Oracle® Communications
Diameter Signaling Router Full Address Resolution

SDS Disaster Recovery User's Guide

Release 7.1/7.2/7.3

E59145 Revision 06

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ORACLE®

 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 MOS in the Appendix section.

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1.0   INTRODUCTION

1.1   Purpose and Scope

This document describes procedures to use during disaster scenarios related to SDS 7.1/7.2/7.3 product.

The disaster scenarios covered in document are:

1. Connectivity loss to Primary SDS NOAM Server 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 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

External *(Customer Facing):*

[1] SDS 7.1/7.2/7.3 Initial Installation Guide, E58856
[2] TPD Initial Product Manufacture, Software Installation Procedure, Release 7.0+, E53017
[3] Platform 7.0 Configuration Guide, E53486
[4] DSR 7.1 3-Tier Disaster Recovery Guide, E57520-02
[5] DSR 7.2 Disaster Recovery Guide, E69612
[6] Cabinet Assembly Instructions, 910-6083-001

[7] Network Interconnect. Topology 1 with Variants. TR007111
[8] Platform 5.0 Generic HP c-Class Networking Interconnect, TR006851

1.3   Acronyms

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

Table 1 - Acronyms

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 A**).

2.0   DISASTER RECOVERY SCENARIOS

2.1   Complete connectivity loss of Primary SDS NOAM Server 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

In order to quickly make SDS GUI accessible and provisioning to continue, old-DR SDS NOAM Server SDS NOAM Servers are activated and made to serve as new-Primary SDS NOAM Server SDS NOAM Servers via the following steps:

1 ☐	Disable the application on DR SDS NOAM Server SDS NOAM Servers.	This step ensures that when the DR SDS assumes new-Primary SDS status in a controlled fashion. Disabling the application inhibits provisioning and can be started after successful validation. 1. Using VIP address, login to the DR SDS GUI as admin user. 2. Navigate to GUI screen [**Main Menu: Status & Manage → Server**] 3. Select the row that has active DR SDS NOAM Server SDS NOAM Server. It highlights 'Stop' button at the bottom. 4. Click the 'Stop' button and then click the 'OK' button. At this time, HA switch over causes an automatic logout. 5. Repeat step all above sub-steps for new active DR SDS NOAM Server SDS NOAM Server. 6. Verify that 'Proc' column on both DR SDS NOAM Server SDS NOAM Servers show 'Man' indicating that application is manually stopped.
2 ☐	SSH to VIP address of the DR SDS as root and make it primary SDS	1. Using VIP address, login to DR SDS Active server console. 2. Execute the command to take DR SDS site over as the new-Primary SDS site **# top.setPrimary** 3. System generates several replication and collection alarms as replication/collection links to/from former Primary SDS NOAM Server SDS NOAM Servers becomes inactive.
3 ☐	Clear any persistent alarms	1. Wait at least 5 minutes for replication to rsync ("inetmerge" or "inetrep" alarms may remain present). 2. If inetmerge or inetrep alarms persist beyond 5 minutes, then on the new primary SDS, restart the corresponding process(es): **# pm.kill <inetmerge or inetrep>** 3. View alarms until all is cleared.

4 ☐	Verify the replication	1. Navigate to GUI screen [**Main Menu: Status & Manage → Server**] at new-Primary SDS, and monitor replication status.
		2. It may take several minutes for DB replication to complete, afterwards "DB" and "Reporting Status" columns should show 'Normal.'
5 ☐	Re-enable the application on the now-Primary SDS using the Active new-Primary SDS GUI.	1. Using VIP address, login to new-Primary SDS GUI as admin user.
		2. Navigate to GUI screen [**Main Menu: Status & Manage → Server**]
		3. Select the row that has the new-Primary SDS Active server. This will highlight the 'Restart' button at the bottom.
		4. Click the 'Restart' button and then click the 'OK' button.
		5. Verify that 'Proc' column now shows 'Norm'.
		6. Repeat sub-steps 3 to 5 for new-Primary SDS Standby server.
6 ☐	Decrease the durability admin status and then reconfigure and reconnect the customer's provisioning clients.	1. Lower the durability admin status to 2 (NO pair) to exclude former-Primary SDS NOAM Server SDS NOAM Servers from the provisioning database durability. A value greater than 2 must be adjusted downward.
		a. Using VIP address, login to new-Primary SDS GUI as admin user
		b. Navigate to GUI screen [**Main Menu: Administration → General Options**]
		c. Set *durableAdminState* to 2 (NO pair)
		d. Click the 'OK' button
		2. Provisioning connections can now resume to the VIP of the new-Primary SDS. Have customer reconfigure provisioning clients to connect to XMI VIP of the newly activated Primary SDS NOAM Server SDS NOAM Servers.
		3. Verify that DB provisioning from clients has started.
		a. Select [**Main Menu: SDS → Maintenance → Command Log**]
		b. Check that new DB provisioning commands have been executed
	At this point, SDS provisioning is fully functioning. The remaining steps will bring the former-Primary SDS NOAM Server SDS NOAM Servers back into the service as the new-DR SDS NOAM Server SDS NOAM Servers.	
7 ☐	Bring former-Primary SDS back to service.	1. Determine what has happened to former-Primary SDS site.
		• SDS frame defective ?_____
		• SDS NOAM Server SDS NOAM Servers defective ? _____
		• Networking outage ? _____
		• Switch defective ? _____
		2. Based on the above disaster recovery scenario, execute procedure from this document to return the former-Primary SDS NOAM Server SDS NOAM Servers and site back to service.
8 ☐	Convert former Primary SDS NOAM Server SDS NOAM Servers to new DR SDS	1. SSH to active former-Primary SDS NOAM Server SDS NOAM Server as root.
		2. Execute the command to take formerly Primary SDS as the DR SDS site **# top.setSecondary**
		3. Monitor [**Main Menu: Status & Manage → Server**] screen at new DR SDS GUI.
		4. It may take several minutes for replication, afterward the DB and Reporting Status columns should show 'Normal.'

9 ☐	Stop Non-Service processes on DR	1. Select [**Main Menu: Status & Manage → Server**] for now Active DR SDS on GUI.
		2. Press the 'Stop' button for new DR SDS (stops *all* processes).
		3. Press the 'OK' button to confirm.
		4. Again select [**Main Menu: Status & Manage → Server**] for new DR SDS on GUI.
		5. Press the 'Restart' button for new DR SDS (starts *only* Service processes).
		6. Press the 'OK' button to confirm.
		7. Monitor [**Main Menu: Status & Manage → Server**] screen for new DR SDS on GUI.
		8. It may take a few seconds, but afterward the Application State should be 'Enabled,' and the Alarm and Process Status columns should show 'Normal.'
10 ☐	Set durability admin status to include DR SDS NOAM Server SDS NOAM Servers back to the replication	1. If you reduced the durability status in step 6, then raise durability admin status back to its former value (NO + DRNO) .
		a. Login to new primary SDS GUI as admin user
		b. Select [Main Menu: Administration → General Options]
		c. Set *durableAdminState* to 3 (NO + DRNO)
		d. Click the 'OK' button
		2. Now new DR SDS NOAM Servers are part of provisioning database durability.

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 new Primary SDS and new DR SDS sites back to their original roles, please execute Step 8 on new-Primary SDS (old-DR SDS) and step 2 on new-DR SDS (old-Primary SDS) of this procedure.

2.2   Replacement of 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

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, login to SOAM GUI site where defective DP server is located. 2. Navigate to GUI screen [**Main Menu: Status & Manage → Server**] 3. Select the defective DP server by its hostname. 4. Click the 'Stop' button followed by the 'Ok' button on confirmation screen.
3 ☐	Verify that no signaling traffic is processed at the defective DP server	1. Navigate to GUI screen [**Main Menu: Status & Manage → KPIs**] and select 'DP' tab. 2. Verify that 'Total Queries/Sec' KPI is now showing '0' for this DP server.
4 ☐	Power down the defective DP server	Power down the defective 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 J (Disable Hyperthreading) from [1].
8 ☐	Restart the application on the new DP server	Execute procedure 10, steps 86 trough 91 (Restarting the application on the new DP server) as described in reference [1]
9 ☐	Verify status and traffic.	1. Using VIP address, login to SOAM GUI site where DP is located. 2. Navigate to GUI screen [**Main Menu: Status & Manage → KPIs**] and select 'DP' tab. 3. Verify that 'Total Queries/Sec' KPI is now showing a non-zero value for this DP server.

2.2.3   Post Condition

- DP server is processing traffic

2.3   Replacement of a SOAM Server

2.3.1   Pre Condition

- SOAM serevr 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

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. Login to the Primary SDS GUI as admin user using VIP address. 2. Navigate to GUI screen [**Main Menu: Status & Manage → HA**] 3. Click 'Edit' button 4. Change "Max Allowed HA Role" of the defective SOAM server to 'Standby' 5. Click OK button
3 ☐	Remove SOAM server from the server group.	1. Navigate to GUI screen [**Main Menu: Configuration → Server Groups**]. 2. Select SOAM's server group. 3. Click the "Edit" button. 4. Under "SG Inclusion", uncheck the defective SOAM server. 5. Click the "OK" button.
4 ☐	Remediate hardware and Recover DSR services	Execute Recovery Scenario 2, of reference [4], DSR Disaster Recovery Guide, to remediate hardware and restore DSR blade services.
5 ☐	Install SDS application on he 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 48, 51 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 35 (Restarting application on new SOAM server) from reference [1].

2.3.3   Post Condition

- SOAM server is back in the service

2.4   Replacement of 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

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. Go to the SDS GUI. 2. Navigate to GUI screen [**Main Menu: Configuration → Server Groups**] 3. Select Query Server's server group. 4. Click the "Edit" button. 5. Under "SG Inclusion", uncheck the defective Query server. 6. Click the "OK" button.
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. Follow reference [6] for the physical installation of the new Query server and reconnect all network cables you labeled and removed from the old server. 5. Power up the new Query server
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   Replacement of a 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

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. Login to the Primary SDS GUI as admin user using VIP address. 2. Navigate to GUI screen [**Main Menu: Status & Manage → HA**] 3. Click 'Edit' button 4. Change "Max Allowed HA Role" of the defective SDS NOAM Server to 'Standby' 5. Click OK button
3 ☐	Remove SDS NOAM Server from the server group.	1. Navigate to GUI screen [**Main Menu: Configuration → Server Groups**] 2. Select SDS's server group. 3. Click the "Edit" button. 4. Under "SG Inclusion", uncheck the defective SDS NOAM Server 5. Click the "OK" button.
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. Follow reference [6] for the physical installation of the new SDS NOAM Server and reconnect all network cables you labeled and removed from the old server. 5. Power up the new SDS NOAM Server
5 ☐	Install the SDS application on new SDS NOAM Server	Execute Procedure 1 (Installing the SDS Application) from reference [1].
6 ☐	Prepare SDS NOAM Server	Execute procedure 2, steps 26 through 61 (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 13 through 28 (Pairing SDS NOAM Servers) from reference [1]. SDS NOAM Server.
8 ☐	Restart the application on new SDS NOAM Server	Execute procedure 3, steps 28 through 38 (Paring 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. Login to the Primary SDS GUI as admin user using VIP address. 2. Perform SSH key exchange for Remote Export using this screen [**Main Menu: SDS → Configuration → Options**] 3. Perform SSH key exchange for Remote Import using this screen [**Main Menu: SDS → Configuration → Options**] 1. Perform SSH key exchange for Data Export using this screen [**Main Menu: Administration → Remote Servers → Data Export**]
10 ☐	Install Netbackup Client Software (optional)	1. Execute steps as described in Appendix B

2.5.3   Post Condition

- SDS NOAM Server is back in service

2.6   Replacement of 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

1 ☐	Determine SDS backup archive files	Make sure that you have access to SDS Configuration and Provisioning backup archive files
		
		Configuration backup archive file _____
		 Provisioning backup archive file _____
		
		   1. Note: The backup archive files should be in uncompressed format.
		
		If it is not uncompress then please 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.	2. Power down all defective SDS NOAM Servers. 3. Label all cables connected to defective SDS NOAM Servers. 4. Physically remove defective SDS NOAM Servers from the frame. 5. Follow reference [6] for the physical installation of new SDS NOAM Servers. 6. Wire in the new SDS NOAM Servers according to the cables you labeled and removed from the old servers.
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 Bof [1]

| 5 ☐ | **NOAM GUI:**
Upload the Backed up Database File | Browse to **Main Menu->Status & Manage->Files**
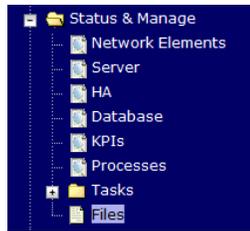
Select the Active NOAM server. The following screen will appear:
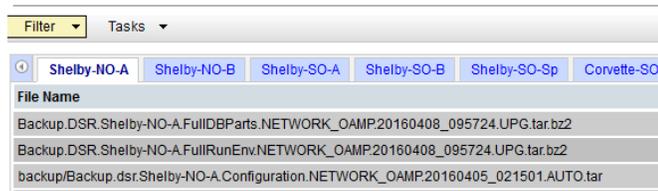
Click on **Upload** as shown below and select the file *"NO Provisioning and Configuration:"* file backed up after initial installation and provisioning.

1. Click on **Browse** and locate the backup file
2. Check **This is a backup file** Box
3. Click on Open as shown below.
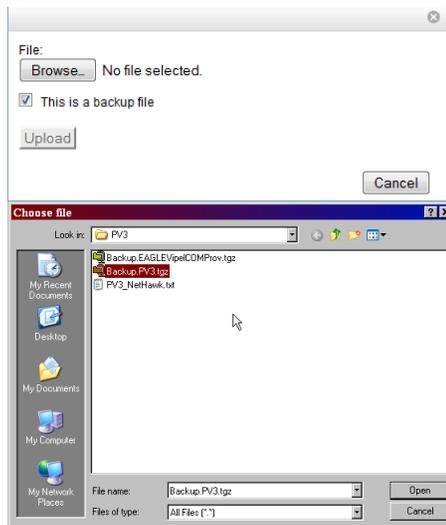
Click on the **Upload** button. The file will take a few seconds to upload depending on the size of the backup data. The file will be visible on the list of entries after the upload is complete. |

5.1 ☐	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. Copy the uncompressed backup archive files identified in step 1 to **/var/TKLC/db/filemgmt/backup** area on newly installed Primary SDS-A server.
		3. Execute the following command to become root $ sudo su -
		4. Execute this command to stop running applications. Leave database running. **# prod.stop**
		Note: if user has a manual (Backup.sds.sd2_noa.ProvAndConfig.NOAMP.20160506.MAN.tar) backup then run following command and skip step 4 & step 5: **idb.restore -n -t /var/TKLC/db/filemgmt/backup/ -v <full path to archive file name>**
		Note:if no manual backup exists then run following commands (below step 4 & step5):
		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>**
		6. Restore the provisioning DB by executing this command: **# idb.restore -n -t /var/TKLC/db/filemgmt/backup -v <full path to provisioning archive file name>**
		7. SDS database is now restored. Start application by executing **# prod.start**
		8. Exit out of root: **# exit**
6 ☐	Prepare the new Primary SDS-A server	Execute procedure 2, steps 26 through 61 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 61 on the new Primary SDS-B server (Applying TKLCConfigData.sh file) from reference [1].
9 ☐	Install the SDS application on the new Primary SDS Query server	Execute Procedure 1 on the new Primary SDS Query server (Installing the SDS Application) from reference [1].
10 ☐	Prepare the new Primary SDS Query server	Execute procedure 2, steps 25 through 50 on the new Primary SDS Query server (Applying TKLCConfigData.sh file) from reference [1].

11 ☐	Restart the application on all new Primary SDS NOAM Servers	1. Login to the Primary SDS GUI as admin user using VIP address 2. Navigate to GUI screen [**Main Menu: Status & Manage → Server**] 3. Select the Primary SDS-A server 4. Click the "Restart" button 5. In pop-up window, click the "OK" button to confirm Repeat all above for Primary SDS-B server, and Primary SDS Query server
12 ☐	Install Netbackup Client Software on Primary SDS-A and Primary SDS-B servers (optional)	Execute steps as described in Appendix B
13 ☐	Re-exchange SSH keys for Remote Import, Remote Export, and Data Export features	1. Login to the Primary SDS GUI as admin user using VIP address. 2. Perform SSH key exchange for Remote Export using this screen [**Main Menu: SDS → Configuration → Options**] 3. Perform SSH key exchange for Remote Import using this screen [**Main Menu: SDS → Configuration → Options**] 4. Perform SSH key exchange for Data Export using this screen [**Main Menu: 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   Replacement of 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

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.	1. Go to the NOAMP GUI. 2. Select [**Main Menu: Status & Manage → Database**] screen 3. Filter on the SOAM Network Element name. 4. Record the DP server hostnames (Role: MP). 5. Click "Inhibit Replication" button for each DP server until all DP servers associated with this SOAM Network Element have been inhibited 6. Click "Inhibit Replication" button for each defective SOAM servers identified in the above step 1
3 ☐	Remediate hardware and Recover DSR services	If DSR recovery has not already been performed, execute Recovery Scenario 2, of reference [4], DSR Disaster Recovery Guide**.**
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 ☐	Prepare the new SOAM-A server	Execute Procedure 8, steps 45 through 48, 51 through 74 (Applying TKLCConfigData.sh file on SOAM server) from reference [1]
6 ☐	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].
7 ☐	Prepare the new SOAM-B server	Execute Procedure 8, steps 45 through 48, 51 through 74 (Applying TKLCConfigData.sh file on SOAM server) from reference [1]

8 ☐	Allow database replication for SOAM-A and SOAM-B servers and DP servers associated with this SOAM network element.	1. Go to the NOAMP GUI. 2. Select [**Main Menu: Status & Manage → Database**] screen 3. Filter on the SOAM Network Element name. 4. Record the DP server hostnames (Role: MP). 5. Click "Allow Replication" button for each newly replaced SOAM-A and SOAM-B servers 6. Click "Allow Replication" button 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 28 through 35 (Restarting application on SOAM server) from reference [1].
10 ☐	Restart the application on the new SOAM-B server	Execute procedure 9, steps 28 through 35 (Restarting application on SOAM server) from reference [1].
11 ☐	Verify that SOAM servers receive SDS provisioning	1. Login to active SOAM GUI using VIP address. 2. Select [**Main Menu: Status & Manage → Servers**] screen. 3. Make sure that new SOAM servers show 'Norm' for DB, Reporting Status and Appl State.

2.7.3   Post Condition

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

2.8   Replacement of 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

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. Follow reference [6] for the physical installation of new SDS NOAM Servers. 5. Wire in the new DR SDS NOAM Servers according to the cables you labeled and removed from the old servers.
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 2, steps 26 through 61 on the new DR SDS-A server (Applying TKLCConfigData.sh file) 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 2, steps 26 through 61 on the new DR SDS-B server (Applying TKLCConfigData.sh file) 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 16 through 42 on the new Query server (Applying TKLCConfigData.sh file) from reference [1].
9 ☐	Restart the application on all new DR SDS NOAM Servers	1. Login to the Primary SDS GUI as admin user using VIP address 2. Navigate to GUI screen [**Main Menu: Status & Manage → Server**] 3. Select the DR SDS-A server 4. Click the "Restart" button 5. In pop-up window, click the "OK" button to confirm Repeat all above for DR SDS-B server, and DR SDS Query server

10 ☐	Install Netbackup Client Software on DR SDS-A, and DR SDS-B servers (optional)	Execute steps as described in Appendix B
11 ☐	Re-exchange SSH keys for Remote Import, Remote Export, and Data Export features	1. Login to the Primary SDS GUI as admin user using VIP address. 2. Perform SSH key exchange for Remote Export using this screen [**Main Menu: SDS → Configuration → Options**] 3. Perform SSH key exchange for Remote Import using this screen [**Main Menu: SDS → Configuration → Options**] Perform SSH key exchange for Data Export using this screen [**Main Menu: Administration → Remote Servers → Data Export**]

2.8.3   Post Condition

- All DR SDS NOAM Servers are back in service

2.9   Replacement 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

1 ☐	Determine SDS site and status of provisioning	If the destroyed SDS frame was the Primary SDS frame, then execute procedure from **Section 2.1** 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 [6].
4 ☐	Install switches in new DR SDS frame	Install new switches into new DR SDS frame by following instructions in reference [6]
5 ☐	Connect DR SDS NOAM Servers	Wire in the new DR SDS NOAM Servers by following instructions in reference [8].
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   Replacement of 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

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 BladeSystem 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. 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 United States), 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, there are multiple layers of menu selections.

Make the selections in the sequence shown below on the Support telephone menu:

1. For the first set of menu options, select:

    2, "New Service Request".

    You will hear another set of menu options.

2. In this set of menu options, select:

    3, "Hardware, Networking and Solaris Operating System Support".

    A third set of menu options begins.

3. In the third set of options, select:

    2, " Non-technical issue".

    Then you will be connected to a live agent who can assist you with MOS registration and provide Support Identifiers. Simply mention you are one of Oracle's Tekelec Customers new to MOS.

Appendix B. INSTALL NETBACKUP CLIENT

Appendix B: 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 as follows: **/usr/TKLC/appworks/sbin/bpstart_notify** **/usr/TKLC/appworks/sbin/bpend_notify** **NOTE**: Neetbackup 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 above step **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**
	THIS PROCEDURE HAS BEEN COMPLETED	