

**Diameter Signal Routing
User Data Repository
Cloud Disaster Recovery Guide for Release
12.7.0**

F55374-01

April 2022

ORACLE®

CAUTION: Open an Service Request on My Oracle Support and confer with Oracle before performing Disaster Recovery Procedure

Before recovering any system, access My Oracle Support (<https://support.oracle.com>) and review any My Oracle Support Alerts that relate to this procedure.

My Oracle Support (<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 My Oracle Support registration.

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

See more information on My Oracle Support in [My Oracle Support](#).

Copyright © 2016, 2022 Oracle and/or its affiliates. All rights reserved.

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

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

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

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

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

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

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

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

TABLE OF CONTENTS

CHAPTER 1. INTRODUCTION	5
1.1 Purpose and Scope.....	5
1.2 References	5
1.3 Acronyms.....	5
1.4 Terminology	6
1.5 How to Use this Document.....	6
CHAPTER 2. GENERAL DESCRIPTION	7
2.1 Complete Site Outage (All Servers)	7
2.2 Partial Outage with One UDR Server Intact and Second UDR Server Failed	7
2.3 Partial Outage with Corrupt Database	7
CHAPTER 3. PROCEDURE OVERVIEW	8
3.1 Required Materials	8
3.2 Disaster Recovery Strategy.....	8
3.3 Procedure Preparation	9
CHAPTER 4. DISASTER RECOVERY PROCEDURE	11
4.1 Recovering and Restoring System Configuration	11
4.1.1 Recovery Scenario 1 (Complete Site Outage).....	11
4.1.2 Recovery Scenario 2 (Partial Server Outage with One UDR Server Intact and Second UDR Server Failed)	22
4.1.3 Recovery Scenario 3 (Database Recovery).....	29
CHAPTER 5. RESOLVING USER CREDENTIAL ISSUES AFTER DATABASE RESTORE	35
5.1 Keeping a Restored User (Resetting User Password).....	35
5.2 Removing a Restored User	37
5.3 Restoring a Modified User.....	38
5.4 Restoring an Archive that Does Not Contain a Current User	39
APPENDIX A. ORACLE COMMUNICATIONS USER DATA REPOSITORY DATABASE BACKUP	44
APPENDIX B. MY ORACLE SUPPORT	48
APPENDIX C. LOCATE PRODUCT DOCUMENTATION ON THE ORACLE HELP CENTER SITE	49

List of Figures

Figure 1. Determining Recovery Scenario	9
---	---

List of Tables

Table 1. Terminology.....	6
Table 2: Recovery Scenarios.....	9

List of Procedures

Procedure 1: Recovery Scenario 1—Complete Server Outage	12
Procedure 2: Recovery Scenario 2—Partial Outage One UDR Intact.....	22
Procedure 3: Recovery Scenario 3 (Case 1)—Database Recovery Backup Present	30
Procedure 4: Recovery Scenario 3 (Case 2)—Database Recovery Backup Not Present	32
Procedure 5: Keep Restored User (Resetting User Password).....	35
Procedure 6: Remove the Restored User.....	37
Procedure 7: Restoring an Archive that does not Contain a Current User	39
Procedure 8: Restoring an Archive that does not Contain a Current User	44

Chapter 1. Introduction

1.1 Purpose and Scope

This document describes disaster recovery procedures used during disaster scenarios of the cloud based Oracle Communications User Data Repository 12.7.0 product.

This document is a guide to describe procedures used to perform disaster recovery for Oracle Communications User Data Repository Cloud deployments. This includes recovery of partial or a complete loss of one or more Oracle Communications User Data Repository virtual servers (Primary or DR). The audience for this document includes Oracle customers as well as the following internal groups: Software Development, Quality Assurance, Product Verification, Information Development, and Consulting Services including NPx. This document provides step-by-step instructions to perform disaster recovery for Oracle Communications User Data Repository 12.7.0. Performing this procedure also involves referring to and performing procedures in existing support documents found in the reference section.

This document is intended for Customer Service team on the fielded Oracle Communications User Data Repository 12.7.0 systems.

1.2 References

- [1] Oracle Communications User Data Repository 12.7.0 Disaster Recovery Guide, E83400, latest revision
- [2] Oracle Communications User Data Repository 12.7.0 Cloud Installation and Configuration Guide, E95212, latest revision

1.3 Acronyms

Acronym	Meaning
BIOS	Basic Input Output System
CD	Compact Disk
DR	Disaster Recovery
FRU	Field Replaceable Unit
IMI	Internal Management Interface
ISL	Inter-Switch-Link
NE	Network Element
NOAMP	Network Operations, Administration, Maintenance and Provisioning
ISO	Constains software images
OVA	Open Virtualization Archive
NAPD	Network Architecture Planning Diagram
TAC	Technical Assistance Centers
TPD	Tekelec Platform Distribution (Linux OS)
UDR	User Data Repository
VIP	Virtual IP
VM	Virtual Machine
XMI	External Management Interface

1.4 Terminology

Table 1. Terminology

Term	Definition
Base hardware	Base hardware includes all hardware components (bare metal) and electrical wiring to allow a server to power on.
Base software	Base software includes installing the operating system for the server: Tekelec Platform Distribution (TPD).
Failed server	A failed server in disaster recovery context refers to a server that has suffered partial or complete software and/or hardware failure to the extent that it cannot restart or be returned to normal operation and requires intrusive activities to re-install the software and/or hardware.
Enablement	The business practice of providing support services (hardware, software, documentation, etc) that enable a 3 rd party entity to install, configuration, and maintain Oracle products for Oracle customers.
Software Centric	The business practice of delivering an Oracle software product, while relying on the customer to procure the requisite hardware components. Oracle provides the hardware specifications, but does not provide the hardware, and is not responsible for hardware installation, configuration, or maintenance.

1.5 How to Use this Document

When using this document, understanding the following helps to ensure that you understand the intent of the manual:

- Before beginning a procedure, completely read the instructional text (it displays immediately after the Section heading for each procedure) and all associated procedural WARNINGS or NOTES.
- Before performing of a STEP in a procedure, completely read the left and right columns including any STEP specific WARNINGS and/or NOTES.

If a procedural STEP fails to perform successfully, stop and contact My Oracle Support.

Chapter 2. General Description

Disaster recovery procedures falls into five basic categories. It is primarily dependent on the state of the UDR servers:

Recovery of the site from a total outage	All UDR servers failed
Recovery of one or more servers with at least one UDR server intact	1 or more UDR servers intact
Recovery of one or more servers with corrupt database	<ul style="list-style-type: none"> • Case 1: No Replication Channel • Case 2: Replication Channel Available

2.1 Complete Site Outage (All Servers)

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

NOTE: UDR servers originally installed by ISO instead of OVA are recovered using ISO.

Database backups are taken from offsite backup storage locations (assuming these were performed and stored offsite before the outage). If backup files are not available, the only option is to rebuild the network from scratch. The network data must be reconstructed from whatever sources are available, including entering all data manually.

2.2 Partial Outage with One UDR Server Intact and Second UDR Server Failed

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

2.3 Partial 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 available.

Chapter 3. Procedure Overview

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

3.1 Required Materials

The following items are needed for disaster recovery:

1. A hardcopy of this document (E71445-01) and hardcopies of all documents in the reference list
2. Hardcopy of all NAPD performed at the initial installation and network configuration of this site. If the NAPD cannot be found, escalate this issue in My Oracle Support until the NAPD documents can be located.
3. Oracle Communications User Data Repository recent backup files: electronic backup file (preferred) or hardcopy of all Oracle Communications User Data Repository configuration and provisioning data.
4. Latest Network Element report: Electronic file or hardcopy of Network Element report.
5. The network element XML file used for the VMs initial configuration.

The software media referenced here may be acquired online from the Oracle e-Delivery service at edelivery.oracle.com

This document and others referenced here can be acquired online from the Oracle Document Repository at the following URL:

<http://docs.oracle.com/en/industries/communications/user-data-repository/index.html>

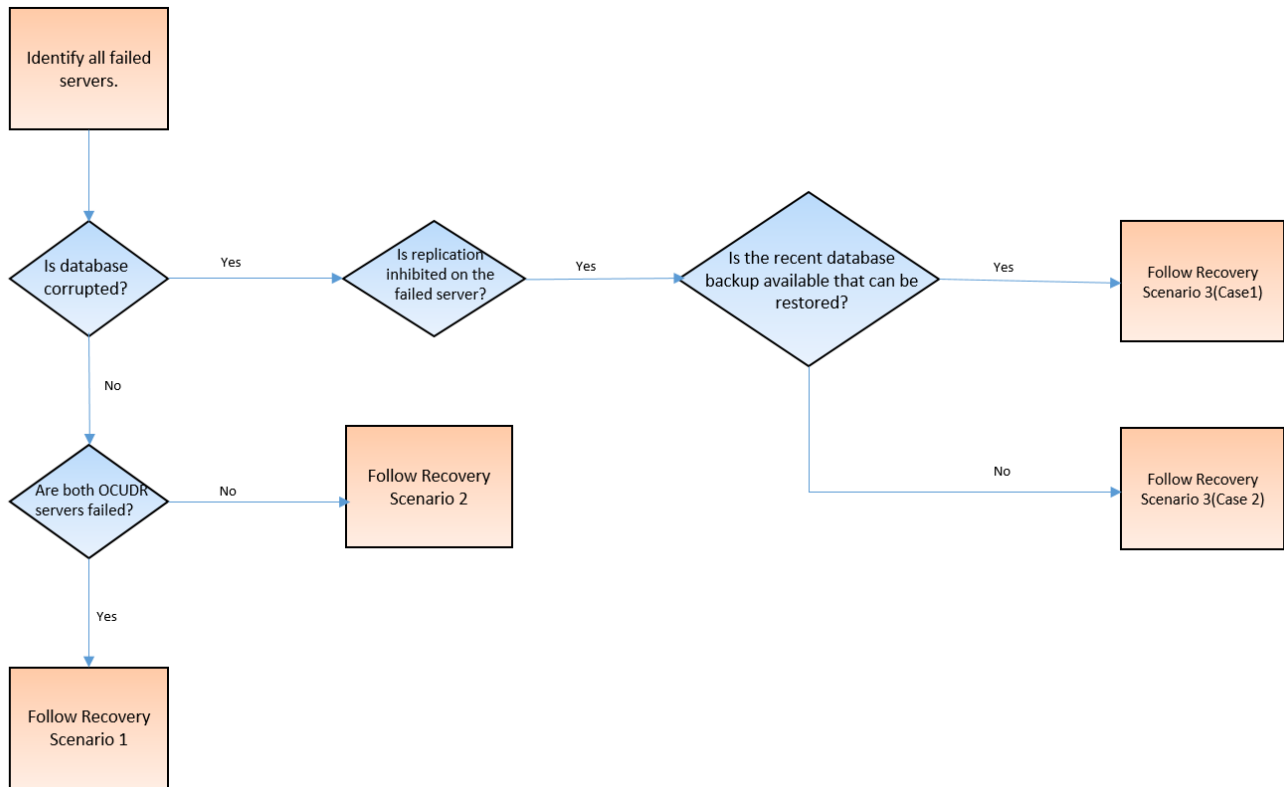
NOTE: For all disaster recovery scenarios, we assume that the UDR database backup was performed

3.2 Disaster Recovery Strategy

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

1. Evaluate failure conditions in the network and determine that normal operations cannot continue without disaster recovery procedures. This means the failure conditions in the network match one of the failure scenarios described in section Chapter 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. Determining Recovery Scenario.
5. Perform the appropriate recovery procedures (listed in section Chapter 4).

Figure 1. Determining Recovery Scenario



3.3 Procedure Preparation

Disaster recovery procedure is dependent on the failure conditions in the network. The severity of the failure determines the recovery scenario for the network. Use Table 2: Recovery Scenarios below to evaluate the correct recovery scenario and follow the procedures 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 2: Recovery Scenarios

Recovery Scenario	Failure Condition	Section
1	All UDR servers failed.	Section Recovery Scenario 1 (Complete Site Outage)
2	At least 1 UDR server is intact and available.	Section Recovery Scenario 2 (Partial Server Outage with One UDR Server Intact and Second UDR Server Failed)
3	<ul style="list-style-type: none"> Server is intact Database gets corrupted on the server 	Section Recovery Scenario 3 (Database Recovery)
3: Case 1	<ul style="list-style-type: none"> Server is intact Database gets corrupted on the server 	Section Recovery Scenario 3: Case 1

Recovery Scenario	Failure Condition	Section
	<ul style="list-style-type: none"> • Replication is inhibited (either manually or because of comcol upgrade barrier) 	
3: Case 2	<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 3: Case 2

Chapter 4. Disaster Recovery Procedure

Call the CAS main number at 1-800-223-1711 (toll-free in the United States), or call the Oracle Support hotline for your local country from the list at <http://www.oracle.com/us/support/contact/index.html> before performing this procedure to ensure that the proper recovery planning is performed.

Before disaster recovery, you must evaluate the outage scenario. This check ensures that the correct procedures are used 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 TAC prime. Based on TAC's assessment of Disaster, it may be necessary to deviate from the documented process.

4.1 Recovering and Restoring System Configuration

Disaster recovery requires configuring the system as it was before the disaster and restoration of operational information. There are 7 distinct procedures to select from depending on the type of recovery needed. Only one of these should be followed (not all).

4.1.1 Recovery Scenario 1 (Complete Site Outage)

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

Database replication from the active UDR 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 perform 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 UDRs
- Recover the active UDR server by recovering the UDRs base software
- Recover the UDR database
- Reconfigure the application

Recover the standby UDR server by recovering base software, for a Non-HA deployment this can be skipped.


- Reconfigure the Oracle Communications User Data Repository application

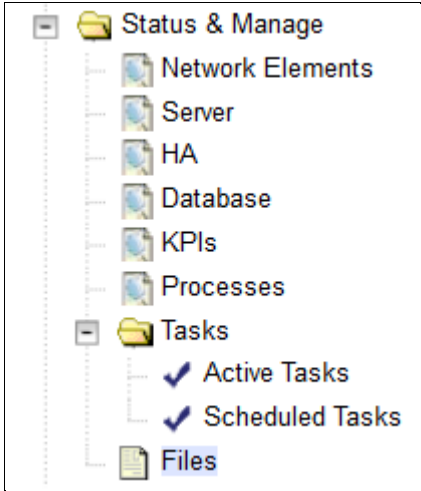

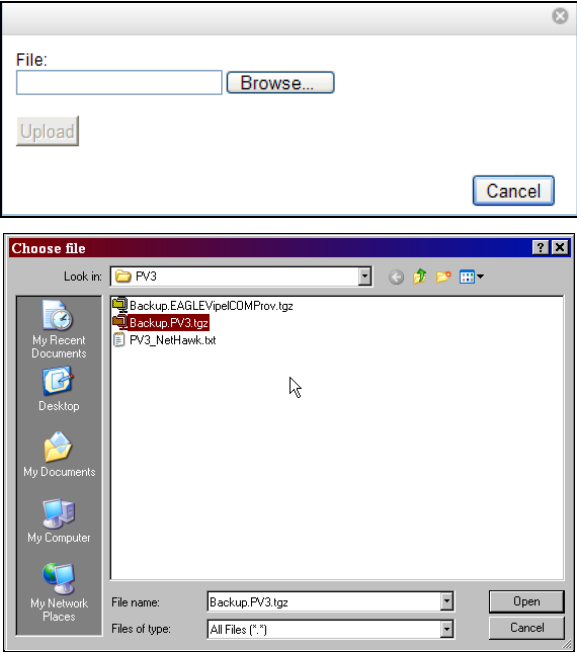
Restart process and re-enable provisioning replication

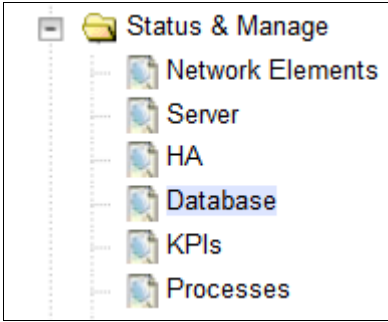


NOTE: Any other applications DR recovery actions (PCRF, etc) may occur in parallel. These actions can be worked simultaneously; doing so allows faster recovery of the complete solution.


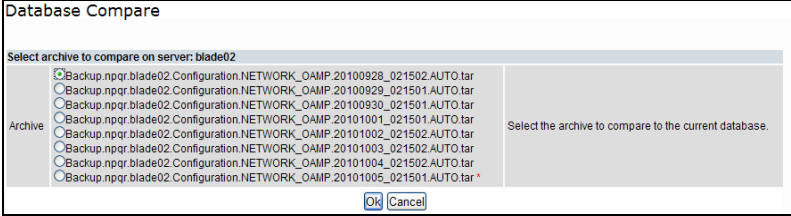
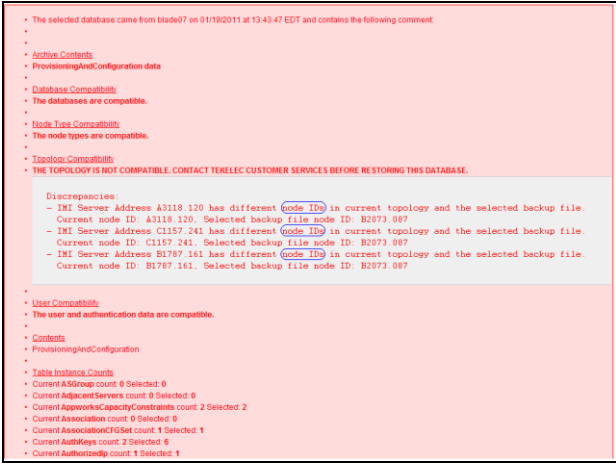
This procedure performs recovery if both UDR servers are failed
 Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.
 If this procedure fails, contact **My Oracle Support**, and ask for assistance.


Procedure 1: Recovery Scenario 1—Complete Server Outage

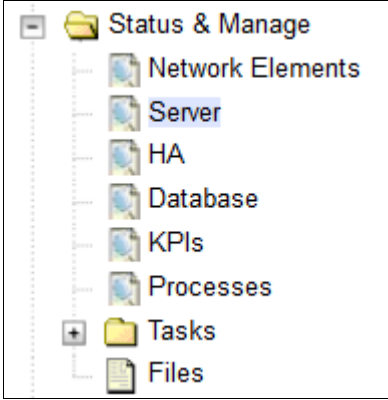
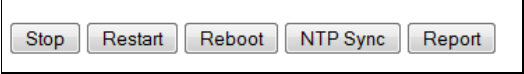
Step	Procedure	Result
1. <input type="checkbox"/>	Gather Required Materials	Gather the documents and required materials listed in Section Required Materials
2. <input type="checkbox"/>	Recover the failed software	Perform these procedures from reference <i>Oracle Communications User Data Repository 12.7.0 Cloud Installation and Configuration Guide, E95212, latest revision</i> [2]: Procedure 2: Deploy Oracle Communications User Data Repository Virtual Machines on VMware
3. <input type="checkbox"/>	Obtain latest database backup and network configuration data.	Obtain the most recent database backup file from external backup sources (ex. file servers) or tape backup sources. From required materials list in 3.1 Required Materials; use site survey documents and Network Element report (if available), to determine network configuration data.
4. <input type="checkbox"/>	Perform UDR installation procedure for the first UDR	Configure the First UDR server by performing procedures from reference <i>Oracle Communications User Data Repository 12.7.0 Cloud Installation and Configuration Guide, E95212, latest revision</i> [2]: Procedure 5: Configure UDR-A Server (1 st NOAMP Only) NOTE: If Topology or nodeld alarms are persistent after the database restore, refer to the steps below.
5. <input type="checkbox"/>	Active UDR: Login	Login to the UDR GUI as the guiadmin user: 

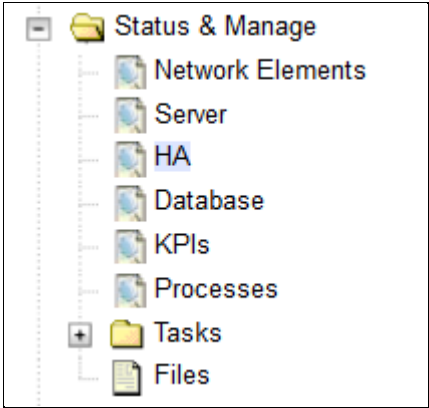

Step	Procedure	Result								
<p>6. <input type="checkbox"/></p>	<p>Active UDR: Upload the backed up database file</p>	<p>Browse to Main Menu → Status & Manage → Files</p>  <p>Select the active UDR server.</p> <table border="1" data-bbox="544 789 1333 888"> <thead> <tr> <th>File Name</th> <th>Size</th> <th>Type</th> <th>Timestamp</th> </tr> </thead> <tbody> <tr> <td>Backup.dsr.Cpa1-NO.Configuration.NETWORK_OAMP.20120321_021501.AUTO.tar</td> <td>720 KB</td> <td>tar</td> <td>2012-03-21 06:15:02 UTC</td> </tr> </tbody> </table> <p>Click Upload and select the file NO provisioning and configuration backed up after initial installation and provisioning.</p>  <p>Click Browse and locate the backup file and click Open.</p>  <p>Click Upload. The file takes a few seconds to upload depending on the size of the backup data. The file is visible on the list of entries after the upload is complete.</p>	File Name	Size	Type	Timestamp	Backup.dsr.Cpa1-NO.Configuration.NETWORK_OAMP.20120321_021501.AUTO.tar	720 KB	tar	2012-03-21 06:15:02 UTC
File Name	Size	Type	Timestamp							
Backup.dsr.Cpa1-NO.Configuration.NETWORK_OAMP.20120321_021501.AUTO.tar	720 KB	tar	2012-03-21 06:15:02 UTC							

Step	Procedure	Result
<p>7. <input type="checkbox"/></p>	<p>Active UDR: Disable provisioning</p>	<p>Click on Main Menu → Status & Manage → Database</p>  <p>Disable Provisioning by clicking Disable Provisioning at the bottom of the screen.</p>  <p>A confirmation window opens, press OK to disable Provisioning.</p>  <p>The Warning Code 002 message may appear.</p>

Step	Procedure	Result
<p>8. <input type="checkbox"/></p>	<p>Active UDR: Verify the archive contents and database compatibility</p>	<p>Select the active UDR server and click Compare.</p>  <p>The following screen is displayed; select the restored database file that was uploaded as a part of Step 13 of this procedure.</p>  <p>Verify that the output window matches the screen below.</p> <p>NOTE: You get a database mismatch regarding the NodeIDs of the VMs. That is expected. If that is the only mismatch, proceed, otherwise stop and contact My Oracle Support.</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 UDR:</p> <p>Topology Compatibility The topology should be compatible minus the NODEID.</p> <p>NOTE: We are trying to restore a backed up database onto an empty UDR database. This is an expected text in Topology Compatibility.</p> <p>If the verification is successful, click BACK and continue to the next step in this procedure.</p>

Step	Procedure	Result			
<p>9. <input type="checkbox"/></p>	<p>Active UDR: Restore the database</p>	<p>Navigate to Main Menu → Status & Manage → Database</p> <p>Select the active UDR server, and click Restore.</p> <p>Select the back up provisioning and configuration file.</p> <div data-bbox="516 331 1360 569" style="border: 1px solid black; padding: 5px;"> <p>Database Restore</p> <p>Select archive to Restore on server: blade02</p> <table border="1"> <tr> <td style="width: 20%;">Archive</td> <td> <input type="radio"/> Backup.npq:blade02.Configuration.NETWORK_OAMP.20100928_021502.AUTO.tar <input type="radio"/> Backup.npq:blade02.Configuration.NETWORK_OAMP.20100929_021501.AUTO.tar <input type="radio"/> Backup.npq:blade02.Configuration.NETWORK_OAMP.20100930_021501.AUTO.tar <input type="radio"/> Backup.npq:blade02.Configuration.NETWORK_OAMP.20101001_021501.AUTO.tar <input type="radio"/> Backup.npq:blade02.Configuration.NETWORK_OAMP.20101002_021502.AUTO.tar <input type="radio"/> Backup.npq:blade02.Configuration.NETWORK_OAMP.20101003_021502.AUTO.tar <input type="radio"/> Backup.npq:blade02.Configuration.NETWORK_OAMP.20101004_021502.AUTO.tar <input checked="" type="radio"/> Backup.npq:blade02.Configuration.NETWORK_OAMP.20101005_021501.AUTO.tar* </td> <td style="width: 60%; vertical-align: top;">Select the archive to restore on blade02.</td> </tr> </table> <p style="text-align: right;"><input type="button" value="Ok"/> <input type="button" value="Cancel"/></p> </div> <p>Click OK. The following confirmation screen is displayed.</p> <p>NOTE: You get a database mismatch regarding the NodeIDs of the servers. That is expected. If that is the only mismatch, proceed, otherwise stop and contact My Oracle Support.</p> <p>Select Force and click OK to proceed with the DB restore.</p> <div data-bbox="480 793 1398 1115" style="border: 1px solid black; padding: 5px;"> <p>Database Restore Confirm</p> <p>Incompatible database selected</p> <div style="border: 1px solid red; background-color: #f0f0f0; padding: 5px; margin: 5px 0;"> <p>Discrepancies:</p> <ul style="list-style-type: none"> - IMI Server Address A3118.120 has different node IDs in current topology and the selected backup file. Current node ID: A3118.120, Selected backup file node ID: B2073.087 - IMI Server Address C1157.241 has different node IDs in current topology and the selected backup file. Current node ID: C1157.241, Selected backup file node ID: B2073.087 - IMI Server Address B1787.161 has different node IDs in current topology and the selected backup file. Current node ID: B1787.161, Selected backup file node ID: B2073.087 </div> <p>Confirm archive "3bladeNPQR.blade07.Configuration.NETWORK_OAMP.20110119_184253.MAN.tar" to Restore on server: blade07</p> <p>Force Restore? <input checked="" type="checkbox"/> Force <input type="checkbox"/> Force restore on blade07, despite compare errors.</p> <p style="text-align: right;"><input type="button" value="Ok"/> <input type="button" value="Cancel"/></p> </div> <p>NOTE: After the restore has started, you are logged out of XMI NO GUI since the restored topology is old data.</p>	Archive	<input type="radio"/> Backup.npq:blade02.Configuration.NETWORK_OAMP.20100928_021502.AUTO.tar <input type="radio"/> Backup.npq:blade02.Configuration.NETWORK_OAMP.20100929_021501.AUTO.tar <input type="radio"/> Backup.npq:blade02.Configuration.NETWORK_OAMP.20100930_021501.AUTO.tar <input type="radio"/> Backup.npq:blade02.Configuration.NETWORK_OAMP.20101001_021501.AUTO.tar <input type="radio"/> Backup.npq:blade02.Configuration.NETWORK_OAMP.20101002_021502.AUTO.tar <input type="radio"/> Backup.npq:blade02.Configuration.NETWORK_OAMP.20101003_021502.AUTO.tar <input type="radio"/> Backup.npq:blade02.Configuration.NETWORK_OAMP.20101004_021502.AUTO.tar <input checked="" type="radio"/> Backup.npq:blade02.Configuration.NETWORK_OAMP.20101005_021501.AUTO.tar*	Select the archive to restore on blade02.
Archive	<input type="radio"/> Backup.npq:blade02.Configuration.NETWORK_OAMP.20100928_021502.AUTO.tar <input type="radio"/> Backup.npq:blade02.Configuration.NETWORK_OAMP.20100929_021501.AUTO.tar <input type="radio"/> Backup.npq:blade02.Configuration.NETWORK_OAMP.20100930_021501.AUTO.tar <input type="radio"/> Backup.npq:blade02.Configuration.NETWORK_OAMP.20101001_021501.AUTO.tar <input type="radio"/> Backup.npq:blade02.Configuration.NETWORK_OAMP.20101002_021502.AUTO.tar <input type="radio"/> Backup.npq:blade02.Configuration.NETWORK_OAMP.20101003_021502.AUTO.tar <input type="radio"/> Backup.npq:blade02.Configuration.NETWORK_OAMP.20101004_021502.AUTO.tar <input checked="" type="radio"/> Backup.npq:blade02.Configuration.NETWORK_OAMP.20101005_021501.AUTO.tar*	Select the archive to restore on blade02.			
<p>10. <input type="checkbox"/></p>	<p>Active UDR: Login</p>	<p>Establish a GUI session on the UDR server by using the VIP IP address of the UDR server. Open the web browser and enter a URL of:</p> <p style="background-color: #e0e0e0; padding: 2px;"><code>http://<Primary_UDR_VIP_IP_Address></code></p> <p>Login as the guidadmin user:</p> <div data-bbox="685 1381 1192 1738" style="border: 1px solid black; padding: 10px; text-align: center;">  <p>The screenshot shows the Oracle System Login page. At the top is the Oracle logo. Below it, the text 'Oracle System Login' is displayed along with the date and time 'Fri Mar 20 12:29:52 2015 EDT'. The main content is a 'Log In' box with the instruction 'Enter your username and password to log in'. It contains two input fields: 'Username' with 'guidadmin' entered and 'Password' with masked characters. There is a 'Change password' checkbox and a 'Log In' button. At the bottom, there is a 'Welcome to the Oracle System Login.' message and a disclaimer: 'Unauthorized access is prohibited. This Oracle system requires the use of Microsoft Internet Explorer 8.0, 9.0, or 10.0 with support for JavaScript and cookies.' The footer includes trademark information for Oracle and Java.</p> </div>			

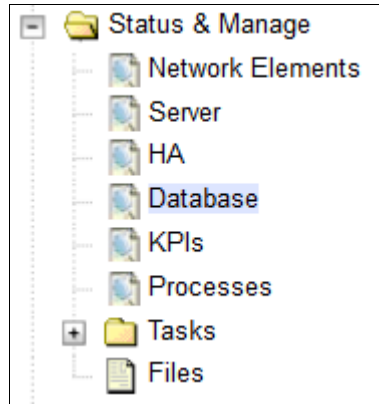
Step	Procedure	Result
11. <input type="checkbox"/>	Active UDR: Monitor and confirm database restoral	Wait for approximately 5 to 10 minutes for the system to stabilize with the new topology: Monitor the Info tab for Succes. This indicates that the backup is complete and the system is stabilized. Following alarms must be ignored for UDR until all the servers are configured: Alarms with Type Column as REPL , COLL, HA (with mate UDR), DB (about Provisioning Manually Disabled) NOTE: Do not pay attention to alarms until all the servers in the system are completely restored. NOTE: The configuration and maintenance information is in the same state it was backed up during initial backup.
12. <input type="checkbox"/>	Active UDR: Login	Login to the recovered active UDR via SSH terminal as admusr user.
13. <input type="checkbox"/>	Active UDR: Restore /etc/hosts/ file of the active UDR	Perform the following command: <pre style="background-color: #f0f0f0; padding: 5px;">\$ sudo AppWorks AppWorks_AppWorks updateServerAliases <UDR Host Name></pre>
14. <input type="checkbox"/>	Active UDR: Recover standby UDR (HA Deployments Only)	Configure the second UDR server by performing procedures from reference <i>Oracle Communications User Data Repository 12.7.0 Cloud Installation and Configuration Guide, E95212, latest revision [2]</i> : <ul style="list-style-type: none"> Procedure 6 “Create Configuration for Remaining Servers”, Step 8. Procedure 7 “Apply Configuration for Remaining Servers” for second UDR. NOTE: If Topology or nodeld alarms are persistent after the database restore, refer to the steps below.
15. <input type="checkbox"/>	Active UDR: Restart UDR application on recovered UDR	Navigate to Main Menu → Status & Manage → Server , <div style="text-align: center; margin: 10px 0;">  </div> Select the recovered standby UDR server and click Restart . <div style="text-align: center; margin-top: 10px;">  </div>

Step	Procedure	Result
16. <input type="checkbox"/>	<p>Active UDR: Set HA on standby UDR</p>	<p>Navigate to Status & Manage → HA</p>  <p>Click Edit at the bottom of the screen.</p> <p>Select the standby UDR server, set it to Active.</p> <p>Click OK.</p>
17. <input type="checkbox"/>	<p>Active UDR: Login</p>	<p>Establish a GUI session on the UDR server by using the VIP IP address of the UDR server. Open the web browser and enter a URL of:</p> <pre>http://<Primary_UDR_VIP_IP_Address></pre> <p>Login as the guidadmin user:</p> 
18. <input type="checkbox"/>	<p>Active UDR: Perform key exchange between the active-UDR and recovered servers.</p>	<p>Establish an SSH session to the active UDR, login as admusr.</p> <p>Run the following command to perform a keyexchange from the active UDR to each recovered server:</p> <pre>\$ keyexchange admusr@<Recovered Server Hostname></pre>

19.

Active UDR:
Fetch and store the database report for the restored data and save it

Navigate to **Main Menu → Status & Manage → Database**



Select the active UDR server and click **Report** at the bottom of the page. The following screen is displayed:

Main Menu: Status & Manage -> Database [Report] Help
Tue Oct 05 15:13:38 2010 UTC

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

General

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

Capacities and Utilization

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

Alarms

 None

Maintenance in Progress

 Restore operation success

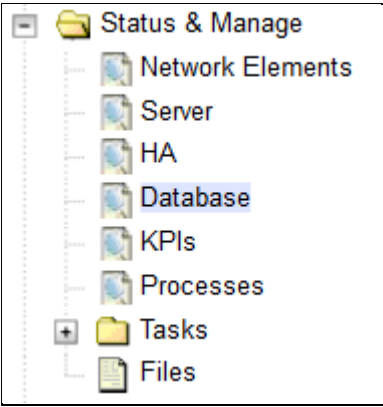
Service Information

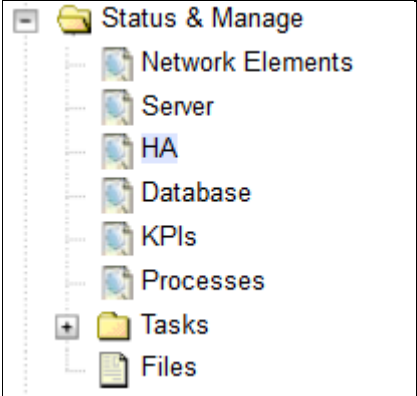
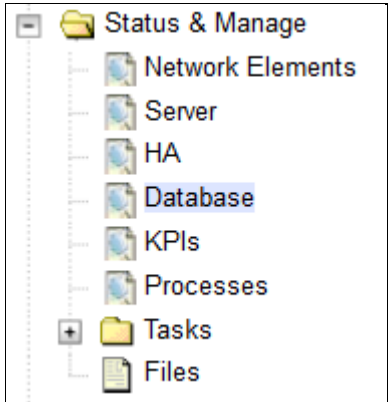
 Part: A_NpqrProvPart

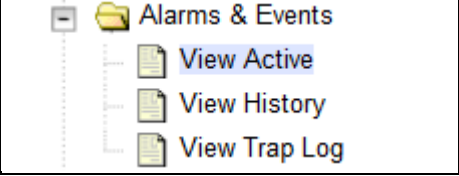
Table Name	Row Size		Num Rows	Memory		Disk	
	Schems	Avg Max		Used / Alloc	Used / Alloc		
CgPa	44		1	44 B	44 B	44 B	44 B
CgPaGta	52		0	0 B	0 B	0 B	0 B
CgPaInfo	64		1	64 B	64 B	64 B	64 B
CgPaOpc	36		0	0 B	0 B	0 B	0 B
CountryCode	24		306	7344 B	7344 B	7344 B	7344 B
GTConfig	52		2	104 B	104 B	104 B	104 B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

=====
Print Save

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

<p>20. <input type="checkbox"/></p>	<p>Active UDR: Verify replication between servers</p>	<p>Login to the active UDR via SSH terminal as admusr user.</p> <p>Run the following command:</p> <pre style="background-color: #f0f0f0; padding: 5px;">\$ sudo irepstat -m</pre> <p>Output is generated:</p> <pre> -- Policy 0 ActStb [DbReplication] ----- *UDR-A (A2434.104) -- Act/Act -- Act -- Groups=1 Links=2 AA To P0 UDR-B Active 0 0.10 1%R 0.08%cpu 44.6/s AA To P1 DR-UDR-B Active 0 0.10 1%R 0.10%cpu 38.6/s UDR-B (A2434.105) -- Act/Stb -- Stb -- Groups=1 Links=1 AA From P0 *UDR-A Active 0 0.10 ^0.07%cpu 35.7/s DR-UDR-A (A3629.172) -- Stb/Stb -- InSvc -- Groups=1 Links=1 AA From P0 DR-UDR-B Active 0 0.10 ^0.07%cpu 49.9/s DR-UDR-B (A3629.173) -- Stb/Act -- InSvc -- Groups=1 Links=2 AA To P0 DR-UDR-A Active 0 0.10 1%R 0.08%cpu 31.3/s AA From P1 *UDR-A Active 0 0.10 ^0.06%cpu 47.1/s </pre>																																																							
<p>21. <input type="checkbox"/></p>	<p>Active UDR: Verify the database states</p>	<p>Click on Main Menu → Status and Manager → Database</p>  <p>Verify that the OAM Max HA Role is either active or standby for UDR, and that the status is Normal.</p> <table border="1" data-bbox="472 1331 1399 1486"> <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>Site2_NE_DR_NO</td> <td>DR-OCUDR-B</td> <td>Network OAM&P</td> <td>Spare</td> <td>N/A</td> <td>Normal</td> <td>18387</td> <td>Normal</td> <td>NotApplicable</td> <td>Allowed</td> <td>NotApplicable</td> </tr> <tr> <td>Site1_NE_NO</td> <td>OCUDR-A</td> <td>Network OAM&P</td> <td>Active</td> <td>N/A</td> <td>Normal</td> <td>18387</td> <td>Normal</td> <td>NotApplicable</td> <td>Allowed</td> <td>NotApplicable</td> </tr> <tr> <td>Site1_NE_NO</td> <td>OCUDR-B</td> <td>Network OAM&P</td> <td>Standby</td> <td>N/A</td> <td>Normal</td> <td>18387</td> <td>Normal</td> <td>NotApplicable</td> <td>Allowed</td> <td>NotApplicable</td> </tr> <tr> <td>Site2_NE_DR_NO</td> <td>DR-OCUDR-A</td> <td>Network OAM&P</td> <td>Spare</td> <td>N/A</td> <td>Normal</td> <td>18387</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	Site2_NE_DR_NO	DR-OCUDR-B	Network OAM&P	Spare	N/A	Normal	18387	Normal	NotApplicable	Allowed	NotApplicable	Site1_NE_NO	OCUDR-A	Network OAM&P	Active	N/A	Normal	18387	Normal	NotApplicable	Allowed	NotApplicable	Site1_NE_NO	OCUDR-B	Network OAM&P	Standby	N/A	Normal	18387	Normal	NotApplicable	Allowed	NotApplicable	Site2_NE_DR_NO	DR-OCUDR-A	Network OAM&P	Spare	N/A	Normal	18387	Normal	NotApplicable	Allowed	NotApplicable
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																																															
Site2_NE_DR_NO	DR-OCUDR-B	Network OAM&P	Spare	N/A	Normal	18387	Normal	NotApplicable	Allowed	NotApplicable																																															
Site1_NE_NO	OCUDR-A	Network OAM&P	Active	N/A	Normal	18387	Normal	NotApplicable	Allowed	NotApplicable																																															
Site1_NE_NO	OCUDR-B	Network OAM&P	Standby	N/A	Normal	18387	Normal	NotApplicable	Allowed	NotApplicable																																															
Site2_NE_DR_NO	DR-OCUDR-A	Network OAM&P	Spare	N/A	Normal	18387	Normal	NotApplicable	Allowed	NotApplicable																																															

22. <input type="checkbox"/>	Active UDR: Verify the HA status	<p>Click on Main Menu → Status and Manage → HA</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;">  </div> <p>Select the row for all of the servers</p> <p>Verify that the HA Role is either Active or Standby.</p> <table border="1" style="width: 100%; border-collapse: collapse; margin: 10px 0;"> <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>OCUDR-A</td> <td>Active</td> <td>N/A</td> <td>Active</td> <td>OCUDR-B</td> <td>Site1_NE_NO</td> <td>Network OAM&P</td> <td>10.10.1.121</td> </tr> <tr> <td>OCUDR-B</td> <td>Standby</td> <td>N/A</td> <td>Active</td> <td>OCUDR-A</td> <td>Site1_NE_NO</td> <td>Network OAM&P</td> <td></td> </tr> <tr> <td>DR-OCUDR-A</td> <td>Spare</td> <td>N/A</td> <td>Active</td> <td>DR-OCUDR-B</td> <td>Site2_NE_DR_NO</td> <td>Network OAM&P</td> <td></td> </tr> <tr> <td>DR-OCUDR-B</td> <td>Spare</td> <td>N/A</td> <td>Active</td> <td>DR-OCUDR-A</td> <td>Site2_NE_DR_NO</td> <td>Network OAM&P</td> <td>10.10.1.28</td> </tr> </tbody> </table>	Hostname	OAM HA Role	Application HA Role	Max Allowed HA Role	Mate Hostname List	Network Element	Server Role	Active VIPs	OCUDR-A	Active	N/A	Active	OCUDR-B	Site1_NE_NO	Network OAM&P	10.10.1.121	OCUDR-B	Standby	N/A	Active	OCUDR-A	Site1_NE_NO	Network OAM&P		DR-OCUDR-A	Spare	N/A	Active	DR-OCUDR-B	Site2_NE_DR_NO	Network OAM&P		DR-OCUDR-B	Spare	N/A	Active	DR-OCUDR-A	Site2_NE_DR_NO	Network OAM&P	10.10.1.28
Hostname	OAM HA Role	Application HA Role	Max Allowed HA Role	Mate Hostname List	Network Element	Server Role	Active VIPs																																			
OCUDR-A	Active	N/A	Active	OCUDR-B	Site1_NE_NO	Network OAM&P	10.10.1.121																																			
OCUDR-B	Standby	N/A	Active	OCUDR-A	Site1_NE_NO	Network OAM&P																																				
DR-OCUDR-A	Spare	N/A	Active	DR-OCUDR-B	Site2_NE_DR_NO	Network OAM&P																																				
DR-OCUDR-B	Spare	N/A	Active	DR-OCUDR-A	Site2_NE_DR_NO	Network OAM&P	10.10.1.28																																			
23. <input type="checkbox"/>	Active UDR: Enable provisioning	<p>Click on Main Menu → Status & Manage → Database</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;">  </div> <p>Enable provisioning by clicking Enable Provisioning at the bottom of the screen.</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> Enable Provisioning Report Inhibit/Allow Replication Backup... Compare... Restore... Man Audit Suspend Auto Audit </div> <p>A confirmation window displays, click OK to enable provisioning.</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0; text-align: center;"> Enable provisioning. Are you sure? OK Cancel </div>																																								

24. <input type="checkbox"/>	Active UDR: Examine all alarms	<p>Login to the UDR VIP if not logged in.</p> <p>Navigate to Main Menu → Alarms & Events → View Active</p> <div data-bbox="711 254 1166 428" style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;">  </div> <p>Examine all active alarms and refer to the on-line help on how to address them.</p> <p>If needed contact My Oracle Support.</p>
25. <input type="checkbox"/>	Restore GUI usernames and passwords	If applicable, perform the steps in Chapter 5 to recover the user and group information restored.
26. <input type="checkbox"/>	Backup and archive all the databases from the recovered system	Perform Appendix A Oracle Communications User Data Repository Database Backup to back up the configuration databases.
THIS PROCEDURE HAS BEEN COMPLETED		

4.1.2 Recovery Scenario 2 (Partial Server Outage with One UDR Server Intact and Second UDR Server Failed)

For a partial server outage with an UDR server intact and available; second UDR server is recovered using recovery procedures for software. Second server is recovered using recovery procedures for software. Database replication from the active UDR server recovers the database on second server. The major activities are summarized in the list below. Use this list to understand the recovery procedure summary. Do not use this list to perform the procedure. The actual steps are in Procedure 2. The major activities are summarized as follows:

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

- Recover the software.


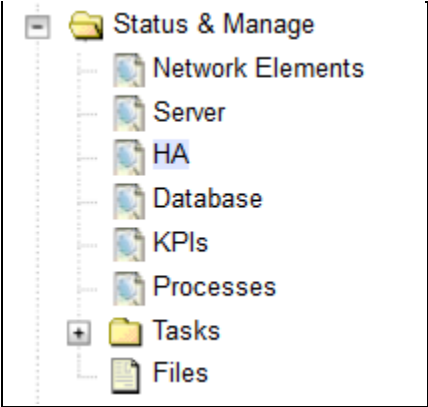
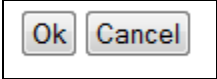
This procedure performs recovery if at least 1 UDR server is available but second server in a site have failed. This includes any UDR server .


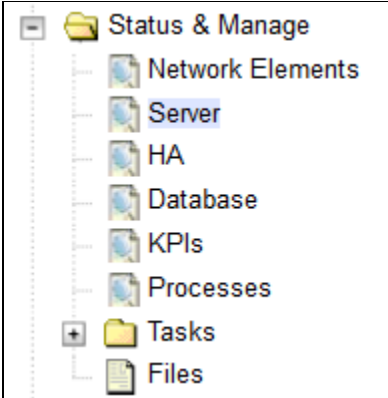
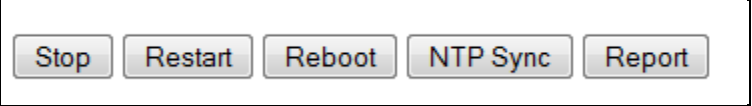
Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.

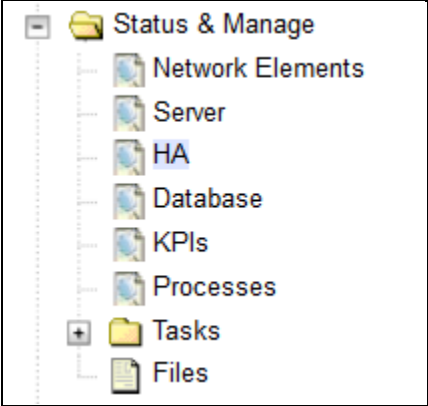
If this procedure fails, contact My Oracle Support, and ask for assistance.

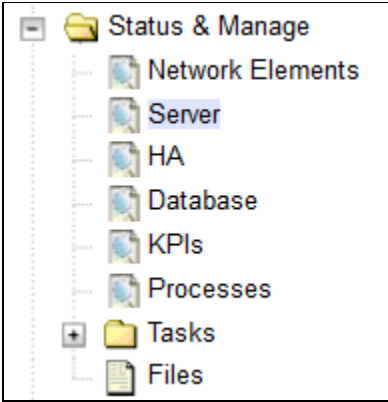
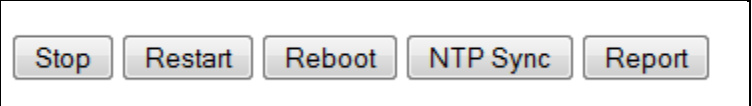
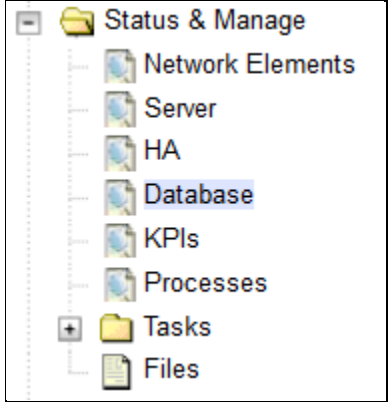

Procedure 2: Recovery Scenario 2—Partial Outage One UDR Intact

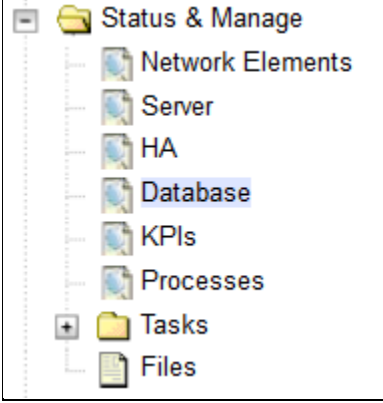
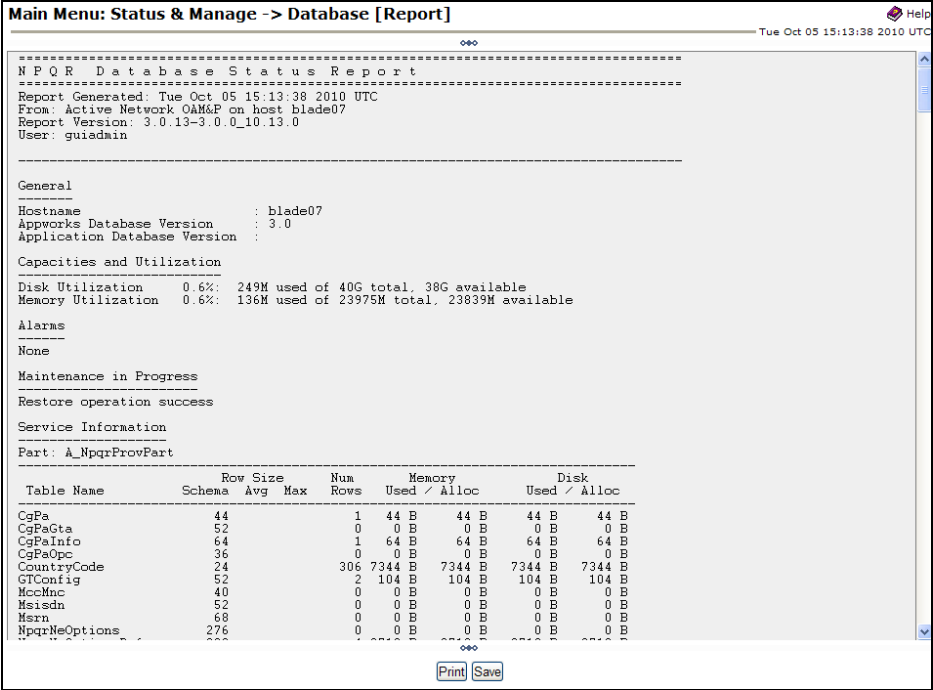
Step	Procedure	Result
1. <input type="checkbox"/>	Gather required materials	Gather the documents and required materials listed in Required Materials

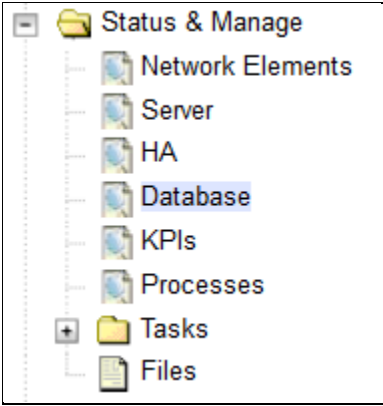
Step	Procedure	Result
2. <input type="checkbox"/>	<p>Active UDR: Login</p>	<p>Establish a GUI session on the UDR server by using the VIP IP address of the UDR server. Open the web browser and enter a URL of:</p> <p style="background-color: #e0e0e0; padding: 2px;"><code>http://<Primary_UDR_VIP_IP_Address></code></p> <p>Login as the guiadmin user:</p> 
3. <input type="checkbox"/>	<p>Active UDR: Set failed server to standby</p>	<p>1. Navigate to Main Menu → Status & Manage → HA</p>  <p>2. Select Edit</p> <p>3. Set the Max Allowed HA Role to Standby for the failed server.</p> <p>4. Click Ok</p> 
4. <input type="checkbox"/>	<p>Create VMs Recover the failed software</p>	<p>Perform the following procedures from reference <i>Oracle Communications User Data Repository 12.7.0 Cloud Installation and Configuration Guide, E95212, latest revision</i> [2]:</p> <p>Procedure 2: Deploy Oracle Communications User Data Repository Virtual Machines on VMware</p>

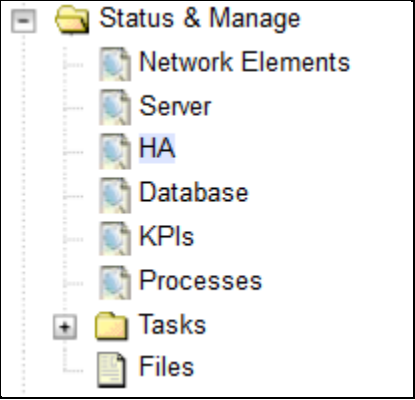
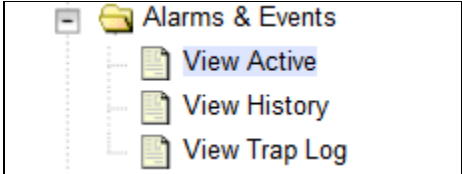
Step	Procedure	Result
5. <input type="checkbox"/>	Active UDR: Login	Establish a GUI session on the UDR server by using the VIP IP address of the UDR server. Open the web browser and enter a URL of: <pre>http://<Primary_UDR_VIP_IP_Address></pre> Login as the guiadmin user: 
6. <input type="checkbox"/>	Active UDR: Recover standby UDR	Configure the standby UDR server by performing procedures from reference <i>Oracle Communications User Data Repository 12.7.0 Cloud Installation and Configuration Guide, E95212, latest revision</i> [2]: <ul style="list-style-type: none"> • Procedure 6 “Create Configuration for Remaining Servers”, Step 8. • Procedure 7 “Apply Configuration for Remaining Servers” for UDR. NOTE: If Topology or nodeld alarms are persistent after the database restore, refer to the steps below.
7. <input type="checkbox"/>	Active UDR: Restart UDR application on recovered UDR	Navigate to Main Menu → Status & Manage → Server ,  Select the recovered standby UDR server and click Restart . 

Step	Procedure	Result
8. <input type="checkbox"/>	Active UDR: Set HA on recovered UDR	Navigate to Status & Manage → HA  Click Edit at the bottom of the screen Select the standby UDR server, set it to Active Click OK
9. <input type="checkbox"/>	Recovered Servers: Login	Establish an SSH to the recovered XMI address for the server
10. <input type="checkbox"/>	Recovered Servers: Sync NTP	1. Perform the following to retrieve the remote NTP server: <pre>\$ sudo ntpq -np</pre> Example output: <pre>[admusr@UDR-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> NOTE: The remote server is the one gathered in sub step 1. 4. Start the ntp service: <pre>\$ sudo service ntpd start</pre>

Step	Procedure	Result
11. <input type="checkbox"/>	<p>Active UDR: Restart UDR application on recovered servers</p> <p><i>(HA deployments only)</i></p>	<p>NOTE: For Non-HA sites SKIP this step</p> <p>Navigate to Main Menu → Status & Manage → Server</p>  <p>Select the recovered server and click Restart.</p> 
12. <input type="checkbox"/>	<p>Active UDR: Start replication on all servers</p>	<p>Un-Inhibit (start) replication to the all C-Level (MP) servers</p> <p>Navigate to Status & Manage → Database</p>  <p>If the Repl Status is set to Inhibited, click Allow Replication in this order:</p> <ul style="list-style-type: none"> • Active UDRP server • Standby UDRP server <p>Verify that replication on all servers is allowed. Select each server and verify that the middle button shows Inhibit Replication, and not Allow Replication.</p> 

Step	Procedure	Result
13. <input type="checkbox"/>	<p>Active UDR: Perform key exchange between the active-UDR and recovered servers.</p>	<p>Establish an SSH session to the Active UDR, login as admusr.</p> <p>Perform the following command to perform a keyexchange from the active UDR to each recovered server:</p> <pre>\$ keyexchange admusr@<Recovered Server Hostname></pre> <p>NOTE: If an export server is configured, perform this step.</p>
14. <input type="checkbox"/>	<p>Active UDR: Fetch and store the database report for the restored data and save it</p>	<p>Navigate to Main Menu → Status & Manage → Database</p>  <p>Select the active UDR server and click Report at the bottom of the page. The following screen is displayed:</p>  <p>Click on Save and save the report to your local machine.</p>

Step	Procedure	Result																																																							
15. <input type="checkbox"/>	<p>Active UDR: Verify replication between servers.</p>	<p>Login to the active UDR via SSH terminal as admusr user.</p> <p>Perform the following command:</p> <pre style="background-color: #f0f0f0; padding: 5px;">\$ sudo irepstat -m</pre> <p>Output like below is generated:</p> <pre>-- Policy 0 ActStb [DbReplication] ----- *UDR-A (A2434.104) -- Act/Act -- Act -- Groups=1 Links=2 AA To P0 UDR-B Active 0 0.10 1%R 0.06%cpu 65.4/s AA To P1 DR-UDR-B Active 0 0.10 1%R 0.08%cpu 73.0/s UDR-B (A2434.105) -- Act/Stb -- Stb -- Groups=1 Links=1 AA From P0 *UDR-A Active 0 0.14 ^0.07%cpu 66.0/s DR-UDR-A (A3629.172) -- Stb/Stb -- InSvc -- Groups=1 Links=1 AA From P0 DR-UDR-B Active 0 0.10 ^0.07%cpu 83.5/s DR-UDR-B (A3629.173) -- Stb/Act -- InSvc -- Groups=1 Links=2 AA To P0 DR-UDR-A Active 0 0.10 1%R 0.08%cpu 72.8/s AA From P1 *UDR-A Active 0 0.10 ^0.06%cpu 73.2/s</pre>																																																							
16. <input type="checkbox"/>	<p>Active UDR: Verify the database states</p>	<p>Click on Main Menu → Status and Manager → Database</p>  <p>Verify that the OAM Max HA Role is either active or standby for UDR and that the status is Normal.</p> <table border="1" data-bbox="492 1367 1390 1514"> <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>Site2_NE_DR_NO</td> <td>DR-OCUDR-B</td> <td>Network OAM&P</td> <td>Spare</td> <td>N/A</td> <td>Normal</td> <td>18387</td> <td>Normal</td> <td>NotApplicable</td> <td>Allowed</td> <td>NotApplicable</td> </tr> <tr> <td>Site1_NE_NO</td> <td>OCUDR-A</td> <td>Network OAM&P</td> <td>Active</td> <td>N/A</td> <td>Normal</td> <td>18387</td> <td>Normal</td> <td>NotApplicable</td> <td>Allowed</td> <td>NotApplicable</td> </tr> <tr> <td>Site1_NE_NO</td> <td>OCUDR-B</td> <td>Network OAM&P</td> <td>Standby</td> <td>N/A</td> <td>Normal</td> <td>18387</td> <td>Normal</td> <td>NotApplicable</td> <td>Allowed</td> <td>NotApplicable</td> </tr> <tr> <td>Site2_NE_DR_NO</td> <td>DR-OCUDR-A</td> <td>Network OAM&P</td> <td>Spare</td> <td>N/A</td> <td>Normal</td> <td>18387</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	Site2_NE_DR_NO	DR-OCUDR-B	Network OAM&P	Spare	N/A	Normal	18387	Normal	NotApplicable	Allowed	NotApplicable	Site1_NE_NO	OCUDR-A	Network OAM&P	Active	N/A	Normal	18387	Normal	NotApplicable	Allowed	NotApplicable	Site1_NE_NO	OCUDR-B	Network OAM&P	Standby	N/A	Normal	18387	Normal	NotApplicable	Allowed	NotApplicable	Site2_NE_DR_NO	DR-OCUDR-A	Network OAM&P	Spare	N/A	Normal	18387	Normal	NotApplicable	Allowed	NotApplicable
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																																															
Site2_NE_DR_NO	DR-OCUDR-B	Network OAM&P	Spare	N/A	Normal	18387	Normal	NotApplicable	Allowed	NotApplicable																																															
Site1_NE_NO	OCUDR-A	Network OAM&P	Active	N/A	Normal	18387	Normal	NotApplicable	Allowed	NotApplicable																																															
Site1_NE_NO	OCUDR-B	Network OAM&P	Standby	N/A	Normal	18387	Normal	NotApplicable	Allowed	NotApplicable																																															
Site2_NE_DR_NO	DR-OCUDR-A	Network OAM&P	Spare	N/A	Normal	18387	Normal	NotApplicable	Allowed	NotApplicable																																															

Step	Procedure	Result																																																								
17. <input type="checkbox"/>	Active UDR: Verify the HA status	<p>Click on Main Menu → Status and Manage → HA</p>  <p>Select the row for all of the servers</p> <p>Verify that the HA Role is either active or standby.</p> <table border="1" data-bbox="501 747 1382 905"> <thead> <tr> <th>Hostname</th> <th>OAM Max HA Role</th> <th>Application Max 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>NO2</td> <td>Active</td> <td>OOS</td> <td>Active</td> <td>NO1</td> <td>NO_10303</td> <td>Network OAM&P</td> <td>10.240.70.132</td> </tr> <tr> <td>SO1</td> <td>Standby</td> <td>OOS</td> <td>Active</td> <td>SO2</td> <td>SO_10303</td> <td>System OAM</td> <td></td> </tr> <tr> <td>SO2</td> <td>Active</td> <td>OOS</td> <td>Active</td> <td>SO1</td> <td>SO_10303</td> <td>System OAM</td> <td>10.240.70.133</td> </tr> <tr> <td>MP1</td> <td>Standby</td> <td>Active</td> <td>Active</td> <td>MP2</td> <td>SO_10303</td> <td>MP</td> <td></td> </tr> <tr> <td>MP2</td> <td>Active</td> <td>Active</td> <td>Active</td> <td>MP1</td> <td>SO_10303</td> <td>MP</td> <td></td> </tr> <tr> <td>IPFE</td> <td>Active</td> <td>OOS</td> <td>Active</td> <td></td> <td>SO_10303</td> <td>MP</td> <td></td> </tr> </tbody> </table>	Hostname	OAM Max HA Role	Application Max HA Role	Max Allowed HA Role	Mate Hostname List	Network Element	Server Role	Active VIPs	NO2	Active	OOS	Active	NO1	NO_10303	Network OAM&P	10.240.70.132	SO1	Standby	OOS	Active	SO2	SO_10303	System OAM		SO2	Active	OOS	Active	SO1	SO_10303	System OAM	10.240.70.133	MP1	Standby	Active	Active	MP2	SO_10303	MP		MP2	Active	Active	Active	MP1	SO_10303	MP		IPFE	Active	OOS	Active		SO_10303	MP	
Hostname	OAM Max HA Role	Application Max HA Role	Max Allowed HA Role	Mate Hostname List	Network Element	Server Role	Active VIPs																																																			
NO2	Active	OOS	Active	NO1	NO_10303	Network OAM&P	10.240.70.132																																																			
SO1	Standby	OOS	Active	SO2	SO_10303	System OAM																																																				
SO2	Active	OOS	Active	SO1	SO_10303	System OAM	10.240.70.133																																																			
MP1	Standby	Active	Active	MP2	SO_10303	MP																																																				
MP2	Active	Active	Active	MP1	SO_10303	MP																																																				
IPFE	Active	OOS	Active		SO_10303	MP																																																				
18. <input type="checkbox"/>	Active UDR: Examine all alarms	<p>Login to the UDR VIP if not 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 My Oracle Support.</p>																																																								
19. <input type="checkbox"/>	Backup and archive all the databases from the recovered system	Perform Appendix A Oracle Communications User Data Repository Database Backup to back up the configuration database.																																																								
THIS PROCEDURE HAS BEEN COMPLETED																																																										

4.1.3 Recovery Scenario 3 (Database Recovery)

The following sections deal with recovering from database corruption, whether a backup is present or not.

4.1.3.1 Recovery Scenario 3: Case 1

For a partial outage with

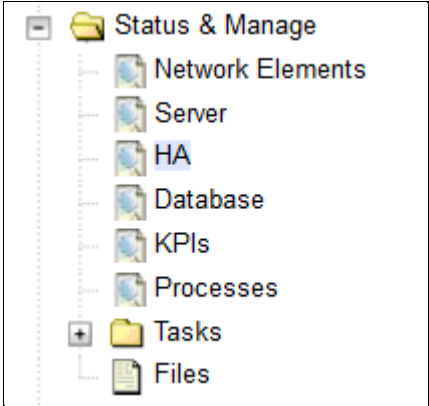

- Server having a corrupted database
- Replication channel from parent is inhibited because of upgrade activity or
- Server is in a different release than that of its active parent because of upgrade activity.

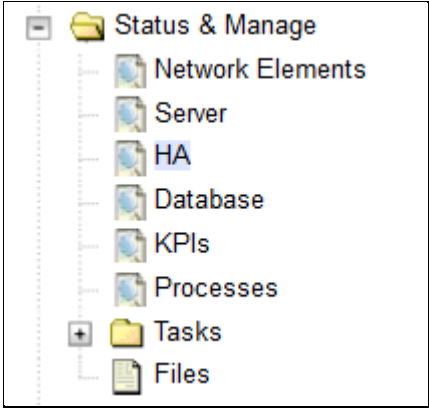
- Verify that the Server Runtime backup files, performed at the start of the upgrade, are present in /var/TKLC/db/filemgmt area in the following format
 - o Backup.UDR.HPC02-NO2.FullIDBParts.NETWORK_OAMP.20140524_223507.UPG.tar.bz2
 - o Backup.UDR.HPC02-NO2.FullRunEnv.NETWORK_OAMP.20140524_223507.UPG.tar.bz2

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

This procedure performs recovery if database is corrupted in the system
 Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.
 If this procedure fails, contact **My Oracle Support**, and ask for assistance.

Procedure 3: Recovery Scenario 3 (Case 1)—Database Recovery Backup Present

Step	Procedure	Result
1. <input type="checkbox"/>	Active UDR: Set failed servers to standby	Navigate to Main Menu → Status & Manage → HA  Select Edit Set the Max Allowed HA Role to Standby for the failed servers. Click Ok 
2. <input type="checkbox"/>	Server with DB Corruption: Login	Establish an SSH session to the server in question. Login as admusr user.
3. <input type="checkbox"/>	Server with DB Corruption: Change runlevel to 3	Run the following command to bring the system to runlevel 3. <pre style="background-color: #f0f0f0; padding: 5px;">\$ sudo init 3</pre>
4. <input type="checkbox"/>	Server with DB Corruption: Recover system	Run the following command and follow the instructions appearing the console prompt <pre style="background-color: #f0f0f0; padding: 5px;">\$ sudo /usr/TKLC/appworks/sbin/backout_restore</pre>

Step	Procedure	Result
5. <input type="checkbox"/>	Server with DB Corruption: Change runlevel to 4	Perform the following command to bring the system back to runlevel 4. <pre data-bbox="513 239 683 260">\$ sudo init 4</pre>
6. <input type="checkbox"/>	Server with DB Corruption: Verify the server	Perform the following command to verify if the processes are up and running <pre data-bbox="513 386 748 407">\$ sudo pm.getprocs</pre>
7. <input type="checkbox"/>	Active UDR: Set failed servers to active	Navigate to Status & Manage → HA  <p data-bbox="464 953 870 982">Click Edit at the bottom of the screen</p> <p data-bbox="464 1003 1365 1033">For each failed server whose Max Allowed HA Role is set to Standby, set it to Active</p> <p data-bbox="464 1054 558 1083">Click OK</p>
8. <input type="checkbox"/>	Backup and archive all the databases from the recovered system	Perform Appendix A Oracle Communications User Data Repository Database Backup to back up the configuration databases:
THIS PROCEDURE HAS BEEN COMPLETED		

4.1.3.2 Recovery Scenario 3: Case 2

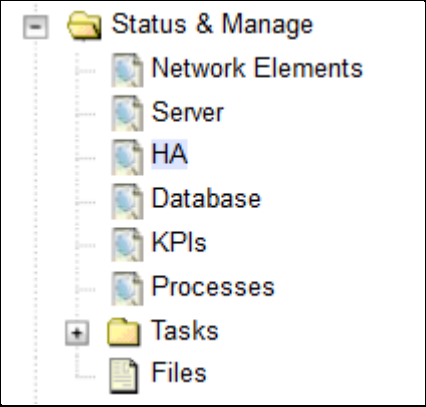
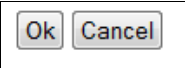
For a partial outage with

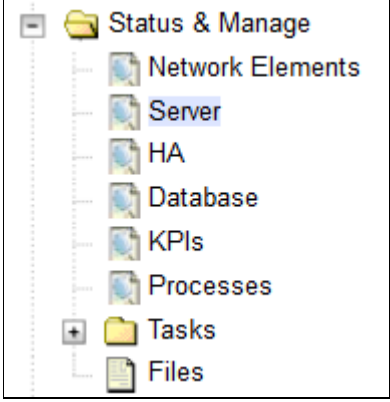
- Server having a corrupted database
- Replication channel is available or
- Server has the same release as that of its active parent

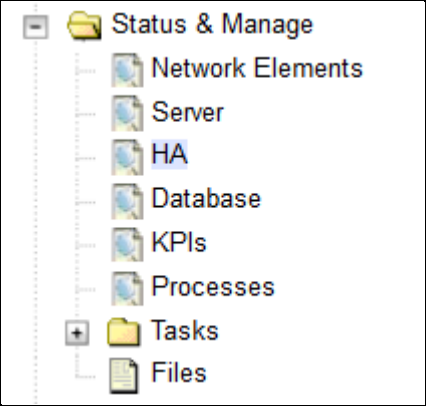
This procedure performs recovery if database got corrupted in the system and system is in the state to get replicated

Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number. If this procedure fails, contact My Oracle Support, and ask for assistance.

Procedure 4: Recovery Scenario 3 (Case 2)—Database Recovery Backup Not Present

Step	Procedure	Result
1. <input type="checkbox"/>	Active UDR: Set failed servers to standby	Navigate to Main Menu → Status & Manage → HA  Click Edit Set the Max Allowed HA Role to Standby for the failed servers. Click Ok 
2. <input type="checkbox"/>	Server with DB Corruption: Login	Establish an SSH session to the server in question. Login as admusr user.
3. <input type="checkbox"/>	Server with DB Corruption: Take server out of service	Run the following command to take the server out of service. <pre data-bbox="513 1549 1414 1604">\$ sudo bash -l \$ sudo prod.clobber</pre>

Step	Procedure	Result
4. <input type="checkbox"/>	<p>Server with DB Corruption: Take server to DbUp state and start the application</p>	<p>Perform the following commands to take the server to Dbup and start the Oracle Communications User Data Repository application:</p> <pre>\$ sudo bash -l \$ sudo prod.start</pre>
5. <input type="checkbox"/>	<p>Server with DB Corruption: Verify the server state</p>	<p>Perform the following commands to verify the processes are up and running:</p> <pre>\$ sudo pm.getprocs</pre> <p>Perform the following command to verify if replication channels are up and running:</p> <pre>\$ sudo irepstat</pre> <p>Perform the following command to verify if merging channels are up and running:</p> <pre>\$ sudo inetmstat</pre>
6. <input type="checkbox"/>	<p>Active UDR: Restart UDR application</p>	<p>Navigate to Main Menu → Status & Manage → Server</p>  <p>Select each recovered server and click Restart.</p> <div style="border: 1px solid black; padding: 5px; display: flex; justify-content: space-around; margin-top: 10px;"> Stop Restart Reboot NTP Sync Report </div>

Step	Procedure	Result
<p>7. <input type="checkbox"/></p>	<p>Active UDR: Set failed servers to active</p>	<p>Navigate to Status & Manage → HA</p>  <p>Click Edit at the bottom of the screen</p> <p>For each failed server whose Max Allowed HA Role is set to Standby, set it to Active</p> <p>Press OK</p>
<p>8. <input type="checkbox"/></p>	<p>Backup and archive all the databases from the recovered system</p>	<p>Perform Appendix A Oracle Communications User Data Repository Database Backup to back up the configuration databases.</p>
<p>THIS PROCEDURE HAS BEEN COMPLETED</p>		

Chapter 5. Resolving User Credential Issues after Database Restore

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

5.1 Keeping a Restored User (Resetting User Password)


User accounts kept across a restore operation have their passwords reset. This procedure guides you through that process.

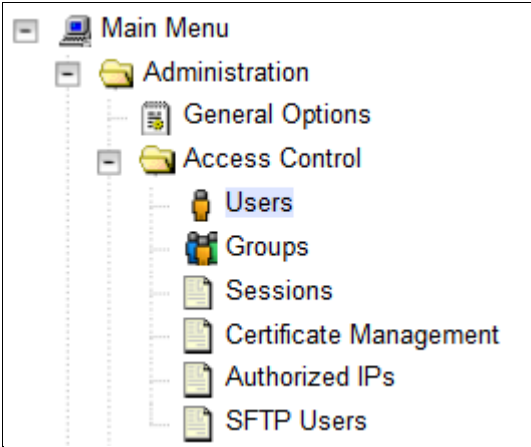
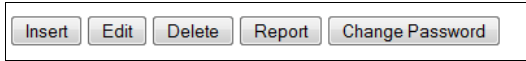

Perform this procedure to keep users that are restored by system restoration.

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

If this procedure fails, contact **My Oracle Support**, and ask for assistance.

Procedure 5: Keep Restored User (Resetting User Password)


Step	Procedure	Result
1. <input type="checkbox"/>	<p>Before Restoration: Notify Affected Users (Before Restoration)</p>	Contact each user that is affected before the restoration and notify them that you are resetting their password during this maintenance operation.
2. <input type="checkbox"/>	<p>After Restoration: Login to the active UDR (before restoration)</p>	<p>Establish a GUI session on the UDR server by using the VIP IP address of the UDR server. Open the web browser and enter a URL of:</p> <p style="text-align: center;"><code>http://<Primary_UDR_VIP_IP_Address></code></p> <p>Login as the guidadmin user:</p> <div style="border: 1px solid black; padding: 10px; text-align: center;">  </div>

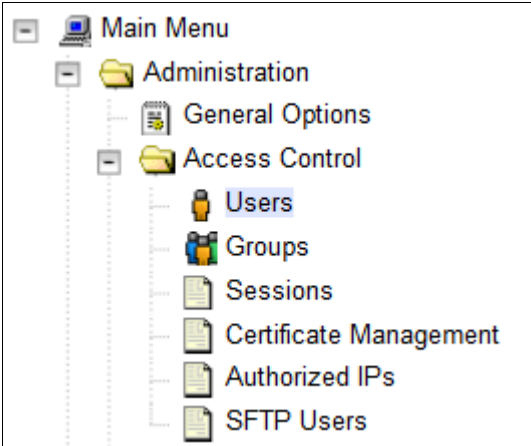
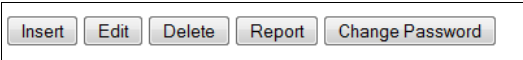
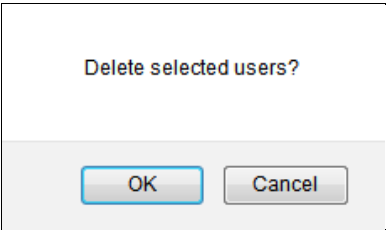
Step	Procedure	Result
<p>3. <input type="checkbox"/></p>	<p>After Restoration: Reset User Passwords</p>	<p>Navigate to Administration → Access Control → Users</p>  <p>Select the user</p> <p>Click Change Password</p>  <p>Enter a new password</p>  <p>Click Continue</p>
<p>THIS PROCEDURE HAS BEEN COMPLETED</p>		

5.2 Removing a Restored User

Perform this procedure to remove users that are restored by system restoration
 Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.
 If this procedure fails, contact **My Oracle Support**, and ask for assistance.

Procedure 6: Remove the Restored User

Step	Procedure	Result
4. <input type="checkbox"/>	After Restoration: Login to the active UDR	Establish a GUI session on the UDR server by using the VIP IP address of the UDR server. Open the web browser and enter a URL of: <div style="border: 1px solid gray; padding: 2px; width: fit-content; margin: 5px 0;"> http://<Primary_UDR_VIP_IP_Address> </div> Login as the guiadmin user: <div style="border: 1px solid black; padding: 10px; margin: 10px 0;">  </div>

Step	Procedure	Result
5. <input type="checkbox"/>	After Restoration: Delete User	Navigate to Administration → Access Control → Users  Select the user Click Delete   Click OK to confirm.
THIS PROCEDURE HAS BEEN COMPLETED		

5.3 Restoring a Modified User

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

The password for testuse differs between the selected backup file and the current database.

Before Restoration:

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

Contact each user that is affected and notify them that you 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 Section 5.1 (Keeping a Restored User) for resetting passwords for a user.

5.4 Restoring an Archive that Does Not Contain a Current User

These users have been created after the backup operation. They are deleted by a system restoration of that file.


If the users are not needed, do not perform any additional steps. The user is permanently removed.

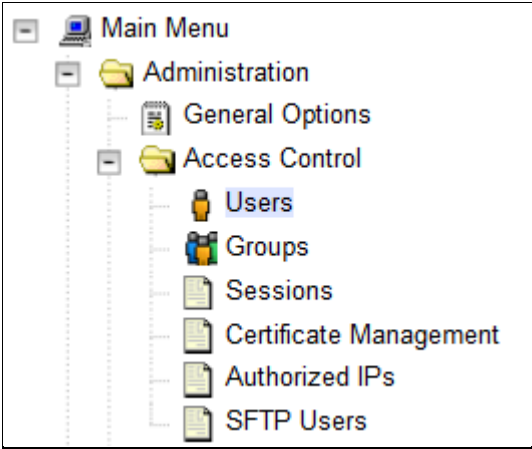

Perform this procedure to remove users that are restored by system restoration

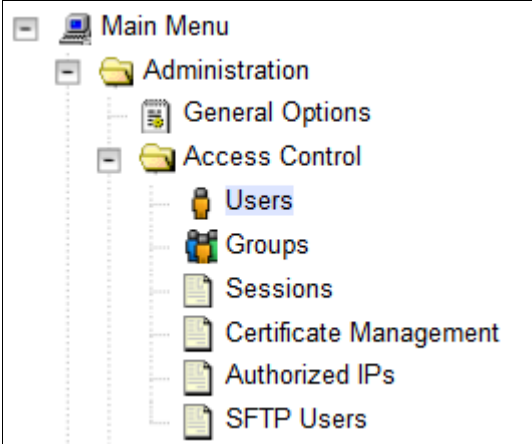

Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.

If this procedure fails, contact **My Oracle Support**, and ask for assistance.

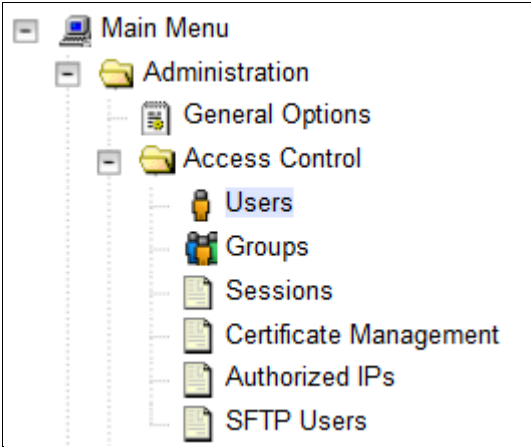
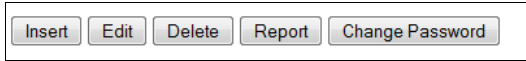

Procedure 7: Restoring an Archive that does not Contain a Current User

Step	Procedure	Result
1. <input type="checkbox"/>	<p>Before Restoration: Notify Affected Users</p> <p>(Before Restoration)</p>	Contact each user that is affected before the restoration and notify them that you are resetting their password during this maintenance operation.
2. <input type="checkbox"/>	<p>Before Restoration: Login to the active UDR (before restoration)</p>	<p>Establish a GUI session on the UDR server by using the VIP IP address of the UDR server. Open the web browser and enter a URL of:</p> <p style="background-color: #e0e0e0; padding: 2px;"><code>http://<Primary_UDR_VIP_IP_Address></code></p> <p>Login as the guiadmin user:</p> <div style="border: 1px solid black; padding: 10px; text-align: center;">  </div>

Step	Procedure	Result
<p>3. <input type="checkbox"/></p>	<p>Before Restoration: Record user settings <i>(Before Restoration)</i></p>	<p>Navigate to Administration → Access Control → Users</p>  <p>Under each affected user, record the following:</p> <ul style="list-style-type: none"> • Username • Account status • Remote auth • Local auth • Concurrent logins allowed • Inactivity limit • Comment • Groups
<p>4. <input type="checkbox"/></p>	<p>After Restoration: Login</p>	<p>Establish a GUI session on the UDR server by using the VIP IP address of the UDR server. Open the web browser and enter a URL of:</p> <p><code>http://<Primary_UDR_VIP_IP_Address></code></p> <p>Login as the guidadmin user:</p> 

<p>5. <input type="checkbox"/></p>	<p>After Restoration: Recreate affected user</p>	<p>Navigate to Administration → Access Control → Users</p> <div data-bbox="673 205 1201 646"><p>The screenshot shows a hierarchical menu structure. At the top is 'Main Menu'. Below it is 'Administration'. Under 'Administration' are 'General Options' and 'Access Control'. Under 'Access Control' are 'Users', 'Groups', 'Sessions', 'Certificate Management', 'Authorized IPs', and 'SFTP Users'. The 'Users' item is highlighted with a blue background.</p></div> <p>Click Insert</p> <div data-bbox="678 714 1198 760"><p>The screenshot shows a row of five buttons: 'Insert', 'Edit', 'Delete', 'Report', and 'Change Password'. The 'Insert' button is highlighted with a blue background.</p></div> <p>Recreate the user using the data collected in Step 3.</p>
------------------------------------	---	---

Step	Procedure	Result
		<div data-bbox="540 195 1333 1409" style="border: 1px solid black; padding: 5px;"> <p>Username * <input type="text"/></p> <p>Group * <input type="text" value="admin"/></p> <p>Authentication Options <input type="checkbox"/> Allow Remote Authentication <input checked="" type="checkbox"/> Allow Local Authentication</p> <p>Access Options <input checked="" type="checkbox"/> Allow GUI Access <input checked="" type="checkbox"/> Allow MMI Access</p> <p>Access Allowed <input checked="" type="checkbox"/> Account Enabled</p> <p>Maximum Concurrent Logins <input type="text" value="0"/></p> <p>Session Inactivity Limit <input type="text" value="120"/></p> <p>Comment * <input type="text"/></p> </div> <p data-bbox="467 1430 553 1455">Click Ok</p> <div data-bbox="802 1472 1073 1539" style="border: 1px solid gray; padding: 2px; display: inline-block;"> <input type="button" value="Ok"/> <input type="button" value="Apply"/> <input type="button" value="Cancel"/> </div>
6. <input type="checkbox"/>	<p>After Restoration: Repeat for Additional Users</p>	<p>Repeat Step 5 to recreate additional users.</p>

Step	Procedure	Result
<p>7. <input type="checkbox"/></p>	<p>After Restoration: Reset the Passwords</p>	<p>Navigate to Administration → Access Control → Users</p>  <p>Select the user</p> <p>Click Change Password</p>  <p>Enter a new password</p>  <p>Click Continue</p>
<p>THIS PROCEDURE HAS BEEN COMPLETED</p>		


Appendix A. Oracle Communications User Data Repository Database Backup

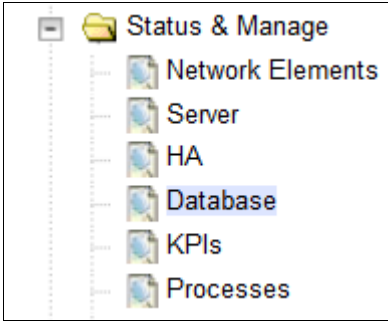
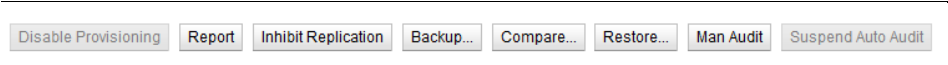
The intent of this procedure is to back up the provision and configuration information from an UDR server after the disaster recovery is complete

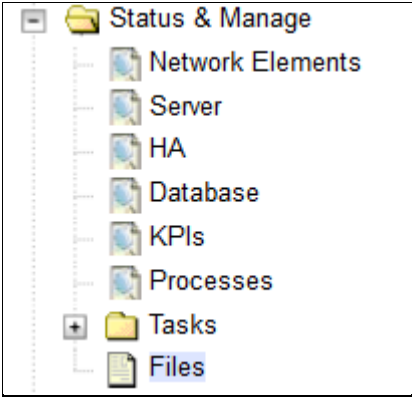
Check off (✓) each step as it is completed. Boxes have been provided for this purpose under each step number.

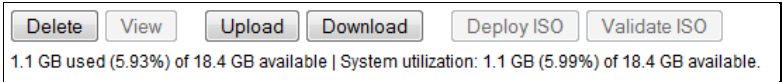
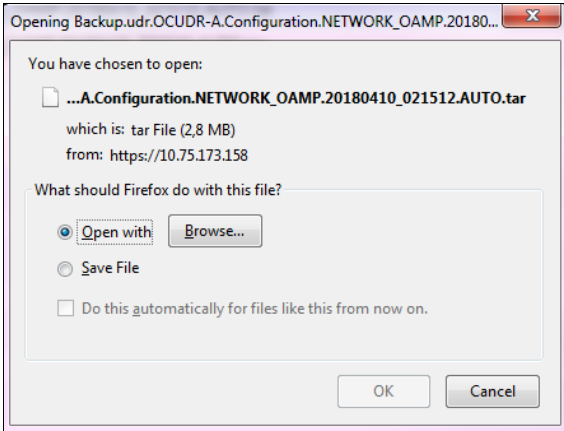
If this procedure fails, contact **My Oracle Support**, and ask for assistance.

Procedure 8: Restoring an Archive that does not Contain a Current User

Step	Procedure	Result
1. <input type="checkbox"/>	Active UDR: Login	<p>Establish a GUI session on the active UDR server by using the VIP IP address of the UDR server.</p> <p>Open the web browser and enter a URL of:</p> <p style="text-align: center;"><code>http://<Primary_UDR_VIP_IP_Address></code></p> <p>Login as the guiadmin user:</p> <div data-bbox="636 695 1237 1117" style="border: 1px solid black; padding: 10px; margin: 10px auto; width: fit-content;">  </div>

Step	Procedure	Result												
<p>2. <input type="checkbox"/></p>	<p>Active UDR: Backup configuration data for the system</p>	<p>Navigate to Main Menu → Status & Manage → Database</p>  <p>Select the active UDR server and click Backup.</p>  <p>Make sure that configuration is selected.</p> <table border="1" data-bbox="467 783 1409 1165"> <thead> <tr> <th>Field</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td colspan="2">Server: OCUDR-A</td> </tr> <tr> <td>Select data for backup</td> <td> <input type="checkbox"/> Provisioning <input checked="" type="checkbox"/> Configuration </td> </tr> <tr> <td>Archive Name *</td> <td>Backup.udr.OCUDR-A.Configuration.NETWORK_OAMP.20180419_015336.MAN</td> </tr> <tr> <td>Comment</td> <td><input type="text"/></td> </tr> <tr> <td colspan="2"> <input type="button" value="Ok"/> <input type="button" value="Cancel"/> </td> </tr> </tbody> </table> <p>Enter a filename for the backup and click OK</p>	Field	Value	Server: OCUDR-A		Select data for backup	<input type="checkbox"/> Provisioning <input checked="" type="checkbox"/> Configuration	Archive Name *	Backup.udr.OCUDR-A.Configuration.NETWORK_OAMP.20180419_015336.MAN	Comment	<input type="text"/>	<input type="button" value="Ok"/> <input type="button" value="Cancel"/>	
Field	Value													
Server: OCUDR-A														
Select data for backup	<input type="checkbox"/> Provisioning <input checked="" type="checkbox"/> Configuration													
Archive Name *	Backup.udr.OCUDR-A.Configuration.NETWORK_OAMP.20180419_015336.MAN													
Comment	<input type="text"/>													
<input type="button" value="Ok"/> <input type="button" value="Cancel"/>														

Step	Procedure	Result
<p>3. <input type="checkbox"/></p>	<p>Active UDR: Verify the backup file existence.</p>	<p>Navigate to Main Menu → Status & Manage → Files</p>  <p>Main Menu: Status & Manage -> Files</p> <p>Filter* Tasks</p> <p>OCUDR-A OCUDR-B DR-OCUDR-A DR-OCUDR-B</p> <p>File Name</p> <p>Backup.UDR.OCUDR-A.FullIDBParts.NETWORK_OAMP.20180410_074209.UPG.tar</p> <p>Backup.UDR.OCUDR-A.FullRunEnv.NETWORK_OAMP.20180410_074209.UPG.tar</p> <p>backup/Backup.udr.OCUDR-A.Configuration.NETWORK_OAMP.20180410_021512.AUTO.tar</p> <p>backup/Backup.udr.OCUDR-A.Provisioning.NETWORK_OAMP.20180410_031512.AUTO.tar</p> <p>Select the active UDR tab.</p> <p>The files on this server are displayed. Verify the existence of the backup file.</p>

Step	Procedure	Result
4. <input checked="" type="checkbox"/>	<p>Active UDR: Download the file to a local machine.</p>	<p>From the previous step, select the backup file.</p> <p>Click Download</p>  <p>Click OK to confirm the download.</p> 
5. <input type="checkbox"/>	<p>Upload the Image to Secure Location</p>	<p>Transfer the backed up image saved in Step 4 to a secure location where the server backup files are fetched during a system disaster recovery.</p>
<p>THIS PROCEDURE HAS BEEN COMPLETED</p>		

Appendix B. My Oracle Support

My Oracle Support (<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 My Oracle Support 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 sequence on the Support telephone menu:

6. Select **2** for New Service Request
7. Select **3** for Hardware, Networking and Solaris Operating system support
8. Select one of the following options:
 - o For Technical issues such as creating a Service Request (SR), Select **1**
 - o For Non-technical issues such as registration or assistance with My Oracle Support, Select **2**

You are connected to a live agent who can assist you with My Oracle Support registration and opening a support ticket.

My Oracle Support is available 24 hours a day, 7 days a week, 365 days a year.

Appendix C. Locate Product Documentation on the Oracle Help Center Site

Oracle Communications customer documentation is available on the web at the Oracle Help Center (OHC) site, <http://docs.oracle.com>. You do not have to register to access these documents. Viewing these files requires Adobe Acrobat Reader, which can be downloaded at <http://www.adobe.com>.

1. Access the Oracle Help Center site at <http://docs.oracle.com>
2. Click **Industries**.
3. Under the Oracle Communications subheading, click **Oracle Communications documentation**.
4. The Communications Documentation page displays. Most products covered by these documentation sets appear under the headings Network Session Delivery and Control Infrastructure or Platforms.
5. Click on your Product and then the Release Number.
6. A list of the documentation set for the selected product and release displays.
7. To download a file to your location, right-click **PDF**, select **Save target as** (or similar command based on your browser), and save to a local folder.