLI (SYMCLI) Version : V8.1.0.0 (Edit Level: 2054) Built with SYMAPI Version : V8.1.0.0 (Edit Level: 2054)

			SYMAPI Run Time Version : V8.1.0.0 (Edit Level: 2054) SYMAPI Server Version : unavailable Number of Configured (Sym) Devices : 1131 Number of Visible (Host) Devices : 36 Number of Configured Actual Disks : 166 Number of Configured Spare Disks : 0 Number of Unconfigured Disks : 0 Maximum number of hypers per disk : 128 Composite door LED status : On Number of Powerpath Devices : 0 Powerpath Run Time Version : N/A SDDF Configuration State : Enabled Configuration Change State : Enabled Symmetrix Configuration Checksum : D9CFCABB Switched RDF Configuration State : Enabled Concurrent RDF Configuration State : Enabled Dynamic RDF Configuration State : Enabled Concurrent Dynamic RDF Configuration : Enabled RDF Data Mobility Configuration State: Disabled Access Control Configuration State : Enabled Device Masking (ACLX) Config State : Mixed ACLX Device Lun Address : 000 Multi LRU Device Assignment : N/A Disk Group Assignments : In Use Hot Swap Policy for Hard Drives : Permanent Hot Swap Policy for Flash Drives : Permanent Symmetrix Disk Library : N/A FBA Geometry Emulation : Native 3 Dynamic Mirrors : N/A Cache Partitioning : Disabled IPSec Status : Pass Thru Allow spare in mirror 4 position : Disabled Disks Service : Normal Data at Rest Encryption : Disabled Time Window Definition Format : N/A Parity Raid Configuration : N/A Raid-5 Configuration : RAID-5 (3+1) Raid-6 Configuration : N/A PAV Mode : DynamicStandardPAV PAV Alias Limit : 31 SRDF/A Maximum Host Throttle (Secs) : 0 SRDF/A Maximum Cache Usage (Percent) : 75 SRDF/A DSE Maximum Capacity (GB) : 100 Auto Meta : N/A Minimum Auto Meta Size : N/A Auto Meta Member Size : N/A Auto Meta Configuration : N/A
View environment configuration	SE 8.1.0.0 5977.691.684	Pass	# symcfg -sid 973 list -env_data Symmetrix ID : 000196700973 Timestamp of Status Data : 10/29/2015 15:52:01 System Bay Bay Name : SB-1 Number of Standby Power Supplies : 6 Number of Drive Enclosures : 2 Number of Enclosure Slots : 2 Number of MIBE Enclosures : 2 Summary Status of Contained Modules All Standby Power Supplies : Normal

			All Enclosures : Normal All Link Control Cards : Normal All Power Supplies : Normal All Enclosure Slots : Normal All Power Supplies : Normal All Fans : Normal All Management Modules : Normal All IO Module Carriers : Normal All Directors : Normal All MIBE Enclosures : Normal All Power Supplies : Normal Drive Bays																																																																																																																																				
View memory configuration	SE 8.1.0.0 5977.691.684	Pass	# symcfg -sid 973 list -memory Symmetrix ID : 000196700973 Number of Memory Boards : 4 <table><tr><td>Slot Number</td><td>Capacity(MB)</td></tr><tr><td>0</td><td>488448</td></tr><tr><td>1</td><td>496640</td></tr><tr><td>2</td><td>496640</td></tr><tr><td>3</td><td>488448</td></tr><tr><td colspan="2">-----</td></tr><tr><td>Total (Usable Cache)</td><td>985088</td></tr><tr><td colspan="2">-----</td></tr></table>	Slot Number	Capacity(MB)	0	488448	1	496640	2	496640	3	488448	-----		Total (Usable Cache)	985088	-----																																																																																																																					
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Total (Usable Cache)	985088																																																																																																																																						

View director configuration (FAs, DAs)	SE 8.1.0.0 5977.691.684	Pass	# symcfg -sid 973 list -dir all Symmetrix ID: 000196700973 (Local) SYMMETRIX DIRECTORS <table><tr><td>Ident</td><td>Type</td><td>Engine</td><td>Cores</td><td>Ports</td><td>Status</td></tr><tr><td colspan="6">-----</td></tr><tr><td>IM-1A</td><td>IM</td><td>1</td><td>4</td><td>0</td><td>Online</td></tr><tr><td>IM-2A</td><td>IM</td><td>1</td><td>4</td><td>0</td><td>Online</td></tr><tr><td>IM-3A</td><td>IM</td><td>2</td><td>4</td><td>0</td><td>Online</td></tr><tr><td>IM-4A</td><td>IM</td><td>2</td><td>4</td><td>0</td><td>Online</td></tr><tr><td>ED-1B</td><td>EDS</td><td>1</td><td>8</td><td>0</td><td>Online</td></tr><tr><td>ED-2B</td><td>EDS</td><td>1</td><td>8</td><td>0</td><td>Online</td></tr><tr><td>ED-3B</td><td>EDS</td><td>2</td><td>8</td><td>0</td><td>Online</td></tr><tr><td>ED-4B</td><td>EDS</td><td>2</td><td>8</td><td>0</td><td>Online</td></tr><tr><td>DF-1C</td><td>DISK</td><td>1</td><td>10</td><td>4</td><td>Online</td></tr><tr><td>DF-2C</td><td>DISK</td><td>1</td><td>10</td><td>4</td><td>Online</td></tr><tr><td>DF-3C</td><td>DISK</td><td>2</td><td>10</td><td>4</td><td>Online</td></tr><tr><td>DF-4C</td><td>DISK</td><td>2</td><td>10</td><td>4</td><td>Online</td></tr><tr><td>FA-1D</td><td>FibreChannel</td><td>1</td><td>6</td><td>16</td><td>Online</td></tr><tr><td>FA-2D</td><td>FibreChannel</td><td>1</td><td>6</td><td>15</td><td>Online</td></tr><tr><td>FA-3D</td><td>FibreChannel</td><td>2</td><td>6</td><td>14</td><td>Online</td></tr><tr><td>FA-4D</td><td>FibreChannel</td><td>2</td><td>6</td><td>15</td><td>Online</td></tr><tr><td>RF-1E</td><td>RDF-BI-DIR</td><td>1</td><td>4</td><td>1</td><td>Online</td></tr><tr><td>RF-2E</td><td>RDF-BI-DIR</td><td>1</td><td>4</td><td>1</td><td>Online</td></tr><tr><td>RF-3E</td><td>RDF-BI-DIR</td><td>2</td><td>4</td><td>1</td><td>Online</td></tr><tr><td>RF-4E</td><td>RDF-BI-DIR</td><td>2</td><td>4</td><td>1</td><td>Online</td></tr></table>	Ident	Type	Engine	Cores	Ports	Status	-----						IM-1A	IM	1	4	0	Online	IM-2A	IM	1	4	0	Online	IM-3A	IM	2	4	0	Online	IM-4A	IM	2	4	0	Online	ED-1B	EDS	1	8	0	Online	ED-2B	EDS	1	8	0	Online	ED-3B	EDS	2	8	0	Online	ED-4B	EDS	2	8	0	Online	DF-1C	DISK	1	10	4	Online	DF-2C	DISK	1	10	4	Online	DF-3C	DISK	2	10	4	Online	DF-4C	DISK	2	10	4	Online	FA-1D	FibreChannel	1	6	16	Online	FA-2D	FibreChannel	1	6	15	Online	FA-3D	FibreChannel	2	6	14	Online	FA-4D	FibreChannel	2	6	15	Online	RF-1E	RDF-BI-DIR	1	4	1	Online	RF-2E	RDF-BI-DIR	1	4	1	Online	RF-3E	RDF-BI-DIR	2	4	1	Online	RF-4E	RDF-BI-DIR	2	4	1	Online
Ident	Type	Engine	Cores	Ports	Status																																																																																																																																		

IM-1A	IM	1	4	0	Online																																																																																																																																		
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ED-4B	EDS	2	8	0	Online																																																																																																																																		
DF-1C	DISK	1	10	4	Online																																																																																																																																		
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DF-3C	DISK	2	10	4	Online																																																																																																																																		
DF-4C	DISK	2	10	4	Online																																																																																																																																		
FA-1D	FibreChannel	1	6	16	Online																																																																																																																																		
FA-2D	FibreChannel	1	6	15	Online																																																																																																																																		
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FA-4D	FibreChannel	2	6	15	Online																																																																																																																																		
RF-1E	RDF-BI-DIR	1	4	1	Online																																																																																																																																		
RF-2E	RDF-BI-DIR	1	4	1	Online																																																																																																																																		
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RF-4E	RDF-BI-DIR	2	4	1	Online																																																																																																																																		
View drive configuration (disk groups, drives, pools)	SE 8.1.0.0 5977.691.684	Pass	# symdisk -sid 973 list -dskgrp_summary Symmetrix ID: 000196700973 <table><tr><td colspan="2">Disk Group</td><td>Disk</td><td>Hyper</td><td>Capacity</td></tr><tr><td colspan="5">-----</td></tr><tr><td>Num</td><td>Name</td><td>Flgs Cnt LT</td><td>Speed Size (MB)</td><td>Total Free (MB) (MB)</td></tr><tr><td colspan="5">-----</td></tr><tr><td>1</td><td>GRP_1_1200_10K_6R6</td><td>66 IF 10000</td><td>1144041</td><td>71503 75506681 0</td></tr><tr><td>2</td><td>GRP_2_600_10K_R1</td><td>66 IF 10000</td><td>557944 34871</td><td>36824288 0</td></tr><tr><td>3</td><td>GRP_3_800_EFD_3R5</td><td>34 IE 0</td><td>762694 47668</td><td>25931588 0</td></tr></table>	Disk Group		Disk	Hyper	Capacity	-----					Num	Name	Flgs Cnt LT	Speed Size (MB)	Total Free (MB) (MB)	-----					1	GRP_1_1200_10K_6R6	66 IF 10000	1144041	71503 75506681 0	2	GRP_2_600_10K_R1	66 IF 10000	557944 34871	36824288 0	3	GRP_3_800_EFD_3R5	34 IE 0	762694 47668	25931588 0																																																																																																	
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3	GRP_3_800_EFD_3R5	34 IE 0	762694 47668	25931588 0																																																																																																																																			

Total										138262556	0
Legend:											
Disk (L)ocation:											
I = Internal, X = External, - = N/A											
(T)echnology:											
S = SATA, F = Fibre Channel, E = Enterprise Flash Drive, - = N/A											
# symdisk -sid 973 list -disk_group 3											
Symmetrix ID : 000196700973											
Disks Selected : 34											
Disk Group : 3											
Disk Group Name : GRP_3_800_EFD_3R5											
Disk Location : Internal											
Technology : EFD											
Form Factor : N/A											
Disk Capacity(MB)											
Ident	Int	TID	Grp	Vendor	Type	Hypr	Total	Free			
DF-1C	C	0	3	HITACHI	SSC0080	16	762694	0			
DF-1C	C	2	3	HITACHI	SSC0080	16	762694	0			
DF-1C	C	4	3	HITACHI	SSC0080	16	762694	0			
DF-1C	C	5	3	HITACHI	SSC0080	16	762694	0			
DF-1C	C	7	3	HITACHI	SSC0080	16	762694	0			
DF-1C	C	A	3	HITACHI	SSC0080	16	762694	0			
DF-1C	C	C	3	HITACHI	SSC0080	16	762694	0			
DF-1C	C	F	3	HITACHI	SSC0080	16	762694	0			
DF-1C	C	11	3	HITACHI	SSC0080	16	762694	0			
DF-2C	C	1	3	HITACHI	SSC0080	16	762694	0			
DF-2C	C	3	3	HITACHI	SSC0080	16	762694	0			
DF-2C	C	6	3	HITACHI	SSC0080	16	762694	0			
DF-2C	C	8	3	HITACHI	SSC0080	16	762694	0			
DF-2C	C	B	3	HITACHI	SSC0080	16	762694	0			
DF-2C	C	D	3	HITACHI	SSC0080	16	762694	0			
DF-2C	C	10	3	HITACHI	SSC0080	16	762694	0			
DF-2C	C	12	3	HITACHI	SSC0080	16	762694	0			
DF-3C	C	0	3	HITACHI	SSC0080	16	762694	0			
DF-3C	C	2	3	HITACHI	SSC0080	16	762694	0			
DF-3C	C	4	3	HITACHI	SSC0080	16	762694	0			
DF-3C	C	5	3	HITACHI	SSC0080	16	762694	0			
DF-3C	C	7	3	HITACHI	SSC0080	16	762694	0			
DF-3C	C	A	3	HITACHI	SSC0080	16	762694	0			
DF-3C	C	C	3	HITACHI	SSC0080	16	762694	0			
DF-3C	C	F	3	HITACHI	SSC0080	16	762694	0			
DF-3C	C	11	3	HITACHI	SSC0080	16	762694	0			
DF-4C	C	1	3	HITACHI	SSC0080	16	762694	0			
DF-4C	C	3	3	HITACHI	SSC0080	16	762694	0			
DF-4C	C	6	3	HITACHI	SSC0080	16	762694	0			
DF-4C	C	8	3	HITACHI	SSC0080	16	762694	0			
DF-4C	C	B	3	HITACHI	SSC0080	16	762694	0			
DF-4C	C	D	3	HITACHI	SSC0080	16	762694	0			
DF-4C	C	10	3	HITACHI	SSC0080	16	762694	0			
DF-4C	C	12	3	HITACHI	SSC0080	16	762694	0			
Total										25931588	0
# symcfg -sid 973 list -pools -thin -mb											
Symmetrix ID: 000196700973											
SYMMETRIX POOLS											
Pool	Flags	Dev	Usable	Free	Used	Full	Comp				
Name	PTECSL	Config	MBs	MBs	MBs	(%)	(%)				

			<pre> DG1_FBA10K TFF-EI RAID-6(6+2) 54069208 54069208 0 0 0 DG2_FBA10K TFF-EI 2-Way Mir 17579544 16363730 1215790 6 0 DG3_FBA_F TEF-EI RAID-5(3+1) 18023032 9144335 8878704 49 0 Total MBs 89671784 79577273 10094494 11 0 Legend: (P)ool Type: S = Snap, R = Rdfa DSE T = Thin (T)echnology: S = SATA, F = Fibre Channel, E = Enterprise Flash Drive, M = Mixed, - = N/A Dev (E)mulation: F = FBA, A = AS400, 8 = CKD3380, 9 = CKD3390, - = N/A (C)ompression: E = Enabled, D = Disabled, N = Enabling, S = Disabling, - = N/A (S)tate: E = Enabled, D = Disabled, B = Balancing Disk (L)ocation: I = Internal, X = External, M = Mixed, - = N/A </pre>
View SRP configuration	SE 8.1.0.0 5977.691.684	Pass	<pre> # symcfg -sid 973 list -srp STORAGE RESOURCE POOLS Symmetrix ID : 000196700973 ----- Name Flg DR Description ----- SRP_1 FX ----- Legend: Flags: (D)efault SRP : F = FBA Default, . = N/A (R)DFA DSE : X = Usable, . = Not Used # symcfg -sid 973 show -srp SRP_1 Symmetrix ID : 000196700973 Name : SRP_1 Description : Default SRP : FBA Usable Capacity (GB) : 87570.0 Allocated Capacity (GB) : 9857.9 Free Capacity (GB) : 77712.1 Subscribed Capacity (GB) : 24679.2 Subscribed Capacity (%) : 28 Reserved Capacity (%) : 15 Usable by RDFA DSE : Yes Disk Groups (3): { ----- Usable Flgs Speed Capacity # Name LTS (rpm) (GB) Product ----- 1 GRP_1_1200_10K_6R6 IFN 10000 52801.9 Internal 2 GRP_2_600_10K_R1 IFN 10000 17167.5 Internal 3 GRP_3_800_EFD_3R5 IEN N/A 17600.6 Internal ----- Total 87570.0 } Available SLOs (6): </pre>

			<pre> { Optimized Diamond Platinum Gold Silver Bronze } Legend: Flags: Disk (L)ocation: I = Internal, X = External (T)echnology: E = Enterprise Flash Drive, F = Fibre Channel, S = SATA, - = N/A (S)tatus: N = Normal, D = Degraded, F = Failed </pre>
View volume configuration (TDATs, TDEVs)	SE 8.1.0.0 5977.691.684	Pass	<pre> # symdev -sid 973 list -all Symmetrix ID: 000196700973 Device Name Dir Device ----- Sym Physical SA :P Config Cap Attribute Sts (MB) ----- 00001 Not Visible ??? :??? TDEV N/Grp'd ACLX WD 6 00002 Not Visible 01D:032 Int+TDEV N/Grp'd RW 12098 00003 Not Visible 04D:032 Int+TDEV N/Grp'd RW 12098 00004 Not Visible 01D:032 Int+TDEV N/Grp'd RW 75617 00005 Not Visible 04D:032 Int+TDEV N/Grp'd RW 75617 00006 Not Visible *** :??? Int+TDEV N/Grp'd RW 252060 00007 Not Visible 01D:032 Int+TDEV N/Grp'd RW 6 00008 Not Visible 01D:032 Int+TDEV N/Grp'd RW 6 00009 Not Visible 01D:032 Int+TDEV N/Grp'd RW 6 ... 00013 Not Visible *** :??? TDEV N/Grp'd RW 34817 00014 Not Visible *** :??? TDEV N/Grp'd RW 34817 00015 Not Visible *** :??? TDEV N/Grp'd RW 1026 00016 Not Visible *** :??? TDEV N/Grp'd RW 1026 00017 Not Visible *** :??? TDEV N/Grp'd RW 1026 00018 Not Visible *** :??? TDEV N/Grp'd RW 5242881 00019 Not Visible *** :??? TDEV N/Grp'd RW 34817 0001A Not Visible *** :??? TDEV N/Grp'd RW 34817 0001B Not Visible *** :??? TDEV N/Grp'd RW 34817 0001C Not Visible *** :??? TDEV N/Grp'd RW 51201 0001D Not Visible ??? :??? RDF1+TDEV Grp'd RW 33793 0001E Not Visible ??? :??? RDF1+TDEV Grp'd RW 33793 0001F Not Visible ??? :??? RDF1+TDEV Grp'd RW 33793 00020 Not Visible ??? :??? RDF1+TDEV Grp'd RW 33793 00021 Not Visible ??? :??? RDF1+TDEV Grp'd RW 33793 00022 Not Visible ??? :??? RDF1+TDEV Grp'd RW 33793 00080 Not Visible ??? :??? RDF1+TDEV Grp'd RW 33793 00081 /dev/sdg 02D:011 TDEV N/Grp'd RW 6 00082 /dev/sdh 02D:011 TDEV N/Grp'd RW 6 00083 /dev/sdi 02D:011 TDEV N/Grp'd RW 6 00084 /dev/sdj 02D:011 TDEV N/Grp'd RW 6 00085 /dev/sdk 02D:011 TDEV N/Grp'd RW 6 00086 /dev/sdl 02D:011 TDEV N/Grp'd RW 6 00087 Not Visible *** :??? TDEV N/Grp'd RW 102401 00088 Not Visible *** :??? TDEV N/Grp'd RW 34817 00089 Not Visible *** :??? TDEV N/Grp'd RW 34817 0008A Not Visible *** :??? TDEV N/Grp'd RW 34817 ... 000AD Not Visible *** :??? TDEV N/Grp'd RW 34817 000AE Not Visible *** :??? RDF1+TDEV Grp'd RW 34817 000AF Not Visible *** :??? RDF1+TDEV Grp'd RW 34817 </pre>

			<pre> ... 000B7 Not Visible ***:*** RDF1+TDEV Grp'd RW 34817 000B8 Not Visible ???:??? RDF1+TDEV Grp'd RW 34817 000B9 Not Visible ???:??? RDF1+TDEV Grp'd RW 34817 ... 000C1 Not Visible ???:??? RDF1+TDEV Grp'd RW 34817 000C2 Not Visible ???:??? TDEV N/Grp'd RW 168960 000C3 Not Visible ???:??? TDEV N/Grp'd RW 168960 ... 000CC Not Visible ???:??? TDEV N/Grp'd RW 358401 000CD Not Visible ***:*** TDEV N/Grp'd RW 34817 000CE Not Visible ***:*** TDEV N/Grp'd RW 34817 ... 00149 Not Visible ***:*** TDEV N/Grp'd RW 34817 0014A Not Visible ***:*** RDF1+TDEV Grp'd RW 34817 0014B Not Visible ***:*** RDF1+TDEV Grp'd RW 34817 ... 00153 Not Visible ***:*** RDF1+TDEV Grp'd RW 34817 00154 Not Visible ***:*** RDF1+TDEV N/Grp'd RW 67584 00155 Not Visible ???:??? TDEV N/Grp'd RW 6 00156 Not Visible ???:??? TDEV N/Grp'd RW 6 00157 Not Visible ???:??? TDEV N/Grp'd RW 6 ... 00164 Not Visible ???:??? TDEV N/Grp'd RW 6 00165 Not Visible ???:??? TDEV N/Grp'd RW 51201 00166 Not Visible ???:??? TDEV N/Grp'd RW 51201 00167 Not Visible ***:*** TDEV N/Grp'd RW 6144 00168 Not Visible ***:*** TDEV N/Grp'd RW 6144 00169 Not Visible ***:*** TDEV N/Grp'd RW 6144 0016A Not Visible ***:*** TDEV N/Grp'd RW 32769 0016B Not Visible ***:*** TDEV N/Grp'd RW 32769 FFCF0 Not Visible ???:??? RAID-5 N/A (DT) RW 140805 FFCF1 Not Visible ???:??? RAID-5 N/A (DT) RW 140805 FFCF2 Not Visible ???:??? RAID-5 N/A (DT) RW 140805 FFCF3 Not Visible ???:??? RAID-5 N/A (DT) RW 140805 ... FFD6F Not Visible ???:??? RAID-5 N/A (DT) RW 140805 FFD70 Not Visible ???:??? 2-Way Mir N/A (DT) RW 34335 FFD71 Not Visible ???:??? 2-Way Mir N/A (DT) RW 34335 ... FFF6F Not Visible ???:??? 2-Way Mir N/A (DT) RW 34335 FFF70 Not Visible ???:??? RAID-6 N/A (DT) RW 422415 FFF71 Not Visible ???:??? RAID-6 N/A (DT) RW 422415 ... FFFEF Not Visible ???:??? RAID-6 N/A (DT) RW 422415 </pre>
Set configuration metrics (disk group names, data pool names, SRDF/A DSE max)	SE 8.1.0.0 5977.691.684	Pass	<pre> # symconfigure -sid 973 commit -f rename_diskgroup.cmd -v Execute a symconfigure operation for symmetrix '000196700973' (y/[n]) ? y A Configuration Change operation is in progress. Please wait... Establishing a configuration change session.....Established. Processing symmetrix 000196700973 { set disk group 1 disk_group_name = GRP_1_1200_10K_6R6; } Performing Access checks.....Allowed. Checking Device Reservations.....Allowed. Initiating COMMIT of configuration changes.....Queued. COMMIT requesting required resources.....Obtained. Step 008 of 072 steps.....Executing. Step 009 of 072 steps.....Executing. Step 013 of 072 steps.....Executing. ... Step 147 of 149 steps.....Executing. Local: COMMIT.....Done. Terminating the configuration change session.....Done. </pre>

			The configuration change session has successfully completed. <pre># symconfigure -sid 973 commit -f rename_pool.cmd -v</pre> Execute a symconfigure operation for symmetrix '000196700973' (y/[n]) ? y A Configuration Change operation is in progress. Please wait... <pre>Establishing a configuration change session.....Established. { rename pool DG1_FBA10K_t to DG1_FBA10K type=thin; }</pre> <pre>Performing Access checks.....Allowed. Checking Device Reservations.....Allowed. Committing configuration changes.....Reordering. Renaming poolDone. Committing configuration changes.....Committed. Terminating the configuration change session.....Done.</pre> The configuration change session has successfully completed. <pre># symconfigure -sid 973 commit -f set_dse_max.cmd -v</pre> Execute a symconfigure operation for symmetrix '000196700973' (y/[n]) ? y A Configuration Change operation is in progress. Please wait... <pre>Establishing a configuration change session.....Established. Processing symmetrix 000196700973 { set symmetrix dse_max_cap=100; → Value is in GBs }</pre> <pre>Performing Access checks.....Allowed. Checking Device Reservations.....Allowed. Committing configuration changes.....Started. Committing configuration changes.....Committed. Terminating the configuration change session.....Done.</pre> The configuration change session has successfully completed.
Set SRP parameters (reserved capacity, enable/disable DSE on SRP)	SE 8.1.0.0 5977.691.684	Pass	<pre>\$ symconfigure -sid 973 commit -f set_srp_resv_cap.cmd -v</pre> Execute a symconfigure operation for symmetrix '000196700973' (y/[n]) ? y A Configuration Change operation is in progress. Please wait... <pre>Establishing a configuration change session.....Established. Processing symmetrix 000196700973 { set srp SRP_1, resv_cap=10; }</pre> <pre>Performing Access checks.....Allowed. Checking Device Reservations.....Allowed. Committing configuration changes.....Started. Committing configuration changes.....Committed. Terminating the configuration change session.....Done.</pre> The configuration change session has successfully completed. <pre>\$ symconfigure -sid 973 preview -f disable_srdfa_dse.cmd -v</pre>

			Execute a symconfigure operation for symmetrix '000196700973' (y/[n]) ? y A Configuration Change operation is in progress. Please wait... Establishing a configuration change session.....Established. Error occurred while Defining change number 1: The configuration change service request not allowed Terminating the configuration change session.....Done. The configuration change session has failed. (Note: SRDF/A DSE can only be enabled on 1 SRP. Disabling fails if only 1 SRP is configured)									
ACLX device management	SE 8.1.0.0 5977.691.684	Pass	\$ symconfigure -sid 973 commit -f show_aclx_enable.cmd -v Execute a symconfigure operation for symmetrix '000196700973' (y/[n]) ? y A Configuration Change operation is in progress. Please wait... Establishing a configuration change session.....Established. Processing symmetrix 000196700973 <pre>{ set port 1D:4 Show_ACLX_Device=Enable; }</pre> Performing Access checks.....Allowed. Checking Device Reservations.....Allowed. Initiating COMMIT of configuration changes.....Queued. COMMIT requesting required resources.....Obtained. Step 004 of 072 steps.....Executing. Step 009 of 072 steps.....Executing. Step 012 of 072 steps.....Executing. ... Step 086 of 089 steps.....Executing. Local: COMMIT.....Done. Terminating the configuration change session.....Done. The configuration change session has successfully completed. \$ symdev -sid 973 list -aclx Symmetrix ID: 000196700973 <table><thead><tr><th>Device Name</th><th>Dir</th><th>Device</th></tr></thead><tbody><tr><td>Sym Physical</td><td>SA :P Config</td><td>Cap Attribute Sts (MB)</td></tr><tr><td>00001 Not Visible</td><td>01D:004 TDEV</td><td>N/Grp'd ACLX WD 6</td></tr></tbody></table> \$ symconfigure -sid 973 commit -f show_aclx_disable.cmd -v Execute a symconfigure operation for symmetrix '000196700973' (y/[n]) ? y A Configuration Change operation is in progress. Please wait... Establishing a configuration change session.....Established. Processing symmetrix 000196700973 <pre>{ set port 1D:4 Show_ACLX_Device=Disable; }</pre> Performing Access checks.....Allowed. Checking Device Reservations.....Allowed. Initiating COMMIT of configuration changes.....Queued.	Device Name	Dir	Device	Sym Physical	SA :P Config	Cap Attribute Sts (MB)	00001 Not Visible	01D:004 TDEV	N/Grp'd ACLX WD 6
Device Name	Dir	Device										
Sym Physical	SA :P Config	Cap Attribute Sts (MB)										
00001 Not Visible	01D:004 TDEV	N/Grp'd ACLX WD 6										

			COMMIT requesting required resources.....Obtained. Step 008 of 072 steps.....Executing. Step 009 of 072 steps.....Executing. ... Step 086 of 089 steps.....Executing. Local: COMMIT.....Done. Terminating the configuration change session.....Done. The configuration change session has successfully completed. -bash-4.1\$ symdev -sid 973 list -aclx Symmetrix ID: 000196700973 <table><thead><tr><th>Device Name</th><th>Dir</th><th>Device</th></tr></thead><tbody><tr><td colspan="3">-----</td></tr><tr><th>Sym</th><th>Physical</th><th>SA :P Config Cap Attribute Sts (MB)</th></tr><tr><td colspan="3">-----</td></tr><tr><td>00001</td><td>Not Visible</td><td>??? :??? TDEV N/Grp'd ACLX WD 6</td></tr></tbody></table>	Device Name	Dir	Device	-----			Sym	Physical	SA :P Config Cap Attribute Sts (MB)	-----			00001	Not Visible	??? :??? TDEV N/Grp'd ACLX WD 6
Device Name	Dir	Device																

Sym	Physical	SA :P Config Cap Attribute Sts (MB)																

00001	Not Visible	??? :??? TDEV N/Grp'd ACLX WD 6																
Initiator Group management	SE 8.1.0.0 5977.691.684	Pass	\$ symaccess -sid 973 create -name ecctest01ms_ig -type initiator \$ symaccess -sid 973 -name ecctest01ms_ig -type initiator add -wwn 10000000c937fe0c \$ symaccess -sid 973 -name ecctest01ms_ig -type initiator add -wwn 10000000c938f1f1 \$ symaccess -sid 973 show ecctest01ms_ig -type initiator Symmetrix ID : 000196700973 Initiator Group Name : ecctest01ms_ig Last update time : 04:55:17 PM on Mon Nov 02,2015 Group last update time : 04:55:17 PM on Mon Nov 02,2015 Host Initiators { WWN : 10000000c937fe0c [alias: 10000000c937fe0c/10000000c937fe0c] WWN : 10000000c938f1f1 [alias: 10000000c938f1f1/10000000c938f1f1] } Masking View Names { None } Parent Initiator Groups { None }															
Port Group management	SE 8.1.0.0 5977.691.684	Pass	\$ symaccess -sid 973 create -name ecctest01ms_pg -type port -bash-4.1\$ symaccess -sid 973 -name ecctest01ms_pg -type port add -dirport 1d:11,2d:11,3d:11,4d:11 \$ symaccess -sid 973 show ecctest01ms_pg -type port Symmetrix ID : 000196700973 Port Group Name : ecctest01ms_pg Last update time : 05:01:58 PM on Mon Nov 02,2015 Director Identification { Director Ident Port WWN Port Name / iSCSI Target Name -----															

			FA-1D 011 50000973500f340b FA-2D 011 50000973500f344b FA-3D 011 50000973500f348b FA-4D 011 50000973500f34cb } Masking View Names { None }												
Storage Group management	SE 8.1.0.0 5977.691.684	Pass	\$ symsg -sid 973 create ecctest01ms_sg \$ symsg -sid 973 -sg ecctest01ms_sg addall -devs 16a:16b \$ symsg -sid 973 show ecctest01ms_sg Name: ecctest01ms_sg Symmetrix ID : 000196700973 Last updated at : Mon Nov 02 17:04:34 2015 Masking Views : No FAST Managed : No SLO Name : <none> Workload : <none> SRP Name : <none> Host I/O Limit : None Host I/O Limit MB/Sec : N/A Host I/O Limit IO/Sec : N/A Dynamic Distribution : N/A Number of Storage Groups : 0 Storage Group Names : N/A Number of Gatekeepers : 0 Devices (2): { ----- <table><tr><th>Sym</th><th>Device</th><th>Cap</th></tr><tr><th>Dev</th><th>Pdev Name</th><th>Config Attr Sts (MB)</th></tr><tr><td>0016A</td><td>N/A</td><td>TDEV RW 32769</td></tr><tr><td>0016B</td><td>N/A</td><td>TDEV RW 32769</td></tr></table> }	Sym	Device	Cap	Dev	Pdev Name	Config Attr Sts (MB)	0016A	N/A	TDEV RW 32769	0016B	N/A	TDEV RW 32769
Sym	Device	Cap													
Dev	Pdev Name	Config Attr Sts (MB)													
0016A	N/A	TDEV RW 32769													
0016B	N/A	TDEV RW 32769													
Masking View management	SE 8.1.0.0 5977.691.684	Pass	\$ symaccess -sid 973 create view -name ecctest01ms_mv -sg ecctest01ms_sg -pg 1d11-2d11-3d11-4d11_pg -ig ecctest01ms_ig \$ symaccess -sid 973 show view ecctest01ms_mv Symmetrix ID : 000196700973 Masking View Name : ecctest01ms_mv Last update time : 05:09:14 PM on Mon Nov 02,2015 View last update time : 05:09:14 PM on Mon Nov 02,2015 Initiator Group Name : ecctest01ms_ig Host Initiators { WWN : 10000000c937fe0c [alias: 10000000c937fe0c/10000000c937fe0c] WWN : 10000000c938f1f1 [alias: 10000000c938f1f1/10000000c938f1f1] } Port Group Name : 1d11-2d11-3d11-4d11_pg Director Identification { Director Ident Port WWN Port Name / iSCSI Target Name												

			<pre> FA-1D 011 50000973500f340b FA-2D 011 50000973500f344b FA-3D 011 50000973500f348b FA-4D 011 50000973500f34cb } Storage Group Name : ecctest01ms_sg Number of Storage Groups : 0 Storage Group Names : None Sym Host Dev Dir:Port Physical Device Name Lun Attr Cap(MB) ----- 0016A 01D:011 Not Visible 0 32769 02D:011 Not Visible 0 03D:011 Not Visible 0 04D:011 Not Visible 0 0016B 01D:011 Not Visible 1 32769 02D:011 Not Visible 1 03D:011 Not Visible 1 04D:011 Not Visible 1 ----- Total Capacity 65538 </pre>
List available SLOs	SE 8.1.0.0 5977.691.684	Pass	<pre> \$ symcfg -sid 973 list -slo SERVICE LEVEL OBJECTIVES Symmetrix ID : 000196700973 Approx Resp Time Name (ms) ----- Optimized N/A Diamond 0.8 Platinum 3.0 Gold 5.0 Silver 8.0 Bronze 14.0 </pre>
View SLO details	SE 8.1.0.0 5977.691.684	Pass	<pre> \$ symcfg -sid 973 list -slo -detail SERVICE LEVEL OBJECTIVES Symmetrix ID : 000196700973 Approx Resp Time Name Workload (ms) Base SLO Name ----- Optimized N/A N/A Optimized Diamond OLTP 0.8 Diamond Diamond OLTP_REP 2.3 Diamond Diamond DSS 2.3 Diamond Diamond DSS_REP 3.7 Diamond Diamond <none> 0.8 Diamond Platinum OLTP 3.0 Platinum Platinum OLTP_REP 4.4 Platinum Platinum DSS 4.4 Platinum Platinum DSS_REP 5.9 Platinum Platinum <none> 3.0 Platinum Gold OLTP 5.0 Gold Gold OLTP_REP 6.5 Gold Gold DSS 6.5 Gold Gold DSS_REP 7.9 Gold </pre>

			Gold <none> 5.0 Gold Silver OLTP 8.0 Silver Silver OLTP_REP 9.5 Silver Silver DSS 9.5 Silver Silver DSS_REP 10.9 Silver Silver <none> 8.0 Silver Bronze OLTP 14.0 Bronze Bronze OLTP_REP 15.5 Bronze Bronze DSS 15.5 Bronze Bronze DSS_REP 16.9 Bronze Bronze <none> 14.0 Bronze																				
Associate SLO with a Storage Group	SE 8.1.0.0 5977.691.684	Pass	\$ symsg -sid 973 -sg ecctest01ms_sg set -slo bronze -bash-4.1\$ symsg -sid 973 show ecctest01ms_sg Name: ecctest01ms_sg Symmetrix ID : 000196700973 Last updated at : Mon Nov 02 17:25:41 2015 Masking Views : Yes FAST Managed : Yes SLO Name : Bronze Workload : <none> SRP Name : <none> Host I/O Limit : None Host I/O Limit MB/Sec : N/A Host I/O Limit IO/Sec : N/A Dynamic Distribution : N/A Number of Storage Groups : 0 Storage Group Names : N/A Number of Gatekeepers : 0 Devices (2): { <table><tr><th>Sym</th><th>Device</th><th>Cap</th></tr><tr><th>Dev</th><th>Pdev Name</th><th>Attr Sts (MB)</th></tr><tr><td>0016A</td><td>N/A</td><td>TDEV RW 32769</td></tr><tr><td>0016B</td><td>N/A</td><td>TDEV RW 32769</td></tr></table> }	Sym	Device	Cap	Dev	Pdev Name	Attr Sts (MB)	0016A	N/A	TDEV RW 32769	0016B	N/A	TDEV RW 32769								
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0016A	N/A	TDEV RW 32769																					
0016B	N/A	TDEV RW 32769																					
SLO-provisioning reporting	SE 8.1.0.0 5977.691.684	Pass	\$ symcfg -sid 973 list -srp -demand -type SLO STORAGE RESOURCE POOLS Symmetrix ID : 000196700973 Name : SRP_1 Usable Capacity (GB) : 87570.0 SRDF DSE Allocated (GB) : 0.0 Snapshots Allocated (GB) : 0.0 ----- <table><tr><th>SLO Name</th><th>Subscribed (GB)</th><th>Allocated (GB)</th><th>(%)</th><th>(%)</th></tr><tr><td>Optimized</td><td>24169.2</td><td>27</td><td>9518.9</td><td>39</td></tr><tr><td>Bronze</td><td>510.0</td><td>0</td><td>340.0</td><td>66</td></tr><tr><td>Total</td><td>24679.2</td><td>28</td><td>9858.9</td><td>39</td></tr></table>	SLO Name	Subscribed (GB)	Allocated (GB)	(%)	(%)	Optimized	24169.2	27	9518.9	39	Bronze	510.0	0	340.0	66	Total	24679.2	28	9858.9	39
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Total	24679.2	28	9858.9	39																			
Modify SLO associated with SG	SE 8.1.0.0 5977.691.684	Pass	\$ symsg -sid 973 -sg ecctest01ms_sg set -slo optimized \$ symsg -sid 973 show ecctest01ms_sg Name: ecctest01ms_sg Symmetrix ID : 000196700973																				

			Last updated at : Mon Nov 02 17:26:31 2015 Masking Views : Yes FAST Managed : Yes SLO Name : Optimized Workload : <none> SRP Name : <none> Host I/O Limit : None Host I/O Limit MB/Sec : N/A Host I/O Limit IO/Sec : N/A Dynamic Distribution : N/A Number of Storage Groups : 0 Storage Group Names : N/A Number of Gatekeepers : 0 Devices (2): { <table><tr><th>Sym Dev</th><th>Pdev Name</th><th>Device Config</th><th>Cap Attr Sts</th><th>(MB)</th></tr><tr><td>0016A</td><td>N/A</td><td>TDEV</td><td>RW</td><td>32769</td></tr><tr><td>0016B</td><td>N/A</td><td>TDEV</td><td>RW</td><td>32769</td></tr></table> }	Sym Dev	Pdev Name	Device Config	Cap Attr Sts	(MB)	0016A	N/A	TDEV	RW	32769	0016B	N/A	TDEV	RW	32769
Sym Dev	Pdev Name	Device Config	Cap Attr Sts	(MB)														
0016A	N/A	TDEV	RW	32769														
0016B	N/A	TDEV	RW	32769														
Create a TDEV	SE 8.1 5977.691.684	Pass	\$ symconfigure -sid 973 commit -f create_dev.cmd -v Execute a symconfigure operation for symmetrix '000196700973' (y/[n]) ? y A Configuration Change operation is in progress. Please wait... Establishing a configuration change session.....Established. Processing symmetrix 000196700973 { create dev count=1, size=18569 cyl, emulation=FBA, config=TDEV, mvs_ssid=0; } Performing Access checks.....Allowed. Checking Device Reservations.....Allowed. Initiating COMMIT of configuration changes.....Queued. COMMIT requesting required resources.....Obtained. Step 002 of 011 steps.....Executing. Step 011 of 011 steps.....Executing. Local: COMMIT.....Done. New symdev: 0016D [TDEV] Terminating the configuration change session.....Done. The configuration change session has successfully completed.															
Mask the TDEV to an SOE server	SE 8.1 5977.691.684	Pass	\$ symsg -sid 973 -sg ecctest01ms_sg add dev 16d															
Validate the LUN exists on the SOE server	SE 8.1.0.0 5977.691.684	Pass																
Verify the SOE server can format or write to the LUN	SE 8.1.0.0 5977.691.684	Pass																
Expand an existing LUN and rediscover on the host to verify.	SE 8.1.0.0 5977.691.684	Pass	\$ symdev -sid 973 modify 016d -tdev -cap 100 -capytype gb Execute a modify devices operation (y/[n]) ? y Modify devices operation succeeded. -bash-4.1\$ symdev -sid 973 show 016d Device Physical Name : Not Visible Device Symmetrix Name : 0016D Device Serial ID : N/A Symmetrix ID : 000196700973 Number of RAID Groups : 0 Encapsulated Device : No															

			Encapsulated WWN : N/A Encapsulated Device Flags: None Encapsulated Array ID : N/A Encapsulated Device Name : N/A Attached BCV Device : N/A Attached VDEV TGT Device : N/A Vendor ID : EMC Product ID : SYMMETRIX Product Revision : 5977 Device WWN : 60000970000196700973533030313644 Device Emulation Type : FBA Device Defined Label Type: N/A Device Defined Label : N/A Device Sub System Id : 0x0001 Cache Partition Name : N/A Bound Pool Name : SRP_1 Device Block Size : 512 Device Capacity { Cylinders : 54614 Tracks : 819210 512-byte Blocks : 209717760 MegaBytes : 102401 KiloBytes : 104858880 Geometry Limited : No } Device External Identity { Device WWN : 60000970000196700973533030313644 Front Director Paths (4): { ----- DIRECTOR PORT LUN ----- Type Num Sts VBUS TID SYMM Host ----- FA 01D:011 RW N/A N/A N/A N/A FA 02D:011 RW N/A N/A N/A N/A FA 03D:011 RW N/A N/A N/A N/A FA 04D:011 RW N/A N/A N/A N/A } Geometry : Native { Sectors/Track : 256 Tracks/Cylinder : 15 Cylinders : 54614 512-byte Blocks : 209717760 MegaBytes : 102401 KiloBytes : 104858880 } } Device Configuration : TDEV SCSI-3 Persistent Reserve: Enabled Dynamic Spare Invoked : No Dynamic RDF Capability : RDF1_OR_RDF2_Capable
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			STAR Mode : No STAR Recovery Capability : None STAR Recovery State : NA SQAR_MODE : No Device Service State : Normal Device Status : Ready (RW) Device SA Status : Ready (RW) Device User Pinned : False Host Access Mode : Active Device Tag(s) : None Extent Based Clone : None Snapvix Source : False Snapvix Target : False Data Destaged : True DIF1 Flag : False Gatekeeper Device : False AS400_GK : False Host Cache Registered : False Optimized Read Miss : N/A Front Director Paths (4): POWERPATH DIRECTOR PORT LUN PdevName Type Type Num Sts VBUS TID SYMM Host Not Visible N/A FA 01D:011 RW N/A N/A N/A N/A Not Visible N/A FA 02D:011 RW N/A N/A N/A N/A Not Visible N/A FA 03D:011 RW N/A N/A N/A N/A Not Visible N/A FA 04D:011 RW N/A N/A N/A N/A Mirror Set Type : [Thin,N/A,N/A,N/A] Mirror Set DA Status : [RW,N/A,N/A,N/A] Mirror Set Inv. Tracks : [0,0,0,0] Mirror Configuration Information Mirror Number : 1 Mirror Type : Thin Mirror Status : Ready (RW)
Pre-allocate all devices in SG	SE 8.1.0.0 5977.691.684	Pass	\$ symcfg -sid 973 list -tdev -detail -sg ecctest01ms_sg Symmetrix ID: 000196700973 Enabled Capacity (Tracks) : 717373440 Bound Capacity (Tracks) : 524310 SYMMETRIX THIN DEVICES Pool Pool Total Compressed Bound Flags Total Subs Allocated Written Size/Ratio Sym Pool Name ESPT Tracks (%) Tracks (%) Tracks (%) Tracks (%) 0016A - F.AB 262155 - 0 0 - - 0 0 DG2_FBA10K -- - - 32 0 - - 32 0 DG3_FBA_F -- - - 262123 100 - - 262123 0 0016B - F.AB 262155 - 0 0 - - 0 0 DG2_FBA10K -- - - 32 0 - - 32 0 DG3_FBA_F -- - - 262123 100 - - 262123 0

			Total Tracks524310-5243100--5243100 Legend: Flags: (E)mulation : A = AS400, F = FBA, 8 = CKD3380, 9 = CKD3390 (S)hared Tracks : S = Shared Tracks Present, . = No Shared Tracks (P)ersistent Allocs : A = All, S = Some, . = None S(T)atus : B = Bound, I = Binding, U = Unbinding, A = Allocating, D = Deallocating, R = Reclaiming, C = Compressing, N = Uncompressing, F = FreeingAll, . = Unbound																																																																																																																																																																
Pre-allocate a single device	SE 8.1.0.0 5977.691.684	Pass	\$ symcfg -sid 973 list -tdev -detail -dev 16d Symmetrix ID: 000196700973 Enabled Capacity (Tracks) : 717373440 Bound Capacity (Tracks) : 819210 S Y M M E T R I X T H I N D E V I C E S <table><thead><tr><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></tr><tr><th></th><th>Bound</th><th>Flags</th><th>Pool</th><th>Pool</th><th>Total</th><th>Compressed</th><th></th><th></th><th></th></tr><tr><th>Sym</th><th>Pool Name</th><th>ESPT</th><th>Total</th><th>Subs</th><th>Allocated</th><th>Written</th><th>Size/Ratio</th><th></th><th></th></tr><tr><th>(%)</th><th></th><th></th><th>Tracks</th><th>(%)</th><th>Tracks</th><th>(%)</th><th>Tracks</th><th>(%)</th><th>Tracks</th></tr></thead><tbody><tr><td>0016D -</td><td>F..B</td><td>819210</td><td>-</td><td>0 0</td><td>- -</td><td>0 0</td><td></td><td></td><td></td></tr><tr><td>DG2_FBA10K</td><td>-.--</td><td>- -</td><td>526 0</td><td>- -</td><td>526 0</td><td></td><td></td><td></td><td></td></tr><tr><td>Total</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Tracks</td><td></td><td>819210</td><td>-</td><td>526 0</td><td>- -</td><td>526 0</td><td></td><td></td><td></td></tr></tbody></table> Legend: Flags: (E)mulation : A = AS400, F = FBA, 8 = CKD3380, 9 = CKD3390 (S)hared Tracks : S = Shared Tracks Present, . = No Shared Tracks (P)ersistent Allocs : A = All, S = Some, . = None S(T)atus : B = Bound, I = Binding, U = Unbinding, A = Allocating, D = Deallocating, R = Reclaiming, C = Compressing, N = Uncompressing, F = FreeingAll, . = Unbound \$ symdev -sid 973 -dev 16d allocate -persistent Execute a 'Allocate Start' operation for devices in the specified set of ranges (y/[n]) ? y 'Allocate Start' operation succeeded for devices in set of ranges. \$ symcfg -sid 973 list -tdev -detail -dev 16d Symmetrix ID: 000196700973 Enabled Capacity (Tracks) : 717373440 Bound Capacity (Tracks) : 819210 S Y M M E T R I X T H I N D E V I C E S <table><thead><tr><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></tr><tr><th></th><th>Bound</th><th>Flags</th><th>Pool</th><th>Pool</th><th>Total</th><th>Compressed</th><th></th><th></th><th></th></tr><tr><th>Sym</th><th>Pool Name</th><th>ESPT</th><th>Total</th><th>Subs</th><th>Allocated</th><th>Written</th><th>Size/Ratio</th><th></th><th></th></tr><tr><th>(%)</th><th></th><th></th><th>Tracks</th><th>(%)</th><th>Tracks</th><th>(%)</th><th>Tracks</th><th>(%)</th><th>Tracks</th></tr></thead><tbody><tr><td>0016D -</td><td>F.AB</td><td>819210</td><td>-</td><td>0 0</td><td>- -</td><td>0 0</td><td></td><td></td><td></td></tr><tr><td>DG2_FBA10K</td><td>-.--</td><td>- -</td><td>819210 100</td><td>- -</td><td>819210 0</td><td></td><td></td><td></td><td></td></tr><tr><td>Total</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Tracks</td><td></td><td>819210</td><td>-</td><td>819210 0</td><td>- -</td><td>819210 0</td><td></td><td></td><td></td></tr></tbody></table> Legend: Flags: (E)mulation : A = AS400, F = FBA, 8 = CKD3380, 9 = CKD3390												Bound	Flags	Pool	Pool	Total	Compressed				Sym	Pool Name	ESPT	Total	Subs	Allocated	Written	Size/Ratio			(%)			Tracks	(%)	Tracks	(%)	Tracks	(%)	Tracks	0016D -	F..B	819210	-	0 0	- -	0 0				DG2_FBA10K	-.--	- -	526 0	- -	526 0					Total										Tracks		819210	-	526 0	- -	526 0															Bound	Flags	Pool	Pool	Total	Compressed				Sym	Pool Name	ESPT	Total	Subs	Allocated	Written	Size/Ratio			(%)			Tracks	(%)	Tracks	(%)	Tracks	(%)	Tracks	0016D -	F.AB	819210	-	0 0	- -	0 0				DG2_FBA10K	-.--	- -	819210 100	- -	819210 0					Total										Tracks		819210	-	819210 0	- -	819210 0			
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Perform zero space reclaim on SG	SE 8.1.0.0 5977.691.684	Pass	\$ symsg -sid 973 -sg ecctest01ms_sg reclaim -persistent Execute a 'Reclaim Start' Device operation for all devices in storage group 'ecctest01ms_sg' (y/[n]) ? y 'Reclaim Start' Device operation successfully completed for the storage group. -bash-4.1\$ symcfg -sid 973 list -tdev -detail -sg ecctest01ms_sg Symmetrix ID: 000196700973 Enabled Capacity (Tracks) : 717373440 Bound Capacity (Tracks) : 524310 SYMMETRIX THIN DEVICES ----- <table><thead><tr><th></th><th>Bound</th><th>Flags</th><th>Pool Total</th><th>Pool Subs</th><th>Total Allocated</th><th>Compressed Written</th><th>Size/Ratio</th></tr><tr><th>Sym</th><th>Pool Name</th><th>ESPT</th><th>Tracks</th><th>(%)</th><th>Tracks (%)</th><th>Tracks (%)</th><th>Tracks</th></tr></thead><tbody><tr><td>0016A</td><td>-</td><td>F.SR</td><td>262155</td><td>-</td><td>0 0</td><td>- -</td><td>0 0</td></tr><tr><td></td><td>DG2_FBA10K</td><td>---</td><td>-</td><td>-</td><td>31 0</td><td>- -</td><td>31 0</td></tr><tr><td></td><td>DG3_FBA_F</td><td>---</td><td>-</td><td>-</td><td>166955 64</td><td>- -</td><td>166955 0</td></tr><tr><td>0016B</td><td>-</td><td>F.SR</td><td>262155</td><td>-</td><td>0 0</td><td>- -</td><td>0 0</td></tr><tr><td></td><td>DG2_FBA10K</td><td>---</td><td>-</td><td>-</td><td>31 0</td><td>- -</td><td>31 0</td></tr><tr><td></td><td>DG3_FBA_F</td><td>---</td><td>-</td><td>-</td><td>233725 89</td><td>- -</td><td>233725 0</td></tr><tr><td>Total</td><td colspan="7">-----</td></tr><tr><td>Tracks</td><td></td><td></td><td>524310</td><td>-</td><td>400742 0</td><td>- -</td><td>400742 0</td></tr></tbody></table> Legend: Flags: (E)mulation : A = AS400, F = FBA, 8 = CKD3380, 9 = CKD3390 (S)hared Tracks : S = Shared Tracks Present, . = No Shared Tracks (P)ersistent Allocs : A = All, S = Some, . = None S(T)atus : B = Bound, I = Binding, U = Unbinding, A = Allocating, D = Deallocating, R = Reclaiming, C = Compressing, N = Uncompressing, F = FreeingAll, . = Unbound -bash-4.1\$ symcfg -sid 973 list -tdev -detail -sg ecctest01ms_sg Symmetrix ID: 000196700973 Enabled Capacity (Tracks) : 717373440 Bound Capacity (Tracks) : 524310 SYMMETRIX THIN DEVICES ----- <table><thead><tr><th></th><th>Bound</th><th>Flags</th><th>Pool Total</th><th>Pool Subs</th><th>Total Allocated</th><th>Compressed Written</th><th>Size/Ratio</th></tr><tr><th>Sym</th><th>Pool Name</th><th>ESPT</th><th>Tracks</th><th>(%)</th><th>Tracks (%)</th><th>Tracks (%)</th><th>Tracks</th></tr></thead><tbody><tr><td>0016A</td><td>-</td><td>F.SR</td><td>262155</td><td>-</td><td>0 0</td><td>- -</td><td>0 0</td></tr><tr><td></td><td>DG2_FBA10K</td><td>---</td><td>-</td><td>-</td><td>31 0</td><td>- -</td><td>31 0</td></tr><tr><td></td><td>DG3_FBA_F</td><td>---</td><td>-</td><td>-</td><td>136883 52</td><td>- -</td><td>136883 0</td></tr><tr><td>0016B</td><td>-</td><td>F.SR</td><td>262155</td><td>-</td><td>0 0</td><td>- -</td><td>0 0</td></tr><tr><td></td><td>DG2_FBA10K</td><td>---</td><td>-</td><td>-</td><td>31 0</td><td>- -</td><td>31 0</td></tr><tr><td></td><td>DG3_FBA_F</td><td>---</td><td>-</td><td>-</td><td>204209 78</td><td>- -</td><td>204209 0</td></tr><tr><td>Total</td><td colspan="7">-----</td></tr><tr><td>Tracks</td><td></td><td></td><td>524310</td><td>-</td><td>341154 0</td><td>- -</td><td>341154 0</td></tr></tbody></table>		Bound	Flags	Pool Total	Pool Subs	Total Allocated	Compressed Written	Size/Ratio	Sym	Pool Name	ESPT	Tracks	(%)	Tracks (%)	Tracks (%)	Tracks	0016A	-	F.SR	262155	-	0 0	- -	0 0		DG2_FBA10K	---	-	-	31 0	- -	31 0		DG3_FBA_F	---	-	-	166955 64	- -	166955 0	0016B	-	F.SR	262155	-	0 0	- -	0 0		DG2_FBA10K	---	-	-	31 0	- -	31 0		DG3_FBA_F	---	-	-	233725 89	- -	233725 0	Total	-----							Tracks			524310	-	400742 0	- -	400742 0		Bound	Flags	Pool Total	Pool Subs	Total Allocated	Compressed Written	Size/Ratio	Sym	Pool Name	ESPT	Tracks	(%)	Tracks (%)	Tracks (%)	Tracks	0016A	-	F.SR	262155	-	0 0	- -	0 0		DG2_FBA10K	---	-	-	31 0	- -	31 0		DG3_FBA_F	---	-	-	136883 52	- -	136883 0	0016B	-	F.SR	262155	-	0 0	- -	0 0		DG2_FBA10K	---	-	-	31 0	- -	31 0		DG3_FBA_F	---	-	-	204209 78	- -	204209 0	Total	-----							Tracks			524310	-	341154 0	- -	341154 0
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Tracks					819210	-	0 0	- -	0 0																																																						

			(P)ersistent Allocs : A = All, S = Some, . = None S(T)atus : B = Bound, I = Binding, U = Unbinding, A = Allocating, D = Deallocating, R = Reclaiming, C = Compressing, N = Uncompressing, F = FreeingAll, . = Unbound
View director/port associations	SE 8.1.0.0 5977.691.684	Pass	\$ symcfg -sid 973 list -dir all Symmetrix ID: 000196700973 (Local) SYMMETRIX DIRECTORS Ident Type Engine Cores Ports Status ----- IM-1A IM 1 4 0 Online IM-2A IM 1 4 0 Online IM-3A IM 2 4 0 Online IM-4A IM 2 4 0 Online ED-1B EDS 1 8 0 Online ED-2B EDS 1 8 0 Online ED-3B EDS 2 8 0 Online ED-4B EDS 2 8 0 Online DF-1C DISK 1 10 4 Online DF-2C DISK 1 10 4 Online DF-3C DISK 2 10 4 Online DF-4C DISK 2 10 4 Online FA-1D FibreChannel 1 6 16 Online FA-2D FibreChannel 1 6 15 Online FA-3D FibreChannel 2 6 14 Online FA-4D FibreChannel 2 6 15 Online RF-1E RDF-BI-DIR 1 4 1 Online RF-2E RDF-BI-DIR 1 4 1 Online RF-3E RDF-BI-DIR 2 4 1 Online RF-4E RDF-BI-DIR 2 4 1 Online
View director ports	SE 8.1.0.0 5977.691.684	Pass	\$ symcfg -sid 973 list -fa all -port Symmetrix ID: 000196700973 (Local) SYMMETRIX DIRECTOR PORTS Ident Port WWN Speed Type Gb/sec Status ----- FA-1D 4 50000973500F3404 FibreChannel 8 PendOn FA-1D 5 50000973500F3405 FibreChannel 8 PendOn FA-1D 6 50000973500F3406 FibreChannel 8 PendOn FA-1D 7 50000973500F3407 FibreChannel 8 Online FA-1D 9 50000973500F3409 FibreChannel 8 PendOn FA-1D 10 50000973500F340A FibreChannel 8 PendOn FA-1D 11 50000973500F340B FibreChannel 8 Online FA-1D 24 50000973500F3418 FibreChannel 16 Online FA-1D 25 50000973500F3419 FibreChannel 16 PendOn FA-1D 26 50000973500F341A FibreChannel 16 PendOn FA-1D 27 50000973500F341B FibreChannel 16 PendOn FA-1D 28 50000973500F341C FibreChannel 16 Online FA-1D 29 50000973500F341D FibreChannel 16 PendOn FA-1D 30 50000973500F341E FibreChannel 16 PendOn FA-1D 31 50000973500F341F FibreChannel 16 PendOn FA-1D 32 50000971500F3400 Virtual-FC N/A Online FA-2D 4 50000973500F3444 FibreChannel 8 PendOn FA-2D 5 50000973500F3445 FibreChannel 8 PendOn FA-2D 6 50000973500F3446 FibreChannel 8 PendOn FA-2D 7 50000973500F3447 FibreChannel 8 Online FA-2D 9 50000973500F3449 FibreChannel 8 PendOn FA-2D 10 50000973500F344A FibreChannel 8 PendOn FA-2D 11 50000973500F344B FibreChannel 8 Online FA-2D 24 50000973500F3458 FibreChannel 16 Online

			FA-2D 25 50000973500F3459 FibreChannel 16 PendOn FA-2D 26 50000973500F345A FibreChannel 16 PendOn FA-2D 27 50000973500F345B FibreChannel 16 PendOn FA-2D 28 50000973500F345C FibreChannel 16 Online FA-2D 29 50000973500F345D FibreChannel 16 PendOn FA-2D 30 50000973500F345E FibreChannel 16 PendOn FA-2D 31 50000973500F345F FibreChannel 16 PendOn FA-3D 4 50000973500F3484 FibreChannel 8 PendOn FA-3D 5 50000973500F3485 FibreChannel 8 PendOn FA-3D 6 50000973500F3486 FibreChannel 8 PendOn FA-3D 7 50000973500F3487 FibreChannel 8 Online FA-3D 9 50000973500F3489 FibreChannel 8 PendOn FA-3D 11 50000973500F348B FibreChannel 8 Online FA-3D 24 50000973500F3498 FibreChannel 16 Online FA-3D 25 50000973500F3499 FibreChannel 16 PendOn FA-3D 26 50000973500F349A FibreChannel 16 PendOn FA-3D 27 50000973500F349B FibreChannel 16 PendOn FA-3D 28 50000973500F349C FibreChannel 16 Online FA-3D 29 50000973500F349D FibreChannel 16 PendOn FA-3D 30 50000973500F349E FibreChannel 16 PendOn FA-3D 31 50000973500F349F FibreChannel 16 PendOn FA-4D 4 50000973500F34C4 FibreChannel 8 PendOn FA-4D 5 50000973500F34C5 FibreChannel 8 PendOn FA-4D 6 50000973500F34C6 FibreChannel 8 PendOn FA-4D 7 50000973500F34C7 FibreChannel 8 Online FA-4D 9 50000973500F34C9 FibreChannel 8 PendOn FA-4D 11 50000973500F34CB FibreChannel 8 Online FA-4D 24 50000973500F34D8 FibreChannel 16 Online FA-4D 25 50000973500F34D9 FibreChannel 16 PendOn FA-4D 26 50000973500F34DA FibreChannel 16 PendOn FA-4D 27 50000973500F34DB FibreChannel 16 PendOn FA-4D 28 50000973500F34DC FibreChannel 16 Online FA-4D 29 50000973500F34DD FibreChannel 16 PendOn FA-4D 30 50000973500F34DE FibreChannel 16 PendOn FA-4D 31 50000973500F34DF FibreChannel 16 PendOn FA-4D 32 50000971500F34C0 Virtual-FC N/A Online
Disassociate/Associate port with front-end director	SE 8.1.0.0 5977.691.684	Pass	<pre># symconfigure -sid 973 commit -f disassociate_port.cmd -v</pre> Execute a symconfigure operation for symmetrix '000196700973' (y/[n]) ? y A Configuration Change operation is in progress. Please wait... <pre>Establishing a configuration change session.....Established. Processing symmetrix 000196700973 { disassociate port 9 from dir 4D; }</pre> <pre>Performing Access checks.....Allowed. Checking Device Reservations.....Allowed. Committing configuration changes.....Started. Committing configuration changes.....Committed. Terminating the configuration change session.....Done.</pre> The configuration change session has successfully completed. <pre># symconfigure -sid 973 commit -f associate_port.cmd -v</pre> Execute a symconfigure operation for symmetrix '000196700973' (y/[n]) ? y A Configuration Change operation is in progress. Please wait... <pre>Establishing a configuration change session.....Established. Processing symmetrix 000196700973 { associate port 10 to dir 4D; associate port 10 to dir 3D; }</pre>

			} Performing Access checks.....Allowed. Checking Device Reservations.....Allowed. Committing configuration changes.....Started. Committing configuration changes.....Committed. Terminating the configuration change session.....Done. The configuration change session has successfully completed.
Online/Offline a director port	SE 8.1.0.0 5977.691.684	Pass	\$ symcfg -sid 973 -fa 4d -p 10 offline Execute a port 'Offline' operation for director 4d, port 10 in Symmetrix unit '000196700973' (y/[n]) ? y A port 'Offline' operation execution is in progress for Symmetrix unit '000196700973'. Please wait... The port 'Offline' operation successfully executed for Symmetrix Unit '000196700973'. \$ symcfg -sid 973 -fa 4d -p 10 online Execute a port 'Online' operation for director 4d, port 10 in Symmetrix unit '000196700973' (y/[n]) ? y A port 'Online' operation execution is in progress for Symmetrix unit '000196700973'. Please wait... The port 'Online' operation successfully executed for Symmetrix Unit '000196700973'.
Add symauth users	SE 8.1.0.0 5977.691.684	Pass	\$ symauth -sid 973 commit -f adduser.cmd -v Perform an Authorization change on Symmetrix unit 000196700973 (y/[n]) ? y PREVIEW.....Started. assign user ql68074 to role Admin PREVIEW.....Done. COMMIT.....Started. assign user ql68074 to role Admin.....Done. COMMIT.....Done.
Modify symauth users	SE 8.1.0.0 5977.691.684	Pass	\$ symauth -sid 973 commit -f reassign_user.cmd -v Perform an Authorization change on Symmetrix unit 000196700973 (y/[n]) ? y PREVIEW.....Started. reassign user sp65064 to role StorageAdmin PREVIEW.....Done. COMMIT.....Started. reassign user sp65064 to role StorageAdmin.....Done. COMMIT.....Done.
List symauth users	SE 8.1.0.0 5977.691.684	Pass	\$ symauth -sid 973 list -users SYMMETRIX AUTHORIZATION USERS

			Symmetrix ID: 000196700973 <table> <thead> <tr> <th>Role</th><th>User/Group name</th><th>Flags Component</th><th>E</th></tr> </thead> <tbody> <tr> <td>Admin</td><td>User C:\icl-unisp-vm01.namde*</td><td>N/A</td><td>.</td></tr> <tr> <td></td><td>User H:\namgdse14\ql68074</td><td>N/A</td><td>.</td></tr> <tr> <td></td><td>User ql68074</td><td>N/A</td><td>.</td></tr> <tr> <td></td><td>User root</td><td>N/A</td><td>.</td></tr> <tr> <td></td><td>User smc</td><td>N/A</td><td>.</td></tr> <tr> <td></td><td>User C:\icl-unisp-vm01.namde*</td><td>N/A</td><td>.</td></tr> <tr> <td></td><td>Group per_csbe_univmax_auth*</td><td>N/A</td><td>.</td></tr> <tr> <td></td><td>Group StorageEng</td><td>N/A</td><td>.</td></tr> <tr> <td>StorageAdmin</td><td>User H:\namgdse14\dn65671</td><td>N/A</td><td>.</td></tr> <tr> <td></td><td>User sp65064</td><td>N/A</td><td>.</td></tr> <tr> <td>Auditor</td><td>User H:\i10-srm-vm10\apg</td><td>N/A</td><td>.</td></tr> <tr> <td></td><td>User C:\icl-unisp-vm01.namde*</td><td>N/A</td><td>.</td></tr> <tr> <td></td><td>User civatest</td><td>N/A</td><td>.</td></tr> <tr> <td></td><td>User hpnao</td><td>N/A</td><td>.</td></tr> <tr> <td></td><td>User C:\icl-unisp-vm01.namde*</td><td>N/A</td><td>.</td></tr> <tr> <td></td><td>User srm_readonly</td><td>N/A</td><td>.</td></tr> <tr> <td></td><td>User storevntd</td><td>N/A</td><td>.</td></tr> <tr> <td>PerfMonitor</td><td>User D:\NAMDEV\civa_readonly</td><td>N/A</td><td>.</td></tr> <tr> <td>Monitor</td><td>User D:\NAMDEV\civa_readonly</td><td>N/A</td><td>N</td></tr> <tr> <td></td><td>User srm_readonly</td><td>N/A</td><td>N</td></tr> </tbody> </table> Legend for Flags: (E) : N = Rule has no effect since a different rule grants greater rights. : = Rule is active.	Role	User/Group name	Flags Component	E	Admin	User C:\icl-unisp-vm01.namde*	N/A	.		User H:\namgdse14\ql68074	N/A	.		User ql68074	N/A	.		User root	N/A	.		User smc	N/A	.		User C:\icl-unisp-vm01.namde*	N/A	.		Group per_csbe_univmax_auth*	N/A	.		Group StorageEng	N/A	.	StorageAdmin	User H:\namgdse14\dn65671	N/A	.		User sp65064	N/A	.	Auditor	User H:\i10-srm-vm10\apg	N/A	.		User C:\icl-unisp-vm01.namde*	N/A	.		User civatest	N/A	.		User hpnao	N/A	.		User C:\icl-unisp-vm01.namde*	N/A	.		User srm_readonly	N/A	.		User storevntd	N/A	.	PerfMonitor	User D:\NAMDEV\civa_readonly	N/A	.	Monitor	User D:\NAMDEV\civa_readonly	N/A	N		User srm_readonly	N/A	N
Role	User/Group name	Flags Component	E																																																																																				
Admin	User C:\icl-unisp-vm01.namde*	N/A	.																																																																																				
	User H:\namgdse14\ql68074	N/A	.																																																																																				
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	User C:\icl-unisp-vm01.namde*	N/A	.																																																																																				
	Group per_csbe_univmax_auth*	N/A	.																																																																																				
	Group StorageEng	N/A	.																																																																																				
StorageAdmin	User H:\namgdse14\dn65671	N/A	.																																																																																				
	User sp65064	N/A	.																																																																																				
Auditor	User H:\i10-srm-vm10\apg	N/A	.																																																																																				
	User C:\icl-unisp-vm01.namde*	N/A	.																																																																																				
	User civatest	N/A	.																																																																																				
	User hpnao	N/A	.																																																																																				
	User C:\icl-unisp-vm01.namde*	N/A	.																																																																																				
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	User srm_readonly	N/A	N																																																																																				
Enable symauth	SE 8.1.0.0 5977.691.684	Pass	\$ symauth -sid 973 enable Perform an Authorization change on Symmetrix unit 000196700973 (y/[n]) ? y																																																																																				
Change enforcement policy	SE 8.1.0.0 5977.691.684	Pass	\$ symauth -sid 973 set enforcement advise Perform an Authorization change on Symmetrix unit 000196700973 (y/[n]) ? y \$ symauth -sid 973 set enforcement enforce Perform an Authorization change on Symmetrix unit 000196700973 (y/[n]) ? y																																																																																				
Obtain symacl uniqueID	SE 8.1.0.0 5977.691.684	Pass	\$ symacl -unique The unique id for this host is: 7AAD0542-5C390DC8-1FED5065																																																																																				
Add symacl entry for a host	SE 8.1.0.0 5977.691.684	Pass	\$ symacl -sid 973 commit -f addhost.cmd -v Enter Access PIN: Contents of command file: addhost.cmd <pre> add host accid C3148EBB-03988699-40CFB811 name gdsese01 to accgroup AdminGrp; #add default accid name UNKNOWN to accgroup UnknwGrp; Command file: (addhost.cmd) PREVIEW.....Started. PREVIEW.....Done. PREPARE.....Started. Adding Host access id gdsese01 to group AdminGrp.....Done. </pre>																																																																																				

			PREPARE.....Done. Starting COMMIT.....Done.
Remove symacl entry for a host	SE 8.1.0.0 5977.691.684	Pass	\$ symacl -sid 973 commit -f remove_host.cmd -v Enter Access PIN: Contents of command file: remove_host.cmd remove accid name gdsese01 from accgroup AdminGrp; Command file: (remove_host.cmd) PREVIEW.....Started. PREVIEW.....Done. PREPARE.....Started. Removing accid gdsese01 from group AdminGrp.....Done. PREPARE.....Done. Starting COMMIT.....Done.
Add accgroup	SE 8.1.0.0 5977.691.684	Pass	\$ symacl -sid 973 commit -f add_accgroup.cmd -v Enter Access PIN: Contents of command file: add_accgroup.cmd create accgroup ECC_MMCS; Command file: (add_accgroup.cmd) PREVIEW.....Started. PREVIEW.....Done. PREPARE.....Started. Creating group ECC_MMCS.....Done. PREPARE.....Done. Starting COMMIT.....Done.
Performance Monitoring			
Display real-time performance statistics	SE 8.1 5977.691.684	Partial Pass	Unisphere is only displaying real-time performance stats on one of two VMAX 200Ks being managed. Historical statistics are being captured on all test arrays. EMC recommended to exclude the install_dir\SYMAPI\stp\spa and install_dir\SMAS\jboss\standalone\data\pgsql\data directories from the virus scan and restart the Unisphere and storstopd daemon. This resolved the issue and Unisphere was able to collect real-time performance stats on the array.
Display historical performance statistics	SE 8.1 5977.691.684	Pass	
Set performance thresholds	SE 8.1 5977.691.684	Pass	The units for the allocated capacity threshold alerts are in GBs, not percentage.
SEMS Audit Log Reconciliation			
Capture evidence to show discovery and event management of Device Under Test by SEMs/ArcSight	SE 8.1 5977.691.684	Partial Pass	Symaudit log entries have a 32 char limit for username and 11 char limit for client hostname. Any entries beyond that will result in a truncated username or client hostname.
Tivoli Alerting			

Capture evidence to show discovery and event management of Device Under Test by Tivoli	SE 8.1 5977.691.684	Pass	No change in SE logging of alerts.
ViPR SRM Reporting			
Verify that ViPR SRM is receiving data for chargeback	SE 8.1 5977.691.684	Pass	SRM collecting data on the arrays.
HPNA Testing			
Capture evidence to show discovery and event management of Device Under Test by Hewlett Packard Network Automation Configuration and Device inventory Tool	SE 8.1 5977.691.684	Pass	HPNA discovered the VMAX3s successfully. The HPNA checks resulted with no fails.
MMCS Anti-Virus			
Verify that the MMCSs can connect to Citi's ePO infrastructure to obtain anti-virus software updates and policies.	SE 8.1 5977.691.684	Pass	ePO agent on the MMCSs still communicating with the ePO server successfully after the upgrade of the Hypermax code.
ESRS			
Verify that the array can call home and the vendor can access the array via ESRS	SE 8.1 5977.691.684	Pass	
Basic 2-Site SRDF/A testing			
List RAs between systems	SE 8.1 5977.691.684	Pass	<pre>\$ symcfg -sid 973 list -ra all Symmetrix ID: 000196700973 (Local) SYMMETRIX RDF DIRECTORS Remote Local Remote Status Ident Port SymmID RA Grp RA Grp Dir Port ----- RF-1E 8 000196700974 1 (00) 1 (00) Online Online 8 000196700974 2 (01) 2 (01) Online Online 8 000196700974 3 (02) 3 (02) Online Online 8 000196700974 99 (62) 99 (62) Online Online 8 000196700974 199 (C6) 199 (C6) Online Online 8 000196700974 220 (DB) 220 (DB) Online Online 8 000196700974 221 (DC) 221 (DC) Online Online 8 000196700974 222 (DD) 222 (DD) Online Online 8 000196700974 223 (DE) 223 (DE) Online Online 8 000196700974 224 (DF) 224 (DF) Online Online 8 000196700974 225 (E0) 225 (E0) Online Online 8 000196700974 226 (E1) 226 (E1) Online Online 8 000196700974 227 (E2) 227 (E2) Online Online 8 000196700974 228 (E3) 228 (E3) Online Online 8 000196700974 229 (E4) 229 (E4) Online Online RF-2E 8 000196700974 1 (00) 1 (00) Online Online 8 000196700974 2 (01) 2 (01) Online Online 8 000196700974 3 (02) 3 (02) Online Online 8 000196700974 220 (DB) 220 (DB) Online Online 8 000196700974 221 (DC) 221 (DC) Online Online 8 000196700974 222 (DD) 222 (DD) Online Online 8 000196700974 223 (DE) 223 (DE) Online Online 8 000196700974 224 (DF) 224 (DF) Online Online 8 000196700974 225 (E0) 225 (E0) Online Online</pre>

			8 000196700974 226 (E1) 226 (E1) Online Online 8 000196700974 227 (E2) 227 (E2) Online Online 8 000196700974 228 (E3) 228 (E3) Online Online 8 000196700974 229 (E4) 229 (E4) Online Online RF-3E 8 000196700974 1 (00) 1 (00) Online Online 8 000196700974 2 (01) 2 (01) Online Online 8 000196700974 3 (02) 3 (02) Online Online 8 000196700974 220 (DB) 220 (DB) Online Online 8 000196700974 221 (DC) 221 (DC) Online Online 8 000196700974 222 (DD) 222 (DD) Online Online 8 000196700974 223 (DE) 223 (DE) Online Online 8 000196700974 224 (DF) 224 (DF) Online Online 8 000196700974 225 (E0) 225 (E0) Online Online 8 000196700974 226 (E1) 226 (E1) Online Online 8 000196700974 227 (E2) 227 (E2) Online Online 8 000196700974 228 (E3) 228 (E3) Online Online 8 000196700974 229 (E4) 229 (E4) Online Online RF-4E 8 000196700974 1 (00) 1 (00) Online Online 8 000196700974 2 (01) 2 (01) Online Online 8 000196700974 3 (02) 3 (02) Online Online 8 000196700974 220 (DB) 220 (DB) Online Online 8 000196700974 221 (DC) 221 (DC) Online Online 8 000196700974 222 (DD) 222 (DD) Online Online 8 000196700974 223 (DE) 223 (DE) Online Online 8 000196700974 224 (DF) 224 (DF) Online Online 8 000196700974 225 (E0) 225 (E0) Online Online 8 000196700974 226 (E1) 226 (E1) Online Online 8 000196700974 227 (E2) 227 (E2) Online Online 8 000196700974 228 (E3) 228 (E3) Online Online 8 000196700974 229 (E4) 229 (E4) Online Online																																																																																																																														
Associate a port to the SRDF emulation	SE 8.1 5977.691.684	Pass	Identify the director IDs for the SRDF emulation: # symcfg -sid 973 list -dir ALL Symmetrix ID: 000196700973 (Local) SYMMETRIX DIRECTORS <table><thead><tr><th>Ident</th><th>Type</th><th>Engine</th><th>Cores</th><th>Ports</th><th>Status</th></tr></thead><tbody><tr><td>IM-1A</td><td>IM</td><td>1</td><td>4</td><td>0</td><td>Online</td></tr><tr><td>IM-2A</td><td>IM</td><td>1</td><td>4</td><td>0</td><td>Online</td></tr><tr><td>IM-3A</td><td>IM</td><td>2</td><td>4</td><td>0</td><td>Online</td></tr><tr><td>IM-4A</td><td>IM</td><td>2</td><td>4</td><td>0</td><td>Online</td></tr><tr><td>ED-1B</td><td>EDS</td><td>1</td><td>8</td><td>0</td><td>Online</td></tr><tr><td>ED-2B</td><td>EDS</td><td>1</td><td>9</td><td>0</td><td>Online</td></tr><tr><td>ED-3B</td><td>EDS</td><td>2</td><td>9</td><td>0</td><td>Online</td></tr><tr><td>ED-4B</td><td>EDS</td><td>2</td><td>8</td><td>0</td><td>Online</td></tr><tr><td>DF-1C</td><td>DISK</td><td>1</td><td>8</td><td>4</td><td>Online</td></tr><tr><td>DF-2C</td><td>DISK</td><td>1</td><td>9</td><td>4</td><td>Online</td></tr><tr><td>DF-3C</td><td>DISK</td><td>2</td><td>9</td><td>4</td><td>Online</td></tr><tr><td>DF-4C</td><td>DISK</td><td>2</td><td>8</td><td>4</td><td>Online</td></tr><tr><td>FA-1D</td><td>FibreChannel</td><td>1</td><td>8</td><td>16</td><td>Online</td></tr><tr><td>FA-2D</td><td>FibreChannel</td><td>1</td><td>6</td><td>15</td><td>Online</td></tr><tr><td>FA-3D</td><td>FibreChannel</td><td>2</td><td>6</td><td>15</td><td>Online</td></tr><tr><td>FA-4D</td><td>FibreChannel</td><td>2</td><td>8</td><td>16</td><td>Online</td></tr><tr><td>RF-1E</td><td>RDF-BI-DIR</td><td>1</td><td>4</td><td>1</td><td>Online</td></tr><tr><td>RF-2E</td><td>RDF-BI-DIR</td><td>1</td><td>4</td><td>1</td><td>Online</td></tr><tr><td>RF-3E</td><td>RDF-BI-DIR</td><td>2</td><td>4</td><td>1</td><td>Online</td></tr><tr><td>RF-4E</td><td>RDF-BI-DIR</td><td>2</td><td>4</td><td>1</td><td>Online</td></tr></tbody></table> List ports available to associate: \$ symcfg -sid 973 list -port -free Symmetrix ID: 000196700973 Flags Speed	Ident	Type	Engine	Cores	Ports	Status	IM-1A	IM	1	4	0	Online	IM-2A	IM	1	4	0	Online	IM-3A	IM	2	4	0	Online	IM-4A	IM	2	4	0	Online	ED-1B	EDS	1	8	0	Online	ED-2B	EDS	1	9	0	Online	ED-3B	EDS	2	9	0	Online	ED-4B	EDS	2	8	0	Online	DF-1C	DISK	1	8	4	Online	DF-2C	DISK	1	9	4	Online	DF-3C	DISK	2	9	4	Online	DF-4C	DISK	2	8	4	Online	FA-1D	FibreChannel	1	8	16	Online	FA-2D	FibreChannel	1	6	15	Online	FA-3D	FibreChannel	2	6	15	Online	FA-4D	FibreChannel	2	8	16	Online	RF-1E	RDF-BI-DIR	1	4	1	Online	RF-2E	RDF-BI-DIR	1	4	1	Online	RF-3E	RDF-BI-DIR	2	4	1	Online	RF-4E	RDF-BI-DIR	2	4	1	Online
Ident	Type	Engine	Cores	Ports	Status																																																																																																																												
IM-1A	IM	1	4	0	Online																																																																																																																												
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ED-1B	EDS	1	8	0	Online																																																																																																																												
ED-2B	EDS	1	9	0	Online																																																																																																																												
ED-3B	EDS	2	9	0	Online																																																																																																																												
ED-4B	EDS	2	8	0	Online																																																																																																																												
DF-1C	DISK	1	8	4	Online																																																																																																																												
DF-2C	DISK	1	9	4	Online																																																																																																																												
DF-3C	DISK	2	9	4	Online																																																																																																																												
DF-4C	DISK	2	8	4	Online																																																																																																																												
FA-1D	FibreChannel	1	8	16	Online																																																																																																																												
FA-2D	FibreChannel	1	6	15	Online																																																																																																																												
FA-3D	FibreChannel	2	6	15	Online																																																																																																																												
FA-4D	FibreChannel	2	8	16	Online																																																																																																																												
RF-1E	RDF-BI-DIR	1	4	1	Online																																																																																																																												
RF-2E	RDF-BI-DIR	1	4	1	Online																																																																																																																												
RF-3E	RDF-BI-DIR	2	4	1	Online																																																																																																																												
RF-4E	RDF-BI-DIR	2	4	1	Online																																																																																																																												

			Slot Port FCISDRE Gb/sec Status ----- 4 9 Y...YY. 8 Powered Legend: Flags: (F)A : Y = Yes, . = No F(C)OE : Y = Yes, . = No F(I)CON : Y = Yes, . = No (S)E : Y = Yes, . = No (D)X : Y = Yes, . = No (R)F : Y = Yes, . = No R(E) : Y = Yes, . = No Associate the port to the SRDF director emulation: \$ symconfigure -sid 973 commit -f associate_port.cmd -v Execute a symconfigure operation for symmetrix '000196700973' (y/[n]) ? y A Configuration Change operation is in progress. Please wait... Establishing a configuration change session.....Established. Processing symmetrix 000196700973 { associate port 9 to dir 4E; } Performing Access checks.....Allowed. Checking Device Reservations.....Allowed. Committing configuration changes.....Started. Committing configuration changes.....Committed. Terminating the configuration change session.....Done. The configuration change session has successfully completed. Confirm the port is associated with the SRDF director emulation: \$ symcfg -sid 973 list -dir 4e -port Symmetrix ID: 000196700973 (Local) SYMMETRIX DIRECTOR PORTS Ident Port WWN Speed Type Gb/sec Status ----- RF-4E 8 50000973500F34C8 RDF-BI-DIR 8 Online RF-4E 9 50000973500F34C9 RDF-BI-DIR 8 Offline
Create RDF groups	SE 8.1 5977.691.684	Pass	\$ symrdf -sid 973 addgrp -label DYN4 -rdfg 4 -dir 1e:8,2e:8,3e:8,4e:8 -remote_rdfg 4 -remote_dir 1e:8,2e:8,3e:8,4e:8 -remote_sid 000196700974 -nop Successfully Added Dynamic RDF Group 'DYN4' for Symm: 000196700973 Note: Must use 12 digit SID for remote array in the command \$ symcfg -sid 973 list -rdfg all Symmetrix ID : 000196700973 SYMMETRIX RDF GROUPS Local Remote Group RDFA Info ----- LL Flags Dir Flags Cycle RA-Grp sec RA-Grp SymmID ST Name LPDS CHTM Cfg CSRM time Pri

			<pre> 1 (0) 10 1 (0) 000196700974 OD DYN1 XX.. ..X. F-S .IS- 15 33 2 (1) 10 2 (1) 000196700974 OD DYN2 XX.. ..X. F-S .IS- 15 33 3 (2) 10 3 (2) 000196700974 OD DYN3 XX.. ..X. F-S .IS- 15 33 4 (3) 10 4 (3) 000196700974 OD DYN4 XX.. ..X. F-S .IS- 15 33 99 (62) 60 99 (62) 000196700974 OD A_GRP99 ..X.. ..X. F-S .IS- 15 33 199 (C6) 60 199 (C6) 000196700974 OD A_GRP199 ..X.. ..X. F-S .IS- 15 33 220 (DB) 10 220 (DB) 000196700974 OD DYN220 XX.. ..X. F-S .IS- 15 33 221 (DC) 10 221 (DC) 000196700974 OD DYN221 XX.. ..X. F-S .IS- 15 33 222 (DD) 10 222 (DD) 000196700974 OD DYN222 XX.. ..X. F-S .IS- 15 33 223 (DE) 10 223 (DE) 000196700974 OD DYN223 XX.. ..X. F-S .IS- 15 33 224 (DF) 10 224 (DF) 000196700974 OD DYN224 XX.. ..X. F-S .IS- 15 33 225 (E0) 10 225 (E0) 000196700974 OD DYN225 XX.. ..X. F-S .IS- 15 33 226 (E1) 10 226 (E1) 000196700974 OD DYN226 XX.. ..X. F-S .IS- 15 33 227 (E2) 10 227 (E2) 000196700974 OD DYN227 XX.. ..X. F-S .IS- 15 33 228 (E3) 10 228 (E3) 000196700974 OD DYN228 XX.. ..X. F-S .IS- 15 33 229 (E4) 10 229 (E4) 000196700974 OD DYN229 XX.. ..X. F-S .IS- 15 33 </pre> Legend: Group (S)tatus : O = Online, F = Offline Group (T)ype : S = Static, D = Dynamic, W = Witness Director (C)onfig : F-S = Fibre-Switched, F-H = Fibre-Hub G = GIGE, E = ESCON, T = T3, - = N/A Group Flags : Prevent Auto (L)ink Recovery : X = Enabled, . = Disabled Prevent RAs Online Upon (P)ower On: X = Enabled, . = Disabled Link (D)omino : X = Enabled, . = Disabled (S)TAR/SQAR mode : N = Normal, R = Recovery, . = OFF S = SQAR Normal, Q = SQAR Recovery RDF Software (C)ompression : X = Enabled, . = Disabled, - = N/A RDF (H)ardware Compression : X = Enabled, . = Disabled, - = N/A RDF Single Round (T)rip : X = Enabled, . = Disabled, - = N/A RDF (M)etro : X = Configured, . = Not Configured RDFA Flags : (C)onsistency : X = Enabled, . = Disabled, - = N/A (S)tatus : A = Active, I = Inactive, - = N/A (R)DFA Mode : S = Single-session, M = MSC, - = N/A (M)sc Cleanup : C = MSC Cleanup required, - = N/A
Create SRDF Storage Groups	SE 8.1 5977.691.684	Pass	\$ symmsg -sid 973 create qtest3-rdf1_sg
Create and add devices to the SRDF Storage Groups	SE 8.1 5977.691.684	Pass	<pre> \$ symconfigure -sid 973 commit -f create_rdf_devs.cmd -v Execute a symconfigure operation for symmetrix '000196700973' (y/[n]) ? y A Configuration Change operation is in progress. Please wait... Establishing a configuration change session.....Established. Processing symmetrix 000196700973 { create dev count=4, size=18569 cyl, emulation=FBA, config=RDF1+TDEV, mvs_ssid=0, remote_config=RDF2+TDEV, ra_group=4, remote_mvs_ssid=0, sg=qtest3-rdf1_sg, remote_sg=qtest3-rdf2_sg; } Performing Access checks.....Allowed. Checking Device Reservations.....Allowed. Establishing session with Remote cfg svr (000196700974)..Established. Initiating COMMIT of Remote configuration changes.....Queued. Remote COMMIT requesting required resources.....Obtained. Initiating COMMIT of Local configuration changes.....Started. Committing configuration changes.....Queued. Local COMMIT requesting required resources.....Obtained. Step 002 of 011 steps.....Executing. Remote: COMMIT.....Done. Local: COMMIT.....Done. Adding devices to Storage Group.....Done. Defining RDF device conversions.....Done. </pre>

			Validating Local configuration changes.....Validated. Validating Remote configuration changes.....Validated. Preparing configuration changes.....Prepared. Preparing configuration changes.....Prepared. Local PREPARE requesting required resources.....Obtained. Committing configuration changes.....Committed. Remote COMMIT requesting required resources.....Obtained. Committing configuration changes.....Queued. Create RDF Pair in (0973,004).....Started. Create RDF Pair in (0973,004).....Done. Mark target device(s) in (0973,004) for full copy from source....Started. Devices: 016C-016F in (0973,004).....Marked. Mark target device(s) in (0973,004) for full copy from source....Done. Merge track tables between source and target in (0973,004).Started. Devices: 016C-016F in (0973,004).....Merged. Merge track tables between source and target in (0973,004).Done. Resume RDF link(s) for device(s) in (0973,004).....Started. Resume RDF link(s) for device(s) in (0973,004).....Done. Committing configuration changes.....Committed. Local COMMIT requesting required resources.....Obtained. Local: COMMIT.....Done. Remote: PREPARE.....Done. New symdevs: 0016C:0016F [TDEVs] New remote symdevs: 000E1:000E4 [TDEVs] Terminating the configuration change session..... Closing Remote configuration change request.....Closed. Done. The configuration change session has successfully completed.
View SRDF storage group details	SE 8.1 5977.691.684	Pass	\$ symmsg -sid 973 show qtest3-rdf1_sg Name: qtest3-rdf1_sg Symmetrix ID : 000196700973 Last updated at : Mon Nov 09 11:22:12 2015 Masking Views : No FAST Managed : No SLO Name : <none> Workload : <none> SRP Name : <none> Host I/O Limit : None Host I/O Limit MB/Sec : N/A Host I/O Limit IO/Sec : N/A Dynamic Distribution : N/A Number of Storage Groups : 0 Storage Group Names : N/A Number of Gatekeepers : 0 Devices (4): { ----- Sym Device Cap Dev Pdev Name Config Attr Sts (MB) ----- 0016C N/A RDF1+TDEV RW 34817 0016D N/A RDF1+TDEV RW 34817 0016E N/A RDF1+TDEV RW 34817 0016F N/A RDF1+TDEV RW 34817 }
View SRDF state of SRDF storage group	SE 8.1 5977.691.684	Pass	\$ symrdf -sid 973 -rdfg 4 -sg qtest3-rdf1_sg query Storage Group (SG) Name : qtest3-rdf1_sg Symmetrix ID : 000196700973 (Microcode Version: 5977) Remote Symmetrix ID : 000196700974 (Microcode Version: 5977) RDF (RA) Group Number : 4 (03)

			Source (R1) View Target (R2) View MODE ST LI ST Standard A N A Logical Sym T R1 Inv R2 Inv K Sym T R1 Inv R2 Inv RDF Pair Device Dev E Tracks Tracks S Dev E Tracks Tracks MACE STATE N/A 0016C RW 0 0 RW 000E1 WD 0 0 CD.. Synchronized N/A 0016D RW 0 0 RW 000E2 WD 0 0 CD.. Synchronized N/A 0016E RW 0 0 RW 000E3 WD 0 0 CD.. Synchronized N/A 0016F RW 0 0 RW 000E4 WD 0 0 CD.. Synchronized Total ----- ----- Track(s) 0 0 0 0 MB(s) 0.0 0.0 0.0 0.0 Legend for MODE: M(ode of Operation) : A = Async, S = Sync, E = Semi-sync, C = Adaptive Copy : M = Mixed, T = Active A(daptive Copy) : D = Disk Mode, W = WP Mode, . = ACp off C(onsistency State) : X = Enabled, . = Disabled, M = Mixed, - = N/A (Consistency) E(xempt): X = Enabled, . = Disabled, M = Mixed, - = N/A
Change SRDF mode for the SRDF device group to asynchronous mode	SE 8.1 5977.691.684	Pass	\$ symrdf -sid 973 -sg qtest3-rdf1_sg -rdfig 4 set mode async Execute an RDF Set 'Asynchronous Mode' operation for storage group 'qtest3-rdf1_sg' (y/[n]) ? y An RDF Set 'Asynchronous Mode' operation execution is in progress for storage group 'qtest3-rdf1_sg'. Please wait... The RDF Set 'Asynchronous Mode' operation successfully executed for storage group 'qtest3-rdf1_sg'. \$ symrdf -sid 973 -rdfig 4 -sg qtest3-rdf1_sg query Storage Group (SG) Name : qtest3-rdf1_sg Symmetrix ID : 000196700973 (Microcode Version: 5977) Remote Symmetrix ID : 000196700974 (Microcode Version: 5977) RDF (RA) Group Number : 4 (03) Source (R1) View Target (R2) View MODE ST LI ST Standard A N A Logical Sym T R1 Inv R2 Inv K Sym T R1 Inv R2 Inv RDF Pair Device Dev E Tracks Tracks S Dev E Tracks Tracks MACE STATE N/A 0016C RW 0 0 RW 000E1 WD 0 0 A... Consistent N/A 0016D RW 0 0 RW 000E2 WD 0 0 A... Consistent N/A 0016E RW 0 0 RW 000E3 WD 0 0 A... Consistent N/A 0016F RW 0 0 RW 000E4 WD 0 0 A... Consistent Total ----- ----- Track(s) 0 0 0 0 MB(s) 0.0 0.0 0.0 0.0 Legend for MODE: M(ode of Operation) : A = Async, S = Sync, E = Semi-sync, C = Adaptive Copy : M = Mixed, T = Active A(daptive Copy) : D = Disk Mode, W = WP Mode, . = ACp off C(onsistency State) : X = Enabled, . = Disabled, M = Mixed, - = N/A (Consistency) E(xempt): X = Enabled, . = Disabled, M = Mixed, - = N/A

Establish the SRDF storage group	SE 8.1 5977.691.684	Pass	\$ symrdf -sid 973 -rdfg 4 -sg qtest3-rdf1_sg establish Execute an RDF 'Incremental Establish' operation for storage group 'qtest3-rdf1_sg' (y/[n]) ? y An RDF 'Incremental Establish' operation execution is in progress for storage group 'qtest3-rdf1_sg'. Please wait... Write Disable device(s) in (0973,004) on RA at target (R2).....Done. Suspend RDF link(s) for device(s) in (0973,004).....Done. Resume RDF link(s) for device(s) in (0973,004).....Started. Merge track tables between source and target in (0973,004).....Started. Devices: 016C-016F in (0973,004).....Merged. Merge track tables between source and target in (0973,004).....Done. Resume RDF link(s) for device(s) in (0973,004).....Done. The RDF 'Incremental Establish' operation successfully initiated for storage group 'qtest3-rdf1_sg'. \$ symrdf -sid 973 -rdfg 4 -sg qtest3-rdf1_sg query Storage Group (SG) Name : qtest3-rdf1_sg Symmetrix ID : 000196700973 (Microcode Version: 5977) Remote Symmetrix ID : 000196700974 (Microcode Version: 5977) RDF (RA) Group Number : 4 (03) <table><thead><tr><th colspan="4">Source (R1) View</th><th colspan="4">Target (R2) View</th><th colspan="2">MODE</th></tr><tr><th colspan="4">ST</th><th colspan="4">LI</th><th colspan="2"></th></tr><tr><th>Standard</th><th>A</th><th></th><th></th><th>N</th><th>A</th><th></th><th></th><th></th><th></th></tr><tr><th>Logical Sym</th><th>T</th><th>R1 Inv</th><th>R2 Inv</th><th>K Sym</th><th>T</th><th>R1 Inv</th><th>R2 Inv</th><th>RDF Pair</th><th></th></tr><tr><th>Device Dev</th><th>E</th><th>Tracks</th><th>Tracks</th><th>S Dev</th><th>E</th><th>Tracks</th><th>Tracks</th><th>MACE</th><th>STATE</th></tr></thead><tbody><tr><td>N/A</td><td>0016C</td><td>RW</td><td>0</td><td>0</td><td>RW</td><td>000E1</td><td>WD</td><td>0</td><td>0 A... Consistent</td></tr><tr><td>N/A</td><td>0016D</td><td>RW</td><td>0</td><td>0</td><td>RW</td><td>000E2</td><td>WD</td><td>0</td><td>0 A... Consistent</td></tr><tr><td>N/A</td><td>0016E</td><td>RW</td><td>0</td><td>0</td><td>RW</td><td>000E3</td><td>WD</td><td>0</td><td>0 A... Consistent</td></tr><tr><td>N/A</td><td>0016F</td><td>RW</td><td>0</td><td>0</td><td>RW</td><td>000E4</td><td>WD</td><td>0</td><td>0 A... Consistent</td></tr><tr><td>Total</td><td colspan="3">-----</td><td colspan="3">-----</td><td colspan="3"></td></tr><tr><td>Track(s)</td><td>0</td><td>0</td><td></td><td>0</td><td>0</td><td></td><td></td><td></td><td></td></tr><tr><td>MB(s)</td><td>0.0</td><td>0.0</td><td></td><td>0.0</td><td>0.0</td><td></td><td></td><td></td><td></td></tr></tbody></table> Legend for MODE: M(ode of Operation) : A = Async, S = Sync, E = Semi-sync, C = Adaptive Copy : M = Mixed, T = Active A(daptive Copy) : D = Disk Mode, W = WP Mode, . = ACp off C(onsistency State) : X = Enabled, . = Disabled, M = Mixed, - = N/A (Consistency) E(xempt): X = Enabled, . = Disabled, M = Mixed, - = N/A	Source (R1) View				Target (R2) View				MODE		ST				LI						Standard	A			N	A					Logical Sym	T	R1 Inv	R2 Inv	K Sym	T	R1 Inv	R2 Inv	RDF Pair		Device Dev	E	Tracks	Tracks	S Dev	E	Tracks	Tracks	MACE	STATE	N/A	0016C	RW	0	0	RW	000E1	WD	0	0 A... Consistent	N/A	0016D	RW	0	0	RW	000E2	WD	0	0 A... Consistent	N/A	0016E	RW	0	0	RW	000E3	WD	0	0 A... Consistent	N/A	0016F	RW	0	0	RW	000E4	WD	0	0 A... Consistent	Total	-----			-----						Track(s)	0	0		0	0					MB(s)	0.0	0.0		0.0	0.0				
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Set RDFA DSE max capacity	SE 8.1 5977.691.684	Pass	\$ symconfigure -sid 973 commit -f set_dse_max.cmd -v Execute a symconfigure operation for symmetrix '000196700973' (y/[n]) ? y A Configuration Change operation is in progress. Please wait... Establishing a configuration change session.....Established. Processing symmetrix 000196700973 { set symmetrix dse_max_cap=100; } Performing Access checks.....Allowed. Checking Device Reservations.....Allowed. Committing configuration changes.....Started.																																																																																																																								

			Committing configuration changes.....Committed. Terminating the configuration change session.....Done. The configuration change session has successfully completed. Note: VMAX3 will use the default SRP for the DSE capacity unless it is configured to use another SRP. \$ symcfg -sid 973 list -v grep "DSE" SRDF/A DSE Maximum Capacity (GB) : 100																																																																																																																																												
Confirm default SRDF/A Maximum Cache Usage (Percent) is 75%	SE 8.1 5977.691.684	Pass	\$ symcfg -sid 973 list -v grep "Maximum Cache Usage" SRDF/A Maximum Cache Usage (Percent) : 75																																																																																																																																												
Controlled suspend	SE 8.1 5977.691.684	Pass	\$ symrdf -sid 973 -rdfg 4 -sg qtest3-rdf1_sg suspend Execute an RDF 'Suspend' operation for storage group 'qtest3-rdf1_sg' (y/[n]) ? y An RDF 'Suspend' operation execution is in progress for storage group 'qtest3-rdf1_sg'. Please wait... Suspend RDF link(s) for device(s) in (0973,004).....Started. Suspend RDF link(s) for device(s) in (0973,004).....Done. The RDF 'Suspend' operation successfully executed for storage group 'qtest3-rdf1_sg'. \$ symrdf -sid 973 -rdfg 4 -sg qtest3-rdf1_sg query Storage Group (SG) Name : qtest3-rdf1_sg Symmetrix ID : 000196700973 (Microcode Version: 5977) Remote Symmetrix ID : 000196700974 (Microcode Version: 5977) RDF (RA) Group Number : 4 (03) <table><thead><tr><th colspan="4">Source (R1) View</th><th colspan="4">Target (R2) View</th><th colspan="2">MODE</th></tr><tr><th colspan="4">-----</th><th colspan="4">-----</th><th colspan="2"></th></tr><tr><th>ST</th><th>LI</th><th>ST</th><th></th><th>ST</th><th>LI</th><th>ST</th><th></th><th></th><th></th></tr><tr><th>Standard</th><th>A</th><th>N</th><th>A</th><th>Standard</th><th>A</th><th>N</th><th>A</th><th></th><th></th></tr><tr><th>Logical</th><th>Sym</th><th>T R1</th><th>Inv R2</th><th>Logical</th><th>Sym</th><th>T R1</th><th>Inv R2</th><th>RDF Pair</th><th></th></tr><tr><th>Device</th><th>Dev</th><th>E Tracks</th><th>Tracks</th><th>Device</th><th>Dev</th><th>E Tracks</th><th>Tracks</th><th>MACE STATE</th><th></th></tr><tr><th colspan="10">-----</th></tr></thead><tbody><tr><td>N/A</td><td>0016C</td><td>RW</td><td>0</td><td>0</td><td>NR</td><td>000E1</td><td>WD</td><td>0</td><td>0 A... Suspended</td></tr><tr><td>N/A</td><td>0016D</td><td>RW</td><td>0</td><td>0</td><td>NR</td><td>000E2</td><td>WD</td><td>0</td><td>0 A... Suspended</td></tr><tr><td>N/A</td><td>0016E</td><td>RW</td><td>0</td><td>0</td><td>NR</td><td>000E3</td><td>WD</td><td>0</td><td>0 A... Suspended</td></tr><tr><td>N/A</td><td>0016F</td><td>RW</td><td>0</td><td>0</td><td>NR</td><td>000E4</td><td>WD</td><td>0</td><td>0 A... Suspended</td></tr><tr><td>Total</td><td colspan="3">-----</td><td colspan="3">-----</td><td colspan="3"></td></tr><tr><td>Track(s)</td><td>0</td><td>0</td><td></td><td>0</td><td>0</td><td></td><td></td><td></td><td></td></tr><tr><td>MB(s)</td><td>0.0</td><td>0.0</td><td></td><td>0.0</td><td>0.0</td><td></td><td></td><td></td><td></td></tr></tbody></table> Legend for MODE: M(ode of Operation) : A = Async, S = Sync, E = Semi-sync, C = Adaptive Copy : M = Mixed, T = Active A(daptive Copy) : D = Disk Mode, W = WP Mode, . = ACp off C(onsistency State) : X = Enabled, . = Disabled, M = Mixed, - = N/A (Consistency) E(xempt): X = Enabled, . = Disabled, M = Mixed, - = N/A	Source (R1) View				Target (R2) View				MODE		-----				-----						ST	LI	ST		ST	LI	ST				Standard	A	N	A	Standard	A	N	A			Logical	Sym	T R1	Inv R2	Logical	Sym	T R1	Inv R2	RDF Pair		Device	Dev	E Tracks	Tracks	Device	Dev	E Tracks	Tracks	MACE STATE		-----										N/A	0016C	RW	0	0	NR	000E1	WD	0	0 A... Suspended	N/A	0016D	RW	0	0	NR	000E2	WD	0	0 A... Suspended	N/A	0016E	RW	0	0	NR	000E3	WD	0	0 A... Suspended	N/A	0016F	RW	0	0	NR	000E4	WD	0	0 A... Suspended	Total	-----			-----						Track(s)	0	0		0	0					MB(s)	0.0	0.0		0.0	0.0				
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Resume an SRDF group	SE 8.1 5977.691.684	Pass	\$ symrdf -sid 973 -rdfg 4 -sg qtest3-rdf1_sg resume Execute an RDF 'Resume' operation for storage group 'qtest3-rdf1_sg' (y/[n]) ? y																																																																																																																																												

			An RDF 'Resume' operation execution is in progress for storage group 'qtest3-rdf1_sg'. Please wait... Resume RDF link(s) for device(s) in (0973,004).....Started. Resume RDF link(s) for device(s) in (0973,004).....Done. The RDF 'Resume' operation successfully executed for storage group 'qtest3-rdf1_sg'. \$ symrdf -sid 973 -rdfg 4 -sg qtest3-rdf1_sg query Storage Group (SG) Name : qtest3-rdf1_sg Symmetrix ID : 000196700973 (Microcode Version: 5977) Remote Symmetrix ID : 000196700974 (Microcode Version: 5977) RDF (RA) Group Number : 4 (03) <table><thead><tr><th colspan="4">Source (R1) View</th><th colspan="4">Target (R2) View</th><th colspan="2">MODE</th></tr><tr><th colspan="2">ST</th><th colspan="2">LI</th><th colspan="2">ST</th><th colspan="2"></th><th colspan="2"></th></tr><tr><th>Standard</th><th>A</th><th></th><th></th><th>N</th><th>A</th><th></th><th></th><th></th><th></th></tr><tr><th>Logical</th><th>Sym</th><th>T R1 Inv</th><th>R2 Inv</th><th>K Sym</th><th>T R1 Inv</th><th>R2 Inv</th><th></th><th>RDF Pair</th><th></th></tr><tr><th>Device</th><th>Dev</th><th>E Tracks</th><th>Tracks</th><th>S Dev</th><th>E Tracks</th><th>Tracks</th><th></th><th>MACE STATE</th><th></th></tr></thead><tbody><tr><td>N/A</td><td>0016C</td><td>RW</td><td>0</td><td>0</td><td>RW</td><td>000E1</td><td>WD</td><td>0</td><td>0 A... Consistent</td></tr><tr><td>N/A</td><td>0016D</td><td>RW</td><td>0</td><td>0</td><td>RW</td><td>000E2</td><td>WD</td><td>0</td><td>0 A... Consistent</td></tr><tr><td>N/A</td><td>0016E</td><td>RW</td><td>0</td><td>0</td><td>RW</td><td>000E3</td><td>WD</td><td>0</td><td>0 A... Consistent</td></tr><tr><td>N/A</td><td>0016F</td><td>RW</td><td>0</td><td>0</td><td>RW</td><td>000E4</td><td>WD</td><td>0</td><td>0 A... Consistent</td></tr><tr><td>Total</td><td colspan="2">-----</td><td></td><td colspan="2">-----</td><td colspan="4"></td></tr><tr><td>Track(s)</td><td>0</td><td>0</td><td></td><td>0</td><td>0</td><td colspan="4"></td></tr><tr><td>MB(s)</td><td>0.0</td><td>0.0</td><td></td><td>0.0</td><td>0.0</td><td colspan="4"></td></tr></tbody></table> Legend for MODE: M(ode of Operation) : A = Async, S = Sync, E = Semi-sync, C = Adaptive Copy : M = Mixed, T = Active A(daptive Copy) : D = Disk Mode, W = WP Mode, . = ACp off C(onsistency State) : X = Enabled, . = Disabled, M = Mixed, - = N/A (Consistency) E(xempt): X = Enabled, . = Disabled, M = Mixed, - = N/A	Source (R1) View				Target (R2) View				MODE		ST		LI		ST						Standard	A			N	A					Logical	Sym	T R1 Inv	R2 Inv	K Sym	T R1 Inv	R2 Inv		RDF Pair		Device	Dev	E Tracks	Tracks	S Dev	E Tracks	Tracks		MACE STATE		N/A	0016C	RW	0	0	RW	000E1	WD	0	0 A... Consistent	N/A	0016D	RW	0	0	RW	000E2	WD	0	0 A... Consistent	N/A	0016E	RW	0	0	RW	000E3	WD	0	0 A... Consistent	N/A	0016F	RW	0	0	RW	000E4	WD	0	0 A... Consistent	Total	-----			-----						Track(s)	0	0		0	0					MB(s)	0.0	0.0		0.0	0.0				
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Failover test	SE 8.1 5977.691.684	Pass	Run from DR site (gdsese01) \$ symrdf -sid 974 -sg qtest3-rdf2_sg -rdfg 4 failover Execute an RDF 'Failover' operation for storage group 'qtest3-rdf2_sg' (y/[n]) ? y An RDF 'Failover' operation execution is in progress for storage group 'qtest3-rdf2_sg'. Please wait... Suspend RDF link(s) for device(s) in (0974,004).....Started. Suspend RDF link(s) for device(s) in (0974,004).....Done. Suspend RDF link(s) for device(s) in (0974,004).....Started. Suspend RDF link(s) for device(s) in (0974,004).....Done. Read/Write Enable device(s) in (0974,004) on RA at target (R2)...Done. Suspend RDF link(s) for device(s) in (0974,004).....Started. Suspend RDF link(s) for device(s) in (0974,004).....Done. The RDF 'Failover' operation successfully executed for storage group 'qtest3-rdf2_sg'. \$ symrdf -sid 974 -sg qtest3-rdf2_sg -rdfg 4 query Storage Group (SG) Name : qtest3-rdf2_sg																																																																																																																								

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Failback test	SE 8.1 5977.691.684	Pass	Run from Prod site (namgdse14) \$ symrdf -sid 973 -sg qtest3-rdf1_sg -rdfig 4 failback Execute an RDF 'Failback' operation for storage group 'qtest3-rdf1_sg' (y/[n]) ? y An RDF 'Failback' operation execution is in progress for storage group 'qtest3-rdf1_sg'. Please wait... Write Disable device(s) in (0973,004) on RA at target (R2).....Done. Suspend RDF link(s) for device(s) in (0973,004).....Done. Merge track tables between source and target in (0973,004).....Started. Devices: 016C-016F in (0973,004).....Merged. Merge track tables between source and target in (0973,004).....Done. Resume RDF link(s) for device(s) in (0973,004).....Started. Resume RDF link(s) for device(s) in (0973,004).....Done. The RDF 'Failback' operation successfully executed for storage group 'qtest3-rdf1_sg'. \$ symrdf -sid 973 -sg qtest3-rdf1_sg -rdfig 4 query Storage Group (SG) Name : qtest3-rdf1_sg Symmetrix ID : 000196700973 (Microcode Version: 5977) Remote Symmetrix ID : 000196700974 (Microcode Version: 5977) RDF (RA) Group Number : 4 (03) <table><tr><th colspan="4">Source (R1) View</th><th colspan="4">Target (R2) View</th><th>MODE</th></tr><tr><th colspan="4">-----</th><th colspan="4">-----</th><th></th></tr><tr><th colspan="2">ST</th><th colspan="2">LI</th><th colspan="2">ST</th><th colspan="2"></th><th></th></tr><tr><th>Standard</th><th>A</th><th></th><th></th><th>N</th><th>A</th><th colspan="2"></th><th></th></tr><tr><th>Logical Sym</th><th>T R1 Inv</th><th>R2 Inv</th><th>K Sym</th><th>T R1 Inv</th><th>R2 Inv</th><th colspan="2">RDF Pair</th><th></th></tr><tr><th>Device Dev</th><th>E Tracks</th><th>Tracks</th><th>S Dev</th><th>E Tracks</th><th>Tracks</th><th colspan="2">MACE STATE</th><th></th></tr><tr><th colspan="9">-----</th></tr><tr><td>N/A</td><td>0016C RW</td><td>0</td><td>0</td><td>RW 000E1 WD</td><td>0</td><td>0</td><td>A...</td><td>Consistent</td></tr></table>	Source (R1) View				Target (R2) View				MODE	-----				-----					ST		LI		ST					Standard	A			N	A				Logical Sym	T R1 Inv	R2 Inv	K Sym	T R1 Inv	R2 Inv	RDF Pair			Device Dev	E Tracks	Tracks	S Dev	E Tracks	Tracks	MACE STATE			-----									N/A	0016C RW	0	0	RW 000E1 WD	0	0	A...	Consistent																																																						
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SRDF swap operations (SRDF/A)	SE 8.1 5977.691.684	Pass	At DR site \$ symrdf -sid 974 -sg qtest3-rdf2_sg -rdfg 4 failover -nop An RDF 'Failover' operation execution is in progress for storage group 'qtest3-rdf2_sg'. Please wait... Suspend RDF link(s) for device(s) in (0974,004).....Started. Suspend RDF link(s) for device(s) in (0974,004).....Done. Suspend RDF link(s) for device(s) in (0974,004).....Started. Suspend RDF link(s) for device(s) in (0974,004).....Done. Read/Write Enable device(s) in (0974,004) on RA at target (R2)...Done. Suspend RDF link(s) for device(s) in (0974,004).....Started. Suspend RDF link(s) for device(s) in (0974,004).....Done. The RDF 'Failover' operation successfully executed for storage group 'qtest3-rdf2_sg'. \$ symrdf -sid 974 -sg qtest3-rdf2_sg -rdfg 4 swap -nop An RDF 'Swap Personality' operation execution is in progress for storage group 'qtest3-rdf2_sg'. Please wait... Suspend RDF link(s) for device(s) in (0974,004).....Started. Suspend RDF link(s) for device(s) in (0974,004).....Done. Swap RDF Personality in (0974,004).....Started. Swap RDF Personality in (0974,004).....Done. The RDF 'Swap Personality' operation successfully executed for storage group 'qtest3-rdf2_sg'. \$ symrdf -sid 974 -sg qtest3-rdf2_sg -rdfg 4 establish -nop An RDF 'Incremental Establish' operation execution is in progress for storage group 'qtest3-rdf2_sg'. Please wait...

			Suspend RDF link(s) for device(s) in (0974,004).....Done. Resume RDF link(s) for device(s) in (0974,004).....Started. Resume RDF link(s) for device(s) in (0974,004).....Done. The RDF 'Incremental Establish' operation successfully initiated for storage group 'qtest3-rdf2_sg'. \$ symrdf -sid 974 -sg qtest3-rdf2_sg -rdfg 4 enable -nop An RDF 'Enable' operation execution is in progress for storage group 'qtest3-rdf2_sg'. Please wait... The RDF 'Enable' operation successfully executed for storage group 'qtest3-rdf2_sg'. [ql68074@gdsese01 ~]\$ symrdf -sid 974 -sg qtest3-rdf2_sg -rdfg 4 query Storage Group (SG) Name : qtest3-rdf2_sg Symmetrix ID : 000196700974 (Microcode Version: 5977) Remote Symmetrix ID : 000196700973 (Microcode Version: 5977) RDF (RA) Group Number : 4 (03) <table><thead><tr><th colspan="8">Source (R1) View</th><th colspan="8">Target (R2) View</th></tr><tr><th colspan="16">MODE</th></tr><tr><th colspan="16">-----</th></tr><tr><th colspan="16">-----</th></tr><tr><th colspan="2"></th><th colspan="2">ST</th><th colspan="2"></th><th colspan="2">LI</th><th colspan="2"></th><th colspan="2">ST</th><th colspan="2"></th><th colspan="2"></th></tr><tr><th>Standard</th><th></th><th>A</th><th></th><th></th><th></th><th>N</th><th></th><th>A</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></tr><tr><th>Logical</th><th>Sym</th><th>T</th><th>R1</th><th>Inv</th><th>R2</th><th>Inv</th><th>K</th><th>Sym</th><th>T</th><th>R1</th><th>Inv</th><th>R2</th><th>Inv</th><th></th><th></th></tr><tr><th>RDF Pair</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></tr><tr><th>Device</th><th>Dev</th><th>E</th><th>Tracks</th><th></th><th>Tracks</th><th></th><th>S</th><th>Dev</th><th>E</th><th>Tracks</th><th></th><th>Tracks</th><th></th><th></th><th></th></tr><tr><th>MACE</th><th>STATE</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></tr><tr><th colspan="16">-----</th></tr><tr><th colspan="16">-----</th></tr></thead><tbody><tr><td>N/A</td><td>000E1</td><td>RW</td><td></td><td></td><td>0</td><td></td><td>0</td><td>RW</td><td>0016C</td><td>WD</td><td></td><td></td><td>0</td><td></td><td>0</td></tr><tr><td>A.X.</td><td>Consistent</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>N/A</td><td>000E2</td><td>RW</td><td></td><td></td><td>0</td><td></td><td>0</td><td>RW</td><td>0016D</td><td>WD</td><td></td><td></td><td>0</td><td></td><td>0</td></tr><tr><td>A.X.</td><td>Consistent</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>N/A</td><td>000E3</td><td>RW</td><td></td><td></td><td>0</td><td></td><td>0</td><td>RW</td><td>0016E</td><td>WD</td><td></td><td></td><td>0</td><td></td><td>0</td></tr><tr><td>A.X.</td><td>Consistent</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>N/A</td><td>000E4</td><td>RW</td><td></td><td></td><td>0</td><td></td><td>0</td><td>RW</td><td>0016F</td><td>WD</td><td></td><td></td><td>0</td><td></td><td>0</td></tr><tr><td>A.X.</td><td>Consistent</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Total</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Track(s)</td><td></td><td></td><td></td><td></td><td>0</td><td></td><td>0</td><td></td><td></td><td></td><td></td><td></td><td>0</td><td></td><td>0</td></tr><tr><td>MB(s)</td><td></td><td></td><td></td><td></td><td>0.0</td><td></td><td>0.0</td><td></td><td></td><td></td><td></td><td></td><td>0.0</td><td></td><td>0.0</td></tr></tbody></table> Legend for MODE: M(ode of Operation) : A = Async, S = Sync, E = Semi-sync, C = Adaptive Copy : M = Mixed, T = Active A(daptive Copy) : D = Disk Mode, W = WP Mode, . = ACp off C(onsistency State) : X = Enabled, . = Disabled, M = Mixed, - = N/A (Consistency) E(xempt): X = Enabled, . = Disabled, M = Mixed, - = N/A																Source (R1) View								Target (R2) View								MODE																-----																-----																		ST				LI				ST						Standard		A				N		A								Logical	Sym	T	R1	Inv	R2	Inv	K	Sym	T	R1	Inv	R2	Inv			RDF Pair																Device	Dev	E	Tracks		Tracks		S	Dev	E	Tracks		Tracks				MACE	STATE															-----																-----																N/A	000E1	RW			0		0	RW	0016C	WD			0		0	A.X.	Consistent															N/A	000E2	RW			0		0	RW	0016D	WD			0		0	A.X.	Consistent															N/A	000E3	RW			0		0	RW	0016E	WD			0		0	A.X.	Consistent															N/A	000E4	RW			0		0	RW	0016F	WD			0		0	A.X.	Consistent															Total																Track(s)					0		0						0		0	MB(s)					0.0		0.0						0.0		0.0
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Swap back to original direction	SE 8.1 5977.691.684	Pass	At prod site <pre>\$ symrdf -sid 973 -sg qtest3-rdfl_sg -rdfg 4 disable -nop</pre> An RDF 'Disable' operation execution is in progress for storage group 'qtest3-rdfl_sg'. Please wait... The RDF 'Disable' operation successfully executed for storage group 'qtest3-rdfl_sg'. <pre>\$ symrdf -sid 973 -sg qtest3-rdfl_sg -rdfg 4 failover -nop</pre> An RDF 'Failover' operation execution is in progress for storage group 'qtest3-rdfl_sg'. Please wait... <pre> Suspend RDF link(s) for device(s) in (0973,004).....Started. Suspend RDF link(s) for device(s) in (0973,004).....Done. Suspend RDF link(s) for device(s) in (0973,004).....Started. Suspend RDF link(s) for device(s) in (0973,004).....Done. Read/Write Enable device(s) in (0973,004) on RA at target (R2)...Done. Suspend RDF link(s) for device(s) in (0973,004).....Started. Suspend RDF link(s) for device(s) in (0973,004).....Done. </pre> The RDF 'Failover' operation successfully executed for storage group 'qtest3-rdfl_sg'. <pre>\$ symrdf -sid 973 -sg qtest3-rdfl_sg -rdfg 4 swap -nop</pre> An RDF 'Swap Personality' operation execution is in progress for storage group 'qtest3-rdfl_sg'. Please wait... <pre> Suspend RDF link(s) for device(s) in (0973,004).....Started. Suspend RDF link(s) for device(s) in (0973,004).....Done. Swap RDF Personality in (0973,004).....Started. Swap RDF Personality in (0973,004).....Done. </pre> The RDF 'Swap Personality' operation successfully executed for storage group 'qtest3-rdfl_sg'. <pre>\$ symrdf -sid 973 -sg qtest3-rdfl_sg -rdfg 4 establish -nop</pre> An RDF 'Incremental Establish' operation execution is in progress for storage group 'qtest3-rdfl_sg'. Please wait... <pre> Suspend RDF link(s) for device(s) in (0973,004).....Done. Resume RDF link(s) for device(s) in (0973,004).....Started. </pre>
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			Resume RDF link(s) for device(s) in (0973,004)Done. The RDF 'Incremental Establish' operation successfully initiated for storage group 'qtest3-rdf1_sg'. \$ symrdf -sid 973 -sg qtest3-rdf1_sg -rdfig 4 enable -nop An RDF 'Enable' operation execution is in progress for storage group 'qtest3-rdf1_sg'. Please wait... The RDF 'Enable' operation successfully executed for storage group 'qtest3-rdf1_sg'. \$ symrdf -sid 973 -sg qtest3-rdf1_sg -rdfig 4 query Storage Group (SG) Name : qtest3-rdf1_sg Symmetrix ID : 000196700973 (Microcode Version: 5977) Remote Symmetrix ID : 000196700974 (Microcode Version: 5977) RDF (RA) Group Number : 4 (03) <table><tr><th colspan="4">Source (R1) View</th><th colspan="4">Target (R2) View</th><th colspan="2">MODE</th></tr><tr><th colspan="2">ST</th><th colspan="2">LI</th><th colspan="2">ST</th><th colspan="2"></th><th colspan="2"></th></tr><tr><td>Standard</td><td>A</td><td></td><td>N</td><td>A</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Logical</td><td>Sym</td><td>T R1 Inv</td><td>R2 Inv</td><td>K Sym</td><td>T R1 Inv</td><td>R2 Inv</td><td></td><td>RDF Pair</td><td></td></tr><tr><td>Device</td><td>Dev</td><td>E Tracks</td><td>Tracks</td><td>S Dev</td><td>E Tracks</td><td>Tracks</td><td></td><td>MACE STATE</td><td></td></tr></table> N/A 0016C RW 0 0 RW 000E1 WD 0 0 A.X. Consistent N/A 0016D RW 0 0 RW 000E2 WD 0 0 A.X. Consistent N/A 0016E RW 0 0 RW 000E3 WD 0 0 A.X. Consistent N/A 0016F RW 0 0 RW 000E4 WD 0 0 A.X. Consistent Total Track(s) 0 0 0 0 MB(s) 0.0 0.0 0.0 0.0 Legend for MODE: M(ode of Operation) : A = Async, S = Sync, E = Semi-sync, C = Adaptive Copy : M = Mixed, T = Active A(daptive Copy) : D = Disk Mode, W = WP Mode, . = ACp off C(onsistency State) : X = Enabled, . = Disabled, M = Mixed, - = N/A (Consistency) E(xempt): X = Enabled, . = Disabled, M = Mixed, - = N/A	Source (R1) View				Target (R2) View				MODE		ST		LI		ST						Standard	A		N	A						Logical	Sym	T R1 Inv	R2 Inv	K Sym	T R1 Inv	R2 Inv		RDF Pair		Device	Dev	E Tracks	Tracks	S Dev	E Tracks	Tracks		MACE STATE	
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VP Space reclamation SRDF/A & S Consistent	SE 8.1 5977.691.684	Pass	Before ZSR: \$ symcfg -sid 973 list -tdev -bound -detail -sg qtest3-rdf1_sg Symmetrix ID: 000196700973 Enabled Capacity (Tracks) : 717373440 Bound Capacity (Tracks) : 1114140 <table><tr><th colspan="10">SYMMETRIX THIN DEVICES</th></tr><tr><th colspan="2"></th><th colspan="2">Pool</th><th colspan="2">Pool</th><th colspan="2">Total</th><th colspan="2">Compressed</th></tr><tr><th>Bound</th><th>Flags</th><th>Total</th><th>Subs</th><th>Allocated</th><th>Written</th><th>Size/Ratio</th><th colspan="3"></th></tr><tr><th>Sym</th><th>Pool Name</th><th>ESPT</th><th>Tracks</th><th>(%)</th><th>Tracks</th><th>(%)</th><th>Tracks</th><th>(%)</th><th>Tracks</th></tr></table> 0016C - F..B 278535 - 0 0 - - 0 0 DG2_FBA10K -..- - - 35359 13 - - 35359 0 0016D - F..B 278535 - 0 0 - - 0 0	SYMMETRIX THIN DEVICES												Pool		Pool		Total		Compressed		Bound	Flags	Total	Subs	Allocated	Written	Size/Ratio				Sym	Pool Name	ESPT	Tracks	(%)	Tracks	(%)	Tracks	(%)	Tracks										
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			<pre> DG2_FBA10K -- - - 36133 13 - - 36133 0 0016E - F..B 278535 - - 0 0 - - 0 0 DG2_FBA10K -- - - 35366 13 - - 35366 0 0016F - F..B 278535 - - 0 0 - - 0 0 DG2_FBA10K -- - - 35893 13 - - 35893 0 Total Tracks 1114140 - 142751 0 - - 142751 0 Legend: Flags: (E)mulation : A = AS400, F = FBA, 8 = CKD3380, 9 = CKD3390 (S)hared Tracks : S = Shared Tracks Present, . = No Shared Tracks (P)ersistent Allocs : A = All, S = Some, . = None S(T)atus : B = Bound, I = Binding, U = Unbinding, A = Allocating, D = Deallocating, R = Reclaiming, C = Compressing, N = Uncompressing, F = FreeingAll, . = Unbound NOTE the change @8.0.1 – ZSR now initiated @ dev & dg, sg, cg \$ symcfg -sid 973 list -tdev -bound -detail -sg qtest3-rdf1_sg Symmetrix ID: 000196700973 Enabled Capacity (Tracks) : 717373440 Bound Capacity (Tracks) : 1114140 SYMMETRIX THIN DEVICES ----- Pool Pool Total Compressed Bound Flags Total Subs Allocated Written Size/Ratio Sym Pool Name ESPT Tracks (%) Tracks (%) Tracks (%) Tracks (%) ----- 0016C - F..B 278535 - - 0 0 - - 0 0 0016D - F..B 278535 - - 0 0 - - 0 0 0016E - F..B 278535 - - 0 0 - - 0 0 0016F - F..B 278535 - - 0 0 - - 0 0 Total Tracks 1114140 - 0 0 - - 0 0 Legend: Flags: (E)mulation : A = AS400, F = FBA, 8 = CKD3380, 9 = CKD3390 (S)hared Tracks : S = Shared Tracks Present, . = No Shared Tracks (P)ersistent Allocs : A = All, S = Some, . = None S(T)atus : B = Bound, I = Binding, U = Unbinding, A = Allocating, D = Deallocating, R = Reclaiming, C = Compressing, N = Uncompressing, F = FreeingAll, . = Unbound </pre>
Check if SRDF still needs to be suspended when Zero Space Reclamation is run.	SE 8.1 5977.691.684	Pass	ZSR Works when SRDF is running. SRDF no longer needs to be suspended to run the command, and space reclamation take place on the R1 array however it does NOT initiate a reclaim on R2.
Change mode for test group to sync mode	SE 8.1 5977.691.684	Pass	\$ symrdf -sid 973 -rdfg 4 -sg qtest3-rdf1_sg disable -nop An RDF 'Disable' operation execution is in progress for storage group 'qtest3-rdf1_sg'. Please wait... The RDF 'Disable' operation successfully executed for storage group 'qtest3-rdf1_sg'.

			\$ symrdf -sid 973 -rdfg 4 -sg qtest3-rdf1_sg set mode sync -nop An RDF Set 'Synchronous Mode' operation execution is in progress for storage group 'qtest3-rdf1_sg'. Please wait... The RDF Set 'Synchronous Mode' operation successfully executed for storage group 'qtest3-rdf1_sg'. -bash-4.1\$ symrdf -sid 973 -rdfg 4 -sg qtest3-rdf1_sg query Storage Group (SG) Name : qtest3-rdf1_sg Symmetrix ID : 000196700973 (Microcode Version: 5977) Remote Symmetrix ID : 000196700974 (Microcode Version: 5977) RDF (RA) Group Number : 4 (03) <table><thead><tr><th colspan="4">Source (R1) View</th><th colspan="4">Target (R2) View</th><th colspan="2">MODE</th></tr><tr><th colspan="4">-----</th><th colspan="4">-----</th><th colspan="2"></th></tr><tr><th colspan="2">ST</th><th colspan="2">LI</th><th colspan="2">ST</th><th colspan="2"></th><th colspan="2"></th></tr><tr><th>Standard</th><th>A</th><th></th><th></th><th>N</th><th>A</th><th></th><th></th><th></th><th></th></tr><tr><th>Logical Sym</th><th>T R1 Inv</th><th>R2 Inv</th><th>K Sym</th><th>T R1 Inv</th><th>R2 Inv</th><th>RDF Pair</th><th></th><th></th><th></th></tr><tr><th>Device Dev</th><th>E Tracks</th><th>Tracks</th><th>S Dev</th><th>E Tracks</th><th>Tracks</th><th>MACE STATE</th><th></th><th></th><th></th></tr><tr><th colspan="4">-----</th><th colspan="4">-----</th><th colspan="2"></th></tr></thead><tbody><tr><td>N/A</td><td>0016C RW</td><td>0</td><td>0 RW 000E1 WD</td><td>0</td><td>0 S...</td><td>Synchronized</td><td></td><td></td><td></td></tr><tr><td>N/A</td><td>0016D RW</td><td>0</td><td>0 RW 000E2 WD</td><td>0</td><td>0 S...</td><td>Synchronized</td><td></td><td></td><td></td></tr><tr><td>N/A</td><td>0016E RW</td><td>0</td><td>0 RW 000E3 WD</td><td>0</td><td>0 S...</td><td>Synchronized</td><td></td><td></td><td></td></tr><tr><td>N/A</td><td>0016F RW</td><td>0</td><td>0 RW 000E4 WD</td><td>0</td><td>0 S...</td><td>Synchronized</td><td></td><td></td><td></td></tr><tr><td colspan="2">Total</td><td colspan="2">-----</td><td colspan="2">-----</td><td colspan="4"></td></tr><tr><td colspan="2">Track(s)</td><td>0</td><td>0</td><td>0</td><td>0</td><td colspan="4"></td></tr><tr><td colspan="2">MB(s)</td><td>0.0</td><td>0.0</td><td>0.0</td><td>0.0</td><td colspan="4"></td></tr></tbody></table> Legend for MODE: M(ode of Operation) : A = Async, S = Sync, E = Semi-sync, C = Adaptive Copy : M = Mixed, T = Active A(daptive Copy) : D = Disk Mode, W = WP Mode, . = ACp off C(onsistency State) : X = Enabled, . = Disabled, M = Mixed, - = N/A (Consistency) E(xempt): X = Enabled, . = Disabled, M = Mixed, - = N/A	Source (R1) View				Target (R2) View				MODE		-----				-----						ST		LI		ST						Standard	A			N	A					Logical Sym	T R1 Inv	R2 Inv	K Sym	T R1 Inv	R2 Inv	RDF Pair				Device Dev	E Tracks	Tracks	S Dev	E Tracks	Tracks	MACE STATE				-----				-----						N/A	0016C RW	0	0 RW 000E1 WD	0	0 S...	Synchronized				N/A	0016D RW	0	0 RW 000E2 WD	0	0 S...	Synchronized				N/A	0016E RW	0	0 RW 000E3 WD	0	0 S...	Synchronized				N/A	0016F RW	0	0 RW 000E4 WD	0	0 S...	Synchronized				Total		-----		-----						Track(s)		0	0	0	0					MB(s)		0.0	0.0	0.0	0.0				
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Failover an SRDF/S SG	SE 8.1 5977.691.684	Pass	\$ symrdf -sid 973 -rdfg 4 -sg qtest3-rdf1_sg failover Execute an RDF 'Failover' operation for storage group 'qtest3-rdf1_sg' (y/[n]) ? y An RDF 'Failover' operation execution is in progress for storage group 'qtest3-rdf1_sg'. Please wait... Suspend RDF link(s) for device(s) in (0973,004).....Done. Read/Write Enable device(s) in (0973,004) on RA at target (R2)...Done. The RDF 'Failover' operation successfully executed for storage group 'qtest3-rdf1_sg'. \$ symrdf -sid 973 -rdfg 4 -sg qtest3-rdf1_sg query Storage Group (SG) Name : qtest3-rdf1_sg Symmetrix ID : 000196700973 (Microcode Version: 5977) Remote Symmetrix ID : 000196700974 (Microcode Version: 5977) RDF (RA) Group Number : 4 (03) <table><thead><tr><th colspan="4">Source (R1) View</th><th colspan="4">Target (R2) View</th><th colspan="2">MODE</th></tr><tr><th colspan="4">-----</th><th colspan="4">-----</th><th colspan="2"></th></tr><tr><th colspan="2">ST</th><th colspan="2">LI</th><th colspan="2">ST</th><th colspan="2"></th><th colspan="2"></th></tr><tr><th>Standard</th><th>A</th><th></th><th></th><th>N</th><th>A</th><th></th><th></th><th></th><th></th></tr><tr><th>Logical Sym</th><th>T R1 Inv</th><th>R2 Inv</th><th>K Sym</th><th>T R1 Inv</th><th>R2 Inv</th><th>RDF Pair</th><th></th><th></th><th></th></tr><tr><th>Device Dev</th><th>E Tracks</th><th>Tracks</th><th>S Dev</th><th>E Tracks</th><th>Tracks</th><th>MACE STATE</th><th></th><th></th><th></th></tr><tr><th colspan="4">-----</th><th colspan="4">-----</th><th colspan="2"></th></tr></thead><tbody></tbody></table>	Source (R1) View				Target (R2) View				MODE		-----				-----						ST		LI		ST						Standard	A			N	A					Logical Sym	T R1 Inv	R2 Inv	K Sym	T R1 Inv	R2 Inv	RDF Pair				Device Dev	E Tracks	Tracks	S Dev	E Tracks	Tracks	MACE STATE				-----				-----																																																																											
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			<pre> ----- N/A 0016C RW 0 0 NR 000E1 RW 0 0 S... Failed Over N/A 0016D RW 0 0 NR 000E2 RW 0 0 S... Failed Over N/A 0016E RW 0 0 NR 000E3 RW 0 0 S... Failed Over N/A 0016F RW 0 0 NR 000E4 RW 0 0 S... Failed Over Total Track(s) 0 0 0 0 MB(s) 0.0 0.0 0.0 0.0 Legend for MODE: M(ode of Operation) : A = Async, S = Sync, E = Semi-sync, C = Adaptive Copy : M = Mixed, T = Active A(daptive Copy) : D = Disk Mode, W = WP Mode, . = ACp off C(onsistency State) : X = Enabled, . = Disabled, M = Mixed, - = N/A (Consistency) E(xempt): X = Enabled, . = Disabled, M = Mixed, - = N/A </pre>
Failback SRDF/S SG	SE 8.1 5977.691.684	Pass	<pre> \$ symrdf -sid 973 -rdfg 4 -sg qtest3-rdf1_sg failback -nop An RDF 'Failback' operation execution is in progress for storage group 'qtest3-rdf1_sg'. Please wait... Write Disable device(s) in (0973,004) on RA at target (R2).....Done. Suspend RDF link(s) for device(s) in (0973,004).....Done. Merge track tables between source and target in (0973,004).....Started. Devices: 016C-016F in (0973,004).....Merged. Merge track tables between source and target in (0973,004).....Done. Resume RDF link(s) for device(s) in (0973,004).....Started. Resume RDF link(s) for device(s) in (0973,004).....Done. The RDF 'Failback' operation successfully executed for storage group 'qtest3-rdf1_sg'. -bash-4.1\$ symrdf -sid 973 -rdfg 4 -sg qtest3-rdf1_sg query Storage Group (SG) Name : qtest3-rdf1_sg Symmetrix ID : 000196700973 (Microcode Version: 5977) Remote Symmetrix ID : 000196700974 (Microcode Version: 5977) RDF (RA) Group Number : 4 (03) Source (R1) View Target (R2) View MODE ----- ST LI ST Standard A N A Logical Sym T R1 Inv R2 Inv K Sym T R1 Inv R2 Inv RDF Pair Device Dev E Tracks Tracks S Dev E Tracks Tracks MACE STATE ----- N/A 0016C RW 0 0 RW 000E1 WD 0 0 S... Synchronized N/A 0016D RW 0 0 RW 000E2 WD 0 0 S... Synchronized N/A 0016E RW 0 0 RW 000E3 WD 0 0 S... Synchronized N/A 0016F RW 0 0 RW 000E4 WD 0 0 S... Synchronized Total Track(s) 0 0 0 0 MB(s) 0.0 0.0 0.0 0.0 Legend for MODE: M(ode of Operation) : A = Async, S = Sync, E = Semi-sync, C = Adaptive Copy : M = Mixed, T = Active A(daptive Copy) : D = Disk Mode, W = WP Mode, . = ACp off C(onsistency State) : X = Enabled, . = Disabled, M = Mixed, - = N/A (Consistency) E(xempt): X = Enabled, . = Disabled, M = Mixed, - = N/A </pre>
	SE 8.1 5977.691.684	Pass	<pre> \$ symrdf -sid 973 -rdfg 4 -sg qtest3-rdf1_sg split -nop </pre>

Split an SRDF/S SG with I/O running			An RDF 'Split' operation execution is in progress for storage group 'qtest3-rdf1_sg'. Please wait... Suspend RDF link(s) for device(s) in (0973,004).....Done. Read/Write Enable device(s) in (0973,004) on RA at target (R2)...Done. The RDF 'Split' operation successfully executed for storage group 'qtest3-rdf1_sg'. \$ symrdf -sid 973 -rdfg 4 -sg qtest3-rdf1_sg query Storage Group (SG) Name : qtest3-rdf1_sg Symmetrix ID : 000196700973 (Microcode Version: 5977) Remote Symmetrix ID : 000196700974 (Microcode Version: 5977) RDF (RA) Group Number : 4 (03) <table><tr><th colspan="4">Source (R1) View</th><th colspan="4">Target (R2) View</th><th>MODE</th></tr><tr><td colspan="4">-----</td><td colspan="4">-----</td><td></td></tr><tr><td>ST</td><td></td><td>LI</td><td></td><td>ST</td><td></td><td></td><td></td><td></td></tr><tr><td>Standard</td><td>A</td><td></td><td></td><td>N</td><td>A</td><td></td><td></td><td></td></tr><tr><td>Logical Sym</td><td>T R1 Inv</td><td>R2 Inv</td><td>K Sym</td><td>T R1 Inv</td><td>R2 Inv</td><td>RDF Pair</td><td></td><td></td></tr><tr><td>Device Dev</td><td>E Tracks</td><td>Tracks</td><td>S Dev</td><td>E Tracks</td><td>Tracks</td><td>MACE STATE</td><td></td><td></td></tr><tr><td colspan="9">-----</td></tr><tr><td>N/A</td><td>0016C RW</td><td>0</td><td>0</td><td>NR 000E1 RW</td><td>0</td><td>0 S...</td><td>Failed Over</td><td></td></tr><tr><td>N/A</td><td>0016D RW</td><td>0</td><td>0</td><td>NR 000E2 RW</td><td>0</td><td>0 S...</td><td>Failed Over</td><td></td></tr><tr><td>N/A</td><td>0016E RW</td><td>0</td><td>0</td><td>NR 000E3 RW</td><td>0</td><td>0 S...</td><td>Failed Over</td><td></td></tr><tr><td>N/A</td><td>0016F RW</td><td>0</td><td>0</td><td>NR 000E4 RW</td><td>0</td><td>0 S...</td><td>Failed Over</td><td></td></tr><tr><td colspan="9">Total</td></tr><tr><td colspan="2">Track(s)</td><td>0</td><td>0</td><td colspan="2">0</td><td>0</td><td colspan="2"></td></tr><tr><td colspan="2">MB(s)</td><td>0.0</td><td>0.0</td><td colspan="2">0.0</td><td>0.0</td><td colspan="2"></td></tr></table> Legend for MODE: M(ode of Operation) : A = Async, S = Sync, E = Semi-sync, C = Adaptive Copy : M = Mixed, T = Active A(daptive Copy) : D = Disk Mode, W = WP Mode, . = ACp off C(onsistency State) : X = Enabled, . = Disabled, M = Mixed, - = N/A (Consistency) E(xempt): X = Enabled, . = Disabled, M = Mixed, - = N/A	Source (R1) View				Target (R2) View				MODE	-----				-----					ST		LI		ST					Standard	A			N	A				Logical Sym	T R1 Inv	R2 Inv	K Sym	T R1 Inv	R2 Inv	RDF Pair			Device Dev	E Tracks	Tracks	S Dev	E Tracks	Tracks	MACE STATE			-----									N/A	0016C RW	0	0	NR 000E1 RW	0	0 S...	Failed Over		N/A	0016D RW	0	0	NR 000E2 RW	0	0 S...	Failed Over		N/A	0016E RW	0	0	NR 000E3 RW	0	0 S...	Failed Over		N/A	0016F RW	0	0	NR 000E4 RW	0	0 S...	Failed Over		Total									Track(s)		0	0	0		0			MB(s)		0.0	0.0	0.0		0.0		
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Establish an SRDF/S SG	SE 8.1 5977.691.684	Pass	\$ symrdf -sid 973 -rdfg 4 -sg qtest3-rdf1_sg establish Execute an RDF 'Incremental Establish' operation for storage group 'qtest3-rdf1_sg' (y/[n]) ? y An RDF 'Incremental Establish' operation execution is in progress for storage group 'qtest3-rdf1_sg'. Please wait... Write Disable device(s) in (0973,004) on RA at target (R2).....Done. Suspend RDF link(s) for device(s) in (0973,004).....Done. Resume RDF link(s) for device(s) in (0973,004).....Started. Merge track tables between source and target in (0973,004).....Started. Devices: 016C-016F in (0973,004).....Merged. Merge track tables between source and target in (0973,004).....Done. Resume RDF link(s) for device(s) in (0973,004).....Done. The RDF 'Incremental Establish' operation successfully initiated for storage group 'qtest3-rdf1_sg'. \$ symrdf -sid 973 -rdfg 4 -sg qtest3-rdf1_sg query Storage Group (SG) Name : qtest3-rdf1_sg Symmetrix ID : 000196700973 (Microcode Version: 5977) Remote Symmetrix ID : 000196700974 (Microcode Version: 5977) RDF (RA) Group Number : 4 (03)																																																																																																																														

			Source (R1) View Target (R2) View MODE ST LI ST Standard A N A Logical Sym T R1 Inv R2 Inv K Sym T R1 Inv R2 Inv RDF Pair Device Dev E Tracks Tracks S Dev E Tracks Tracks MACE STATE N/A 0016C RW 0 0 RW 000E1 WD 0 0 S... Synchronized N/A 0016D RW 0 0 RW 000E2 WD 0 0 S... Synchronized N/A 0016E RW 0 0 RW 000E3 WD 0 0 S... Synchronized N/A 0016F RW 0 0 RW 000E4 WD 0 0 S... Synchronized Total ----- ----- Track(s) 0 0 0 0 MB(s) 0.0 0.0 0.0 0.0 Legend for MODE: M(ode of Operation) : A = Async , S = Sync , E = Semi-sync , C = Adaptive Copy : M = Mixed , T = Active A(daptive Copy) : D = Disk Mode , W = WP Mode , . = ACp off C(onsistency State) : X = Enabled , . = Disabled , M = Mixed , - = N/A (Consistency) E(xempt) : X = Enabled , . = Disabled , M = Mixed , - = N/A
SnapVX Tests			
Establish snapshot	SE 8.1.0.0 5977.691.684	Pass	\$ symsnapvx -sid 973 -sg qtest3-rdf1_sg -name qtest3-rdf1_snapshot establish Execute Establish operation for Storage Group qtest3-rdf1_sg (y/[n]) ? y Establish operation execution is in progress for the storage group qtest3-rdf1_sg. Please wait... Polling for Establish.....Started. Polling for Establish.....Done. Polling for Activate.....Started. Polling for Activate.....Done. Establish operation successfully executed for the storage group qtest3-rdf1_sg \$ symsnapvx -sid 973 list Symmetrix ID : 000196700973 (Microcode Version: 5977) Sym Num Flgs Dev Snapshot Name Gens FLRG Last Snapshot Timestamp 0016C qtest3-rdf1_snapshot 1 Fri Nov 13 15:24:22 2015 0016D qtest3-rdf1_snapshot 1 Fri Nov 13 15:24:22 2015 0016E qtest3-rdf1_snapshot 1 Fri Nov 13 15:24:22 2015 0016F qtest3-rdf1_snapshot 1 Fri Nov 13 15:24:22 2015 Flgs: (F)ailed : X = Failed , . = No Failure (L)ink : X = Link Exists , . = No Link Exists (R)estore : X = Restore Active , . = No Restore Active (G)CM : X = GCM , . = Non-GCM
Set snapshot expiration	SE 8.1.0.0 5977.691.684	Pass	Set ttl to 1 day at snapshot creation: \$ symsnapvx -sid 973 -sg qtest3-rdf1_sg -name qtest3-rdf1_snapshot establish -ttl -delta 1 Execute Establish operation for Storage Group qtest3-rdf1_sg (y/[n]) ? y

			Establish operation execution is in progress for the storage group qtest3-rdf1_sg. Please wait... Polling for Establish.....Started. Polling for Establish.....Done. Polling for Activate.....Started. Polling for Activate.....Done. Establish operation successfully executed for the storage group qtest3-rdf1_sg Set ttl to 1 day for a specific generation snapshot: \$ symsnapvx -sid 973 -sg qtest3-rdf1_sg -snapshot_name qtest3-rdf1_snapshot -generation 1 set ttl -delta 1 Execute Set TTL operation for Storage Group qtest3-rdf1_sg (y/[n]) ? y SetTimeToLive operation execution is in progress for the storage group qtest3-rdf1_sg. Please wait... Polling for SetTimeToLive.....Started. Polling for SetTimeToLive.....Done. SetTimeToLive operation successfully executed for the storage group qtest3-rdf1_sg																																																																																															
View snapshot details	SE 8.1.0.0 5977.691.684	Pass	\$ symsnapvx -sid 973 -sg qtest3-rdf1_sg list -detail Storage Group (SG) Name : qtest3-rdf1_sg SG's Symmetrix ID : 000196700973 (Microcode Version: 5977) ----- ----- <table><thead><tr><th>Sym</th><th>Flgs</th><th>Total</th><th>Non-Shared</th><th></th></tr><tr><th>Dev Snapshot Name</th><th>Gen FLRG</th><th>Deltas Snapshot Timestamp</th><th>(Tracks)</th><th></th></tr><tr><th>(Tracks) Expiration Date</th><th></th><th></th><th></th><th></th></tr></thead><tbody><tr><td>0016C qtest3-rdf1_snapshot</td><td>0</td><td>Fri Nov 13 15:26:04 2015</td><td>0</td><td></td></tr><tr><td>0 Sat Nov 14 15:26:03 2015</td><td></td><td></td><td></td><td></td></tr><tr><td>qtest3-rdf1_snapshot</td><td>1</td><td>Fri Nov 13 15:24:23 2015</td><td>0</td><td>0</td></tr><tr><td>Sat Nov 14 15:31:39 2015</td><td></td><td></td><td></td><td></td></tr><tr><td>0016D qtest3-rdf1_snapshot</td><td>0</td><td>Fri Nov 13 15:26:04 2015</td><td>0</td><td></td></tr><tr><td>0 Sat Nov 14 15:26:03 2015</td><td></td><td></td><td></td><td></td></tr><tr><td>qtest3-rdf1_snapshot</td><td>1</td><td>Fri Nov 13 15:24:23 2015</td><td>0</td><td>0</td></tr><tr><td>Sat Nov 14 15:31:39 2015</td><td></td><td></td><td></td><td></td></tr><tr><td>0016E qtest3-rdf1_snapshot</td><td>0</td><td>Fri Nov 13 15:26:04 2015</td><td>0</td><td></td></tr><tr><td>0 Sat Nov 14 15:26:03 2015</td><td></td><td></td><td></td><td></td></tr><tr><td>qtest3-rdf1_snapshot</td><td>1</td><td>Fri Nov 13 15:24:23 2015</td><td>0</td><td>0</td></tr><tr><td>Sat Nov 14 15:31:39 2015</td><td></td><td></td><td></td><td></td></tr><tr><td>0016F qtest3-rdf1_snapshot</td><td>0</td><td>Fri Nov 13 15:26:04 2015</td><td>0</td><td></td></tr><tr><td>0 Sat Nov 14 15:26:03 2015</td><td></td><td></td><td></td><td></td></tr><tr><td>qtest3-rdf1_snapshot</td><td>1</td><td>Fri Nov 13 15:24:23 2015</td><td>0</td><td>0</td></tr><tr><td>Sat Nov 14 15:31:39 2015</td><td></td><td></td><td></td><td></td></tr></tbody></table> ----- 0 Flgs: (F)ailed : X = Failed, . = No Failure (L)ink : X = Link Exists, . = No Link Exists (R)estore : X = Restore Active, . = No Restore Active (G)CM : X = GCM, . = Non-GCM	Sym	Flgs	Total	Non-Shared		Dev Snapshot Name	Gen FLRG	Deltas Snapshot Timestamp	(Tracks)		(Tracks) Expiration Date					0016C qtest3-rdf1_snapshot	0	Fri Nov 13 15:26:04 2015	0		0 Sat Nov 14 15:26:03 2015					qtest3-rdf1_snapshot	1	Fri Nov 13 15:24:23 2015	0	0	Sat Nov 14 15:31:39 2015					0016D qtest3-rdf1_snapshot	0	Fri Nov 13 15:26:04 2015	0		0 Sat Nov 14 15:26:03 2015					qtest3-rdf1_snapshot	1	Fri Nov 13 15:24:23 2015	0	0	Sat Nov 14 15:31:39 2015					0016E qtest3-rdf1_snapshot	0	Fri Nov 13 15:26:04 2015	0		0 Sat Nov 14 15:26:03 2015					qtest3-rdf1_snapshot	1	Fri Nov 13 15:24:23 2015	0	0	Sat Nov 14 15:31:39 2015					0016F qtest3-rdf1_snapshot	0	Fri Nov 13 15:26:04 2015	0		0 Sat Nov 14 15:26:03 2015					qtest3-rdf1_snapshot	1	Fri Nov 13 15:24:23 2015	0	0	Sat Nov 14 15:31:39 2015				
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Sat Nov 14 15:31:39 2015																																																																																																		
Restore a snapshot	SE 8.1.0.0 5977.691.684	Pass	Test Steps: 1. Take snapshot of source volume 2. Copy some files onto the source volume 3. Restore the snapshot																																																																																															

			4. Verify that the files copied after the snapshot was taken no longer exist on the volume. Command to restore the snapshot to the source volumes: \$ symsnapvx -sid 973 -sg g16-dl385g6-03_sg -snapshot_name g16-dl385g6-03_snap -gen 0 restore Execute Restore operation for Storage Group g16-dl385g6-03_sg (y/[n]) ? y Restore operation execution is in progress for the storage group g16-dl385g6-03_sg. Please wait... Polling for Restore.....Started. Polling for Restore.....Done. Restore operation successfully executed for the storage group g16-dl385g6-03_sg Command to verify that the restore completed: \$ symsnapvx -sid 973 -sg g16-dl385g6-03_sg list -summary Storage Group (SG) Name : g16-dl385g6-03_sg <table><tr><td>Snapshot State</td><td>Count</td></tr><tr><td>-----</td><td>-----</td></tr><tr><td>Restored</td><td>1</td></tr><tr><td>RestoreInProgress</td><td>0</td></tr><tr><td>Established</td><td>1</td></tr><tr><td>EstablishInProgress</td><td>0</td></tr><tr><td>Linked</td><td>0</td></tr><tr><td>CopyInProgress</td><td>0</td></tr><tr><td>Copied</td><td>0</td></tr><tr><td>NoSnapshot</td><td>0</td></tr><tr><td>Failed</td><td>0</td></tr><tr><td>-----</td><td>-----</td></tr><tr><td>Total</td><td>2</td></tr></table> Track(s) ----- Total Remaining0	Snapshot State	Count	-----	-----	Restored	1	RestoreInProgress	0	Established	1	EstablishInProgress	0	Linked	0	CopyInProgress	0	Copied	0	NoSnapshot	0	Failed	0	-----	-----	Total	2
Snapshot State	Count																												
-----	-----																												
Restored	1																												
RestoreInProgress	0																												
Established	1																												
EstablishInProgress	0																												
Linked	0																												
CopyInProgress	0																												
Copied	0																												
NoSnapshot	0																												
Failed	0																												
-----	-----																												
Total	2																												
Link a snapshot	SE 8.1.0.0 5977.691.684	Pass	Test Steps: 1. Linked the snapshot to a target SG. 2. Masked the target LUN to the host and verified that the data matched the data on the source volume at the time the snapshot was taken. Link the snapshot to a target SG: \$ symsnapvx -sid 973 -sg g16-dl385g6-03_sg -lmsg g16-dl385g6-03_lmsg -snapshot_name g16-dl385g6-03_snap -gen 0 link Execute Link operation for Storage Group g16-dl385g6-03_sg (y/[n]) ? y Link operation execution is in progress for the storage group g16-dl385g6-03_sg. Please wait... Polling for Link.....Started. Polling for Link.....Done. Link operation successfully executed for the storage group g16-dl385g6-03_sg Verify all tracked are defined on linked target: \$ symsnapvx -sid 973 list -sg g16-dl385g6-03_sg -linked Storage Group (SG) Name : g16-dl385g6-03_sg SG's Symmetrix ID : 000196700973 (Microcode Version: 5977) -----																										

			Sym Dev Snapshot Name Link Flgs Gen Dev FCMD Snapshot Timestamp
			000A4 g16-dl385g6-03_snap 0 000A5 ...X Thu Nov 19 12:51:00 2015 Flgs: (F)ailed : F = Force Failed, X = Failed, . = No Failure (C)opy : I = CopyInProg, C = Copied, D = Copied/Destaged, . = NoCopy Link (M)odified : X = Modified Target Data, . = Not Modified (D)efined : X = All Tracks Defined, . = Define in progress
Relink to a different snapshot	SE 8.1.0.0 5977.691.684	Pass	\$ symsnapvx -sid 973 -sg g16-dl385g6-03_sg -lmsg g16-dl385g6-03_lmsg -snapshot_name g16-dl385g6-03_snap -gen 0 relink Execute Relink operation for Storage Group g16-dl385g6-03_sg (y/[n]) ? y Relink operation execution is in progress for the storage group g16-dl385g6-03_sg. Please wait... Polling for Relink.....Started. Polling for Relink.....Done. Relink operation successfully executed for the storage group g16-dl385g6-03_sg
Unlink a snapshot	SE 8.1.0.0 5977.691.684	Pass	\$ symsnapvx -sid 973 -sg g16-dl385g6-03_sg -lmsg g16-dl385g6-03_lmsg -snapshot_name g16-dl385g6-03_snap -gen 0 unlink Execute Unlink operation for Storage Group g16-dl385g6-03_sg (y/[n]) ? y Unlink operation execution is in progress for the storage group g16-dl385g6-03_sg. Please wait... Polling for Unlink.....Started. Polling for Unlink.....Done. Unlink operation successfully executed for the storage group g16-dl385g6-03_sg
Terminate snapshot	SE 8.1.0.0 5977.691.684	Pass	\$ symsnapvx -sid 973 -sg g16-dl385g6-03_sg -snapshot_name g16-dl385g6-03_snap terminate Execute Terminate operation for Storage Group g16-dl385g6-03_sg (y/[n]) ? y Terminate operation execution is in progress for the storage group g16-dl385g6-03_sg. Please wait... Polling for Terminate.....Started. Polling for Terminate.....Done. Terminate operation successfully executed for the storage group g16-dl385g6-03_sg

