Oracle® Communications

Diameter Signaling Router

SDS Cloud Disaster Recovery User's Guide

Release 8.6.0.0.0

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Oracle Communications Diameter Signaling Router SDS Cloud Disaster Recovery Guide, Release 8.6.0.0.0

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) in 0.

Table of Contents

1. Introduction

This document describes procedures to use during SDS Cloud product related disaster scenarios. The disaster scenarios covered in this document are as follows:

1. A defective DP server
2. A defective Query server
3. A defective DP SOAM server
4. A defective SDS NOAM server
5. A defective SDS NOAM server pair
6. A defective DP SOAM server pair OR DP SOAM deployed in "Active only" redundancy
7. A defective SDS NOAM server pair and Query server with DR NOAM server and DR QS available
8. A defective DR SDS NOAM server pair and Query server

The audience for this document includes GPS groups such as Software Engineering, Product Verification, Documentation, and Customer Service including Software Operations and First Office Application. This document can also be executed by Oracle customers as long as Oracle Customer Service personnel are involved and/or consulted. It can also be used at Oracle by PV and development teams.

Note: Please note that failures can happen from the host or Infrastructure level too. Different infrastructures have different approaches to recover VMs, which is not covered in this document. For example, VMWare has a vMotion feature that can migrate VM from one host to another. Any such Infrastructure/Hypervisor related migrations/disaster recovery scenarios are out of scope of this document. This document covers the DR scenarios within the SDS application.

1.1 References

[1] DSR Disaster Recovery Guide

[2] SDS Cloud Installation and Configuration Guide

[3] Productizing Cloud Deployable DSR

[4] DSR/SDS 8.x NOAM Failover User's Guide

1.2 Acronyms

Table 1. Acronyms

Acronym	Meaning
DP	Database Processor
NOAM	Network Operations, Administration, and Maintenance
OAM	Operations, Administration, and Maintenance
OVM-M	Oracle Virtual Machine Manager
OVM-S	Oracle Virtual Machine Server
SDS	Subscriber Database System
SOAM	Systems Operations, Administration, and Maintenance
VIP	Virtual IP
VM	Virtual Machine running specific server logic, for example, DP VM would mean Virtual Machine running database processor server logic

1.3 Assumptions

This procedure assumes the following:

- The user conceptually understands SDS topology and 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.

1.4 How to Use this Document

When executing this document, understand the following to ensure you understand the manual's intent:

- 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.
- 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, STOP and contact My Oracle Support (MOS) (as described in 0).

2. Disaster Recovery Scenarios

!!Warning!!

If you need to restore the database backup for NOAM servers and the backup directory is not in the system because it is DRed, refer to 0 for the procedure on how to check for a backup directory and create it, if needed.

2.1 Replace A DP Server

2.1.1 Pre-Condition

- DP VM has stopped processing traffic.
- It has been determined the DP VM is defective/corrupted and needs to be replaced.

2.1.2 Recovery Steps

Procedure 1. Replace a DP Server

STEP #	Procedure	Description
1. ☐	Prepare for VM replacement	Identify the DP server that needs to be replaced. DP server hostname = _____

STEP #	Procedure	Description
2. ☐	Make DP server's Max Allowed HA Role "OOS" so it does not become active	1. From the SDS GUI, navigate to **Status & Manage > HA**. 2. Select the DP server that needs to be replaced. 3. Change its **Max Allowed HA Role** to **OOS**. 4. Click **OK**.
3. ☐	Remove DP server from the server group	1. From the SDS GUI, navigate to **Configuration > Server Groups**. 2. Select DP server's server group. 3. Click **Edit**. 4. Move DP server out of the server group. 5. Click **OK**.

STEP #	Procedure	Description

☐ 4.	Replace VM	**For VMWare based deployments**:
		1. Open the Cloud client of your choice, for example, vSphere Client and locate the defective DP server VM.
		2. Power down DP server VM and remove it from the inventory/disk.
		3. Execute **Procedure 1 Create SDS Guest from OVA (VMWare)** from [2] SDS Cloud Installation and Configuration Guide.
		For KVM/OpenStack based deployments:
		1. Log into the OpenStack control node.
		`$ ssh admusr@node`
		2. Power down defective DP server VM and remove it from the inventory/disk:
		`$ nova delete <VM Name>`
		3. Execute **Procedure 2 Create SDS Guest from OVA (KVM/OpenStack)** from [2] SDS Cloud Installation and Configuration Guide.
		For OVM-S/OVM-M based deployments:
		1. Log into the command line interface of the OVM-M.
		`OVM> ssh -l admin <OVM-M IP> -p 10000`
		Example:
		`[root@manager01 ~]# ssh -l admin 10.240.16.138 -p 10000`
		`admin@10.240.16.138's password:`
		2. Power down SDS VM(s).
		`OVM> stop Vm name=<VM Name>`
		Note: Wait for the VM to have the state **Stopped**.
		3. Remove the VM from the inventory/disk.
		`OVM> delete Vm name=<VM Name>`
		Note: Repeat steps 2 and 3 for all the failed VMs.
		Execute **Procedure 3 (3.1 & 3.2) Create SDS Guest from OVA (OVM/OVM-Manager)** from [2] SDS Cloud Installation and Configuration Guide.

☐ 5.	Prepare the new DP server	Execute **Procedure 11.1 Applying the Database Processor Configuration File (DP)** from [2] SDS Cloud Installation and Configuration Guide.
☐ 6.	Add DP server to the server group and validate pairing	From [2] SDS Cloud Installation and Configuration Guide, execute these procedures in sequence on the new DP server: 1. **Procedure 11.3 Adding the Database Processor into the DP Server Group (DP)**. 2. **Procedure 11.4 Restarting the Database Processor Application (DP)**.

2.1.3 Post-Condition

DP server is processing traffic.

2.2 Replace a DP SOAM Server

2.2.1 Pre-Condition

- DP SOAM VM has stopped functioning.
- It has been determined the DP SOAM VM needs to be replaced.
- SDS GUI is accessible.

Note: If VIP is required, update the port so that two addresses can be used. See **Appendix E Application VIP Failover Options** from [2] SDS Cloud Installation and Configuration Guide.

2.2.2 Recovery Steps

Procedure 2. Replace a DP SOAM Server

STEP #	Procedure	Description
1. ☐	Prepare for VM replacement	Identify the DP SOAM server that needs to be replaced. DP SOAM server hostname = _____
2. ☐	Make DP SOAM server's Max Allowed HA Role "OOS" so it does not become active	1. From the SDS GUI, navigate to **Status & Manage > HA**. 2. Select the DP SOAM server that needs to be replaced. 3. Change its **Max Allowed HA Role** to **OOS**. 4. Click **OK**.
3. ☐	Remove DP SOAM from the server group	1. From the SDS GUI, navigate to **Configuration > Server Groups**. 2. Select DP SOAM server's server group. 3. Click **Edit**. 4. Move DP SOAM server out of the server group. 5. Click **OK**.

STEP #	Procedure	Description

4. ☐	Replace VM	**For VMWare based deployments**:
		1. Open the Cloud client of your choice, for example, vSphere Client and locate the defective DP SOAM server VM.
		2. Power down DP SOAM server VM and remove it from the inventory/disk.
		3. Execute **Procedure 1 Create SDS Guest from OVA (VMWare)** from [2] SDS Cloud Installation and Configuration Guide.
		For KVM/OpenStack based deployments:
		1. Log into the OpenStack control node.
		`$ ssh admusr@node`
		2. Power down defective DP SOAM server VM and remove it from the inventory/disk:
		`$ nova delete <VM Name>`
		3. Execute **Procedure 2 Create SDS Guest from OVA (KVM/OpenStack)** from [2] SDS Cloud Installation and Configuration Guide.
		For OVM-S/OVM-M based deployments:
		1. Log into the command line interface of the OVM-M.
		`OVM> ssh -l admin <OVM-M IP> -p 10000`
		Example:
		`[root@manager01 ~]# ssh -l admin 10.240.16.138 -p 10000`
		`admin@10.240.16.138's password:`
		2. Power down SDS VM(s).
		`OVM> stop Vm name=<VM Name>`
		Note: Wait for the VM to have the state **Stopped**.
		3. Remove the VM from the inventory/disk.
		`OVM> delete Vm name=<VM Name>`
		Note: Repeat steps 2 and 3 for all the failed VMs.
		Execute **Procedure 3 (3.1 & 3.2) Create SDS Guest from OVA (OVM/OVM-Manager)** from [2] SDS Cloud Installation and Configuration Guide.

5. ☐	Prepare the new DP SOAM server	Execute **Procedure 9.3 Applying the SOAM Server Configuration File** from [2] SDS Cloud Installation and Configuration Guide.
6. ☐	Add DP SOAM server to the server group and validate pairing	From [2] SDS Cloud Installation and Configuration Guide, execute these procedures in sequence on the new DP SOAM server: 1. **Procedure 10.2 Adding a Server to the OAM Server Group (SOAM)**. 2. **Procedure 10.3 Restarting OAM Server Application (SOAM)**.

2.2.3 Post-Condition

DP SOAM is back in service.

2.3 Replace a Query Server

2.3.1 Pre-Condition

- Query server VM has stopped functioning.
- It has been determined to replace the Query server VM.

Note: If VIP is required, perform the steps to update the port so that two addresses can be used (See Appendix E Application VIP Failover Options) from reference [2] SDS Cloud Installation and Configuration Guide.

2.3.2 Recovery Steps

Procedure 3. Replace a Query Server

STEP #	Procedure	Description
1. ☐	Prepare for server replacement	Identify the Query server that needs to be replaced. Query server hostname = _____
2. ☐	Make Query server's Max Allowed HA Role "OOS" so it does not become active	1. From the SDS GUI, navigate to **Status & Manage > HA**. 2. Select the Query server that needs to be replaced. 3. Change its **Max Allowed HA Role** to **OOS**. 4. Click **OK**.
3. ☐	Remove 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. Move Query server out of the server group. 5. Click **OK**.

STEP #	Procedure	Description

4. ☐	Replace VM	**For VMWare based deployments**:
		1. Open the Cloud client of your choice, for example, vSphere Client and locate the defective Query server VM.
		2. Power down Query server VM and remove it from the inventory/disk.
		3. Execute **Procedure 1 Create SDS Guest from OVA (VMWare)** from [2] SDS Cloud Installation and Configuration Guide.
		For KVM/OpenStack based deployments:
		1. Log into the OpenStack control node.
		`$ ssh admusr@node`
		2. Power down defective Query server VM and remove it from the inventory/disk:
		`$ nova delete <VM Name>`
		3. Execute **Procedure 2 Create SDS Guest from OVA (KVM/OpenStack)** from [2] SDS Cloud Installation and Configuration Guide.
		For OVM-S/OVM-M based deployments:
		1. Log into the command line interface of the OVM-M.
		`OVM> ssh -l admin <OVM-M IP> -p 10000`
		Example:
		`[root@manager01 ~]# ssh -l admin 10.240.16.138 -p 10000`
		`admin@10.240.16.138's password:`
		2. Power down SDS VM(s).
		`OVM> stop Vm name=<VM Name>`
		Note: Wait for the VM to have the state **Stopped**.
		3. Remove the VM from the inventory/disk.
		`OVM> delete Vm name=<VM Name>`
		Note: Repeat steps 2 and 3 for all the failed VMs.
		Execute **Procedure 3 (3.1 & 3.2) Create SDS Guest from OVA (OVM/OVM-Manager)** from [2] SDS Cloud Installation and Configuration Guide.

5. ☐	Prepare the new Query server	Execute **Procedure 6.2 Applying the Query Server Configuration File** from [2] SDS Cloud Installation and Configuration Guide.
6. ☐	Add Query server to the server group and validate pairing	From [2] SDS Cloud Installation and Configuration Guide, execute **Procedure 6.3 Adding the Query Server to the SDS Server Group** on the new Query server.

STEP #	Procedure	Description
☐ 7.	Make Query server's Max Allowed HA Role to "Active"	1. From the SDS GUI, navigate to **Status & Manage > HA**. 2. Select the Query server. 3. Change its **Max Allowed HA Role** to **Observer**. 4. Click **OK**.
☐ 8.	Restart the Query server	From [2] SDS Cloud Installation and Configuration Guide, execute **Procedure 6.4 Restarting the Query server Application** on the new Query server.

2.3.3 Post-Condition

Query server is back in service.

2.4 Replace a SDS NOAM Server

2.4.1 Pre-Condition

- SDS NOAM server has stopped functioning.
- It has been determined to replace the SDS NOAM server.
- One SDS NOAM server is functioning.

Note: If VIP is required, perform the steps to update the port so that two addresses can be used (See Appendix E Application VIP Failover Options) from reference [2] SDS Cloud Installation and Configuration Guide.

2.4.2 Recovery Steps

Procedure 4. Replace a SDS NOAM Server

STEP #	Procedure	Description
☐ 1.	Prepare for server replacement	Identify the SDS NOAM server that needs to be replaced. Hostname = _____
☐ 2.	Make SDS NOAM server's Max Allowed HA Role "OOS" so it does not become active	1. From the SDS GUI, navigate to **Status & Manage > HA**. 2. Select the SDS NOAM server that needs to be replaced. 3. Change its **Max Allowed HA Role** to **OOS**. 4. Click **OK**.
☐ 3.	Remove SDS from the server group	1. From the SDS GUI, navigate to **Configuration > Server Groups**. 2. Select primary SDS's server group. 3. Click **Edit**. 4. Move SDS NOAM server out of the server group. 5. Click **OK**.

STEP #	Procedure	Description

4. ☐	Replace VM	**For VMWare based deployments**:
		1. Open the Cloud client of your choice, for example, vSphere Client and locate the defective SDS NOAM server VM.
		2. Power down SDS NOAM server VM and remove it from the inventory/disk.
		3. Execute **Procedure 1 Create SDS Guest from OVA (VMWare)** from [2] SDS Cloud Installation and Configuration Guide.
		For KVM/OpenStack based deployments:
		1. Log into the OpenStack control node.
		`$ ssh admusr@node`
		2. Power down defective SDS NOAM server VM and remove it from the inventory/disk:
		`$ nova delete <VM Name>`
		3. Execute **Procedure 2 Create SDS Guest from OVA (KVM/OpenStack)** from [2] SDS Cloud Installation and Configuration Guide.
		For OVM-S/OVM-M based deployments:
		1. Log into the command line interface of the OVM-M.
		`OVM> ssh -l admin <OVM-M IP> -p 10000`
		Example:
		`[root@manager01 ~]# ssh -l admin 10.240.16.138 -p 10000`
		`admin@10.240.16.138's password:`
		2. Power down SDS VM(s).
		`OVM> stop Vm name=<VM Name>`
		Note: Wait for the VM to have the state **Stopped**.
		3. Remove the VM from the inventory/disk.
		`OVM> delete Vm name=<VM Name>`
		Note: Repeat steps 2 and 3 for all the failed VMs.
		Execute **Procedure 3 (3.1 & 3.2) Create SDS Guest from OVA (OVM/OVM-Manager)** from [2] SDS Cloud Installation and Configuration Guide.

5. ☐	Prepare the new SDS NOAM server	Execute **Procedure 4.4 Applying the SDS NOAM Server Configuration File** from [2] SDS Cloud Installation and Configuration Guide.
6. ☐	Add SDS NOAM server to the server group and validate pairing	From [2] SDS Cloud Installation and Configuration Guide, execute these procedures in sequence on the new SDS NOAM server VM: 1. **Procedure 5.2 Adding a Server to an OAM Server Group**. 2. **Procedure 5.3 Verifying the SDS NOAM Server Alarm Status**.

2.4.3 Post-Condition

SDS NOAM server is back in service.

2.5 Replace a SDS NOAM Server Pair

2.5.1 Pre-Condition

- Active and standby SDS NOAM servers have stopped functioning.
- It has been determined to replace both VM(s) that host SDS NOAM servers.
- Recent backup archives of SDS configuration and provisioning databases are available.
- DR SDS NOAM servers are NOT available or are NOT installed.

2.5.2 Recovery Steps

Procedure 5. Replace a SDS NOAM Server Pair

STEP #	Procedure	Description
1. ☐	Determine SDS backup archive	Make sure you have access to the SDS backup archive containing provisioning data and configuration data. This backup archive should be in uncompressed format.

2. ☐	Replace old SDS VMs with new SDS VMs	**For VMWare based deployments**:
		1. Open the Cloud client of your choice, for example, vSphere Client and locate the defective SDS NOAM server VM.
		2. Power down SDS NOAM server VM and remove it from the inventory/disk.
		3. Execute **Procedure 1 Create SDS Guest from OVA (VMWare)** from [2] SDS Cloud Installation and Configuration Guide.
		For KVM/OpenStack based deployments:
		1. Log in to the OpenStack control node.
		`$ ssh admusr@node`
		2. Power down defective SDS NOAM server VM and remove it from the inventory/disk:
		`$ nova delete <VM Name>`
		3. Execute **Procedure 2 Create SDS Guest from OVA (KVM/OpenStack)** from [2] SDS Cloud Installation and Configuration Guide.
		For OVM-S/OVM-M based deployments:
		1. Log in to the command line interface of the OVM-M.
		`OVM> ssh -l admin <OVM-M IP> -p 10000`
		Example:
		`[root@manager01 ~]# ssh -l admin 10.240.16.138 -p 10000`
		`admin@10.240.16.138's password:`
		2. Power down SDS VM(s).

STEP #	Procedure	Description

		`OVM> stop Vm name=<VM Name>`
		Note: Wait for the VM to have the state **Stopped**.
		3. Remove the VM from the inventory/disk.
		`OVM> delete Vm name=<VM Name>`
		Note: Repeat steps 2 and 3 for all the failed VMs.
		Execute **Procedure 3 (3.1 & 3.2) Create SDS Guest from OVA (OVM/OVM-Manager)** from [2] SDS Cloud Installation and Configuration Guide.

☐ 3.	Configure the new SDS A server	Execute **Procedure 4 Configuring SDS NOAM Servers A and B** from [2] SDS Cloud Installation and Configuration Guide for only SDS A server.

☐ 4.	Copy SDS backup archive to new SDS A server	1. Login using ssh to the console of the new SDS NOAM server.
		2. Copy the uncompressed backup archive identified in step 1 to **/var/TKLC/db/filemgmt** area on the newly installed first SDS NOAM server.
		3. Execute `sudo prod.stop --ignore-cap` to stop running applications.
		Leave database running.
		4. Restore the configuration DB by executing:
		`sudo idb.restore -n -t /var/TKLC/db/filemgmt -v <full path to configuration archive file>`
		5. Restore the provisioning DB by executing:
		`sudo idb.restore -n -t /var/TKLC/db/filemgmt -v <full path to provisioning archive file>`
		Note: This step may take up time depending upon the size of provisioning database.
		SDS database is now restored.
		6. Start application by executing `sudo prod.start`.

☐ 5.	Re-exchange SSH keys for remote import/export/ data servers	1. Log into the primary SDS GUI as admin user using VIP address. 2. Perform ssh key exchange for Remote Export using the **SDS** > **Configuration** > **Options** screen. 3. Perform ssh key exchange for Remote Import using **SDS** > **Configuration** > **Options** screen. 4. Perform ssh key exchange for Data Export using **Administration** > **Remote Servers** > **Data Export** screen.
☐ 6.	Install the new second SDS NOAM server	Follow recovery steps from section 2.4 of this document to restore the second SDS NOAM server.

2.5.3 Post-Condition

- Both SDS NOAM servers are back in service.

- Provisioning clients are connected to SDS VIP address.
- Provisioning continues.

2.6 Replace a DP SOAM Server Pair

2.6.1 Pre-Condition

- Active and Standby DP SOAM servers have stopped functioning.
- It has been determined to replace both VM(s) that host DP SOAM.
- Access to primary SDS GUI is available.
- DPs are not receiving provisioning database updates.

2.6.2 Recovery Steps

Procedure 6. Replace a DP Server Pair

STEP #	Procedure	Description
1. ☐	Prepare for server replacement	Identify the DP SOAM server VM(s) that needs to be replaced. DP SOAM 1 = _____ DP SOAM 2 = _____

2. ☐	Replace old SDS DP SOAM VMs with new SDS SOAM VMs	**For VMWare based deployments**:
		1. Open the Cloud client of your choice, for example, vSphere Client and locate the defective DP SOAM server VM.
		2. Power down DP SOAM server VM and remove it from the inventory/disk.
		3. Execute **Procedure 1 Create SDS Guest from OVA (VMWare)** from [2] SDS Cloud Installation and Configuration Guide for each DP SOAM server VM to be replaced.
		For KVM/OpenStack based deployments:
		1. Log into the OpenStack control node.
		`$ ssh admusr@node`
		2. Power down defective DP SOAM server VM(s) and remove it from the inventory/disk:
		`$ nova delete <VM Name>`
		3. Execute **Procedure 2 Create SDS Guest from OVA (KVM/OpenStack)** from [2] SDS Cloud Installation and Configuration Guide.
		For OVM-S/OVM-M based deployments:
		1. Log into the command line interface of the OVM-M.
		`OVM> ssh -l admin <OVM-M IP> -p 10000`
		Example:
		`[root@manager01 ~]# ssh -l admin 10.240.16.138 -p 10000`
		`admin@10.240.16.138's password:`

STEP #	Procedure	Description

		2. Power down SDS VM(s).
		`OVM> stop Vm name=<VM Name>`
		Note: Wait for the VM to have the state **Stopped**.
		3. Remove the VM from the inventory/disk.
		`OVM> delete Vm name=<VM Name>`
		Note: Repeat steps 2 and 3 for all the failed VMs.
		Execute **Procedure 3 (3.1 & 3.2) Create SDS Guest from OVA (OVM/OVM-Manager)** from [2] SDS Cloud Installation and Configuration Guide.

☐ 3.	Prepare the new SDS SOAM servers	Execute **Procedure 9.3 Applying the SOAM Server Configuration File** from [2] SDS Cloud Installation and Configuration Guide.
☐ 4.	Restart the SOAM servers	From [2] SDS Cloud Installation and Configuration Guide, execute **Procedure 10.3 Restarting OAM Server Application (SOAM)** for each DP SOAM server VM to be replaced.
☐ 5.	Verify DP SOAM servers received SDS provisioning	1. Log into the active DP SOAM GUI using the VIP address. 2. Navigate to **Status & Manage > Servers**. 3. Make sure the new DP SOAM server(s) show **Norm** for DB, Reporting Status, and Appl State.

2.6.3 Post-Condition

- Both DP SOAM servers are back in service.
- DP SOAM configuration changes can be made from DP SOAM GUI.
- DPs are now receiving provisioning updates.

2.7 Replace a SDS NOAM Server Pair and Query Server with DR NOAM Servers and DR Query Server Available

2.7.1 Pre-Condition

- Active and Standby SDS NOAM server have stopped functioning. User cannot access primary SDS site GUI.
- Query server has stopped functioning.
- It has been determined to replace both NOAM servers and the Query server.
- DR NOAM servers and DR Query server is available. User can access DR SDS GUI.

2.7.2 Recovery Steps

Procedure 7. Replace a SDS NOAM Server Pair and Query Server

STEP #	Procedure	Description
☐ 1.	Bring DR SDS NOAM servers to primary SDS NOAM servers.	Follow the [4] DSR/SDS 8.x NOAM Failover User's Guide to convert DR NOAM servers to primary NOAM servers. After this step, SDS GUI is accessible and provisioning continues.
At this point, SDS provisioning is fully functioning. The remaining steps bring the former primary SDS NOAM server back into the service as the new-DR SDS NOAM servers.		
☐ 2.	Bring former-primary SDS back to service	Execute section 2.5 to return the former primary SDS NOAM servers and site back to service. After this step, both the former primary SDS servers are back into service.
☐ 3.	If you need to make the recovered site primary once again (optional)	Follow the reference [4] DSR/SDS 8.x NOAM Failover User's Guide.

2.7.3 Post-Condition

- GUI on the new primary SDS is accessible.
- Provisioning continues.
- 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.

2.8 Replace a DR SDS NOAM Server Pair

2.8.1 Pre-Condition

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

2.8.2 Recovery Steps

Procedure 8. Replace a DR SDS NOAM Server Pair

STEP #	Procedure	Description
☐ 1.	Prepare for server replacement	Identify the DR SDS NOAM servers that needs to be replaced. DR SDS-A server: _____ DR SDS-B server: _____ DR SDS Query server: _____

STEP #	Procedure	Description

2. ☐	Replace old SDS VMs with new SDS VMs	**For VMWare based deployments**:
		1. Open the Cloud client of your choice, for example, vSphere Client and locate the defective DP NOAM server VM.
		2. Power down DP NOAM server VM and remove it from the inventory/disk.
		3. Execute **Procedure 1 Create SDS Guest from OVA (VMWare)** from [2] SDS Cloud Installation and Configuration Guide for each DP SOAM server VM to be replaced.
		For KVM/OpenStack based deployments:
		1. Log into the OpenStack control node.
		`$ ssh admusr@node`
		2. Power down defective DP NOAM server VM(s) and remove it from the inventory/disk:
		`$ nova delete <VM Name>`
		3. Execute **Procedure 2 Create SDS Guest from OVA (KVM/OpenStack)** from [2] SDS Cloud Installation and Configuration Guide.
		For OVM-S/OVM-M based deployments:
		1. Log into the command line interface of the OVM-M.
		`OVM> ssh -l admin <OVM-M IP> -p 10000`
		Example:
		`[root@manager01 ~]# ssh -l admin 10.240.16.138 -p 10000`
		`admin@10.240.16.138's password:`
		2. Power down SDS VM(s).
		`OVM> stop Vm name=<VM Name>`
		Note: Wait for the VM to have the state **Stopped**.
		3. Remove the VM from the inventory/disk.
		`OVM> delete Vm name=<VM Name>`
		Note: Repeat steps 2 and 3 for all the failed VMs.
		Execute **Procedure 3 (3.1 & 3.2) Create SDS Guest from OVA (OVM/OVM-Manager)** from [2] SDS Cloud Installation and Configuration Guide.

3. ☐	Install the new DR SDS servers	Execute **Procedure 7 Configuring DR SDS NOAM Servers** from [2] SDS Cloud Installation and Configuration Guide.
4. ☐	Configure the new DR SDS servers	Execute **Procedure 8 OAM Pairing for DR SDS NOAM Site** from [2] SDS Cloud Installation and Configuration Guide.

STEP #	Procedure	Description
☐ 5.	Restart the application on all new DR SDS NOAM servers	4. Log into the primary SDS GUI as admin user using VIP address. 5. Navigate to **Status & Manage > Servers**. 6. Select the DR SDS-A server. 7. Click **Restart**. 8. Click **OK** to confirm. 9. Repeat steps for DR SDS-B server and DR SDS Query server.
☐ 6.	Re-exchange SSH keys for remote import/export/ data servers	1. Log into the primary SDS GUI as admin user using VIP address. 2. Perform ssh key exchange for Remote Export using the **SDS** > **Configuration** > **Options** screen. 3. Perform ssh key exchange for Remote Import using **SDS** > **Configuration** > **Options** screen. 4. Perform ssh key exchange for Data Export using **Administration** > **Remote Servers** > **Data Export** screen.

2.8.3 Post-Condition

- All DR SDS servers are back in service

Backup Directory

Procedure 9. Backup Directory

STEP #	Procedure	Description

1. ☐	**NOAM VIP Console**: Determine if backup directory exists	1. Execute this command on an active NOAM server console (accessed using the VIP) and compare the output.
		`$ cd /var/TKLC/db/filemgmt/`
		`$ ls -ltr`
		2. Look for the backup directory in the output.
		3. Make sure the directory is already created with correct permission. The directory looks like this:
		`drwxrwx--- 2 awadmin awadm 4096 Dec 19 02:15 backup`
		• If the directory is already there with correct permissions, then skip steps 2 and 3.
		• If directory does not have the correct permissions, then go to step 3.

2. ☐	**NOAM VIP Console**: Create backup directory	1. Go to the backup directory location.
		`cd /var/TKLC/db/filemgmt/`
		2. Create backup directory.
		`$ mkdir backup`
		3. Verify directory has been created.
		`$ ls -ltr /var/TKLC/db/filemgmt/backup`
		Note: A **No such file or directory** error message should not display. The directory should show as empty with the total as 0 for content.

3. ☐	**NOAM VIP Console**: Change permissions of backup directory	1. Verify directory has been created.
		`$ ls -ltr /var/TKLC/db/filemgmt/backup`
		Note: A **No such file or directory** error message should not display. The directory should show as empty with the total as 0 for content.
		2. Change permissions for the backup directory.
		`$ chmod 770 /var/TKLC/db/filemgmt/backup`
		3. Change ownership of backup directory.
		`$ sudo chown -R awadmin:awadm /var/TKLC/db/filemgmt/backup`
		Directory displays as follows:
		`drwxrwx--- 2 awadmin awadm 4096 Dec 22 02:15 backup`

4. ☐	**NOAM VIP Console**: Copy the backup file to the backup directory	1. Copy the backup file to the backup directory.
		`$ cp BACKUPFILE /var/TKLC/db/filemgmt/backup`
		2. Change permissions of files in the backup directory.
		`$ chmod 666 Backup.*`
		3. Change ownership of files in the backup directory.
		`$ sudo chown -R awadmin:awadm Backup.*`

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 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.

Emergency Response

In the event of a critical service situation, emergency response is offered by the CAS main number at 1-800-223-1711 (toll-free in the US), or by calling the Oracle Support hotline for your local country from the list at http://www.oracle.com/us/support/contact/index.html. The emergency response provides immediate coverage, automatic escalation, and other features to ensure that the critical situation is resolved as rapidly as possible.

A critical situation is defined as a problem with the installed equipment that severely affects service, traffic, or maintenance capabilities, and requires immediate corrective action. Critical situations affect service and/or system operation resulting in one or several of these situations:

- A total system failure that results in loss of all transaction processing capability
- Significant reduction in system capacity or traffic handling capability
- Loss of the system's ability to perform automatic system reconfiguration
- Inability to restart a processor or the system
- Corruption of system databases that requires service affecting corrective actions
- Loss of access for maintenance or recovery operations
- Loss of the system ability to provide any required critical or major trouble notification

Any other problem severely affecting service, capacity/traffic, billing, and maintenance capabilities may be defined as critical by prior discussion and agreement with Oracle.

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5. To download a file to your location, right-click the PDF link, select **Save target as** (or similar command based on your browser), and save to a local folder.