

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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CAUTION: Use only the DR procedures included in the Disaster Recovery Kit.

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

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

See more information on MOS in the Appendix section.

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1.0 Introduction

1.1 Purpose and Scope

This document is a guide to describe procedures used 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 that components dependent on DSR might need to be recovered as well, for example SDS and IDIH.

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

1.2 References

- [1] DSR 8.0/8.1 Cloud Installation Guide, cgbu_019911
- [2] DSR / SDS 8.x NOAM Failover User's Guide
- [3] DSR PCA Activation Guide
- [4] DSR MAP-Diameter IWF Feature Activation Procedure

1.3 Acronyms

Table 1: Acronyms

Acronym	Definition
BIOS	Basic Input Output System
CD	Compact Disk
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
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
vSTP	Virtual Signaling Transfer Point

1.4 Terminology

Table 2: Terminology

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 will need to be taken for optional features that may be present in this deployment. Please 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

1.6 Revision History

Table 4: Revision History

Date	Release
November 22, 2016	Initial Release

2.0 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:

<p>Recovery of the entire network from a total outage</p> <p><i>[5.1.1 Recovery Scenario 1 (Complete Server Outage)]</i></p>	<ul style="list-style-type: none"> • All NOAM servers failed • All SOAM servers failed • 1 or more MP servers failed
<p>Recovery of one or more servers with at least one NOAM server intact</p> <p><i>[5.1.2 Recovery Scenario 2 (Partial Server Outage with one NOAM server intact and both SOAMs failed)]</i></p>	<ul style="list-style-type: none"> • 1 or more NOAM servers intact • All SOAM servers or MP servers failed
<p>Recovery of the NOAM pair with one or more SOAM servers intact</p> <p><i>[5.1.3 Recovery Scenario 3 (Partial Server Outage with all NOAM servers failed and one SOAM server intact)]</i></p>	<ul style="list-style-type: none"> • All NOAM servers failed • 1 or more SOAM servers intact
<p>Recovery of one or more server with at least one NOAM and one SOAM server intact.</p> <p><i>[5.1.4 Recovery Scenario 4 (Partial Server Outage with one NOAM server and one SOAM server intact)]</i></p>	<ul style="list-style-type: none"> • 1 or more NOAM servers intact • 1 or more SOAM servers intact • 1 or more MP servers failed
<p>Recovery of the NOAM pair with DR-NOAM available and one or more SOAM servers intact</p> <p><i>[5.1.5 Recovery Scenario 5 (Partial Server Outage with all NOAM servers failed with DR-NOAM available)]</i></p>	<ul style="list-style-type: none"> • All NOAM servers failed • 1 or more SOAM servers intact • DR-NOAM available
<p>Recovery of one or more server with corrupt databases that cannot be restored via replication from the active parent node.</p> <p><i>[5.1.6 Recovery Scenario 6 (Database Recovery)]</i></p>	<ul style="list-style-type: none"> • Server having a corrupted database

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 then restoring database backups to the active NOAM and SOAM servers.

Database backups will be taken from customer offsite backup storage locations (assuming these were performed and stored offsite prior to 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
- All SOAM servers failed
- 1 or more MP servers failed

This case assumes that 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 will recover 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 will recover 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 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 will 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 that 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

3.0 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:

1. A hardcopy of this document (E76332) and hardcopies of all documents in the reference list
2. 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.
3. DSR recent backup files: electronic backup file (preferred) or hardcopy of all DSR configuration and provisioning data.
4. Latest Network Element report: Electronic file or hardcopy of Network Element report.
5. The network element XML file used for the VMs initial configuration.

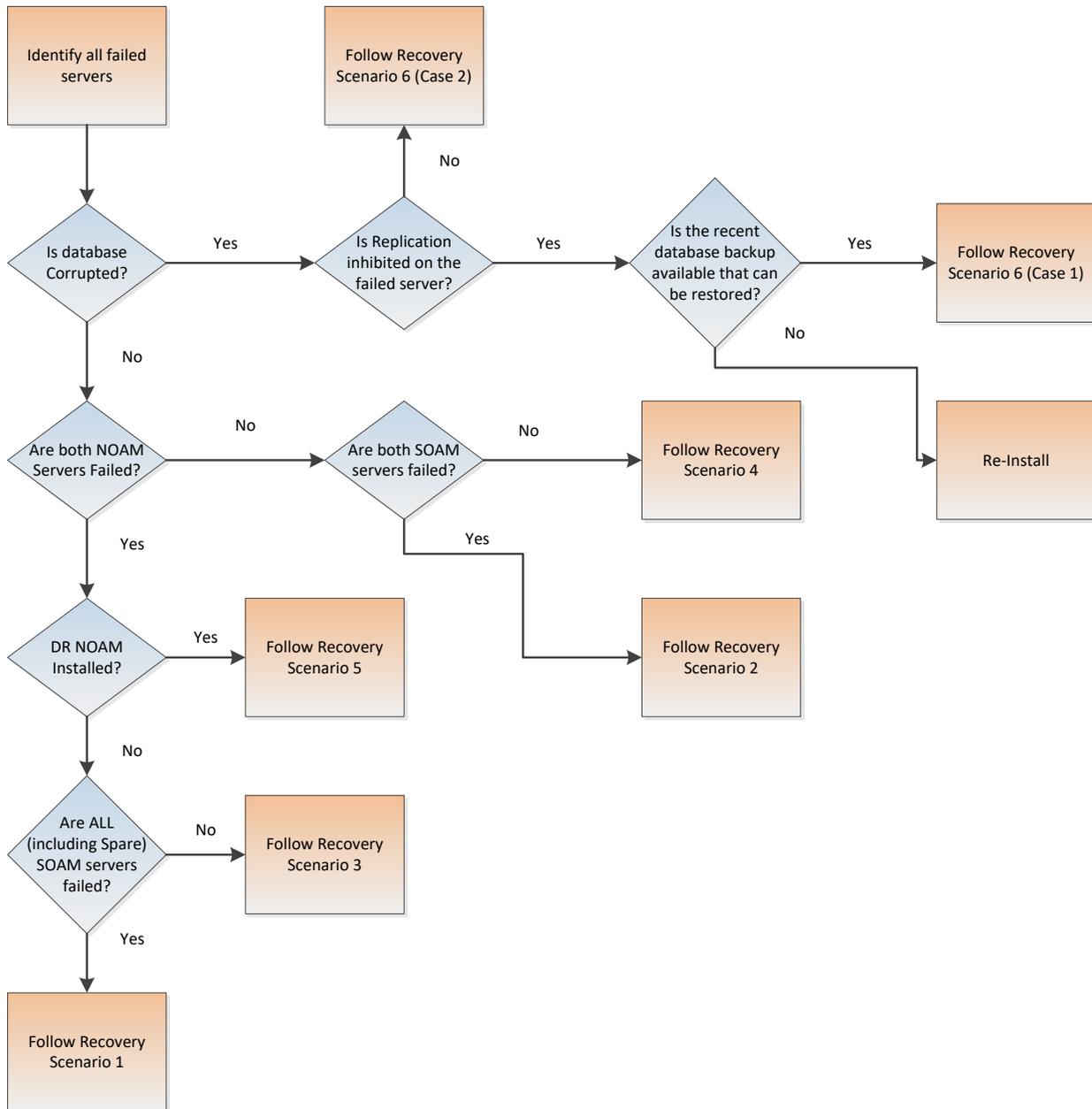
Note: For all Disaster Recovery scenarios, we assume that the NOAM Database backup and the SOAM database backup were performed around the same time, and that no synchronization issues exist among them.

3.2 Disaster Recovery Strategy

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

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 2.0**.
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. Determining Recovery Scenario.)
5. Execute appropriate recovery procedures (listed in section 5.0).

Figure 1. Determining Recovery Scenario



4.0 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 5: Recovery Scenarios below 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 5: Recovery Scenarios

Recovery Scenario	Failure Condition	Section
1	<ul style="list-style-type: none"> All NOAM servers failed. All SOAM servers failed. MP servers may or may not be failed. 	Section 5.1.1 Recovery Scenario 1 (Complete Server Outage)
2	<ul style="list-style-type: none"> At least 1 NOAM server is intact and available. All SOAM servers failed. MP servers may or may not be failed. 	Section 5.1.2 Recovery Scenario 2 (Partial Server Outage with one NOAM server intact and both SOAMs failed)
3	<ul style="list-style-type: none"> All NOAM servers failed. At least 1 SOAM server out of Active, StandBy, Spare is intact and available. MP servers may or may not be failed. 	Section 5.1.3 Recovery Scenario 3 (Partial Server Outage with all NOAM servers failed and one SOAM server intact)
4	<ul style="list-style-type: none"> At least 1 NOAM server is intact and available. At least 1 SOAM server out of Active, StandBy, Spare is intact and available. 1 or more MP servers have failed. 	Section 5.1.4 Recovery Scenario 4 (Partial Server Outage with one NOAM server and one SOAM server intact)
5	<ul style="list-style-type: none"> Both NOAM servers failed in Primary site At least 1 SOAM server out of Active, StandBy, Spare is intact and available. DR-NOAM is available 	Section 5.1.5 Recovery Scenario 5 (Partial Server Outage with all

		NOAM servers failed with DR-NOAM available)
6: Case 1	<ul style="list-style-type: none"> • Server is intact • Database gets corrupted on the server • Replication is occurring to the server with corrupted database 	Section 5.1.6.1 Recovery Scenario 6: Case 1
6: Case 2	<ul style="list-style-type: none"> • Server is intact • Database gets corrupted on the server • Latest Database backup of the corrupt server is NOT present • Replication is inhibited (either manually or because of comcol upgrade barrier) 	Section 5.1.6.2 Recovery Scenario 6: Case 2

5.0 Disaster Recovery Procedure

Call [Appendix G. My Oracle Support \(MOS\)](#) prior to executing this procedure to ensure that the proper recovery planning is performed.

Before disaster recovery, users must properly evaluate the outage scenario. This check ensures that 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 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 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 will recover 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 will automatically reconfigure 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 would allow faster recovery of the complete solution (i.e. stale DB on DP servers will not receive updates until SDS-SOAM servers are recovered).

Procedure 1: Recovery Scenario 1

S T E P #	<p>This procedure performs recovery if both NOAM servers are failed and all SOAM servers are 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 G. My Oracle Support (MOS), and ask for assistance.</p>	
1. <input type="checkbox"/>	Workarounds	<p>Refer to Appendix F. Workarounds for Issues not fixed in this Release to understand/apply any workarounds required during this procedure.</p>
2. <input type="checkbox"/>	Gather Required Materials	<p>Gather the documents and required materials listed in Section 3.1 Required Materials</p>
3. <input type="checkbox"/>	Recover the Failed Software	<p>For VMWare based deployments:</p> <ol style="list-style-type: none"> 1. For NOAMs execute the following procedures from reference [1]: <ol style="list-style-type: none"> a. Procedure 1 (VMWare). Import DSR OVA [Note: If OVA is already imported and present in the Infrastructure Manager, skip this procedure of importing OVA] b. Procedure 2 (VMWare Only). Configure NOAM guests based on resource profile 2. For SOAMs execute the following procedures from reference [1]: <ol style="list-style-type: none"> a. Procedure 1 (VMWare). Import DSR OVA [Note: If OVA is already imported and present in the Infrastructure Manager, skip this procedure of importing OVA] b. Procedure 3 (VMWare Only). Configure Remaining DSR guests based on resource profile 3. For failed MPs execute the following procedures from reference [1]: <ol style="list-style-type: none"> a. Procedure 1 (VMWare). Import DSR OVA [Note: If OVA is already imported and present in the Infrastructure Manager, skip this procedure of importing OVA] b. Procedure 3 (VMWare Only). Configure Remaining DSR guests based on resource profile <p>For KVM / Openstack based deployments:</p> <ol style="list-style-type: none"> 1. For NOAMs execute the following procedures from reference [1]: <ol style="list-style-type: none"> a. Procedure 4 (KVM / Openstack). Import DSR OVA [Note: If OVA is already imported and present in the Infrastructure Manager, skip this procedure of importing OVA] b. Procedure 5 (KVM / Openstack Only). Configure NOAM guests based on resource profile 2. For SOAMs execute the following procedures from reference [1]: <ol style="list-style-type: none"> a. Procedure 4 (KVM / Openstack). Import DSR OVA [Note: If OVA is already imported and present in the Infrastructure Manager, skip this procedure of importing OVA]

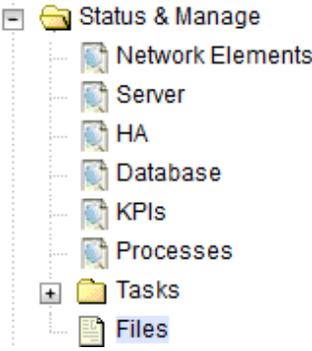
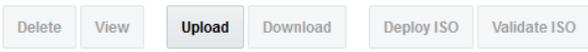
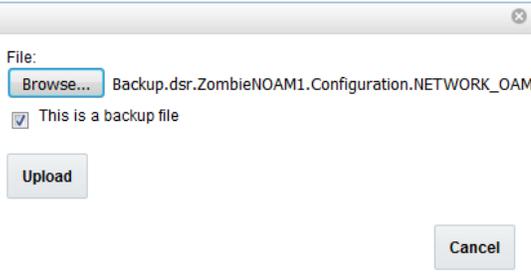
Procedure 1: Recovery Scenario 1

		<p>b. Procedure 6 (KVM / Openstack Only). Configure Remaining DSR guests based on resource profile</p> <p>3. For failed MPs execute the following procedures from reference [1]:</p> <p>a. Procedure 4 (KVM / Openstack). Import DSR OVA [Note: If OVA is already imported and present in the Infrastructure Manager, skip this procedure of importing OVA]</p> <p>b. Procedure 6 (KVM / Openstack Only). Configure Remaining DSR guests based on resource profile</p> <p>For OVM-S / OVM-M based deployments:</p> <p>Execute the following procedures from reference [1]:</p> <p>a. Procedure 7 (OVM-S/OVM-M). Import DSR OVA and prepare for VM creation</p> <p>b. Procedure 8 (OVM-S/OVM-M). Configure each DSR VM</p> <p>Note: While executing Procedure 8, configure the required failed VMs only (NOAMs/SOAMs/MPs)</p>
<p>4. <input type="checkbox"/></p>	<p>Obtain Latest Database Backup and Network Configuration Data.</p>	<p>Obtain the most recent database backup file from external backup sources (ex. 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>
<p>5. <input type="checkbox"/></p>	<p>Execute DSR Installation Procedure for the First NOAM</p>	<p>Verify the networking data for Network Elements</p> <p>Note: Use the backup copy of network configuration data and site surveys (Step 2)</p> <p>Execute installation procedures for the first NOAM server from reference [1]:</p> <p>Procedure 9 “Configure the First NOAM NE and Server” and</p> <p>Procedure 10 “Configure the NOAM Server Group”.</p>

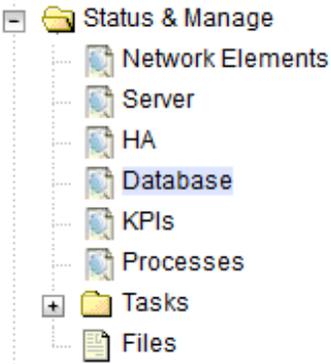
Procedure 1: Recovery Scenario 1

<p>6. <input type="checkbox"/></p>	<p>NOAM GUI: Login</p>	<p>Login to the NOAM GUI as the <i>guiadmin</i> user:</p> <div data-bbox="776 331 1170 394"></div> <p>Oracle System Login Fri Aug 12 06:41:39 2016 EDT</p> <div data-bbox="685 531 1247 951" style="border: 1px solid #ccc; padding: 10px; margin: 10px auto; width: 80%;"><p style="text-align: center;">Log In Enter your username and password to log in</p><p style="text-align: center;">Session was logged out at 6:41:39 am.</p><p>Username: <input type="text" value="guiadmin"/></p><p>Password: <input type="password"/></p><p style="text-align: center;"><input type="checkbox"/> Change password</p><p style="text-align: center;"><input type="button" value="Log In"/></p></div> <p style="text-align: center;">Welcome to the Oracle System Login.</p> <p style="text-align: center;">This application is designed to work with most modern HTML5 compliant browsers and uses both JavaScript and cookies. Please refer to the Oracle Software Web Browser Support Policy for details.</p> <p style="text-align: center;">Unauthorized access is prohibited.</p> <hr/> <p style="text-align: center;"><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>
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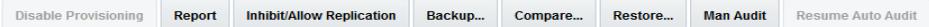
Procedure 1: Recovery Scenario 1

<p>7. □</p>	<p>NOAM GUI: Upload the Backed up Database File</p>	<p>Browse to Main Menu->Status & Manage->Files</p>  <p>Select the Active NOAM server. The following screen will appear:</p> <p>Main Menu: Status & Manage -> Files</p>  <p>Click on Upload as shown below and select the file <i>“NO Provisioning and Configuration:”</i> file backed up after 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"> 1. Click on Browse and locate the backup file 2. Check This is a backup file Box 3. Click on Open as shown below.  <p>Click on the Upload button. The file will take a few seconds to upload depending on the size of the backup data. The file will be visible on the list of entries after the upload is complete.</p>
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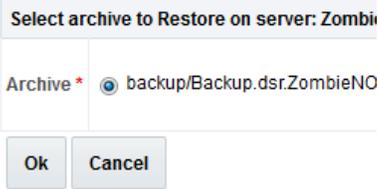
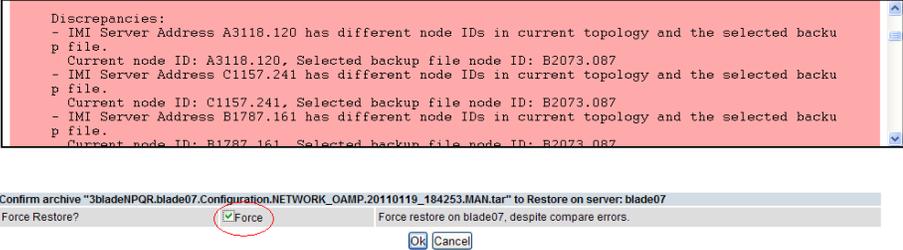
Procedure 1: Recovery Scenario 1

<p>8. □</p>	<p>NOAM GUI: Disable Provisioning</p>	<p>Click on Main Menu->Status & Manage->Database</p>  <p>Disable Provisioning by clicking on Disable Provisioning button at the bottom of the screen as shown below.</p>  <p>A confirmation window will appear, press OK to disable Provisioning.</p>  <p>The message <i>"Warning Code 002"</i> will appear.</p>
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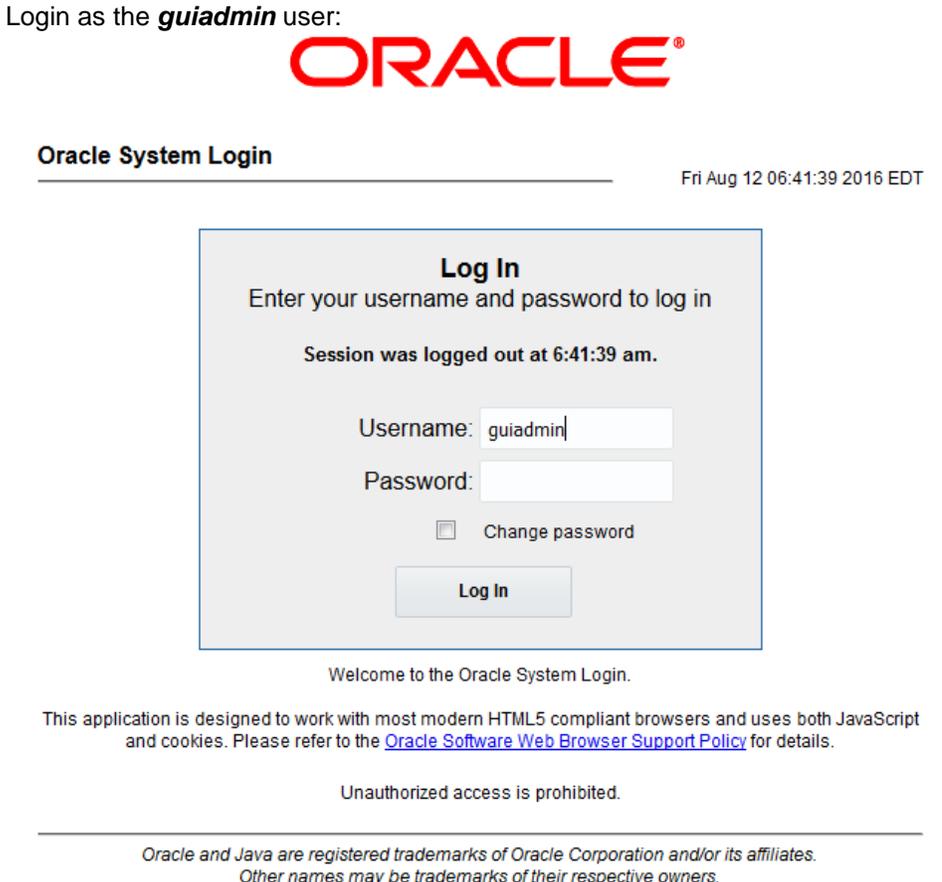
Procedure 1: Recovery Scenario 1

<p>9. □</p>	<p>NOAM GUI: Verify the Archive Contents and Database Compatibility</p>	<p>Select the Active NOAM server and click on the Compare.</p>  <p>The following screen is displayed; click the button for the restored database file that was uploaded as a part of Step 13 of this procedure.</p> <p>Database Compare</p> <p>Select archive to compare on server: Martinique-NO1</p> <p>Archive * <input type="radio"/> backup/Backup.dsr.Martinique-NO1.Configuration.NETWORK_OAMP20161111_064210.MAN.tar.bz2 <input type="radio"/> 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>Verify that the output window matches the screen below.</p> <p>Note: You will get a database mismatch regarding the NodeIDs of the VMs. That is expected. If that is the only mismatch, proceed, otherwise stop and contact Appendix G. My Oracle Support (MOS).</p> <p>Database Archive Compare</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 A0630.239 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>Note: Archive Contents and Database Compatibilities must be the following:</p> <p>Archive Contents: Configuration data Database Compatibility: The databases are compatible.</p> <p>Note: 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>Topology Compatibility THE TOPOLOGY SHOULD BE COMPATIBLE MINUS THE NODEID.</p> <p>Note: 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 BACK button and continue to next step in this procedure.</p>
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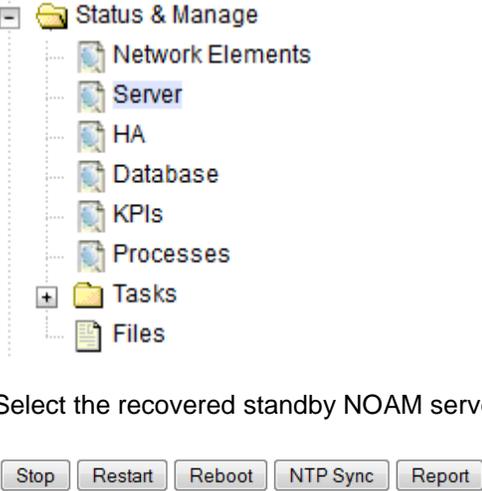
Procedure 1: Recovery Scenario 1

<p>10.</p> <p><input type="checkbox"/></p>	<p>ACTIVE NOAM: Restore the Database</p>	<p>Click on Main Menu->Status & Manage->Database</p> <p>Select the Active NOAM server, and click on Restore as shown below.</p> <p>The following screen will be displayed. Select the proper back up provisioning and configuration file.</p>  <p>Click OK Button. The following confirmation screen will be displayed.</p> <p>Note: You will get a database mismatch regarding the NodeIDs of the servers. That is expected. If that is the only mismatch, proceed, otherwise stop and contact Appendix G. My Oracle Support (MOS).</p> <p>Select the Force checkbox as shown above and Click OK to proceed with the DB restore.</p> <p>Database Restore Confirm</p> <p>Incompatible database selected</p>  <p>Note: After the restore has started, the user will be logged out of XMI NO GUI since the restored Topology is old data.</p>
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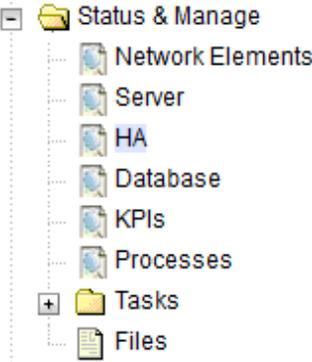
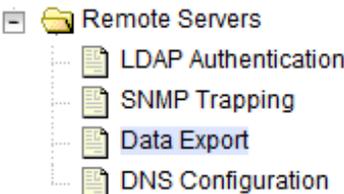
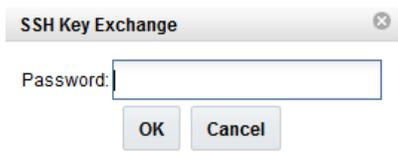
Procedure 1: Recovery Scenario 1

<p>11. <input type="checkbox"/></p>	<p>NOAM VIP GUI: 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: 2px; margin: 10px 0;"> <p><code>http://<Primary_NOAM_VIP_IP_Address></code></p> </div> <p>Login as the <i>guiadmin</i> user:</p> 
<p>12. <input type="checkbox"/></p>	<p>NOAM VIP GUI: Monitor and Confirm database restoral</p>	<p>Wait for 5-10 minutes for the System to stabilize with the new topology:</p> <p>Monitor the Info tab for “Success”. This will indicate that the backup is complete and the system is stabilized.</p> <p>Following alarms must be ignored for NOAM and MP Servers until all the Servers are configured:</p> <p>Alarms with Type Column as “REPL” , “COLL”, “HA” (with mate NOAM), “DB” (about Provisioning Manually Disabled)</p> <p>Note: Do not pay attention to alarms until all the servers in the system are completely restored.</p> <p>Note: The Configuration and Maintenance information will be in the same state it was backed up during initial backup.</p>

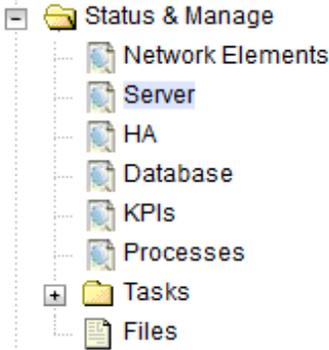
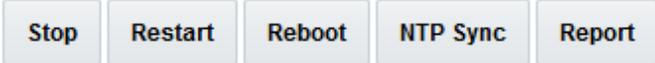
Procedure 1: Recovery Scenario 1

<p>13. <input type="checkbox"/></p>	<p>ACTIVE NOAM: Login</p>	<p>Login to the recovered Active NOAM via SSH terminal as admusr user.</p>
<p>14. <input type="checkbox"/></p>	<p>NOAM VIP GUI: Recover Standby NOAM</p>	<p>Install the second NOAM server by executing procedures from reference [1]</p> <p>Procedure 11 “Configure the Second NOAM Server” steps 1, 3-7</p> <p>Procedure 12 “Complete Configuring the NOAM Server Group” Step 4</p>
<p>15. <input type="checkbox"/></p>	<p>Active NOAM: Correct the RecognizedAuth ority table</p>	<p>Establish an SSH session to the active NOAM, login as admusr.</p> <p>Execute the following command:</p> <div style="border: 1px solid black; padding: 5px; background-color: #f0f0f0;"> <pre>\$ sudo top.setPrimary - Using my cluster: A1789 - New Primary Timestamp: 11/09/15 20:21:43.418 - Updating A1789.022: <DSR_NOAM_B_hostname> - Updating A1789.144: <DSR_NOAM_A_hostname></pre> </div>
<p>16. <input type="checkbox"/></p>	<p>NOAM VIP GUI: Restart DSR application</p>	<p>Navigate to Main Menu->Status & Manage->Server,</p>  <p>Select the recovered standby NOAM server and click on Restart.</p>

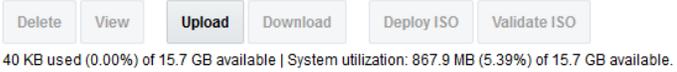
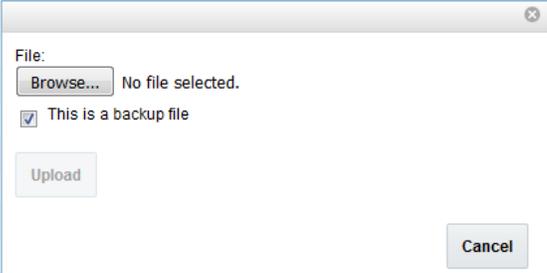
Procedure 1: Recovery Scenario 1

<p>17.</p> <p><input type="checkbox"/></p>	<p>NOAM VIP GUI: Set HA on Standby NOAM</p>	<p>Navigate to Status & Manage -> HA</p>  <p>Click on Edit at the bottom of the screen</p> <p>Select the standby NOAM server, set it to Active</p> <p>Press OK</p>
<p>18.</p> <p><input type="checkbox"/></p>	<p>NOAM VIP GUI: Perform Keyexchange with Export Server</p>	<p>Navigate to Main Menu -> Administration -> Remote Servers -> Data Export</p>  <p>Click on SSH Key Exchange at the bottom of the screen</p> <p>Enter the Password and press OK</p> 

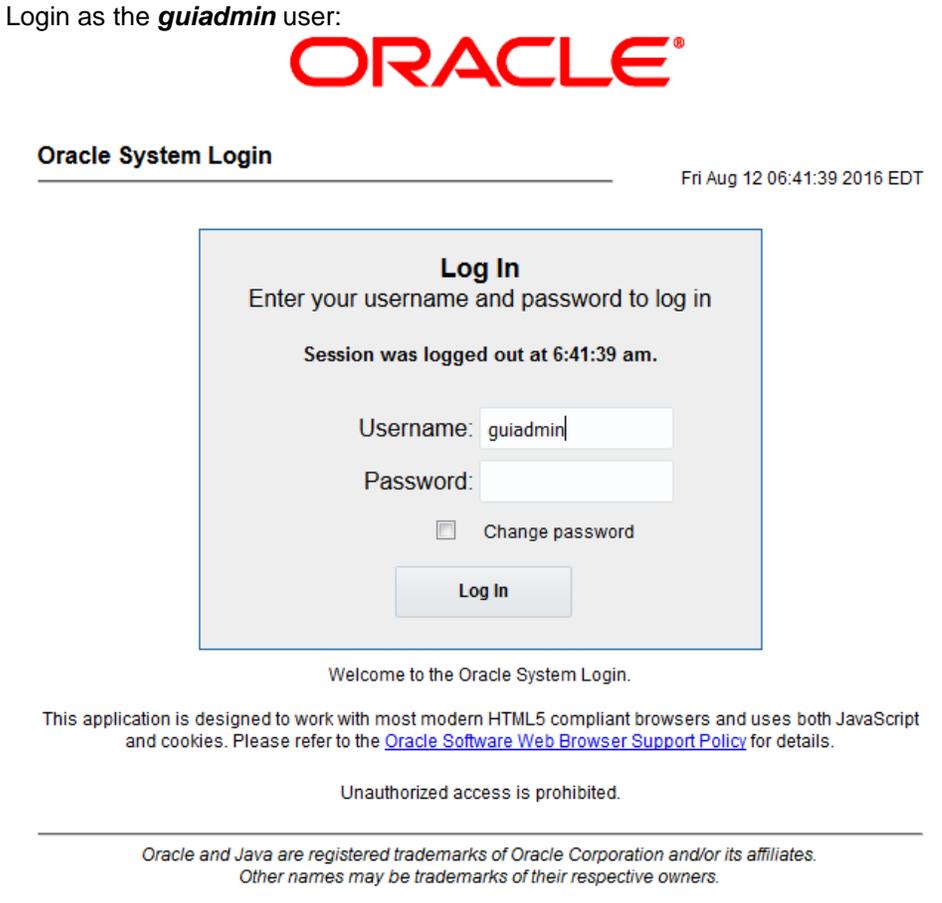
Procedure 1: Recovery Scenario 1

<p>19. <input type="checkbox"/></p>	<p>NOAM VIP GUI: Stop Replication to the C-Level Servers of this Site.</p>	<p>Inhibit Replication to the working C Level Servers which belong to the same site as of the failed SOAM servers, as the recovery of Active SOAM will cause the database wipeout in the C level servers because of the replication</p> <p></p> <p>If the spare SOAM is also present in the site and lost: Appendix D. Inhibit A and B Level Replication on C-Level Servers (When Active, Standby and Spare SOAMs are lost)</p> <p>If the spare SOAM is NOT deployed in the site: Execute Appendix B. Inhibit A and B Level Replication on C-Level Servers</p> <p></p>
<p>20. <input type="checkbox"/></p>	<p>NOAM VIP GUI: Recover Active SOAM Server</p>	<p>Install the SOAM servers by executing procedures from reference [1]</p> <p>Procedure 18 “Configure the SOAM Servers”, steps 1, 3- 7</p> <p>NOTE: Wait for server to reboot before continuing.</p>
<p>21. <input type="checkbox"/></p>	<p>NOAM VIP GUI: Restart DSR application on Recovered Active SOAM Server</p>	<p>Navigate to Main Menu->Status & Manage->Server,</p> <p></p> <p>Select the recovered server and click on Restart.</p> <p></p>

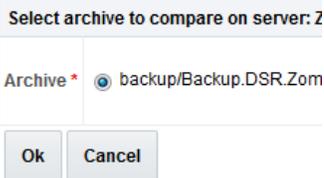
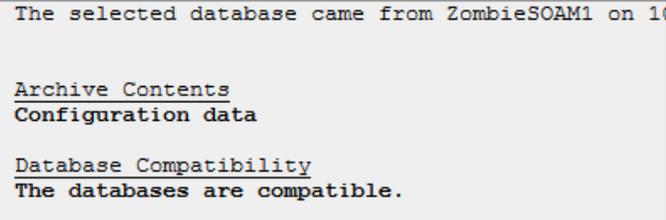
Procedure 1: Recovery Scenario 1

<p>22.</p> <p><input type="checkbox"/></p>	<p>NOAM VIP GUI: Upload the backed up SOAM Database file</p>	<p>Navigate to Main Menu->Status & Manage->Files</p> <p>Select the Active SOAM server. The following screen will appear. Click on Upload as shown below and select the file <i>“SO Provisioning and Configuration:”</i> file backed up after initial installation and provisioning.</p>  <ol style="list-style-type: none"> 1. Click on Browse and locate the backup file 2. Check This is a backup file Box 3. Click on Open as shown below..  <p>Click on the Upload button. The file will take a few seconds to upload depending on the size of the backup data. The file will be visible on the list of entries after the upload is complete.</p>
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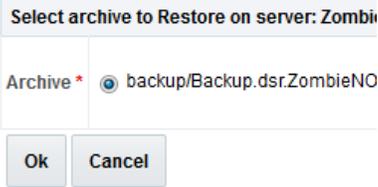
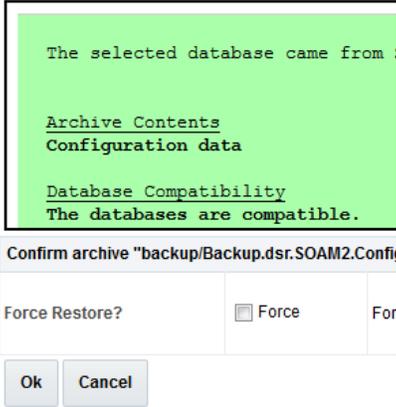
Procedure 1: Recovery Scenario 1

<p>23.</p> <p><input type="checkbox"/></p>	<p>Recovered SOAM GUI: Login</p>	<p>Establish a GUI session on the recovered SOAM server. Open the web browser and enter a URL of:</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p><code>http://<Recovered_SOAM_IP_Address></code></p> </div> <p>Login as the <i>guiadmin</i> 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 Oracle Software Web Browser Support Policy for details.</p> <p>Unauthorized access is prohibited.</p> <hr/> <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>
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Procedure 1: Recovery Scenario 1

<p>24.</p> <p><input type="checkbox"/></p>	<p>Recovered SOAM GUI: Verify the Archive Contents and Database Compatibility</p>	<p>Navigate to Main Menu->Status & Manage->Database</p> <p>Select the Active SOAM server and click on the Compare.</p>  <p>The following screen is displayed; click the button for the restored database file that was uploaded as a part of Step 13 of this procedure.</p> <p>Database Compare</p>  <p>Verify that the output window matches the screen below.</p> <p>Note: You will get a database mismatch regarding the NodeIDs of the VMs. That is expected. If that is the only mismatch, proceed, otherwise stop and contact Appendix G. My Oracle Support (MOS)</p> <hr/> <p>Database Archive Compare</p>  <p>Note: Archive Contents and Database Compatibilities must be the following:</p> <p>Archive Contents: Configuration data Database Compatibility: The databases are compatible.</p> <p>Note: 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>Topology Compatibility THE TOPOLOGY SHOULD BE COMPATIBLE MINUS THE NODEID.</p> <p>Note: We are trying to restore a backed up database onto an empty SOAM database. This is an expected text in Topology Compatibility. If the verification is successful, Click BACK button and continue to next step in this procedure.</p>
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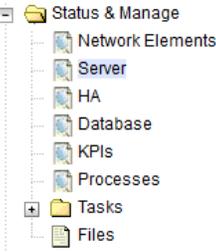
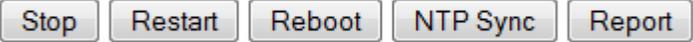
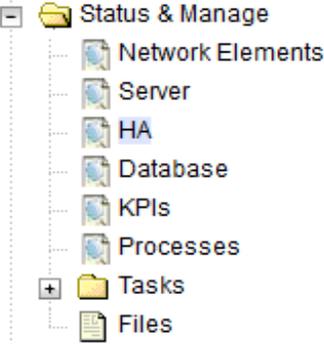
Procedure 1: Recovery Scenario 1

<p>25.</p> <p><input type="checkbox"/></p>	<p>Recovered SOAM GUI: Restore the Database</p>	<p>Click on Main Menu->Status & Manage->Database</p> <p>Select the Active SOAM server, and click on Restore as shown below.</p> <p>The following screen will be displayed. Select the proper back up provisioning and configuration file.</p>  <p>Click OK Button. The following confirmation screen will be displayed.</p> <p>If you get an error that the NodeIDs do not match. That is expected. If no other errors beside the NodeIDs are displayed, select the Force checkbox as shown below and Click OK to proceed with the DB restore.</p> <p>Database Restore Confirm</p> <p>Compatible archive.</p>  <p>Note: After the restore has started, the user will be logged out of XMI SOAM GUI since the restored Topology is old data.</p>
<p>26.</p> <p><input type="checkbox"/></p>	<p>Recovered SOAM GUI: Monitor and Confirm database restoral</p>	<p>Wait for 5-10 minutes for the System to stabilize with the new topology:</p> <p>Monitor the Info tab for “Success”. This will indicate that the backup is complete and the system is stabilized.</p> <p>Note: Do not pay attention to alarms until all the servers in the system are completely restored.</p> <p>Note: The Configuration and Maintenance information will be in the same state it was backed up during initial backup.</p>

Procedure 1: Recovery Scenario 1

<p>27. <input type="checkbox"/></p>	<p>NOAM VIP GUI: 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: 2px; width: fit-content; margin: 10px auto;"> <p><code>http://<Primary_NOAM_VIP_IP_Address></code></p> </div> <p>Login as the <i>guiadmin</i> 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 Oracle Software Web Browser Support Policy for details.</p> <p>Unauthorized access is prohibited.</p> <hr/> <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>28. <input type="checkbox"/></p>	<p>NOAM VIP GUI: Recover remaining SOAM Server</p>	<p>Install the SOAM servers by executing procedure from reference [1]</p> <p>Procedure 18 “Configure the SOAM Servers”, steps 1, 3- 6</p> <p>NOTE: Wait for server to reboot before continuing.</p>

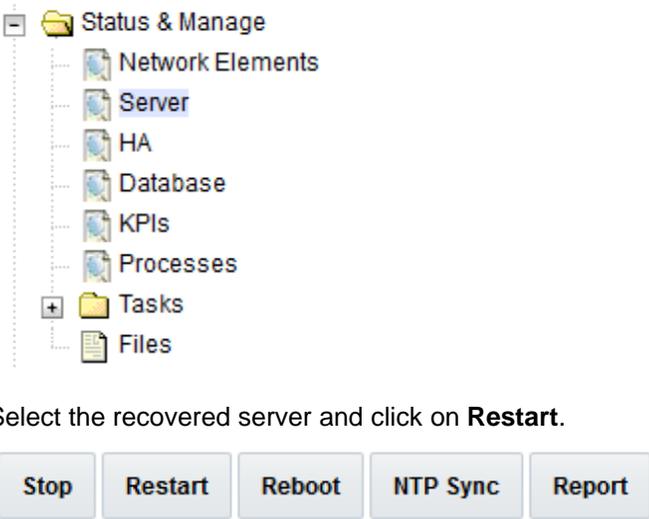
Procedure 1: Recovery Scenario 1

<p>29.</p> <p><input type="checkbox"/></p>	<p>NOAM VIP GUI: Restart DSR application on remaining SOAM Server(s)</p>	<p>Navigate to Main Menu->Status & Manage->Server,</p>  <p>Select the recovered server and click on Restart.</p> 
<p>30.</p> <p><input type="checkbox"/></p>	<p>NOAM VIP GUI: Set HA on Recovered Standby SOAM Server</p>	<p>NOTE: For Non-HA sites SKIP this step.</p> <p>Navigate to Status & Manage -> HA</p>  <p>Click on Edit at the bottom of the screen</p> <p>Set Max Allowed HA Role to Active</p> <p>Press OK</p>

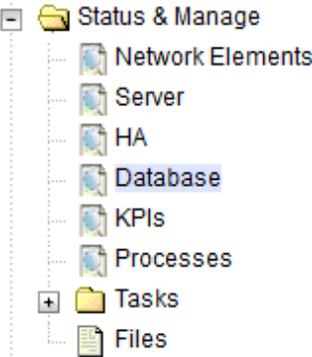
Procedure 1: Recovery Scenario 1

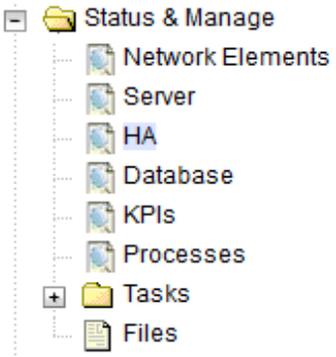
<p>31. <input type="checkbox"/></p>	<p>NOAM VIP GUI: Start Replication on Working C-Level Servers</p>	<p>Un-Inhibit (<i>Start</i>) Replication to the working C-Level Servers which belong to the same site as of the failed SOAM servers.</p> <p><u>If the spare SOAM is also present in the site and lost:</u> Execute Appendix E. Un-Inhibit A and B Level Replication on C-Level Servers (When Active, Standby and Spare SOAMs are lost)</p> <p><u>If the spare SOAM is NOT deployed in the site:</u> Execute Appendix C. Un-Inhibit A and B Level Replication on C-Level Servers</p> <p>Navigate to Main Menu->Status & Manage->Database</p> <p>If the “<i>Repl Status</i>” is set to “Inhibited”, click on the Allow Replication button as shown below 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"> • Active NOAM Server • Standby NOAM Server • Active SOAM Server • Standby SOAM Server • Spare SOAM Server (<i>if applicable</i>) • MP/IPFE Servers (<i>if MPs are configured as Active/Standby, start with the Active MP, otherwise the order of the MPs does not matter</i>) • SBRS (<i>if SBR servers are configured, start with the active SBR, then standby, then spare</i>) <p>Verify that the replication on all the working servers is allowed. This can be done by examining the Repl Status table as seen below:</p> <table border="1" data-bbox="492 1136 1406 1440"> <thead> <tr> <th>OAM Repl Status</th> <th>SIG Repl Status</th> <th>Repl Status</th> <th>Repl Audit Status</th> </tr> </thead> <tbody> <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 style="background-color: #e0f0ff;"> <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> </tbody> </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																			
<p>32. <input type="checkbox"/></p>	<p>NOAM VIP GUI: Recover the C-Level Server (DA-MP, SBRs, IPFE, SS7-MP,vSTP-MP)</p>	<p>Establish a SSH session to the C Level server being recovered, login as admusr.</p> <p>Execute following command to set shared memory to unlimited:</p> <pre style="border: 1px solid black; padding: 5px; width: fit-content;">\$ sudo sh1.set -m 0</pre> <p>Execute the following procedures from [1] FOR EACH server that has been recovered:</p> <p>Procedure 21 “Configure the MP Virtual Machines”, Steps 1, 11-14 (& 15 if required).</p>																				

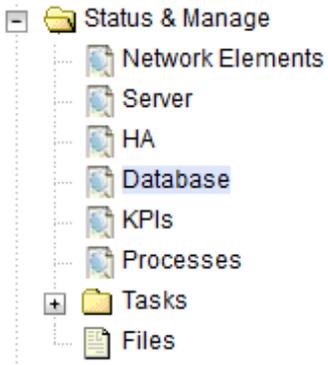
Procedure 1: Recovery Scenario 1

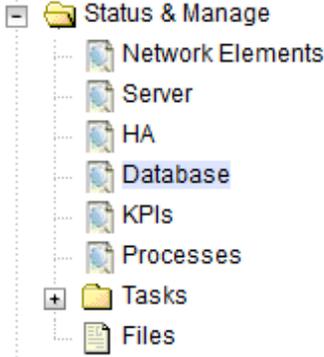
33.	NOAM VIP GUI: Restart DSR application for Recovered C-Level Server	<p>Navigate to Main Menu->Status & Manage->Server,</p>  <p>Select the recovered server and click on Restart.</p> <p>Stop Restart Reboot NTP Sync Report</p>
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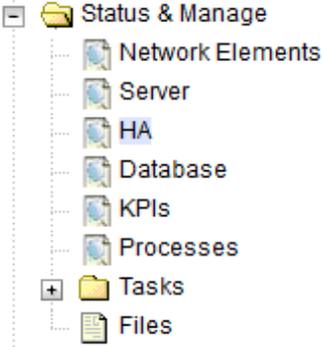
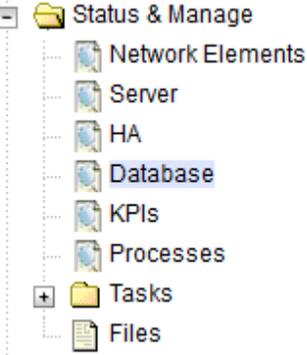
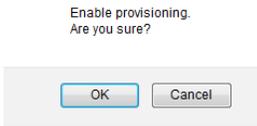
Procedure 1: Recovery Scenario 1

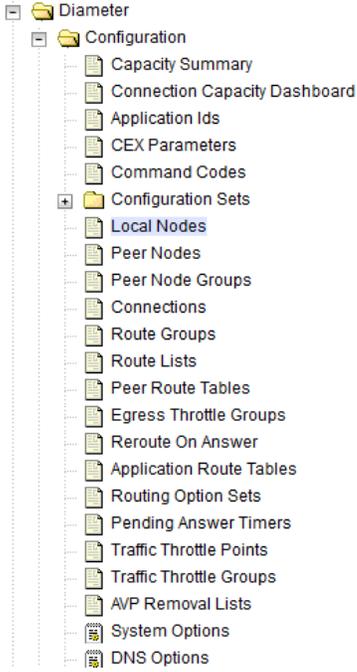
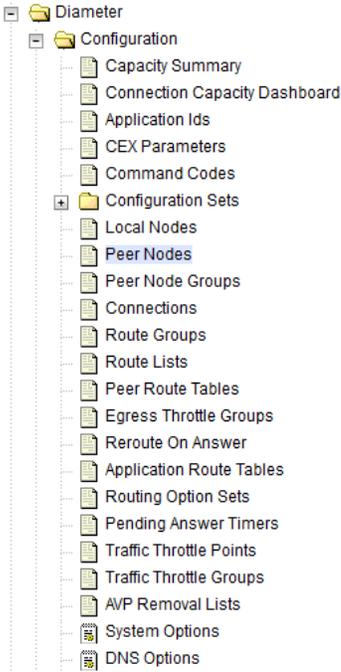
<p>34.</p> <p><input type="checkbox"/></p>	<p>NOAM VIP GUI: Start Replication on all C-Level Servers</p>	<p>Un-Inhibit (<i>Start</i>) Replication to the ALL C-Level Servers</p> <p>Navigate to Status & Manage -> Database</p>  <p>If the "<i>Repl Status</i>" is set to "Inhibited", click on the Allow Replication button as shown below using the following order:</p> <ul style="list-style-type: none"> • Active NOAM Server • Standby NOAM Server • Active SOAM Server • Standby SOAM Server • Spare SOAM Server (<i>if applicable</i>) • MP/IPFE Servers (<i>if MPs are configured as Active/Standby, start with the Active MP, otherwise the order of the MPs does not matter</i>) <p>Verify that the replication on all the working servers is allowed. This can be done by examining the Repl Status table as seen below:</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>OAM Repl Status</th> <th>SIG Repl Status</th> <th style="border: 2px solid red;">Repl Status</th> <th>Repl Audit Status</th> </tr> </thead> <tbody> <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 style="background-color: #e6f2ff;"> <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> </tbody> </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
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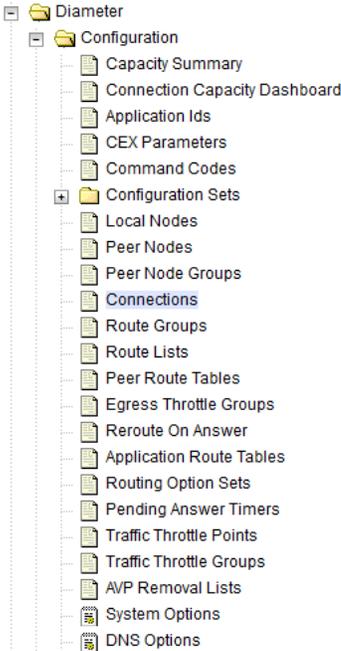
<p>35. <input type="checkbox"/></p>	<p>NOAM VIP GUI: Set HA on all C-Level Servers</p>	<p>Navigate to Status & Manage -> HA</p>  <p>Click on Edit at the bottom of the screen</p> <p>For each server whose Max Allowed HA Role is set to OOS, set it to Active</p> <p>Press OK</p>
<p>36. <input type="checkbox"/></p>	<p>ACTIVE NOAM: Perform key exchange between the active-NOAM and recovered servers.</p>	<p>Establish an SSH session to the Active NOAM, login as admusr.</p> <p>Execute the following command to perform a keyexchange from the active NOAM to each recovered server:</p> <pre style="border: 1px solid black; padding: 5px;">\$ keyexchange admusr@<Recovered Server Hostname></pre> <p>Note: If an export server is configured, perform this step.</p>
<p>37. <input type="checkbox"/></p>	<p>ACTIVE NOAM: Activate Optional Features</p>	<p>Establish an SSH session to the active NOAM, login as admusr.</p> <p>Note for PCA Feature Activation: If you have PCA installed in the system being recovered, execute the procedure “PCA Activation on Stand By NOAM server” on recovered Standby NOAM Server and procedure “PCA Activation on Active SOAM server” on 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>Note: While running the activation script, the following error message (and corresponding messages) output may be seen, this can safely be ignored:</p> <pre style="font-family: monospace;">iload#31000{S/W Fault}</pre> <p>Note: If any of the MPs are 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>

<p>38. <input type="checkbox"/></p>	<p>NOAM VIP GUI: Fetch and Store the database Report for the Newly Restored Data and Save it</p>	<p>Navigate to Main Menu->Status & Manage->Database</p>  <p>Select the active NOAM server and click on the Report button at the bottom of the page. The following screen is displayed:</p> <div style="border: 1px solid black; padding: 5px;"> <p>Main Menu: Status & Manage -> Database [Report]</p> <hr/> <pre> ===== d s r D a t a b a s e S t a t u s R e p o r t ===== Report Generated: Tue Oct 11 13:24:26 2016 EDT From: Active Network OAM&P on host ZombieNOAM1 Report Version: 8.0.0.0.0-80.9.0 User: guiadmin ===== General ----- Hostname : ZombieNOAM1 Database Birthday : 2016-07-11 11:21:50 EDT Appworks Database Version : 6.0 Application Database Version : Capacities and Utilization ----- Disk Utilization 8.4%: 585M used of 7.0G total, 6.0G available Memory Utilization 0.0%: used of total, 0M available </pre> </div> <p>Click on Save and save the report to your local machine.</p>
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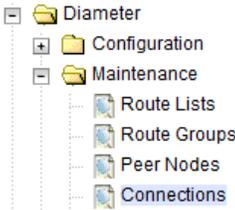
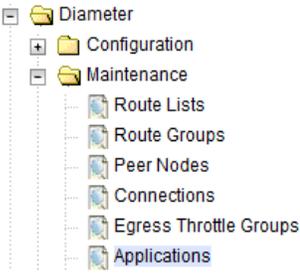
39.	ACTIVE NOAM: Verify Replication Between Servers.	Login to the Active NOAM via SSH terminal as admusr user. Execute the following command: <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <pre>\$ sudo irepstat -m</pre> <p>Output like below shall be generated:</p> <pre>-- Policy 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> </div>																																																																		
40.	NOAM VIP GUI: Verify the Database states	Click on Main Menu->Status and Manager->Database  <p>Verify that the “OAM Max HA Role” is either “Active” or “Standby” for NOAM and SOAM and “Application Max HA Role” for MPs is “Active”, and that the status is “Normal” as shown below:</p> <p>Main Menu: Status & Manage -> Database</p> <table border="1" style="width: 100%; border-collapse: collapse; font-size: small;"> <thead> <tr> <th>Network Element</th> <th>Server</th> <th>Role</th> <th>OAM Max HA Role</th> <th>Application Max HA Role</th> <th>Status</th> <th>DB Level</th> <th>OAM Repl Status</th> <th>SIG Repl Status</th> <th>Repl Status</th> <th>Repl Audit Status</th> </tr> </thead> <tbody> <tr> <td>SOAM_NE</td> <td>S01</td> <td>System OAM</td> <td>Standby</td> <td>N/A</td> <td>Normal</td> <td>0</td> <td>Normal</td> <td>NotApplicable</td> <td>Allowed</td> <td>NotApplicable</td> </tr> <tr> <td>SOAM_NE</td> <td>S02</td> <td>System OAM</td> <td>Active</td> <td>N/A</td> <td>Normal</td> <td>0</td> <td>Normal</td> <td>NotApplicable</td> <td>Allowed</td> <td>NotApplicable</td> </tr> <tr> <td>NOAM_NE</td> <td>N02</td> <td>Network OAMMP</td> <td>Standby</td> <td>N/A</td> <td>Normal</td> <td>0</td> <td>Normal</td> <td>NotApplicable</td> <td>Allowed</td> <td>NotApplicable</td> </tr> <tr> <td>SOAM_NE</td> <td>DAMP1</td> <td>MP</td> <td>Active</td> <td>Active</td> <td>Normal</td> <td>0</td> <td>Normal</td> <td>NotApplicable</td> <td>Allowed</td> <td>NotApplicable</td> </tr> <tr> <td>NOAM_NE</td> <td>N01</td> <td>Network OAMMP</td> <td>Active</td> <td>N/A</td> <td>Normal</td> <td>0</td> <td>Normal</td> <td>NotApplicable</td> <td>Allowed</td> <td>NotApplicable</td> </tr> </tbody> </table>	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 OAMMP	Standby	N/A	Normal	0	Normal	NotApplicable	Allowed	NotApplicable	SOAM_NE	DAMP1	MP	Active	Active	Normal	0	Normal	NotApplicable	Allowed	NotApplicable	NOAM_NE	N01	Network OAMMP	Active	N/A	Normal	0	Normal	NotApplicable	Allowed	NotApplicable
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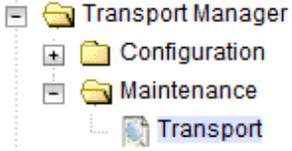
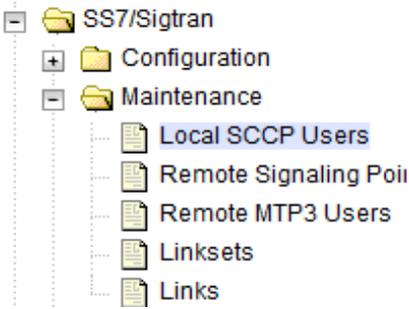
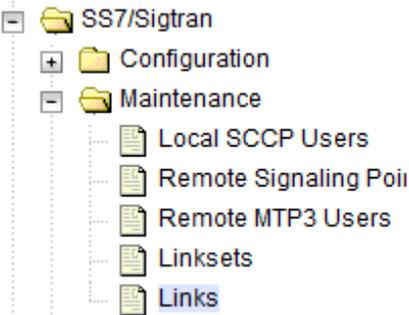
<p>41.</p> <p><input type="checkbox"/></p>	<p>NOAM VIP GUI: Verify the HA Status</p>	<p>Click on Main Menu->Status and Manage->HA</p>  <p>Select the row for all of the servers Verify that the "HA Role" is either "Active" or "Standby".</p> <p>Main Menu: Status & Manage -> HA</p> <table border="1" data-bbox="488 785 1370 974"> <thead> <tr> <th>Hostname</th> <th>OAM HA Role</th> <th>Application HA Role</th> <th>Max Allowed HA Role</th> <th>Mate Hostname List</th> <th>Network Element</th> <th>Server Role</th> </tr> </thead> <tbody> <tr> <td>SO1</td> <td>Standby</td> <td>N/A</td> <td>Active</td> <td>SO2</td> <td>SOAM_NE</td> <td>System OAM</td> </tr> <tr> <td>SO2</td> <td>Active</td> <td>N/A</td> <td>Active</td> <td>SO1</td> <td>SOAM_NE</td> <td>System OAM</td> </tr> <tr> <td>DAMP1</td> <td>Active</td> <td>Active</td> <td>Active</td> <td></td> <td>SOAM_NE</td> <td>MP</td> </tr> <tr> <td>NO1</td> <td>Active</td> <td>N/A</td> <td>Active</td> <td>NO2</td> <td>NOAM_NE</td> <td>Network OAM&P</td> </tr> <tr> <td>NO2</td> <td>Standby</td> <td>N/A</td> <td>Active</td> <td>NO1</td> <td>NOAM_NE</td> <td>Network OAM&P</td> </tr> </tbody> </table>	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
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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																																						
<p>42.</p> <p><input type="checkbox"/></p>	<p>NOAM GUI: Enable Provisioning</p>	<p>Click on Main Menu->Status & Manage->Database</p>  <p>Enable Provisioning by clicking on Enable Provisioning button at the bottom of the screen as shown below.</p>  <p>A confirmation window will appear, press OK to enable Provisioning.</p> 																																										

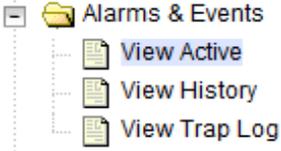
<p>43.</p> <p><input type="checkbox"/></p>	<p>SOAM VIP GUI: Verify the Local Node Info</p>	<p>Navigate to Main Menu->Diameter->Configuration->Local Node</p>  <p>Verify that all the local nodes are shown.</p>
<p>44.</p> <p><input type="checkbox"/></p>	<p>SOAM VIP GUI: Verify the Peer Node Info</p>	<p>Navigate to Main Menu->Diameter->Configuration->Peer Node</p>  <p>Verify that all the peer nodes are shown.</p>

<p>45.</p> <p><input type="checkbox"/></p>	<p>SOAM VIP GUI: Verify the Connections Info</p>	<p>Navigate to Main Menu->Diameter->Configuration->Connections</p>  <p>Verify that all the connections are shown.</p>
<p>46.</p> <p><input type="checkbox"/></p>	<p>For vSTP Only-SOAM VIP Server Console (Optional): Verify the local nodes info</p>	<p>To verify the vSTP MP Local nodes info:</p> <ol style="list-style-type: none"> 1. Login to the SOAM VIP Server console as admusr 2. Execute the following command [admusr@SOAM1 ~]\$ mmiclient.py /vstp/localhosts 3. Verify the output similar to the below output <pre data-bbox="586 1325 1214 1814"> { "data": [{ "configurationLevel": "10", "localHostName": "AUTLocalHost1", "localHostPort": 4444, "localHostPriIPAddress": "145.168.100.2", "localHostSecIPAddress": "145.168.111.1" }, { "configurationLevel": "11", "localHostName": "AUTLocalHost2", "localHostPort": 4445, "localHostPriIPAddress": "145.168.100.2", "localHostSecIPAddress": "145.168.111.1" }], "links": {}, "messages": [], "status": true } </pre>

<p>47.</p> <p><input type="checkbox"/></p>	<p>For vSTP Only-SOAM VIP Server Console (Optional): Verify the remote nodes info</p>	<p>To verify the vSTP MP Remote nodes info:</p> <ol style="list-style-type: none"> 1. Login to the SOAM VIP Server console as admusr 2. Execute the following command [admusr@SOAM1 ~]\$ mmiclient.py /vstp/remotehosts 3. Verify the output similar to the below output <pre> { "data": [{ "configurationLevel": "12", "remoteHostName": "AUTRemoteHost1", "remoteHostPort": 4444, "remoteHostPriIPAddress": "1.1.1.6", "remoteHostSecIPAddress": "1.1.1.7" }], "links": {}, "messages": [], "status": true } </pre>
<p>48.</p> <p><input type="checkbox"/></p>	<p>For vSTP Only-SOAM VIP Server Console (Optional): Verify the Connections info</p>	<p>To verify the vSTP MP Connections info:</p> <ol style="list-style-type: none"> 1. Login to the SOAM VIP Server console as admusr 2. Execute the following command [admusr@SOAM1 ~]\$ mmiclient.py /vstp/connections 3. Verify the output similar to the below output <pre> { "data": [{ "configurationLevel": "13", "connCfgSetName": "Default", "connectionMode": "Server", "connectionType": "M3ua", "localHostName": "AUTLocalHost1", "name": "AUTLinkTestConn1", "remoteHostName": "AUTRemoteHost1" }, { "configurationLevel": "14", "connCfgSetName": "Default", "connectionMode": "Server", "connectionType": "M2pa", "localHostName": "AUTLocalHost2", "name": "AUTLinkTestConn2", "remoteHostName": "AUTRemoteHost1" }], "links": {}, "messages": [], "status": true } </pre>

<p>49. <input type="checkbox"/></p>	<p>MP Servers: Disable SCTP Auth Flag</p>	<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>
<p>50. <input type="checkbox"/></p>	<p>SOAM VIP GUI: Enable Connections if needed</p>	<p>Navigate to Main Menu->Diameter->Maintenance->Connections</p>  <p>Select each connection and click on the Enable button. Alternatively you can enable all the connections by selecting the EnableAll button.</p>  <p>Verify that the Operational State is Available.</p> <p>Note: 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>
<p>51. <input type="checkbox"/></p>	<p>SOAM VIP GUI: Enable Optional Features</p>	<p>Navigate to Main Menu -> Diameter -> Maintenance -> Applications</p>  <p>Select the optional feature application configured before.</p> <p>Click the Enable button.</p> 

<p>52.</p> <p><input type="checkbox"/></p>	<p>SOAM VIP GUI: Re-enable Transports if Needed [Applicable when MAP-IWF application is activated]</p>	<p>Navigate to Main Menu->Transport Manager -> Maintenance -> Transport</p>  <p>Select each transport and click on the Enable button</p>  <p>Verify that the Operational Status for each transport is Up.</p>
<p>53.</p> <p><input type="checkbox"/></p>	<p>SOAM VIP GUI: Re-enable MAPIWF application if needed [Applicable when MAP-IWF application is activated]</p>	<p>Navigate to Main Menu->SS7/Sigtran->Maintenance->Local SCCP Users</p>  <p>Click on the Enable button corresponding to MAPIWF Application Name.</p>  <p>Verify that the SSN Status is Enabled.</p>
<p>54.</p> <p><input type="checkbox"/></p>	<p>SOAM VIP GUI: Re-enable links if needed [Applicable when MAP-IWF application is activated]</p>	<p>Navigate to Main Menu->SS7/Sigtran->Maintenance->Links</p>  <p>Click on Enable button for each link.</p>  <p>Verify that the Operational Status for each link is Up.</p>

55. <input type="checkbox"/>	SOAM VIP GUI: Examine All Alarms	<p>Navigate to Main Menu->Alarms & Events->View Active</p>  <p>Examine all active alarms and refer to the on-line help on how to address them.</p> <p>If needed contact Appendix G. My Oracle Support (MOS).</p>
56. <input type="checkbox"/>	NOAM VIP GUI: Examine All Alarms	<p>Login to the NOAM VIP if not already logged in.</p> <p>Navigate to Main Menu->Alarms & Events->View Active</p>  <p>Examine all active alarms and refer to the on-line help on how to address them.</p> <p>If needed contact Appendix G. My Oracle Support (MOS)</p>
57. <input type="checkbox"/>	Restore GUI Username and Passwords	If applicable, Execute steps in Section 6.0 to recover the user and group information restored.
58. <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:

5.1.2 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 will recover 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**. The major activities are summarized as follows:

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

- Recover the software.

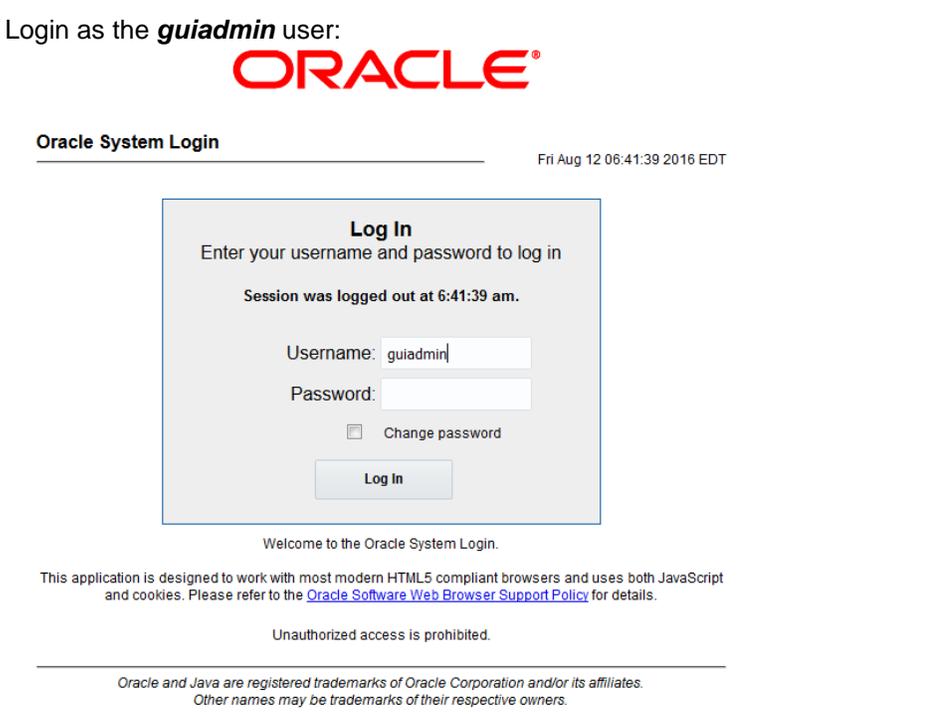
Recover **Active SOAM** server by recovering software.

- Recover the software.
- Recover the Database.

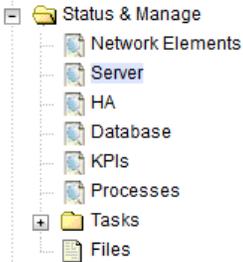
Recover any failed **SOAM and MP** servers by recovering software.

- 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

<p>S T E P #</p>	<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 that is 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 G. My Oracle Support (MOS), and ask for assistance.</p>	
<p>1. <input type="checkbox"/></p>	<p>Workarounds</p>	<p>Refer to Appendix F. Workarounds for Issues not fixed in this Release to understand any workarounds required during this procedure.</p>
<p>2. <input type="checkbox"/></p>	<p>Gather Required Materials</p>	<p>Gather the documents and required materials listed in Section 3.1 Required Materials</p>
<p>3. <input type="checkbox"/></p>	<p>NOAM VIP GUI: 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><code>http://<Primary_NOAM_VIP_IP_Address></code></p> </div> <p>Login as the <i>guiadmin</i> user:</p> 

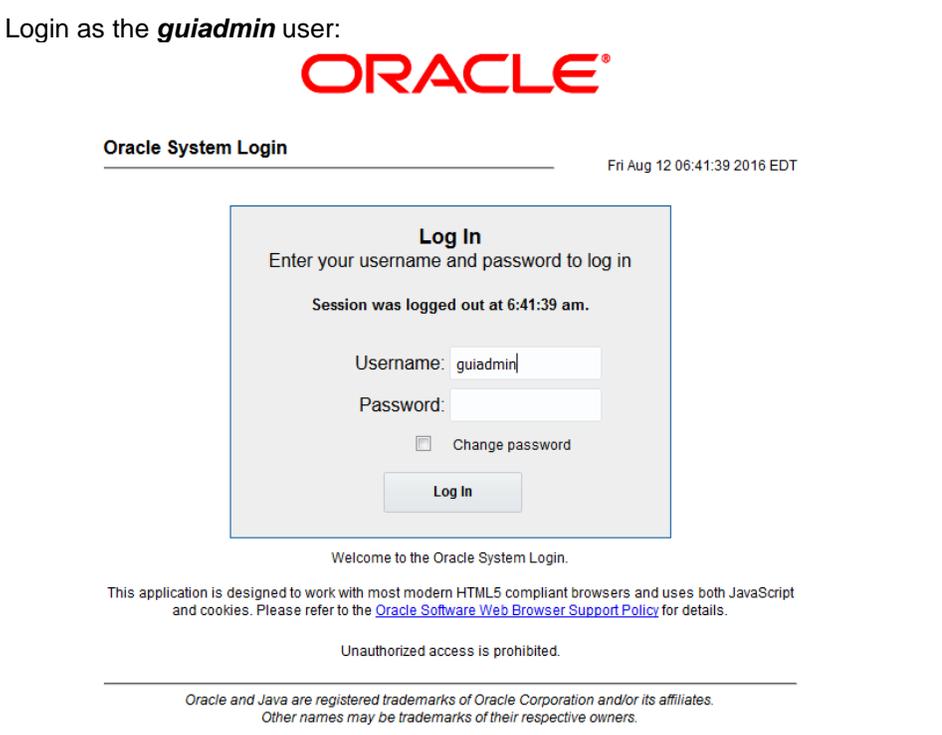
Procedure 2: Recovery Scenario 2

<p>4.</p> <p><input type="checkbox"/></p>	<p>Active NOAM: Set Failed Servers to OOS</p>	<p>Navigate to Main Menu -> Status & Manage -> HA</p>  <p>Select Edit</p> <p>Set the Max Allowed HA Role drop down box to OOS for the failed servers.</p> <p>Select Ok</p> <p><input type="button" value="Ok"/> <input type="button" value="Cancel"/></p>
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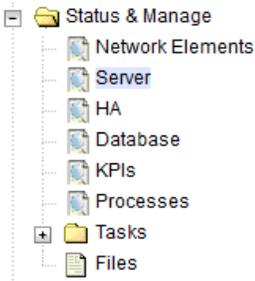
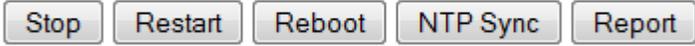
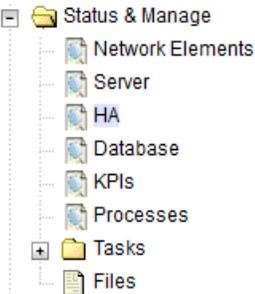
Procedure 2: Recovery Scenario 2

<p>5. <input type="checkbox"/></p>	<p>Create VMs Recover the Failed Software</p>	<p>For VMWare based deployments:</p> <ol style="list-style-type: none"> 1. For NOAMs execute the following procedures from reference [1]: <ol style="list-style-type: none"> a. Procedure 1 (VMWare). Import DSR OVA [Note: If OVA is already imported and present in the Infrastructure Manager, skip this procedure of importing OVA] b. Procedure 2 (VMWare Only). Configure NOAM guests based on resource profile 2. For SOAMs execute the following procedures from reference [1]: <ol style="list-style-type: none"> a. Procedure 1 (VMWare). Import DSR OVA [Note: If OVA is already imported and present in the Infrastructure Manager, skip this procedure of importing OVA] b. Procedure 3 (VMWare Only). Configure Remaining DSR guests based on resource profile <p>For KVM/Openstack based deployments:</p> <ol style="list-style-type: none"> 1. For NOAMs execute the following procedures from reference [1]: <ol style="list-style-type: none"> a. Procedure 4 (KVM/Openstack). "Import DSR OVA" [Note: If OVA is already imported and present in the Infrastructure Manager, skip this procedure of importing OVA] b. Procedure 5 (KVM/Openstack). "Configure NOAM guests based on resource profile" 2. For SOAMs execute the following procedures from reference [1]: <ol style="list-style-type: none"> a. Procedure 4 (KVM/Openstack). "Import DSR OVA" [Note: If OVA is already imported and present in the Infrastructure Manager, skip this procedure of importing OVA] b. Procedure 6 (KVM/Openstack). "Configure Remaining DSR guests based on resource profile" <p>For OVM-S/OVM-M based deployments:</p> <p>Execute the following procedures from reference [1]:</p> <ol style="list-style-type: none"> a. Procedure 7 (OVM-S/OVM-M). Import DSR OVA and prepare for VM creation b. Procedure 8 (OVM-S/OVM-M). Configure each DSR VM Note: While executing Procedure 8, configure the required failed VMs only (NOAMs/SOAMs/MPs)
<p>6. <input type="checkbox"/></p>	<p>Repeat for Remaining Failed Servers</p>	<p>If necessary, repeat step 5 for all remaining failed servers.</p>

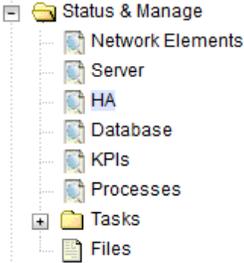
Procedure 2: Recovery Scenario 2

<p>7. <input type="checkbox"/></p>	<p>NOAM VIP GUI: 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><code>http://<Primary_NOAM_VIP_IP_Address></code></p> </div> <p>Login as the <i>guiadmin</i> user:</p> 
<p>8. <input type="checkbox"/></p>	<p>NOAM VIP GUI: Recover Standby NOAM</p>	<p>Install the second NOAM server by executing procedures from reference [1]:</p> <p>Procedure 11 “Configure the Second NOAM Server” steps 1, 3-7</p> <p>Procedure 12 “Complete Configuring the NOAM Server Group” Step 4</p> <p>Note: If Topology or nodeld alarms are persistent after the database restore, refer to Appendix F. Workarounds for Issues not fixed in this Release or the next step below.</p>

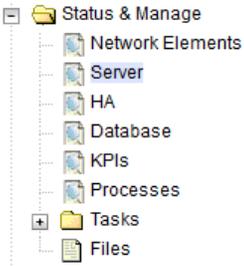
Procedure 2: Recovery Scenario 2

<p>9.</p> <p><input type="checkbox"/></p>	<p>NOAM VIP GUI: Restart DSR application</p>	<p>Navigate to Main Menu->Status & Manage->Server,</p>  <p>Select the recovered standby NOAM server and click on Restart.</p> 
<p>10.</p> <p><input type="checkbox"/></p>	<p>NOAM VIP GUI: Set HA on Standby NOAM</p>	<p>Navigate to Status & Manage -> HA</p>  <p>Click on Edit at the bottom of the screen</p> <p>Select the standby NOAM server, set it to Active</p> <p>Press OK</p>

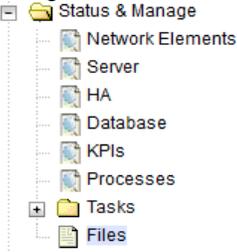
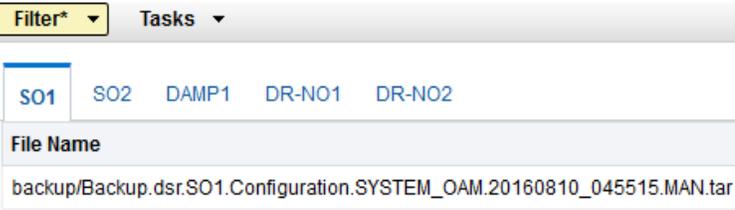
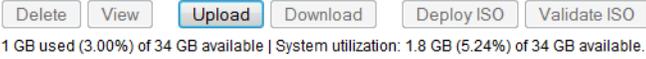
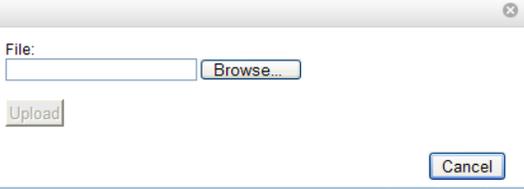
Procedure 2: Recovery Scenario 2

<p>11. <input type="checkbox"/></p>	<p>NOAM VIP GUI: Stop Replication to the C-Level Servers of this Site.</p>	<p>Inhibit Replication to the working C Level Servers which belong to the same site as the failed SOAM servers, as the recovery of Active SOAM will cause the database wipeout in the C level servers because of the replication</p>  <p>If the spare SOAM is also present in the site and lost: Appendix D. Inhibit A and B Level Replication on C-Level Servers (When Active, Standby and Spare SOAMs are lost)</p> <p>If the spare SOAM is NOT deployed in the site: Execute Appendix B. Inhibit A and B Level Replication on C-Level Servers</p> 
<p>12. <input type="checkbox"/></p>	<p>NOAM VIP GUI: Recover Active SOAM Server</p>	<p>Install the SOAM servers by executing procedure from reference [1]:</p> <p>Procedure 18 “Configure the SOAM Servers”, steps 1, 3- 7</p> <p>NOTE: Wait for server to reboot before continuing.</p>
<p>13. <input type="checkbox"/></p>	<p>NOAM VIP GUI: Set HA on Active SOAM</p>	<p>Navigate to Status & Manage -> HA</p>  <p>Click on Edit at the bottom of the screen</p> <p>Select the Active SOAM server, set it to Active</p> <p>Press OK</p>

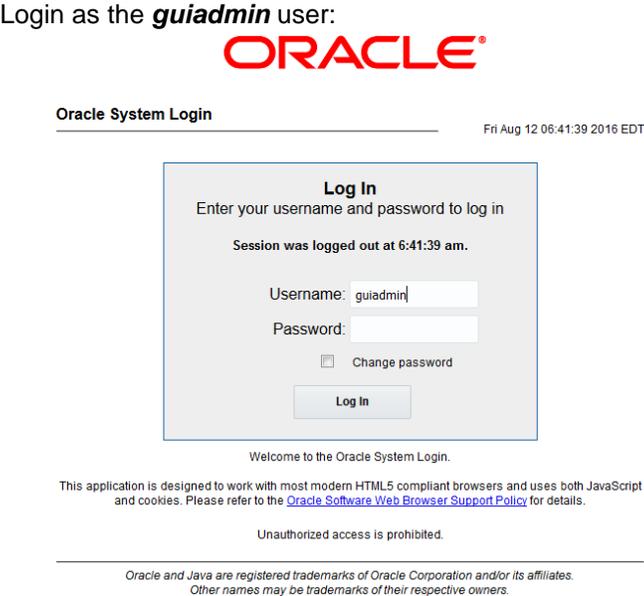
Procedure 2: Recovery Scenario 2

<p>14.</p> <p><input type="checkbox"/></p>	<p>NOAM VIP GUI: Restart DSR application</p>	<p>Navigate to Main Menu->Status & Manage->Server,</p>  <p>Select the recovered Active SOAM server and click on Restart.</p> 
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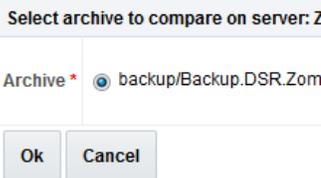
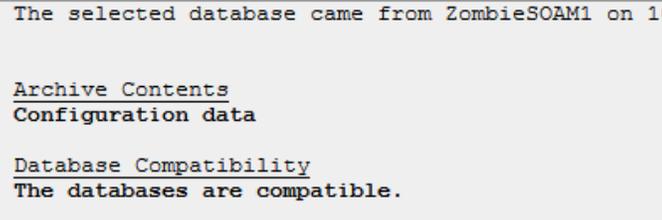
Procedure 2: Recovery Scenario 2

<p>15. <input type="checkbox"/></p> <p>NOAM VIP GUI: Upload the backed up SOAM Database file</p>	<p>Navigate to Main Menu->Status & Manage->Files</p>  <p>Select the Active SOAM server. The following screen will appear:</p> <p>Main Menu: Status & Manage -> Files</p>  <p>Click on Upload as shown below and select the file <i>“NO Provisioning and Configuration:”</i> file backed up after initial installation and provisioning.</p>  <ol style="list-style-type: none"> 1. Click on Browse and locate the backup file 2. Check This is a backup file Box 3. Click on Open as shown below.  <p>Click on the Upload button.</p> <p>The file will take a few seconds to upload depending on the size of the backup data. The file will be visible on the list of entries after the upload is complete.</p>
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Procedure 2: Recovery Scenario 2

16. <input type="checkbox"/>	Recovered SOAM GUI: Login	<p>Establish a GUI session on the recovered SOAM server. Open the web browser and enter a URL of:</p> <div data-bbox="492 394 1346 432" style="border: 1px solid black; padding: 2px;"><code>http://<Recovered_SOAM_IP_Address></code></div> <p>Login as the <i>guiadmin</i> 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 Oracle Software Web Browser Support Policy 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>
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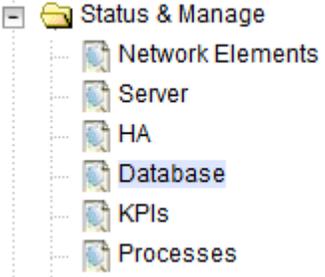
Procedure 2: Recovery Scenario 2

<p>17.</p> <p><input type="checkbox"/></p>	<p>Recovered SOAM GUI: Verify the Archive Contents and Database Compatibility</p>	<p>Navigate to Main Menu->Status & Manage->Database</p> <p>Select the Active SOAM server and click on the Compare.</p>  <p>The following screen is displayed; click the button for the restored database file that was uploaded as a part of Step 15 of this procedure.</p> <p>Database Compare</p>  <p>Verify that the output window matches the screen below.</p> <p>Note: You will get a database mismatch regarding the NodeIDs of the VMs. That is expected. If that is the only mismatch, proceed, otherwise stop and contact Appendix G. My Oracle Support (MOS).</p> <hr/> <p>Database Archive Compare</p>  <p>Note: Archive Contents and Database Compatibilities must be the following:</p> <p>Archive Contents: Configuration data Database Compatibility: The databases are compatible.</p> <p>Note: 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>Topology Compatibility THE TOPOLOGY SHOULD BE COMPATIBLE MINUS THE NODEID.</p> <p>Note: We are trying to restore a backed up database onto an empty SOAM database. This is an expected text in Topology Compatibility. If the verification is successful, Click BACK button and continue to next step in this procedure.</p>
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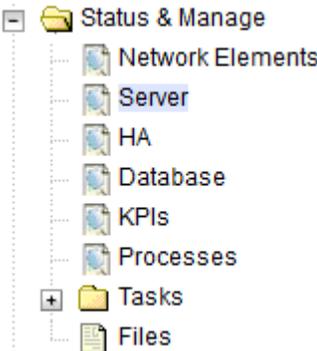
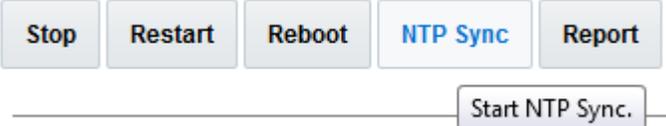
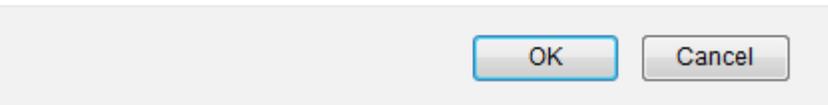
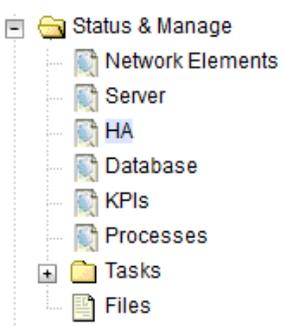
Procedure 2: Recovery Scenario 2

<p>18.</p> <p><input type="checkbox"/></p>	<p>Recovered SOAM GUI: Restore the Database</p>	<p>Click on Main Menu->Status & Manage->Database</p> <p>Select the Active SOAM server, and click on Restore as shown below.</p> <p>The following screen will be displayed. Select the proper back up provisioning and configuration file.</p> <div data-bbox="505 485 821 753" style="border: 1px solid black; padding: 5px;"> <p style="text-align: center;">Database Compare</p> <p>Select archive to compare on server</p> <p>Archive * <input checked="" type="radio"/> backup/Backup.dsr.Z</p> <p style="text-align: center;"><input type="button" value="Ok"/> <input type="button" value="Cancel"/></p> </div> <p>Click OK Button. The following confirmation screen will be displayed.</p> <p>Note: You will get a database mismatch regarding the NodeIDs of the servers. That is expected. If that is the only mismatch, proceed, otherwise stop and contact Appendix G. My Oracle Support (MOS).</p> <p>Select the Force checkbox as shown above and Click OK to proceed with the DB restore.</p> <hr/> <p style="text-align: center;">Database Restore Confirm</p> <p>Compatible archive.</p> <div data-bbox="509 1184 1003 1442" style="border: 1px solid black; background-color: #e0ffe0; padding: 10px;"> <pre style="font-family: monospace; font-size: 0.9em;"> The selected database came from Zombi Archive Contents Configuration data Database Compatibility The databases are compatible. </pre> </div> <p>Note: After the restore has started, the user will be logged out of XMI SOAM GUI since the restored Topology is old data. The provisioning will be disabled after this step.</p>
<p>19.</p> <p><input type="checkbox"/></p>	<p>Recovered SOAM GUI: Monitor and Confirm database restoral</p>	<p>Wait for 5-10 minutes for the System to stabilize with the new topology:</p> <p>Monitor the Info tab for “Success”. This will indicate that the backup is complete and the system is stabilized.</p> <p>Note: Do not pay attention to alarms until all the servers in the system are completely restored.</p> <p>Note: The Configuration and Maintenance information will be in the same state it was backed up during initial backup.</p>

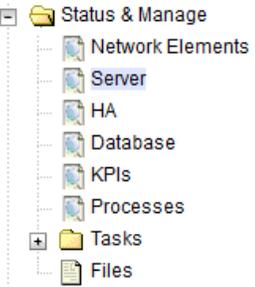
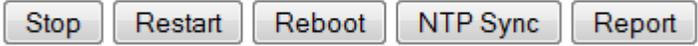
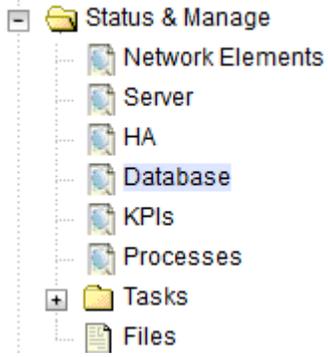
Procedure 2: Recovery Scenario 2

<p>20. <input type="checkbox"/></p>	<p>NOAM VIP GUI: Recover remaining SOAM Server</p>	<p>Install the SOAM servers by executing procedure from reference [1]: Procedure 18 “Configure the SOAM Servers”, steps 1, 3- 6 NOTE: Wait for server to reboot before continuing.</p>
<p>21.</p>	<p>NOAM VIP GUI: Start replication on the recovered SOAMs</p>	<p>Un-Inhibit (<i>Start</i>) Replication to the recovered SOAM servers Navigate to Status & Manage -> Database</p>  <p>Click on the Allow Replication button as shown below on the recovered SOAM servers. Verify that the replication on all SOAMs servers is allowed. This can be done by checking 'Repl status' column of respective server</p>

Procedure 2: Recovery Scenario 2

<p>22.</p> <p><input type="checkbox"/></p>	<p>Recovered Server: Sync NTP</p>	<p>Navigate to Status & Manage -> Server</p>  <p>Select the Recovered server and click NTP Sync button</p>  <p>Click Ok</p> <p>Are you sure you wish to force an NTP Sync on the following server(s) SOAM2</p> 
<p>23.</p>	<p>NOAM VIP GUI: Set HA on SOAM Servers</p>	<p>Navigate to Status & Manage -> HA</p>  <p>Click on Edit at the bottom of the screen</p> <p>For each SOAM server whose Max Allowed HA Role is set to Standby, set it to Active</p> <p>Press OK</p>

Procedure 2: Recovery Scenario 2

<p>24. <input type="checkbox"/></p>	<p>NOAM VIP GUI: Restart DSR application</p>	<p>Navigate to Main Menu->Status & Manage->Server,</p>  <p>Select the recovered server and click on Restart.</p> 
<p>25.</p>	<p>SOAM GUI: Enable Provisioning</p>	<p>Click on Main Menu->Status & Manage->Database</p>  <p>Enable Provisioning by clicking on Enable Site Provisioning button at the bottom of the screen as shown below.</p>  <p>A confirmation window will appear, press OK to enable Provisioning.</p>

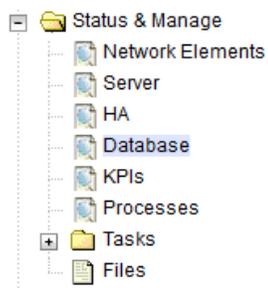
Procedure 2: Recovery Scenario 2

26. <input type="checkbox"/>	<p>NOAM VIP GUI: Start Replication on working C-Level Servers</p>	<p>Un-Inhibit (<i>Start</i>) Replication to the working C-Level Servers which belong to the same site as of the failed SOAM servers.</p> <p><u>If the spare SOAM is also present in the site and lost:</u> Execute Appendix E. Un-Inhibit A and B Level Replication on C-Level Servers (When Active, Standby and Spare SOAMs are lost)</p> <p><u>If the spare SOAM is NOT deployed in the site:</u> Execute Appendix C. Un-Inhibit A and B Level Replication on C-Level Servers</p> <p>Navigate to Main Menu->Status & Manage->Database</p> <p>If the “<i>Repl Status</i>” is set to “Inhibited”, click on the Allow Replication button as shown below 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"> • Active NOAM Server • Standby NOAM Server • Active SOAM Server • Standby SOAM Server • Spare SOAM Server (<i>if applicable</i>) • MP/IPFE Servers (<i>if MPs are configured as Active/Standby, start with the Active MP, otherwise the order of the MPs does not matter</i>) • SBRS (<i>if SBR servers are configured, start with the active SBR, then standby, then spare</i>) <p>Verify that the replication on all the working servers is allowed. This can be done by examining the Repl Status table as seen below:</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="padding: 5px;">OAM Repl Status</th> <th style="padding: 5px;">SIG Repl Status</th> <th style="padding: 5px; border: 2px solid red;">Repl Status</th> <th style="padding: 5px;">Repl Audit Status</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">NotApplicable</td> <td style="padding: 5px;">NotApplicable</td> <td style="padding: 5px;">Allowed</td> <td style="padding: 5px;">NotApplicable</td> </tr> <tr> <td style="padding: 5px;">Normal</td> <td style="padding: 5px;">NotApplicable</td> <td style="padding: 5px;">Allowed</td> <td style="padding: 5px;">NotApplicable</td> </tr> <tr style="border: 1px dashed blue;"> <td style="padding: 5px;">Normal</td> <td style="padding: 5px;">NotApplicable</td> <td style="padding: 5px;">Allowed</td> <td style="padding: 5px;">NotApplicable</td> </tr> <tr> <td style="padding: 5px;">Normal</td> <td style="padding: 5px;">NotApplicable</td> <td style="padding: 5px;">Allowed</td> <td style="padding: 5px;">NotApplicable</td> </tr> </tbody> </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
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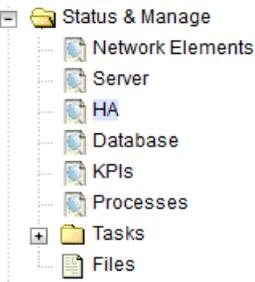
Procedure 2: Recovery Scenario 2

27. <input type="checkbox"/>	NOAM VIP GUI: Recover the C-Level Server (DA-MP, SBRs, IPFE, SS7-MP,vSTP-MP)	Establish a SSH session to the C Level server being recovered, login as <i>admusr.</i> Execute following command to set shared memory to unlimited: <pre>\$ sudo sh1.set -m 0</pre> Execute the following procedures from [1] FOR EACH server that has been recovered: Procedure 21 “Configure the MP Virtual Machines”, Steps 1, 8-14 (& 15 if required).
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Procedure 2: Recovery Scenario 2

28.	<p>NOAM VIP GUI: Start replication on ALL C-Level Servers</p>	<p>Un-Inhibit (<i>Start</i>) Replication to the ALL C-Level Servers</p> <p>Navigate to Status & Manage -> Database</p>  <p>If the "<i>Repl Status</i>" is set to "Inhibited", click on the Allow Replication button as shown below using the following order:</p> <ul style="list-style-type: none"> • Active NOAM Server • Standby NOAM Server • Active SOAM Server • Standby SOAM Server • Spare SOAM Server (<i>if applicable</i>) • MP/IPFE Servers (<i>if MPs are configured as Active/Standby, start with the Active MP, otherwise the order of the MPs does not matter</i>) <p>Verify that the replication on all the working servers is allowed. This can be done by examining the Repl Status table as seen below:</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>OAM Repl Status</th> <th>SIG Repl Status</th> <th style="border: 2px solid red;">Repl Status</th> <th>Repl Audit Status</th> </tr> </thead> <tbody> <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 style="border: 2px dashed blue;"> <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> </tbody> </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
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Procedure 2: Recovery Scenario 2

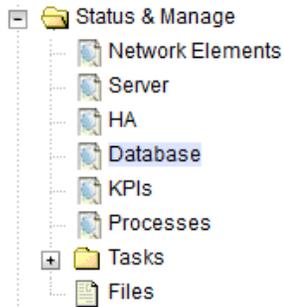
<p>29. <input type="checkbox"/></p>	<p>NOAM VIP GUI: Set HA on all C-Level Servers</p>	<p>Navigate to Status & Manage -> HA</p>  <p>Click on Edit at the bottom of the screen</p> <p>For each server whose Max Allowed HA Role is set to Standby, set it to Active</p> <p>Press OK</p>
<p>30. <input type="checkbox"/></p>	<p>ACTIVE NOAM: Perform key exchange between the active-NOAM and recovered servers.</p>	<p>Establish an SSH session to the Active NOAM, login as admusr.</p> <p>Execute the following command to perform a keyexchange from the active NOAM to each recovered server:</p> <pre style="border: 1px solid black; padding: 5px;">\$ keyexchange admusr@<Recovered Server Hostname></pre> <p>Note: If an export server is configured, perform this step.</p>
<p>31. <input type="checkbox"/></p>	<p>ACTIVE NOAM: Activate Optional Features</p>	<p>Establish an SSH session to the active NOAM, login as admusr.</p> <p>Note for PCA Feature Activation: If you have PCA installed in the system being recovered, execute the procedure “PCA Activation on Standby NOAM server” on recovered NOAM Server and procedure “PCA Activation on Stand By SOAM server” on recovered Standby SOAM from [3] to re-activate PCA</p> <p>Note: While running the activation script, the following error message (and corresponding messages) output may be seen, this can safely be ignored:</p> <pre>iload#31000{S/W Fault}</pre> <p>Note: If any of the MPs are 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 2: Recovery Scenario 2

32.

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 on the **Report** button at the bottom of the page. The following screen is displayed:

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

Tue Oct 05 15:13:38 2010 UTC

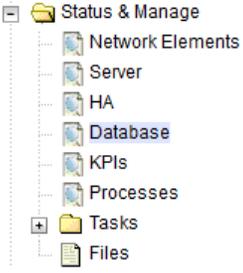
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=====
N P Q R Database Status Report
=====
Report Generated: Tue Oct 05 15:13:38 2010 UTC
From: Active Network OAM&P on host blade07
Report Version: 3.0.13-3.0.0_10.13.0
User: guiadmin
=====
General
-----
Hostname           : blade07
Appworks Database 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
GITConfig      52           2 104 B  104 B  104 B  104 B
MchMnc         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
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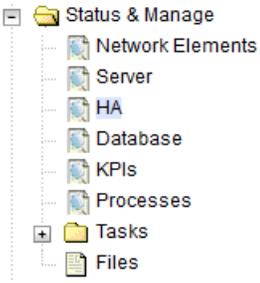
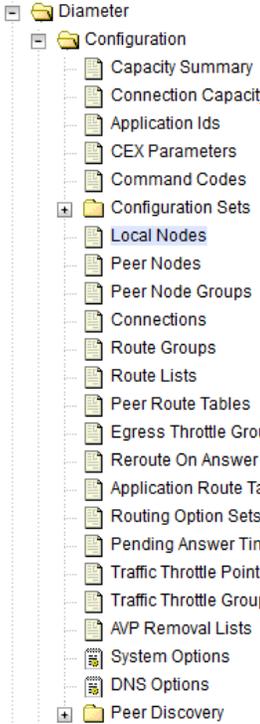
Print Save

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

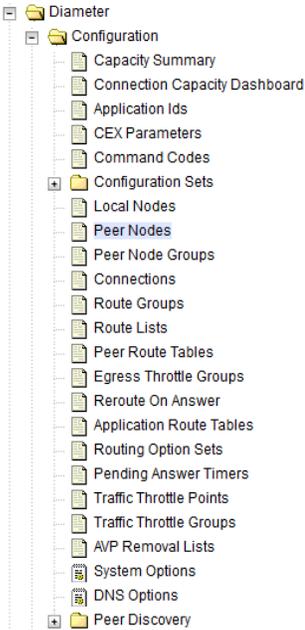
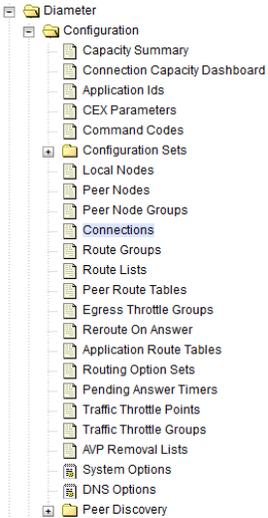
Procedure 2: Recovery Scenario 2

<p>33.</p> <p><input type="checkbox"/></p>	<p>ACTIVE NOAM: Verify Replication Between Servers.</p>	<p>Login to the Active NOAM via SSH terminal as admusr user. Execute the following command:</p> <pre>\$ sudo irepstat -m</pre> <p>Output like below shall be generated:</p> <pre>-- 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</pre>																																																																		
<p>34.</p> <p><input type="checkbox"/></p>	<p>NOAM VIP GUI: Verify the Database states</p>	<p>Click on Main Menu->Status and Manager->Database</p>  <p>Verify that the “OAM Max HA Role” is either “Active” or “Standby” for NOAM and SOAM and “Application Max HA Role” for MPs is “Active”, and that the status is “Normal” as shown below:</p> <p>Main Menu: Status & Manage -> Database</p> <table border="1"> <thead> <tr> <th>Network Element</th> <th>Server</th> <th>Role</th> <th>OAM Max HA Role</th> <th>Application Max HA Role</th> <th>Status</th> <th>DB Level</th> <th>OAM Repl Status</th> <th>SIG Repl Status</th> <th>Repl Status</th> <th>Repl Audit Status</th> </tr> </thead> <tbody> <tr> <td>SOAM_NE</td> <td>SO1</td> <td>System OAM</td> <td>Standby</td> <td>N/A</td> <td>Normal</td> <td>0</td> <td>Normal</td> <td>NotApplicable</td> <td>Allowed</td> <td>NotApplicable</td> </tr> <tr> <td>SOAM_NE</td> <td>SO2</td> <td>System OAM</td> <td>Active</td> <td>N/A</td> <td>Normal</td> <td>0</td> <td>Normal</td> <td>NotApplicable</td> <td>Allowed</td> <td>NotApplicable</td> </tr> <tr> <td>NOAM_NE</td> <td>NO2</td> <td>Network OAM&P</td> <td>Standby</td> <td>N/A</td> <td>Normal</td> <td>0</td> <td>Normal</td> <td>NotApplicable</td> <td>Allowed</td> <td>NotApplicable</td> </tr> <tr> <td>SOAM_NE</td> <td>DAMP1</td> <td>MP</td> <td>Active</td> <td>Active</td> <td>Normal</td> <td>0</td> <td>Normal</td> <td>Normal</td> <td>Allowed</td> <td>NotApplicable</td> </tr> <tr> <td>NOAM_NE</td> <td>NO1</td> <td>Network OAM&P</td> <td>Active</td> <td>N/A</td> <td>Normal</td> <td>0</td> <td>Normal</td> <td>NotApplicable</td> <td>Allowed</td> <td>NotApplicable</td> </tr> </tbody> </table>	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 2: Recovery Scenario 2

<p>35.</p> <p><input type="checkbox"/></p>	<p>NOAM VIP GUI: Verify the HA Status</p>	<p>Click on Main Menu->Status and Manage->HA</p>  <p>Select the row for all of the servers Verify that the “HA Role” is either “Active” or “Standby”.</p> <p>Main Menu: Status & Manage -> HA Mon Aug</p> <p>filter*</p> <table border="1"> <thead> <tr> <th>Hostname</th> <th>OAM HA Role</th> <th>Application HA Role</th> <th>Max. Allowed HA Role</th> <th>Mate Hostname List</th> <th>Network Element</th> <th>Server Role</th> <th>Active VIPs</th> </tr> </thead> <tbody> <tr> <td>SO1</td> <td>Standby</td> <td>N/A</td> <td>Active</td> <td>SO2</td> <td>SOAM_NE</td> <td>System OAM</td> <td></td> </tr> <tr> <td>SO2</td> <td>Active</td> <td>N/A</td> <td>Active</td> <td>SO1</td> <td>SOAM_NE</td> <td>System OAM</td> <td></td> </tr> <tr> <td>DAMP1</td> <td>Active</td> <td>Active</td> <td>Active</td> <td></td> <td>SOAM_NE</td> <td>MP</td> <td></td> </tr> <tr> <td>DR-NO1</td> <td>Active</td> <td>N/A</td> <td>Active</td> <td>DR-NO2</td> <td>DR_NOAM_NE</td> <td>Network OAM&P</td> <td></td> </tr> <tr> <td>DR-NO2</td> <td>Standby</td> <td>N/A</td> <td>Active</td> <td>DR-NO1</td> <td>DR_NOAM_NE</td> <td>Network OAM&P</td> <td></td> </tr> </tbody> </table>	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	
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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																																												
<p>36.</p> <p><input type="checkbox"/></p>	<p>SOAM VIP GUI: Verify the Local Node Info</p>	<p>Navigate to Main Menu->Diameter->Configuration->Local Node</p>  <p>Verify that all the local nodes are shown.</p>																																																

Procedure 2: Recovery Scenario 2

<p>37.</p> <p><input type="checkbox"/></p>	<p>SOAM VIP GUI: Verify the Peer Node Info</p>	<p>Navigate to Main Menu->Diameter->Configuration->Peer Node</p>  <p>Verify that all the peer nodes are shown.</p>
<p>38.</p> <p><input type="checkbox"/></p>	<p>SOAM VIP GUI: Verify the Connections Info</p>	<p>Navigate to Main Menu->Diameter->Configuration->Connections</p>  <p>Verify that all the connections are shown.</p>

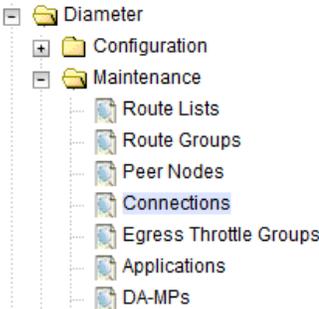
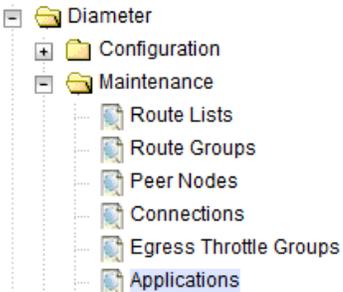
Procedure 2: Recovery Scenario 2

<p>39.</p> <p><input type="checkbox"/></p>	<p>For vSTP Only-SOAM VIP Server Console (Optional): Verify the local nodes info</p>	<p>To verify the vSTP MP Local nodes info:</p> <ol style="list-style-type: none"> 1. Login to the SOAM VIP Server console as admusr 2. Execute the following command [admusr@SOAM1 ~]\$ mmiclient.py /vstp/localhosts 3. Verify the output similar to the below output <pre> { "data": [{ "configurationLevel": "10", "localHostName": "AUTLocalHost1", "localHostPort": 4444, "localHostPriIPAddress": "145.168.100.2", "localHostSecIPAddress": "145.168.111.1" }, { "configurationLevel": "11", "localHostName": "AUTLocalHost2", "localHostPort": 4445, "localHostPriIPAddress": "145.168.100.2", "localHostSecIPAddress": "145.168.111.1" }], "links": {}, "messages": [], "status": true } </pre>
<p>40.</p> <p><input type="checkbox"/></p>	<p>For vSTP Only-SOAM VIP Server Console (Optional): Verify the remote nodes info</p>	<p>To verify the vSTP MP Remote nodes info:</p> <ol style="list-style-type: none"> 1. Login to the SOAM VIP Server console as admusr 2. Execute the following command [admusr@SOAM1 ~]\$ mmiclient.py /vstp/remotehosts 3. Verify the output similar to the below output <pre> { "data": [{ "configurationLevel": "12", "remoteHostName": "AUTRemoteHost1", "remoteHostPort": 4444, "remoteHostPriIPAddress": "1.1.1.6", "remoteHostSecIPAddress": "1.1.1.7" }], "links": {}, "messages": [], "status": true } </pre>

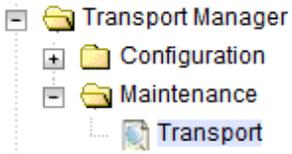
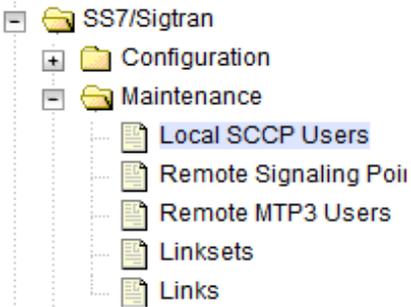
Procedure 2: Recovery Scenario 2

<p>41.</p> <p><input type="checkbox"/></p>	<p>For vSTP Only-SOAM VIP Server Console (Optional): Verify the Connections info</p>	<p>To verify the vSTP MP Connections info:</p> <ol style="list-style-type: none"> 1. Login to the SOAM VIP Server console as admusr 2. Execute the following command [admusr@SOAM1 ~]\$ mmclient.py /vstp/connections 3. Verify the output similar to the below output <pre> { "data": [{ "configurationLevel": "13", "connCfgSetName": "Default", "connectionMode": "Server", "connectionType": "M3ua", "localHostName": "AUTLocalHost1", "name": "AUTLinkTestConn1", "remoteHostName": "AUTRemoteHost1" }, { "configurationLevel": "14", "connCfgSetName": "Default", "connectionMode": "Server", "connectionType": "M2pa", "localHostName": "AUTLocalHost2", "name": "AUTLinkTestConn2", "remoteHostName": "AUTRemoteHost1" }], "links": {}, "messages": [], "status": true } </pre>
<p>42.</p> <p><input type="checkbox"/></p>	<p>MP Servers: Disable SCTP Auth Flag</p>	<p>For SCTP connections without DTLS enabled, refer to Enable/Disable DTLS procedure from reference [1].</p> <p>Execute this procedure on all Failed MP Servers.</p>

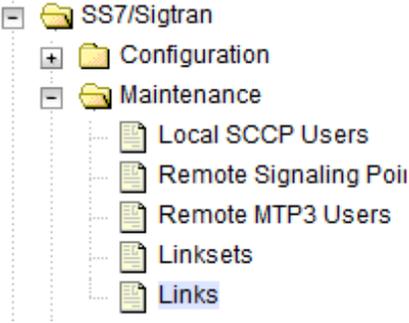
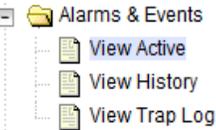
Procedure 2: Recovery Scenario 2

<p>43. <input type="checkbox"/></p>	<p>SOAM VIP GUI: Enable Connections if needed</p>	<p>Navigate to Main Menu->Diameter->Maintenance->Connections</p>  <p>Select each connection and click on the Enable button. Alternatively you can enable all the connections by selecting the EnableAll button.</p>  <p>Verify that the Operational State is Available.</p>
<p>44. <input type="checkbox"/></p>	<p>SOAM VIP GUI: Enable Optional Features</p>	<p>Navigate to Main Menu -> Diameter -> Maintenance -> Applications</p>  <p>Select the optional feature application configured in step 29.</p> <p>Click the Enable button.</p> 

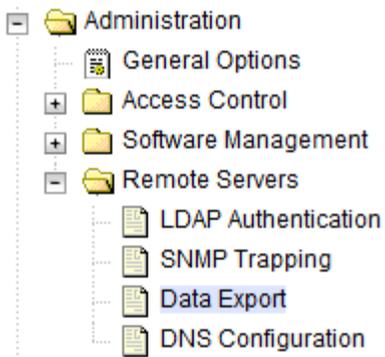
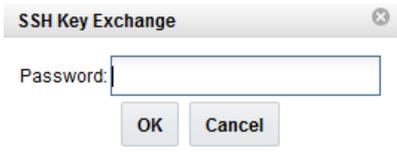
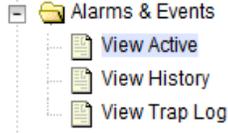
Procedure 2: Recovery Scenario 2

<p>45.</p> <p><input type="checkbox"/></p>	<p>SOAM VIP GUI: Re-enable Transports if Needed</p>	<p>Navigate to Main Menu->Transport Manager -> Maintenance -> Transport</p>  <p>Select each transport and click on the Enable button</p>  <p>Verify that the Operational Status for each transport is Up.</p>
<p>46.</p> <p><input type="checkbox"/></p>	<p>SOAM VIP GUI: Re-enable MAPIWF application if needed</p>	<p>Navigate to Main Menu->SS7/Sigtran->Maintenance->Local SCCP Users</p>  <p>Click on the Enable button corresponding to MAPIWF Application Name.</p>  <p>Verify that the SSN Status is Enabled.</p>

Procedure 2: Recovery Scenario 2

<p>47. <input type="checkbox"/></p>	<p>SOAM VIP GUI: Re-enable links if needed</p>	<p>Navigate to Main Menu->SS7/Sigtran->Maintenance->Links</p>  <p>Click on Enable button for each link.</p>  <p>Verify that the Operational Status for each link is Up.</p>
<p>48. <input type="checkbox"/></p>	<p>SOAM VIP GUI: Examine All Alarms</p>	<p>Navigate to Main Menu->Alarms & Events->View Active</p>  <p>Examine all active alarms and refer to the on-line help on how to address them.</p> <p>If needed contact Appendix G. My Oracle Support (MOS)</p>

Procedure 2: Recovery Scenario 2

<p>49.</p>	<p>SOAM VIP GUI: Perform Keyexchange with Export Server</p>	<p>Navigate to Main Menu -> Administration -> Remote Servers -> Data Export</p>  <p>Click on Key Exchange at the bottom of the screen</p> <p>Enter the Password and press OK</p> 
<p>50.</p> <p><input type="checkbox"/></p>	<p>NOAM VIP GUI: Examine All Alarms</p>	<p>Login to the NOAM VIP if not already logged in.</p> <p>Navigate to Main Menu->Alarms & Events->View Active</p>  <p>Examine all active alarms and refer to the on-line help on how to address them.</p> <p>If needed contact Appendix G. My Oracle Support (MOS).</p>
<p>51.</p> <p><input type="checkbox"/></p>	<p>Backup and Archive All the Databases from the Recovered System</p>	<p>Execute Appendix A. DSR Database Backup to back up the Configuration databases:</p>

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 will recover 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**. 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.

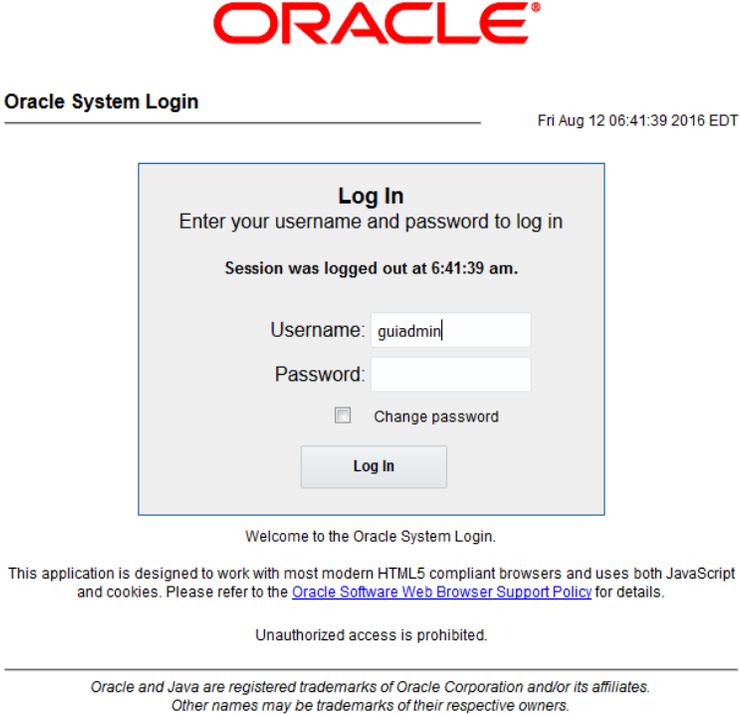
Procedure 3: Recovery Scenario 3

S T E P #	<p>This procedure performs recovery if ALL NOAM servers are failed but 1 or more SOAM servers are intact. This includes any SOAM server that is 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 G. My Oracle Support (MOS), and ask for assistance.</p>	
1. <input type="checkbox"/>	Workarounds	Refer to Appendix F. 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

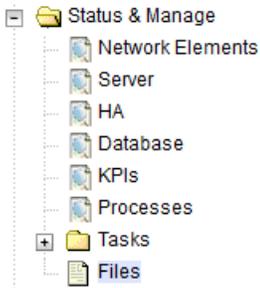
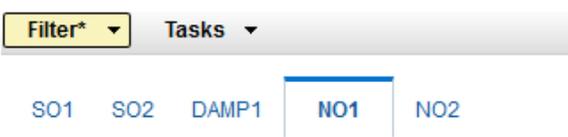
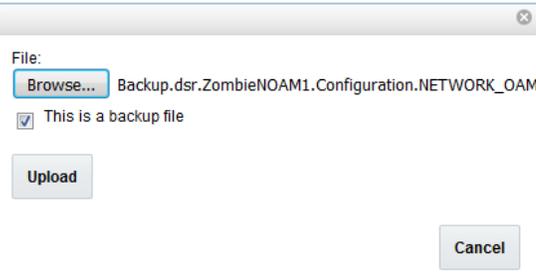
Procedure 3: Recovery Scenario 3

<p>3. <input type="checkbox"/></p> <p>DSR - 8.0/8.1</p>	<p>Recover the Failed Software</p>	<p>For VMWare based deployments:</p> <ol style="list-style-type: none"> 1. For NOAMs execute the following procedures from reference [1]: <ol style="list-style-type: none"> a. Procedure 1 (VMWare). Import DSR OVA [Note: If OVA is already imported and present in the Infrastructure Manager, skip this procedure of importing OVA] b. Procedure 2 (VMWare Only). Configure NOAM guests based on resource profile 2. For SOAMs execute the following procedures from reference [1]: <ol style="list-style-type: none"> a. Procedure 1 (VMWare). Import DSR OVA [Note: If OVA is already imported and present in the Infrastructure Manager, skip this procedure of importing OVA] b. Procedure 3 (VMWare Only). Configure Remaining DSR guests based on resource profile 3. For failed MPs execute the following procedures from reference [1]: <ol style="list-style-type: none"> a. Procedure 1 (VMWare). Import DSR OVA [Note: If OVA is already imported and present in the Infrastructure Manager, skip this procedure of importing OVA] b. Procedure 3 (VMWare Only). Configure Remaining DSR guests based on resource profile <p>For KVM/Openstack based deployments:</p> <ol style="list-style-type: none"> 1. For NOAMs execute the following procedures from reference [1]: <ol style="list-style-type: none"> a. Procedure 4 (KVM/Openstack). "Import DSR OVA" [Note: If OVA is already imported and present in the Infrastructure Manager, skip this procedure of importing OVA] b. Procedure 5 (KVM/Openstack). "Configure NOAM guests based on resource profile" 2. For SOAMs execute the following procedures from reference [1]: <ol style="list-style-type: none"> a. Procedure 4 (KVM/Openstack). "Import DSR OVA" [Note: If OVA is already imported and present in the Infrastructure Manager, skip this procedure of importing OVA] b. Procedure 6 (KVM/Openstack). "Configure Remaining DSR guests based on resource profile" 3. For failed MPs execute the following procedures from reference [1]: <ol style="list-style-type: none"> a. Procedure 4 (KVM/Openstack). "Import DSR OVA" [Note: If OVA is already imported and present in the Infrastructure Manager, skip this procedure of importing OVA] b. Procedure 6 (KVM/Openstack). "Configure Remaining DSR guests based on resource profile" <p>For OVM-S / OVM-M based deployments:</p> <p>Execute the following procedures from reference [1]:</p> <ol style="list-style-type: none"> a. Procedure 7 (OVM-S/OVM-M). Import DSR OVA and prepare for VM creation b. Procedure 8 (OVM-S/OVM-M). Configure each DSR VM <p>Note: While executing Procedure 8, configure the required failed VMs only (NOAMs/SOAMs/MPs)</p>
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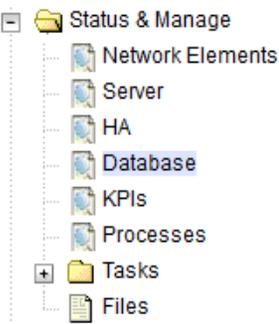
Procedure 3: Recovery Scenario 3

<p>4. <input type="checkbox"/></p>	<p>Obtain Latest Database Backup and Network Configuration Data.</p>	<p>Obtain the most recent database backup file from external backup sources (ex. 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>
<p>5. <input type="checkbox"/></p>	<p>Execute DSR Installation Procedure for the First NOAM</p>	<p>Verify the networking data for Network Elements</p> <p>Note: Use the backup copy of network configuration data and site surveys (Step 2)</p> <p>Execute installation procedures for the first NOAM server from reference [1]:</p> <p>Procedure 9 “Configure the First NOAM NE and Server” and</p> <p>Procedure 10 “Configure the NOAM Server Group”.</p>
<p>6. <input type="checkbox"/></p>	<p>NOAM GUI: Login</p>	<p>Login to the NOAM GUI as the <i>guiadmin</i> 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 Oracle Software Web Browser Support Policy 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>

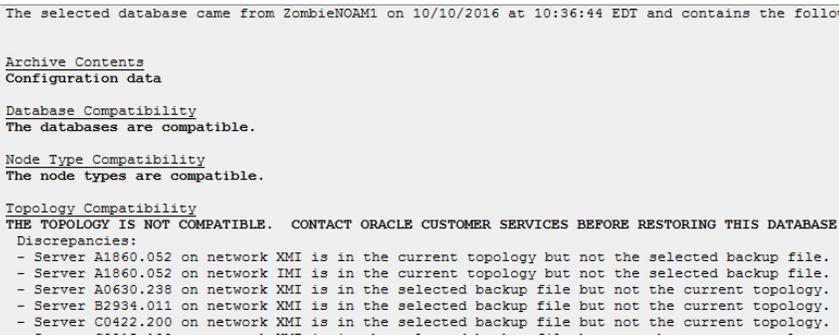
Procedure 3: Recovery Scenario 3

<p>7. □</p>	<p>NOAM GUI: Upload the Backed up Database File</p>	<p>Browse to Main Menu->Status & Manage->Files</p>  <p>Select the Active NOAM server. The following screen will appear:</p> <p>Main Menu: Status & Manage -> Files</p>  <p>Click on Upload as shown below and select the file <i>“NO Provisioning and Configuration:”</i> file backed up after initial installation and provisioning.</p>  <ol style="list-style-type: none"> 1. Click on Browse and locate the backup file 2. Check This is a backup file Box 3. Click on Open as shown below.  <p>Click on the Upload button.</p> <p>The file will take a few seconds to upload depending on the size of the backup data. The file will be visible on the list of entries after the upload is complete.</p>
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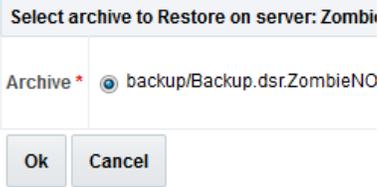
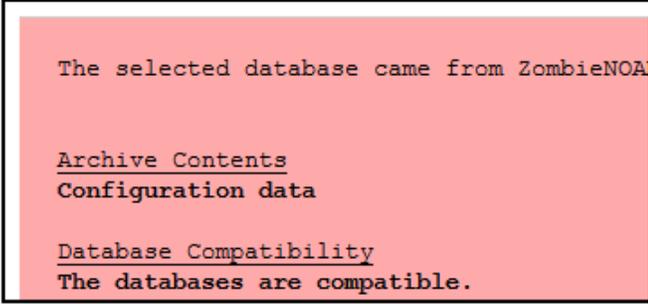
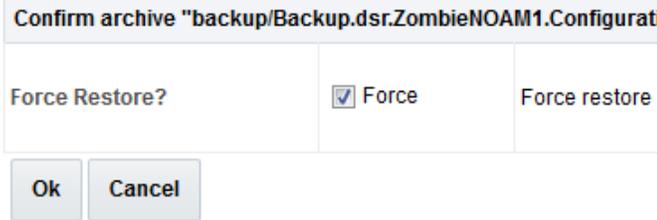
Procedure 3: Recovery Scenario 3

<p>8.</p> <p><input type="checkbox"/></p>	<p>NOAM GUI: Disable Provisioning</p>	<p>Click on Main Menu->Status & Manage->Database</p>  <p>Disable Provisioning by clicking on Disable Provisioning button at the bottom of the screen as shown below.</p>  <p>A confirmation window will appear, press OK to disable Provisioning.</p>  <p>The message <i>"Warning Code 002"</i> will appear.</p>
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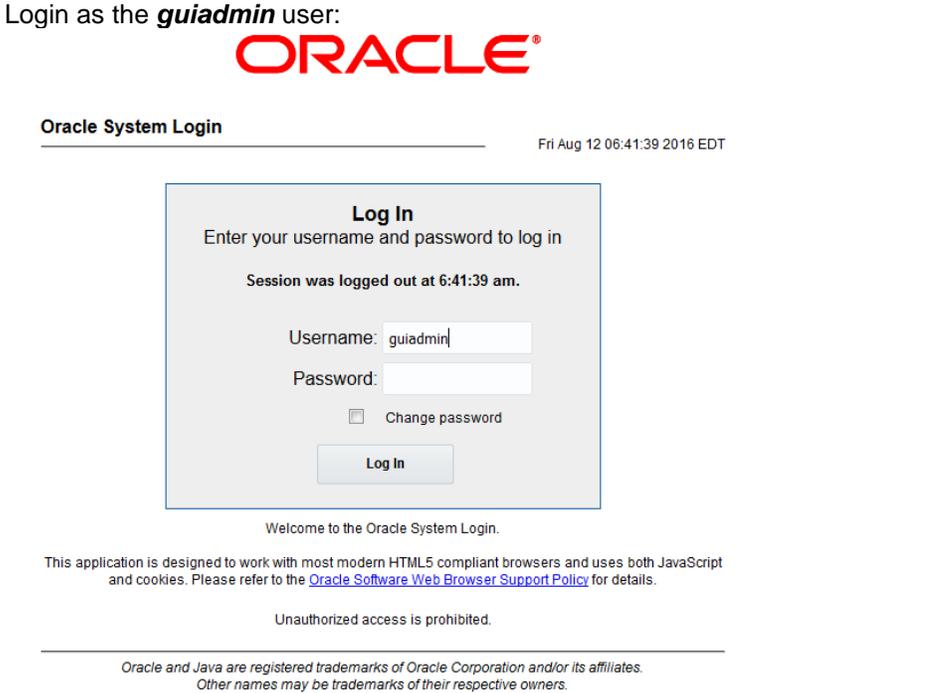
Procedure 3: Recovery Scenario 3

<p>9.</p> <p><input type="checkbox"/></p>	<p>NOAM GUI: Verify the Archive Contents and Database Compatibility</p>	<p>Select the Active NOAM server and click on the Compare.</p>  <p>The following screen is displayed; click the button for the restored database file that was uploaded as a part of Step 7 of this procedure.</p>  <p>Verify that the output window matches the screen below.</p> <p>Note: You will get a database mismatch regarding the NodeIDs of the VMs. That is expected. If that is the only mismatch, proceed, otherwise stop and contact Appendix G. My Oracle Support (MOS)</p>  <p>Note: Archive Contents and Database Compatibilities must be the following:</p> <p>Archive Contents: Configuration data Database Compatibility: The databases are compatible.</p> <p>Note: 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>Topology Compatibility THE TOPOLOGY SHOULD BE COMPATIBLE MINUS THE NODEID.</p> <p>Note: 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 BACK button and continue to next step in this procedure.</p>
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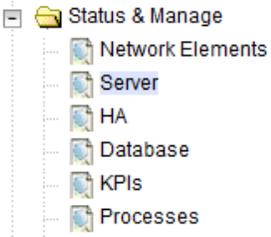
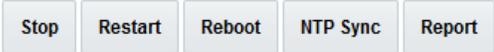
Procedure 3: Recovery Scenario 3

<p>10. <input type="checkbox"/></p>	<p>ACTIVE NOAM: Restore the Database</p>	<p>Click on Main Menu->Status & Manage->Database</p> <p>Select the Active NOAM server, and click on Restore as shown below.</p> <p>The following screen will be displayed. Select the proper back up provisioning and configuration file.</p>  <p>Click OK Button. The following confirmation screen will be displayed.</p> <p>Note: You will get a database mismatch regarding the NodeIDs of the servers. That is expected. If that is the only mismatch, proceed, otherwise stop and contact Appendix G. My Oracle Support (MOS)</p> <p>Select the Force checkbox as shown above and Click OK to proceed with the DB restore.</p> <p>Database Restore Confirm</p> <p>Incompatible archive selected</p>   <p>Note: After the restore has started, the user will be logged out of XMI NO GUI since the restored Topology is old data.</p>
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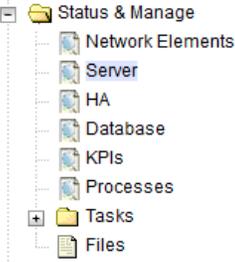
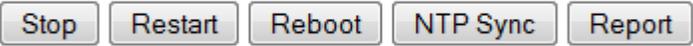
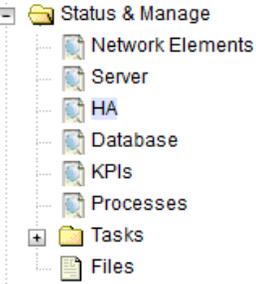
Procedure 3: Recovery Scenario 3

<p>11. <input type="checkbox"/></p>	<p>NOAM VIP GUI: 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: 2px; margin: 10px 0;"> <p><code>http://<Primary_NOAM_VIP_IP_Address></code></p> </div> <p>Login as the guiadmin user:</p> 
<p>12. <input type="checkbox"/></p>	<p>NOAM VIP GUI: Monitor and Confirm database restoral</p>	<p>Wait for 5-10 minutes for the System to stabilize with the new topology:</p> <p>Monitor the Info tab for “Success”. This will indicate that the backup is complete and the system is stabilized.</p> <p>Following alarms must be ignored for NOAM and MP Servers until all the Servers are configured:</p> <p>Alarms with Type Column as “REPL” , “COLL”, “HA” (with mate NOAM), “DB” (about Provisioning Manually Disabled)</p> <p>Note: Do not pay attention to alarms until all the servers in the system are completely restored.</p> <p>Note: The Configuration and Maintenance information will be in the same state it was backed up during initial backup.</p>
<p>13. <input type="checkbox"/></p>	<p>ACTIVE NOAM: Login</p>	<p>Login to the recovered Active NOAM via SSH terminal as admusr user.</p>

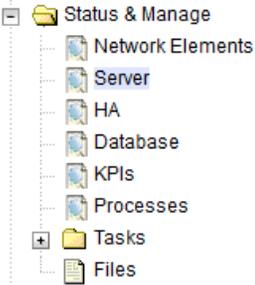
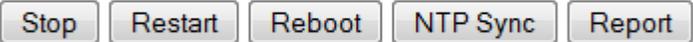
Procedure 3: Recovery Scenario 3

<p>14. <input type="checkbox"/></p>	<p>NOAM VIP GUI: Re-enable Provisioning</p>	<p>Navigate to Main Menu->Status & Manage->Database</p>  <p>Click on the Enable Provisioning. A pop-up window will appear to confirm as shown below, press OK.</p> 
<p>15. <input type="checkbox"/></p>	<p>NOAM VIP GUI: Recover Standby NOAM</p>	<p>Install the second NOAM server by executing procedures from reference [1]: Procedure 11 "Configure the Second NOAM Server" steps 1, 3-7</p>
<p>16. <input type="checkbox"/></p>	<p>NOAM VIP GUI: Recover Standby NOAM</p>	<p>Navigate to Main Menu->Status & Manage->Server and select the second NOAM server.</p>  <p>Click Restart.</p>  <p>Click OK on the confirmation screen.</p> <p>Note: If Topology or nodeld alarms are persistent after the database restore, refer to Appendix F. Workarounds for Issues not fixed in this Release or the next step below.</p>
<p>17. <input type="checkbox"/></p>	<p>NOAM VIP GUI: Recover remaining failed SOAM Servers</p>	<p>Recover the remaining SOAM servers (standby, spare) by repeating the following steps for each SOAM server:</p> <ol style="list-style-type: none"> 1. Install the remaining SOAM servers by executing Procedure 18 "Configure the SOAM Servers", steps 1, 3- 7 from reference [1]. <p>NOTE: Wait for server to reboot before continuing.</p>

Procedure 3: Recovery Scenario 3

<p>18. <input type="checkbox"/></p>	<p>NOAM VIP GUI: Restart DSR application</p>	<p>Navigate to Main Menu->Status & Manage->Server,</p>  <p>Select the recovered server and click on Restart.</p> 
<p>19. <input type="checkbox"/></p>	<p>NOAM VIP GUI: Set HA on all C-Level Servers</p>	<p>Navigate to Status & Manage -> HA</p>  <p>Click on Edit at the bottom of the screen</p> <p>For each server whose Max Allowed HA Role is not Active, set it to Active</p> <p>Press OK</p>

Procedure 3: Recovery Scenario 3

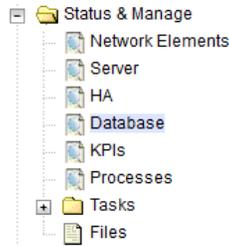
<p>20. <input type="checkbox"/></p>	<p>NOAM VIP GUI: Restart DSR application</p>	<p>Navigate to Main Menu->Status & Manage->Server,</p>  <p>Select each recovered server and click on Restart.</p> 
<p>21. <input type="checkbox"/></p>	<p>ACTIVE NOAM: Perform key exchange between the active-NOAM and recovered servers.</p>	<p>Establish an SSH session to the Active NOAM, login as admusr.</p> <p>Execute the following command to perform a keyexchange from the active NOAM to each recovered server:</p> <pre>\$ keyexchange admusr@<Recovered Server Hostname></pre> <p>Note: If an export server is configured, perform this step.</p>
<p>22. <input type="checkbox"/></p>	<p>ACTIVE NOAM: Activate Optional Features</p>	<p>Establish an SSH session to the active NOAM, login as admusr.</p> <p>Note for PCA Feature Activation: If you have PCA installed in the system being recovered, execute the procedure “PCA Activation on Active NOAM server” on recovered Active NOAM Server and procedure “PCA Activation on Stand By SOAM server” on recovered Standby SOAM from [3] to re-activate PCA</p> <p>Note: While running the activation script, the following error message (and corresponding messages) output may be seen, this can safely be ignored:</p> <pre>iload#31000{S/W Fault}</pre> <p>Note: If any of the MPs are 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 3: Recovery Scenario 3

23.

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 on the **Report** button at the bottom of the page. The following screen is displayed:

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: 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

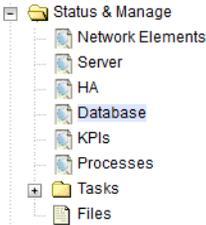
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Table Name	Schema	Row Size		Num Rows	Memory		Disk	
		Avg	Max		Used	Alloc	Used	Alloc
CgPa		44		1	44 B	44 B	44 B	44 B
CgPaGta		52		0	0 B	0 B	0 B	0 B
CgPaInfo		64		1	64 B	64 B	64 B	64 B
CgPaOpc		36		0	0 B	0 B	0 B	0 B
CountryCode		24		306	7344 B	7344 B	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

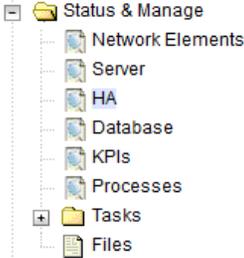
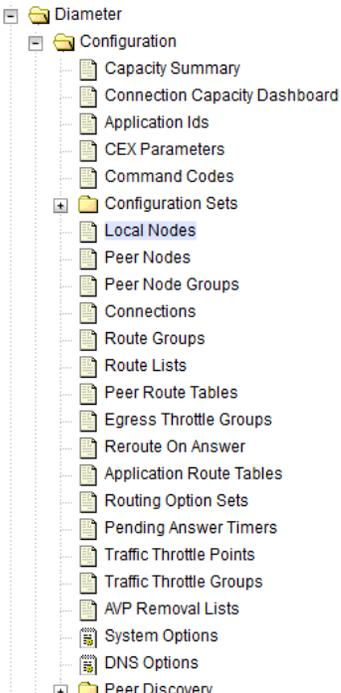
Print Save

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

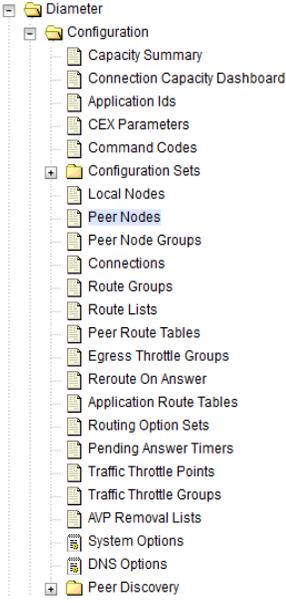
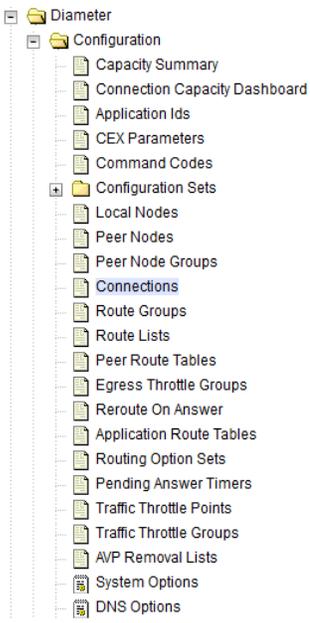
Procedure 3: Recovery Scenario 3

<p>24.</p> <p><input type="checkbox"/></p>	<p>ACTIVE NOAM: Verify Replication Between Servers.</p>	<p>Login to the Active NOAM via SSH terminal as admusr user. Execute the following command:</p> <pre>\$ sudo irepstat -m</pre> <p>Output like below shall be 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>																																																																		
<p>25.</p> <p><input type="checkbox"/></p>	<p>NOAM VIP GUI: Verify the Database states</p>	<p>Click on Main Menu->Status and Manager->Database</p>  <p>Verify that the “OAM Max HA Role” is either “Active” or “Standby” for NOAM and SOAM and “Application Max HA Role” for MPs is “Active”, and that the status is “Normal” as shown below:</p> <p>Main Menu: Status & Manage -> Database</p> <table border="1"> <thead> <tr> <th>Network Element</th> <th>Server</th> <th>Role</th> <th>OAM Max HA Role</th> <th>Application Max HA Role</th> <th>Status</th> <th>DB Level</th> <th>OAM Repl Status</th> <th>SIG Repl Status</th> <th>Repl Status</th> <th>Repl Audit Status</th> </tr> </thead> <tbody> <tr> <td>SOAM_NE</td> <td>S01</td> <td>System OAM</td> <td>Standby</td> <td>N/A</td> <td>Normal</td> <td>0</td> <td>Normal</td> <td>NotApplicable</td> <td>Allowed</td> <td>NotApplicable</td> </tr> <tr> <td>SOAM_NE</td> <td>S02</td> <td>System OAM</td> <td>Active</td> <td>N/A</td> <td>Normal</td> <td>0</td> <td>Normal</td> <td>NotApplicable</td> <td>Allowed</td> <td>NotApplicable</td> </tr> <tr> <td>NOAM_NE</td> <td>NO2</td> <td>Network OAM&P</td> <td>Standby</td> <td>N/A</td> <td>Normal</td> <td>0</td> <td>Normal</td> <td>NotApplicable</td> <td>Allowed</td> <td>NotApplicable</td> </tr> <tr> <td>SOAM_NE</td> <td>DAMP1</td> <td>MP</td> <td>Active</td> <td>Active</td> <td>Normal</td> <td>0</td> <td>Normal</td> <td>Normal</td> <td>Allowed</td> <td>NotApplicable</td> </tr> <tr> <td>NOAM_NE</td> <td>NO1</td> <td>Network OAM&P</td> <td>Active</td> <td>N/A</td> <td>Normal</td> <td>0</td> <td>Normal</td> <td>NotApplicable</td> <td>Allowed</td> <td>NotApplicable</td> </tr> </tbody> </table>	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	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

<p>26.</p> <p><input type="checkbox"/></p>	<p>NOAM VIP GUI: Verify the HA Status</p>	<p>Click on Main Menu->Status and Manage->HA</p>  <p>Select the row for all of the servers Verify that the “HA Role” is either “Active” or “Standby”.</p> <p>Main Menu: Status & Manage -> HA</p> <p>Filter*</p> <table border="1" data-bbox="493 785 1370 932"> <thead> <tr> <th>Hostname</th> <th>OAM HA Role</th> <th>Application HA Role</th> <th>Max Allowed HA Role</th> <th>Mate Hostname List</th> <th>Network Element</th> <th>Server Role</th> </tr> </thead> <tbody> <tr> <td>SO1</td> <td>Standby</td> <td>N/A</td> <td>Active</td> <td>SO2</td> <td>SOAM_NE</td> <td>System OAM</td> </tr> <tr> <td>SO2</td> <td>Active</td> <td>N/A</td> <td>Active</td> <td>SO1</td> <td>SOAM_NE</td> <td>System OAM</td> </tr> <tr> <td>DAMP1</td> <td>Active</td> <td>Active</td> <td>Active</td> <td></td> <td>SOAM_NE</td> <td>MP</td> </tr> <tr> <td>NO1</td> <td>Active</td> <td>N/A</td> <td>Active</td> <td>NO2</td> <td>NOAM_NE</td> <td>Network OAM&P</td> </tr> <tr> <td>NO2</td> <td>Standby</td> <td>N/A</td> <td>Active</td> <td>NO1</td> <td>NOAM_NE</td> <td>Network OAM&P</td> </tr> </tbody> </table>	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
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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																																						
<p>27.</p> <p><input type="checkbox"/></p>	<p>SOAM VIP GUI: Verify the Local Node Info</p>	<p>Navigate to Main Menu->Diameter->Configuration->Local Node</p>  <p>Verify that all the local nodes are shown.</p>																																										

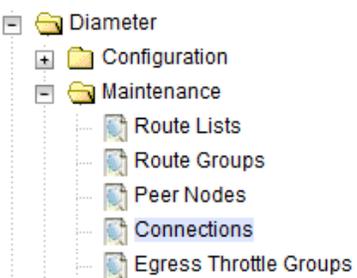
Procedure 3: Recovery Scenario 3

<p>28.</p> <p><input type="checkbox"/></p>	<p>SOAM VIP GUI: Verify the Peer Node Info</p>	<p>Navigate to Main Menu->Diameter->Configuration->Peer Node</p>  <p>Verify that all the peer nodes are shown.</p>
<p>29.</p> <p><input type="checkbox"/></p>	<p>SOAM VIP GUI: Verify the Connections Info</p>	<p>Navigate to Main Menu->Diameter->Configuration->Connections</p>  <p>Verify that all the connections are shown.</p>

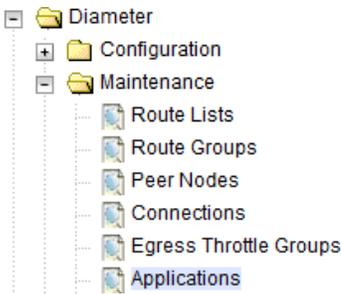
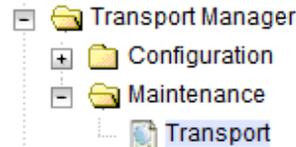
Procedure 3: Recovery Scenario 3

<p>30.</p> <p><input type="checkbox"/></p>	<p>For vSTP Only-SOAM VIP Server Console (Optional): Verify the local nodes info</p>	<p>To verify the vSTP MP Local nodes info:</p> <ol style="list-style-type: none"> 1. Login to the SOAM VIP Server console as admusr 2. Execute the following command [admusr@SOAM1 ~]\$ mmiclient.py /vstp/localhosts 3. Verify the output similar to the below output <pre> { "data": [{ "configurationLevel": "10", "localHostName": "AUTLocalHost1", "localHostPort": 4444, "localHostPriIPAddress": "145.168.100.2", "localHostSecIPAddress": "145.168.111.1" }, { "configurationLevel": "11", "localHostName": "AUTLocalHost2", "localHostPort": 4445, "localHostPriIPAddress": "145.168.100.2", "localHostSecIPAddress": "145.168.111.1" }], "links": {}, "messages": [], "status": true } </pre>
<p>31.</p> <p><input type="checkbox"/></p>	<p>For vSTP Only-SOAM VIP Server Console (Optional): Verify the remote nodes info</p>	<p>To verify the vSTP MP Remote nodes info:</p> <ol style="list-style-type: none"> 1. Login to the SOAM VIP Server console as admusr 2. Execute the following command [admusr@SOAM1 ~]\$ mmiclient.py /vstp/remotehosts 3. Verify the output similar to the below output <pre> { "data": [{ "configurationLevel": "12", "remoteHostName": "AUTRemoteHost1", "remoteHostPort": 4444, "remoteHostPriIPAddress": "1.1.1.6", "remoteHostSecIPAddress": "1.1.1.7" }], "links": {}, "messages": [], "status": true } </pre>

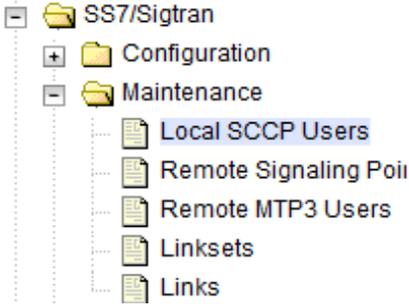
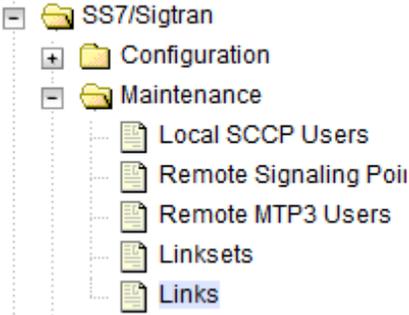
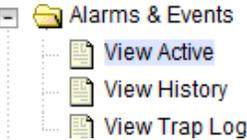
Procedure 3: Recovery Scenario 3

<p>32.</p> <p><input type="checkbox"/></p>	<p>For vSTP Only-SOAM VIP Server Console (Optional): Verify the Connections info</p>	<p>To verify the vSTP MP Connections info:</p> <ol style="list-style-type: none"> 1. Login to the SOAM VIP Server console as admusr 2. Execute the following command [admusr@SOAM1 ~]\$ mmclient.py /vstp/connections 3. Verify the output similar to the below output <pre> { "data": [{ "configurationLevel": "13", "connCfgSetName": "Default", "connectionMode": "Server", "connectionType": "M3ua", "localHostName": "AUTLocalHost1", "name": "AUTLinkTestConn1", "remoteHostName": "AUTRemoteHost1" }, { "configurationLevel": "14", "connCfgSetName": "Default", "connectionMode": "Server", "connectionType": "M2pa", "localHostName": "AUTLocalHost2", "name": "AUTLinkTestConn2", "remoteHostName": "AUTRemoteHost1" }], "links": {}, "messages": [], "status": true } </pre>
<p>33.</p> <p><input type="checkbox"/></p>	<p>SOAM VIP GUI: Enable Connections if needed</p>	<p>Navigate to Main Menu->Diameter->Maintenance->Connections</p>  <p>Select each connection and click on the Enable button. Alternatively you can enable all the connections by selecting the EnableAll button.</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 that the Operational State is Available.</p>

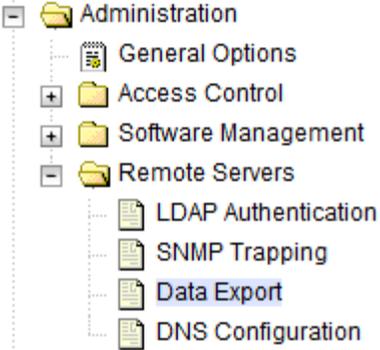
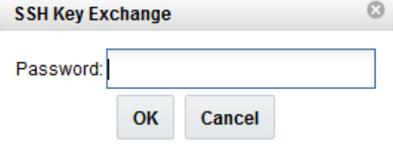
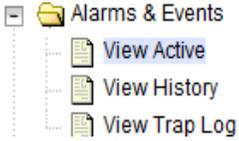
Procedure 3: Recovery Scenario 3

<p>34. <input type="checkbox"/></p>	<p>SOAM VIP GUI: Enable Optional Features</p>	<p>Navigate to Main Menu -> Diameter -> Maintenance -> Applications</p>  <p>Select the optional feature application configured in step 31</p> <p>Click the Enable button.</p> <p><input type="button" value="Enable"/> <input type="button" value="Disable"/> <input type="checkbox"/> Pause updates</p>
<p>35. <input type="checkbox"/></p>	<p>SOAM VIP GUI: Re-enable Transports if Needed</p>	<p>Navigate to Main Menu->Transport Manager -> Maintenance -> Transport</p>  <p>Select each transport and click on the Enable button</p> <p><input type="button" value="Enable"/> <input type="button" value="Disable"/> <input type="button" value="Block"/></p> <p>Verify that the Operational Status for each transport is Up.</p>

Procedure 3: Recovery Scenario 3

<p>36. <input type="checkbox"/></p>	<p>SOAM VIP GUI: Re-enable MAPIWF application if needed</p>	<p>Navigate to Main Menu->SS7/Sigtran->Maintenance->Local SCCP Users</p>  <p>Click on the Enable button corresponding to MAPIWF Application Name.</p>  <p>Verify that the SSN Status is Enabled.</p>
<p>37. <input type="checkbox"/></p>	<p>SOAM VIP GUI: Re-enable links if needed</p>	<p>Navigate to Main Menu->SS7/Sigtran->Maintenance->Links</p>  <p>Click on Enable button for each link.</p>  <p>Verify that the Operational Status for each link is Up.</p>
<p>38. <input type="checkbox"/></p>	<p>SOAM VIP GUI: Examine All Alarms</p>	<p>Navigate to Main Menu->Alarms & Events->View Active</p>  <p>Examine all active alarms and refer to the on-line help on how to address them.</p> <p>If needed contact Appendix G. My Oracle Support (MOS)</p>

Procedure 3: Recovery Scenario 3

<p>39.</p>	<p>NOAM VIP GUI: Perform Keyexchange with Export Server</p>	<p>Navigate to Main Menu -> Administration -> Remote Servers -> Data Export</p>  <p>Click on Key Exchange at the bottom of the screen</p> <p>Enter the Password and press OK</p> 
<p>40.</p> <p><input type="checkbox"/></p>	<p>NOAM VIP GUI: Examine All Alarms</p>	<p>Login to the NOAM VIP if not already logged in.</p> <p>Navigate to Main Menu->Alarms & Events->View Active</p>  <p>Examine all active alarms and refer to the on-line help on how to address them.</p> <p>If needed contact Appendix G. My Oracle Support (MOS).</p>
<p>41.</p> <p><input type="checkbox"/></p>	<p>Restore GUI Usernames and Passwords</p>	<p>If applicable, Execute steps in Section 6.0 to recover the user and group information restored.</p>
<p>42.</p> <p><input type="checkbox"/></p>	<p>Backup and Archive All the Databases from the Recovered System</p>	<p>Execute Appendix A. DSR Database Backup to back up the Configuration databases:</p>

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.

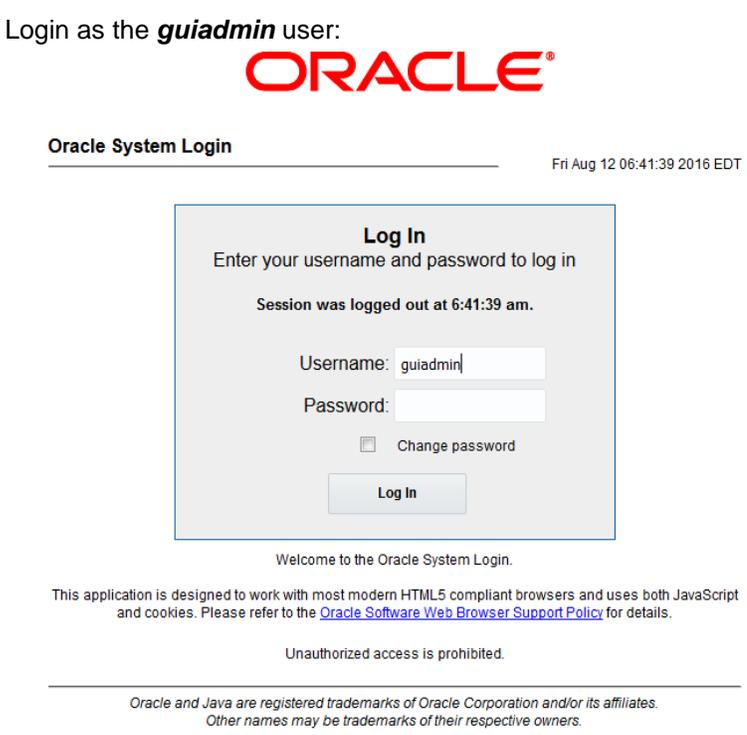
The database is intact at the active NOAM server and does not require restoration at the standby NOAM server.

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

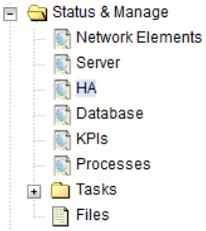
The database is intact at the active NOAM server and does not require restoration at the SO and MP servers.

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

Procedure 4: Recovery Scenario 4

S T E P #	<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 G. My Oracle Support (MOS), and ask for assistance.</p>	
1. <input type="checkbox"/>	Workarounds	Refer to Appendix F. 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"/>	NOAM VIP GUI: 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;"> <p><code>http://<Primary_NOAM_VIP_IP_Address></code></p> </div> <p>Login as the <i>guiadmin</i> user:</p>  <p style="text-align: center; font-size: small;">Oracle and Java are registered trademarks of Oracle Corporation and/or its affiliates. Other names may be trademarks of their respective owners.</p>

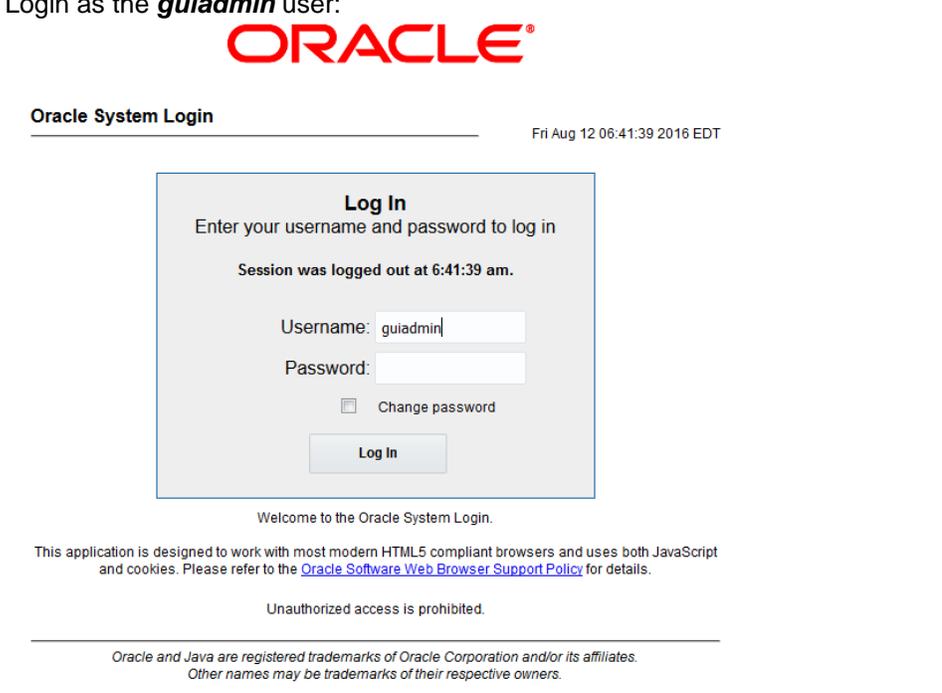
Procedure 4: Recovery Scenario 4

<p>4. <input type="checkbox"/></p>	<p>Active NOAM: Set Failed Servers to OOS</p>	<p>Navigate to Main Menu -> Status & Manage -> HA</p>  <p>Select Edit</p> <p>Set the Max Allowed HA Role drop down box to OOS for the failed servers.</p> <p>Select Ok</p> 
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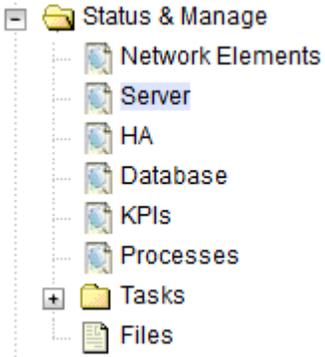
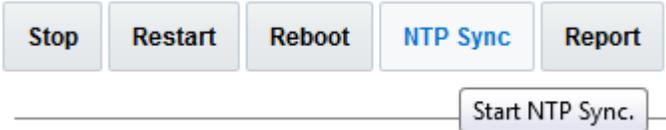
Procedure 4: Recovery Scenario 4

<p>5. <input type="checkbox"/></p>	<p>Recover the Failed Software</p>	<p>For VMWare based deployments:</p> <ol style="list-style-type: none"> 1. For NOAMs execute the following procedures from reference [1]: <ol style="list-style-type: none"> a. Procedure 1 (VMWare). Import DSR OVA [Note: If OVA is already imported and present in the Infrastructure Manager, skip this procedure of importing OVA] b. Procedure 2 (VMWare Only). Configure NOAM guests based on resource profile 2. For SOAMs execute the following procedures from reference [1]: <ol style="list-style-type: none"> a. Procedure 1 (VMWare). Import DSR OVA [Note: If OVA is already imported and present in the Infrastructure Manager, skip this procedure of importing OVA] b. Procedure 3 (VMWare Only). Configure Remaining DSR guests based on resource profile 3. For failed MPs execute the following procedures from reference [1]: <ol style="list-style-type: none"> a. Procedure 1 (VMWare). Import DSR OVA [Note: If OVA is already imported and present in the Infrastructure Manager, skip this procedure of importing OVA] b. Procedure 3 (VMWare Only). Configure Remaining DSR guests based on resource profile <p>For KVM/Openstack based deployments:</p> <ol style="list-style-type: none"> 1. For NOAMs execute the following procedures from reference [1]: <ol style="list-style-type: none"> a. Procedure 4 (KVM/Openstack). "Import DSR OVA" [Note: If OVA is already imported and present in the Infrastructure Manager, skip this procedure of importing OVA] b. Procedure 5 (KVM/Openstack). "Configure NOAM guests based on resource profile" 2. For SOAMs execute the following procedures from reference [1]: <ol style="list-style-type: none"> a. Procedure 4 (KVM/Openstack). "Import DSR OVA" [Note: If OVA is already imported and present in the Infrastructure Manager, skip this procedure of importing OVA] b. Procedure 6 (KVM/Openstack). "Configure Remaining DSR guests based on resource profile" 3. For failed MPs execute the following procedures from reference [1]: <ol style="list-style-type: none"> a. Procedure 4 (KVM/Openstack). "Import DSR OVA" [Note: If OVA is already imported and present in the Infrastructure Manager, skip this procedure of importing OVA] b. Procedure 6 (KVM/Openstack). "Configure Remaining DSR guests based on resource profile" <p>For OVM-S/OVM-M based deployments:</p> <p>Execute the following procedures from reference [1]:</p> <ol style="list-style-type: none"> a. Procedure 7 (OVM-S/OVM-M). Import DSR OVA and prepare for VM creation b. Procedure 8 (OVM-S/OVM-M). Configure each DSR VM Note: While executing Procedure 8, configure the required failed VMs only (NOAMs/SOAMs/MPs)
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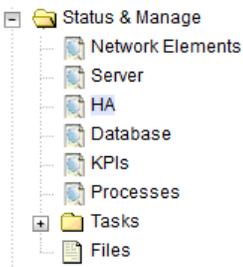
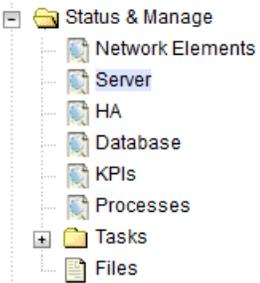
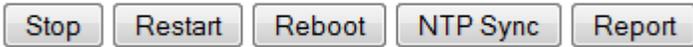
Procedure 4: Recovery Scenario 4

<p>6. <input type="checkbox"/></p>	<p>Repeat for Remaining Failed Servers</p>	<p>If necessary, repeat 5 for all remaining failed servers.</p>
<p>7. <input type="checkbox"/></p>	<p>NOAM VIP GUI: 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><code>http://<Primary_NOAM_VIP_IP_Address></code></p> </div> <p>Login as the <i>guiadmin</i> user:</p>  <p>The screenshot shows the Oracle System Login interface. At the top, it says "Oracle System Login" and "Fri Aug 12 06:41:39 2016 EDT". Below this is a "Log In" box with the text "Enter your username and password to log in". It also indicates "Session was logged out at 6:41:39 am." There are input fields for "Username:" (containing "guiadmin") and "Password:". A checkbox for "Change password" is present. A "Log In" button is at the bottom of the box. Below the box, it says "Welcome to the Oracle System Login." and "This application is designed to work with most modern HTML5 compliant browsers and uses both JavaScript and cookies. Please refer to the Oracle Software Web Browser Support Policy for details." At the bottom, it states "Unauthorized access is prohibited." and "Oracle and Java are registered trademarks of Oracle Corporation and/or its affiliates. Other names may be trademarks of their respective owners."</p>
<p>8. <input type="checkbox"/></p>	<p>NOAM VIP GUI: Recover Standby NOAM if needed</p>	<p>Install the second NOAM server by executing procedures from reference [1]:</p> <p>Procedure 11 “Configure the Second NOAM Server” steps 1, 3-7</p> <p>Procedure 12 “Complete Configuring the NOAM Server Group” Step 4</p> <p>Note: If Topology or nodeld alarms are persistent after the database restore, refer to Appendix F. Workarounds for Issues not fixed in this Release, or the next step below.</p>

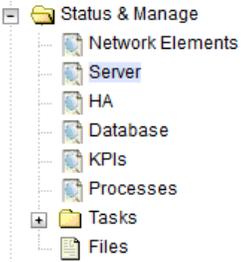
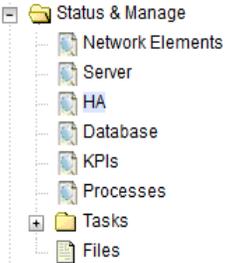
Procedure 4: Recovery Scenario 4

<p>9. <input type="checkbox"/></p>	<p>(OPTIONAL) NOAM VIP GUI: Recover the Failed SOAM Servers if needed</p>	<p>If the failed server is an SOAM, recover the remaining SOAM servers (standby, spare) by repeating the following steps for each SOAM server:</p> <ol style="list-style-type: none"> 1. Install the remaining SOAM servers by executing Procedure 18 “Configure the SOAM Servers”, steps 1, 3- 7 from reference [1]. <p>NOTE: Wait for server to reboot before continuing.</p>
<p>10. <input type="checkbox"/></p>	<p>Recovered Server: Login</p>	<p>Establish an SSH to the recovered server’s XMI address:</p>
<p>11. <input type="checkbox"/></p>	<p>Recovered Server: Sync NTP</p>	<p>Navigate to Status & Manage -> Server</p>  <p>Select the Recovered server and click NTP Sync button</p>  <p>Click Ok</p> <p>Are you sure you wish to force an NTP Sync on the following server(s)? SOAM2</p> 

Procedure 4: Recovery Scenario 4

<p>12.</p>	<p>(OPTIONAL) NOAM VIP GUI: Set HA on Recovered Servers</p>	<p>Navigate to Status & Manage -> HA</p>  <p>Click on Edit at the bottom of the screen</p> <p>For each server whose Max Allowed HA Role is set to Standby, set it to Active</p> <p>Press OK</p>
<p>13. <input type="checkbox"/></p>	<p>NOAM VIP GUI: Restart DSR application</p>	<p>Navigate to Main Menu->Status & Manage->Server,</p>  <p>Select the recovered server and click on Restart.</p> 
<p>14. <input type="checkbox"/></p>	<p>NOAM VIP GUI: Recover the C-Level Server (DA-MP, SBRs, IPFE, SS7-MP,vSTP-MP)</p>	<p>Establish a SSH session to the C Level server being recovered, login as admusr.</p> <p>Execute following command to set shared memory to unlimited:</p> <pre style="border: 1px solid black; padding: 5px;">\$ sudo sh1.set -m 0</pre> <p>Execute the following procedures from [1] FOR EACH server that has been recovered:</p> <p>Procedure 21 “Configure the MP Virtual Machines”, Steps 1, 8-14 (& 15 if required).</p>

Procedure 4: Recovery Scenario 4

<p>15. <input type="checkbox"/></p>	<p>NOAM VIP GUI: Restart DSR Application on recovered C-Level Servers.</p>	<p>Navigate to Main Menu->Status & Manage->Server</p>  <p>Select the recovered servers and click on Restart.</p> 
<p>16. <input type="checkbox"/></p>	<p>NOAM VIP GUI: Set HA on all C-Level Servers</p>	<p>Navigate to Status & Manage -> HA</p>  <p>Click on Edit at the bottom of the screen</p> <p>For each server whose Max Allowed HA Role is set to Standby, set it to Active</p> <p>Press OK</p>
<p>17. <input type="checkbox"/></p>	<p>ACTIVE NOAM: Login</p>	<p>Login to the recovered Active NOAM via SSH terminal as admusr user.</p>
<p>18. <input type="checkbox"/></p>	<p>ACTIVE NOAM: Perform key exchange between the active-NOAM and recovered servers.</p>	<p>Establish an SSH session to the Active NOAM, login as admusr.</p> <p>Execute the following command to perform a keyexchange from the active NOAM to each recovered server:</p> <pre>\$ keyexchange admusr@<Recovered Server Hostname></pre>

Procedure 4: Recovery Scenario 4

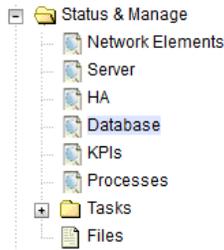
<p>19.</p> <p><input type="checkbox"/></p>	<p>ACTIVE NOAM: Activate Optional Features</p>	<p>Establish an SSH session to the active NOAM, login as admusr.</p> <p>Note For PCA Activation: If you have PCA installed in the system being recovered, execute the procedure “PCA Activation on Stand By NOAM server” on recovered StandBy NOAM Server and procedure “PCA Activation on Stand By SOAM server” on recovered StandBy SOAM Server from [3] to re-activate PCA</p> <p>Refer to 1.5 Optional Features to activate any features that were previously activated.</p> <p>Note: While running the activation script, the following error message (and corresponding messages) output may be seen, this can safely be ignored:</p> <pre>iload#31000{S/W Fault}</pre> <p>Note: If any of the MPs are failed and recovered, then these MP servers should be restarted after Activation of the feature.</p>
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Procedure 4: Recovery Scenario 4

20.

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 on the **Report** button at the bottom of the page. The following screen is displayed:

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: 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

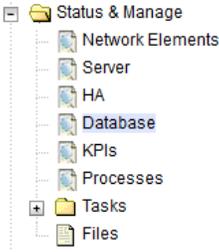
Part: A_NpqrProvPart

Table Name	Schema	Row Size		Num Rows	Memory		Disk	
		Avg	Max		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
Hsrn		68		0	0 B	0 B	0 B	0 B
NpqrNeOptions		276		0	0 B	0 B	0 B	0 B

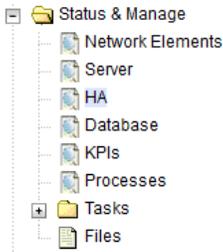
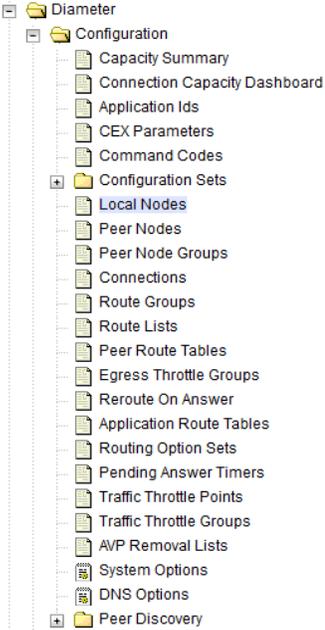
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Print Save

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

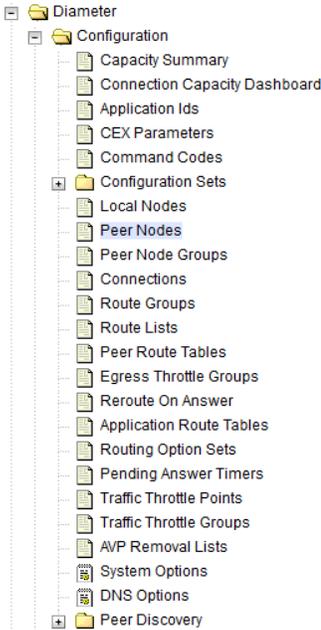
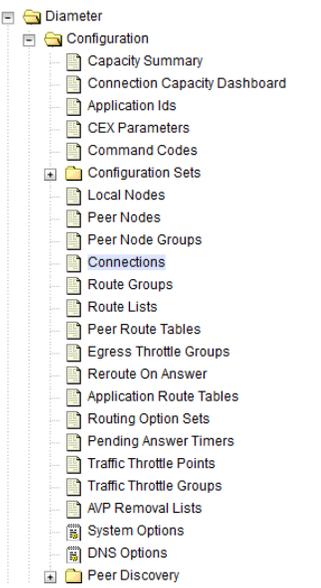
Procedure 4: Recovery Scenario 4

<p>21.</p> <p><input type="checkbox"/></p>	<p>ACTIVE NOAM: Verify Replication Between Servers.</p>	<p>Login to the Active NOAM via SSH terminal as admusr user. Execute the following command:</p> <pre style="background-color: #f0f0f0; padding: 10px;">\$ sudo irepstat -m</pre> <p>Output like below shall be generated:</p> <pre style="background-color: #f0f0f0; padding: 10px;">-- 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</pre>																																																																		
<p>22.</p> <p><input type="checkbox"/></p>	<p>NOAM VIP GUI: Verify the Database states</p>	<p>Click on Main Menu->Status and Manager->Database</p>  <p>Verify that the “OAM Max HA Role” is either “Active” or “Standby” for NOAM and SOAM and “Application Max HA Role” for MPs is “Active”, and that the status is “Normal” as shown below:</p> <p>Main Menu: Status & Manage -> Database</p> <table border="1" data-bbox="487 1501 1234 1617"> <thead> <tr> <th>Network Element</th> <th>Server</th> <th>Role</th> <th>OAM Max HA Role</th> <th>Application Max HA Role</th> <th>Status</th> <th>DB Level</th> <th>OAM Repl Status</th> <th>SG Repl Status</th> <th>Repl Status</th> <th>Repl Audit Status</th> </tr> </thead> <tbody> <tr> <td>SOAM_NE</td> <td>SO1</td> <td>System DMB</td> <td>Standby</td> <td>N/A</td> <td>Normal</td> <td>0</td> <td>Normal</td> <td>NotApplicable</td> <td>Allowed</td> <td>NotApplicable</td> </tr> <tr> <td>SOAM_NE</td> <td>SO2</td> <td>System DMB</td> <td>Active</td> <td>N/A</td> <td>Normal</td> <td>0</td> <td>Normal</td> <td>NotApplicable</td> <td>Allowed</td> <td>NotApplicable</td> </tr> <tr> <td>NOAM_NE</td> <td>NO2</td> <td>Network OAM&P</td> <td>Standby</td> <td>N/A</td> <td>Normal</td> <td>0</td> <td>Normal</td> <td>NotApplicable</td> <td>Allowed</td> <td>NotApplicable</td> </tr> <tr> <td>SOAM_NE</td> <td>DAMP1</td> <td>MP</td> <td>Active</td> <td>Active</td> <td>Normal</td> <td>0</td> <td>Normal</td> <td>Normal</td> <td>Allowed</td> <td>NotApplicable</td> </tr> <tr> <td>NOAM_NE</td> <td>NO1</td> <td>Network OAM&P</td> <td>Active</td> <td>N/A</td> <td>Normal</td> <td>0</td> <td>Normal</td> <td>NotApplicable</td> <td>Allowed</td> <td>NotApplicable</td> </tr> </tbody> </table>	Network Element	Server	Role	OAM Max HA Role	Application Max HA Role	Status	DB Level	OAM Repl Status	SG Repl Status	Repl Status	Repl Audit Status	SOAM_NE	SO1	System DMB	Standby	N/A	Normal	0	Normal	NotApplicable	Allowed	NotApplicable	SOAM_NE	SO2	System DMB	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 4: Recovery Scenario 4

<p>23.</p> <p><input type="checkbox"/></p>	<p>NOAM VIP GUI: Verify the HA Status</p>	<p>Click on Main Menu->Status and Manage->HA</p>  <p>Select the row for all of the servers Verify that the “HA Role” is either “Active” or “Standby”.</p> <p>Main Menu: Status & Manage -> HA</p> <p>Filter*</p> <table border="1"> <thead> <tr> <th>Hostname</th> <th>OAM HA Role</th> <th>Application HA Role</th> <th>Max Allowed HA Role</th> <th>Mate Hostname List</th> <th>Network Element</th> <th>Server Role</th> </tr> </thead> <tbody> <tr> <td>SO1</td> <td>Standby</td> <td>N/A</td> <td>Active</td> <td>SO2</td> <td>SOAM_NE</td> <td>System OAM</td> </tr> <tr> <td>SO2</td> <td>Active</td> <td>N/A</td> <td>Active</td> <td>SO1</td> <td>SOAM_NE</td> <td>System OAM</td> </tr> <tr> <td>DAMP1</td> <td>Active</td> <td>Active</td> <td>Active</td> <td></td> <td>SOAM_NE</td> <td>MP</td> </tr> <tr> <td>NO1</td> <td>Active</td> <td>N/A</td> <td>Active</td> <td>NO2</td> <td>NOAM_NE</td> <td>Network OAM&P</td> </tr> <tr> <td>NO2</td> <td>Standby</td> <td>N/A</td> <td>Active</td> <td>NO1</td> <td>NOAM_NE</td> <td>Network OAM&P</td> </tr> </tbody> </table>	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
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DAMP1	Active	Active	Active		SOAM_NE	MP																																						
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NO2	Standby	N/A	Active	NO1	NOAM_NE	Network OAM&P																																						
<p>24.</p> <p><input type="checkbox"/></p>	<p>SOAM VIP GUI: Verify the Local Node Info</p>	<p>Navigate to Main Menu->Diameter->Configuration->Local Node</p>  <p>Verify that all the local nodes are shown.</p>																																										

Procedure 4: Recovery Scenario 4

<p>25.</p> <p><input type="checkbox"/></p>	<p>SOAM VIP GUI: Verify the Peer Node Info</p>	<p>Navigate to Main Menu->Diameter->Configuration->Peer Node</p>  <p>Verify that all the peer nodes are shown.</p>
<p>26.</p> <p><input type="checkbox"/></p>	<p>SOAM VIP GUI: Verify the Connections Info</p>	<p>Navigate to Main Menu->Diameter->Configuration->Connections</p>  <p>Verify that all the connections are shown.</p>

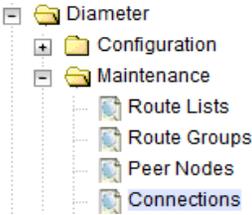
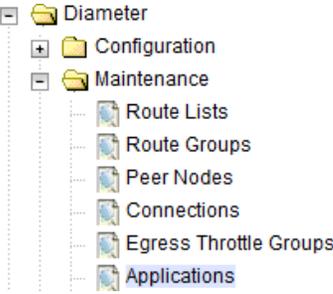
Procedure 4: Recovery Scenario 4

<p>27.</p> <p><input type="checkbox"/></p>	<p>For vSTP Only-SOAM VIP Server Console (Optional): Verify the local nodes info</p>	<p>To verify the vSTP MP Local nodes info:</p> <ol style="list-style-type: none"> 1. Login to the SOAM VIP Server console as admusr 2. Execute the following command [admusr@SOAM1 ~]\$ mmiclient.py /vstp/localhosts 3. Verify the output similar to the below output <pre> { "data": [{ "configurationLevel": "10", "localHostName": "AUTLocalHost1", "localHostPort": 4444, "localHostPriIPAddress": "145.168.100.2", "localHostSecIPAddress": "145.168.111.1" }, { "configurationLevel": "11", "localHostName": "AUTLocalHost2", "localHostPort": 4445, "localHostPriIPAddress": "145.168.100.2", "localHostSecIPAddress": "145.168.111.1" }], "links": {}, "messages": [], "status": true } </pre>
<p>28.</p> <p><input type="checkbox"/></p>	<p>For vSTP Only-SOAM VIP Server Console (Optional): Verify the remote nodes info</p>	<p>To verify the vSTP MP Remote nodes info:</p> <ol style="list-style-type: none"> 1. Login to the SOAM VIP Server console as admusr 2. Execute the following command [admusr@SOAM1 ~]\$ mmiclient.py /vstp/remotehosts 3. Verify the output similar to the below output <pre> { "data": [{ "configurationLevel": "12", "remoteHostName": "AUTRemoteHost1", "remoteHostPort": 4444, "remoteHostPriIPAddress": "1.1.1.6", "remoteHostSecIPAddress": "1.1.1.7" }], "links": {}, "messages": [], "status": true } </pre>

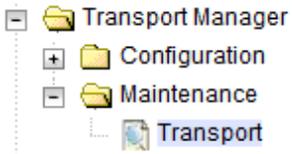
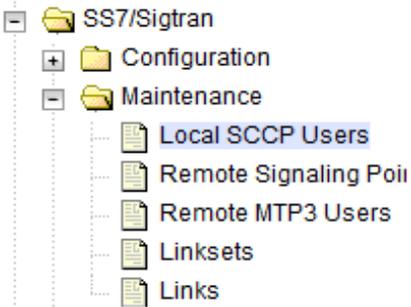
Procedure 4: Recovery Scenario 4

<p>29.</p> <input type="checkbox"/>	<p>For vSTP Only-SOAM VIP Server Console (Optional): Verify the Connections info</p>	<p>To verify the vSTP MP Connections info:</p> <ol style="list-style-type: none"> 1. Login to the SOAM VIP Server console as admusr 2. Execute the following command [admusr@SOAM1 ~]\$ mmclient.py /vstp/connections 3. Verify the output similar to the below output <pre> { "data": [{ "configurationLevel": "13", "connCfgSetName": "Default", "connectionMode": "Server", "connectionType": "M3ua", "localHostName": "AUTLocalHost1", "name": "AUTLinkTestConn1", "remoteHostName": "AUTRemoteHost1" }, { "configurationLevel": "14", "connCfgSetName": "Default", "connectionMode": "Server", "connectionType": "M2pa", "localHostName": "AUTLocalHost2", "name": "AUTLinkTestConn2", "remoteHostName": "AUTRemoteHost1" }], "links": {}, "messages": [], "status": true } </pre>
<p>30.</p> <input type="checkbox"/>	<p>MP Servers: Disable SCTP Auth Flag</p>	<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>

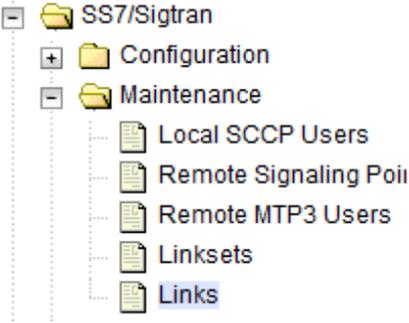
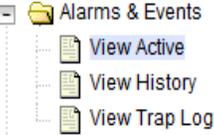
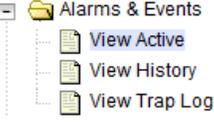
Procedure 4: Recovery Scenario 4

<p>31. <input type="checkbox"/></p>	<p>SOAM VIP GUI: Enable Connections if needed</p>	<p>Navigate to Main Menu->Diameter->Maintenance->Connections</p>  <p>Select each connection and click on the Enable button.</p> <p>Alternatively you can enable all the connections by selecting the EnableAll button.</p>  <p>Verify that the Operational State is Available.</p>
<p>32. <input type="checkbox"/></p>	<p>SOAM VIP GUI: Enable Optional Features</p>	<p>Navigate to Main Menu -> Diameter -> Maintenance -> Applications</p>  <p>Select the optional feature application</p> <p>Click the Enable button.</p> 

Procedure 4: Recovery Scenario 4

<p>33. <input type="checkbox"/></p>	<p>SOAM VIP GUI: Re-enable Transports if Needed</p>	<p>Navigate to Main Menu->Transport Manager -> Maintenance -> Transport</p>  <p>Select each transport and click on the Enable button</p>  <p>Verify that the Operational Status for each transport is Up.</p>
<p>34. <input type="checkbox"/></p>	<p>SOAM VIP GUI: Re-enable MAPIWF application if needed</p>	<p>Navigate to Main Menu->SS7/Sigtran->Maintenance->Local SCCP Users</p>  <p>Click on the Enable button corresponding to MAPIWF Application Name.</p>  <p>Verify that the SSN Status is Enabled.</p>

Procedure 4: Recovery Scenario 4

<p>35. <input type="checkbox"/></p>	<p>SOAM VIP GUI: Re-enable links if needed</p>	<p>Navigate to Main Menu->SS7/Sigtran->Maintenance->Links</p>  <p>Click on Enable button for each link.</p>  <p>Verify that the Operational Status for each link is Up.</p>
<p>36. <input type="checkbox"/></p>	<p>SOAM VIP GUI: Examine All Alarms</p>	<p>Navigate to Main Menu->Alarms & Events->View Active</p>  <p>Examine all active alarms and refer to the on-line help on how to address them.</p> <p>If needed contact Appendix G. My Oracle Support (MOS).</p>
<p>37. <input type="checkbox"/></p>	<p>NOAM VIP GUI: Examine All Alarms</p>	<p>Login to the NOAM VIP if not already logged in.</p> <p>Navigate to Main Menu->Alarms & Events->View Active</p>  <p>Examine all active alarms and refer to the on-line help on how to address them.</p> <p>If needed contact Appendix G. My Oracle Support (MOS).</p>

Procedure 4: Recovery Scenario 4

<p>38.</p> <input type="checkbox"/>	<p>Restart oampAgent if Needed</p>	<p>Note: If alarm “10012: The responder for a monitored table failed to respond to a table change” is raised, the oampAgent needs to be restarted.</p> <p>Establish an SSH session to each server that has the alarm. Login as <i>admusr</i></p> <p>Execute the following commands:</p> <pre style="border: 1px solid black; padding: 5px;">\$ sudo pm.set off oampAgent \$ sudo pm.set on oampAgent</pre>
<p>39.</p> <input type="checkbox"/>	<p>Backup and Archive All the Databases from the Recovered System</p>	<p>Execute Appendix A. DSR Database Backup to back up the Configuration databases:</p>

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.

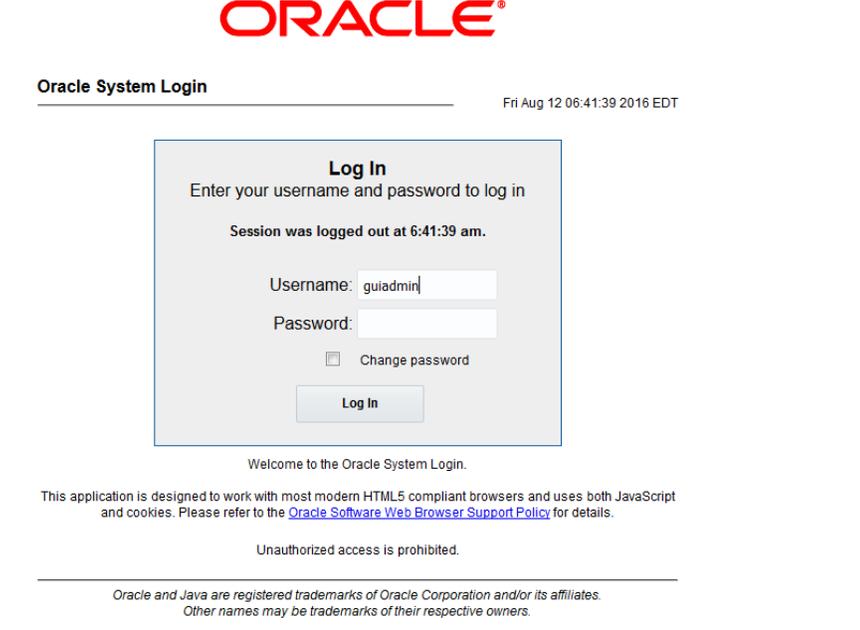
Procedure 5: Recovery Scenario 5

S T E P #	<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 G. My Oracle Support (MOS), and ask for assistance.</p>	
1 <input type="checkbox"/>	Workarounds	Refer to Appendix F. 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 [2]

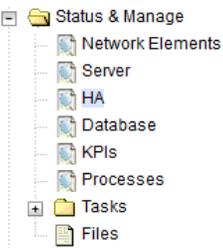
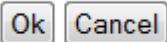
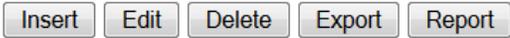
Procedure 5: Recovery Scenario 5

<p>4 □</p>	<p>Recover the Failed Software</p>	<p>For VMWare based deployments:</p> <ol style="list-style-type: none"> 1. For NOAMs execute the following procedures from reference [1]: <ol style="list-style-type: none"> a. Procedure 1 (VMWare). Import DSR OVA [Note: If OVA is already imported and present in the Infrastructure Manager, skip this procedure of importing OVA] b. Procedure 2 (VMWare Only). Configure NOAM guests based on resource profile 2. For SOAMs execute the following procedures from reference [1]: <ol style="list-style-type: none"> a. Procedure 1 (VMWare). Import DSR OVA [Note: If OVA is already imported and present in the Infrastructure Manager, skip this procedure of importing OVA] b. Procedure 3 (VMWare Only). Configure Remaining DSR guests based on resource profile 3. For failed MPs execute the following procedures from reference [1]: <ol style="list-style-type: none"> a. Procedure 1 (VMWare). Import DSR OVA [Note: If OVA is already imported and present in the Infrastructure Manager, skip this procedure of importing OVA] b. Procedure 3 (VMWare Only). Configure Remaining DSR guests based on resource profile <p>For KVM/Openstack based deployments:</p> <ol style="list-style-type: none"> 1. For NOAMs execute the following procedures from reference [1]: <ol style="list-style-type: none"> a. Procedure 4 (KVM/Openstack). "Import DSR OVA" [Note: If OVA is already imported and present in the Infrastructure Manager, skip this procedure of importing OVA] b. Procedure 5 (KVM/Openstack). "Configure NOAM guests based on resource profile" 2. For SOAMs execute the following procedures from reference [1]: <ol style="list-style-type: none"> a. Procedure 4 (KVM/Openstack). "Import DSR OVA" [Note: If OVA is already imported and present in the Infrastructure Manager, skip this procedure of importing OVA] b. Procedure 6 (KVM/Openstack). "Configure Remaining DSR guests based on resource profile" 3. For failed MPs execute the following procedures from reference [1]: <ol style="list-style-type: none"> a. Procedure 4 (KVM/Openstack). "Import DSR OVA" [Note: If OVA is already imported and present in the Infrastructure Manager, skip this procedure of importing OVA] b. Procedure 6 (KVM/Openstack). "Configure Remaining DSR guests based on resource profile" <p>For OVM-S/OVM-M based deployments:</p> <p>Execute the following procedures from reference [1]:</p> <ol style="list-style-type: none"> a. Procedure 7 (OVM-S/OVM-M). Import DSR OVA and prepare for VM creation b. Procedure 8 (OVM-S/OVM-M). Configure each DSR VM <p>Note: While executing Procedure 8, configure the required failed VMs only (NOAMs/SOAMs/MPs)</p>
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Procedure 5: Recovery Scenario 5

<p>5 <input type="checkbox"/></p>	<p>Recover Failed SOAMs</p>	<p>If ALL SOAM servers have failed, execute Procedure 2</p>
<p>6 <input type="checkbox"/></p>	<p>DR-NOAM VIP GUI: Login</p>	<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 data-bbox="500 491 1360 533" style="border: 1px solid black; padding: 2px; margin: 10px 0;"> <p><code>http://<Primary_DR-NOAM_VIP_IP_Address></code></p> </div> <p>Login as the <i>guiadmin</i> user:</p>  <p>The screenshot shows the Oracle System Login interface. At the top, it says 'Oracle System Login' and 'Fri Aug 12 06:41:39 2016 EDT'. Below this is a 'Log In' box with the text 'Enter your username and password to log in'. A message states 'Session was logged out at 6:41:39 am.'. There are input fields for 'Username:' (containing 'guiadmin') and 'Password:'. A checkbox for 'Change password' is present. A 'Log In' button is at the bottom of the box. Below the box, it says 'Welcome to the Oracle System Login.' and 'This application is designed to work with most modern HTML5 compliant browsers and uses both JavaScript and cookies. Please refer to the Oracle Software Web Browser Support Policy for details.' At the bottom, it says 'Unauthorized access is prohibited.' and 'Oracle and Java are registered trademarks of Oracle Corporation and/or its affiliates. Other names may be trademarks of their respective owners.'</p>

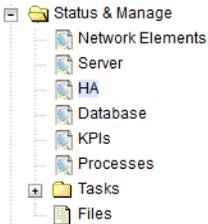
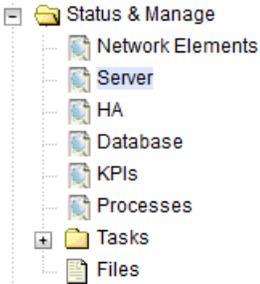
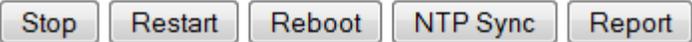
Procedure 5: Recovery Scenario 5

<p>7</p> <p><input type="checkbox"/></p>	<p>DR-NOAM VIP GUI: Set Failed NOAM Servers to Standby</p>	<p>Navigate to Main Menu -> Status & Manage -> HA</p>  <p>Select Edit</p> <p>Set the Max Allowed HA Role drop down box to Standby for the failed NOAM servers.</p> <p>Select Ok</p> 
<p>8</p> <p><input type="checkbox"/></p>	<p>DR-NOAM VIP GUI: Export the Initial Configuration</p>	<p>Navigate to Main Menu -> Configuration -> Servers.</p> <p>From the GUI screen, select the Failed NOAM server and then select Export to generate the initial configuration data for that server.</p> 
<p>9</p> <p><input type="checkbox"/></p>	<p>DR-NOAM VIP GUI: Copy Configuration File to Failed NOAM Server</p>	<p>Obtain a terminal session to the DR-NOAM VIP, login as the admusr user. Execute the following command to configure the failed NOAM server:</p> <pre data-bbox="505 1283 1443 1472"> \$ sudo scp -r /var/TKLC/db/filemgmt/TKLCConfigData.<Failed_NOAM_Hostname>.sh admusr@<Failed_NOAM_xmi_IP_address>:/var/tmp/TKLCConfigData.sh </pre>

Procedure 5: Recovery Scenario 5

<p>10</p> <p><input type="checkbox"/></p>	<p>Recovered NOAM Server: Verify configuration was called and Reboot the Server</p>	<p>Establish an SSH session to the Recovered NOAM server (Recovered_NOAM_xmi_IP_address)</p> <p>Login as the <i>admusr</i> user.</p> <p>The automatic configuration daemon will look for the file named “<i>TKLCConfigData.sh</i>” in the /var/tmp directory, implement the configuration in the file, and then prompt the user to reboot the server.</p> <p>Verify awpushcfg was called by checking the following file</p> <pre style="border: 1px solid black; padding: 5px;">\$ sudo cat /var/TKLC/appw/logs/Process/install.log</pre> <p>Verify the following message is displayed:</p> <pre style="border: 1px solid black; padding: 5px;">[SUCCESS] script completed successfully!</pre> <p>Now Reboot the Server:</p> <pre style="border: 1px solid black; padding: 5px;">\$ sudo init 6</pre> <p>Wait for the server to reboot</p>
<p>11</p> <p><input type="checkbox"/></p>	<p>Recovered NOAM Server: Verify Server Health</p>	<p>Execute the following command on the failed NOAM server and make sure that no errors are returned:</p> <pre style="border: 1px solid black; padding: 5px;">\$ 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>
<p>12</p> <p><input type="checkbox"/></p>	<p>Repeat for Additional 2nd Failed NOAM</p>	<p>Repeat steps 8-11 for the 2nd failed NOAM server.</p>

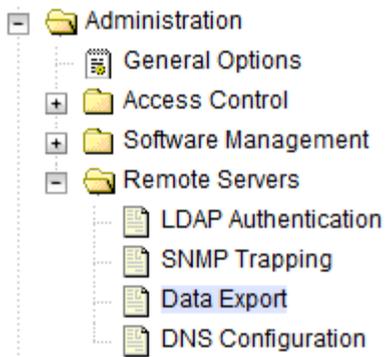
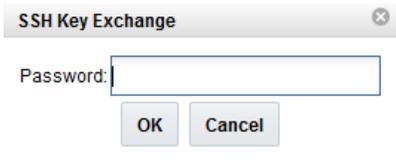
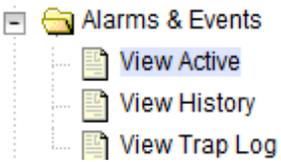
Procedure 5: Recovery Scenario 5

<p>13</p> <p><input type="checkbox"/></p>	<p>Perform Key exchange between Active NOAM and Recovered NOAMs</p>	<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 the admusr user, exchange SSH keys for admusr 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 the admusr user of the recovered NOAM servers.</p> <pre style="border: 1px solid black; padding: 5px;">\$ keyexchange admusr@<Recovered_NOAM Hostname></pre>
<p>14</p> <p><input type="checkbox"/></p>	<p>NOAM VIP GUI: Set HA on Recovered NOAMs</p>	<p>Navigate to Status & Manage -> HA</p>  <p>Click on Edit at the bottom of the screen</p> <p>For each NOAM server whose Max Allowed HA Role is set to Standby, set it to Active</p> <p>Press OK</p>
<p>15</p> <p><input type="checkbox"/></p>	<p>NOAM VIP GUI: Restart DSR application</p>	<p>Navigate to Main Menu->Status & Manage->Server,</p>  <p>Select each recovered NOAM server and click on Restart.</p> 

Procedure 5: Recovery Scenario 5

<p>16</p> <p><input type="checkbox"/></p>	<p>Recovered NOAM servers: Activate Optional Features</p>	<p>Map-Diameter Interworking (MAP-IWF) and/or Policy and Charging Application (PCA) Only</p> <p>Activate the features Map-Diameter Interworking (MAP-IWF) and Policy and Charging Application (PCA) as follows:</p> <p>For PCA:</p> <ol style="list-style-type: none"> 1. Establish SSH sessions to the all the recovered NOAM servers and login as <i>admusr</i>. Refer [3] and execute procedure “PCA Activation on Standby NOAM server” on all recovered NOAM Servers to re-activate PCA. <p>Establish SSH session to the recovered active NOAM, login as <i>admusr</i>.</p> <p>For MAP-IWF:</p> <ol style="list-style-type: none"> 1. Establish SSH session to the recovered active NOAM, login as <i>admusr</i>. Refer [4] to activate Map-Diameter Interworking (MAP-IWF) <p>Note: While running the activation script, the following error message (and corresponding messages) output may be seen, this can safely be ignored:</p> <pre>iload#31000{S/W Fault}</pre> <p>Note: If any of the MPs are failed and recovered, then these MP servers should be restarted after Activation of the feature.</p>
<p>17</p> <p><input type="checkbox"/></p>	<p>Switch DR NOAM Back to Secondary</p>	<p>Once the system have been recovered:</p> <p>Refer to DSR / SDS 8.x NOAM Failover User's Guide [2]</p>

Procedure 5: Recovery Scenario 5

<p>18</p>	<p>NOAM VIP GUI: Perform Keyexchange with Export Server</p>	<p>Navigate to Main Menu -> Administration -> Remote Servers -> Data Export</p>  <p>Click on Key Exchange at the bottom of the screen</p> <p>Enter the Password and press OK</p> 
<p>19</p> <p><input type="checkbox"/></p>	<p>Recovered Servers: Verify Alarms</p>	<p>Navigate to Main Menu -> Alarms & Events -> View Active</p>  <p>Verify the recovered servers are not contributing to any active alarms (Replication, Topology misconfiguration, database impairments, NTP, etc.)</p>
<p>20</p> <p><input type="checkbox"/></p>	<p>NOAM VIP GUI: Recover Standby/Spare SOAM and C-Level Servers</p>	<p>If necessary, refer to Procedure 3 to recover any standby or Spare SOAMs as well as any C-Level servers.</p>

5.1.6 Recovery Scenario 6 (Database Recovery)

5.1.6.1 Recovery Scenario 6: Case 1

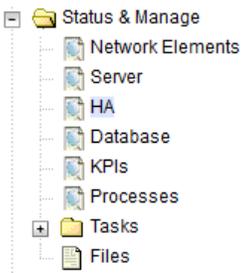
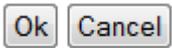
For a partial outage with

- Server having a corrupted database

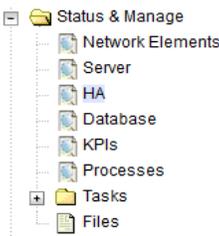
- Replication channel from parent is inhibited because of upgrade activity or
- Server is in a different release then that of its Active parent because of upgrade activity.
- Verify that the Server Runtime backup files, performed at the start of the upgrade, are present in /var/TKLC/db/filemgmt area in the following format
 - Backup.DSR.HPC02-NO2.FullIDBParts.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 will get replaced by the sever Runtime backup. Any configuration done after taking the backup will not be visible post recovery.

Procedure 6: Recovery Scenario 6 (Case 1)

S T E P #	<p>This procedure performs recovery if database is corrupted in the system</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 G. My Oracle Support (MOS), and ask for assistance.</p>	
1. <input type="checkbox"/>	Workarounds	Refer to Appendix F. Workarounds for Issues not fixed in this Release to understand/apply any workarounds required during this procedure.
2. <input type="checkbox"/>	NOAM VIP GUI: Set Failed Servers to OOS	<p>Navigate to Main Menu -> Status & Manage -> HA</p>  <p>Select Edit</p> <p>Set the Max Allowed HA Role drop down box to OOS for the failed servers.</p> <p>Select Ok</p> 
3. <input type="checkbox"/>	Server in Question: Login	Establish an SSH session to the server in question. Login as admusr user.
4. <input type="checkbox"/>	Server in Question: Change runlevel to 3	Execute the following command to bring the system to runlevel 3. <pre>\$ sudo init 3</pre>

Procedure 6: Recovery Scenario 6 (Case 1)

5. <input type="checkbox"/>	Server in Question: Recover System	Execute the following command and follow the instructions appearing the console prompt <pre>\$ sudo /usr/TKLC/appworks/sbin/backout_restore</pre>
6. <input type="checkbox"/>	Server in Question: Change runlevel to 4	Execute the following command to bring the system back to runlevel 4. <pre>\$ sudo init 6</pre>
7. <input type="checkbox"/>	Server in Question: Verify the server	Execute the following command to verify if the processes are up and running <pre>\$ sudo pm.getprocs</pre>
8. <input type="checkbox"/>	NOAM VIP GUI: Set Failed Servers to Active	<p>Navigate to Status & Manage -> HA</p>  <p>Click on Edit at the bottom of the screen</p> <p>For each failed server whose Max Allowed HA Role is set to OOS, set it to Active</p> <p>Press OK</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:

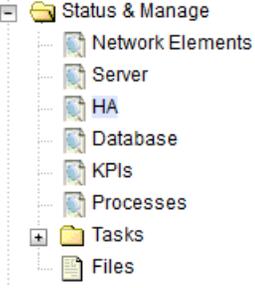
5.1.6.2 Recovery Scenario 6: Case 2

For a partial outage with

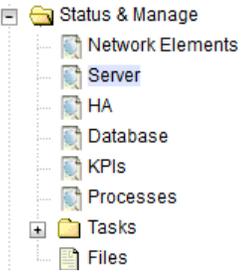
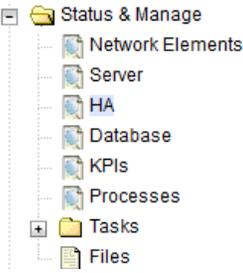
- Server having a corrupted database
- Replication channel is not inhibited or
- Server has the same release as that of its Active parent

Procedure 6: Recovery Scenario 6 (Case 2)

Procedure 6: Recovery Scenario 6 (Case 2)

<p>S T E P #</p>	<p>This procedure performs recovery if database got 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 G. My Oracle Support (MOS), and ask for assistance.</p>	
<p>1. <input type="checkbox"/></p>	<p>Workarounds</p>	<p>Refer to Appendix F. Workarounds for Issues not fixed in this Release to understand/apply any workarounds required during this procedure.</p>
<p>2. <input type="checkbox"/></p>	<p>NOAM VIP GUI: Set Failed Servers to OOS</p>	<p>Navigate to Main Menu -> Status & Manage -> HA</p>  <p>Select Edit</p> <p>Set the Max Allowed HA Role drop down box to OOS for the failed servers.</p> <p>Select Ok</p> 
<p>3. <input type="checkbox"/></p>	<p>Server in Question: Login</p>	<p>Establish an SSH session to the server in question. Login as admusr user.</p>
<p>4. <input type="checkbox"/></p>	<p>Server in Question: Take Server out of Service</p>	<p>Execute the following command to take the server out of service.</p> <pre>\$ sudo bash -l \$ sudo prod.clobber</pre>
<p>5. <input type="checkbox"/></p>	<p>Server in Question: Take Server to DbUp State and Start the Application</p>	<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>

Procedure 6: Recovery Scenario 6 (Case 2)

<p>6. <input type="checkbox"/></p>	<p>Server in Question: Verify the Server State</p>	<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>
<p>7. <input type="checkbox"/></p>	<p>NOAM VIP GUI: Restart DSR application</p>	<p>Navigate to Main Menu->Status & Manage->Server,</p>  <p>Select each recovered server and click on Restart.</p> 
<p>8. <input type="checkbox"/></p>	<p>NOAM VIP GUI: Set Failed Servers to Active</p>	<p>Navigate to Status & Manage -> HA</p>  <p>Click on Edit at the bottom of the screen</p> <p>For each failed server whose Max Allowed HA Role is set to OOS, set it to Active</p> <p>Press OK</p>

Procedure 6: Recovery Scenario 6 (Case 2)

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:
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6.0 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 that the restoration will not impact security or accessibility.

6.1 Restoring a Deleted User

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- User 'testuser' exists in the selected backup file but not in the current database.
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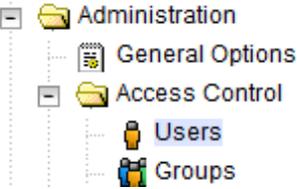
These users were removed prior to creation of the backup and archive file. They will be reintroduced by system restoration of that file.

6.2 Keeping a Restored user

Procedure 7: Keep Restored User

S T E P #	<p>Perform this procedure to keep users that will be 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 G. My Oracle Support (MOS), and ask for assistance.</p>	
1. <input type="checkbox"/>	<p>Before Restoration: Notify Affected Users Before Restoration</p>	<p>Contact each user that is affected before the restoration and notify them that you will reset their password during this maintenance operation.</p>
2. <input type="checkbox"/>	<p>After Restoration: Login to 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: 2px; margin: 5px 0;"> <p><code>http://<Primary_NOAM_VIP_IP_Address></code></p> </div> <p>Login as the <i>guiadmin</i> user:</p> <div style="text-align: center;">  </div>

Procedure 7: Keep Restored User

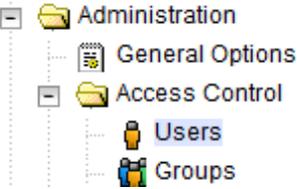
<p>3.</p> <p><input type="checkbox"/></p>	<p>After Restoration: Reset User Passwords</p>	<p>Navigate to Administration -> Access Control -> Users</p>  <p>Select the user</p> <p>Click the Change Password button</p>  <p>Enter a new password</p>  <p>Click the Continue button</p>
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6.3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

Procedure 8: Remove the Restored User

S T E P #	<p>Perform this procedure to remove users that will be 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 G. My Oracle Support (MOS), and ask for assistance.</p>	
<p>1.</p> <p><input type="checkbox"/></p>	<p>After Restoration: Login to 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: 2px; margin: 5px 0;"> <p><code>http://<Primary_NOAM_VIP_IP_Address></code></p> </div> <p>Login as the <i>guiadmin</i> user:</p> 

Procedure 8: Remove the Restored User

2. <input type="checkbox"/>	After Restoration: Delete user	<p>Navigate to Administration -> Access Control -> Users</p>  <p>Select the user</p> <p>Click the Delete button</p>  <p>Delete selected users?</p>  <p>Click the OK button to confirm.</p>
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6.4 Restoring a Modified User

These users have had a password change prior to creation of the backup and archive file. They will be 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 that you have access to a user with administrator permissions that is not affected.

Contact each user that is affected and notify them that you will reset 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 G. My Oracle Support (MOS)** for resetting passwords for a user.

6.5 Restoring an Archive that does not contain a Current User

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

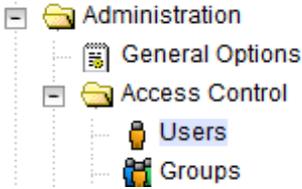
- User 'testuser' exists in current database but not in the selected backup file.

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

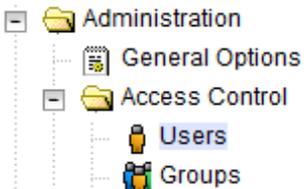
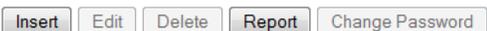
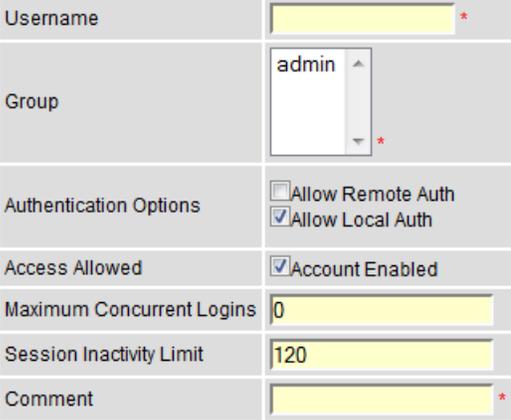
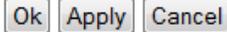
Procedure 9: Restoring an Archive that does not Contain a Current User

S T E P #	<p>Perform this procedure to remove users that will be 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 G. My Oracle Support (MOS), and ask for assistance.</p>	
1. <input type="checkbox"/>	<p>Before Restoration: Notify Affected Users Before Restoration</p>	<p>Contact each user that is affected before the restoration and notify them that you will reset their password during this maintenance operation.</p>
2. <input type="checkbox"/>	<p>Before Restoration: Login to 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: 2px; margin: 5px 0;"> <p><code>http://<Primary_NOAM_VIP_IP_Address></code></p> </div> <p>Login as the <i>guiadmin</i> user:</p> <div style="text-align: center;">  <p>The screenshot shows the Oracle System Login interface. At the top is the Oracle logo. Below it, the text 'Oracle System Login' is displayed on the left, and the date 'Fri Mar 20 12:29:52 2015 EDT' is on the right. A central box titled 'Log In' contains the prompt 'Enter your username and password to log in'. Below this are fields for 'Username: guiadmin' and 'Password: ●●●●●●'. There is a checkbox for 'Change password' and a 'Log In' button. At the bottom of the page, it says 'Welcome to the Oracle System Login.' and a disclaimer: '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.' A footer note states: 'Oracle and Java are registered trademarks of Oracle Corporation and/or its affiliates. Other names may be trademarks of their respective owners.'</p> </div>

Procedure 9: Restoring an Archive that does not Contain a Current User

<p>3.</p> <p><input type="checkbox"/></p>	<p>Before Restoration: Record user settings</p>	<p>Navigate to Administration -> Access Control -> Users</p>  <p>Under each affected user, record the following:</p> <ul style="list-style-type: none"> • Username, • Account status • Remote Auth • Local Auth • Concurrent Logins Allowed • Inactivity Limit • Comment • Groups
<p>4.</p> <p><input type="checkbox"/></p>	<p>After Restoration: 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; width: fit-content; margin: 10px auto;"> <p><code>http://<Primary_NOAM_VIP_IP_Address></code></p> </div> <p>Login as the guiadmin user:</p>  <p>The screenshot shows the Oracle System Login page. At the top is the Oracle logo. Below it is the text 'Oracle System Login' 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: guiadmin' and 'Password: ●●●●●●', a 'Change password' checkbox, and a 'Log In' button. Below the box is the text 'Welcome to the Oracle System Login.' At the bottom, there is a disclaimer: '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.' and a footer: 'Oracle and Java are registered trademarks of Oracle Corporation and/or its affiliates. Other names may be trademarks of their respective owners.'</p>

Procedure 9: Restoring an Archive that does not Contain a Current User

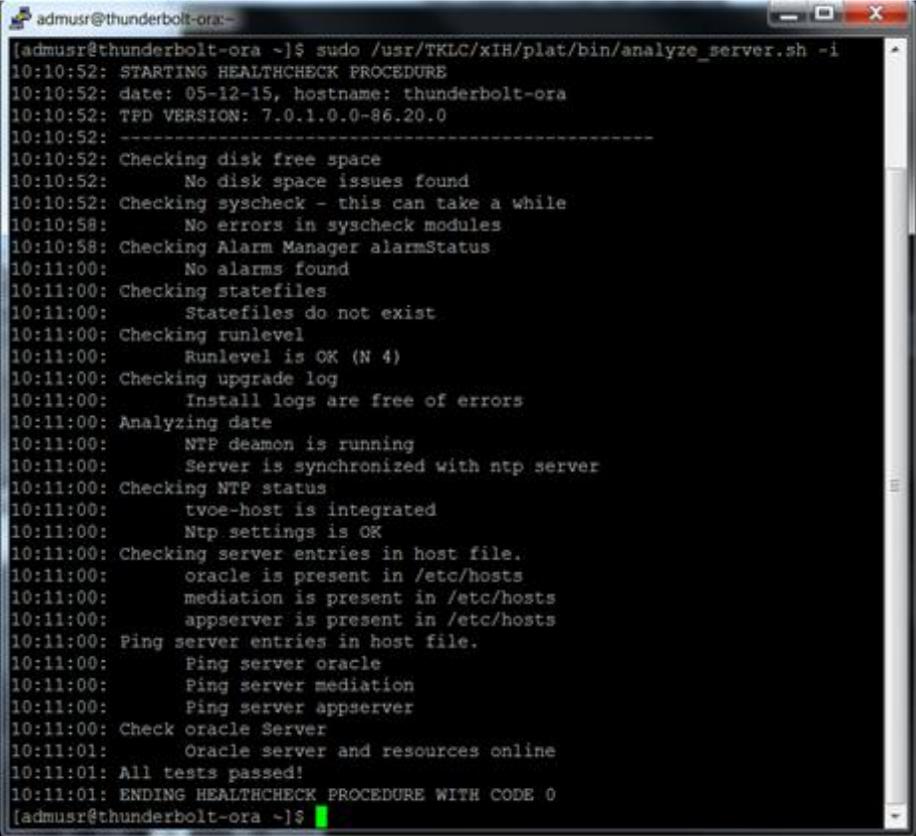
<p>5. ☐</p>	<p>After Restoration: Recreate affected user and required group</p>	<p>Navigate to Administration -> Access Control -> Users</p>  <p>Click Insert</p>  <p>Recreate the user using the data collected in Step 4.</p>  <p>Click Ok</p> 
<p>6. ☐</p>	<p>After Restoration: Repeat for Additional Users</p>	<p>Repeat Step 5 to recreate additional users and groups.</p>
<p>7. ☐</p>	<p>After Restoration: Reset the Passwords</p>	<p>See 6.2 Keeping a Restored user for resetting passwords for a user.</p>

7.0 IDIH Disaster Recovery

Procedure 10: IDIH Disaster Recovery Preparation

S T E P #	<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 G. My Oracle Support (MOS), and ask for assistance.</p>	
1. <input type="checkbox"/>	Oracle Guest: Login	Establish an SSH session to the Oracle guest, login as <i>admusr</i> .

Procedure 10: IDIH Disaster Recovery Preparation

<p>2.</p> <p><input type="checkbox"/></p>	<p>Oracle Guest: Perform Database Health check</p>	<p>Execute the following command to perform a database health check:</p> <pre style="border: 1px solid black; padding: 5px;">\$ sudo /usr/TKLC/xIH/plat/bin/analyze_server.sh -i</pre> <p>Output:</p>  <p>NOTE: If this step fails, a re-installation is necessary by following procedure from reference [1]: For VMware based deployments: Section 4.9 (Procedure 28) : Create iDIH Virtual Machines (VMWare) Section 4.12 (Procedure 31 – 34) : Configure iDIH Virtual Machines For KVM/Openstack based deployments: Section 4.10 (Procedure 29) : Create iDIH Virtual Machines (KVM/Openstack) Section 4.12 (Procedure 31 – 34) : Configure iDIH Virtual Machines For OVM-S/OVM-M based deployments: Section 4.11 (Procedure 30) : (OVM-S/OVM-M). Import three IDIH OVA's and create and configure a VM for each Section 4.12 (Procedure 31 – 34) : Configure iDIH Virtual Machines</p>
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Procedure 11: IDIH Disaster Recovery (Re-Install Mediation and Application Servers)

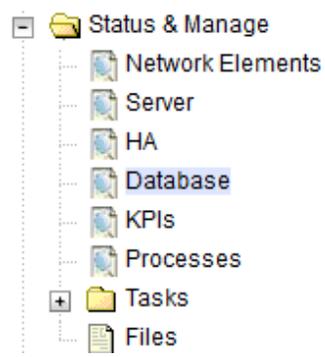
S T E P #	<p>This procedure performs disaster recovery for the IDIH by re-installing the mediation and application servers.</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>If this procedure fails, contact Appendix G. My Oracle Support (MOS), and ask for assistance.</p>	
1. <input type="checkbox"/>	Create iDIH Application & Mediation VMs	<p>Execute the following procedure from [1] to recover the Application and Mediation VMs:</p> <p>For VMWare based deployments: Procedure 28 “(VMware only) Create iDIH Oracle, Mediation and Application VMs”</p> <p>For KVM / Openstack based deployments: Procedure 29. (KVM/OpenStack only) Create iDIH Oracle, Mediation and Application VMs (Optional)</p> <p>For OVM-S / OVM-M based deployments: Procedure 30. (OVM-S/OVM-M). Import three IDIH OVA's and create and configure a VM for each</p>
2. <input type="checkbox"/>	Configure iDIH VM Networks	<p>Execute the following procedure from [1] to configure the VM networks on the Application and Mediation VMs only:</p> <p>Procedure 31 “Configure iDIH VM Networks”</p>
3. <input type="checkbox"/>	Configure VMs	<p>Execute the following procedure from [1]:</p> <p>Procedure 32 “Run Post Installation scripts on iDIH VMs”, steps 3 - 7</p>
4. <input type="checkbox"/>	Integrate into DSR (Optional)	<p>If integration is needed execute the following procedure from [1]:</p> <p>Procedure 35. Integrate iDIH into DSR</p>

Appendix A. DSR Database Backup

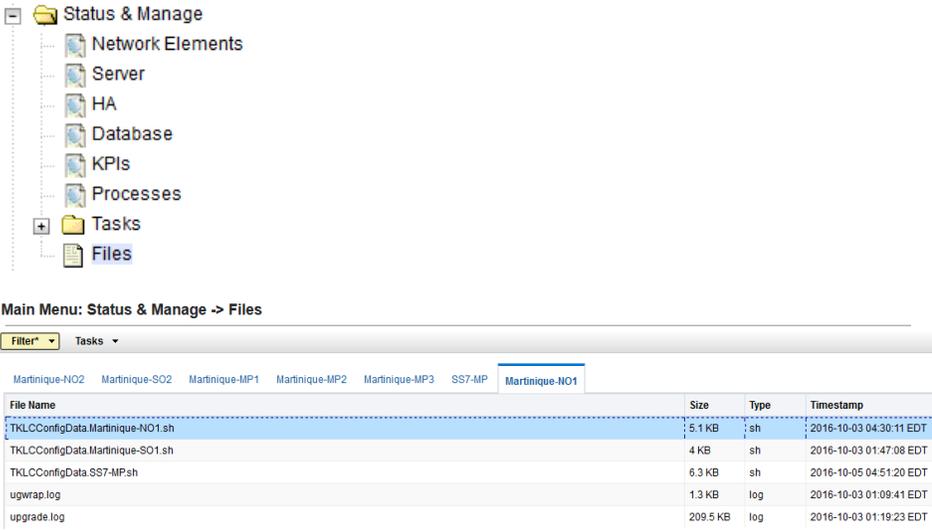
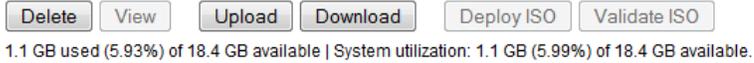
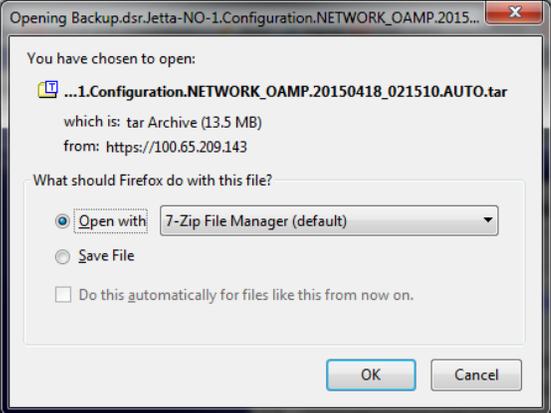
Procedure 12: Back up the provision and configuration data

<p>S T E P #</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 G. My Oracle Support (MOS), and ask for assistance.</p>	
<p>1. <input type="checkbox"/></p>	<p>NOAM/SOAM VIP: Login</p>	<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 style="border: 1px solid black; padding: 2px; width: fit-content; margin: 5px auto;"> <p><code>http://<Primary_NOAM/SOAM_VIP_IP_Address></code></p> </div> <p>Login as the <i>guiadmin</i> user:</p> <div style="text-align: center;">  <p>Oracle System Login</p> <hr/> <p style="text-align: right; font-size: small;">Fri Mar 20 12:29:52 2015 EDT</p> <div style="border: 1px solid gray; padding: 10px; width: fit-content; margin: 10px auto;"> <p style="text-align: center;">Log In</p> <p style="text-align: center;">Enter your username and password to log in</p> <p>Username: <input type="text" value="guiadmin"/></p> <p>Password: <input type="password" value="••••••"/></p> <p><input type="checkbox"/> Change password</p> <p style="text-align: center;"><input type="button" value="Log In"/></p> </div> <p style="text-align: center; font-size: x-small;">Welcome to the Oracle System Login.</p> <p style="text-align: center; font-size: x-small;">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.</p> <hr/> <p style="text-align: center; font-size: x-small;">Oracle and Java are registered trademarks of Oracle Corporation and/or its affiliates. Other names may be trademarks of their respective owners.</p> </div>

Procedure 12: Back up the provision and configuration data

<p>2.</p> <p><input type="checkbox"/></p> <p>NOAM/SOAM VIP: Backup Configuration Data for the System</p>	<p>Navigate to Main Menu -> Status & Manage -> Database</p>  <p>Select the Active NOAM Server and Click on Backup button</p>  <p>Make sure that the checkboxes next to “Configuration” is checked.</p> <p>Database Backup</p> <table border="1" data-bbox="487 924 1429 1281"> <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"> • tar.gz - gzip compression, • tar.bz2 - bzip2 compression, • tar - no compression. [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>Enter a filename for the backup and press OK</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"> • tar.gz - gzip compression, • tar.bz2 - bzip2 compression, • tar - no compression. [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"/>		
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Procedure 12: Back up the provision and configuration data

<p>3.</p> <p><input type="checkbox"/></p>	<p>NOAM/SOAM VIP: Verify the backup file existence.</p>	<p>Navigate to Main Menu -> Status & Manage -> Files</p>  <p>Main Menu: Status & Manage -> Files</p> <p>Filter* Tasks</p> <p>Martinique-NO2 Martinique-SO2 Martinique-MP1 Martinique-MP2 Martinique-MP3 SS7-MP Martinique-NO1</p> <table border="1"> <thead> <tr> <th>File Name</th> <th>Size</th> <th>Type</th> <th>Timestamp</th> </tr> </thead> <tbody> <tr> <td>TKLCConfigData.Martinique-NO1.sh</td> <td>5.1 KB</td> <td>sh</td> <td>2016-10-03 04:30:11 EDT</td> </tr> <tr> <td>TKLCConfigData.Martinique-SO1.sh</td> <td>4 KB</td> <td>sh</td> <td>2016-10-03 01:47:08 EDT</td> </tr> <tr> <td>TKLCConfigData.SS7-MP.sh</td> <td>6.3 KB</td> <td>sh</td> <td>2016-10-05 04:51:20 EDT</td> </tr> <tr> <td>ugwrap.log</td> <td>1.3 KB</td> <td>log</td> <td>2016-10-03 01:09:41 EDT</td> </tr> <tr> <td>upgrade.log</td> <td>209.5 KB</td> <td>log</td> <td>2016-10-03 01:19:23 EDT</td> </tr> </tbody> </table> <p>Select the Active NOAM or SOAM tab.</p> <p>The files on this server will be displayed. Verify the existence of the backup file.</p>	File Name	Size	Type	Timestamp	TKLCConfigData.Martinique-NO1.sh	5.1 KB	sh	2016-10-03 04:30:11 EDT	TKLCConfigData.Martinique-SO1.sh	4 KB	sh	2016-10-03 01:47:08 EDT	TKLCConfigData.SS7-MP.sh	6.3 KB	sh	2016-10-05 04:51:20 EDT	ugwrap.log	1.3 KB	log	2016-10-03 01:09:41 EDT	upgrade.log	209.5 KB	log	2016-10-03 01:19:23 EDT
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<p>4.</p> <p><input type="checkbox"/></p>	<p>NOAM/SOAM VIP: Download the file to a local machine.</p>	<p>From the previous step, choose the backup file.</p> <p>Select the Download button</p>  <p>1.1 GB used (5.93%) of 18.4 GB available System utilization: 1.1 GB (5.99%) of 18.4 GB available.</p> <p>Select OK to confirm the download.</p> 																								
<p>5.</p> <p><input type="checkbox"/></p>	<p>Upload the Image to Secure Location</p>	<p>Transfer the backed up image saved in the previous step to a secure location where the Server Backup files are fetched in case of system disaster recovery.</p>																								

Procedure 12: Back up the provision and configuration data

6. <input type="checkbox"/>	Backup Active SOAM	Repeat Steps 2 through 5 to back up the Active SOAM
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Appendix B. Inhibit A and B Level Replication on C-Level Servers

Procedure 13: Inhibit A and B Level Replication on C-Level Servers

S T E P #	<p>The intent of this procedure is to inhibit A and B level replication on all C Level servers of this site</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 G. My Oracle Support (MOS), and ask for assistance.</p>																																																																
1. <input type="checkbox"/>	Active NOAM: Login	<p>Login to the Active NOAM server via SSH as admusr user.</p>																																																															
2. <input type="checkbox"/>	Active NOAM: Inhibit replication on all C level Servers	<p>Execute the following command:</p> <pre style="border: 1px solid black; padding: 5px;">\$ 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</pre> <p>Note: NE name of the site can be found out by logging into the Active NOAM GUI and going to Configuration->Server Groups screen.</p> <p>Please see the snapshot below for more details.</p> <p>Main Menu: Configuration -> Server Groups</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Server Group Name</th> <th>Level</th> <th>Parent</th> <th>Function</th> <th>Connection Count</th> <th>Servers</th> </tr> </thead> <tbody> <tr> <td>MPSG</td> <td>C</td> <td>SOSG</td> <td>DSR (multi-active cluster)</td> <td>1</td> <td> Network Element: Martinique_SO <table border="1" style="width: 100%; border-collapse: collapse;"> <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> </td> </tr> <tr> <td>NOSG</td> <td>A</td> <td>NONE</td> <td>DSR (active/standby pair)</td> <td>1</td> <td> Network Element: Martinique_NO <table border="1" style="width: 100%; border-collapse: collapse;"> <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> </td> </tr> <tr style="background-color: #e0f0ff;"> <td>SOSG</td> <td>B</td> <td>NOSG</td> <td>DSR (active/standby pair)</td> <td>1</td> <td> Network Element: Martinique_SO <table border="1" style="width: 100%; border-collapse: collapse;"> <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> </td> </tr> <tr> <td>SS7SG</td> <td>C</td> <td>SOSG</td> <td>SS7-WF</td> <td>1</td> <td> Network Element: Martinique_SO <table border="1" style="width: 100%; border-collapse: collapse;"> <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> </td> </tr> </tbody> </table>	Server Group Name	Level	Parent	Function	Connection Count	Servers	MPSG	C	SOSG	DSR (multi-active cluster)	1	Network Element: Martinique_SO <table border="1" style="width: 100%; border-collapse: collapse;"> <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			NOSG	A	NONE	DSR (active/standby pair)	1	Network Element: Martinique_NO <table border="1" style="width: 100%; border-collapse: collapse;"> <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	SOSG	B	NOSG	DSR (active/standby pair)	1	Network Element: Martinique_SO <table border="1" style="width: 100%; border-collapse: collapse;"> <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	SS7SG	C	SOSG	SS7-WF	1	Network Element: Martinique_SO <table border="1" style="width: 100%; border-collapse: collapse;"> <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		
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Procedure 13: Inhibit A and B Level Replication on C-Level Servers

<p>3</p> <p><input type="checkbox"/></p>	<p>Active NOAM: Verify Replication has been Inhibited.</p>	<p>After executing above steps to inhibit replication on MP(s), no alarms on GUI would be raised informing that replication on MP is disabled.</p> <p>Verification of replication 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':</p> <p>Perform the following command:</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <pre>\$ sudo iqt NodeInfo</pre> <p>Expected output:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>nodeId</th> <th>nodeName</th> <th>hostName</th> <th>nodeCapability</th> <th>inhibitRepPlans</th> <th>siteId</th> </tr> </thead> <tbody> <tr> <td>A1386.099</td> <td>NO1</td> <td>NO1</td> <td>Active</td> <td></td> <td>NO_HPC03</td> </tr> <tr> <td>B1754.109</td> <td>SO1</td> <td>SO1</td> <td>Active</td> <td></td> <td>SO_HPC03</td> </tr> <tr> <td>C2254.131</td> <td>MP2</td> <td>MP2</td> <td>Active</td> <td>A B</td> <td>SO_HPC03</td> </tr> <tr> <td>C2254.233</td> <td>MP1</td> <td>MP1</td> <td>Active</td> <td>A B</td> <td>SO_HPC03</td> </tr> </tbody> </table> </div>	nodeId	nodeName	hostName	nodeCapability	inhibitRepPlans	siteId	A1386.099	NO1	NO1	Active		NO_HPC03	B1754.109	SO1	SO1	Active		SO_HPC03	C2254.131	MP2	MP2	Active	A B	SO_HPC03	C2254.233	MP1	MP1	Active	A B	SO_HPC03
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Appendix C. Un-Inhibit A and B Level Replication on C-Level Servers

Procedure 14: Un-Inhibit A and B Level Replication on C-Level Servers

S T E P #	<p>The intent of this procedure is to Un-inhibit A and B level replication on all C Level servers of this site</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 G. My Oracle Support (MOS), and ask for assistance.</p>																																																																
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Procedure 14: Un-Inhibit A and B Level Replication on C-Level Servers

<p>3. <input type="checkbox"/></p>	<p>Active NOAM: Verify Replication has been un- inhibited.</p>	<p>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.</p> <p>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 empty</p> <p>Perform the following command:</p> <pre style="border: 1px solid black; padding: 5px;">\$ sudo iqt NodeInfo</pre> <p>Expected output:</p> <table border="1"> <thead> <tr> <th>nodeId</th> <th>nodeName</th> <th>hostName</th> <th>nodeCapability</th> <th>inhibitRepPlans</th> <th>siteId excludeTables</th> </tr> </thead> <tbody> <tr> <td>A1386.099</td> <td>NO1</td> <td>NO1</td> <td>Active</td> <td></td> <td>NO_HPC03</td> </tr> <tr> <td>B1754.109</td> <td>SO1</td> <td>SO1</td> <td>Active</td> <td></td> <td>SO_HPC03</td> </tr> <tr> <td>C2254.131</td> <td>MP2</td> <td>MP2</td> <td>Active</td> <td></td> <td>SO_HPC03</td> </tr> <tr> <td>C2254.233</td> <td>MP1</td> <td>MP1</td> <td>Active</td> <td></td> <td>SO_HPC03</td> </tr> </tbody> </table>	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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Appendix D. Inhibit A and B Level Replication on C-Level Servers (When Active, Standby and Spare SOAMs are lost)

Procedure 13: Inhibit A and B Level Replication on C-Level Servers

<p>S T E P #</p>	<p>The intent of this procedure is to inhibit A and B level replication on all C Level servers of this site when Active, Standby and Spare SOAMS are lost</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 G. My Oracle Support (MOS), and ask for assistance.</p>	
<p>3. <input type="checkbox"/></p>	<p>Active NOAM: Login</p>	<p>Login to the Active NOAM server via SSH as admusr user.</p>

Procedure 13: Inhibit A and B Level Replication on C-Level Servers

4.	<p>Active NOAM: Inhibit replication on all C level Servers</p>	<p>Execute the following command:</p> <pre style="background-color: #f0f0f0; padding: 10px; border: 1px solid black;"> \$ for i in \$(sudo Imysql.client -B -N -e " SELECT DISTINCT CS.hostname FROM appworks.Server CS, appworks.Server PS, appworks.Server2SG C2SG, appworks.Server2SG P2SG, appworks.ServerGroup CSG, appworks.ServerGroup PSG, comcol.ClusterInfo CCI, comcol.ClusterInfo PCI, comcol.ClusterGroupInfo WHERE CS._h_Server_ID = C2SG._h_Server_ID AND C2SG._h_SG_ID = CSG._h_SG_ID AND CSG.clusterId = CCI.clusterId AND CCI.groups = comcol.ClusterGroupInfo.groupId AND comcol.ClusterGroupInfo.parentGroup = PCI.groups AND PCI.clusterId = PSG.clusterId AND PSG.ServerGroupName='<SOAM_SG_NAME>' "); do iset -finhibitRepPlans='A B' NodeInfo where "nodeName='\$i'"; done </pre> <p>Note: SOAM_SG_NE name of the Server Group can be found out by logging into the Active NOAM GUI and going to Configuration->Server Groups screen.</p> <p>Please see the snapshot below for more details.</p> <table border="1" style="width: 100%; border-collapse: collapse; font-size: small;"> <tr> <td style="width: 15%;"></td> <td style="width: 10%;"></td> <td style="width: 30%;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th colspan="3">Network Element: DSR_DR_NO_NE</th></tr> <tr><th>Server</th><th>Node HA Pref</th><th>VIPs</th></tr> <tr><td>DRNOAM1</td><td></td><td></td></tr> <tr><td>DRNOAM2</td><td></td><td></td></tr> </table> </td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th colspan="3">Network Element: DSR_NO_NE</th></tr> <tr><th>Server</th><th>Node HA Pref</th><th>VIPs</th></tr> <tr><td>NOAM1</td><td></td><td></td></tr> <tr><td>NOAM2</td><td></td><td></td></tr> </table> </td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th colspan="3">Network Element: DSR_SO_NE</th></tr> <tr><th>Server</th><th>Node HA Pref</th><th>VIPs</th></tr> <tr><td>SOAM1</td><td></td><td></td></tr> <tr><td>SOAM2</td><td></td><td></td></tr> </table> </td> </tr> </table>							<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th colspan="3">Network Element: DSR_DR_NO_NE</th></tr> <tr><th>Server</th><th>Node HA Pref</th><th>VIPs</th></tr> <tr><td>DRNOAM1</td><td></td><td></td></tr> <tr><td>DRNOAM2</td><td></td><td></td></tr> </table>	Network Element: DSR_DR_NO_NE			Server	Node HA Pref	VIPs	DRNOAM1			DRNOAM2									<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th colspan="3">Network Element: DSR_NO_NE</th></tr> <tr><th>Server</th><th>Node HA Pref</th><th>VIPs</th></tr> <tr><td>NOAM1</td><td></td><td></td></tr> <tr><td>NOAM2</td><td></td><td></td></tr> </table>	Network Element: DSR_NO_NE			Server	Node HA Pref	VIPs	NOAM1			NOAM2									<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th colspan="3">Network Element: DSR_SO_NE</th></tr> <tr><th>Server</th><th>Node HA Pref</th><th>VIPs</th></tr> <tr><td>SOAM1</td><td></td><td></td></tr> <tr><td>SOAM2</td><td></td><td></td></tr> </table>	Network Element: DSR_SO_NE			Server	Node HA Pref	VIPs	SOAM1			SOAM2		
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Procedure 13: Inhibit A and B Level Replication on C-Level Servers

<p>3</p> <p><input type="checkbox"/></p>	<p>Active NOAM: Verify Replication has been Inhibited.</p>	<p>After executing above steps to inhibit replication on MP(s), no alarms on GUI would be raised informing that replication on MP is disabled.</p> <p>Verification of replication inhibition on MPs can be done by analyzing NodeInfo output. InhibitRepPlans field for all the MP servers for the selected server group e.g. Server group SO_SG shall be set as 'A B':</p> <p>Perform the following command:</p> <pre style="border: 1px solid black; padding: 5px;">\$ sudo iqt NodeInfo</pre> <p>Expected output:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>nodeId</th> <th>nodeName</th> <th>hostName</th> <th>nodeCapability</th> <th>inhibitRepPlans</th> <th>siteId</th> </tr> </thead> <tbody> <tr> <td>excludeTables</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>A1386.099</td> <td>NO1</td> <td>NO1</td> <td>Active</td> <td></td> <td>NO_HPC03</td> </tr> <tr> <td>B1754.109</td> <td>SO1</td> <td>SO1</td> <td>Active</td> <td></td> <td>SO_HPC03</td> </tr> <tr> <td>C2254.131</td> <td>MP2</td> <td>MP2</td> <td>Active</td> <td>A B</td> <td>SO_HPC03</td> </tr> <tr> <td>C2254.233</td> <td>MP1</td> <td>MP1</td> <td>Active</td> <td>A B</td> <td>SO_HPC03</td> </tr> </tbody> </table>	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	A B	SO_HPC03	C2254.233	MP1	MP1	Active	A B	SO_HPC03
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Appendix E. Un-Inhibit A and B Level Replication on C-Level Servers (When Active, Standby and Spare SOAMs are lost)

Procedure 14: Un-Inhibit A and B Level Replication on C-Level Servers

<p>S</p> <p>T</p> <p>E</p> <p>P</p> <p>#</p>	<p>The intent of this procedure is to Un-inhibit A and B level replication on all C Level servers of this site when Active, Standby and Spare SOAMS are lost.</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 G. My Oracle Support (MOS), and ask for assistance.</p>	
<p>4.</p> <p><input type="checkbox"/></p>	<p>Active NOAM: Login</p>	<p>Login to the Active NOAM server via SSH as <i>admusr</i> user.</p>

Procedure 14: Un-Inhibit A and B Level Replication on C-Level Servers

5.	<p>Active NOAM: Un-Inhibit replication on all C level Servers</p>	<p>Execute the following command:</p> <pre style="background-color: #f0f0f0; padding: 10px; border: 1px solid black;"> \$ for i in \$(sudo Imysql.client -B -N -e " SELECT DISTINCT CS.hostname FROM appworks.Server CS, appworks.Server PS, appworks.Server2SG C2SG, appworks.Server2SG P2SG, appworks.ServerGroup CSG, appworks.ServerGroup PSG, comcol.ClusterInfo CCI, comcol.ClusterInfo PCI, comcol.ClusterGroupInfo WHERE CS._h_Server_ID = C2SG._h_Server_ID AND C2SG._h_SG_ID = CSG._h_SG_ID AND CSG.clusterId = CCI.clusterId AND CCI.groups = comcol.ClusterGroupInfo.groupId AND comcol.ClusterGroupInfo.parentGroup = PCI.groups AND PCI.clusterId = PSG.clusterId AND PSG.ServerGroupName='<SOAM_SG_NAME>') "); do iset -finhibitRepPlans='' NodeInfo where "nodeName='\$i'"; done </pre> <p>Note: SOAM_SG_NAME name of the site can be found out by logging into the Active NOAM GUI and going to Configuration->Server Groups screen.</p> <p>Please see the snapshot below for more details.</p> <table border="1" style="width: 100%; border-collapse: collapse; font-size: small;"> <tr> <td style="width: 15%;">DRNO_SG</td> <td style="width: 5%;">A</td> <td style="width: 10%;">NONE</td> <td style="width: 25%;">DSR (active/standby pair)</td> <td style="width: 5%;">1</td> <td style="width: 40%;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th colspan="3">Network Element: DSR_DR_NO_JIE</th></tr> <tr><th>Server</th><th>Node HA Pref</th><th>VIPs</th></tr> <tr><td>DRNOAM1</td><td></td><td></td></tr> <tr><td>DRNOAM2</td><td></td><td></td></tr> </table> </td> </tr> <tr> <td>NO_SG</td> <td>A</td> <td>NONE</td> <td>DSR (active/standby pair)</td> <td>1</td> <td> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th colspan="3">Network Element: DSR_NO_NE</th></tr> <tr><th>Server</th><th>Node HA Pref</th><th>VIPs</th></tr> <tr><td>NOAM1</td><td></td><td></td></tr> <tr><td>NOAM2</td><td></td><td></td></tr> </table> </td> </tr> <tr> <td>SO_SG</td> <td>B</td> <td>NO_SG</td> <td>DSR (active/standby pair)</td> <td>1</td> <td> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th colspan="3">Network Element: DSR_SO_NE</th></tr> <tr><th>Server</th><th>Node HA Pref</th><th>VIPs</th></tr> <tr><td>SOAM1</td><td></td><td></td></tr> <tr><td>SOAM2</td><td></td><td></td></tr> </table> </td> </tr> </table>	DRNO_SG	A	NONE	DSR (active/standby pair)	1	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th colspan="3">Network Element: DSR_DR_NO_JIE</th></tr> <tr><th>Server</th><th>Node HA Pref</th><th>VIPs</th></tr> <tr><td>DRNOAM1</td><td></td><td></td></tr> <tr><td>DRNOAM2</td><td></td><td></td></tr> </table>	Network Element: DSR_DR_NO_JIE			Server	Node HA Pref	VIPs	DRNOAM1			DRNOAM2			NO_SG	A	NONE	DSR (active/standby pair)	1	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th colspan="3">Network Element: DSR_NO_NE</th></tr> <tr><th>Server</th><th>Node HA Pref</th><th>VIPs</th></tr> <tr><td>NOAM1</td><td></td><td></td></tr> <tr><td>NOAM2</td><td></td><td></td></tr> </table>	Network Element: DSR_NO_NE			Server	Node HA Pref	VIPs	NOAM1			NOAM2			SO_SG	B	NO_SG	DSR (active/standby pair)	1	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th colspan="3">Network Element: DSR_SO_NE</th></tr> <tr><th>Server</th><th>Node HA Pref</th><th>VIPs</th></tr> <tr><td>SOAM1</td><td></td><td></td></tr> <tr><td>SOAM2</td><td></td><td></td></tr> </table>	Network Element: DSR_SO_NE			Server	Node HA Pref	VIPs	SOAM1			SOAM2		
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Procedure 14: Un-Inhibit A and B Level Replication on C-Level Servers

<p>6.</p> <p><input type="checkbox"/></p>	<p>Active NOAM: Verify Replication has been un- inhibited.</p>	<p>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.</p> <p>Verification of replication un-inhibition on MPs can be done by analyzing NodeInfo output. InhibitRepPlans field for all the MP servers for the selected server group e.g. Server group SO_SG shall be set as '':</p> <p>Perform the following command:</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <pre>\$ sudo iqt NodeInfo</pre> <p>Expected output:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>nodeId</th> <th>nodeName</th> <th>hostName</th> <th>nodeCapability</th> <th>inhibitRepPlans</th> <th>siteId excludeTables</th> </tr> </thead> <tbody> <tr> <td>A1386.099</td> <td>NO1</td> <td>NO1</td> <td>Active</td> <td></td> <td>NO_HPC03</td> </tr> <tr> <td>B1754.109</td> <td>SO1</td> <td>SO1</td> <td>Active</td> <td></td> <td>SO_HPC03</td> </tr> <tr> <td>C2254.131</td> <td>MP2</td> <td>MP2</td> <td>Active</td> <td></td> <td>SO_HPC03</td> </tr> <tr> <td>C2254.233</td> <td>MP1</td> <td>MP1</td> <td>Active</td> <td></td> <td>SO_HPC03</td> </tr> </tbody> </table> </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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Appendix F. Workarounds for Issues not fixed in this Release

Appendix G. My Oracle Support (MOS)

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

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

1. Select 2 for New Service Request
2. Select 3 for Hardware, Networking and Solaris Operating System Support
3. Select one of the following options:
 - For Technical issues such as creating a new Service Request (SR), Select 1.
 - For Non-technical issues such as registration or assistance with MOS, Select 2.

You will be connected to a live agent who can assist you with MOS registration and opening a support ticket.

MOS is available 24 hours a day, 7 days a week, 365 days a year.