Oracle® Communications
User Data Repository
Cloud Installation and Configuration Guide

Release 12.2

E72454-06

October 2017

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See more information on My Oracle Support in the Appendix section.

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Oracle Communications User Data Repository Cloud Installation and Configuration Guide, Release 12.2
E72454-06

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1. INTRODUCTION

1.1 Purpose and Scope

This document describes the application-related installation procedures for a VMware User Data Repository 12.2 system.

This document assumes that platform-related configuration has already been done.

The audience for this document includes Oracle customers as well as these groups: Software System, Product Verification, Documentation, and Customer Service including Software Operations and First Office Application.

1.2 References

[1] Oracle Communications User Data Repository Cloud Resource Porfile, E67495-01, latest revision

[2] Oracle Communications User Data Repository Installation and Configuration Guide, E72453-01, latest revision

[3] Oracle Communications User Data Repository Cloud Disaster Recovery Guide, E72458-01, latest revision

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
UDR	User Data Repository
ESXi	Elastic Sky X Integrated
FABR	Full Address Based Resolution
iDIH	Integrated Diameter Intelligence Hub
IPFE	IP Front End
IPM	Initial Product Manufacture–the process of installing TPD
IWF	Inter Working Function
NAPD	Network Architecture Planning Diagram
OS	Operating System (for example, TPD)
OVA	Open Virtualization Appliance
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
TPD	Tekelec Platform Distribution
VM	Virtual Machine

1.4 Terminology

Multiple server types are involved with the procedures in this manual. Therefore, most steps in the written procedures begin with the name or type of server to which the step applies.

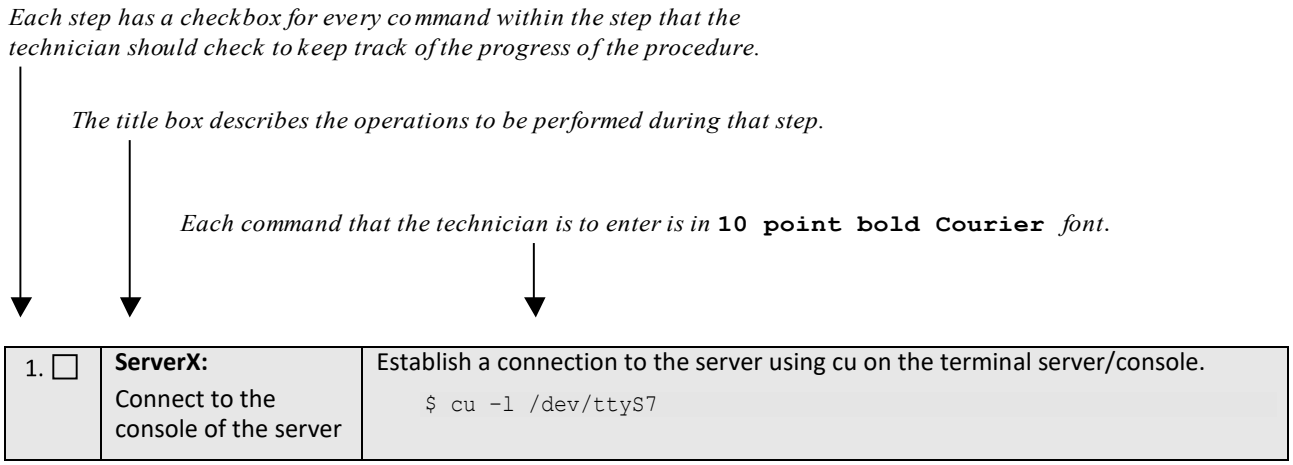


Figure 1. Example of an Instruction that Indicates the Server to Which it Applies

Table 2 Terminology

Term	Description
Site	Applicable for various applications, a Site is type of Place. A Place is configured object that allows servers to be associated with a physical location. A Site place allows servers to be associated with a physical site. For example, Sites may be configured for Atlanta, Charlotte, and Chicago. Every server is associated with exactly one Site when the server is configured. For the Policy and Charging DRA application, when configuring a Site only put DA-MPs and SBR MP servers in the site. Do not add NOAMP, SOAM or IPFE MPs to a Site
Place Association	Applicable for various applications, a Place Association is a configured object that allows Places to be grouped together. A Place can be a member of more than one Place Association. The Policy and Charging DRA application defines two Place Association Types: Policy Binding Region and Policy and Charging Mated Sites.
Two Site Redundancy	Two Site Redundancy is a data durability configuration in which Policy and Charging data is unaffected by the loss of one site in a Policy and Charging Mated Sites Place Association containing two sites. Two Site Redundancy is a feature provided by Server Group configuration. This feature provides geographic redundancy. Some Server Groups can be configured with servers located in two geographically separate Sites (locations). This feature ensures that there is always a functioning Active server in a Server Group even if all the servers in a single site fail.
Server Group Primary Site	A Server Group Primary Site is a term used to represent the principle location within a SOAM. SOAM Server groups are intended to span several Sites (Places). The Primary Site may be in a different Site (Place) for each configured SOAM. A Primary Site is described as the location in which the Active and Standby servers to reside, however there cannot be any Preferred Spare servers within this location. All SOAM Server Groups have a Primary Site.

Term	Description
Server Group Secondary Site	A Server Group Secondary Site is a term used to represent location in addition to the Primary Site within a SOAM Server Group. SOAM Server groups are intended to span several Sites(Places The Secondary Site may be in a different Site (Place) for each configured SOAM. A Secondary Site is described as the location in which only Preferred Spare servers reside. The Active and Standby servers cannot reside within this location. If Two Site Redundancy is wanted, a Secondary Site is required for all SOAM Server Groups.

1.5 Assumptions

This procedure assumes the following:

- You have the assigned values from the network and have used them to compile XML files (see **Appendix C** for each NE for the NOAMP and SOAM site before performing procedure).
- You have at least an intermediate skill set with command prompt activities on an Open Systems computing environment such as Linux or TPD.

1.6 XML Files (for installing NE)

The XML files compiled for installation of the NE for each NOAMP and SOAM site must be maintained and accessible for use in Disaster Recovery procedures. The Professional Services Engineer (PSE) provides a copy of the XML files used for installation to the designated Customer Operations POC. The customer is ultimately responsible for maintaining and providing the XML files to My Oracle Support if needed for use in Disaster Recovery operations. For more details on Disaster Recovery refer to **[3]**.

1.7 How to use this Document

Although this document is primarily to be used as an initial installation guide, its secondary purpose is to be used as a reference for Disaster Recovery procedures **[3]**. When executing this document for either purpose, there are a few points which help to clarify the intent of the author. These points are as follows:

1. Before beginning a procedure, completely read the instructional text (it is after the section heading for each procedure) and all associated procedural WARNINGS or NOTES.
2. Before performing a step within a procedure, completely read the left and right columns including any step specific WARNINGS or NOTES.

If a procedural step fails to run successfully, stop and contact My Oracle Support for assistance before attempting to continue.

2. GENERAL DESCRIPTION

This document defines the steps required to perform the initial installation of the Oracle Communications User Data Repository application on a VMware hypervisor.

Oracle Communications User Data Repository installation paths are illustrated in the **Figure 2**. The general timeline for all processes to perform a software installation/configuration and upgrade is also included.

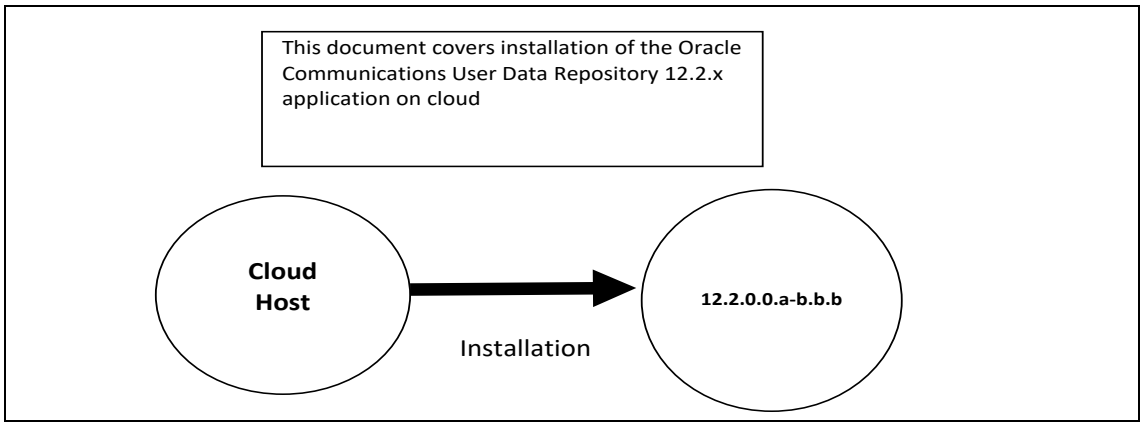


Figure 2. Initial Application Installation Path–Example

2.1 Required Materials

The following materials are required to complete Oracle Communications User Data Repository installation:

1. Target release Oracle Communications User Data Repository OVA Media
2. Target release Oracle Communications User Data Repository ISO Media only for ISO installs
3. Target release TPD Media only for ISO installs

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

2.2 Installation Overview

This section describes the overall strategy to be employed for a single or multi-site installation. It also lists the procedures required for installation and estimated times. Section **2.4** discusses the overall install strategy and includes an installation flow chart that can be used to determine the procedures to run for an installation. Section **2.4** lists the steps required to install an Oracle Communications User Data Repository system. These latter sections expand on the information from the matrix and provide a general timeline for the installation.

2.3 SNMP Configuration

The network-wide plan for SNMP configuration must be decided before installation proceeds. This section provides recommendations for these decisions.

SNMP traps can originate from the following entities in an Oracle Communications User Data Repository installation:

- Oracle Communications User Data Repository Application Servers (NOAMP, SOAM, MP)

Oracle Communications User Data Repository application servers can be configured to:

1. Send all their SNMP traps to the NOAMP via merging from their local SOAM. All traps terminate at the NOAMP and be viewable from the NOAMP GUI (entire network) and the SOAM GUI (site specific). Traps are displayed on the GUI both as alarms and logged in trap history. This is the default configuration option and no changes are required for this to take effect.
2. Send all their SNMP traps to an external Network Management Station (NMS). The traps are seen at the SOAM AND/OR NOAM as alarms and they are viewable at the configured NMSs as traps.

Application server SNMP configuration performed from the NOAMP GUI, near the end of installation. See the procedure list for details.

2.4 Installation List of Procedures

Table 3. Installation Overview illustrates the progression of the installation process by procedure with estimated times. The estimated times and the phases that must be completed may vary due to differences in typing ability and system configuration. The procedures outlined in Table 3 must be performed in the order they are listed.

Table 3. Installation Overview

Procedure	Phase	Elapsed Time (Minutes)	
		For This Step	Cumulative.
Procedure 1	Verify Deployment Options and Cloud Resources	5	5
Error! Reference source not found.	Deploy Oracle Communications User Data Repository Virtual Machines on VMWare	20	25
Procedure 3	Deploy Oracle User Data Repository Virtual Machines on OpenStack (Only for OpenStack deployments)	20	25
Procedure 4	Deploy Oracle User Data Repository Virtual Machines on Oracle Linux/KVM	20	25
Procedure 5	Configure NOAMP-A Server (1st NOAMP only)	25	50
Procedure 6	Create Configuration for Remaining Servers	15	65
Procedure 7	Apply Configuration to Remaining Servers	15	80
Error! Reference source not found.	Configure XSI Networks (All SOAM Sites)	10	90
Error! Reference source not found.	OAM Pairing for Primary NOAMP Servers (1st NOAMP site only)	10	100
Procedure 10	OAM Pairing for SOAM and DR Sites (All SOAM and DR sites)	15	115
Procedure 11	OAM Pairing for MP Server Groups (All SOAM sites)	5	120
Error! Reference source not found.	Configure Signaling Routes	5	125
Error! Reference source not found.	Configure SPR Application on MP (All SOAM Sites)	10	135
Procedure 14	Configure NOAMP Signaling Routes (All NOAM Sites)	10	145
Procedure 15	Configure Services on Signaling Network	5	150
Error! Reference source not found.	Accept Installation	5	155

3. PRE-INSTALLATION PROCEDURE

3.1 Verify Deployment Options and Cloud Resources

This procedure determines appropriate HA Configurations and VM Profiles for the deployment, as well as verifies the environment.

Procedure 1: Verify Deployment Options and Cloud Resources

Step	Procedure	Details
1. ☐	Decide which profile to deploy	The first step in deploying Oracle Communications User Data Repository for cloud is to review the Resource Profiles stated in **[1]**. A choice of HA configuration and resource profile must be driven by the available resources and expected use of the Oracle Communications User Data Repository deployment. • For demo purposes an OVA lab profile is the best option. • For support of larger datasets, ISO installation may be required.
2. ☐	Ensure availability of cloud resources	If you are using vCloud Director or vSphere as a non-priviliged user, contact your cloud administrator to esnure the availability of sufficient process, memory, storage and network resources to meet the requirements of your chosen configuration and profile in step Error! Reference source not found.. **NOTE:** If you are a privileged user with VMWare vSphere, you can leverage procedures in **Appendix A** to configure storage and host networking for hosting Oracle Communications User Data Repository.
THIS PROCEDURE IS COMPLETE		

4. CLOUD CREATION

4.1 Deploy Oracle Communications User Data Repository Virtual Machines on VMware

This procedure creates Oracle Communications User Data Repository virtual machines (guests) on Vmware infrastructure.

Requirements:

- **Section 3.1 Verify Deployment Options and Cloud Resources** has been completed

Check (√) each step as it is completed. Boxes have been provided for this purpose.

Procedure 2: Deploy Oracle Communications User Data Repository Virtual Machines on VMware

Step	Procedure	Details
1. ☐	Ready Installation media	• If using vSphere client, place installation media (OVA, or ISO) onto your local machine. • If using vCloud Director, upload installation media using Appendix C.1: vCloud Director Oracle Communications User Data Repository Media Upload.
2. ☐	Create vApp	• If using vCloud Director, go to **Appendix** Error! Reference source not found.: Error! Reference source not found. • If using vSphere client procede to the next step.
3. ☐	Create Oracle Communications User Data Repository guests	• If using vSphere client, follow: - **B.1: Create Guests from OVA** • If using vCloud Director, follow: - Error! Reference source not found. Error! Reference source not found. for large database NOAMP - **C.3 Create Guests from OVA** for all other server types Mark the checkbox as the addition of each server is completed. ☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B ☐ MP-2 ☐ MP-2 ☐ MP-3 ☐ MP-4
4. ☐	Configure guest resources (Only OVA installs)	• If using vSphere client to install by OVA, follow: - **B.2: Configure Guest Resources** • If using vCloud Director to install by OVA, follow: - Error! Reference source not found.: Error! Reference source not found. • If installing by ISO proceed to the next step. Mark the checkbox as the addition of each server is completed. ☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B ☐ MP-2 ☐ MP-2 ☐ MP-3 ☐ MP-4
5. ☐	Install guest OS (Only ISO installs)	Only for ISO installs using vCloud Director, follow Appendix Error! Reference source not found.: Error! Reference source not found. Mark the checkbox as the addition of each server is completed. ☐ NOAMP-A ☐ NOAMP-B

Step	Procedure	Details
6. ☐	Configure guest OAM network	• If using vSphere client, follow Appendix **B.3: Configure Guest Network: Create Guests from OVA** • If using vCloud Director, follow **Appendix** Error! Reference source not found.: Error! Reference source not found. Mark the checkbox as the addition of each server is completed. ☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B ☐ MP-1 ☐ MP-2 ☐ MP-3 ☐ MP-4
THIS PROCEDURE IS COMPLETE		

4.2 Deploy Oracle User Data Repository Virtual Machines on OpenStack

This procedure creates User Data Repository virtual machines (guests) on OpenStack.

Requirements:

- Section **3.1 Verify Deployment Options and Cloud Resources** has been completed

Check (√) each step as it is completed. Boxes have been provided for this purpose.

Procedure 3: Deploy User Data Repository Virtual Machines on OpenStack

Step	Procedure	Details
1. ☐	Ready Installation media	Create and import OVA image file to OpenStack using: Appendix **D.1: OpenStack Image Creation from OVA**
2. ☐	Create Resource Profile	Create Resource Profile (Flavor) on OpenStack using: Appendix **D.2: Create Resource Profiles (Flavors)**
3. ☐	Create Key Pair	Create Key Pair on OpenStack using: Appendix **D.3: Create Key Pair**
4. ☐	Update the YAML File	Update the UDR Stack YAML file using: Appendix **D.4: Update UDR Stack YAML File**
5. ☐	Create VM Instances	On OpenStack, create VM instances using: Appendix **D.5: Create VM Instances Using YAML File**
6. ☐	Configure guest OAM network	Configure OAM network for VM instances: using Appendix Error! Reference source not found.: Error! Reference source not found. Mark the checkbox as the addition of each server is completed. ☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B ☐ MP-1 ☐ MP-2 ☐ MP-3 ☐ MP-4
7. ☐	Extend Volumes	Extend volumes for various VM Instances depending on flavor following: Appendix **D.6: Extend VM Instance Volume Size** Mark the checkbox as the addition of each server is completed. ☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B ☐ MP-1 ☐ MP-2 ☐ MP-3 ☐ MP-4

Step	Procedure	Details
8. ☐	Clobber database on VM Instances	Clobber database on VM Instances following: Appendix Error! Reference source not found.: Error! Reference source not found. Mark the checkbox as the addition of each server is completed. ☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B ☐ MP-1 ☐ MP-2 ☐ MP-3 ☐ MP-4
9. ☐	Associate Floating IP	Associate Floating IPs to the VM Instances if Floating IPs are available in cloud following: Appendix Error! Reference source not found.: Error! Reference source not found. Mark the checkbox as the addition of each server is completed. ☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B ☐ MP-1 ☐ MP-2 ☐ MP-3 ☐ MP-4 **NOTE:** This step is only needed if none of the networks assigned to VM Instances is a Public Network.
10. ☐	Create Virtual IPs	Create Virtual IP addresses following: **Appendix** Error! Reference source not found.: Error! Reference source not found. **NOTE:** This step is only needed if none of the networks assigned to VM Instances is a Public Network.
THIS PROCEDURE IS COMPLETE		

4.3 Deploy Oracle User Data Repository Virtual Machines on Oracle Linux/KVM

This procedure creates User Data Repository virtual machines (guests) on Oracle Linux/KVM.

Check (√) each step as it is completed. Boxes have been provided for this purpose.

Procedure 4: Deploy User Data Repository Virtual Machines on Oracle Linux/KVM

Step	Procedure	Details
1. ☐	Install Oracle Linux/KVM and create VMs	Install Oracle Linux/KVM on the host and create VMs using Virtual Machine Manager by following the below procedure: **8.Appendix J Install UDR on Oracle Linux OS via KVM**
THIS PROCEDURE IS COMPLETE		

5. ORACLE COMMUNICATIONS USER DATA REPOSITORY SERVER CONFIGURATION

5.1 Configure NOAMP-A Server (1st NOAMP only)

This procedure does all steps that are necessary for configuring the first NOAMP server. This includes creating the NOAMP Network Element, configuring Services and creating/configuring the first NOAMP-A server.

Requirements:

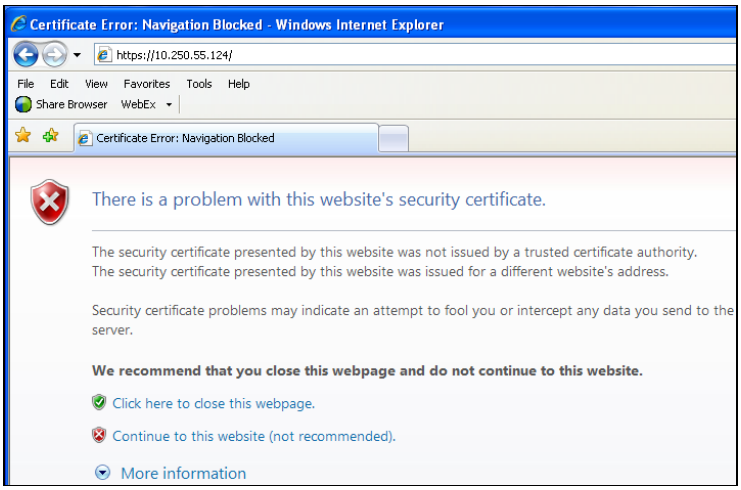
- Section 4 Cloud Creation has been completed

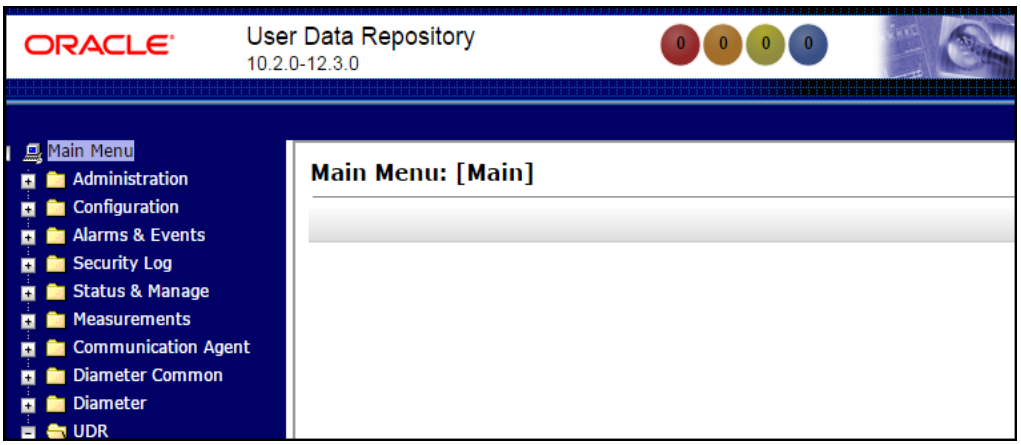
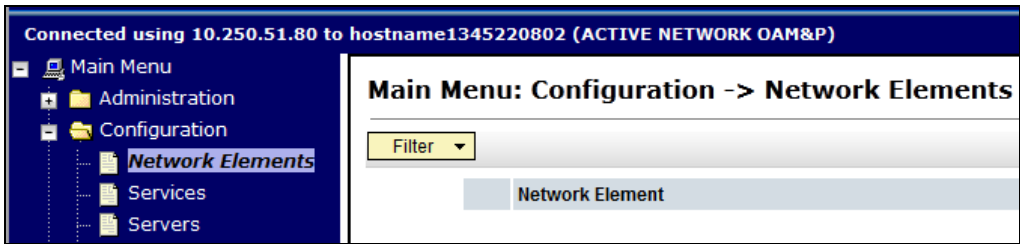
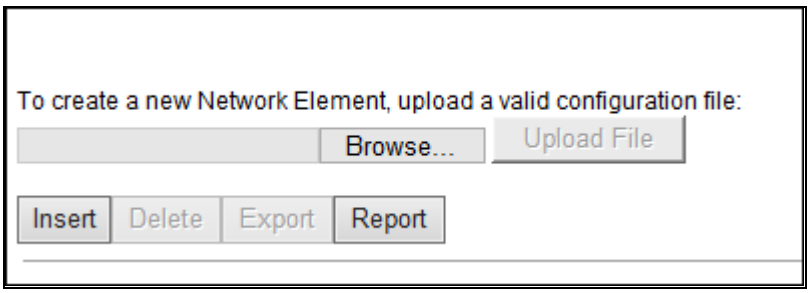
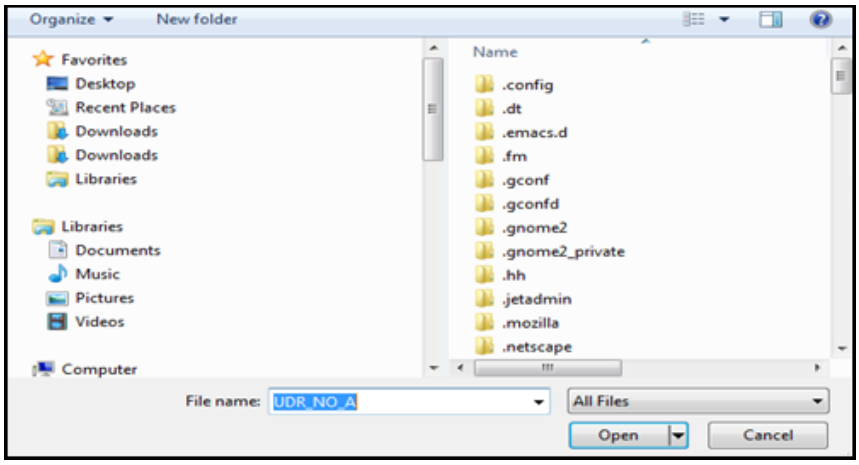
Assumptions:

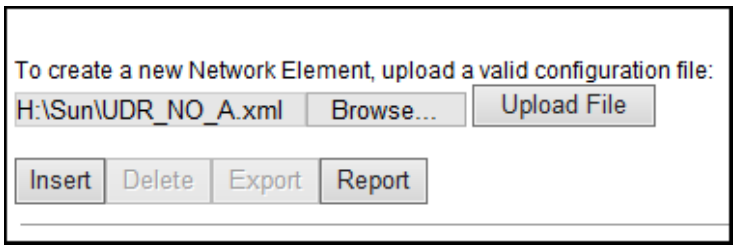
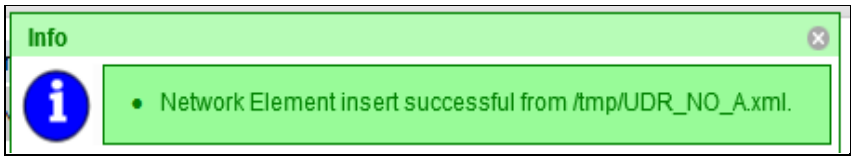
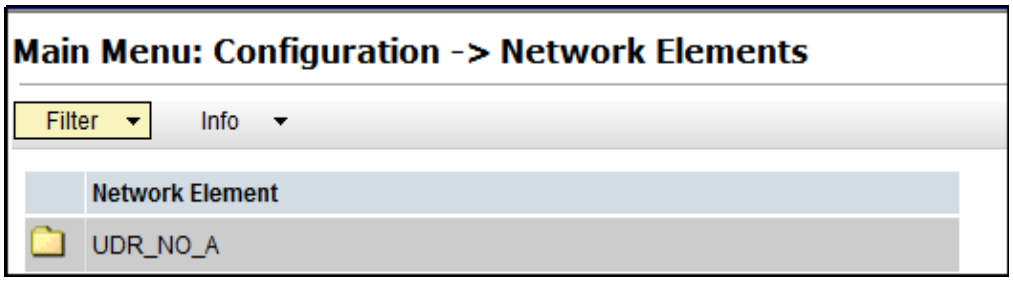
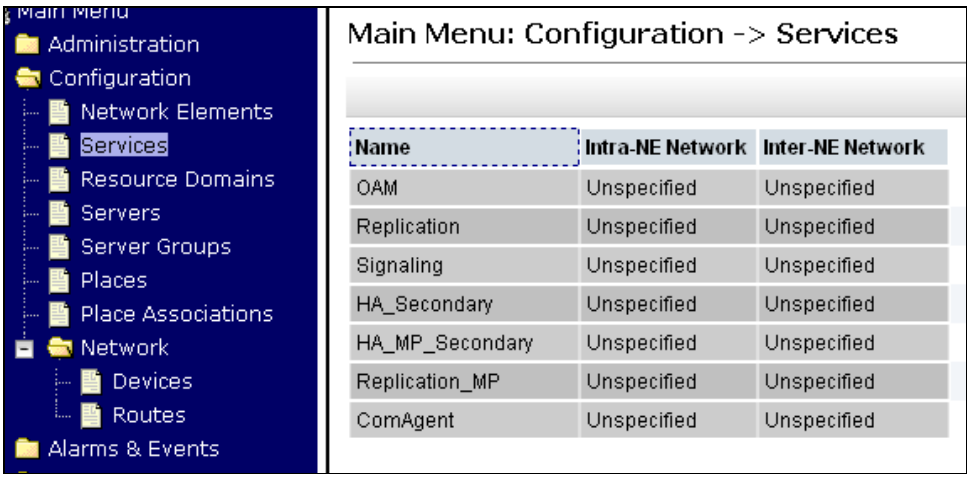
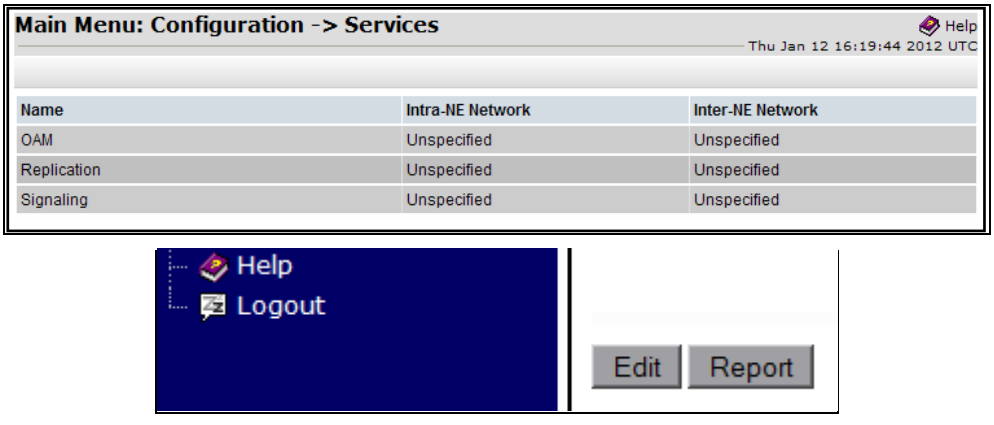
- This procedure assumes that the Oracle Communications User Data Repository Network Element XML file for the Primary Provisioning NOAMP site has previously been created, as described in Appendix E.
- This procedure assumes that the Network Element XML files are either on a USB flash drive or the hard drive of the laptop. The steps are written as if the XML files are on a USB flash drive, but the files can exist on any accessible drive.

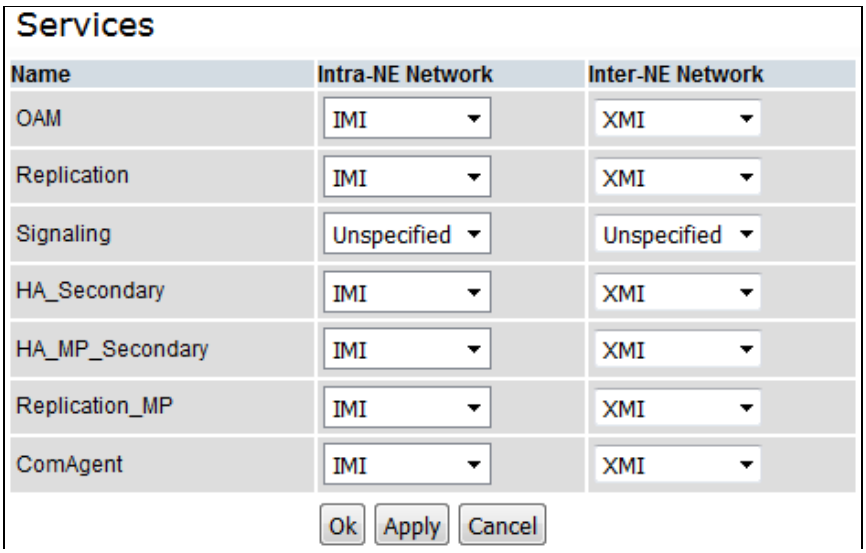
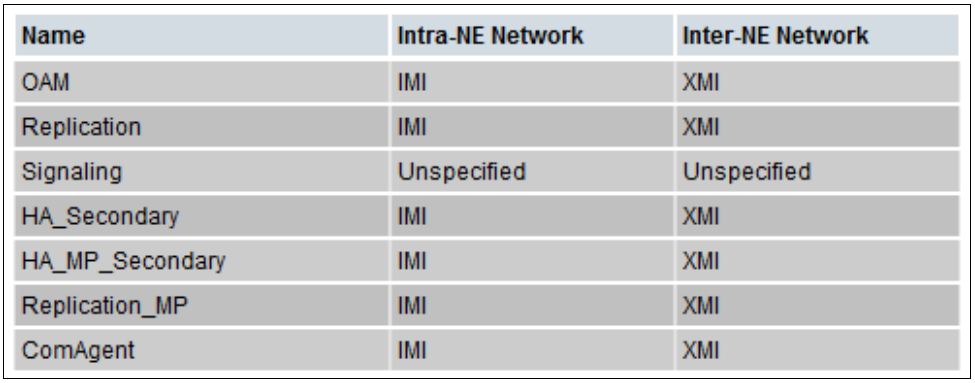
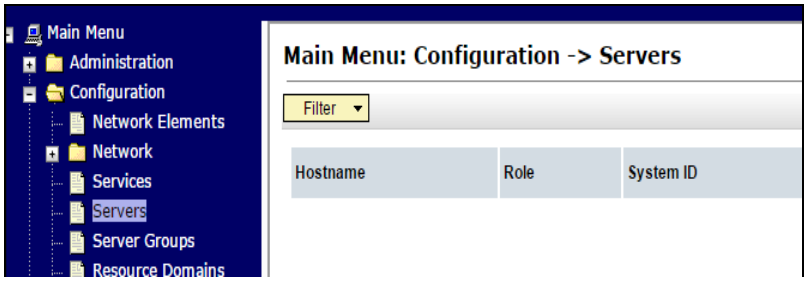
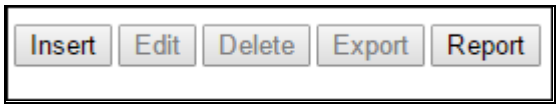
Check (√) each step as it is completed. Boxes have been provided for this purpose.

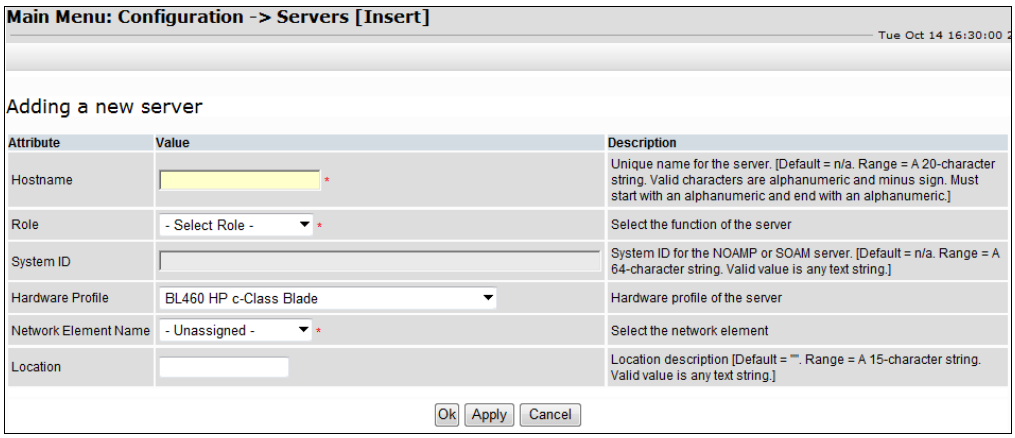
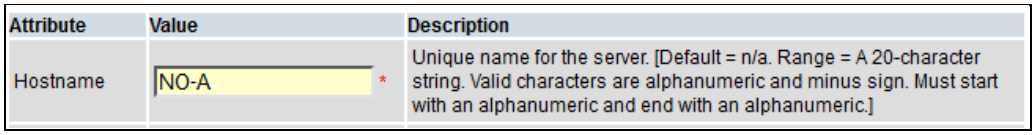
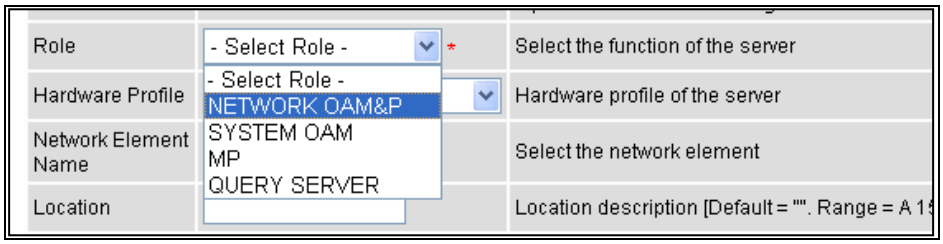
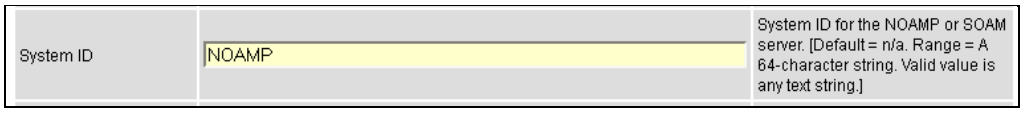
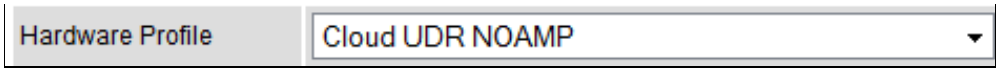
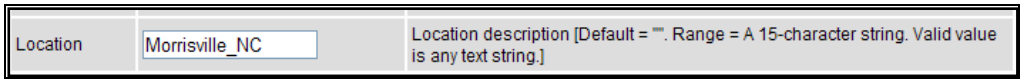
Procedure 5: Configure NOAMP-A Server (1st NOAMP only)

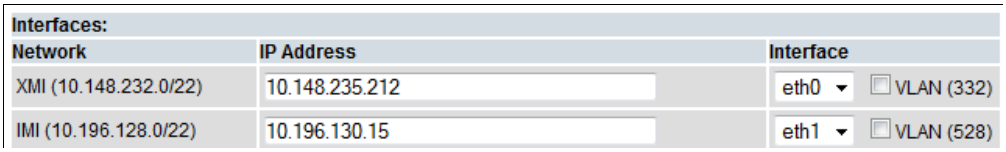
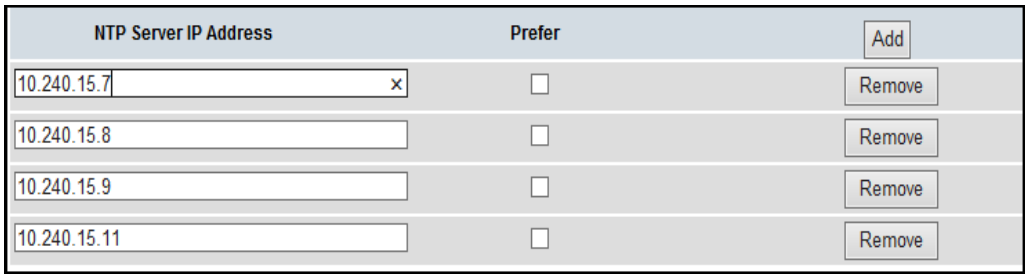
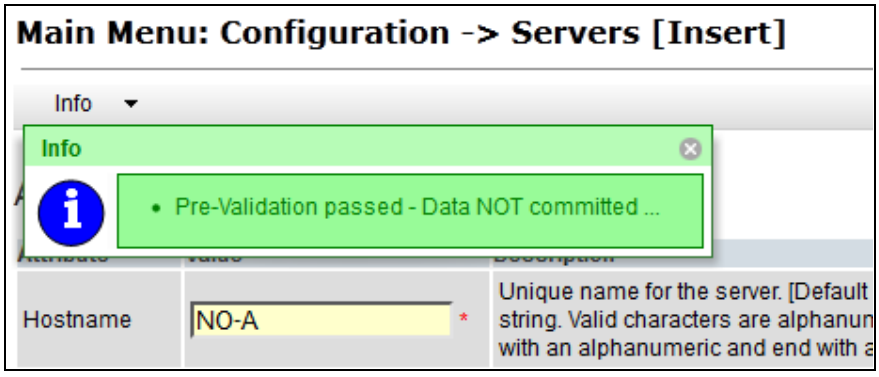
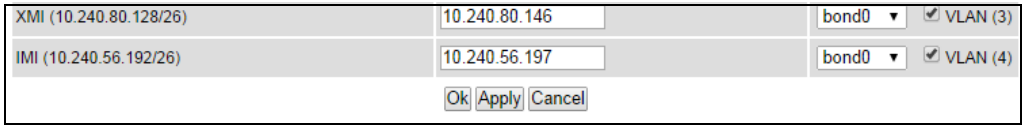
Step	Procedure	Details
1. ☐	**NOAMP Server A:** Launch an approved web browser and connect to the NOAMP Server A IP address **NOTE:** If the security certificate warning screen displays, select **Continue to this website (not recommended)**.	
2. ☐	**NOAMP Server A:** The login screen displays. Login to the GUI using the default user and password.	

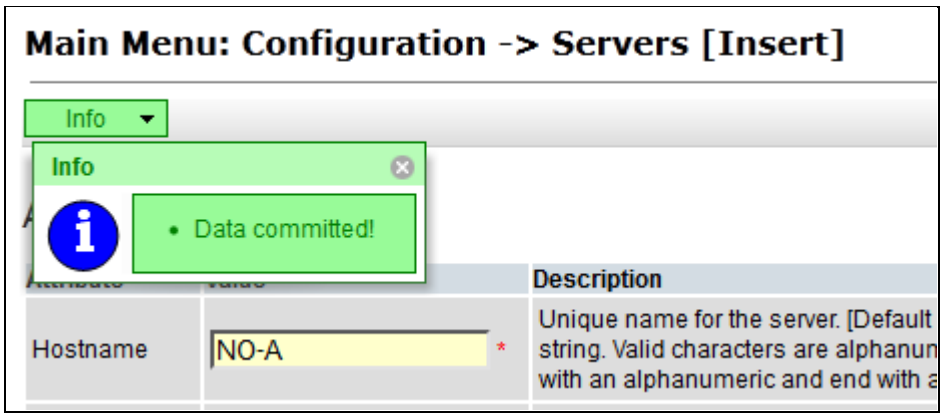
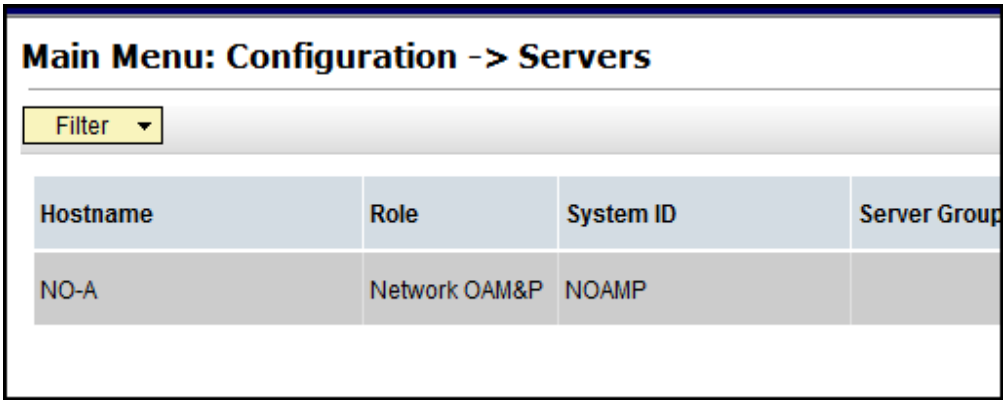
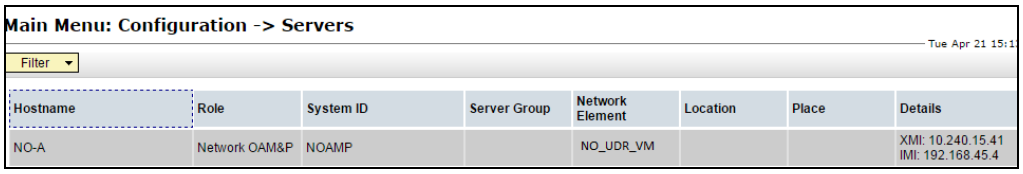
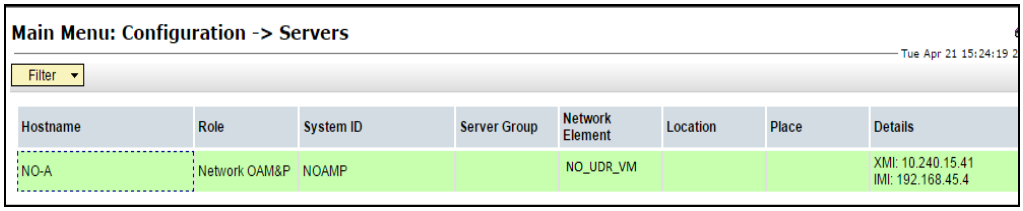
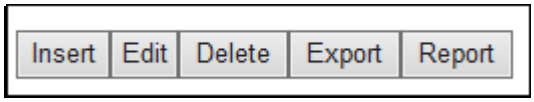
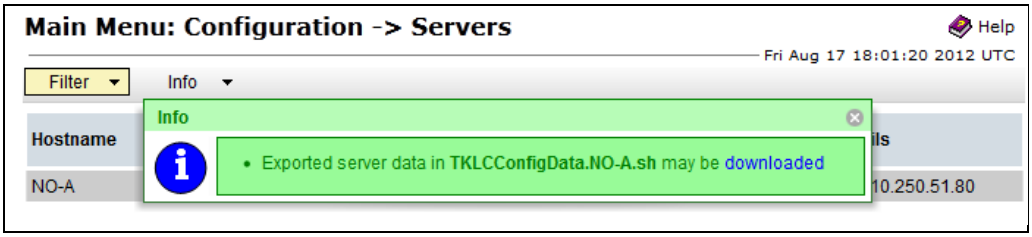
Step	Procedure	Details
3. ☐	**NOAMP Server A:** The Oracle Communications User Data Repository Main Menu opens.	
4. ☐	**NOAMP Server A:** Configuring Network Element Navigate to **Main Menu → Configuration → Network Elements**	
5. ☐	**NOAMP Server A:** From the Configuration Network Elements screen, click **Browse** (scroll to bottom left corner of screen).	
6. ☐	**NOAMP Server A:** **NOTE:** This step assumes that the XML files were previously prepared, as described in [Appendix C](#). 1. Select the location containing the site XML file. 2. Select the XML file 3. Click **Open**.	

Step	Procedure	Details
7. ☐	**NOAMP Server A:** Click **Upload File** in the bottom left corner of screen.	
8. ☐	**NOAMP Server A:** If the values in the XML file pass validation rules, you can see a banner information message showing that the data has been successfully committed to the DB. **NOTE:** Click **Info** to see the informational message.	 
9. ☐	Navigate to **Main Menu → Configuration → Services**	
10. ☐	**NOAMP Server A:** Click **Edit**.	

Step	Procedure	Details
11. ☐	**NOAMP Server A:** 1. Set the services values (see the notes). 2. Click **Apply**. 3. Click **OK**.	 **NOTES:** • Servers do not need to be restarted if this is a fresh installation. • ComAgent Service is used for NOAMP to MP and MP to MP communication.
12. ☐	**NOAMP Server A:** The Services configuration screen opens.	
13. ☐	**NOAMP Server A:** Configuring Oracle Communications User Data Repository Server Navigate to **Main Menu → Configuration → Servers**	
14. ☐	**NOAMP Server A:** Click **Insert**.	

Step	Procedure	Details
15. ☐	**NOAMP Server A:** The Adding a new server configuration screen opens.	
16. ☐	**NOAMP Server A:** Enter the hostname for the NOAMP-A Server.	
17. ☐	**NOAMP Server A:** Select **NETWORK OAM&P** for the server Role from the list.	
18. ☐	**NOAMP Server A:** Enter the System ID for the NOAMP Server.	
19. ☐	**NOAMP Server A:** Select the Hardware Profile from the list.	Select Hardware Profile: **Cloud UDR NOAMP** 
20. ☐	**NOAMP Server A:** Select the Network Element Name from the list. **NOTE:** After the Network Element Name is selected, the Interfaces fields are displayed.	
21. ☐	**NOAMP Server A:** Enter the site location. **NOTE:** Location is an optional field.	

Step	Procedure	Details
22. ☐	**NOAMP Server A:** 1. Enter the IP Addresses for the Server. 2. Set the Interface parameters according to to deployment type.	 1. Enter the IP Addresses for XMI and IMI networks. 2. Set the Interface device for XMI and IMI networks according to the network adapter assigment for the VM guest as viewable. See Appendix **B.3** step Error! Reference source not found. or Appendix Error! Reference source not found. step Error! Reference source not found.. 3. Leave the VLAN boxes unselected.
23. ☐	**NOAMP Server A:** Click **Add** under NTP Servers and add the address of the supplied NTP server.	 Set one or more NTP Server IP Addresses to the supplied NTP servers. It is recommended to have minimum of 3 and up to 4 external NTP servers for reliable functioning of NTP service. 
24. ☐	**NOAMP Server A:** Click **Info** to see a message stating **`Pre-Validation passed`**. Click **Apply**.	 

Step	Procedure	Details
25. ☐	**NOAMP Server A:** If the values provided match the network ranges assigned to the NOAMP NE, the banner information message shows that the data has been validated and committed to the DB.	
26. ☐	**NOAMP Server A:** Applying the Server Configuration File Navigate to **Main Menu → Configuration → Servers**.	
27. ☐	**NOAMP Server A:** The **Configuration →Servers** screen shows the added server in the list.	
28. ☐	**NOAMP Server A:** 1. Use the cursor to select the server just inserted. The row containing the server is highlighted in GREEN. 2. Click **Export**.	 
29. ☐	**NOAMP Server A:** Click **Info** to see a message showing a download link for the server configuration data.	 The configuration file is created and stored in the `/var/TKLC/db/filemgmt` directory. The configuration file has file name like `TKLCConfigData.<hostname>.sh`.

Step	Procedure	Details

30. ☐	**NOAMP Server A:**
	1. Access the command prompt.
	2. Log into the NOAMP-A server as the admusr user.
		`Login as: admusr`
		`root@10.250.xx.yy's password: <admusr_password>`
		`Last login: Mon Jul 30 10:33:19 2012 from 10.25.80.199`
		`[root@pc9040833-no-a ~]#`

31. ☐	**NOAMP Server A:** Switch to root user.	`[admusr@ pc9040833-no-a ~]$ su -` `password: <root_password>`

32. ☐	**NOAMP Server A:**
	Copy the server configuration file to the `/var/tmp` directory on the server, making sure to rename the file by omitting the server hostname from the file name.
		Example:
		`TKLCConfigData<.server_hostname>.sh` translates to `TKLCConfigData.sh`
		`# cp -p /var/TKLC/db/filemgmt/TKLCConfigData.NO-A.sh /var/tmp/TKLCConfigData.sh`
		NOTE: The server polls the `/var/tmp` directory for the presence of the configuration file and automatically runs it when the file is found.

33. ☐	**NOAMP Server A:**
	After the script completes, a broadcast message is sent to the terminal.
	Ignore the output and press **ENTER** to return to the command prompt.
	NOTE: The time to complete this step varies by server and may take from 3 to 20 minutes to complete.
		*** NO OUTPUT FOR ≈ 3-20 MINUTES ***
		`Broadcast message from root (Thu Dec 1 09:41:24 2011):`
		`Server configuration completed successfully!`
		`See /var/TKLC/appw/logs/Process/install.log for details.`
		`Please remove the USB flash drive if connected and reboot the server.`
		`<ENTER>`

34. ☐	**NOAMP Server A:**
	Configure the time zone
		`# set_ini_tz.pl <time zone>`
		NOTE: The following command example uses America/New_York time zone. Replace, as appropriate, with the time zone you have selected for this installation. For UTC, use `Etc/UTC`.
		`# set_ini_tz.pl "America/New_York"`

35. ☐	**NOAMP Server A:** Initiate a reboot of the NOAMP Server.	`# reboot`

36. ☐	**NOAMP Server A:**
	Wait until the server reboot is complete. Then, SSH into the NOAMP-A server.
		Wait approximately 9 minutes until the server reboot is complete.
		Using an SSH client such as putty, ssh to the NOAMP-A server.
		`login as: admusr`
		`root@10.250.xx.yy's password: <admusr_password>`
		`Last login: Mon Jul 30 10:33:19 2012 from 10.25.80.199`
		NOTE: If the server is not up, wait a few minutes and re-enter the **`ssh`** command. You can also try running the **`ping`** command to see if the server is up.

<table>
<tr><th>Step</th><th>Procedure</th><th>Details</th></tr>
<tr><td>37. ☐</td><td>NOAMP Server A:
Verify that the XMI and IMI IP addresses entered in step Error! Reference source not found. have been applied</td><td>

```
$ ifconfig |grep in |grep -v inet6
```

Example:

```
eth0   Link encap:Ethernet  HWaddr F0:92:1C:18:59:10
       inet addr:10.240.80.146  Bcast:10.240. xxx.xxx Mask:255.255.xxx.xxx
eth1   Link encap:Ethernet  HWaddr F0:92:1C:18:59:10
       inet addr:10.240.56.197  Bcast:10.240.xxx.xxx Mask:255.255.xxx.xxx
```

NOTE: The XMI and IMI addresses for the server can be verified by reviewing the server configuration through the Oracle Communications User Data Repository GUI.
Navigate to Main Menu → Configuration → Servers
Scroll to the line entry containing the hostname for the server.</td></tr>
<tr><td>38. ☐</td><td>NOAMP Server A:
Use the ntpq command to verify that the server has connectivity to the assigned Primary (and Secondary if one was provided) NTP servers.</td><td>

```
$ ntpq -np
     remote           refid      st t when poll reach   delay   offset  jitter
==============================================================================
*10.250.32.10    192.5.41.209     2 u  651 1024  377    0.339    0.583   0.048
+10.250.32.51    192.5.41.209     2 u  656 1024  377    0.416    0.641   0.086
```

</td></tr>
<tr><td></td><td colspan="2">IF CONNECTIVITY TO THE NTP SERVERS CANNOT BE ESTABLISHED, STOP AND HAVE THE IT GROUP PROVIDE A NETWORK PATH FROM THE OAM SERVER IP TO THE ASSIGNED NTP IP ADDRESSES.
AFTER THE NETWORK CONNECTIVITY IS ESTABLISHED TO THE ASSIGNED NTP IP ADDRESSES, THEN RESTART THIS PROCEDURE BEGINNING WITH STEP Error! Reference source not found. .</td></tr>
<tr><td>39. ☐</td><td>NOAMP Server A:
Run the alarmMgr to verify the current health of the server</td><td>

```
$ alarmMgr --alarmStatus
```

NOTE: This command should return no output on a healthy system.</td></tr>
<tr><td>40. ☐</td><td>NOAMP Server A:
Exit the SSH session for the NOAMP-A server</td><td>

```
$ exit
```

</td></tr>
<tr><td colspan="3">THIS PROCEDURE IS COMPLETE</td></tr>
</table>

5.2 Create Configuration for Remaining Servers

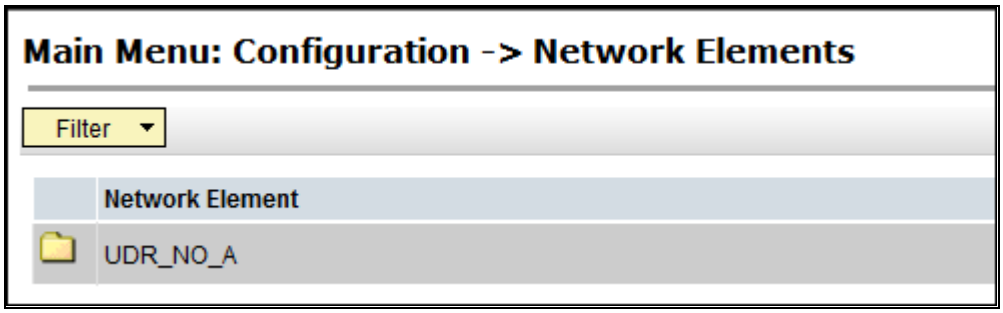
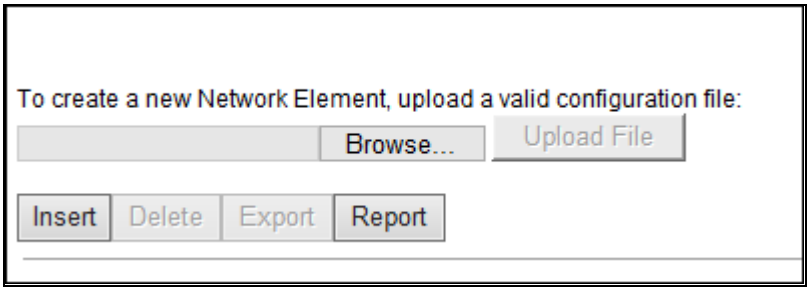
This procedure creates and configures all Oracle Communications User Data Repository Servers (Primary and DR Servers) except the first NOAMP-A server.

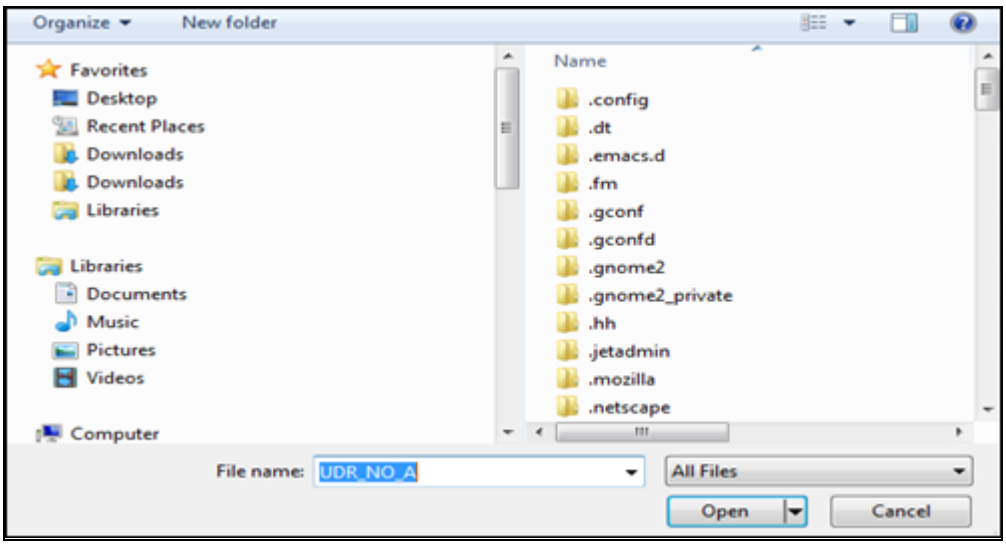
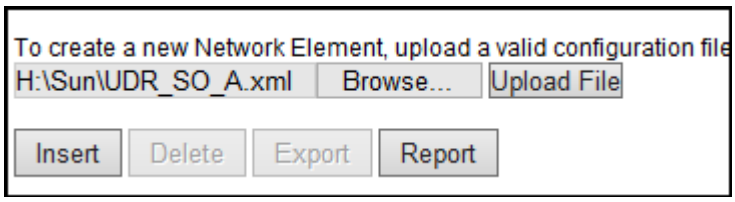
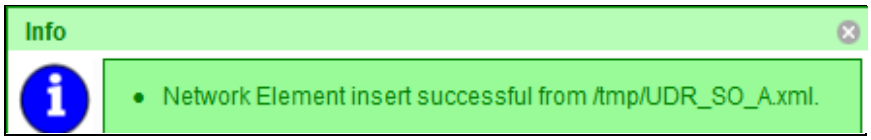
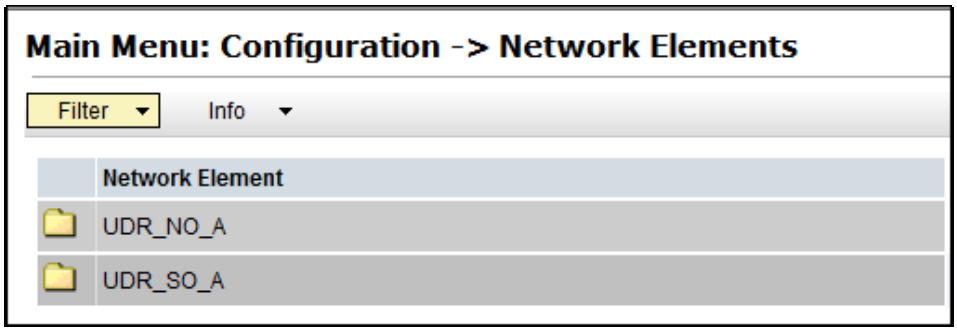
Requirements:

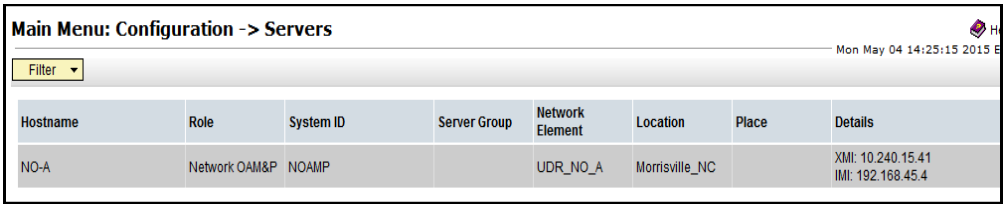
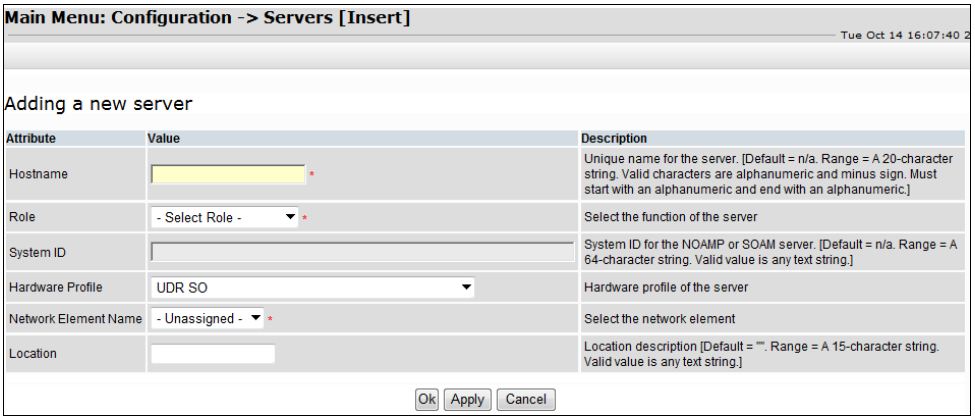
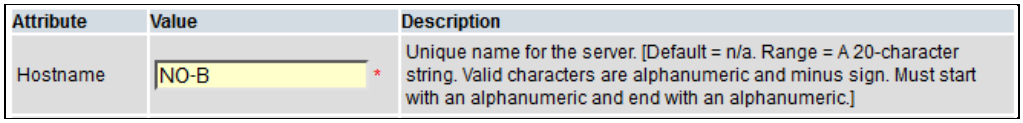
- S**ection 5.1 Configure NOAMP-A Server (1st NOAMP only)** has been completed

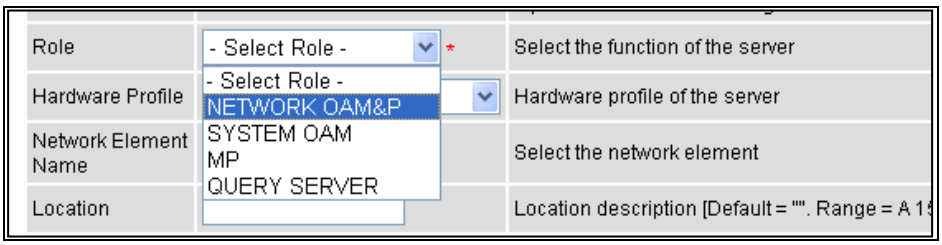
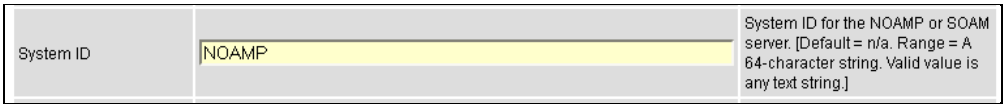
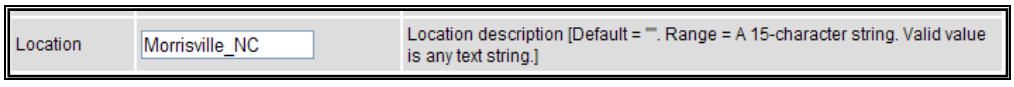
Check (√) each step as it is completed. Boxes have been provided for this purpose.

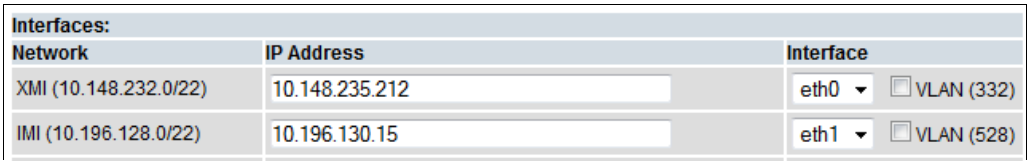
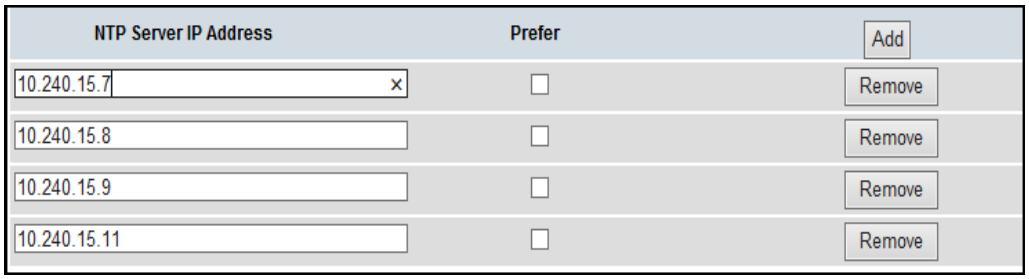
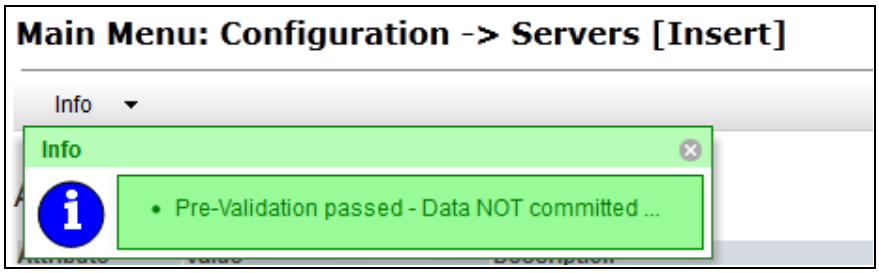
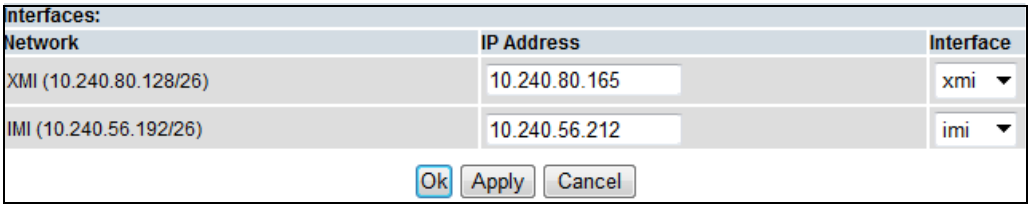
Procedure 6: Create Configuration for Remaining Servers

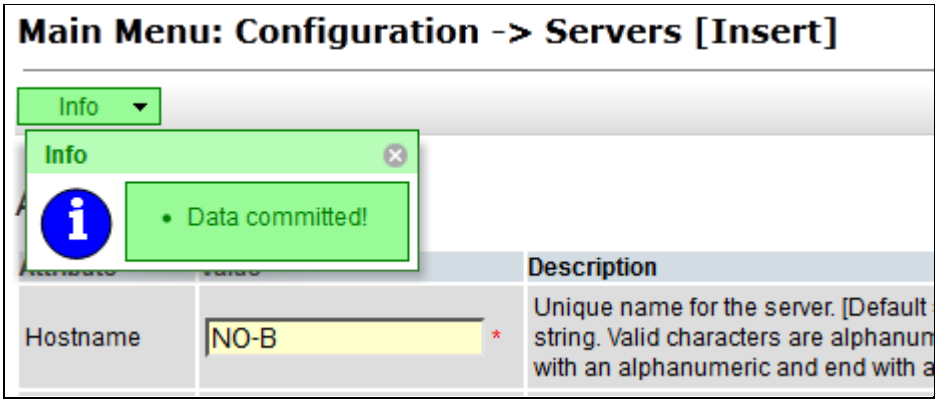
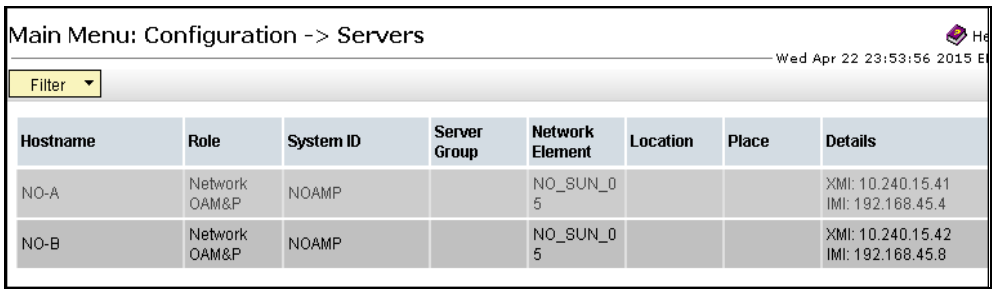
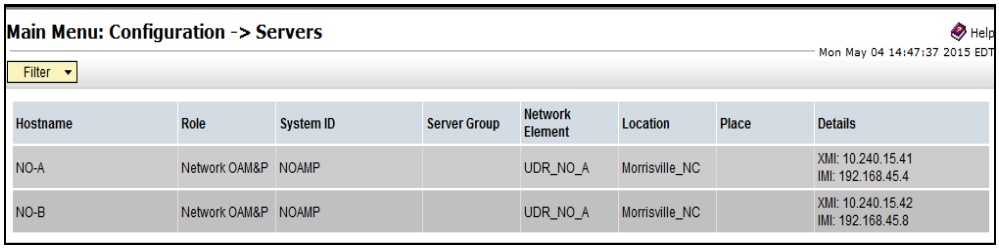
Step	Procedure	Details
1. ☐	**NOAMP Server A:** Launch an approved web browser and connect to the NOAMP Server A IP address **NOTE:** Select **Continue to this website (not recommended)** if the security certificate warning displays. Login to the GUI using the default user and password.	
For steps 4 through 8 add the remaing Network Elements one at a time. This includes the SO network Element for the Primary site and the DR elements (NO and SO) if present. (DR elements can be uploaded during DR install)		
2. ☐	**NOAMP Server A:** Configuring Network Element Navigate to **Main Menu → Configuration → Network Elements**	
3. ☐	**NOAMP Server A:** From the Configuration Network Elements screen, click **Browse**	

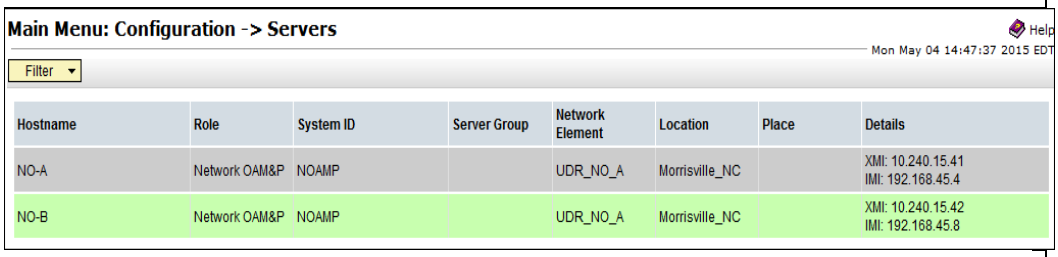
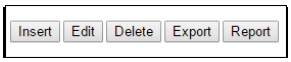
Step	Procedure	Details
4. ☐	**NOAMP Server A:** **NOTE:** This step assumes that the xml files were previously prepared, as described in Appendix C. 1. Select the location containing the site .XML file. 2. Select the .XML file. 3. Click **Open**.	
5. ☐	**NOAMP Server A:** Click **Upload File** in the bottom left corner of screen.	
6. ☐	**NOAMP Server A:** If the values in the XML file pass validation rules, the banner information message shows that the data has been successfully committed to the DB. **NOTE:** You may have to left mouse click the Info banner option in order to see the banner output.	 
NOTE: Steps 7 through 23 must be performed for all servers EXCEPT the first NOAMP-A server. These steps include a check box for NOAMP-A server. That check box is only referring to NOAMP-A servers that are not at the primary provisioning site, such as the NOAMP-A server at the disaster recovery (DR) site.		

Step	Procedure	Details
7. ☐	**NOAMP Server A:** Navigate to **Main Menu → Configuration → Servers**	 Mark the checkbox as the addition of each server is completed. ☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B ☐ MP-2 ☐ MP-2 ☐ MP-3 ☐ MP-4
8. ☐	**NOAMP Server A:** Click **Insert** at the bottom left.	 Mark the checkbox as the addition of each server is completed. ☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B ☐ MP-2 ☐ MP-2 ☐ MP-3 ☐ MP-4
9. ☐	**NOAMP Server A:** The Adding a new server configuration page opens.	 Mark the checkbox as the addition of each server is completed. ☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B ☐ MP-2 ☐ MP-2 ☐ MP-3 ☐ MP-4
10. ☐	**NOAMP Server A:** Enter the hostname for the server.	 Mark the checkbox as the addition of each server is completed. ☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B ☐ MP-2 ☐ MP-2 ☐ MP-3 ☐ MP-4

Step	Procedure	Details
11. ☐	**NOAMP Server A:** Select the server Role from the list.	 Mark the checkbox as the addition of each server is completed. ☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B ☐ MP-2 ☐ MP-2 ☐ MP-3 ☐ MP-4
12. ☐	**NOAMP Server A:** Enter the System ID for the server. **NOTE:** System ID is not required for MP.	 Mark the checkbox as the addition of each server is completed. ☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B ☐ MP-2 ☐ MP-2 ☐ MP-3 ☐ MP-4
13. ☐	**NOAMP Server A:** Select the Hardware Profile from the list.	• SOAM Select Hardware Profile: **Cloud UDR SOAM** • MP Select Hardware Profile: **Cloud UDR MP**  Mark the checkbox as the addition of each server is completed. ☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B ☐ MP-2 ☐ MP-2 ☐ MP-3 ☐ MP-4
14. ☐	**NOAMP Server A:** Select the Network Element name from the list. **NOTE:** After the Network Element name is selected, the Interfaces fields are displayed.	 **NOTE:** NO and DR pairs have their own Network element. SO pairs also have their own Network Element which they share with their associated MP. Mark the checkbox as the addition of each server is completed. ☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B ☐ MP-2 ☐ MP-2 ☐ MP-3 ☐ MP-4
15. ☐	**NOAMP Server A:** Enter the site location. **NOTE:** Location is an optional field.	 Mark the checkbox as the addition of each server is completed. ☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B ☐ MP-1 ☐ MP-2 ☐ MP-3 ☐ MP-4

Step	Procedure	Details
16. ☐	**NOAMP Server A:** 1. Enter the IP Addresses for the Server. 2. Set the Interface parameters according to to deployment type.	 1. Enter the IP Addresses for XMI and IMI networks. 2. Set the Interface device for XMI and IMI networks according to the network adapter assigment for the VM guest as viewable. See Appendix **B.3** step Error! Reference source not found. or Appendix Error! Reference source not found. step Error! Reference source not found.. 3. Leave the VLAN boxes unselected. Mark the checkbox as the addition of each server is completed. ☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B ☐ MP-1 ☐ MP-2 ☐ MP-3 ☐ MP-4
17. ☐	**NOAMP Server A:** Click **Add** in the NTP Servers section and add the addresses of the NTP servers.	 Set one or more NTP Server IP Addresses to the supplied NTP servers. It is recommended to have a minimum of 3 and up to 4 external NTP servers for reliable functioning of NTP service. Mark the checkbox as the addition of each server is completed. ☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B ☐ MP-1 ☐ MP-2 ☐ MP-3 ☐ MP-4
18. ☐	**NOAMP Server A:** 1. Click **Info** to see a message stating **`Pre-Validation passed`**. 2. Click **Apply**.	  Mark the checkbox as the addition of each server is completed. ☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B ☐ MP-1 ☐ MP-2 ☐ MP-3 ☐ MP-4

Step	Procedure	Details
19. ☐	**NOAMP Server A:** If the values provided match the network ranges assigned to the NE, click **Info** to see a message stating that the data has been validated and committed to the DB.	 Mark the checkbox as the addition of each server is completed. ☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B ☐ MP-1 ☐ MP-2 ☐ MP-3 ☐ MP-4
20. ☐	**NOAMP Server A:** Applying the Server Configuration File Navigate to **Main Menu → Configuration → Servers**	 Mark the checkbox as the addition of each server is completed. ☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B ☐ MP-1 ☐ MP-2 ☐ MP-3 ☐ MP-4
21. ☐	**NOAMP Server A:** The **Configuration →Servers** screen shows the added Server in the list.	 Mark the checkbox as the addition of each server is completed. ☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B ☐ MP-1 ☐ MP-2 ☐ MP-3 ☐ MP-4

Step	Procedure	Details
22. ☐	**NOAMP Server A:** 1. Use the cursor to select the server inserted. The row containing the server is highlighted in GREEN. 2. Click **Export**.	  Mark the checkbox as the addition of each server is completed. ☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B ☐ MP-1 ☐ MP-2 ☐ MP-3 ☐ MP-4
23. ☐	**VMware client:** Repeat this procedure to create configuration	Repeat this procedure to create configuration for each remaining server: ☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B ☐ MP-1 ☐ MP-2 ☐ MP-3 ☐ MP-4
THIS PROCEDURE IS COMPLETE		

5.3 Apply Configuration to Remaining Servers

This procedure applies the configuration to all Oracle Communications User Data Repository Servers (Primary and DR Servers) except the first NOAMP-A server.

REQUIREMENTS:

- Section 5.2 Create Configuration for Remaining Servers has been completed

Check (√) each step as it is completed. Boxes have been provided for this purpose.

Procedure 7: Apply Configuration to Remaining Servers

Step	Procedure	Details
1. ☐	**NOAMP Server A:** Connect to the NOAMP-A Server terminal at the Primary NOAMP site	SSH to the Primary NOAMP-A XMI IP_address. Mark the checkbox as the addition of each server is completed. ☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B ☐ MP-1 ☐ MP-2 ☐ MP-3 ☐ MP-4

2. ☐	**NOAMP Server A:**
	1. Access the command prompt.
	2. Log into the Primary NOAMP-A server as the admusr user.
		`login as: admusr`
		`admusr@10.250.xx.yy's password: <admusr_password>`
		`Last login: Mon Jul 30 10:33:19 2012 from 10.25.80.199`
		`$`
		Mark the checkbox as the addition of each server is completed.
		☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B
		☐ MP-1 ☐ MP-2 ☐ MP-3 ☐ MP-4

Step	Procedure	Details
3. ☐	**NOAMP Server A:** Change directory into the file management space	`[admusr@pc9040833-no-a ~]$ cd /var/TKLC/db/filemgmt` Mark the checkbox as the addition of each server is completed. ☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B ☐ MP-1 ☐ MP-2 ☐ MP-3 ☐ MP-4

4. ☐	**NOAMP Server A:**
	Get a directory listing and find the servers configuration files.
		`[admusr@pc9040833-no-a ~]$ ls -ltr TKLCConfigData*.sh`
		*** TRUNCATED OUTPUT ***
		`-rw-rw-rw- 1 root root 1257 Aug 17 14:01 TKLCConfigData.NOAMP-A.sh`
		`-rw-rw-rw- 1 root root 1311 Aug 17 14:30 TKLCConfigData.NO-B.sh`
		Mark the checkbox as the addition of each server is completed.
		☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B
		☐ MP-1 ☐ MP-2 ☐ MP-3 ☐ MP-4

5. ☐	**NOAMP Server A:**
	Copy the configuration files to the target server based on the server name of the configuration file.
		`[admusr@pc9040833-no-a ~]$ scp -p <configuration file-a> <Associated_Server_XMI_IP>:/tmp`
		`admusr@10.240.39.4's password: <admusr_password>`
		`TKLCConfigData.so-carync-a.sh 100% 1741 1.7KB/s 00:00`
		`[root@no-mrsvnc-a filemgmt]$`
		Mark the checkbox as the addition of each server is completed.
		☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B
		☐ MP-1 ☐ MP-2 ☐ MP-3 ☐ MP-4

6. ☐	**NOAMP Server A:**
	Connect to the target server which has received a configuration file copy in the previous step
		`[admusr@pc9040833-no-a ~]$ ssh <Associated_Server_XMI_IP>`
		`admusr@192.168.1.10's password: <admusr_password>`
		Mark the checkbox as the addition of each server is completed.
		☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B
		☐ MP-1 ☐ MP-2 ☐ MP-3 ☐ MP-4

7. ☐	**Target Server:**
	Copy the server configuration file to the `var/tmp` directory on the server, making sure to rename the file by omitting the server hostname from the file name.
		Example:
		`TKLCConfigData.<server_hostname>.sh` translates to `TKLCConfigData.sh`
		`[admusr@hostname1326744539 ~]$ sudo cp -p /tmp/TKLCConfigData.NO-B.sh /var/tmp/TKLCConfigData.sh`
		`[admusr@hostname1326744539 ~]$`
		NOTE: The server polls the `/var/tmp` directory for the presence of the configuration file and automatically runs the file when it is found.
		Mark the checkbox as the addition of each server is completed.
		☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B
		☐ MP-1 ☐ MP-2 ☐ MP-3 ☐ MP-4

Step	Procedure	Details

8. ☐	**Target Server:**
	After the script completes, a broadcast message is sent to the terminal.
	Ignore the output and press **ENTER** to return to the command prompt.
	NOTE: The time to complete this step varies by server and can take from 3 to 20 minutes to complete.
		****** There is no output for approximately 3 to 20 MINUTES ******
		`Broadcast message from root (Thu Dec 1 09:41:24 2011):`
		`Server configuration completed successfully!`
		`See /var/TKLC/appw/logs/Process/install.log for details.`
		`Please remove the USB flash drive if connected and reboot the server.`
		Press **ENTER**
		`[admusr@hostname1326744539 ~]$`
		Mark the checkbox as the addition of each server is completed.
		☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B
		☐ MP-1 ☐ MP-2 ☐ MP-3 ☐ MP-4

9. ☐	**Target Server:** Initiate a reboot of the Server.	`[admusr@hostname1326744539 ~]$ sudo reboot` Mark the checkbox as the addition of each server is completed. ☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B ☐ MP-1 ☐ MP-2 ☐ MP-3 ☐ MP-4

10. ☐	**NOAMP Server A:**
	The SSH session for the target server was terminated in the previous step.
		Step 9 closes the ssh session with the server and returns you to the NOAMP server console prompt.
		`Connection to 192.168.x.xx closed by remote host.`
		`Connection to 192.168.x.xx closed.`
		`$`
		Mark the checkbox as the addition of each server is completed.
		☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B
		☐ MP-1 ☐ MP-2 ☐ MP-3 ☐ MP-4

11. ☐	**NOAMP Server A:**
	Wait until server reboot is complete. Then, SSH into the target server using its XMI address.
		Wait approximately 9 minutes until the server reboot is complete.
		Using an SSH client such as Putty, ssh to the target server using admusr credentials and the *<XMI IP Address>*.
		`[admusr@pc9040833-no-a ~]$ ssh 192.168.1.xx`
		`admusr@192.168.x.xx's password: <admusr_password>`
		NOTE: If the server is not up, wait a few minutes and re-enter the **`ssh`** command. You can also try running the **`ping 192.168.1.xx`** command to see if the server is up.
		Mark the checkbox as the addition of each server is completed.
		☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B
		☐ MP-1 ☐ MP-2 ☐ MP-3 ☐ MP-4

Step	Procedure	Details

12. ☐	**Target Server:**
	Verify that the XMI and IMI IP addresses entered in Section **5.2** step Error! Reference source not found. have been applied
		`$ ifconfig |grep in |grep -v inet6`
		`control Link encap:Ethernet HWaddr 52:54:00:6C:3C:B4`
		`inet addr:192.168.xx.xx Bcast:192.168.xx.xxx Mask:255.255.xxx.xxx`
		`imi Link encap:Ethernet HWaddr 52:54:00:F6:DC:4A`
		`inet addr:169.254.xx.xx Bcast:169.254.x.xxx Mask:255.255.xxx.xx`
		`lo Link encap:Local Loopback`
		`inet addr:127.0.x.x Mask:255.0.x.x`
		`xmi Link encap:Ethernet HWaddr 52:54:00:0F:1F:3B`
		`inet addr:10.250.xx.xx Bcast:10.250.39.31 Mask:255.255.xx.xx`
		NOTE: The XMI and IMI addresses for the server can be verified by reviewing the server configuration through the Oracle Communications User Data Repository GUI.
		1. Navigate to **Main Menu → Configuration → Servers**
		2. Scroll to line entry containing the hostname for the server.
		Mark the checkbox as the addition of each server is completed.
		☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B
		☐ MP-1 ☐ MP-2 ☐ MP-3 ☐ MP-4

13. ☐	**Target Server:**
	Use the **`ntpq`** command to verify that the server has connectivity to the assigned Primary and Secondary NTP servers.
		`$ ntpq -np`
		`remote refid st t when poll reach delay offset jitter`
		`==============================================================================`
		`*10.250.32.10 192.5.41.209 2 u 651 1024 377 0.339 0.583 0.048`
		`+10.250.32.51 192.5.41.209 2 u 656 1024 377 0.416 0.641 0.086`
		`[root@pc9040725-no-a ~]$`
		If the offset value is in excess of five seconds, run these commands to sync time manually:
		`$ sudo service ntpd stop`
		`Shutting down ntpd: [ OK ]`
		`$ sudo ntpdate <Remote_NTP_Server_IP>`
		`$ sudo service ntpd start`
		`Starting ntpd: [ OK ]`
		Mark the checkbox as the addition of each server is completed.
		☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B
		☐ MP-1 ☐ MP-2 ☐ MP-3 ☐ MP-4

14. ☐		***IF CONNECTIVITY TO THE NTP SERVERS CANNOT BE ESTABLISHED, STOP AND PERFORM THE STEPS 15 through 17:***
15. ☐	**Target Server:** Run the **`alarmMgr`** to verify the current health of the server	`$ alarmMgr --alarmStatus` **NOTE:** This command should return no output on a healthy system. Mark the checkbox as the addition of each server is completed. ☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B ☐ MP-1 ☐ MP-2 ☐ MP-3 ☐ MP-4

Step	Procedure	Details

16. ☐	**Target Server:**
	Exit the SSH session for the target server
		`$ exit`
		`logout`
		`Connection to 192.168.1.16 closed.`
		`#`
		Mark the checkbox as the addition of each server is completed.
		☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B
		☐ MP-1 ☐ MP-2 ☐ MP-3 ☐ MP-4

17. ☐	**NOAMP Server A:**
	Exit terminal session
		`# exit`
		`logout`
		`Connection to 192.168.1.4 closed.`
		`#`

THIS PROCEDURE IS COMPLETE		

5.4 Configure XSI Networks (All SOAM Sites)

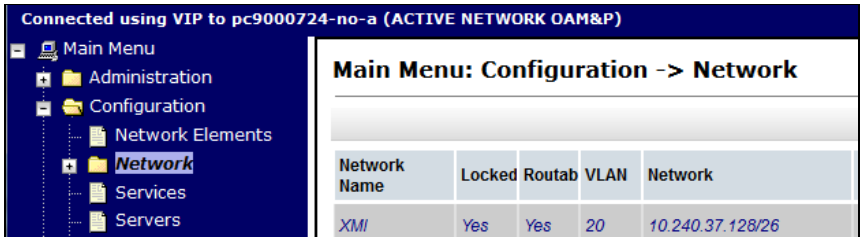
This procedure configures the XSI networks used on MP to support signaling traffic.

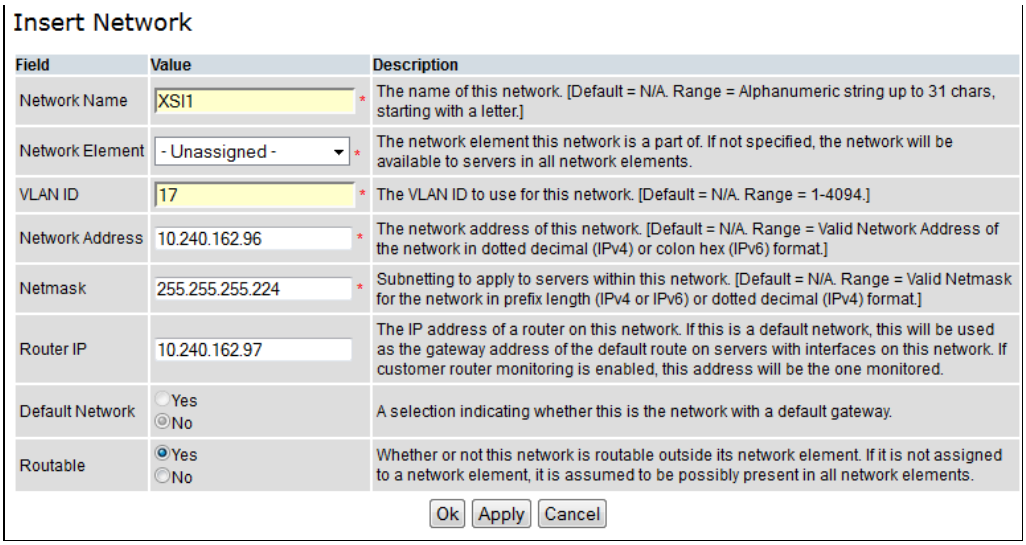
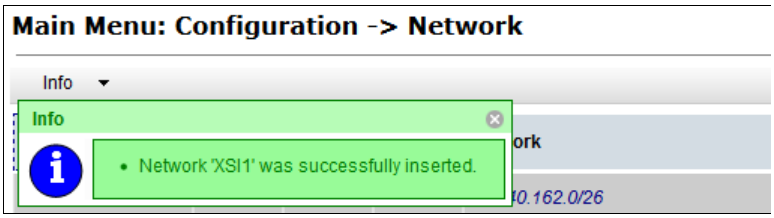
Requirements:

- Section 5.3 Apply Configuration to Remaining Servers has been completed

NOTE: If deploying two sites use the same name for both XSI networks.

Procedure 8: Configure XSI Networks

Step	Procedure	Details
1. ☐	**NOAMP Server A:** Launch an approved web browser and connect to the NOAMP Server A IP address **NOTE:** Select **Continue to this website (not recommended)** if the security certificate warning displays. Login to the GUI using the default user and password.	
2. ☐	**NOAMP Server A** Navigate to **Main Menu → Configuration →Network**	

<table>
<tr><th>Step</th><th>Procedure</th><th>Details</th></tr>
<tr><td>3. ☐</td><td>NOAMP Server A
Add the XSI1 network</td><td>Click  (Insert).
 
Enter the information for the XSI1 network according to your network parameters. The default values for Network Element (Unassigned), Default Network (No), and Routable (Yes) must be retained.
ComAgent Service may be configured to run on XSI1 in Section 7.3. In such case, the XSI1 network sis used for MP to NOAMP ComAgent Traffic.
This network may or may not be used for MP Signaling Traffic.
NOTES
• Network names can be overloaded to support multiple subnets. When defining network for ComAgent Service, use same network name for Primary and DR Site.
• VLANs are not used in the context of this document, though VLAN ID is a required field on this screen. Enter any number in the valid range.</td></tr>
<tr><td>4. ☐</td><td>NOAMP Server A
Repeat as required</td><td>Repeat step 3 of this procedure to Insert additional signaling networks (XSI2, and so on) if applicable.</td></tr>
<tr><td>5. ☐</td><td>NOAMP Server A
The new XSI network is displayed along with a success message.</td><td>  </td></tr>
<tr><td colspan="3">THIS PROCEDURE IS COMPLETE</td></tr>
</table>

6. OAM PAIRING

6.1 OAM Pairing for Primary NOAMP Servers (1st NOAMP site only)

During the OAM Pairing procedure, various errors may be seen at different stages of the procedure. During the execution of a step, you are is directed to ignore errors related to values other than the ones referenced by that step.

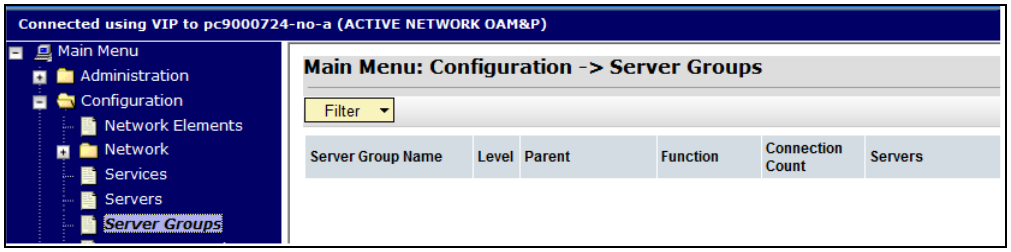
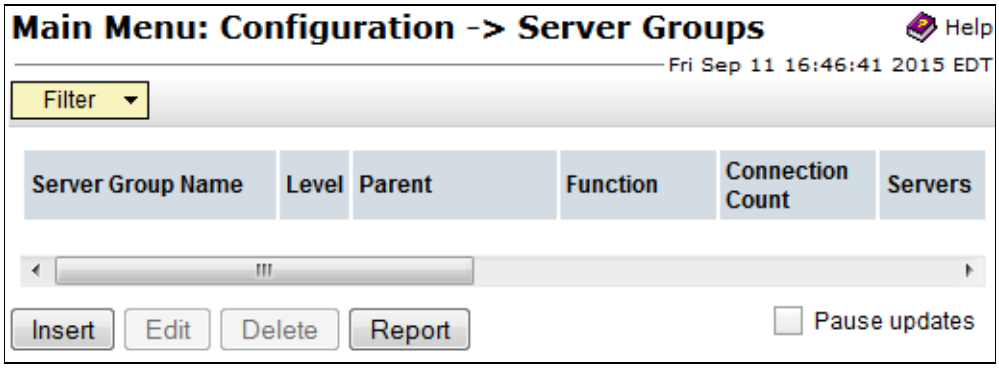
This procedure creates active/standby pair for the NOAMP servers at the Primary Provisioning Site.

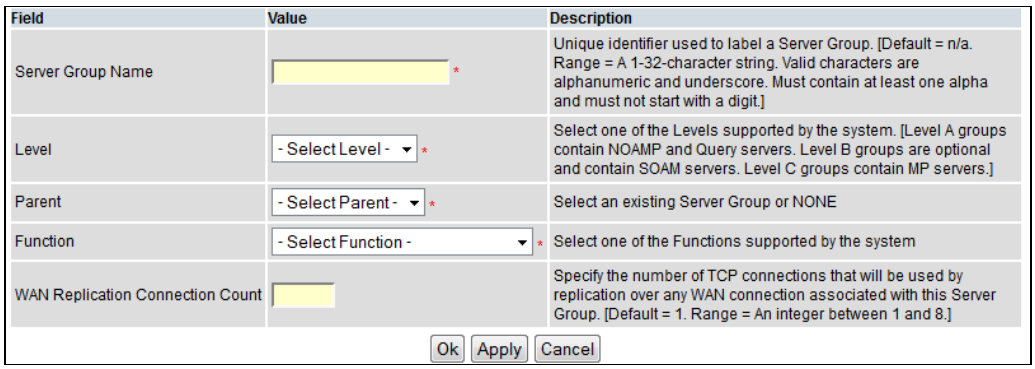
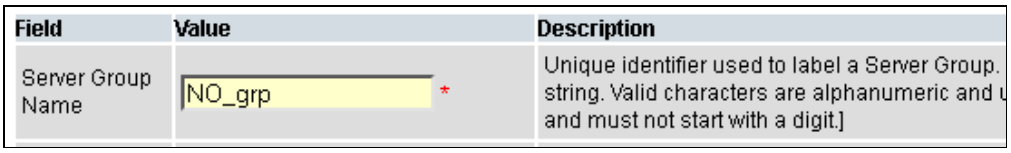
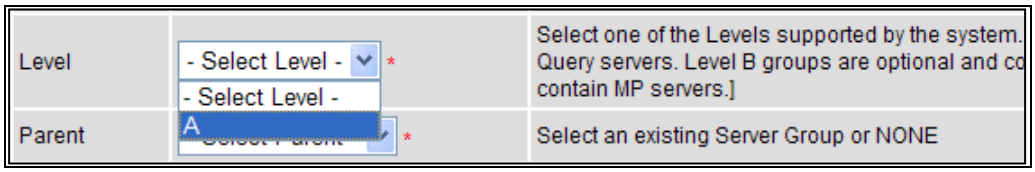
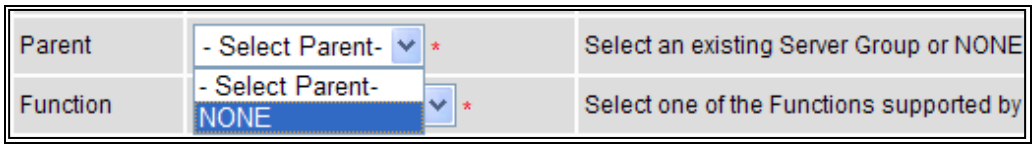
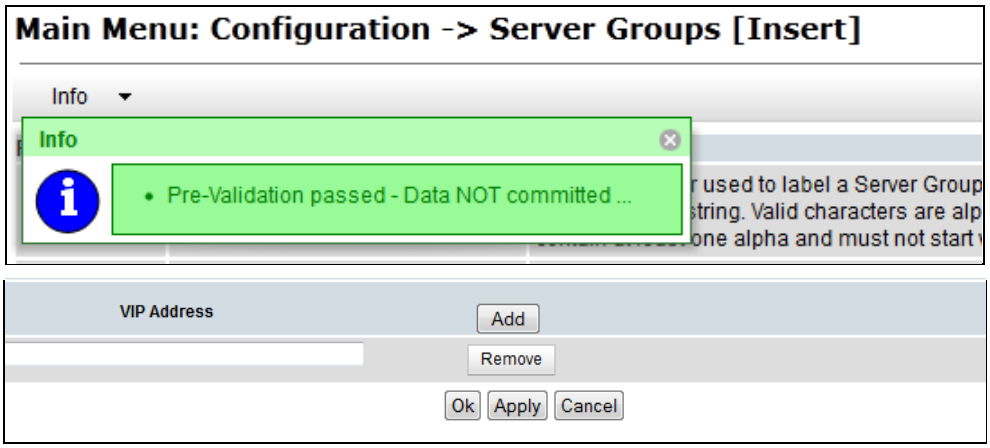
Requirements:

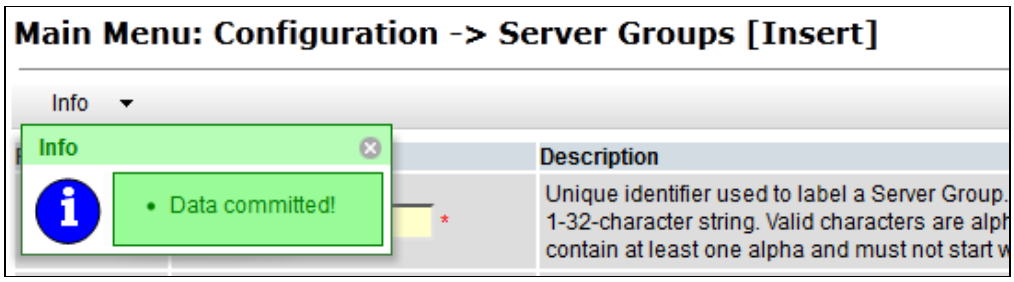
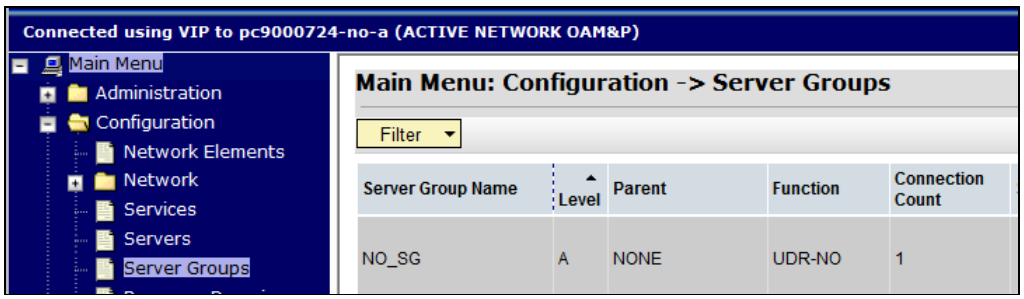
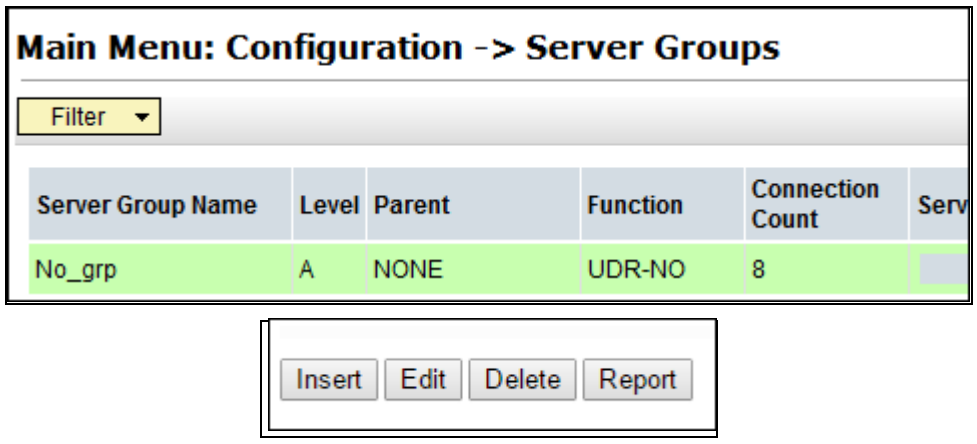
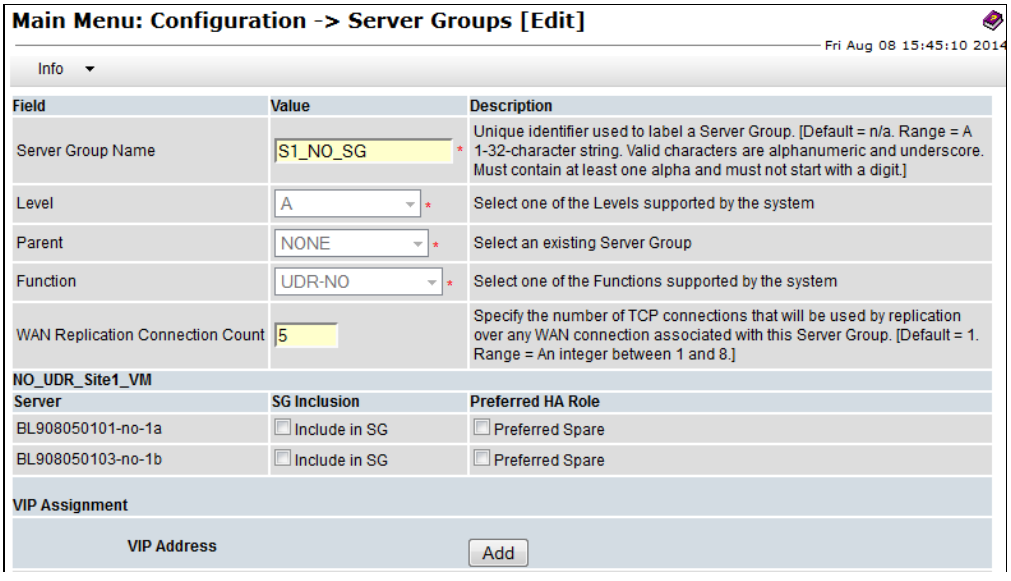
- Section **5.3 Apply Configuration to Remaining Servers** has been completed

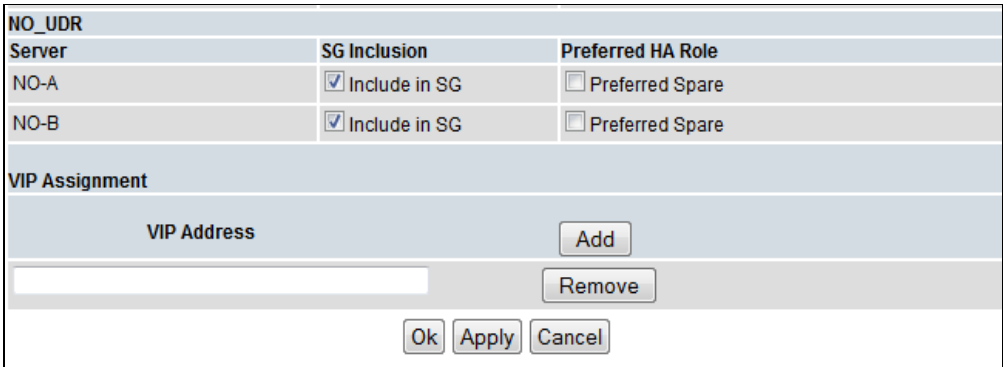
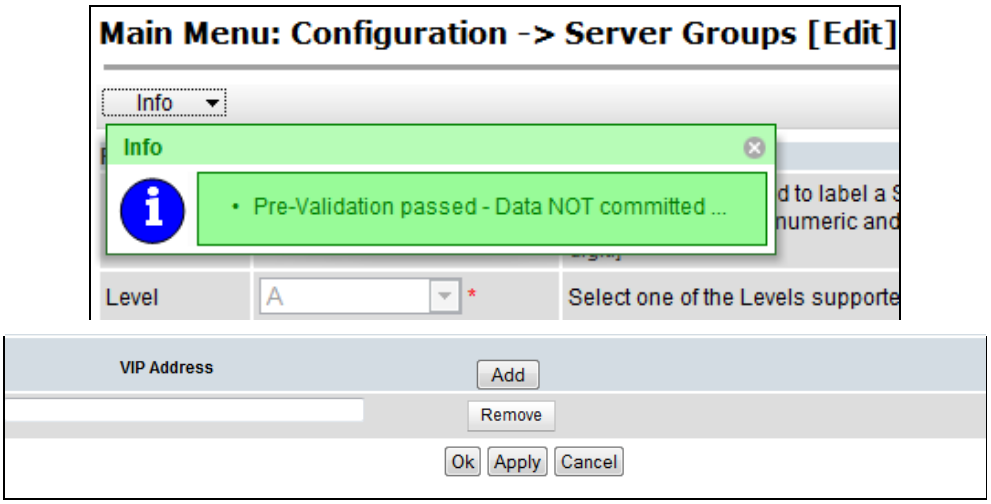
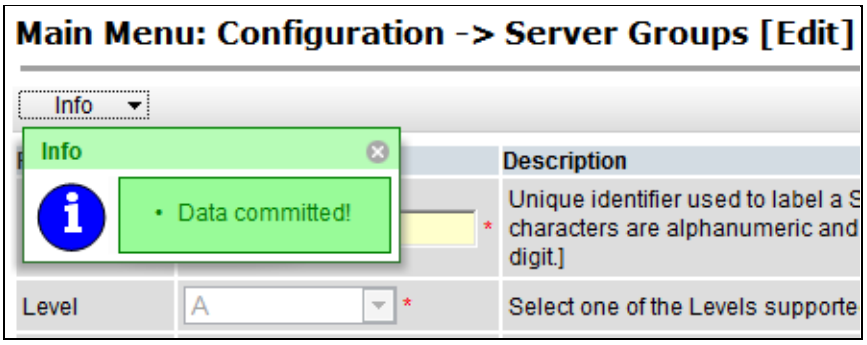
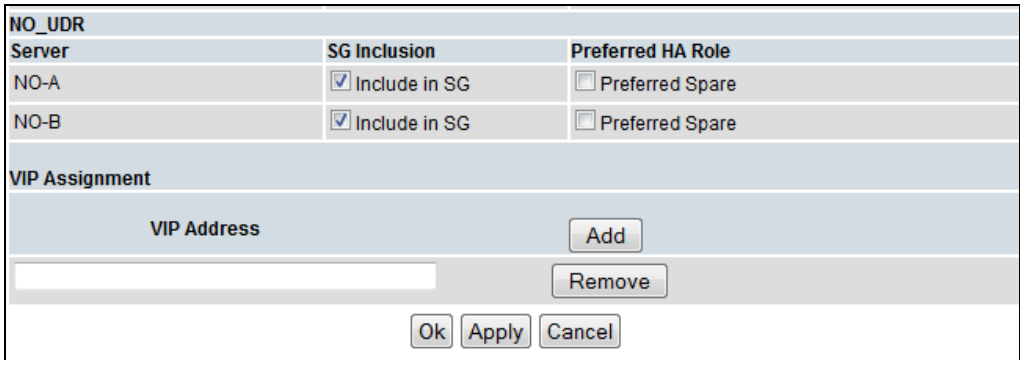
Check (√) each step as it is completed. Boxes have been provided for this purpose.

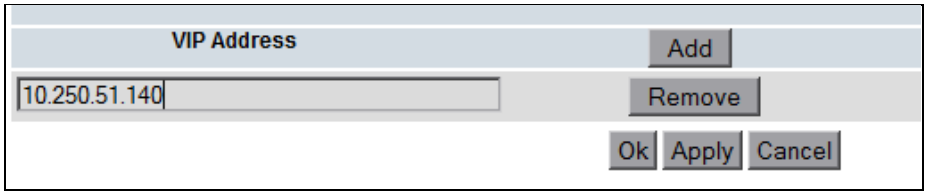
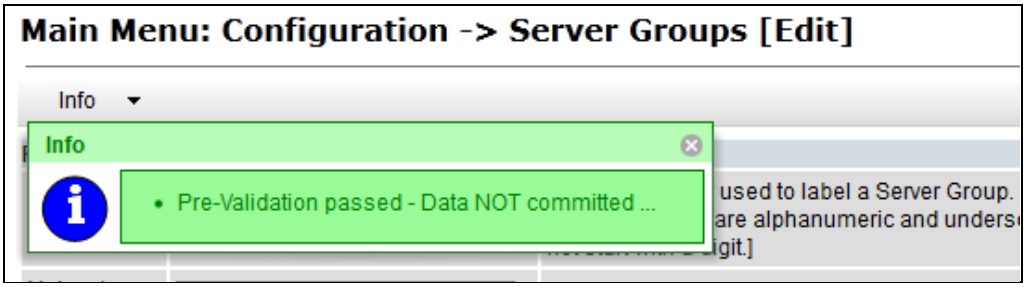
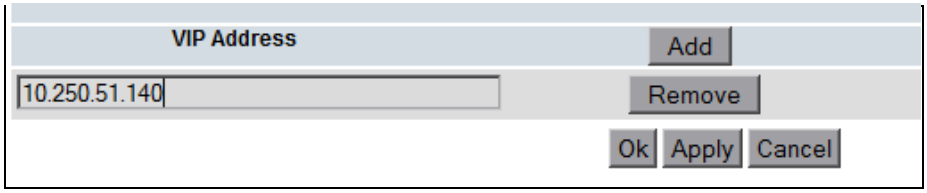
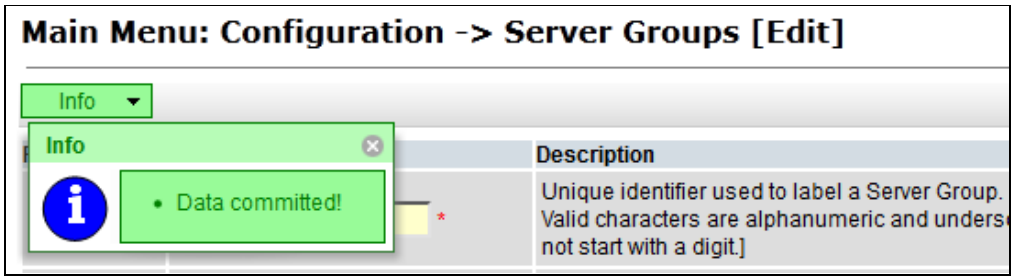
Procedure 9: OAM Pairing for Primary NOAMP Servers (1st NOAMP site only)

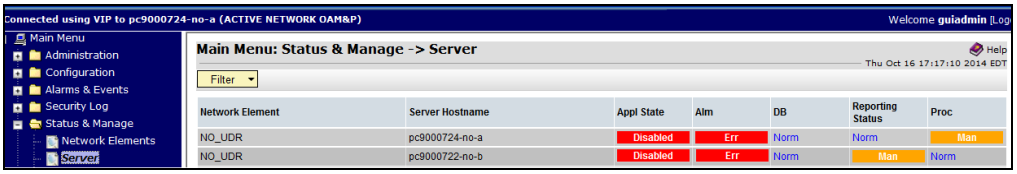
Step	Procedure	Details
1. ☐	**NOAMP Server A:** Launch an approved web browser and connect to the NOAMP Server A IP address **NOTE:** Select **Continue to this website (not recommended)** if the security certificate warning displays. Login to the GUI using the default user and password.	
2. ☐	**NOAMP Server A:** Configuring Server Group Navigate to **Main Menu → Configuration → Server Groups**	
3. ☐	**NOAMP Server A:** Click Insert from the bottom left corner of the screen. **NOTE:** You may have to scroll to see **Insert**	

Step	Procedure	Details
4. ☐	**NOAMP Server A:** The Server Groups [Insert] screen opens.	
5. ☐	**NOAMP Server A:** Enter the Server Group Name.	
6. ☐	**NOAMP Server A:** Select **A** for the Level.	
7. ☐	**NOAMP Server A:** Select **None** for the Parent.	
8. ☐	**NOAMP Server A:** Select **UDR-NO** for Function.	
9. ☐	**NOAMP Server A:** Enter 8 for the WAN Replication Connection Count.	
10. ☐	**NOAMP Server A:** Click **Info** to see a message stating **`Pre-Validation passed`**. Click **Apply**.	

Step	Procedure	Details
11. ☐	**NOAMP Server A:** Click **Info** to see a message stating **`Data committed`**.	
12. ☐	**NOAMP Server A:** Navigate to **Main Menu → Configuration → Server Groups**	
13. ☐	**NOAMP Server A:** 1. Select the Server Group entry that was added. The line entry is highlighted in GREEN. 2. Cick **Edit** from the bottom left corner of the screen. **NOTE:** You may have to scroll to see **Edit**	
14. ☐	**NOAMP Server A:** The Server Groups [Edit] screen opens.	

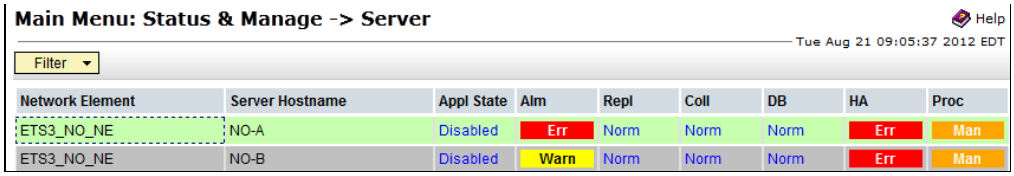
Step	Procedure	Details
15. ☐	**NOAMP Server A:** Select **SG Inclusion** to include the A and B servers into the NOAMP Server Group. **NOTE:** For single server installation, only NO-A is displayed; therefore only one server is selected.	
16. ☐	**NOAMP Server A:** Click **Info** to see a message stating **`Pre-Validation passed`**. Click **Apply**.	
17. ☐	**NOAMP Server A:** Click **Info** to see a message stating **`Data committed`**.	
18. ☐	**NOAMP Server A:** Click **Add** for the VIP Address. **NOTE**: VIP Address optional for Single Server Configuration.	

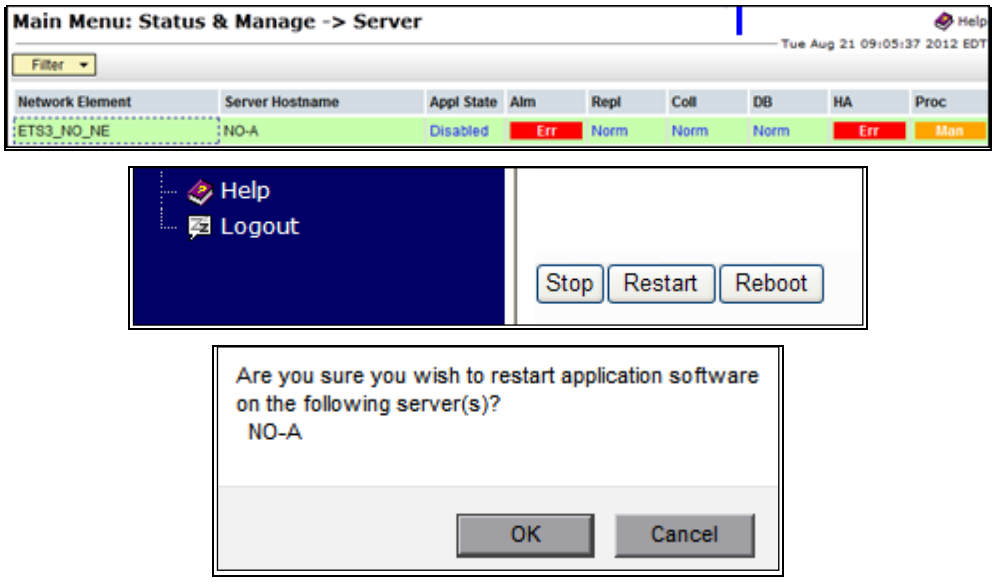
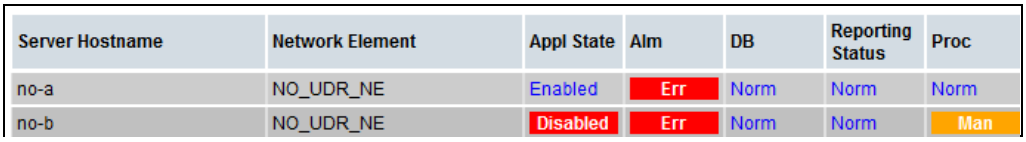
Step	Procedure	Details
19. ☐	**NOAMP Server A:** Enter the VIP Address	
20. ☐	**NOAMP Server A:** Click **Info** to see a message stating **`Pre-Validation passed`**. Click **Apply**.	 
21. ☐	**NOAMP Server A:** Click **Info** to see a message stating **`Data committed`**.	
22. ☐	**NOAMP Server A:** Click **Logout** on the OAM A server GUI.	
23. ☐	***IMPORTANT: Wait at least 5 minutes before proceeding to step 24.***	After the servers are paired within a server group, they establish a master/slave relationship for high availability (HA). It can take several minutes for this process to be completed. **NOTE:** Single Server Configuration does not have to establish the master/slave relationship for high availability (HA). Allow a minimum of 5 minutes before continuing to the next step.

Step	Procedure	Details
24. ☐	**Active NOAMP VIP:** Launch an approved web browser and connect to the NOAMP Server A IP address **NOTE:** Select **Continue to this website (not recommended)** if the security certificate warning displays. Login to the GUI using the default user and password.	
25. ☐	**NOAMP VIP:** Restarting the NOAMP Server Application Navigate to **Main Menu → Status & Manage → Server**.	Normal or Low Capacity Configuration:  Single Server Configuration: 
26. ☐	**NOAMP VIP:** 1. The A and B servers are listed in the right panel. **NOTE:** For single server, only the A server is listed. 2. Verify that the DB status shows Norm and the Proc status shows Man for the servers before proceeding to the next step.	Normal or Low Capacity Configuration: Single Server Configuration:

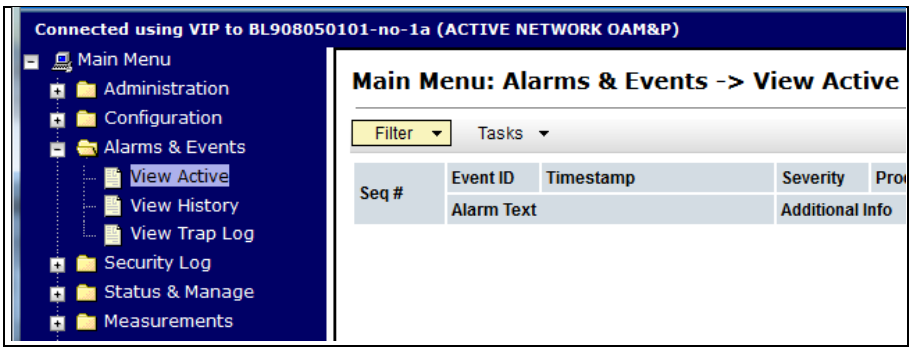
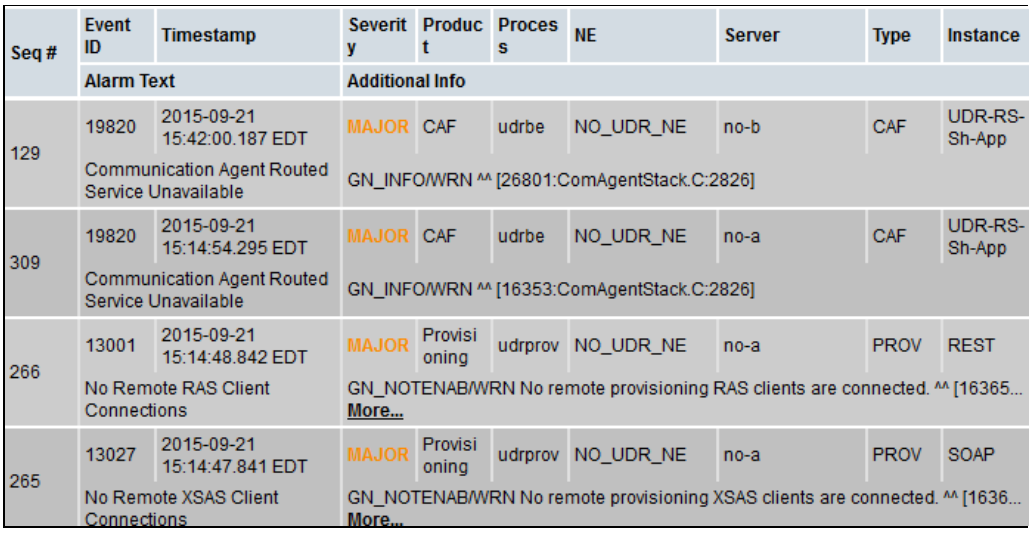
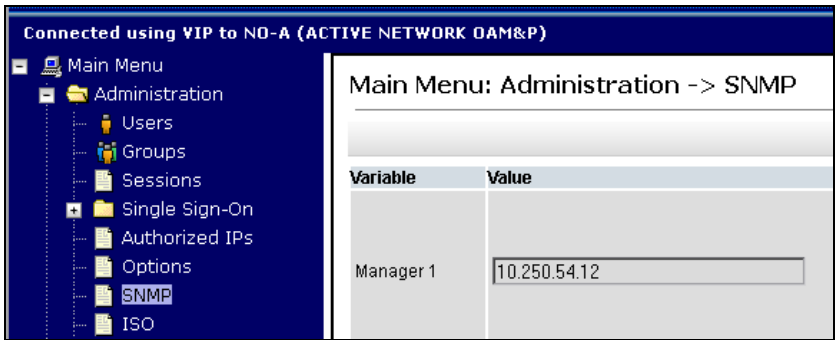
Server Hostname	Network Element	Appl State	Alm	DB	Reporting Status	Proc
no-a	NO_UDR_NE	Disabled	Err	Norm	Norm	Man
no-b	NO_UDR_NE	Disabled	Err	Norm	Norm	Man

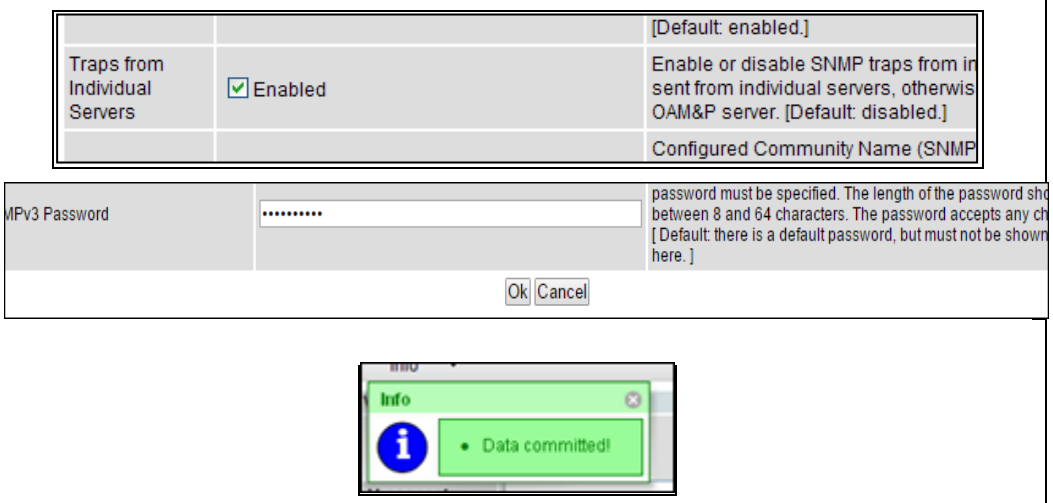
Server Hostname	Network Element	Appl State	Alm	DB	Reporting Status	Proc
no-a	NO_UDR_NE	Disabled	Err	Norm	Norm	Man

<table>
<tr><th>Step</th><th>Procedure</th><th>Details</th></tr>
<tr><td>27. ☐</td><td>NOAMP VIP:
1. Select NOAMP Server A. The line entry is highlighted in GREEN.
2. Click Restart from the bottom left corner of the screen.
3. Click OK on the confirmation dialogue.
4. Click Info to see a message for NOAMP Server A stating: <code>Successfully restarted application</code>.
NOTE: You may have to scroll to see Restart.</td><td>Normal Configuration:
 

Single Server Configuration:
 
</td></tr>
<tr><td>28. ☐</td><td>NOAMP VIP:
Verify that the Appl State shows Enabled and that the DB, Reporting Status, and Proc status columns show Norm for NOAMP Server A before proceeding to the next step.</td><td> 

NOTE: If you want to refresh the server status screen before the default setting of 15 to 30 seconds. This can be done by reselecting Status & Manage → Server option from the Main menu on the left.</td></tr>
<tr><td>29. ☐</td><td>NOAMP VIP:
Restart NOAMP Server B.</td><td>NOTE: Do not perform this step for single server installations.
Repeat steps Error! Reference source not found. and Error! Reference source not found. to restart NOAMP Server B.</td></tr>
</table>

Step	Procedure	Details
30. ☐	**NOAMP VIP:** Verifying the NOAMP server alarm status Navigate to **Main Menu → Alarms & Events → View Active**.	
31. ☐	**NOAMP VIP:** Verify that the noted Event IDs are the only alarms on the system at this time.	 Verify that the following Event IDs are the only alarms: **13075** Provisioning Interfaces Disabled **19820** Communication Agent Routed Service Unavailable **NOTE:** It may take a few minutes for residual process alarms to clear.
32. ☐	**NOAMP VIP:** Configuring SNMP for Traps from Individual Servers Navigate to **Main Menu → Administration → Remote Servers → SNMP Trapping**	

Step	Procedure	Details
33. ☐	• NOAMP VIP: 1. Select **Traps from Individual Servers.** 2. Click **OK** located at the bottom of the screen. 3. Verify that a banner message stating **`Data committed`** is received.	
34. ☐	**NOAMP VIP:** Click **Logout** on the server GUI.	
THIS PROCEDURE IS COMPLETE		

6.2 OAM Pairing for SOAM and DR Sites (All SOAM and DR sites)

During the OAM Pairing procedure, various errors may be seen at different stages of the procedure. During the execution of a step, you are directed to ignore errors related to values other than the ones referenced by that step.

The steps in this procedure are for all SOAM servers and the DR NOAMP servers.

This procedure creates active/standby pair for the SOAM servers at any site or the DR NOAMP Servers.

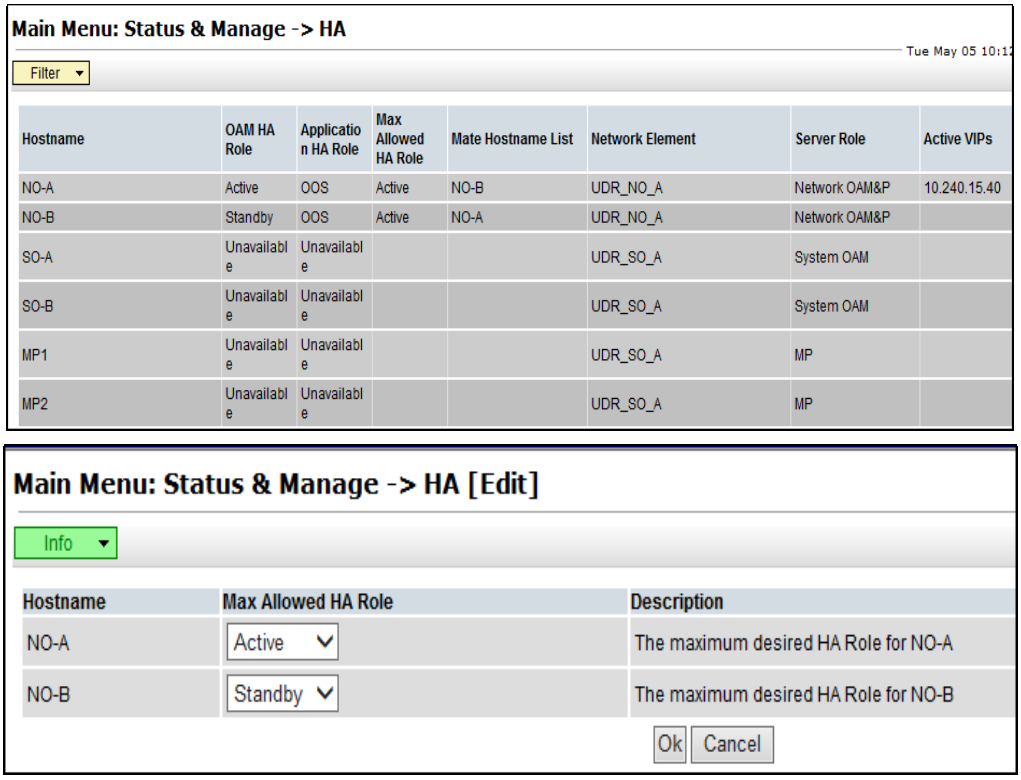
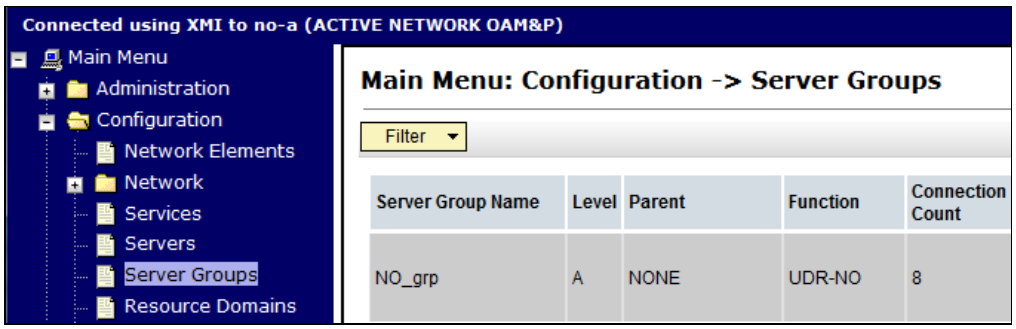
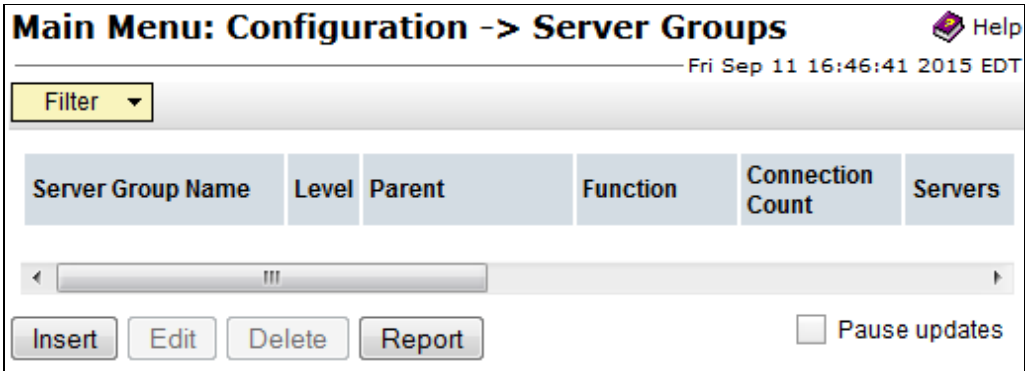
Requirements:

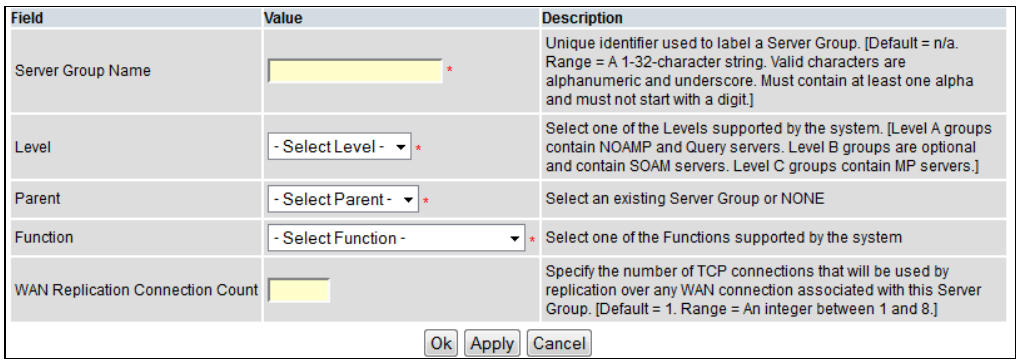
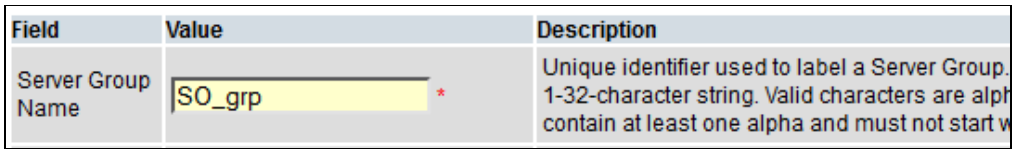
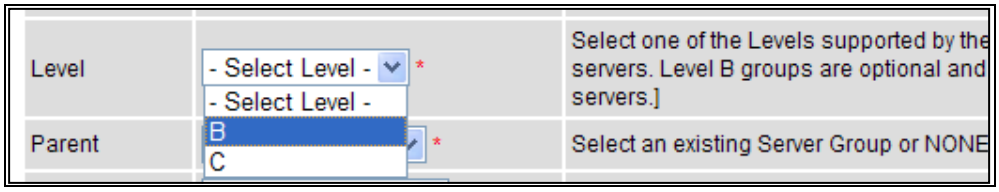
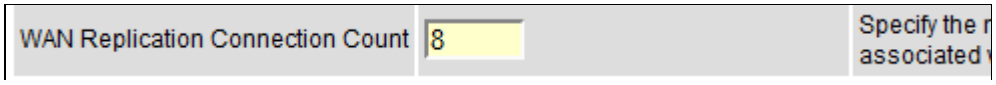
- Section 5 Oracle Communications User Data Repository Server Configuration has been completed
- Section 6.1 OAM Pairing for Primary NOAMP Servers (1st NOAMP site only) has been completed

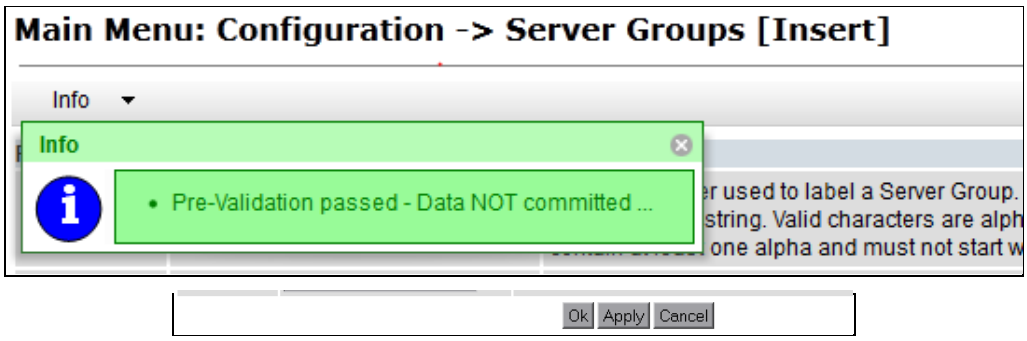
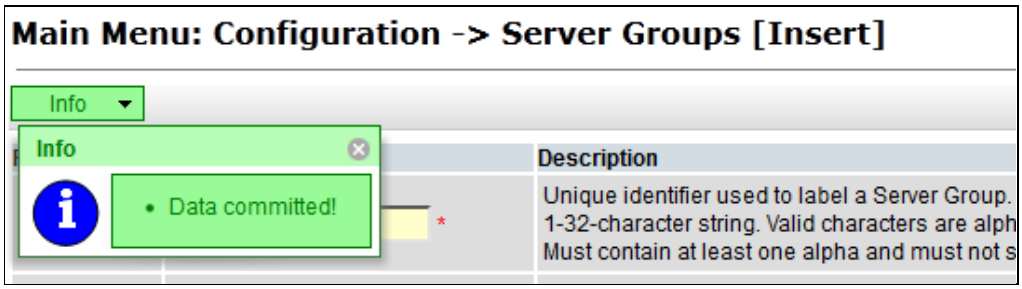
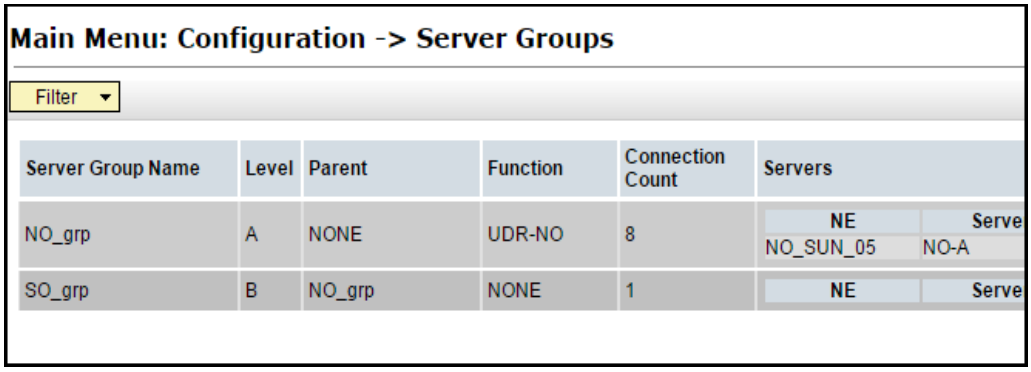
Check (√) each step as it is completed. Boxes have been provided for this purpose.

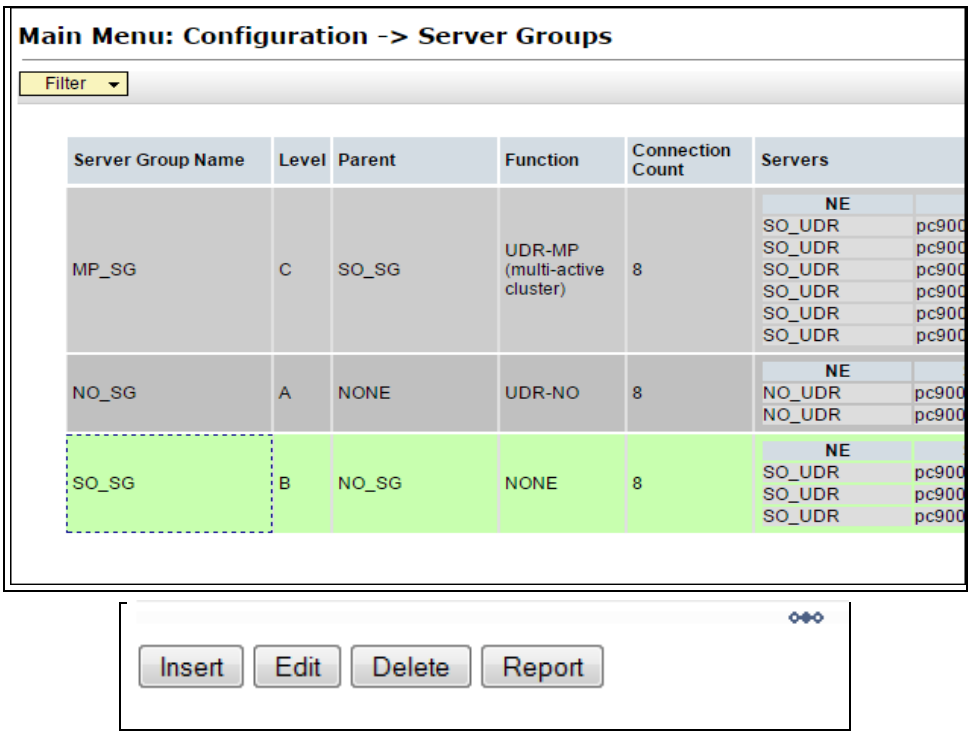
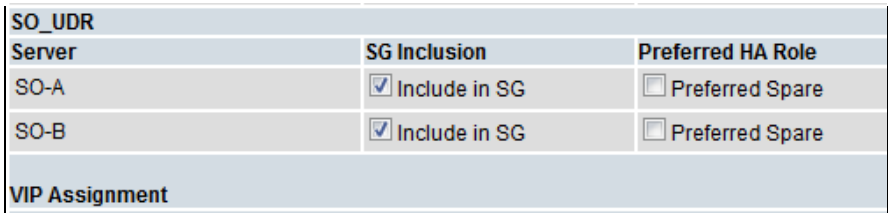
Procedure 10: OAM Pairing for SOAM and DR Sites (All SOAM and DR sites)

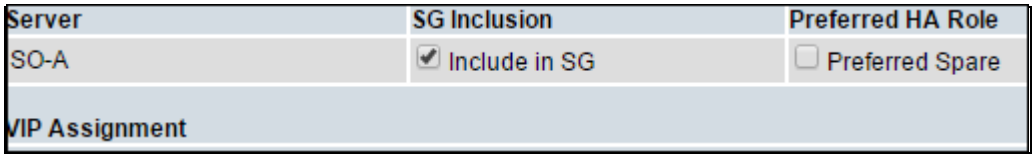
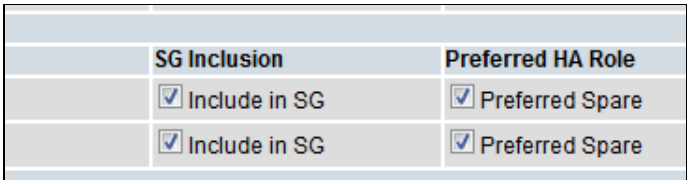
Step	Procedure	Details
1. ☐	**Active NOAMP VIP:** 1. Launch a supported web browser and connect to the NOAMP Server A IP address **NOTE:** If the security certificate warning diplays, click **Continue to this website (not recommended)**. 2. Login to the GUI using the default user and password.	

Step	Procedure	Details
2. ☐	**Active NOAMP VIP:** For Primary NOAMP Standby server only: 1. Select the server forced standby **Main Menu → Status & Manage → HA** 2. Click **Edit** on bottom left 3. Locate the row for the Primary NOAMP Standby server and change Max Allowed HA Role to **Standby**.	**NOTE**: Do not perform this step for single server installations. 
3. ☐	**Active NOAMP VIP:** Navigate to **Main Menu → Configuration → Server Groups**	
4. ☐	**Active NOAMP VIP:** Click **Insert** in the bottom left corner of the screen. **NOTE:** You may have to scroll to see **Insert**	

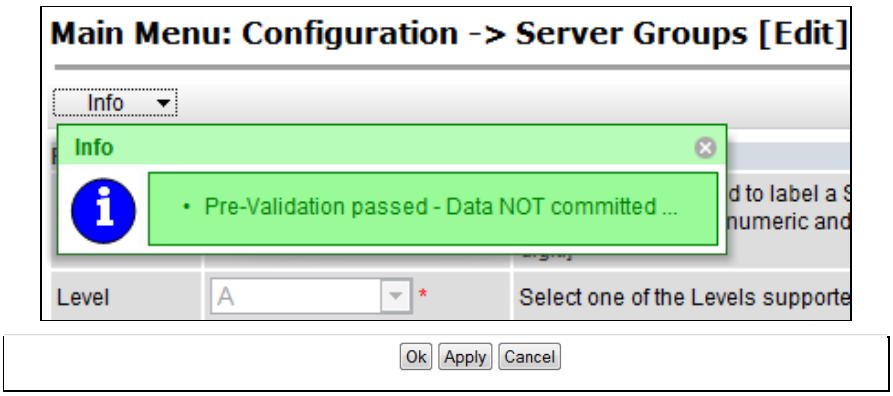
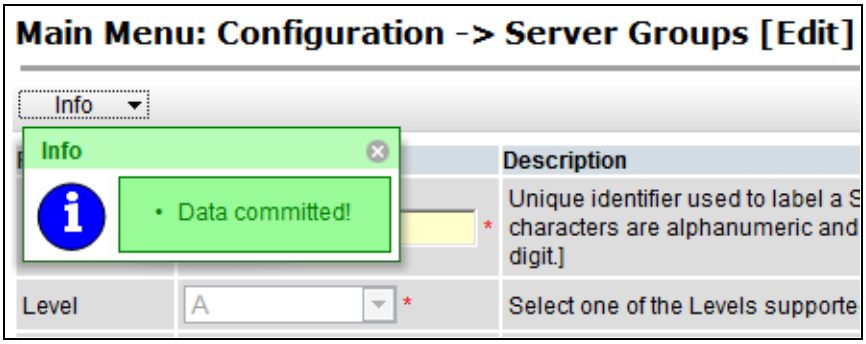
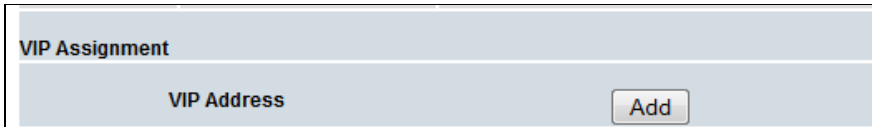
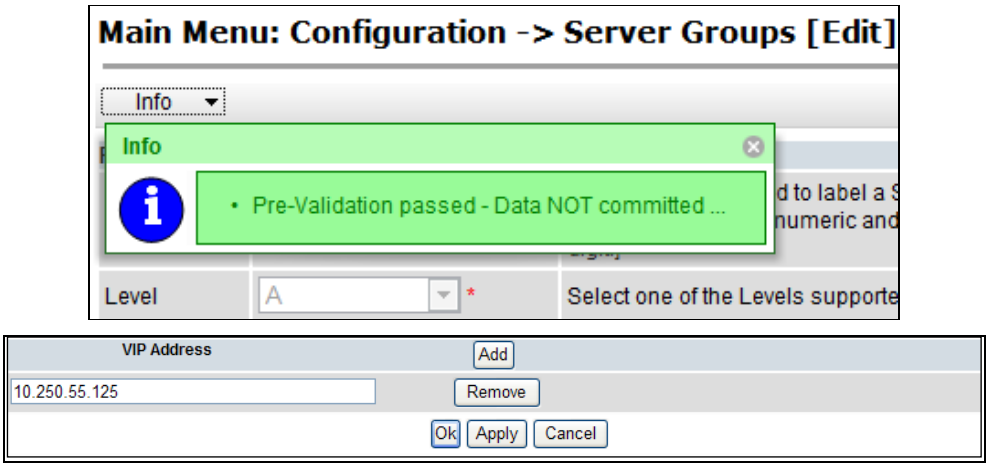
Step	Procedure	Details
5. ☐	**Active NOAMP VIP:** Configuring the SOAM or DR NOAMP Server Group The Server Groups [Insert] screen opens.	
6. ☐	**Active NOAMP VIP:** Enter the Server Group Name.	
7. ☐	**Active NOAMP VIP:** Select correct group Level.	 **NOTE:** Use these setting for group level: • For DR NOAMP server group: select **A** for the Level. • For SOAM server group: select **B** for the Level.
8. ☐	**Active NOAMP VIP:** Select the Parent.	 **NOTE:** Use these setting for parent: • For DR NOAMP server group, select **NONE** for the Parent. • For SOAM server group, select the server group for the first NOAMP site, as entered in **Section 6.1 step** Error! Reference source not found..
9. ☐	**Active NOAMP VIP:** Select the Function.	 **NOTE**: Use these setting for function: • For DR NOAMP server group, select **UDR-NO** for the Function. • For SOAM server group, select **NONE** for the Function.
10. ☐	**Active NOAMP VIP:** (for DR NOAMP only) Enter 8 for WAN Replication Connection Count.	

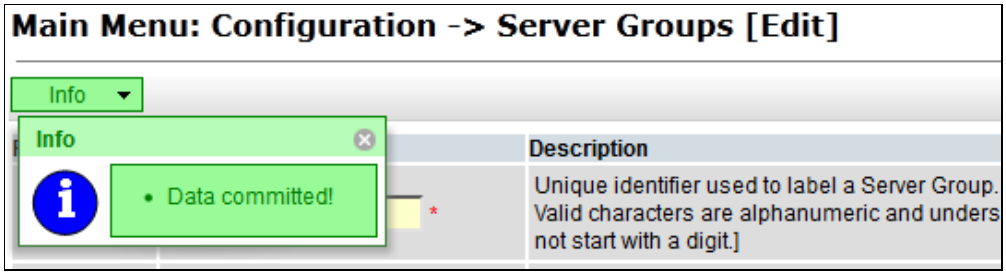
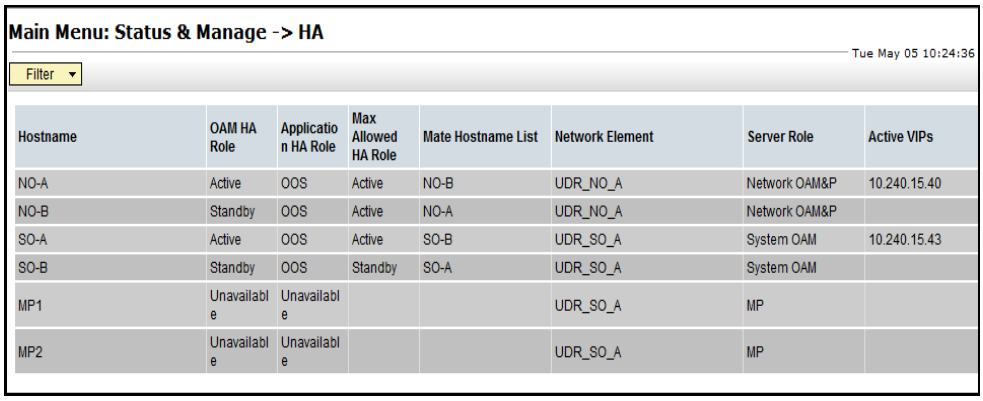
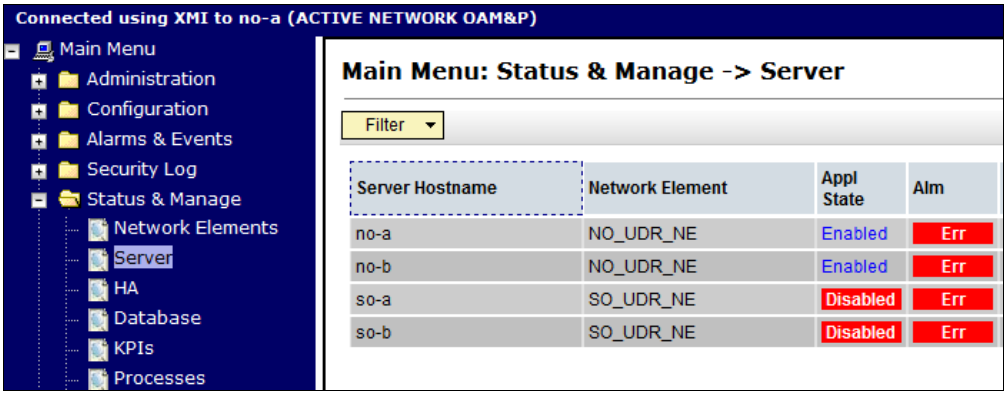
Step	Procedure	Details
11. ☐	**Active NOAMP VIP:** 1. Click **Info** to see the **`Pre-Validation passed`** message. 2. Click **Apply**.	
12. ☐	**Active NOAMP VIP:** Click **Info** to see the **`Data committed`** message.	
13. ☐	**Active NOAMP VIP:** Navigate to **Main Menu → Configuration → Server Groups** **NOTE:** Server Group entry is listed on the Server Groups configuration screen.	

<table>
<tr><th>Step</th><th>Procedure</th><th>Details</th></tr>
<tr><td>14. ☐</td><td>Active NOAMP VIP:
1. Select the Server Group applied in step 7. The line entry is highlighted in GREEN.
2. Cick Edit in the bottom left corner of the screen.
NOTE: You may have to scroll to see Edit.</td><td> 
</td></tr>
<tr><td>15. ☐</td><td>Active NOAMP VIP:
Select the A and B server from the list of servers.
NOTE: For single server installation, only SO-A is displayed.</td><td>Normal or Low Capacity Configuration:
 

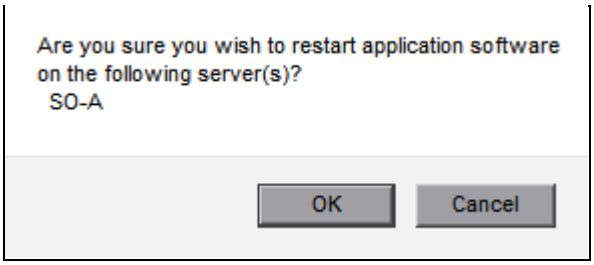
Single Server Configuration:
 
</td></tr>
<tr><td>16. ☐</td><td>Active NOAMP VIP:
For DR NOAMP servers only:
Select Preferred Spare.</td><td> 

NOTE: DR NOAMP is not accessible via their VIP unless they become the Active NOAMP. Individual servers in the DR NOAMP server group are always accessible by their XMI addresses.</td></tr>
</table>

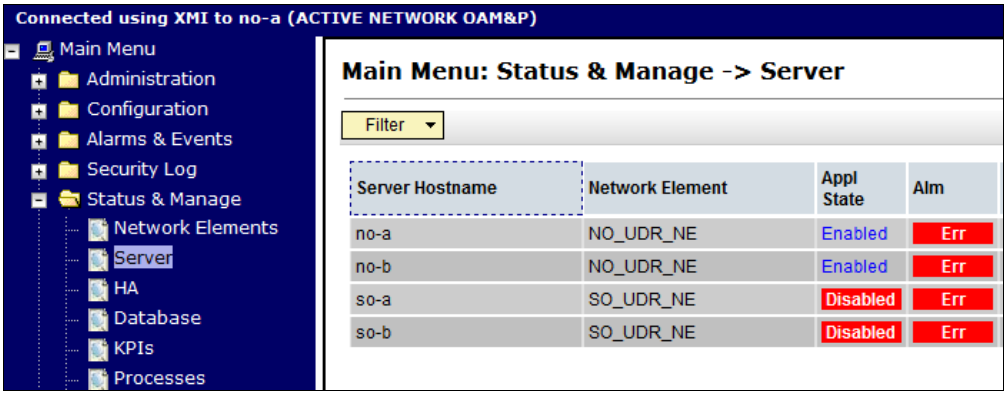
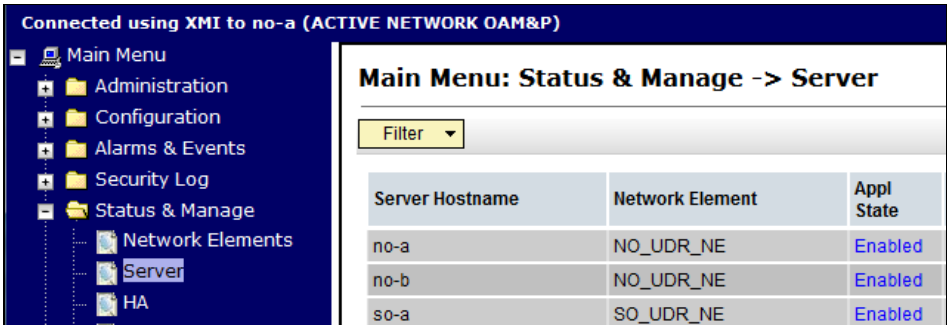
Step	Procedure	Details
17. ☐	**Active NOAMP VIP:** Click Info to see a message stating **`Pre-Validation passed`**. Click **Apply**.	
18. ☐	**Active NOAMP VIP:** Click **Info** to see a message stating **`Data committed`**.	
19. ☐	**Active NOAMP VIP:** Click **Add** for the VIP Address.	
20. ☐	**Active NOAMP VIP:** Input the VIP Address	
21. ☐	**Active NOAMP VIP:** 1. Click **Info** to see a message stating **`Pre-Validation passed`**. 2. Click **Apply**.	

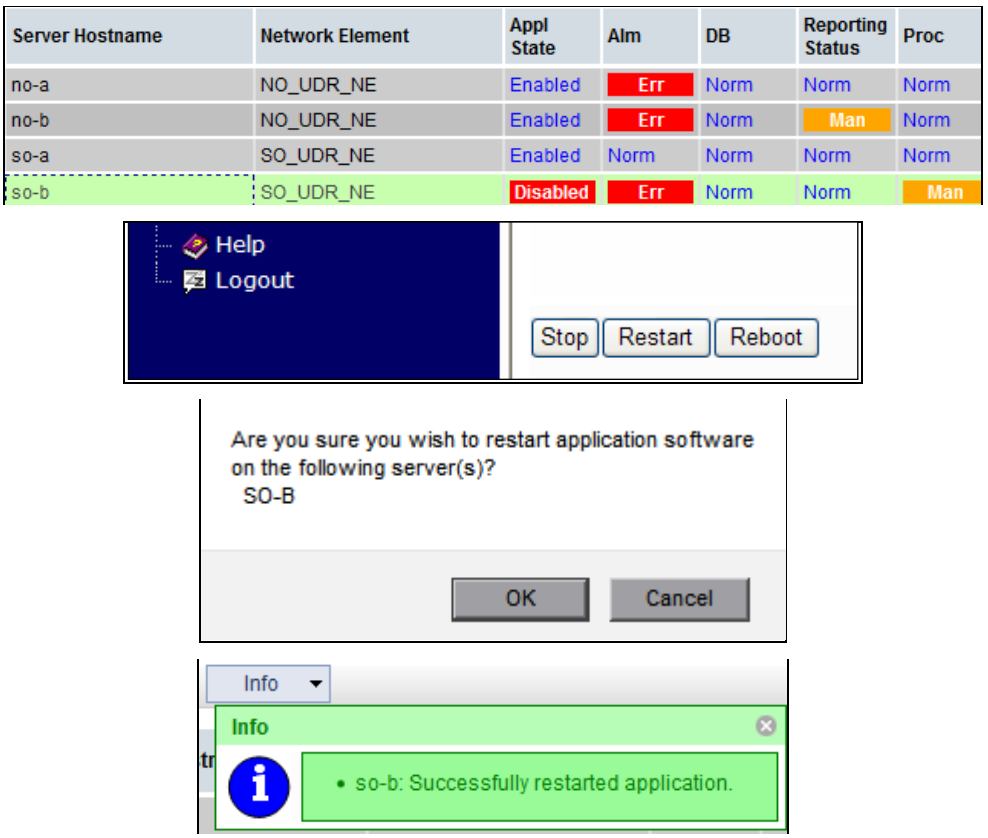
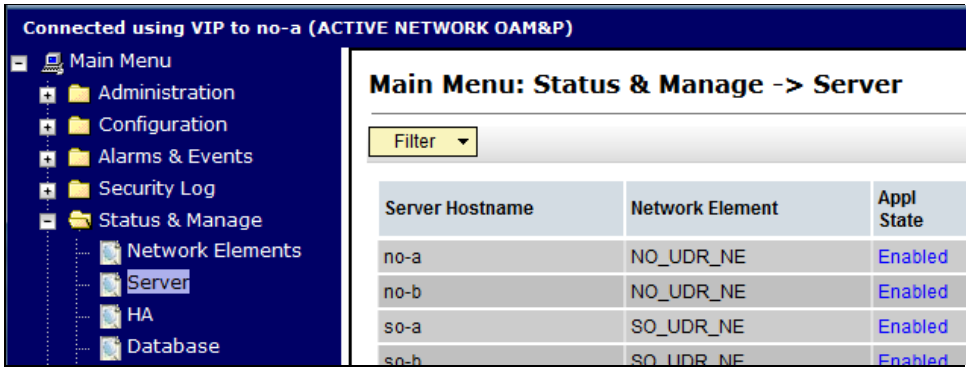
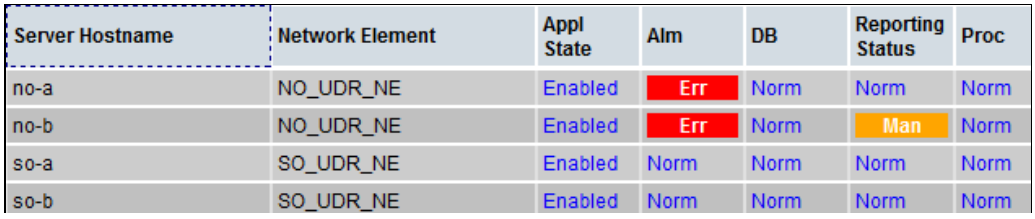
Step	Procedure	Details
22. ☐	**Active NOAMP VIP:** Click **Info** to see a message stating `Data committed`.	
23. ☐	***IMPORTANT: Wait at least 5 minutes before proceeding on to the next step.***	After the servers are paired within a server group, a master/slave relationship is established for high availability (HA). It may take several minutes for this process to complete. **NOTE:** Single Server Configurations do not establish master/slave relationship for high availability (HA). Allow a minimum of 5 minutes before continuing to the next step.
24. ☐	**Active NOAMP VIP:** Navigate to **Main Menu → Status & Manage → HA**.	 Hostname / OAM HA Role / Application HA Role / Max Allowed HA Role / Mate Hostname List / Network Element / Server Role / Active VIPs NO-A / Active / OOS / Active / NO-B / UDR_NO_A / Network OAM&P / 10.240.15.40 NO-B / Standby / OOS / Active / NO-A / UDR_NO_A / Network OAM&P / SO-A / Active / OOS / Active / SO-B / UDR_SO_A / System OAM / 10.240.15.43 SO-B / Standby / OOS / Standby / SO-A / UDR_SO_A / System OAM / MP1 / Unavailable / Unavailable / / UDR_SO_A / MP / MP2 / Unavailable / Unavailable / / UDR_SO_A / MP /
25. ☐	**Active NOAMP VIP:** **NOTES**: • DR NOAMP servers have OAM MAX HA Role of Spare and no Active VIPs. • SOAM servers have OAM MAX HA Role of Active or Standby and an Active VIP.	Normal or Low Capacity Configuration: Hostname / OAM Max HA Role / Application Max HA Role / Max Allowed HA Role / Mate Hostname List / Network Element / Server Role / Active VIPs BL119122305-SO-1A / Active / OOS / Active / BL119122306-SO-1B / SO_UDR_Site1_VM / System OAM / 10.240.168. BL119122306-SO-1B / Standby / OOS / Active / BL119122305-SO-1A / SO_UDR_Site1_VM / System OAM / BL119121305-SO-2A / Active / OOS / Active / BL119121306-SO-2B / SO_UDR_Site2_VM / System OAM / 10.240.168. BL119121306-SO-2B / Standby / OOS / Active / BL119121305-SO-2A / SO_UDR_Site2_VM / System OAM / BL119122301-NO-1A / Standby / OOS / Active / BL119122303-NO-1B / NO_UDR_Site1_VM / Network OAM&P / BL119122303-NO-1B / Active / OOS / Active / BL119122301-NO-1A / NO_UDR_Site1_VM / Network OAM&P / 10.240.168. BL119121301-NO-2A / Spare / OOS / Active / BL119121303-NO-2B / NO_UDR_Site2_VM / Network OAM&P / BL119121303-NO-2B / Spare / OOS / Active / BL119121301-NO-2A / NO_UDR_Site2_VM / Network OAM&P /
26. ☐	**Active NOAMP VIP:** Restarting the OAM Server Application Navigate to **Main Menu → Status & Manage → Server**	

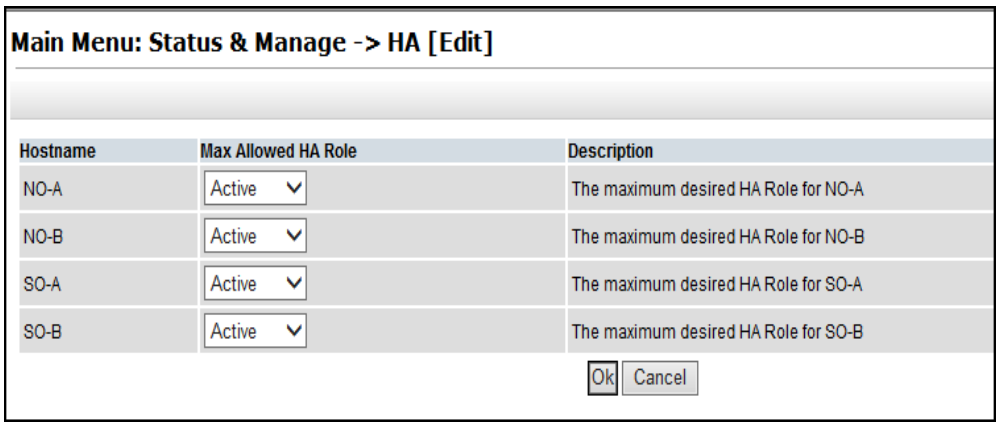
<table>
<tr><th>Step</th><th>Procedure</th><th>Details</th></tr>
<tr><td>27. ☐</td><td>Active NOAMP VIP:
1. The A and B servers are listed in the right panel. (Only A for single server installs)
2. Verify that the DB status shows Norm and the Proc status shows Man for both servers before proceeding to the to step 28. (Only A server for single server configuration)</td><td>Normal or Low Capacity Configuration:
<table><tr><th>Network Element</th><th>Server Hostname</th><th>Appl State</th><th>Alm</th><th>DB</th><th>Reporting Status</th><th>Proc</th></tr><tr><td>SO_UDR</td><td>pc9000722-so-b</td><td>Disabled</td><td>Err</td><td>Norm</td><td>Norm</td><td>Man</td></tr><tr><td>SO_UDR</td><td>pc9000720-so-a</td><td>Disabled</td><td>Err</td><td>Norm</td><td>Norm</td><td>Man</td></tr></table>Single Server Configuration:
<table><tr><th>Network Element</th><th>Server Hostname</th><th>Appl State</th><th>Alm</th><th>DB</th><th>Reporting Status</th><th>Proc</th></tr><tr><td>NO_UDR</td><td>pc9000724-no-a</td><td>Enabled</td><td>Err</td><td>Norm</td><td>Norm</td><td>Norm</td></tr><tr><td>SO_UDR</td><td>pc9000720-so-a</td><td>Disabled</td><td>Norm</td><td>Norm</td><td>Norm</td><td>Man</td></tr></table></td></tr>
<tr><td>28. ☐</td><td>Active NOAMP VIP:
1. Select Server A. The line entry is highlighted in GREEN.
2. Click Restart from the bottom left corner of the screen.
3. Click OK on the confirmation dialogue.
4. Click Info to see a message for Server A stating <code>Successfully restarted application</code>.
NOTE: You may have to scroll to see Restart</td><td>Normal or Low Capacity Configuration:
<table><tr><th>Server Hostname</th><th>Network Element</th><th>Appl State</th><th>Alm</th><th>DB</th><th>Reporting Status</th><th>Proc</th></tr><tr><td>no-a</td><td>NO_UDR_NE</td><td>Enabled</td><td>Err</td><td>Norm</td><td>Norm</td><td>Norm</td></tr><tr><td>no-b</td><td>NO_UDR_NE</td><td>Enabled</td><td>Err</td><td>Norm</td><td>Man</td><td>Norm</td></tr><tr><td>so-a</td><td>SO_UDR_NE</td><td>Disabled</td><td>Err</td><td>Norm</td><td>Norm</td><td>Man</td></tr><tr><td>so-b</td><td>SO_UDR_NE</td><td>Disabled</td><td>Err</td><td>Norm</td><td>Norm</td><td>Man</td></tr></table> 




</td></tr>
</table>

<table>
<tr><th>Step</th><th>Procedure</th><th>Details</th></tr>
<tr><td>29. ☐</td><td>Active NOAMP VIP:
Navigate to Main Menu → Status & Manage → Server</td><td> 
</td></tr>
<tr><td>30. ☐</td><td>Active NOAMP VIP:
Verify that the Appl State column shows Enabled and that the Alm, DB, Reporting, and Status and Proc columns show Norm for OAM Server A before proceeding to the next step.</td><td>
<table>
<tr><th>Server Hostname</th><th>Network Element</th><th>Appl State</th><th>Alm</th><th>DB</th><th>Reporting Status</th><th>Proc</th></tr>
<tr><td>no-a</td><td>NO_UDR_NE</td><td>Enabled</td><td>Err</td><td>Norm</td><td>Norm</td><td>Norm</td></tr>
<tr><td>no-b</td><td>NO_UDR_NE</td><td>Enabled</td><td>Err</td><td>Norm</td><td>Man</td><td>Norm</td></tr>
<tr><td>so-a</td><td>SO_UDR_NE</td><td>Enabled</td><td>Norm</td><td>Norm</td><td>Norm</td><td>Norm</td></tr>
<tr><td>so-b</td><td>SO_UDR_NE</td><td>Disabled</td><td>Err</td><td>Norm</td><td>Norm</td><td>Man</td></tr>
</table>
NOTE: You can refresh the server status screen before the default setting of 15 to 30 seconds. This may be done by selecting Status & Manage → Server from the Main menu on the left.
</td></tr>
<tr><td>31. ☐</td><td>Active NOAMP VIP:
Navigate to Main Menu → Status & Manage → Server</td><td> 
</td></tr>
<tr><td colspan="3">Perform steps Error! Reference source not found. through Error! Reference source not found. for multiple server configurations only (not single server).</td></tr>
</table>

Step	Procedure	Details
32. ☐	**Active NOAMP VIP:** 1. Select Server B. The line entry is highlighted in GREEN. 2. Click **Restart** in the bottom left corner of the screen. 3. Click **OK** on the confirmation dialogue. 4. Click **Info** to see a message for Server B stating **`Successfully restarted application`**. **NOTE:** You may need to scroll- in order to see **Restart**.	
33. ☐	**Active NOAMP VIP:** Navigate to **Main Menu → Status & Manage → Server**	
34. ☐	**Active NOAMP VIP:** Verify that Appl State column shows Enabled and that the Alm, DB, Reporting Status and Proc columns show Norm for Server B before proceeding to the next step.	 **NOTE:** You can refresh the server status screen before the default setting of 15 to 30 seconds. This is done by selecting **Status & Manage → Server** from the Main menu on the left.
Repeat all the steps for each DR NOAMP and SOAM site being installed.		

Step	Procedure	Details
35. ☐	**Active NOAMP VIP:** (For Primary NOAMP Standby server only) Move the server back to Active Navigate to **Main Menu → Status & Manage → HA[Edit]** Find the row for the Primary NOAMP Standby server and change **Max Allowed HA Role** back to **Active**.	
36. ☐	**Active NOAMP VIP:** Click **Logout**.	
THIS PROCEDURE IS COMPLETE		

6.3 OAM Pairing for MP Server Groups (All SOAM sites)

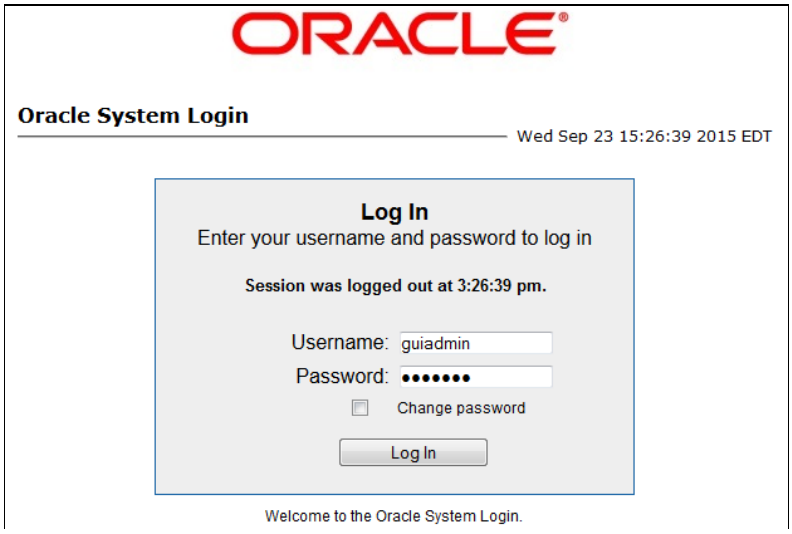
During the Message Processor (MP) installation procedure, various errors may be seen at different stages of the procedure. During the execution of a step, you are directed to ignore errors related to values other than the ones referenced by that step.

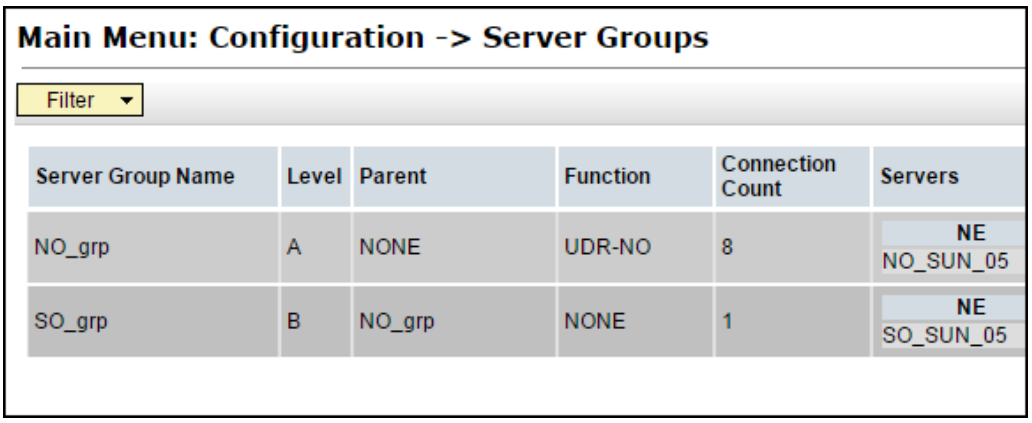
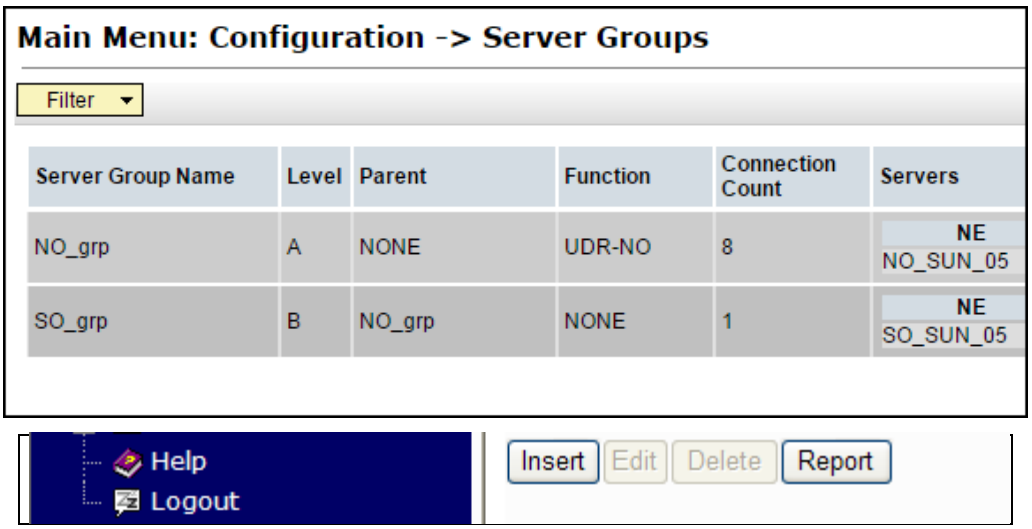
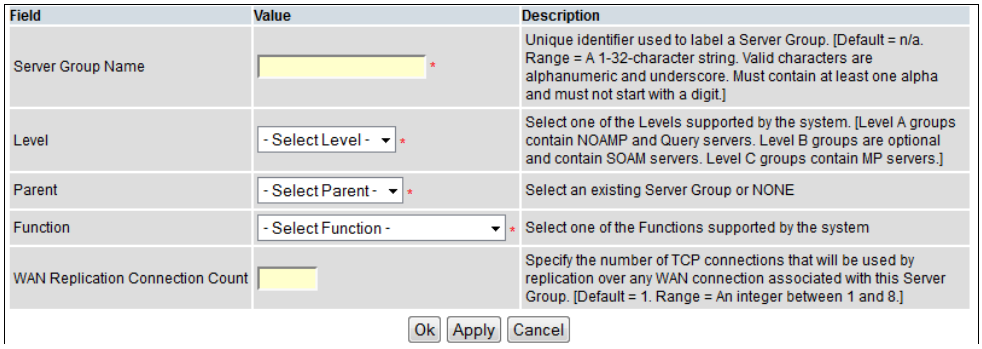
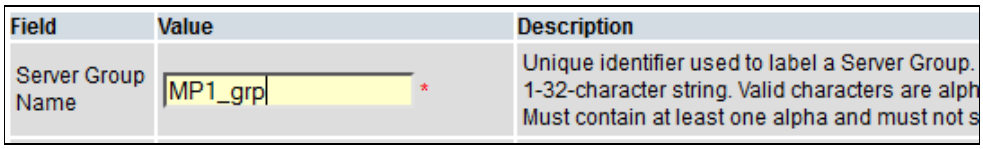
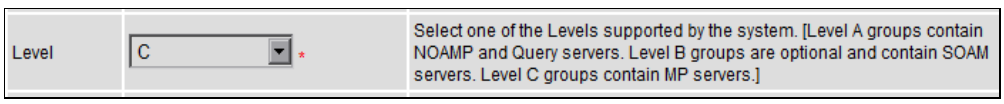
Requirements:

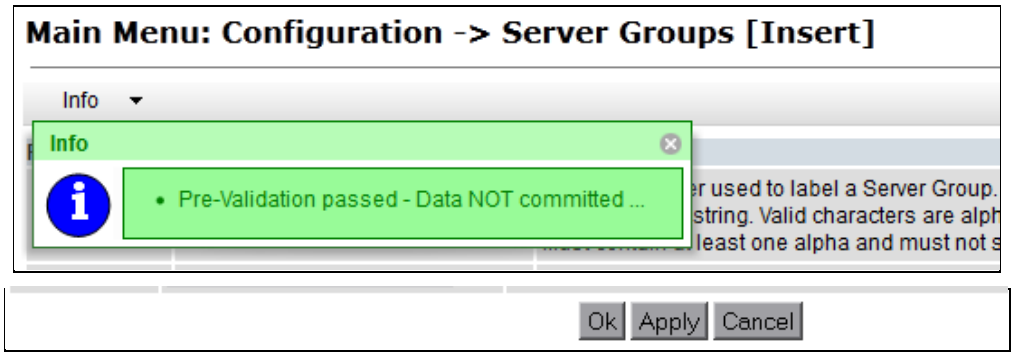
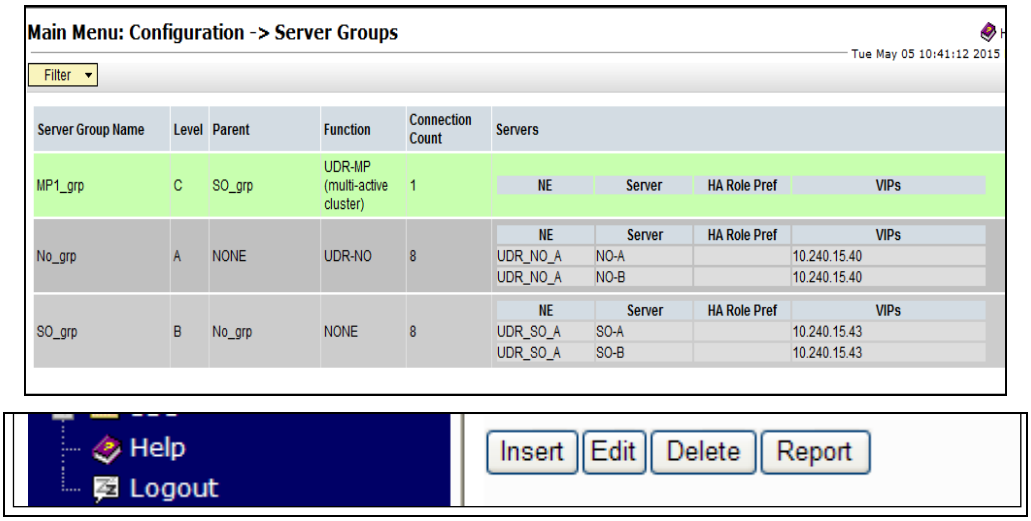
- Section 6.2 OAM Pairing for SOAM and DR Sites (All SOAM and DR sites) has been completed

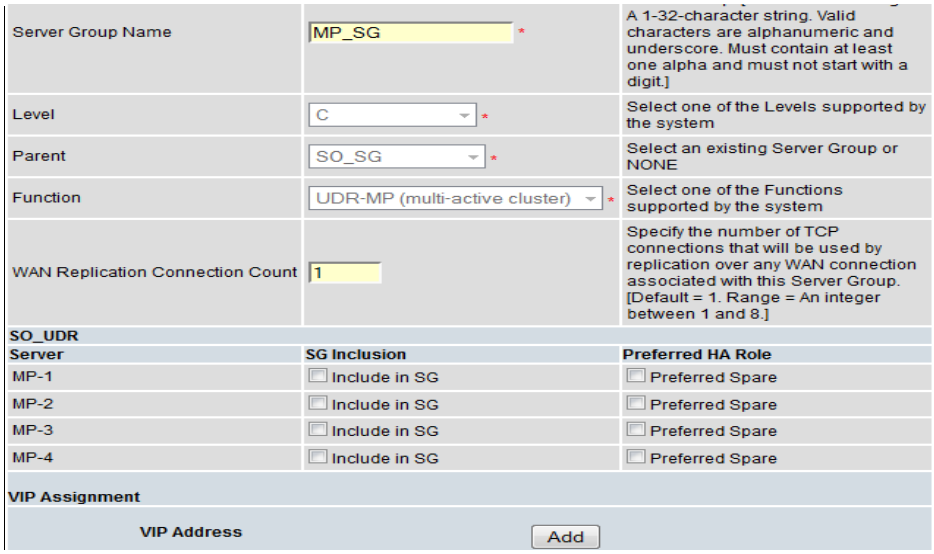
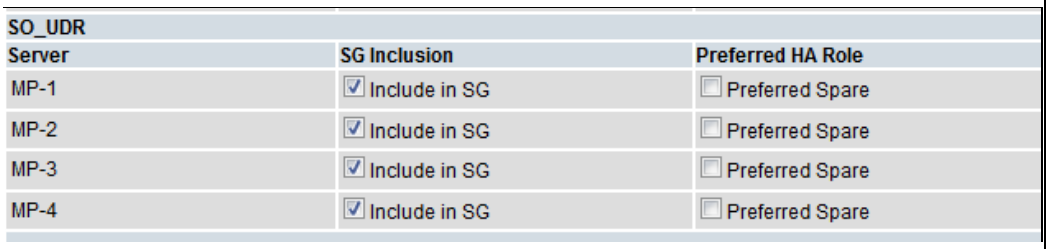
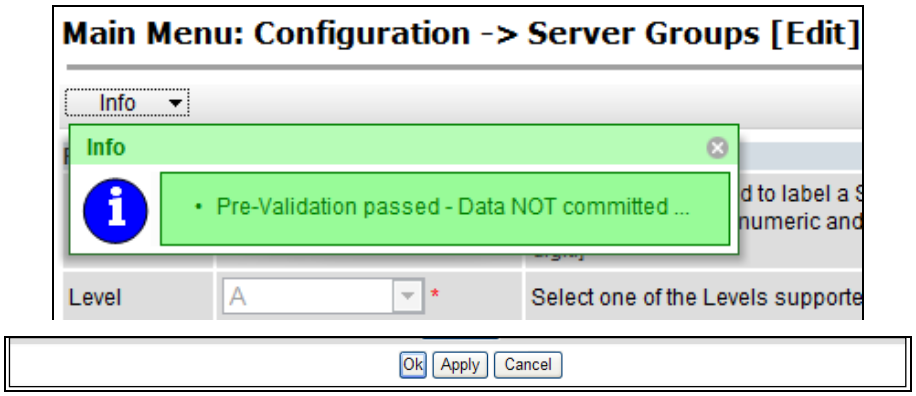
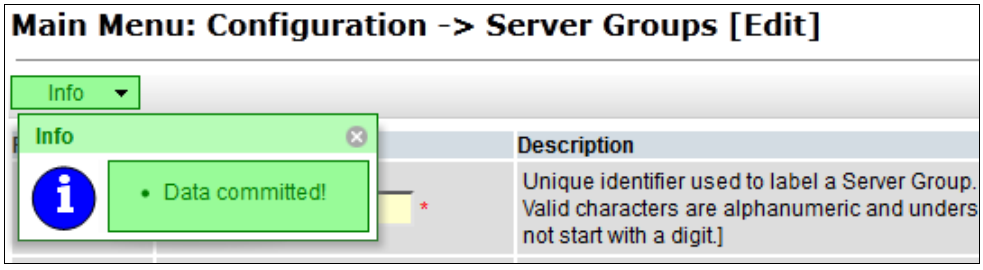
Check (√) each step as it is completed. Boxes have been provided for this purpose.

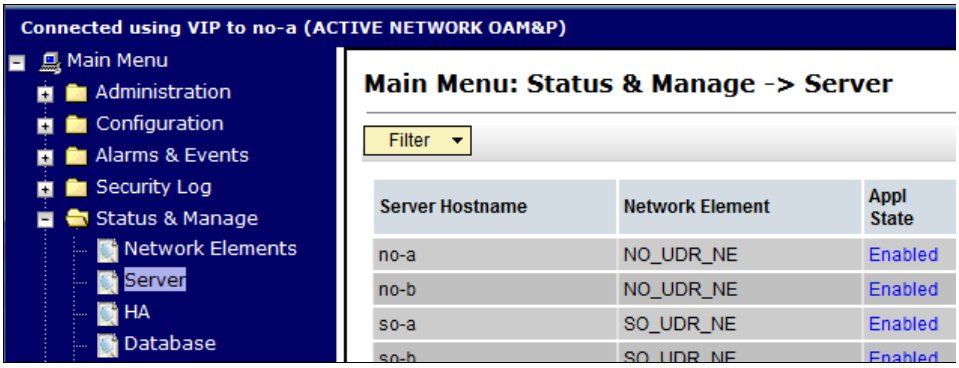
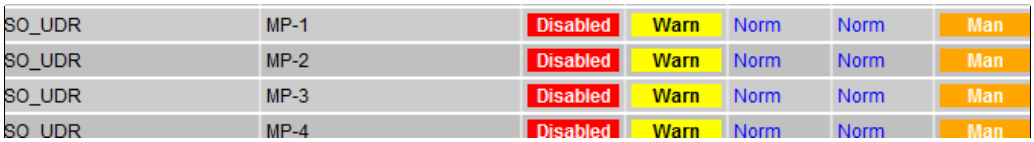
Procedure 11: OAM Pairing for MP Server Groups (All SOAM sites)

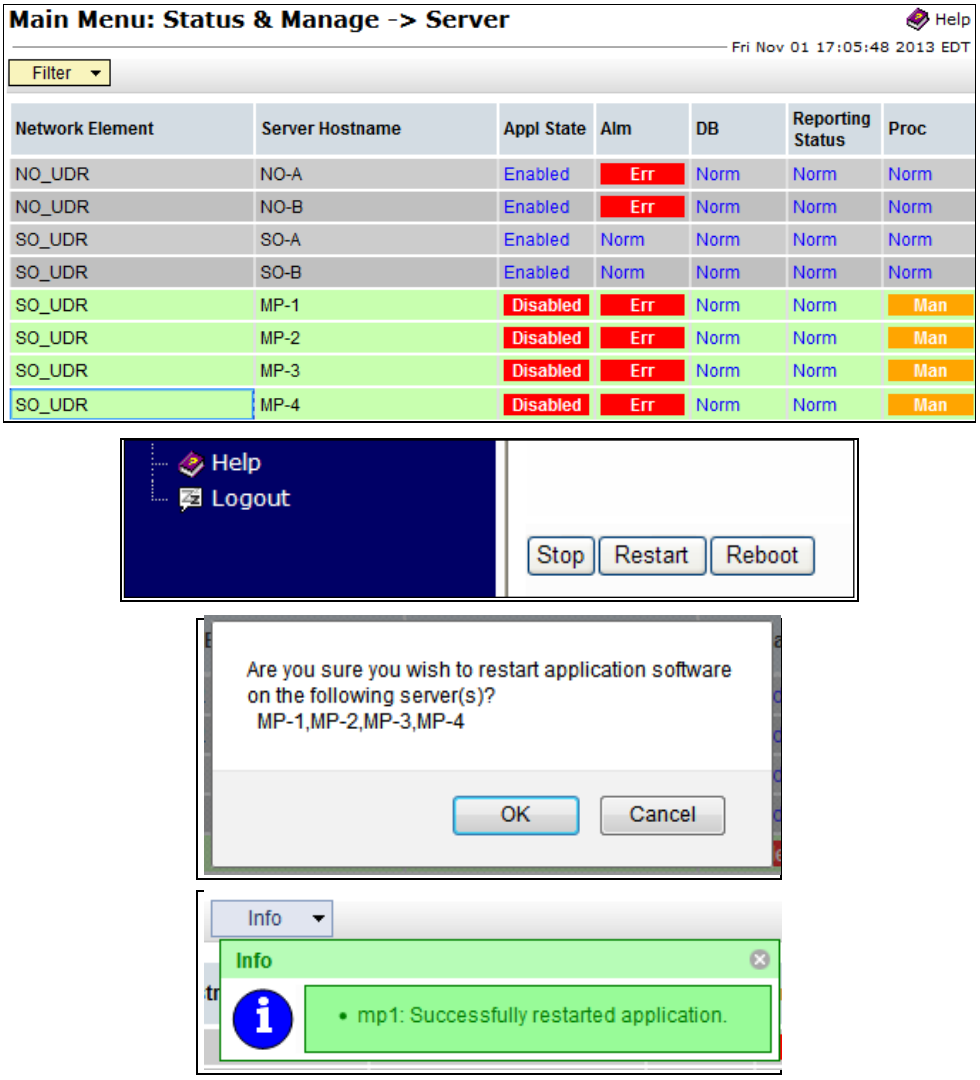
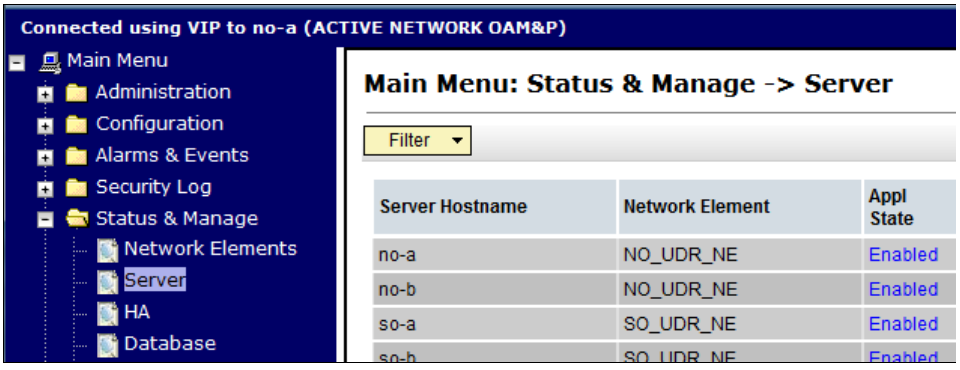
Step	Procedure	Details
1. ☐	**Active NOAMP VIP:** Launch an approved web browser and connect to the NOAMP Server A IP address **NOTE:** Select **Continue to this website (not recommended)** if the security certificate warning displays. Login to the GUI using the default user and password.	

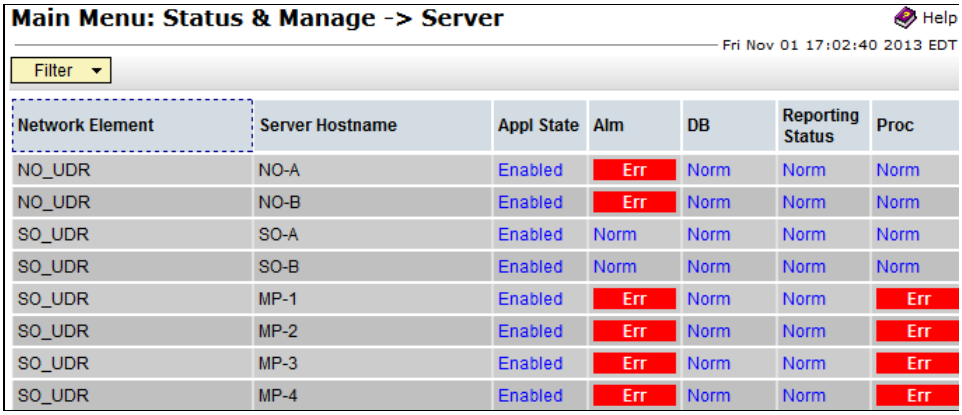
Step	Procedure	Details
2. ☐	**Active NOAMP VIP:** Navigate to **Main Menu → Configuration → Server Groups**	
3. ☐	**Active NOAMP VIP:** Click **Insert** in the bottom left corner of the screen. **NOTE:** You may have to scroll to see **Insert**	
4. ☐	**Active NOAMP VIP:** The Server Groups [Insert] screen opens.	
5. ☐	**Active NOAMP VIP:** Enter the Server Group Name.	
6. ☐	**Active NOAMP VIP:** Select **C** for the Level.	

Step	Procedure	Details
7. ☐	**Active NOAMP VIP:** Select the SOAM server group for the Parent.	
8. ☐	**Active NOAMP VIP:** Select **UDR-MP (multi-active cluster)** for the Function.	
9. ☐	**Active NOAMP VIP:** 1. Click **Info** to see a message stating **`Pre-Validation passed`**. 2. Click **OK**.	
10. ☐	**Active NOAMP VIP:** 1. Select the MP Server Group associated with the MP being installed. 2. Click **Edit** from the bottom left corner of the screen.	

Step	Procedure	Details
11. ☐	**Active NOAMP VIP:** The **Configuration → Server Groups [Edit]** page opens.	Normal Capacity Configuration: 
12. ☐	**Active NOAMP VIP:** Select **Include in SG** for each MP to be included in this Server Group.	
13. ☐	**Active NOAMP VIP:** Click **Info** to see a message stating **`Pre-Validation passed`**. Click **Apply**.	
14. ☐	**Active NOAMP VIP:** Click **Info** to see a message stating **`Data committed`**.	

Step	Procedure	Details
15. ☐	***IMPORTANT: Wait at least 5 minutes before proceeding on to the next step.***	• After the Message Processors are placed within their server groups, each must establish DB replication with the active SOAM server at the NE. It may take several minutes for this process to be completed. • Oracle Communications User Data Repository process alarms may be present until Section 7.2 Configure SPR Application on MP (All SOAM Sites) is completed. Allow a minimum of 5 minutes before continuing to the next step.
16. ☐	**Active NOAMP VIP:** Navigate to **Main Menu → Status & Manage → Server**	
17. ☐	**Active NOAMP VIP:** Verify that the DB and Reporting Status columns show Norm for the MPs at this point. The Proc column should show Man.	Normal Capacity Configuration: 

Step	Procedure	Details
18. ☐	**Active NOAMP VIP:** 1. Select each MP with Man status using the mouse and holding the **Ctrl**. The line entries are highlighted in GREEN. 2. Click **Restart** from the bottom left corner of the screen. 3. Click **OK** on the confirmation dialogue. 4. Click infor to see the message stating **`Successfully restarted application`**. **NOTE:** You may need to use the vertical scroll-bar to see **Restart**.	
19. ☐	**Active NOAMP VIP:** Navigate to **Main Menu → Status & Manage → Server**	

Step	Procedure	Details
20. ☐	**Active NOAMP VIP:** Verify that the Appl State shows Enabled and that the DB and Reporting Status columns show Norm for the MPs. The Alm and Proc columns may show Err at this point.	
21. ☐	**Active NOAMP VIP:** Click **Logout**.	
THIS PROCEDURE IS COMPLETE		

Network Element	Server Hostname	Appl State	Alm	DB	Reporting Status	Proc
NO_UDR	NO-A	Enabled	Err	Norm	Norm	Norm
NO_UDR	NO-B	Enabled	Err	Norm	Norm	Norm
SO_UDR	SO-A	Enabled	Norm	Norm	Norm	Norm
SO_UDR	SO-B	Enabled	Norm	Norm	Norm	Norm
SO_UDR	MP-1	Enabled	Err	Norm	Norm	Err
SO_UDR	MP-2	Enabled	Err	Norm	Norm	Err
SO_UDR	MP-3	Enabled	Err	Norm	Norm	Err
SO_UDR	MP-4	Enabled	Err	Norm	Norm	Err

7. APPLICATION CONFIGURATION

7.1 Configure Signaling Routes

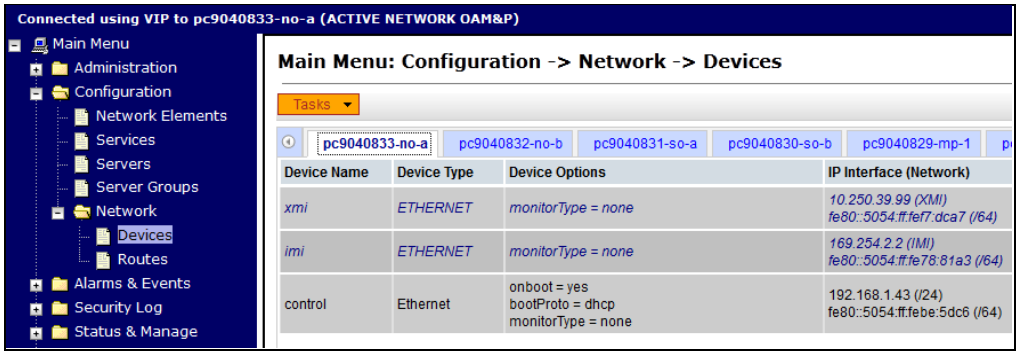
This procedure configures the XSI signaling route for all MP Servers.

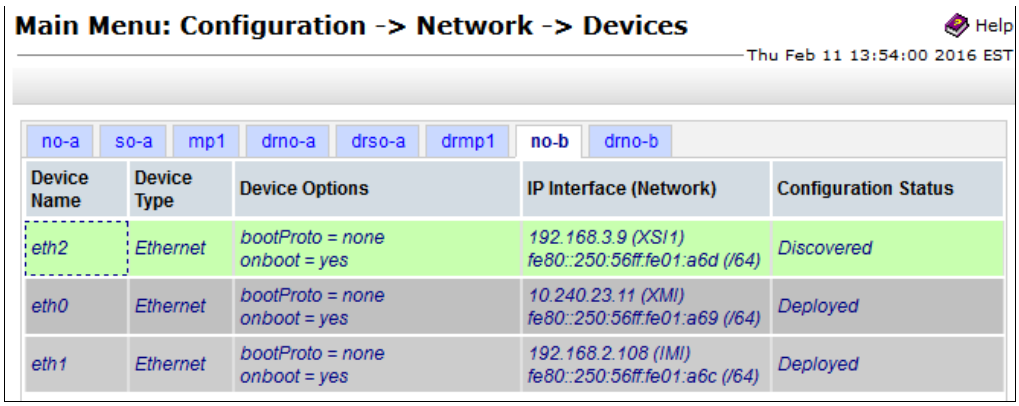
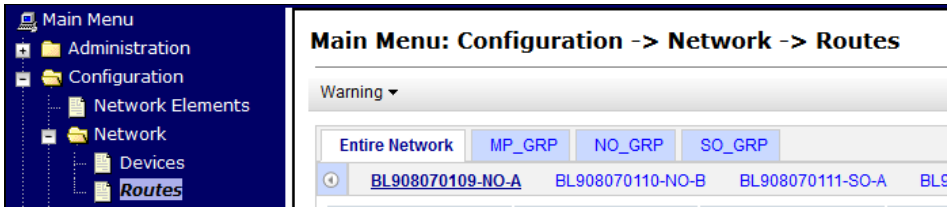
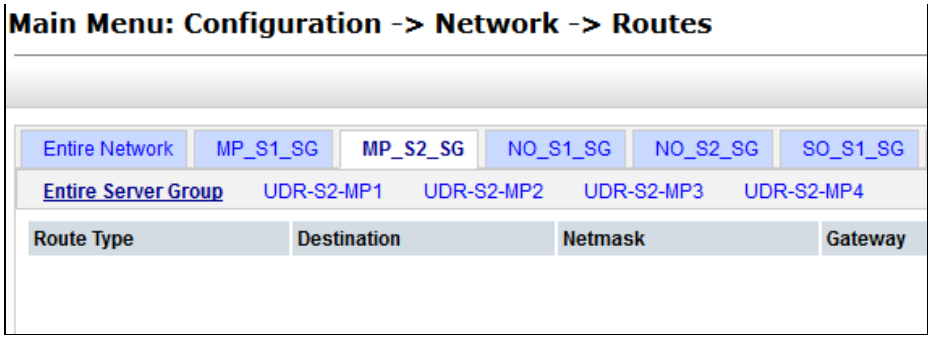
Requirements:

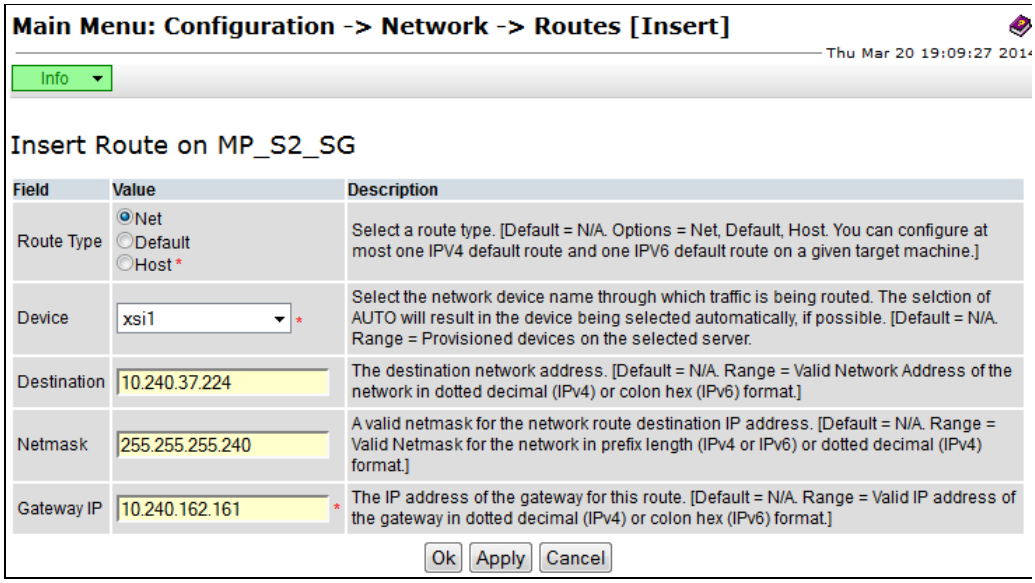
- Section 6 OAM Pairing has been completed

Check (√) each step as it is completed. Boxes have been provided for this purpose.

Procedure 12: Configure Signaling Routes

Step	Procedure	Details
1. ☐	**Active NOAMP VIP:** Launch an approved web browser and connect to the NOAMP Server A IP address **NOTE:** Select **Continue to this website (not recommended)** if the security certificate warning displays. Login to the GUI using the default user and password.	
2. ☐	**Active NOAMP VIP** Navigate to **Main Menu → Configuration → Network → Devices**	

Step	Procedure	Details
3. ☐	**Active NOAMP VIP** Select the XSI device for the MP	1. Select the MP tab. 2. Set Device to **XSI-1** device (recorded in **B.3 step 3** or Error! Reference source not found. **step 5**).  **Main Menu: Configuration -> Network -> Devices** Help Thu Feb 11 13:54:00 2016 EST no-a | so-a | mp1 | drno-a | drso-a | drmp1 | no-b | drno-b Device Name | Device Type | Device Options | IP Interface (Network) | Configuration Status eth2 | Ethernet | bootProto = none onboot = yes | 192.168.3.9 (XSI1) fe80::250:56ff:fe01:a6d (/64) | Discovered eth0 | Ethernet | bootProto = none onboot = yes | 10.240.23.11 (XMI) fe80::250:56ff:fe01:a69 (/64) | Deployed eth1 | Ethernet | bootProto = none onboot = yes | 192.168.2.108 (IMI) fe80::250:56ff:fe01:a6c (/64) | Deployed Mark the checkbox as the addition of each server is completed. ☐MP-1(XSI-1) ☐ MP-2(XSI-1) ☐MP-3(XSI-1) ☐ MP-4(XSI-1) ☐MP-1(XSI-1) ☐ MP-2(XSI-1) ☐MP-3(XSI-2) ☐ MP-4(XSI-2)
4. ☐	**Active NOAMP VIP** Take ownership of the XSI device for the MP	Click Take Ownership (Take Ownership). Mark the checkbox as the addition of each server is completed. ☐MP-1(XSI-1) ☐ MP-2(XSI-1) ☐MP-3(XSI-1) ☐ MP-4(XSI-1) ☐MP-1(XSI-1) ☐ MP-2(XSI-1) ☐MP-3(XSI-2) ☐ MP-4(XSI-2)
5. ☐	**Active NOAMP VIP:** Navigate to **Main Menu → Configuration → Network → Routes**	 Main Menu Administration Configuration Network Elements Network Devices Routes **Main Menu: Configuration -> Network -> Routes** Warning Entire Network | MP_GRP | NO_GRP | SO_GRP BL908070109-NO-A | BL908070110-NO-B | BL908070111-SO-A
6. ☐	**Active NOAMP VIP:** Insert a route for the MP server group.	1. Select the MP Server Group tab on the top line. 2. Click **Entire Server Group** on the line below the Server Group line.  **Main Menu: Configuration -> Network -> Routes** Entire Network | MP_S1_SG | MP_S2_SG | NO_S1_SG | NO_S2_SG | SO_S1_SG Entire Server Group | UDR-S2-MP1 | UDR-S2-MP2 | UDR-S2-MP3 | UDR-S2-MP4 Route Type | Destination | Netmask | Gateway 3. Click Insert **(Insert).** 4. Mark the checkbox as addition is completed for each network. ☐ XSI-1 ☐ XSI-2

<table>
<tr><th>Step</th><th>Procedure</th><th>Details</th></tr>
<tr><td>7. ☐</td><td>Active NOAMP VIP:
Add XSI signaling route to MP</td><td>


1. Select the route type.
2. Select the signaling device name (eth2 or eth3).
3. Enter the destination. This is the network address of the diameter Sh clients that connect to Oracle Communications User Data Repository on the signaling network.
4. Enter Netmask for the Diameter Sh client network.
5. Enter Gateway IP. This is the gateway for signaling network of the Oracle Communications User Data Repository.
6. Click **Apply**.
7. Mark the checkbox as addition is completed for each network.

☐ XSI-1 (eth2) ☐ XSI-2 (eth3)</td></tr>
<tr><td>8. ☐</td><td colspan="2">Repeat steps 1 through 8 for each signaling network.</td></tr>
<tr><td>9. ☐</td><td>Active NOAMP VIP:
Click Logout on the server GUI.</td><td>


</td></tr>
<tr><td colspan="3">THIS PROCEDURE IS COMPLETE</td></tr>
</table>

7.2 Configure SPR Application on MP (All SOAM Sites)

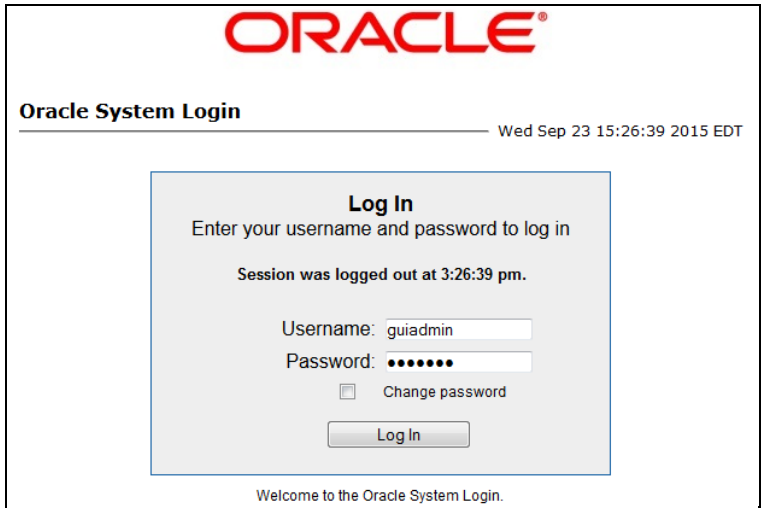
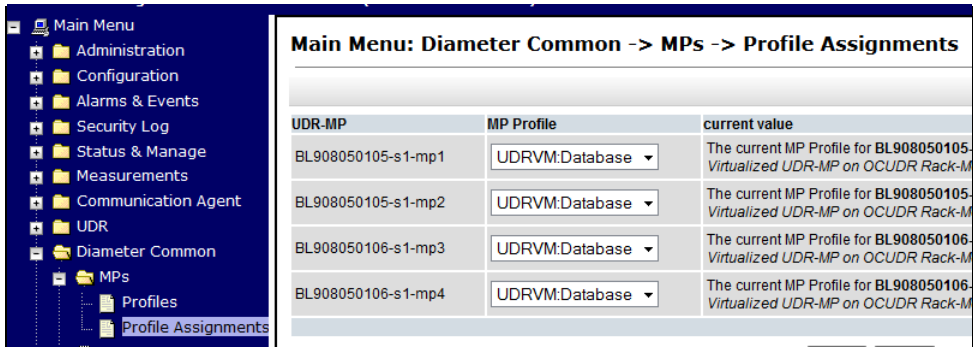
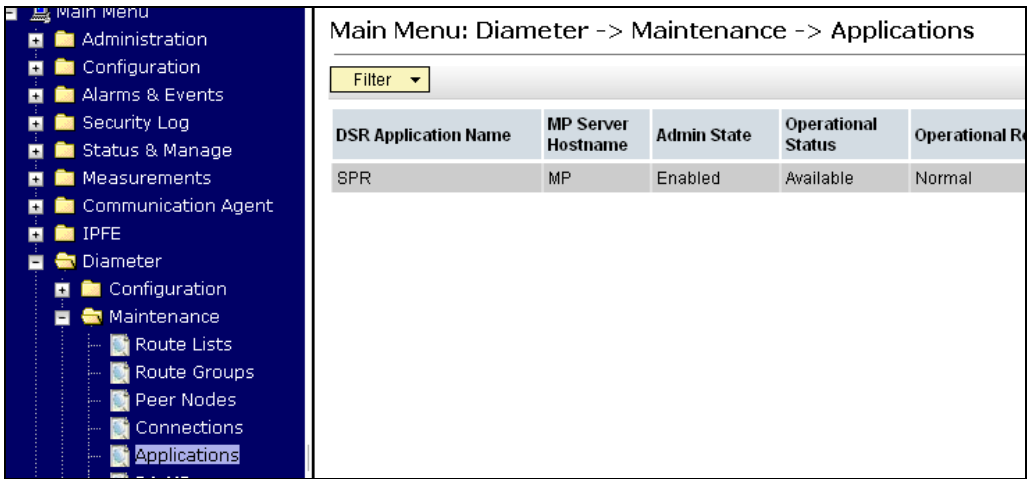
This procedure configures the SPR application for MP Servers on each SOAM site.

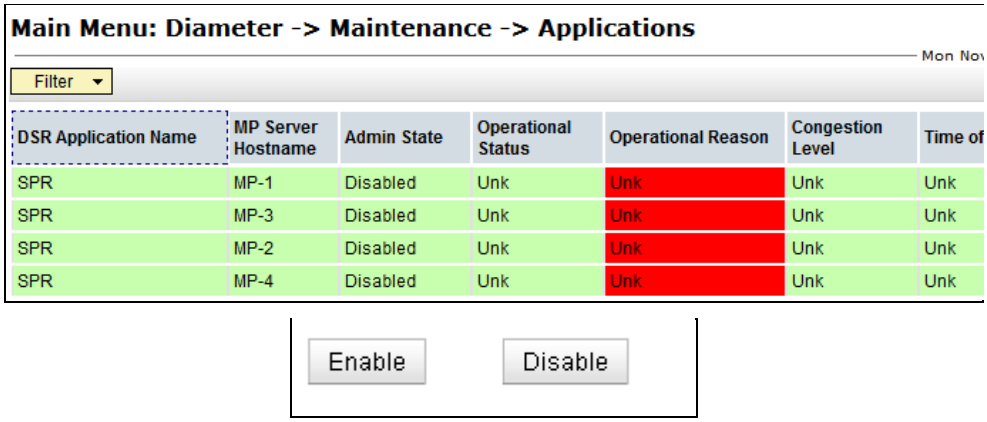
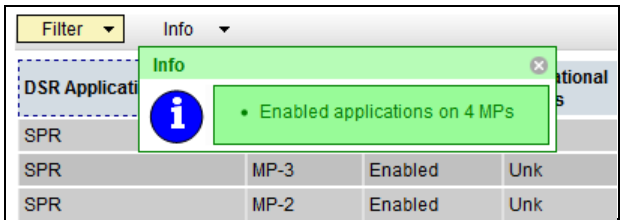
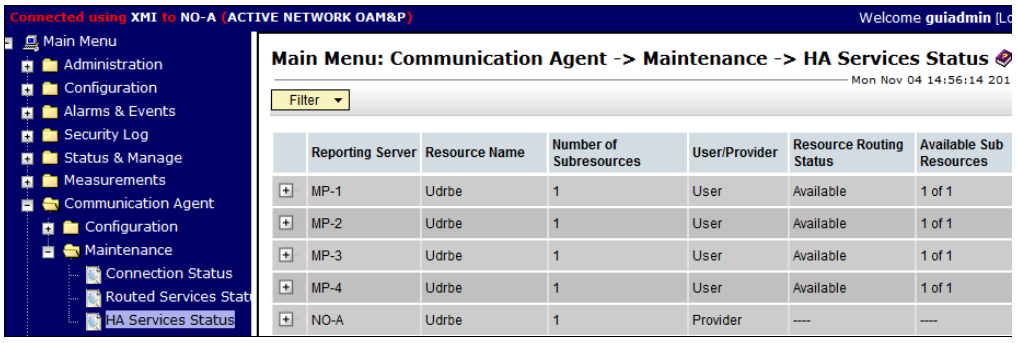
Requirements:

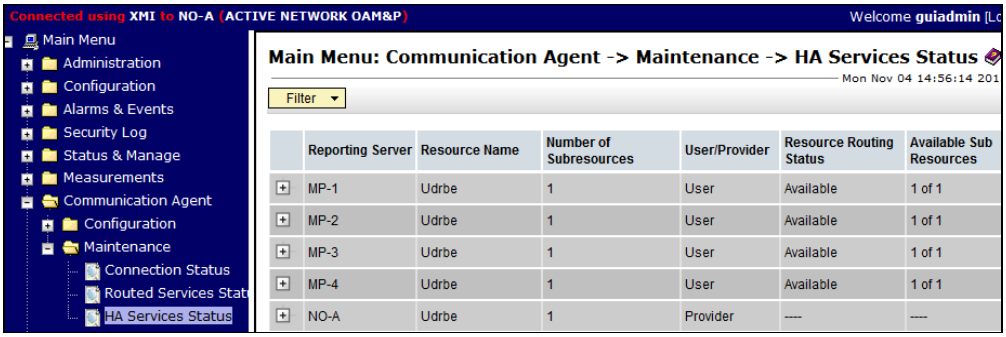
- Section 7.1 Configure Signaling Routes has been completed

Check (√) each step as it is completed. Boxes have been provided for this purpose.

Procedure 13: Configure SPR Application on MP (All SOAM Sites)

Step	Procedure	Details
1. ☐	**SOAM VIP:** Launch an approved web browser and connect to the NOAMP Server A IP address **NOTE:** Select **Continue to this website (not recommended)** if the security certificate warning displays. Login to the GUI using the default user and password.	
2. ☐	**SOAM VIP:** 1. Navigate to **Main Menu → Diamter Common → MPs →Profile Assignments** 2. Select profile as UDRVM:Database and click **Assign**	Normal Capacity Configuration: 
3. ☐	**SOAM VIP:** Navigate to **Main Menu → Diameter → Maintenance → Applications**	

Step	Procedure	Details
4. ☐	**SOAM VIP:** 1. Select the SPR Application on each MP using the mouse and holding **Ctrl**. The line entries are highlighted in GREEN. 2. Click **Enable**.	
5. ☐	**SOAM VIP:** Click **Info** to see a message stating **`Enabled application`**.	
6. ☐	**SOAM VIP:** Click Logout.	
7. ☐	**Active NOAMP VIP:** The login screen opens. Login to the GUI using the default user and password.	
8. ☐	**Active NOAMP VIP:** Verify that the service is listed on NOAMP GUI page. Navigate to **Main Menu → Communication Agent → Maintenance → HA Services Status**	

Step	Procedure	Details
9. ☐	**Active NOAMP VIP:** Verify that the service is listed on the NOAMP GUI page Navigate to **Main Menu → Communication Agent → Maintenance → HA Services Status**	
10. ☐	**Active NOAMP VIP:** Click **Logout**.	
THIS PROCEDURE IS COMPLETE		

7.3 Configure NOAMP Signaling Routes (All NOAM Sites)

This procedure configures the XSI signaling route for the NOAMP and DR NOAMP Server Groups.

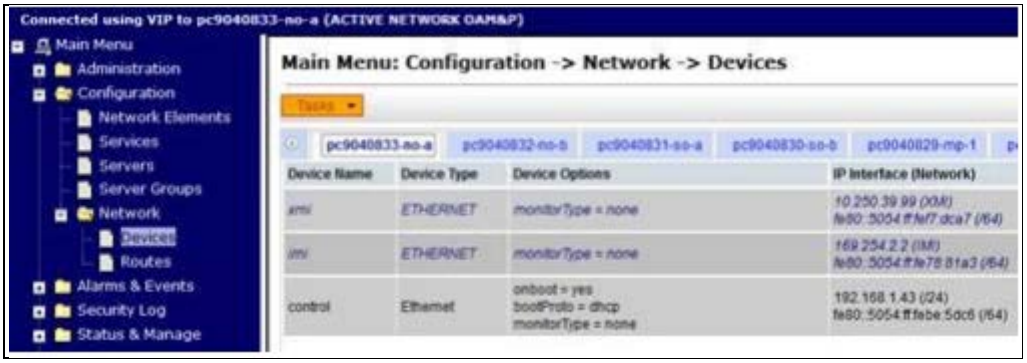
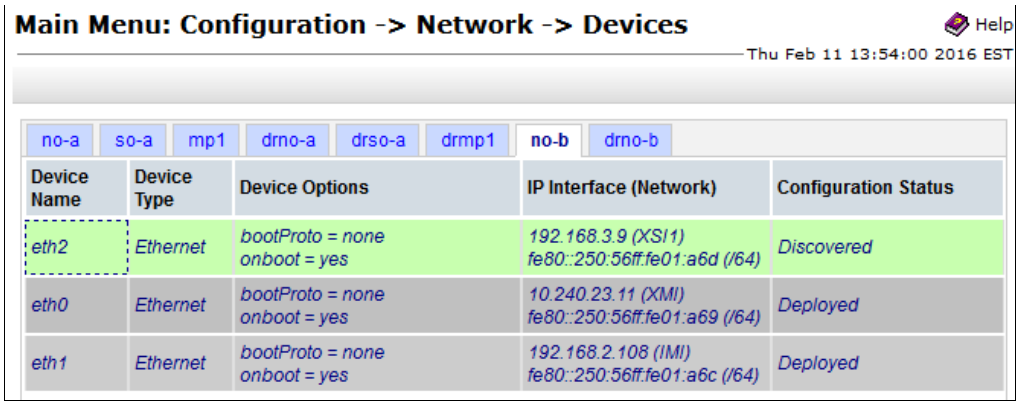
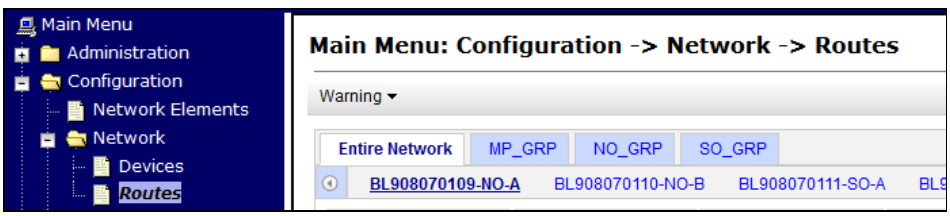
Requirements:

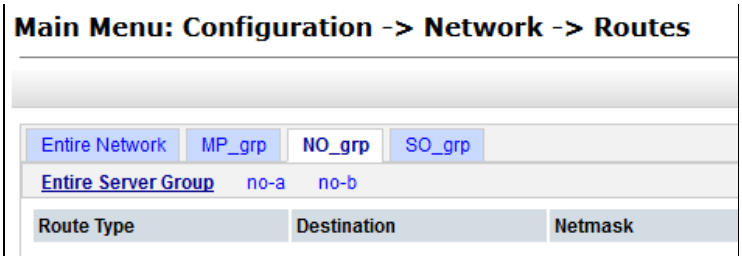
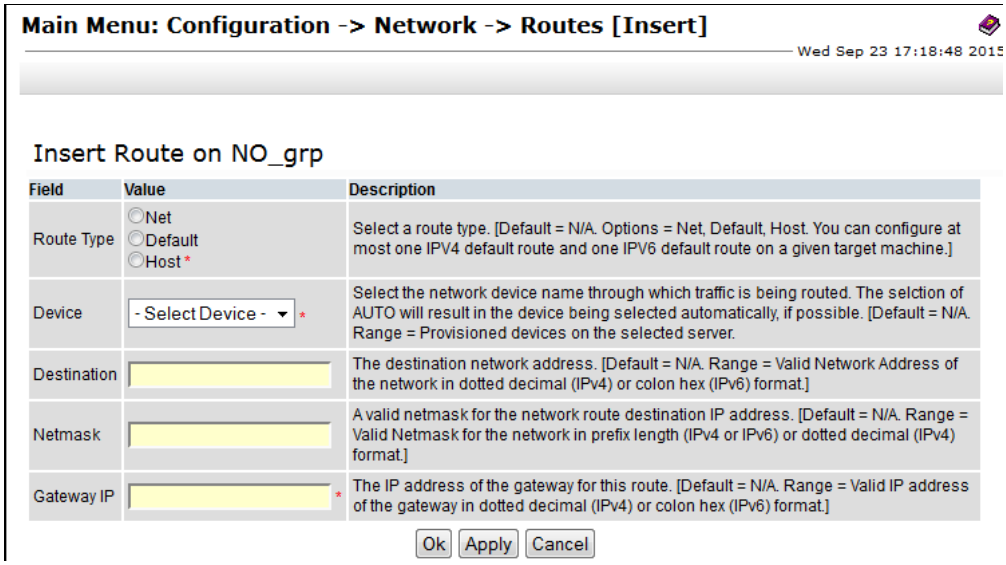
- Section 7.2 Configure SPR Application on MP (All SOAM Sites) has been completed

Check (√) each step as it is completed. Boxes have been provided for this purpose.

Procedure 14: Configure NOAMP Signaling Routes

Step	Procedure	Details
1. ☐	**Active NOAMP VIP:** 1. Launch an approved web browser and connect to the NOAMP Server A IP address 2. Select **Continue to this website (not recommended)** if the security certificate warning displays. 3. Login to the GUI using the default user and password.	

Step	Procedure	Details
2. ☐	**Active NOAMP VIP:** Select **Main Menu → Configuration → Network → Devices**.	 Mark the checkbox as the addition of each server is completed. ☐ NOAMP-A (XSI-1) ☐ NOAMP-B (XSI-1)
3. ☐	**Active NOAMP VIP** Select the XSI device for the NOAMP	1. Select a NOAMP tab. 2. Select the XSI-1 device (recorded in B.3 step 3 or **Error! Reference source not found.** step 5).  3. Mark the checkbox as the addition of each server is completed. ☐NOAMP-A (XSI-1) ☐ NOAMP-B (XSI-1)
4. ☐	**Active NOAMP VIP** Edit the XSI device for the NOAMP	1. Click Take Ownership (Take Ownership). 2. Mark the checkbox as the addition of each server is completed. ☐NOAMP-A (XSI-1) ☐ NOAMP-B (XSI-1)
5. ☐	**Active NOAMP VIP** Repeat as required.	Repeat steps 3 and 4 for each NOAMP and its Signaling networks. **NOTE:** Steps 6 through 8 are only needed for geo-redundant systems.
6. ☐	**Active NOAMP VIP** Navigate to **Main Menu → Configuration → Network → Routes**	

Step	Procedure	Details
7. ☐	**Active NOAMP VIP** Insert a route for the NOAMP or DR NOAMP Server group.	1. Select a Server Group tab on the top line. 2. Click **Entire Server Group** on the line below the Server Group.  3. Click  (**Insert**).
8. ☐	**Active NOAMP VIP:** Add signaling route	 1. Select **Net** for the Route Type. 2. Select **XSI-1** for the Device (recorded in B.3 step 3 or **Error! Reference source not found.** step 5). 3. Enter the destination. This is the network address of the remote MP server group that connects to Oracle Communications User Data Repository NOAMP for ComAgent service. 4. Enter Netmask for the remote network. 5. Enter Gateway IP. This is the gateway for the signaling network of the Oracle Communications User Data Repository. 6. Click **Apply**.
9. ☐	Repeat steps 6 through 8 to configure MP ComAgent communication on XSI1. **NOTES:** • Destination would be DR Site XSI1 Address if configuring Primary Site and vice-versa. • Netmask would be DR Site XSI1 Address if configuring Primary Site and vice-versa. • Gateway IP would be Primary Site XSI1 Gateway if configuring Primary Site and vice-versa.	

Step	Procedure	Details
10. ☐	**Active NOAMP VIP:** Click **Logout**.	
THIS PROCEDURE IS COMPLETE		

7.4 Configure Services on Signaling Network

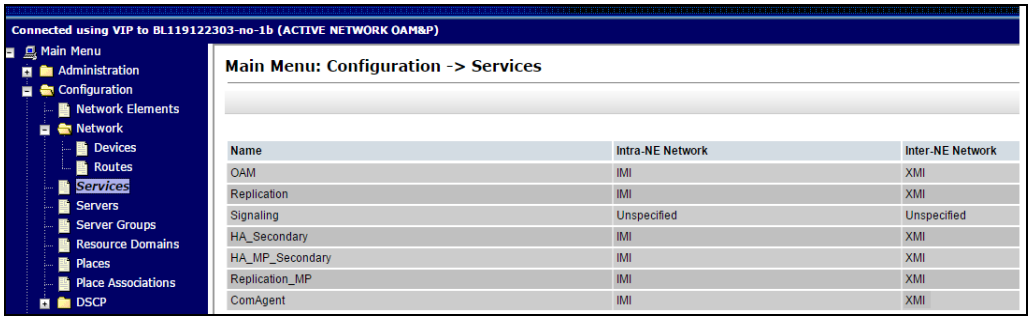
This procedure configures ComAgent communication between NOAMP and MP to use Signaling Network. This procedure also configures dual path HA heartbeat to use the XSI network.

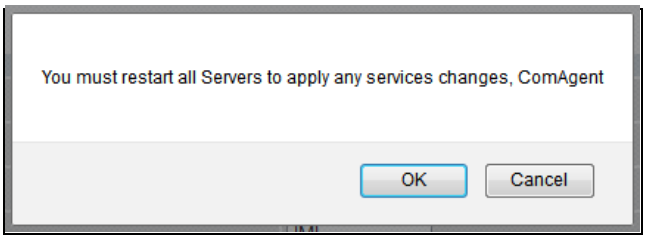
Requirements:

- Section **7.3 Configure NOAMP Signaling Routes (All NOAM Sites)** has been completed

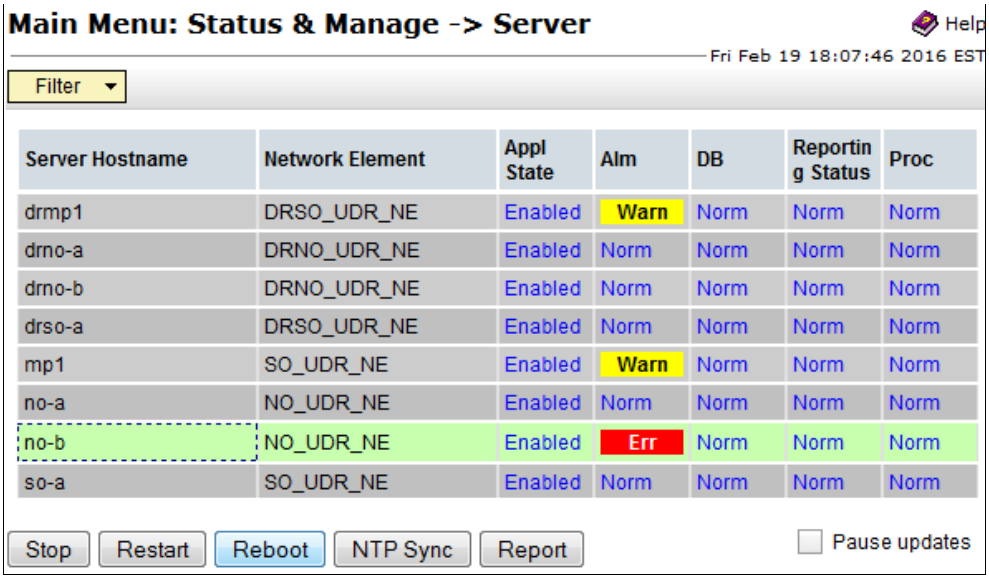
Check (√) each step as it is completed. Boxes have been provided for this purpose.

Procedure 15: Configure Services on Signaling Network

Step	Procedure	Details
1. ☐	**Active NOAMP VIP:** Launch an approved web browser and connect to the NOAMP Server A IP address **NOTE:** Select **Continue to this website (not recommended)** if the security certificate warning displays. Login to the GUI using the default user and password.	
2. ☐	**Active NOAMP VIP:** Navigate to **Main Menu → Configuration → Services**.	

<table>
<tr><th>Step</th><th>Procedure</th><th>Details</th></tr>
<tr><td>3. ☐</td><td>Active NOAMP VIP:
1. Set two services values:
Set Inter-NE HA_Secondary to XSI1
Set Inter-NE ComAgent to XSI1
2. Click Apply.
3. Click OK.</td><td>
<table>
<tr><th>Name</th><th>Intra-NE Network</th><th>Inter-NE Network</th></tr>
<tr><td>OAM</td><td>IMI</td><td>XMI</td></tr>
<tr><td>Replication</td><td>IMI</td><td>XMI</td></tr>
<tr><td>Signaling</td><td>Unspecified</td><td>Unspecified</td></tr>
<tr><td>HA_Secondary</td><td>IMI</td><td>XSI1</td></tr>
<tr><td>HA_MP_Secondary</td><td>IMI</td><td>XMI</td></tr>
<tr><td>Replication_MP</td><td>IMI</td><td>XMI</td></tr>
<tr><td>ComAgent</td><td>IMI</td><td>XSI1</td></tr>
</table>


NOAMP and MP Servers must be restarted.
</td></tr>
<tr><td>4. ☐</td><td>Active NOAMP VIP:
The Services configuration screen opens.</td><td>
<table>
<tr><th>Name</th><th>Intra-NE Network</th><th>Inter-NE Network</th></tr>
<tr><td>OAM</td><td>IMI</td><td>XMI</td></tr>
<tr><td>Replication</td><td>IMI</td><td>XMI</td></tr>
<tr><td>Signaling</td><td>Unspecified</td><td>Unspecified</td></tr>
<tr><td>HA_Secondary</td><td>IMI</td><td>XSI1</td></tr>
<tr><td>HA_MP_Secondary</td><td>IMI</td><td>XMI</td></tr>
<tr><td>Replication_MP</td><td>IMI</td><td>XMI</td></tr>
<tr><td>ComAgent</td><td>IMI</td><td>XSI1</td></tr>
</table>
</td></tr>
</table>

Step	Procedure	Details
5. ☐	Reboot all NOAMP and MP Servers	Reboot all NOAMP and MP servers using the active NOAMP GUI. Go to the **Status & Manage -> Server** screen with the **Reboot** button.  Or on the terminal of each server with the reboot command: `$ sudo reboot` **NOTE:** Run this command on all NOAMPs and MPs.
THIS PROCEDURE IS COMPLETE		

7.5 Accept Installation

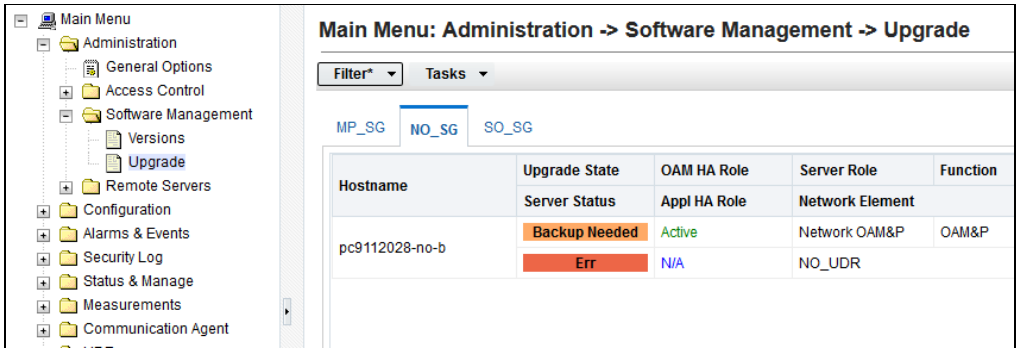
This procedure accepts the installation/upgrade on any servers that have not already been accepted. Depending on the manner of installation, there may be no servers that require acceptance at this point in installation.

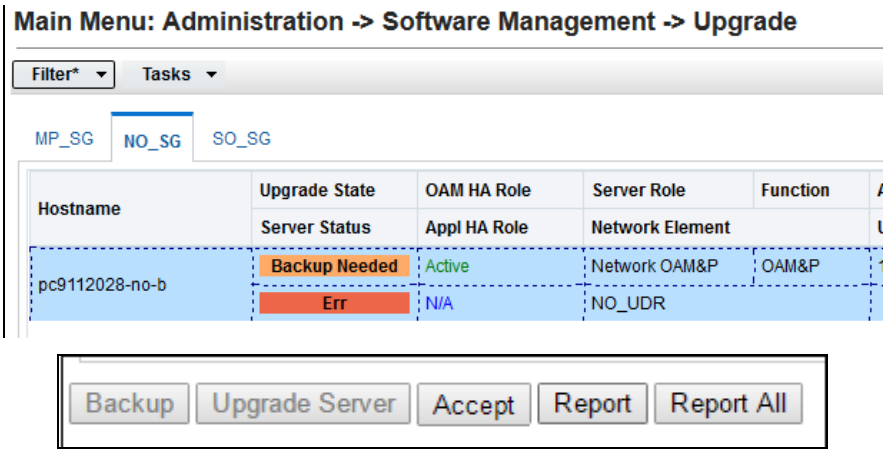
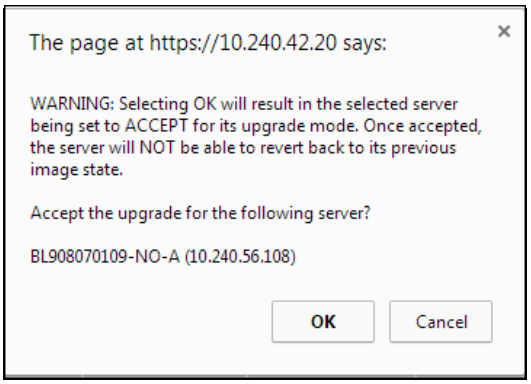
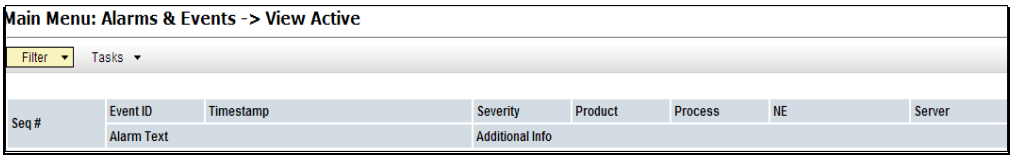
The upgrade needs either to be accepted or rejected before any subsequent upgrades are performed in the future.

Alarm 32532 (Server Upgrade Pending Accept/Reject) displays for each server until either an accept or reject is performed.

Check (√) each step as it is completed. Boxes have been provided for this purpose.

Procedure 16: Accept Installation

Step	Procedure	Details
1. ☐	**Active NOAMP VIP:** Launch an approved web browser and connect to the NOAMP Server A IP address **NOTE:** Select **Continue to this website (not recommended)** if the security certificate warning displays. Login to the GUI using the default user and password.	
2. ☐	**Active NOAMP VIP:** Navigate to **Main Menu → Administration → Software Management → Upgrade**	

Step	Procedure	Details
3. ☐	**Active NOAMP VIP (GUI):** Accept upgrade for selected servers	1. Accept upgrade of selected servers 2. Select the servers where the upgrade has not been accepted. 3. Click **Accept**.  A confirmation dialog warns that after the upgrade is accepted, the servers cannot be reverted back to their previous image states.  4. Click **OK**. The Upgrade Administration screen displays. An informational message indicates the servers with the accepted upgrade.
4. ☐	**Active NOAMP VIP:** Accept upgrade of the rest of the system	1. Accept upgrade on all remaining servers in the system: 2. Repeat all sub-steps of step 3 of this procedure on remaining servers until the upgrade of all servers in the User Data Repository system has been accepted. **NOTE:** As the upgrade is accepted on each server, alarm 32532 (Server Upgrade Pending Accept/Reject) is removed.
5. ☐	**Active NOAMP VIP:** Verify accept	Check that alarms are removed: 1. Navigate to this **Alarms & Events > View Active**.  2. Verify that alarm 32532 (Server Upgrade Pending Accept/Reject) is not displayed in the active alarms on User Data Repository system.

Step	Procedure	Details
THIS PROCEDURE IS COMPLETE		

8. APPENDIXES

APPENDIX A. VMWARE VSPHERE ENVIRONMENT SETUP

A.1 Host Datastore configuration using vSphere

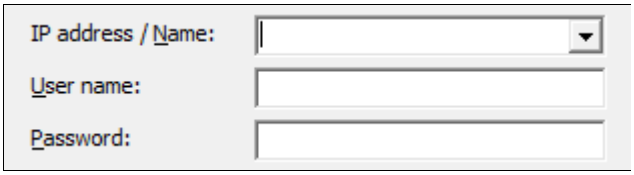
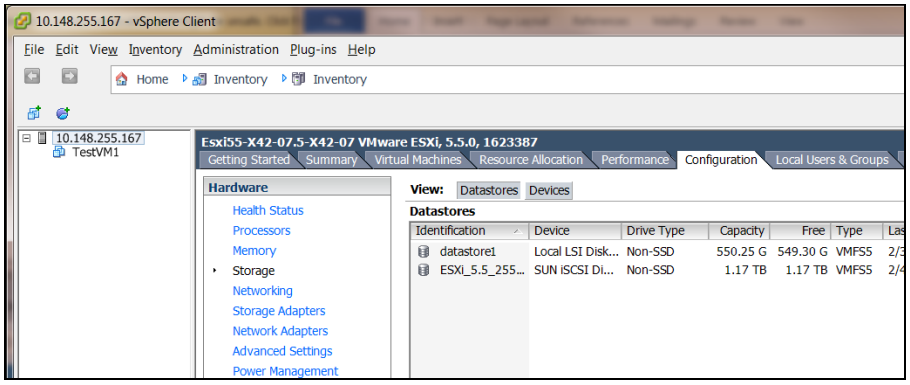
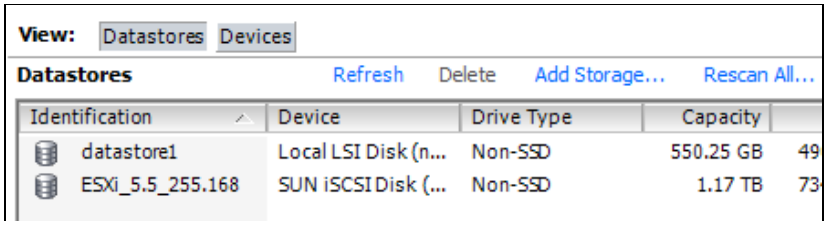
The following procedure is performed to configure a datastore on the host so that the correct amount of storage is available for Oracle Communications User Data Repository component VMs. These steps and screen captures are taken from vSphere Client.

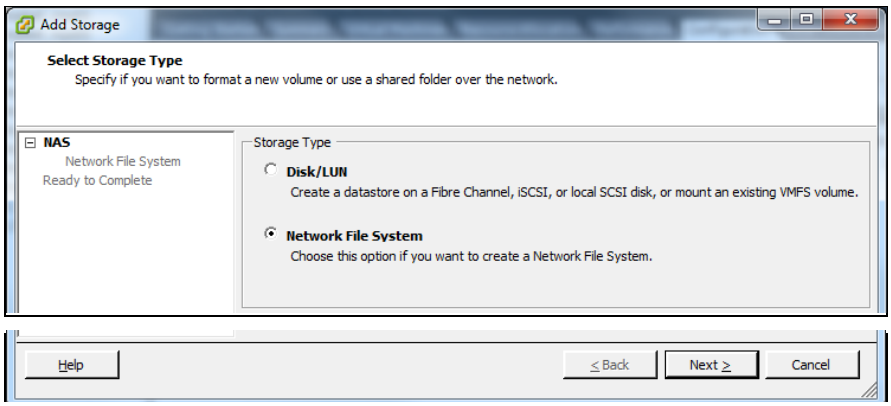
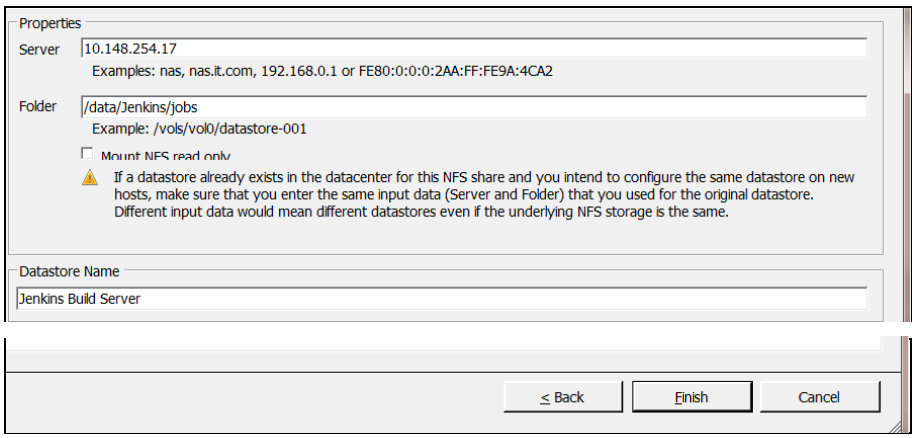
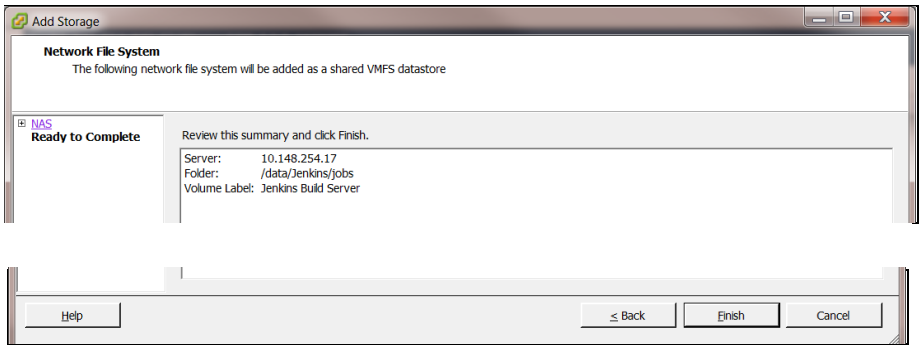
This procedure configures host networking.

Check (√) each step as it is completed. Boxes have been provided for this purpose.

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

Procedure 17: **Host Datastore Configuration with vSphere**

Step	Procedure	Details
1. ☐	Log into the Vmware client	
2. ☐	**VMware client:** 1. Select the host in the left tree menu 2. Click **Configuration** tab on right 3. Click **Storage** in the Hardware menu	
3. ☐	**VMware client:** Click **Add Storage**	

Step	Procedure	Details
4. ☐	**VMware client:** 1. Select **Network File System**. 2. Click **Next**	
5. ☐	**VMware client:** 1. Enter a Server IP, Folder, and Datastore Name in the provided fields according to the resource availability in your VMware host environment 2. Click **Next**	
6. ☐	**VMware client:** 1. Review the Datastore summary 2. Click **Finish**	
THIS PROCEDURE IS COMPLETE		

A.2 Host networking configuration using vSphere

The following procedure configures the recommended networking on the host so that the appropriate vNICs are available for Oracle Communications User Data Repository component VMs. These steps and screen captures are from the vSphere Client.

To view the currently available networks on the host, select the **Summary** tab. In the example below, several OAM and Signaling Networks are configured. Each are associated with a vSwitch on the host and physical Ethernet.

Oracle Communications User Data Repository VMs can be associated with up to five vLAN Networks. All of the vNICs must be created and configured so that they can be available for the guest. The expected vNICs correspond to the following dedicated interfaces of the Oracle Communications User Data Repository and so the recommendation is the label them using the interface name:

- XMI

  OAM Management Interface for the application

- XSI1

  Signaling Interface

- XSI2

  Signaling Interface

- IMI

  Replication Interface

- Guest Management

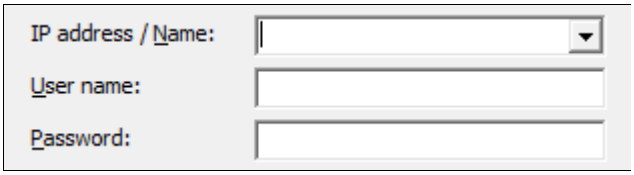
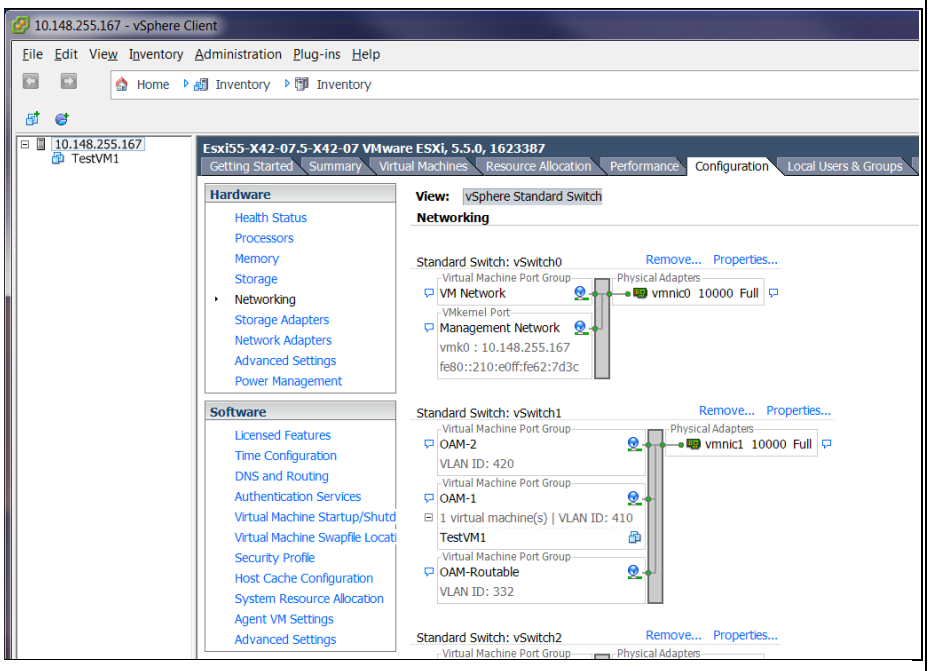
  Reserved for Guest management activities.

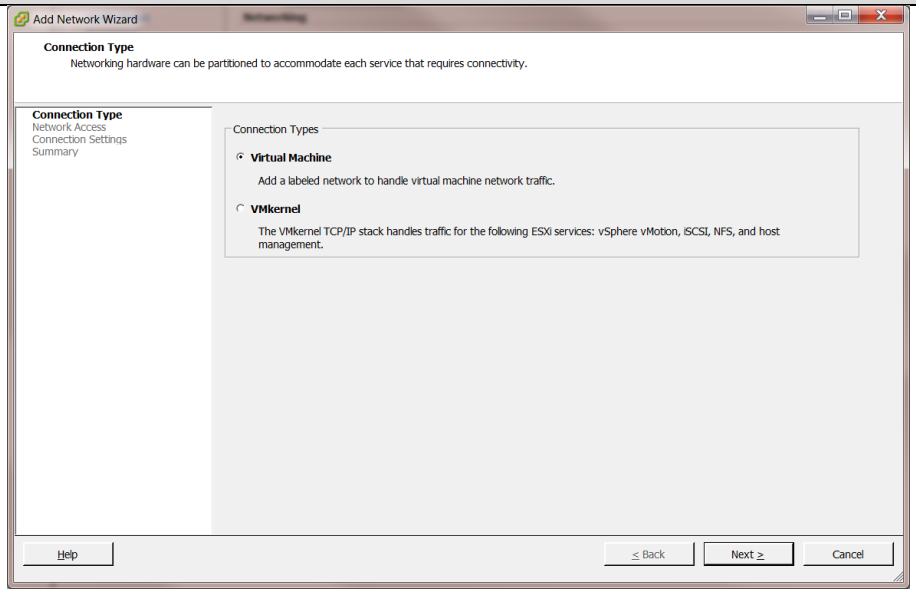
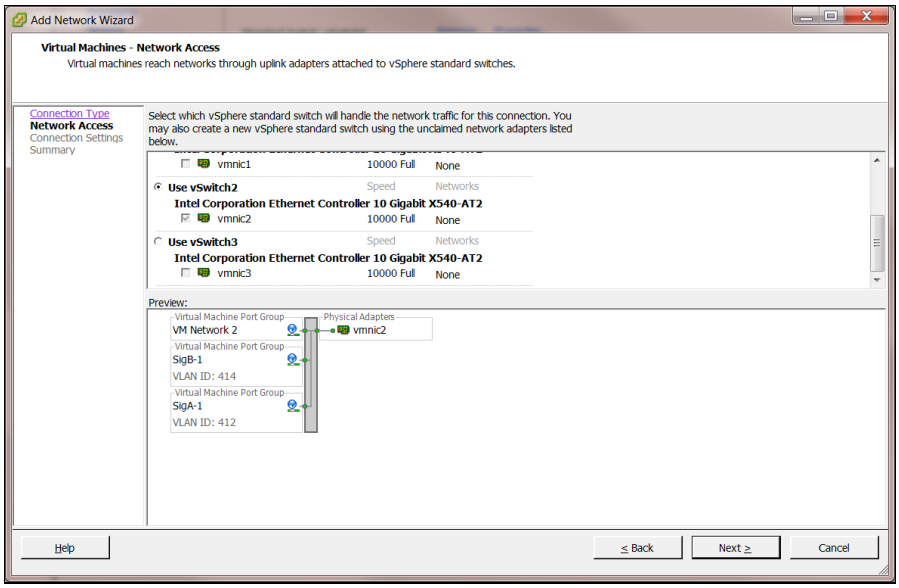
This procedure configures host networking.

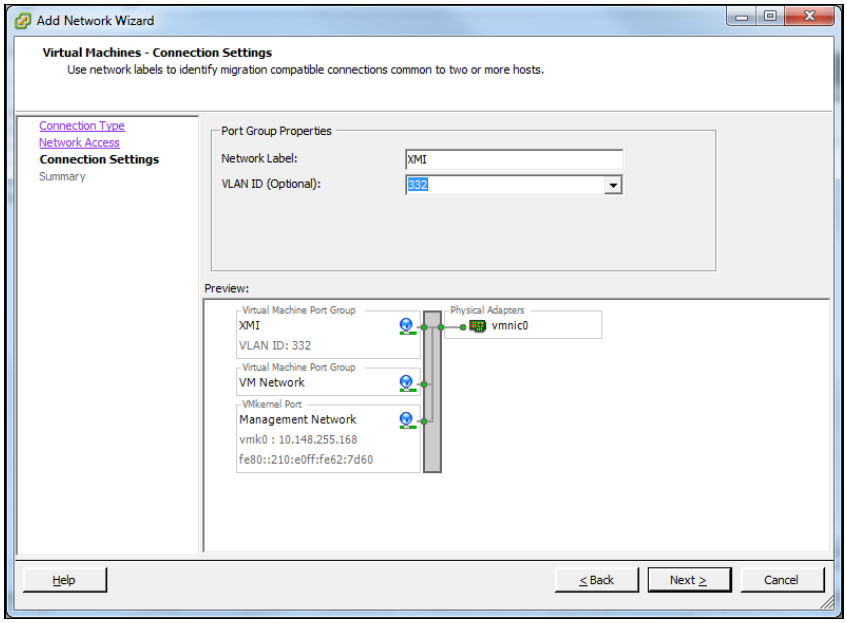
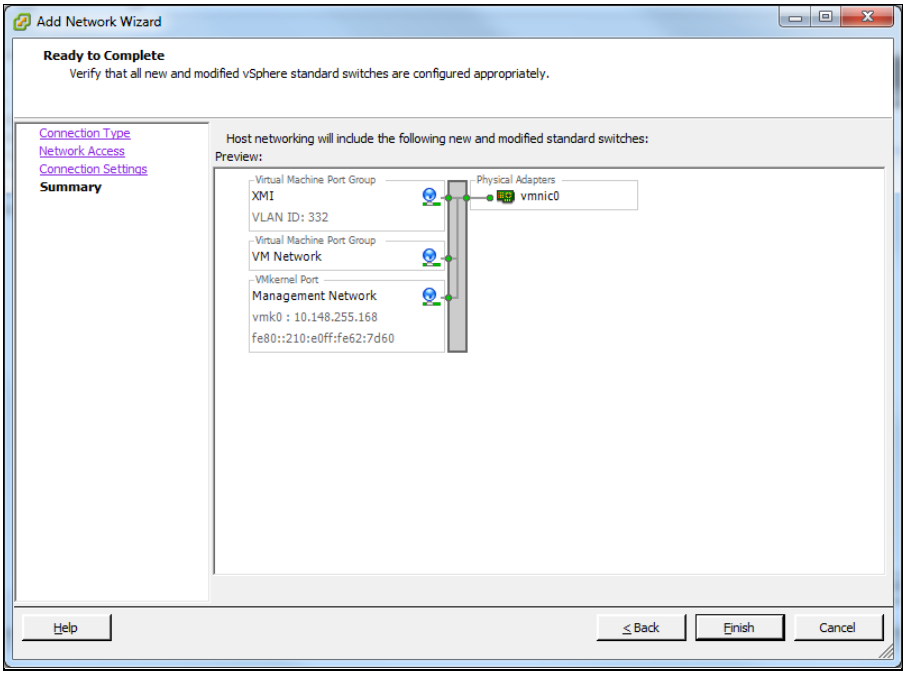
Check (√) each step as it is completed. Boxes have been provided for this purpose.

If this procedure fails, contact My Oracle Support, and ask for assistance. See Appendix K for information on contacting My Oracle Support.

Procedure 18: Host Networking Configuration with vSphere

Step	Procedure	Details
7. ☐	Log into the Vmware client	
8. ☐	**VMware client:** 3. Select the host on the left tree menu 4. Click **Configuration** tab on right 5. Select **Networking** in the Hardware list.	

Step	Procedure	Details
9. ☐	**VMware client:** 1. Select **Add Networking** from top 2. Select connection type **Virtual Machine** 3. Click **Next**	
10. ☐	**VMware client:** 1. Select the vSwitch type based on the host hardware. 2. Click **Next**.	

Step	Procedure	Details
11. ☐	**VMware client:** Label the Network, enter the VLAN ID, click **Next**	 **NOTE:** It is recommended that the name reflect how the Network is used or referenced from within the Guest that is XMI, IMI, XSI1, and so on.
12. ☐	**VMware client:** Review the information and click **Finish**	
13. ☐	Repeat this procedure for each network	Repeat this procedure for each network type that is supported by this VMWare host: ☐ XMI ☐ IMI ☐ XSI-1 ☐ XSI-2 (optional)
THIS PROCEDURE IS COMPLETE		

APPENDIX B. VMWARE VSPHERE ORACLE COMMUNICATIONS USER DATA REPOSITORY DEPLOYMENT

B.1 Create Guests from OVA

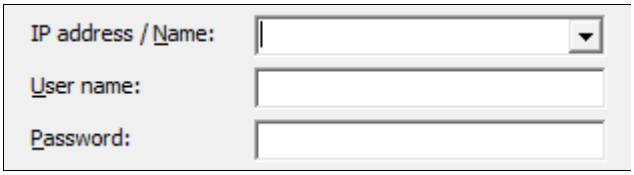
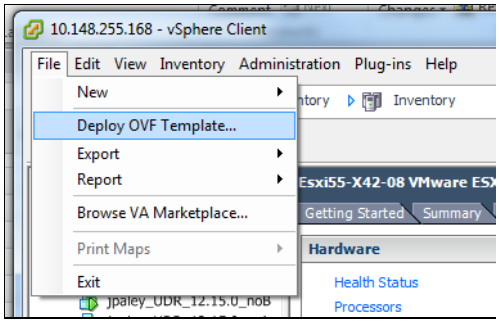
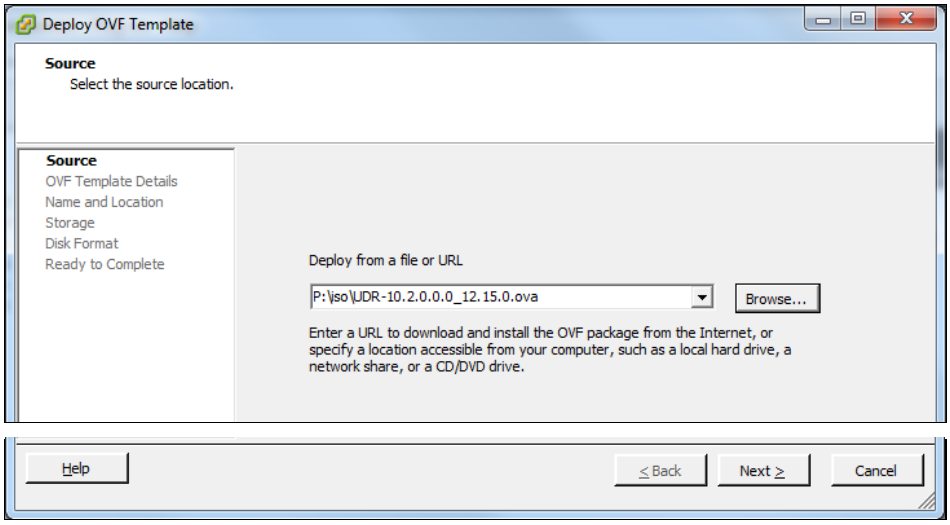
This procedure creates Oracle Communications User Data Repository virtual machines (guests) from OVA.

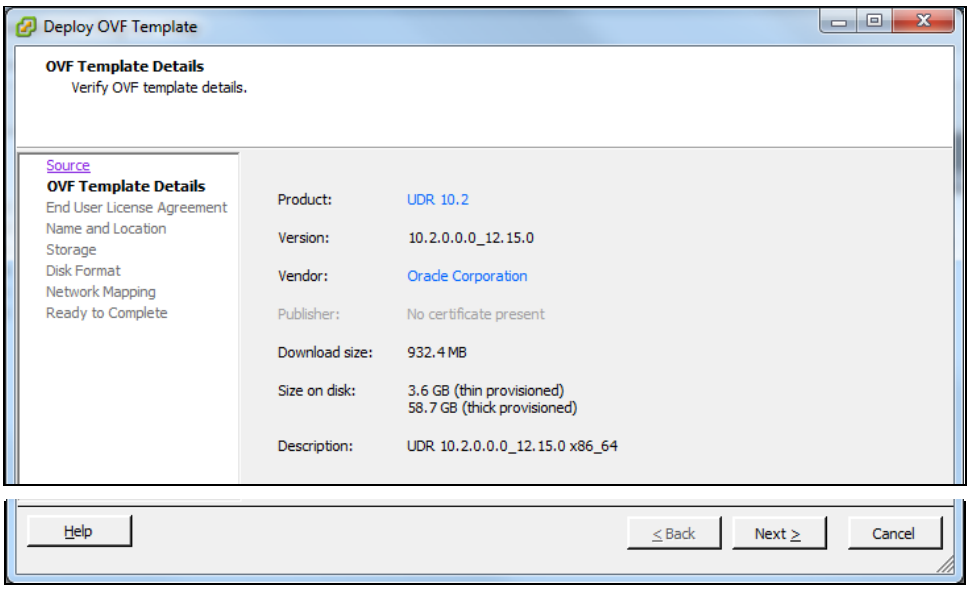
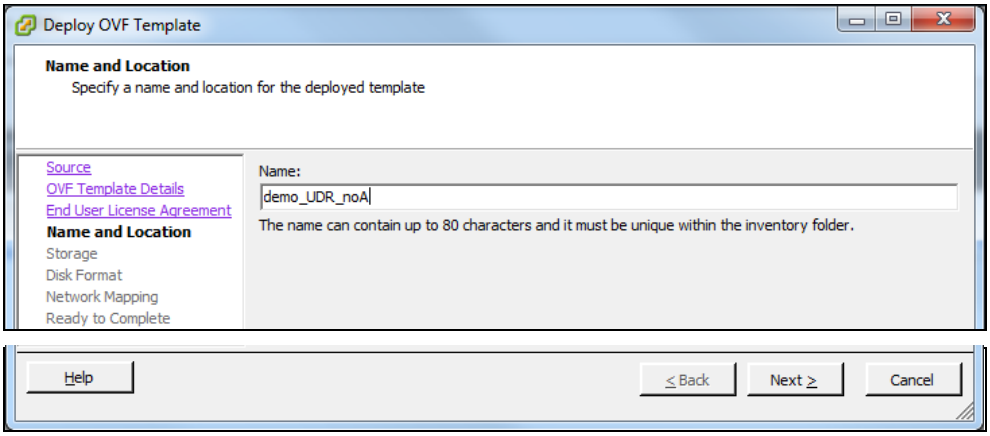
Required material:

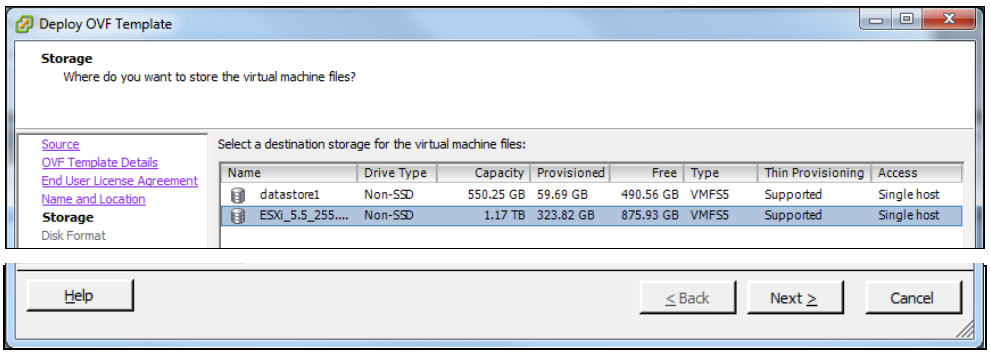
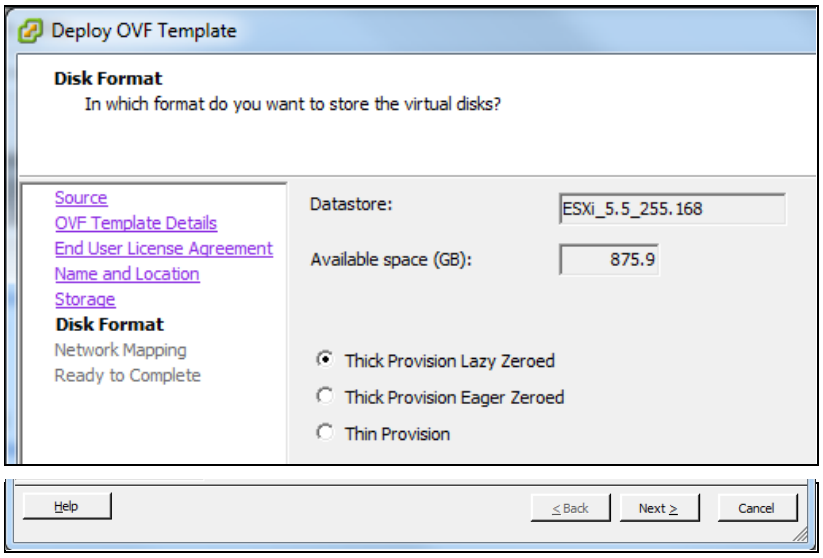
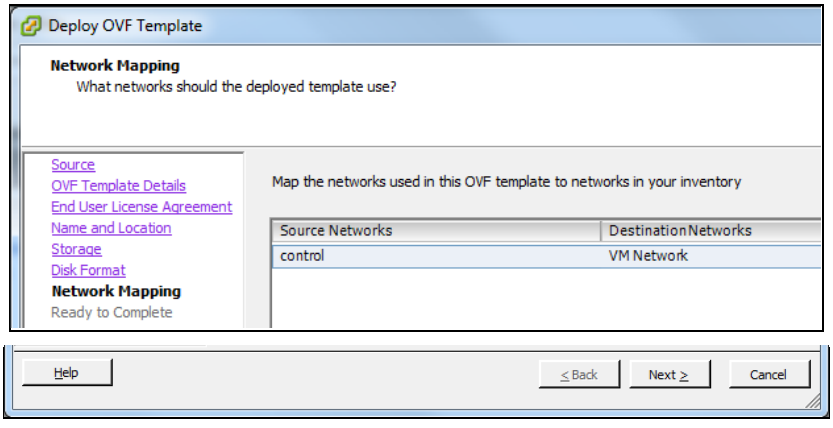
- Oracle Communications User Data Repository OVA

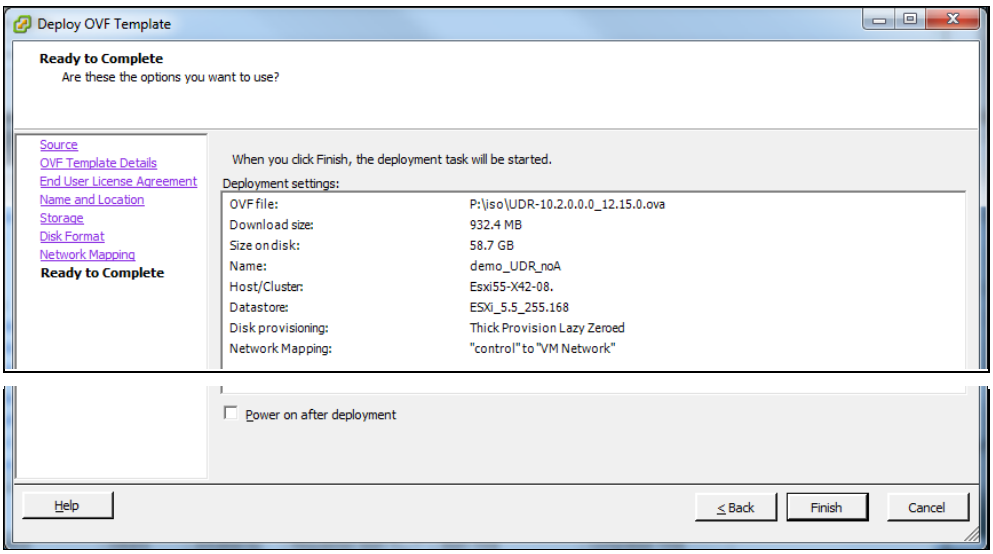
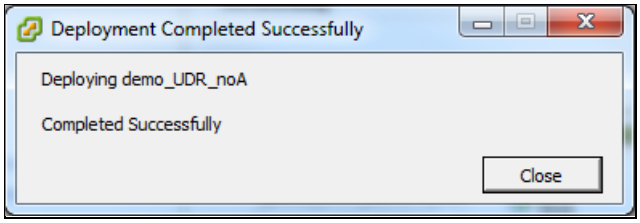
Check (√) each step as it is completed. Boxes have been provided for this purpose.

Procedure 19: Deploy Oracle Communications User Data Repository OVA

Step	Procedure	Details
1. ☐	Log into the VMware client	
2. ☐	**VMware client:** Navigate to **File → Deploy OVF Template**	
3. ☐	**VMware client:** 1. Click **Browse** and select the OVA file 2. Click **Next**	

Step	Procedure	Details
4. ☐	**VMware client:** Details screen displays, click **Next**	
5. ☐	**VMware client:** Accept End User License Agreement by clicking **Accept** then clicking **Next**	
6. ☐	**VMware client:** Name the virtual machine and click **Next**	

Step	Procedure	Details
7. ☐	**VMware client:** Select the destination storage for the virtual machine from the list of available data stores then click **Next**.	 **NOTE:** For an upgradeable deployment, ensure the data store has enough free capacity to support the type of VM according to the profile selected from [1].
8. ☐	**VMware client:** Choose Thick Provision Lazy Zeroed and click **Next**.	
9. ☐	**VMware client:** Click **Next**	

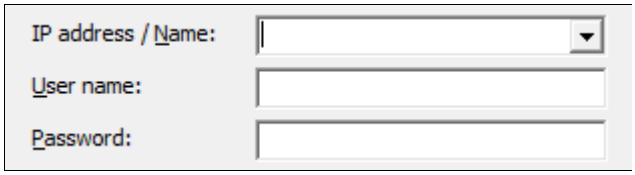
Step	Procedure	Details
10. ☐	**VMware client:** Review deployment settings and click **Finish**	
11. ☐	**VMware client:** After a short time, a deployment status message is displayed. Click **Close**.	
THIS PROCEDURE IS COMPLETE		

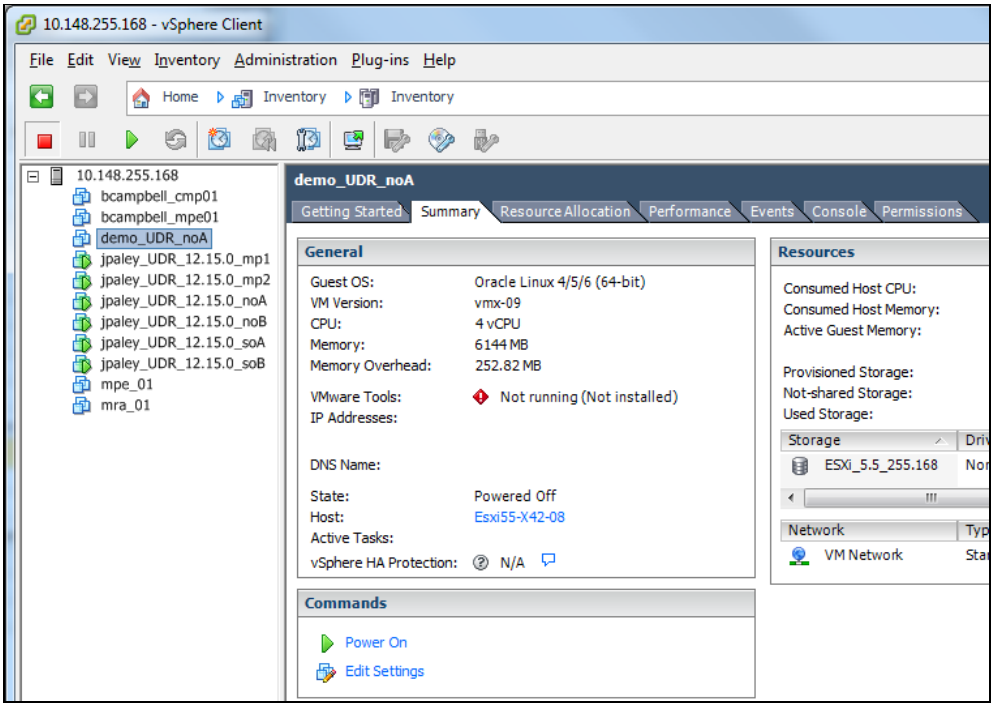
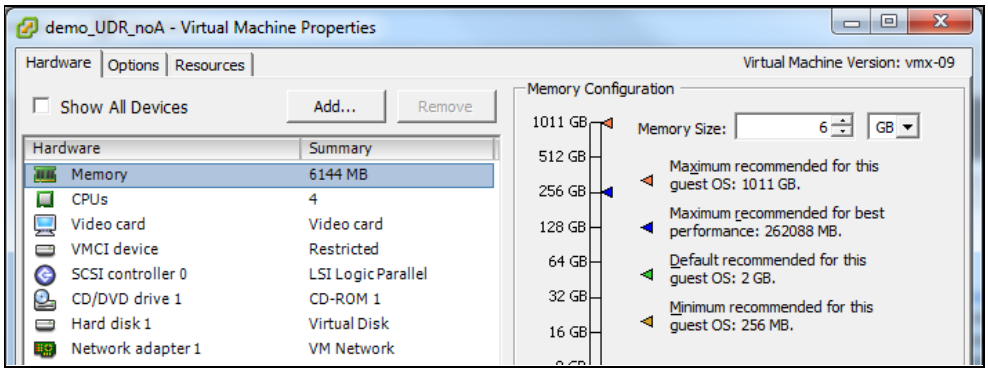
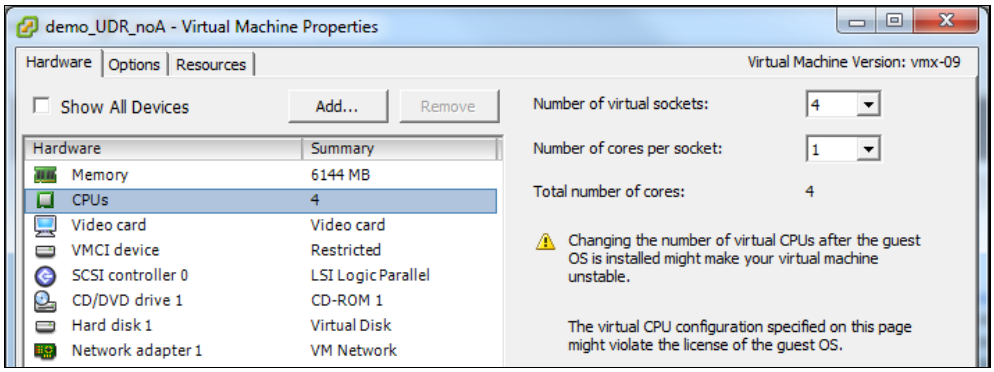
B.2 Configure Guest Resources

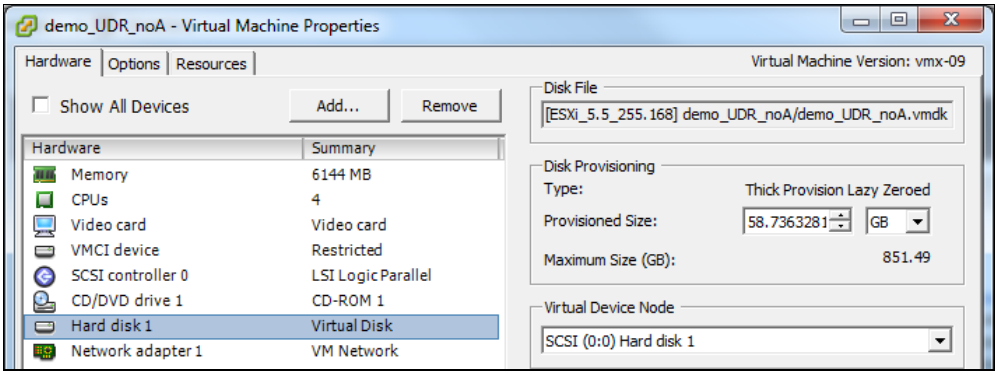
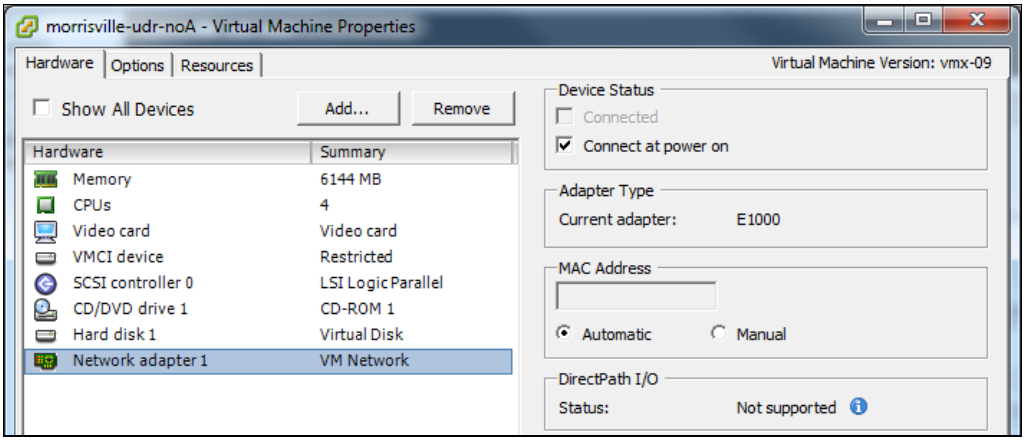
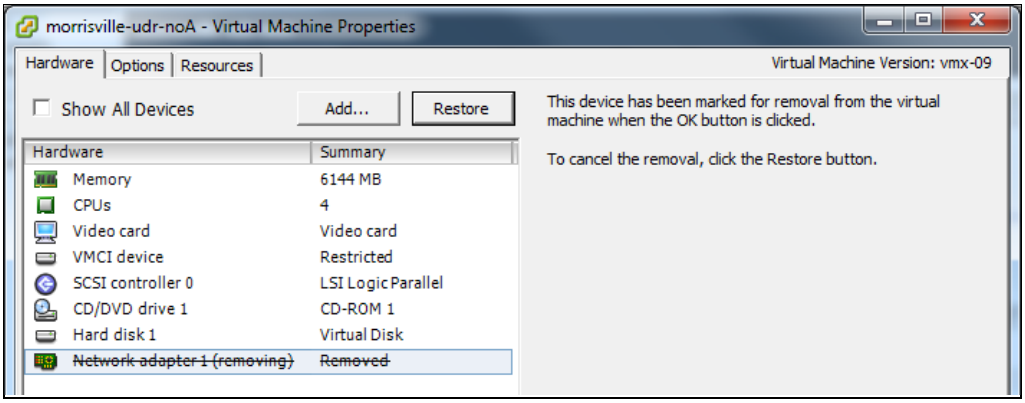
This procedure configures the required resource allocations and associations for Oracle Communications User Data Repository virtual machines (guests) and power them on.

Check (√) each step as it is completed. Boxes have been provided for this purpose.

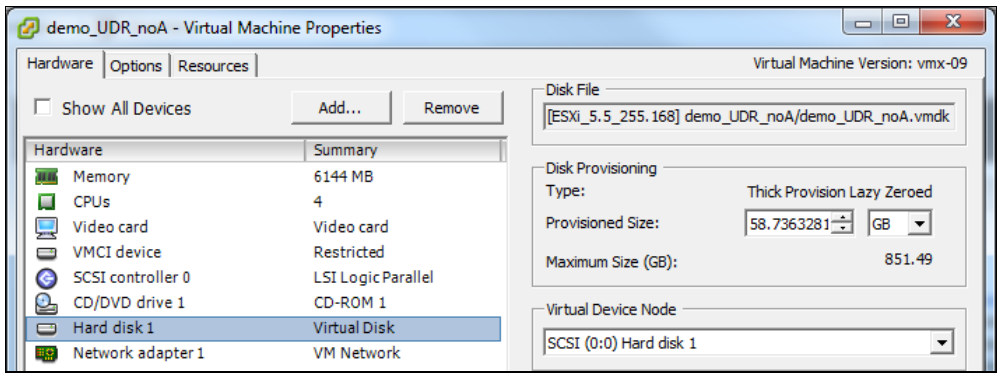
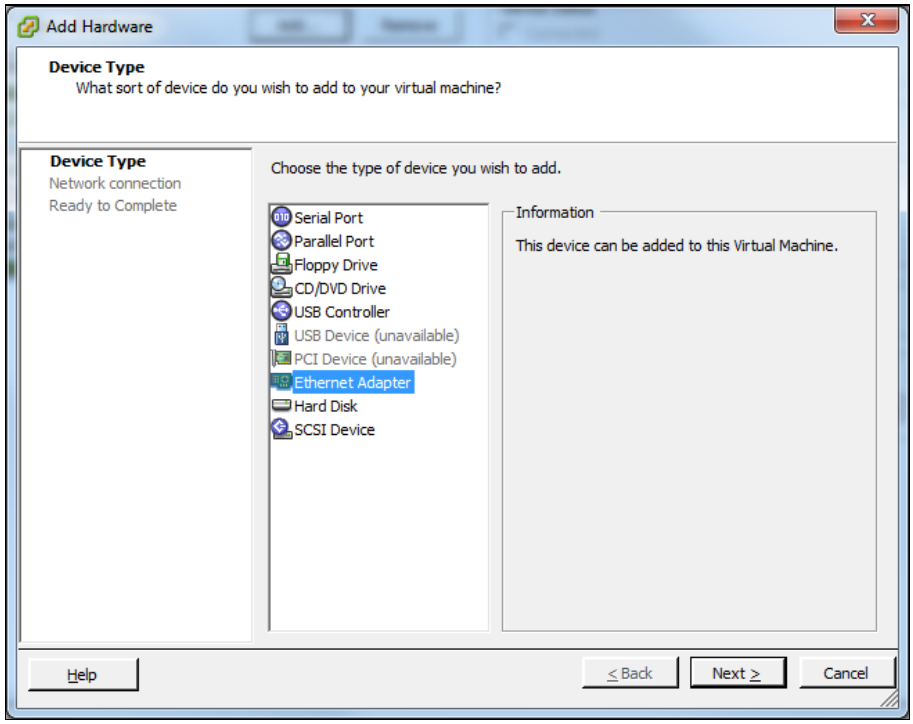
Procedure 20: Configure Guest Resources

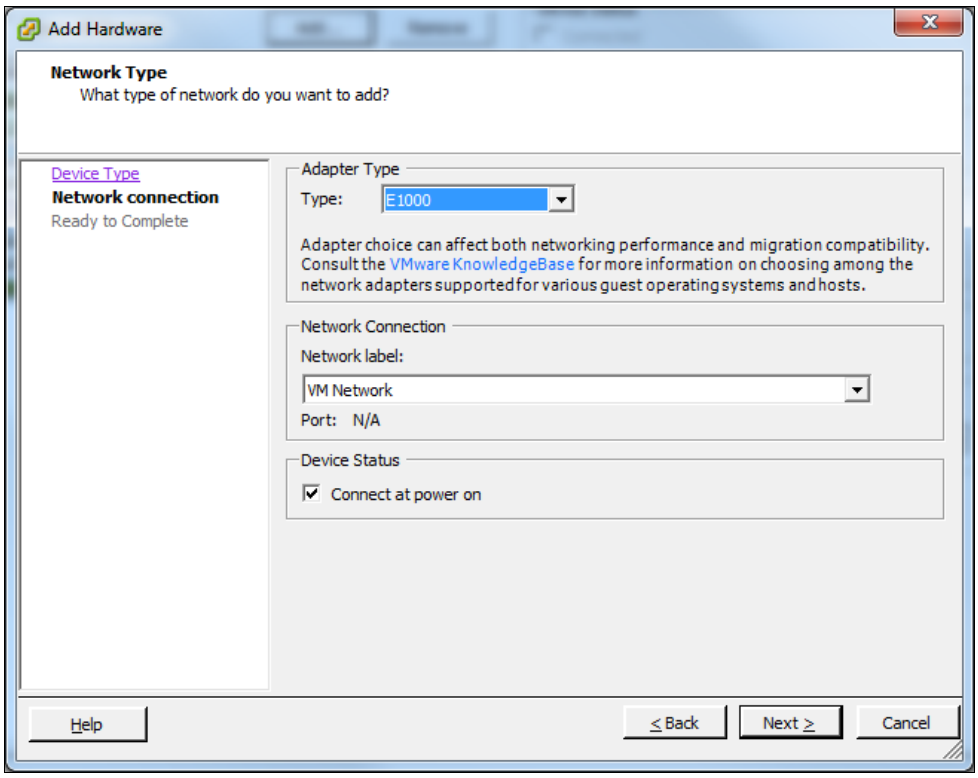
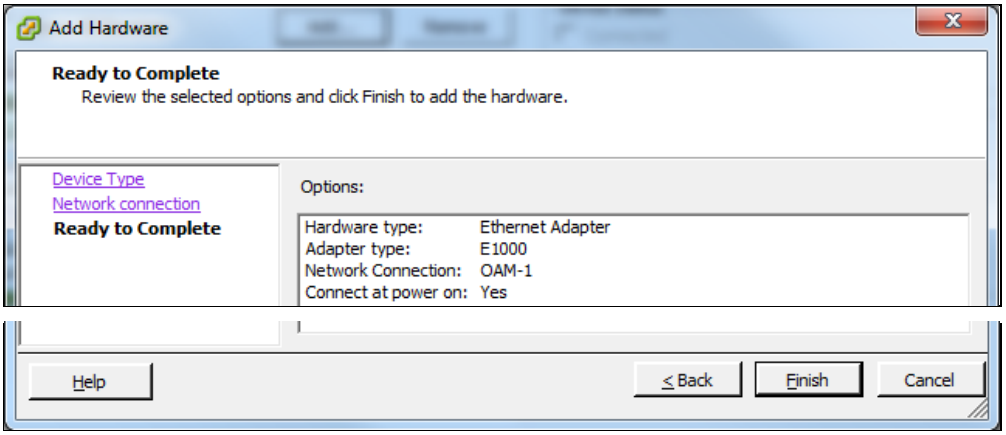
Step	Procedure	Details
1. ☐	**VMware client:** Log into the Vmware client	

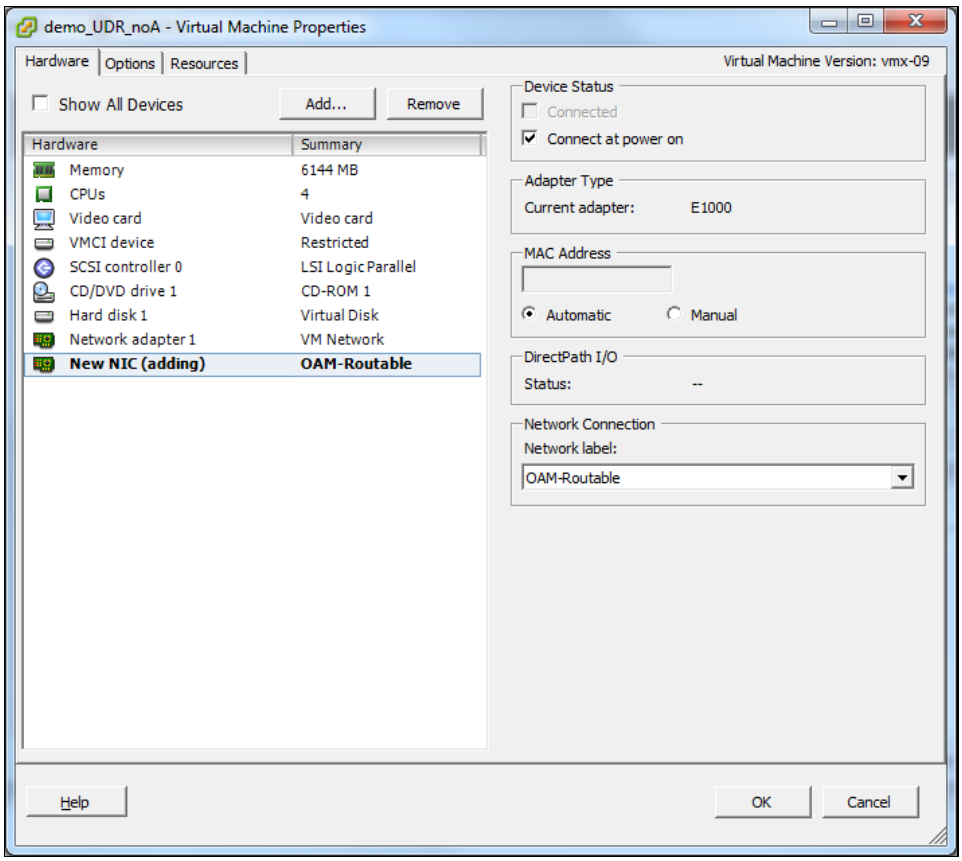
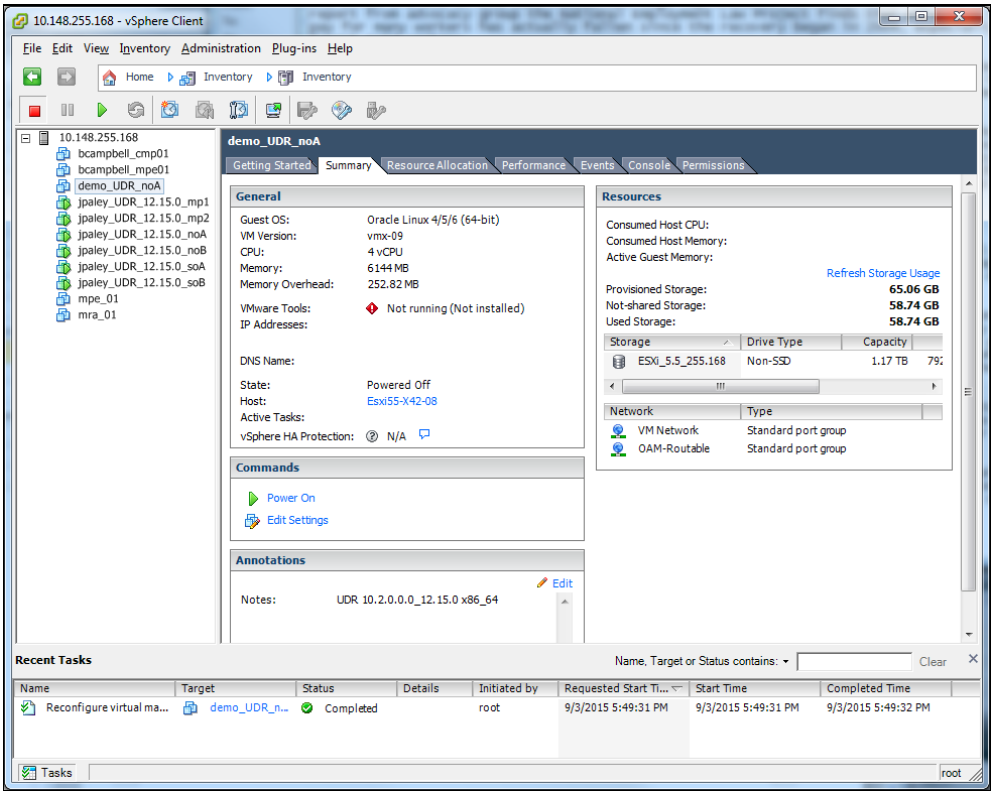
Step	Procedure	Details
2. ☐	**VMware client:** 1. Select the Oracle Communications User Data Repository virtual machine from the left tree menu 2. Select the **Summary** tab 3. Click **Edit Settings** in the Commands section	
3. ☐	**VMware client:** Select **Memory** from the Hardware menu and adjust Memory Size to suit the role of the server. • NOAMP: 48 GB • SOAM: 4 GB • MP: 16 GB	
4. ☐	**VMware client:** Select **CPUs** from the Hardware menu and adjust the Number of virtual sockets according to [1].	

<table>
<tr><th>Step</th><th>Procedure</th><th>Details</th></tr>
<tr><td>5. ☐</td><td>VMware client:
Select Hard disk 1 from the Hardware menu and adjust the Provisioned Size according to [1].</td><td> 
</td></tr>
<tr><td>6. ☐</td><td>VMware client:
1. Select any Network adapter that exists by default
2. Click Remove.</td><td> 
</td></tr>
<tr><td>7. ☐</td><td>VMware client:
The network adapter is crossed out and a removal message displayed</td><td> 
</td></tr>
<tr><td>8. ☐</td><td>VMware client:
Take note of the order in which networks are added.</td><td>NOTE: The order the networks are added affects their device order within the virtual machine. Add the networks in the order they are listed for each server type.

<table>
<tr><th>NOAMP</th><th>SOAM</th><th>MP</th></tr>
<tr><td>1. ☐ XMI
2. ☐ IMI
3. ☐ XSI-1 (optional)</td><td>1. ☐ XMI
2. ☐ IMI</td><td>1. ☐ XMI
2. ☐ IMI
3. ☐ XSI-1
4. ☐ XSI-2 (optional)</td></tr>
</table></td></tr>
</table>

Step	Procedure	Details
9. ☐	**VMware client:** On the **Hardware** tab, click **Add**	
10. ☐	**VMware client:** Select **Ethernet Adapter** from the list of devices and click **Next**	

Step	Procedure	Details
11. ☐	**VMware client:** 1. Select the Adapter Type to conform to your virtual host 2. Select the Network Label to match the network type 3. Click **Next**	
12. ☐	**VMware client:** Confirm Option settings and click **Finish**	
13. ☐	**VMware client:** Repeat as required	Repeat steps Error! Reference source not found. to Error! Reference source not found. to add networks that are required for the role of the server.

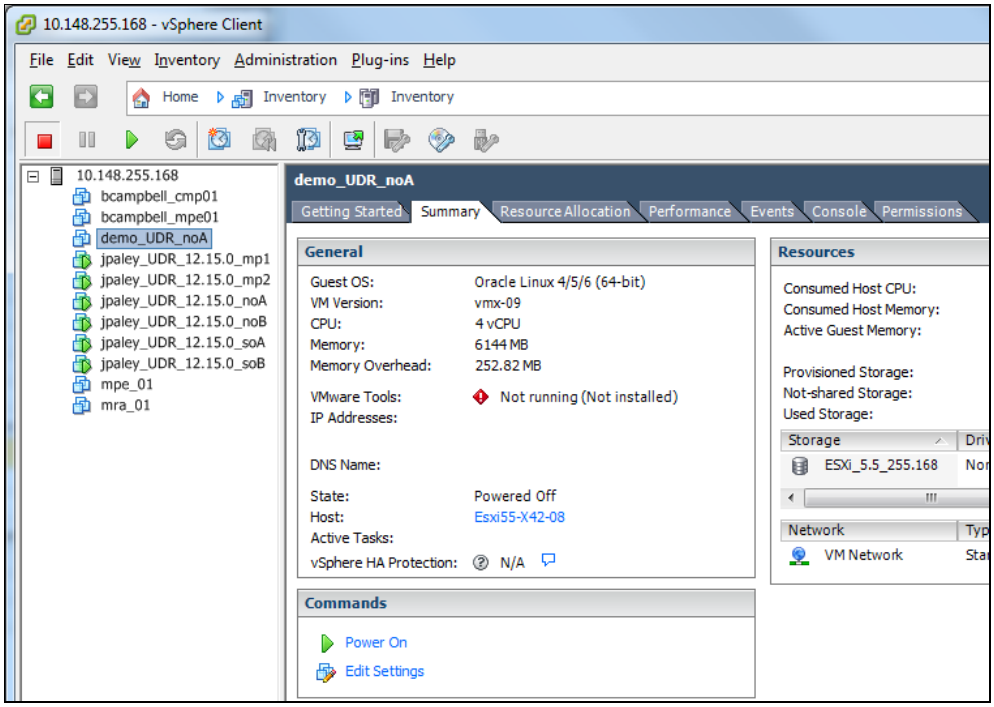
Step	Procedure	Details
14. ☐	**VMware client:** After all networks are added, confirm their correct entry in the Hardware menu then click **OK**.	
15. ☐	**VMware client:** New devices and networks are listed on the **Summary** tab and Reconfigure task shows status Completed under Recent Tasks. Click **Power On** in the Commands section.	
THIS PROCEDURE IS COMPLETE		

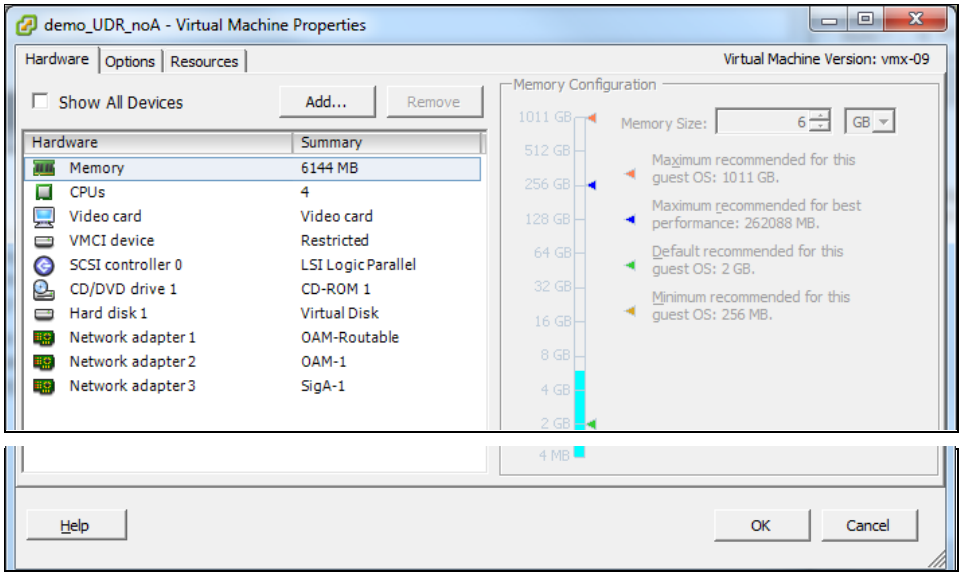
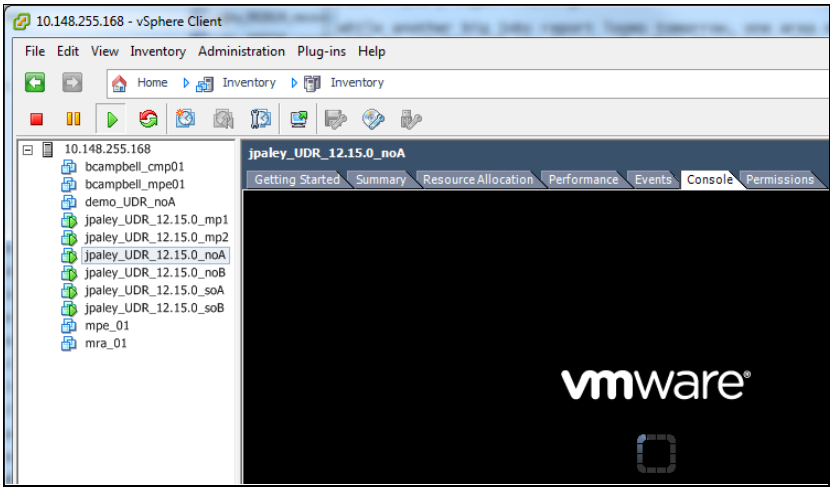
B.3 Configure Guest Network

This procedure configures the OAM network on Oracle Communications User Data Repository virtual machines (guests).

Check (√) each step as it is completed. Boxes have been provided for this purpose.

Procedure 21: Configure Guest OAM Network

Step	Procedure	Details
1. ☐	Log into the Vmware client	
2. ☐	**VMware client:** 1. Select the Oracle Communications User Data Repository virtual machine from the left tree menu 2. Selecy the **Summary** tab 3. Click **Edit Settings** in the Commands section.	

Step	Procedure	Details
3. ☐	**VMware client:** 1. Take note of the Network adapter assigment under **Hardware** tab for each application network. 2. Click **Cancel**.	 Network adapters are enumerated under the **Hardware** tab. Their adapter number in the Hardware column corresponds to their zero-based device name assignment within a running guest. For instance, in the example capture above: • OAM (XMI) is on eth0 device • OAM-1 (IMI) is on eth1 device • Sig-A (XSI-1) is on eth2 device Note the device NIC number assigment of the following networks: XMI: _____ IMI: _____ XSI-1: _____ XSI-2 : _____ (optional)
4. ☐	**VMware client:** 1. Select the **Console** tab 2. Click inside the console window to bring focus there **NOTE:** Press **Ctrl-Alt** to escape from console.	
5. ☐	**VM Console:** Login to console as admusr	`login as: admusr` `Password:`

Step	Procedure	Details

6. ☐	**VM Console:**
	Configure XMI network
		1. Set the XMI device for routable OAM access:
		NOTE: Where ethX is the interface associated with the XMI network
		`$ sudo netAdm add --device=eth0 --address=<Guest_XMI_IP_Address> --netmask=<XMI_Netmask> --onboot=yes --bootproto=none`
		2. Add the default route for XMI:
		`$ sudo netAdm add --route=default --gateway=<Gateway_XMI_IP_Address> --device=eth0`
		NOTE: The network device may be different than the device listed here (eth0) if the order of network adapter insertion was different than shown. Refer to step **3** for this assignment.

7. ☐	**VM Console:** Configure XSI network (NO and MP Server Only)	(Only for NO and MP Servers) Set the XSI device for routable signaling network access: **NOTE:** Where ethX is the interface associated with the XSI network `$ sudo netAdm add --device=eth2 --address=<Guest_XSI_IP_Address> --netmask=<XSI_Netmask> --onboot=yes --bootproto=none` **NOTE:** The network device may be different than the device listed here (eth2) if the order of network adapter insertion was different than shown. Refer to step **3** for this assignment.
8. ☐	**VM Console:** Repeat as required (MP Server Only)	(Only for MP Servers) If a second signaling network is in use, repeat step **7** to add XS1-2 (eth3). Adjust parameter values accordingly.
9. ☐	**VM Console:** Exit console	`$ exit` **NOTE:** Press **Ctrl-Alt** to escape from console.
THIS PROCEDURE IS COMPLETE		

APPENDIX C. VMWARE VCLOUD DIRECTOR ORACLE COMMUNICATIONS USER DATA REPOSITORY DEPLOYMENT

C.1 vCloud Director Oracle Communications User Data Repository Media Upload

This procedure uploads Oracle Communications User Data Repository media (ISO or OVA) into vCloud Director Catalogs.

Needed material:

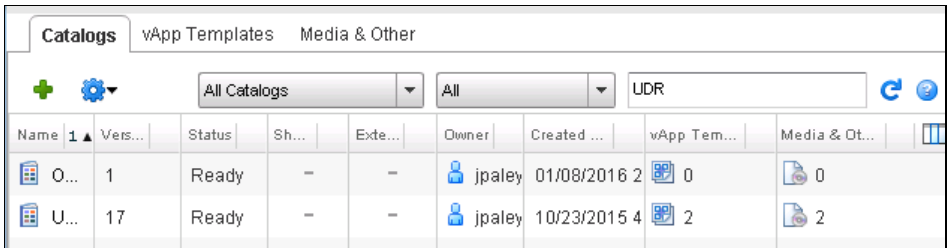
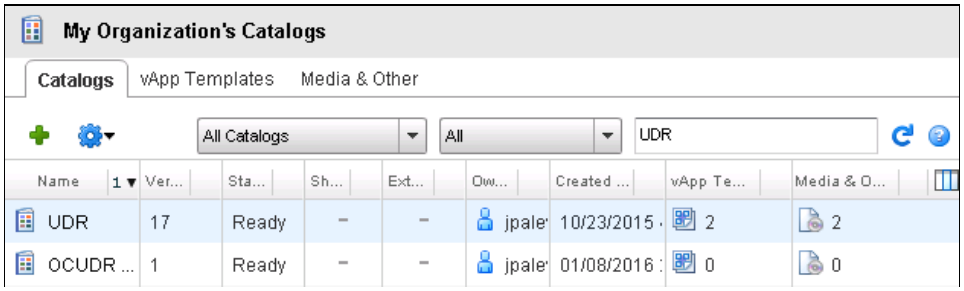
- Oracle Communications User Data Repository OVA

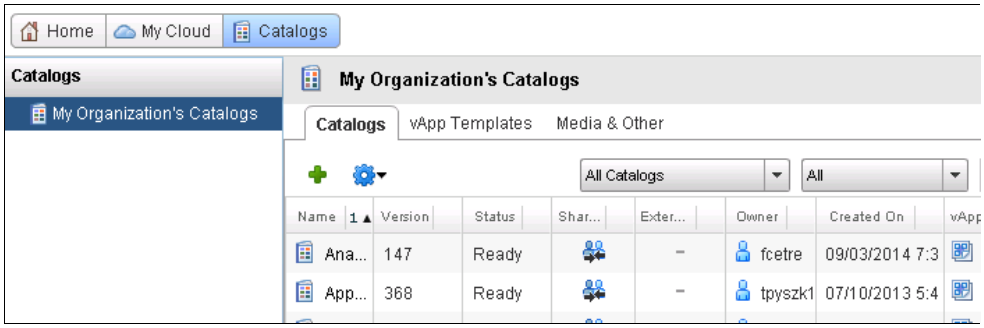
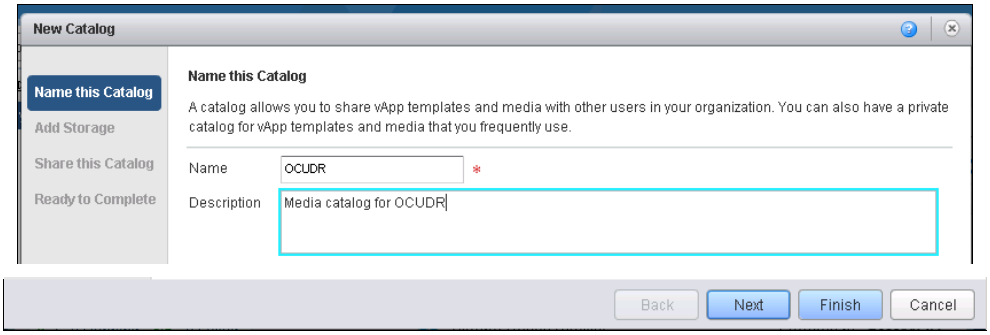
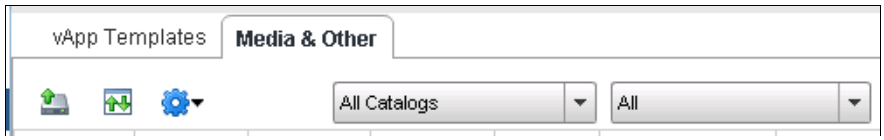
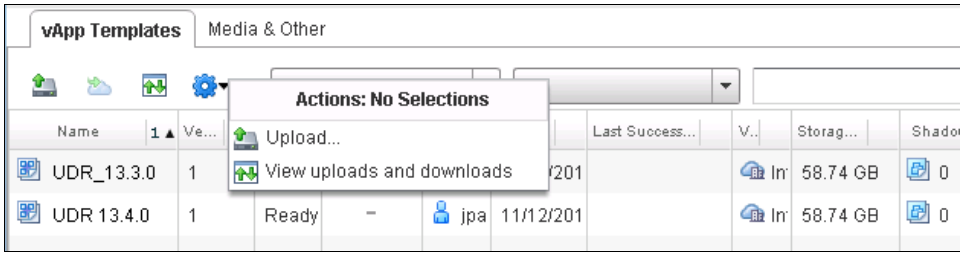
Optional material (required for ISO install only):

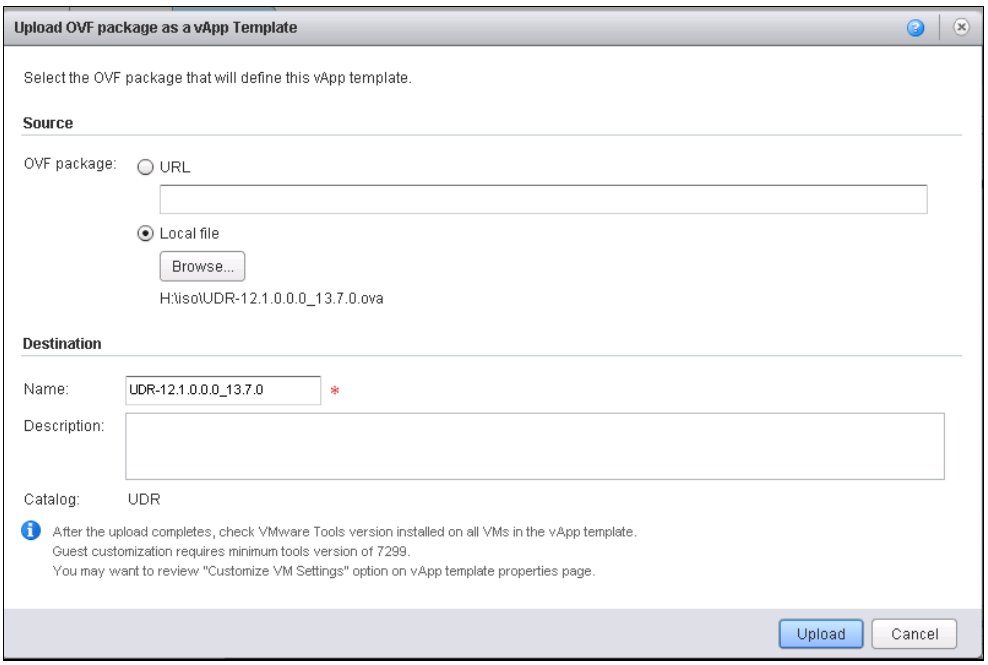
- Oracle Communications User Data Repository ISO
- TPD Platform ISO

Check (√) each step as it is completed. Boxes have been provided for this purpose.

Procedure 22: vCloud Director Oracle Communications User Data Repository Media Upload

Step	Procedure	Details
1. ☐	Log into the VMware vCloud Director	
2. ☐	**vCloud Director:** Enter Oracle Communications User Data Repository catalog name in the search field and hit Enter.	
3. ☐	**vCloud Director:** Click the catalog name and proceed to step 6.	 **NOTE:** If a catalog for Oracle Communications User Data Repository does not exist, create one using steps 4 and 5.

Step	Procedure	Details
4. ☐	**vCloud Director:** Navigate to **Catalogs → +** (Green Plus)	
5. ☐	**vCloud Director:** 1. Input catalog name and description. 2. Unless this catalog requires special storage or sharing, click **Finish**.	 **NOTE:** After clicking **Finish**, return to step 2 of this procedure to access the catalog.
6. ☐	**vCloud Director:** Select: • **vApp Templates** for OVA upload • **Media & Other** for ISO upload	
7. ☐	**vCloud Director:** Navigate to **Blue Gear Symbol → Upload**	

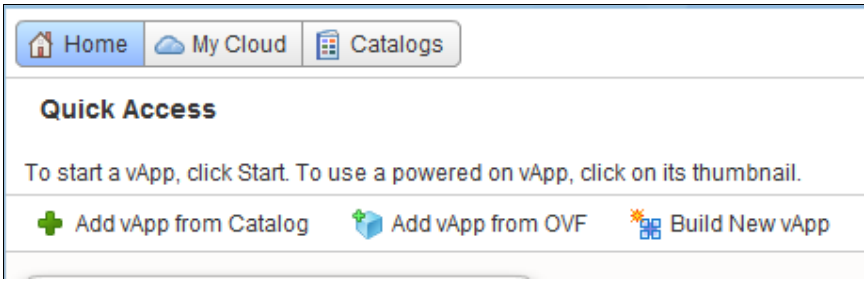
Step	Procedure	Details
8. ☐	**vCloud Director:** In the source section, select: • URL and enter a Name. • Local file and then select a file Click **Upload**.	
THIS PROCEDURE IS COMPLETE		

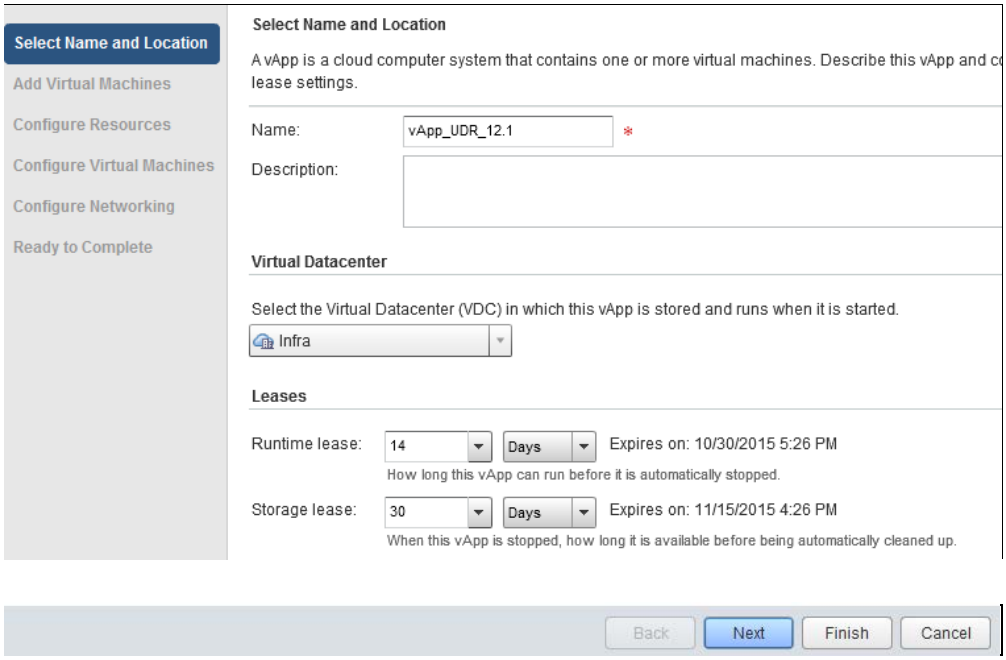
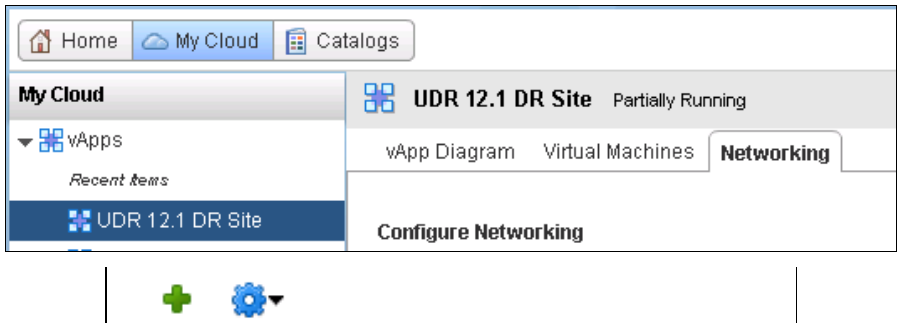
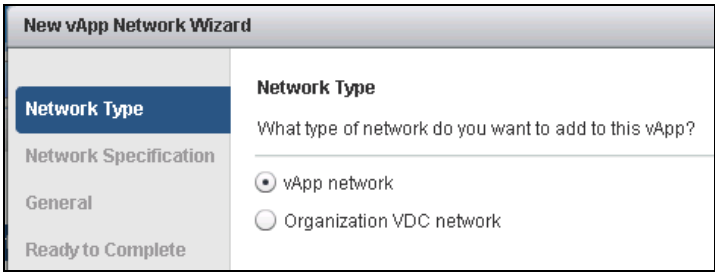
C.2 Create vApp

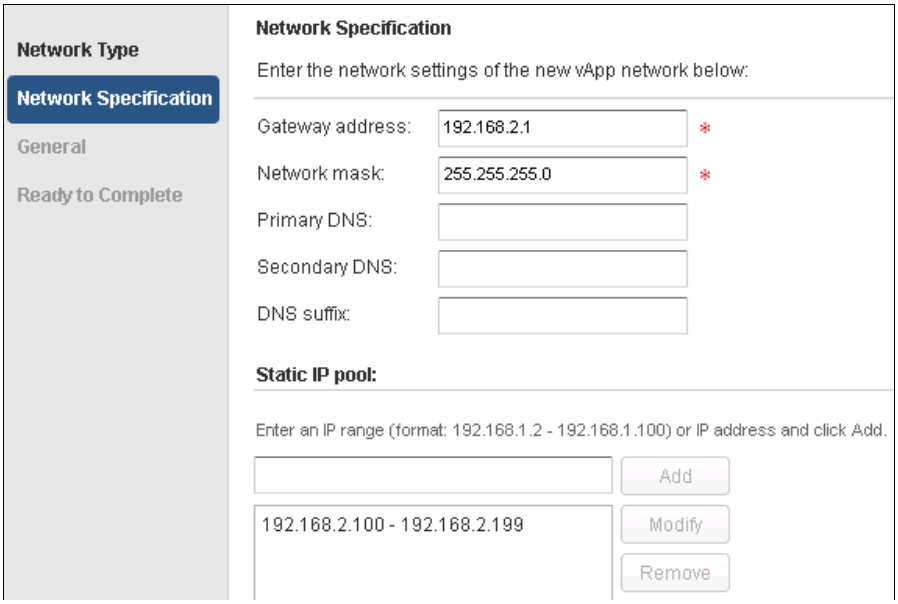
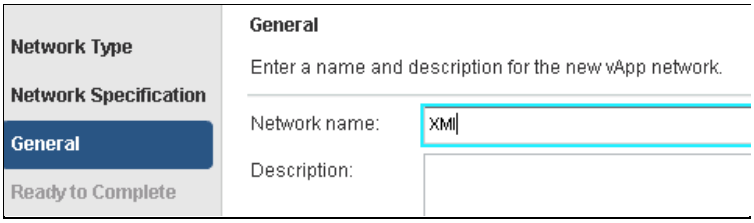
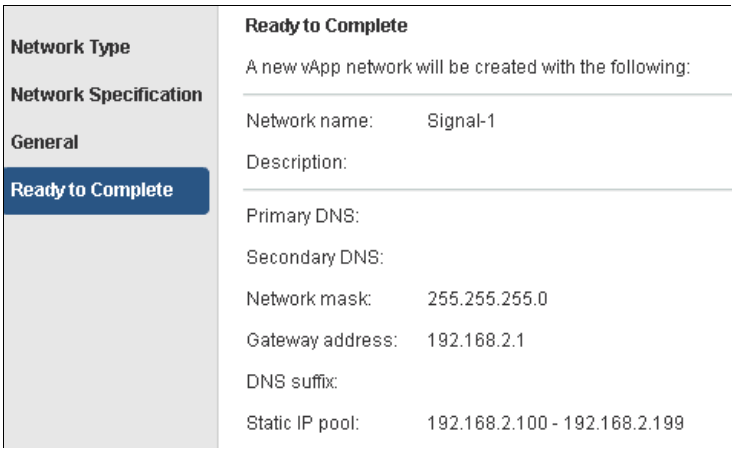
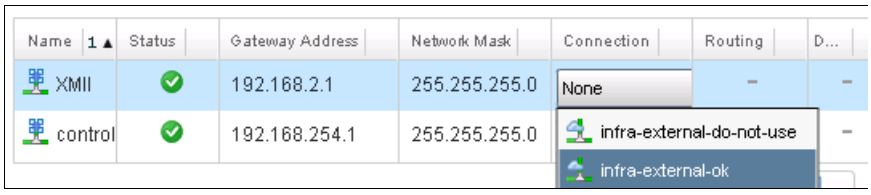
This procedure creates and configure a vApp virtual appliance.

Check (√) each step as it is completed. Boxes have been provided for this purpose.

Procedure 23: Create vApp

Step	Procedure	Details
1. ☐	Log into the VMware vCloud Director	
2. ☐	**vCloud Director:** Select **Home** tab and then click **Build New vAp**p.	

Step	Procedure	Details
3. ☐	**vCloud Director:** 1. Enter the Name for the vApp and other parameters as required. 2. Click **Finish**.	
4. ☐	**vCloud Director:** 1. Navigate to **My Cloud** → <*vApp Name*> → **Networking** 2. Click the + (green plus) icon to add a network	
5. ☐	**vCloud Director:** 1. Select the vApp network. 2. Click **Next**.	

Step	Procedure	Details
6. ☐	**vCloud Director:** 1. Enter parameters for your internal network. Be sure to have sufficient address space for the number of servers you expect to deploy. 2. Click **Next**.	
7. ☐	**vCloud Director:** 1. Enter a Name for your network using [1] as a guide. 2. Click **Next**.	
8. ☐	**vCloud Director:** 1. Review the network data 2. Click **Finish**.	
9. ☐	**vCloud Director:** Back on the **Networking** tab.	 If the network is to be addressable outside the Cloud (such as XMI for administration), select an external network from the **Connection** list. Otherwise, leave Connection setting as **None**.

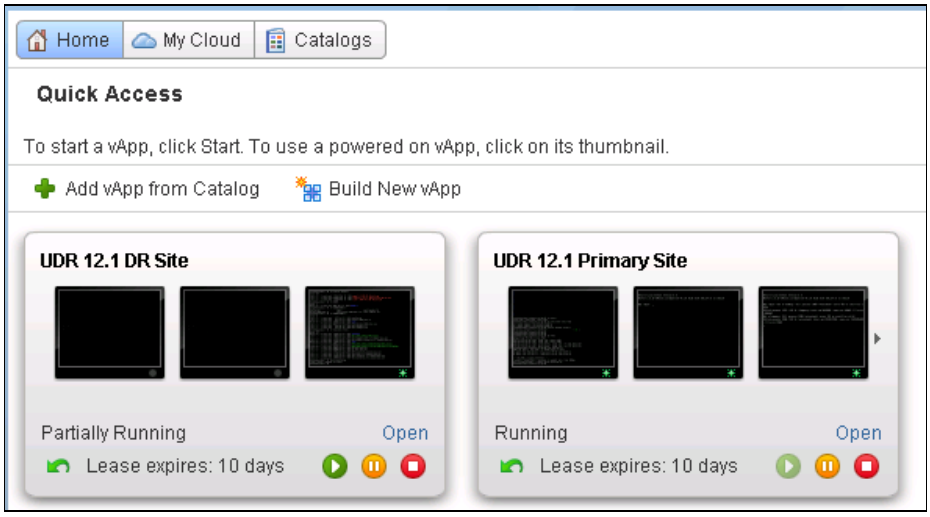
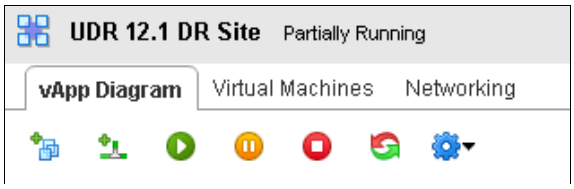
Step	Procedure	Details
10. ☐	**vCloud Director:** Click **Apply**.	
THIS PROCEDURE IS COMPLETE		

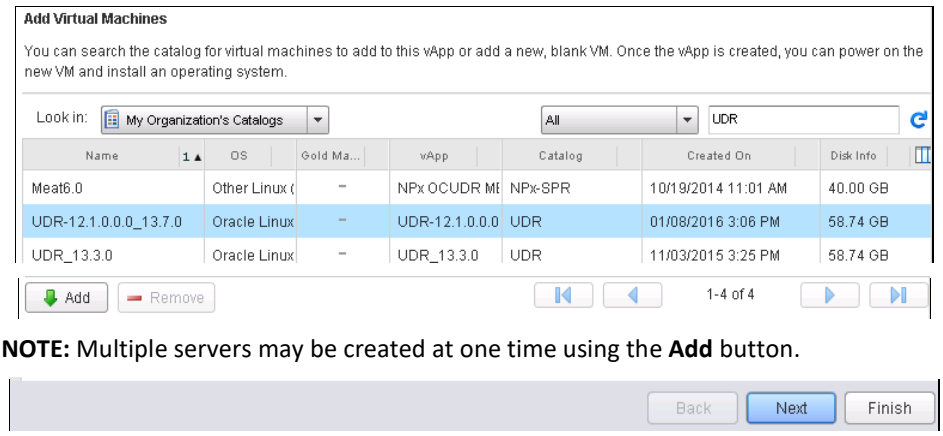
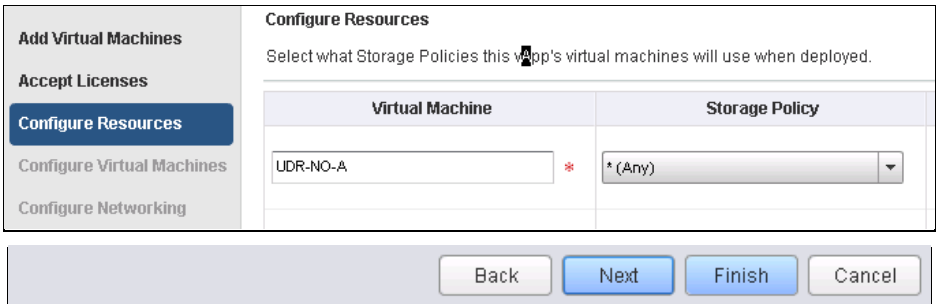
C.3 Create Guests from OVA

This procedure creates Oracle Communications User Data Repository virtual machines (guests) from OVA.

Check (√) each step as it is completed. Boxes have been provided for this purpose.

Procedure 24: Create Guests from OVA with vCloud Director

Step	Procedure	Details
1. ☐	Log into the VMware vCloud Director	
2. ☐	**vCloud Director:** Click **Open** for the Oracle Communications User Data Repository vApp	 **NOTE:** Current vApps are listed on the Home Page. If a new vApp is required continue with the step 3.
3. ☐	**vCloud Director:** Select icon on left to **Add VM**	

Step	Procedure	Details
4. ☐	**vCloud Director:** 1. Enter the name in the search field and press **Enter** 2. Select Oracle Communications User Data Repository media name 3. Click **Add** 4. Click **Next**	 **NOTE:** Multiple servers may be created at one time using the **Add** button.
5. ☐	**vCloud Director:** 1. Selecct the box to agree with license 2. Click **Next**	
6. ☐	**vCloud Director:** 1. Rename virtual machines to suit its location and role 2. Click **Finish**.	
THIS PROCEDURE IS COMPLETE		

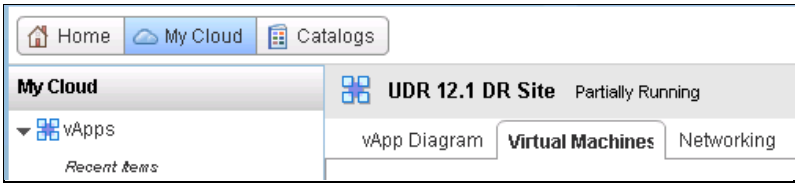
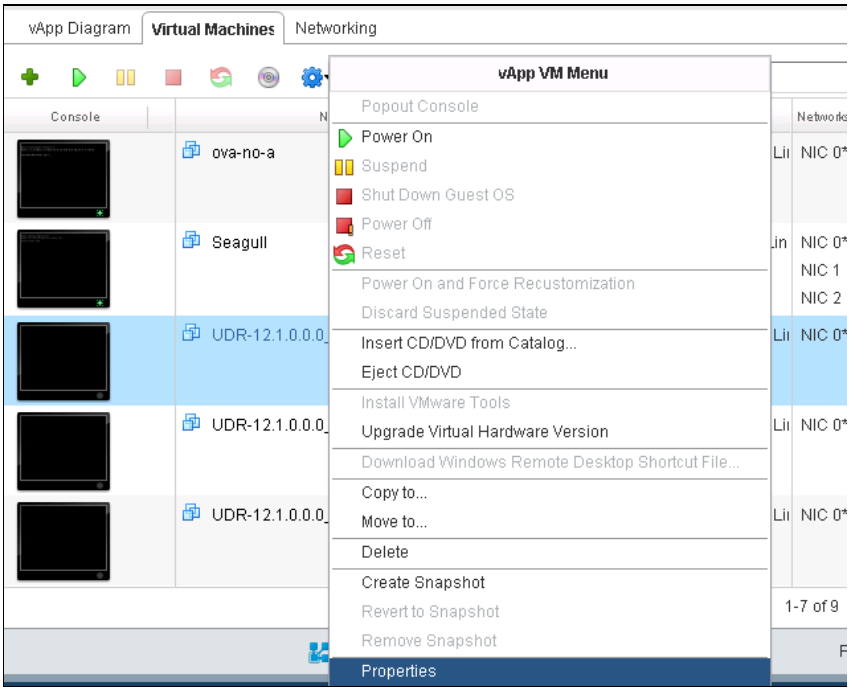
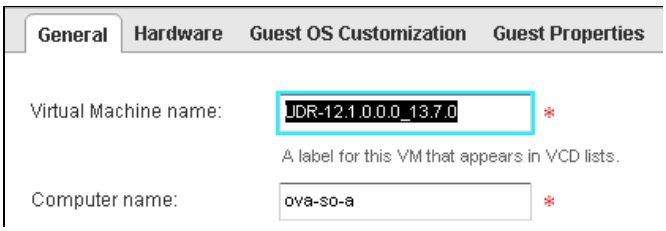
C.4 Configure Guest Resources

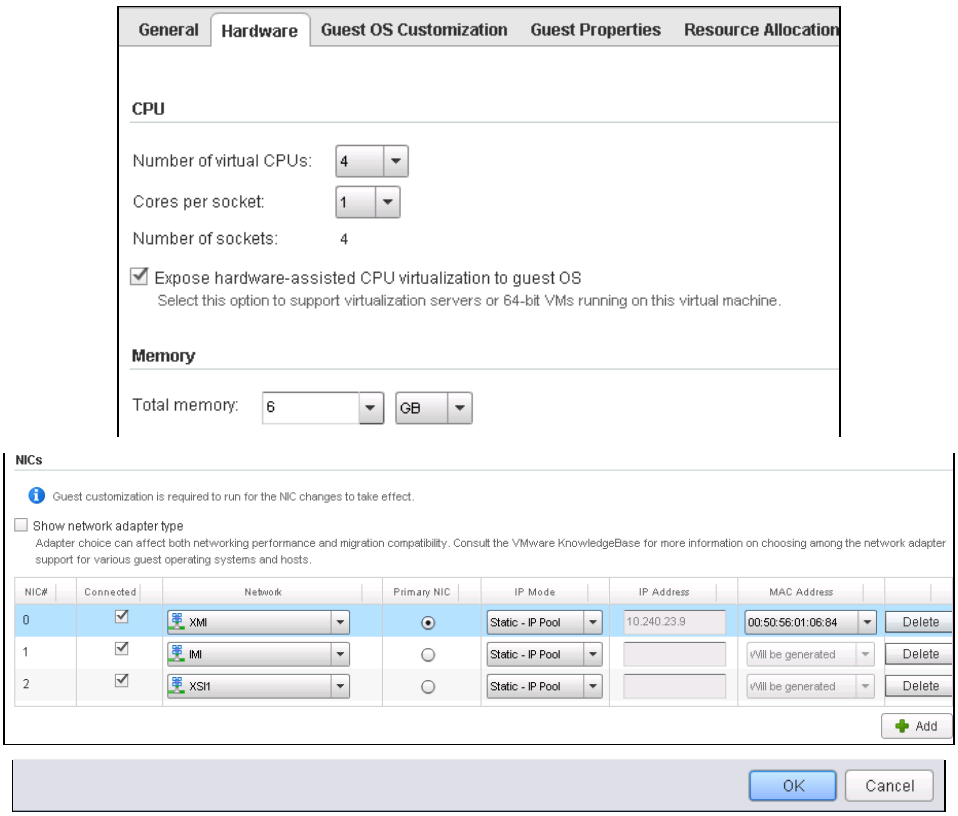
This procedure configures Oracle Communications User Data Repository virtual machines (guests) which have been created from OVA.

Check (√) each step as it is completed. Boxes have been provided for this purpose.

Procedure 25: Configure Guests from OVA with vCloud Director

Step	Procedure	Details
1. ☐	Log into the VMware vCloud Director	

Step	Procedure	Details
2. ☐	**vCloud Director:** Navigate to **My Cloud → Virtual Machines**	
3. ☐	**vCloud Director:** 1. Select the VM. 2. Click the Blue Gear icon. 3. Select **Properties**.	
4. ☐	**vCloud Director:** 1. Select the **General** tab. 2. Adjust Virtual Machine and Computer names to suit preference.	

Step	Procedure	Details
5. ☐	**vCloud Director:** 1. Select the **Hardware** tab. 2. Adjust the number of Virtual CPUs and Total Memory to match the role of the server in [1]. 3. Check Expose hardware-assisted CPU virtualization box. 4. Adjust NICs to match the role of the server in [1]. 5. Click **OK**.	
THIS PROCEDURE IS COMPLETE		

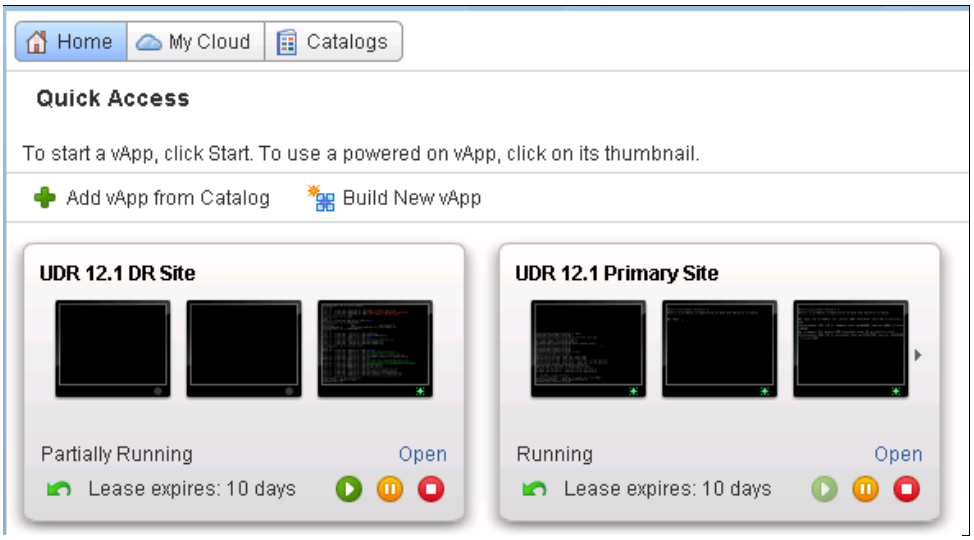
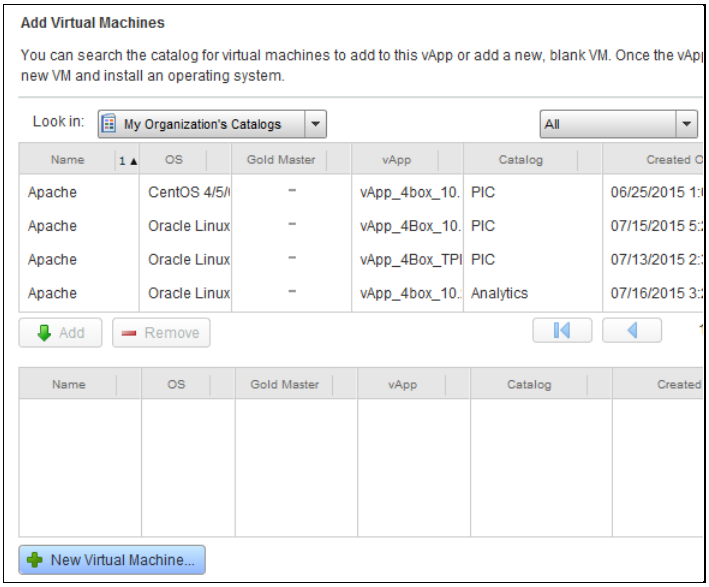
C.5 Create Guests from ISO

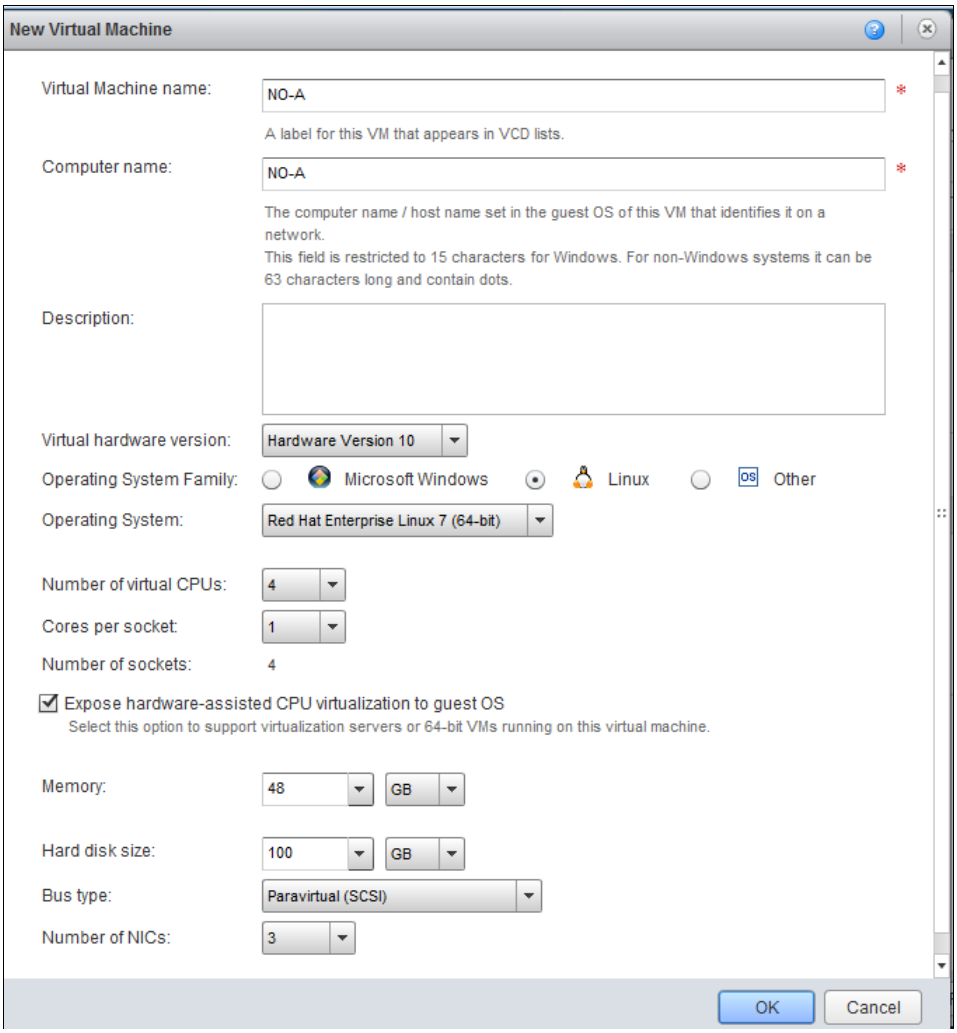
This procedure creates Oracle Communications User Data Repository virtual machines (guests) from ISO.

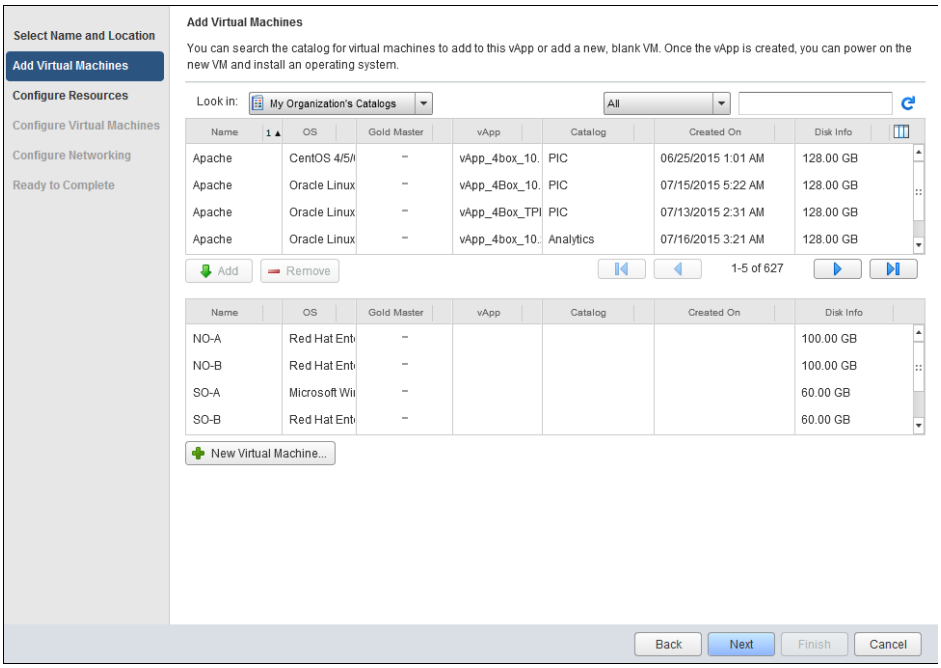
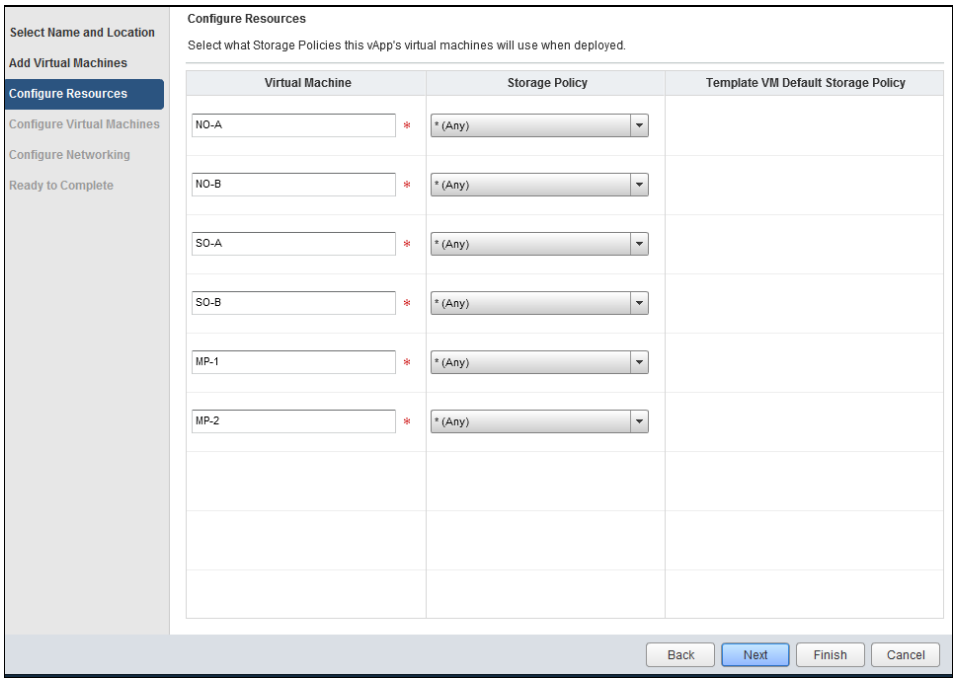
Check (√) each step as it is completed. Boxes have been provided for this purpose.

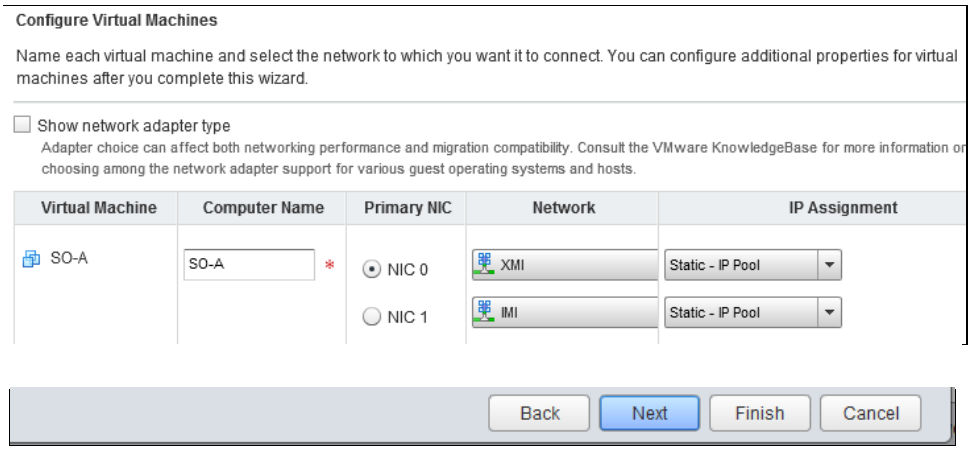
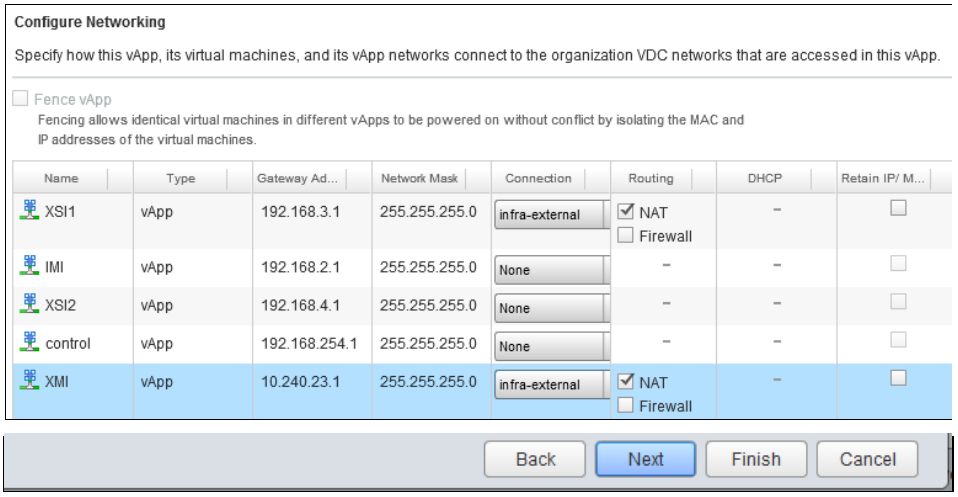
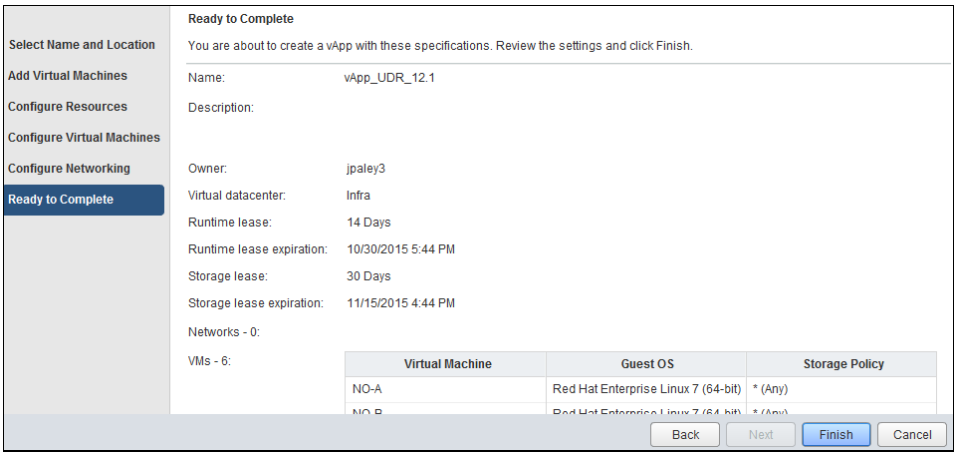
Procedure 26: Create Guests from ISO with vCloud Director

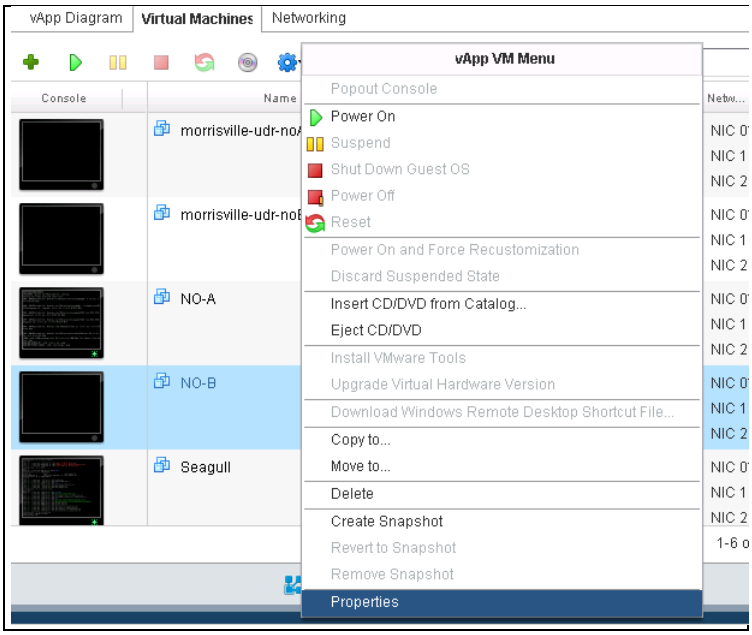
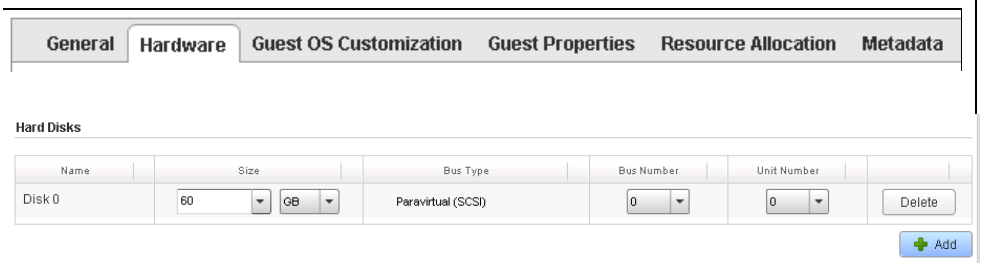
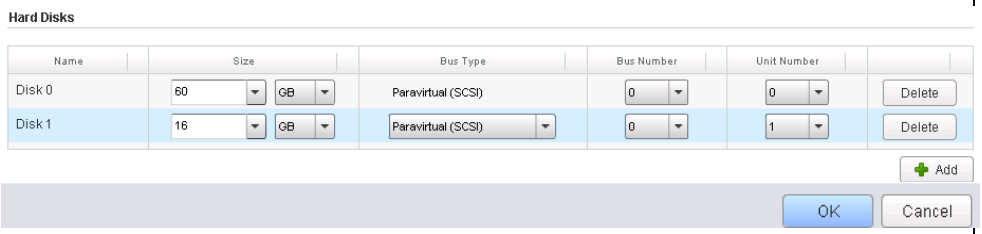
Step	Procedure	Details
1. ☐	Log into the VMware vCloud Director	

Step	Procedure	Details
2. ☐	**vCloud Director:** Click **Open** for the Oracle Communications User Data Repository vApp	 **NOTE:** Current vApps are listed on the Home Page. If a new vApp is required continue with step **3** to create it.
3. ☐	**vCloud Director:** Select icon on left to Add VM	
4. ☐	**vCloud Director:** Click **New Virtual Machine**.	

Step	Procedure	Details
5. ☐	**vCloud Director:** 1. Enter the Name and Computer Name for VM. 2. Select **Linux** for the Operating SystemFamily. 3. Select **Expose hardware-assisted CPU**. 4. Enter the resource parameters according to the role given in OCCUR Resource Profile [1]. 5. Click **OK**.	

Step	Procedure	Details
6. ☐	**vCloud Director:** Click **Next**.	
7. ☐	**vCloud Director:** Click **Next**.	

Step	Procedure	Details
8. ☐	**vCloud Director:** 1. Select Networks and IP Assignments for the VM according to the role given in Resource Profile [1]. 2. Click **Next**.	
9. ☐	**vCloud Director:** 3. For each external network (XMI, XSI): Set Connection to the network a cloud administer has granted for external communication. 4. For each external network (XMI, XSI): Select NAT and clear Firewall. 5. Click **Next**.	
10. ☐	**vCloud Director:** 1. Review the settings. 2. Click **Finish**.	

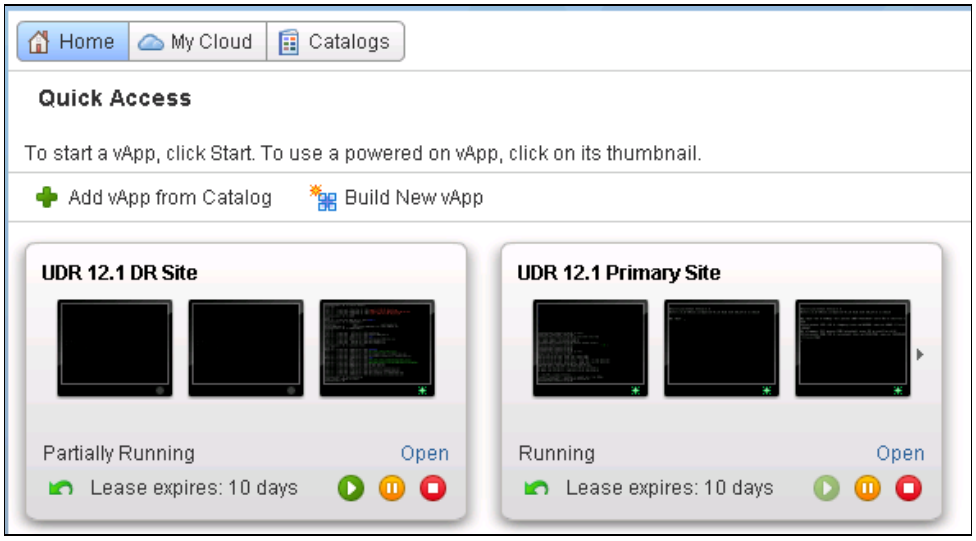
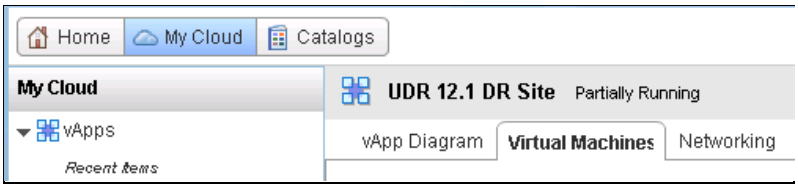
Step	Procedure	Details
11. ☐	**vCloud Director:** 1. Select the VM. 2. Click the Blue Gear icon. 3. Select Properties.	
12. ☐	**vCloud Director:** 1. Select the **Hardware** tab. 2. Adjust size of Disk 0 to match VM profile [1].	
13. ☐	**vCloud Director:** Only If the VM uses a second disk by [1]: 1. Click **Add** 2. Adjust size of Disk 1 to match VM profile [1]. 3. Click **OK**	
THIS PROCEDURE IS COMPLETE		

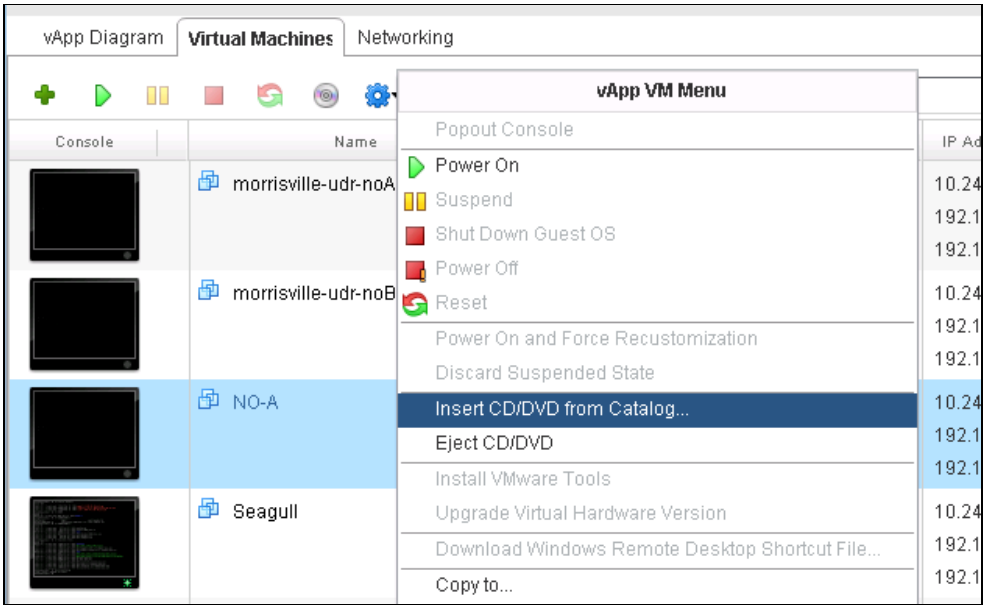
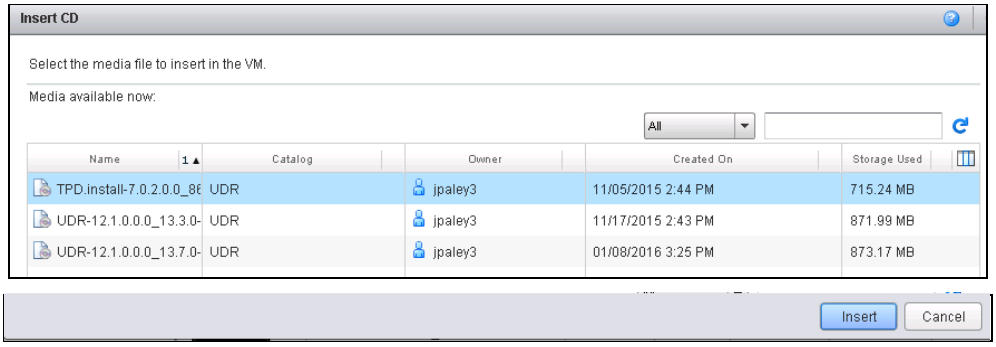
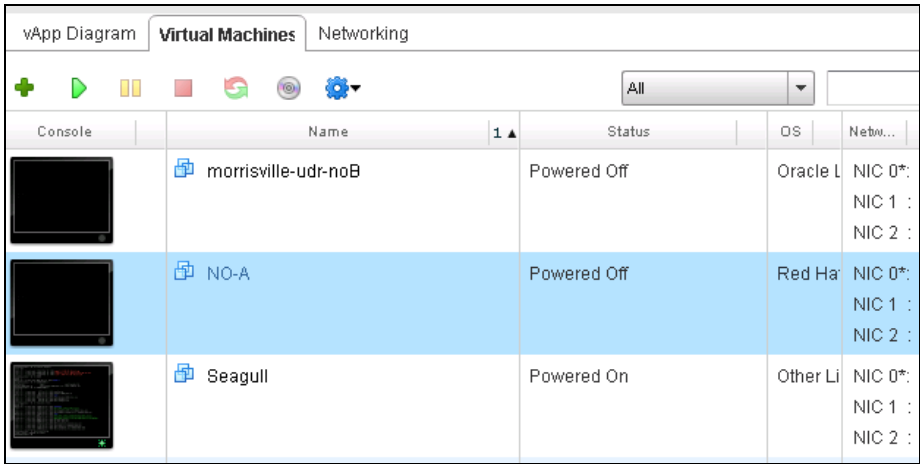
C.6 Install Guests from ISO

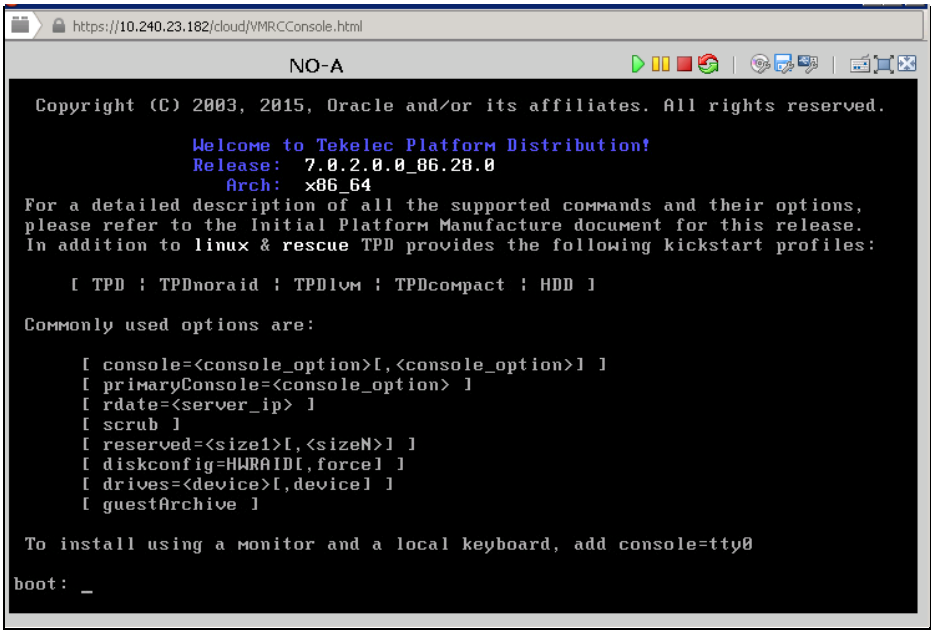
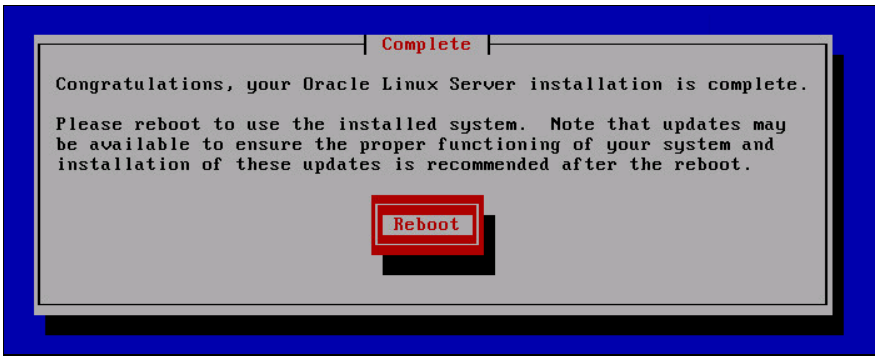
This procedure creates Oracle Communications User Data Repository virtual machines (guests) from ISO.

Check (√) each step as it is completed. Boxes have been provided for this purpose.

Procedure 27: Install Guests from ISO with vCloud Director

Step	Procedure	Details
1. ☐	Log into the VMware vCloud Director	
2. ☐	**vCloud Director:** Select **Open** for the Oracle Communications User Data Repository vApp then proceed to step 5.	 **NOTE:** Current vApps are listed on the Home Page. If a new vApp is required continue with the step 3.
3. ☐	**vCloud Director:** Navigate to **My Cloud → Virtual Machines**	

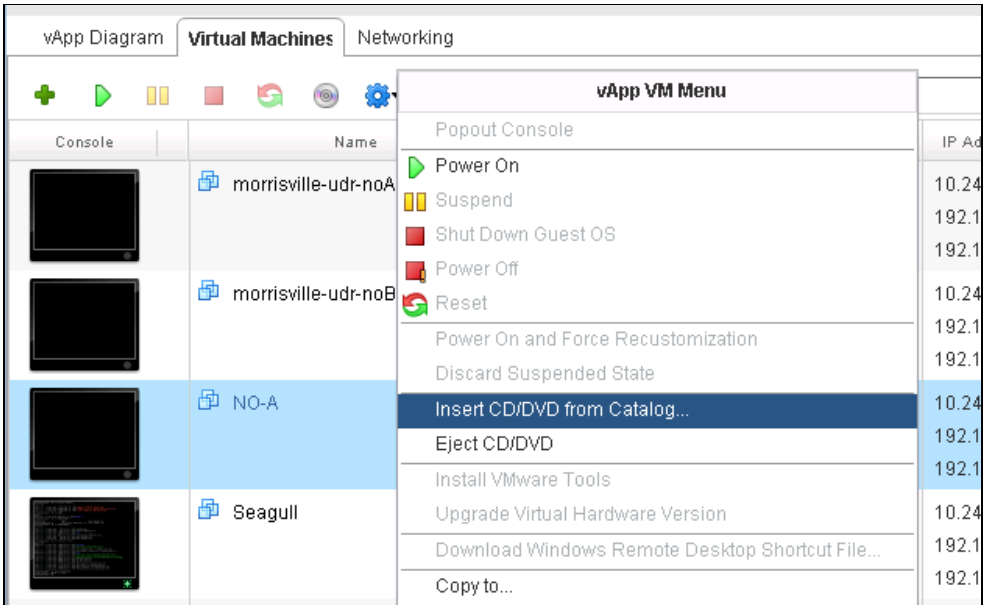
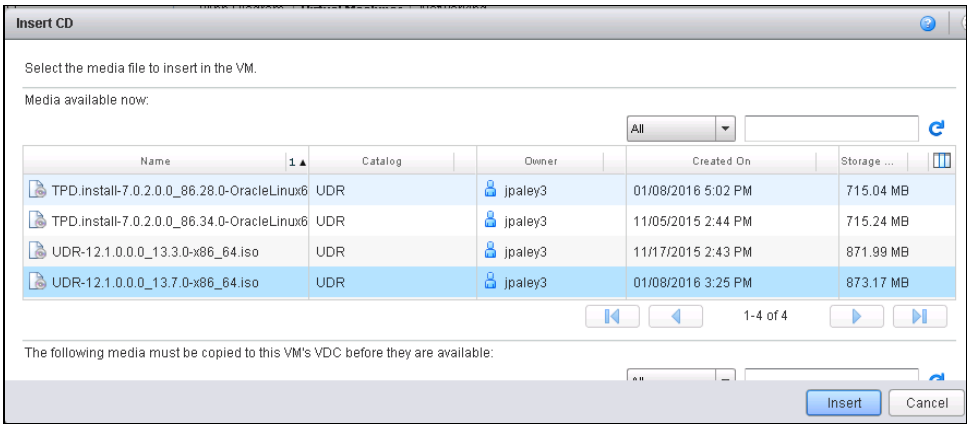
Step	Procedure	Details
4. ☐	**vCloud Director:** 1. Select the VM. 2. Click the Blue Gear icon. 3. Select **Insert CD/DVD from Catalog**.	
5. ☐	**vCloud Director:** 1. Select the TPD ISO. 2. Click **Insert**	
6. ☐	**vCloud Director:** 1. Click the Green Play icon to start the VM 2. Select the Console to open the console window	

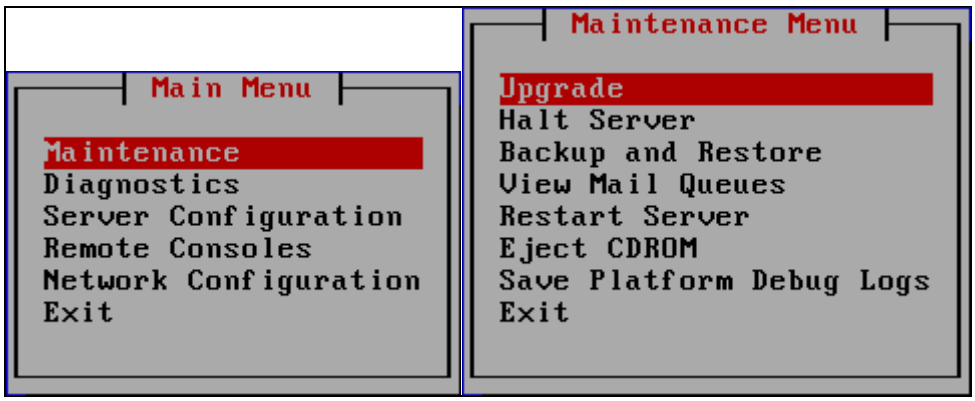
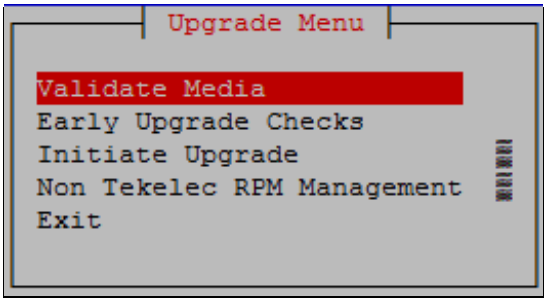
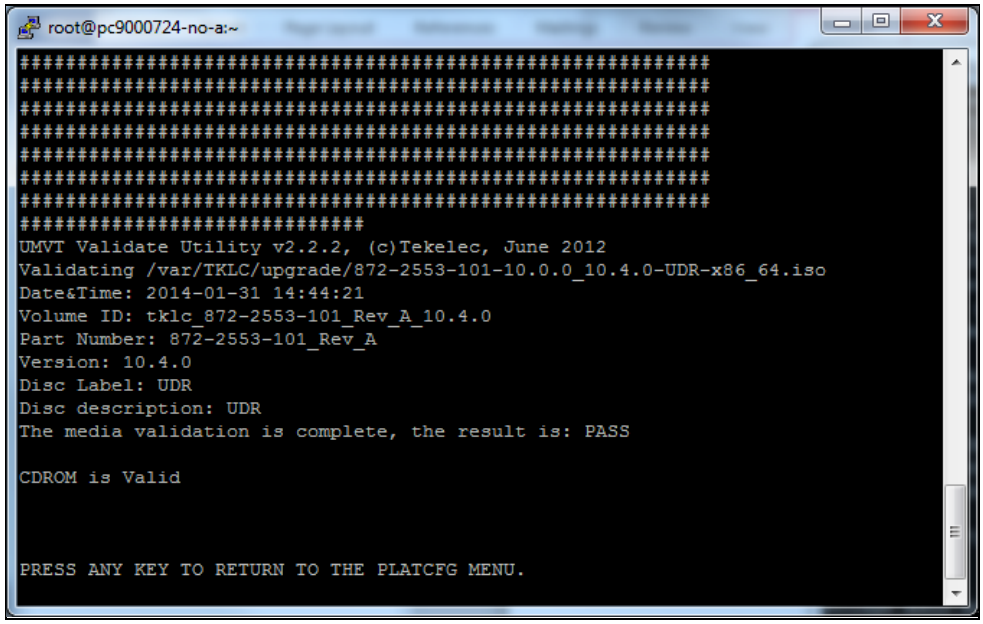
Step	Procedure	Details
7. ☐	**vCloud Director:** Initiate operating system install by entering the given text into console boot prompt	boot: TPDnoraid console=tty0 
8. ☐	When installation completes, press **Enter** to reboot	 **NOTE:** Escape the console session by presseing **Ctrl–Alt**
9. ☐	After reboot, log into console	`Hostnameb6092a316785 login: root` `password:`
10. ☐	Verify that the TPD release is 7.0.2.x	`# getPlatRev` `7.0.2.0.0-86.34.0`
11. ☐	Run the **`alarmMgr`** command to verify health of the server before Application install.	`# alarmMgr --alarmStatus` **NOTE:** This command should return no output on a healthy system.

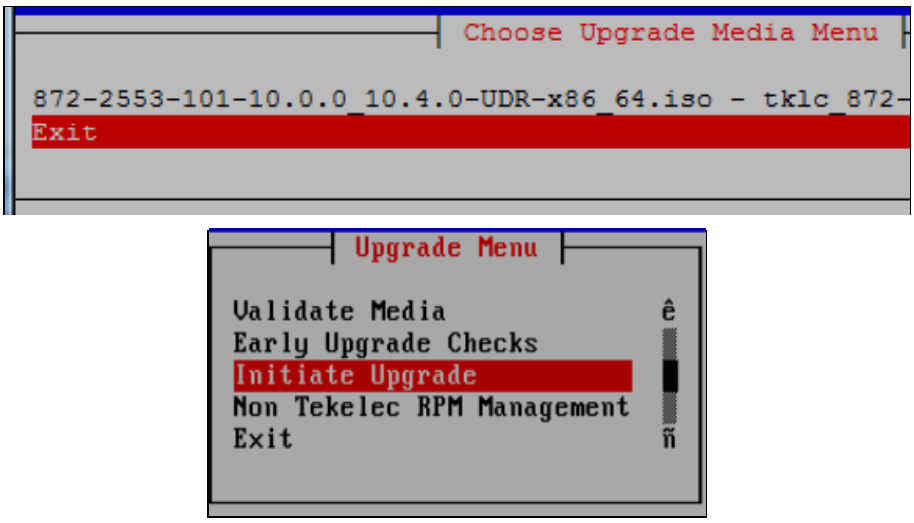
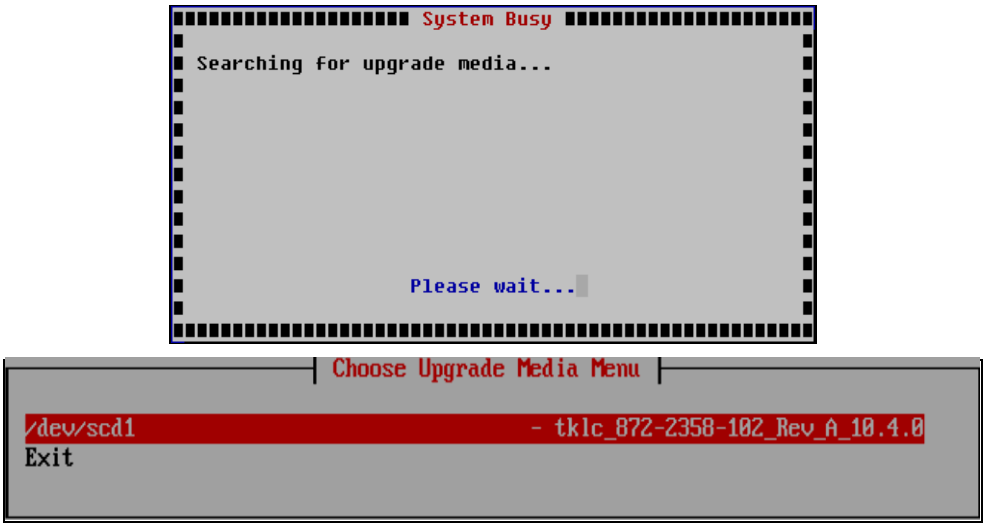
Step	Procedure	Details
12. ☐	Run the **`verifyIPM`** command as a secondary way to verify health of the server before Application install.	`# verifyIPM` **NOTE:** This command should return no output on a healthy system.
13. ☐	Create physical volume `sdb`	`# pvcreate /dev/sdb` `Physical volume "/dev/sdb" successfully created`
14. ☐	Create volume group `stripe_vg`	`# vgcreate stripe_vg /dev/sdb` `Volume group "stripe_vg" successfully created`

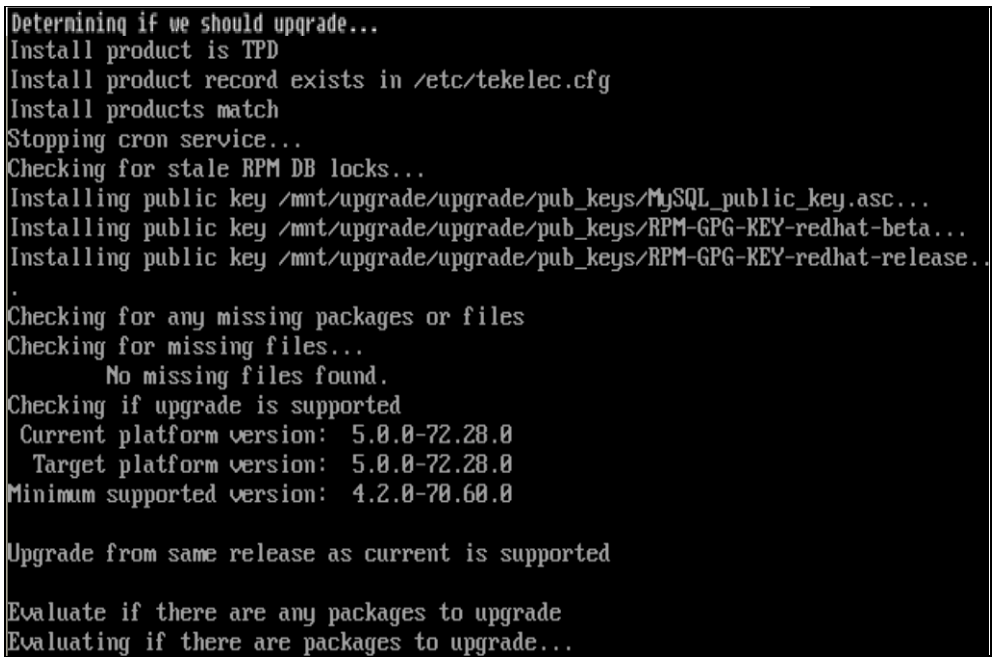
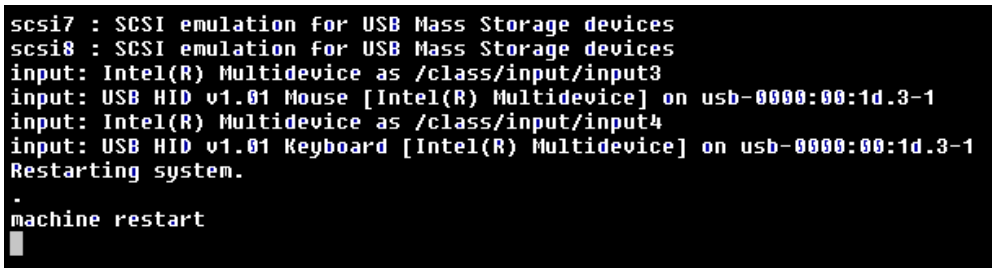
15. ☐	Create logical volume `rundb`	`# lvcreate -L <SIZE>G --alloc anywhere --name rundb stripe_vg`
		Replace <*SIZE*> size tag with a number in gigabytes half the size of the second disk according to [1].
		`ISO lab second disk is 120: <SIZE> = 60`
		`ISO production second disk is 720: <SIZE> = 360`

16. ☐	Make filesystem on rundb	`# mkfs -t ext4 /dev/stripe_vg/rundb`
		`mke2fs 1.43-WIP (20-Jun-2013)`
		`Filesystem label=`
		`OS type: Linux`
		`Block size=4096 (log=2)`
		`Fragment size=4096 (log=2)`
		`Stride=0 blocks, Stripe width=0 blocks`
		`25231360 inodes, 100925440 blocks`
		`5046272 blocks (5.00%) reserved for the super user`
		`First data block=0`
		`Maximum filesystem blocks=4294967296`
		`3080 block groups`
		`32768 blocks per group, 32768 fragments per group`
		`8192 inodes per group`
		`Superblock backups stored on blocks:`
		`32768, 98304, 163840, 229376, 294912, 819200, 884736, 1605632, 2654208,`
		`4096000, 7962624, 11239424, 20480000, 23887872, 71663616, 78675968`
		`Allocating group tables: done`
		`Writing inode tables: done`
		`Creating journal (32768 blocks): done`
		`Writing superblocks and filesystem accounting information: done`
		`This filesystem will be automatically checked every 22 mounts or`
		`180 days, whichever comes first. Use tune2fs -c or -i to override.`

Step	Procedure	Details
17. ☐	Perform the syscheck/restart steps in order	`# syscheck --reconfig disk`
18. ☐	Escape console	Escape the console session by pressing **Ctrl–Alt**
19. ☐	**vCloud Director:** 1. Select the VM. 2. Click the Blue Gear icon. 3. Select **Insert CD/DVD from Catalog**.	
20. ☐	**vCloud Director:** 1. Select Oracle Communications User Data Repository ISO. 2. Click **Insert**	
21. ☐	**VM Console:** 1. Go to the console window 2. Login to the platcfg utility.	`[root@hostname1260476221 ~]# su - platcfg`

Step	Procedure	Details
22. ☐	**VM Console:** From the platcfg Main Menu: 1. Select Maintenance and press **Enter**. 2. Select **Upgrade** and press **Enter**. 3. Select Validate Medion and press **Enter**.	 
23. ☐	**VM Console:** From the platcfg Main Menu: 1. Verify that the CDROM is Valid. 2. Press any key to return to platcfg menu.	

Step	Procedure	Details
24. ☐	**VM Console:** From the platcfg Main Menu: 1. Select **Exit** and press **Enter**. 2. Select **Initiate Upgrade** and press **Enter**.	
25. ☐	**VM Console:** Verify that the application release level matches the target release. Press **Enter**.	

Step	Procedure	Details
26. ☐	**VM Console:** Output similar to that shown on the right may be observed as the Application install progresses.	
27. ☐	**VM Console:** Output similar to that shown on the right may be observed as the server initiates a post-install reboot.	
28. ☐	**VM Console:** After the server has completed the reboot, log into the server as admusr.	CentOS release 5.6 (Final) Kernel 2.6.18-238.19.1.el5prerel5.0.0_72.22.0 on an x86_64 hostname1260476221 login:admusr Password: <*admusr_password*>

Step	Procedure	Details

29. ☐	**VM Console:**
	The server returns to a command prompt.
		*** TRUNCATED OUTPUT ***
		`|============================================================|`
		`| This system has been upgraded but the upgrade has not yet |`
		`| been accepted or rejected. Please accept or reject the |`
		`| upgrade soon. |`
		`|============================================================|`
		`VPATH=/opt/TKLCcomcol/runcm5.16:/opt/TKLCcomcol/cm5.16`
		`PRODPATH=`
		`RELEASE=5.16`
		`RUNID=00`
		`VPATH=/var/TKLC/rundb:/usr/TKLC/appworks:/usr/TKLC/awpcommon:/usr/TKLC/comagent-gui:/usr/TKLC/comagent:/usr/TKLC/udr`
		`PRODPATH=/opt/comcol/prod`
		`RUNID=00`
		`[admusr@hostname1260476221 ~]$`

30. ☐	**VM Console:** Verify successful upgrade.	`$ verifyUpgrade` **NOTE**: This command should return no output on a healthy system.

31. ☐	**VM Console:**
	Verify that the Application release level matches the target release.
		`[admusr@pc9000724-no-a ~]$ appRev`
		`Install Time: Tue Dec 8 06:16:58 2015`
		`Product Name: UDR`
		`Product Release: 12.2.0.0.0_14.3.1`
		`Base Distro Product: TPD`
		`Base Distro Release: 7.0.3.0.0_86.41.0`
		`Base Distro ISO: TPD.install-7.0.2.0.0_86.36.0-OracleLinux6.6-x86_64.iso`
		`ISO name: UDR-12.2.0.0.0_14.3.1-x86_64.iso`
		`OS: OracleLinux 6.6`

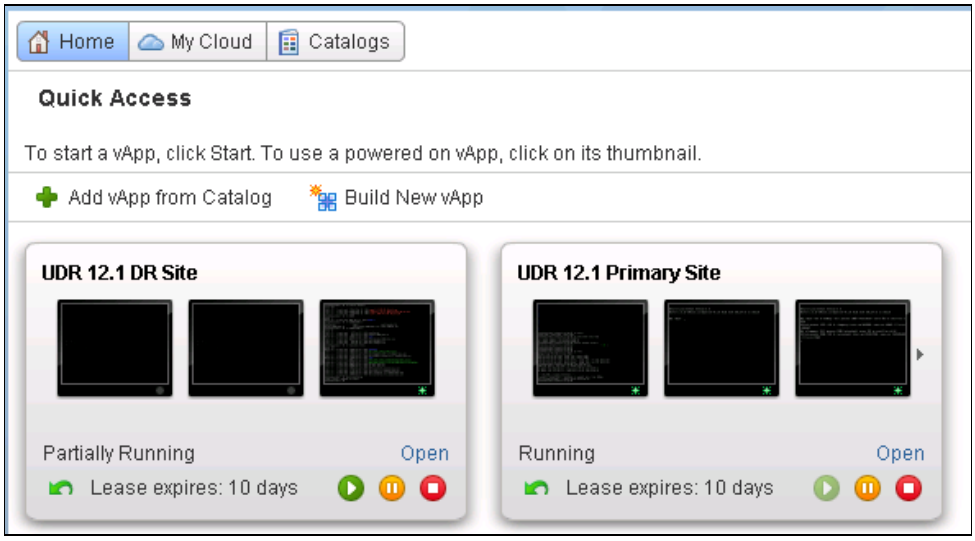
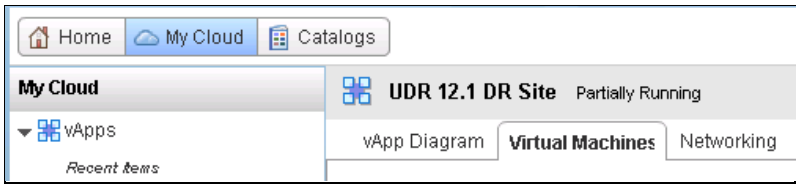
32. ☐	Change directory	`$ cd /var/TKLC/backout`
33. ☐	Perform upgrade acceptance.	`$ sudo ./accept`
34. ☐	**VM Console:** Reboot the server	Reboot the server: `$ sudo reboot` Wait until the reboot completes and re-login with admusr credentials.
35. ☐	**VM Console:** Verify server health	Verify server health: `$ alarmMgr --alarmStatus` **NOTE**: This command should return only one alarm related to pending upgrade acceptance.
THIS PROCEDURE IS COMPLETE		

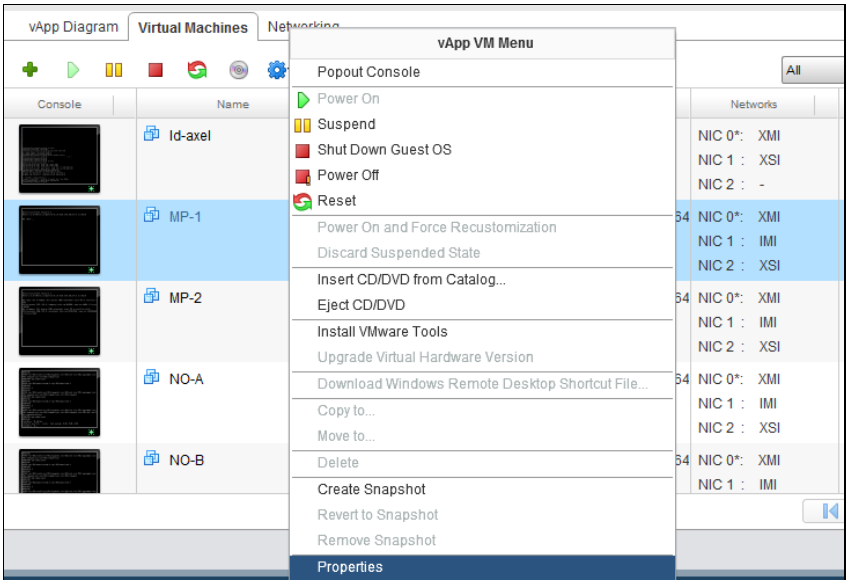
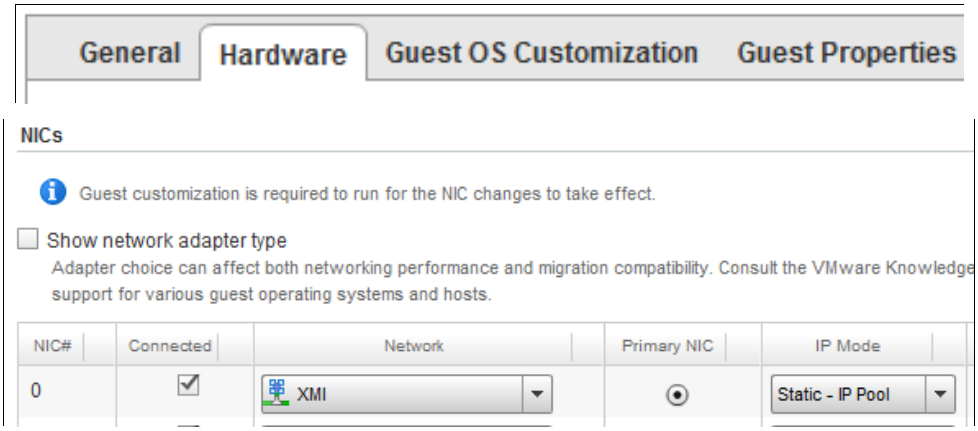
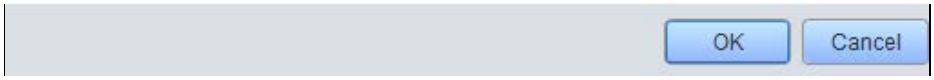
C.7 Configure Network for Guest

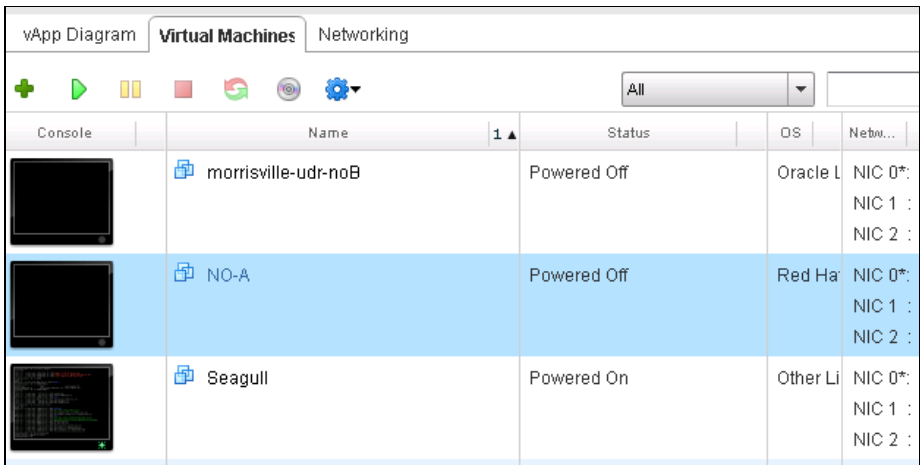
This procedure creates Oracle Communications User Data Repository virtual machines (guests) from ISO.

Check (√) each step as it is completed. Boxes have been provided for this purpose.

Procedure 28: Configure Guest OAM Network

Step	Procedure	Details
1. ☐	Log into the VMware vCloud Director	
2. ☐	**vCloud Director:** Click **Open** hyperlink for the Oracle Communications User Data Repository vApp then proceed to step 5.	 **NOTE:** Current vApps are listed on the Home Page. If a new vApp is required continue with the next step 3.
3. ☐	**vCloud Director:** Navigate to **My Cloud → Virtual Machines**	

Step	Procedure	Details
4. ☐	**vCloud Director:** 1. Select the VM. 2. Click the Blue Gear icon. 3. Select **Properties**	
5. ☐	**vCloud Director:** 1. Select **Hardware** tab. 2. Note the NIC number assigment of application networks 3. Click **Cancel**	 Note the device NIC number assigment of the following networks: XMI: _____ IMI: _____ XSI-1: _____ XSI-2 : _____ (optional) 

Step	Procedure	Details
6. ☐	**vCloud Director:** Click the console to raise console window	
7. ☐	**VM Console:** Login to console as admusr	`login as: admusr` `Password:`

8. ☐	**VM Console:**
	Configure XMI network
		1. View a list of netAdm devices
		`$ sudo netAdm show`
		2. Set the XMI device for routable OAM access:
		NOTE: Use **`add`** if the show command did not list device eth0. Otherwise, use **`set`**.
		`$ sudo netAdm add --device=eth0 --address=<Guest XMI IP Address> --netmask=<XMI_Netmask> --onboot=yes --bootproto=none`
		3. Add the default route for XMI:
		`$ sudo netAdm add --route=default --gateway=<Gateway XMI IP Address> --device=eth0`
		NOTE: The network device may be different than the device listed (eth0) if the order of network adapter insertion was different than shown. Refer to step 5 for this assignment.

9. ☐	**VM Console:** Configure XSI network (NO and MP Server Only)	Set the XSI device for routable signaling network access (Only for NO and MP Servers): **NOTE:** Where eth*x* is the interface associated with the signaling network `$ sudo netAdm add --device=eth2 --address=<Guest_XSI_IP_Address> --netmask=<XSI_Netmask> --onboot=yes --bootproto=none` **NOTE:** The network device may be different than the device listed (eth2) if the order of network adapter insertion was different than shown. Refer to step 5 for this assignment.
10. ☐	**VM Console:** Repeat as required (MP Server Only)	Repeat steps 7 to 9 add XS1-2 (eth3) if a second signaling network is in use (Only for MP Servers). Adjust parameter values accordingly
11. ☐	**VM Console:** Exit console	`$ exit` **NOTE:** Press **Ctrl-Alt** to escape from console.
THIS PROCEDURE IS COMPLETE		

APPENDIX D. OPENSTACK CLOUD ORACLE COMMUNICATIONS USER DATA REPOSITORY

This appendix contains procedures for deploying Oracle Communications User Data Repository on the Openstack platform. The steps here contain references to third party interfaces, the accuracy of which cannot be guaranteed. Appearance and function may differ between versions of Openstack software and deployments of Openstack cloud computing.

Important: The content of this appendix is for informational purposes only. Consult the latest documents from the vendor of your OpenStack distribution.

D.1 OpenStack Image Creation from OVA

This procedure converts application media (OVA) to qcow2 format and upload it into OpenStack.

Needed material:

- Oracle Communications User Data Repository OVAs

Check (√) each step as it is completed. Boxes have been provided for this purpose.

Procedure 29: OpenStack Image Creation from OVA

Step	Procedure	Details

1. ☐	1. Login to OpenStack Controller Node using root user
	2. Create `/home/ova` dir.
		`login as: root`
		`root@100.65.218.136's password: <root_password>`
		`Last login: Thu Mar 31 21:10:59 2016 from 10.182.167.73`
		`[root@pc12107008 ~]# mkdir -p /home/ova`
		`[root@pc12107008 ~]# cd /home/ova`

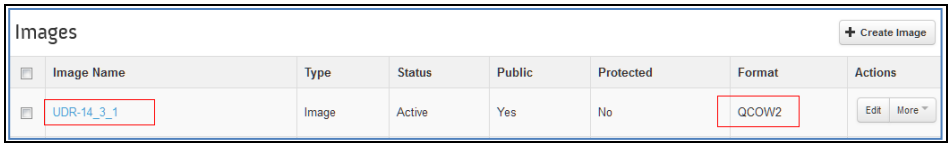
2. ☐	Transfer OVA file to this directory using sftp tool	`[root@pc12107008 ova]# ll`
		`total 12322888`
		`-rw-r--r-- 1 root root 1044500480 Mar 14 02:57 UDR-12.2.0.0.0_14.3.1.ova`

3. ☐	Untar this ova file	`[root@pc12107008 ova]# tar xvf UDR-12.2.0.0.0_14.3.1.ova`
		`UDR-14_3_1.ovf`
		`UDR-14_3_1.mf`
		`UDR-14_3_1.vmdk`

4. ☐	Convert this vmdk file to qcow2 file	`[root@pc12107008 ova]# qemu-img convert -O qcow2 UDR-14_3_1.vmdk UDR-14_3_1.qcow2`

Step	Procedure	Details

5. ☐	Import converted qcow2 file into OpenStack	`[root@pc12107008 ova]# source /root/keystonerc_admin`
		`[root@pc12107008 ova(keystone_admin)]# time glance image-create --name UDR-14_3_1 --disk-format=qcow2 --container-format=bare --visibility=public--file=UDR-14_3_1.qcow2`
		`+------------------+--------------------------------------+`
		`| Property | Value |`
		`+------------------+--------------------------------------+`
		`| checksum | 81e7f682231b108e29053e9516ff91ac |`
		`| container_format | bare |`
		`| created_at | 2016-03-29T06:56:51 |`
		`| deleted | False |`
		`| deleted_at | None |`
		`| disk_format | qcow2 |`
		`| id | ee0ffa59-356b-4b32-aea2-b0cdf9063653 |`
		`| is_public | True |`
		`| min_disk | 0 |`
		`| min_ram | 0 |`
		`| name | UDR-14_3_1 |`
		`| owner | 63efbafd70864562aa6440abfca60ca5 |`
		`| protected | False |`
		`| size | 3615227904 |`
		`| status | active |`
		`| updated_at | 2016-03-29T06:57:16 |`
		`| virtual_size | None |`
		`+------------------+--------------------------------------+`
		`real 0m26.267s`
		`user 0m2.435s`
		`sys 0m2.691s`

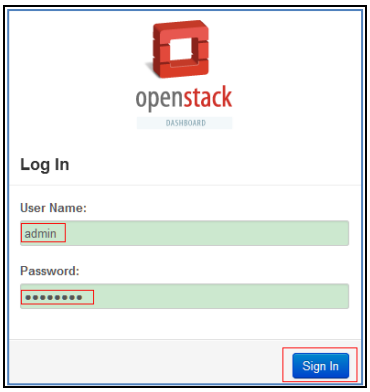
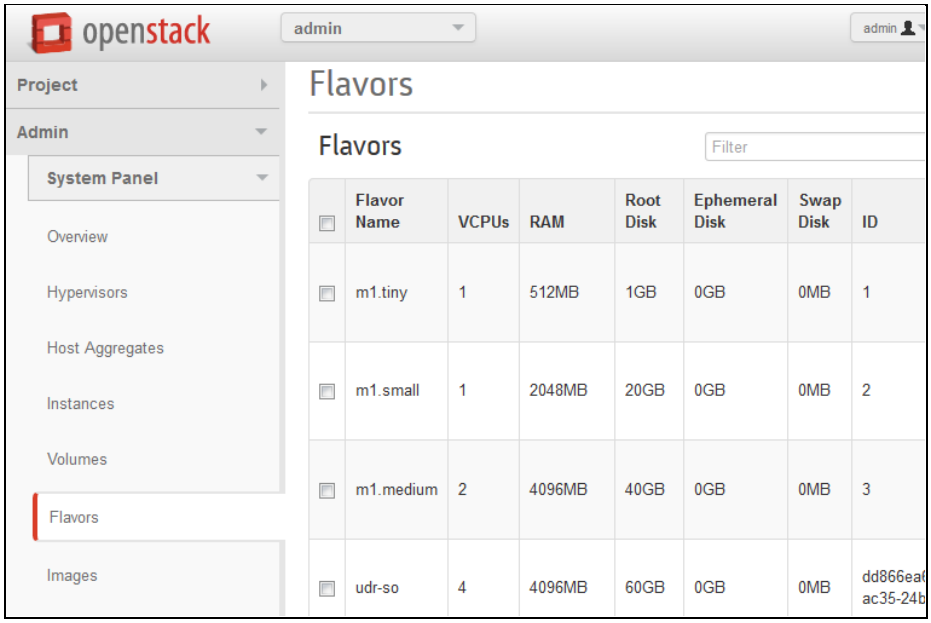
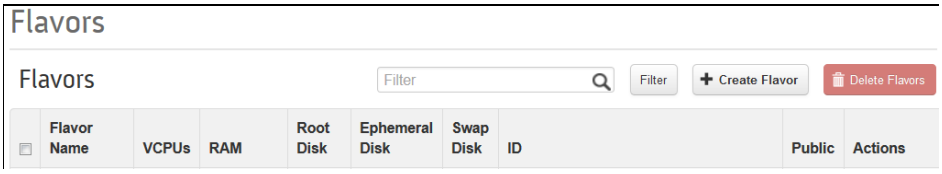
6. ☐	After image-create, this image could be seen from OpenStack GUI under **Project → Images**	
THIS PROCEDURE IS COMPLETE		

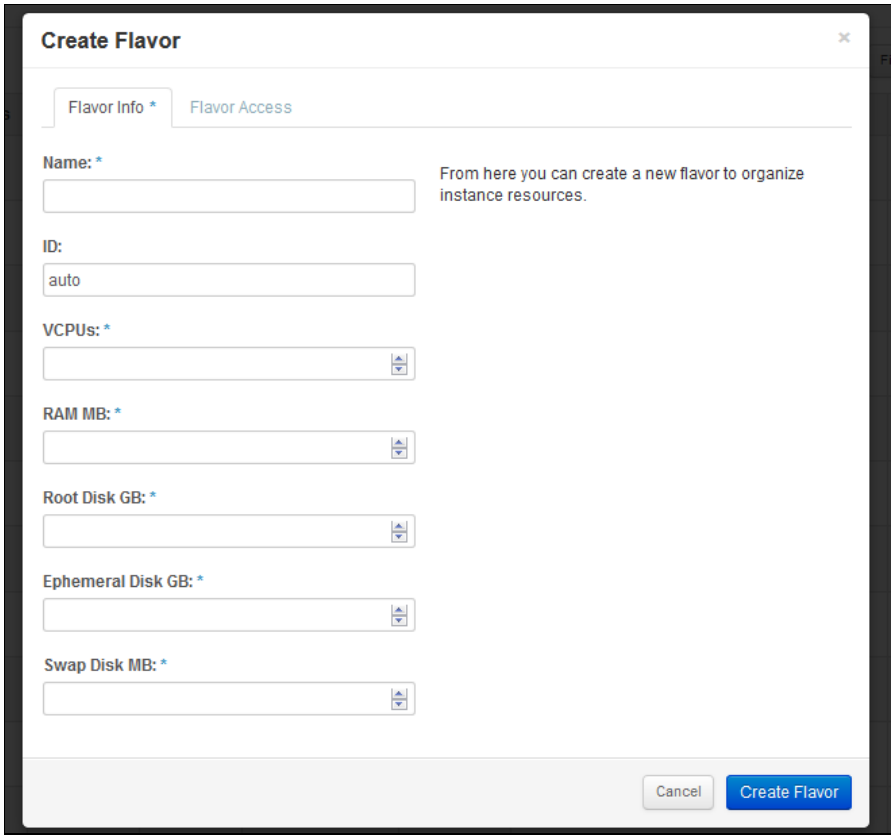
D.2 Create Resource Profiles (Flavors)

This procedure creates resource profiles called flavors to aid in VM creation.

Check (√) each step as it is completed. Boxes have been provided for this purpose.

Procedure 30: Create Resource Profiles (Flavors)

Step	Procedure	Details
1. ☐	Login to the OpenStack GUI **NOTE:** Flavor Profile creation may require administrative privilege.	
2. ☐	Navigate to **Main Menu → Admin → System Panel → Flavors**	
3. ☐	Click **+ Create Flavor**	

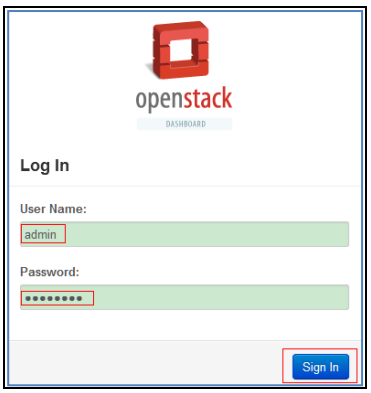
Step	Procedure	Details
4. ☐	1. Enter Flavor Details using Appendix G Resource Profile as a guide. 2. Click **Create Flavor**.	
5. ☐	Repeat for each server type	Repeat steps Error! Reference source not found. and Error! Reference source not found. for each additional server type: udr-so, udr-mp.
THIS PROCEDURE IS COMPLETE		

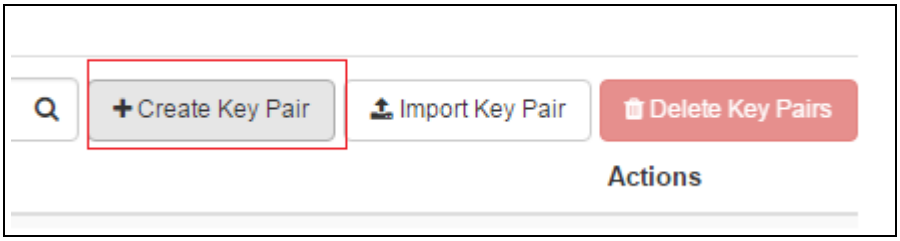
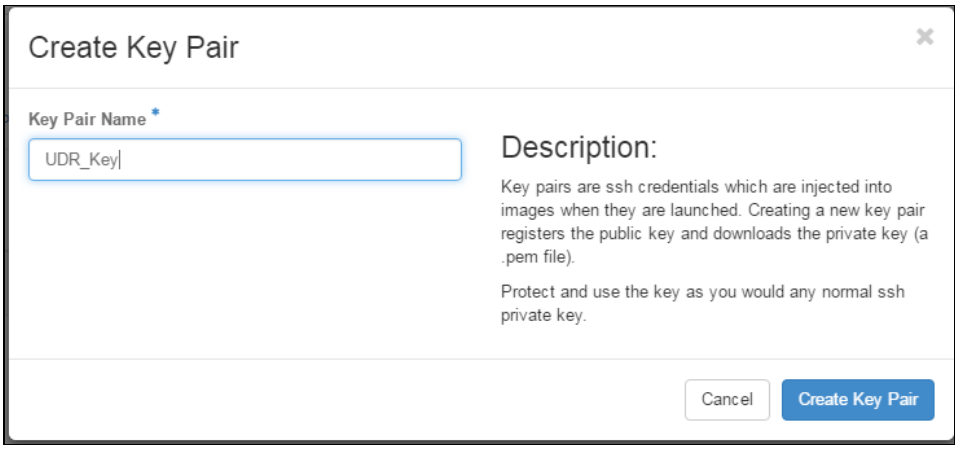
D.3 Create Key Pair

This procedure creates Key Pair to be used in VM creation.

Check (√) each step as it is completed. Boxes have been provided for this purpose.

Procedure 31: Create Key Pair

Step	Procedure	Details
1. ☐	Login to the OpenStack GUI **NOTE:** Flavor Profile creation may require administrative privilege.	

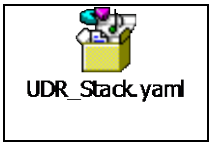
Step	Procedure	Details
2. ☐	Navigate to **Main Menu → Compute →Access & Security →Key Pairs**	
3. ☐	Click **+ Create Key Pair**	
4. ☐	1. Enter Key Pair Name 2. Click **Create Key Pair**.	
5. ☐	The key pair automatically get downloaded to your computer.	The generated key pair is downloaded automatically on creation. This is used for SSH Access to VM Instances.
THIS PROCEDURE IS COMPLETE		

D.4 Update UDR Stack YAML File

This procedure updates UDR Stack YAML file to be used in VM creation.

Check (√) each step as it is completed. Boxes have been provided for this purpose.

Procedure 32: Create Key Pair

Step	Procedure	Details
1. ☐	Download the YAML file	

2. ☐	Update Image name or ID with the name of the UDR Qcow2 to be used	Change the default value:
		`label: Image name or ID`
		`description: UDR Image to be used for launching UDR VM`
		`default: UDR-12.2.0.0.0_15.12.0`

Step	Procedure	Details
3. ☐	Update the Key Pair name to be used if different	Change the default value. label: Key name description: Name of key-pair to be used for accessing UDR VM default: UDR_key
4. ☐	Update the NTP Server IP	Change the default value. label: NTP server description: IP address of the NTP server used for UDR VM syncing time default: 192.168.xx.xxx
5. ☐	Update the NOAMP flavor name if different	Change the default value. label: Flavor for NOAMP description: Type of instance (flavor) to be used for launching UDR NOAMP VM default: udr-no
6. ☐	Update the SOAM flavor name if different	Change the default value. label: Flavor for SOAM description: Type of instance (flavor) to be used for launching UDR SOAM VM default: udr-so
7. ☐	Update the MP flavor name if different	Change the default value. label: Flavor for MP description: Type of instance (flavor) to be used for launching UDR MP VM default: udr-mp
8. ☐	Update the XMI Network name if different	Change the default value. label: UDR XMI network description: Network name or ID to attach UDR XMI network to. default: xmi
9. ☐	Update the IMI Network name if different	Change the default value. label: UDR IMI network description: Private network name or ID to attach UDR IMI network to. default: imi
10. ☐	Update the XSI1 Network name if different	Change the default value. label: UDR XSI1 network description: Network name or ID to attach UDR XSI1 network to. default: xsi1
11. ☐	Update the XSI2 Network name if different	Change the default value. label: UDR XSI2 network description: Network name or ID to attach UDR XSI2 network to. default: xsi2

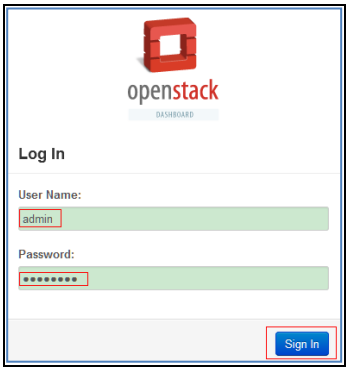
Step	Procedure	Details
12. ☐	Uncomment NOB configuration from line 121 to 174 if configuring Active/Standby NOAMPs	Uncomment NOB configuration from line 121 to 174 if configuring Active/Standby NOAMPs
13. ☐	Uncomment SOB configuration from line 236 to 288 if configuring Active/Standby NOAMPs	Uncomment SOB configuration from line 236 to 288 if configuring Active/Standby SOAMs
14. ☐	Uncomment MP2 configuration from line 354 to 526 if configuring 12.5K Sh Profile	Uncomment MP2,MP3, and MP4 configuration from line 354 to 526 if configuring 12.5K Sh Profile
THIS PROCEDURE IS COMPLETE		

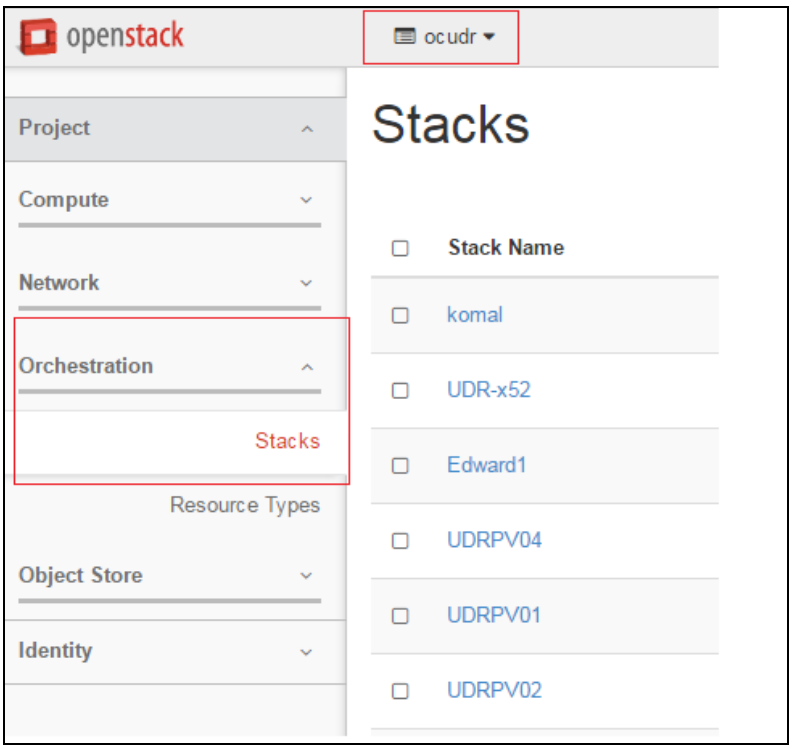
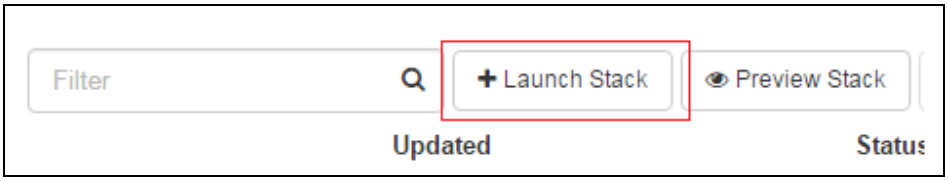
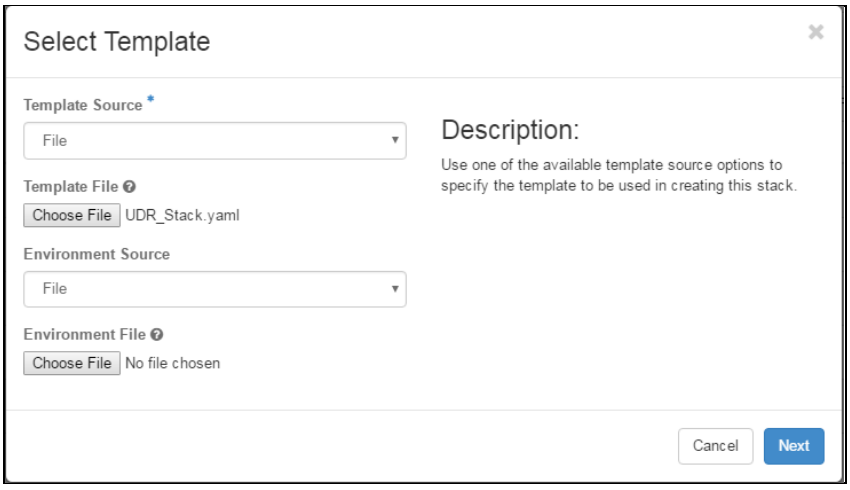
D.5 Create VM Instances Using YAML File

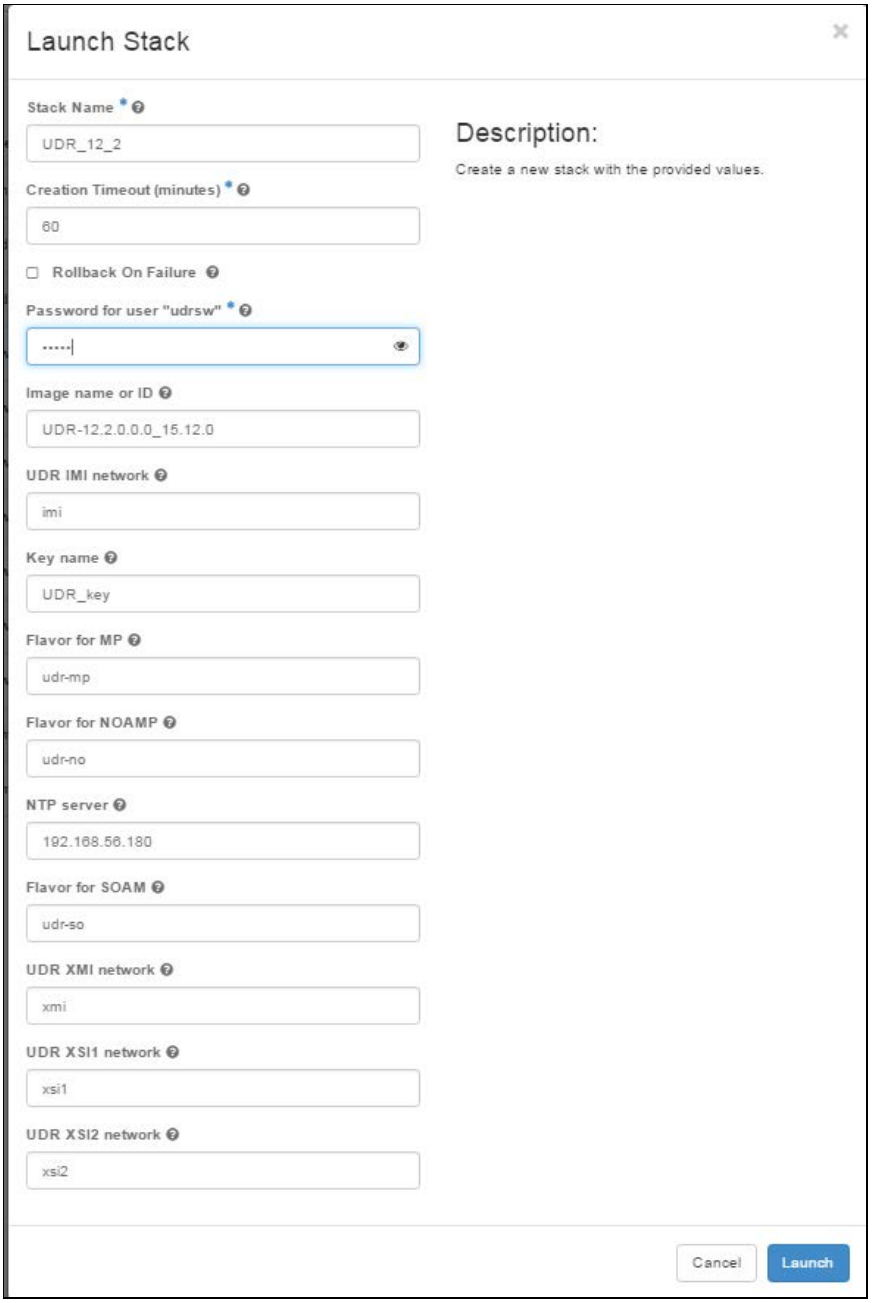
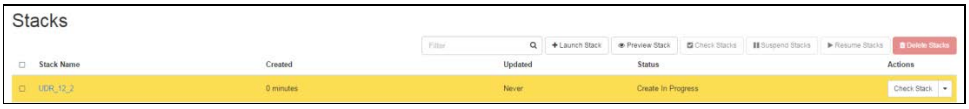
This procedure creates and configures all VM instances required for Oracle Communications User Data Repository configuration.

Check (√) each step as it is completed. Boxes have been provided for this purpose.

Procedure 33: Create VM Instances Using YAML File

Step	Procedure	Details
1. ☐	Login to the OpenStack GUI	

Step	Procedure	Details
2. ☐	1. Select project, (For example, **ocudr**). 2. Navigate to **Project → Orchestration → Stacks** to show the stacks created for this project:	
3. ☐	Click **Launch Stack**	
4. ☐	Select the Template File and Click **Next**	

Step	Procedure	Details
5. ☐	1. Enter the Stack Name 2. Enter the password for Openstack user 3. Click **Launch** to create UDR Stack	
6. ☐	Wait for stack creation to finish.	
THIS PROCEDURE IS COMPLETE		

D.6 Extend VM Instance Volume Size

This procedure extends the storage capacity for a VM instance using filesystem utilities.

Important: These steps only apply to servers where storage demands exceed the default size 60GB. The numbers vary depending on the unique requirements of each deployment and the specific hardware resource available. The numbers in this procedure are an example only. The suitability of these steps cannot be guaranteed across all deployment scenarios.

The steps in this procedure are only performed in the following conditions:

- NOAMP Instance with Resource Profile other than Lab Profile
- SOAM Instance with 12.5K Sh Profile
- MP Instance with 12.5K Sh Profile

Check (√) each step as it is completed. Boxes have been provided for this purpose.

Procedure 34: Extend VM Instance Volume Size

Step	Procedure	Details
1. ☐	Login to the VM Instance as per D.10: Accessing VM Instance using SSH	`hostnamea0c2d9aa8bce login: admusr`
2. ☐	Switch to root user	`# su - root` `password: <root_password>`

Step	Procedure	Details
3. ☐	**NOTE:** Do not perform on KVM based VMs Use the **fdisk** command to create a partition on /dev/vda **NOTE:** 1. If /dev/vda is not present, use /dev/sda instead in the commands. 2. First cylinder of /dev/vda3 is calculated from End cylinder of /dev/vda2, for example assume that 124810 is the next of the End Cylinder of /dev/vda2	[root@hostnameb267a6968148 ~]#fdisk /dev/vda Command (m for help): p Disk /dev/vda: 171.8 GB, 171798691840 bytes 16 heads, 63 sectors/track, 332881 cylinders Units = cylinders of 1008 * 512 = 516096 bytes Sector size (logical/physical): 512 bytes / 512 bytes I/O size (minimum/optimal): 512 bytes / 512 bytes Disk identifier: 0x0008a531 Device Boot Start End Blocks Id System /dev/vda1 * 3 523 262144 83 Linux Partition 1 does not end on cylinder boundary. /dev/vda2 523 124809 62640128 8e Linux LVM Partition 2 does not end on cylinder boundary. Command (m for help): n Command action e extended p primary partition (1-4) p Partition number (1-4): 3 First cylinder (1-332881, default 1): 124810 Last cylinder, +cylinders or +size{K,M,G} (124810-332881, default 332881): Using default value 332881 Command (m for help): w The partition table has been altered! Calling ioctl() to re-read partition table. WARNING: Re-reading the partition table failed with error 16: Device or resource busy. The kernel still uses the old table. The new table will be used at the next reboot or after you run partprobe(8) or kpartx(8) Syncing disks.
4. ☐	**NOTE:** Do not perform on KVM based VMs Reboot instance	[root@hostnameb267a6968148 ~]# init 6

Step	Procedure	Details

5. ☐	**NOTE:** Do not perform on KVM based VMs
	After reboot, Login to the VM with admusr user and switch to root user
	D.10: Accessing VM Instance using SSH
		`hostnameb267a6968148 login: admusr`
		`# su - root`
		`password: <root_password>`

6. ☐	**NOTE:** Do not perform on KVM based VMs Create physical volume `/dev/vda3`	`[root@hostnameb267a6968148 ~]# pvcreate /dev/vda3` `  Physical volume "/dev/vda3" successfully created`
7. ☐	**NOTE:** Do not perform on KVM based VMs Extend vg vgroot on `/dev/vda3`	`[root@hostnameb267a6968148 ~]# vgextend vgroot /dev/vda3` `  Volume group "vgroot" successfully extended`

8. ☐	Extend logical volumes for 2K profile
	Only required for NOAMP VM Instance
		`# lvextend -L +52428800K /dev/vgroot/run_db`
		`# lvextend -L +52428800K /dev/vgroot/filemgmt`
		`# lvextend -L +6291456K /dev/vgroot/logs_process`
		`# resize2fs /dev/mapper/vgroot-filemgmt`
		`# resize2fs /dev/mapper/vgroot-run_db`
		`# resize2fs /dev/mapper/vgroot-logs_process`
		`# lvs`
		`  LV            VG     Attr       LSize  Pool Origin Data%  Meta%  Move Log Cpy%Sync Convert`
		`  apw_tmp       vgroot -wi-ao----  9.09g`
		`  filemgmt      vgroot -wi-ao---- 68.19g`
		`  logs_process  vgroot -wi-ao----  9.66g`
		`  logs_security vgroot -wi-ao----  3.66g`
		`  netbackup_lv  vgroot -wi-ao----  2.00g`
		`  plat_root     vgroot -wi-ao----  1.00g`
		`  plat_tmp      vgroot -wi-ao----  1.00g`
		`  plat_usr      vgroot -wi-ao----  4.00g`
		`  plat_var      vgroot -wi-ao----  1.00g`
		`  plat_var_tklc vgroot -wi-ao----  4.00g`
		`  run_db        vgroot -wi-ao---- 59.09g`
		`# vgs`
		`  VG     #PV #LV #SN Attr   VSize   VFree`
		`  vgroot   2  11   0 wz--n- 219.72g 57.03g`

Step	Procedure	Details

9. ☐	Extend logical volumes for 7K or 12.5K profile
	
	(Only required for NOAMP VM Instance)
		# lvextend -L +115343360K /dev/vgroot/run_db
		# lvextend -L +104857600K /dev/vgroot/filemgmt
		# lvextend -L +6291456K /dev/vgroot/logs_process
		# lvextend -L +10485760K /dev/vgroot/apw_tmp
		# resize2fs /dev/mapper/vgroot-filemgmt
		# resize2fs /dev/mapper/vgroot-run_db
		# resize2fs /dev/mapper/vgroot-logs_process
		# resize2fs /dev/mapper/vgroot-apw_tmp
		# lvs
		  LV VG Attr LSize Pool Origin Data% Meta% Move Log Cpy%Sync Convert
		  apw_tmp vgroot -wi-ao---- 29.09g
		  filemgmt vgroot -wi-ao---- 118.19g
		  logs_process vgroot -wi-ao---- 9.66g
		  logs_security vgroot -wi-ao---- 3.66g
		  netbackup_lv vgroot -wi-ao---- 2.00g
		  plat_root vgroot -wi-ao---- 1.00g
		  plat_tmp vgroot -wi-ao---- 1.00g
		  plat_usr vgroot -wi-ao---- 4.00g
		  plat_var vgroot -wi-ao---- 1.00g
		  plat_var_tklc vgroot -wi-ao---- 4.00g
		  run_db vgroot -wi-ao---- 109.09g
		# vgs
		  VG #PV #LV #SN Attr VSize VFree
		  vgroot 2 11 0 wz--n- 282.69g 117.31g

Step	Procedure	Details

10. ☐	Extend logical volumes for 12.5K profile
	Only required for SOAM and MP VM Instance for 12.5K Sh Profile
		`# lvextend -L +6364856K /dev/vgroot/run_db`
		`# lvextend -L +16672358K /dev/vgroot/filemgmt`
		`# lvextend -L +3145728K /dev/vgroot/logs_process`
		`# lvextend -L +6291456K /dev/vgroot/apw_tmp`
		`# resize2fs /dev/mapper/vgroot-filemgmt`
		`# resize2fs /dev/mapper/vgroot-run_db`
		`# resize2fs /dev/mapper/vgroot-logs_process`
		`# resize2fs /dev/mapper/vgroot-apw_tmp`
		`# lvs`
		`  LV            VG     Attr       LSize  Pool Origin Data%  Meta% Move Log Cpy%Sync Convert`
		`  apw_tmp       vgroot -wi-ao----  15.16g`
		`  filemgmt      vgroot -wi-ao----  34.09g`
		`  logs_process  vgroot -wi-ao----  6.66g`
		`  logs_security vgroot -wi-ao----  3.66g`
		`  netbackup_lv  vgroot -wi-ao----  2.00g`
		`  plat_root     vgroot -wi-ao----  1.00g`
		`  plat_tmp      vgroot -wi-ao----  1.00g`
		`  plat_usr      vgroot -wi-ao----  4.00g`
		`  plat_var      vgroot -wi-ao----  1.00g`
		`  plat_var_tklc vgroot -wi-ao----  4.00g`
		`  run_db        vgroot -wi-ao----  15.16g`
		`# vgs`
		`  VG     #PV #LV #SN Attr   VSize   Vfree`
		`  vgroot   2  11   0 wz--n- 87.73g 12.27g`

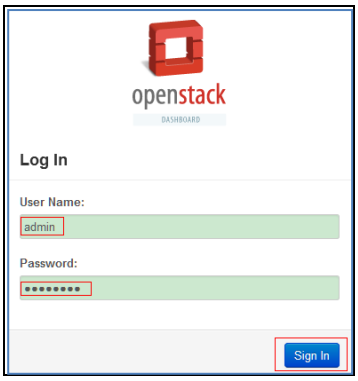
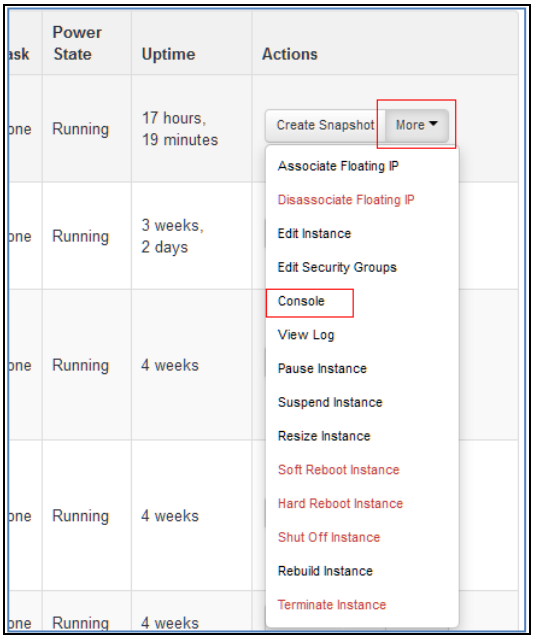
11. ☐	Reboot instance	`[root@hostnameb267a6968148 ~]# init 6`
THIS PROCEDURE IS COMPLETE		

D.7 VM Instance Network Configuration

This procedure configures network interfaces for VM instance.

Check (√) each step as it is completed. Boxes have been provided for this purpose.

Procedure 35: VM Instance Network Configuration

Step	Procedure	Details
1. ☐	Login to the OpenStack GUI	
2. ☐	Login VM instance from **Project → Compute → Instances → More →Console**	
3. ☐	Login to the VM with root user	`hostnamea0c2d9aa8bce login: root` `password: <root_password>`

4. ☐	Use netAdm to add device and set IP address
	(ISO installs only)
		NOTE: This step is required only for ISO installs.
		`[root@ hostnamea0c2d9aa8bce ~]# netAdm add --device=eth0`
		`Interface eth0 added`

5. ☐	Set IP address for this interface	`[root@ hostnamea0c2d9aa8bce ~]# netAdm set --device=eth0 --onboot=yes \`
		`--netmask=<netmask> --address=<ip_address>`
		`Interface eth0 updated`

Step	Procedure	Details

6. ☐	Add default router	`[root@ hostnamea0c2d9aa8bce ~]# netAdm add --route=default --device=eth0 \`
		`--gateway=10.240.xxx.xx`
		`Route to eth0 added`

7. ☐	Add eth1 interface	`[root@ hostnamea0c2d9aa8bce ~]# netAdm add --device=eth1` `Interface eth1 added`

8. ☐	Add eth2 interface
	(NOAMP and MP only)
		NOTE: Perform this step only for NOAMP and MP virtual machines:
		`[root@hostnameb6092a316785 ~]# netAdm add --device=eth2`
		`Interface eth2 added`

9. ☐	Add eth3 interface
	(MP only)
		NOTE: Perform this step only for MP virtual machines for deployments that use a second signaling network (XSI2):
		`[root@hostnameb6092a316785 ~]# netAdm add --device=eth3`
		`Interface eth3 added`

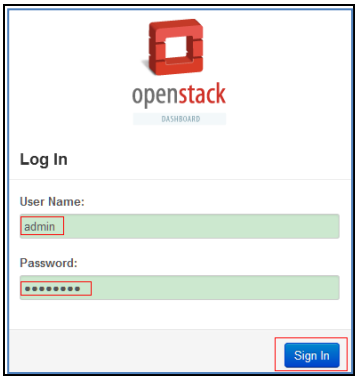
THIS PROCEDURE IS COMPLETE		

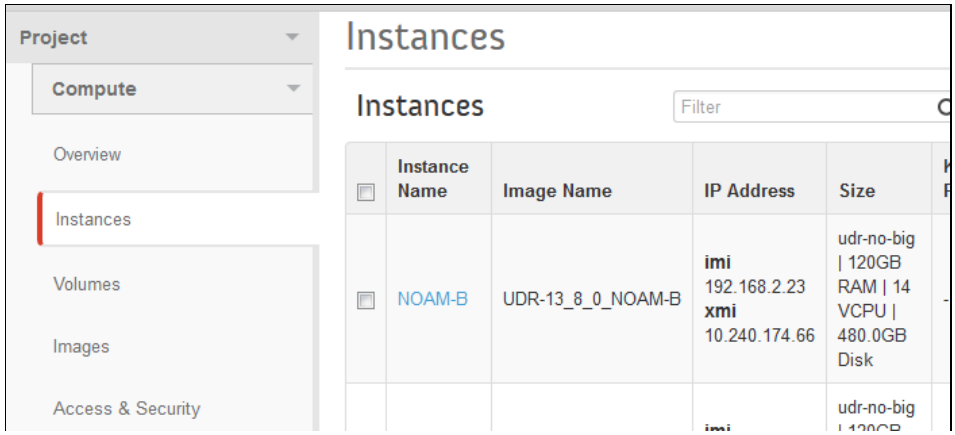
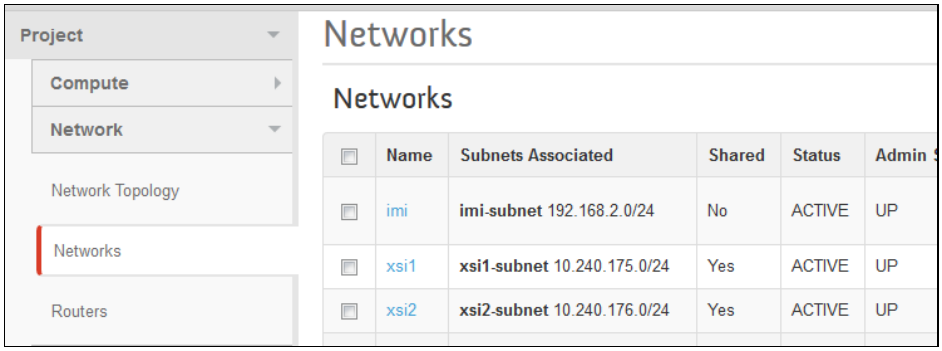
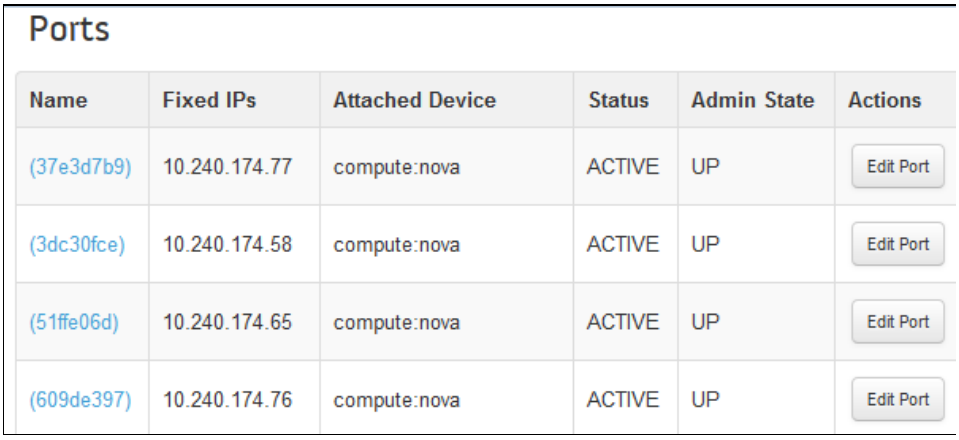
D.8 Virtual IP Address Assignment

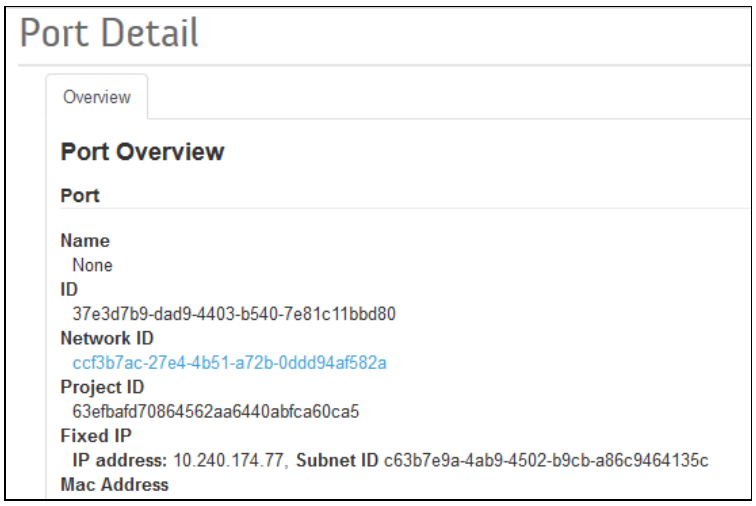
This procedure configures a VIP for a virtual machine. Administrative access to the OpenStack controller node is required.

Check (√) each step as it is completed. Boxes have been provided for this purpose.

Procedure 36: Virtual IP Address Assignment

Step	Procedure	Details
1. ☐	Login to the OpenStack GUI	

Step	Procedure	Details
2. ☐	1. Select project, (for example: UDR). 2. Navigate to **Project → Compute → Instances** to show all Instances created under this project.	
3. ☐	Find the NOAMP instances	Record the IP addresses of the NOAMP and/or SOAM instances primary XMI network. NOAMP A: _____ SOAM A: _____ NOAMP B: _____ SOAM B: _____
4. ☐	1. Navigate to **Project → Network → Networks** 2. Select the XMI network for expanded detail	
5. ☐	1. In the Ports section, find the Fixed IP associated with the addresses recorded in step **3**. 2. Select the associated Port Name.	

Step	Procedure	Details
6. ☐	Copy or record the Port ID	
7. ☐	Copy or record all required Port IDs.	Repeat steps 5 and 6 to record the Port ID of each server from step 3. NOAMP A: _____ SOAM A: _____ NOAMP B: _____ SOAM B: _____

8. ☐	**OpenStack Controller node:**
	1. Access the command prompt.
	2. Log into the controller node as a privilidged user.
		`login as: <usr_name>`
		`root@10.250.xx.yy's password: <usr_password>`
		`Last login: Mon Jul 30 10:33:19 2012 from 10.25.80.199`
		`[root@control01]#`

9. ☐	**OpenStack Controller node:** Initialize environment variables	`controller ~]# source keystonerc_admin`

10. ☐	**OpenStack Controller node:**
	Assign VIP by Port IDs
		Assign the VIP address to both A and B servers sharing the VIP:
		`[root@control01 ~(keystone_admin)]# neutron port-update <A_server_port_id> --allowed-address-pairs type=dict list=true ip_address=<vip>`
		`[root@control01 ~(keystone_admin)]# neutron port-update <B_server_port_id> --allowed-address-pairs type=dict list=true ip_address=<vip>`

11. ☐	**OpenStack Controller node:** Repeat if required	Repeat step 10 as required for any other server pairs requiring a VIP.
12. ☐	**OpenStack Controller node:** Confirm VIP association	Example of VIP associations are confirmed with the following command using the port ID: `[root@control01 ~(keystone_admin)]# neutron port-show <port_id>`
THIS PROCEDURE IS COMPLETE		

D.8.1 Example of VIP Associations Confirmation

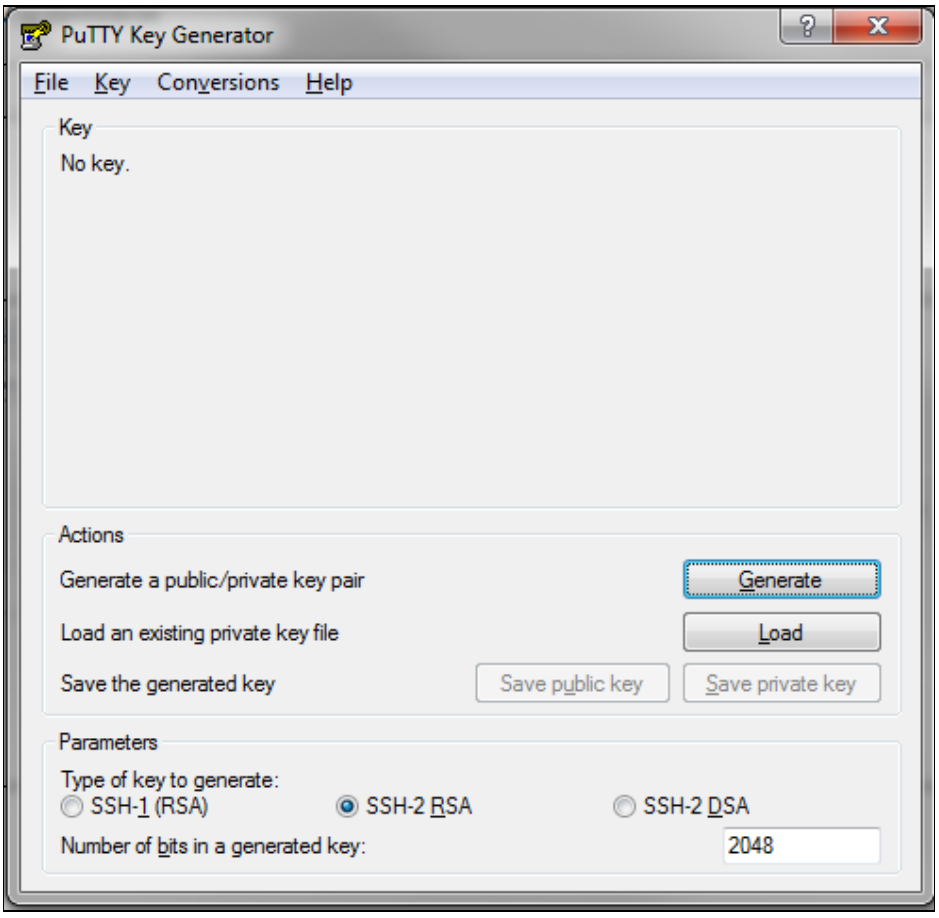
```
+-----------------------+-------------------------------------------------------------------------------------+
| Field                 | Value                                                                               |
+-----------------------+-------------------------------------------------------------------------------------+
| admin_state_up        | True                                                                                |
| allowed_address_pairs | {"ip_address": "10.240.xxx.xx", "mac_address": "fa:16:3e:ce:18:2a"}                 |
| binding:host_id       | compute05.labafrica                                                                 |
| binding:profile       | {}                                                                                  |
| binding:vif_details   | {"port_filter": true, "ovs_hybrid_plug": true}                                      |
| binding:vif_type      | ovs                                                                                 |
| binding:vnic_type     | normal                                                                              |
| device_id             | 947457b4-46e8-43e7-8f14-79c816388e3d                                                |
| device_owner          | compute:Odds                                                                        |
| extra_dhcp_opts       |                                                                                     |
| fixed_ips             | {"subnet_id": "23f28095-bdb6-4fab-b13e-281d726ef3eb", "ip_address": "10.240.xxx.xx"} |
| id                    | aa14b554-d0a6-413d-b77c-63e11a3c9895                                                |
| mac_address           | fa:16:3e:ce:18:2a                                                                   |
| name                  |                                                                                     |
| network_id            | 62027e77-7556-42b2-8070-ffbd61933877                                                |
| port_security_enabled | True                                                                                |
| security_groups       | 1e4bd44c-9ac2-4cd0-a56b-c094a52830c2                                                |
| status                | ACTIVE                                                                              |
| tenant_id             | d2fda814485247f795c23b9af2bc2e1c                                                    |
+-----------------------+-------------------------------------------------------------------------------------+
```

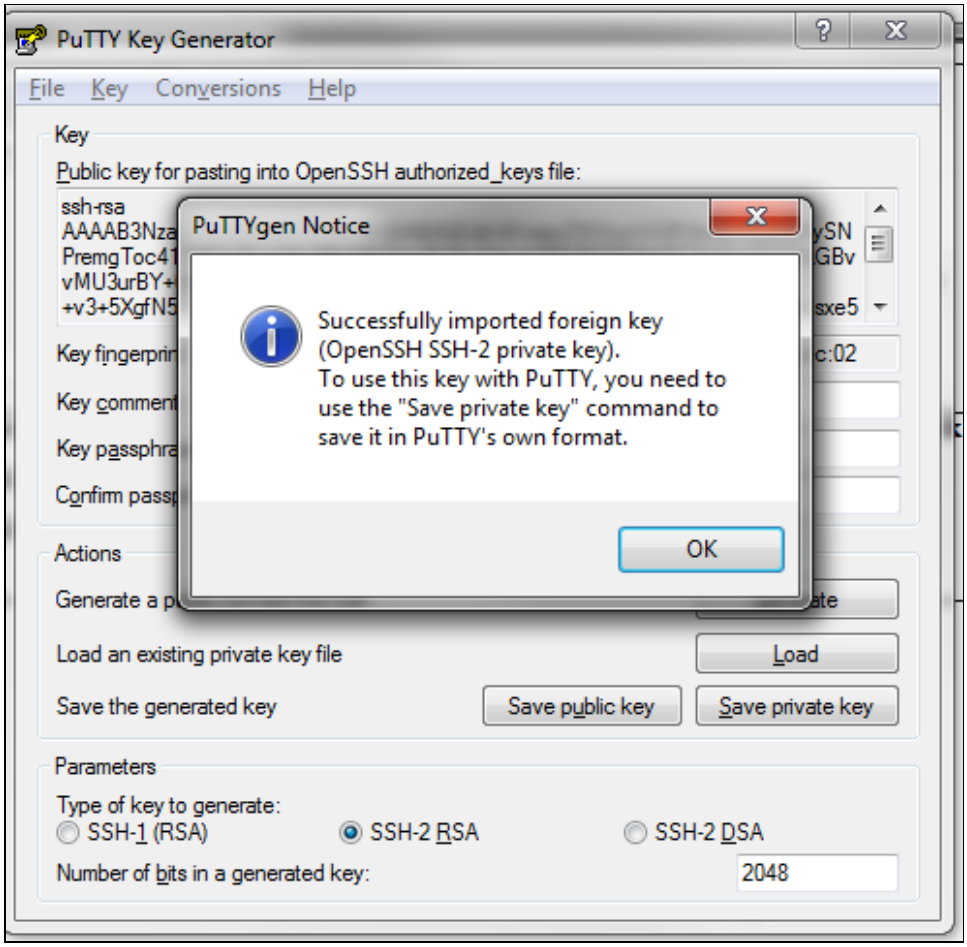
D.9 Generate Private Key for SSH Access

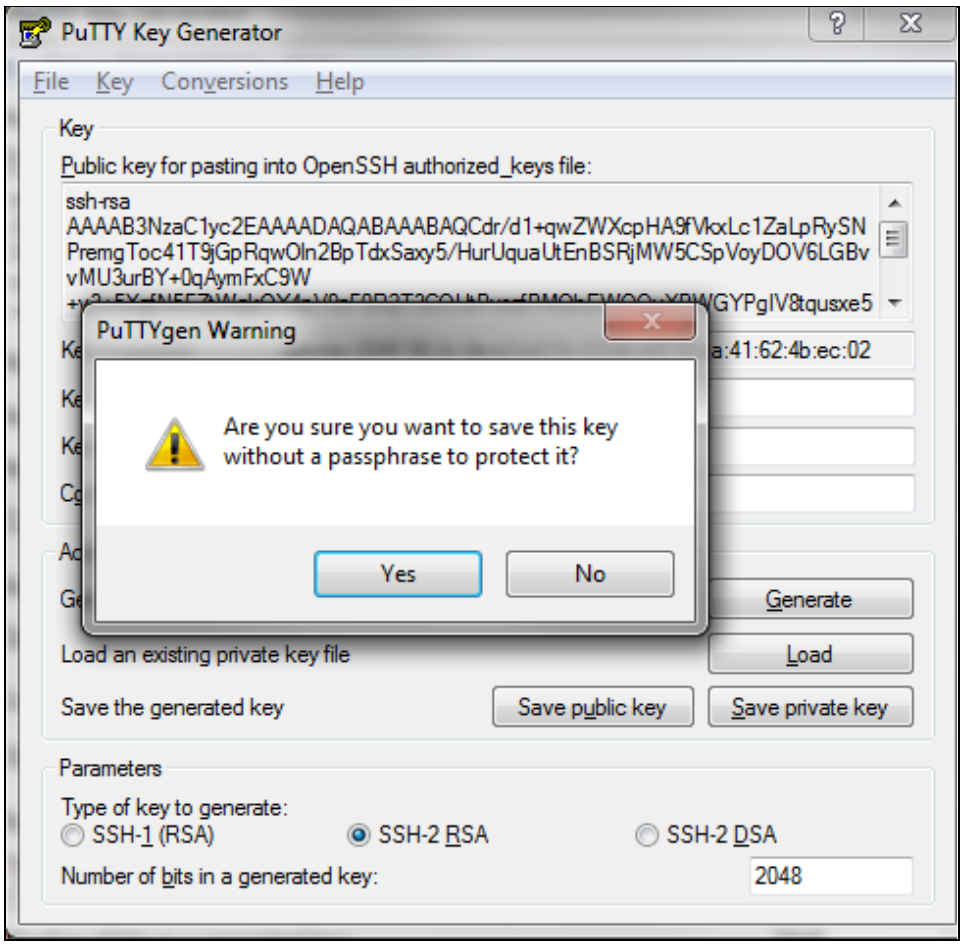
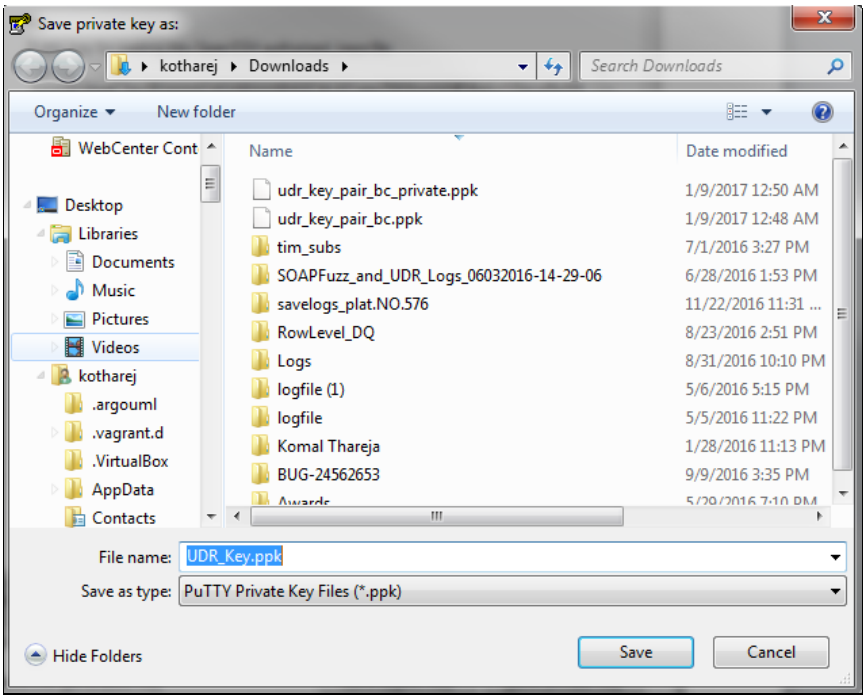
This procedure generates Private Key to be used for accessing VM instance via SSH.

Check (√) each step as it is completed. Boxes have been provided for this purpose.

Procedure 37: Generate Private Key for SSH Access

Step	Procedure	Details
1. ☐	Launch PuTTyGen	

Step	Procedure	Details
2. ☐	1. Load the Key file (the `*.pem` generated in **D.3: Create Key Pair** 2. Click **OK**	

Step	Procedure	Details
3. ☐	1. Save the Private Key by blicking **Save Private Key** 2. Click **Yes** 3. Click **Save**	 
THIS PROCEDURE IS COMPLETE		

D.10 Accessing VM Instance using SSH

This procedure accesses the VM instance using SSH. This procedure assumes:

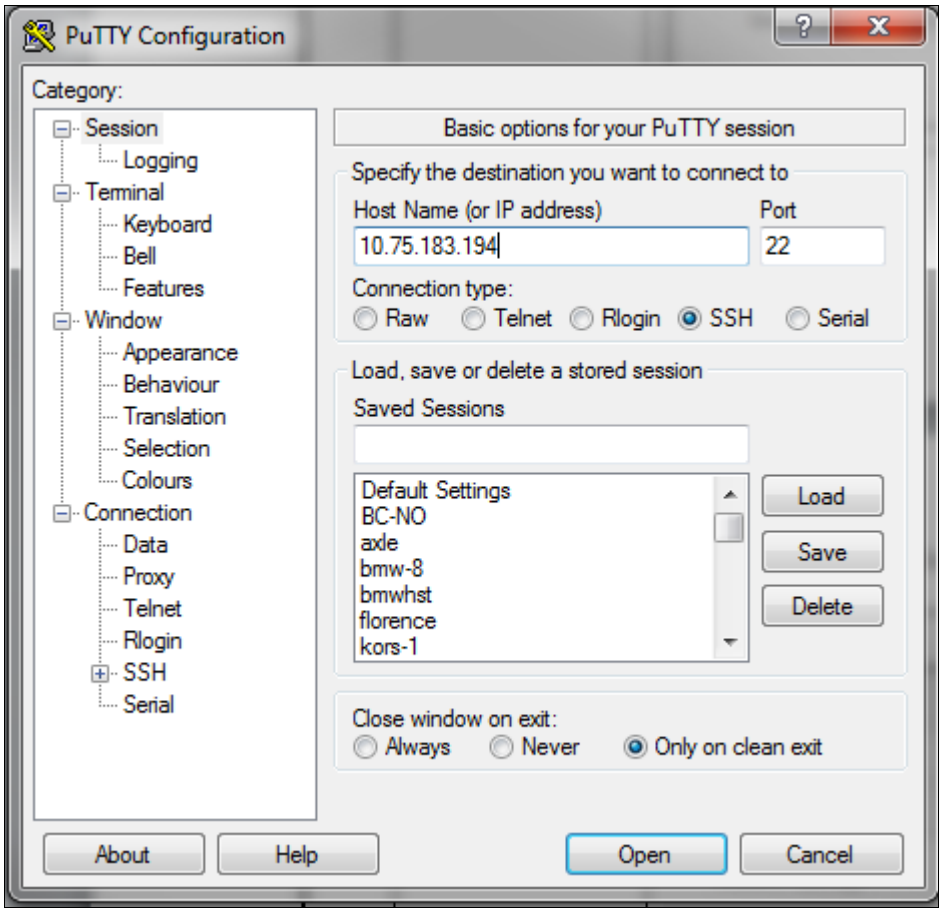
- Network configuration on VM instance is complete or floating IPs have been associated with VM instance
- Private Key has been generated as per **D.8.1: Example of VIP Associations Confirmation**
- **+----------+----------+**

```
| Field                 | Value                                                                                          |
+-----------------------+------------------------------------------------------------------------------------------------+
| admin_state_up        | True                                                                                           |
| allowed_address_pairs | {"ip_address": "10.240.xxx.xx", "mac_address": "fa:16:3e:ce:18:2a"}                            |
| binding:host_id       | compute05.labafrica                                                                            |
| binding:profile       | {}                                                                                             |
| binding:vif_details   | {"port_filter": true, "ovs_hybrid_plug": true}                                                 |
| binding:vif_type      | ovs                                                                                            |
| binding:vnic_type     | normal                                                                                         |
| device_id             | 947457b4-46e8-43e7-8f14-79c816388e3d                                                           |
| device_owner          | compute:Odds                                                                                   |
| extra_dhcp_opts       |                                                                                                |
| fixed_ips             | {"subnet_id": "23f28095-bdb6-4fab-b13e-281d726ef3eb", "ip_address": "10.240.xxx.xx"}           |
| id                    | aa14b554-d0a6-413d-b77c-63e11a3c9895                                                           |
| mac_address           | fa:16:3e:ce:18:2a                                                                              |
| name                  |                                                                                                |
| network_id            | 62027e77-7556-42b2-8070-ffbd61933877                                                           |
| port_security_enabled | True                                                                                           |
| security_groups       | 1e4bd44c-9ac2-4cd0-a56b-c094a52830c2                                                           |
| status                | ACTIVE                                                                                         |
| tenant_id             | d2fda814485247f795c23b9af2bc2e1c                                                               |
+-----------------------+------------------------------------------------------------------------------------------------+
```

- Generate Private Key for SSH Access

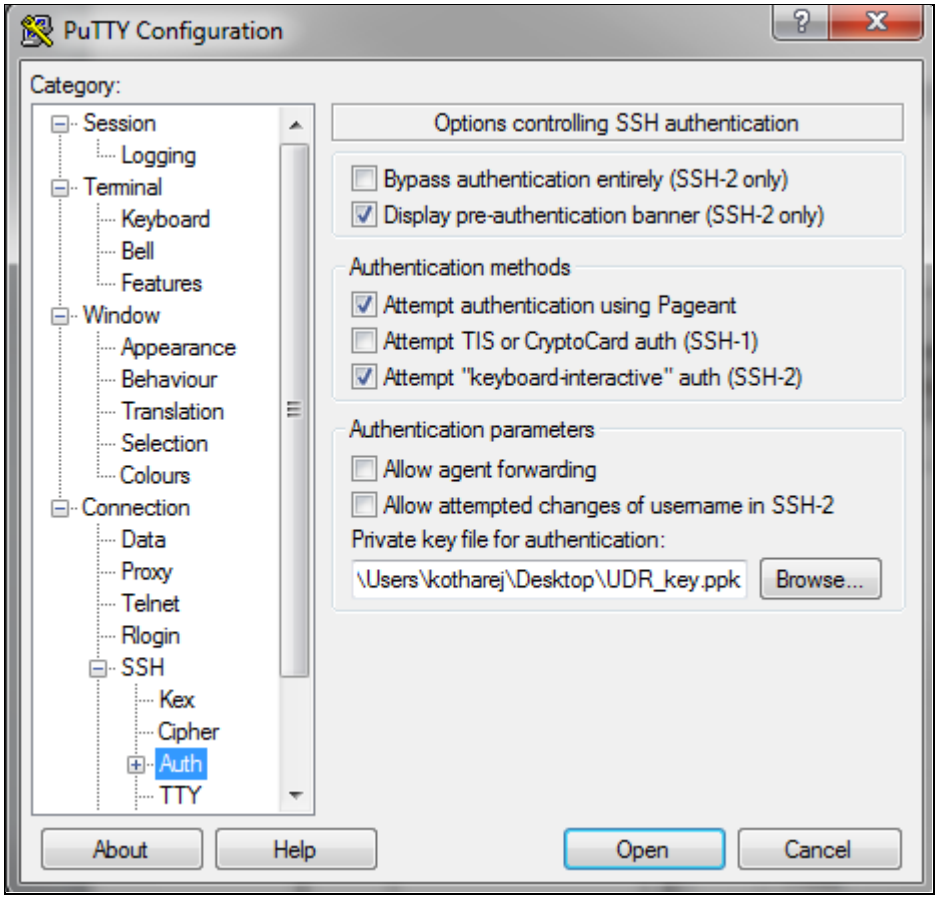
Check (√) each step as it is completed. Boxes have been provided for this purpose.

Procedure 38: SSH Access to VM Instance

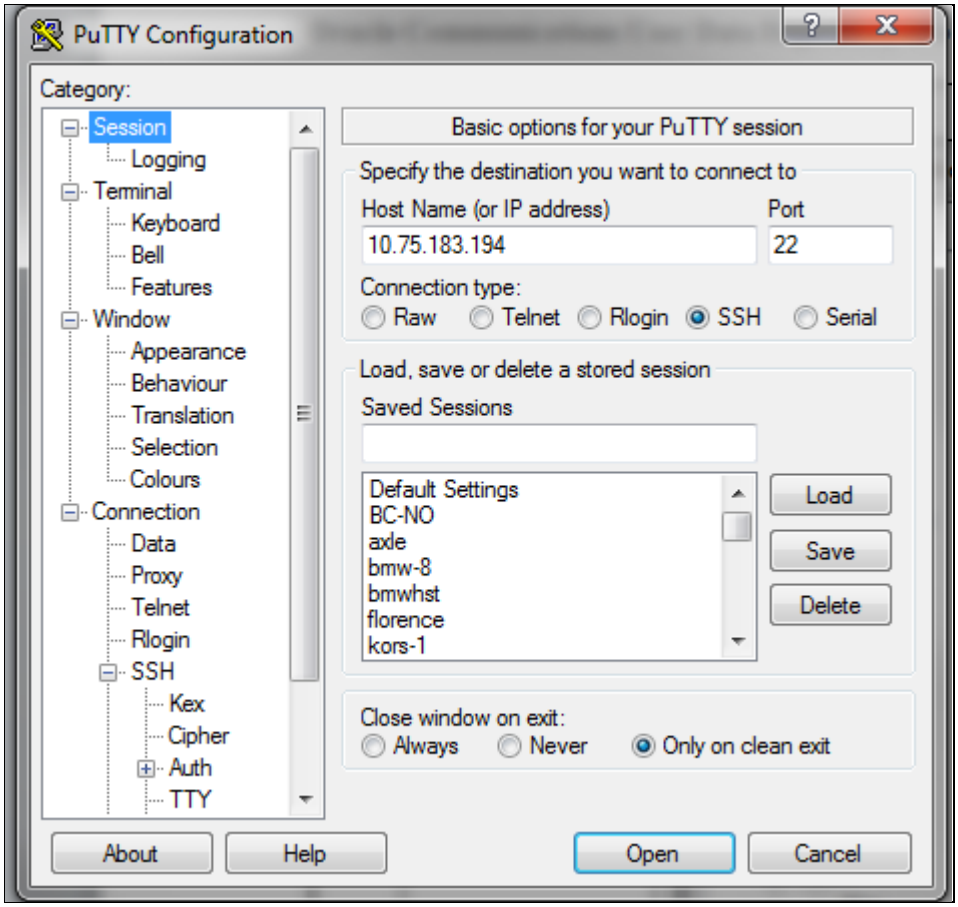
Step	Procedure	Details
1. ☐	1. Open Putty 2. Specify the IP Address of the VM Instance	

2. ☐ Under the **SSH → Auth**, select the *.ppk file generated by D.8.1: Example of VIP Associations Confirmation

```
+----------------------
-+----------------------
------------------------
------------------------
----------------+

| Field                |
Value

                       |

+------------------
-----+-------------
-------------------
-------------------
-------------------
----------------+

|
admin_state_up
   |
True



         |

|
allowed address pai
rs | {"ip_address":
"10.240.xxx.xx",
"mac address":
"fa:16:3e:ce:18:2a"
}
|

|
binding:host id
   |
compute05.labafrica



         |

|
binding:profile
   |
{}



         |

|
binding:vif_details
   |
{"port_filter":
true,
"ovs_hybrid_plug":
true}

      |

|
binding:vif_type
   |
ovs



         |

|
binding:vnic type
   |
```



	normal | | device id | 947457b4-46e8-43e7-8f14-79c816388e3d | | device owner | compute:Odds | | extra_dhcp_opts | | | fixed ips | {"subnet_id": "23f28095-bdb6-4fab-b13e-281d726ef3eb", "ip_address": "10.240.xxx.xx"} | | id | aa14b554-d0a6-413d-b77c-63e11a3c9895 | | mac address | fa:16:3e:ce:18:2a | | name | | | network_id | 62027e77-7556-42b2-8070-ffbd61933877 | | port_security_enabled | True | | security groups | 1e4bd44c-9ac2-4cd0-a56b-c094a52830c2	

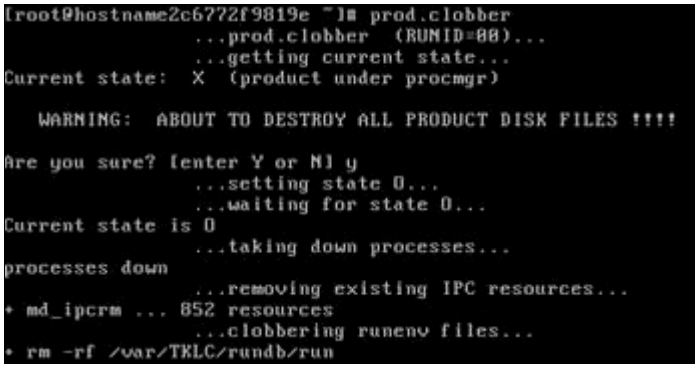
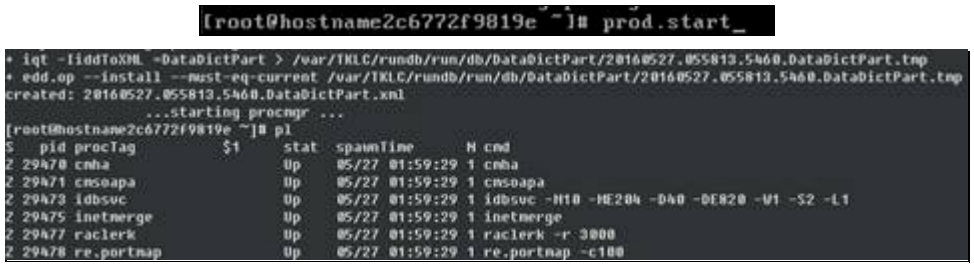
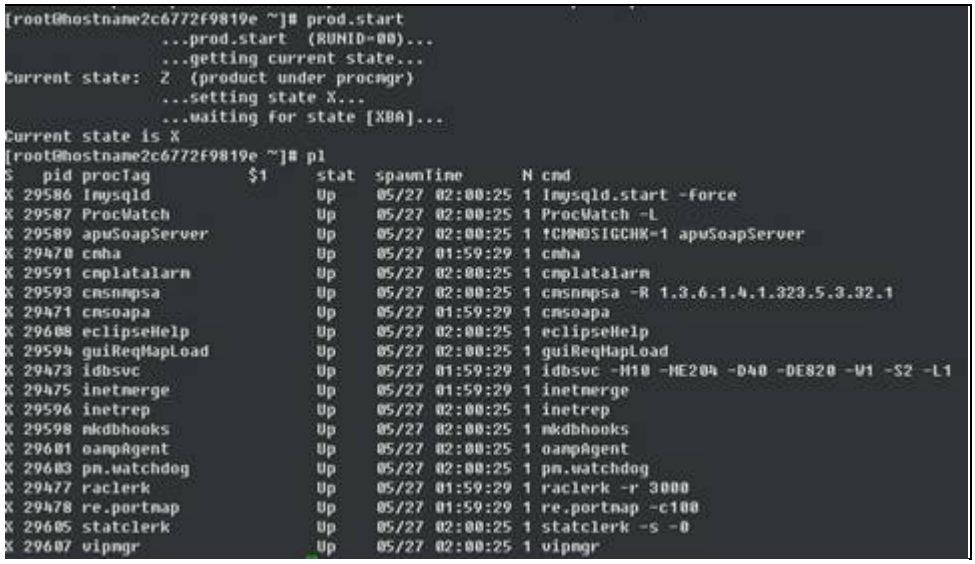
Step	Procedure	Details
	| | status | ACTIVE | | tenant id | d2fda814485247f795c23b9af2bc2e1c | +----------+----------+----------+----------+----------+----------+ Generate Private Key for SSH Access	
3. ☐	From Session Category, click Open to launch the SSH connection Specify username admusr when prompted	
THIS PROCEDURE IS COMPLETE		

D.11 Clobber the Database on VM Instance

This procedure clobbers the database on VM instance.

Check (√) each step as it is completed. Boxes have been provided for this purpose.

Procedure 39: Clobber Database on VM Instance

Step	Procedure	Details
1. ☐	Login to the VM with admusr via SSH as per **D.10: Accessing VM Instance using SSH**	`hostnamea0c2d9aa8bce login: admusr`
2. ☐	Switch to root user	`# su-root` `password: <root_password>`
3. ☐	Run the **prod.clobber** command on the created instances	
4. ☐	Run **prod.start** on instance After start, use the **pl** command to check process status, after first start, only a few processes start	
5. ☐	Run **prod.start** again on instance, this time, all processes start	

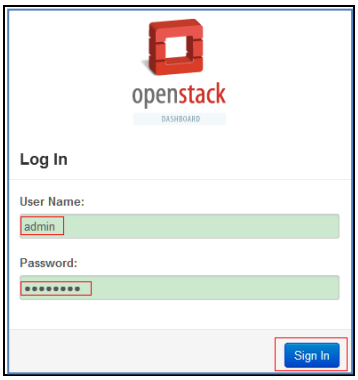
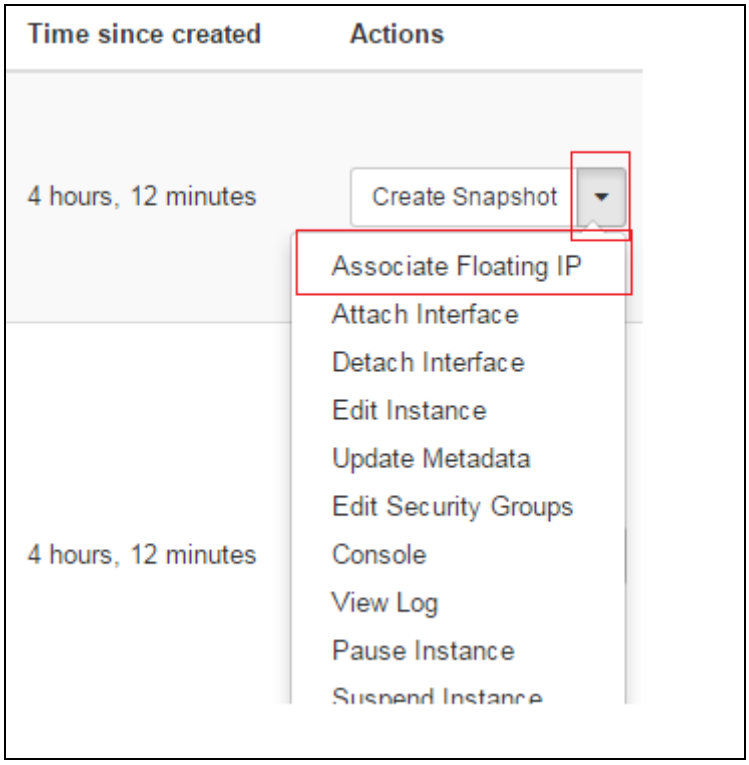
Step	Procedure	Details
THIS PROCEDURE IS COMPLETE		

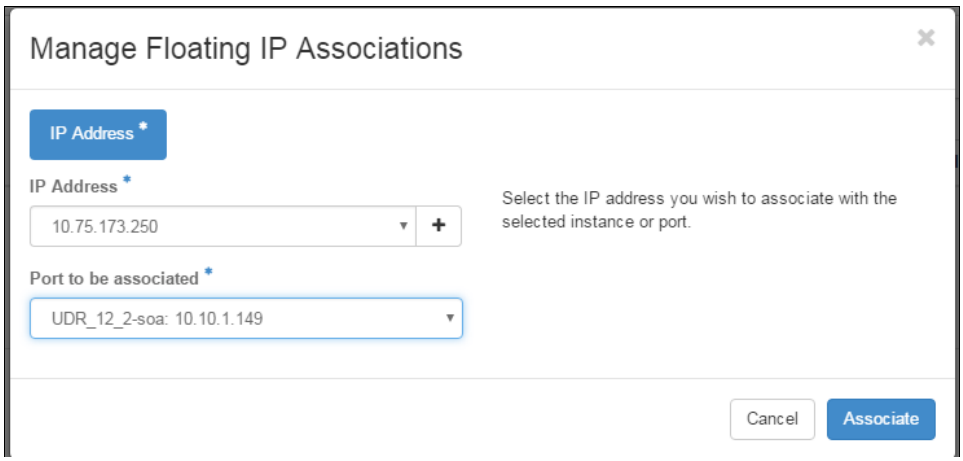
D.12 Associating Floating IPs

This procedure associates a floating IP with a VM instance.

Check (√) each step as it is completed. Boxes have been provided for this purpose.

Procedure 40: Associate Floating IP

Step	Procedure	Details
1. ☐	Login to the OpenStack GUI	
2. ☐	Login VM instance from **Project → Instances → More → Associate Floating IP**	

Step	Procedure	Details
3. ☐	1. Select the IP Addresss and Port to be associated 2. Click **Associate**.	
THIS PROCEDURE IS COMPLETE		

APPENDIX E. SAME NETWORK ELEMENT AND HARDWARE PROFILES

In order to enter all the network information for a network element into an Appworks-based system, a specially formatted XML file needs to be filled out with the required network information. The network information is needed to configure both the NOAMP and any SOAM Network Elements.

It is expected that the maintainer/creator of this file has networking knowledge of this product and the site where it is being installed. The following is an example of a Network Element XML file.

The SOAM Network Element XML file needs to have same network names for the networks as the NOAMP Network Element XML file has. It is easy to accidentally create different network names for NOAMP and SOAM Network Element, and then the mapping of services to networks is not possible.

Table 4 Example Network Element XML File

Example NOAMP Network Element XML

```
<?xml version="1.0"?>
<networkelement>
    <name>NO_UDR_NE</name>
    <networks>
        <network>
            <name>XMI</name>
            <vlanId>3</vlanId>
            <ip>10.2.0.0</ip>
            <mask>255.255.255.0</mask>
            <gateway>10.2.0.1</gateway>
            <isDefault>true</isDefault>
        </network>
        <network>
            <name>IMI</name>
            <vlanId>4</vlanId>
            <ip>10.3.0.0</ip>
            <mask>255.255.255.0</mask>
        <nonRoutable>true</nonRoutable>
        </network>
    </networks>
</networkelement>
```

Example SOAM Network Element XML

```
<?xml version="1.0"?>
<networkelement>
    <name>SO_UDR_NE</name>
    <networks>
        <network>
            <name>XMI</name>
            <vlanId>3</vlanId>
            <ip>10.2.0.0</ip>
            <mask>255.255.255.0</mask>
            <gateway>10.2.0.1</gateway>
            <isDefault>true</isDefault>
        </network>
        <network>
            <name>IMI</name>
            <vlanId>4</vlanId>
            <ip>10.3.0.0</ip>
            <mask>255.255.255.0</mask>
        <nonRoutable>true</nonRoutable>
        </network>
    </networks>
</networkelement>
```

NOTE: Do not include the XSI networks in a Network Element XML file.

The server hardware information is needed to configure the Ethernet interfaces on the servers. This server hardware profile data XML file is used for Appworks deployments. It is supplied to the NOAMP server so that the information can be pulled in by Appworks and presented in the GUI during server configuration. The following is an example of a Server Hardware Profile XML file which is stored at path `/var/TKLC/appworks/profiles`

Table 5 Example Server Hardware Profile XML–Virtual Guest:

```
<profile>
    <serverType>Cloud UDR</serverType>
    <available>
        <device>eth0</device>
        <device>eth1</device>
        <device>eth2</device>
        <device>eth3</device>
    </available>
    <devices>
        <device>
            <name>eth0</name>
            <type>ETHERNET</type>
        </device>
        <device>
            <name>eth1</name>
            <type>ETHERNET</type>
        </device>
        <device>
            <name>eth2</name>
            <type>ETHERNET</type>
        </device>
        <device>
            <name>eth3</name>
            <type>ETHERNET</type>
        </device>
    </devices>
</profile>
```

APPENDIX F. HIGH AVAILABILITY CONFIGURATIONS

	Non HA		HA			
VM Name	Min number of VMs	Max number of VMs	Min number of VMs	Max number of VMs	HA config	Affinity
NOAMP	1	2	2	2	Active-Standby	Anti-affinity. NOAMPs must be hosted on different servers
SOAM	1	2	2	2	Active-Standby	Anti-affinity. SOAMs must be hosted on different servers
MP	1	1	2	4	Active-Active	Anti-affinity. MPs must be hosted on different servers

NOTES:

Non-HA configuration is for labs and demonstrations only.

The NOAMP and SOAM VMs raise HA alarms when deployed as singletons. For this reason, standby VMs are often deployed even in non-HA labs.

The HA Max number of VMs was used for performance testing

For Geo-Diverse configurations, DR site VMs must be hosted at a geo-diverse location from the first site

APPENDIX G. RESOURCE PROFILE

VM Name	VM Purpose	vCPUs				RAM (GB)				Storage (GB)			
		Lab	2K Sh	7K Sh	12.5K	Lab	2K Sh	7K Sh	12.5K Sh	Lab	2K Sh	7K Sh	12.5K Sh
NOAMP	Network Operation, Administration, Maintenance, and Provisioning	4	4	8	14	6	16	32	64	60	220	400	400
SOAM	Site (node) Operation, Administration, Maintenance	2*	2*	2*	2*	2	4	4	16	60	60	100	100
MP	Message Processor	4	4	6	12	10	16	16	32	60	60	100	100

NOTES:

- SOAM can run with only 2 CPUs. This does not create a performance degradation. However, the Server Hardware Configuration Error alarm is raised and remains on the system.
- Lab numbers are for demonstration of functionality only and can only support 100/s SOAP provisioning with 2k/s SH traffic.
- 1:1vCPU to CPU ratio based on Intel(R) Xeon(R) CPU E5-2699 v3 @ 2.30GHz

APPENDIX H. NETWORK DEVICE ASSIGNMENTS

Product	Role	Interface Assignment						
		Control	Platform Management	OAMP (XMI)	Local (IMI)	Signaling A (XSI1)	Signaling B (XSI2)	NetBackup
Platform	TVOE							
	PMAC							
UDR	NOAMP			eth0	eth1	eth2		
	SOAM			eth0	eth1			
	MP			eth0	eth1	eth2	eth3	

Legend				
Mandatory	Not Applicable	Unsupported	Optional	Suggested

APPENDIX I. NETWORK AND PORT INFORMATION

Network	Description	Also Known As	Optional/ Mandatory	Type	IPv6	VMs using	Services	Notes
OAMP	Routable operations, administration, maintenance and provisioning flows	External Management Interface (XMI)	Mandatory	External	No	All	AppWorks SOAP Server (TCP/18081) AppWorks GUI (TCP/443, TCP/80) AppWorks File Transfer (TCP/22) AppWorks Online Help (TCP/8081) DNS (TCP/53, UDP/53) NTP (UDP/123) SNMP gets (UDP/161) SSH (TCP/22) X11 Forwarding (TCP/6010) RPC Bind (TCP/111) Prov REST (TCP/8787)** Prov SOAP (TCP/62001)** Prov GUI (TCP/16530)** Prov Import (TCP/16531) Prov OnDemand (TCP/16532) Prov Notifications (TCP/16535)	Local services may also run on OAM network when the target is outside the Network Element. ComAgent Services may run over OAMP Network between Network Elements unless configured to run on Signaling A.

Local	Application internal communications	Internal Management Interface (IMI)	Mandatory	Internal	No	All	COMCOL SOAP Server (TCP/15360) COMCOL Merging (TCP/16878) COMCOL Replication (TCP/17398,17399, TCP/17400) COMCOL HA (TCP/17401,17402,17406 UDP/17401) ComAgent EventTransfer (TCP/16529) ComAgent EventTransfer Alert (TCP/16541) Imysql (TCP 15616)	OAM services may be configured to run on the Local network when the destination is inside the Network Element.
Signaling A	Application external communications	External Signaling Interface 1 (XSI1)	Mandatory	External	Yes	MP, Optional:NO AMP	Diameter (TCP/3868, SCTP/3868)	Signal A network may also be configured to host ComAgent services when the target is outside the Network Element.
Signaling B	Application external communications	External Signaling Interface 2 (XSI2)	Optional	External	Yes	MP	Diameter (TCP/3868, SCTP/3868)	

** Port values are configurable (default value is shown)

APPENDIX J. INSTALL UDR ON ORACLE LINUX OS VIA KVM

Important: The content of this appendix is for informational purposes only.

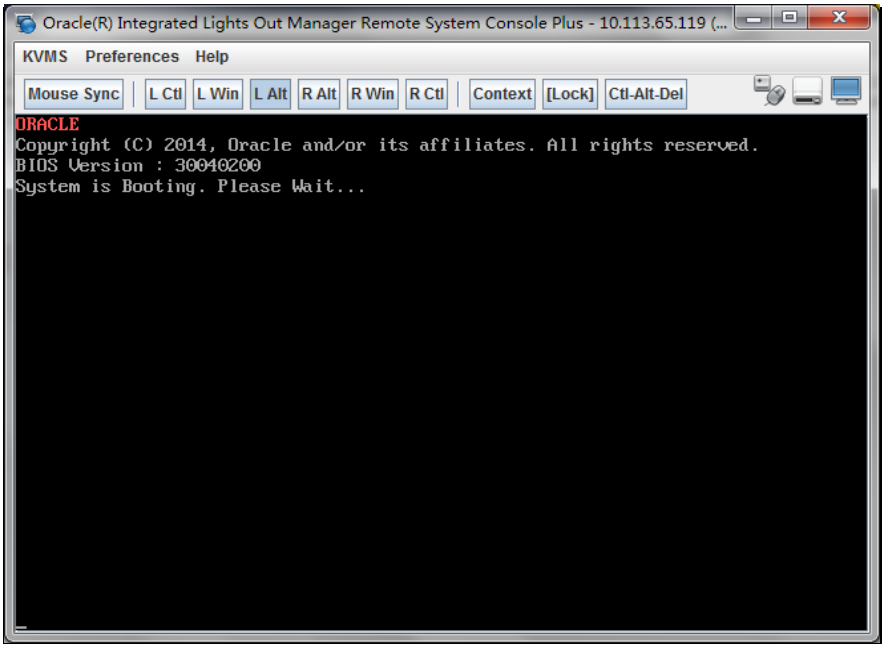
This procedure installs UDR configuration on Oracle Linux OS with direct KVM as hypervisor.

NOTE:

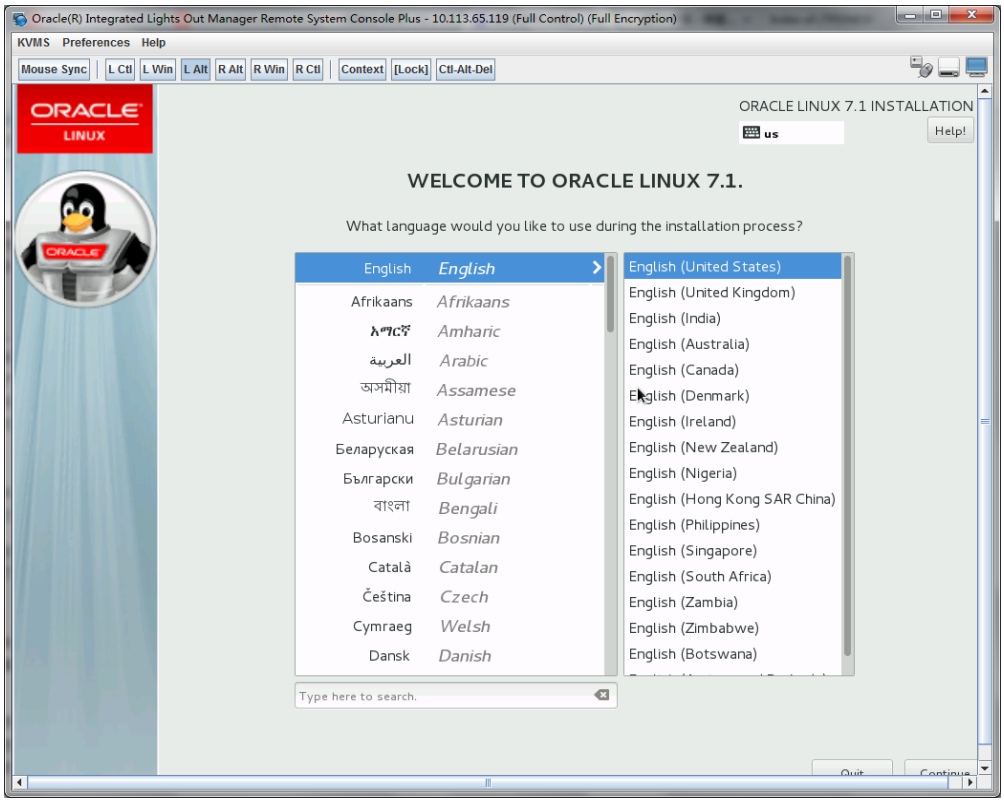
- This installation procedure only applies when installing UDR on Oracle Linux OS via direct KVM
- For the Oracle Linux OS, Oracle Linux 7.2 GA release is used and verified OK.

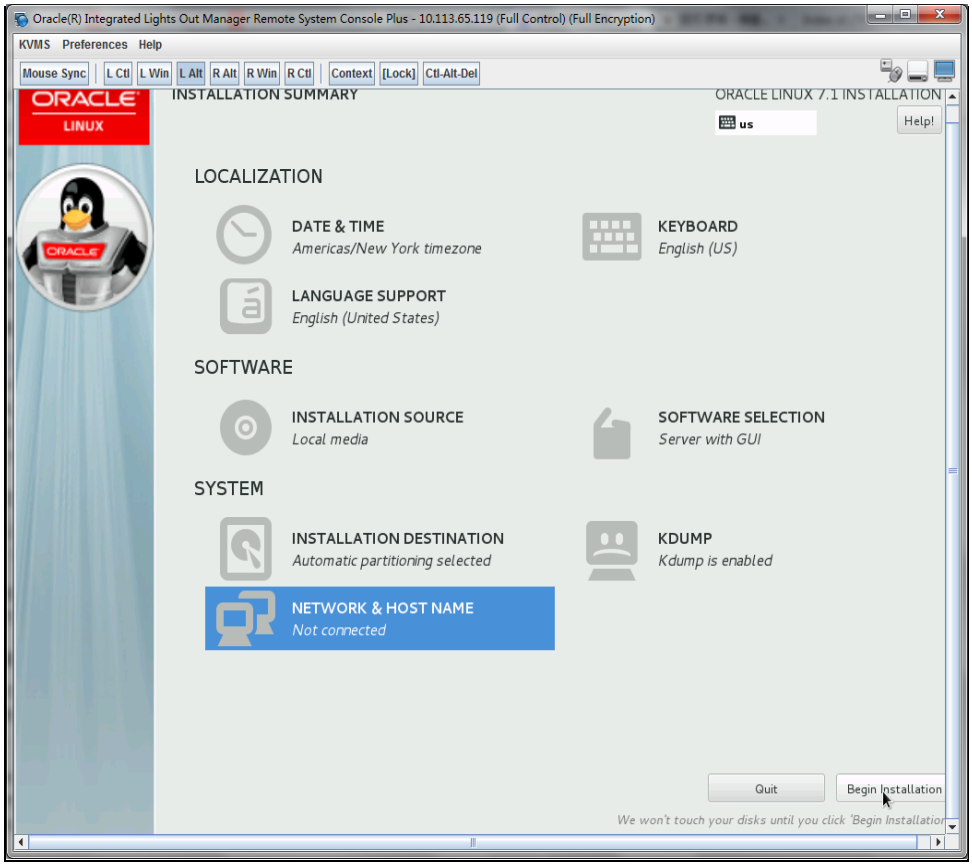
Check (√) each step as it is completed. Boxes have been provided for this purpose.

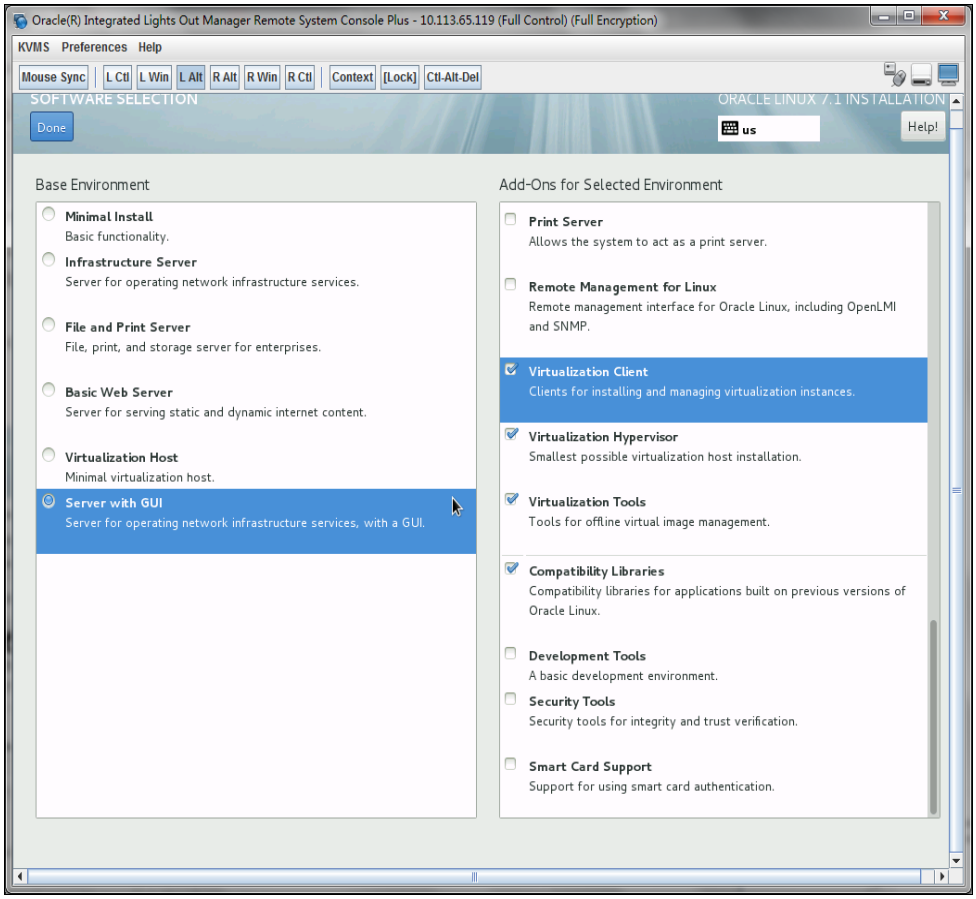
Procedure 41: Install UDR on Oracle Linux/KVM

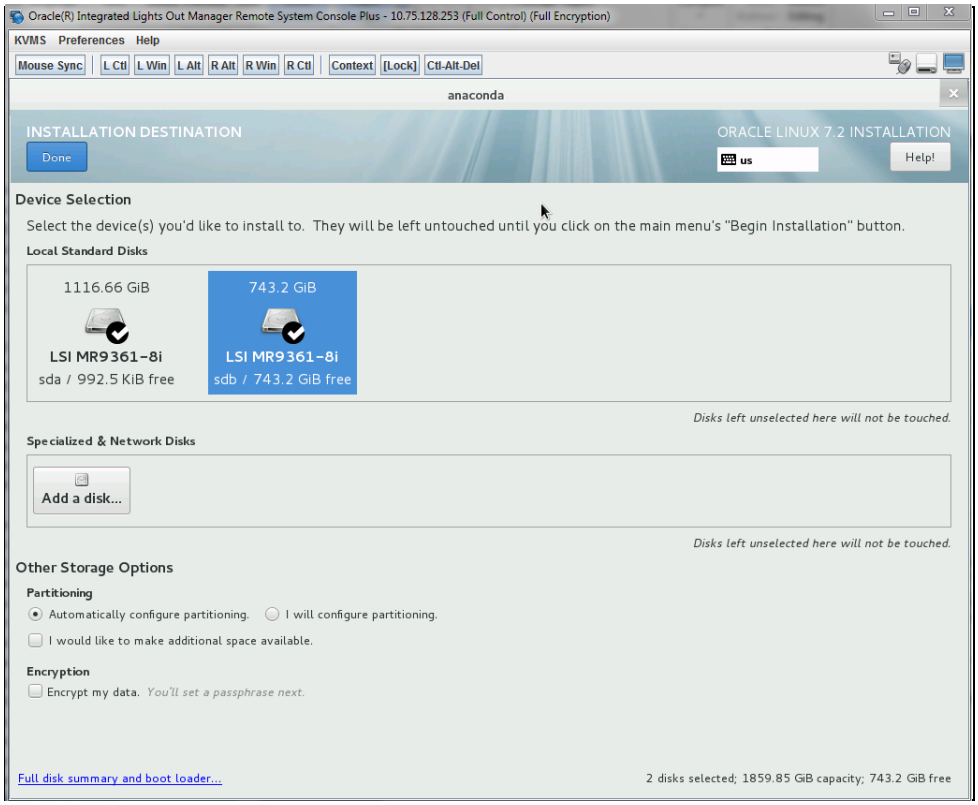
Step	Procedure	Details
1. ☐	**For each Oracle X5-2 RMS:** Mount virtual media contains Oracle Linux OS software	Follow steps defined in Appendix C.3 Mounting Virtual Media on Oracle RMS Server of [1] to mount the Oracle Linux OS software ISO.
2. ☐	**For each Oracle X5-2 RMS.** Reboot the host.	1. Login to X5-2 iLo GUI and launch the remote console. 2. Navigate to **Host Management → Power Control**. 3. Select **Reset** and click **Save** to reboot host. In the remote console window, you see that the host is rebooting.  Wait for a couple of minutes for reboot to complete.

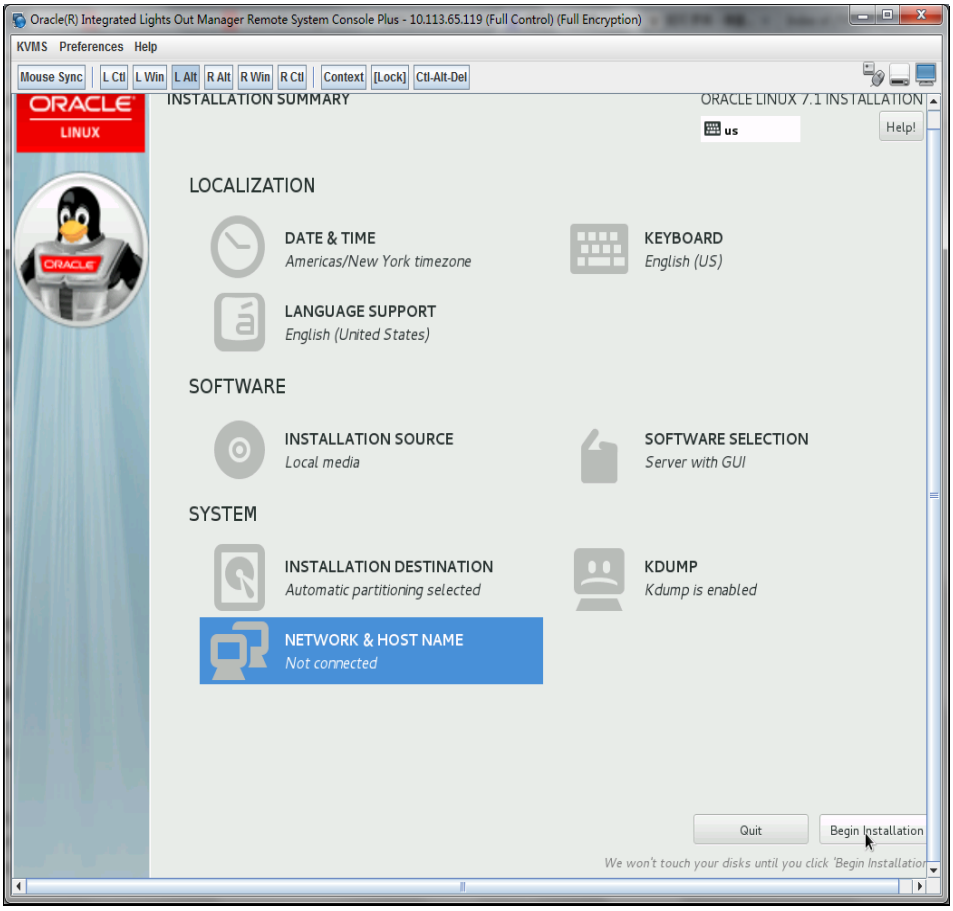
Step	Procedure	Details
3. ☐	**For each Oracle X5-2 RMS:** Initiate Oracle Linux Platform installation	After the reboot completes, the host opens with the Oracle Linux installation ISO and the GUI screen prompts for the installation option. Select **Install Oracle Linux 7.x** to continue. 

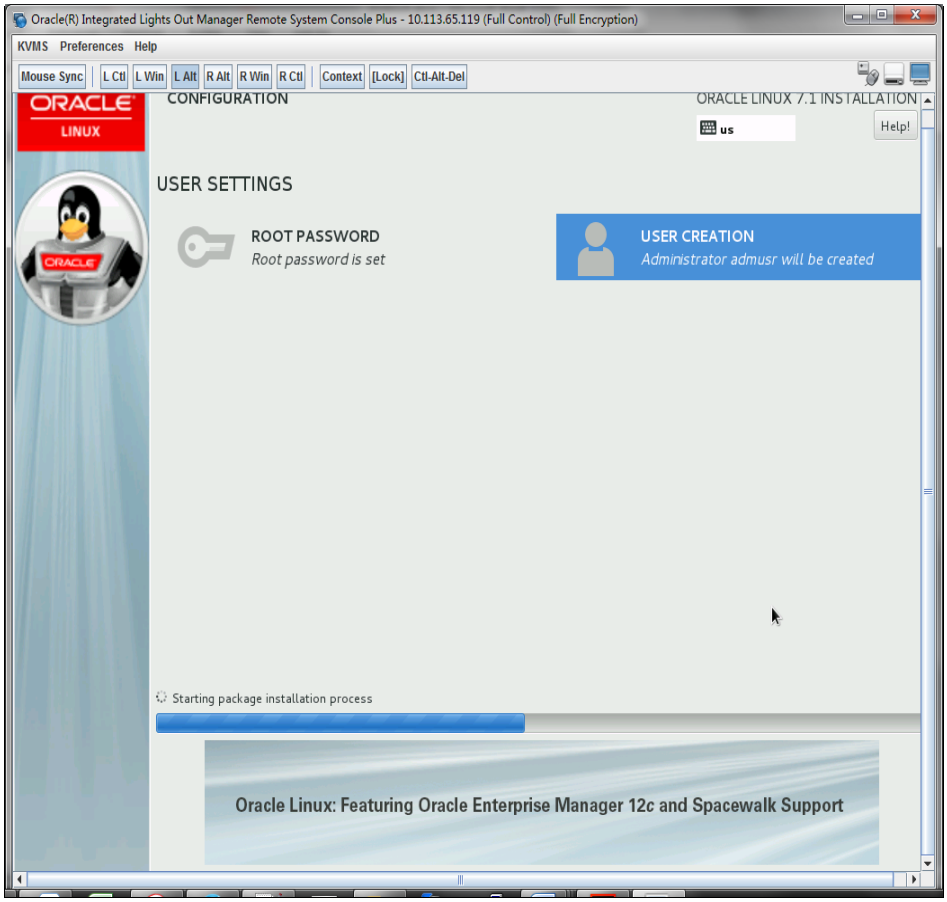
Step	Procedure	Details
4. ☐	**For each Oracle X5-2 RMS:** Choose Oracle Linux OS language	1. When prompted, select **English** as Oracle Linux OS language:  2. Click **Continue** and go to the next step.

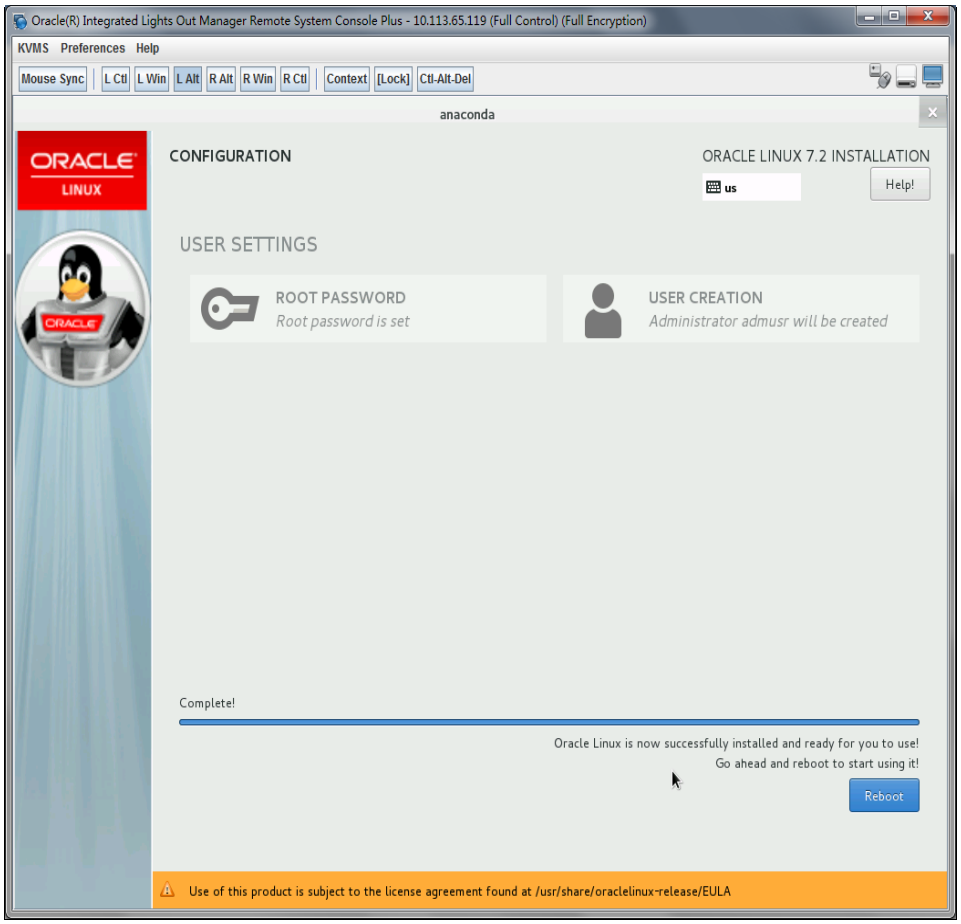
Step	Procedure	Details
5. ☐	**For each Oracle X5-2 RMS:** Setup time zone	The next page prompts for Oracle Linux OS installation required information to start installation.  1. Navigate to **LOCALIZATION → DATE & TIME**. 2. Set thetime zone as Americas/New York. 3. Click **Done** to save the changes and go back to main configuration page.

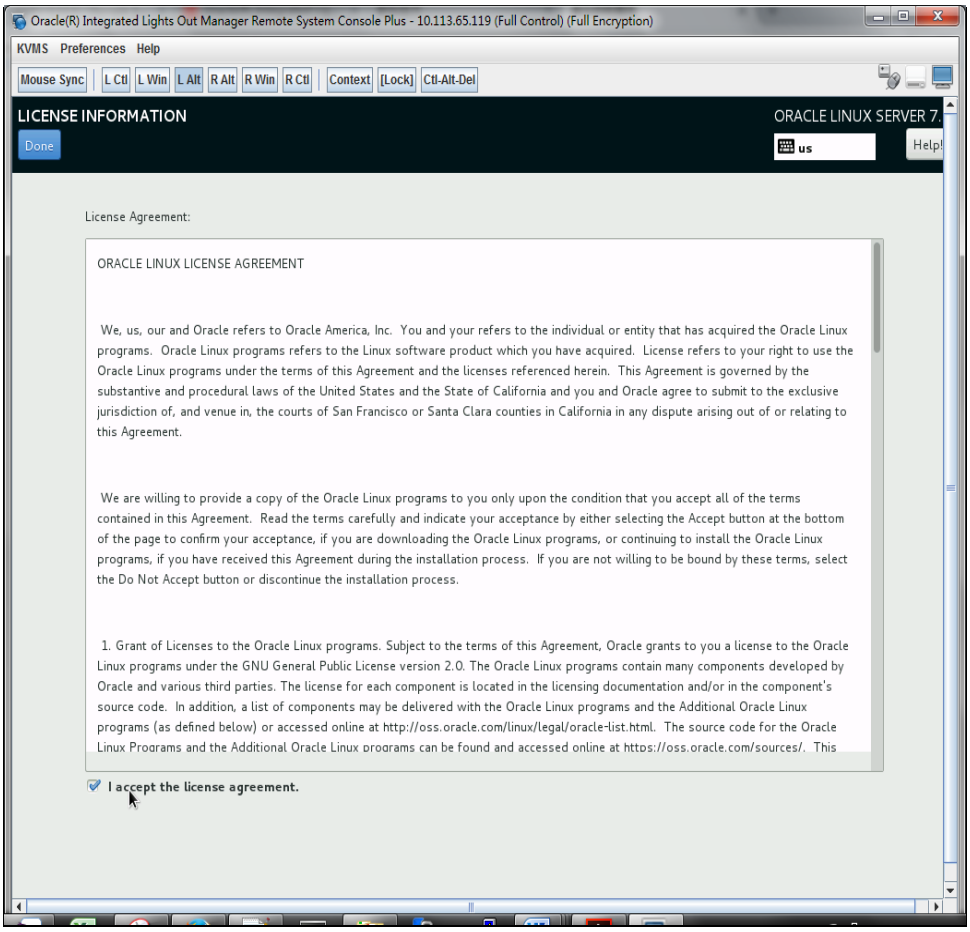
Step	Procedure	Details
6. ☐	**For each Oracle X5-2 RMS:** Setup installation base environment	1. Navigate to **SOFTWARE -> SOFTWARE SELECTION**. 2. Select **Server with GUI**, and verify that these add-ons are selected: - Virtualization Client - Virtualization Hypervisor - Virtualization Tools - Compatibility Libraries  3. Click **Done** to save the changes and return to the main configuration page.

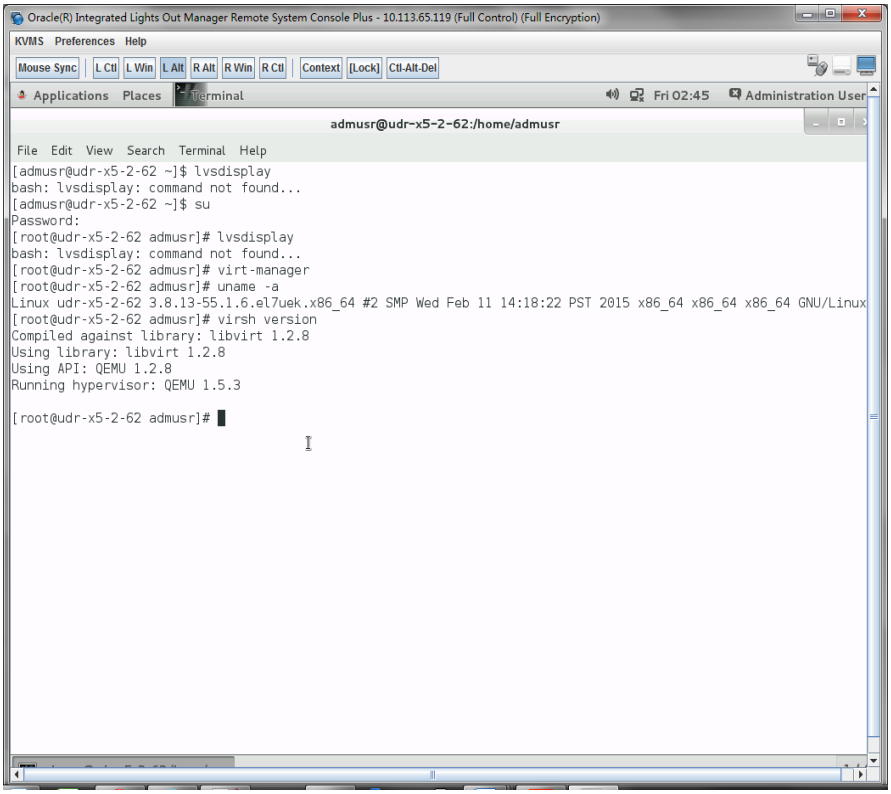
Step	Procedure	Details
7. ☐	**For each Oracle X5-2 RMS:** Setup installation destination	1. Navigate to **SYSTEM → INSTALLATION DESTINATION** menu. 2. Select **sda** and **sdb** to use. 3. Select **Automatically configure partitioning**. 4. Click **Done**. 

Step	Procedure	Details
8. ☐	**For each Oracle X5-2 RMS:** Review configuration and start to install	Review all information before clicking **Begin Installation.** (You do not have to configure the network now, configuration is completed after the Oracle Linux OS is installed.) 

Step	Procedure	Details
9. ☐	**For each Oracle X5-2 RMS:** Create login credential	At the same time Oracle Linux installation software is laying down files into Oracle X5-2 local hard disk, you may configure root credential or any other login credentials per your needs: 

Step	Procedure	Details
10. ☐	**For each Oracle X5-2 RMS:** Reboot host after installation completed	1. Wait for the installation to complete.  2. Click **Reboot**.

Step	Procedure	Details
11. ☐	**For each Oracle X5-2 RMS:** Read and accept license agreement	After reboot is complete, the license agreement page opens.  Select **I accept the license agreement** and then click **Finish** Configuration. Later you are prompted for ULN setting, skip that step.

<table>
<tr><th>Step</th><th>Procedure</th><th>Details</th></tr>
<tr><td>12. ☐</td><td>For each Oracle X5-2 RMS:
Verify kernel version and KVM version</td><td>Open SSH console window and check following:
 
</td></tr>
<tr><td>13. ☐</td><td>For each Oracle X5-2 RMS:
Change network interface name pattern to ethx</td><td>1. Edit <code>/etc/default/grub</code> to append <code>net.ifnames=0</code> to GRUB_CMDLINE_LINUX:
<pre>[root@udr-x5-2-62-ol7 admusr]#vim /etc/default/grub
GRUB_TIMEOUT=5
GRUB_DISTRIBUTOR="$(sed 's, release .*$,,g' /etc/system-release)"
GRUB_DEFAULT=saved
GRUB_DISABLE_SUBMENU=true
GRUB_TERMINAL_OUTPUT="console"
GRUB_CMDLINE_LINUX="crashkernel=auto rd.lvm.lv=ol00/root
rd.lvm.lv=ol00/swap rhgb quiet net.ifnames=0"
GRUB_DISABLE_RECOVERY="true"</pre>
2. Recreate the grub2 config file with following command:
<pre># grub2-mkconfig -o /boot/grub2/grub.cfg</pre>
3. Restart host using the <code>shutdown -r</code> command and verify that network interface are with ethx name pattern.</td></tr>
</table>

Step	Procedure	Details

14. ☐	**For each Oracle X5-2 RMS:**
	Create bond0 device
		1. Create bond0 device configuration file:
		`# vim /etc/sysconfig/network-scripts/ifcfg-bond0`
		`DEVICE=bond0`
		`TYPE=Bonding`
		`BOND_INTERFACES=<nic1>,<nic2>`
		`ONBOOT=yes`
		`NM_CONTROLLED=no`
		`BOOTPROTO=none`
		`BONDING_OPTS="mode=active-backup primary=<nic1> miimon=100"`
		2. Save the file and exit.
		3. Create eth0 device configuration file:
		`# vim /etc/sysconfig/network-scripts/ifcfg-<nic1>`
		`DEVICE=<nic1>`
		`TYPE=Ethernet`
		`ONBOOT=yes`
		`NM_CONTROLLED=no`
		`BOOTPROTO=none`
		`MASTER=bond0`
		`SLAVE=yes`
		4. Save the file and exit.
		5. Create eth1 device configuration file:
		`# vim /etc/sysconfig/network-scripts/ifcfg-<nic2>`
		`DEVICE=<nic2>`
		`TYPE=Ethernet`
		`ONBOOT=yes`
		`NM_CONTROLLED=no`
		`BOOTPROTO=none`
		`MASTER=bond0`
		`SLAVE=yes`
		6. Save the file and exit.
		7. Bring up devices into services:
		`# ifup <nic1>`
		`# ifup <nic2>`
		`# ifup bond0`

Step	Procedure	Details

15. ☐	**For each Oracle X5-2 RMS:**
	Create IMI bridge
		1. Create bond0.<*imi_vlan*> configuration file:
		`# vim /etc/sysconfig/network-scripts/ifcfg-bond0.<imi_vlan>`
		`DEVICE=bond0.<imi_vlan>`
		`TYPE=Ethernet`
		`BOOTPROTO=none`
		`ONBOOT=yes`
		`NM_CONTROLLED=no`
		`BRIDGE=imi`
		`VLAN=yes`
		2. Create imi device configuration file:
		`# vim /etc/sysconfig/network-scripts/ifcfg-imi`
		`DEVICE=imi`
		`TYPE=Bridge`
		`BOOTPROTO=none`
		`ONBOOT=yes`
		`NM_CONTROLLED=no`
		`BRIDGE_INTERFACES=bond0.<imi_vlan>`
		3. Bring up devices into services:
		`# ifup bond0.<imi_vlan>`
		`# ifup imi`

Step	Procedure	Details

16. ☐	**For each Oracle X5-2 RMS:**
	Create XMI bridge
		1. Create bond0.<*xmi_vlan*> configuration file:
		`# vim /etc/sysconfig/network-scripts/ifcfg-bond0.<xmi_vlan>`
		`DEVICE=bond0.<xmi_vlan>`
		`TYPE=Ethernet`
		`BOOTPROTO=none`
		`ONBOOT=yes`
		`NM_CONTROLLED=no`
		`BRIDGE=xmi`
		`VLAN=yes`
		2. Create xmi device configuration file:
		`# vim /etc/sysconfig/network-scripts/ifcfg-xmi:`
		`DEVICE=xmi`
		`TYPE=Bridge`
		`BOOTPROTO=none`
		`ONBOOT=yes`
		`NM_CONTROLLED=no`
		`IPADDR=<xmi_ip_addr>`
		`NETMASK=<xmi_netmask>`
		`NETWORK=<xmi_network>`
		`BRIDGE_INTERFACES=bond0.<xmi_vlan>`
		3. Set default route for xmi network:
		`# vim /etc/sysconfig/network-scripts/route-xmi`
		`default via <xmi_gateway> table main`
		4. Bring devices into services:
		`# ifup bond0.<xmi_vlan>`
		`# ifup xmi`

Step	Procedure	Details

17. ☐	**For each Oracle X5-2 RMS:**
	Create bond1 device
		1. Create device bond1 configuration file:
		`# vim /etc/sysconfig/network-scripts/ifcfg-bond1`
		`DEVICE=bond1`
		`TYPE=Bonding`
		`BOND_INTERFACES=<nic3>,<nic4>`
		`ONBOOT=yes`
		`NM_CONTROLLED=no`
		`BOOTPROTO=none`
		`BONDING_OPTS="mode=active-backup primary=<nic3> miimon=100"`
		2. Create device eth4 configuration file:
		`# vim /etc/sysconfig/network-scripts/ifcfg-<nic3>`
		`DEVICE=<nic3>`
		`TYPE=Ethernet`
		`ONBOOT=yes`
		`NM_CONTROLLED=no`
		`BOOTPROTO=none`
		`MASTER=bond1`
		`SLAVE=yes`
		3. Create device eth5 configuration file:
		`# vim /etc/sysconfig/network-scripts/ifcfg-<nic4>`
		`DEVICE=<nic4>`
		`TYPE=Ethernet`
		`ONBOOT=yes`
		`NM_CONTROLLED=no`
		`BOOTPROTO=none`
		`MASTER=bond1`
		`SLAVE=yes`
		4. Bring up devices into services:
		`# ifup <nic3>`
		`# ifup <nic4>`
		`# ifup bond1`

Step	Procedure	Details

18. ☐	**For each Oracle X5-2 RMS:**
	Create xsi1/xsi2 bridge
		1. Create device bond1.<*xsi1_vlan*> configuration file:
		`# vim /etc/sysconfig/network-scripts/ifcfg-bond1.<xsi1_vlan>`
		`BOOTPROTO=none`
		`VLAN=yes`
		`ONBOOT=yes`
		`TYPE=Ethernet`
		`DEVICE=bond1.<xsi1_vlan>`
		`BRIDGE=xsi1`
		`NM_CONTROLLED=no`
		2. Create device xsi1 configuration file:
		`# vim /etc/sysconfig/network-scripts/ifcfg-xsi1`
		`DEVICE=xsi1`
		`TYPE=Bridge`
		`BOOTPROTO=none`
		`ONBOOT=yes`
		`NM_CONTROLLED=no`
		`BRIDGE_INTERFACES=bond1.<xsi1_vlan>`
		3. Bring devices into services:
		`# ifup xsi1`
		`# ifup bond1.<xsi1_vlan>`
		4. Perform these steps again to create network devices for xsi2.

19. ☐	**For each Oracle X5-2 RMS:**
	Set host name
		Rename host by modifying /etc/hostname file:
		`[root@localhost network-scripts]# cat /etc/hostname`
		`udr-x5-2-62-ol7`
		Review host name change with following command:
		`[root@localhost network-scripts]# hostnamectl status`
		`Static hostname: udr-x5-2-62-ol7`
		`Icon name: computer-server`
		`Chassis: server`
		`Machine ID: 17980a78ef7d440ca5a6900768903795`
		`Boot ID: a2a5a649eea14d8ab7534aec962c6782`
		`Operating System: Oracle Linux Server 7.2`
		`CPE OS Name: cpe:/o:oracle:linux:7:2:server`
		`Kernel: Linux 3.8.13-98.7.1.el7uek.x86_64`
		`Architecture: x86-64`

Step	Procedure	Details

20. ☐	For each Oracle X5-2 RMS:
	Set NTP service
		1. Modify the `/etc/chrony.conf` path.
		2. Comment out all server * entries.
		3. Append your NTP server IP to the list with the prepending text of server:
		`# Use public servers from the pool.ntp.org project.`
		`# Please consider joining the pool (http://www.pool.ntp.org/join.html).`
		`#server 0.rhel.pool.ntp.org iburst`
		`#server 1.rhel.pool.ntp.org iburst`
		`#server 2.rhel.pool.ntp.org iburst`
		`#server 3.rhel.pool.ntp.org iburst`
		`server 144.25.xxx.xxx`
		4. Force ntp to sync with the added server:
		`# ntpdate 144.25.xxx.xxx`
		`# timedatectl`
		5. Verify time synced:
		`[root@udr-x5-2-62 log]# chronyc tracking`
		`Reference ID : 144.25.xxx.xxx (144.25.xxx.xxx)`
		`Stratum : 3`
		`Ref time (UTC) : Mon Feb 29 06:06:44 2016`
		`System time : 1.692247748 seconds slow of NTP time`
		`Last offset : -3.862722397 seconds`
		`RMS offset : 3.862722397 seconds`
		`Frequency : 0.000 ppm fast`
		`Residual freq : -93.109 ppm`
		`Skew : 1000000.000 ppm`
		`Root delay : 0.178002 seconds`
		`Root dispersion : 30.041723 seconds`
		`Update interval : 0.0 seconds`
		`Leap status : Normal`

21. ☐	For each Oracle X5-2 RMS: Create `/home/ova` directory	`[root@pc9112020 ~]# mkdir -p /home/ova` `[root@pc9112020 ~]# cd /home/ova`

22. ☐	Transfer OVA file this dir using sftp tool	`[root@pc12107008 ova]# ll`
		`total 12322888`
		`-rw-r--r--. 1 root root 1047767040 May 2 00:51 UDR-12.2.0.1.0_15.12.1.ova`

23. ☐	Untar this ova file	`[root@pc9112020 ova]# tar xvf UDR-12.2.0.1.0_15.12.1.ova`
		`UDR-15_12_1.ovf`
		`UDR-15_12_1.mf`
		`UDR-15_12_1.vmdk`

Step	Procedure	Details
24. ☐	Convert this vmdk file to qcow2 file	`[root@pc9112020 ova]# qemu-img convert -O qcow2 DR-12.2.0.1.0_15.12.1.vmdk UDRNO-15_12_1.qcow2`
25. ☐	Copy the qcow2 files for SO and MP	`[root@pc9112020 ova]# cp UDRNO-15_12_1.qcow2 UDRSO-15_12_1.qcow2` `[root@pc9112020 ova]# cp UDRNO-15_12_1.qcow2 UDRMP-15_12_1.qcow2`

26. ☐	Configure storage for corresponding qcow2 files	Configure storage qcow2 files for the corresponding VMs. See Appendix G to get the required storage.
		Run the following command for each VM to set the storage:
		`qemu-img resize <NO_qcow2_filename>.qcow2 <storage_in_gigabytes>G`
		Run the command for a VM if storage required is >60G. No need to run this command if the storage required is 60G.
		For example, if resource profile is 2K Sh and VM is NOAMP, the storage required is 220G. The command in that case is:
		`qemu-img resize UDRNO-15_12_1.qcow2 220G`

27. ☐	Create Oracle Communications User Data Repository VMs. Repeat this step for each VM.	Create Oracle Communications User Data Repository VMs: NO, SO and MP using **Appendix M, Create and install Oracle Communications User Data Repository** VM via KVM GUI. Repeat the procedure for each VM Mark the checkbox as the addition of each server is completed. ☐ NOAMP ☐ SOAM ☐ MP

28. ☐	**For each UDR VMs:**
	Add the network device
		Login to each VM created and add the network devices:
		NO:
		`# netAdm add –device=eth0`
		`# netAdm add –device=eth1`
		`# netAdm add –device=eth2`
		SO:
		`# netAdm add –device=eth0`
		`# netAdm add –device=eth1`
		MP:
		`# netAdm add –device=eth0`
		`# netAdm add –device=eth1`
		`# netAdm add –device=eth2`
		NOTE: eth0 is XMI, eth1 is IMI, eth2 is XSI1 and eth3 is XSI2 (create eth3 if XSI2 is required).

29. ☐	**For each UDR VMs:**
	Configure XMI network address
		Set XMI network address for each UDR VM:
		`# netAdm set --device=eth0 --onboot=yes --netmask=<XMI_netmask> --address=<XMI_network_address>`
		`# netAdm add --device=eth0 --route=default --gateway=<XMI_gateway>`

30. ☐	**For each UDR VMs:** Configure NTP service	Perform steps 5 and 6 in section L.6 Configure TVOE Server (Hostname, Time Zone, SNMP, NTP, and so on) of [1] to configure NTP service for each VM.

Step	Procedure	Details
31. ☐	Extend VM Instance volume	Extend volumes for various VM Instances depending on flavor. See Appendix **D.6: Extend VM Instance Volume Size** for the procedure. Mark the checkbox as the addition of each server is completed. ☐ NOAMP ☐ SOAM ☐ MP
THIS PROCEDURE IS COMPLETE		

APPENDIX K. 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 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 Service Request (SR), Select **1**
    - 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, and 365 days a year.

APPENDIX L. 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 the **Oracle Communications documentation** link.

   The Communications Documentation page opens. This product is listed in the Network Session Delivery and Control Infrastructure section.
4. Click your product and then the release number.

   A list of the documentation set for the selected product and release displays.
5. To download a file to your location, right-click the **PDF** link, select **Save target as** (or similar command based on your browser), and save to a local folder.

APPENDIX M. CREATE AND INSTALL ORACLE COMMUNICATIONS USER DATA REPOSITORY VM VIA KVM GUI

IMPORTANT: The content of this appendix is for informational purposes only.

This procedure installs UDR VMs NO, SO and MP using KVM GUI.

NOTE:

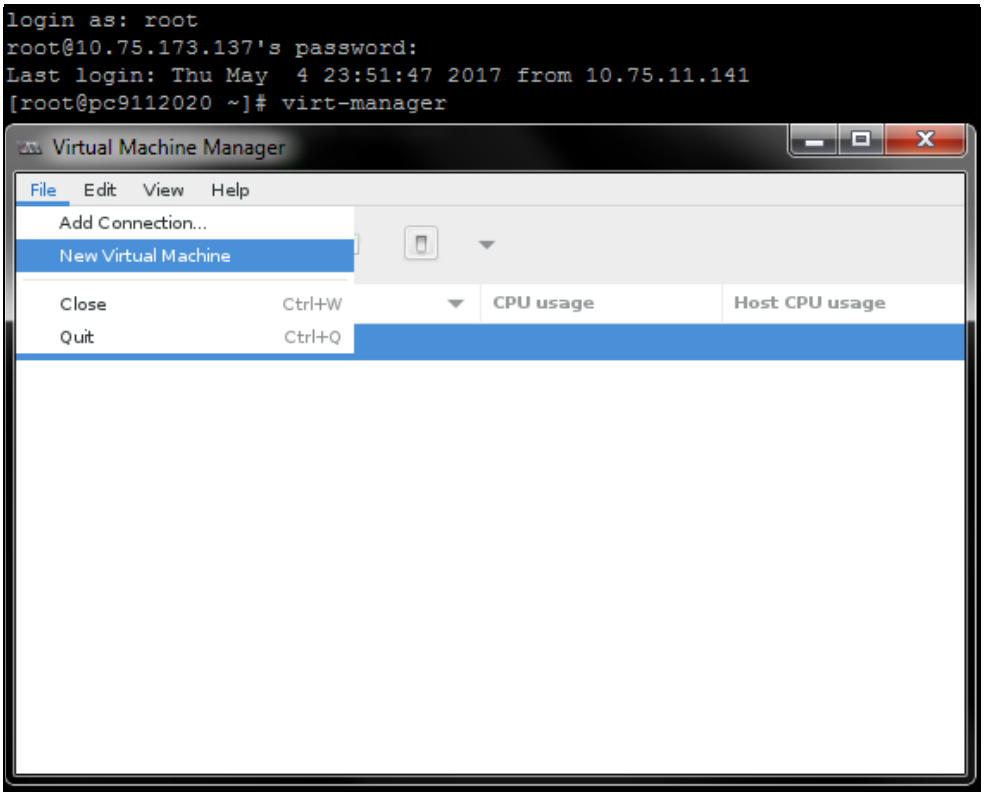
- This procedure must be done for each VM: NO, SO and MP

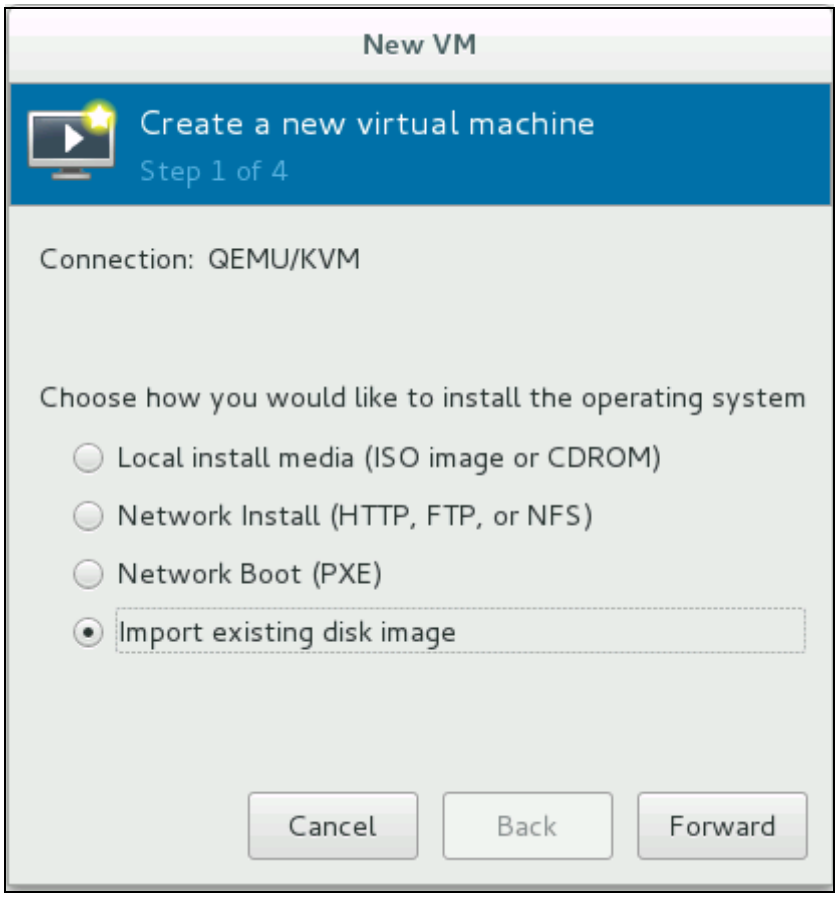
Requirements:

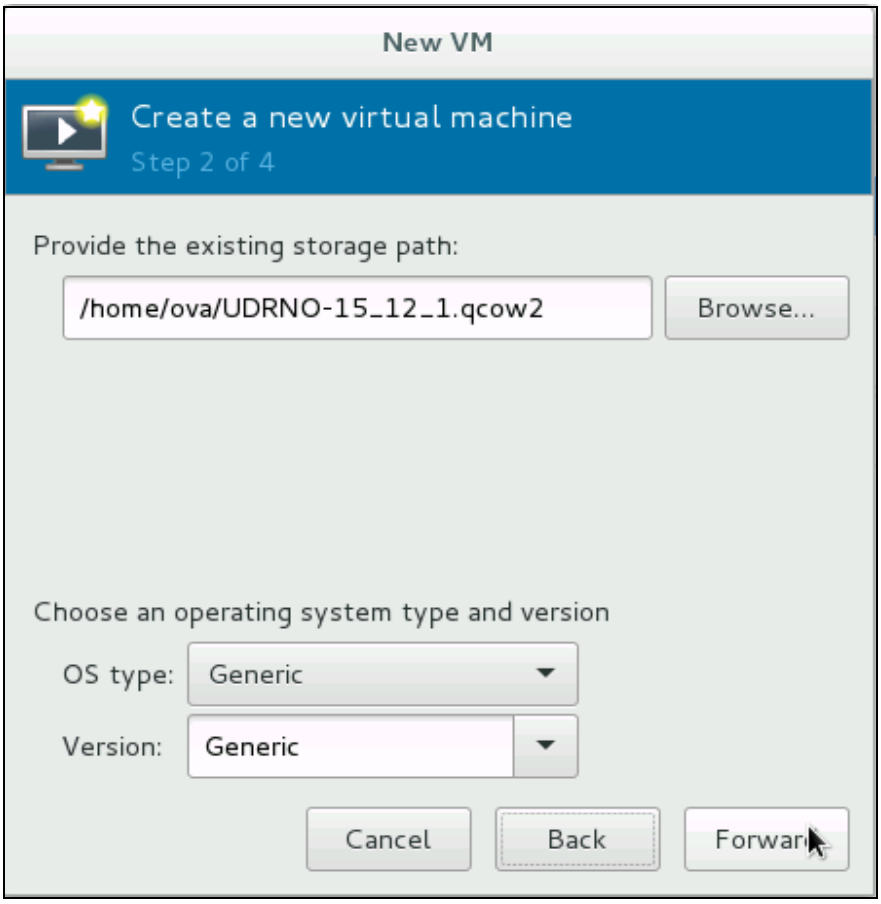
- Appendix J Install UDR on Oracle Linux OS via KVM steps: 1-25 must be complete.

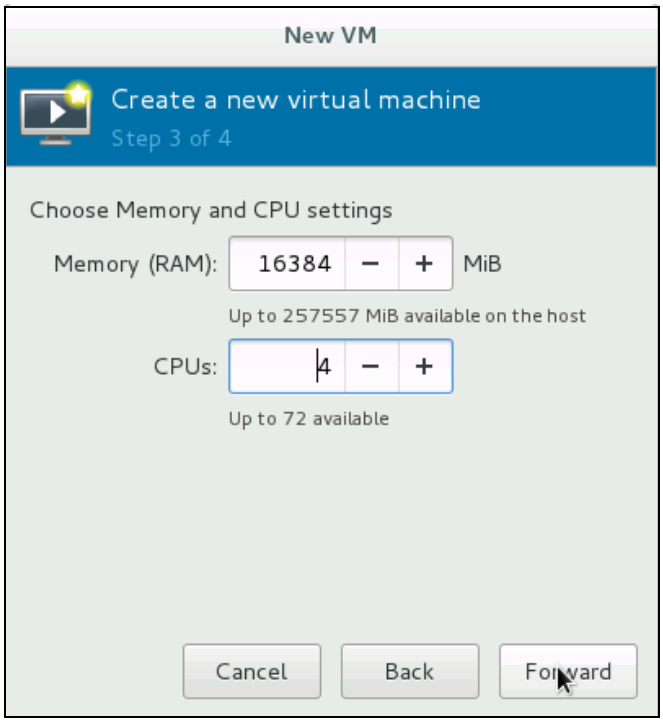
Check (√) each step as it is completed. Boxes have been provided for this purpose.

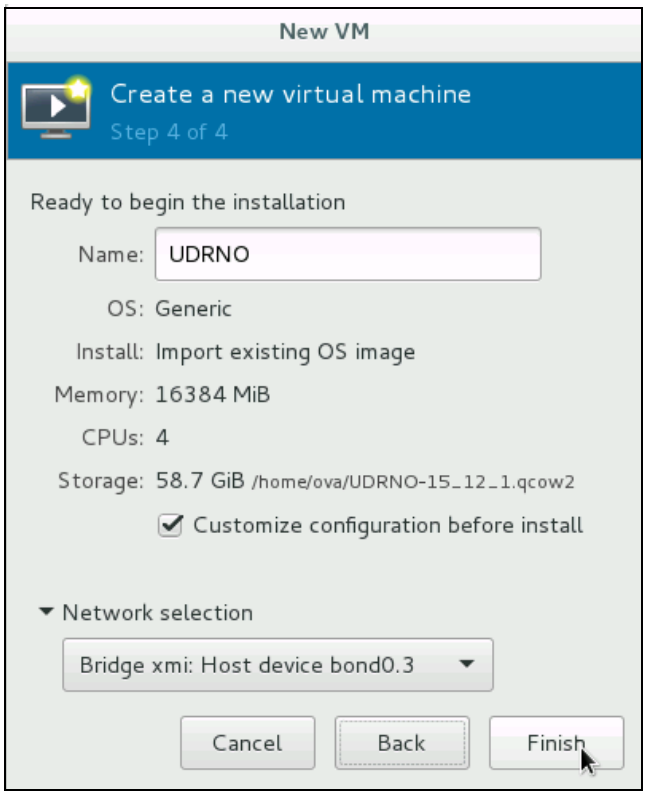
Procedure 42: Create and Install Oracle Communications User Data Repository VMs via KVM GUI

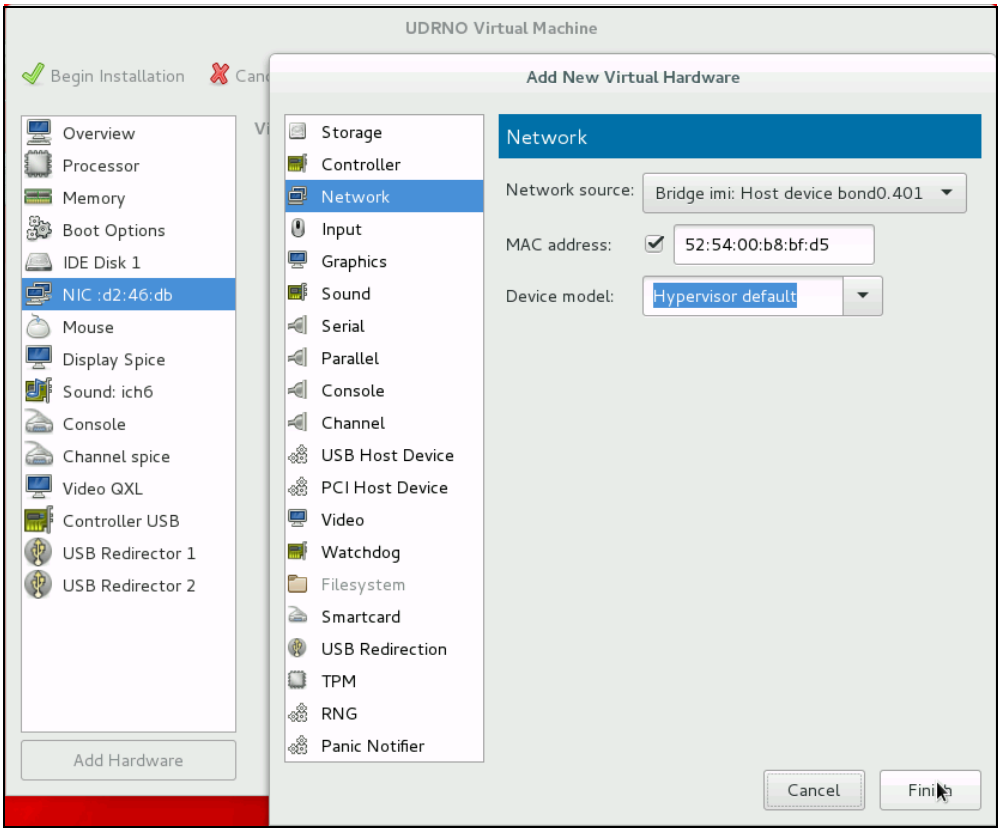
Step	Procedure	Details
1. ☐	Login to the host machine and open the Virtual Machine Manager	Login to the host machine that Oracle Linux installed and open the Virtual Machine Manager using the command **`virt-manager`**. **NOTE:** Make sure X11 forwarding is enabled before running **`virt-manager`** command on CLI. 

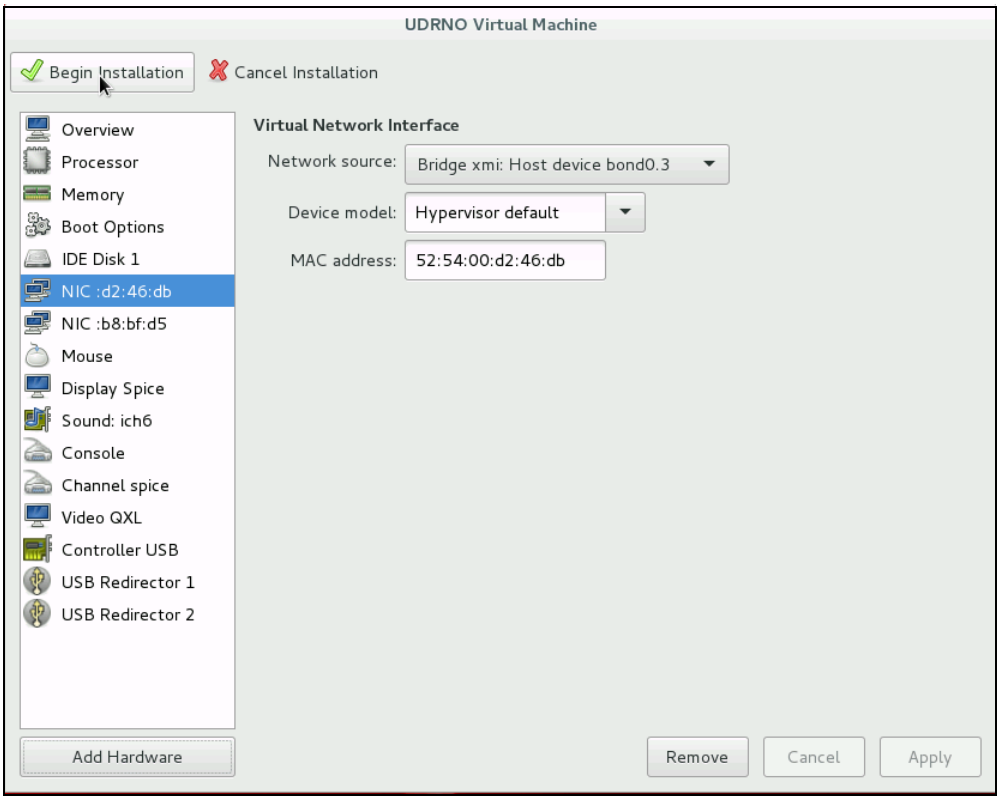
Step	Procedure	Details
2. ☐	Create a Virtual Machine using the Virtual Manager GUI	On Virtual Manager GUI, 1. Navigate to **File → New Virtual Machine**. 2. Select **Import existing disk image**. 

Step	Procedure	Details
3. ☐	Select the image file	Select the qcow2 from the `/home/ova` directory (as done in steps 24 to 25 in Appendix J) by browsing to the location. Click **Forward**. 

Step	Procedure	Details
4. ☐	Select RAM and vCPUs for VM	1. For each VM, select the RAM and vCPUs according to the required resource profile. Refer to **Appendix G**. 2. Click **Forward**. 

Step	Procedure	Details
5. ☐	Verify and customize VM	1. Update the VM name and select **Customize configuration before install**. 2. In the Network selection list, select **XMI bridge** 3. Click **Finish**. 

Step	Procedure	Details
6. ☐	Customize the network configuration	1. On the next screen, click **Add Hardware**. The Add New Virtual Hardware window displays. 2. Under Network, choose the IMI bridge. - For NO and SO, choose IMI bridge only. (add XSI also if required for NOAMP) - For MP, add XSI1 along with IMI by repeating this step. 3. Click **Finsh**. 

Step	Procedure	Details
7. ☐	Verify and begin installation	After adding all bridges, verify and begin the VM installation: 
THIS PROCEDURE IS COMPLETE		