

Oracle® Communications
Diameter Signaling Router
DSR Cloud Disaster Recovery Guide
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ORACLE®

Oracle Communications Diameter Signaling Router, DSR Cloud Disaster Recovery Guide

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

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1. Introduction

1.1 Purpose and Scope

This document describes how to execute disaster recovery for DSR (3-tier deployments). This includes recovery of partial or a complete loss of one or more DSR servers. The audience for this document includes GPS groups such as Software Engineering, Product Verification, Documentation, and Customer Service including Software Operations and First Office Application. This document can also be executed by Oracle customers as long as Oracle Customer Service personnel are involved and/or consulted. This document provides step-by-step instructions to execute disaster recovery for DSR. Executing this procedure also involves referring to and executing procedures in existing support documents.

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

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

1.2 References

- [1] DSR 8.0 Cloud Installation Guide, E76331, cgbu_019911, Oracle
- [2] DSR/SDS 8.x NOAM Failover User's Guide, E85595
- [3] DSR PCA Activation Guide, E81528
- [4] DSR MAP-Diameter IWF Feature Activation Procedure, E78927

1.3 Acronyms

An alphabetized list of acronyms used in the document.

Table 1. Acronyms

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

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

1.4 Terminology

Table 2. Terminology

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

1.5 Optional Features

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

Table 3. Optional Features

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

2. General Description

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

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

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

Scenario:

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

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

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

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

Scenario:

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

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

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

Scenario:

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

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

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

Scenario:

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

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

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

Scenario:

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

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

2.6 Partial Service Outage with Corrupt Database

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

Case 2: Database is corrupted but replication channel is active

3. Procedure Overview

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

3.1 Required Materials

The following items are needed for disaster recovery:

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

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

3.2 Disaster Recovery Strategy

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

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

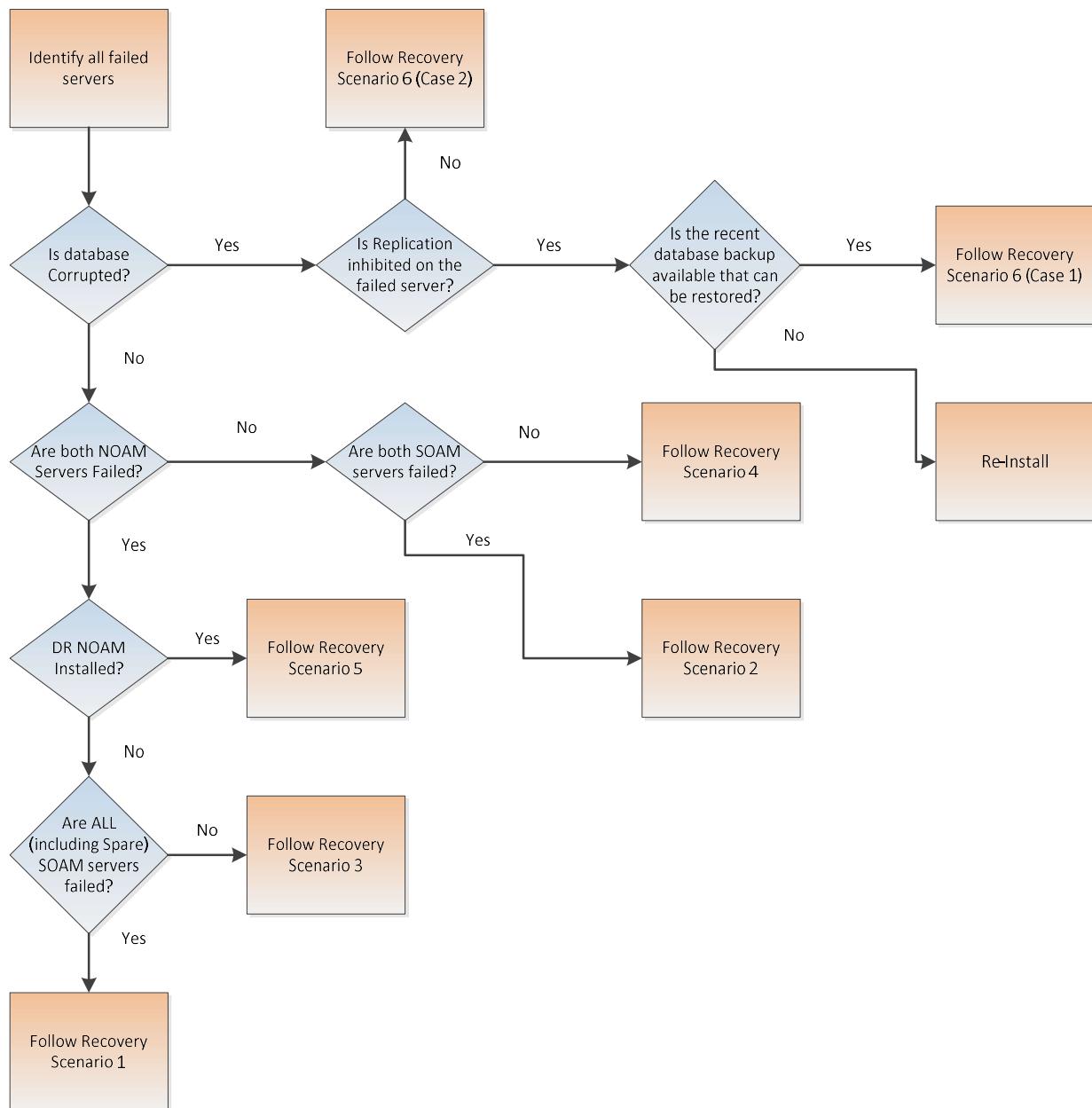


Figure 1. Determine Recovery Scenario

4. Procedure Preparation

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

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

Table 4. Recovery Scenarios

Recovery Scenario	Failure Condition	Section
1	<ul style="list-style-type: none"> • All NOAM servers failed. • All SOAM servers failed. • MP servers may or may not be failed. 	Section 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 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 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 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 Recovery Scenario 5 (Partial Server Outage with all NOAM servers failed with DR-NOAM available)
6	<ul style="list-style-type: none"> • Server is intact • Database gets corrupted on the server • Latest Database backup of the corrupt server is present • Replication is inhibited (either manually or because of comcol upgrade barrier) 	Section Recovery Scenario 6 (Database Recovery)
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 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 Recovery Scenario 6: Case 2

5. Disaster Recovery Procedure

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

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

**** **WARNING** ****

**** **WARNING** ****

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

5.1 Recovering and Restoring System Configuration

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

5.1.1 Recovery Scenario 1 (Complete Server Outage)

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

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

Recover base software for all VMs:

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

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

- Reconfigure the DSR application

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

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

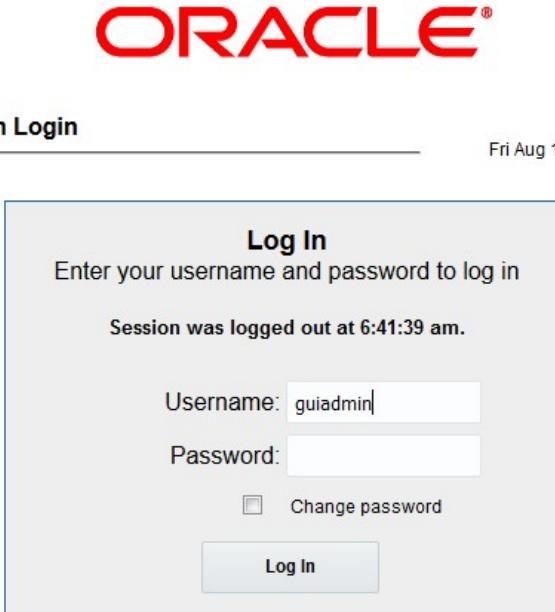
Restart process and re-enable provisioning replication.

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

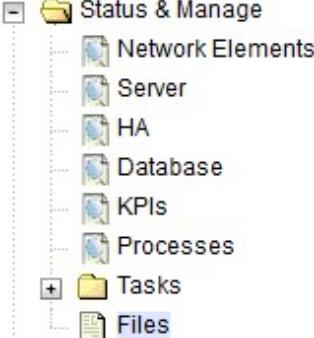
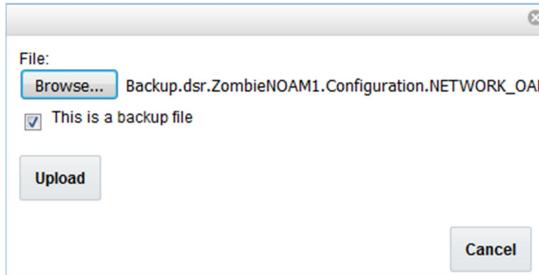
Procedure 1. Recovery Scenario 1

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

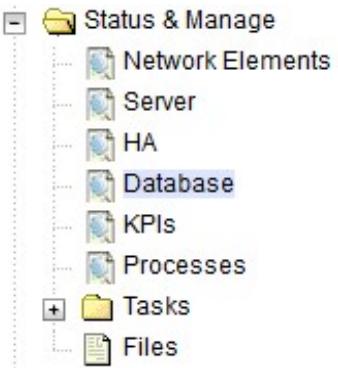
Procedure 1. Recovery Scenario 1

		<p>resource profile.</p> <ol style="list-style-type: none"> 2. For SOAMs, execute the following procedures from reference [1]: <ul style="list-style-type: none"> • Procedure 7 (OVM-S/OVM-M). Import DSR OVA. • Procedure 9 (OVM-S/OVM-M Only). Configure Remaining DSR guests based on resource profile. 3. For failed MPs, execute the following procedures from reference [1]: <ul style="list-style-type: none"> • Procedure 7 (OVM-S/OVM-M). Import DSR OVA. • Procedure 9 (OVM-S/OVM-M Only). Configure Remaining DSR guests based on resource profile.
4.	<input type="checkbox"/> Obtain latest database backup and network configuration data	<p>Obtain the most recent database backup file from external backup sources (i.e., file servers) or tape backup sources.</p> <p>From required materials list in Section 3.1 Required Materials, use the site survey documents and network element report (if available) to determine network configuration data.</p>
5.	<input type="checkbox"/> Execute DSR installation procedure for the first NOAM	<p>Verify the networking data for network elements.</p> <p>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> <ul style="list-style-type: none"> • Procedure 10 Configure the First NOAM NE and Server • Procedure 11 Configure the NOAM Server Group.
6.	<input type="checkbox"/> NOAM GUI: Login	<p>Log into the NOAM GUI as the guiadmin user.</p>  <p>The screenshot shows the Oracle System Login interface. At the top is a large red "ORACLE" logo. Below it is the text "Oracle System Login" and the date "Fri Aug 12 06:41:39 2016 EDT". The main area is a login form with the following text and fields: <ul style="list-style-type: none"> Log In Enter your username and password to log in Session was logged out at 6:41:39 am. Username: <input type="text" value="guiadmin"/> Password: <input type="password"/> <input type="checkbox"/> Change password Log In </p>

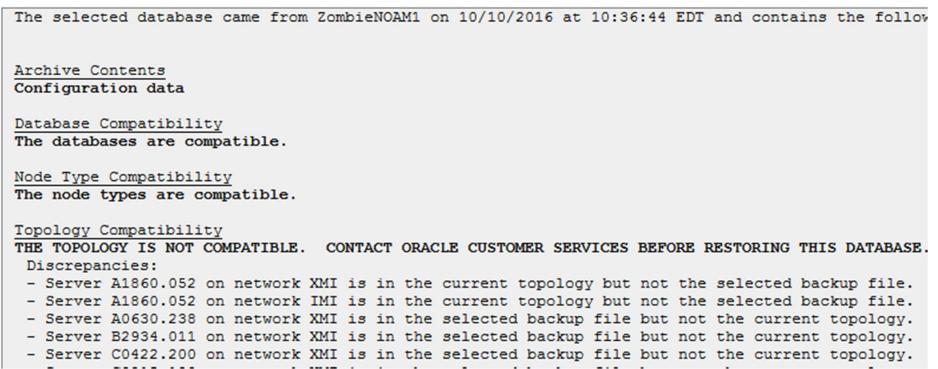
Procedure 1. Recovery Scenario 1

7. <input type="checkbox"/> NOAM GUI: Upload the backed up database file	<p>Navigate to Main Menu->Status & Manage->Files.</p>  <p>Select the active NOAM server.</p> <p>Main Menu: Status & Manage -> Files</p> <p>Filter* Tasks</p> <p>SO1 SO2 DAMP1 NO1 NO2</p> <p>Click Upload and select the NO Provisioning and Configuration file backed up after the initial installation and provisioning.</p> <p>Delete View Upload Download Deploy ISO Validate ISO</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"> 4. Click Browse and locate the backup file. 5. Mark the This is a backup file checkbox. 6. Click Upload.  <p>The file takes a few seconds to upload depending on the size of the backup data. The file displays on the list of entries after the upload is complete.</p>
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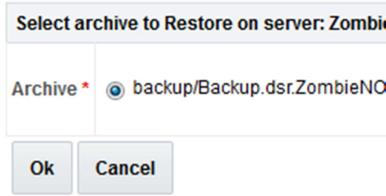
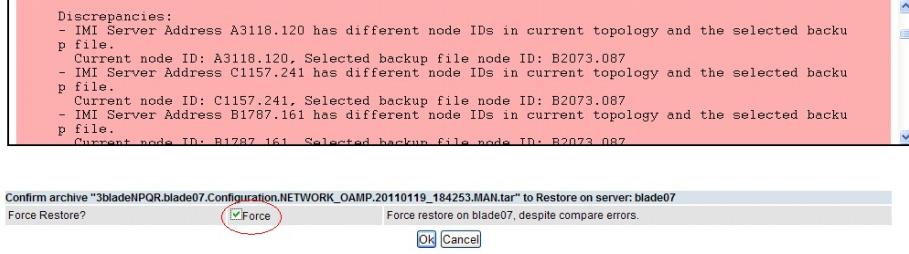
Procedure 1. Recovery Scenario 1

8.	NOAM GUI: <input type="checkbox"/> Disable provisioning	<p>Navigate to Main Menu->Status & Manage->Database.</p>  <p>Click Disable Provisioning.</p>  <p>Click OK on the confirmation screen.</p>  <p>The Warning Code 002 message displays.</p>
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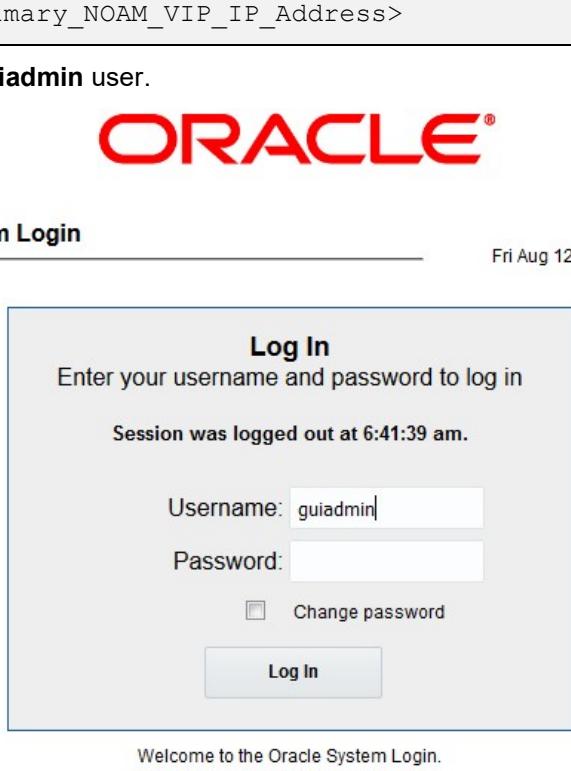
Procedure 1. Recovery Scenario 1

9.	NOAM GUI: <input type="checkbox"/> Verify the archive contents and database compatibility	<p>Select the active NOAM server and click Compare.</p> <p></p> <p>Click the button for the restored database file uploaded as a part of Step 7 of this procedure.</p> <p></p> <p>Verify the output window matches the screen below.</p> <p>Note: A database mismatch regarding the NodeIDs of the VMs is expected. If that is the only mismatch, proceed; otherwise, stop and contact Appendix E. My Oracle Support (MOS).</p> <p></p> <p>Note: Archive Contents and Database Compatibilities must be the following:</p> <ul style="list-style-type: none"> Archive Contents: Configuration data Database Compatibility: The databases are compatible. <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</p> <p>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.</p>
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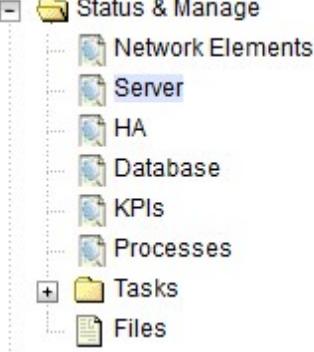
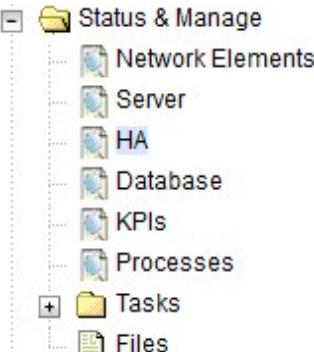
Procedure 1. Recovery Scenario 1

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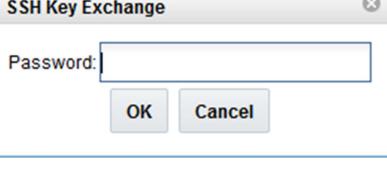
Procedure 1. Recovery Scenario 1

<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; text-align: center;"> <code>http://<Primary_NOAM_VIP_IP_Address></code> </div>
		<p>Login as the guiadmin user.</p>  <p>Oracle System Login</p> <p>Fri Aug 12 06:41:39 2016 EDT</p> <p>Log In Enter your username and password to log in</p> <p>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><input type="checkbox"/> Change password</p> <p>Log In</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>
<input type="checkbox"/>	NOAM VIP GUI: Monitor and confirm database restoral	<p>Wait 5-10 minutes for the system to stabilize with the new topology.</p>
		<p>Monitor the Info tab for the Success message. This indicates the backup is complete and the system is stabilized.</p> <p>The following alarms must be ignored for NOAM and MP servers until all the servers are configured:</p> <ul style="list-style-type: none"> Alarms with Type Column as REPL, COLL, HA (with mate NOAM), DB (about provisioning manually disabled). <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 is in the same state it was backed up during initial backup.</p>
<input type="checkbox"/>	ACTIVE NOAM: Login	<p>Log into the recovered active NOAM via SSH terminal as admusr.</p>

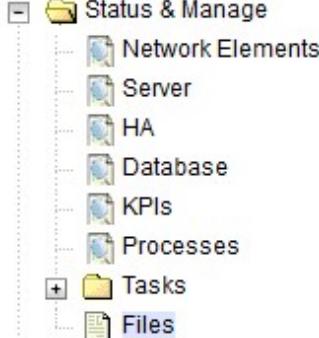
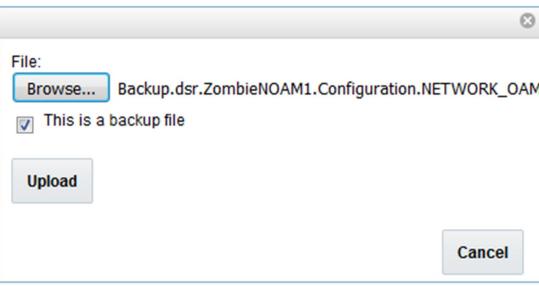
Procedure 1. Recovery Scenario 1

14.	NOAM VIP GUI: Recover standby NOAM	Install the second NOAM server by executing procedures from reference [1]. <ul style="list-style-type: none"> Procedure 12 Configure the Second NOAM Server, Steps 1, 3-7 Procedure 13 Complete Configuring the NOAM Server Group, Step 4
15.	Active NOAM: Correct the recognizedAuth ority table	Establish an SSH session to the active NOAM, login as admusr . Execute the following command. <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>
16.	NOAM VIP GUI: Restart DSR application	Navigate to Main Menu->Status & Manage->Server .  <p>Select the recovered standby NOAM server and click Restart.</p> <p>Stop Restart Reboot NTP Sync Report</p>
17.	NOAM VIP GUI: Set HA on standby NOAM	Navigate to Status & Manage -> HA .  <p>Click Edit. Select the standby NOAM server and set it to Active. Click OK.</p>

Procedure 1. Recovery Scenario 1

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

Procedure 1. Recovery Scenario 1

22.	NOAM VIP GUI: <input type="checkbox"/> Upload the backed up SOAM database file	<p>Navigate to Main Menu->Status & Manage->Files.</p>  <p>Select the active SOAM server.</p> <p>Main Menu: Status & Manage -> Files</p> <p>Filter* Tasks</p> <p>SO1 SO2 DAMP1 DR-NO1 DR-NO2</p> <p>File Name</p> <p>backup/Backup.dsr.SO1.Configuration.SYSTEM_OAM.20160810_045515.MAN.tar</p> <p>Click Upload and select the SO Provisioning and Configuration file backed up after initial installation and provisioning.</p> <p>Delete View Upload Download Deploy ISO Validate ISO</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 Browse and locate the backup file. 2. Mark the This is a backup file checkbox. 3. Click Upload.  <p>The file takes a few seconds to upload depending on the size of the backup data. The file displays on the list of entries after the upload is complete.</p>
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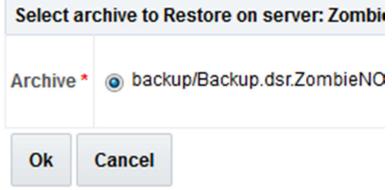
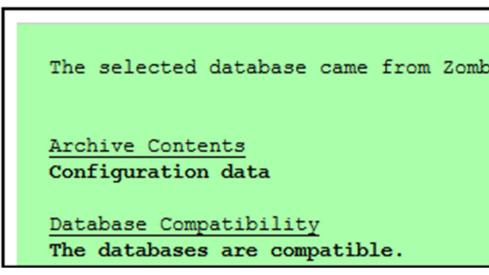
Procedure 1. Recovery Scenario 1

23. <input type="checkbox"/>	Recovered SOAM GUI: Login	<p>Establish a GUI session on the recovered SOAM server.</p> <p>Open the web browser and enter a URL of:</p> <div style="border: 1px solid black; padding: 5px; width: 100%;"><code>http://<Recovered_SOAM_IP_Address></code></div> <p>Login as the guiadmin user.</p>  <p>Oracle System Login</p> <p>Fri Aug 12 06:41:39 2016 EDT</p> <div style="border: 1px solid black; padding: 10px; width: 100%;"> <p style="text-align: center;">Log In</p> <p>Enter your username and password to log in</p> <p>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><input type="checkbox"/> Change password</p> <p style="text-align: center;">Log In</p> </div> <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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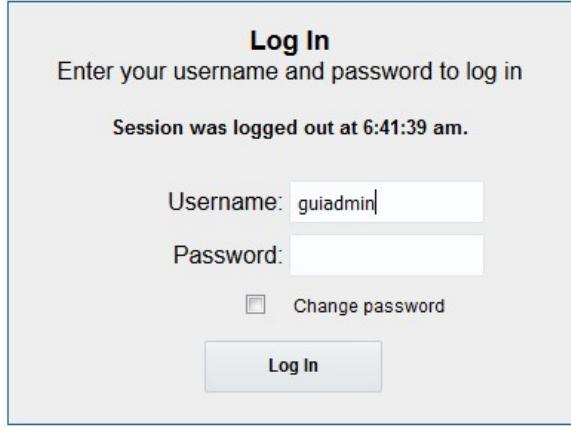
Procedure 1. Recovery Scenario 1

24.	<p><input type="checkbox"/> Recovered SOAM GUI: Verify the archive contents and database compatibility</p>	<p>Navigate to Main Menu->Status & Manage->Database. Select the active SOAM server and click Compare.</p> <p></p> <p>Click the button for the restored database file uploaded as a part of Step 22 of this procedure.</p> <p>Database Compare</p> <p>Select archive to compare on server: 2</p> <p>Archive * <input checked="" type="radio"/> backup/Backup.DSR.Zom</p> <p>Ok Cancel</p> <p>Verify the output window matches the screen below.</p> <p>Note: A database mismatch regarding the NodeIDs of the VMs is expected. If that is the only mismatch, proceed; otherwise, stop and contact Appendix E. My Oracle Support (MOS).</p> <hr/> <p>Database Archive Compare</p> <p>The selected database came from ZombieSOAM1 on 10/10/2013 10:10:10 AM</p> <p><u>Archive Contents</u> Configuration data</p> <p><u>Database Compatibility</u> The databases are compatible.</p> <p>Note: Archive Contents and Database Compatibilities must be the following:</p> <p>Archive Contents: Configuration data</p> <p>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</p> <p>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.</p> <p>If the verification is successful, click Back.</p>
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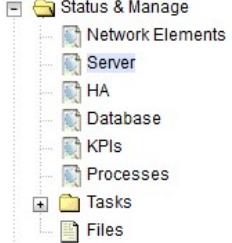
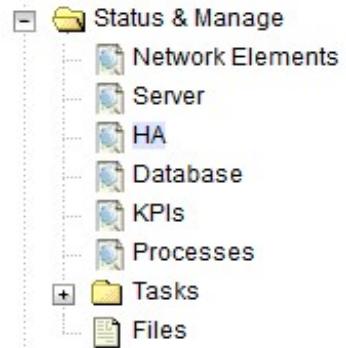
Procedure 1. Recovery Scenario 1

25.	<input type="checkbox"/> Recovered SOAM GUI: Restore the database	<p>Navigate to Main Menu->Status & Manage->Database.</p> <p>Select the active SOAM server and click Restore.</p> <p>Select the proper back up provisioning and configuration file.</p>  <p>Click OK.</p> <p>Note: An error that the NodeIDs do not match is expected. If no other errors beside the NodeIDs are displayed, mark the Force checkbox 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 is logged out of XMI SOAM GUI since the restored topology is old data.</p>
26.	<input type="checkbox"/> Recovered SOAM GUI: Monitor and confirm database restoral	<p>Wait 5-10 minutes for the system to stabilize with the new topology.</p> <p>Monitor the Info tab for the Success message. This indicates 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 is in the same state it was backed up during initial backup.</p>

Procedure 1. Recovery Scenario 1

27. <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; text-align: center;"> <code>http://<Primary_NOAM_VIP_IP_Address></code> </div> <p>Login as the guiadmin user.</p>  <p>Oracle System Login</p> <p>Fri Aug 12 06:41:39 2016 EDT</p> <p>Log In Enter your username and password to log in</p> <p>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><input type="checkbox"/> Change password</p> <p>Log In</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>
28. <input type="checkbox"/>	NOAM VIP GUI: Recover remaining SOAM server	<p>Install the SOAM servers by executing Procedure 19 Configure the SOAM Servers, Steps 1, 3- 6, from reference [1].</p> <p>Note: Wait for server to reboot before continuing.</p>

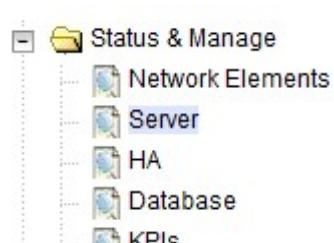
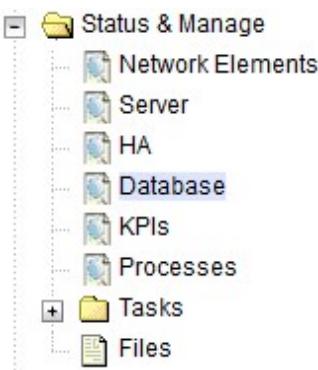
Procedure 1. Recovery Scenario 1

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

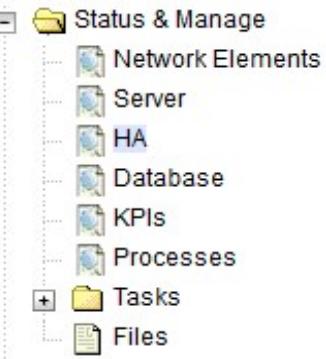
Procedure 1. Recovery Scenario 1

31.	NOAM VIP GUI: <input type="checkbox"/> Start replication on working C-level servers	<p>Un-Inhibit (Start) Replication to the working C-level servers, which belong to the same site as of the failed SOAM servers.</p> <p>Execute Appendix C. Un-Inhibit A and B Level Replication on C-Level Servers.</p> <p>Navigate to Main Menu->Status & Manage->Database.</p> <p>If the Repl Status is set to Inhibited, click Allow Replication 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 (if applicable) • MP/IPFE servers (if MPs are configured as active/standby, start with the active MP, otherwise the order of the MPs does not matter) • SBRs (if SBR servers are configured, start with the active SBR, then standby, then spare) <p>Verify the replication on all the working servers is Allowed. This can be done by examining the Repl Status table.</p> <table border="1" data-bbox="486 893 1416 1199"> <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> <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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32.	NOAM VIP GUI: <input type="checkbox"/> Recover the C-level server (DA-MP, SBRs, IPFE, SS7-MP)	<p>Establish an SSH session to the C-level server being recovered, login as admusr.</p> <p>Execute following command to set shared memory to unlimited.</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin-left: auto; margin-right: auto;"> <pre>\$ sudo sh1.set -m 0</pre> </div> <p>Execute Procedure 22 Configure the MP Virtual Machines, Steps 1, 4-11, from [1] FOR EACH recovered server.</p>																				

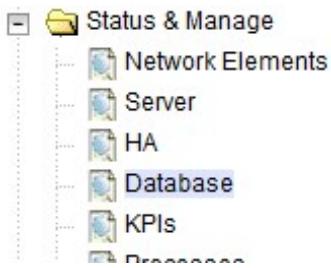
Procedure 1. Recovery Scenario 1

33.	NOAM VIP GUI:	Navigate to Main Menu->Status & Manage->Server .																				
<input type="checkbox"/>	Restart DSR application for recovered C-level Server																					
		Select the recovered server and click Restart .																				
Stop	Restart	Reboot	NTP Sync	Report																		
34.	NOAM VIP GUI:	Un-Inhibit (Start) Replication to the ALL C-level servers.																				
<input type="checkbox"/>	Start replication on all C-level servers	Navigate to Status & Manage -> Database .																				
																						
		If the Repl Status is set to Inhibited , click Allow Replication using the following order:																				
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OAM Repl Status	SIG Repl Status	Repl Status	Repl Audit Status																			
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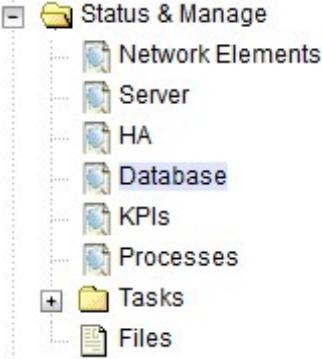
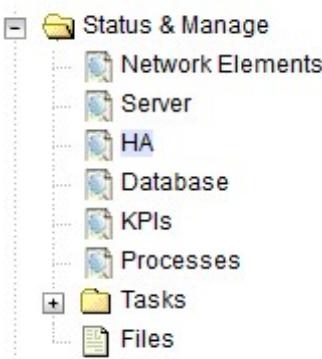
Procedure 1. Recovery Scenario 1

35.	NOAM VIP GUI: <input type="checkbox"/> Set HA on all C-level servers	<p>Navigate to Status & Manage -> HA.</p>  <p>Click Edit.</p> <p>For each server whose Max Allowed HA Role is set to OOS, set it to Active.</p> <p>Click OK.</p>
36.	ACTIVE NOAM: <input type="checkbox"/> Perform key exchange between the active-NOAM and recovered servers	<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> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <pre>\$ keyexchange admusr@<Recovered Server Hostname></pre> </div> <p>Note: If an export server is configured, perform this step.</p>
37.	ACTIVE NOAM: <input type="checkbox"/> Activate optional features	<p>Establish an SSH session to the active NOAM, login as admusr.</p> <p>Note for PCA Feature Activation:</p> <p>If you have PCA installed in the system being recovered, execute the PCA Activation on Standby NOAM Server procedure on the recovered standby NOAM server and the PCA Activation on Active SOAM Server procedure on the recovered active SOAM server from [3] to re-activate PCA.</p> <p>Refer to Section 1.5 Optional Features to activate any features that were previously activated.</p> <p>Note: While running the activation script, the following error message (and corresponding messages) output may display. This can safely be ignored.</p> <div style="margin-left: 20px;"> <pre>iLoad#31000{S/W Fault}</pre> </div> <p>Note: If any of the MPs have failed and recovered, then these MP servers should be restarted after activation of the feature.</p> <p>Refer to Section 1.5 Optional Features to activate any features that were previously activated.</p>

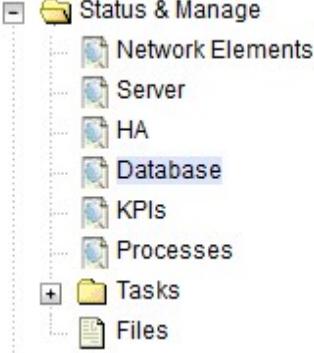
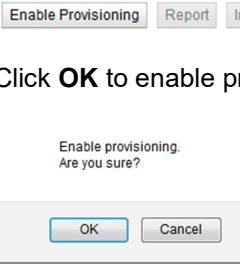
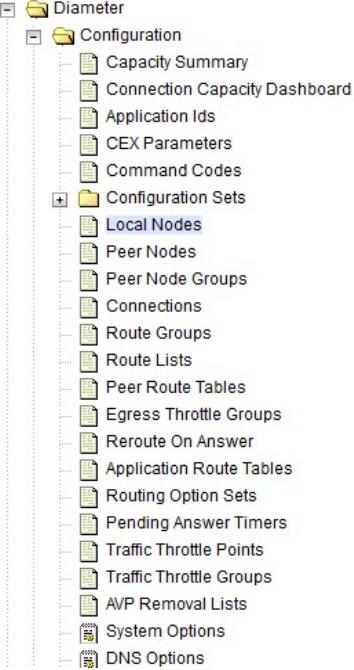
Procedure 1. Recovery Scenario 1

<p>38. 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></p> <p>Select the active NOAM server and click Report.</p> <p>Main Menu: Status & Manage -> Database [Report]</p> <pre>===== dsr Database Status Report ===== 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: guiaadmin ----- 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> <p>Click Save to save the report to your local machine.</p>
<p>39. ACTIVE NOAM: Verify replication between servers</p>	<p>Log into the Active NOAM via SSH terminal as admusr.</p> <p>Execute the following command.</p> <pre>\$ sudo irepstat -m</pre> <p>Output like this is generated:</p> <pre>-- Policy 0 ActStb [DbReplication] ----- RDU06-MP1 - Stby BC From RDU06-S01 Active 0 0.50 ^0.17%cpu 42B/s A=none CC From RDU06-MP2 Active 0 0.10 ^0.17 0.88%cpu 32B/s A=none RDU06-MP2 - Active BC From RDU06-S01 Active 0 0.50 ^0.10%cpu 33B/s A=none CC To RDU06-MP1 Active 0 0.10 0.08%cpu 20B/s A=none RDU06-NO1 - Active AB To RDU06-S01 Active 0 0.50 1%R 0.03%cpu 21B/s RDU06-S01 - 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>

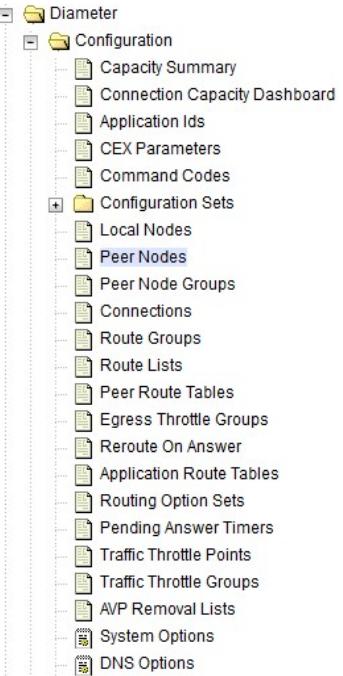
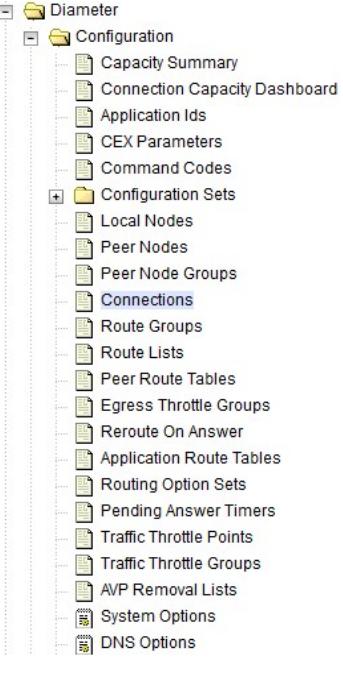
Procedure 1. Recovery Scenario 1

40.	NOAM VIP GUI: <input type="checkbox"/> Verify the database states	Click on Main Menu->Status and Manager->Database .																																																																		
		 <p>Verify the OAM Max HA Role is either Active or Standby for NOAM and SOAM; Application Max HA Role for MPs is Active; and the status is Normal.</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>N02</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>N01</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	N02	Network OAM&P	Standby	N/A	Normal	0	Normal	NotApplicable	Allowed	NotApplicable	SOAM_NE	DAMP1	MP	Active	Active	Normal	0	Normal	Normal	Allowed	NotApplicable	NOAM_NE	N01	Network OAM&P	Active	N/A	Normal	0	Normal	NotApplicable	Allowed	NotApplicable
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NOAM_NE	N01	Network OAM&P	Active	N/A	Normal	0	Normal	NotApplicable	Allowed	NotApplicable																																																										
41.	NOAM VIP GUI: <input type="checkbox"/> Verify the HA status	Navigate to Main Menu->Status and Manager->HA .																																																																		
		 <p>Select the row for all of the servers.</p> <p>Verify the HA Role is either Active or Standby.</p> <p>Main Menu: Status & Manage -> HA</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>S01</td> <td>Standby</td> <td>N/A</td> <td>Active</td> <td>S02</td> <td>SOAM_NE</td> <td>System OAM</td> </tr> <tr> <td>S02</td> <td>Active</td> <td>N/A</td> <td>Active</td> <td>S01</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>N01</td> <td>Active</td> <td>N/A</td> <td>Active</td> <td>N02</td> <td>NOAM_NE</td> <td>Network OAM&P</td> </tr> <tr> <td>N02</td> <td>Standby</td> <td>N/A</td> <td>Active</td> <td>N01</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	S01	Standby	N/A	Active	S02	SOAM_NE	System OAM	S02	Active	N/A	Active	S01	SOAM_NE	System OAM	DAMP1	Active	Active	Active		SOAM_NE	MP	N01	Active	N/A	Active	N02	NOAM_NE	Network OAM&P	N02	Standby	N/A	Active	N01	NOAM_NE	Network OAM&P																								
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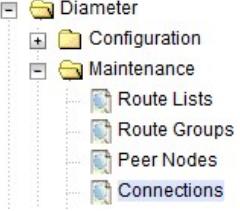
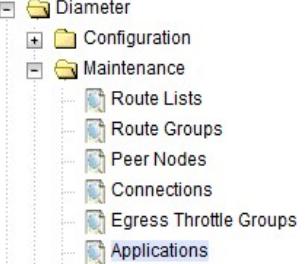
Procedure 1. Recovery Scenario 1

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

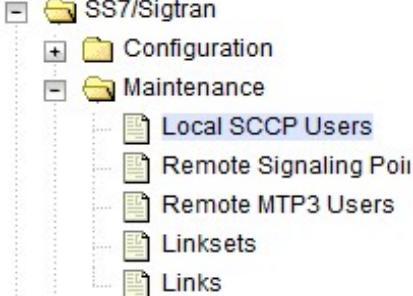
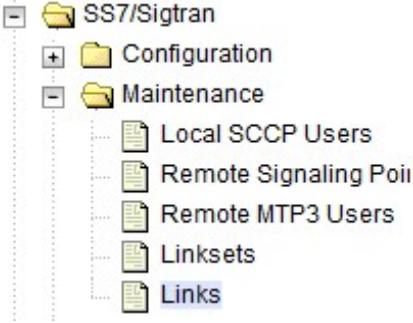
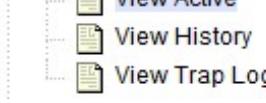
Procedure 1. Recovery Scenario 1

44.	SOAM VIP GUI:	<p>Verify the peer node info</p> <p>Navigate to Main Menu->Diameter->Configuration->Peer Node.</p>  <p>Verify all the peer nodes are shown.</p>
45.	SOAM VIP GUI:	<p>Verify the connections info</p> <p>Navigate to Main Menu->Diameter->Configuration->Connections.</p>  <p>Verify all the connections are shown.</p>
46.	MP Servers:	<p>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>

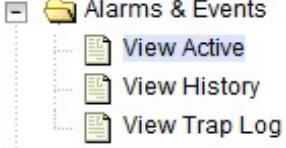
Procedure 1. Recovery Scenario 1

47.	SOAM VIP GUI: Enable connections, if needed	<p>Navigate to Main Menu->Diameter->Maintenance->Connections.</p>  <p>Select each connection and click Enable. Alternatively, you can enable all the connections by clicking EnableAll.</p> <p>Buttons: Enable, Disable, EnableAll, DisableAll, Diagnose Start, Diagnose End, SCTP STATISTICS, <input type="checkbox"/> Pause updates</p> <p>Verify 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>
48.	SOAM VIP GUI: Enable optional features	<p>Navigate to Main Menu -> Diameter -> Maintenance -> Applications.</p>  <p>Select the optional feature application already configured.</p> <p>Click Enable.</p> <p>Buttons: Enable, Disable, <input type="checkbox"/> Pause updates</p>
49.	SOAM VIP GUI: Re-enable transports, if needed [applicable when MAP-IWF application is activated]	<p>Navigate to Main Menu->Transport Manager -> Maintenance -> Transport.</p>  <p>Select each transport and click Enable.</p> <p>Buttons: Enable, Disable, Block</p> <p>Verify the Operational Status for each transport is Up.</p>

Procedure 1. Recovery Scenario 1

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

Procedure 1. Recovery Scenario 1

53.	NOAM VIP GUI:	<p>Log into 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 E. My Oracle Support (MOS).</p>
54.	Restore GUI usernames and passwords	If applicable, execute steps in Section 6 to recover the user and group information restored.
55.	Backup and archive all the databases from the recovered system	Execute Appendix A. DSR Database Backup to back up the configuration databases.

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

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

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

- Recover the software.

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

- Recover the software.
- Recover the Database.

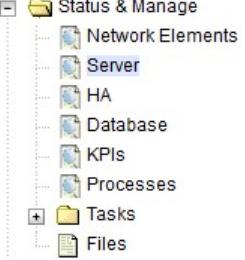
Recover any failed **SOAM and MP** servers by recovering software.

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

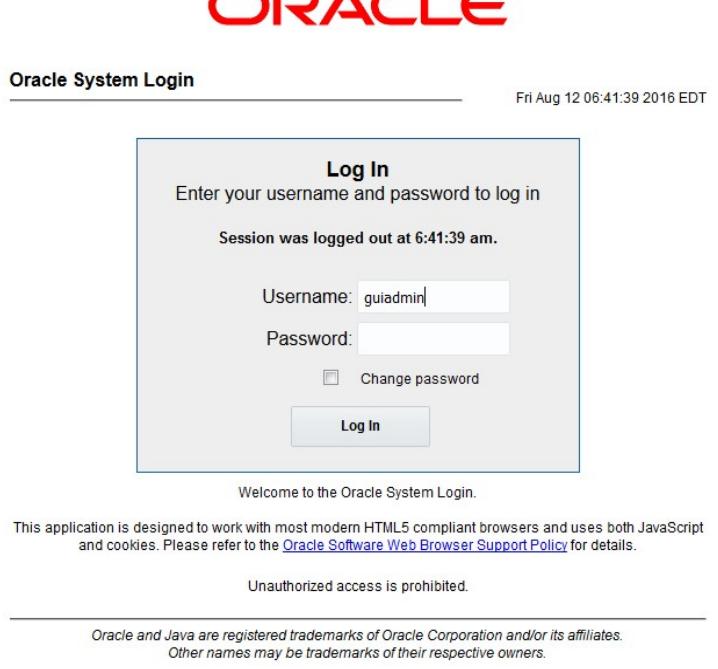
Procedure 2. Recovery Scenario 2

S	This procedure performs recovery if at least 1 NOAM server is available but all SOAM servers in a site have failed. This includes any SOAM server in another location.	
T	Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.	
E		
P	If this procedure fails, contact Appendix E. My Oracle Support (MOS) and ask for assistance.	
#		
1.	Workarounds	Refer to Appendix D. Workarounds for Issues Not Fixed in This Release to understand any workarounds required during this procedure.
<input type="checkbox"/>		
2.	Gather required materials	Gather the documents and required materials listed in Section 3.1 Required Materials.
<input type="checkbox"/>		
3.	NOAM VIP GUI: Login	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: <code>http://<Primary_NOAM_VIP_IP_Address></code>
<input type="checkbox"/>		
	Login as the guiadmin user.	
	 Oracle System Login <small>Fri Aug 12 06:41:39 2016 EDT</small> <div style="border: 1px solid #ccc; padding: 10px; margin-top: 10px;"> <p style="text-align: center;">Log In Enter your username and password to log in <small>Session was logged out at 6:41:39 am.</small></p> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="width: 45%;">Username: <input type="text" value="guiadmin"/></div> <div style="width: 45%;">Password: <input type="password"/></div> </div> <div style="display: flex; justify-content: space-around; margin-top: 5px;"> <div style="width: 45%;"><input type="checkbox"/> Change password</div> <div style="width: 45%; text-align: center;">Log In</div> </div> <p style="text-align: center; margin-top: 20px;">Welcome to the Oracle System Login. <small>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.</small></p> <p style="text-align: center; margin-top: 10px;"><small>Unauthorized access is prohibited.</small></p> <hr/> <small>Oracle and Java are registered trademarks of Oracle Corporation and/or its affiliates. Other names may be trademarks of their respective owners.</small> </div>	

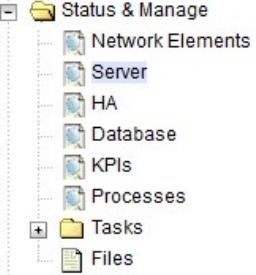
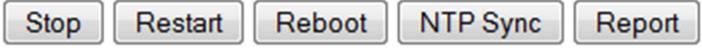
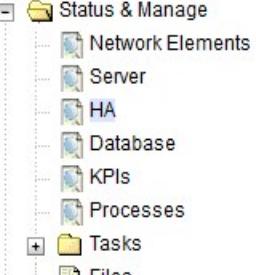
Procedure 2. Recovery Scenario 2

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

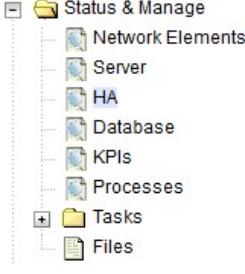
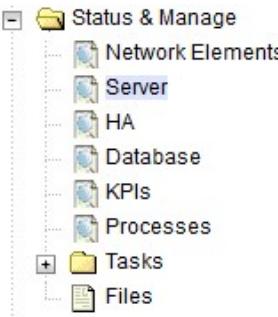
Procedure 2. Recovery Scenario 2

6. <input type="checkbox"/>	Repeat for remaining failed servers	If necessary, repeat Step 5 for all remaining failed servers.
7. <input type="checkbox"/>	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-top: 10px;"> <code>http://<Primary_NOAM_VIP_IP_Address></code> </div>
		<p>Login as the guiadmin user.</p>  <p>Oracle System Login</p> <p>Fri Aug 12 06:41:39 2016 EDT</p> <p>Log In Enter your username and password to log in</p> <p>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><input type="checkbox"/> Change password</p> <p>Log In</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>
8. <input type="checkbox"/>	NOAM VIP GUI: Recover standby NOAM	<p>Install the second NOAM server by executing procedures from reference [1]:</p> <ul style="list-style-type: none"> • Procedure 12 Configure the Second NOAM Server, Steps 1, 3-7 • Procedure 13 Complete Configuring the NOAM Server Group, Step 4 <p>Note: If topology or NodeID alarms are persistent after the database restore, refer to Appendix D. Workarounds for Issues Not Fixed in This Release or the next step.</p>

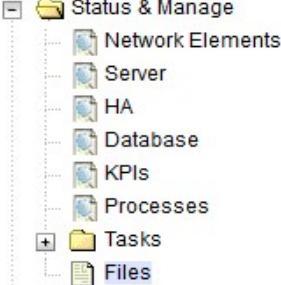
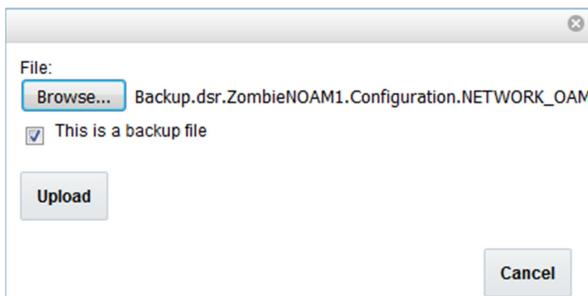
Procedure 2. Recovery Scenario 2

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

Procedure 2. Recovery Scenario 2

13.	NOAM VIP GUI: <input type="checkbox"/> Set HA on active SOAM	<p>Navigate to Status & Manage -> HA</p>  <p>Click Edit. Select the active SOAM server and set it to Active. Click OK.</p>
14.	NOAM VIP GUI: <input type="checkbox"/> Restart DSR application	<p>Navigate to Main Menu->Status & Manage->Server.</p>  <p>Select the recovered active SOAM server and click Restart.</p> <div data-bbox="497 1140 1199 1193" style="border: 1px solid #ccc; padding: 5px; display: flex; justify-content: space-around;"> Stop Restart Reboot NTP Sync Report </div>

Procedure 2. Recovery Scenario 2

15. <input type="checkbox"/> NOAM VIP GUI: Upload the backed up SOAM database file	<p>Navigate to Main Menu->Status & Manage->Files.</p>  <p>Select the active SOAM server.</p> <p>Main Menu: Status & Manage -> Files</p> <p>Filter* Tasks</p> <p>SO1 SO2 DAMP1 DR-NO1 DR-NO2</p> <p>File Name</p> <p>backup/Backup.dsr.SO1.Configuration.SYSTEM_OAM.20160810_045515.MAN.tar</p> <p>Click Upload and select the NO Provisioning and Configuration file backed up after the initial installation and provisioning.</p> <p>Delete View Upload Download Deploy ISO Validate ISO</p> <p>1 GB used (3.00%) of 34 GB available System utilization: 1.8 GB (5.24%) of 34 GB available.</p> <ol style="list-style-type: none"> 1. Click Browse and locate the backup file. 2. Mark the This is a backup file checkbox. 3. Click Upload.  <p>The file takes a few seconds to upload depending on the size of the backup data. The file displays on the list of entries after the upload is complete.</p>
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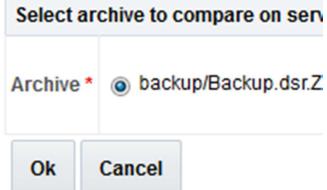
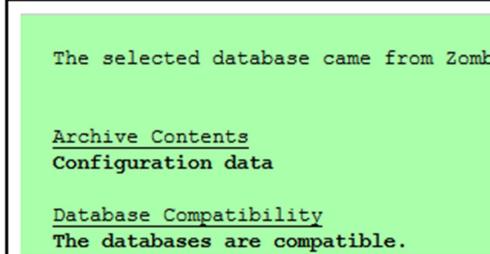
Procedure 2. Recovery Scenario 2

16.	Recovered SOAM GUI: Login	<p>Establish a GUI session on the recovered SOAM server.</p> <p>Open the web browser and enter a URL of:</p> <div style="border: 1px solid black; padding: 5px; width: 100%;"><code>http://<Recovered_SOAM_IP_Address></code></div> <p>Login as the guiadmin user.</p> <p>Establish a GUI session on the recovered SOAM server.</p> <p>Open the web browser and enter a URL of:</p> <div style="border: 1px solid black; padding: 5px; width: 100%;"><code>http://<Recovered_SOAM_IP_Address></code></div> <p>Login as the guiadmin user.</p> <p>ORACLE®</p> <p>Oracle System Login</p> <p>Fri Aug 12 06:41:39 2016 EDT</p> <p>Log In Enter your username and password to log in</p> <p>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><input type="checkbox"/> Change password</p> <p>Log In</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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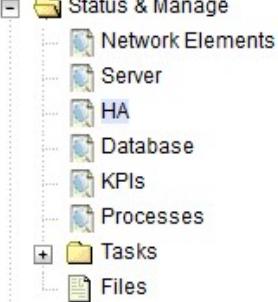
Procedure 2. Recovery Scenario 2

17.	<input type="checkbox"/> Recovered SOAM GUI: Verify the archive contents and database compatibility	<p>Navigate to Main Menu->Status & Manage->Database. Select the active SOAM server and click Compare.</p> <p style="text-align: center;"> Enable Provisioning Report Inhibit Replication Backup... Compare... Restore... Man Audit Suspend Auto Audit </p> <p>Click the button for the restored database file uploaded as a part of Step 15 of this procedure.</p> <p>Database Compare</p> <p>Select archive to compare on server: 2</p> <p>Archive * <input checked="" type="radio"/> backup/Backup.DSR.Zom</p> <p>Ok Cancel</p> <p>Verify the output window matches the screen below.</p> <p>Note: A database mismatch regarding the NodeIDs of the VMs is expected. If that is the only mismatch, proceed; otherwise, stop and contact Appendix E. My Oracle Support (MOS).</p> <hr/> <p>Database Archive Compare</p> <div style="background-color: #f0f0f0; padding: 10px;"> <p>The selected database came from ZombieSOAM1 on 10/10/2013 10:10:10 AM</p> <p><u>Archive Contents</u> Configuration data</p> <p><u>Database Compatibility</u> The databases are compatible.</p> </div> <p>Note: Archive Contents and Database Compatibilities must be the following:</p> <p>Archive Contents: Configuration data</p> <p>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</p> <p>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.</p> <p>If the verification is successful, click Back.</p>
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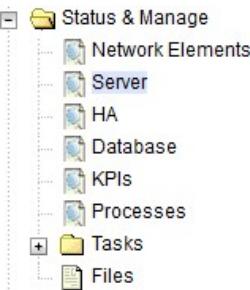
Procedure 2. Recovery Scenario 2

18.	<input type="checkbox"/> Recovered SOAM GUI: Restore the database	<p>Navigate to Main Menu->Status & Manage->Database. Select the active SOAM server and click Restore. Select the proper back up provisioning and configuration file.</p> <p>Database Compare</p>  <p>Click OK.</p> <p>Note: A database mismatch regarding the NodeIDs of the servers is expected. If that is the only mismatch, proceed; otherwise, stop and contact Appendix E. My Oracle Support (MOS).</p> <p>Mark the Force checkbox 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 is logged out of XMI SOAM GUI since the restored Topology is old data.</p>
19.	<input type="checkbox"/> Recovered SOAM GUI: Monitor and confirm database restoral	<p>Wait 5-10 minutes for the system to stabilize with the new topology. Monitor the Info tab for the Success message. This indicates 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 is in the same state it was backed up during initial backup.</p>
20.	<input type="checkbox"/> NOAM VIP GUI: Recover remaining SOAM server	<p>Install the SOAM servers by executing Procedure 19 Configure the SOAM Servers, Steps 1, 3- 6, from reference [1].</p> <p>Note: Wait for server to reboot before continuing.</p>

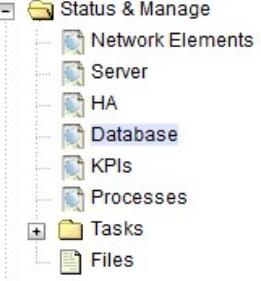
Procedure 2. Recovery Scenario 2

21.	<input type="checkbox"/> NOAM VIP GUI: Set HA on SOAM servers	<p>Navigate to Status & Manage -> HA.</p>  <p>Click Edit.</p> <p>For each SOAM server whose Max Allowed HA Role is set to Standby, set it to Active.</p> <p>Click OK.</p>
22.	<input type="checkbox"/> Recovered Server: Sync NTP	<ol style="list-style-type: none"> 1. Perform the following to retrieve the remote NTP server. <pre>\$ sudo ntpq -np</pre> <p>Example output:</p> <pre>[admusr@NOAM-2 ~]\$ ntpq -np remote refid st t when poll reach delay offset jitter ===== *10.240.9.186 10.250.33.2 3 u 356 1024 377 1.409 0.113 2.434</pre> 2. Stop ntpd service. <pre>\$ sudo service ntpd stop</pre> 3. Sync the date to the ntp remote server. <pre>\$ sudo ntpdate <NTP remote server></pre> <p>Note: The <NTP remote server> in the above ntpdate command is the one gathered in sub step 1.</p> 4. Start the ntp service. <pre>\$ sudo service ntpd start</pre>

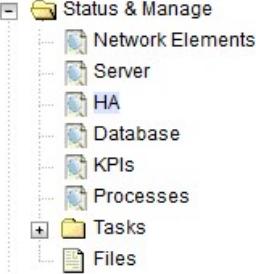
Procedure 2. Recovery Scenario 2

23.	NOAM VIP GUI: <input type="checkbox"/> Restart DSR application	<p>Navigate to Main Menu->Status & Manage->Server.</p>  <p>Select the recovered server and click Restart.</p> <p>Stop Restart Reboot NTP Sync Report</p>																				
24.	NOAM VIP GUI: <input type="checkbox"/> Start replication on working C-level servers	<p>Un-Inhibit (Start) replication to the working C-level servers, which belong to the same site as of the failed SOAM servers.</p> <p>Execute Appendix C. Un-Inhibit A and B Level Replication on C-Level Servers</p> <p>Navigate to Main Menu->Status & Manage->Database.</p> <p>If the Repl Status is set to Inhibited, click Allow Replication 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 (if applicable) • MP/IPFE Servers (if MPs are configured as active/standby, start with the active MP, otherwise the order of the MPs does not matter) • SBRs (if SBR servers are configured, start with the active SBR, then standby, then spare) <p>Verify the replication on all the working servers is Allowed. This can be done by examining the Repl Status table.</p> <table border="1" data-bbox="486 1368 1405 1670"> <thead> <tr> <th data-bbox="494 1368 703 1431">OAM Repl Status</th> <th data-bbox="703 1368 915 1431">SIG Repl Status</th> <th data-bbox="915 1368 1144 1431">Repl Status</th> <th data-bbox="1144 1368 1405 1431">Repl Audit Status</th> </tr> </thead> <tbody> <tr> <td data-bbox="494 1431 703 1480">NotApplicable</td> <td data-bbox="703 1431 915 1480">NotApplicable</td> <td data-bbox="915 1431 1144 1480">Allowed</td> <td data-bbox="1144 1431 1405 1480">NotApplicable</td> </tr> <tr> <td data-bbox="494 1480 703 1529">Normal</td> <td data-bbox="703 1480 915 1529">NotApplicable</td> <td data-bbox="915 1480 1144 1529">Allowed</td> <td data-bbox="1144 1480 1405 1529">NotApplicable</td> </tr> <tr> <td data-bbox="494 1529 703 1598">Normal</td> <td data-bbox="703 1529 915 1598">NotApplicable</td> <td data-bbox="915 1529 1144 1598">Allowed</td> <td data-bbox="1144 1529 1405 1598">NotApplicable</td> </tr> <tr> <td data-bbox="494 1598 703 1647">Normal</td> <td data-bbox="703 1598 915 1647">NotApplicable</td> <td data-bbox="915 1598 1144 1647">Allowed</td> <td data-bbox="1144 1598 1405 1647">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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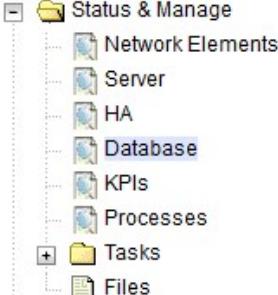
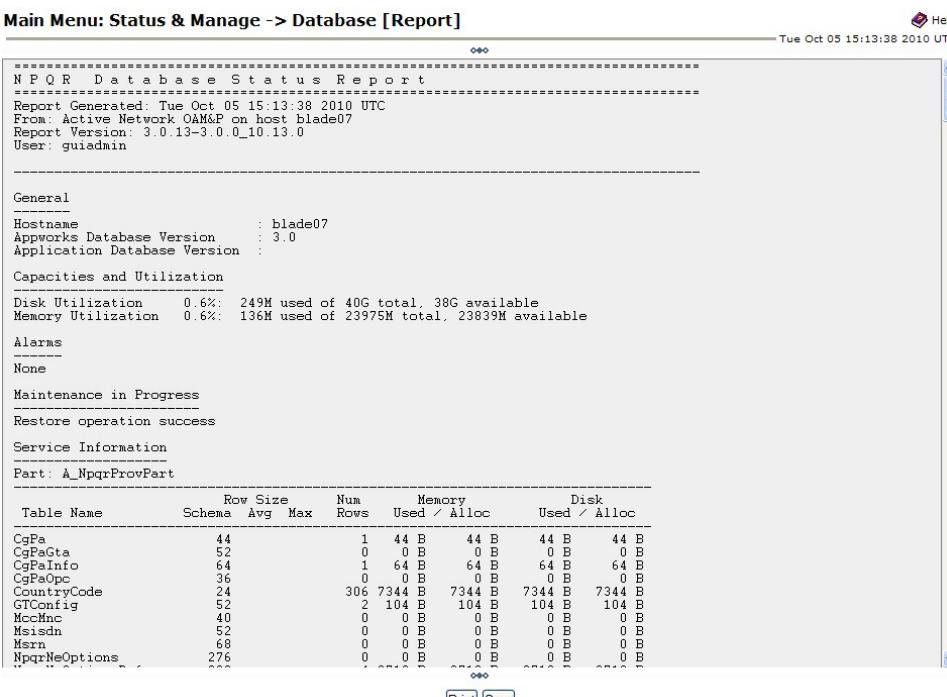
Procedure 2. Recovery Scenario 2

25.	NOAM VIP GUI: <input type="checkbox"/> Recover the C-level server (DA-MP, SBRs, IPFE, SS7-MP)	<p>Establish an SSH session to the C-level server being recovered, login as admusr.</p> <p>Execute following command to set shared memory to unlimited.</p> <pre>\$ sudo sh1.set -m 0</pre> <p>Execute Procedure 15 Configure the MP Virtual Machines, Steps 1, 4-11, from [1] FOR EACH recovered server:</p>																				
26.	NOAM VIP GUI: <input type="checkbox"/> Start replication on ALL C-level Servers	<p>Un-Inhibit (Start) Replication to the ALL C-level servers.</p> <p>Navigate to Status & Manage -> Database.</p>  <p>If the Repl Status is set to Inhibited, click Allow Replication 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 (if applicable) • MP/IPFE Servers (if MPs are configured as active/standby, start with the active MP, otherwise the order of the MPs does not matter) <p>Verify the replication on all the working servers is Allowed. This can be done by examining the Repl Status table.</p> <table border="1" data-bbox="486 1305 1416 1607"> <thead> <tr> <th data-bbox="494 1305 698 1368">OAM Repl Status</th> <th data-bbox="698 1305 918 1368">SIG Repl Status</th> <th data-bbox="918 1305 1147 1368">Repl Status</th> <th data-bbox="1147 1305 1408 1368">Repl Audit Status</th> </tr> </thead> <tbody> <tr> <td data-bbox="494 1368 698 1431">NotApplicable</td> <td data-bbox="698 1368 918 1431">NotApplicable</td> <td data-bbox="918 1368 1147 1431">Allowed</td> <td data-bbox="1147 1368 1408 1431">NotApplicable</td> </tr> <tr> <td data-bbox="494 1431 698 1495">Normal</td> <td data-bbox="698 1431 918 1495">NotApplicable</td> <td data-bbox="918 1431 1147 1495">Allowed</td> <td data-bbox="1147 1431 1408 1495">NotApplicable</td> </tr> <tr> <td data-bbox="494 1495 698 1558">Normal</td> <td data-bbox="698 1495 918 1558">NotApplicable</td> <td data-bbox="918 1495 1147 1558">Allowed</td> <td data-bbox="1147 1495 1408 1558">NotApplicable</td> </tr> <tr> <td data-bbox="494 1558 698 1607">Normal</td> <td data-bbox="698 1558 918 1607">NotApplicable</td> <td data-bbox="918 1558 1147 1607">Allowed</td> <td data-bbox="1147 1558 1408 1607">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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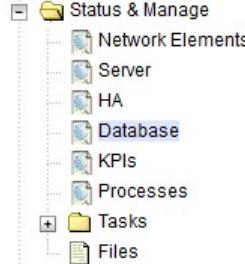
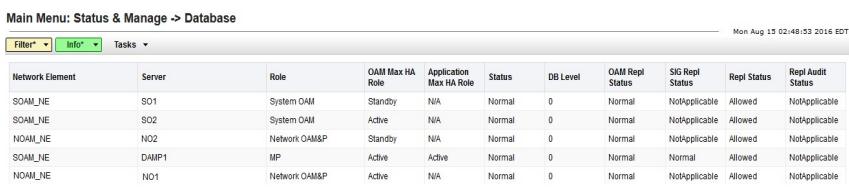
Procedure 2. Recovery Scenario 2

27.	<input type="checkbox"/> NOAM VIP GUI: Set HA on all C-level servers	<p>Navigate to Status & Manage -> HA.</p>  <p>Click Edit.</p> <p>For each server whose Max Allowed HA Role is set to Standby, set it to Active.</p> <p>Click OK.</p>
28.	<input type="checkbox"/> ACTIVE NOAM: Perform key exchange between the active-NOAM and recovered servers	<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> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <pre>\$ keyexchange admusr@<Recovered Server Hostname></pre> </div> <p>Note: If an export server is configured, perform this step.</p>
29.	<input type="checkbox"/> ACTIVE NOAM: Activate optional features	<p>Establish an SSH session to the active NOAM, login as admusr.</p> <p>Note for PCA Feature Activation:</p> <p>If you have PCA installed in the system being recovered, execute the PCA Activation on Active NOAM Server procedure on the recovered active NOAM Server; and the PCA Activation on Stand By SOAM Server procedure on the 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 display. This can safely be ignored.</p> <pre>iload#31000{S/W Fault}</pre> <p>Note: If any of the MPs have failed and recovered, then these MP servers should be restarted after activation of the feature.</p> <p>Refer to Section 1.5 Optional Features to activate any features previously activated.</p>

Procedure 2. Recovery Scenario 2

30. <input type="checkbox"/> NOAM VIP GUI: Fetch and store the database report for the newly restored data and save it	<p>Navigate to Main Menu->Status & Manage->Database.</p>  <p>Select the active NOAM server and click Report.</p>  <p>Click Save to save the report to your local machine.</p>
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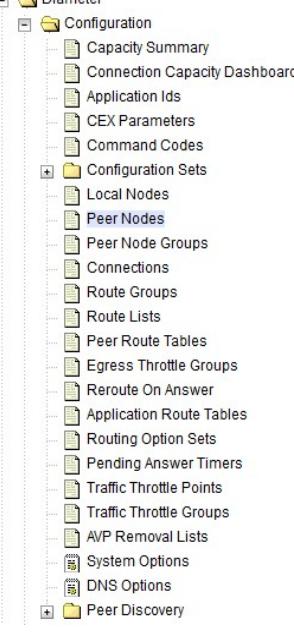
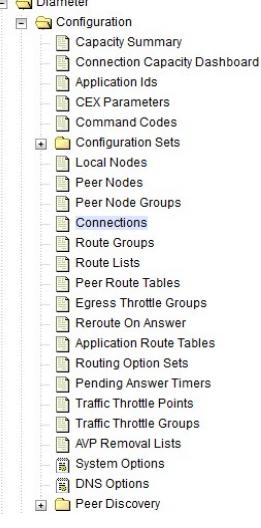
Procedure 2. Recovery Scenario 2

31.	ACTIVE NOAM: <input type="checkbox"/> Verify replication between servers	<p>Log into the active NOAM via SSH terminal as admusr.</p> <p>Execute the following command.</p> <pre>\$ sudo irepstat -m</pre> <p>Output like this is generated:</p> <pre>-- Policy 0 ActStb [DbReplication] ----- RDU06-MP1 - Stby BC From RDU06-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>																																																																		
32.	NOAM VIP GUI: <input type="checkbox"/> Verify the database states	<p>Navigate to Main Menu->Status and Manager->Database.</p>  <p>Verify the OAM Max HA Role is either Active or Standby for NOAM and SOAM; Application Max HA Role for MPs is Active; and the status is Normal.</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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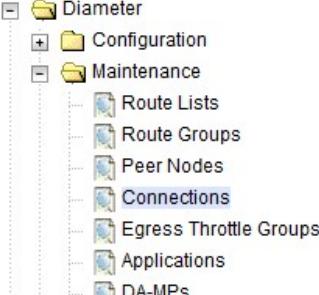
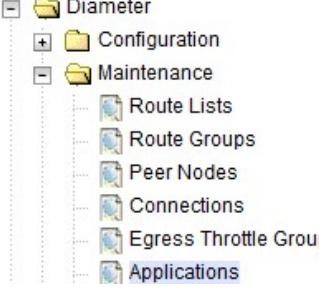
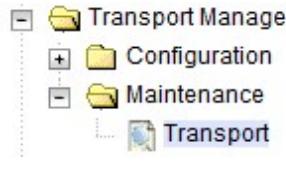
Procedure 2. Recovery Scenario 2

33.	NOAM VIP GUI: <input type="checkbox"/> Verify the HA status	<p>Navigate to Main Menu->Status and Manage->HA.</p> <p>Select the row for all of the servers.</p> <p>Verify the HA Role is either Active or Standby.</p> <p>Main Menu: Status & Manage -> HA</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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SO2	Active	N/A	Active	SO1	SOAM_NE	System OAM																																												
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DR-NO1	Active	N/A	Active	DR-NO2	DR_NOAM_NE	Network OAM&P																																												
DR-NO2	Standby	N/A	Active	DR-NO1	DR_NOAM_NE	Network OAM&P																																												
34.	SOAM VIP GUI: <input type="checkbox"/> Verify the local node info	<p>Navigate to Main Menu->Diameter->Configuration->Local Node.</p> <p>Verify all the local nodes are shown.</p>																																																

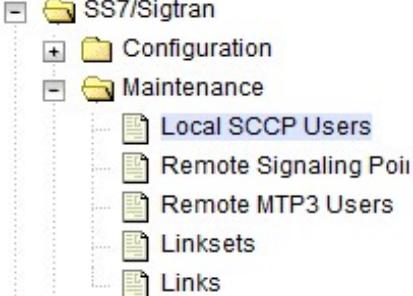
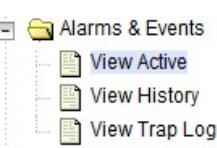
Procedure 2. Recovery Scenario 2

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

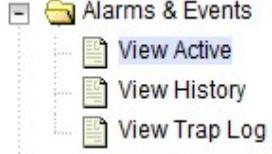
Procedure 2. Recovery Scenario 2

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

Procedure 2. Recovery Scenario 2

41.	SOAM VIP GUI: <input type="checkbox"/> Re-enable MAPIWF application, if needed	<p>Navigate to Main Menu->SS7/Sigtran->Maintenance->Local SCCP Users.</p>  <p>Click Enable corresponding to MAPIWF Application Name.</p> <p>Enable Disable</p> <p>Verify the SSN Status is Enabled.</p>
42.	SOAM VIP GUI: <input type="checkbox"/> Re-enable links, if needed	<p>Navigate to Main Menu->SS7/Sigtran->Maintenance->Links.</p>  <p>Click Enable for each link.</p> <p>Enable Disable</p> <p>Verify the Operational Status for each link is Up.</p>
43.	SOAM VIP GUI: <input type="checkbox"/> 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 E. My Oracle Support (MOS).</p>

Procedure 2. Recovery Scenario 2

<input type="checkbox"/>	44. NOAM VIP GUI: Examine all alarms	<p>Log into 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 E. My Oracle Support (MOS).</p>
<input type="checkbox"/>	45. Backup and archive all the databases from the recovered system	<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 recovers the database on these servers. The major activities are summarized in the list below. Use this list to understand the recovery procedure summary. Do not use this list to execute the procedure. The actual procedures' detailed steps are in Procedure 3. Recovery Scenario 3. The major activities are summarized as follows:

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

- Recover the software.
- Recover the database

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

- Recover the software.

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

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

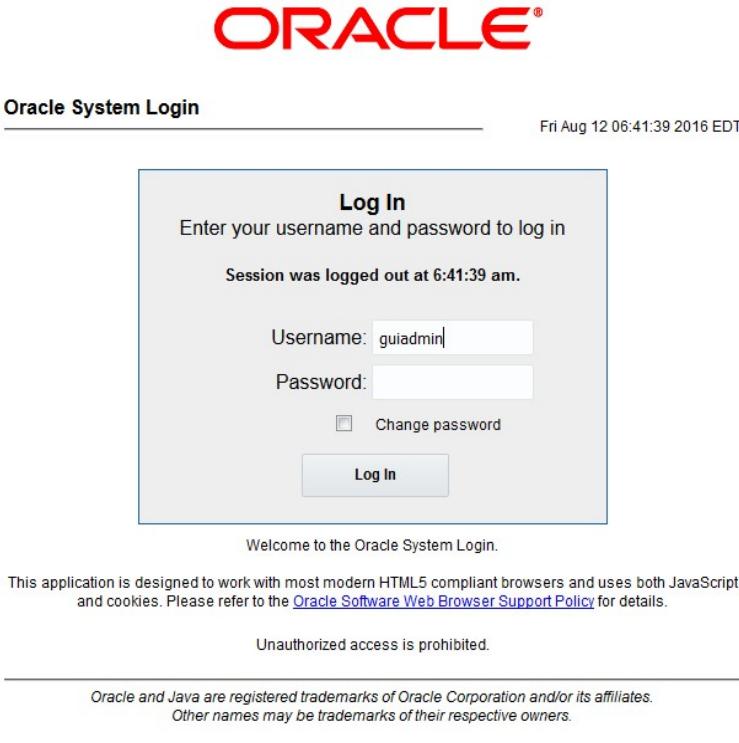
Procedure 3. Recovery Scenario 3

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

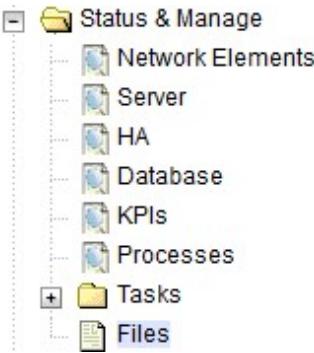
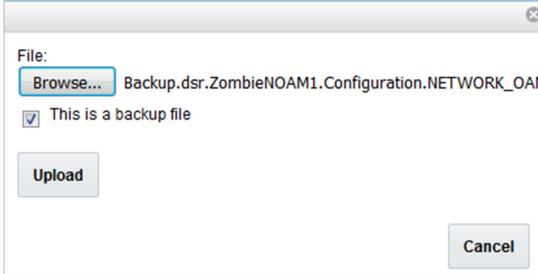
Procedure 3. Recovery Scenario 3

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

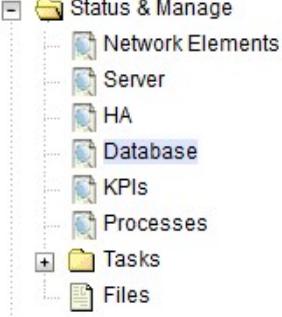
Procedure 3. Recovery Scenario 3

4.	<input type="checkbox"/> Obtain latest database backup and network configuration data	<p>Obtain the most recent database backup file from external backup sources (i.e., file servers) or tape backup sources.</p> <p>From required materials list in Section 3.1 Required Materials; use site survey documents and Network Element report (if available), to determine network configuration data.</p>
5.	<input type="checkbox"/> Execute DSR installation procedure for the first NOAM	<p>Verify the networking data for network elements,</p> <p>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> <ul style="list-style-type: none"> • Procedure 10 Configure the First NOAM NE and Server • Procedure 11 Configure the NOAM Server Group
6.	<input type="checkbox"/> NOAM GUI: Login	<p>Log into the NOAM GUI as the guiadmin user.</p>  <p>Oracle System Login</p> <p>Fri Aug 12 06:41:39 2016 EDT</p> <p>Log In Enter your username and password to log in</p> <p>Session was logged out at 6:41:39 am.</p> <p>Username: <input type="text" value="guiadmin"/> Password: <input type="password"/></p> <p><input type="checkbox"/> Change password</p> <p>Log In</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>

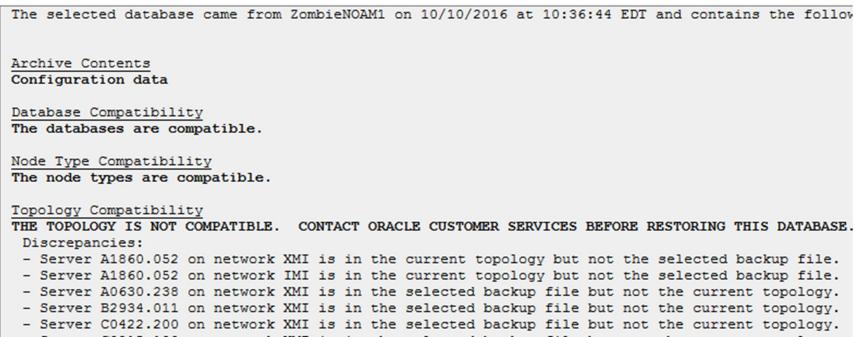
Procedure 3. Recovery Scenario 3

7. <input type="checkbox"/> NOAM GUI: Upload the backed up database file	<p>Navigate to Main Menu->Status & Manage->Files.</p>  <p>Select the active NOAM server.</p> <p>Main Menu: Status & Manage -> Files</p> <p>Filter* Tasks</p> <p>SO1 SO2 DAMP1 NO1 NO2</p> <p>Click Upload and select the NO Provisioning and Configuration file backed up after the initial installation and provisioning.</p> <p>Delete View Upload Download Deploy ISO Validate ISO</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 Browse and locate the backup file. 2. Mark the This is a backup file checkbox. 3. Click Upload.  <p>The file takes a few seconds to upload depending on the size of the backup data. The file displays on the list of entries after the upload is complete.</p>
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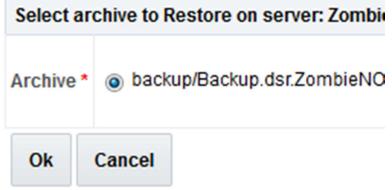
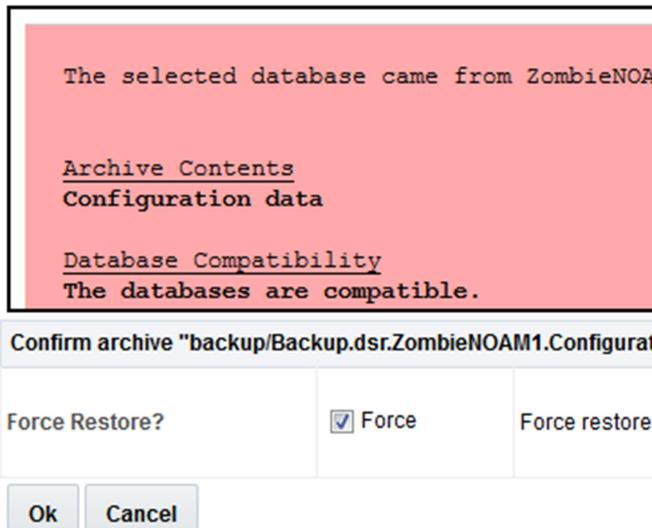
Procedure 3. Recovery Scenario 3

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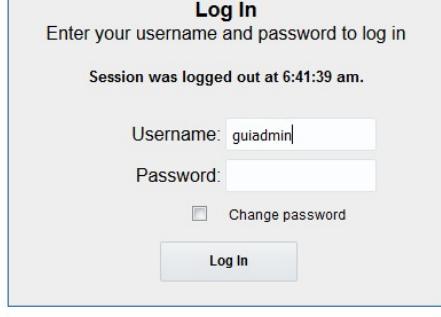
Procedure 3. Recovery Scenario 3

9.	<p>NOAM GUI: <input type="checkbox"/> Verify the archive contents and database compatibility</p>	<p>Select the active NOAM server and click Compare.</p> <p></p> <p>Click the button for the restored database file uploaded as a part of Step 7 of this procedure.</p> <p>Database Compare</p> <p></p> <p>Verify the output window matches the screen below.</p> <p>Note: A database mismatch regarding the NodeIDs of the VMs is expected. If that is the only mismatch, proceed; otherwise, stop and contact Appendix E. My Oracle Support (MOS).</p> <p>Database Archive Compare</p> <p></p> <p>Note: Archive Contents and Database Compatibilities must be the following:</p> <ul style="list-style-type: none"> Archive Contents: Configuration data Database Compatibility: The databases are compatible. <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</p> <p>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.</p>
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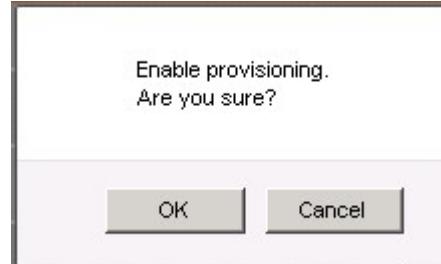
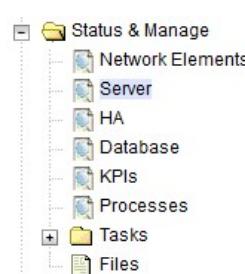
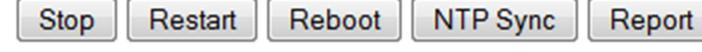
Procedure 3. Recovery Scenario 3

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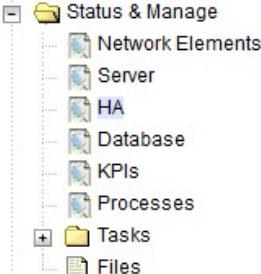
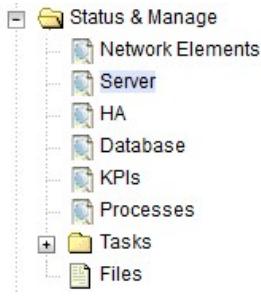
Procedure 3. Recovery Scenario 3

11.	NOAM VIP GUI: <input type="checkbox"/> 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; text-align: center;"> <code>http://<Primary_NOAM_VIP_IP_Address></code> </div> <p>Login as the guiadmin user.</p>  <p>Fri Aug 12 06:41:39 2016 EDT</p> <p>Log In Enter your username and password to log in</p> <p>Session was logged out at 6:41:39 am.</p> <p>Username: <input type="text" value="guiadmin"/> Password: <input type="password"/></p> <p><input type="checkbox"/> Change password</p> <p>Log In</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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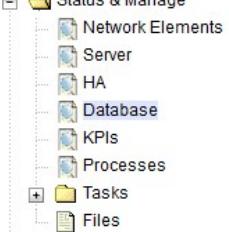
Procedure 3. Recovery Scenario 3

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

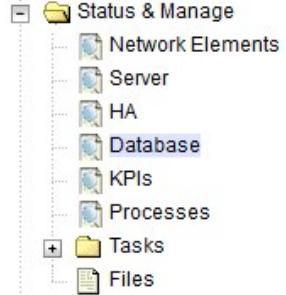
Procedure 3. Recovery Scenario 3

18.	NOAM VIP GUI: <input type="checkbox"/> Set HA on all C-level servers	<p>Navigate to Status & Manage -> HA.</p>  <p>Click Edit. For each server whose Max Allowed HA Role is not active, set it to Active. Click OK.</p>
19.	NOAM VIP GUI: <input type="checkbox"/> Restart DSR application	<p>Navigate to Main Menu->Status & Manage->Server.</p>  <p>Select each recovered server and click Restart.</p> <div style="border: 1px solid #ccc; padding: 5px; display: inline-block;"> <input type="button" value="Stop"/> <input type="button" value="Restart"/> <input type="button" value="Reboot"/> <input type="button" value="NTP Sync"/> <input type="button" value="Report"/> </div>
20.	ACTIVE NOAM: <input type="checkbox"/> Perform key exchange between the active-NOAM and recovered servers	<p>Establish an SSH session to the active NOAM, login as admusr. Execute the following command to perform a keyexchange from the active NOAM to each recovered server.</p> <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;"> <pre>\$ keyexchange admusr@<Recovered Server Hostname></pre> </div> <p>Note: If an export server is configured, perform this step.</p>

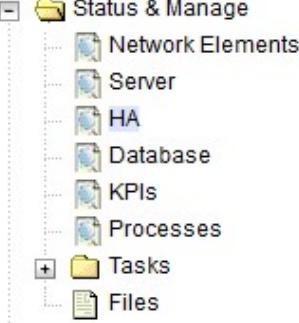
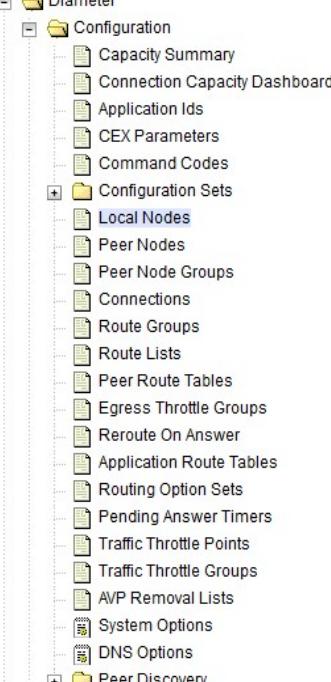
Procedure 3. Recovery Scenario 3

21.	ACTIVE NOAM: <input type="checkbox"/> Activate optional features	<p>Establish an SSH session to the active NOAM, login as admusr.</p> <p>Note for PCA Feature Activation:</p> <p>If you have PCA installed in the system being recovered, execute the PCA Activation on Active NOAM Server procedure on the recovered active NOAM server and the PCA Activation on Standby SOAM Server procedure on the 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 display. This can safely be ignored.</p> <pre>iload#31000{S/W Fault}</pre> <p>Note: If any of the MPs have failed and recovered, then these MP servers should be restarted after activation of the feature.</p> <p>Refer to Section 1.5 Optional Features to activate any features previously activated.</p>																																																																																			
22.	NOAM VIP GUI: <input type="checkbox"/> Fetch and store the database report for the newly restored data and save it	<p>Navigate to Main Menu->Status & Manage->Database.</p>  <p>Select the active NOAM server and click Report.</p> <p>Main Menu: Status & Manage -> Database [Report]</p> <p>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: guidadin</p> <p>General</p> <p>Hostname : blade07 Appworks Database Version : 3.0 Application Database Version :</p> <p>Capacities and Utilization</p> <p>Disk Utilization 0.6%: 249M used of 40G total, 38G available Memory Utilization 0.6%: 136M used of 23975M total, 23839M available</p> <p>Alarms</p> <p>None</p> <p>Maintenance in Progress</p> <p>Restore operation success</p> <p>Service Information</p> <p>Part: A_NpqrProvPart</p> <table border="1"> <thead> <tr> <th>Table Name</th> <th>Row</th> <th>Size</th> <th>Num</th> <th>Memory</th> <th>Disk</th> </tr> <tr> <th></th> <th>Schema</th> <th>Avg</th> <th>Max</th> <th>Rows</th> <th>Used / Alloc</th> <th>Used / Alloc</th> </tr> </thead> <tbody> <tr> <td>CgPa</td> <td></td> <td>44</td> <td></td> <td>1</td> <td>44 B</td> <td>44 B</td> </tr> <tr> <td>CgPaGta</td> <td></td> <td>52</td> <td></td> <td>0</td> <td>0 B</td> <td>0 B</td> </tr> <tr> <td>CgPalInfo</td> <td></td> <td>64</td> <td></td> <td>1</td> <td>64 B</td> <td>64 B</td> </tr> <tr> <td>CgPaOpc</td> <td></td> <td>36</td> <td></td> <td>0</td> <td>0 B</td> <td>0 B</td> </tr> <tr> <td>CountryCode</td> <td></td> <td>24</td> <td></td> <td>306</td> <td>7344 B</td> <td>7344 B</td> </tr> <tr> <td>GTCconfig</td> <td></td> <td>52</td> <td></td> <td>2</td> <td>104 B</td> <td>104 B</td> </tr> <tr> <td>MacMac</td> <td></td> <td>40</td> <td></td> <td>0</td> <td>0 B</td> <td>0 B</td> </tr> <tr> <td>Msisdn</td> <td></td> <td>52</td> <td></td> <td>0</td> <td>0 B</td> <td>0 B</td> </tr> <tr> <td>Msrn</td> <td></td> <td>68</td> <td></td> <td>0</td> <td>0 B</td> <td>0 B</td> </tr> <tr> <td>NpqrMoOptions</td> <td></td> <td>276</td> <td></td> <td>0</td> <td>0 B</td> <td>0 B</td> </tr> </tbody> </table> <p>Print Save</p> <p>Click Save to save the report to your local machine.</p>	Table Name	Row	Size	Num	Memory	Disk		Schema	Avg	Max	Rows	Used / Alloc	Used / Alloc	CgPa		44		1	44 B	44 B	CgPaGta		52		0	0 B	0 B	CgPalInfo		64		1	64 B	64 B	CgPaOpc		36		0	0 B	0 B	CountryCode		24		306	7344 B	7344 B	GTCconfig		52		2	104 B	104 B	MacMac		40		0	0 B	0 B	Msisdn		52		0	0 B	0 B	Msrn		68		0	0 B	0 B	NpqrMoOptions		276		0	0 B	0 B
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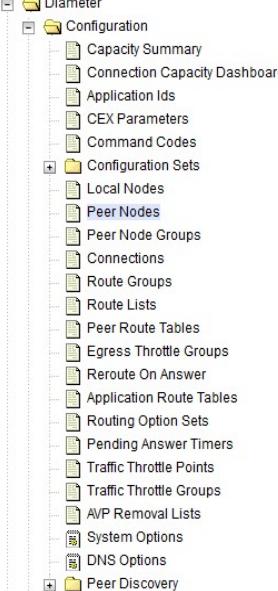
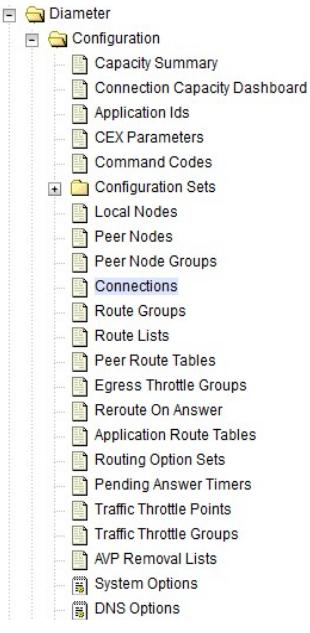
Procedure 3. Recovery Scenario 3

23.	ACTIVE NOAM: <input type="checkbox"/> Verify replication between servers	<p>Log into the active NOAM via SSH terminal as admusr.</p> <p>Execute the following command.</p> <pre>\$ sudo irepstat -m</pre> <p>Output like this is generated:</p> <pre>-- Policy 0 ActStb [DbReplication] ----- RDU06-MP1 - Stby BC From RDU06-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>																																																																		
24.	NOAM VIP GUI: <input type="checkbox"/> Verify the database states	<p>Navigate to Main Menu->Status and Manager->Database.</p>  <p>Verify the OAM Max HA Role is either Active or Standby for NOAM and SOAM; Application Max HA Role for MPs is Active; and the status is Normal.</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>N02</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>N01</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	N02	Network OAM&P	Standby	N/A	Normal	0	Normal	NotApplicable	Allowed	NotApplicable	SOAM_NE	DAMP1	MP	Active	Active	Normal	0	Normal	Normal	Allowed	NotApplicable	NOAM_NE	N01	Network OAM&P	Active	N/A	Normal	0	Normal	NotApplicable	Allowed	NotApplicable
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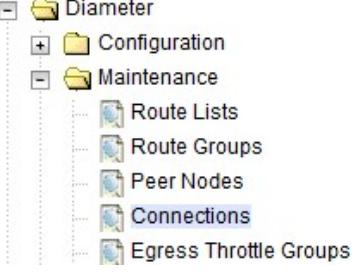
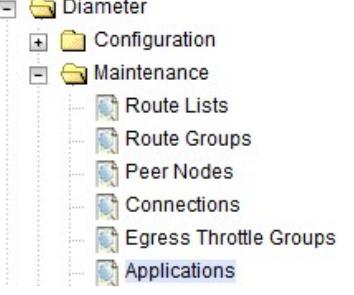
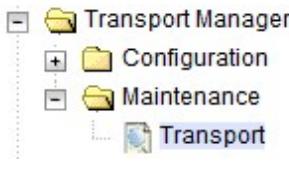
Procedure 3. Recovery Scenario 3

25.	NOAM VIP GUI: <input type="checkbox"/> Verify the HA status	<p>Navigate to Main Menu->Status and Manage->HA.</p>  <p>Select the row for all of the servers.</p> <p>Verify the HA Role is either Active or Standby.</p> <p>Main Menu: Status & Manage -> HA</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>S01</td> <td>Standby</td> <td>N/A</td> <td>Active</td> <td>S02</td> <td>SOAM_NE</td> <td>System OAM</td> </tr> <tr> <td>S02</td> <td>Active</td> <td>N/A</td> <td>Active</td> <td>S01</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	S01	Standby	N/A	Active	S02	SOAM_NE	System OAM	S02	Active	N/A	Active	S01	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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NO1	Active	N/A	Active	NO2	NOAM_NE	Network OAM&P																																						
NO2	Standby	N/A	Active	NO1	NOAM_NE	Network OAM&P																																						
26.	SOAM VIP GUI: <input type="checkbox"/> Verify the local node info	<p>Navigate to Main Menu->Diameter->Configuration->Local Node.</p>  <p>Verify all the local nodes are shown.</p>																																										

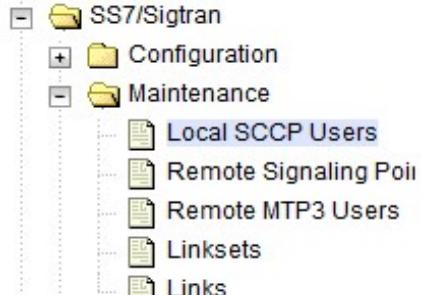
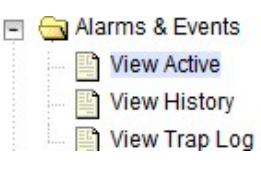
Procedure 3. Recovery Scenario 3

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

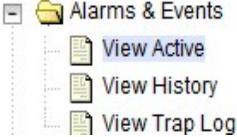
Procedure 3. Recovery Scenario 3

29.	SOAM VIP GUI: <input type="checkbox"/> Enable connections, if needed	<p>Navigate to Main Menu->Diameter->Maintenance->Connections.</p>  <p>Select each connection and click Enable. Alternatively, you can enable all the connections by clicking EnableAll.</p> <p><input type="button" value="Enable"/> <input type="button" value="Disable"/> <input type="button" value="EnableAll"/> <input type="button" value="DisableAll"/> <input type="button" value="Diagnose Start"/> <input type="button" value="Diagnose End"/> <input type="button" value="SCTP STATISTICS"/> <input type="checkbox"/> Pause updates</p> <p>Verify the Operational State is Available.</p>
30.	SOAM VIP GUI: <input type="checkbox"/> Enable optional features	<p>Navigate to Main Menu -> Diameter -> Maintenance -> Applications.</p>  <p>Select the optional feature application configured in Step 31.</p> <p>Click Enable.</p> <p><input type="button" value="Enable"/> <input type="button" value="Disable"/> <input type="checkbox"/> Pause updates</p>
31.	SOAM VIP GUI: <input type="checkbox"/> Re-enable transports, if needed	<p>Navigate to Main Menu->Transport Manager -> Maintenance -> Transport.</p>  <p>Select each transport and click Enable.</p> <p><input type="button" value="Enable"/> <input type="button" value="Disable"/> <input type="button" value="Block"/></p> <p>Verify the Operational Status for each transport is Up.</p>

Procedure 3. Recovery Scenario 3

32.	SOAM VIP GUI: <input type="checkbox"/> Re-enable MAPIWF application, if needed	<p>Navigate to Main Menu->SS7/Sigtran->Maintenance->Local SCCP Users.</p> <p> A navigation tree showing the path: SS7/Sigtran > Configuration > Maintenance > Local SCCP Users. Other options include Remote Signaling Poi, Remote MTP3 Users, Linksets, and Links.</p> <p>Click Enable corresponding to MAPIWF Application Name.</p> <p><input type="button" value="Enable"/> <input type="button" value="Disable"/></p> <p>Verify the SSN Status is Enabled.</p>
33.	SOAM VIP GUI: <input type="checkbox"/> Re-enable links, if needed	<p>Navigate to Main Menu->SS7/Sigtran->Maintenance->Links.</p> <p> A navigation tree showing the path: SS7/Sigtran > Configuration > Maintenance > Links. Other options include Local SCCP Users, Remote Signaling Poi, Remote MTP3 Users, and Linksets.</p> <p>Click Enable for each link.</p> <p><input type="button" value="Enable"/> <input type="button" value="Disable"/></p> <p>Verify the Operational Status for each link is Up.</p>
34.	SOAM VIP GUI: <input type="checkbox"/> Examine all alarms	<p>Navigate to Main Menu->Alarms & Events->View Active.</p> <p> A navigation tree showing the path: Alarms & Events > View Active. Other options include View History and View Trap Log.</p> <p>Examine all active alarms and refer to the on-line help on how to address them.</p> <p>If needed, contact Appendix E. My Oracle Support (MOS).</p>

Procedure 3. Recovery Scenario 3

35.	NOAM VIP GUI: <input type="checkbox"/> Examine all alarms	Log into the NOAM VIP if not already logged in. Navigate to Main Menu->Alarms & Events->View Active .  Examine all active alarms and refer to the on-line help on how to address them. If needed, contact Appendix E. My Oracle Support (MOS).
36.	<input type="checkbox"/> Restore GUI usernames and passwords	If applicable, execute steps in Section 6 to recover the user and group information restored.
37.	<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.

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

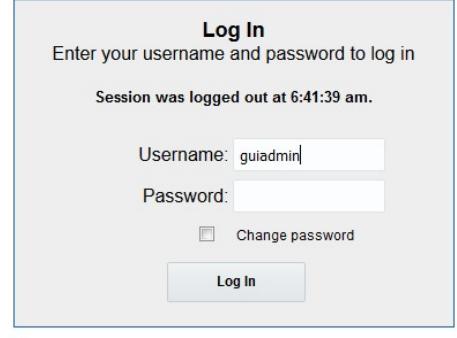
Procedure 4. Recovery Scenario 4

2.	Gather Required Materials	Gather the documents and required materials listed in Section Required Materials.
3.	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-bottom: 10px;"> <code>http://<Primary_NOAM_VIP_IP_Address></code> </div> <p>Login as the guiadmin user.</p>
4.	Active NOAM: Set failed servers to standby	<p>Navigate to Main Menu -> Status & Manage -> HA.</p> <p>Click Edit. Set the Max Allowed HA Role option to OOS for the failed servers. Click OK.</p> <div style="text-align: center;"> <input type="button" value="Ok"/> <input type="button" value="Cancel"/> </div>

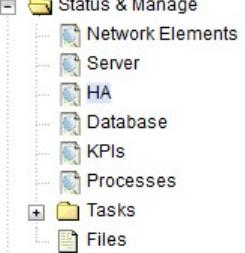
Procedure 4. Recovery Scenario 4

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

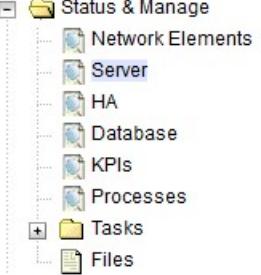
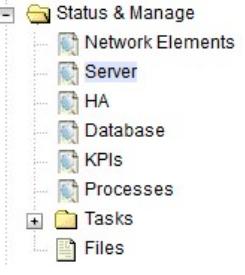
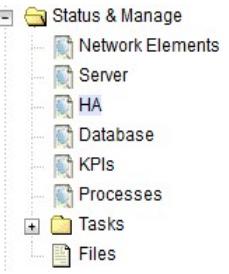
Procedure 4. Recovery Scenario 4

7.	NOAM VIP GUI: <input type="checkbox"/> 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; text-align: center;"> <code>http://<Primary_NOAM_VIP_IP_Address></code> </div> <p>Login as the guiadmin user.</p>  <p>ORACLE®</p> <p>Oracle System Login</p> <p>Fri Aug 12 06:41:39 2016 EDT</p> <p>Log In Enter your username and password to log in</p> <p>Session was logged out at 6:41:39 am.</p> <p>Username: <input type="text" value="guiadmin"/> Password: <input type="password"/></p> <p><input type="checkbox"/> Change password</p> <p>Log In</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>
8.	NOAM VIP GUI: <input type="checkbox"/> Recover standby NOAM, if needed	<p>Install the second NOAM server by executing procedures from reference [1]:</p> <ul style="list-style-type: none"> • Procedure 12 Configure the Second NOAM Server, Steps 1, 3-7 • Procedure 13 Complete Configuring the NOAM Server Group, Step 4 <p>Note: If Topology or NodeID alarms are persistent after the database restore, refer to Appendix D. Workarounds for Issues Not Fixed in This Release, or the next step.</p>
9.	(Optional) NOAM VIP GUI: <input type="checkbox"/> Recover the failed SOAM servers, if needed	<p>If the failed server is an SOAM, recover the remaining SOAM servers (standby, spare) by repeating the this step for each SOAM server:</p> <ol style="list-style-type: none"> 1. Install the remaining SOAM servers by executing Procedure 19 Configure the SOAM Servers, Steps 1, 3- 7, from reference [1]. <p>Note: Wait for server to reboot before continuing.</p>

Procedure 4. Recovery Scenario 4

10.	<input type="checkbox"/> (Optional) NOAM VIP GUI: Set HA on recovered servers	<p>Navigate to Status & Manage -> HA.</p>  <p>Click Edit. For each server whose Max Allowed HA Role is set to Standby, set it to Active. Click OK.</p>
11.	<input type="checkbox"/> Recovered Server: Login	Establish an SSH to the recovered server's XMI address.
12.	<input type="checkbox"/> Recovered Server: Sync NTP	<ol style="list-style-type: none"> 1. Perform the following to retrieve the remote NTP server. <pre>\$ sudo ntpq -np</pre> Example output: <pre>[admusr@NOAM-2 ~] \$ ntpq -np remote refid st t when poll reach delay offset jitter ===== ===== *10.240.9.186 10.250.33.2 3 u 356 1024 377 1.409 0.113 2.434</pre> 2. Stop ntpd service. <pre>\$ sudo service ntpd stop</pre> 3. Sync the date to the ntp remote server. <pre>\$ sudo ntpdate <NTP remote server></pre> <p>Note: The remote server below is the one gathered in sub step 1.</p> 4. Start the ntp service. <pre>\$ sudo service ntpd start</pre>

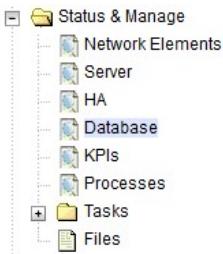
Procedure 4. Recovery Scenario 4

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

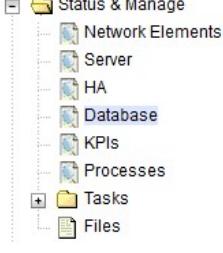
Procedure 4. Recovery Scenario 4

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

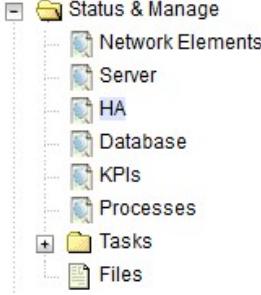
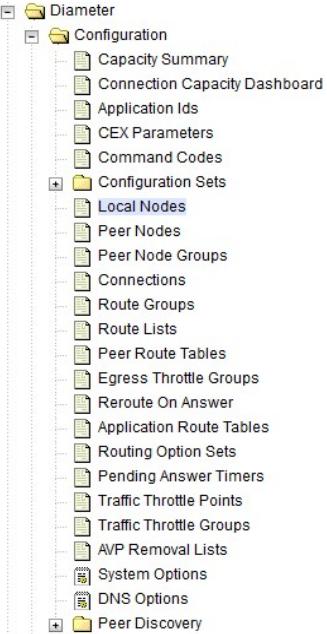
Procedure 4. Recovery Scenario 4

22.	<input type="checkbox"/> NOAM VIP GUI: Fetch and Store the database report for the newly restored data and save it	<p>Navigate to Main Menu->Status & Manage->Database.</p>  <p>Select the active NOAM server and click Report.</p> <p>Main Menu: Status & Manage -> Database [Report]</p> <p>Report Generated: Tue Oct 05 15:13:38 2010 UTC From: Active Network OAH&P on host blade07 Report Version: 3.0.13-3.0.0_10.13.0 User: guiaadmin</p> <p>General</p> <p>Hostname : blade07 Appworks Database Version : 3.0 Application Database Version :</p> <p>Capacities and Utilization</p> <p>Disk Utilization 0.6% 249M used of 40G total, 38G available Memory Utilization 0.6% 136M used of 23975M total, 23839M available</p> <p>Alarms</p> <p>None</p> <p>Maintenance in Progress</p> <p>Restore operation success</p> <p>Service Information</p> <p>Part: A_NpqrProvPart</p> <table border="1"> <thead> <tr> <th>Table Name</th> <th>Row Size</th> <th>Schema</th> <th>Avg Max</th> <th>Num Rows</th> <th>Memory Used / Alloc</th> <th>Disk Used / Alloc</th> </tr> </thead> <tbody> <tr> <td>CgPa</td> <td>44</td> <td></td> <td></td> <td>1</td> <td>44 B / 44 B</td> <td>44 B / 44 B</td> </tr> <tr> <td>CgPaGta</td> <td>52</td> <td></td> <td></td> <td>0</td> <td>0 B / 0 B</td> <td>0 B / 0 B</td> </tr> <tr> <td>CgPaInfo</td> <td>64</td> <td></td> <td></td> <td>1</td> <td>64 B / 64 B</td> <td>64 B / 64 B</td> </tr> <tr> <td>CgPaOpc</td> <td>36</td> <td></td> <td></td> <td>0</td> <td>0 B / 0 B</td> <td>0 B / 0 B</td> </tr> <tr> <td>CountryCode</td> <td>24</td> <td></td> <td></td> <td>306</td> <td>7344 B / 7344 B</td> <td>7344 B / 7344 B</td> </tr> <tr> <td>GTConfig</td> <td>52</td> <td></td> <td></td> <td>2</td> <td>104 B / 104 B</td> <td>104 B / 104 B</td> </tr> <tr> <td>MccMnc</td> <td>40</td> <td></td> <td></td> <td>0</td> <td>0 B / 0 B</td> <td>0 B / 0 B</td> </tr> <tr> <td>Msisdn</td> <td>52</td> <td></td> <td></td> <td>0</td> <td>0 B / 0 B</td> <td>0 B / 0 B</td> </tr> <tr> <td>Msrn</td> <td>68</td> <td></td> <td></td> <td>0</td> <td>0 B / 0 B</td> <td>0 B / 0 B</td> </tr> <tr> <td>NpqrNeOptions</td> <td>276</td> <td></td> <td></td> <td>0</td> <td>0 B / 0 B</td> <td>0 B / 0 B</td> </tr> </tbody> </table> <p>Print Save</p> <p>Click Save to save the report to your local machine.</p>	Table Name	Row Size	Schema	Avg Max	Num Rows	Memory Used / Alloc	Disk 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
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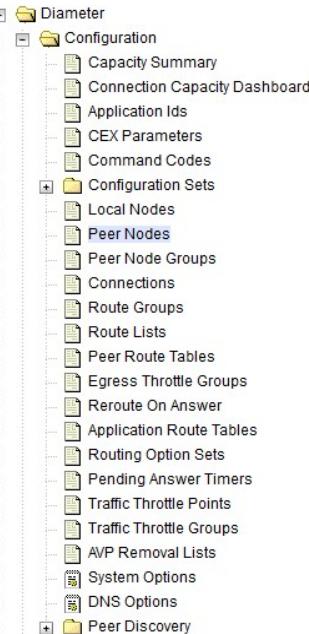
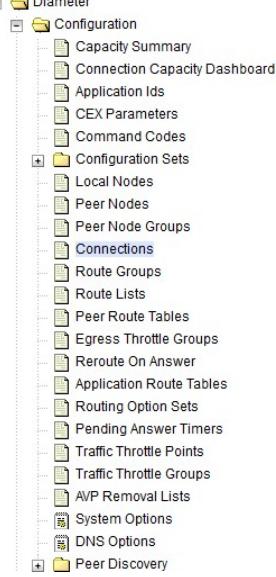
Procedure 4. Recovery Scenario 4

23.	ACTIVE NOAM: <input type="checkbox"/> Verify replication between servers	<p>Log into the active NOAM via SSH terminal as admusr.</p> <p>Execute the following command.</p> <pre>\$ sudo irepstat -m</pre> <p>Output like this is generated:</p> <pre>-- Policy 0 ActStb [DbReplication] ----- RDU06-MP1 - Stby BC From RDU06-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>																																																																		
24.	NOAM VIP GUI: <input type="checkbox"/> Verify the database states	<p>Navigate to Main Menu->Status and Manager->Database.</p>  <p>Verify the OAM Max HA Role is either Active or Standby for NOAM and SOAM; Application Max HA Role for MPs is Active; and the status is Normal.</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>N02</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>N01</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	N02	Network OAM&P	Standby	N/A	Normal	0	Normal	NotApplicable	Allowed	NotApplicable	SOAM_NE	DAMP1	MP	Active	Active	Normal	0	Normal	Normal	Allowed	NotApplicable	NOAM_NE	N01	Network OAM&P	Active	N/A	Normal	0	Normal	NotApplicable	Allowed	NotApplicable
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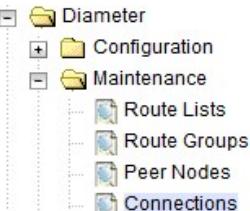
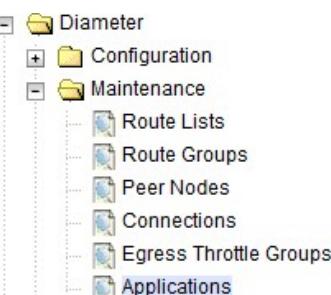
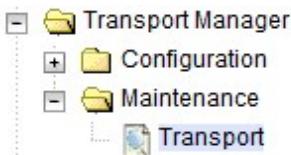
Procedure 4. Recovery Scenario 4

25.	NOAM VIP GUI: <input type="checkbox"/> Verify the HA status	<p>Navigate to Main Menu->Status and Manage->HA.</p>  <p>Select the row for all of the servers.</p> <p>Verify the HA Role is either Active or Standby.</p> <p>Main Menu: Status & Manage -> HA</p> <table border="1" data-bbox="497 728 1428 908"> <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																																						
26.	SOAM VIP GUI: <input type="checkbox"/> Verify the local node info	<p>Navigate to Main Menu->Diameter->Configuration->Local Node.</p>  <p>Verify all the local nodes are shown.</p>																																										

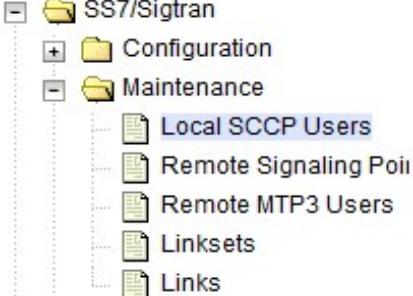
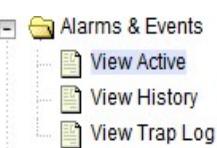
Procedure 4. Recovery Scenario 4

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

Procedure 4. Recovery Scenario 4

30.	SOAM VIP GUI: <input type="checkbox"/> Enable connections, if needed	<p>Navigate to Main Menu->Diameter->Maintenance->Connections.</p>  <p>Select each connection and click Enable. Alternatively, you can enable all the connections by clicking EnableAll.</p> <p>Buttons: Enable, Disable, EnableAll, DisableAll, Diagnose Start, Diagnose End, SCTP STATISTICS, Pause updates</p> <p>Verify the Operational State is Available.</p>
31.	SOAM VIP GUI: <input type="checkbox"/> Enable optional features	<p>Navigate to Main Menu -> Diameter -> Maintenance -> Applications.</p>  <p>Select the optional feature application configured in Step 22.</p> <p>Click Enable.</p> <p>Buttons: Enable, Disable, Pause updates</p>
32.	SOAM VIP GUI: <input type="checkbox"/> Re-enable transports, if needed	<p>Navigate to Main Menu->Transport Manager -> Maintenance -> Transport.</p>  <p>Select each transport and click Enable.</p> <p>Buttons: Enable, Disable, Block</p> <p>Verify the Operational Status for each transport is Up.</p>

Procedure 4. Recovery Scenario 4

33.	SOAM VIP GUI: <input type="checkbox"/> Re-enable MAPIWF application, if needed	<p>Navigate to Main Menu->SS7/Sigtran->Maintenance->Local SCCP Users.</p>  <p>Click Enable corresponding to MAPIWF application name.</p> <p>Enable Disable</p> <p>Verify the SSN Status is Enabled.</p>
34.	SOAM VIP GUI: <input type="checkbox"/> Re-enable links, if needed	<p>Navigate to Main Menu->SS7/Sigtran->Maintenance->Links.</p>  <p>Click Enable for each link.</p> <p>Enable Disable</p> <p>Verify the Operational Status for each link is Up.</p>
35.	SOAM VIP GUI: <input type="checkbox"/> 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. If needed, contact Appendix E. My Oracle Support (MOS).</p>

Procedure 4. Recovery Scenario 4

<input type="checkbox"/>	NOAM VIP GUI: Examine all alarms	<p>Log into 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 E. My Oracle Support (MOS).</p>
<input type="checkbox"/>	37. Restart oampAgent, if needed	<p>Note: If the 10012: The responder for a monitored table failed to respond to a table change alarm is generated, the oampAgent needs to be restarted.</p> <p>Establish an SSH session to each server with the alarm.</p> <p>Login as admusr.</p> <p>Execute the following commands.</p> <div style="border: 1px solid black; padding: 5px; margin-left: 20px;"> <pre>\$ sudo pm.set off oampAgent \$ sudo pm.set on oampAgent</pre> </div>
<input type="checkbox"/>	38. Backup and archive all the databases from the recovered system	<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.

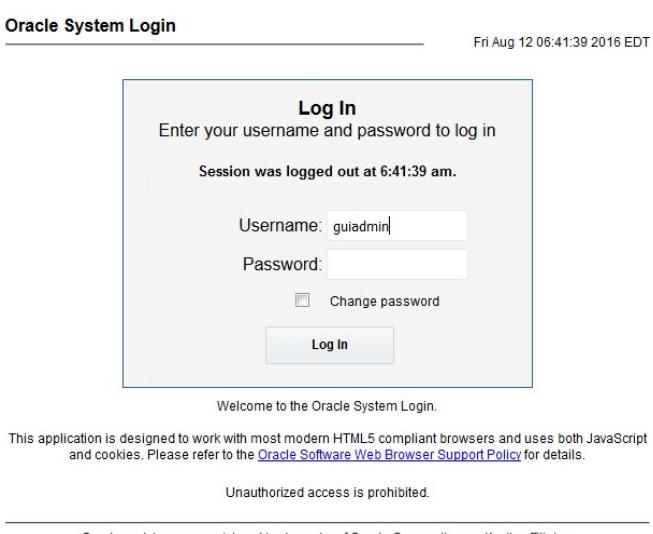
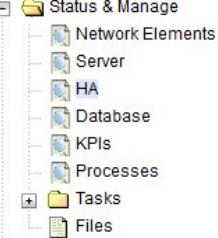
Procedure 5. Recovery Scenario 5

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

Procedure 5. Recovery Scenario 5

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

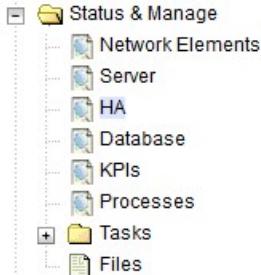
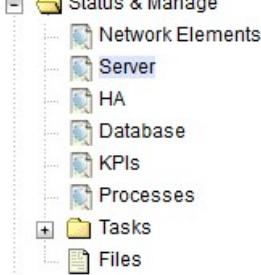
Procedure 5. Recovery Scenario 5

6.	DR-NOAM VIP GUI: Login	<p>Establish a GUI session on the DR-NOAM server by using the VIP IP address of the DR-NOAM server. Open the web browser and enter a URL of:</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> http://<Primary_DR-NOAM_VIP_IP_Address> </div> <p>Login as the guiadmin user.</p> 
7.	DR-NOAM VIP GUI: Set failed NOAM servers to standby	<p>Navigate to Main Menu -> Status & Manage -> HA.</p>  <p>Click Edit.</p> <p>Set the Max Allowed HA Role option to Standby for the failed NOAM servers.</p> <p>Click OK.</p> 
8.	Execute DSR installation procedure for the first NOAM	<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> <ul style="list-style-type: none"> • Procedure 10 Configure the First NOAM NE and Server • Procedure 11 Configure the NOAM Server Group

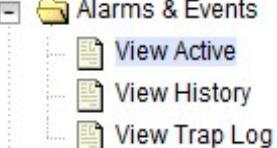
Procedure 5. Recovery Scenario 5

9.	DR-NOAM VIP GUI: Export the initial configuration	Navigate to Main Menu -> Configuration -> Servers . From the GUI screen, select the failed NOAM server and click Export to generate the initial configuration data for that server. <div style="border: 1px solid #ccc; padding: 5px; display: inline-block;"> <input type="button" value="Insert"/> <input type="button" value="Edit"/> <input type="button" value="Delete"/> <input type="button" value="Export"/> <input type="button" value="Report"/> </div>
10.	DR-NOAM VIP GUI: Copy configuration file to failed NOAM server	Obtain a terminal session to the DR-NOAM VIP, login as admusr . Execute the following command to configure the failed NOAM server. <div style="border: 1px solid #ccc; padding: 5px; display: inline-block;"> <pre>\$ sudo scp -r /var/TKLC/db/filemgmt/TKLCConfigData.<Failed_NOAM_Hostname>.sh admusr@<Failed_NOAM_xmi_IP_address>:/var/tmp/TKLCConfigData.sh</pre> </div>
11.	Recovered NOAM Server: Verify configuration was called and reboot the server	Establish an SSH session to the Recovered NOAM server (Recovered_NOAM_xmi_IP_address). Login as admusr . The automatic configuration daemon looks for the TKLCConfigData.sh file in the /var/tmp directory, implements the configuration in the file, and asks the user to reboot the server. Verify awpushcfg was called by checking the following file. <div style="border: 1px solid #ccc; padding: 5px; display: inline-block;"> <pre>\$ sudo cat /var/TKLC/appw/logs/Process/install.log</pre> <p>Verify the following message is displayed:</p> <pre>[SUCCESS] script completed successfully!</pre> </div> Now reboot the server. <div style="border: 1px solid #ccc; padding: 5px; display: inline-block;"> <pre>\$ sudo init 6</pre> </div> Wait for the server to reboot.
12.	Recovered NOAM Server: Verify server health	Execute the following command on the failed NOAM server and make sure no errors are returned. <div style="border: 1px solid #ccc; padding: 5px; display: inline-block;"> <pre>\$ sudo syscheck Running modules in class hardware...OK Running modules in class disk...OK Running modules in class net...OK Running modules in class system...OK Running modules in class proc...OK LOG LOCATION: /var/TKLC/log/syscheck/fail_log</pre> </div>
13.	Repeat for additional 2 nd failed NOAM	Repeat Steps 9-12 for the 2 nd failed NOAM server.

Procedure 5. Recovery Scenario 5

14.	<input type="checkbox"/> Perform keyexchange between active NOAM and recovered NOAMs	<p>Perform a keyexchange between the newly active NOAM and the recovered NOAM servers.</p> <p>From a terminal window connection on the active NOAM as admusr, 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 admusr of the recovered NOAM servers.</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <pre>\$ keyexchange admusr@<Recovered NOAM Hostname></pre> </div>
15.	<input type="checkbox"/> NOAM VIP GUI: Set HA on recovered NOAMs	<p>Navigate to Status & Manage -> HA.</p>  <p>Click Edit.</p> <p>For each NOAM server whose Max Allowed HA Role is set to Standby, set it to Active.</p> <p>Click OK.</p>
16.	<input type="checkbox"/> NOAM VIP GUI: Restart DSR application	<p>Navigate to Main Menu->Status & Manage->Server.</p>  <p>Select each recovered NOAM server and click Restart.</p> <div style="text-align: center; margin-top: 10px;"> Stop Restart Reboot NTP Sync Report </div>

Procedure 5. Recovery Scenario 5

17.	<input type="checkbox"/> Recovered NOAM servers: Activate Optional Features	<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"> Establish SSH sessions to the all the recovered NOAM servers and login as admusr. Refer [3] and execute the PCA Activation on Standby NOAM Server procedure on all recovered NOAM servers to re-activate PCA. <p>Establish an SSH session to the recovered active NOAM, login as admusr.</p> <p>For MAP-IWF:</p> <ol style="list-style-type: none"> Establish an SSH session to the recovered active NOAM, login as admusr. 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 display. This can safely be ignored.</p> <pre>iload#31000{S/W Fault}</pre> <p>Note: If any of the MPs have failed and recovered, then these MP servers should be restarted after activation of the feature.</p>
18.	<input type="checkbox"/> Switch DR NOAM back to secondary	Once the system have been recovered, refer to DSR/SDS 8.x NOAM Failover User's Guide, E85595 [2].
19.	<input type="checkbox"/> Recovered Servers: Verify alarms	<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>
20.	<input type="checkbox"/> NOAM VIP GUI: Recover standby/spare SOAM and C-level servers	If necessary, refer to Procedure 3. Recovery Scenario 3 to recover any standby or spare SOAMs as well as any C-level servers.

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

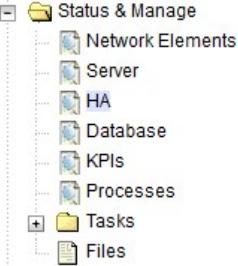
For a partial outage with:

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

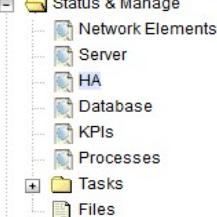
- Backup.DSR.HPC02-NO2.FullDBParts.NETWORK_OAMP.20140524_223507.UPG.tar.bz2
- Backup.DSR.HPC02-NO2.FullRunEnv.NETWORK_OAMP.20140524_223507.UPG.tar.bz2

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

Procedure 6. Recovery Scenario 6 (Case 1)

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

Procedure 6. Recovery Scenario 6 (Case 1)

7.	Server in Question: Verify the server	Execute the following command to verify if the processes are up and running. \$ sudo pm.getprocs
8.	NOAM VIP GUI: Set failed servers to Active	<p>Navigate to Status & Manage -> HA.</p>  <p>Click Edit.</p> <p>For each failed server whose Max Allowed HA Role is set to OOS, set it to Active.</p> <p>Click OK.</p>
9.	Backup and archive all the databases from the recovered system	Execute Appendix A. DSR Database Backup to back up the configuration databases.

5.1.6.2 Recovery Scenario 6: Case 2

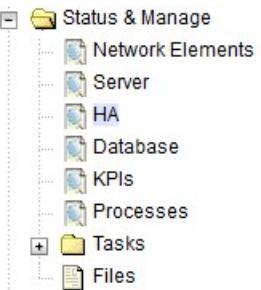
For a partial outage with:

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

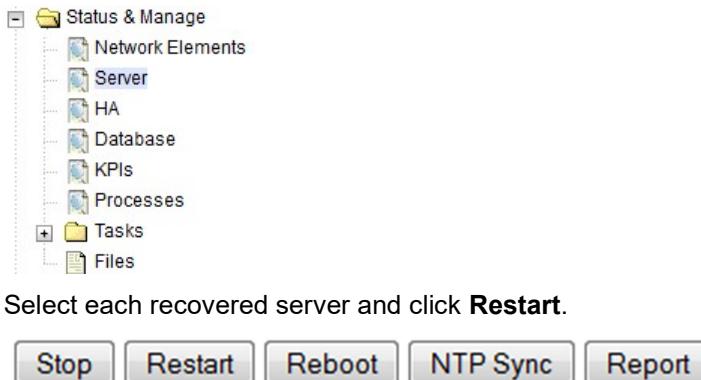
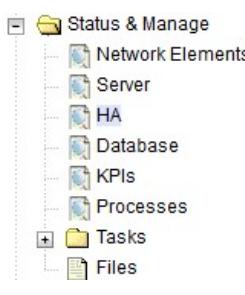
Procedure 7. Recovery Scenario 6 (Case 2)

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

Procedure 7. Recovery Scenario 6 (Case 2)

2.	<input type="checkbox"/> NOAM VIP GUI: Set failed servers to standby	Navigate to Main Menu -> Status & Manage -> HA.  Click Edit. Set the Max Allowed HA Role option to OOS for the failed servers. Click OK. 
3.	<input type="checkbox"/> Server in Question: Login	Establish an SSH session to the server in question. Login as admusr .
4.	<input type="checkbox"/> Server in Question: Take server out of service	Execute the following command to take the server out of service. <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <pre>\$ sudo bash -l \$ sudo prod.clobber</pre> </div>
5.	<input type="checkbox"/> Server in Question: Take server to dbup state and start the application	Execute the following commands to take the server to Dbup and start the DSR application. <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <pre>\$ sudo bash -l \$ sudo prod.start</pre> </div>
6.	<input type="checkbox"/> Server in Question: Verify the server state	Execute the following commands to verify the processes are up and running. <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <pre>\$ sudo pm.getprocs</pre> </div> Execute the following command to verify if replication channels are up and running. <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <pre>\$ sudo irepstat</pre> </div> Execute the following command to verify if merging channels are up and running. <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <pre>\$ sudo inetmstat</pre> </div>

Procedure 7. Recovery Scenario 6 (Case 2)

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

6. Resolving User Credential Issues after Database Restore

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

6.1 Restore a Deleted User

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

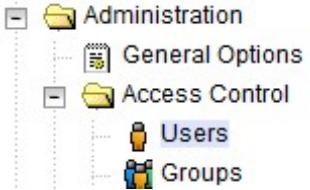
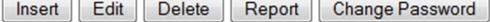
These users were removed before creating the backup and archive file. They are reintroduced by system restoration of that file.

6.2 Keep a Restored User

Procedure 8. Keep Restored User

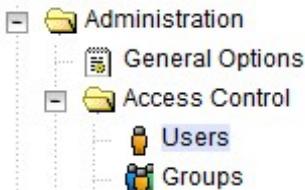
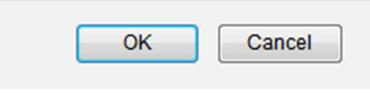
S	Perform this procedure to keep users restored by system restoration.	
T	Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.	
E		
P	If this procedure fails, contact Appendix E. My Oracle Support (MOS) and ask for assistance.	
#		
1.	Before Restoration: <input type="checkbox"/> Notify affected users before restoration	Contact each user affected before the restoration and notify them you are resetting their password during this maintenance operation.
2.	After Restoration: <input type="checkbox"/> Log into the NOAM VIP	<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; max-width: 400px;"> http://<Primary_NOAM_VIP_IP_Address> </div> <p>Login as the guiadmin user.</p>

Procedure 8. Keep Restored User

3.	<p><input type="checkbox"/> After Restoration: Reset User Passwords</p>	<p>Navigate to Administration -> Access Control -> Users.</p> <p>A hierarchical navigation tree showing 'Administration' as the root, with 'General Options' as a child. 'Access Control' is expanded, showing 'Users' and 'Groups' as children.</p> <p>Select the user.</p> <p>Click Change Password.</p> <p>A horizontal row of buttons: Insert, Edit, Delete, Report, and Change Password. The 'Change Password' button is highlighted.</p> <p>Enter a new password.</p> <p>A dialog box with the following text: Enter the new password for guiadmin two times. New Password: <input type="text"/> Retype New Password: <input type="text"/> <input checked="" type="checkbox"/> Force password change on next login <input type="button" value="Continue"/></p> <p>Click Continue.</p>
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6.3 Remove a Restored User

Procedure 9. Remove the Restored User

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

6.4 Restore a Modified User

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

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

Before Restoration:

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

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

After Restoration:

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

6.5 Restore an Archive that Does Not Contain a Current User

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

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

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

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

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

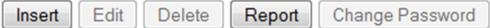
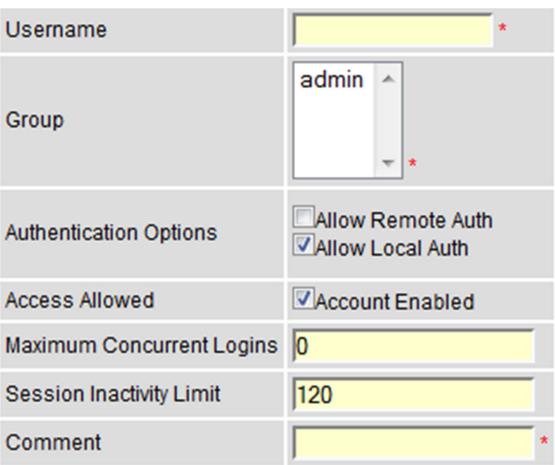
Procedure 10. Restoring an Archive that Does Not Contain a Current User

2.	<p><input type="checkbox"/> Before Restoration: Log into the NOAM VIP</p>	<p>Establish a GUI session on the NOAM server by using the VIP IP address of the NOAM server. Open the web browser and enter a URL of:</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <code>http://<Primary_NOAM_VIP_IP_Address></code> </div> <p>Login as the guiadmin user.</p>
3.	<p><input type="checkbox"/> 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

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

4. <input type="checkbox"/> After Restoration: 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; width: 100%;"><code>http://<Primary_NOAM_VIP_IP_Address></code></div> <p>Login as the guiadmin user.</p>
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Procedure 10. Restoring an Archive that Does Not Contain a Current User

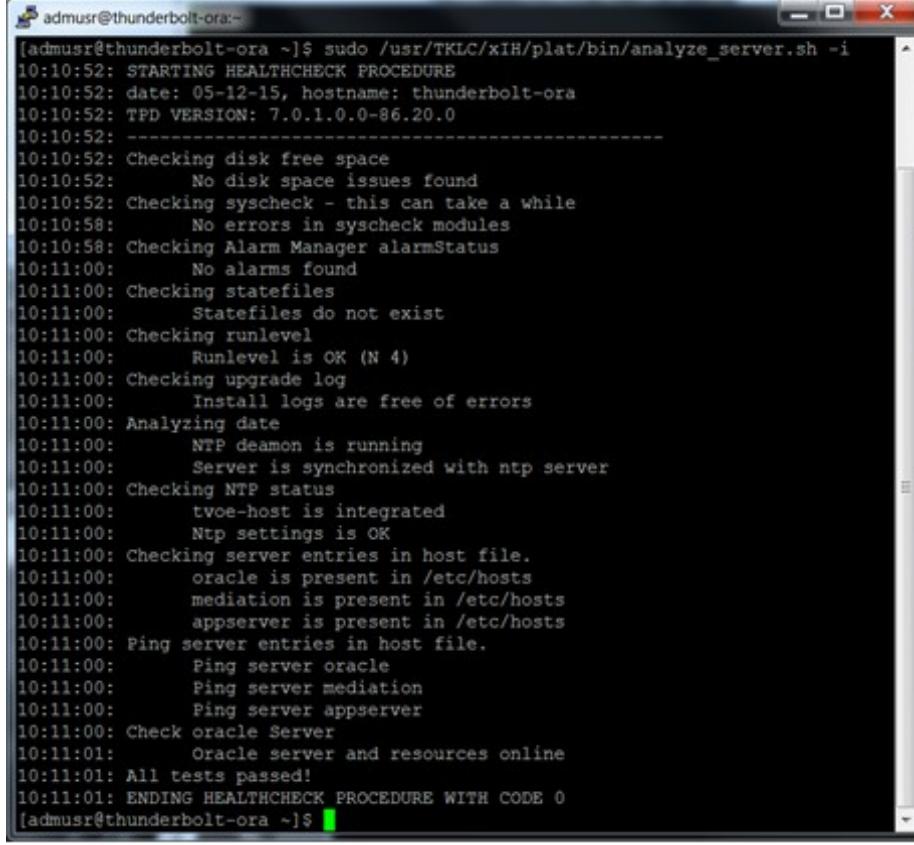
<p>5. <input type="checkbox"/> After Restoration: Recreate affected user</p>	<p>Navigate to Administration -> Access Control -> Users.</p> <p>A hierarchical navigation tree showing 'Administration' as the root, with 'General Options' and 'Access Control' as children. 'Access Control' has 'Users' and 'Groups' as children. 'Users' is highlighted with a blue selection bar.</p> <p>Click Insert.</p> <p>A row of five buttons: 'Insert' (highlighted in blue), 'Edit', 'Delete', 'Report', and 'Change Password'.</p> <p>Recreate the user using the data collected in Step 3.</p> <p>A form with the following fields: - Username: A text input field with a yellow background and a red asterisk. - Group: A dropdown menu showing 'admin' with up and down arrows. - Authentication Options: A section with two checkboxes: 'Allow Remote Auth' (unchecked) and 'Allow Local Auth' (checked). - Access Allowed: A section with a checkbox 'Account Enabled' (checked). - Maximum Concurrent Logins: A text input field with a yellow background containing '0'. - Session Inactivity Limit: A text input field with a yellow background containing '120'. - Comment: A text input field with a yellow background and a red asterisk.</p> <p>Click OK.</p> <p>A row of three buttons: 'Ok' (highlighted in blue), 'Apply', and 'Cancel'.</p>
<p>6. <input type="checkbox"/> After Restoration: Repeat for additional users</p>	<p>Repeat Step 5 to recreate additional users.</p>
<p>7. <input type="checkbox"/> After Restoration: Reset the passwords</p>	<p>See Section 6.2 Keep a Restored User for resetting passwords for a user.</p>

7. IDIH Disaster Recovery

Procedure 11. IDIH Disaster Recovery Preparation

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

Procedure 11. iDIH Disaster Recovery Preparation

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

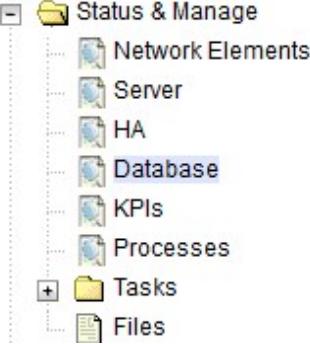
S	This procedure performs disaster recovery for the iDIH by re-installing the mediation and application servers.	
T	Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.	
E		
P	If this procedure fails, contact Appendix E. My Oracle Support (MOS)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

Appendix A. DSR Database Backup

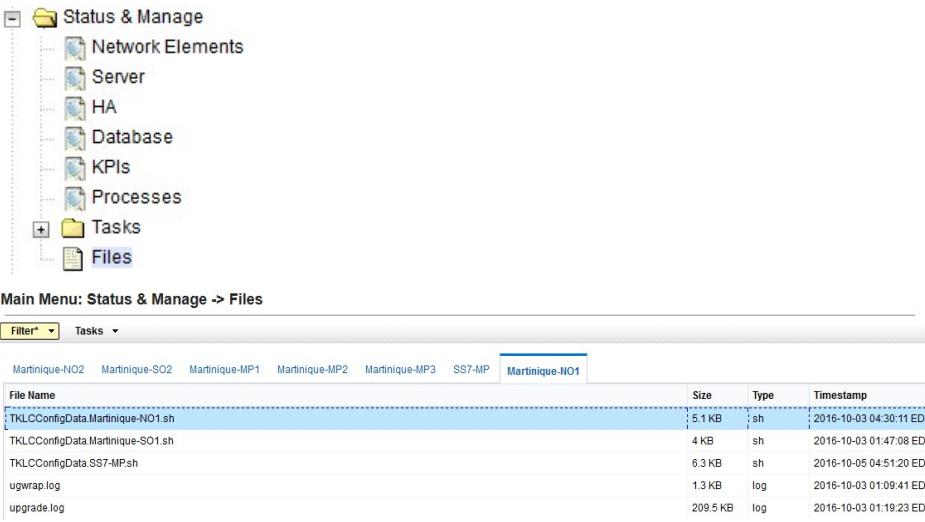
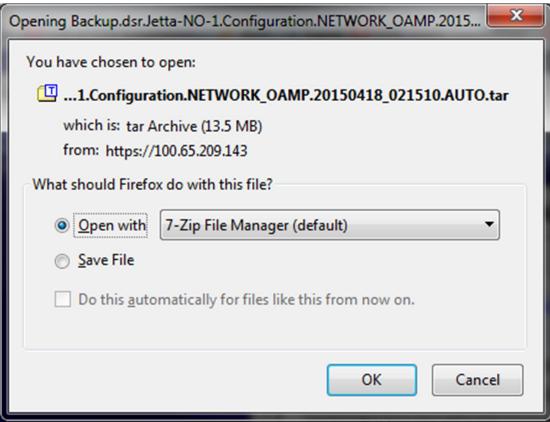
Procedure 13. Back up the provision and configuration data

S T E P #	<p>The intent of this procedure is to back up the provision and configuration information from an NOAM or SOAM server after the disaster recovery is complete</p> <p>Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.</p> <p>If this procedure fails, contact Appendix E. My Oracle Support (MOS) and ask for assistance.</p>
1. <input type="checkbox"/>	<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: 5px; width: fit-content;"> http://<Primary_NOAM/SOAM_VIP_IP_Address> </div> <p>Login as the guiadmin user.</p> 

Procedure 13. Back up the provision and configuration data

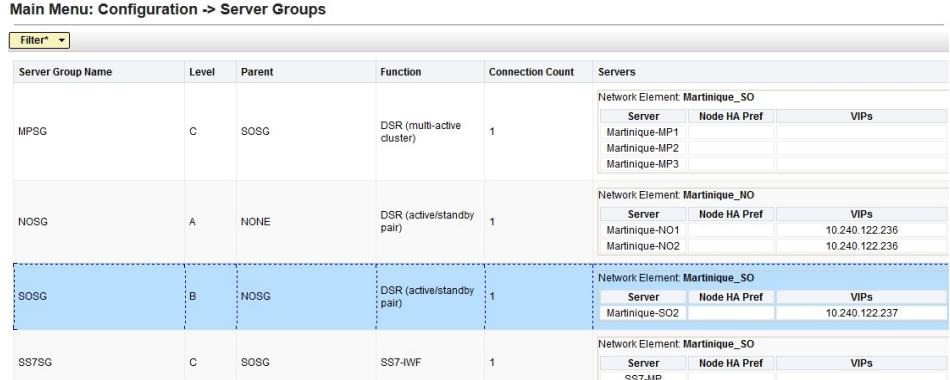
2. <input type="checkbox"/> NOAM/SOAM VIP: Backup configuration data for the system	<p>Navigate to Main Menu -> Status & Manage -> Database.</p>  <p>Select the active NOAM server and click Backup.</p> <p>Database Backup</p> <table border="1"> <thead> <tr> <th>Field</th> <th>Value</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>Server:</td> <td>Martinique-NO1</td> <td></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"/> bz2 <input type="radio"/> none</td> <td>Select the backup archive compression algorithm. The following file suffix will be applied for the selected option: • tar.gz - gzip compression, • tar.bz2 - bz2 compression, • tar - no compression. [A value is required.]</td> </tr> <tr> <td>Archive Name *</td> <td>Backup.ds1.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> </tbody> </table> <p>Type a filename for the backup and click 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"/> bz2 <input type="radio"/> none	Select the backup archive compression algorithm. The following file suffix will be applied for the selected option: • tar.gz - gzip compression, • tar.bz2 - bz2 compression, • tar - no compression. [A value is required.]	Archive Name *	Backup.ds1.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: ` ` \$
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Procedure 13. Back up the provision and configuration data

3.	NOAM/SOAM VIP: Verify the backup file existence	<p>Navigate to Main Menu -> Status & Manage -> Files.</p>  <p>Main Menu: Status & Manage -> Files</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>2016-10-05 01:47:08 EDT</td> </tr> <tr> <td>TKLCConfigData.SS7-MPsh</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 display. 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	2016-10-05 01:47:08 EDT	TKLCConfigData.SS7-MPsh	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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4.	NOAM/SOAM VIP: Download the file to a local machine	<p>From the previous step, choose the backup file.</p> <p>Click Download.</p>  <p>Opening Backup.dsr.Jetta-NO-1.Configuration.NETWORK_OAMP.2015...</p> <p>You have chosen to open:</p> <p>...1.Configuration.NETWORK_OAMP.20150418_021510.AUTO.tar</p> <p>which is: tar Archive (13.5 MB)</p> <p>from: https://100.65.209.143</p> <p>What should Firefox do with this file?</p> <p><input checked="" type="radio"/> Open with 7-Zip File Manager (default)</p> <p><input type="radio"/> Save File</p> <p><input type="checkbox"/> Do this automatically for files like this from now on.</p> <p>OK Cancel</p> <p>Click OK to confirm the download.</p>																								
5.	Upload the image to secure location	Transfer the backed up image saved in the previous step to a secure location where the Server Backup files are stored in case of system disaster recovery.																								
6.	Backup active SOAM	Repeat Steps 2 through 5 to back up the active SOAM.																								

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

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

S	The intent of this procedure is to inhibit A and B level replication on all C-level servers of this site.		
T	Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.		
E			
P	If this procedure fails, contact Appendix E. My Oracle Support (MOS) and ask for assistance.		
#			
1.	Active NOAM: <input type="checkbox"/> Login	Log into the active NOAM server via SSH as admusr .	
2.	Active NOAM: <input type="checkbox"/> Inhibit replication on all C-level servers	Execute the following command.	
		<pre>\$ for i in \$(iqet -p -z -h -fhostName NodeInfo where "nodeId like 'C*' and siteId='<NE name of the site>'"); do iset -f inhibitRepPlans='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 navigating to Configuration->Server Groups.</p> 	

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

3. <input type="checkbox"/> Active NOAM: Verify replication has been Inhibited	<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>Verify replication inhibition on MPs by analyzing NodeInfo output. InhibitRepPlans field for all the MP servers for the selected site, e.g., Site SO_HPC03 is set as A B.</p> <p>Perform the following command.</p> <pre>\$ 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> </tr> </thead> <tbody> <tr> <td>A1386.099</td> <td>NO1</td> <td>NO1</td> <td>Active</td> <td>NO_HPC03</td> </tr> <tr> <td>B1754.109</td> <td>SO1</td> <td>SO1</td> <td>Active</td> <td>SO_HPC03</td> </tr> <tr> <td>C2254.131</td> <td>MP2</td> <td>MP2</td> <td>Active</td> <td>SO_HPC03</td> </tr> <tr> <td>C2254.233</td> <td>MP1</td> <td>MP1</td> <td>Active</td> <td>SO_HPC03</td> </tr> </tbody> </table>	nodeID	nodeName	hostName	nodeCapability	inhibitRepPlans	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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C2254.131	MP2	MP2	Active	SO_HPC03																						
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Appendix C. Un-Inhibit A and B Level Replication on C-Level Servers**Procedure 15. Un-Inhibit A and B Level Replication on C-Level Servers**

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

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

2.	Active NOAM: <input type="checkbox"/> Un-Inhibit replication on all C-level Servers	<p>Execute the following command.</p> <pre>\$ for i in \$(iqt -p -z -h -fhostName NodeInfo where "nodeId like 'C*' and siteId='<NE name of the site>'"); do iset -finhibitRepPlans='' NodeInfo where "nodeName='\$i"'; done</pre> <p>Note: NE name of the site can be found out by logging into the active NOAM GUI and navigating to Configuration->Server Groups.</p> <p>Main Menu: Configuration -> Server Groups</p> <p>Filter* ▾</p> <table border="1"> <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"> <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"> <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> <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"> <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-IWF</td><td>1</td><td> Network Element: Martinique_SO <table border="1"> <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"> <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"> <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"> <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-IWF	1	Network Element: Martinique_SO <table border="1"> <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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Appendix D. Workarounds for Issues Not Fixed in This Release

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

Appendix E. My Oracle Support (MOS)

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

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

1. Select 2 for New Service Request.

2. Select 3 for Hardware, Networking and Solaris Operating System Support.

3. Select one of the following options:

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

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

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