Oracle® Communications

Diameter Signaling Router Full Address Resolution

SDS Disaster Recovery Guide

Release 8.1

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CAUTION: Use only the Upgrade procedure included in the Upgrade Kit.

Before upgrading any system, please access My Oracle Support (MOS) (https://support.oracle.com) and review any Technical Service Bulletins (TSBs) that relate to this upgrade.

My Oracle Support (MOS) (https://support.oracle.com) is your initial point of contact for all product support and training needs. A representative at Customer Access Support (CAS) can assist you with MOS registration.

Call the CAS main number at 1-800-223-1711 (toll-free in the US), or call the Oracle Support hotline for your local country from the list at http://www.oracle.com/us/support/contact/index.html.

See more information on My Oracle Support (MOS).

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1. Introduction

1.1 Purpose and Scope

This document describes procedures to use during disaster scenarios related to SDS 8.0/8.1 product.

The disaster scenarios covered in document are:

1. Connectivity loss to primary SDS NOAM servers and DR SDS site activation.
2. A defective DP server
3. A defective Query server
4. A defective SOAM server
5. A defective SDS NOAM server
6. A defective SDS NOAM server pair
7. A defective SOAM server pair
8. A defective CISCO switch
9. Total loss of SDS frame.
10. Total loss of SOAM frame.

This document is intended for execution by My Oracle Support (MOS) on fielded SDS systems.

It also could be used at Oracle by PV and development team.

1.2 References

[1] SDS 8.1 Initial Installation Guide

[2] TPD Initial Product Manufacture, Software Installation Procedure, Release 7.0+

[3] Oracle Communication Tekelec Platform 7.2 Configuration Guide

[4] DSR 7.1 3-Tier Disaster Recovery Guide

[5] DSR 8.1 Disaster Recovery Guide

[6] DSR/sds 8.x NOAM Failover User's Guide

[7] Cabinet Assembly Instructions, 910-6083-001

1.3 Acronyms

An alphabetized list of acronyms used in the document.

Table 1. Acronyms

Acronym	Meaning
CSV	Comma Separated Values
DP	Database Processor
IMI	Internal Management Interface
ISL	Inter-Switch-Link
MP	Message Processor
NE	Network Element

Acronym	Meaning
NOAM	Network Operations, Administration & Maintenance
OAM	Operations, Administration & Maintenance
SDS	Subscriber Data Server
RMM	Remote Management Module
SOAM	Systems Operations, Administration & Maintenance
TPD	Tekelec Platform Distribution (Linux OS)
VIP	Virtual IP
XMI	External Management Interface

1.4 Assumptions

This procedure assumes the following:

- The user conceptually understands the topology of SDS and the network configuration.
- The user has at least an intermediate skill set with command prompt activities on an open systems computing environment such as Linux or TPD.

1.5 How to Use this Document

When executing this document, understanding the following helps to ensure that the user understands the manual's intent:

1. Before beginning a procedure, completely read the instructional text (it appears immediately after the Section heading for each procedure) and all associated procedural WARNINGS or NOTES.
2. Before execution of a STEP within a procedure, completely read the left and right columns including any STEP specific WARNINGS or NOTES.

If a procedural step fails to execute successfully, then please STOP and contact My Oracle Support (as described in Appendix D).

2. Disaster Recovery Scenarios

2.1 Complete Connectivity Loss of Primary SDS NOAM Servers

2.1.1 Pre-Condition

- User cannot access primary SDS site GUI
- User can access DR SDS GUI
- Provisioning clients are disconnected from the primary SDS
- Provisioning has stopped

2.1.2 Recovery Steps

To quickly make SDS GUI accessible and continue provisioning, follow these instructions:

1. Promoting the DR NOAM from secondary to primary follow reference [6].
2. Recover primary NOAM as DRNO follow reference [6].

2.1.3 Post Condition

- GUI on the new primary SDS is accessible
- Provisioning clients are connected to the new primary SDS
- Database provisioning resumes
- A new DR SDS GUI is accessible
- Replication and collection alarms have cleared

Note: To swap the new primary SDS and new DR SDS sites back to their original roles, execute step 8 on new primary SDS (old-DR SDS) and step 2 on new DR SDS (old primary SDS) from procedure 1 in reference [6].

2.2 Replace a DP Server

2.2.1 Pre-Condition

- DP server has stopped processing traffic
- It has been determined the DP server is defective and needs replacement
- New DP server is available

2.2.2 Recovery Steps

Step	Procedure	Result
1 ☐	Prepare the defective DP server for the replacement	Identify the defective DP server that needs to be replaced. Defective DP server hostname = _____
2 ☐	Stop the application on the defective DP server	1. Using VIP address, log into the SOAM GUI site where the defective DP server is located. 2. Navigate to **Status & Manage -> Server**. 3. Select the defective DP server by its hostname. 4. Click **Stop**. 5. Click **OK** on confirmation screen.
3 ☐	Verify no signaling traffic is processed at the defective DP server	1. Navigate to **Status & Manage -> KPIs**. 2. Click the **KPI Filter** icon on the right edge of the screen. 3. Select **DP** for the Group. 4. Click **GO**. 5. Select the tab of the DP server to be recovered. 6. Verify the Total Queries/Sec KPI is now showing **0** for this DP.

Step	Procedure	Result
4 ☐	Power down the defective DP server	***Note***: If HW replacement is deemed necessary, physically remove defective DP Blade and install new replacement Blade 1. Power down the defective DP server. 2. Label all cables connected to defective DP server. 3. Physically remove defective DP server from the frame. 4. To install the new DP Blade, use these steps from reference [7]: • Upgrade firmware on the Blade • Upgrade the BIOS of the Blade • Set the iLO credentials userid/password of the Blade 5. Power up the new DP server.
5 ☐	Install SDS application on the new DP server	Execute procedure 10, steps 1 through 22 (DP Installation) as described in reference [1].
6 ☐	Configure the new DP server	Execute procedure 10, steps 38 through 65 (Applying TKLCConfigData.sh file on the new DP server) as described in reference [1].
7 ☐	Disable hyperthreading on the new DP server	Execute steps as described in Appendix I (Disable Hyperthreading) from [1].
8 ☐	Restart the application on the new DP server	Execute procedure 10, steps 86 through 91 (Restarting the application on the new DP server) as described in reference [1].
9 ☐	Verify status and traffic	1. Navigate to **Status & Manage -> KPIs**. 2. Click the **KPI Filter** icon on the right edge of the screen. 3. Select **DP** for the Group. 4. Click **GO**. 5. Select the tab of the DP server to be recovered. 6. Verify the Total Queries/Sec KPI is now showing a non-zero value for this DP.
10 ☐	Verify ComAgent connections	1. Navigate to **Communication Agent -> Maintenance -> Connection Status**. 2. Verify ComAgent connections (Automatic & Configured).

2.2.3 Post Condition

- DP server is processing traffic

2.3 Replace an SOAM Server

2.3.1 Pre-Condition

- SOAM server has stopped functioning
- It has been determined to replace the Blade hosting SOAM server

- New Blade replacement is available
- SDS GUI is accessible

2.3.2 Recovery Steps

Step	Procedure	Result
1 ☐	Prepare for server replacement	Identify the SOAM server that needs replacement. Defective SOAM server hostname = _____
2 ☐	Make SOAM server's Max Allowed HA Role "Standby" so it does not become active	1. Log into the primary SDS GUI as admin user using VIP address. 2. Navigate to **Status & Manage -> HA**. 3. Click **Edit**. 4. Change Max Allowed HA Role of the defective SOAM server to **Standby**. 5. Click **OK**.
3 ☐	Remove SOAM server from the server group	1. Navigate to **Configuration -> Server Groups**. 2. Select SOAM's server group. 3. Click **Edit**. 4. Under SG Inclusion, unmark the defective SOAM server checkbox. 5. Click **OK**.
4 ☐	Remediate hardware and Recover DSR services	Remediate OAM Blade hardware and restore TVOE network configuration in accordance with the DSR 8.0/8.1 Disaster Recovery Guide [5].
5 ☐	Install SDS application on the new SOAM server	Execute procedure 8, steps 1 through 22 (Installing the SDS Application) from reference [1].
6 ☐	Prepare the new SOAM server	Execute procedure 8, steps 45 through 74 (Applying TKLCConfigData.sh file on the new SOAM server) from reference [1].
7 ☐	Add the new SOAM server back to the server group	Execute procedure 9, steps 14 through 20 (Adding new SOAM server back to the Server Group) from reference [1].
8 ☐	Restart the application on the new SOAM server	Execute procedure 9, steps 26 through 32 (Restarting application on new SOAM server) from reference [1].

2.3.3 Post Condition

- SOAM server is back in the service

2.4 Replace a Query server

2.4.1 Pre-Condition

- Query server has stopped functioning
- It has been determined to replace the Query server
- New Query server replacement is available

2.4.2 Recovery Steps

Step	Procedure	Result
1 ☐	Prepare for Query server replacement	Identify the defective Query server that needs replacement. Defective Query server hostname = _____
2 ☐	Remove the defective Query server from the server group	1. From the SDS GUI, navigate to **Configuration -> Server Groups**. 2. Select Query server's server group. 3. Click **Edit**. 4. Under SG Inclusion, unmark the defective Query server checkbox. *5.* Click **OK**.
3 ☐	Power down and replace Query server	1. Power down the defective Query server. 2. Label all cables connected to the defective Query server. 3. Physically remove the defective Query server from the frame. 4. All connections should be made to the replacement server according to the labels attached in **sub-step 2** of the same step. 5. Power up the new Query server. 6. To install the new Query server, use these step from reference [7]: • Check/upgrade firmware on the Blade • Upgrade the BIOS of the Blade • Set the iLO credentials userid/password of the Blade
4 ☐	Install SDS application on the new Query server	Execute procedure 1 (Installing the SDS Application on the new Query Server) as described in reference [1].
5 ☐	Prepare the new Query server	Execute procedure 4, steps 17 through 43 (Applying TKLCConfigData.sh file on the new Query Server) as described in reference [1].
6 ☐	Add the new Query server back to SDS NOAM server group	Execute procedure 4, steps 44 through 50 (Adding Query Server Back to SDS NOAM Server Group) as described in reference [1].
7 ☐	Restart the application on the new Query server	Execute procedure 4, steps 51 through 56 (Restarting SDS Application on the Query Server) as described in reference [1].

2.4.3 Post Condition

- Query server is back in service

2.5 Replace an SDS NOAM Server

2.5.1 Pre-Condition

- SDS NOAM server has stopped functioning
- It has been determined to replace the defective SDS NOAM server
- New SDS NOAM server replacement is available

2.5.2 Recovery Steps

Step	Procedure	Result
1 ☐	Prepare for server replacement	Identify the defective SDS NOAM server that needs replacement. Defective SDS NOAM server hostname = _____
2 ☐	Make the defective SDS NOAM server "Standby" so it does not become active	1. Log into the primary SDS GUI as admin user using VIP address. 2. Navigate to **Status & Manage -> HA**. 3. Click **Edit**. 4. Change Max Allowed HA Role of the defective SDS NOAM server to **Standby**. 5. Click **OK**.
3 ☐	Remove SDS NOAM server from the server group	1. Navigate to **Configuration -> Server Groups**. 2. Select SDS's server group. 3. Click **Edit**. 4. Under SG Inclusion, unmark the defective SDS NOAM server checkbox. 5. Click **OK**.
4 ☐	Power down and replace SDS NOAM server	1. Power down the defective SDS NOAM server. 2. Label all cables connected to the defective SDS NOAM server. 3. Physically remove the defective SDS NOAM server from the frame. 4. All connections should be made to the replacement server according to the labels attached in **sub-step 2** of the same step. 5. Power up the new SDS NOAM server. 6. To install the new NOAM server use below step from reference [7]: • Check/upgrade firmware on the Blade • Upgrade the BIOS of the Blade • Set the iLO credentials userid/password of the Blade
5 ☐	Install the SDS application on new SDS NOAM server	Execute procedure 1 (Installing the SDS Application) from reference [1].

Step	Procedure	Result
6 ☐	Prepare SDS NOAM server	Execute procedure 2, steps 26 through 49, and then steps 52 through-55 (Applying TKLCConfigData.sh file on the New SDS NOAM Server) from reference [1].
7 ☐	Add the new SDS NOAM server back to the server group	Execute procedure 3, steps 1, 13 through 25 (Pairing SDS NOAM Servers) from reference [1].
8 ☐	Restart the application on new SDS NOAM server	Execute procedure 3, steps 26 through 40 (Pairing the SDS NOAM Servers SDS NOAM Server) from reference [1].
9 ☐	Re-exchange SSH keys for Remote Import, Remote Export, and Data Export features	1. Log into the primary SDS GUI as admin user using VIP address. 2. Perform SSH key exchange for Remote Export from **SDS** -> **Configuration** -> **Options**. 3. Perform SSH key exchange for Remote Import from **SDS** -> **Configuration** -> **Options**. 4. Perform SSH key exchange for Data Export from **Administration** -> **Remote Servers** -> **Data Export**.
10 ☐	Install NetBackup client software (optional)	Execute steps as described in Appendix A**.**

2.5.3 Post Condition

- SDS NOAM server is back in service

2.6 Replace Primary SDS NOAM Server Pair

2.6.1 Pre-Condition

- Primary SDS-A, primary SDS-B, and primary SDS Query servers have stopped functioning
- **DR SDS NOAM servers are NOT available or are NOT installed**
- It has been determined to replace primary SDS NOAM servers
- New primary SDS NOAM servers for replacement are available
- Recent backup archives of SDS configuration and provisioning databases are available

Note: If DR SDS NOAM servers are available, then follow recovery steps from Section 2.1 of this document.

2.6.2 Recovery Steps

Step	Procedure	Result

1
☐
	Determine SDS backup archive files	Make sure you have access to SDS configuration and provisioning backup archive files.
		Configuration backup archive file _____
		Provisioning backup archive file _____
		Note: The backup archive files should be in uncompressed format. If it is not uncompressed, then execute following commands.
		For gunzip file:
		`$ gunzip Backup.sds.sds1-noa-1191038.Configuration.NETWORK_OAMP.20160609_021511.AUTO.tar.gz`
		`$ gunzip Backup.sds.sds1-noa-1191038.Provisioning.NETWORK_OAMP.20160609_021511.AUTO.tar.gz`
		For bunzip file:
		`$ bunzip2 Backup.sds.sds1-noa-1191038.Configuration.NETWORK_OAMP.20160609_021511.AUTO.tar.bz2`
		`$ bunzip2 Backup.sds.sds1-noa-1191038.Provisioning.NETWORK_OAMP.20160609_021511.AUTO.tar.bz2`

2 ☐	Power down and remove all defective primary SDS NOAM servers. Replace them with new SDS NOAM servers.	1. Power down all defective SDS NOAM servers. 2. Label all cables connected to defective SDS NOAM servers. 3. Physically remove defective SDS NOAM servers from the frame. 4. Follow reference [7] for the physical installation of new SDS NOAM servers. 5. Wire in the new SDS NOAM servers according to the cables you labeled and removed from the old servers. 6. To install the new NOAM server use below step from reference [7]: • Check/upgrade firmware on the Blade • Upgrade the BIOS of the Blade • Set the iLO credentials userid/password of the Blade
3 ☐	Install the SDS application on the new primary SDS-A server	Execute procedure 1 on the new primary SDS-A server (Installing the SDS Application) from reference [1].
4 ☐	Configure temporary IP address	Configure temporary external IP address on the new primary SDS-A server, as described in Appendix C of [1].

Step	Procedure	Result

5 ☐	Copy SDS backup archive files to the new primary SDS-A server	1. Login via SSH to the console of the new primary SDS-A server.
		2. Execute these commands on console:
		`sudo su -`
		`cd /var/TKLC/db/filemgmt`
		`mkdir backup`
		`chown awadmin:awadm backup`
		`chmod 775 backup`
		3. Copy the uncompressed backup archive files identified in step 1 to **/var/TKLC/db/filemgmt/backup** area on newly installed primary SDS-A server.
		4. Execute this command to stop running applications. Leave the database running.
		`# prod.stop`
		5. Restore the configuration DB by executing this command:
		`# idb.restore -n -t /var/TKLC/db/filemgmt/backup/ -v <full path to configuration archive file name>`
		SDS database is now restored.
		6. Start application by executing:
		`# prod.start`
		7. Exit out of root:
		`# exit`

6 ☐	Prepare the new primary SDS-A server	Execute procedure 2, steps 26 through 49 and steps 53 through 55 on the new primary SDS-A server (Applying TKLCConfigData.sh file) from reference [1].
7 ☐	Install the SDS application on the new primary SDS-B server	Execute procedure 1 on the new primary SDS-B server (Installing the SDS Application) from reference [1].
8 ☐	Prepare the new primary SDS-B server	Execute procedure 2, steps 26 through 49 and steps 53 through 56 on the new primary SDS-B server (Applying TKLCConfigData.sh file) from reference [1].
9 ☐	Restore Provisioning Database	Follow steps in Appendix C Recover Pdbrelay.
10 ☐	Install the SDS application on the new primary SDS Query server	1. To install the new Query server use these steps from reference [1]: • Check/upgrade firmware on the Blade • Upgrade the BIOS of the Blade • Set the iLO credentials userid/password of the Blade 2. Execute procedure 1 on the new primary SDS Query server (Installing the SDS Application) from reference [1].

Step	Procedure	Result
11 ☐	Prepare the new primary SDS Query server	Execute procedure 4, steps 17 through 43 and steps 52 through 57 on the new primary SDS Query server (Applying TKLCConfigData.sh file) from reference [1].
12 ☐	Restart the application on all new primary SDS NOAM servers	1. Log into the primary SDS GUI as admin user using VIP address. 2. Navigate to **Status & Manage -> Server**. 3. Select the primary SDS-A server. 4. Click **Restart**. 5. Click **OK** on confirmation screen. 6. Repeat all above for primary SDS-B server, and primary SDS Query server
13 ☐	Install Netbackup Client Software on primary SDS-A and primary SDS-B servers (optional)	Execute steps as described in Appendix A
14 ☐	Re-exchange SSH keys for Remote Import, Remote Export, and Data Export features	1. Log into the primary SDS GUI as admin user using VIP address. 2. Perform SSH key exchange for Remote Export from **SDS** -> **Configuration** -> **Options**. 3. Perform SSH key exchange for Remote Import from **SDS** -> **Configuration** -> **Options**. 4. Perform SSH key exchange for Data Export from **Administration** -> **Remote Servers** -> **Data Export**.

2.6.3 Post Condition

- Primary SDS-A, primary SDS-B, and primary SDS Query servers are back in service
- Provisioning clients are connected to SDS VIP address
- Provisioning continues

2.7 Replace SOAM Server Pair

2.7.1 Pre-Condition

- Both SOAM-A and SOAM-B servers have stopped functioning
- It has been determined to replace both Blades that host SOAM servers
- New Blades for replacement are available
- Access to primary SDS GUI is available
- DPs are not receiving provisioning database updates.

2.7.2 Recovery Steps

Step	Procedure	Result
1 ☐	Prepare for server replacement	Identify the SOAM-A and SOAM-B servers that needs replacement. SOAM-A Server: _____ SOAM-B Server: _____ SOAM Network Element name _____
2 ☐	Inhibit database replication for defective SOAM servers and DP servers associated with this SOAM network element. ***Note***: It is expected that each SOAM and subtending DP has a DB Level of **UNKNOWN** until the SOAMs are restored.	1. From the NOAMP GUI, navigate to **Status & Manage -> Database**. 2. Filter on the **SOAM Network Element** name. 3. Record the DP server hostnames (Role: MP). 4. Click **Inhibit Replication** for each DP server until all DP servers associated with this SOAM Network Element have been inhibited. 5. Click **Inhibit Replication** for each defective SOAM server identified in step 1.
3 ☐	Remediate OAM Blade hardware and restore TVOE network configuration	Remediate OAM Blade hardware and restore TVOE network configuration in accordance with the DSR 8.0/8.1 Disaster Recovery Guide [5].
4 ☐	Install SDS application on the new SOAM-A server	Execute procedure 8, steps 1 through 22 (Installing the SDS Application on SOAM Server) from reference [1].
5 ☐	Install SDS application on the new SOAM-B server	Execute procedure 8, steps 1 through 22 (Installing the SDS Application on SOAM Server) from reference [1].
6 ☐	Prepare the new SOAM-A server	Execute procedure 8, steps 45 through 76 (Applying TKLCConfigData.sh file on SOAM Server) from reference [1].
7 ☐	Prepare the new SOAM-B server	Execute procedure 8, steps 45 through 48, 50 through 70 and 72 through 76 (Applying TKLCConfigData.sh file on SOAM Server) from reference [1].

Step	Procedure	Result
8 ☐	Allow database replication for SOAM-A and SOAM-B servers and DP servers associated with this SOAM network element	1. From the NOAMP GUI, navigate to **Status & Manage -> Database**. 2. Filter on the **SOAM Network Element** name. 3. Record the DP server hostnames (Role: MP). 4. Click **Allow Replication** for each newly replaced SOAM-A and SOAM-B server. 5. Click **Allow Replication** for each DP server until all DP servers associated with this SOAM Network Element have been inhibited.
9 ☐	Restart the application on the new SOAM-A server	Execute procedure 9, steps 26 through 32 (Restarting application on SOAM server) from reference [1].
10 ☐	Restart the application on the new SOAM-B server	Execute procedure 9, steps 26 through 29 and 33 through 35 (Restarting Application on SOAM Server) from reference [1].
11 ☐	Verify that SOAM servers receive SDS provisioning	1. Log into active SOAM GUI using VIP address. 2. Navigate to **Status & Manage -> Server**. 3. Make sure the new SOAM servers show **Norm** for DB, Reporting Status, and Appl State.
12 ☐	Verify that SOAM servers showing valid DB level	1. From the SOAM GUI, navigate to **Status & Manage -> Database**. 2. Verify a valid DB Level is now showing for each SOAM and subtending DP.

2.7.3 Post Condition

- Both SOAM servers are back in service
- DPs are now receiving provisioning updates

2.8 Replace DR SDS NOAM Server Pair

2.8.1 Pre-Condition

- DR SDS-A, DR SDS-B, and DR SDS Query servers have stopped functioning
- It has been determined to replace DR SDS NOAM servers
- New DR SDS NOAM servers for replacement are available
- Access to primary SDS GUI is functional

2.8.2 Recovery Steps

Step	Procedure	Result
1 ☐	Prepare for server replacement	Identify the DR SDS NOAM servers that needs replacement DR SDS-A Server: _____ DR SDS-B Server: _____ DR SDS Query Server: _____
2 ☐	Power down and remove all defective DR SDS NOAM servers. Replace them with new servers.	1. Power down all defective DR SDS NOAM servers. 2. Label all cables connected to defective DR SDS NOAM servers. 3. Physically remove defective DR SDS NOAM servers from the frame. 4. Wire in the new DR SDS NOAM servers according to the cables you labeled and removed from the old servers. 5. To install the new NOAM server use below step from reference [7]: • Check/upgrade firmware on the Blade • Upgrade the BIOS of the Blade • Set the iLO credentials userid/password of the Blade
3 ☐	Install the SDS application on the new DR SDS-A server	Execute procedure 1 on the new DR SDS-A server (Installing the SDS Application) from reference [1].
4 ☐	Prepare the new DR SDS-A server	Execute procedure 5, steps 22 through 45 on the new DR SDS-A server (Applying TKLCConfigData.sh file) from reference [1]. And then execute procedure 6, steps 26 through 32 (Restarting Application on DR SDS NOAM Server) from reference [1].
5 ☐	Install the SDS application on the new DR SDS-B server	Execute procedure 1 on the new DR SDS-B server (Installing the SDS Application) from reference [1].
6 ☐	Prepare the new DR SDS-B server	Execute procedure 5, steps 22 through 45 on the new DR SDS-B server (Applying TKLCConfigData.sh file) from reference [1]. And then execute procedure 6, steps 26 through 32 (Restarting application on DR SDS NOAM Server) from reference [1].
7 ☐	Install the SDS application on the new DR SDS Query server	Execute procedure 1 on the new DR Query server (Installing the SDS Application) from reference [1].
8 ☐	Prepare the new DR SDS Query server	Execute procedure 4, steps 17 through 43 on the new Query server (Applying TKLCConfigData.sh file) from reference [1] and then execute procedure 4 (Configuring the Query Server), steps 54 through 56 (Restarting application on DR SDS Query Server) from reference [1].
9 ☐	Verify DB level	Navigate to **Status & Manage -> Database** to verify a valid DB level is now showing for each DR NOAM and DR site Query server. ***Note***: Any value except **UNKNOWN** and **0** is valid for DB level.

Step	Procedure	Result
10 ☐	Install NetBackup Client Software on DR SDS-A, and DR SDS-B servers (optional)	Execute steps as described in Appendix A.
11 ☐	Re-exchange SSH keys for Remote Import, Remote Export, and Data Export features	1. Log into the primary SDS GUI as admin user using VIP address. 2. Perform SSH key exchange for Remote Export from **SDS** -> **Configuration** -> **Options**. 3. Perform SSH key exchange for Remote Import from **SDS** -> **Configuration** -> **Options**. 4. Perform SSH key exchange for Data Export from **Administration** -> **Remote Servers** -> **Data Export**.

2.8.3 Post Condition

- All DR SDS NOAM servers are back in service

2.9 Replace of SDS Frame

2.9.1 Pre-Condition

- SDS frame is destroyed
- A replacement SDS frame with 2 SDS NOAM servers and a Query server is available
- DR SDS NOAM servers are available
- Access to DR SDS GUI is functional

2.9.2 Recovery Steps

Step	Procedure	Result
1 ☐	Determine SDS site and status of provisioning	If the destroyed SDS frame was the primary SDS frame, then execute procedure from reference [6] to activate DR SDS site as a new primary SDS site. This allows provisioning to continue and makes the defective frame as a defective DR SDS frame.
2 ☐	Install new replacement DR SDS frame	Follow reference [2] to install new DR SDS frame.
3 ☐	Install DR SDS NOAM servers in new DR SDS frame	Install new DR SDS NOAM servers into new DR SDS frame by following instructions in reference [7].
4 ☐	Install switches in new DR SDS frame	Install new switches into new DR SDS frame by following instructions in reference [7]

5 ☐	Connect DR SDS NOAM servers	Wire in the new DR SDS NOAM servers by following instructions in reference[7].
6 ☐	Recover DR SDS NOAM server pair	Follow recovery steps from Section 2.8 of this document.
7 ☐	Recover Query server	Follow recovery steps from Section 2.4 of this document.

2.9.3 Post Condition

- DR SDS frame is back in the service

2.10 Replace SOAM Frame

2.10.1 Pre-Condition

- SOAM frame is destroyed
- A replacement SOAM frame with 2 SOAM servers and DP servers is available

2.10.2 Recovery Steps

Step	Procedure	Result
1 ☐	Install new SOAM frame	Follow procedures in reference [4] to install new SOAM frame.
2 ☐	Install SOAM Cabinet	Follow reference [5] for installation of HP Blade system enclosure.
3 ☐	Install DSR	Execute Recovery Scenario 1, of reference [4], DSR Disaster Recovery Guide, to restore DSR services.
4 ☐	Recover SOAM server pair	Follow recovery steps from Section 2.7 of this document.
5 ☐	Recover DP servers	For each DP server, follow recovery steps from Section 2.2 of this document.

2.10.3 Post Condition

- SOAM frame is back in service

Appendix A. Install NetBackup Client

Step	Procedure	Result
1 ☐	Install Netbackup Client Software	Execute Section 3.10.5 Application NetBackup Client Install/Upgrade procedures of reference [3] to complete this step. ***Note***: Location of the bpstart_notify and bpend_notify scripts is required for the execution of this step. These scripts are located at: /usr/TKLC/appworks/sbin/bpstart_notify /usr/TKLC/appworks/sbin/bpend_notify ***Note***: Netbackup client software must be installed on each SDS NOAM server

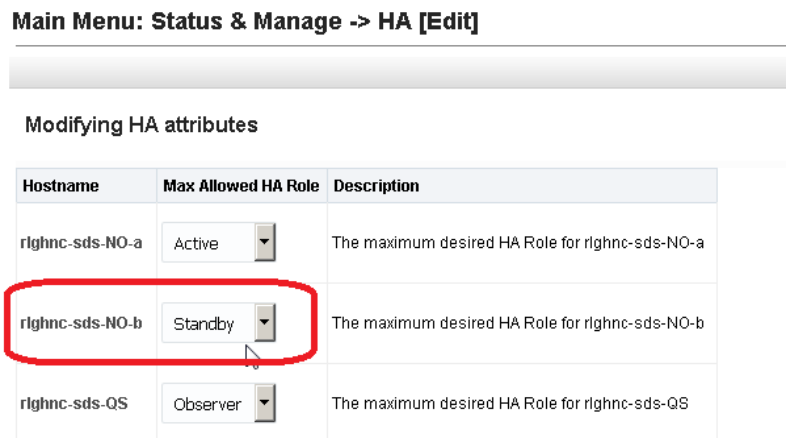
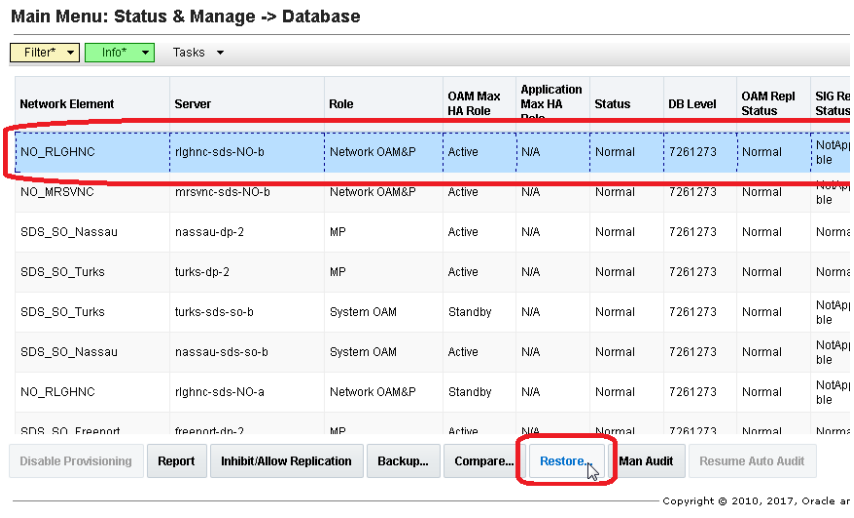
2 ☐	Link notify scripts to well-known path stated in the above step	Link the notify scripts to well-known path stated in the step1 .
		`ln -s <path>/bpstart_notify /usr/openv/netbackup/bin/bpstart_notify`
		`ln -s <path>/bpend_notify /usr/openv/netbackup/bin/bpend_notify`

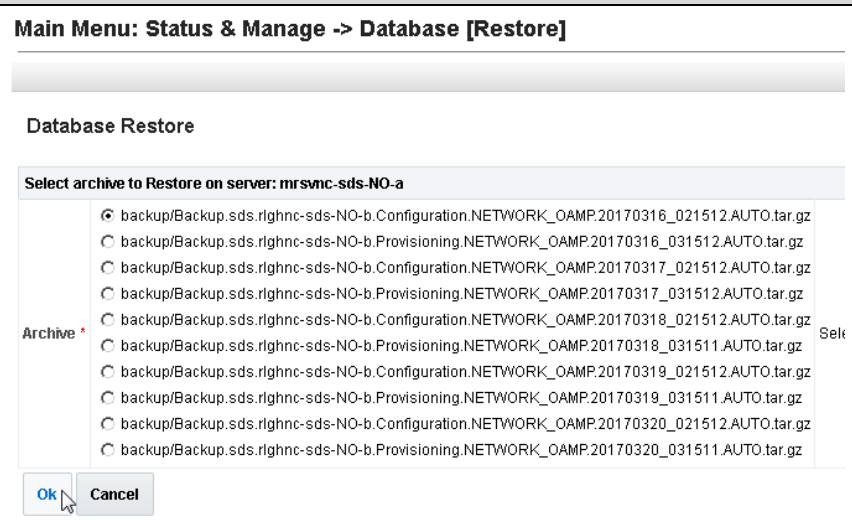
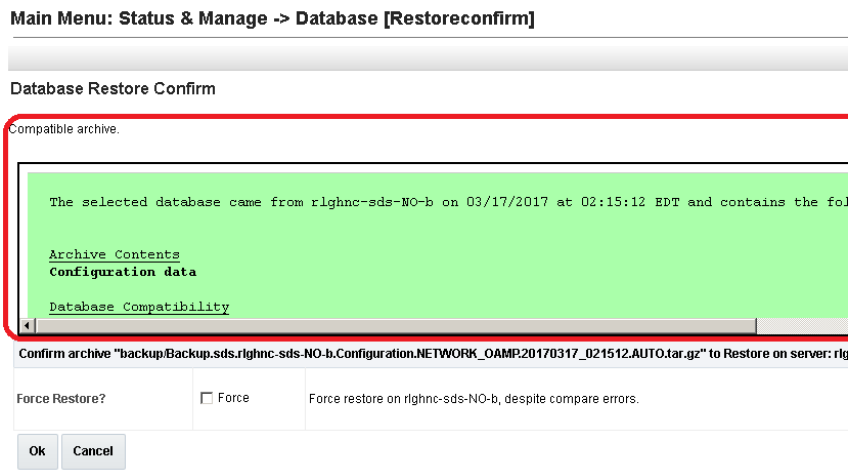
3 ☐	Verify if the Netbackup port 1556 is opened for IPv4 protocol	Verify if the NetBackup port 1556 is opened on IPv4 protocol:
		`iptables -L 60sds-INPUT -n | grep 1556`
		If there is no output, then enable the port 1556 for NetBackup on IPv4:
		`iptablesAdm append --type=rule --protocol=ipv4 --domain=60sds --table=filter --chain=INPUT --match='-m state --state NEW -m tcp -p tcp --dport 1556 -j ACCEPT' --persist=yes`

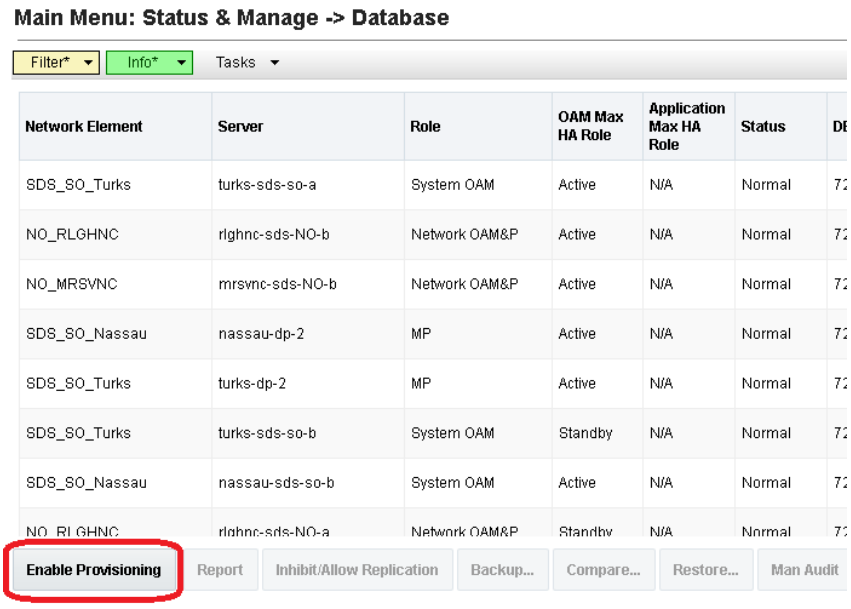
4 ☐	Verify if the Netbackup port 1556 is opened for IPv6 protocol	Verify if the NetBackup port 1556 is opened on IPv6 protocol:
		`ip6tables -L 60sds-INPUT -n | grep 1556`
		If there is no output, then enable the port 1556 for NetBackup on IPv6 protocol:
		`iptablesAdm append --type=rule --protocol=ipv6 --domain=60sds --table=filter --chain=INPUT --match='-m state --state NEW -m tcp -p tcp --dport 1556 -j ACCEPT' --persist=yes`

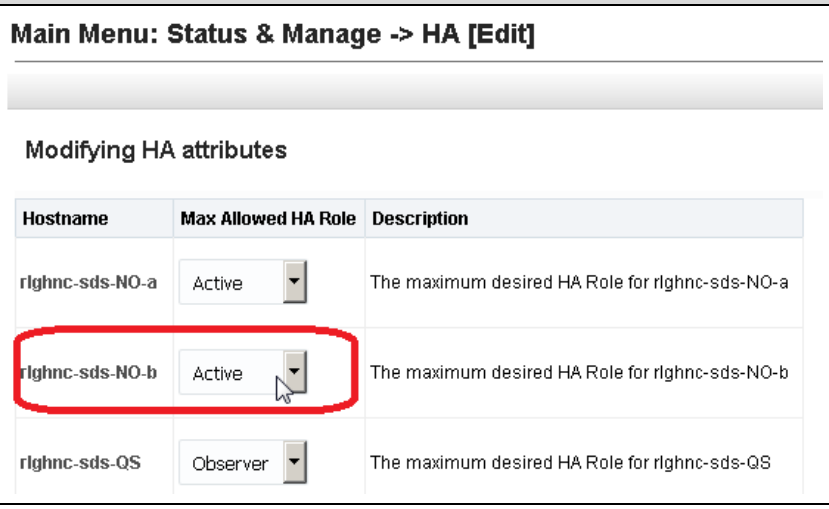
Appendix B. Restore Provisioning Database

Step	Procedure	Result
1 ☐	Log into primary SDS NOAM GUI	Log into the primary SDS NOAM GUI using its static IP (not the VIP).

Step	Procedure	Result
2 ☐	Place the newly recovered Standby NOAM into Forced Standby	1. Navigate to Status & Manage-> HA. 2. Click Edit. 3. Move the newly recovered standby server to forced standby. 
3 ☐	Restore Provisioning data	1. Navigate to **Status & Manage -> Database**. 2. Select the Active NOAM and click **Restore**.  3. Select the Provisioning backup file from the list (which was previously placed in /var/TKLC/db/filemgmt/backup directory in Step 5 of Section 2.6.2) and click **OK**. ***Note***: Must use a Provisioning only backup file. Combined backup files containing Configuration & Provisioning data causes catastrophic issues, which could lead to complete re-installation.

Step	Procedure	Result
		 4. Verify compatibility and click **OK** to restore. 
4 ☐	Wait for the restore to begin	Wait 60 seconds for the restore to begin.
5 ☐	Track Progress of Restore	Monitor the Info tab from the **Status & Manage -> Database** screen and look for the following message: `Restore on <Active_NO_hostname> status MAINT_IN_PROGRESS.`
6 ☐	Wait for the restore to complete	Continue to monitor th the Info tab from the **Status & Manage -> Database** screen until the following message is received: `Success: - Restore on rlghnc-sds-NO-b status MAINT_CMD_SUCCESS. Success` ***Note***: The Info tab may require manual refresh to see updated status. To refresh the Info tab, reselect **Status & Manage -> Database** from the Main Menu, and then reselect the Info tab.
7 ☐	Uninhibit servers	Uninhibit All servers in the following staggered arrangement: 1. Uninhibit Active NOAM.

Step	Procedure	Result
		2. Refresh/monitor the **Status & Manage -> Database** screen until a valid **DB Level** displays for the Active NOAM. 3. Uninhibit Standby NOAM/Query server. 4. Refresh/monitor the **Status & Manage -> Database** screen until a valid DB Level displays for the Standby NOAM/Query server. 5. Uninhibit Active SOAMs. 6. Refresh/monitor the **Status & Manage -> Database** screen until a valid DB Level appears for the Active SOAMs. 7. Uninhibit Standby SOAMs / DPs. 8. Refresh/monitor the **Status & Manage -> Database** screen until a valid DB Level appears for the Standby SOAMs/DPs.
8 ☐	Recover Pdbrelay (IF NEEDED)	Verify whether PDB Relay is Enabled by following the instructions in Appendix C.
9 ☐	Enable Provisioning	Navigate to **Status & Manage -> Database** and click **Enable Provisioning**. 
10 ☐	Remove NO from forced standby	Navigate to **Status & Manage -> HA** and click **Edit**. Select the server which was moved to forced standby in step 2, change Max HA Role to Active, and click **OK**.

Step	Procedure	Result
		

Appendix C. Recover Pdbrelay

If, system fails to re-establish pdbrelay connection, follow the instructions:

Step	Procedure	Result

1 ☐	Determine if pdbrelay is enabled	Execute following command on console of Active NOAM server (accessed via the VIP) and compare the output:
		`$ iqt -zhp -fvalue ProvOptions where "var='pdbRelayEnabled'"`
		`TRUE`
		`$`
		Proceed to next step only if the result of above command is true.

2 ☐	Disable pdbrelay	Uncheck PDB Relay Enabled checkbox under the [SDS -> Configuration -> Options] screen and Apply the change.
3 ☐	Emergency Restart (Start from Beginning of Cmd Log)	Execute following commad on console: `$ iset -fvalue=0 ProvOptions where "var='pdbRelayMsgLogTimeStamp'"`
4 ☐	Enable pdbrelay	Recheck PDB Relay Enabled checkbox under the [SDS -> Configuration -> Options] screen and Apply the change.

Appendix D. My Oracle Support (MOS)

MOS (https://support.oracle.com) is your initial point of contact for all product support and training needs. A representative at Customer Access Support (CAS) can assist you with MOS registration.

Call the CAS main number at **1-800-223-1711** (toll-free in the US), or call the Oracle Support hotline for your local country from the list at http://www.oracle.com/us/support/contact/index.html. When calling, make the selections in the sequence shown below on the Support telephone menu:

1. Select 2 for New Service Request.
2. Select 3 for Hardware, Networking and Solaris Operating System Support.
3. Select one of the following options:

For technical issues such as creating a new Service Request (SR), select 1.

For non-technical issues such as registration or assistance with MOS, select 2.

You are connected to a live agent who can assist you with MOS registration and opening a support ticket. MOS is available 24 hours a day, 7 days a week, 365 days a year.