

# **Oracle® Communications**

## **Diameter Signaling Router**

DSR Cloud Disaster Recovery Guide

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**ORACLE®**

Oracle Communications Diameter Signaling Router, DSR Cloud Disaster Recovery Guide

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See more information on MOS in Appendix E. My Oracle Support (MOS).

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## 1. Introduction

### 1.1 Purpose and Scope

This document describes how to execute disaster recovery for DSR (3-tier deployments). This includes recovery of partial or a complete loss of one or more DSR servers. 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. This document provides step-by-step instructions to execute disaster recovery for DSR. Executing this procedure also involves referring to and executing procedures in existing support documents.

**Note:** Components dependent on DSR might also need to be recovered, for example SDS and IDIH.

**Note:** Failures can also happen from the host or Infrastructure level. 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 a 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 DSR application.

### 1.2 References

- [1] DSR 8.0 Cloud Installation Guide, E76331, cgbu\_019911, Oracle
- [2] DSR/SDS 8.x NOAM Failover User's Guide, E85595
- [3] DSR PCA Activation Guide, E81528
- [4] DSR MAP-Diameter IWF Feature Activation Procedure, E78927

### 1.3 Acronyms

An alphabetized list of acronyms used in the document.

**Table 1. Acronyms**

Acronym	Definition
BIOS	Basic Input Output System
CD	Compact Disk
DR	Disaster Recovery
DSR	Diameter Signaling Router
ESXi	Elastic Sky X Integrated
FABR	Full Address Based Resolution
iDIH	Integrated Diameter Intelligence Hub
IPFE	IP Front End
IWF	Inter Working Function
NAPD	Network Architecture Planning Diagram
NOAM	Network Operations, Administration & Maintenance
OS	Operating System
OVA	Open Virtualization Appliance
OVM-M	Oracle Virtual Machine Manager
OVM-S	Oracle Virtual Machine Server

Acronym	Definition
PDRA	Policy Diameter Routing Agent
PCA	Policy and Charging Application
RBAR	Range Based Address Resolution
SAN	Storage Area Network
SFTP	Secure File Transfer Protocol
SNMP	Simple Network Management Protocol
SOAM	Systems Operations, Administration & Maintenance
TPD	Tekelec Platform Distribution
VM	Virtual Machine

## 1.4 Terminology

**Table 2. Terminology**

Term	Definition
Base software	Base software includes deploying the VM image.
Failed server	A failed server in disaster recovery context refers to a VM that has suffered partial or complete software failure to the extent that it cannot restart or be returned to normal operation and requires intrusive activities to re-install the software.
Software Centric	The business practice of delivering an Oracle software product, while relying upon the customer to procure the requisite hardware components. Oracle provides the hardware specifications, but does not provide the hardware or hardware firmware, and is not responsible for hardware installation, configuration, or maintenance.
Enablement	The business practice of providing support services (hardware, software, documentation, etc.) that enable a 3rd party entity to install, configuration, and maintain Oracle products for Oracle customers.

## 1.5 Optional Features

Further configuration and/or installation steps need to be taken for optional features that may be present in this deployment. Refer to these documents for disaster recovery steps needed for their components.

**Table 3. Optional Features**

Feature	Document
Diameter Mediation	DSR Meta Administration Feature Activation Procedure, E58661
Full Address Based Resolution (FABR)	DSR FABR Feature Activation Procedure, E78925
Range Based Address Resolution (RBAR)	DSR RBAR Feature Activation Procedure, E78926
Map-Diameter Interworking (MAP-IWF)	DSR MAP-Diameter IWF Feature Activation Procedure, E78927
Policy and Charging Application (PCA)	DSR PCA Activation Procedure, E81528
Host Intrusion Detection System (HIDS)	DSR Security Guide, E76974-01, Section 3.2

## 2. General Description

The DSR disaster recovery procedure falls into five basic categories. It is primarily dependent on the state of the NOAM servers and SOAM servers.

Category	State of Server
Recovery of the entire network from a total outage [Recovery Scenario 1 (Complete Server Outage)]	<ul style="list-style-type: none"> <li>• All NOAM servers failed</li> <li>• All SOAM servers failed</li> <li>• 1 or more MP servers failed</li> </ul>
Recovery of one or more servers with at least one NOAM server intact [Recovery Scenario 2 (Partial Server Outage with One NOAM Server Intact and Both SOAMs Failed)]	<ul style="list-style-type: none"> <li>• 1 or more NOAM servers intact</li> <li>• 1 or more SOAM or MP servers failed</li> </ul>
Recovery of the NOAM pair with one or more SOAM servers intact [Recovery Scenario 3 (Partial Server Outage with all NOAM Servers Failed and One SOAM Server Intact)]	<ul style="list-style-type: none"> <li>• All NOAM servers failed</li> <li>• 1 or more SOAM servers intact</li> </ul>
Recovery of one or more server with at least one NOAM and one SOAM server intact. [Recovery Scenario 4 (Partial Server Outage with one NOAM Server and One SOAM Server Intact)]	<ul style="list-style-type: none"> <li>• 1 or more NOAM servers intact</li> <li>• 1 or more SOAM servers intact</li> <li>• 1 SOAM or 1 or more MP servers failed</li> </ul>
Recovery of the NOAM pair with DR-NOAM available and one or more SOAM servers intact [Recovery Scenario 5 (Partial Server Outage with all NOAM servers failed with DR-NOAM available)]	<ul style="list-style-type: none"> <li>• All NOAM servers failed</li> <li>• 1 or more SOAM servers intact</li> <li>• DR-NOAM available</li> </ul>
Recovery of one or more server with corrupt databases that cannot be restored via replication from the active parent node.	

### 2.1 Complete Server Outage (All Servers) – Recovery Scenario 5.1.1

Scenario:

- All NOAM servers failed
- All SOAM servers failed
- 1 or more MP servers failed

This is the worst case scenario where all the servers in the network have suffered complete software failure. The servers are recovered using OVA images and then restoring database backups to the active NOAM and SOAM servers.

Database backups are taken from customer offsite backup storage locations (assuming these were performed and stored offsite before the outage). If no backup files are available, the only option is to rebuild the entire network from scratch. The network data must be reconstructed from whatever sources are available, including entering all data manually.

## **2.2 Partial Server Outage with one NOAM Server Intact and Both SOAMs Failed – Recovery Scenario 5.1.2**

Scenario:

- 1 or more NOAM servers intact
- 1 or more SOAM or MP servers failed

This case assumes at least one NOAM servers intact. All SOAM servers have failed and are recovered using OVA images. Database is restored on the SOAM server and replication recovers the database of the remaining servers.

## **2.3 Partial Server Outage with Both NOAM Servers Failed and One SOAM Server Intact – Recovery Scenario 5.1.3**

Scenario:

- All NOAM servers failed
- 1 or more SOAM servers intact

Database is restored on the NOAM and replication recovers the database of the remaining servers.

## **2.4 Partial Server Outage with NOAM and One SOAM Server Intact – Recovery Scenario 5.1.4**

Scenario:

- 1 or more NOAM servers intact
- 1 or more SOAM servers intact
- 1 SOAM or 1 or more MP servers failed

The simplest case of disaster recovery is with at least one NOAM and at least one SOAM servers intact. All servers are recovered using base recovery of software. Database replication from the active NOAM and SOAM servers recover the database to all servers.

## **2.5 Partial Server Outage with both NOAM Servers Failed with DR-NOAM Available – Recovery Scenario 5.1.5**

Scenario:

- All NOAM servers failed
- 1 or more SOAM servers intact
- DR-NOAM available

This case assumes a partial outage with both NOAM servers failed but a DR NOAM available. The DR NOAM is switched from secondary to primary then recovers the failed NOAM servers

## **2.6 Partial Service Outage with Corrupt Database**

**Case 1:** Database is corrupted, replication channel is inhibited (either manually or because of comcol upgrade barrier) and database backup is available

**Case 2:** Database is corrupted but replication channel is active

### 3. Procedure Overview

This section lists the materials required to perform disaster recovery procedures and a general overview (disaster recovery strategy) of the procedure executed.

#### 3.1 Required Materials

The following items are needed for disaster recovery:

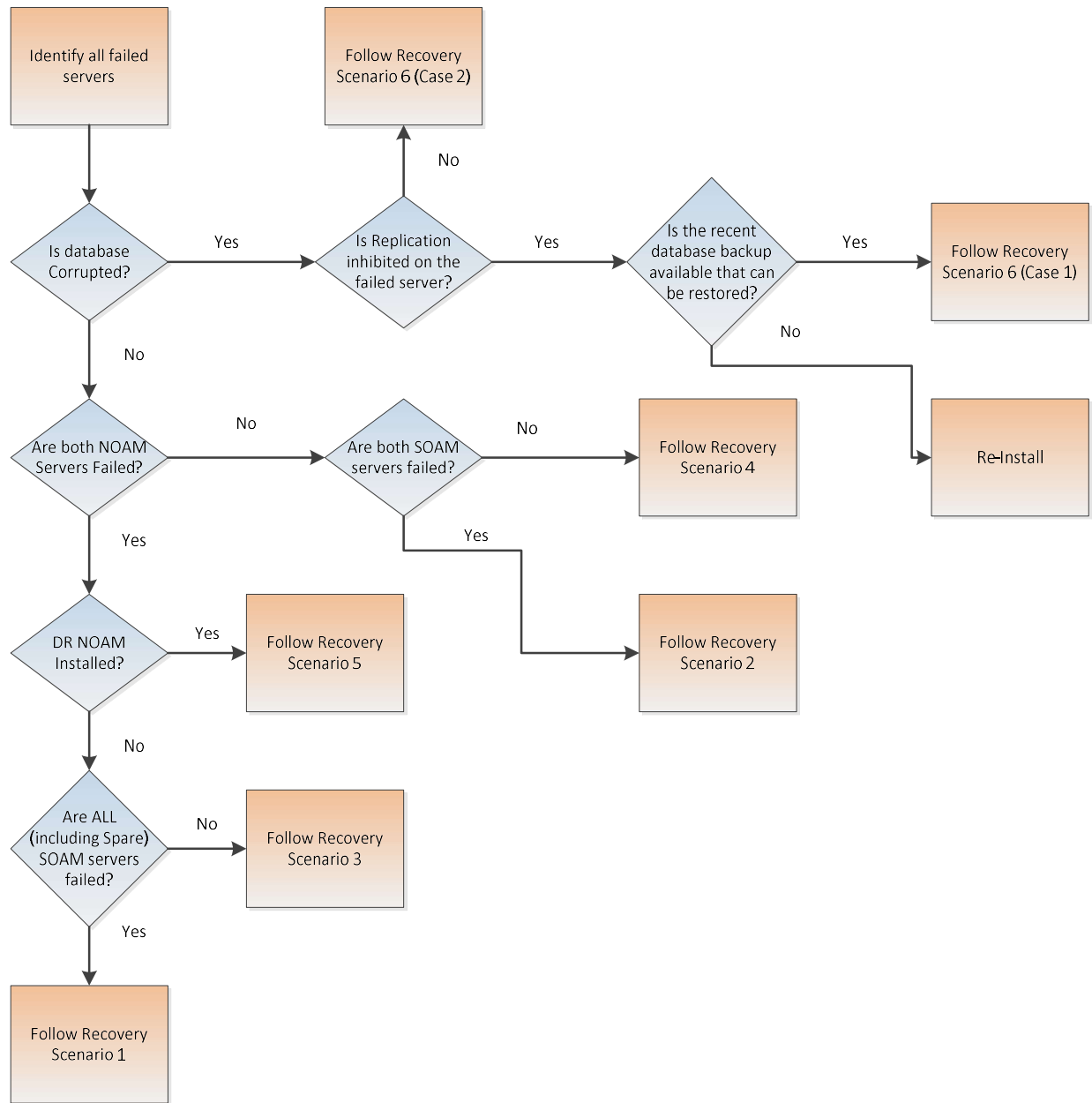
- A hardcopy of this document (E76332) and hardcopies of all documents in the reference list
- Hardcopy of all NAPD performed at the initial installation and network configuration of this customer's site. If the NAPD cannot be found, escalate this issue within My Oracle Support (MOS) until the NAPD documents can be located.
- DSR recent backup files: electronic backup file (preferred) or hardcopy of all DSR configuration and provisioning data.
- Latest network element report: Electronic file or hardcopy of Network Element report.
- The network element XML file used for the VMs initial configuration.

**Note:** For all disaster recovery scenarios, we assume the NOAM database backup and the SOAM database backup were performed around the same time, and no synchronization issues exist among them.

#### 3.2 Disaster Recovery Strategy

Disaster recovery procedure execution is performed as part of a disaster recovery strategy with these basic steps:

1. Evaluate failure conditions in the network and determine that normal operations cannot continue without disaster recovery procedures. This means the failure conditions in the network match one of the failure scenarios described in Section 2.
2. Read and review the content in this document.
3. Gather required materials in Section 3.1 Required Materials.
4. From the failure conditions, determine the Recovery Scenario and procedure to follow (using Figure 1. Determine Recovery Scenario).
5. Execute appropriate recovery procedures (listed in Section 5).

**Figure 1. Determine Recovery Scenario**

## 4. Procedure Preparation

Disaster recovery procedure execution is dependent on the failure conditions in the network. The severity of the failure determines the recovery scenario for the network. Use Table 4. Recovery Scenarios to evaluate the correct recovery scenario and follow the procedure(s) listed to restore operations.

**Note:** A failed server in disaster recovery context refers to a server that has suffered partial or complete software failure to the extent that it cannot restart or be returned to normal operation and requires intrusive activities to re-deploy base software.

**Table 4. Recovery Scenarios**

Recovery Scenario	Failure Condition	Section
1	<ul style="list-style-type: none"> <li>All NOAM servers failed.</li> <li>All SOAM servers failed.</li> <li>MP servers may or may not be failed.</li> </ul>	Section Recovery Scenario 1 (Complete Server Outage)
2	<ul style="list-style-type: none"> <li>At least 1 NOAM server is intact and available.</li> <li>All SOAM servers failed.</li> <li>MP servers may or may not be failed.</li> </ul>	Section Recovery Scenario 2 (Partial Server Outage with One NOAM Server Intact and Both SOAMs Failed)
3	<ul style="list-style-type: none"> <li>All NOAM servers failed.</li> <li>At least 1 SOAM server out of active, standby, spare is intact and available.</li> <li>MP servers may or may not be failed.</li> </ul>	Section Recovery Scenario 3 (Partial Server Outage with all NOAM Servers Failed and One SOAM Server Intact)
4	<ul style="list-style-type: none"> <li>At least 1 NOAM server is intact and available.</li> <li>At least 1 SOAM server out of active, standby, spare is intact and available.</li> <li>1 or more MP servers have failed.</li> </ul>	Section Recovery Scenario 4 (Partial Server Outage with one NOAM Server and One SOAM Server Intact)
5	<ul style="list-style-type: none"> <li>Both NOAM servers failed in Primary site</li> <li>At least 1 SOAM server out of active, standby, spare is intact and available.</li> <li>DR-NOAM is available</li> </ul>	Section Recovery Scenario 5 (Partial Server Outage with all NOAM servers failed with DR-NOAM available)
6	<ul style="list-style-type: none"> <li>Server is intact</li> <li>Database gets corrupted on the server</li> <li>Latest Database backup of the corrupt server is present</li> <li>Replication is inhibited (either manually or because of comcol upgrade barrier)</li> </ul>	Section Recovery Scenario 6 (Database Recovery)
6: Case 1	<ul style="list-style-type: none"> <li>Server is intact</li> <li>Database gets corrupted on the server</li> <li>Replication is occurring to the server with corrupted database</li> </ul>	Section Recovery Scenario 6: Case 1
6: Case 2	<ul style="list-style-type: none"> <li>Server is intact</li> <li>Database gets corrupted on the server</li> <li>Latest database backup of the corrupt server is NOT present</li> <li>Replication is inhibited (either manually or because of comcol upgrade barrier)</li> </ul>	Section Recovery Scenario 6: Case 2

## 5. Disaster Recovery Procedure

Call Appendix E. My Oracle Support (MOS) before executing this procedure to ensure the proper recovery planning is performed.

Before disaster recovery, users must properly evaluate the outage scenario. This check ensures the correct procedures are executed for the recovery.

\*\*\*\* **WARNING** \*\*\*\*\*

\*\*\*\* **WARNING** \*\*\*\*\*

**Note:** Disaster recovery is an exercise that requires collaboration of multiple groups and is expected to be coordinated by the **Oracle Support** prime. Based on Oracle Support's assessment of the disaster, it may be necessary to deviate from the documented process.

### 5.1 Recovering and Restoring System Configuration

Disaster recovery requires configuring the system as it was before the disaster and restoration of operational information. There are eight (8) distinct procedures to choose from depending on the type of recovery needed. Only one of these should be followed (not all).

#### 5.1.1 Recovery Scenario 1 (Complete Server Outage)

For a complete server outage, NOAM servers are recovered using recovery procedures for software and then executing a database restore to the active NOAM server. All other servers are recovered using recovery procedures for software.

Database replication from the active NOAM server recovers the database on these servers. The major activities are summarized in the list below. Use this list to understand the recovery procedure summary. Do not use this list to execute the procedure. The actual detailed steps are in Procedure 1. The major activities are summarized as follows:

Recover base software for all VMs:

- Recover the virtual machines hosting the NOAMs and SOAMs
- Recover the **active NOAM** server by recovering the NOAMs base software
- Recover the NOAM database
- Reconfigure the application

Recover the **standby NOAM** server by recovering base software, for a non-HA deployment this can be skipped.

- Reconfigure the DSR application

Recover all SOAM and MP servers by recovering software. In a non-HA deployment the standby/spare SOAM servers can be skipped.

- Recover the SOAM database
- Reconfigure the DSR Application
- Reconfigure the signaling interface and routes on the MPs. The DSR software automatically reconfigures the signaling interface from the recovered database.

Restart process and re-enable provisioning replication.

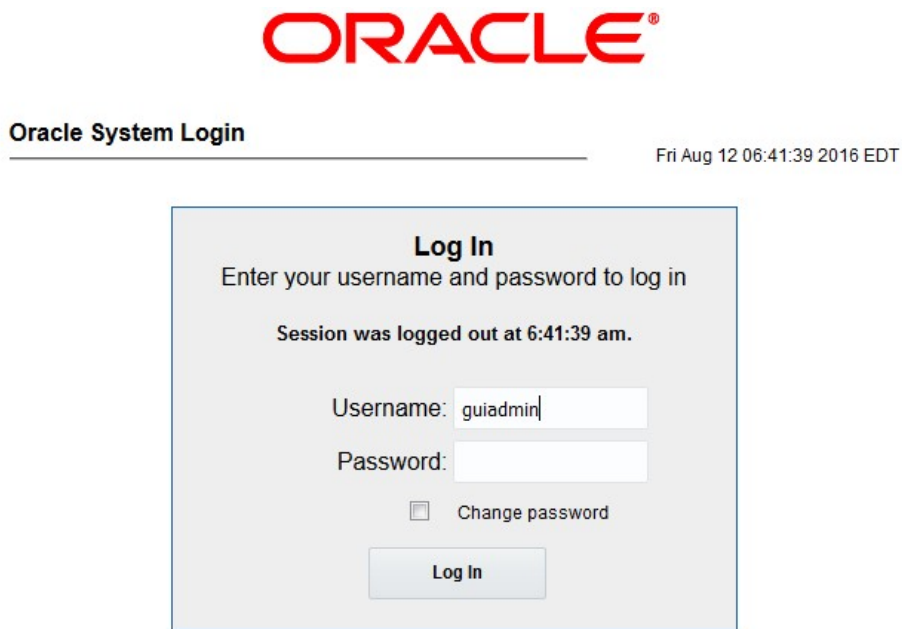
**Note:** Any other applications DR recovery actions (SDS and IDIH) may occur in parallel. These actions can/should be worked simultaneously; doing so allows a faster recovery of the complete solution (i.e., stale DB on DP servers do not receive updates until SDS-SOAM servers are recovered).



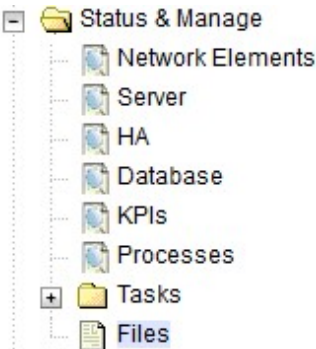

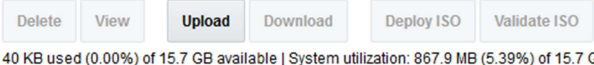
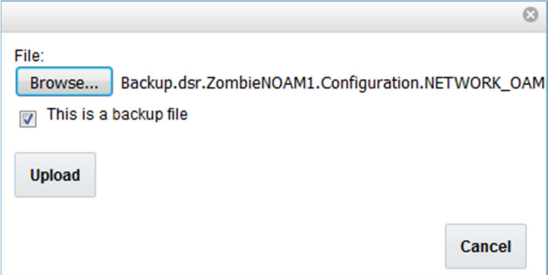
**Procedure 1. Recovery Scenario 1**

<b>S T E P #</b>	<p>This procedure performs recovery if both NOAM servers have failed and all SOAM servers have failed. This procedure also covers the C-level sever failure.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>If this procedure fails, contact Appendix E. My Oracle Support (MOS) and ask for assistance.</p>	
1. <input type="checkbox"/>	Workarounds	Refer to Appendix D. Workarounds for Issues Not Fixed in This Release to understand/apply any workarounds required during this procedure.
2. <input type="checkbox"/>	Gather required materials	Gather the documents and required materials listed in Section 3.1 Required Materials.
3. <input type="checkbox"/>	Recover the failed software	<p><b>For VMWare based deployments:</b></p> <ol style="list-style-type: none"> <li>For NOAMs, execute the following procedures from reference [1]: <ul style="list-style-type: none"> <li>Procedure 1 (VMWare). Import DSR OVA.</li> <li>Procedure 2 (VMWare Only). Configure NOAM guests based on resource profile.</li> </ul> </li> <li>For SOAMs, execute the following procedures from reference [1]: <ul style="list-style-type: none"> <li>Procedure 1 (VMWare). Import DSR OVA.</li> <li>Procedure 3 (VMWare Only). Configure Remaining DSR guests based on resource profile.</li> </ul> </li> <li>For failed MPs, execute the following procedures from reference [1]: <ul style="list-style-type: none"> <li>Procedure 1 (VMWare). Import DSR OVA.</li> <li>Procedure 3 (VMWare Only). Configure Remaining DSR guests based on resource profile.</li> </ul> </li> </ol> <p><b>For KVM/OpenStack based deployments:</b></p> <ol style="list-style-type: none"> <li>For NOAMs, execute the following procedures from reference [1]: <ul style="list-style-type: none"> <li>Procedure 4 (KVM/OpenStack). Import DSR OVA.</li> <li>Procedure 5 (KVM/OpenStack Only). Configure NOAM guests based on resource profile.</li> </ul> </li> <li>For SOAMs, execute the following procedures from reference [1]: <ul style="list-style-type: none"> <li>Procedure 4 (KVM/OpenStack). Import DSR OVA.</li> <li>Procedure 6 (KVM/OpenStack Only). Configure Remaining DSR guests based on resource profile.</li> </ul> </li> <li>For failed MPs, execute the following procedures from reference [1]: <ul style="list-style-type: none"> <li>Procedure 4 (KVM/OpenStack). Import DSR OVA.</li> <li>Procedure 6 (KVM/OpenStack Only). Configure Remaining DSR guests based on resource profile.</li> </ul> </li> </ol> <p><b>For OVM-S/OVM-M based deployments:</b></p> <ol style="list-style-type: none"> <li>For NOAMs, execute the following procedures from reference [1]: <ul style="list-style-type: none"> <li>Procedure 7 (OVM-S/OVM-M). Import DSR OVA.</li> <li>Procedure 8 (OVM-S/OVM-M Only). Configure NOAM guests based on</li> </ul> </li> </ol>

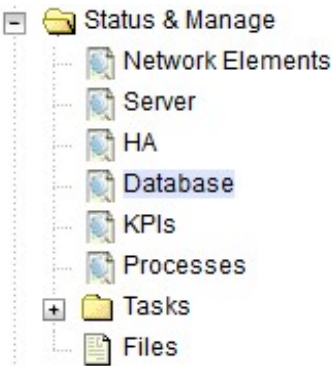
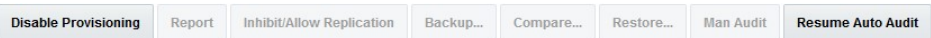

**Procedure 1. Recovery Scenario 1**

		<p>resource profile.</p> <p>2. For SOAMs, execute the following procedures from reference [1]:</p> <ul style="list-style-type: none"> <li>• Procedure 7 (OVM-S/OVM-M). Import DSR OVA.</li> <li>• Procedure 9 (OVM-S/OVM-M Only). Configure Remaining DSR guests based on resource profile.</li> </ul> <p>3. For failed MPs, execute the following procedures from reference [1]:</p> <ul style="list-style-type: none"> <li>• Procedure 7 (OVM-S/OVM-M). Import DSR OVA.</li> <li>• Procedure 9 (OVM-S/OVM-M Only). Configure Remaining DSR guests based on resource profile.</li> </ul>
4. <input type="checkbox"/>	Obtain latest database backup and network configuration data	<p>Obtain the most recent database backup file from external backup sources (i.e., file servers) or tape backup sources.</p> <p>From required materials list in Section 3.1 Required Materials, use the site survey documents and network element report (if available) to determine network configuration data.</p>
5. <input type="checkbox"/>	Execute DSR installation procedure for the first NOAM	<p>Verify the networking data for network elements.</p> <p><b>Note:</b> Use the backup copy of network configuration data and site surveys (Step 2).</p> <p><b>Execute</b> installation procedures for the first NOAM server from reference [1]:</p> <ul style="list-style-type: none"> <li>• Procedure 10 Configure the First NOAM NE and Server</li> <li>• Procedure 11 Configure the NOAM Server Group.</li> </ul>
6. <input type="checkbox"/>	<b>NOAM GUI:</b> Login	<p>Log into the NOAM GUI as the <b>guiadmin</b> user.</p> 


**Procedure 1. Recovery Scenario 1**

<p>7. <input type="checkbox"/></p>	<p><b>NOAM GUI:</b> Upload the backed up database file</p>	<p>Navigate to <b>Main Menu-&gt;Status &amp; Manage-&gt;Files</b>.</p>  <p>Select the <b>active NOAM server</b>.</p> <p><b>Main Menu: Status &amp; Manage -&gt; Files</b></p>  <p>Click <b>Upload</b> and select the <b>NO Provisioning and Configuration</b> file backed up after the initial installation and provisioning.</p>  <p>40 KB used (0.00%) of 15.7 GB available   System utilization: 867.9 MB (5.39%) of 15.7 GB available.</p> <ol style="list-style-type: none"> <li>Click <b>Browse</b> and locate the backup file.</li> <li>Mark the <b>This is a backup file</b> checkbox.</li> <li>Click <b>Upload</b>.</li> </ol>  <p>The file takes a few seconds to upload depending on the size of the backup data. The file displays on the list of entries after the upload is complete.</p>
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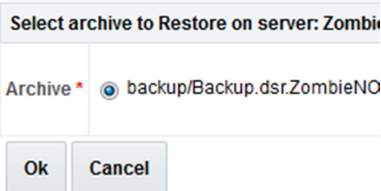
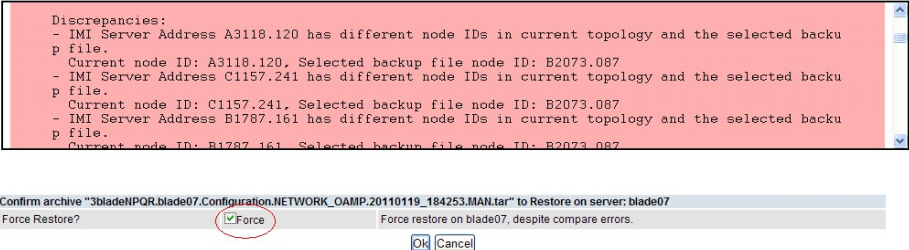
**Procedure 1. Recovery Scenario 1**

8.	<b>NOAM GUI:</b> Disable provisioning	<p>Navigate to <b>Main Menu-&gt;Status &amp; Manage-&gt;Database.</b></p>  <p>Click <b>Disable Provisioning.</b></p>  <p>Click <b>OK</b> on the confirmation screen.</p>  <p>The <b>Warning Code 002</b> message displays.</p>
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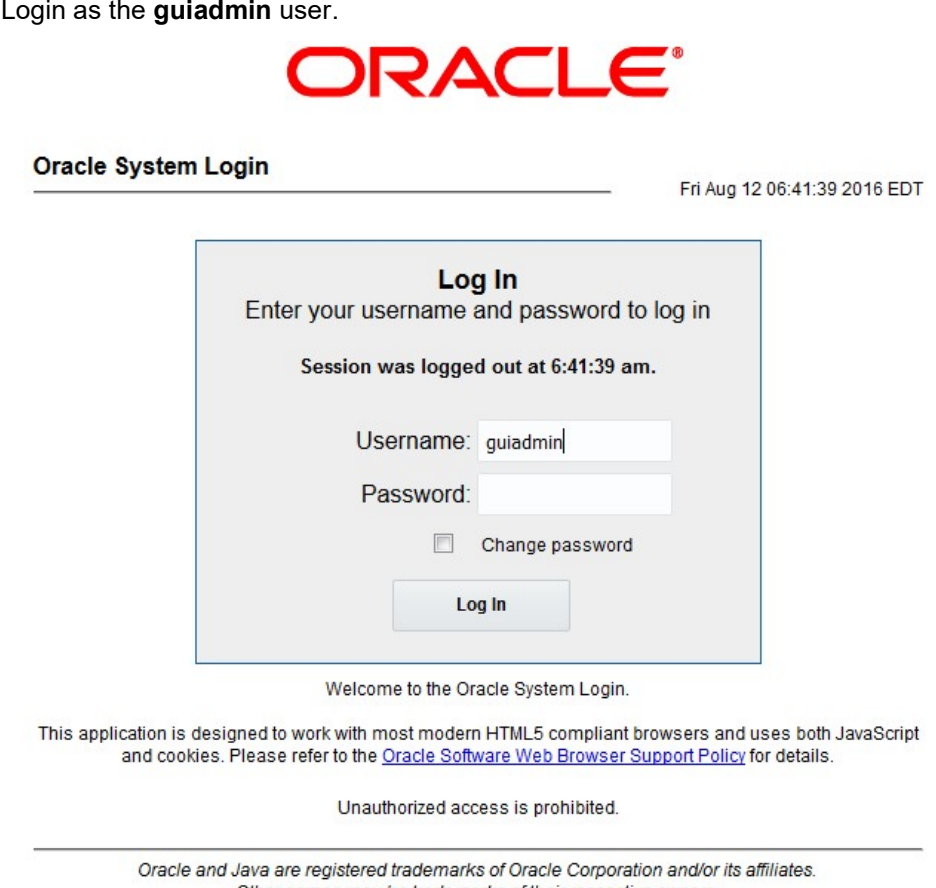
**Procedure 1. Recovery Scenario 1**

<p>9.</p> <p><input type="checkbox"/></p>	<p><b>NOAM GUI:</b> Verify the archive contents and database compatibility</p>	<p>Select the <b>active NOAM</b> server and click <b>Compare</b>.</p>  <p>Click the button for the restored database file uploaded as a part of Step 7 of this procedure.</p> <p><b>Database Compare</b></p> <p>Select archive to compare on server: Martinique-NO1</p> <p>Archive * <input checked="" type="radio"/> backup/Backup.dsr/Martinique-NO1.Configuration.NETWORK_OAMP20161111_064210.MAN.tar.bz2 <input type="text"/> Select the archive to compare to the current database. [A value is required.]</p> <p><input type="button" value="OK"/> <input type="button" value="Cancel"/></p> <p><b>Verify</b> the output window matches the screen below.</p> <p><b>Note:</b> A database mismatch regarding the NodeIDs of the VMs is expected. If that is the only mismatch, proceed; otherwise, stop and contact Appendix E. My Oracle Support (MOS).</p> <p><b>Database Archive Compare</b></p> <pre> The selected database came from ZombieNOAM1 on 10/10/2016 at 10:36:44 EDT and contains the follow Archive Contents Configuration data Database Compatibility The databases are compatible. Node Type Compatibility The node types are compatible. Topology Compatibility THE TOPOLOGY IS NOT COMPATIBLE. CONTACT ORACLE CUSTOMER SERVICES BEFORE RESTORING THIS DATABASE. Discrepancies: - Server A1860.052 on network XMI is in the current topology but not the selected backup file. - Server A1860.052 on network IMI is in the current topology but not the selected backup file. - Server A0630.238 on network XMI is in the selected backup file but not the current topology. - Server B2934.011 on network XMI is in the selected backup file but not the current topology. - Server C0422.200 on network XMI is in the selected backup file but not the current topology. </pre> <p><b>Note:</b> Archive Contents and Database Compatibilities must be the following:</p> <p><b>Archive Contents:</b> Configuration data</p> <p><b>Database Compatibility:</b> The databases are compatible.</p> <p><b>Note:</b> The following is expected Output for Topology Compatibility Check since we are restoring from existing backed up data base to database with just one NOAM:</p> <p><b>Topology Compatibility</b></p> <p>THE TOPOLOGY SHOULD BE COMPATIBLE MINUS THE NODEID.</p> <p><b>Note:</b> We are trying to restore a backed up database onto an empty NOAM database. This is an expected text in Topology Compatibility.</p> <p>If the verification is successful, click <b>Back</b>.</p>
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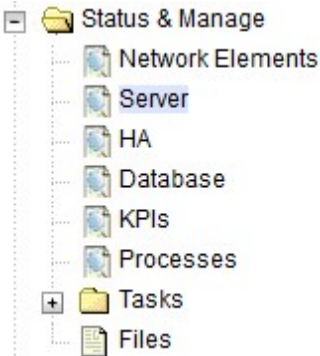
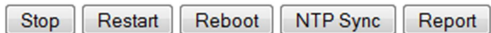
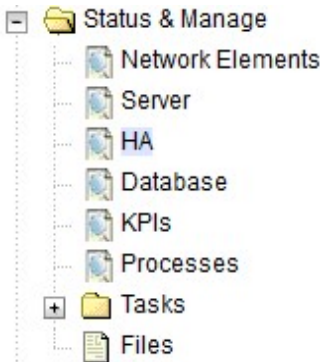
**Procedure 1. Recovery Scenario 1**

10. <input type="checkbox"/>	<b>ACTIVE NOAM:</b> Restore the database	<p>Navigate to <b>Main Menu-&gt;Status &amp; Manage-&gt;Database</b>.</p> <p>Select the <b>active NOAM</b> server and click <b>Restore</b>.</p> <p>Select the backup provisioning and configuration file.</p>  <p>Click <b>OK</b>.</p> <p><b>Note:</b> A database mismatch regarding the NodeIDs of the servers is expected. If that is the only mismatch, proceed; otherwise, stop and contact Appendix E. My Oracle Support (MOS).</p> <p>Mark the <b>Force</b> checkbox and click <b>OK</b> to proceed with the DB restore.</p> <p>Database Restore Confirm</p> <p>Incompatible database selected</p>  <p><b>Note:</b> After the restore has started, the user is logged out of XMI NO GUI since the restored topology is old data.</p>
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**Procedure 1. Recovery Scenario 1**


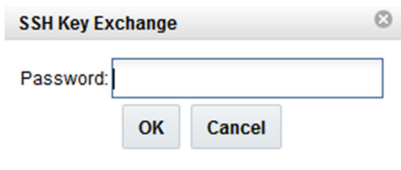


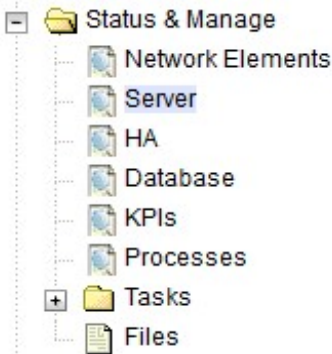
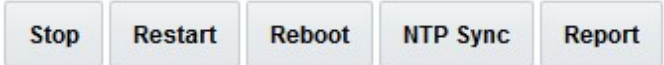
11. <input type="checkbox"/>	<b>NOAM VIP GUI:</b> Login	<p>Establish a GUI session on the NOAM server by using the VIP IP address of the NOAM server. Open the web browser and enter a URL of:</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> http://&lt;Primary_NOAM_VIP_IP_Address&gt; </div> <p>Login as the <b>guiadmin</b> user.</p>  <p>Welcome to the Oracle System Login.</p> <p>This application is designed to work with most modern HTML5 compliant browsers and uses both JavaScript and cookies. Please refer to the <a href="#">Oracle Software Web Browser Support Policy</a> for details.</p> <p>Unauthorized access is prohibited.</p> <p><small>Oracle and Java are registered trademarks of Oracle Corporation and/or its affiliates. Other names may be trademarks of their respective owners.</small></p>
12. <input type="checkbox"/>	<b>NOAM VIP GUI:</b> Monitor and confirm database restoral	<p>Wait <b>5-10 minutes</b> for the system to stabilize with the new topology.</p> <p>Monitor the Info tab for the <b>Success</b> message. This indicates the backup is complete and the system is stabilized.</p> <p>The following alarms <b>must</b> be ignored for NOAM and MP servers until all the servers are configured:</p> <ul style="list-style-type: none"> <li>Alarms with Type Column as <b>REPL, COLL, HA</b> (with mate NOAM), <b>DB</b> (about provisioning manually disabled).</li> </ul> <p><b>Note:</b> Do not pay attention to alarms until all the servers in the system are completely restored.</p> <p><b>Note:</b> The configuration and maintenance information is in the same state it was backed up during initial backup.</p>
13. <input type="checkbox"/>	<b>ACTIVE NOAM:</b> Login	<p>Log into the recovered active NOAM via SSH terminal as <b>admusr</b>.</p>

**Procedure 1. Recovery Scenario 1**

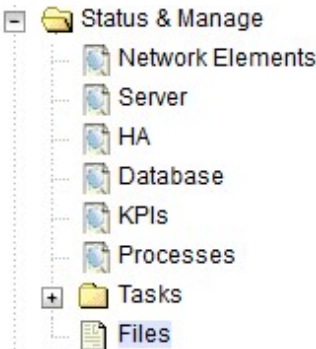
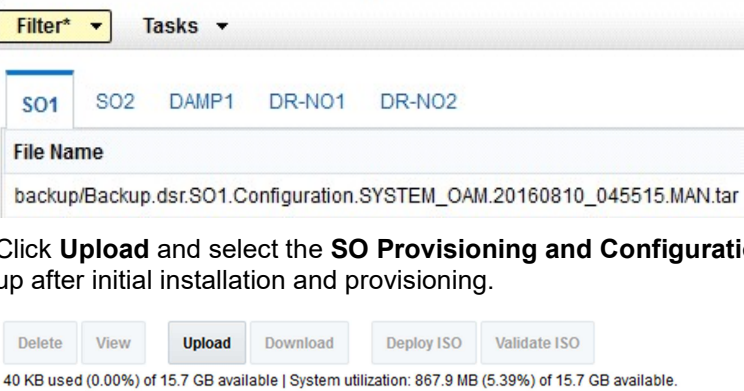
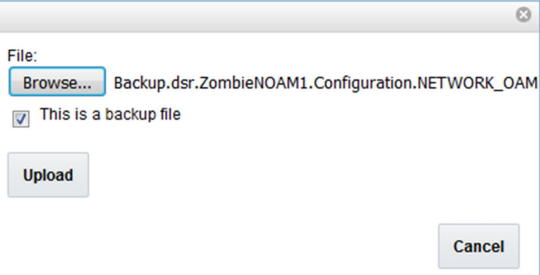
14. <input type="checkbox"/>	<b>NOAM VIP GUI:</b> Recover standby NOAM	<p>Install the second NOAM server by executing procedures from reference [1].</p> <ul style="list-style-type: none"> <li>• Procedure 12 Configure the Second NOAM Server, Steps 1, 3-7</li> <li>• Procedure 13 Complete Configuring the NOAM Server Group, Step 4</li> </ul>
15. <input type="checkbox"/>	<b>Active NOAM:</b> Correct the recognizedAuth ority table	<p>Establish an SSH session to the active NOAM, login as <b>admusr</b>.</p> <p>Execute the following command.</p> <pre>\$ sudo top.setPrimary - Using my cluster: A1789 - New Primary Timestamp: 11/09/15 20:21:43.418 - Updating A1789.022: &lt;DSR_NOAM_B_hostname&gt; - Updating A1789.144: &lt;DSR_NOAM_A_hostname&gt;</pre>
16. <input type="checkbox"/>	<b>NOAM VIP GUI:</b> Restart DSR application	<p>Navigate to <b>Main Menu-&gt;Status &amp; Manage-&gt;Server</b>.</p>  <p>Select the recovered standby NOAM server and click <b>Restart</b>.</p> 
17. <input type="checkbox"/>	<b>NOAM VIP GUI:</b> Set HA on standby NOAM	<p>Navigate to <b>Status &amp; Manage -&gt; HA</b>.</p>  <p>Click <b>Edit</b>.</p> <p>Select the standby NOAM server and set it to <b>Active</b>.</p> <p>Click <b>OK</b>.</p>



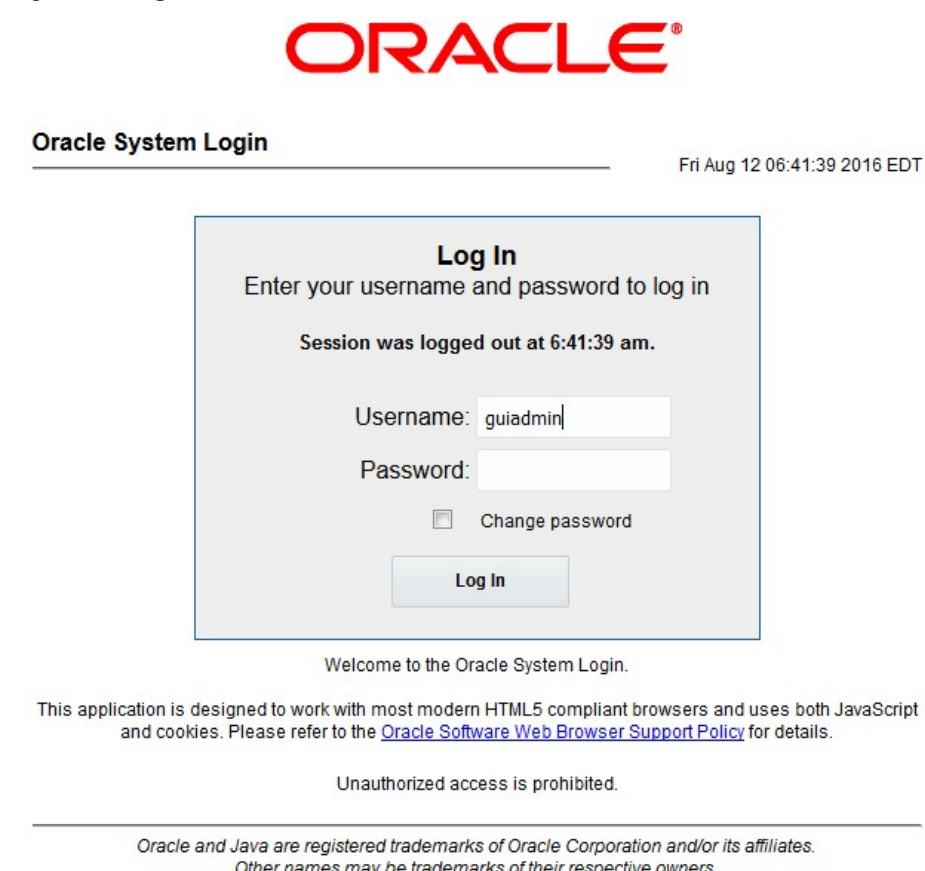
**Procedure 1. Recovery Scenario 1**

18. <input type="checkbox"/>	<b>NOAM VIP GUI:</b> Perform Keyexchange with export server	<p>Navigate to <b>Main Menu -&gt; Administration -&gt; Remote Servers -&gt; Data Export</b>.</p>  <p>Click <b>SSH Key Exchange</b>.</p> <p>Enter the password and click <b>OK</b>.</p> 
19. <input type="checkbox"/>	<b>NOAM VIP GUI:</b> Stop replication to the C-level servers of this site	<p>Inhibit replication to the working C-level servers, which belong to the <b>same site</b> as of the failed SOAM servers since the recovery of active SOAM causes the database wipeout in the C-level servers because of the replication.</p>  <p>Execute Appendix B. Inhibit A and B Level Replication on C-Level Servers</p> 
20. <input type="checkbox"/>	<b>NOAM VIP GUI:</b> Recover active SOAM server	<p>Install the SOAM servers by executing Procedure 19 <b>Configure the SOAM Servers</b>, Steps 1, 3- 7, from reference [1].</p> <p><b>Note:</b> Wait for server to reboot before continuing.</p>
21. <input type="checkbox"/>	<b>NOAM VIP GUI:</b> Restart DSR application on recovered active SOAM server	<p>Navigate to <b>Main Menu-&gt;Status &amp; Manage-&gt;Server</b>.</p>  <p>Select the recovered server and click <b>Restart</b>.</p> 

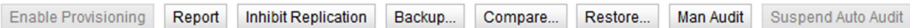
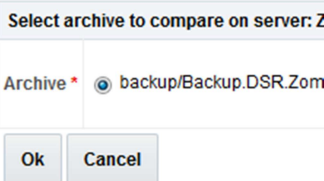
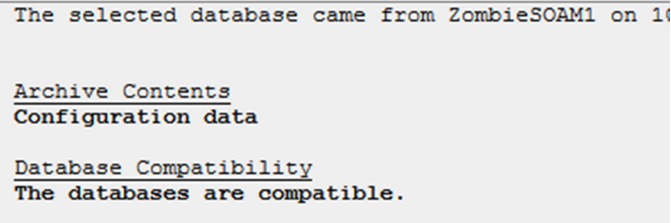
**Procedure 1. Recovery Scenario 1**

<p>22. <b>NOAM VIP GUI:</b> Upload the backed up SOAM database file</p>	<p>Navigate to <b>Main Menu-&gt;Status &amp; Manage-&gt;Files</b>.</p>  <p>Select the <b>active SOAM server</b>.</p> <p><b>Main Menu: Status &amp; Manage -&gt; Files</b></p>  <p>Click <b>Upload</b> and select the <b>SO Provisioning and Configuration</b> file backed up after initial installation and provisioning.</p>  <p>1. Click <b>Browse</b> and locate the backup file.</p> <p>2. Mark the <b>This is a backup file</b> checkbox.</p> <p>3. Click <b>Upload</b>.</p> <p>The file takes a few seconds to upload depending on the size of the backup data. The file displays on the list of entries after the upload is complete.</p>
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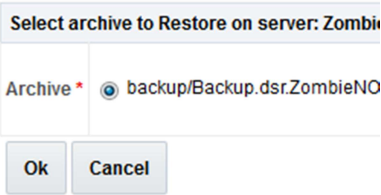
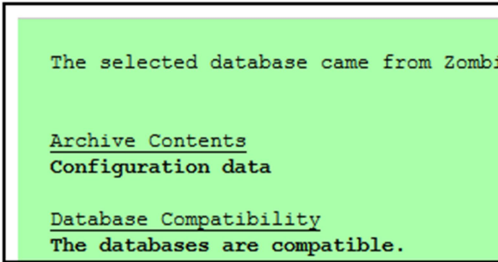
**Procedure 1. Recovery Scenario 1**

23. <input type="checkbox"/>	<b>Recovered SOAM GUI:</b> Login	<p>Establish a GUI session on the recovered SOAM server.</p> <p>Open the web browser and enter a URL of:</p> <div data-bbox="493 323 1347 380"><code>http://&lt;Recovered_SOAM_IP_Address&gt;</code></div> <p>Login as the <b>guiadmin</b> user.</p> <div data-bbox="493 428 1412 1293"></div>
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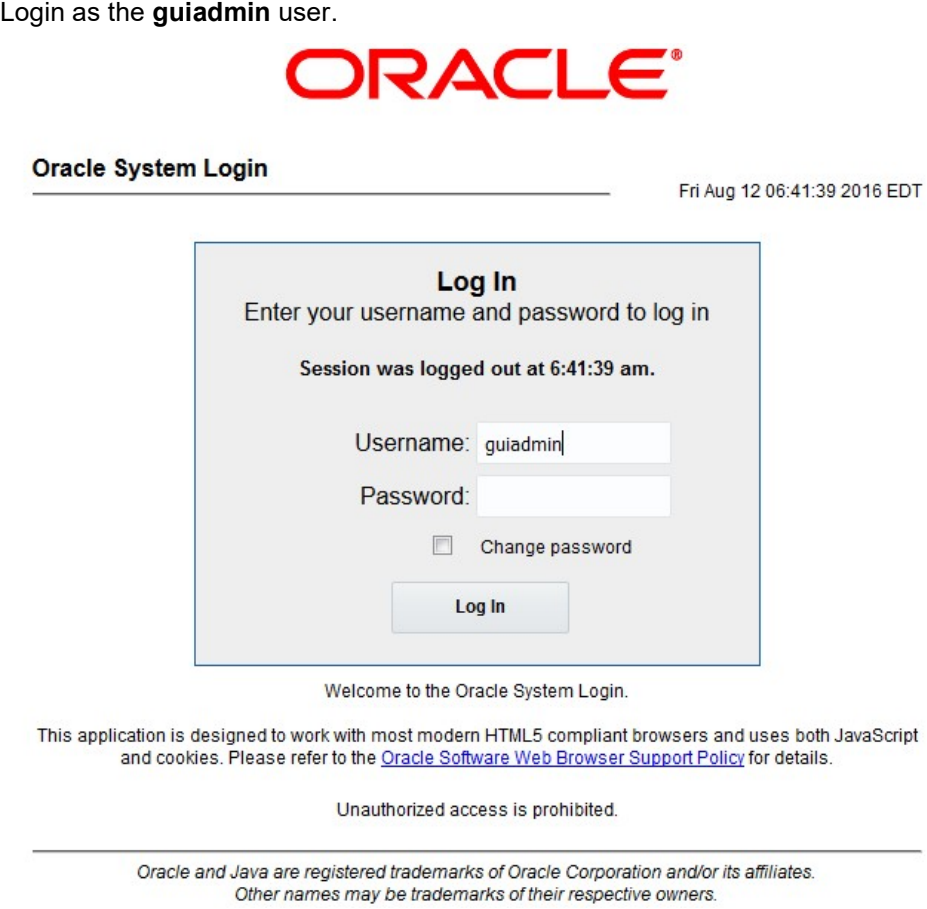
**Procedure 1. Recovery Scenario 1**

24. <input type="checkbox"/>	<b>Recovered SOAM GUI:</b> Verify the archive contents and database compatibility	<p>Navigate to <b>Main Menu-&gt;Status &amp; Manage-&gt;Database</b>.</p> <p>Select the <b>active SOAM</b> server and click <b>Compare</b>.</p>  <p>Click the button for the restored database file uploaded as a part of Step 22 of this procedure.</p> <p><b>Database Compare</b></p>  <p><b>Verify</b> the output window matches the screen below.</p> <p><b>Note:</b> A database mismatch regarding the NodeIDs of the VMs is expected. If that is the only mismatch, proceed; otherwise, stop and contact Appendix E. My Oracle Support (MOS).</p> <p><b>Database Archive Compare</b></p>  <p><b>Note:</b> Archive Contents and Database Compatibilities must be the following:</p> <p><b>Archive Contents:</b> Configuration data</p> <p><b>Database Compatibility:</b> The databases are compatible.</p> <p><b>Note:</b> The following is expected Output for Topology Compatibility Check since we are restoring from existing backed up data base to database with just one SOAM:</p> <p><b>Topology Compatibility</b></p> <p>THE TOPOLOGY SHOULD BE COMPATIBLE MINUS THE NODEID.</p> <p><b>Note:</b> We are trying to restore a backed up database onto an empty SOAM database. This is an expected text in Topology Compatibility.</p> <p>If the verification is successful, click <b>Back</b>.</p>
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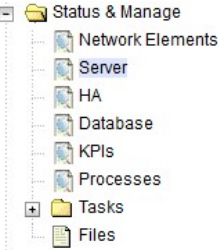
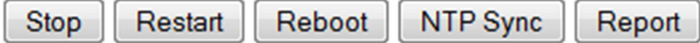
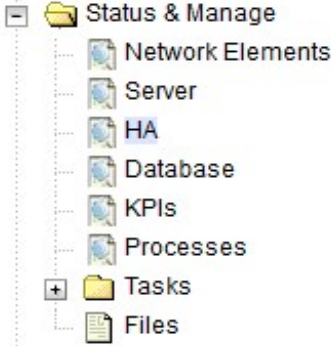
**Procedure 1. Recovery Scenario 1**

25. <input type="checkbox"/>	<b>Recovered SOAM GUI:</b> Restore the database	<p>Navigate to <b>Main Menu-&gt;Status &amp; Manage-&gt;Database</b>.</p> <p>Select the <b>active SOAM</b> server and click <b>Restore</b>.</p> <p>Select the proper back up provisioning and configuration file.</p>  <p>Click <b>OK</b>.</p> <p><b>Note:</b> An error that the NodeIDs do not match is expected. If no other errors beside the NodeIDs are displayed, mark the <b>Force</b> checkbox and click <b>OK</b> to proceed with the DB restore.</p> <hr/> <p><b>Database Restore Confirm</b></p> <p>Compatible archive.</p>  <p><b>Note:</b> After the restore has started, the user is logged out of XMI SOAM GUI since the restored topology is old data.</p>
26. <input type="checkbox"/>	<b>Recovered SOAM GUI:</b> Monitor and confirm database restoral	<p>Wait <b>5-10 minutes</b> for the system to stabilize with the new topology.</p> <p>Monitor the Info tab for the <b>Success</b> message. This indicates the backup is complete and the system is stabilized.</p> <p><b>Note:</b> Do not pay attention to alarms until all the servers in the system are completely restored.</p> <p><b>Note:</b> The configuration and maintenance information is in the same state it was backed up during initial backup.</p>

**Procedure 1. Recovery Scenario 1**

27. <input type="checkbox"/>	<b>NOAM VIP GUI:</b> Login	<p>Establish a GUI session on the NOAM server by using the VIP IP address of the NOAM server. Open the web browser and enter a URL of:</p> <div data-bbox="493 310 1349 365" style="border: 1px solid black; padding: 2px;"> http://&lt;Primary_NOAM_VIP_IP_Address&gt; </div> <p>Login as the <b>guiadmin</b> user.</p>  <p>Welcome to the Oracle System Login.</p> <p>This application is designed to work with most modern HTML5 compliant browsers and uses both JavaScript and cookies. Please refer to the <a href="#">Oracle Software Web Browser Support Policy</a> for details.</p> <p>Unauthorized access is prohibited.</p> <p><small>Oracle and Java are registered trademarks of Oracle Corporation and/or its affiliates. Other names may be trademarks of their respective owners.</small></p>
28. <input type="checkbox"/>	<b>NOAM VIP GUI:</b> Recover remaining SOAM server	<p>Install the SOAM servers by executing Procedure 19 <b>Configure the SOAM Servers</b>, Steps 1, 3- 6, from reference [1].</p> <p><b>Note:</b> Wait for server to reboot before continuing.</p>

**Procedure 1. Recovery Scenario 1**

29. <input type="checkbox"/>	<b>NOAM VIP GUI:</b> Restart DSR application on remaining SOAM server(s)	<p>Navigate to <b>Main Menu-&gt;Status &amp; Manage-&gt;Server.</b></p>  <p>Select the recovered server and click <b>Restart</b>.</p> 
30. <input type="checkbox"/>	<b>NOAM VIP GUI:</b> Set HA on recovered standby SOAM server	<p><b>Note:</b> For non-HA sites, <b>SKIP</b> this step.</p> <p>Navigate to <b>Status &amp; Manage -&gt; HA.</b></p>  <p>Click <b>Edit</b>.</p> <p>Set Max Allowed HA Role to <b>Active</b>.</p> <p>Click <b>OK</b>.</p>

**Procedure 1. Recovery Scenario 1**

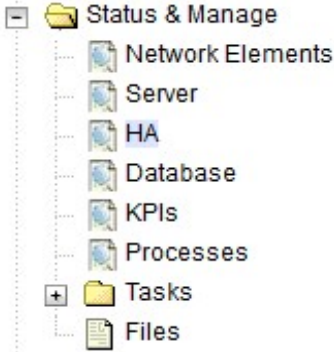
31. <div></div>	<b>NOAM VIP GUI:</b> Start replication on working C-level servers	<p>Un-Inhibit (Start) Replication to the <b>working</b> C-level servers, which belong to the same site as of the failed SOAM servers.</p> <p>Execute Appendix C. Un-Inhibit A and B Level Replication on C-Level Servers.</p> <p>Navigate to <b>Main Menu-&gt;Status &amp; Manage-&gt;Database</b>.</p> <p>If the Repl Status is set to <b>Inhibited</b>, click <b>Allow Replication</b> using the following order; otherwise, if none of the servers are inhibited, skip this step and continue with the next step:</p> <ul style="list-style-type: none"><li>• Active NOAM server</li><li>• Standby NOAM server</li><li>• Active SOAM server</li><li>• Standby SOAM server</li><li>• Spare SOAM server (if applicable)</li><li>• MP/IPFE servers (if MPs are configured as active/standby, start with the active MP, otherwise the order of the MPs does not matter)</li><li>• SBRs (if SBR servers are configured, start with the active SBR, then standby, then spare)</li></ul> <p>Verify the replication on all the working servers is <b>Allowed</b>. This can be done by examining the Repl Status table.</p> <table><tr><th>OAM Repl Status</th><th>SIG Repl Status</th><th>Repl Status</th><th>Repl Audit Status</th></tr><tr><td>NotApplicable</td><td>NotApplicable</td><td>Allowed</td><td>NotApplicable</td></tr><tr><td>Normal</td><td>NotApplicable</td><td>Allowed</td><td>NotApplicable</td></tr><tr><td>Normal</td><td>NotApplicable</td><td>Allowed</td><td>NotApplicable</td></tr><tr><td>Normal</td><td>NotApplicable</td><td>Allowed</td><td>NotApplicable</td></tr></table>	OAM Repl Status	SIG Repl Status	Repl Status	Repl Audit Status	NotApplicable	NotApplicable	Allowed	NotApplicable	Normal	NotApplicable	Allowed	NotApplicable	Normal	NotApplicable	Allowed	NotApplicable	Normal	NotApplicable	Allowed	NotApplicable
OAM Repl Status	SIG Repl Status	Repl Status	Repl Audit Status																			
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Normal	NotApplicable	Allowed	NotApplicable																			
Normal	NotApplicable	Allowed	NotApplicable																			
Normal	NotApplicable	Allowed	NotApplicable																			
32. <div></div>	<b>NOAM VIP GUI:</b> Recover the C-level server (DA-MP, SBRs, IPFE, SS7-MP)	<p>Establish an SSH session to the C-level server being recovered, login as <b>admusr</b>.</p> <p>Execute following command to set shared memory to unlimited.</p> <div><pre>\$ sudo sh1.set -m 0</pre></div> <p>Execute Procedure 22 Configure the MP Virtual Machines, Steps 1, 4-11, from [1] <b>FOR EACH</b> recovered server.</p>																				



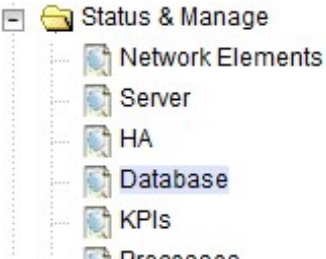
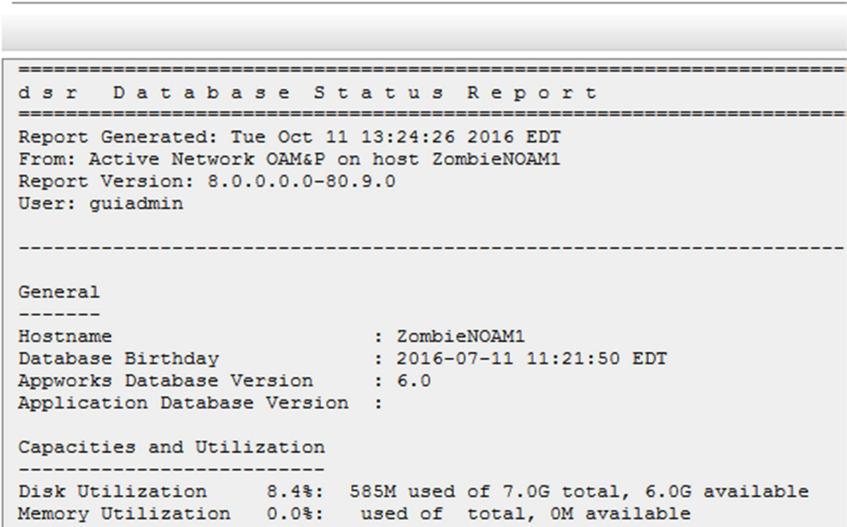
**Procedure 1. Recovery Scenario 1**

33. <div></div>	<b>NOAM VIP GUI:</b> Restart DSR application for recovered C-level Server	<p>Navigate to <b>Main Menu-&gt;Status &amp; Manage-&gt;Server.</b></p> <div><div><div>Status &amp; Manage</div><div>Network Elements</div><div>Server</div><div>HA</div><div>Database</div><div>KPIs</div></div></div> <p>Select the recovered server and click <b>Restart</b>.</p> <div><div>Stop</div><div>Restart</div><div>Reboot</div><div>NTP Sync</div><div>Report</div></div>																				
34. <div></div>	<b>NOAM VIP GUI:</b> Start replication on all C-level servers	<p>Un-Inhibit (Start) Replication to the <b>ALL</b> C-level servers.</p> <p>Navigate to <b>Status &amp; Manage -&gt; Database.</b></p> <div><div><div>Status &amp; Manage</div><div>Network Elements</div><div>Server</div><div>HA</div><div>Database</div><div>KPIs</div><div>Processes</div><div>Tasks</div><div>Files</div></div></div> <p>If the Repl Status is set to <b>Inhibited</b>, click <b>Allow Replication</b> using the following order:</p> <ul style="list-style-type: none"><li>• Active NOAM server</li><li>• Standby NOAM server</li><li>• Active SOAM server</li><li>• Standby SOAM server</li><li>• Spare SOAM server (if applicable)</li><li>• MP/IPFE servers (if MPs are configured as active/standby, start with the active MP, otherwise, the order of the MPs does not matter)</li></ul> <p>Verify the replication on all the working servers is <b>Allowed</b>. This can be done by examining the Repl Status table.</p> <table><tr><th>OAM Repl Status</th><th>SIG Repl Status</th><th>Repl Status</th><th>Repl Audit Status</th></tr><tr><td>NotApplicable</td><td>NotApplicable</td><td>Allowed</td><td>NotApplicable</td></tr><tr><td>Normal</td><td>NotApplicable</td><td>Allowed</td><td>NotApplicable</td></tr><tr><td>Normal</td><td>NotApplicable</td><td>Allowed</td><td>NotApplicable</td></tr><tr><td>Normal</td><td>NotApplicable</td><td>Allowed</td><td>NotApplicable</td></tr></table>	OAM Repl Status	SIG Repl Status	Repl Status	Repl Audit Status	NotApplicable	NotApplicable	Allowed	NotApplicable	Normal	NotApplicable	Allowed	NotApplicable	Normal	NotApplicable	Allowed	NotApplicable	Normal	NotApplicable	Allowed	NotApplicable
OAM Repl Status	SIG Repl Status	Repl Status	Repl Audit Status																			
NotApplicable	NotApplicable	Allowed	NotApplicable																			
Normal	NotApplicable	Allowed	NotApplicable																			
Normal	NotApplicable	Allowed	NotApplicable																			
Normal	NotApplicable	Allowed	NotApplicable																			

**Procedure 1. Recovery Scenario 1**

35. <input type="checkbox"/>	<b>NOAM VIP GUI:</b> Set HA on all C-level servers	<p>Navigate to <b>Status &amp; Manage -&gt; HA</b>.</p>  <p>Click <b>Edit</b>.</p> <p>For each server whose Max Allowed HA Role is set to OOS, set it to <b>Active</b>.</p> <p>Click <b>OK</b>.</p>
36. <input type="checkbox"/>	<b>ACTIVE NOAM:</b> Perform key exchange between the active-NOAM and recovered servers	<p>Establish an SSH session to the Active NOAM, login as <b>admusr</b>.</p> <p>Execute the following command to perform a keyexchange from the active NOAM to each recovered server.</p> <pre>\$ keyexchange admusr@&lt;Recovered Server Hostname&gt;</pre> <p><b>Note:</b> If an export server is configured, perform this step.</p>
37. <input type="checkbox"/>	<b>ACTIVE NOAM:</b> Activate optional features	<p>Establish an SSH session to the active NOAM, login as <b>admusr</b>.</p> <p><b>Note for PCA Feature Activation:</b></p> <p>If you have PCA installed in the system being recovered, execute the <b>PCA Activation on Standby NOAM Server</b> procedure on the recovered standby NOAM server and the <b>PCA Activation on Active SOAM Server</b> procedure on the recovered active SOAM server from [3] to re-activate PCA.</p> <p>Refer to Section 1.5 Optional Features to activate any features that were previously activated.</p> <p><b>Note:</b> While running the activation script, the following error message (and corresponding messages) output may display. This can safely be ignored.</p> <pre>iload#31000{S/W Fault}</pre> <p><b>Note:</b> If any of the MPs have failed and recovered, then these MP servers should be restarted after activation of the feature.</p> <p>Refer to Section 1.5 Optional Features to activate any features that were previously activated.</p>

**Procedure 1. Recovery Scenario 1**

38. <input type="checkbox"/>	<b>NOAM VIP GUI:</b> Fetch and store the database report for the newly restored data and save it	<p>Navigate to <b>Main Menu-&gt;Status &amp; Manage-&gt;Database</b>.</p>  <p>Select the <b>active NOAM server</b> and click <b>Report</b>.</p> <p><b>Main Menu: Status &amp; Manage -&gt; Database [Report]</b></p>  <p>Click <b>Save</b> to save the report to your local machine.</p>
39. <input type="checkbox"/>	<b>ACTIVE NOAM:</b> Verify replication between servers	<p>Log into the Active NOAM via SSH terminal as <b>admusr</b>.</p> <p>Execute the following command.</p> <pre>\$ sudo irepstat -m</pre> <p>Output like this is generated:</p> <pre>-- Policy 0 ActStb [DbReplication] ----- RDU06-MP1 - Stby   BC From RDU06-S01 Active      0   0.50 ^0.17%cpu 42B/s  A=none   CC From RDU06-MP2 Active      0   0.10 ^0.17 0.88%cpu 32B/s  A=none RDU06-MP2 - Active   BC From RDU06-S01 Active      0   0.50 ^0.10%cpu 33B/s  A=none   CC To   RDU06-MP1 Active      0   0.10  0.08%cpu 20B/s  A=none RDU06-N01 - Active   AB To   RDU06-S01 Active      0   0.50 1%R 0.03%cpu 21B/s RDU06-S01 - Active   AB From RDU06-N01 Active      0   0.50 ^0.04%cpu 24B/s   BC To   RDU06-MP1 Active      0   0.50 1%R 0.04%cpu 21B/s   BC To   RDU06-MP2 Active      0   0.50 1%R 0.07%cpu 21B/s</pre>

**Procedure 1. Recovery Scenario 1**

40.

NOAM VIP GUI:

Verify the database states

Click on **Main Menu->Status and Manager->Database.**

Status & Manage

Network Elements

Server

HA

Database

KPIs

Processes

Tasks

Files

Verify the OAM Max HA Role is either **Active** or **Standby** for NOAM and SOAM; Application Max HA Role for MPs is **Active**; and the status is **Normal**.

Main Menu: Status & Manage -> Database

Filter\*

Info\*

Tasks

Mon Aug 15 02:48:53 2016 EDT

Network Element	Server	Role	OAM Max HA Role	Application Max HA Role	Status	DB Level	OAM Repl Status	SIG Repl Status	Repl Status	Repl Audit Status
SOAM_NE	SO1	System OAM	Standby	N/A	Normal	0	Normal	NotApplicable	Allowed	NotApplicable
SOAM_NE	SO2	System OAM	Active	N/A	Normal	0	Normal	NotApplicable	Allowed	NotApplicable
NOAM_NE	NO2	Network OAM&P	Standby	N/A	Normal	0	Normal	NotApplicable	Allowed	NotApplicable
SOAM_NE	DAMP1	MP	Active	Active	Normal	0	Normal	Normal	Allowed	NotApplicable
NOAM_NE	NO1	Network OAM&P	Active	N/A	Normal	0	Normal	NotApplicable	Allowed	NotApplicable

41.

NOAM VIP GUI:

Verify the HA status

Navigate to **Main Menu->Status and Manager->HA.**

Status & Manage

Network Elements

Server

HA

Database

KPIs

Processes

Tasks

Files

Select the row for all of the servers.

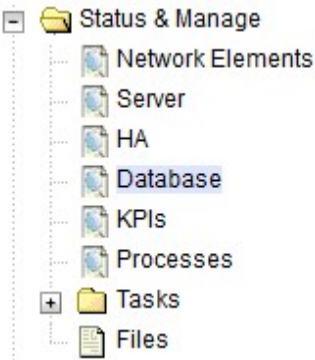

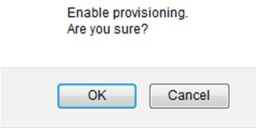
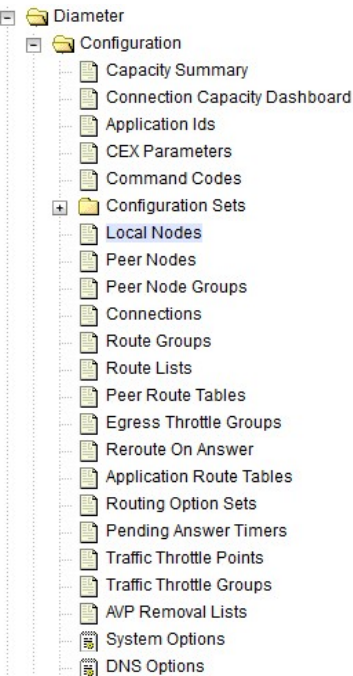
Verify the HA Role is either **Active** or **Standby**.

Main Menu: Status & Manage -> HA

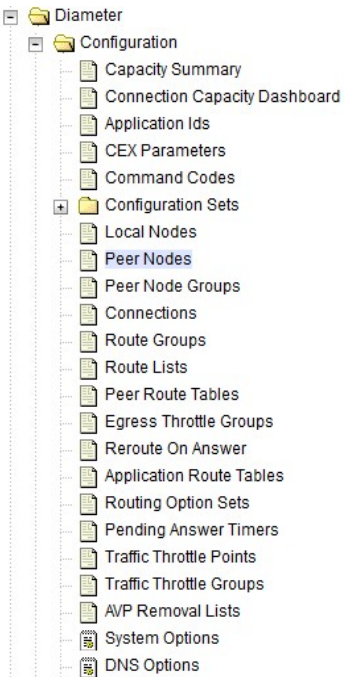
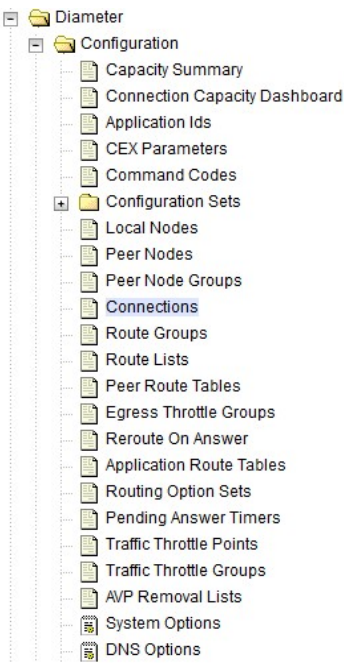
Filter\*

Hostname	OAM HA Role	Application HA Role	Max Allowed HA Role	Mate Hostname List	Network Element	Server Role
SO1	Standby	N/A	Active	SO2	SOAM_NE	System OAM
SO2	Active	N/A	Active	SO1	SOAM_NE	System OAM
DAMP1	Active	Active	Active		SOAM_NE	MP
NO1	Active	N/A	Active	NO2	NOAM_NE	Network OAM&P
NO2	Standby	N/A	Active	NO1	NOAM_NE	Network OAM&P

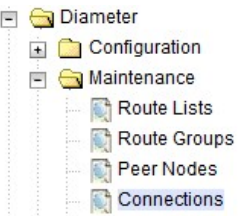
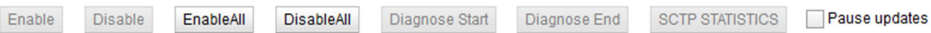
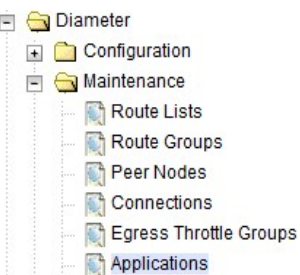

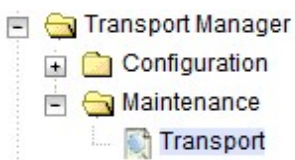
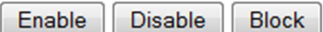
**Procedure 1. Recovery Scenario 1**

42. <input type="checkbox"/>	<b>NOAM GUI:</b> Enable provisioning	<p>Navigate to <b>Main Menu-&gt;Status &amp; Manage-&gt;Database.</b></p>  <p>Click <b>Enable Provisioning.</b></p>  <p>Click <b>OK</b> to enable provisioning.</p> 
43. <input type="checkbox"/>	<b>SOAM VIP GUI:</b> Verify the local node info	<p>Navigate to <b>Main Menu-&gt;Diameter-&gt;Configuration-&gt;Local Node.</b></p>  <p>Verify all the local nodes are shown.</p>

**Procedure 1. Recovery Scenario 1**

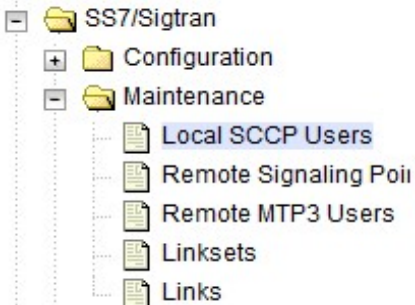
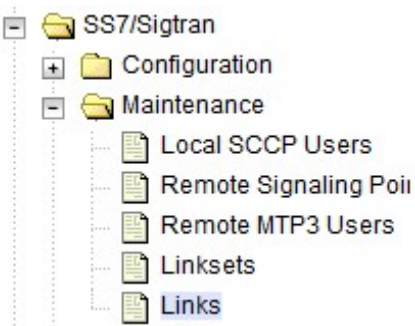
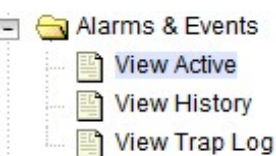
44. <input type="checkbox"/>	<b>SOAM VIP GUI:</b> Verify the peer node info	<p>Navigate to <b>Main Menu-&gt;Diameter-&gt;Configuration-&gt;Peer Node.</b></p>  <p>Verify all the peer nodes are shown.</p>
45. <input type="checkbox"/>	<b>SOAM VIP GUI:</b> Verify the connections info	<p>Navigate to <b>Main Menu-&gt;Diameter-&gt;Configuration-&gt;Connections.</b></p>  <p>Verify all the connections are shown.</p>
46. <input type="checkbox"/>	<b>MP Servers:</b> Disable SCTP Auth Flag	<p>For SCTP connections without DTLS enabled, refer to Enable/Disable DTLS Appendix from reference [1].</p> <p>Execute this procedure on all failed MP servers.</p>

**Procedure 1. Recovery Scenario 1**

47. <input type="checkbox"/>	<b>SOAM VIP GUI:</b> Enable connections, if needed	<p>Navigate to <b>Main Menu-&gt;Diameter-&gt;Maintenance-&gt;Connections.</b></p>  <p>Select each connection and click <b>Enable</b>. Alternatively, you can enable all the connections by clicking <b>EnableAll</b>.</p>  <p>Verify the Operational State is <b>Available</b>.</p> <p><b>Note:</b> If a disaster recovery was performed on an IPFE server, it may be necessary to disable and re-enable the connections to ensure proper link distribution.</p>
48. <input type="checkbox"/>	<b>SOAM VIP GUI:</b> Enable optional features	<p>Navigate to <b>Main Menu -&gt; Diameter -&gt; Maintenance -&gt; Applications.</b></p>  <p>Select the optional feature application already configured.</p> <p>Click <b>Enable</b>.</p> 
49. <input type="checkbox"/>	<b>SOAM VIP GUI:</b> Re-enable transports, if needed [applicable when MAP-IWF application is activated]	<p>Navigate to <b>Main Menu-&gt;Transport Manager -&gt; Maintenance -&gt; Transport.</b></p>  <p>Select each transport and click <b>Enable</b>.</p>  <p>Verify the Operational Status for each transport is <b>Up</b>.</p>




**Procedure 1. Recovery Scenario 1**

50. <input type="checkbox"/>	<b>SOAM VIP GUI:</b> Re-enable MAPIWF application, if needed [applicable when MAP-IWF application is activated]	<p>Navigate to <b>Main Menu-&gt;SS7/Sigtran-&gt;Maintenance-&gt;Local SCCP Users.</b></p>  <p>Click <b>Enable</b> corresponding to MAPIWF Application Name.</p> <p><input type="button" value="Enable"/> <input type="button" value="Disable"/></p> <p>Verify the SSN Status is <b>Enabled</b>.</p>
51. <input type="checkbox"/>	<b>SOAM VIP GUI:</b> Re-enable links, if needed [applicable when MAP-IWF application is activated]	<p>Navigate to <b>Main Menu-&gt;SS7/Sigtran-&gt;Maintenance-&gt;Links.</b></p>  <p>Click <b>Enable</b> for each link.</p> <p><input type="button" value="Enable"/> <input type="button" value="Disable"/></p> <p>Verify that the Operational Status for each link is <b>Up</b>.</p>
52. <input type="checkbox"/>	<b>SOAM VIP GUI:</b> Examine all alarms	<p>Navigate to <b>Main Menu-&gt;Alarms &amp; Events-&gt;View Active.</b></p>  <p>Examine all active alarms and refer to the on-line help on how to address them.</p> <p>If needed, contact Appendix E. My Oracle Support (MOS).</p>



**Procedure 1. Recovery Scenario 1**

53.	<b>NOAM VIP GUI:</b> Examine all alarms	<p>Log into the NOAM VIP if not already logged in.</p> <p>Navigate to <b>Main Menu-&gt;Alarms &amp; Events-&gt;View Active.</b></p>  <p>Examine all active alarms and refer to the on-line help on how to address them.</p> <p>If needed, contact Appendix E. My Oracle Support (MOS).</p>
54.	Restore GUI usernames and passwords	If applicable, execute steps in Section 6 to recover the user and group information restored.
55.	Backup and archive all the databases from the recovered system	Execute Appendix A. DSR Database Backup to back up the configuration databases.

**5.1.2 Recovery Scenario 2 (Partial Server Outage with One NOAM Server Intact and Both SOAMs Failed)**

For a partial server outage with an NOAM server intact and available; SOAM servers are recovered using recovery procedures for software and then executing a database restore to the active SOAM server using a database backup file obtained from the SOAM servers. All other servers are recovered using recovery procedures for software. Database replication from the active NOAM server recovers the database on these servers. The major activities are summarized in the list below. Use this list to understand the recovery procedure summary. Do not use this list to execute the procedure. The actual procedures' detailed steps are in Procedure 2. Recovery Scenario 2. The major activities are summarized as follows:

Recover **Standby NOAM** server (if needed) by recovering software and the database.

- Recover the software.

Recover **active SOAM** server by recovering software.

- Recover the software.
- Recover the Database.

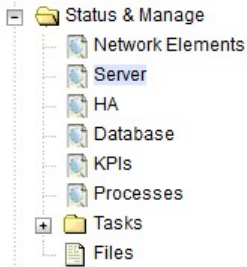
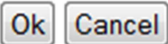
Recover any failed **SOAM and MP** servers by recovering software.

- Recover the software.
- The database has already been restored at the active SOAM server and does not require restoration at the SO and MP servers.

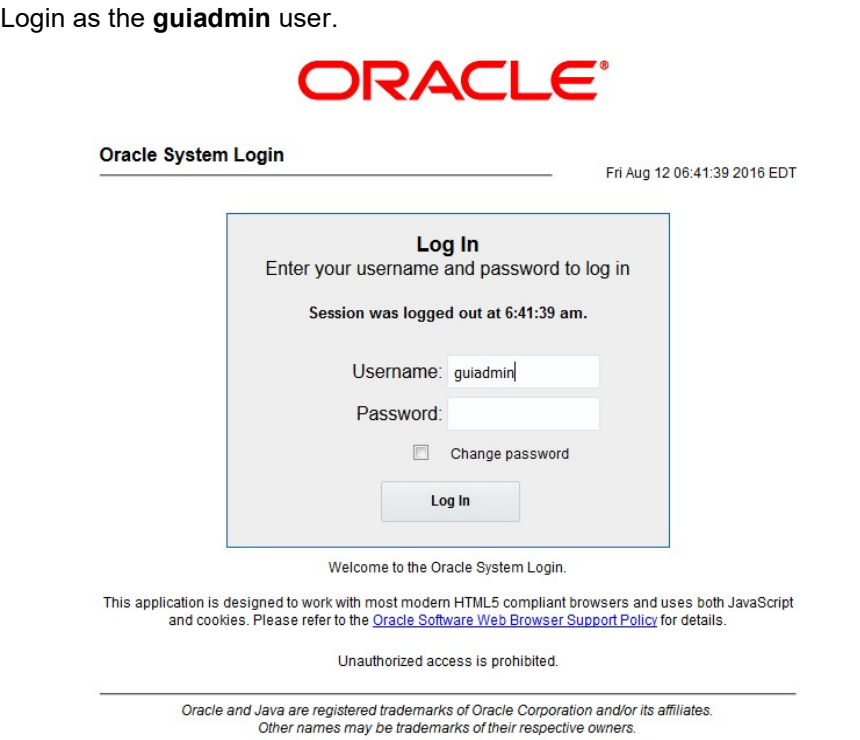
**Procedure 2. Recovery Scenario 2**

<b>STEP #</b>	<p>This procedure performs recovery if at least 1 NOAM server is available but all SOAM servers in a site have failed. This includes any SOAM server in another location.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>If this procedure fails, contact Appendix E. My Oracle Support (MOS) and ask for assistance.</p>	
1. <input type="checkbox"/>	Workarounds	Refer to Appendix D. Workarounds for Issues Not Fixed in This Release to understand any workarounds required during this procedure.
2. <input type="checkbox"/>	Gather required materials	Gather the documents and required materials listed in Section 3.1 Required Materials.
3. <input type="checkbox"/>	<b>NOAM VIP GUI:</b> Login	<p>Establish a GUI session on the NOAM server by using the VIP IP address of the NOAM server. Open the web browser and enter a URL of:</p> <div data-bbox="492 747 1349 804" style="border: 1px solid black; padding: 5px; margin: 10px 0;">       http://&lt;Primary_NOAM_VIP_IP_Address&gt;     </div> <p>Login as the <b>guiadmin</b> user.</p>  <p>Welcome to the Oracle System Login.</p> <p>This application is designed to work with most modern HTML5 compliant browsers and uses both JavaScript and cookies. Please refer to the <a href="#">Oracle Software Web Browser Support Policy</a> for details.</p> <p>Unauthorized access is prohibited.</p> <p><small>Oracle and Java are registered trademarks of Oracle Corporation and/or its affiliates. Other names may be trademarks of their respective owners.</small></p>

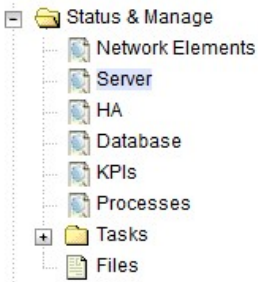
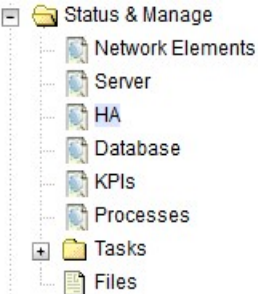


**Procedure 2. Recovery Scenario 2**

4. <input type="checkbox"/>	<b>Active NOAM:</b> Set failed servers to OOS	<p>Navigate to <b>Main Menu -&gt; Status &amp; Manage -&gt; HA.</b></p>  <p>Click <b>Edit</b>.</p> <p>Set the Max Allowed HA Role option to <b>OOS</b> for the failed servers.</p> <p>Click <b>OK</b>.</p> 
5. <input type="checkbox"/>	Create VMs and recover the failed software	<p><b>For VMWare based deployments:</b></p> <ol style="list-style-type: none"> <li>For NOAMs, execute the following procedures from reference [1]: <ul style="list-style-type: none"> <li>Procedure 1 (VMWare). Import DSR OVA.</li> <li>Procedure 2 (VMWare Only). Configure NOAM guests based on resource profile.</li> </ul> </li> <li>For SOAMs, execute the following procedures from reference [1]: <ul style="list-style-type: none"> <li>Procedure 1 (VMWare). Import DSR OVA.</li> <li>Procedure 3 (VMWare Only). Configure Remaining DSR guests based on resource profile.</li> </ul> </li> </ol> <p><b>For KVM/OpenStack based deployments:</b></p> <ol style="list-style-type: none"> <li>For NOAMs, execute the following procedures from reference [1]: <ul style="list-style-type: none"> <li>Procedure 4 (KVM/OpenStack). Import DSR OVA.</li> <li>Procedure 5 (KVM/OpenStack Only). Configure NOAM guests based on resource profile.</li> </ul> </li> <li>For SOAMs, execute the following procedures from reference [1]: <ul style="list-style-type: none"> <li>Procedure 4 (KVM/OpenStack). Import DSR OVA.</li> <li>Procedure 6 (KVM/OpenStack Only). Configure Remaining DSR guests based on resource profile.</li> </ul> </li> </ol> <p><b>For OVM-S/OVM-M based deployments:</b></p> <ol style="list-style-type: none"> <li>For NOAMs, execute the following procedures from reference [1]: <ul style="list-style-type: none"> <li>Procedure 7 (OVM-S/OVM-M). Import DSR OVA.</li> <li>Procedure 8 (OVM-S/OVM-M Only). Configure NOAM guests based on resource profile.</li> </ul> </li> <li>For SOAMs, execute the following procedures from reference [1]: <ul style="list-style-type: none"> <li>Procedure 7 (OVM-S/OVM-M). Import DSR OVA.</li> <li>Procedure 9 (OVM-S/OVM-M Only). Configure Remaining DSR guests based on resource profile.</li> </ul> </li> </ol>

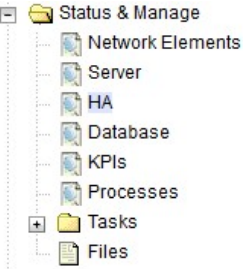
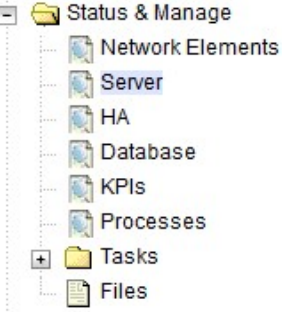
**Procedure 2. Recovery Scenario 2**

6. <input type="checkbox"/>	Repeat for remaining failed servers	If necessary, repeat Step 5 for all remaining failed servers.
7. <input type="checkbox"/>	<b>NOAM VIP GUI:</b> Login	<p>Establish a GUI session on the NOAM server by using the VIP IP address of the NOAM server. Open the web browser and enter a URL of:</p> <div data-bbox="492 417 1346 474" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <code>http://&lt;Primary_NOAM_VIP_IP_Address&gt;</code> </div> <p>Login as the <b>guiadmin</b> user.</p> 
8. <input type="checkbox"/>	<b>NOAM VIP GUI:</b> Recover standby NOAM	<p>Install the second NOAM server by executing procedures from reference [1]:</p> <ul style="list-style-type: none"> <li>• Procedure 12 Configure the Second NOAM Server, Steps 1, 3-7</li> <li>• Procedure 13 Complete Configuring the NOAM Server Group, Step 4</li> </ul> <p><b>Note:</b> If topology or NodeID alarms are persistent after the database restore, refer to Appendix D. Workarounds for Issues Not Fixed in This Release or the next step.</p>

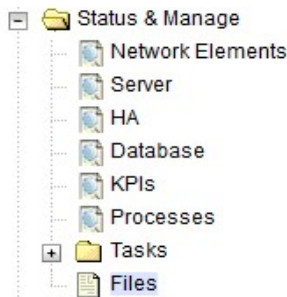
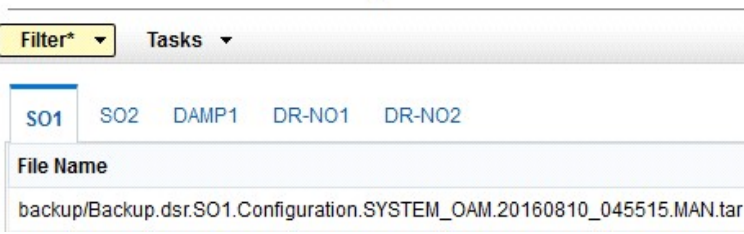
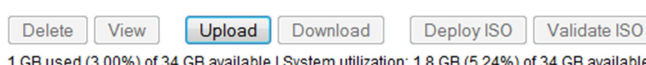
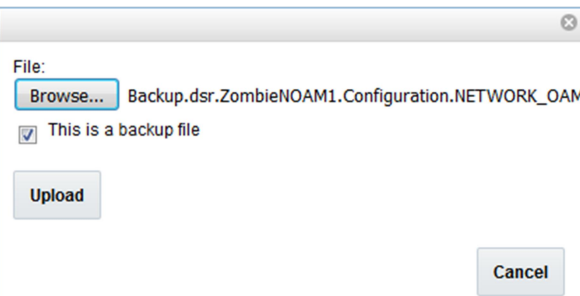
**Procedure 2. Recovery Scenario 2**

9.	<b>NOAM VIP GUI:</b> Restart DSR application	<p>Navigate to <b>Main Menu-&gt;Status &amp; Manage-&gt;Server.</b></p>  <p>Select the recovered standby NOAM server and click <b>Restart.</b></p> <p><b>Stop   Restart   Reboot   NTP Sync   Report</b></p>
10.	<b>NOAM VIP GUI:</b> Set HA on standby NOAM	<p>Navigate to <b>Status &amp; Manage -&gt; HA</b></p>  <p>Click <b>Edit.</b></p> <p>Select the standby NOAM server and set it to <b>Active.</b></p> <p>Click <b>OK.</b></p>
11.	<b>NOAM VIP GUI:</b> Stop replication to the C-level servers of this site	<p>Inhibit replication to the working C-level servers, which belong to the <b>same site</b> as the failed SOAM servers since the recovery of active SOAM causes the database wipeout in the C-level servers because of the replication.</p> <div style="text-align: center;">  <p>Execute <b>Appendix B. Inhibit A and B Level</b></p>  <p>Replication on C-Level Servers</p> </div>
12.	<b>NOAM VIP GUI:</b> Recovered active SOAM server	<p>Install the SOAM servers by executing Procedure 19 <b>Configure the SOAM Servers</b>, Steps 1, 3- 6, from reference [1].</p> <p><b>Note:</b> Wait for server to reboot before continuing.</p>

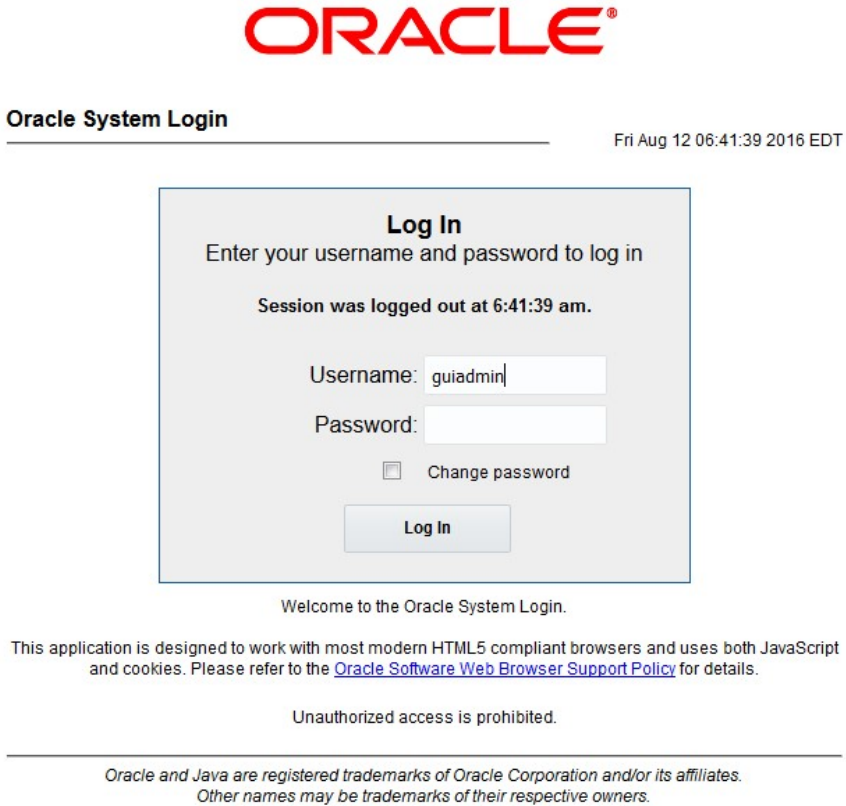
**Procedure 2. Recovery Scenario 2**

13.	<b>NOAM VIP GUI:</b> Set HA on active SOAM	<p>Navigate to <b>Status &amp; Manage -&gt; HA</b></p>  <p>Click <b>Edit</b>.</p> <p>Select the active SOAM server and set it to <b>Active</b>.</p> <p>Click <b>OK</b>.</p>
14.	<b>NOAM VIP GUI:</b> Restart DSR application	<p>Navigate to <b>Main Menu-&gt;Status &amp; Manage-&gt;Server</b>.</p>  <p>Select the recovered active SOAM server and click <b>Restart</b>.</p> <div data-bbox="500 1134 1193 1176"> <span>Stop</span> <span>Restart</span> <span>Reboot</span> <span>NTP Sync</span> <span>Report</span> </div>

**Procedure 2. Recovery Scenario 2**

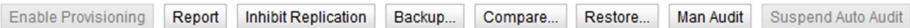
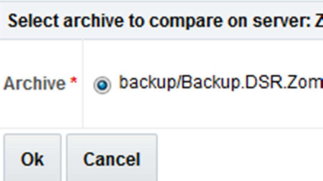
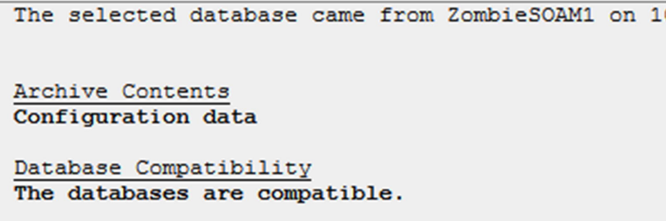
<p>15. <b>NOAM VIP GUI:</b> Upload the backed up SOAM database file</p>	<p>Navigate to <b>Main Menu-&gt;Status &amp; Manage-&gt;Files</b>.</p>  <p>Select the <b>active SOAM server</b>.</p> <p><b>Main Menu: Status &amp; Manage -&gt; Files</b></p>  <p>Click <b>Upload</b> and select the <b>NO Provisioning and Configuration</b> file backed up after the initial installation and provisioning.</p>  <ol style="list-style-type: none"> <li>1. Click <b>Browse</b> and locate the backup file.</li> <li>2. Mark the <b>This is a backup file</b> checkbox.</li> <li>3. Click <b>Upload</b>.</li> </ol>  <p>The file takes a few seconds to upload depending on the size of the backup data. The file displays on the list of entries after the upload is complete.</p>
---	--

**Procedure 2. Recovery Scenario 2**

16.	<b>Recovered SOAM GUI:</b> Login	<p>Establish a GUI session on the recovered SOAM server.</p> <p>Open the web browser and enter a URL of:</p> <div data-bbox="492 325 1346 382"><p>http://&lt;Recovered_SOAM_IP_Address&gt;</p></div> <p>Login as the <b>guiadmin</b> user.</p> <div data-bbox="565 447 1406 1247"></div>
-----	-------------------------------------	---



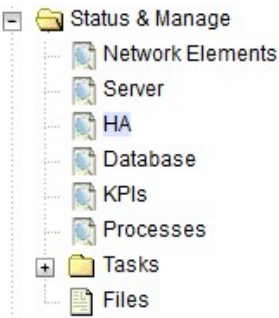
**Procedure 2. Recovery Scenario 2**

17. <input type="checkbox"/>	<b>Recovered SOAM GUI:</b> Verify the archive contents and database compatibility	<p>Navigate to <b>Main Menu-&gt;Status &amp; Manage-&gt;Database</b>.</p> <p>Select the <b>active SOAM</b> server and click <b>Compare</b>.</p>  <p>Click the button for the restored database file uploaded as a part of Step 15 of this procedure.</p> <p><b>Database Compare</b></p>  <p><b>Verify</b> the output window matches the screen below.</p> <p><b>Note:</b> A database mismatch regarding the NodeIDs of the VMs is expected. If that is the only mismatch, proceed; otherwise, stop and contact Appendix E. My Oracle Support (MOS).</p> <p><b>Database Archive Compare</b></p>  <p><b>Note:</b> Archive Contents and Database Compatibilities must be the following:</p> <p><b>Archive Contents:</b> Configuration data</p> <p><b>Database Compatibility:</b> The databases are compatible.</p> <p><b>Note:</b> The following is expected Output for Topology Compatibility Check since we are restoring from existing backed up data base to database with just one SOAM:</p> <p><b>Topology Compatibility</b></p> <p>THE TOPOLOGY SHOULD BE COMPATIBLE MINUS THE NODEID.</p> <p><b>Note:</b> We are trying to restore a backed up database onto an empty SOAM database. This is an expected text in Topology Compatibility.</p> <p>If the verification is successful, click <b>Back</b>.</p>
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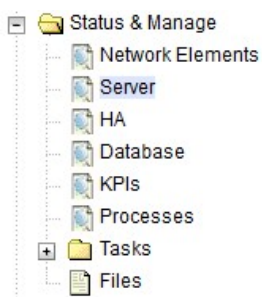
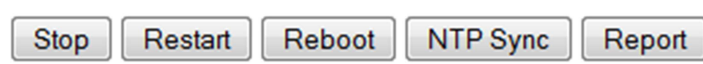
**Procedure 2. Recovery Scenario 2**

18. <input type="checkbox"/>	<b>Recovered SOAM GUI:</b> Restore the database	<p>Navigate to <b>Main Menu-&gt;Status &amp; Manage-&gt;Database</b>.</p> <p>Select the <b>active SOAM</b> server and click <b>Restore</b>.</p> <p>Select the proper back up provisioning and configuration file.</p> <hr/> <p><b>Database Compare</b></p> <p>Select archive to compare on server</p> <p>Archive * <input checked="" type="radio"/> backup/Backup.dsr.Z</p> <p><input type="button" value="Ok"/> <input type="button" value="Cancel"/></p> <p>Click <b>OK</b>.</p> <p><b>Note:</b> A database mismatch regarding the NodeIDs of the servers is expected. If that is the only mismatch, proceed; otherwise, stop and contact Appendix E. My Oracle Support (MOS).</p> <p>Mark the <b>Force</b> checkbox and click <b>OK</b> to proceed with the DB restore.</p> <hr/> <p><b>Database Restore Confirm</b></p> <p>Compatible archive.</p> <div data-bbox="511 1045 1003 1302"> <pre> The selected database came from Zombi  Archive Contents Configuration data  Database Compatibility The databases are compatible. </pre> </div> <p><b>Note:</b> After the restore has started, the user is logged out of XMI SOAM GUI since the restored Topology is old data.</p>
19. <input type="checkbox"/>	<b>Recovered SOAM GUI:</b> Monitor and confirm database restoral	<p>Wait <b>5-10 minutes</b> for the system to stabilize with the new topology.</p> <p>Monitor the Info tab for the <b>Success</b> message. This indicates the backup is complete and the system is stabilized.</p> <p><b>Note:</b> Do not pay attention to alarms until all the servers in the system are completely restored.</p> <p><b>Note:</b> The Configuration and Maintenance information is in the same state it was backed up during initial backup.</p>
20. <input type="checkbox"/>	<b>NOAM VIP GUI:</b> Recover remaining SOAM server	<p>Install the SOAM servers by executing Procedure 19 <b>Configure the SOAM Servers</b>, Steps 1, 3- 6, from reference [1].</p> <p><b>Note:</b> Wait for server to reboot before continuing.</p>

**Procedure 2. Recovery Scenario 2**

21.	<b>NOAM VIP GUI:</b> Set HA on SOAM servers	<div>Navigate to <b>Status &amp; Manage</b> -&gt; <b>HA</b>.</div> <div></div> <div>Click <b>Edit</b>.</div> <div>For each SOAM server whose Max Allowed HA Role is set to Standby, set it to <b>Active</b>.</div> <div>Click <b>OK</b>.</div>																				
22.	<b>Recovered Server:</b> Sync NTP	<div>1. Perform the following to retrieve the remote NTP server.</div> <div><pre>\$ sudo ntpq -np</pre><p>Example output:</p><pre>[admusr@NOAM-2 ~]\$ ntpq -np</pre><table><thead><tr><th>remote</th><th>refid</th><th>st</th><th>t</th><th>when</th><th>poll</th><th>reach</th><th>delay</th><th>offset</th><th>jitter</th></tr></thead><tbody><tr><td>*10.240.9.186</td><td>10.250.33.2</td><td>3</td><td>u</td><td>356</td><td>1024</td><td>377</td><td>1.409</td><td>0.113</td><td>2.434</td></tr></tbody></table></div> <div>2. Stop ntpd service.</div> <div><pre>\$ sudo service ntpd stop</pre></div> <div>3. Sync the date to the ntp remote server.</div> <div><pre>\$ sudo ntpdate &lt;NTP remote server&gt;</pre></div> <div><b>Note:</b> The <b>&lt;NTP remote server&gt;</b> in the above ntpdate command is the one gathered in sub step 1.</div> <div>4. Start the ntp service.</div> <div><pre>\$ sudo service ntpd start</pre></div>	remote	refid	st	t	when	poll	reach	delay	offset	jitter	*10.240.9.186	10.250.33.2	3	u	356	1024	377	1.409	0.113	2.434
remote	refid	st	t	when	poll	reach	delay	offset	jitter													
*10.240.9.186	10.250.33.2	3	u	356	1024	377	1.409	0.113	2.434													

**Procedure 2. Recovery Scenario 2**

23.	<b>NOAM VIP GUI:</b> Restart DSR application	<p>Navigate to <b>Main Menu-&gt;Status &amp; Manage-&gt;Server.</b></p>  <p>Select the recovered server and click <b>Restart</b>.</p> 																				
24.	<b>NOAM VIP GUI:</b> Start replication on working C-level servers	<p>Un-Inhibit (Start) replication to the <b>working</b> C-level servers, which belong to the same site as of the failed SOAM servers.</p> <p>Execute <b>Appendix C</b>. Un-Inhibit A and B Level Replication on C-Level Servers</p> <p>Navigate to <b>Main Menu-&gt;Status &amp; Manage-&gt;Database.</b></p> <p>If the Repl Status is set to <b>Inhibited</b>, click <b>Allow Replication</b> using the following order, otherwise if none of the servers are inhibited, skip this step and continue with the next step:</p> <ul style="list-style-type: none"><li>• Active NOAM Server</li><li>• Standby NOAM Server</li><li>• Active SOAM Server</li><li>• Standby SOAM Server</li><li>• Spare SOAM Server (if applicable)</li><li>• MP/IPFE Servers (if MPs are configured as active/standby, start with the active MP, otherwise the order of the MPs does not matter)</li><li>• SBRS (if SBR servers are configured, start with the active SBR, then standby, then spare)</li></ul> <p>Verify the replication on all the working servers is <b>Allowed</b>. This can be done by examining the Repl Status table.</p> <table><tr><th>OAM Repl Status</th><th>SIG Repl Status</th><th>Repl Status</th><th>Repl Audit Status</th></tr><tr><td>NotApplicable</td><td>NotApplicable</td><td>Allowed</td><td>NotApplicable</td></tr><tr><td>Normal</td><td>NotApplicable</td><td>Allowed</td><td>NotApplicable</td></tr><tr><td>Normal</td><td>NotApplicable</td><td>Allowed</td><td>NotApplicable</td></tr><tr><td>Normal</td><td>NotApplicable</td><td>Allowed</td><td>NotApplicable</td></tr></table>	OAM Repl Status	SIG Repl Status	Repl Status	Repl Audit Status	NotApplicable	NotApplicable	Allowed	NotApplicable	Normal	NotApplicable	Allowed	NotApplicable	Normal	NotApplicable	Allowed	NotApplicable	Normal	NotApplicable	Allowed	NotApplicable
OAM Repl Status	SIG Repl Status	Repl Status	Repl Audit Status																			
NotApplicable	NotApplicable	Allowed	NotApplicable																			
Normal	NotApplicable	Allowed	NotApplicable																			
Normal	NotApplicable	Allowed	NotApplicable																			
Normal	NotApplicable	Allowed	NotApplicable																			

**Procedure 2. Recovery Scenario 2**

25.

**NOAM VIP GUI:**  
Recover the C-level server (DA-MP, SBRs, IPFE, SS7-MP)

Establish an SSH session to the C-level server being recovered, login as **admusr**.

Execute following command to set shared memory to unlimited.

```
$ sudo sh1.set -m 0
```

Execute Procedure 15 **Configure the MP Virtual Machines**, Steps 1, 4-11, from [1] **FOR EACH** recovered server:

26.

**NOAM VIP GUI:**  
Start replication on ALL C-level Servers

Un-Inhibit (Start) Replication to the **ALL** C-level servers.

Navigate to **Status & Manage -> Database**.

Status & Manage

Network Elements

Server

HA

Database

KPIs

Processes

Tasks

Files

If the Repl Status is set to **Inhibited**, click **Allow Replication** using the following order:

• Active NOAM Server

• Standby NOAM Server

• Active SOAM Server

• Standby SOAM Server

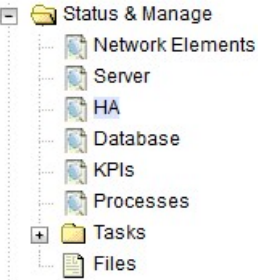
• Spare SOAM Server (if applicable)

• MP/IPFE Servers (if MPs are configured as active/standby, start with the active MP, otherwise the order of the MPs does not matter)

Verify the replication on all the working servers is **Allowed**. This can be done by examining the Repl Status table.

OAM Repl Status	SIG Repl Status	Repl Status	Repl Audit Status
NotApplicable	NotApplicable	Allowed	NotApplicable
Normal	NotApplicable	Allowed	NotApplicable
Normal	NotApplicable	Allowed	NotApplicable
Normal	NotApplicable	Allowed	NotApplicable

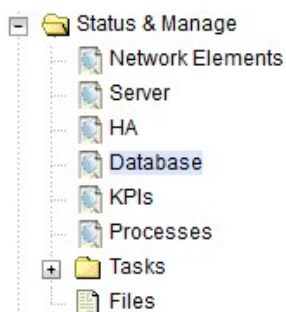
**Procedure 2. Recovery Scenario 2**

27. <input type="checkbox"/>	<b>NOAM VIP GUI:</b> Set HA on all C-level servers	<p>Navigate to <b>Status &amp; Manage -&gt; HA</b>.</p>  <p>Click <b>Edit</b>.</p> <p>For each server whose Max Allowed HA Role is set to Standby, set it to <b>Active</b>.</p> <p>Click <b>OK</b>.</p>
28. <input type="checkbox"/>	<b>ACTIVE NOAM:</b> Perform key exchange between the active-NOAM and recovered servers	<p>Establish an SSH session to the active NOAM, login as <b>admusr</b>.</p> <p>Execute the following command to perform a keyexchange from the active NOAM to each recovered server.</p> <pre>\$ keyexchange admusr@&lt;Recovered Server Hostname&gt;</pre> <p><b>Note:</b> If an export server is configured, perform this step.</p>
29. <input type="checkbox"/>	<b>ACTIVE NOAM:</b> Activate optional features	<p>Establish an SSH session to the active NOAM, login as <b>admusr</b>.</p> <p><b>Note for PCA Feature Activation:</b></p> <p>If you have PCA installed in the system being recovered, execute the <b>PCA Activation on Active NOAM Server</b> procedure on the recovered active NOAM Server; and the <b>PCA Activation on Stand By SOAM Server</b> procedure on the recovered standby SOAM from [3] to re-activate PCA.</p> <p><b>Note:</b> While running the activation script, the following error message (and corresponding messages) output may display. This can safely be ignored.</p> <pre>iload#31000{S/W Fault}</pre> <p><b>Note:</b> If any of the MPs have failed and recovered, then these MP servers should be restarted after activation of the feature.</p> <p>Refer to Section 1.5 Optional Features to activate any features previously activated.</p>

**Procedure 2. Recovery Scenario 2**

30. **NOAM VIP GUI:**  
Fetch and store the database report for the newly restored data and save it

Navigate to **Main Menu->Status & Manage->Database.**



Select the **active NOAM server** and click **Report.**

**Main Menu: Status & Manage -> Database [Report]**

Help Tue Oct 05 15:13:38 2010 UTC

```

=====
N P Q R Database Status Report
=====
Report Generated: Tue Oct 05 15:13:38 2010 UTC
From: Active Network OAM&P on host blade07
Report Version: 3.0.13-3.0.0_10.13.0
User: guidadmin
=====

General
-----
Hostname           : blade07
Appworks Database Version : 3.0
Application Database Version :
Capacities and Utilization
-----
Disk Utilization    0.6%: 249M used of 40G total, 38G available
Memory Utilization  0.6%: 136M used of 23975M total, 23839M available

Alarms
-----
None

Maintenance in Progress
-----
Restore operation success

Service Information
-----
Part: A_NpqrProvPart
=====
Table Name      Row Size  Num  Memory  Disk
Schema  Avg  Max  Rows  Used / Alloc  Used / Alloc
-----
CgPa          44          1  44 B   44 B   44 B   44 B
CgPaGta       52          0   0 B    0 B    0 B    0 B
CgPaInfo      64          1  64 B   64 B   64 B   64 B
CgPaOpc       36          0   0 B    0 B    0 B    0 B
CountryCode   24          306 7344 B 7344 B 7344 B 7344 B
GTConfig      52          2 104 B  104 B  104 B  104 B
MccMnc        40          0   0 B    0 B    0 B    0 B
Msisdn        52          0   0 B    0 B    0 B    0 B
Msrn          68          0   0 B    0 B    0 B    0 B
NpqrNeOptions 276          0   0 B    0 B    0 B    0 B
=====

```

Print Save

Click **Save** to save the report to your local machine.

**Procedure 2. Recovery Scenario 2**

31.

ACTIVE NOAM:  
Verify replication  
between servers

Log into the active NOAM via SSH terminal as **admusr**.

Execute the following command.

```
$ sudo irepstat -m
```

Output like this is generated:

```
-- Policy 0 ActStb [DbReplication] -----
RDU06-MP1 - Stby
    BC From RDU06-SO1 Active      0   0.50 ^0.17%cpu 42B/s  A=none
    CC From RDU06-MP2 Active      0   0.10 ^0.17 0.88%cpu 32B/s  A=none
RDU06-MP2 - Active
    BC From RDU06-SO1 Active      0   0.50 ^0.10%cpu 33B/s  A=none
    CC To  RDU06-MP1 Active      0   0.10 0.08%cpu 20B/s  A=none
RDU06-NO1 - Active
    AB To  RDU06-SO1 Active      0   0.50 1%R 0.03%cpu 21B/s
RDU06-SO1 - Active
    AB From RDU06-NO1 Active      0   0.50 ^0.04%cpu 24B/s
    BC To  RDU06-MP1 Active      0   0.50 1%R 0.04%cpu 21B/s
    BC To  RDU06-MP2 Active      0   0.50 1%R 0.07%cpu 21B/s
```

32.

NOAM VIP GUI:  
Verify the  
database states

Navigate to **Main Menu->Status and Manager->Database**.

Status & Manage

Network Elements

Server

HA

Database

KPIs

Processes

Tasks

Files

Verify the OAM Max HA Role is either **Active** or **Standby** for NOAM and SOAM; Application Max HA Role for MPs is **Active**; and the status is **Normal**.

Main Menu: Status & Manage -> Database

Filter\* Info\* Tasks

Network Element	Server	Role	OAM Max HA Role	Application Max HA Role	Status	DB Level	OAM Repl Status	SIG Repl Status	Repl Status	Repl Audit Status
SOAM_NE	SO1	System OAM	Standby	N/A	Normal	0	Normal	NotApplicable	Allowed	NotApplicable
SOAM_NE	SO2	System OAM	Active	N/A	Normal	0	Normal	NotApplicable	Allowed	NotApplicable
NOAM_NE	NO2	Network OAM&P	Standby	N/A	Normal	0	Normal	NotApplicable	Allowed	NotApplicable
SOAM_NE	DAMP1	MP	Active	Active	Normal	0	Normal	Normal	Allowed	NotApplicable
NOAM_NE	NO1	Network OAM&P	Active	N/A	Normal	0	Normal	NotApplicable	Allowed	NotApplicable



**Procedure 2. Recovery Scenario 2**

33.

NOAM VIP GUI:

Verify the HA status

Status & Manage

Network Elements

Server

HA

Database

KPIs

Processes

Tasks

Files

Select the row for all of the servers.

Verify the HA Role is either **Active** or **Standby**.

Main Menu: Status & Manage -> HA

Filter\*

Hostname	OAM HA Role	Application HA Role	Max Allowed HA Role	Mate Hostname List	Network Element	Server Role	Active VIPs
SO1	Standby	N/A	Active	SO2	SOAM_NE	System OAM	
SO2	Active	N/A	Active	SO1	SOAM_NE	System OAM	
DAMP1	Active	Active	Active		SOAM_NE	MP	
DR-NO1	Active	N/A	Active	DR-NO2	DR_NOAM_NE	Network OAM&P	
DR-NO2	Standby	N/A	Active	DR-NO1	DR_NOAM_NE	Network OAM&P	

34.

SOAM VIP GUI:

Verify the local node info

Diameter

Configuration

Capacity Summary

Connection Capacity Dashboard

Application Ids

CEX Parameters

Command Codes

Configuration Sets

Local Nodes

Peer Nodes

Peer Node Groups

Connections

Route Groups

Route Lists

Peer Route Tables

Egress Throttle Groups

Reroute On Answer

Application Route Tables

Routing Option Sets

Pending Answer Timers

Traffic Throttle Points

Traffic Throttle Groups

A/P Removal Lists

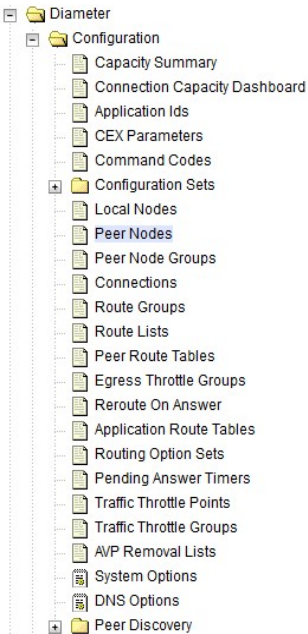
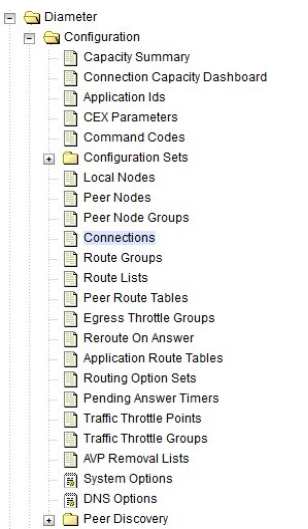
System Options

DNS Options

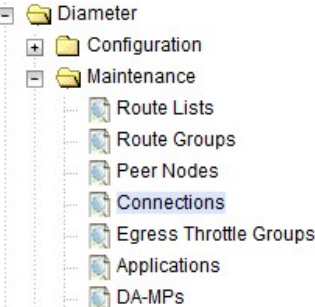
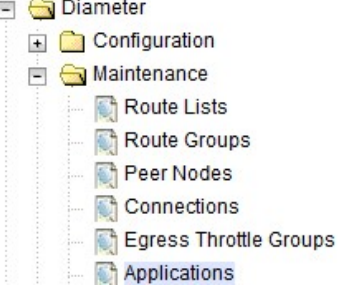
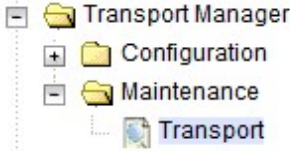
Peer Discovery

Verify all the local nodes are shown.

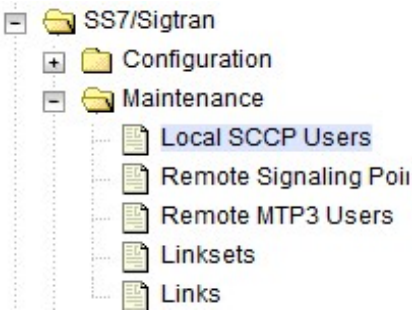
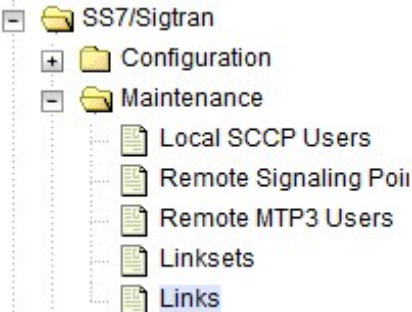
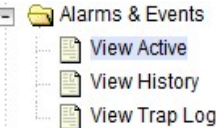
**Procedure 2. Recovery Scenario 2**

35. <input type="checkbox"/>	<b>SOAM VIP GUI:</b> Verify the peer node info	<p>Navigate to <b>Main Menu-&gt;Diameter-&gt;Configuration-&gt;Peer Node.</b></p>  <p>Verify all the peer nodes are shown.</p>
36. <input type="checkbox"/>	<b>SOAM VIP GUI:</b> Verify the connections info	<p>Navigate to <b>Main Menu-&gt;Diameter-&gt;Configuration-&gt;Connections.</b></p>  <p>Verify all the connections are shown.</p>
37. <input type="checkbox"/>	<b>MP Servers:</b> Disable SCTP Auth Flag	<p>For SCTP connections without DTLS enabled, refer to <b>Enable/Disable DTLS Appendix</b> from reference [1].</p> <p>Execute this procedure on all failed MP servers.</p>


**Procedure 2. Recovery Scenario 2**

38. <input type="checkbox"/>	<b>SOAM VIP GUI:</b> Enable Connections, if needed	<p>Navigate to <b>Main Menu-&gt;Diameter-&gt;Maintenance-&gt;Connections.</b></p>  <p>Select each connection and click <b>Enable</b>. Alternatively, you can enable all the connections by clicking <b>EnableAll</b>.</p> <p> <input type="button" value="Enable"/> <input type="button" value="Disable"/> <input type="button" value="EnableAll"/> <input type="button" value="DisableAll"/> <input type="button" value="Diagnose Start"/> <input type="button" value="Diagnose End"/> <input type="button" value="SCTP STATISTICS"/> <input type="checkbox"/> Pause updates </p> <p>Verify the Operational State is <b>Available</b>.</p>
39. <input type="checkbox"/>	<b>SOAM VIP GUI:</b> Enable Optional Features	<p>Navigate to <b>Main Menu -&gt; Diameter -&gt; Maintenance -&gt; Applications.</b></p>  <p>Select the optional feature application configured in Step 29.</p> <p>Click <b>Enable</b>.</p> <p> <input type="button" value="Enable"/> <input type="button" value="Disable"/> <input type="checkbox"/> Pause updates </p>
40. <input type="checkbox"/>	<b>SOAM VIP GUI:</b> Re-enable transports, if needed	<p>Navigate to <b>Main Menu-&gt;Transport Manager -&gt; Maintenance -&gt; Transport.</b></p>  <p>Select each transport and click <b>Enable</b>.</p> <p> <input type="button" value="Enable"/> <input type="button" value="Disable"/> <input type="button" value="Block"/> </p> <p>Verify the Operational Status for each transport is <b>Up</b>.</p>

**Procedure 2. Recovery Scenario 2**

41. <input type="checkbox"/>	<b>SOAM VIP GUI:</b> Re-enable MAPIWF application, if needed	<p>Navigate to <b>Main Menu-&gt;SS7/Sigtran-&gt;Maintenance-&gt;Local SCCP Users.</b></p>  <p>Click <b>Enable</b> corresponding to MAPIWF Application Name.</p> <p><input type="button" value="Enable"/> <input type="button" value="Disable"/></p> <p>Verify the SSN Status is <b>Enabled</b>.</p>
42. <input type="checkbox"/>	<b>SOAM VIP GUI:</b> Re-enable links, if needed	<p>Navigate to <b>Main Menu-&gt;SS7/Sigtran-&gt;Maintenance-&gt;Links.</b></p>  <p>Click <b>Enable</b> for each link.</p> <p><input type="button" value="Enable"/> <input type="button" value="Disable"/></p> <p>Verify the Operational Status for each link is <b>Up</b>.</p>
43. <input type="checkbox"/>	<b>SOAM VIP GUI:</b> Examine all alarms	<p>Navigate to <b>Main Menu-&gt;Alarms &amp; Events-&gt;View Active.</b></p>  <p>Examine all active alarms and refer to the on-line help on how to address them.</p> <p>If needed, contact Appendix E. My Oracle Support (MOS).</p>

**Procedure 2. Recovery Scenario 2**

44. <input type="checkbox"/>	<b>NOAM VIP GUI:</b> Examine all alarms	<p>Log into the NOAM VIP if not already logged in.</p> <p>Navigate to <b>Main Menu-&gt;Alarms &amp; Events-&gt;View Active</b>.</p>  <p>Examine all active alarms and refer to the on-line help on how to address them.</p> <p>If needed, contact Appendix E. My Oracle Support (MOS).</p>
45. <input type="checkbox"/>	Backup and archive all the databases from the recovered system	Execute Appendix A. DSR Database Backup to back up the Configuration databases.

**5.1.3 Recovery Scenario 3 (Partial Server Outage with all NOAM Servers Failed and One SOAM Server Intact)**

For a partial server outage with an SOAM server intact and available; NOAM servers are recovered using recovery procedures for software and then executing a database restore to the active NOAM server using a NOAM database backup file obtained from external backup sources such as customer servers. All other servers are recovered using recovery procedures for software. Database replication from the active NOAM/active SOAM server recovers the database on these servers. The major activities are summarized in the list below. Use this list to understand the recovery procedure summary. Do not use this list to execute the procedure. The actual procedures' detailed steps are in Procedure 3. Recovery Scenario 3. The major activities are summarized as follows:

Recover **active NOAM** server by recovering software and the database.

- Recover the software.
- Recover the database

Recover **Standby NOAM servers** by recovering software.

- Recover the software.

Recover any failed **SOAM and MP servers** by recovering software.

- Recover the software.
- Database is already intact at one SOAM server and does not require restoration at the other SOAM and MP servers.


**Procedure 3. Recovery Scenario 3**

<b>S T E P #</b>	<p>This procedure performs recovery if ALL NOAM servers have failed but 1 or more SOAM servers are intact. This includes any SOAM server in another location (spare SOAM server).</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>If this procedure fails, contact Appendix E. My Oracle Support (MOS) and ask for assistance.</p>
1. <input type="checkbox"/>	<p>Workarounds</p> <p>Refer to Appendix D. Workarounds for Issues Not Fixed in This Release to understand any workarounds required during this procedure.</p>

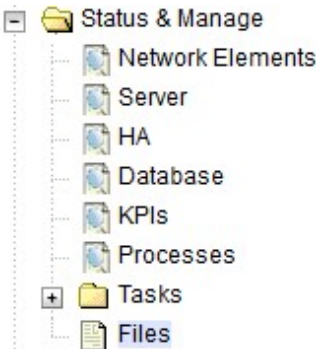

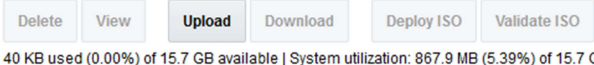
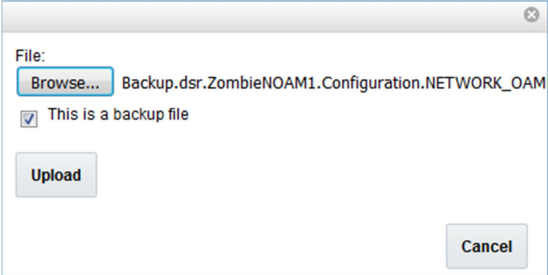
**Procedure 3. Recovery Scenario 3**

2. <input type="checkbox"/>	Gather required materials	Gather the documents and required materials listed in Section 3.1 Required Materials.
3. <input type="checkbox"/>	Recover the failed software	<p><b>For VMWare based deployments:</b></p> <ol style="list-style-type: none"> <li>For NOAMs, execute the following procedures from reference [1]: <ul style="list-style-type: none"> <li>Procedure 1 (VMWare). Import DSR OVA.</li> <li>Procedure 2 (VMWare Only). Configure NOAM guests based on resource profile.</li> </ul> </li> <li>For SOAMs, execute the following procedures from reference [1]: <ul style="list-style-type: none"> <li>Procedure 1 (VMWare). Import DSR OVA.</li> <li>Procedure 3 (VMWare Only). Configure Remaining DSR guests based on resource profile.</li> </ul> </li> <li>For failed MPs, execute the following procedures from reference [1]: <ul style="list-style-type: none"> <li>Procedure 1 (VMWare). Import DSR OVA.</li> <li>Procedure 3 (VMWare Only). Configure Remaining DSR guests based on resource profile.</li> </ul> </li> </ol> <p><b>For KVM/OpenStack based deployments:</b></p> <ol style="list-style-type: none"> <li>For NOAMs, execute the following procedures from reference [1]: <ul style="list-style-type: none"> <li>Procedure 4 (KVM/OpenStack). Import DSR OVA.</li> <li>Procedure 5 (KVM/OpenStack Only). Configure NOAM guests based on resource profile.</li> </ul> </li> <li>For SOAMs, execute the following procedures from reference [1]: <ul style="list-style-type: none"> <li>Procedure 4 (KVM/OpenStack). Import DSR OVA.</li> <li>Procedure 6 (KVM/OpenStack Only). Configure Remaining DSR guests based on resource profile.</li> </ul> </li> <li>For failed MPs, execute the following procedures from reference [1]: <ul style="list-style-type: none"> <li>Procedure 4 (KVM/OpenStack). Import DSR OVA.</li> <li>Procedure 6 (KVM/OpenStack Only). Configure Remaining DSR guests based on resource profile.</li> </ul> </li> </ol> <p><b>For OVM-S/OVM-M based deployments:</b></p> <ol style="list-style-type: none"> <li>For NOAMs, execute the following procedures from reference [1]: <ul style="list-style-type: none"> <li>Procedure 7 (OVM-S/OVM-M). Import DSR OVA.</li> <li>Procedure 8 (OVM-S/OVM-M Only). Configure NOAM guests based on resource profile.</li> </ul> </li> <li>For SOAMs, execute the following procedures from reference [1]: <ul style="list-style-type: none"> <li>Procedure 7 (OVM-S/OVM-M). Import DSR OVA.</li> <li>Procedure 9 (OVM-S/OVM-M Only). Configure Remaining DSR guests based on resource profile.</li> </ul> </li> <li>For failed MPs, execute the following procedures from reference [1]: <ul style="list-style-type: none"> <li>Procedure 7 (OVM-S/OVM-M). Import DSR OVA.</li> <li>Procedure 9 (OVM-S/OVM-M Only). Configure Remaining DSR guests based on resource profile.</li> </ul> </li> </ol>

**Procedure 3. Recovery Scenario 3**

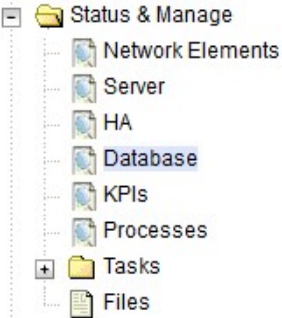
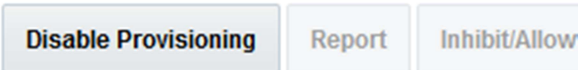

4. <input type="checkbox"/>	Obtain latest database backup and network configuration data	<p>Obtain the most recent database backup file from external backup sources (i.e., file servers) or tape backup sources.</p> <p>From required materials list in Section 3.1 Required Materials; use site survey documents and Network Element report (if available), to determine network configuration data.</p>
5. <input type="checkbox"/>	Execute DSR installation procedure for the first NOAM	<p>Verify the networking data for network elements,</p> <p><b>Note:</b> Use the backup copy of network configuration data and site surveys (Step 2).</p> <p><b>Execute</b> installation procedures for the first NOAM server from reference [1]:</p> <ul style="list-style-type: none"> <li>• Procedure 10 Configure the First NOAM NE and Server</li> <li>• Procedure 11 Configure the NOAM Server Group</li> </ul>
6. <input type="checkbox"/>	<b>NOAM GUI:</b> Login	<p>Log into the NOAM GUI as the <b>guiadmin</b> user.</p> 

**Procedure 3. Recovery Scenario 3**

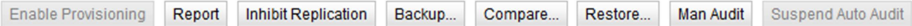
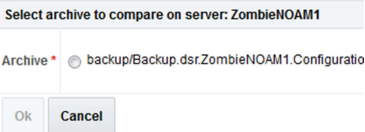
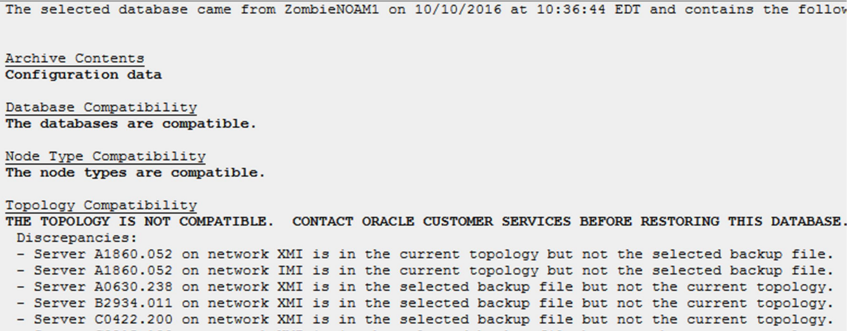
<p>7. <b>NOAM GUI:</b> Upload the backed up database file</p>	<p>Navigate to <b>Main Menu-&gt;Status &amp; Manage-&gt;Files</b>.</p>  <p>Select the <b>active NOAM server</b>.</p> <p><b>Main Menu: Status &amp; Manage -&gt; Files</b></p>  <p>Click <b>Upload</b> and select the <b>NO Provisioning and Configuration</b> file backed up after the initial installation and provisioning.</p>  <p>40 KB used (0.00%) of 15.7 GB available   System utilization: 867.9 MB (5.39%) of 15.7 GB available.</p> <ol style="list-style-type: none"> <li>1. Click <b>Browse</b> and locate the backup file.</li> <li>2. Mark the <b>This is a backup file</b> checkbox.</li> <li>3. Click <b>Upload</b>.</li> </ol>  <p>The file takes a few seconds to upload depending on the size of the backup data. The file displays on the list of entries after the upload is complete.</p>
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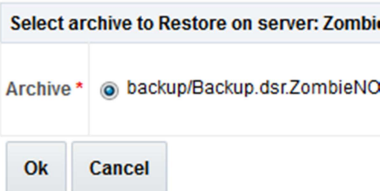
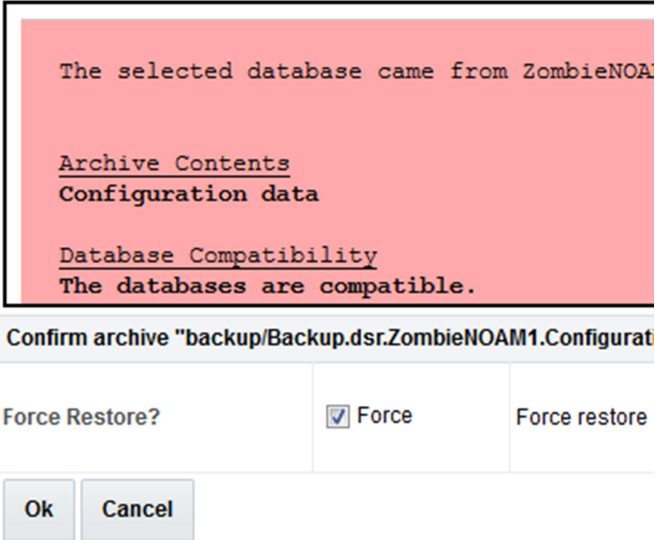
**Procedure 3. Recovery Scenario 3**

8.	<b>NOAM GUI:</b> Disable Provisioning	<p>Navigate to <b>Main Menu-&gt;Status &amp; Manage-&gt;Database.</b></p>  <p>Click <b>Disable Provisioning.</b></p>  <p>Click <b>OK</b> on the confirmation screen to disable provisioning.</p>  <p>The <b>Warning Code 002</b> message displays.</p>
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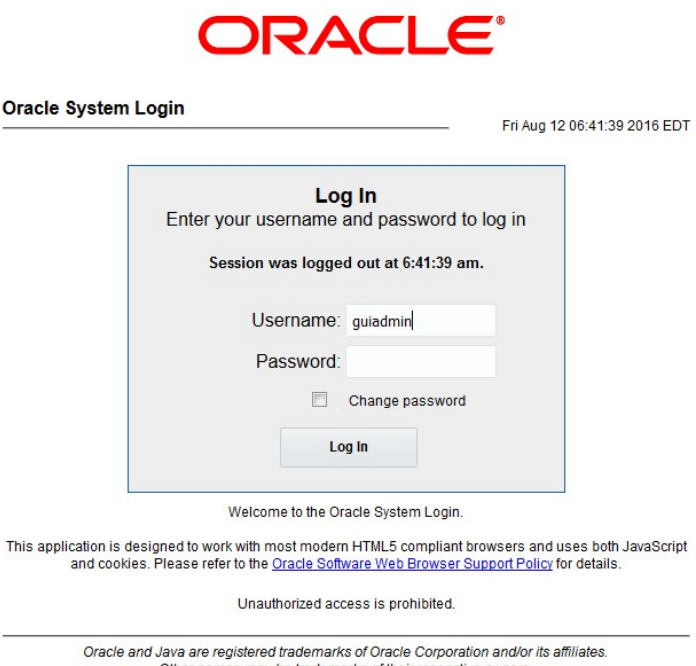
**Procedure 3. Recovery Scenario 3**

<p>9. <input type="checkbox"/></p>	<p><b>NOAM GUI:</b> Verify the archive contents and database compatibility</p>	<p>Select the <b>active NOAM</b> server and click <b>Compare</b>.</p>  <p>Click the button for the restored database file uploaded as a part of Step 7 of this procedure.</p> <p><b>Database Compare</b></p>  <p><b>Verify</b> the output window matches the screen below.</p> <p><b>Note:</b> A database mismatch regarding the NodeIDs of the VMs is expected. If that is the only mismatch, proceed; otherwise, stop and contact Appendix E. My Oracle Support (MOS).</p> <p><b>Database Archive Compare</b></p>  <p><b>Note:</b> Archive Contents and Database Compatibilities must be the following:</p> <p><b>Archive Contents:</b> Configuration data</p> <p><b>Database Compatibility:</b> The databases are compatible.</p> <p><b>Note:</b> The following is expected Output for Topology Compatibility Check since we are restoring from existing backed up data base to database with just one NOAM:</p> <p><b>Topology Compatibility</b></p> <p>THE TOPOLOGY SHOULD BE COMPATIBLE MINUS THE NODEID.</p> <p><b>Note:</b> We are trying to restore a backed up database onto an empty NOAM database. This is an expected text in Topology Compatibility.</p> <p>If the verification is successful, click <b>Back</b>.</p>
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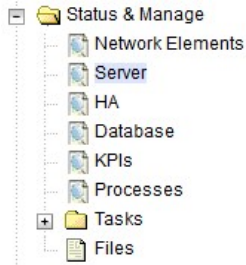
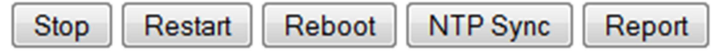
**Procedure 3. Recovery Scenario 3**

10. <input type="checkbox"/>	<b>ACTIVE NOAM:</b> Restore the Database	<p>Navigate to <b>Main Menu-&gt;Status &amp; Manage-&gt;Database</b>.</p> <p>Select the <b>active NOAM</b> server and click <b>Restore</b>.</p> <p>Select the proper back up provisioning and configuration file.</p>  <p>Click <b>OK</b>.</p> <p><b>Note:</b> A database mismatch regarding the NodeIDs of the servers is expected. If that is the only mismatch, proceed; otherwise, stop and contact Appendix E. My Oracle Support (MOS).</p> <p>Mark the <b>Force</b> checkbox and click <b>OK</b> to proceed with the DB restore.</p> <p><b>Database Restore Confirm</b></p> <p>Incompatible archive selected</p>  <p><b>Note:</b> After the restore has started, the user is logged out of XMI NO GUI since the restored Topology is old data.</p>
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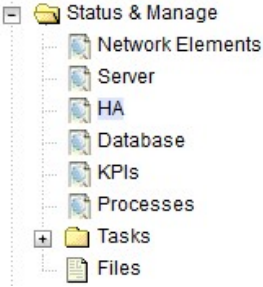
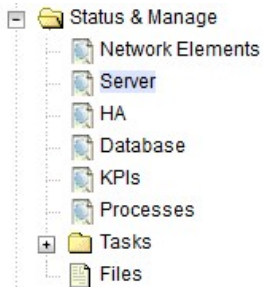
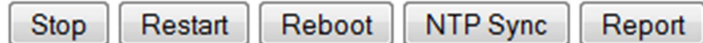
**Procedure 3. Recovery Scenario 3**

11. <input type="checkbox"/>	<b>NOAM VIP GUI:</b> Login	<p>Establish a GUI session on the NOAM server by using the VIP IP address of the NOAM server. Open the web browser and enter a URL of:</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> http://&lt;Primary_NOAM_VIP_IP_Address&gt; </div> <p>Login as the <b>guiadmin</b> user.</p> 
12. <input type="checkbox"/>	<b>NOAM VIP GUI:</b> Monitor and confirm database restoral	<p>Wait <b>5-10 minutes</b> for the system to stabilize with the new topology:</p> <p>Monitor the Info tab for the <b>Success</b> message. This indicates the backup is complete and the system is stabilized.</p> <p>Following alarms <b>must</b> be ignored for NOAM and MP Servers until all the Servers are configured:</p> <ul style="list-style-type: none"> <li>Alarms with Type Column as <b>REPL, COLL, HA</b> (with mate NOAM), <b>DB</b> (about Provisioning Manually Disabled)</li> </ul> <p><b>Note:</b> Do not pay attention to alarms until all the servers in the system are completely restored.</p> <p><b>Note:</b> The Configuration and Maintenance information is in the same state it was backed up during initial backup.</p>
13. <input type="checkbox"/>	<b>ACTIVE NOAM:</b> Login	<p>Log into the recovered active NOAM via SSH terminal as <b>admusr</b>.</p>

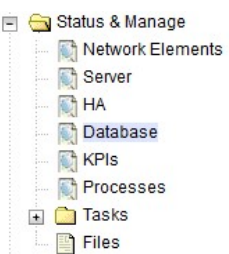
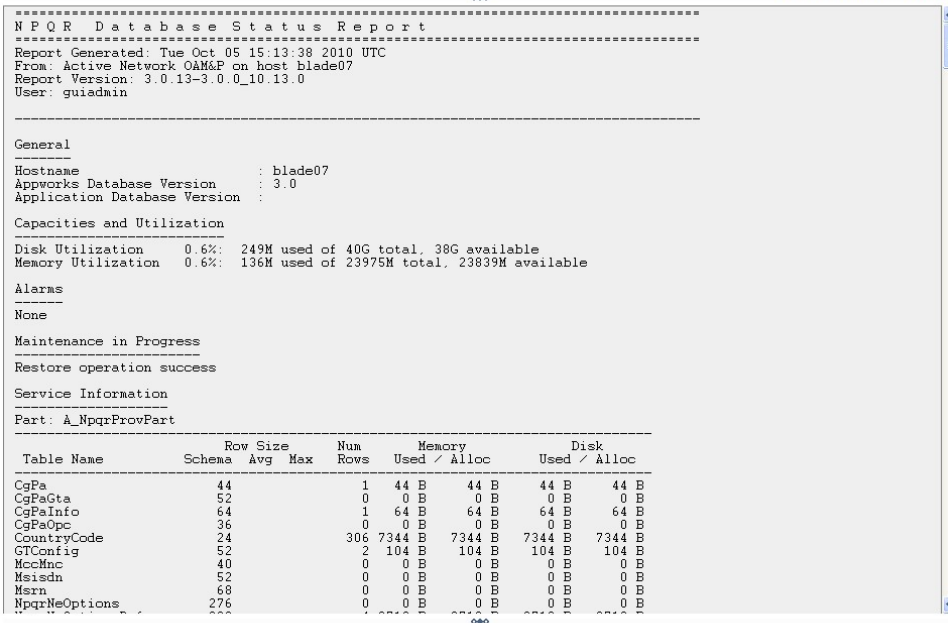
**Procedure 3. Recovery Scenario 3**

14. <input type="checkbox"/>	<b>NOAM VIP GUI:</b> Re-enable provisioning	<p>Navigate to <b>Main Menu-&gt;Status &amp; Manage-&gt;Database.</b></p> <p>Click <b>Enable Provisioning.</b></p>  <p>Click <b>OK</b> to confirm.</p> 
15. <input type="checkbox"/>	<b>NOAM VIP GUI:</b> Recover standby NOAM	<p>Install the second NOAM server by executing procedures from reference [1]:</p> <ul style="list-style-type: none"> <li>• Procedure 12 Configure the Second NOAM Server, Steps 1, 3-7</li> <li>• Procedure 13 Complete Configuring the NOAM Server Group, Step 4</li> </ul> <p><b>Note:</b> If Topology or NodeID alarms are persistent after the database restore, refer to Appendix D. Workarounds for Issues Not Fixed in This Release or the next step.</p>
16. <input type="checkbox"/>	<b>NOAM VIP GUI:</b> Recover remaining failed SOAM servers	<p>Recover the <b>remaining</b> SOAM servers (<b>standby, spare</b>) by repeating the following step for each SOAM server:</p> <ol style="list-style-type: none"> <li>1. Install the remaining SOAM servers by executing Procedure 19 <b>Configure the SOAM Servers</b>, Steps 1, 3- 7, from reference [1].</li> </ol> <p><b>Note:</b> Wait for server to reboot before continuing.</p>
17. <input type="checkbox"/>	<b>NOAM VIP GUI:</b> Restart DSR application	<p>Navigate to <b>Main Menu-&gt;Status &amp; Manage-&gt;Server.</b></p>  <p>Select the recovered server and click <b>Restart.</b></p> 

**Procedure 3. Recovery Scenario 3**

18. <input type="checkbox"/>	<b>NOAM VIP GUI:</b> Set HA on all C-level servers	<p>Navigate to <b>Status &amp; Manage -&gt; HA</b>.</p>  <p>Click <b>Edit</b>.</p> <p>For each server whose Max Allowed HA Role is not <b>active</b>, set it to <b>Active</b>.</p> <p>Click <b>OK</b>.</p>
19. <input type="checkbox"/>	<b>NOAM VIP GUI:</b> Restart DSR application	<p>Navigate to <b>Main Menu-&gt;Status &amp; Manage-&gt;Server</b>.</p>  <p>Select each recovered server and click <b>Restart</b>.</p> 
20. <input type="checkbox"/>	<b>ACTIVE NOAM:</b> Perform key exchange between the active-NOAM and recovered servers	<p>Establish an SSH session to the active NOAM, login as <b>admusr</b>.</p> <p>Execute the following command to perform a <b>keyexchange</b> from the active NOAM to each recovered server.</p> <pre>\$ keyexchange admusr@&lt;Recovered Server Hostname&gt;</pre> <p><b>Note:</b> If an export server is configured, perform this step.</p>

**Procedure 3. Recovery Scenario 3**

21. <input type="checkbox"/>	<b>ACTIVE NOAM:</b> Activate optional features	<p>Establish an SSH session to the active NOAM, login as <b>admusr</b>.</p> <p><b>Note for PCA Feature Activation:</b></p> <p>If you have PCA installed in the system being recovered, execute the <b>PCA Activation on Active NOAM Server</b> procedure on the recovered active NOAM server and the <b>PCA Activation on Standby SOAM Server</b> procedure on the recovered standby SOAM from [3] to re-activate PCA.</p> <p><b>Note:</b> While running the activation script, the following error message (and corresponding messages) output may display. This can safely be ignored.</p> <pre> i1oad#31000{S/W Fault} </pre> <p><b>Note:</b> If any of the MPs have failed and recovered, then these MP servers should be restarted after activation of the feature.</p> <p>Refer to Section 1.5 Optional Features to activate any features previously activated.</p>
22. <input type="checkbox"/>	<b>NOAM VIP GUI:</b> Fetch and store the database report for the newly restored data and save it	<p>Navigate to <b>Main Menu-&gt;Status &amp; Manage-&gt;Database</b>.</p>  <p>Select the <b>active NOAM server</b> and click <b>Report</b>.</p> <p><b>Main Menu: Status &amp; Manage -&gt; Database [Report]</b></p>  <p>Click <b>Save</b> to save the report to your local machine.</p>

**Procedure 3. Recovery Scenario 3**

23.

ACTIVE NOAM:

Verify replication between servers

Log into the active NOAM via SSH terminal as **admusr**.

Execute the following command.

\$ sudo irepstat -m

Output like this is generated:

-- Policy 0 ActStb [DbReplication] -----

RDU06-MP1 - Stby

BC From RDU06-SO1 Active00.50 ^0.17%cpu 42B/s A=none

CC From RDU06-MP2 Active00.10 ^0.17 0.88%cpu 32B/s A=none

RDU06-MP2 - Active

BC From RDU06-SO1 Active00.50 ^0.10%cpu 33B/s A=none

CC To RDU06-MP1 Active00.10 0.08%cpu 20B/s A=none

RDU06-NO1 - Active

AB To RDU06-SO1 Active00.50 1%R 0.03%cpu 21B/s

RDU06-SO1 - Active

AB From RDU06-NO1 Active00.50 ^0.04%cpu 24B/s

BC To RDU06-MP1 Active00.50 1%R 0.04%cpu 21B/s

BC To RDU06-MP2 Active00.50 1%R 0.07%cpu 21B/s

24.

NOAM VIP GUI:

Verify the database states

Navigate to **Main Menu->Status and Manager->Database**.

Status & Manage

Network Elements

Server

HA

Database

KPIs

Processes

Tasks

Files

Verify the OAM Max HA Role is either **Active** or **Standby** for NOAM and SOAM; Application Max HA Role for MPs is **Active**; and the status is **Normal**.

Main Menu: Status & Manage -> Database

FilterInfoTasks

Network Element	Server	Role	OAM Max HA Role	Application Max HA Role	Status	DB Level	OAM Repl Status	SIG Repl Status	Repl Status	Repl Audit Status
SOAM_NE	SO1	System OAM	Standby	N/A	Normal	0	Normal	NotApplicable	Allowed	NotApplicable
SOAM_NE	SO2	System OAM	Active	N/A	Normal	0	Normal	NotApplicable	Allowed	NotApplicable
NOAM_NE	NO2	Network OAM&P	Standby	N/A	Normal	0	Normal	NotApplicable	Allowed	NotApplicable
SOAM_NE	DAMP1	MP	Active	Active	Normal	0	Normal	Normal	Allowed	NotApplicable
NOAM_NE	NO1	Network OAM&P	Active	N/A	Normal	0	Normal	NotApplicable	Allowed	NotApplicable

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**Procedure 3. Recovery Scenario 3**

25.

NOAM VIP GUI:

Verify the HA status

Status & Manage

Network Elements

Server

HA

Database

KPIs

Processes

Tasks

Files

Select the row for all of the servers.

Verify the HA Role is either **Active** or **Standby**.

Main Menu: Status & Manage -> HA

Filter\*

Hostname	OAM HA Role	Application HA Role	Max Allowed HA Role	Mate Hostname List	Network Element	Server Role
SO1	Standby	N/A	Active	SO2	SOAM_NE	System OAM
SO2	Active	N/A	Active	SO1	SOAM_NE	System OAM
DAMP1	Active	Active	Active		SOAM_NE	MP
NO1	Active	N/A	Active	NO2	NOAM_NE	Network OAM&P
NO2	Standby	N/A	Active	NO1	NOAM_NE	Network OAM&P

26.

SOAM VIP GUI:

Verify the local node info

Diameter

Configuration

Capacity Summary

Connection Capacity Dashboard

Application Ids

CEX Parameters

Command Codes

Configuration Sets

Local Nodes

Peer Nodes

Peer Node Groups

Connections

Route Groups

Route Lists

Peer Route Tables

Egress Throttle Groups

Reroute On Answer

Application Route Tables

Routing Option Sets

Pending Answer Timers

Traffic Throttle Points

Traffic Throttle Groups

AVP Removal Lists

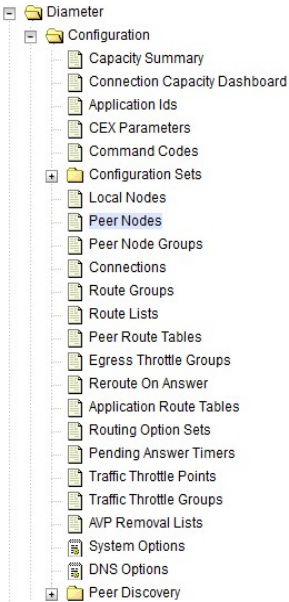
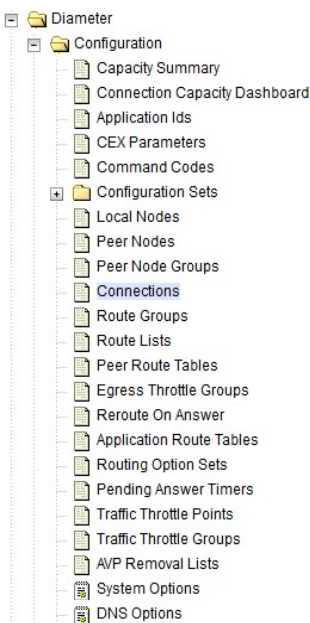
System Options

DNS Options

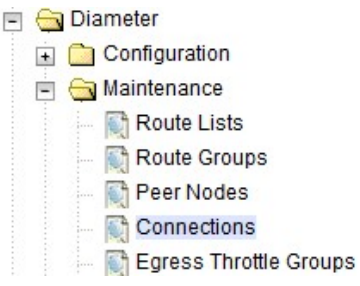
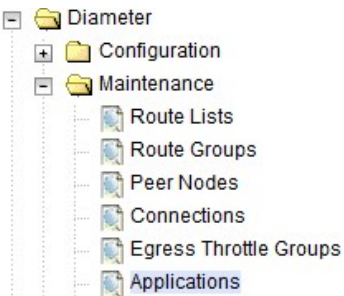
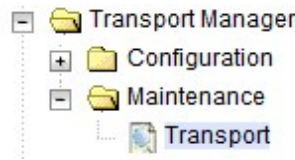
Peer Discovery

Verify all the local nodes are shown.

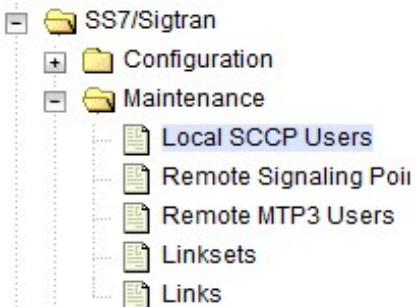
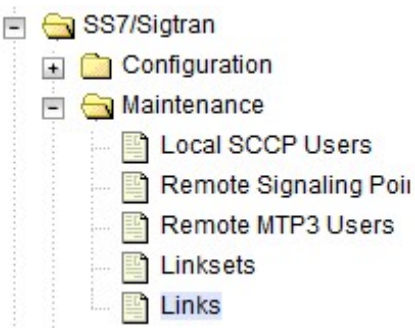
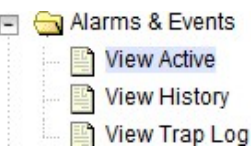
**Procedure 3. Recovery Scenario 3**

27. <input type="checkbox"/>	<b>SOAM VIP GUI:</b> Verify the peer node info	<p>Navigate to <b>Main Menu-&gt;Diameter-&gt;Configuration-&gt;Peer Node.</b></p>  <p>Verify all the peer nodes are shown.</p>
28. <input type="checkbox"/>	<b>SOAM VIP GUI:</b> Verify the connections info	<p>Navigate to <b>Main Menu-&gt;Diameter-&gt;Configuration-&gt;Connections.</b></p>  <p>Verify all the connections are shown.</p>

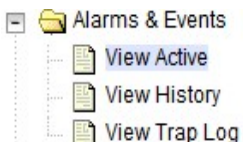
**Procedure 3. Recovery Scenario 3**

29. <div data-bbox="191 279 219 315" style="border: 1px solid black; width: 15px; height: 15px; display: inline-block;"></div>	<b>SOAM VIP GUI:</b> Enable connections, if needed	<p>Navigate to <b>Main Menu-&gt;Diameter-&gt;Maintenance-&gt;Connections.</b></p>  <p>Select each connection and click <b>Enable</b>. Alternatively, you can enable all the connections by clicking <b>EnableAll</b>.</p> <p> <input type="button" value="Enable"/> <input type="button" value="Disable"/> <input type="button" value="EnableAll"/> <input type="button" value="DisableAll"/> <input type="button" value="Diagnose Start"/> <input type="button" value="Diagnose End"/> <input type="button" value="SCTP STATISTICS"/> <input type="checkbox"/> Pause updates </p> <p>Verify the Operational State is <b>Available</b>.</p>
30. <div data-bbox="191 783 219 819" style="border: 1px solid black; width: 15px; height: 15px; display: inline-block;"></div>	<b>SOAM VIP GUI:</b> Enable optional features	<p>Navigate to <b>Main Menu -&gt; Diameter -&gt; Maintenance -&gt; Applications.</b></p>  <p>Select the optional feature application configured in Step 31.</p> <p>Click <b>Enable</b>.</p> <p> <input type="button" value="Enable"/> <input type="button" value="Disable"/> <input type="checkbox"/> Pause updates </p>
31. <div data-bbox="191 1293 219 1329" style="border: 1px solid black; width: 15px; height: 15px; display: inline-block;"></div>	<b>SOAM VIP GUI:</b> Re-enable transports, if needed	<p>Navigate to <b>Main Menu-&gt;Transport Manager -&gt; Maintenance -&gt; Transport.</b></p>  <p>Select each transport and click <b>Enable</b>.</p> <p> <input type="button" value="Enable"/> <input type="button" value="Disable"/> <input type="button" value="Block"/> </p> <p>Verify the Operational Status for each transport is <b>Up</b>.</p>

**Procedure 3. Recovery Scenario 3**

32.	<b>SOAM VIP GUI:</b> Re-enable MAPIWF application, if needed	<p>Navigate to <b>Main Menu-&gt;SS7/Sigtran-&gt;Maintenance-&gt;Local SCCP Users.</b></p>  <p>Click <b>Enable</b> corresponding to MAPIWF Application Name.</p> <p><input type="button" value="Enable"/> <input type="button" value="Disable"/></p> <p>Verify the SSN Status is <b>Enabled</b>.</p>
33.	<b>SOAM VIP GUI:</b> Re-enable links, if needed	<p>Navigate to <b>Main Menu-&gt;SS7/Sigtran-&gt;Maintenance-&gt;Links.</b></p>  <p>Click <b>Enable</b> for each link.</p> <p><input type="button" value="Enable"/> <input type="button" value="Disable"/></p> <p>Verify the Operational Status for each link is <b>Up</b>.</p>
34.	<b>SOAM VIP GUI:</b> Examine all alarms	<p>Navigate to <b>Main Menu-&gt;Alarms &amp; Events-&gt;View Active.</b></p>  <p>Examine all active alarms and refer to the on-line help on how to address them.</p> <p>If needed, contact Appendix E. My Oracle Support (MOS).</p>

**Procedure 3. Recovery Scenario 3**

35.	<b>NOAM VIP GUI:</b> Examine all alarms	Log into the NOAM VIP if not already logged in.  Navigate to <b>Main Menu-&gt;Alarms &amp; Events-&gt;View Active</b> .   Examine all active alarms and refer to the on-line help on how to address them.  If needed, contact Appendix E. My Oracle Support (MOS).
36.	Restore GUI usernames and passwords	If applicable, execute steps in Section 6 to recover the user and group information restored.
37.	Backup and archive all the databases from the recovered system	Execute Appendix A. DSR Database Backup to back up the configuration databases.

**5.1.4 Recovery Scenario 4 (Partial Server Outage with one NOAM Server and One SOAM Server Intact)**

For a partial outage with an NOAM server and an SOAM server intact and available, only base recovery of software is needed. The intact NO and SOAM servers are capable of restoring the database via replication to all servers. The major activities are summarized in the list below. Use this list to understand the recovery procedure summary. Do not use this list to execute the procedure. The actual procedures' detailed steps are in Procedure 4. The major activities are summarized as follows:

Recover Standby NOAM server by recovering software.

- Recover the software.

The database is intact at the active NOAM server and does not require restoration at the standby NOAM server.

- Recover any failed SO and MP servers by recovering software.
- Recover the software.

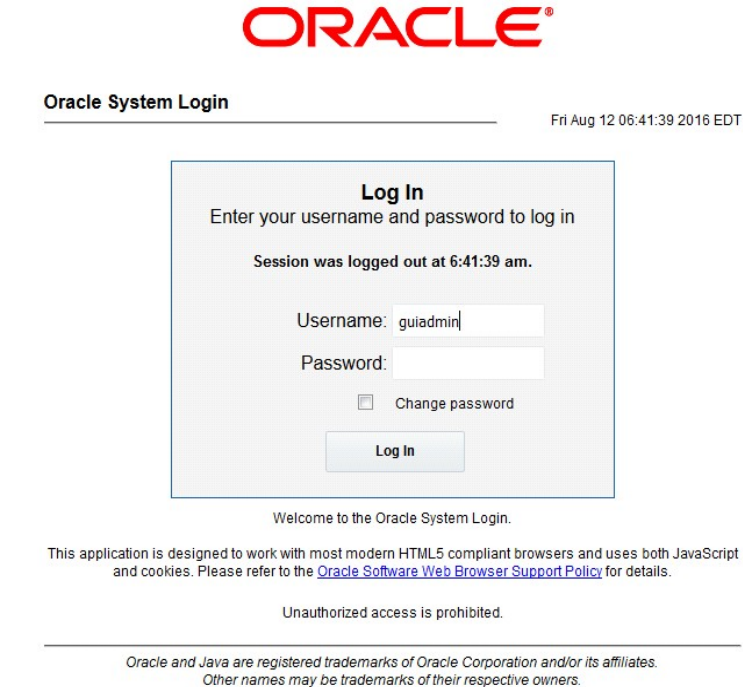
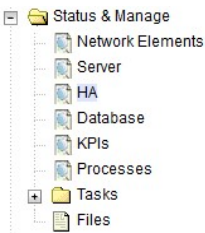
The database is intact at the active NOAM server and does not require restoration at the SO and MP servers.

- Re-apply signaling networks configuration if the failed VM is an MP.

**Procedure 4. Recovery Scenario 4**

<b>S T E P #</b>	<p>This procedure performs recovery if at least 1 NOAM server is intact and available and 1 SOAM server is intact and available.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>If this procedure fails, contact Appendix E. My Oracle Support (MOS) and ask for assistance.</p>	
1.	Workarounds	Refer to Appendix D. Workarounds for Issues Not Fixed in This Release to understand/apply any workarounds required during this procedure.

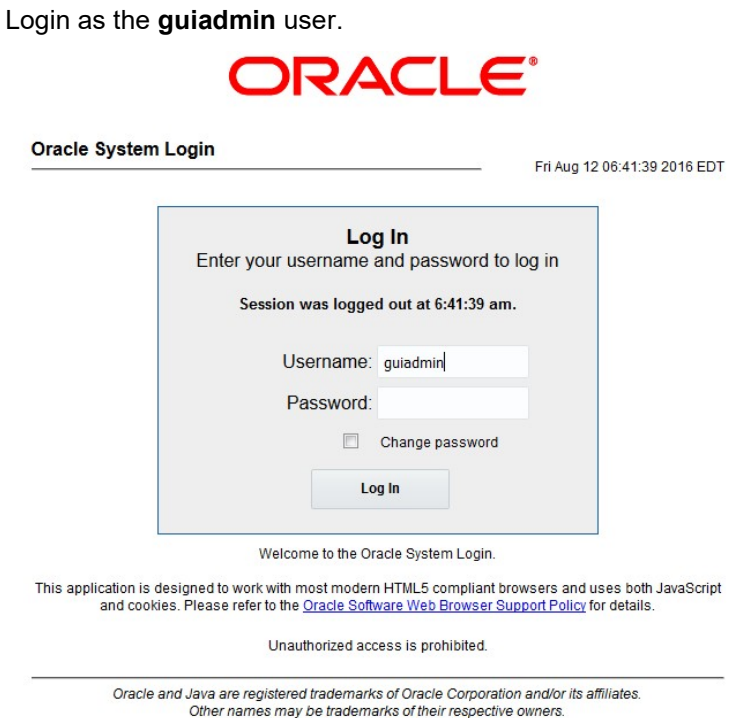
**Procedure 4. Recovery Scenario 4**

2. <input type="checkbox"/>	<b>Gather Required Materials</b>	Gather the documents and required materials listed in Section Required Materials.
3. <input type="checkbox"/>	<b>NOAM VIP GUI: Login</b>	<p>Establish a GUI session on the NOAM server by using the VIP IP address of the NOAM server. Open the web browser and enter a URL of:</p> <div data-bbox="492 415 1344 468" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <code>http://&lt;Primary_NOAM_VIP_IP_Address&gt;</code> </div> <p>Login as the <b>guiadmin</b> user.</p> 
4. <input type="checkbox"/>	<b>Active NOAM: Set failed servers to standby</b>	<p>Navigate to <b>Main Menu -&gt; Status &amp; Manage -&gt; HA</b>.</p>  <p>Click <b>Edit</b>.</p> <p>Set the Max Allowed HA Role option to <b>OOS</b> for the failed servers.</p> <p>Click <b>OK</b>.</p> <div data-bbox="508 1675 678 1717" style="border: 1px solid gray; padding: 5px; display: inline-block;"> <input type="button" value="Ok"/> <input type="button" value="Cancel"/> </div>

**Procedure 4. Recovery Scenario 4**

5. <input type="checkbox"/>	Recover the failed software	<p><b>For VMWare based deployments:</b></p> <ol style="list-style-type: none"> <li>For NOAMs, execute the following procedures from reference [1]: <ul style="list-style-type: none"> <li>Procedure 1 (VMWare). Import DSR OVA.</li> <li>Procedure 2 (VMWare Only). Configure NOAM guests based on resource profile.</li> </ul> </li> <li>For SOAMs, execute the following procedures from reference [1]: <ul style="list-style-type: none"> <li>Procedure 1 (VMWare). Import DSR OVA.</li> <li>Procedure 3 (VMWare Only). Configure Remaining DSR guests based on resource profile.</li> </ul> </li> <li>For failed MPs, execute the following procedures from reference [1]: <ul style="list-style-type: none"> <li>Procedure 1 (VMWare). Import DSR OVA.</li> <li>Procedure 3 (VMWare Only). Configure Remaining DSR guests based on resource profile.</li> </ul> </li> </ol> <p><b>For KVM/OpenStack based deployments:</b></p> <ol style="list-style-type: none"> <li>For NOAMs, execute the following procedures from reference [1]: <ul style="list-style-type: none"> <li>Procedure 4 (KVM/OpenStack). Import DSR OVA.</li> <li>Procedure 5 (KVM/OpenStack Only). Configure NOAM guests based on resource profile.</li> </ul> </li> <li>For SOAMs, execute the following procedures from reference [1]: <ul style="list-style-type: none"> <li>Procedure 4 (KVM/OpenStack). Import DSR OVA.</li> <li>Procedure 6 (KVM/OpenStack Only). Configure Remaining DSR guests based on resource profile.</li> </ul> </li> <li>For failed MPs, execute the following procedures from reference [1]: <ul style="list-style-type: none"> <li>Procedure 4 (KVM/OpenStack). Import DSR OVA.</li> <li>Procedure 6 (KVM/OpenStack Only). Configure Remaining DSR guests based on resource profile.</li> </ul> </li> </ol> <p><b>For OVM-S/OVM-M based deployments:</b></p> <ol style="list-style-type: none"> <li>For NOAMs, execute the following procedures from reference [1]: <ul style="list-style-type: none"> <li>Procedure 7 (OVM-S/OVM-M). Import DSR OVA.</li> <li>Procedure 8 (OVM-S/OVM-M Only). Configure NOAM guests based on resource profile.</li> </ul> </li> <li>For SOAMs, execute the following procedures from reference [1]: <ul style="list-style-type: none"> <li>Procedure 7 (OVM-S/OVM-M). Import DSR OVA.</li> <li>Procedure 9 (OVM-S/OVM-M Only). Configure Remaining DSR guests based on resource profile.</li> </ul> </li> <li>For failed MPs, execute the following procedures from reference [1]: <ul style="list-style-type: none"> <li>Procedure 7 (OVM-S/OVM-M). Import DSR OVA.</li> <li>Procedure 9 (OVM-S/OVM-M Only). Configure Remaining DSR guests based on resource profile.</li> </ul> </li> </ol>
6. <input type="checkbox"/>	Repeat for remaining failed servers	If necessary, repeat Step 5 for all remaining failed servers.

**Procedure 4. Recovery Scenario 4**

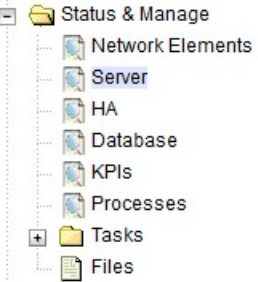
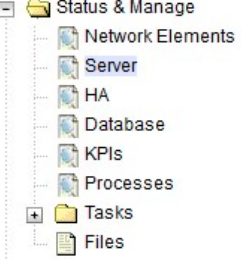
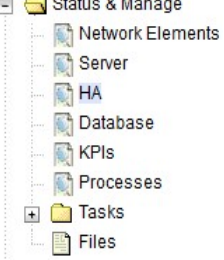
<p>7.</p> <p><input type="checkbox"/></p>	<p><b>NOAM VIP GUI:</b> Login</p>	<p>Establish a GUI session on the NOAM server by using the VIP IP address of the NOAM server. Open the web browser and enter a URL of:</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>http://&lt;Primary_NOAM_VIP_IP_Address&gt;</p> </div> <p>Login as the <b>guiadmin</b> user.</p>  <p>Welcome to the Oracle System Login.</p> <p>This application is designed to work with most modern HTML5 compliant browsers and uses both JavaScript and cookies. Please refer to the <a href="#">Oracle Software Web Browser Support Policy</a> for details.</p> <p>Unauthorized access is prohibited.</p> <p><small>Oracle and Java are registered trademarks of Oracle Corporation and/or its affiliates. Other names may be trademarks of their respective owners.</small></p>
<p>8.</p> <p><input type="checkbox"/></p>	<p><b>NOAM VIP GUI:</b> Recover standby NOAM, if needed</p>	<p>Install the second NOAM server by executing procedures from reference [1]:</p> <ul style="list-style-type: none"> <li>• Procedure 12 Configure the Second NOAM Server, Steps 1, 3-7</li> <li>• Procedure 13 Complete Configuring the NOAM Server Group, Step 4</li> </ul> <p><b>Note:</b> If Topology or NodeID alarms are persistent after the database restore, refer to Appendix D. Workarounds for Issues Not Fixed in This Release, or the next step.</p>
<p>9.</p> <p><input type="checkbox"/></p>	<p><b>(Optional)</b> <b>NOAM VIP GUI:</b> Recover the failed SOAM servers, if needed</p>	<p>If the failed server is an SOAM, recover the <b>remaining</b> SOAM servers (<b>standby, spare</b>) by repeating the <b>this step</b> for each SOAM server:</p> <ol style="list-style-type: none"> <li>1. Install the remaining SOAM servers by executing Procedure 19 <b>Configure the SOAM Servers</b>, Steps 1, 3- 7, from reference [1].</li> </ol> <p><b>Note:</b> Wait for server to reboot before continuing.</p>



**Procedure 4. Recovery Scenario 4**

10.	<div><div></div><div><b>(Optional) NOAM VIP GUI:</b> Set HA on recovered servers</div></div>	<div><div>Navigate to <b>Status &amp; Manage -&gt; HA</b>.</div><div><div><div><div></div><div>Status &amp; Manage</div></div><div><div><div></div><div>Network Elements</div></div><div><div><div></div><div>Server</div></div><div><div><div></div><div>HA</div></div><div><div><div></div><div>Database</div></div><div><div><div></div><div>KPIs</div></div><div><div><div></div><div>Processes</div></div><div><div><div></div><div>Tasks</div></div><div><div><div></div><div>Files</div></div></div></div></div></div></div><div>Click <b>Edit</b>.</div><div>For each server whose Max Allowed HA Role is set to Standby, set it to <b>Active</b>.</div><div>Click <b>OK</b>.</div></div></div></div></div></div></div>
11.	<div><div></div><div><b>Recovered Server:</b> Login</div></div>	<div><div>Establish an SSH to the recovered server's XMI address.</div></div>
12.	<div><div></div><div><b>Recovered Server:</b> Sync NTP</div></div>	<div><div>1. Perform the following to retrieve the remote NTP server.</div><div><div><div><div>\$ sudo ntpq -np</div><div>Example output:</div><div><div>[admusr@NOAM-2 ~]\$ ntpq -np</div><div><div><div>remote</div><div>refid</div><div>st</div><div>t</div><div>when</div><div>poll</div><div>reach</div></div><div><div>delay</div><div>offset</div><div>jitter</div><div></div><div></div><div></div></div></div><div>=====</div><div>=====</div><div><div>*10.240.9.186</div><div>10.250.33.2</div><div>3</div><div>u</div><div>356</div><div>1024</div><div>377</div></div><div><div>1.409</div><div>0.113</div><div>2.434</div><div></div><div></div><div></div></div></div></div></div></div><div>2. Stop ntpd service.</div><div><div><div><div>\$ sudo service ntpd stop</div></div></div></div><div>3. Sync the date to the ntp remote server.</div><div><div><div><div>\$ sudo ntpdate &lt;NTP remote server&gt;</div></div></div></div><div><div><b>Note:</b> The remote server below is the one gathered in sub step 1.</div></div><div>4. Start the ntp service.</div><div><div><div><div>\$ sudo service ntpd start</div></div></div></div></div>

**Procedure 4. Recovery Scenario 4**

13. <input type="checkbox"/>	<b>(Optional) NOAM VIP GUI:</b> Restart DSR application	<p>Navigate to <b>Main Menu-&gt;Status &amp; Manage-&gt;Server</b>.</p>  <p>Select the recovered server and click <b>Restart</b>.</p> <p> <input type="button" value="Stop"/> <input type="button" value="Restart"/> <input type="button" value="Reboot"/> <input type="button" value="NTP Sync"/> <input type="button" value="Report"/> </p>
14. <input type="checkbox"/>	<b>NOAM VIP GUI:</b> Recover the C-level server (DA-MP, SBRs, IPFE, SS7-MP)	<p>Establish an SSH session to the C-level server being recovered, login as <b>admusr</b>.</p> <p>Execute following command to set shared memory to unlimited.</p> <pre>\$ sudo sh1.set -m 0</pre> <p>Execute Procedure 15 <b>Configure the MP Virtual Machines</b>, Steps 1, 4-11, from [1] <b>FOR EACH</b> recovered server.</p>
15. <input type="checkbox"/>	<b>NOAM VIP GUI:</b> Restart DSR application on recovered C-level servers.	<p>Navigate to <b>Main Menu-&gt;Status &amp; Manage-&gt;Server</b>.</p>  <p>Select the recovered servers and click <b>Restart</b>.</p> <p> <input type="button" value="Stop"/> <input type="button" value="Restart"/> <input type="button" value="Reboot"/> <input type="button" value="NTP Sync"/> <input type="button" value="Report"/> </p>
16. <input type="checkbox"/>	<b>NOAM VIP GUI:</b> Set HA on all C-level servers	<p>Navigate to <b>Status &amp; Manage -&gt; HA</b>.</p>  <p>Click <b>Edit</b>.</p> <p>For each server whose Max Allowed HA Role is set to Standby, set it to <b>Active</b>.</p> <p>Click <b>OK</b>.</p>

**Procedure 4. Recovery Scenario 4**

17. <input type="checkbox"/>	<b>ACTIVE NOAM:</b> Login	Log into the recovered active NOAM via SSH terminal as <b>admusr</b> .
18. <input type="checkbox"/>	<b>Active SOAM:</b> Prepare recovered SOAM for optional feature activation	<p>Establish an SSH session to the active SOAM, login as <b>admusr</b>.</p> <p>Execute the following command.</p> <pre>\$ irem DsrApplication where "name in ('RBAR', 'FABR', 'PCA', 'MD-IWF', 'DM-IWF', 'CPA', 'GLA') "</pre>
19. <input type="checkbox"/>	<b>Active SOAM:</b> Verify preparation	<p>Execute the following command to verify preparation of optional feature activation.</p> <pre>\$ iqt -z -h -p -fname DsrApplication where "name in ('RBAR', 'FABR', 'PCA', 'MD-IWF', 'DM-IWF', 'CPA', 'GLA') "</pre> <p><b>Note:</b> There should be no output of this command, if there is, verify the correct entry of the command in Step 18.</p>
20. <input type="checkbox"/>	<b>ACTIVE NOAM:</b> Perform key exchange between the active-NOAM and recovered servers	<p>Establish an SSH session to the active NOAM, login as <b>admusr</b>.</p> <p>Execute the following command to perform a keyexchange from the active NOAM to each recovered server.</p> <pre>\$ keyexchange admusr@&lt;Recovered Server Hostname&gt;</pre>
21. <input type="checkbox"/>	<b>ACTIVE NOAM:</b> Activate optional features	<p>Establish an SSH session to the active NOAM, login as <b>admusr</b>.</p> <p><b>Note For PCA Activation:</b></p> <p>If you have PCA installed in the system being recovered, execute the <b>PCA Activation on Standby NOAM Server</b> procedure on the recovered standby NOAM server and the <b>PCA Activation on Standby SOAM Server</b> procedure on the recovered standby SOAM server from [3] to re-activate PCA.</p> <p>Refer to Section 1.5 Optional Features to activate any features previously activated.</p> <p><b>Note:</b> While running the activation script, the following error message (and corresponding messages) output may display. This can safely be ignored.</p> <pre>iload#31000{S/W Fault}</pre> <p><b>Note:</b> If any of the MPs have failed and recovered, then these MP servers should be restarted after activation of the feature.</p> <p>Refer to Section 1.5 Optional Features to activate any features previously activated.</p>

Procedure 4. Recovery Scenario 4

22.

NOAM VIP GUI:  
Fetch and Store  
the database  
report for the  
newly restored  
data and save it

Status & Manage

Network Elements

Server

HA

Database

KPIs

Processes

Tasks

Files

Select the active NOAM server and click Report.

Main Menu: Status & Manage -> Database [Report]

Report Generated: Tue Oct 05 15:13:38 2010 UTC  
From: Active Network OAM&P on host blade07  
Report Version: 3.0.13-3.0.0\_10.13.0  
User: guadmin

General

Hostname : blade07  
Appworks Database Version : 3.0  
Application Database Version :

Capacities and Utilization

Disk Utilization 0.6%: 249M used of 40G total, 38G available  
Memory Utilization 0.6%: 136M used of 23975M total, 23839M available

Alarms

None

Maintenance in Progress

Restore operation success

Service Information

Part: A\_NpqrProvPart

Table Name	Schema	Row Size Avg Max	Num Rows	Memory Used / Alloc	Disk Used / Alloc
CgPa		44	1	44 B	44 B
CgPaGta		52	0	0 B	0 B
CgPaInfo		64	1	64 B	64 B
CgPaOpc		36	0	0 B	0 B
CountryCode		24	306	7344 B	7344 B
GTConfig		52	2	104 B	104 B
MccMnc		40	0	0 B	0 B
Msisdn		52	0	0 B	0 B
Msrn		68	0	0 B	0 B
NpqrNeOptions		276	0	0 B	0 B

Print

Save

Click **Save** to save the report to your local machine.

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**Procedure 4. Recovery Scenario 4**

23.

ACTIVE NOAM:

Verify replication between servers

Log into the active NOAM via SSH terminal as **admusr**.

Execute the following command.

\$ sudo irepstat -m

Output like this is generated:

-- Policy 0 ActStb [DbReplication] -----

RDU06-MP1 - Stby

BC From RDU06-S01 Active00.50 ^0.17%cpu 42B/s A=none

CC From RDU06-MP2 Active00.10 ^0.17 0.88%cpu 32B/s A=none

RDU06-MP2 - Active

BC From RDU06-S01 Active00.50 ^0.10%cpu 33B/s A=none

CC To RDU06-MP1 Active00.10 0.08%cpu 20B/s A=none

RDU06-N01 - Active

AB To RDU06-S01 Active00.50 1%R 0.03%cpu 21B/s

RDU06-S01 - Active

AB From RDU06-N01 Active00.50 ^0.04%cpu 24B/s

BC To RDU06-MP1 Active00.50 1%R 0.04%cpu 21B/s

BC To RDU06-MP2 Active00.50 1%R 0.07%cpu 21B/s

24.

NOAM VIP GUI:

Verify the database states

Navigate to **Main Menu->Status and Manager->Database**.

Status & Manage

Network Elements

Server

HA

Database

KPIs

Processes

Tasks

Files

Verify the OAM Max HA Role is either **Active** or **Standby** for NOAM and SOAM; Application Max HA Role for MPs is **Active**; and the status is **Normal**.

Main Menu: Status & Manage -> Database

Filter\*Info\*Tasks

Network Element

Server

Role

OAM Max HA Role

Application Max HA Role

Status

DB Level

OAM Repl Status

SIG Repl Status

Repl Status

Repl Audit Status

SOAM\_NE

S01

System OAM

Standby

N/A

Normal

0

Normal

NotApplicable

Allowed

NotApplicable

SOAM\_NE

S02

System OAM

Active

N/A

Normal

0

Normal

NotApplicable

Allowed

NotApplicable

NOAM\_NE

N02

Network OAM&P

Standby

N/A

Normal

0

Normal

NotApplicable

Allowed

NotApplicable

SOAM\_NE

DAMP1

MP

Active

Active

Normal

0

Normal

Normal

Allowed

NotApplicable

NOAM\_NE

N01

Network OAM&P

Active

N/A

Normal

0

Normal

NotApplicable

Allowed

NotApplicable

**Procedure 4. Recovery Scenario 4**

25.

NOAM VIP GUI:

Verify the HA status

Navigate to **Main Menu->Status and Manage->HA.**

Status & Manage

Network Elements

Server

HA

Database

KPIs

Processes

Tasks

Files

Select the row for all of the servers.

Verify the HA Role is either **Active** or **Standby**.

Main Menu: Status & Manage -> HA

Filter\*

Hostname	OAM HA Role	Application HA Role	Max Allowed HA Role	Mate Hostname List	Network Element	Server Role
SO1	Standby	N/A	Active	SO2	SOAM_NE	System OAM
SO2	Active	N/A	Active	SO1	SOAM_NE	System OAM
DAMP1	Active	Active	Active		SOAM_NE	MP
NO1	Active	N/A	Active	NO2	NOAM_NE	Network OAM&P
NO2	Standby	N/A	Active	NO1	NOAM_NE	Network OAM&P

26.

SOAM VIP GUI:

Verify the local node info

Navigate to **Main Menu->Diameter->Configuration->Local Node.**

Diameter

Configuration

Capacity Summary

Connection Capacity Dashboard

Application Ids

CEX Parameters

Command Codes

Configuration Sets

Local Nodes

Peer Nodes

Peer Node Groups

Connections

Route Groups

Route Lists

Peer Route Tables

Egress Throttle Groups

Reroute On Answer

Application Route Tables

Routing Option Sets

Pending Answer Timers

Traffic Throttle Points

Traffic Throttle Groups

AVP Removal Lists

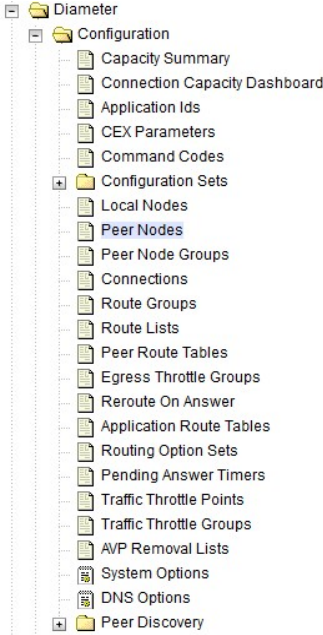
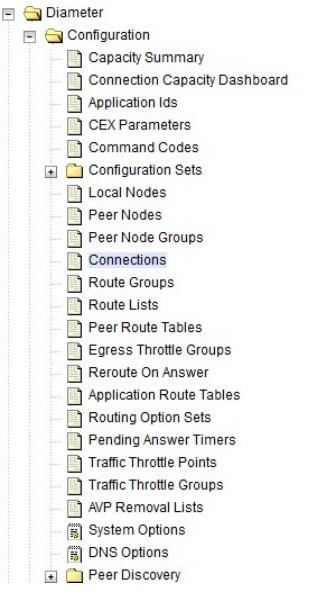
System Options

DNS Options

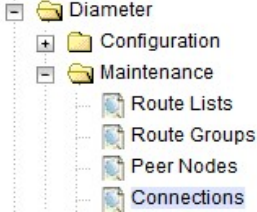
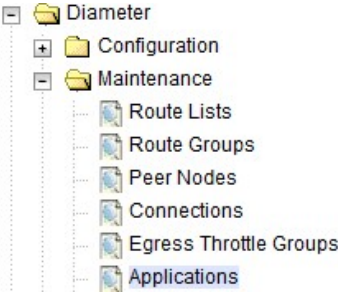
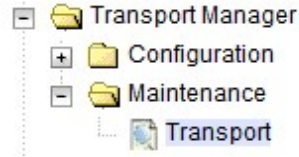
Peer Discovery

Verify all the local nodes are shown.

**Procedure 4. Recovery Scenario 4**

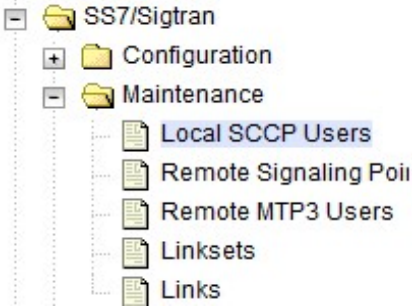
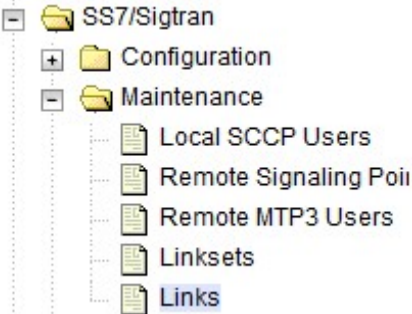
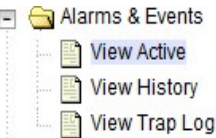
27. <input type="checkbox"/>	<b>SOAM VIP GUI:</b> Verify the peer node info	<p>Navigate to <b>Main Menu-&gt;Diameter-&gt;Configuration-&gt;Peer Node.</b></p>  <p>Verify all the peer nodes are shown.</p>
28. <input type="checkbox"/>	<b>SOAM VIP GUI:</b> Verify the connections info	<p>Navigate to <b>Main Menu-&gt;Diameter-&gt;Configuration-&gt;Connections.</b></p>  <p>Verify all the connections are shown.</p>
29. <input type="checkbox"/>	<b>MP Servers:</b> Disable SCTP Auth Flag	<p>For SCTP connections without DTLS enabled, refer to Enable/Disable DTLS Appendix from reference [1].</p> <p>Execute this procedure on all failed MP servers.</p>

**Procedure 4. Recovery Scenario 4**


30. <div data-bbox="191 281 217 315" style="border: 1px solid black; width: 16px; height: 16px; display: inline-block;"></div>	<b>SOAM VIP GUI:</b> Enable connections, if needed	<p>Navigate to <b>Main Menu-&gt;Diameter-&gt;Maintenance-&gt;Connections.</b></p>  <p>Select each connection and click <b>Enable</b>. Alternatively, you can enable all the connections by clicking <b>EnableAll</b>.</p> <div data-bbox="493 588 1425 617"> <input type="button" value="Enable"/> <input type="button" value="Disable"/> <input type="button" value="EnableAll"/> <input type="button" value="DisableAll"/> <input type="button" value="Diagnose Start"/> <input type="button" value="Diagnose End"/> <input type="button" value="SCTP STATISTICS"/> <input type="checkbox"/> Pause updates </div> <p>Verify the Operational State is <b>Available</b>.</p>
31. <div data-bbox="191 726 217 760" style="border: 1px solid black; width: 16px; height: 16px; display: inline-block;"></div>	<b>SOAM VIP GUI:</b> Enable optional features	<p>Navigate to <b>Main Menu -&gt; Diameter -&gt; Maintenance -&gt; Applications.</b></p>  <p>Select the optional feature application configured in Step 22.</p> <p>Click <b>Enable</b>.</p> <div data-bbox="493 1138 883 1167"> <input type="button" value="Enable"/> <input type="button" value="Disable"/> <input type="checkbox"/> Pause updates </div>
32. <div data-bbox="191 1260 217 1293" style="border: 1px solid black; width: 16px; height: 16px; display: inline-block;"></div>	<b>SOAM VIP GUI:</b> Re-enable transports, if needed	<p>Navigate to <b>Main Menu-&gt;Transport Manager -&gt; Maintenance -&gt; Transport.</b></p>  <p>Select each transport and click <b>Enable</b>.</p> <div data-bbox="493 1495 818 1524"> <input type="button" value="Enable"/> <input type="button" value="Disable"/> <input type="button" value="Block"/> </div> <p>Verify the Operational Status for each transport is <b>Up</b>.</p>



**Procedure 4. Recovery Scenario 4**

33.	<b>SOAM VIP GUI:</b> Re-enable MAPIWF application, if needed	<p>Navigate to <b>Main Menu-&gt;SS7/Sigtran-&gt;Maintenance-&gt;Local SCCP Users.</b></p>  <p>Click <b>Enable</b> corresponding to MAPIWF application name.</p> <p><input type="button" value="Enable"/> <input type="button" value="Disable"/></p> <p>Verify the SSN Status is <b>Enabled</b>.</p>
34.	<b>SOAM VIP GUI:</b> Re-enable links, if needed	<p>Navigate to <b>Main Menu-&gt;SS7/Sigtran-&gt;Maintenance-&gt;Links.</b></p>  <p>Click <b>Enable</b> for each link.</p> <p><input type="button" value="Enable"/> <input type="button" value="Disable"/></p> <p>Verify the Operational Status for each link is <b>Up</b>.</p>
35.	<b>SOAM VIP GUI:</b> Examine all alarms	<p>Navigate to <b>Main Menu-&gt;Alarms &amp; Events-&gt;View Active.</b></p>  <p>Examine all active alarms and refer to the on-line help on how to address them.</p> <p>If needed, contact Appendix E. My Oracle Support (MOS).</p>

**Procedure 4. Recovery Scenario 4**

36. <input type="checkbox"/>	<b>NOAM VIP GUI:</b> Examine all alarms	<p>Log into the NOAM VIP if not already logged in.</p> <p>Navigate to <b>Main Menu-&gt;Alarms &amp; Events-&gt;View Active</b>.</p>  <p>Examine all active alarms and refer to the on-line help on how to address them.</p> <p>If needed contact Appendix E. My Oracle Support (MOS).</p>
37. <input type="checkbox"/>	Restart oampAgent, if needed	<p><b>Note:</b> If the <b>10012: The responder for a monitored table failed to respond to a table change</b> alarm is generated, the oampAgent needs to be restarted.</p> <p>Establish an SSH session to each server with the alarm.</p> <p>Login as <b>admusr</b>.</p> <p>Execute the following commands.</p> <pre data-bbox="500 800 992 894"> \$ sudo pm.set off oampAgent \$ sudo pm.set on oampAgent </pre>
38. <input type="checkbox"/>	Backup and archive all the databases from the recovered system	Execute Appendix A. DSR Database Backup to back up the configuration databases.

**5.1.5 Recovery Scenario 5 (Partial Server Outage with all NOAM servers failed with DR-NOAM available)**

For a partial outage with both NOAM servers failed but a DR NOAM available, the DR NOAM is switched from secondary to primary then recovers the failed NOAM servers. The major activities are summarized in the list below. Use this list to understand the recovery procedure summary. Do not use this list to execute the procedure. The actual procedures' detailed steps are in Procedure 5. The major activities are summarized as follows:

Switch DR NOAM from secondary to primary

Recover the failed NOAM servers by recovering base hardware and software.

- Recover the base hardware.
- Recover the software.
- The database is intact at the newly active NOAM server and does not require restoration.

If applicable, recover any failed SOAM and MP servers by recovering base hardware and software.

- Recover the base hardware.
- Recover the software.
- The database is intact at the active NOAM server and does not require restoration at the SOAM and MP servers.

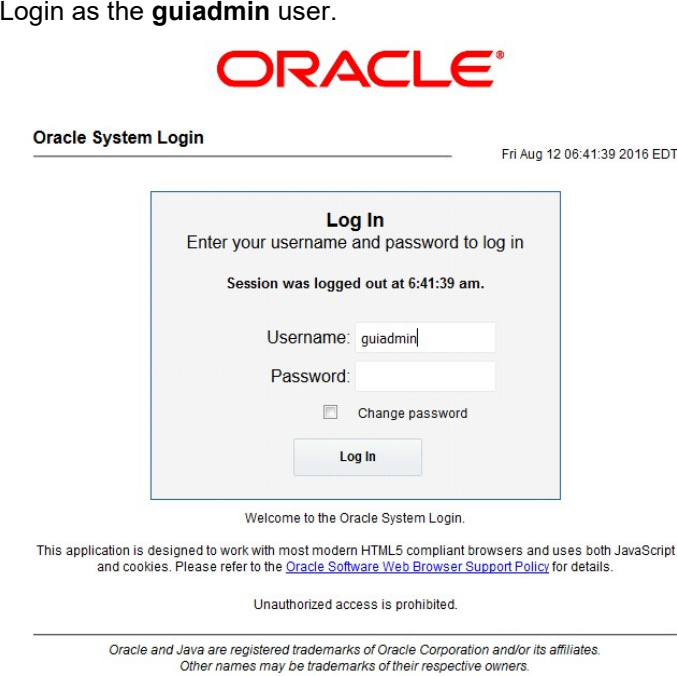
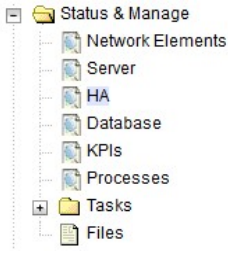
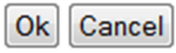
**Procedure 5. Recovery Scenario 5**

<b>S T E P #</b>	<p>This procedure performs recovery if both NOAM servers have failed but a DR NOAM is available.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>If this procedure fails, contact Appendix E. My Oracle Support (MOS) and ask for assistance.</p>	
1. <input type="checkbox"/>	Workarounds	Refer to Appendix D. Workarounds for Issues Not Fixed in This Release to understand any workarounds required during this procedure.
2. <input type="checkbox"/>	Gather required materials	Gather the documents and required materials listed in Section 3.1 Required Materials.
3. <input type="checkbox"/>	Switch DR NOAM to primary	Refer to DSR/SDS 8.x NOAM Failover User's Guide, E85595 [2].

**Procedure 5. Recovery Scenario 5**

4. <input type="checkbox"/>	Recover the failed software	<p><b>For VMWare based deployments:</b></p> <ol style="list-style-type: none"> <li>For NOAMs, execute the following procedures from reference [1]: <ul style="list-style-type: none"> <li>Procedure 1 (VMWare). Import DSR OVA.</li> <li>Procedure 2 (VMWare Only). Configure NOAM guests based on resource profile.</li> </ul> </li> <li>For SOAMs, execute the following procedures from reference [1]: <ul style="list-style-type: none"> <li>Procedure 1 (VMWare). Import DSR OVA.</li> <li>Procedure 3 (VMWare Only). Configure Remaining DSR guests based on resource profile.</li> </ul> </li> <li>For failed MPs, execute the following procedures from reference [1]: <ul style="list-style-type: none"> <li>Procedure 1 (VMWare). Import DSR OVA.</li> <li>Procedure 3 (VMWare Only). Configure Remaining DSR guests based on resource profile.</li> </ul> </li> </ol> <p><b>For KVM/OpenStack based deployments:</b></p> <ol style="list-style-type: none"> <li>For NOAMs, execute the following procedures from reference [1]: <ul style="list-style-type: none"> <li>Procedure 4 (KVM/OpenStack). Import DSR OVA.</li> <li>Procedure 5 (KVM/OpenStack Only). Configure NOAM guests based on resource profile.</li> </ul> </li> <li>For SOAMs, execute the following procedures from reference [1]: <ul style="list-style-type: none"> <li>Procedure 4 (KVM/OpenStack). Import DSR OVA.</li> <li>Procedure 6 (KVM/OpenStack Only). Configure Remaining DSR guests based on resource profile.</li> </ul> </li> <li>For failed MPs, execute the following procedures from reference [1]: <ul style="list-style-type: none"> <li>Procedure 4 (KVM/OpenStack). Import DSR OVA.</li> <li>Procedure 6 (KVM/OpenStack Only). Configure Remaining DSR guests based on resource profile.</li> </ul> </li> </ol> <p><b>For OVM-S/OVM-M based deployments:</b></p> <ol style="list-style-type: none"> <li>For NOAMs, execute the following procedures from reference [1]: <ul style="list-style-type: none"> <li>Procedure 7 (OVM-S/OVM-M). Import DSR OVA.</li> <li>Procedure 8 (OVM-S/OVM-M Only). Configure NOAM guests based on resource profile.</li> </ul> </li> <li>For SOAMs, execute the following procedures from reference [1]: <ul style="list-style-type: none"> <li>Procedure 7 (OVM-S/OVM-M). Import DSR OVA.</li> <li>Procedure 9 (OVM-S/OVM-M Only). Configure Remaining DSR guests based on resource profile.</li> </ul> </li> <li>For failed MPs, execute the following procedures from reference [1]: <ul style="list-style-type: none"> <li>Procedure 7 (OVM-S/OVM-M). Import DSR OVA.</li> <li>Procedure 9 (OVM-S/OVM-M Only). Configure Remaining DSR guests based on resource profile.</li> </ul> </li> </ol>
5. <input type="checkbox"/>	Recover failed SOAMs	If <b>ALL</b> SOAM servers have failed, execute Procedure 2.

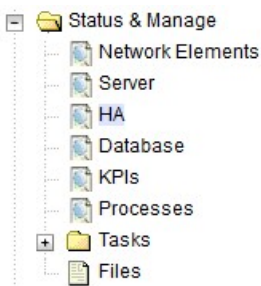
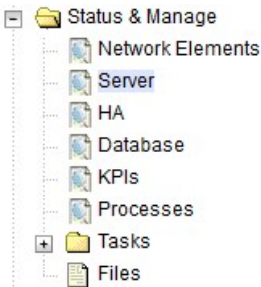
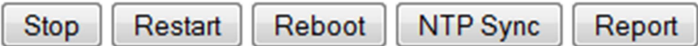
**Procedure 5. Recovery Scenario 5**

6. <input type="checkbox"/>	<b>DR-NOAM VIP GUI: Login</b>	<p>Establish a GUI session on the DR-NOAM server by using the VIP IP address of the DR-NOAM server. Open the web browser and enter a URL of:</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <code>http://&lt;Primary_DR-NOAM_VIP_IP_Address&gt;</code> </div> <p>Login as the <b>guiadmin</b> user.</p> 
7. <input type="checkbox"/>	<b>DR-NOAM VIP GUI: Set failed NOAM servers to standby</b>	<p>Navigate to <b>Main Menu -&gt; Status &amp; Manage -&gt; HA</b>.</p>  <p>Click <b>Edit</b>.</p> <p>Set the Max Allowed HA Role option to <b>Standby</b> for the failed NOAM servers.</p> <p>Click <b>OK</b>.</p> 
8. <input type="checkbox"/>	<b>Execute DSR installation procedure for the first NOAM</b>	<p>Verify the networking data for network elements.</p> <p><b>Note:</b> Use the backup copy of network configuration data and site surveys (Step 2).</p> <p><b>Execute</b> installation procedures for the first NOAM server from reference [1]:</p> <ul style="list-style-type: none"> <li>• Procedure 10 Configure the First NOAM NE and Server</li> <li>• Procedure 11 Configure the NOAM Server Group</li> </ul>

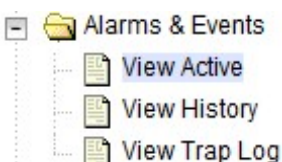
**Procedure 5. Recovery Scenario 5**

9. <input type="checkbox"/>	<b>DR-NOAM VIP</b> GUI: Export the initial configuration	<p>Navigate to <b>Main Menu -&gt; Configuration -&gt; Servers</b>.</p> <p>From the GUI screen, select the <b>failed NOAM server</b> and click <b>Export</b> to generate the initial configuration data for that server.</p> <p><input type="button" value="Insert"/> <input type="button" value="Edit"/> <input type="button" value="Delete"/> <input type="button" value="Export"/> <input type="button" value="Report"/></p>
10. <input type="checkbox"/>	<b>DR-NOAM VIP</b> GUI: Copy configuration file to failed NOAM server	<p>Obtain a terminal session to the DR-NOAM VIP, login as <b>admusr</b>.</p> <p>Execute the following command to configure the failed NOAM server.</p> <pre>\$ sudo scp -r /var/TKLC/db/filemgmt/TKLCConfigData.&lt;Failed_NOAM_Hostname&gt;.sh admusr@&lt;Failed_NOAM_xmi_IP_address&gt;:/var/tmp/TKLCConfigData.sh</pre>
11. <input type="checkbox"/>	<b>Recovered NOAM Server:</b> Verify configuration was called and reboot the server	<p>Establish an SSH session to the Recovered NOAM server (Recovered_NOAM_xmi_IP_address).</p> <p>Login as <b>admusr</b>.</p> <p>The automatic configuration daemon looks for the <b>TKLCConfigData.sh</b> file in the <b>/var/tmp</b> directory, implements the configuration in the file, and asks the user to reboot the server.</p> <p>Verify awpushcfg was called by checking the following file.</p> <pre>\$ sudo cat /var/TKLC/appw/logs/Process/install.log</pre> <p>Verify the following message is displayed:</p> <pre>[SUCCESS] script completed successfully!</pre> <p>Now reboot the server.</p> <pre>\$ sudo init 6</pre> <p>Wait for the server to reboot.</p>
12. <input type="checkbox"/>	<b>Recovered NOAM Server:</b> Verify server health	<p>Execute the following command on the failed NOAM server and make sure no errors are returned.</p> <pre>\$ sudo syscheck  Running modules in class hardware...OK Running modules in class disk...OK Running modules in class net...OK Running modules in class system...OK Running modules in class proc...OK LOG LOCATION: /var/TKLC/log/syscheck/fail_log</pre>
13. <input type="checkbox"/>	Repeat for additional 2 <sup>nd</sup> failed NOAM	Repeat Steps 9-12 for the 2 <sup>nd</sup> failed NOAM server.

**Procedure 5. Recovery Scenario 5**

14. <input type="checkbox"/>	Perform keyexchange between active NOAM and recovered NOAMs	<p>Perform a keyexchange between the newly active NOAM and the recovered NOAM servers.</p> <p>From a terminal window connection on the active NOAM as <b>admusr</b>, exchange SSH keys for <b>admusr</b> between the active NOAM and the recovered NOAM servers using the keyexchange utility, using the host names of the recovered NOAMs.</p> <p>When prompted for the password, enter the password for <b>admusr</b> of the recovered NOAM servers.</p> <pre>\$ keyexchange admusr@&lt;Recovered_NOAM Hostname&gt;</pre>
15. <input type="checkbox"/>	<b>NOAM VIP GUI:</b> Set HA on recovered NOAMs	<p>Navigate to <b>Status &amp; Manage -&gt; HA</b>.</p>  <p>Click <b>Edit</b>.</p> <p>For each NOAM server whose Max Allowed HA Role is set to Standby, set it to <b>Active</b>.</p> <p>Click <b>OK</b>.</p>
16. <input type="checkbox"/>	<b>NOAM VIP GUI:</b> Restart DSR application	<p>Navigate to <b>Main Menu-&gt;Status &amp; Manage-&gt;Server</b>.</p>  <p>Select each recovered NOAM server and click <b>Restart</b>.</p> 

**Procedure 5. Recovery Scenario 5**

17. <input type="checkbox"/>	<b>Recovered NOAM servers:</b> Activate Optional Features	<b>Map-Diameter Interworking (MAP-IWF) and/or Policy and Charging Application (PCA) Only</b>  Activate the features Map-Diameter Interworking (MAP-IWF) and Policy and Charging Application (PCA) as follows:  <b>For PCA:</b> 1. Establish SSH sessions to the all the recovered NOAM servers and login as <b>admusr</b> . Refer [3] and execute the <b>PCA Activation on Standby NOAM Server</b> procedure on all recovered NOAM servers to re-activate PCA.  Establish an SSH session to the recovered active NOAM, login as <b>admusr</b> .  <b>For MAP-IWF:</b> 1. Establish an SSH session to the recovered active NOAM, login as <b>admusr</b> . Refer [4] to activate Map-Diameter Interworking (MAP-IWF).  <b>Note:</b> While running the activation script, the following error message (and corresponding messages) output may display. This can safely be ignored.  <pre>iload#31000{S/W Fault}</pre> <b>Note:</b> If any of the MPs have failed and recovered, then these MP servers should be restarted after activation of the feature.
18. <input type="checkbox"/>	Switch DR NOAM back to secondary	Once the system have been recovered, refer to DSR/SDS 8.x NOAM Failover User's Guide, E85595 [2].
19. <input type="checkbox"/>	<b>Recovered Servers:</b> Verify alarms	Navigate to <b>Main Menu -&gt; Alarms &amp; Events -&gt; View Active</b> .   Verify the recovered servers are not contributing to any active alarms (replication, topology misconfiguration, database impairments, NTP, etc.).
20. <input type="checkbox"/>	<b>NOAM VIP GUI:</b> Recover standby/spare SOAM and C-level servers	If necessary, refer to Procedure 3. Recovery Scenario 3 to recover any standby or spare SOAMs as well as any C-level servers.

**5.1.6 Recovery Scenario 6 (Database Recovery)****5.1.6.1 Recovery Scenario 6: Case 1**

For a partial outage with:

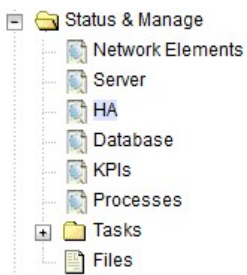
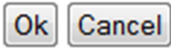
- Server having a corrupted database,
- Replication channel from parent is inhibited because of upgrade activity, or
- Server is in a different release then that of its active parent because of upgrade activity.
- Verify the server runtime backup files, performed at the start of the upgrade, are present in /var/TKLC/db/filemgmt area in the following format



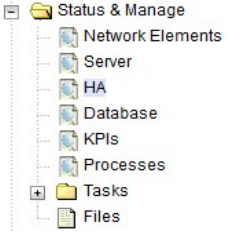
- Backup.DSR.HPC02-NO2.FullDBParts.NETWORK\_OAMP.20140524\_223507.UPG.tar.bz2
- Backup.DSR.HPC02-NO2.FullRunEnv.NETWORK\_OAMP.20140524\_223507.UPG.tar.bz2

**Note:** During recovery, the corrupted database is replaced by the sever runtime backup. Any configuration done after taking the backup is not visible post recovery.

#### Procedure 6. Recovery Scenario 6 (Case 1)

<b>S</b>	This procedure performs recovery if database is corrupted in the system.	
<b>T</b>	Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.	
<b>E</b>		
<b>P</b>	If this procedure fails, contact Appendix E. My Oracle Support (MOS) and ask for assistance.	
<b>#</b>		
1. <input type="checkbox"/>	Workarounds	Refer to Appendix D. Workarounds for Issues Not Fixed in This Release to understand/apply any workarounds required during this procedure.
2. <input type="checkbox"/>	<b>NOAM VIP GUI:</b> Set Failed Servers to Standby	<p>Navigate to <b>Main Menu -&gt; Status &amp; Manage -&gt; HA</b></p>  <p>Click <b>Edit</b>.</p> <p>Set the Max Allowed HA Role option to <b>OOS</b> for the failed servers.</p> <p>Click <b>OK</b>.</p> 
3. <input type="checkbox"/>	<b>Server in Question:</b> Login	Establish an SSH session to the server in question. Login as <b>admusr</b> .
4. <input type="checkbox"/>	<b>Server in Question:</b> Change runlevel to 3	<p>Execute the following command to bring the system to runlevel 3.</p> <pre>\$ sudo init 3</pre>
5. <input type="checkbox"/>	<b>Server in Question:</b> Recover System	<p>Execute the following command and follow the instructions appearing the console prompt.</p> <pre>\$ sudo /usr/TKLC/appworks/sbin/backout_restore</pre>
6. <input type="checkbox"/>	<b>Server in Question:</b> Change runlevel to 4	<p>Execute the following command to bring the system back to runlevel 4.</p> <pre>\$ sudo init 6</pre>

**Procedure 6. Recovery Scenario 6 (Case 1)**

7. <input type="checkbox"/>	<b>Server in Question:</b> Verify the server	Execute the following command to verify if the processes are up and running. <div style="border: 1px solid black; padding: 5px; margin-top: 5px;">\$ sudo pm.getprocs</div>
8. <input type="checkbox"/>	<b>NOAM VIP GUI:</b> Set failed servers to Active	<p>Navigate to <b>Status &amp; Manage -&gt; HA</b>.</p>  <p>Click <b>Edit</b>.</p> <p>For each failed server whose Max Allowed HA Role is set to OOS, set it to <b>Active</b>.</p> <p>Click <b>OK</b>.</p>
9. <input type="checkbox"/>	Backup and archive all the databases from the recovered system	Execute Appendix A. DSR Database Backup to back up the configuration databases.

**5.1.6.2 Recovery Scenario 6: Case 2**

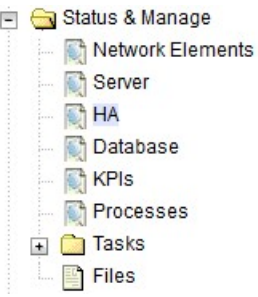
For a partial outage with:

- Server having a corrupted database
- Replication channel is not inhibited or
- Server has the same release the active parent

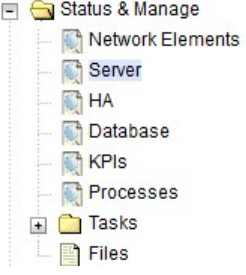

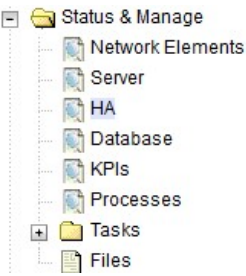
**Procedure 7. Recovery Scenario 6 (Case 2)**

<b>S T E P #</b>	<p>This procedure performs recovery if database is corrupted in the system and system is in the state to get replicated.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>If this procedure fails, contact Appendix E. My Oracle Support (MOS) and ask for assistance.</p>	
1. <input type="checkbox"/>	Workarounds	Refer to Appendix D. Workarounds for Issues Not Fixed in This Release to understand/apply any workarounds required during this procedure.

**Procedure 7. Recovery Scenario 6 (Case 2)**

2. <input type="checkbox"/>	<b>NOAM VIP GUI:</b> Set failed servers to standby	<p>Navigate to <b>Main Menu -&gt; Status &amp; Manage -&gt; HA.</b></p>  <p>Click <b>Edit</b>.</p> <p>Set the Max Allowed HA Role option to <b>OOS</b> for the failed servers.</p> <p>Click <b>OK</b>.</p> <p><input type="button" value="Ok"/> <input type="button" value="Cancel"/></p>
3. <input type="checkbox"/>	<b>Server in Question:</b> Login	Establish an SSH session to the server in question. Login as <b>admusr</b> .
4. <input type="checkbox"/>	<b>Server in Question:</b> Take server out of service	<p>Execute the following command to take the server out of service.</p> <pre>\$ sudo bash -l \$ sudo prod.clobber</pre>
5. <input type="checkbox"/>	<b>Server in Question:</b> Take server to dbup state and start the application	<p>Execute the following commands to take the server to Dbup and start the DSR application.</p> <pre>\$ sudo bash -l \$ sudo prod.start</pre>
6. <input type="checkbox"/>	<b>Server in Question:</b> Verify the server state	<p>Execute the following commands to verify the processes are up and running.</p> <pre>\$ sudo pm.getprocs</pre> <p>Execute the following command to verify if replication channels are up and running.</p> <pre>\$ sudo irepstat</pre> <p>Execute the following command to verify if merging channels are up and running.</p> <pre>\$ sudo inetmstat</pre>

**Procedure 7. Recovery Scenario 6 (Case 2)**

7. <input type="checkbox"/>	<b>NOAM VIP GUI:</b> Restart DSR application	<p>Navigate to <b>Main Menu-&gt;Status &amp; Manage-&gt;Server.</b></p>  <p>Select each recovered server and click <b>Restart.</b></p> 
8. <input type="checkbox"/>	<b>NOAM VIP GUI:</b> Set failed servers to active	<p>Navigate to <b>Status &amp; Manage -&gt; HA.</b></p>  <p>Click <b>Edit.</b></p> <p>For each failed server whose Max Allowed HA Role is set to OOS, set it to <b>Active.</b></p> <p>Click <b>OK.</b></p>
9. <input type="checkbox"/>	Backup and archive all the databases from the recovered system	Execute Appendix A. DSR Database Backup to back up the configuration databases.

**6. Resolving User Credential Issues after Database Restore**

User incompatibilities may introduce security holes or prevent access to the network by administrators. User incompatibilities are not dangerous to the database, however. Review each user difference carefully to ensure the restoration will not impact security or accessibility.


**6.1 Restore a Deleted User**

- User 'testuser' exists in the selected backup file but not in the current database.

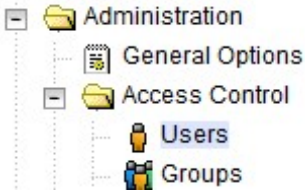


These users were removed before creating the backup and archive file. They are reintroduced by system restoration of that file.

## 6.2 Keep a Restored User

### Procedure 8. Keep Restored User


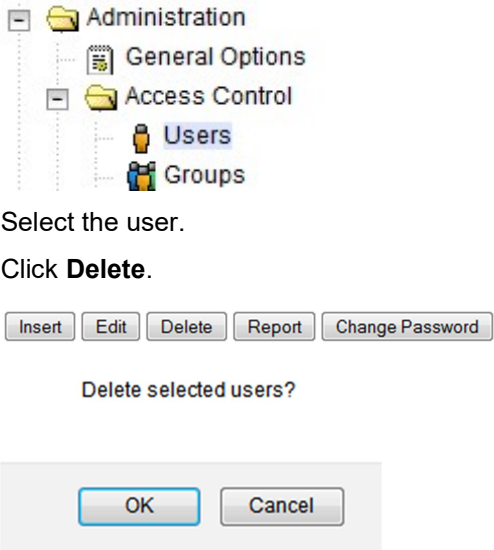
<b>S</b>  <b>T</b>  <b>E</b>  <b>P</b>  <b>#</b>	Perform this procedure to keep users restored by system restoration.  Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.  If this procedure fails, contact Appendix E. My Oracle Support (MOS) and ask for assistance.	
1.  <input type="checkbox"/>	<b>Before Restoration:</b> Notify affected users before restoration	Contact each user affected before the restoration and notify them you are resetting their password during this maintenance operation.
2.  <input type="checkbox"/>	<b>After Restoration:</b> Log into the NOAM VIP	Establish a GUI session on the NOAM server by using the VIP IP address of the NOAM server. Open the web browser and enter a URL of:  <div style="border: 1px solid black; padding: 5px; margin: 10px 0;">           http://&lt;Primary_NOAM_VIP_IP_Address&gt;         </div> Login as the <b>guiadmin</b> user.  

**Procedure 8. Keep Restored User**

3. <input type="checkbox"/>	<b>After Restoration:</b> Reset User Passwords	<p>Navigate to <b>Administration -&gt; Access Control -&gt; Users</b>.</p>  <p>Select the user.</p> <p>Click <b>Change Password</b>.</p>  <p>Enter a new password.</p>  <p>Click <b>Continue</b>.</p>
--------------------------------	---	--

## 6.3 Remove a Restored User

### Procedure 9. Remove the Restored User

<b>S</b>  <b>T</b>  <b>E</b>  <b>P</b>  <b>#</b>	<p>Perform this procedure to remove users restored by system restoration.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>If this procedure fails, contact Appendix E. My Oracle Support (MOS) and ask for assistance.</p>
1. <input type="checkbox"/>	<p><b>After Restoration:</b> Log into the NOAM VIP</p> <p>Establish a GUI session on the NOAM server by using the VIP IP address of the NOAM server. Open the web browser and enter a URL of:</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> http://&lt;Primary_NOAM_VIP_IP_Address&gt; </div> <p>Login as the <b>guiadmin</b> user.</p> 
2. <input type="checkbox"/>	<p>Navigate to <b>Administration -&gt; Access Control -&gt; Users</b>.</p>  <p>Select the user.</p> <p>Click <b>Delete</b>.</p> <p>Click <b>OK</b>.</p>

## 6.4 Restore a Modified User

These users have had a password change before creating the backup and archive file. They are reverted by system restoration of that file.

- The password for user 'testuser' differs between the selected backup file and the current database.

### Before Restoration:

Verify you have access to a user with administrator permissions that is not affected.

Contact each user affected and notify them you are resetting their password during this maintenance operation.

### After Restoration:

Log in and reset the passwords for all users in this category. See the steps in Appendix E. My Oracle Support (MOS) for resetting passwords for a user.

## 6.5 Restore an Archive that Does Not Contain a Current User

These users have been created after the creation of the backup and archive file. They are deleted by system restoration of that file.

- User 'testuser' exists in current database but not in the selected backup file.


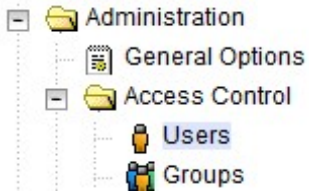
If the user is no longer desired, do not perform any additional steps. The user is permanently removed.

### Procedure 10. Restoring an Archive that Does Not Contain a Current User


<b>S</b> <b>T</b> <b>E</b> <b>P</b> <b>#</b>	Perform this procedure to remove users restored by system restoration  Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.  If this procedure fails, contact Appendix E. My Oracle Support (MOS) and ask for assistance.	
1. <input type="checkbox"/>	<b>Before Restoration:</b> Notify affected users before restoration	Contact each user affected before the restoration and notify them you are resetting their password during this maintenance operation.



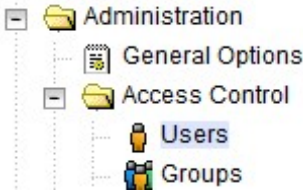

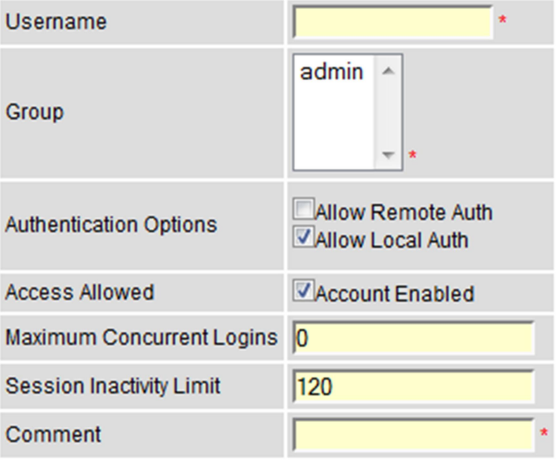

**Procedure 10. Restoring an Archive that Does Not Contain a Current User**

<p>2. <input type="checkbox"/></p>	<p><b>Before Restoration:</b> Log into the NOAM VIP</p>	<p>Establish a GUI session on the NOAM server by using the VIP IP address of the NOAM server. Open the web browser and enter a URL of:</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <code>http://&lt;Primary_NOAM_VIP_IP_Address&gt;</code> </div> <p>Login as the <b>guiadmin</b> user.</p> 
<p>3. <input type="checkbox"/></p>	<p><b>Before Restoration:</b> Record user settings</p>	<p>Navigate to <b>Administration -&gt; Access Control -&gt; Users</b>.</p>  <p>Under each affected user, record the following:</p> <ul style="list-style-type: none"> <li>• Username</li> <li>• Account status</li> <li>• Remote Auth</li> <li>• Local Auth</li> <li>• Concurrent Logins Allowed</li> <li>• Inactivity Limit</li> <li>• Comment</li> <li>• Groups</li> </ul>

**Procedure 10. Restoring an Archive that Does Not Contain a Current User**

4. <input type="checkbox"/>	<b>After Restoration: Login</b>	<p>Establish a GUI session on the NOAM server by using the VIP IP address of the NOAM server. Open the web browser and enter a URL of:</p> <div data-bbox="492 310 1347 367" style="border: 1px solid black; padding: 5px; margin: 10px 0;"><code>http://&lt;Primary_NOAM_VIP_IP_Address&gt;</code></div> <p>Login as the <b>guiadmin</b> user.</p> <div data-bbox="565 457 1347 1045" style="text-align: center;"><p>The screenshot shows the Oracle System Login page. At the top is the Oracle logo in red. Below it is the text 'Oracle System Login' followed by a horizontal line and the date 'Fri Mar 20 12:29:52 2015 EDT'. In the center is a 'Log In' box with the text 'Enter your username and password to log in'. Inside this box are fields for 'Username' (containing 'guiadmin') and 'Password' (containing seven dots). Below the password field is a checkbox labeled 'Change password'. At the bottom of the box is a 'Log In' button. Below the box, it says 'Welcome to the Oracle System Login.' and 'Unauthorized access is prohibited. This Oracle system requires the use of Microsoft Internet Explorer 8.0, 9.0, or 10.0 with support for JavaScript and cookies.' At the very bottom, it says 'Oracle and Java are registered trademarks of Oracle Corporation and/or its affiliates. Other names may be trademarks of their respective owners.'</p></div>
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**Procedure 10. Restoring an Archive that Does Not Contain a Current User**

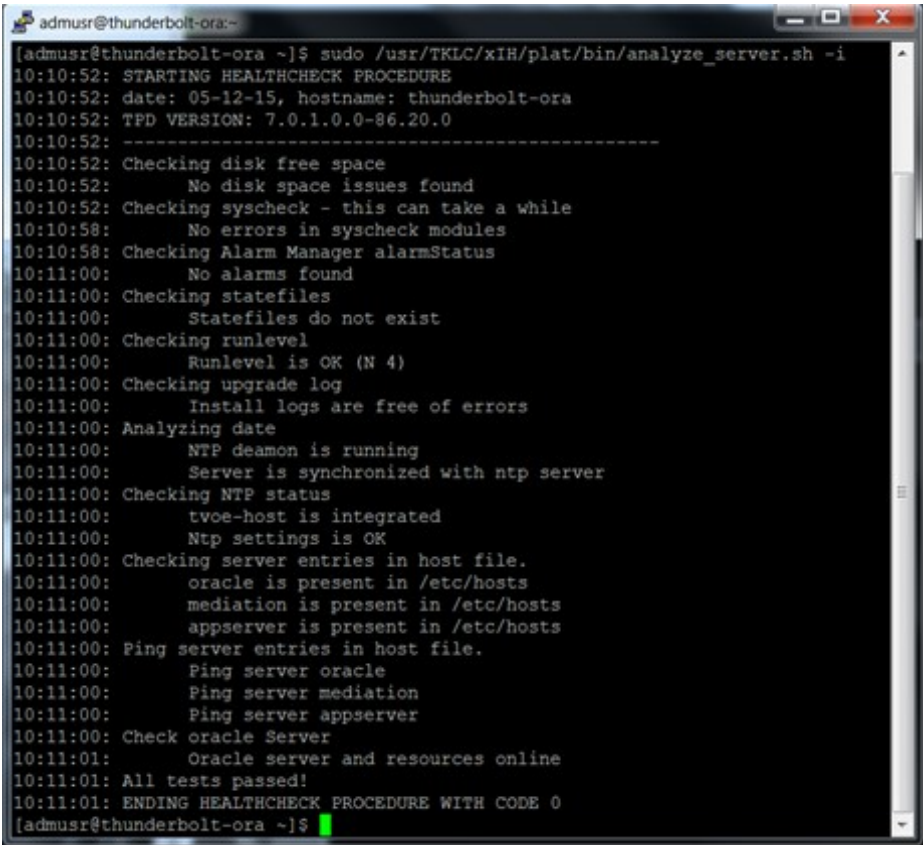
<p>5. <b>After Restoration:</b> Recreate affected user</p>		<p>Navigate to <b>Administration -&gt; Access Control -&gt; Users</b>.</p>  <p>Click <b>Insert</b>.</p>  <p>Recreate the user using the data collected in Step 3.</p>  <p>Click <b>OK</b>.</p> 
<p>6. <b>After Restoration:</b> Repeat for additional users</p>		<p>Repeat Step 5 to recreate additional users.</p>
<p>7. <b>After Restoration:</b> Reset the passwords</p>		<p>See Section 6.2 Keep a Restored User for resetting passwords for a user.</p>

## 7. IDIH Disaster Recovery

### Procedure 11. IDIH Disaster Recovery Preparation

<b>S</b> <b>T</b> <b>E</b> <b>P</b> <b>#</b>	<p>This procedure performs disaster recovery preparation steps for the IDIH.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>If this procedure fails, contact Appendix E. My Oracle Support (MOS) and ask for assistance.</p>	
1. <input type="checkbox"/>	<b>Oracle Guest:</b> Login	Establish an SSH session to the Oracle guest, login as <b>admusr</b> .

**Procedure 11. IDIH Disaster Recovery Preparation**


2.	<b>Oracle Guest:</b> <input type="checkbox"/> Perform database health check	<p>Execute the following command to perform a database health check.</p> <pre>\$ sudo /usr/TKLC/xIH/plat/bin/analyze_server.sh -i</pre> <p><b>Output</b></p>  <pre>[admusr@thunderbolt-ora ~]\$ sudo /usr/TKLC/xIH/plat/bin/analyze_server.sh -i 10:10:52: STARTING HEALTHCHECK PROCEDURE 10:10:52: date: 05-12-15, hostname: thunderbolt-ora 10:10:52: TPD VERSION: 7.0.1.0.0-86.20.0 10:10:52: ----- 10:10:52: Checking disk free space 10:10:52:      No disk space issues found 10:10:52: Checking syscheck - this can take a while 10:10:58:      No errors in syscheck modules 10:10:58: Checking Alarm Manager alarmStatus 10:11:00:      No alarms found 10:11:00: Checking statefiles 10:11:00:      Statefiles do not exist 10:11:00: Checking runlevel 10:11:00:      Runlevel is OK (N 4) 10:11:00: Checking upgrade log 10:11:00:      Install logs are free of errors 10:11:00: Analyzing date 10:11:00:      NTP daemon is running 10:11:00:      Server is synchronized with ntp server 10:11:00: Checking NTP status 10:11:00:      tvoc-host is integrated 10:11:00:      Ntp settings is OK 10:11:00: Checking server entries in host file. 10:11:00:      oracle is present in /etc/hosts 10:11:00:      mediation is present in /etc/hosts 10:11:00:      appserver is present in /etc/hosts 10:11:00: Ping server entries in host file. 10:11:00:      Ping server oracle 10:11:00:      Ping server mediation 10:11:00:      Ping server appserver 10:11:00: Check oracle Server 10:11:01:      Oracle server and resources online 10:11:01: All tests passed! 10:11:01: ENDING HEALTHCHECK PROCEDURE WITH CODE 0 [admusr@thunderbolt-ora ~]\$</pre> <p><b>Note:</b> If this step fails, a re-installation is necessary by following procedure from reference [1]:</p> <p>For VMware based deployments:</p> <ul style="list-style-type: none"> <li>• Section 4.9 (Procedure 29) <b>Create iDIH Virtual Machines (VMWare)</b></li> <li>• Section 4.12 (Procedure 32 – 35) <b>Configure iDIH Virtual Machines</b></li> </ul> <p>For KVM/Openstack based deployments:</p> <ul style="list-style-type: none"> <li>• Section 4.10 (Procedure 30) <b>Create iDIH Virtual Machines (KVM/Openstack)</b></li> <li>• Section 4.12 (Procedure 32 – 35) <b>Configure iDIH Virtual Machines</b></li> </ul> <p>For OVM-S/OVM-M based deployments:</p> <ul style="list-style-type: none"> <li>• Section 4.11 (Procedure 31) <b>Create iDIH Virtual Machines (OVM-S/OVM-M)</b></li> <li>• Section 4.12 (Procedure 32 – 35) <b>Configure iDIH Virtual Machines</b></li> </ul>
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**Procedure 12. IDIH Disaster Recovery (Re-Install Mediation and Application Servers)**

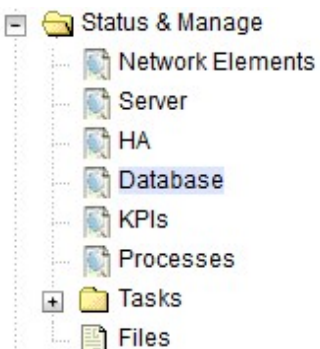
<b>S T E P #</b>	<p>This procedure performs disaster recovery for the IDIH by re-installing the mediation and application servers.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>If this procedure fails, contact Appendix E. My Oracle Support (MOS) and ask for assistance.</p>	
1. <input type="checkbox"/>	Create iDIH application and mediation VMs	<p>Execute the following procedure from [1] to recover the Application and Mediation VMs:</p> <p>For VMWare based deployments:</p> <ul style="list-style-type: none"> <li>• Procedure 29 (VMware only) <b>Create iDIH Oracle, Mediation and Application VMs</b></li> </ul> <p>For KVM/Openstack based deployments:</p> <ul style="list-style-type: none"> <li>• Procedure 30. (KVM/OpenStack only) <b>Create iDIH Oracle, Mediation and Application VMs (Optional)</b></li> </ul> <p>For OVM-S/OVM-M based deployments:</p> <ul style="list-style-type: none"> <li>• Procedure 31. (OVM-S/OVM-M only) <b>Create iDIH Oracle, Mediation and Application VMs (Optional)</b></li> </ul>
2. <input type="checkbox"/>	Configure iDIH VM networks	Execute Procedure 32 <b>Configure iDIH VM Networks</b> from [1] to configure the VM networks on the Application and Mediation VMs only.
3. <input type="checkbox"/>	Configure VMs	Execute Procedure 33 <b>Run Post Installation Scripts on iDIH VMs</b> , Steps 3 – 7, from [1].
4. <input type="checkbox"/>	Integrate into DSR (Optional)	If integration is needed, execute Procedure 36. <b>Integrate iDIH into DSR</b> from [1].

## Appendix A. DSR Database Backup

### Procedure 13. Back up the provision and configuration data

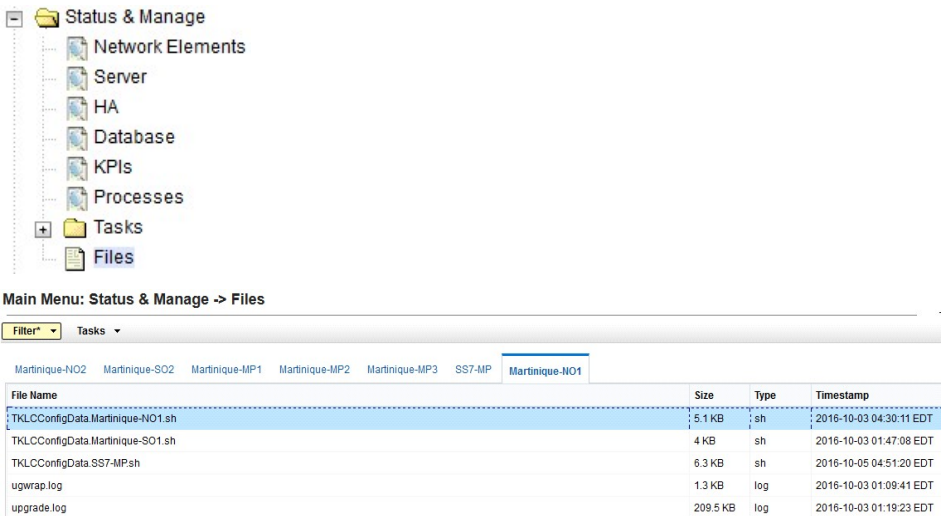
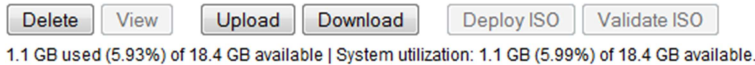
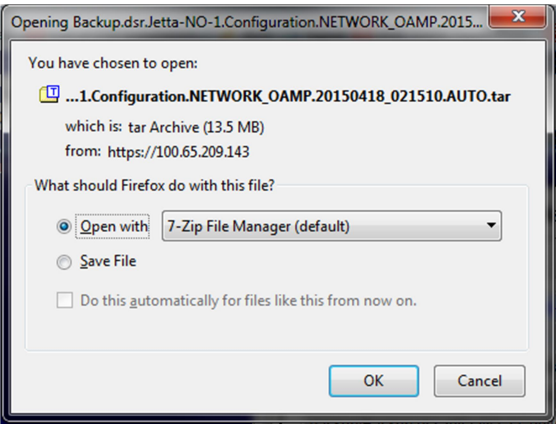
S T E P #	<p>The intent of this procedure is to back up the provision and configuration information from an NOAM or SOAM server after the disaster recovery is complete</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>If this procedure fails, contact Appendix E. My Oracle Support (MOS) and ask for assistance.</p>	
1. <input type="checkbox"/>	<b>NOAM/SOAM VIP: Login</b>	<p>Establish a GUI session on the NOAM or SOAM server by using the VIP IP address of the NOAM or SOAM server.</p> <p>Open the web browser and enter a URL of:</p> <div data-bbox="492 651 1346 707" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <code>http://&lt;Primary_NOAM/SOAM_VIP_IP_Address&gt;</code> </div> <p>Login as the <b>guiadmin</b> user.</p> <div data-bbox="565 795 1349 1388" style="text-align: center;">  </div>

**Procedure 13. Back up the provision and configuration data**

<p>2.</p> <p><input type="checkbox"/></p>	<p><b>NOAM/SOAM VIP:</b> Backup configuration data for the system</p>	<p>Navigate to <b>Main Menu -&gt; Status &amp; Manage -&gt; Database.</b></p>  <p>Select the <b>active NOAM server</b> and click <b>Backup.</b></p> <p> <input type="button" value="Disable Provisioning"/> <input type="button" value="Report"/> <input type="button" value="Inhibit Replication"/> <input type="button" value="Backup..."/> <input type="button" value="Compare..."/> <input type="button" value="Restore..."/> <input type="button" value="Man Audit"/> <input type="button" value="Suspend Auto Audit"/> </p> <p>Make sure the <b>Configuration</b> checkbox is marked.</p> <p><b>Database Backup</b></p> <table border="1"> <thead> <tr> <th>Field</th> <th>Value</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td colspan="3">Server: Martinique-NO1</td> </tr> <tr> <td>Select data for backup</td> <td> <input type="checkbox"/> Provisioning  <input checked="" type="checkbox"/> Configuration         </td> <td>Select the type of Backup to perform.</td> </tr> <tr> <td>Compression *</td> <td> <input type="radio"/> gzip  <input checked="" type="radio"/> bzip2  <input type="radio"/> none         </td> <td>           Select the backup archive compression algorithm.            The following file suffix will be applied for the selected option:           <ul style="list-style-type: none"> <li>• .tar.gz - gzip compression,</li> <li>• .tar.bz2 - bzip2 compression,</li> <li>• .tar - no compression.</li> </ul>           [A value is required.]         </td> </tr> <tr> <td>Archive Name *</td> <td>Backup.dsr.Martinique-NO1.Configuration.NETWORK_OAMP.20161006_0640:</td> <td>Modify archive name if desired. Do not include the compression type suffix. [A value is required.]</td> </tr> <tr> <td>Comment</td> <td><input type="text"/></td> <td>May not contain the following characters: `` \$</td> </tr> <tr> <td colspan="3"> <input type="button" value="Ok"/> <input type="button" value="Cancel"/> </td> </tr> </tbody> </table> <p>Type a <b>filename</b> for the backup and click <b>OK.</b></p>	Field	Value	Description	Server: Martinique-NO1			Select data for backup	<input type="checkbox"/> Provisioning <input checked="" type="checkbox"/> Configuration	Select the type of Backup to perform.	Compression *	<input type="radio"/> gzip <input checked="" type="radio"/> bzip2 <input type="radio"/> none	Select the backup archive compression algorithm. The following file suffix will be applied for the selected option: <ul style="list-style-type: none"> <li>• .tar.gz - gzip compression,</li> <li>• .tar.bz2 - bzip2 compression,</li> <li>• .tar - no compression.</li> </ul> [A value is required.]	Archive Name *	Backup.dsr.Martinique-NO1.Configuration.NETWORK_OAMP.20161006_0640:	Modify archive name if desired. Do not include the compression type suffix. [A value is required.]	Comment	<input type="text"/>	May not contain the following characters: `` \$	<input type="button" value="Ok"/> <input type="button" value="Cancel"/>		
Field	Value	Description																					
Server: Martinique-NO1																							
Select data for backup	<input type="checkbox"/> Provisioning <input checked="" type="checkbox"/> Configuration	Select the type of Backup to perform.																					
Compression *	<input type="radio"/> gzip <input checked="" type="radio"/> bzip2 <input type="radio"/> none	Select the backup archive compression algorithm. The following file suffix will be applied for the selected option: <ul style="list-style-type: none"> <li>• .tar.gz - gzip compression,</li> <li>• .tar.bz2 - bzip2 compression,</li> <li>• .tar - no compression.</li> </ul> [A value is required.]																					
Archive Name *	Backup.dsr.Martinique-NO1.Configuration.NETWORK_OAMP.20161006_0640:	Modify archive name if desired. Do not include the compression type suffix. [A value is required.]																					
Comment	<input type="text"/>	May not contain the following characters: `` \$																					
<input type="button" value="Ok"/> <input type="button" value="Cancel"/>																							



**Procedure 13. Back up the provision and configuration data**

3. <input type="checkbox"/>	<b>NOAM/SOAM VIP:</b> Verify the backup file existence	<p>Navigate to <b>Main Menu -&gt; Status &amp; Manage -&gt; Files</b>.</p>  <p>Select the active NOAM or SOAM tab.</p> <p>The files on this server display. Verify the existence of the backup file.</p>
4. <input type="checkbox"/>	<b>NOAM/SOAM VIP:</b> Download the file to a local machine	<p>From the previous step, choose the backup file.</p> <p>Click <b>Download</b>.</p>  <p>Click <b>OK</b> to confirm the download.</p> 
5. <input type="checkbox"/>	Upload the image to secure location	Transfer the backed up image saved in the previous step to a secure location where the Server Backup files are stored in case of system disaster recovery.
6. <input type="checkbox"/>	Backup active SOAM	Repeat <b>Steps 2 through 5</b> to back up the active SOAM.

## Appendix B. Inhibit A and B Level Replication on C-Level Servers

### Procedure 14. Inhibit A and B Level Replication on C-Level Servers

S  
T  
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P  
#

The intent of this procedure is to inhibit A and B level replication on all C-level servers of this site.

Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.

If this procedure fails, contact Appendix E. My Oracle Support (MOS) and ask for assistance.

1.  
☐

**Active NOAM:**  
Login

Log into the active NOAM server via SSH as **admusr**.

2.  
☐

**Active NOAM:**  
Inhibit replication on all C-level servers

```
$ for i in $(iqt -p -z -h -fhostName NodeInfo where "nodeId like 'C*' and siteId='<NE name of the site>'); do iset -finhibitRepPlans='A B' NodeInfo where "nodeName='$i'; done
```

**Note:** NE name of the site can be found out by logging into the active NOAM GUI and navigating to **Configuration->Server Groups**.

Main Menu: Configuration -> Server Groups

Filter\*

Server Group Name	Level	Parent	Function	Connection Count	Servers												
MPSG	C	SOSG	DSR (multi-active cluster)	1	<div>Network Element: Martinique_SO</div> <table><thead><tr><th>Server</th><th>Node HA Pref</th><th>VIPs</th></tr></thead><tbody><tr><td>Martinique-MP1</td><td></td><td></td></tr><tr><td>Martinique-MP2</td><td></td><td></td></tr><tr><td>Martinique-MP3</td><td></td><td></td></tr></tbody></table>	Server	Node HA Pref	VIPs	Martinique-MP1			Martinique-MP2			Martinique-MP3		
Server	Node HA Pref	VIPs															
Martinique-MP1																	
Martinique-MP2																	
Martinique-MP3																	
NOSG	A	NONE	DSR (active/standby pair)	1	<div>Network Element: Martinique_NO</div> <table><thead><tr><th>Server</th><th>Node HA Pref</th><th>VIPs</th></tr></thead><tbody><tr><td>Martinique-NO1</td><td></td><td>10.240.122.236</td></tr><tr><td>Martinique-NO2</td><td></td><td>10.240.122.236</td></tr></tbody></table>	Server	Node HA Pref	VIPs	Martinique-NO1		10.240.122.236	Martinique-NO2		10.240.122.236			
Server	Node HA Pref	VIPs															
Martinique-NO1		10.240.122.236															
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SOSG	B	NOSG	DSR (active/standby pair)	1	<div>Network Element: Martinique_SO</div> <table><thead><tr><th>Server</th><th>Node HA Pref</th><th>VIPs</th></tr></thead><tbody><tr><td>Martinique-SO2</td><td></td><td>10.240.122.237</td></tr></tbody></table>	Server	Node HA Pref	VIPs	Martinique-SO2		10.240.122.237						
Server	Node HA Pref	VIPs															
Martinique-SO2		10.240.122.237															
SS7SG	C	SOSG	SS7-WF	1	<div>Network Element: Martinique_SO</div> <table><thead><tr><th>Server</th><th>Node HA Pref</th><th>VIPs</th></tr></thead><tbody><tr><td>SS7-MP</td><td></td><td></td></tr></tbody></table>	Server	Node HA Pref	VIPs	SS7-MP								
Server	Node HA Pref	VIPs															
SS7-MP																	

**Procedure 14. Inhibit A and B Level Replication on C-Level Servers**

3.	<div><div></div><div><b>Active NOAM:</b> Verify replication has been Inhibited</div></div>	<div><div>After executing above steps to inhibit replication on MP(s), no alarms on GUI would be raised informing that replication on MP is disabled.</div><div>Verify replication inhibition on MPs by analyzing NodeInfo output. InhibitRepPlans field for all the MP servers for the selected site, e.g., Site SO_HPC03 is set as <b>A B</b>.</div><div>Perform the following command.</div><div><pre>\$ sudo iqt NodeInfo</pre><div>Expected output:</div><table><thead><tr><th>nodeID</th><th>nodeName</th><th>hostName</th><th>nodeCapability</th><th>inhibitRepPlans</th></tr><tr><th>siteId</th><th>excludeTables</th><th></th><th></th><th></th></tr></thead><tbody><tr><td>A1386.099</td><td>NO1</td><td>NO1</td><td>Active</td><td></td></tr><tr><td>NO_HPC03</td><td></td><td></td><td></td><td></td></tr><tr><td>B1754.109</td><td>SO1</td><td>SO1</td><td>Active</td><td></td></tr><tr><td>SO_HPC03</td><td></td><td></td><td></td><td></td></tr><tr><td>C2254.131</td><td>MP2</td><td>MP2</td><td>Active</td><td></td></tr><tr><td>SO_HPC03</td><td></td><td></td><td></td><td></td></tr><tr><td>C2254.233</td><td>MP1</td><td>MP1</td><td>Active</td><td></td></tr><tr><td>SO_HPC03</td><td></td><td></td><td></td><td></td></tr></tbody></table></div></div>	nodeID	nodeName	hostName	nodeCapability	inhibitRepPlans	siteId	excludeTables				A1386.099	NO1	NO1	Active		NO_HPC03					B1754.109	SO1	SO1	Active		SO_HPC03					C2254.131	MP2	MP2	Active		SO_HPC03					C2254.233	MP1	MP1	Active		SO_HPC03				
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B1754.109	SO1	SO1	Active																																																	
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C2254.131	MP2	MP2	Active																																																	
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C2254.233	MP1	MP1	Active																																																	
SO_HPC03																																																				

**Appendix C. Un-Inhibit A and B Level Replication on C-Level Servers****Procedure 15. Un-Inhibit A and B Level Replication on C-Level Servers**

<b>S</b>	The intent of this procedure is to Un-inhibit A and B level replication on all C-level servers of this site	
<b>T</b>	Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.	
<b>E</b>		
<b>P</b>	If this procedure fails, contact Appendix E. My Oracle Support (MOS) and ask for assistance.	
<b>#</b>		
1. <input type="checkbox"/>	<b>Active NOAM:</b> Login	Log into the active NOAM server via SSH as <b>admusr</b> .

**Procedure 15. Un-Inhibit A and B Level Replication on C-Level Servers**

2.

Active NOAM:  
Un-Inhibit  
replication on all  
C-level Servers

Execute the following command.

```
$ for i in $(iqt -p -z -h -fhostName NodeInfo where "nodeId like 'C*' and siteId='<NE name of the site>'); do iset -finhibitRepPlans='' NodeInfo where "nodeName='$i'; done
```

Note:

NE name of the site can be found out by logging into the active NOAM GUI and navigating to **Configuration->Server Groups**.

Main Menu: Configuration -> Server Groups

Filter\*

Server Group Name	Level	Parent	Function	Connection Count	Servers												
MPSG	C	SOSG	DSR (multi-active cluster)	1	<div>Network Element: Martinique_SO</div> <table><tr><th>Server</th><th>Node HA Pref</th><th>VIPs</th></tr><tr><td>Martinique-MP1</td><td></td><td></td></tr><tr><td>Martinique-MP2</td><td></td><td></td></tr><tr><td>Martinique-MP3</td><td></td><td></td></tr></table>	Server	Node HA Pref	VIPs	Martinique-MP1			Martinique-MP2			Martinique-MP3		
Server	Node HA Pref	VIPs															
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NOSG	A	NONE	DSR (active/standby pair)	1	<div>Network Element: Martinique_NO</div> <table><tr><th>Server</th><th>Node HA Pref</th><th>VIPs</th></tr><tr><td>Martinique-NO1</td><td></td><td>10.240.122.236</td></tr><tr><td>Martinique-NO2</td><td></td><td>10.240.122.236</td></tr></table>	Server	Node HA Pref	VIPs	Martinique-NO1		10.240.122.236	Martinique-NO2		10.240.122.236			
Server	Node HA Pref	VIPs															
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SOSG	B	NOSG	DSR (active/standby pair)	1	<div>Network Element: Martinique_SO</div> <table><tr><th>Server</th><th>Node HA Pref</th><th>VIPs</th></tr><tr><td>Martinique-SO2</td><td></td><td>10.240.122.237</td></tr></table>	Server	Node HA Pref	VIPs	Martinique-SO2		10.240.122.237						
Server	Node HA Pref	VIPs															
Martinique-SO2		10.240.122.237															
SS7SG	C	SOSG	SS7-IWF	1	<div>Network Element: Martinique_SO</div> <table><tr><th>Server</th><th>Node HA Pref</th><th>VIPs</th></tr><tr><td>SS7-MP</td><td></td><td></td></tr></table>	Server	Node HA Pref	VIPs	SS7-MP								
Server	Node HA Pref	VIPs															
SS7-MP																	

3.

Active NOAM:  
Verify replication  
has been  
Inhibited

After executing above steps to un-inhibit replication on MP(s), no alarms on GUI would be raised informing that replication on MP is disabled.

Verification of replication un-inhibition on MPs can be done by analyzing NodeInfo output. InhibitRepPlans field for all the MP servers for the selected site, e.g., Site SO\_HPC03 shall be set as **A B**.

Perform the following command:

```
$ sudo iqt NodeInfo
```

Expected output:

nodeID	nodeName	hostName	nodeCapability	inhibitRepPlans
siteId	excludeTables			
A1386.099	NO1	NO1	Active	
NO_HPC03				
B1754.109	SO1	SO1	Active	
SO_HPC03				
C2254.131	MP2	MP2	Active	
SO_HPC03				
C2254.233	MP1	MP1	Active	
SO_HPC03				

**Appendix D. Workarounds for Issues Not Fixed in This Release**

Issue	Associated PR	Workaround
Inetsync alarms after performing disaster recovery	Bug 19095639	Restart the Inetsync service on all affected servers using the following commands. <pre>\$ pm.set off inetsync</pre> <pre>\$ pm.set on inetsync</pre>

## Appendix E. My Oracle Support (MOS)

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

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

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

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

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

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