

Oracle® Communications
Diameter Signaling Router Full Address
Resolution

SDS Cloud Disaster Recovery Guide

Release 8.0

E76336-02

June 2017

ORACLE®

This software and related documentation are provided under a license agreement containing restrictions on use and disclosure and are protected by intellectual property laws. Except as expressly permitted in your license agreement or allowed by law, you may not use, copy, reproduce, translate, broadcast, modify, license, transmit, distribute, exhibit, perform, publish, or display any part, in any form, or by any means. Reverse engineering, disassembly, or decompilation of this software, unless required by law for interoperability, is prohibited.

The information contained herein is subject to change without notice and is not warranted to be error-free. If you find any errors, please report them to us in writing.

If this is software or related documentation that is delivered to the U.S. Government or anyone licensing it on behalf of the U.S. Government, then the following notice is applicable:

U.S. GOVERNMENT END USERS: Oracle programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, delivered to U.S. Government end users are "commercial computer software" pursuant to the applicable Federal Acquisition Regulation and agency-specific supplemental regulations. As such, use, duplication, disclosure, modification, and adaptation of the programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, shall be subject to license terms and license restrictions applicable to the programs. No other rights are granted to the U.S. Government.

This software or hardware is developed for general use in a variety of information management applications. It is not developed or intended for use in any inherently dangerous applications, including applications that may create a risk of personal injury. If you use this software or hardware in dangerous applications, then you shall be responsible to take all appropriate fail-safe, backup, redundancy, and other measures to ensure its safe use. Oracle Corporation and its affiliates disclaim any liability for any damages caused by use of this software or hardware in dangerous applications.

Oracle and Java are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

Intel and Intel Xeon are trademarks or registered trademarks of Intel Corporation. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. AMD, Opteron, the AMD logo, and the AMD Opteron logo are trademarks or registered trademarks of Advanced Micro Devices. UNIX is a registered trademark of The Open Group.

This software or hardware and documentation may provide access to or information about content, products, and services from third parties. Oracle Corporation and its affiliates are not responsible for and expressly disclaim all warranties of any kind with respect to third-party content, products, and services unless otherwise set forth in an applicable agreement between you and Oracle. Oracle Corporation and its affiliates will not be responsible for any loss, costs, or damages incurred due to your access to or use of third-party content, products, or services, except as set forth in an applicable agreement between you and 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 My Oracle Support (MOS) in section 2.9.

Table of Contents

1. Introduction	5
1.1 Purpose and Scope.....	5
1.2 References.....	5
1.3 Acronyms	5
1.4 Assumptions	6
1.5 How to Use this Document.....	6
2. Disaster Recovery Scenarios	6
2.1 Replacement of A DP Server	6
2.1.1 Pre-Condition	6
2.1.2 Recovery Steps	6
2.1.3 Post-Condition.....	6
2.2 Replacement of a DP SOAM.....	7
2.2.1 Pre-Condition	7
2.2.2 Recovery Steps	7
2.2.3 Post-Condition.....	8
2.3 Replacement of a Query Server	8
2.3.1 Pre-Condition	8
2.3.2 Recovery Steps	8
2.3.3 Post-Condition.....	10
2.4 Replacement of a SDS NOAM Server.....	10
2.4.1 Pre-Condition	10
2.4.2 Recovery Steps	10
2.4.3 Post-Condition.....	11
2.5 Replacement of SDS NOAM Server Pair.....	11
2.5.1 Pre-Condition	11
2.5.2 Recovery Steps	12
2.5.3 Post-Condition.....	13
2.6 Replacement of DP SOAM Server Pair	13
2.6.1 Pre-Condition	13
2.6.2 Recovery Steps	13
2.6.3 Post-Condition.....	14
2.7 Replacement of SDS NOAM Server Pair and Query Server with DR NOAM Servers and DR Query Server Available	15

- 2.7.1 Pre-Condition 15
 - 2.7.2 Recovery Steps 15
 - 2.7.3 Post-Condition 15
- 2.8 Replacement of DR SDS NOAM Server Pair 15
 - 2.8.1 Pre-Condition 15
 - 2.8.2 Recovery Steps 15
 - 2.8.3 Post-Condition 17
- 2.9 My Oracle Support (MOS)..... 17

List of Tables

- Table 1. Acronyms5

1. Introduction

1.1 Purpose and Scope

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

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 which 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.

1.2 References

- [1] DSR 7.2 Disaster Recovery Guide, E69612, Latest Revision
- [2] SDS Cloud Installation and Configuration Guide, E76333, cgbu_019912, Latest Revision
- [3] Productizing Cloud Deployable DSR, cgbu_eg_2109, Latest Revision
- [4] DSR 8.0 Disaster Recovery Guide, E76332, cgbu_019944, Latest Revision
- [5] DSR/SDS 8.x NOAM Failover User's Guide, E85595

1.3 Acronyms

Table 1. Acronyms

Acronym	Meaning
DP	Database Processor
MP	Message Processor
NE	Network Element
NOAM	Network Operations, Administration & Maintenance
OAM	Operations, Administration & Maintenance
OVM-M	Oracle Virtual Machine Manager
OVM-S	Oracle Virtual Machine Server

Acronym	Meaning
SDS	Subscriber Database System
SOAM	Systems Operations, Administration & Maintenance
VIP	Virtual IP
VM	Virtual Machine running specific server logic [eg DP VM would mean Virtual Machine running Database Processor Server logic]

1.4 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.

1.5 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, STOP and contact My Oracle Support (MOS) (as described in section 2.9)

2. Disaster Recovery Scenarios

2.1 Replacement of 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 replacement

2.1.2 Recovery Steps

In order to quickly make SDS GUI accessible and provisioning to continue, old-DR SDS NOAM Servers are activated and made to serve as new-Primary SDS NOAM Servers. Follow the instructions from reference [5] DSR/SDS 8.x NOAM Failover User's Guide, E85595.

2.1.3 Post-Condition

DP server is processing traffic.




2.2 Replacement of a DP SOAM

2.2.1 Pre-Condition

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

2.2.2 Recovery Steps

1 ■	Prepare for VM replacement	Identify the DP SOAM that needs replacement DP SOAM hostname = _____
2 ■	Make DP SOAM server's Max Allowed HA Role "OOS" so it does not become active	<ol style="list-style-type: none"> 1. Go to the SDS GUI. 2. Select [Main Menu: Status & Manage → HA]. 3. Select the DP SOAM that needs replacement. 4. Change its "Max Allowed HA Role" to "OOS". 5. Click the "OK" button.
3 ■	Remove DP SOAM from the server group	<ol style="list-style-type: none"> 1. Go to the SDS GUI. 2. Select [Main Menu: Configuration → Server Groups]. 3. Select DP SOAM's server group. 4. Click the "Edit" button. 5. Move DP SOAM out of the server group. 6. Click the "OK" button.

4 	Replace VM	<p>For VMWare based deployments:</p> <ol style="list-style-type: none"> 1. Launch the Cloud client of your choice eg “vSphere Client” and browse to the defective DP SOAM VM. 2. Power down DP SOAM VM and remove it from the inventory / disk. 3. Execute Procedure 1 <i>Create SDS Guest from OVA (VMWare)</i> from [2]. <p>For KVM / OpenStack based deployments:</p> <ol style="list-style-type: none"> 1. Login to the OpenStack control node. \$ ssh admusr@node 2. Power down DP SOAM VM and remove it from the inventory / disk: \$ nova delete <vm-name> 3. Execute Procedure 2 to <i>Create SDS Guest from OVA (KVM / OpenStack)</i> from [2]. <p>For OVM-S / OVM-M based deployments:</p> <ol style="list-style-type: none"> 1. Login to the command line interface of OVM-Manager. 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: OVM> 2. Power down SDS VM(s). OVM> stop Vm name=<VMName> Note: Wait for the VM to have the state ‘Stopped’ 3. Remove the VM from the inventory / disk OVM> delete Vm name=<VMName> <p>Note: Repeat the above steps 2 and 3 for all the failed VMs.</p> <ol style="list-style-type: none"> 4. Execute Procedure 3 <i>Create SDS Guest from OVA (OVM / OVM-Manager)</i> from [2]
5 	Prepare the new DP SOAM server	Execute Procedure 9.3 <i>Applying the SOAM Server Configuration File</i> from reference [2].
6 	Add DP SOAM server to the server group and validate pairing	<p>From reference [2], execute following procedures in sequence on new DP SOAM server.</p> <ol style="list-style-type: none"> 1. Procedure 10.2 <i>Adding a Server to the OAM Server Group (SOAM)</i> 2. Procedure 10.3 <i>Restarting OAM Server Application (SOAM)</i>

2.2.3 Post-Condition


DP SOAM is back in service.

2.3 Replacement of a Query Server

2.3.1 Pre-Condition

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

2.3.2 Recovery Steps

1 	Prepare for server replacement.	<p>Identify the Query server that needs replacement</p> <p>Query server hostname = _____</p>
--	---------------------------------	--

<p>2</p> <p>Make Query Server's Max Allowed HA Role "OOS" so it does not become active</p>	<ol style="list-style-type: none"> 1. Go to the SDS GUI. 2. Select [Main Menu: Status & Manage → HA]. 3. Select the Query Server that needs replacement. 4. Change its "Max Allowed HA Role" to "OOS". 5. Click the "OK" button.
<p>3</p> <p>Remove Query Server from the server group</p>	<ol style="list-style-type: none"> 1. Go to the SDS GUI. 2. Select [Main Menu: Configuration → Server Groups]. 3. Select the Query Server's server group. 4. Click the "Edit" button. 5. Move Query Server out of the server group. 6. Click the "OK" button.
<p>4</p> <p>Replace VM</p>	<p>For VMWare based deployments:</p> <ol style="list-style-type: none"> 1. Launch the Cloud client of your choice eg "vSphere Client" and browse to the defective Query Server VM. 2. Power down Query Server VM and remove it from the inventory / disk. 3. Execute Procedure 1 <i>Create SDS Guest from OVA (VMWare)</i> from [2]. <p>For KVM / OpenStack based deployments:</p> <ol style="list-style-type: none"> 1. Login to the OpenStack control node. \$ ssh admusr@node 2. Power down Query Server VM and remove it from the inventory / disk: \$ nova delete <vm-name> 3. Execute Procedure 2 <i>Create SDS Guest from OVA (KVM / OpenStack)</i> from [2]. <p>For OVM-S / OVM-M based deployments:</p> <ol style="list-style-type: none"> 1. Login to the command line interface of OVM-Manager. 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: OVM> 2. Power down SDS VM(s). OVM> stop Vm name=<VMName> Note: Wait for the VM to have the state 'Stopped' 3. Remove the VM from the inventory / disk OVM> delete Vm name=<VMName> <p>Note: Repeat the above steps 2 and 3 for all the failed VMs.</p> <ol style="list-style-type: none"> 4. Execute Procedure 3 <i>Create SDS Guest from OVA (OVM / OVM-Manager)</i> from [2]
<p>5</p> <p>Prepare the new Query server</p>	<p>Execute Procedure 6.2 <i>Applying the Query Server Configuration File</i> from reference [2].</p>
<p>6</p> <p>Add Query Server to the server group and validate pairing</p>	<p>From reference [2], execute following procedure on new Query server. Procedure 6.3 <i>Adding the Query Server to the SDS Server Group</i></p>

7 ■	Make Query Server's Max Allowed HA Role to "Active"	<ol style="list-style-type: none"> 1. Go to the SDS GUI. 2. Select [Main Menu: Status & Manage → HA]. 3. Select the Query Server that needs replacement. 4. Change its "Max Allowed HA Role" to "Observer". 5. Click the "OK" button.
8 ■	Restart the Query Server	From reference [2], execute following procedure on new Query server. Procedure 6.4 <i>Restarting the Query Server Application</i>

2.3.3 Post-Condition

Query server is back in service

2.4 Replacement of 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.

2.4.2 Recovery Steps

1 ■	Prepare for server replacement.	Identify the SDS NOAM Server that needs replacement Hostname = _____
2 ■	Make SDS NOAM Server's Max Allowed HA Role "OOS" so it does not become active.	<ol style="list-style-type: none"> 1. Go to the SDS GUI. 2. Select [Main Menu: Status & Manage → HA]. 3. Select the SDS that needs replacement. 4. Change its "Max Allowed HA Role" to "OOS". 5. Click the "OK" button.
3 ■	Remove SDS from the server group.	<ol style="list-style-type: none"> 1. Go to the SDS GUI. 2. Select [Main Menu: Configuration → Server Groups]. 3. Select Primary SDS's server group. 4. Click the "Edit" button. 5. Move SDS out of the server group. 6. Click the "OK" button.

4	Replace VM	<p>For VMWare based deployments:</p> <ol style="list-style-type: none"> 1. Launch the Cloud client of your choice eg “vSphere Client” and browse to the defective SDS VM. 2. Power down SDS VM and remove it from the inventory / disk. 3. Execute Procedure 1 <i>Create SDS Guest from OVA (VMWare)</i> from [2]. <p>For KVM / OpenStack based deployments:</p> <ol style="list-style-type: none"> 1. Login to the OpenStack control node. \$ ssh admusr@node 2. Power down SDS VM and remove it from the inventory / disk: \$ nova delete <vm-name> 3. Execute Procedure to 2 <i>Create SDS Guest from OVA (KVM / OpenStack)</i> from [2]. <p>For OVM-S / OVM-M based deployments:</p> <ol style="list-style-type: none"> 1. Login to the command line interface of OVM-Manager. 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: OVM> 2. Power down SDS VM(s). OVM> stop Vm name=<VMName> Note: Wait for the VM to have the state ‘Stopped’ 3. Remove the VM from the inventory / disk OVM> delete Vm name=<VMName> <p>Note: Repeat the above steps 2 and 3 for all the failed VMs.</p> <ol style="list-style-type: none"> 4. Execute Procedure 3 <i>Create SDS Guest from OVA (OVM / OVM-Manager)</i> from [2]
5	Prepare the new SDS NOAM Server	Execute Procedure 4.4 <i>Applying the SDS NOAM Server Configuration File</i> from reference [2].
6	Add SDS NOAM Server to the server group and validate pairing	<p>From reference [2], execute following procedures in sequence on new SDS NOAM Server VM:</p> <ol style="list-style-type: none"> 1. Procedure 5.2 <i>Adding a Server to an OAM Server Group</i> 2. Procedure 5.3 <i>Verifying the SDS NOAM Server Alarm Status</i>

2.4.3 Post-Condition

SDS NOAM Server is back in service

2.5 Replacement of 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

1	Determine SDS backup archive	Make sure that you have access to SDS backup archive that contains provisioning data as well as configuration data. This backup archive should be in uncompressed format.
2	Replace old SDS VMs with new SDS VMs.	<p>For VMWare based deployments:</p> <ol style="list-style-type: none"> 1. Launch the Cloud client of your choice eg “vSphere Client” and browse to the defective SDS VMs. 2. Power down SDS VM(s) and remove it from the inventory / disk. 3. Execute Procedure 1 Create SDS Guest from OVA (VMWare) from [2]. <p>For KVM / OpenStack based deployments:</p> <ol style="list-style-type: none"> 1. Login to the OpenStack control node. \$ ssh admusr@node” 2. Power down SDS 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]. <p>For OVM-S / OVM-M based deployments:</p> <ol style="list-style-type: none"> 1. Login to the command line interface of OVM-Manager. 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: OVM> 2. Power down SDS VM(s). OVM> stop Vm name=<VMName> Note: Wait for the VM to have the state ‘Stopped’ 3. Remove the VM from the inventory / disk OVM> delete Vm name=<VMName> <p>Note: Repeat the above steps 2 and 3 for all the failed VMs.</p> <ol style="list-style-type: none"> 4. Execute Procedure 3 Create SDS Guest from OVA (OVM-S / OVM-M) from [2]
3	Configure the new SDS A server	Execute Procedure 4 Configuring SDS NOAM Servers A and B for from reference [2] for only SDS A Server.
5	Copy SDS backup archive to new SDS A server.	<ol style="list-style-type: none"> 1. Login via SSH to the console of new SDS NOAM Server. 2. Copy the uncompressed backup archive identified in step 1 to /var/TKLC/db/filemgmt area on 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> <p>Note: This step may take up time depending upon the size of provisioning database.</p> <ol style="list-style-type: none"> 6. SDS database is now restored. Start application by executing “sudo prod.start”.

<div>6</div> <div></div>	Re-exchange SSH keys for remote import/export/data servers.	<ol style="list-style-type: none"> 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]
<div>7</div> <div></div>	Install the new second SDS NOAM Server	Follow recovery steps from section 2.4 of this document to restore 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 Replacement of 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

<div>1</div> <div></div>	Prepare for server replacement.	Identify the DP SOAM server VM(s) that needs replacement DP SOAM 1 = _____ DP SOAM 2 = _____
--------------------------	---------------------------------	--

2	Replace old SDS DP SOAM VMs with new SDS SOAM VMs.	<p>For VMWare based deployments:</p> <ol style="list-style-type: none"> 1. Launch the Cloud client of your choice eg “vSphere Client” and browse to the defective DP SOAM VM(s). 2. Power down SDS SOAM VM(s) and remove it from the inventory / disk. 3. Execute Procedure 1 Create SDS Guest from OVA (VMWare) from [2] for each DP SOAM server VM to be replaced. <p>For KVM / OpenStack based deployments:</p> <ol style="list-style-type: none"> 1. Login to the OpenStack control node. \$ ssh admusr@node 2. Power down defective DP SOAM 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]. <p>For OVM-S / OVM-M based deployments:</p> <ol style="list-style-type: none"> 1. Login to the command line interface of OVM-Manager. 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: OVM> 2. Power down SDS VM(s). OVM> stop Vm name=<VMName> Note: Wait for the VM to have the state ‘Stopped’ 3. Remove the VM from the inventory / disk OVM> delete Vm name=<VMName> <p>Note: Repeat the above steps 2 and 3 for all the failed VMs.</p> <ol style="list-style-type: none"> 4. Execute Procedure 3 Create SDS Guest from OVA (OVM / OVM-Manager) from [2]
3	Prepare the new SDS SOAM servers	Execute Procedure 9.3 Applying the SOAM Server Configuration File for SDS SOAM Server(s) from reference [2].
5	Restart the SOAM servers	From reference [2], execute procedure 10.3 Restarting the OAM Server Application (SOAM) for each DP SOAM server VM to be replaced.
6	Verify that DP SOAM servers received SDS provisioning	<ol style="list-style-type: none"> 1. Login to active DP SOAM GUI using VIP address. 2. Select [Main Menu: Status & Manage → Servers] screen. 3. Make sure that 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 Replacement of 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

1	Bring DR SDS NOAM servers to primary SDS NOAM servers.	Follow the reference DSR/SDS 8.x NOAM Failover User's Guide, E85595 [5] 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 DSR/SDS 8.x NOAM Failover User's Guide, E85595 [5].

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 Replacement of 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 QS 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 	Replace old SDS VMs with new SDS VMs.	<p>For VMWare based deployments:</p> <ol style="list-style-type: none"> 1. Launch the Cloud client of your choice eg “vSphere Client” and browse to the defective SDS VMs. 2. Power down SDS VM(s) and remove it from the inventory / disk. 3. Execute Procedure 1 <i>Create SDS Guest from OVA (VMWare)</i> from [2]. <p>For KVM / OpenStack based deployments:</p> <ol style="list-style-type: none"> 1. Login to the OpenStack control node. <ol style="list-style-type: none"> i. “\$ ssh admusr@node” 2. Power down SDS VM(s) and remove it from the inventory / disk: <ol style="list-style-type: none"> i. “\$ nova delete <vm-name>” 3. Execute Procedure 2 <i>Create SDS Guest from OVA (KVM / OpenStack)</i> from [2]. <p>For OVM / OVM-Manager based deployments:</p> <p>For OVM-S / OVM-M based deployments:</p> <ol style="list-style-type: none"> 1. Login to the command line interface of OVM-Manager. 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: OVM> 2. Power down SDS VM(s). OVM> stop Vm name=<VMName> Note: Wait for the VM to have the state ‘Stopped’ 3. Remove the VM from the inventory / disk OVM> delete Vm name=<VMName> <p>Note: Repeat the above steps 2 and 3 for all the failed VMs.</p> <ol style="list-style-type: none"> 4. Execute Procedure 3 <i>Create SDS Guest from OVA (OVM-S / OVM-M)</i> from [2]
3 	Install the new DR SDS servers	Execute Procedure 7 <i>Configuring DR SDS NOAM servers</i> from reference [2]
4 	Configure the new DR SDS servers	Execute Procedure 8 <i>OAM Pairing for DR SDS NOAM site</i> from reference [2]
5 	Restart the application on all new DR SDS NOAM Servers.	<ol style="list-style-type: none"> 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 6. Repeat all above for DR SDS-B server, and DR SDS Query server
6 	Re-exchange SSH keys for remote import/export/data servers.	<ol style="list-style-type: none"> 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]

2.8.3 Post-Condition

- All DR SDS Servers are back in service

2.9 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 will be 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.