Oracle® Communications

User Data Repository

Cloud Installation and Configuration Guide

Release 12.4

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Oracle Communications User Data Repository Cloud Installation and Configuration Guide, Release 12.4

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See more information on MOS in the Appendix section.

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1.0 INTRODUCTION

1.1 Purpose and Scope

This document describes the application-related installation procedures for an VMware User Data Repository 12.4 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

1.2.1 External

[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 (e.g. 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 may be 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.

Each step has a checkbox for every command within the step that the technician should check to keep track of the progress of the procedure.

The title box describes the operations to be performed during that step.

Each command that the technician is to enter is in **`10 point bold Courier`** *font.*

5 ☐	**ServerX:** Connect to the console of the server	Establish a connection to the server using cu on the terminal server/console. $ **`cu -l /dev/ttyS7`**

Figure 1. Example of an instruction that indicates the server to which it applies

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 & 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 & Charging DRA application defines two Place Association Types: Policy Binding Region and Policy & 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 & 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 will ensure 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 will have a Primary Site.
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:

- The user has taken assigned values from the Customer network and used them to compile XML files (see Appendix C for each NOAMP and SOAM site's NE prior to attempting to execute this procedure).
- The user has 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 each of the NOAMP and SOAM site's NE must be maintained and accessible for use in Disaster Recovery procedures. The Professional Services Engineer (PSE) will provide 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 (MOS) 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 ensure that the user understands the author's intent. These points are as follows;

1) Before beginning a procedure, completely read the instructional text (it will appear immediately after the Section heading for each procedure) and all associated procedural WARNINGS or NOTES.
2) Before execution of 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 execute successfully, STOP and contact My Oracle Support MOS for assistance before attempting to continue.

2.0 GENERAL DESCRIPTION

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

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

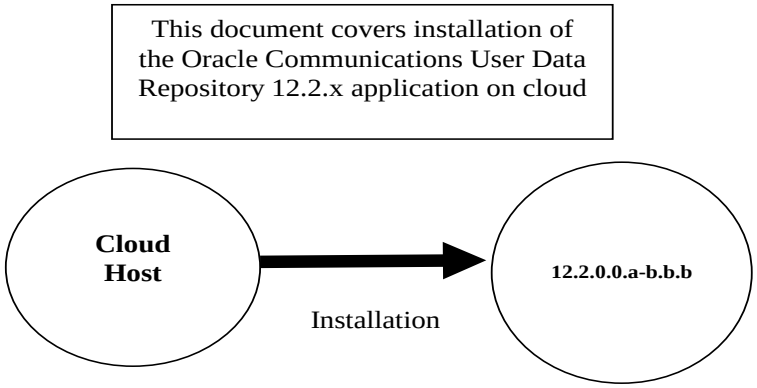


Figure 2. Initial Application Installation Path – Example shown

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 overal strategy to be employed for a single or multi-site installation. It also lists the procedures required for installation with estimated times. Section 2.4 discusses the overall install strategy and includes an installation flow chart that can be used to determine exactly which procedures should be run for an installation. Section 3.2.3 lists the steps required to install a 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 should be decided upon before installation proceeds. This section provides recommendations for these decisions.

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

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

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 will 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 will be seen at the SOAM AND/OR NOAM as alarms **AND** they will be viewable at the configured NMS(s) as traps.

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

2.4 Installation List of Procedures

The following table 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 phases outlined in are to be executed in the order they are listed.

Table 2. Installation Overview

Procedure	Phase	Elapsed Time (Minutes)	
		This Step	Cum.
Procedure 1	Verify Deployment Options and Cloud Resources	5	5
Procedure 2	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
Procedure 8	Configure XSI Networks (All SOAM Sites)	10	90
Procedure 9	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
Procedure 12	Configure Signaling Routes	5	125
Procedure 13	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
Procedure 16	Accept Installation	5	155

3.0 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	Result
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 resrouce profile must be driven by the available resources and expected use of the Oracle Communications User Data Repository deployment. • For demo purposes a 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 1. 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 HAS BEEN COMPLETED		

4.0 CLOUD CREATION

4.1 Deploy Oracle Communications User Data Repository Virtual Machines on VMware

This procedure will create 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 off (√) each step as it is completed. Boxes have been provided for this purpose under each step number.

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

Step	Procedure	Result
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, follow: • Appendix C-2: Create vApp If using vSphere client procede to the next step.
3. ☐	Create Oracle Communications User Data Repository guests	If using vSphere client, follow: • Appendix B-1: Create Guests from OVA If using vCloud Director, follow: • Appendix C-5 Create Guests from ISO for large database NOAMP or • Appendix C-3 Create Guests from OVA for all other server types "Check off" the associated Check Box as addition is completed for each Server. ☐ 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: • Appendix B-2: Configure Guest Resources If using vCloud Director to install by OVA, follow: • Appendix C-4: Configure Guest Resources If installing by ISO proceed to the next step. "Check off" the associated Check Box as addition is completed for each Server. ☐ 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 C-6: Install Guests from ISO "Check off" the associated Check Box as addition is completed for each Server. ☐ NOAMP-A ☐ NOAMP-B

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

Step	Procedure	Result
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 C-7: Configure Guests Network "Check off" the associated Check Box as addition is completed for each Server. ☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B ☐ MP-2 ☐ MP-2 ☐ MP-3 ☐ MP-4
THIS PROCEDURE HAS BEEN COMPLETED		

4.2 Deploy Oracle User Data Repository Virtual Machines on OpenStack

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

Requirements:

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

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

Procedure 3: Deploy User Data Repository Virtual Machines on OpenStack

Step	Procedure	Result
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 following: Appendix D-2: Create Resource Profiles (Flavors)
3. ☐	Create Key Pair	Create Key Pair on OpenStack following: Appendix D-3: Create Key Pair
4. ☐	Update the Yaml File	Update the UDR Stack Yaml file following: Appendix D-4: Update UDR Stack Yaml File
5. ☐	Create VM Instances	On OpenStack, please follow this to create vm instances: Appendix D-5: Create VM Instances Using Yaml File

Step	Procedure	Result
6. ☐	Configure guest OAM network	Follow this step to configure OAM network for vm instances: Appendix D-7: VM Instance Network Configuration "Check off" the associated Check Box as addition is completed for each Server. ☐ 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 "Check off" the associated Check Box as addition is completed for each Server. ☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B ☐ MP-1 ☐ MP-2 ☐ MP-3 ☐ MP-4
8. ☐	Clobber database on VM Instances	Clobber database on VM Instances following: Appendix D-11: Clobber the database on VM Instance "Check off" the associated Check Box as addition is completed for each Server. ☐ 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 D-12: Associating Floating IPs "Check off" the associated Check Box as addition is completed for each Server. ☐ 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	Assigning floating IP address to VIP: Appendix D-8: Virtual IP Address Assignment NOTE: This step is only needed if none of the networks assigned to VM Instances is a Public Network.
THIS PROCEDURE HAS BEEN COMPLETED		

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

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

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

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

Step	Procedure	Result
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: Appendix J Install UDR on Oracle Linux OS via KVM
THIS PROCEDURE HAS BEEN COMPLETED		

5.0 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:

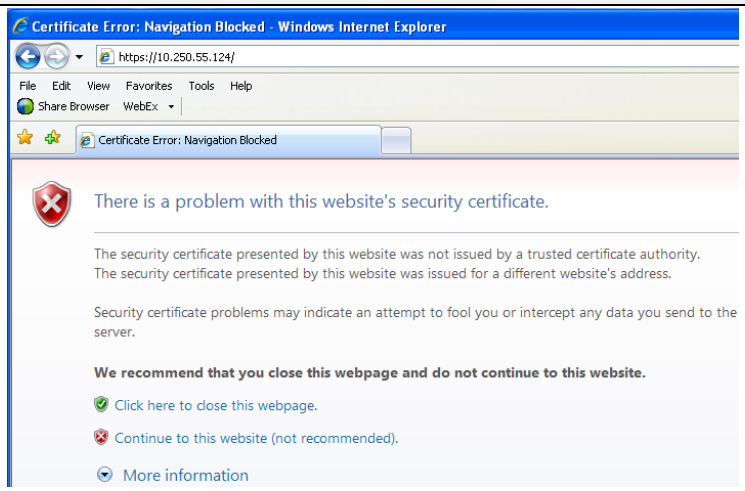
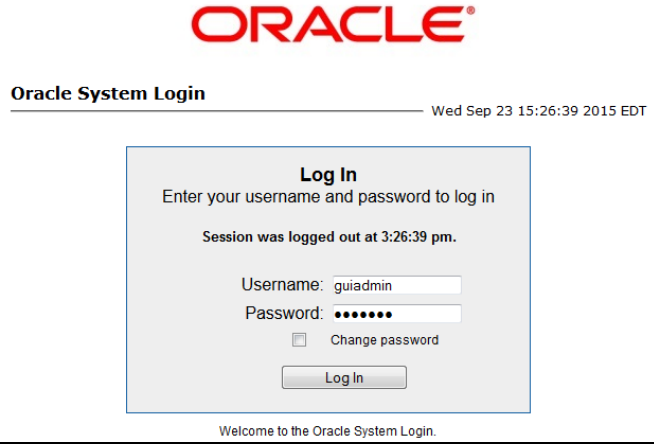
- **Section 4.0 Cloud Creation** has been completed

Assumptions:

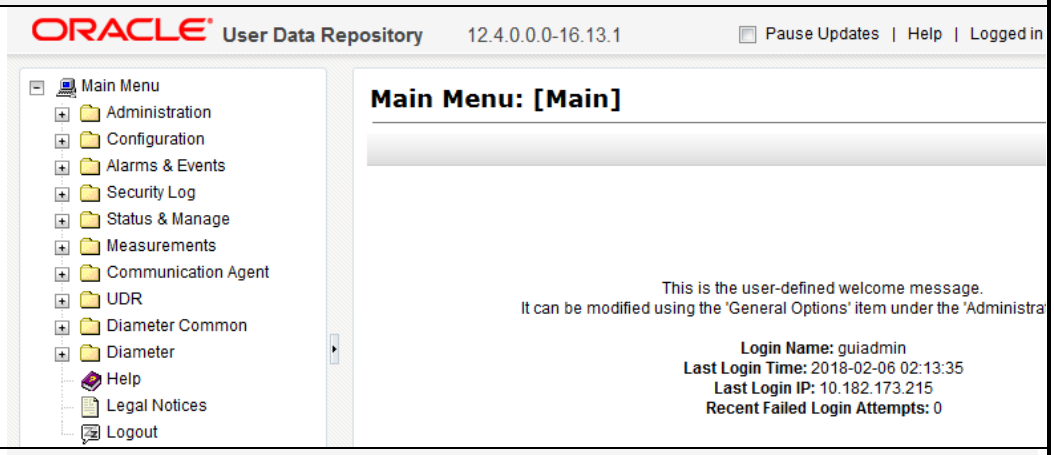
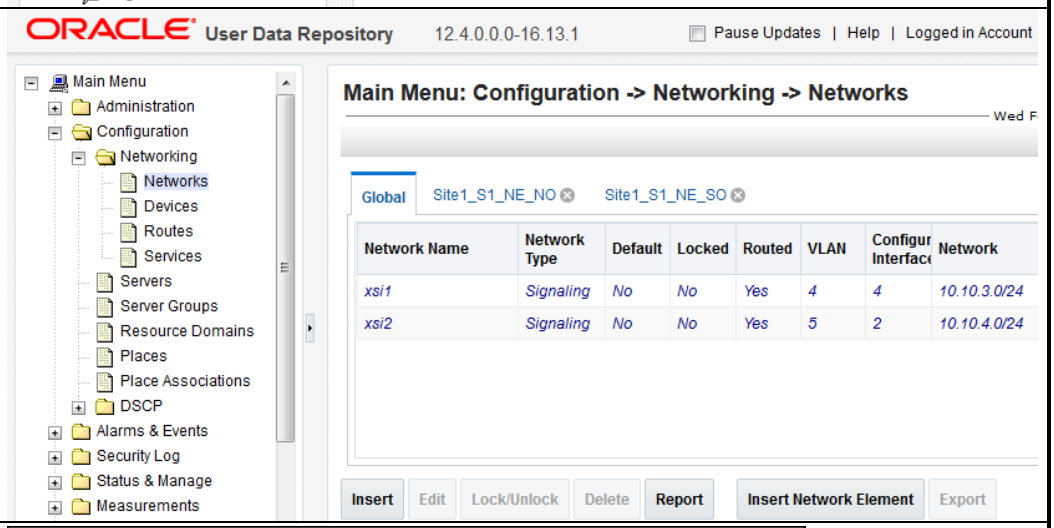
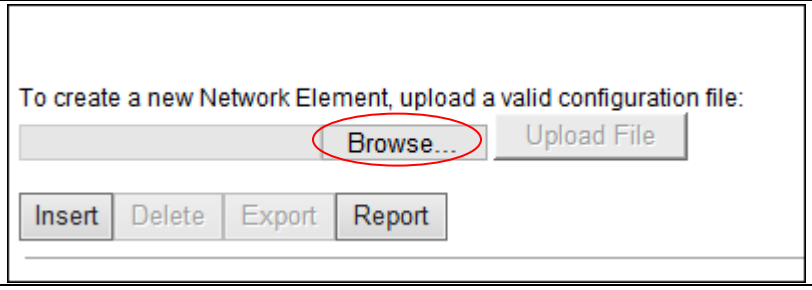
- This procedure assumes that the Oracle Communications User Data Repository Network Element XML file for the Primary Provisioning NOAMP site has previously been created, as described in Appendix E.
- This procedure assumes that the Network Element XML files are either on a USB flash drive or the laptop's hard drive. 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 off (√) each step as it is completed. Boxes have been provided for this purpose under each step number.

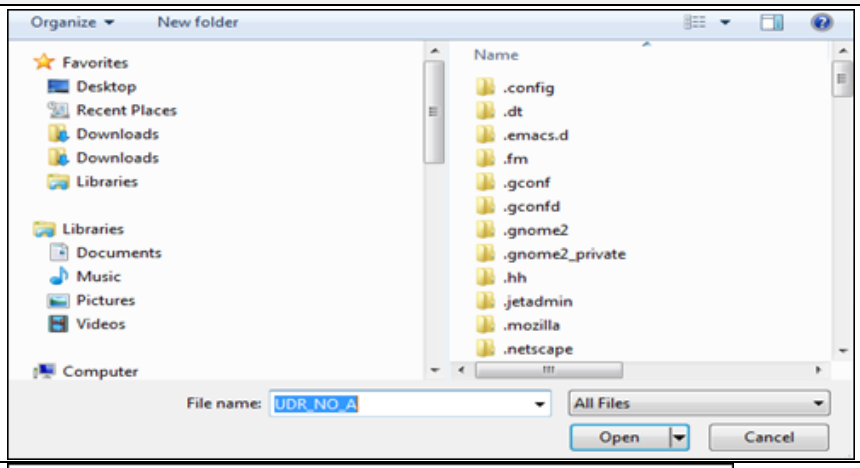
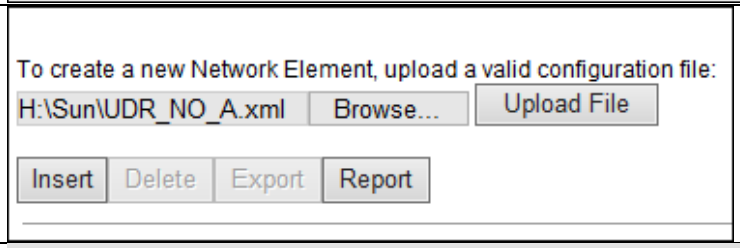
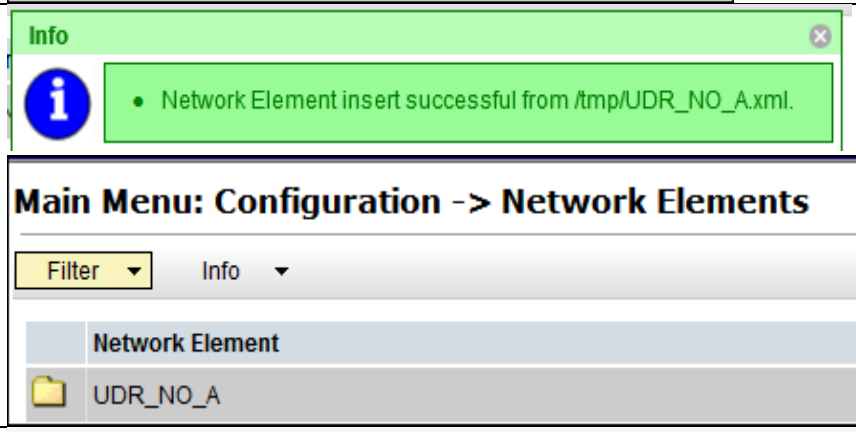
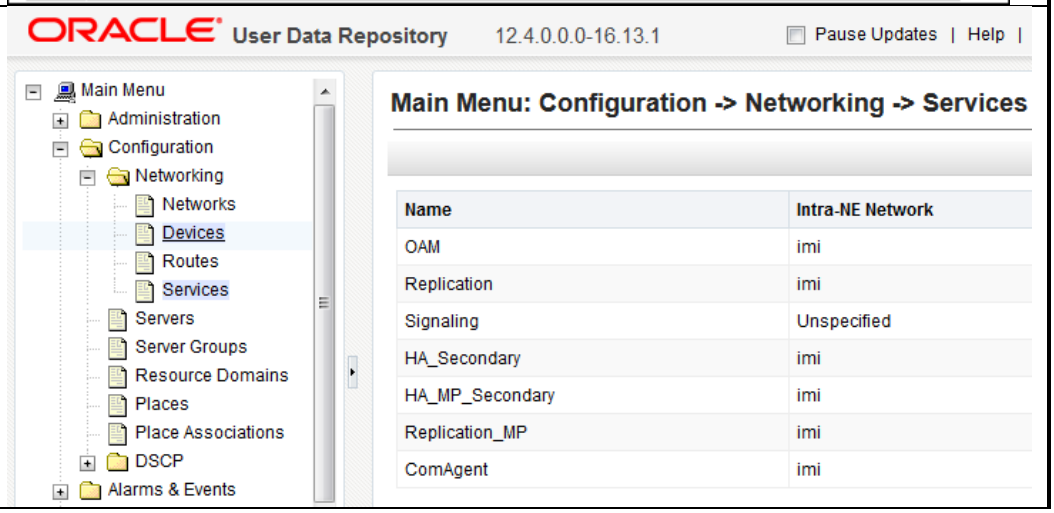
Procedure 5: Configure NOAMP-A Server (1st NOAMP only)

Step	Procedure	Result
1. ☐	**NOAMP Server A:** Launch an approved web browser and connect to the NOAMP Server A IP address **NOTE:** If presented with the "security certificate" warning screen shown to the right, choose the following option**: "Continue to this website (not recommended)".**	
2. ☐	**NOAMP Server A:** The user should be presented the login screen shown on the right. Login to the GUI using the default user and password.	

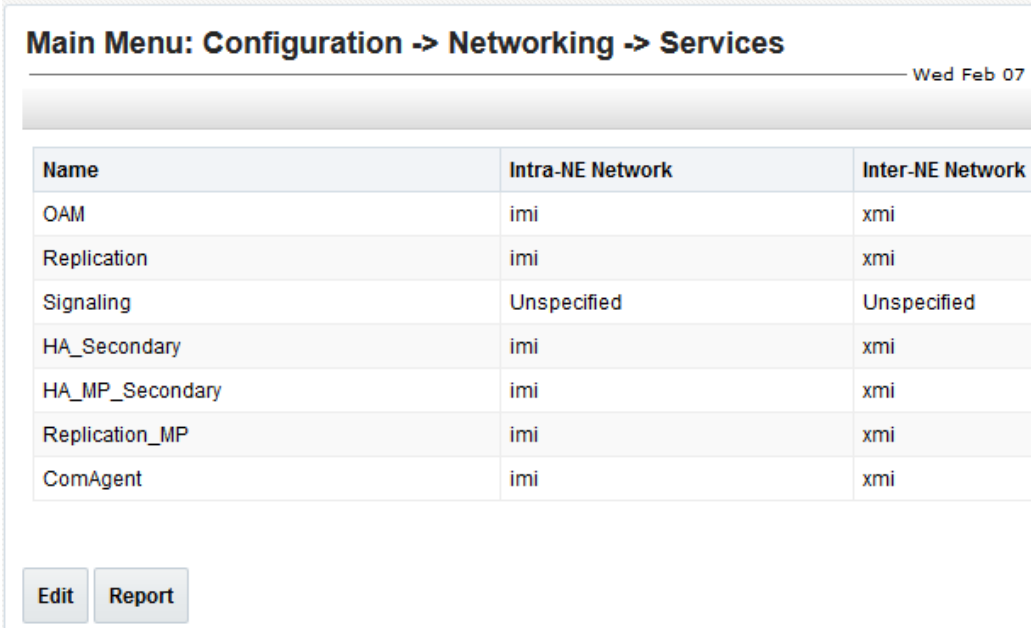
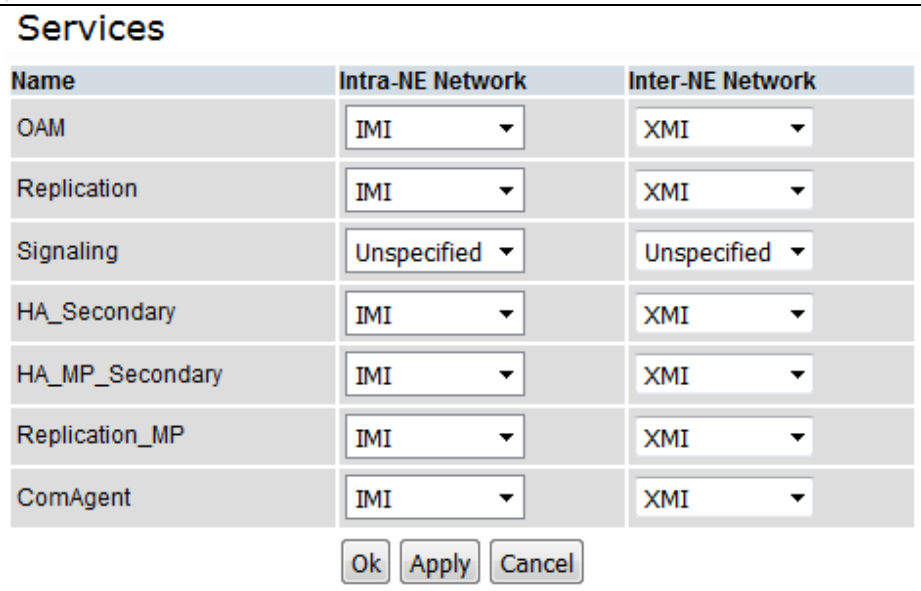
Procedure 5: Configure NOAMP-A Server (1st NOAMP only)

Step	Procedure	Result
3. ☐	**NOAMP Server A:** The user should be presented the Oracle Communications User Data Repository Main Menu as shown on the right.	
4. ☐	**NOAMP Server A:** *Configuring Network Element* Select… **Main Menu** → **Configuration** → ***Networking*** → ***Networks*** …as shown on the right.	
5. ☐	**NOAMP Server A:** From the **Configuration / Networking / Networks** screen… Select the **"Browse"** dialogue button (scroll to bottom left corner of screen).	

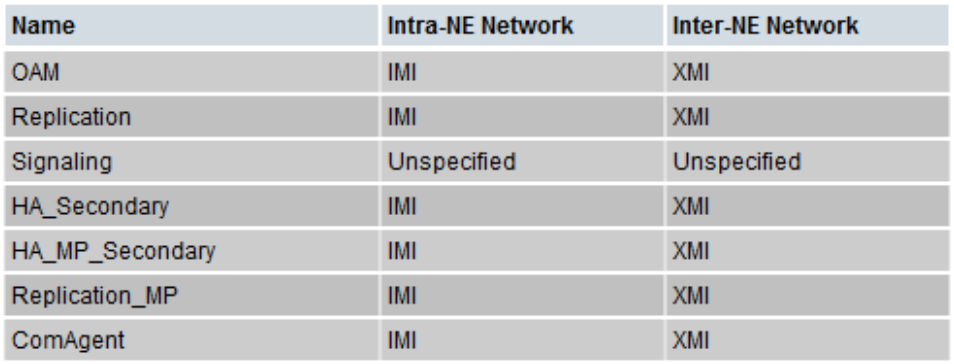
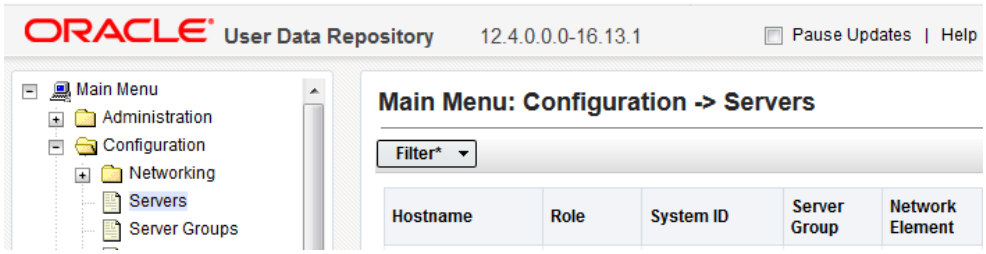
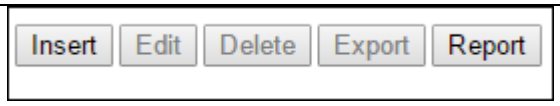
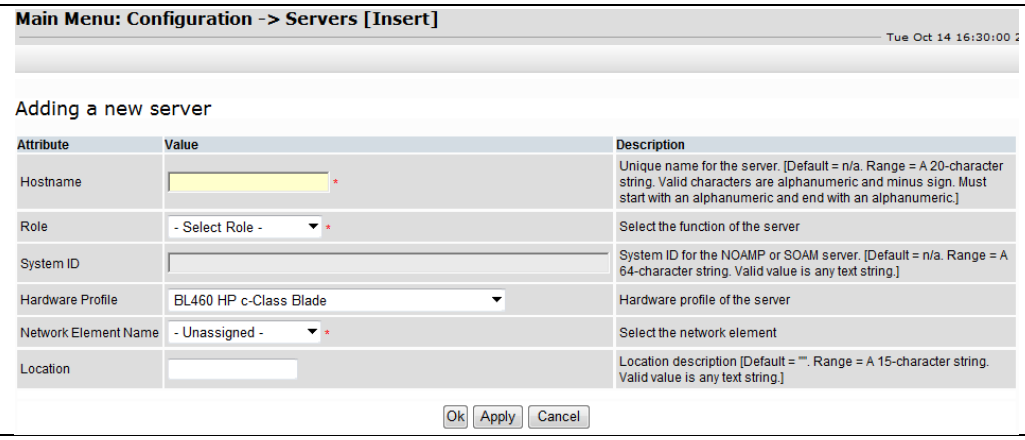
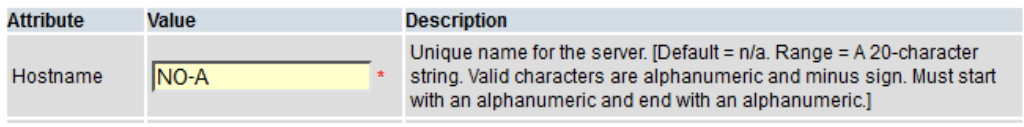
Procedure 5: Configure NOAMP-A Server (1st NOAMP only)

Step	Procedure	Result
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 and click the **"Open"** dialogue button.	
7. ☐	**NOAMP Server A:** Select the **"Upload File"** dialogue button (bottom left corner of screen).	
8. ☐	**NOAMP Server A:** If the values in the **.xml** file pass validation rules, the user receives a banner information message showing 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.*	
9. ☐	Select… **Main Menu** **→ Configuration** **→ *Networking*** **→ *Services*** …as shown on the right.	

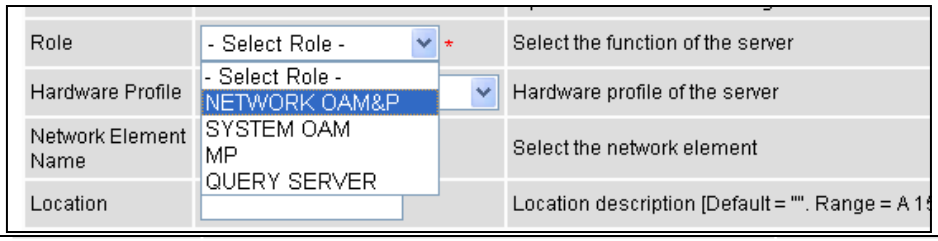
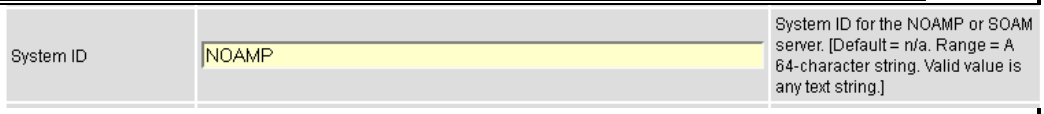
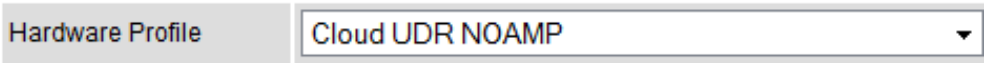
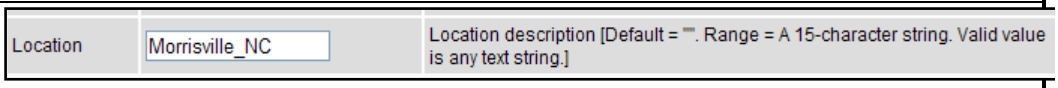
Procedure 5: Configure NOAMP-A Server (1st NOAMP only)

Step	Procedure	Result
10. ☐	**NOAMP Server A:** Select the **"Edit"** dialogue button.	
11. ☐	**NOAMP Server A:** **1)** Set the services values as shown on the right (see **Note** section). **2)** Select the **"Apply"** dialogue button. **3)** Select the **"OK"** dialogue button in the popup window.	 **Note:** Servers do not need to be restarted if this is a fresh installation. **Note:** ComAgent Service is used for NOAMP ⇔ MP and MP ⇔ MP communication.

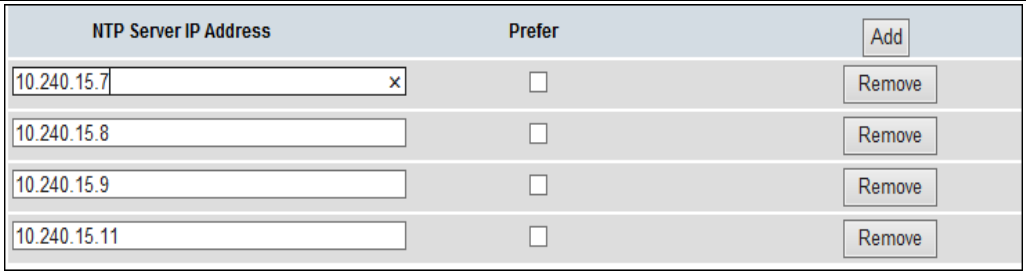
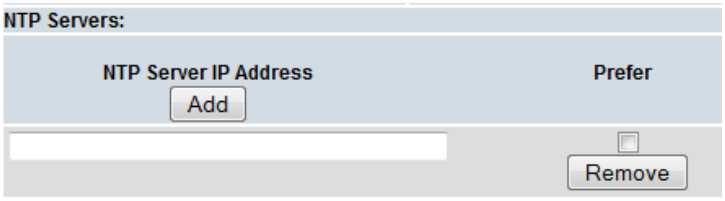
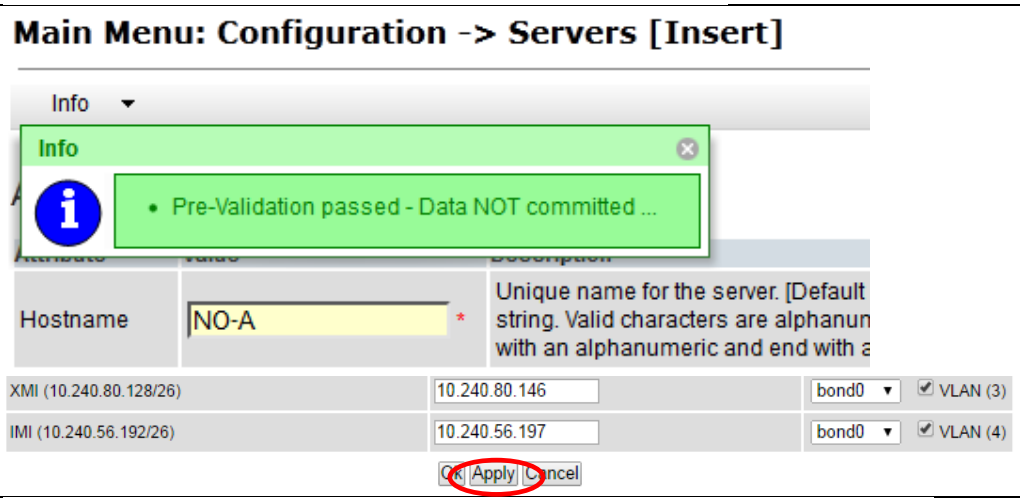
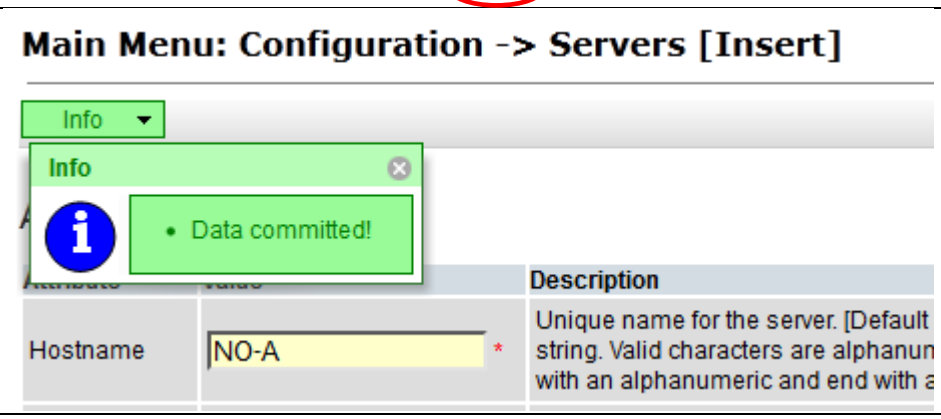
Procedure 5: Configure NOAMP-A Server (1st NOAMP only)

Step	Procedure	Result
12. ☐	**NOAMP Server A:** The user will be presented with the "**Services**" configuration screen	 **Name** / **Intra-NE Network** / **Inter-NE Network** OAM / IMI / XMI Replication / IMI / XMI Signaling / Unspecified / Unspecified HA_Secondary / IMI / XMI HA_MP_Secondary / IMI / XMI Replication_MP / IMI / XMI ComAgent / IMI / XMI
13. ☐	**NOAMP Server A:** *Configuring Oracle Communications User Data Repository Server* Select… **Main Menu** → **Configuration** → ***Servers*** …as shown on the right.	 ORACLE User Data Repository 12.4.0.0.0-16.13.1 Pause Updates | Help Main Menu Administration Configuration Networking Servers Server Groups **Main Menu: Configuration -> Servers** Filter* Hostname / Role / System ID / Server Group / Network Element
14. ☐	**NOAMP Server A:** Select the **"Insert"** dialogue button.	 Insert Edit Delete Export Report
15. ☐	**NOAMP Server A:** The user is now presented with the **"Adding a new server"** configuration screen.	 **Main Menu: Configuration -> Servers [Insert]** Tue Oct 14 16:30:00 Adding a new server Attribute / Value / Description Hostname — Unique name for the server. [Default = n/a. Range = A 20-character string. Valid characters are alphanumeric and minus sign. Must start with an alphanumeric and end with an alphanumeric.] Role: - Select Role - — Select the function of the server System ID — System ID for the NOAMP or SOAM server. [Default = n/a. Range = A 64-character string. Valid value is any text string.] Hardware Profile: BL460 HP c-Class Blade — Hardware profile of the server Network Element Name: - Unassigned - — Select the network element Location — Location description [Default = "". Range = A 15-character string. Valid value is any text string.] Ok Apply Cancel
16. ☐	**NOAMP Server A:** Input the assigned "**hostname"** for the NOAMP-A Server.	 **Attribute** / **Value** / **Description** Hostname: NO-A — Unique name for the server. [Default = n/a. Range = A 20-character string. Valid characters are alphanumeric and minus sign. Must start with an alphanumeric and end with an alphanumeric.]

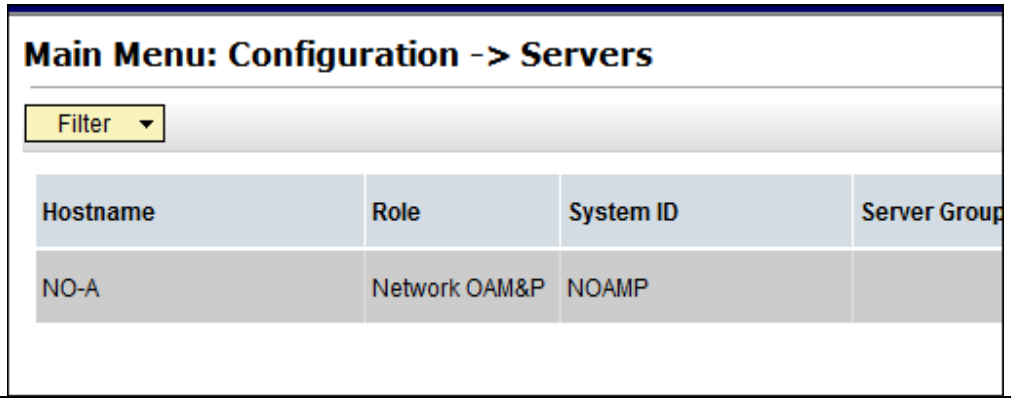
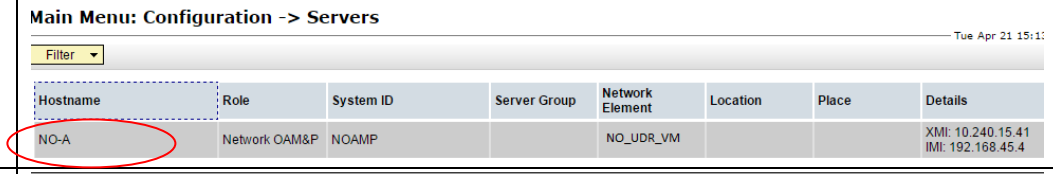
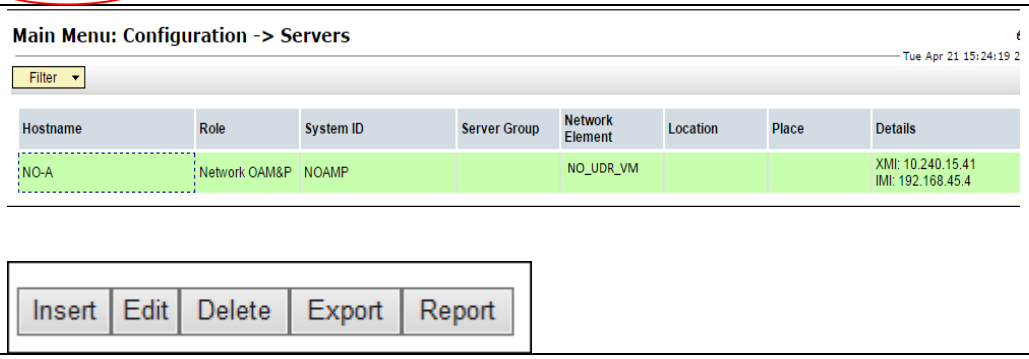
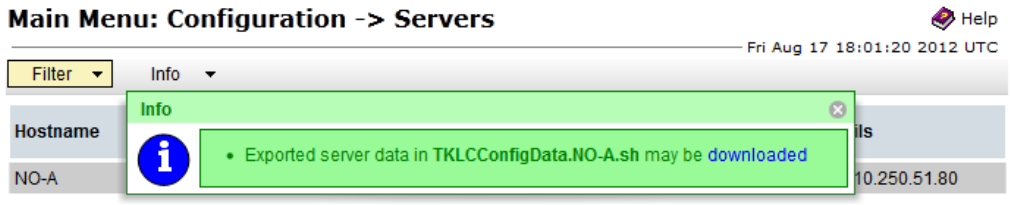
Procedure 5: Configure NOAMP-A Server (1st NOAMP only)

Step	Procedure	Result
17. ☐	**NOAMP Server A:** Select **"NETWORK OAM&P"** for the server **"Role"** from the pull-down menu.	
18. ☐	**NOAMP Server A:** Input the "**System ID"** for the NOAMP Server.	
19. ☐	**NOAMP Server A:** Select the correct **Hardware Profile** from the pull-down menu.	Select Hardware Profile: **Cloud UDR NOAMP** 
20. ☐	**NOAMP Server A:** Select the **Network Element Name** from the pull-down menu. **NOTE:** *After the Network Element Name is selected, the Interfaces fields will be displayed.*	
21. ☐	**NOAMP Server A:** Enter the site location. **NOTE:** *Location is an optional field.*	
22. ☐	**NOAMP Server A:** **1)** Enter the **IP Addresses** for the **Server**. **2)** Set the **Interface** parameters according to to deployment type.	 Enter the IP Addresses for **XMI** and **IMI** networks. Set the Interface device for **XMI** and **IMI** networks according to this VM guest's network adapter assigment as viewable in **Appendix B-3 Step 3 or Appendix C-7 Step 5.** Leave the VLAN boxes unchecked.

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

Step	Procedure	Result
23. ☐	**NOAMP Server A:** Click the "**Add**" button under NTP Servers and add the address of the customer supplied NTP server. .	 Set one ore more NTP Server IP Address(es) to customer supplied NTP server(s). 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:** By clicking **Info** the user should be presented with a banner information message stating **"Pre-Validation passed"**. Click the **"Apply"** dialogue button.	
25. ☐	**NOAMP Server A:** If the values provided match the network ranges assigned to the NOAMP NE, the user will receive a banner information message showing that the data has been validated and committed to the DB.	

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

Step	Procedure	Result
26. ☐	**NOAMP Server A:** Applying the Server Configuration File Select… **Main Menu** **→ Configuration** **→ *Servers*** …as shown on the right.	
27. ☐	**NOAMP Server A:** The **"Configuration →Servers" screen** should now show the newly added **Server** in the list.	
28. ☐	**NOAMP Server A:** **1)** Use the cursor to select the **Server** just inserted. The row containing the desired **Server** should now be highlighted in **GREEN**. **2)** Select the **"Export"** dialogue button.	
29. ☐	**NOAMP Server A:** The user will receive a banner information message showing a download link for the **Server** configuration data.	 The configuration file was created and stored in the /var/TKLC/db/filemgmt directory. The configuration file will have a file name like TKLCConfigData.<***hostname***>.sh.

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>`

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

Step	Procedure	Result
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 ➔ will translate to ➔TKLCConfigData.sh # **cp –p /var/TKLC/db/filemgmt/TKLCConfigData.NO-A.sh /var/tmp/TKLCConfigData.sh** **NOTE:** *The server will poll the **/var/tmp** directory for the presence of the configuration file and automatically execute it when found.*

33. ☐	**NOAMP Server A:**
	After the script completes, a broadcast message will be sent to the terminal.
	
	Ignore the output shown and press the **<ENTER>** key to return to the command prompt.
	
	NOTE: *The user should be aware that the time to complete this step varies by server and may take from 3-20 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 server reboot is done. Then, SSH into the NOAMP-A server.
	
	Output similar to that shown on the right may be observed
		Wait about 9 minutes until the server reboot is done.
		
		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 isn't 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.

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

Step	Procedure	Result
37. ☐	**NOAMP Server A:** Verify that the **XMI and IMI IP addresses** entered in **Step 22** have been applied	$ **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:10.240.80.191 Mask:255.255.255.192 eth1 Link encap:Ethernet HWaddr F0:92:1C:18:59:10 inet addr:10.240.56.197 Bcast:10.240.56.255 Mask:255.255.255.192 **NOTE:** *The server's **XMI and IMI** addresses can be verified by reviewing the server configuration through the Oracle Communications User Data Repository GUI.* **Main Menu** → **Configuration** → **Servers** *Scroll to line entry containing the server's **hostname.***
38. ☐	**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 server(s).	$ **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
	IF CONNECTIVITY TO THE NTP SERVER(S) CANNOT BE ESTABLISHED, STOP AND EXECUTE THE FOLLOWING STEPS: • Have the customer IT group provide a network path from the OAM server IP to the assigned NTP IP addresses. **ONCE NETWORK CONNECTIVITY IS ESTABLISHED TO THE ASSIGNED NTP IP ADDRESSES, THEN RESTART THIS PROCEDURE BEGINNING WITH STEP 35 .**	
39. ☐	**NOAMP Server A:** Execute a **"alarmMgr"** to verify the current health of the server	$ **alarmMgr --alarmStatus** NOTE: This command should return no output on a healthy system.
40. ☐	**NOAMP Server A:** Exit the SSH session for the NOAMP-A server	$ **exit**
	THIS PROCEDURE HAS BEEN COMPLETED	

5.2 Create Configuration for Remaining Servers

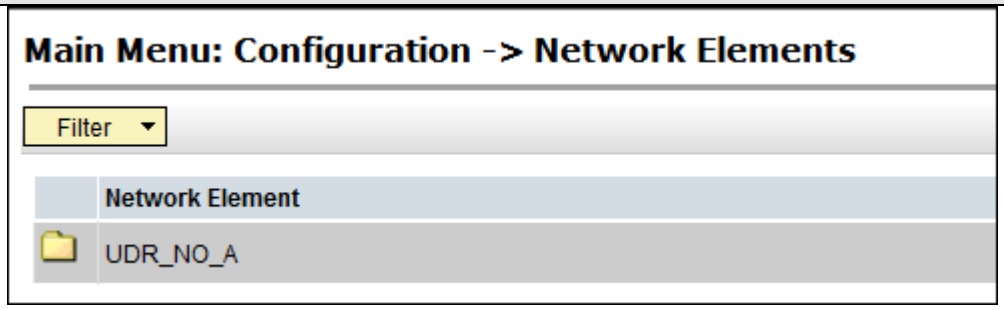
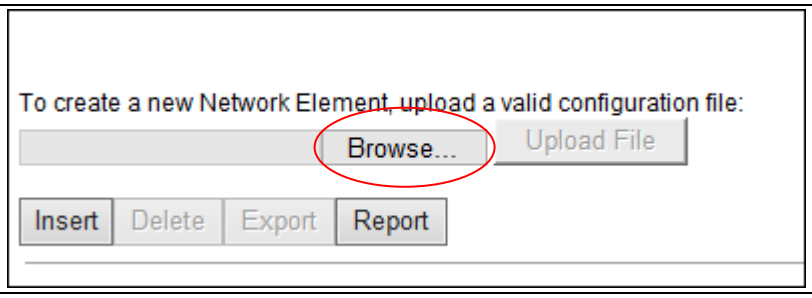
This procedure is used to create and configure all Oracle Communications User Data Repository Servers (Primary and DR Servers) except the first NOAMP-A server.

Requirements:

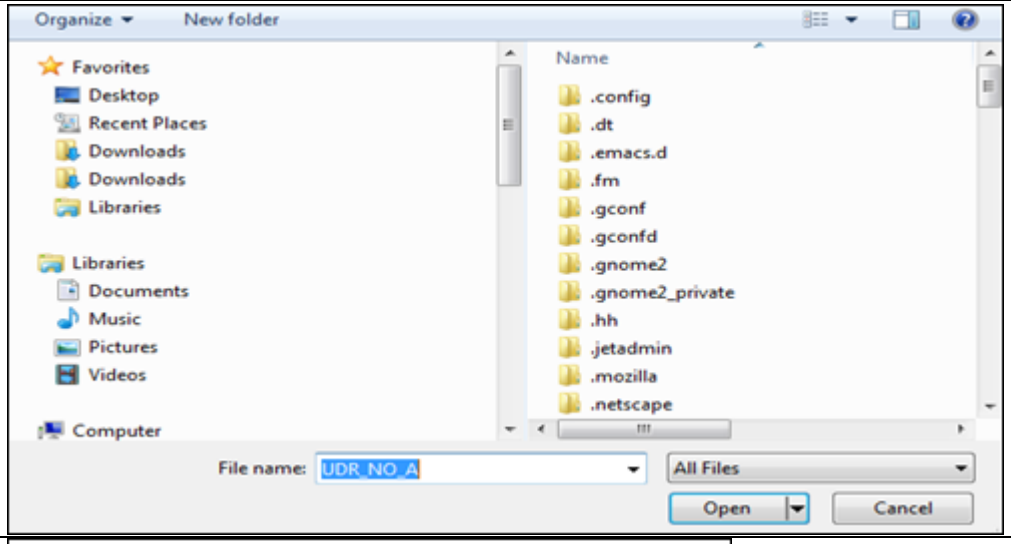
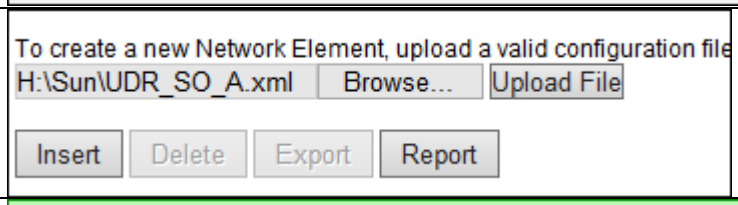
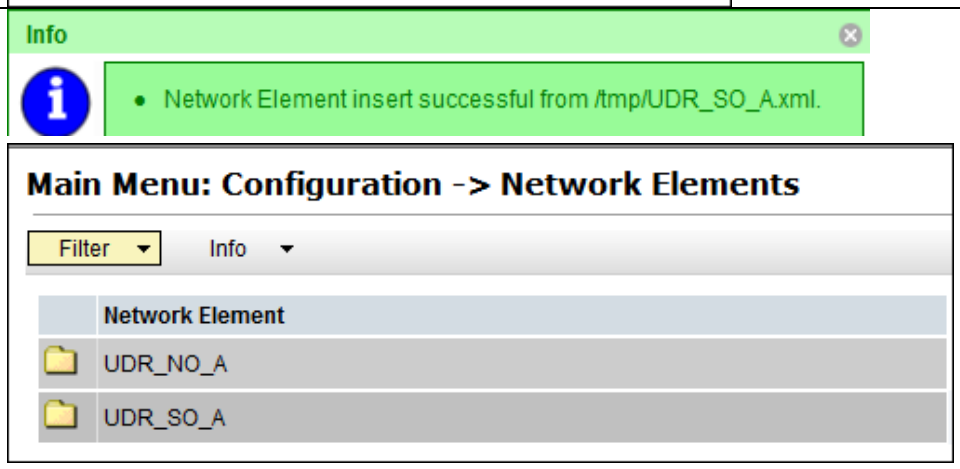
- **Section 5.1 Configure NOAMP-A Server (1st NOAMP only)** has been completed

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

Procedure 6: Create Configuration for Remaining Servers

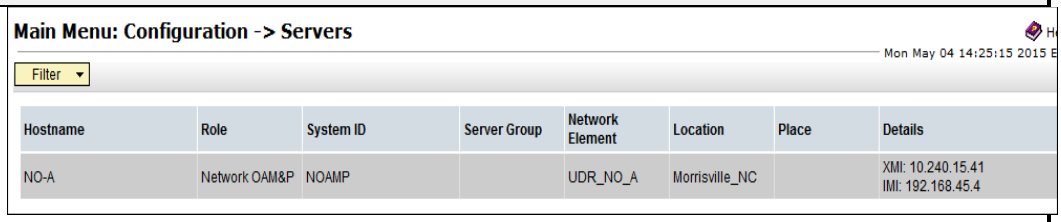
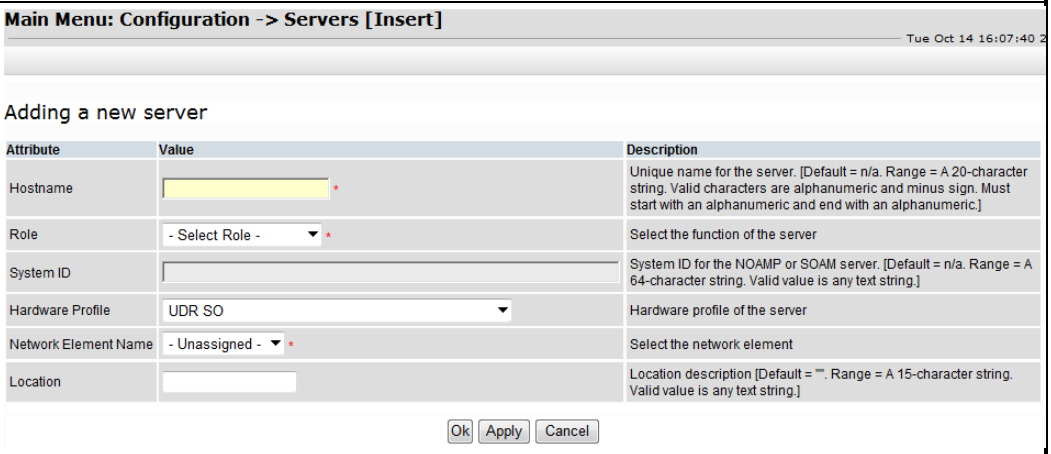
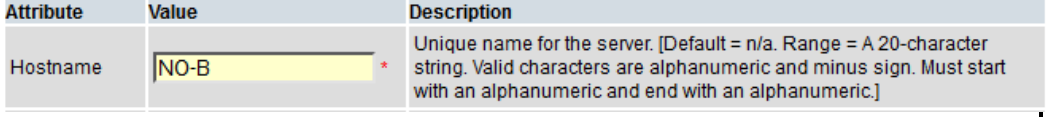
Step	Procedure	Result
1. ☐	**NOAMP Server A:** Launch an approved web browser and connect to the NOAMP Server A IP address **NOTE:** Choose **"Continue to this website (not recommended)"** if presented with the "security certificate" warning. **Login** to the GUI using the default user and password.	
For steps 4 – 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* Select… **Main Menu** → **Configuration** → ***Network Elements*** …as shown on the right.	
3. ☐	NOAMP Server A: From the **Configuration / Network Elements** screen… Select the "**Browse"** dialogue button (scroll to bottom left corner of screen).	

Procedure 6: Create Configuration for Remaining Servers

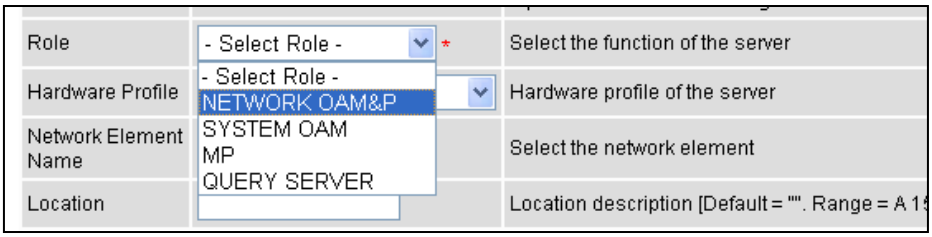
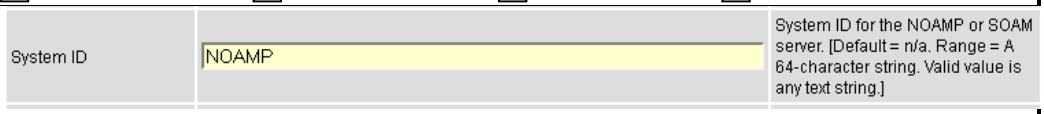
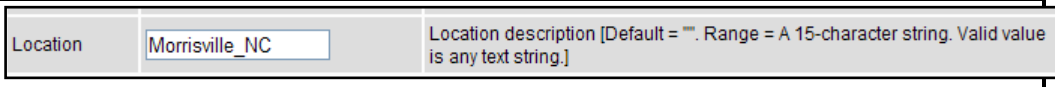
Step	Procedure	Result
4. ☐	**NOAMP Server A**: **Note**: This step assumes that the xml files were previously prepared, as described in Appendix C. 1) Select the location containing the site .**xml** file. 2) Select the .**xml** file and click the "**Open**" dialogue button.	
5. ☐	**NOAMP Server A:** Select the "**Upload File**" dialogue button (bottom left corner of screen).	
6. ☐	**NOAMP Server A:** If the values in the .**xml** file pass validation rules, the user receives a banner information message showing 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: The following steps need to run 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.

Procedure 6: Create Configuration for Remaining Servers

Step	Procedure	Result
7. ☐	**NOAMP Server A:** Select… **Main Menu** → **Configuration** → ***Servers*** …as shown on the right.	 "Check off" the associated Check Box as addition is completed for each Server. ☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B ☐ MP-2 ☐ MP-2 ☐ MP-3 ☐ MP-4
8. ☐	**NOAMP Server A:** Select the "**Insert**" dialogue button at the bottom left.	 "Check off" the associated Check Box as addition is completed for each Server. ☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B ☐ MP-2 ☐ MP-2 ☐ MP-3 ☐ MP-4
9. ☐	**NOAMP Server A:** The user is now presented with the "Adding a new server" configuration screen.	 "Check off" the associated Check Box as addition is completed for each Server. ☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B ☐ MP-2 ☐ MP-2 ☐ MP-3 ☐ MP-4
10. ☐	**NOAMP Server A:** Input the assigned "**Hostname**" for the server.	 "Check off" the associated Check Box as addition is completed for each Server. ☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B ☐ MP-2 ☐ MP-2 ☐ MP-3 ☐ MP-4

Procedure 6: Create Configuration for Remaining Servers

Step	Procedure	Result
11. ☐	**NOAMP Server A:** Select the appropriate server "**Role**" from the pull-down menu.	 "Check off" the associated Check Box as addition is completed for each Server. ☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B ☐ MP-2 ☐ MP-2 ☐ MP-3 ☐ MP-4
12. ☐	**NOAMP Server A:** Input the "**System ID**" for the server. NOTE: *System ID is not required for MP.*	 "Check off" the associated Check Box as addition is completed for each Server. ☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B ☐ MP-2 ☐ MP-2 ☐ MP-3 ☐ MP-4
13. ☐	**NOAMP Server A:** Select the correct **Hardware Profile** from the pull-down menu.	SOAM Select Hardware Profile: **Cloud UDR SOAM** MP Select Hardware Profile: **Cloud UDR MP**  "Check off" the associated Check Box as addition is completed for each Server. ☐ 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 pull-down menu. NOTE: *After the Network Element Name is selected, the Interfaces fields will be displayed.*	 NOTE: *NO and DR pairs will have their own Network element. SO pairs will also have their own Network Element which they share with their associated MP.* "Check off" the associated Check Box as addition is completed for each Server. ☐ 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.*	 "Check off" the associated Check Box as addition is completed for each Server. ☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B ☐ MP-1 ☐ MP-2 ☐ MP-3 ☐ MP-4

Procedure 6: Create Configuration for Remaining Servers

<table>
<tr><th>Step</th><th>Procedure</th><th>Result</th></tr>
<tr><td>16.

☐</td><td>NOAMP Server A:
1) Enter the IP Addresses for the Server.

2) Set the Interface parameters according to to deployment type.</td><td>
Interfaces:
<table>
<tr><th>Network</th><th>IP Address</th><th>Interface</th></tr>
<tr><td>XMI (10.148.232.0/22)</td><td>10.148.235.212</td><td>eth0 ▾ ☐ VLAN (332)</td></tr>
<tr><td>IMI (10.196.128.0/22)</td><td>10.196.130.15</td><td>eth1 ▾ ☐ VLAN (528)</td></tr>
</table>
Enter the IP Addresses for XMI and IMI networks.

Set the Interface device for XMI and IMI networks according to this VM guest’s network adapter assigment as viewable in Appendix B-3 Step 3 or Appendix C-7 Step 5.

Leave the VLAN boxes unchecked.

“Check off” the associated Check Box as addition is completed for each Server.

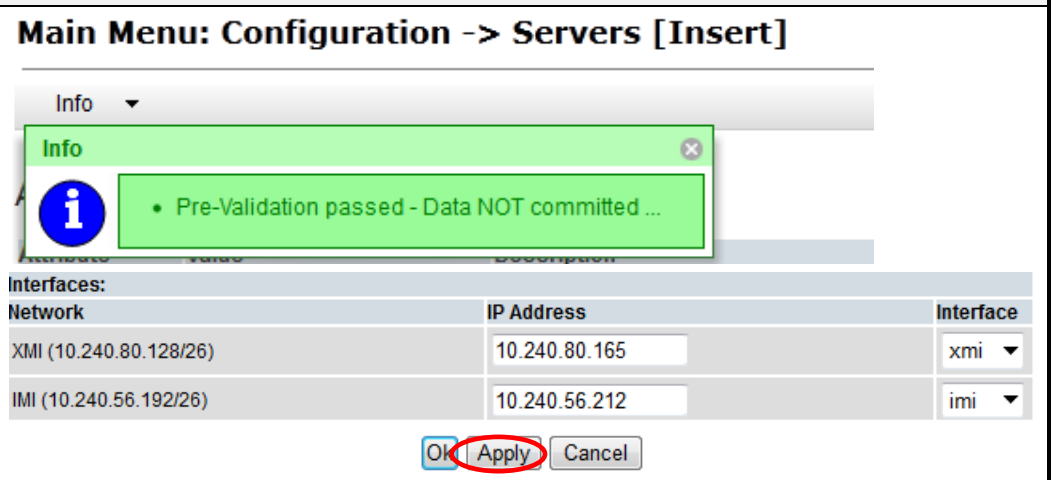
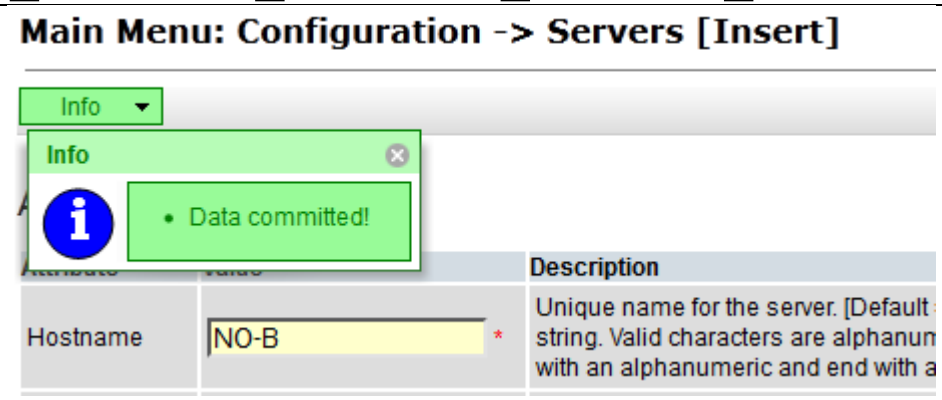
☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B
☐ MP-1 ☐ MP-2 ☐ MP-3 ☐ MP-4
</td></tr>
<tr><td>17.

☐</td><td>NOAMP Server A:
Click the “Add” button under NTP Servers and add the address(s) of the NTP server(s).</td><td>
<table>
<tr><th>NTP Server IP Address</th><th>Prefer</th><th>Add</th></tr>
<tr><td>10.240.15.7 ×</td><td>☐</td><td>Remove</td></tr>
<tr><td>10.240.15.8</td><td>☐</td><td>Remove</td></tr>
<tr><td>10.240.15.9</td><td>☐</td><td>Remove</td></tr>
<tr><td>10.240.15.11</td><td>☐</td><td>Remove</td></tr>
</table>
Set one ore more NTP Server IP Address(es) to customer supplied NTP server(s). It is recommended to have minimum of 3 and up to 4 external NTP servers for reliable functioning of NTP service.

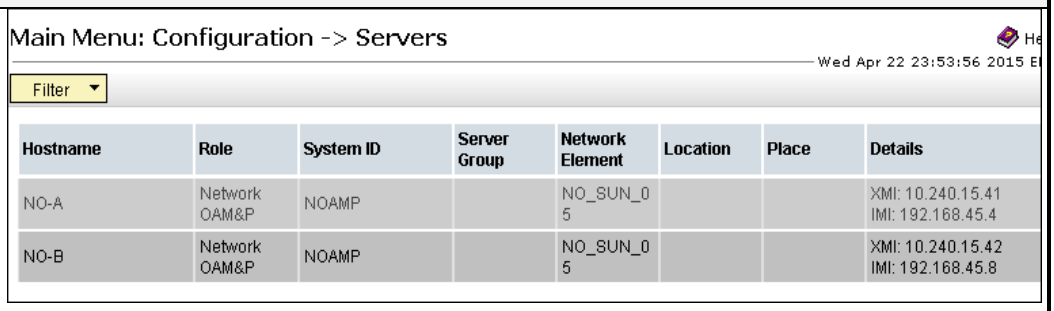
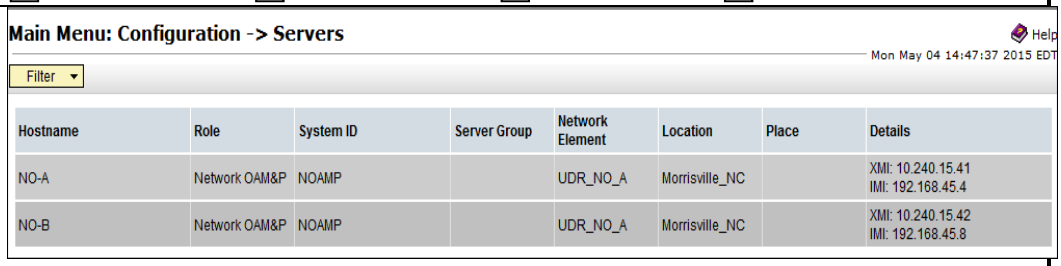
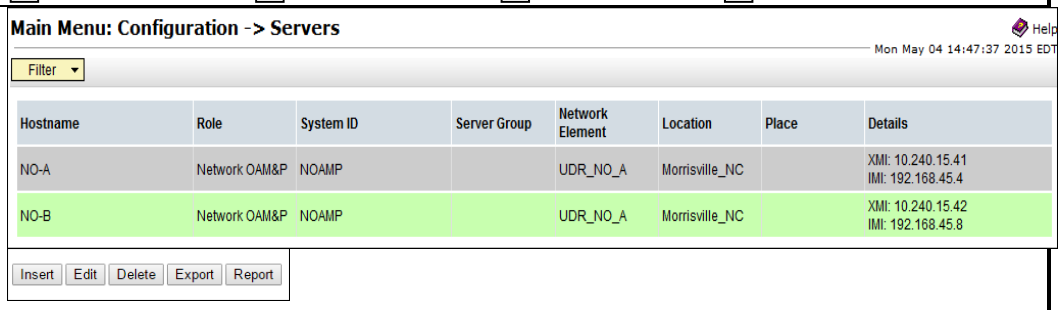
“Check off” the associated Check Box as addition is completed for each Server.

☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B
☐ MP-1 ☐ MP-2 ☐ MP-3 ☐ MP-4
</td></tr>
</table>

Procedure 6: Create Configuration for Remaining Servers

Step	Procedure	Result
18. ☐	**NOAMP Server A:** By clicking **Info** the user should be presented with a banner information message stating **"Pre-Validation passed"**. Click the "**Apply**" dialogue button.	 "Check off" the associated Check Box as addition is completed for each Server. ☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B ☐ MP-1 ☐ MP-2 ☐ MP-3 ☐ MP-4
19. ☐	**NOAMP Server A:** If the values provided match the network ranges assigned to the NE, the user will receive a banner information message showing that the data has been validated and committed to the DB.	 "Check off" the associated Check Box as addition is completed for each Server. ☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B ☐ MP-1 ☐ MP-2 ☐ MP-3 ☐ MP-4

Procedure 6: Create Configuration for Remaining Servers

Step	Procedure	Result
20. ☐	**NOAMP Server A:** *Applying the Server Configuration File* Select… **Main Menu** **→ Configuration** **→ *Servers*** …as shown on the right.	 "Check off" the associated Check Box as addition is completed for each Server. ☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B ☐ MP-1 ☐ MP-2 ☐ MP-3 ☐ MP-4
21. ☐	**NOAMP Server A:** The "Configuration →Servers" screen should now show the newly added Server in the list.	 "Check off" the associated Check Box as addition is completed for each Server. ☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B ☐ MP-1 ☐ MP-2 ☐ MP-3 ☐ MP-4
22. ☐	**NOAMP Server A:** 1) Use the cursor to select the Server just inserted. The row containing the desired Server should now be highlighted in GREEN. 2) Select the "**Export**" dialogue button.	 "Check off" the associated Check Box as addition is completed for each Server. ☐ 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 HAS BEEN COMPLETED		

5.3 Apply Configuration To Remaining Servers

This procedure is used to apply 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 off (√) each step as it is completed. Boxes have been provided for this purpose under each step number.

Procedure 7: Apply Configuration to Remaining Servers

Step	Procedure	Result
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. "Check off" the associated Check Box as addition is completed for each Server. ☐ 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`
		`$`
		
		"Check off" the associated Check Box as addition is completed for each Server.
		
		☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B
		☐ MP-1 ☐ MP-2 ☐ MP-3 ☐ MP-4

3. ☐	**NOAMP Server A:** Change directory into the file management space	`[admusr@pc9040833-no-a ~]$ cd /var/TKLC/db/filemgmt` "Check off" the associated Check Box as addition is completed for each Server. ☐ 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 desired servers configuration files .
	
	Note: Server names are in red.
		`[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`
		
		"Check off" the associated Check Box as addition is completed for each Server.
		
		☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B
		☐ MP-1 ☐ MP-2 ☐ MP-3 ☐ MP-4

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

Procedure 7: Apply Configuration to Remaining Servers

<table>
<tr><th>Step</th><th>Procedure</th><th>Result</th></tr>
<tr><td>5.

☐</td><td>NOAMP Server A:

Copy the configuration files found in the previous step to the appropirate target server based on the configuration file's server name.</td><td>[admusr@pc9040833-no-a ~]$ scp -p <i><configuration_file-a></i>
<Associated_Server_XMI_<i>IP</i>>:/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]$

“Check off” the associated Check Box as addition is completed for each Server.

☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B
☐ MP-1 ☐ MP-2 ☐ MP-3 ☐ MP-4</td></tr>
<tr><td>6.

☐</td><td>NOAMP Server A:

Connect to the target server which has received a configuration file copy in the previous step</td><td>[admusr@pc9040833-no-a ~]$ ssh <Associated_Server_XMI_<i>IP</i> >
admusr@192.168.1.10's password: <admusr_password>

“Check off” the associated Check Box as addition is completed for each Server.

☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B
☐ MP-1 ☐ MP-2 ☐ MP-3 ☐ MP-4</td></tr>
<tr><td>7.

☐</td><td>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.</td><td>Example:
TKLCConfigData<.server_hostname>.sh ➔ will translate to ➔TKLCConfigData.sh

[admusr@hostname1326744539 ~]$ sudo cp -p /tmp/TKLCConfigData.NO-B.sh /var/tmp/TKLCConfigData.sh
[admusr@hostname1326744539 ~]$

NOTE: The server will poll the /var/tmp directory for the presence of the configuration file and automatically execute it when found.

“Check off” the associated Check Box as addition is completed for each Server.

☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B
☐ MP-1 ☐ MP-2 ☐ MP-3 ☐ MP-4</td></tr>
<tr><td>8.

☐</td><td>Target Server:
After the script completes, a broadcast message will be sent to the terminal.

Ignore the output shown and press the <ENTER> key to return to the command prompt.

NOTE: The user should be aware that the time to complete this step varies by server and may take from 3-20 minutes to complete.</td><td>*** 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>

[admusr@hostname1326744539 ~]$

“Check off” the associated Check Box as addition is completed for each Server.

☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B
☐ MP-1 ☐ MP-2 ☐ MP-3 ☐ MP-4</td></tr>
</table>

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

Procedure 7: Apply Configuration to Remaining Servers

Step	Procedure	Result
9. ☐	**Target Server:** Initiate a reboot of the **Server**.	`[admusr@hostname1326744539 ~]$ sudo reboot` "Check off" the associated Check Box as addition is completed for each Server. ☐ 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 by previous step.
	
	Output similar to that shown on the right may be observed.
		The previous step should cause the ssh session to the desired server to close and user should return to the NOAMP server console prompt. The user should see output similar to the below output:
		
		`Connection to 192.168.1.16 closed by remote host.`
		`Connection to 192.168.1.16 closed.`
		`$`
		
		"Check off" the associated Check Box as addition is completed for each Server.
		
		☐ 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 done. Then, SSH into the target server using its XMI address.
	
	Output similar to that shown on the right may be observed
		Wait about 9 minutes until the server reboot is done.
		
		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@192.168.1.20's password: <admusr_password>`
		
		Note: If the server isn't 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.
		
		"Check off" the associated Check Box as addition is completed for each Server.
		
		☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B
		☐ MP-1 ☐ MP-2 ☐ MP-3 ☐ MP-4

12. ☐	**Target Server:**
	
	Verify that the **XMI and IMI IP addresses** entered in **Section 5.2 Step 16** have been applied
		`$ ifconfig |grep in |grep -v inet6`
		`control  Link encap:Ethernet  HWaddr 52:54:00:6C:3C:B4`
		`inet addr:192.168.1.11  Bcast:192.168.1.255  Mask:255.255.255.0`
		`imi  Link encap:Ethernet  HWaddr 52:54:00:F6:DC:4A`
		`inet addr:169.254.2.2  Bcast:169.254.2.255  Mask:255.255.255.0`
		`lo  Link encap:Local Loopback`
		`inet addr:127.0.0.1  Mask:255.0.0.0`
		`xmi  Link encap:Ethernet  HWaddr 52:54:00:0F:1F:3B`
		`inet addr:10.250.39.19  Bcast:10.250.39.31  Mask:255.255.255.240`
		
		NOTE: *The server's **XMI and IMI** addresses can be verified by reviewing the server configuration through the Oracle Communications User Data Repository GUI.*
		
		Main Menu
		→ Configuration
		→ Servers
		*Scroll to line entry containing the server's **hostname.***
		
		"Check off" the associated Check Box as addition is completed for each Server.
		
		☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B
		☐ MP-1 ☐ MP-2 ☐ MP-3 ☐ MP-4

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

Procedure 7: Apply Configuration to Remaining Servers

<table>
<tr><th>Step</th><th>Procedure</th><th>Result</th></tr>
<tr><td>13.
☐</td><td>Target Server:
Use the “ntpq” command to verify that the server has connectivity to the assigned Primary and Secondary NTP server(s).</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
[root@pc9040725-no-a ~]$

If offset value is in excess of five seconds, run the commands below 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]

“Check off” the associated Check Box as addition is completed for each Server.
☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B
☐ MP-1 ☐ MP-2 ☐ MP-3 ☐ MP-4</td></tr>
<tr><td></td><td>  </td><td>IF CONNECTIVITY TO THE NTP SERVER(S) CANNOT BE ESTABLISHED, STOP AND EXECUTE THE FOLLOWING STEPS:</td></tr>
<tr><td>14.
☐</td><td>Target Server:
Execute a “alarmMgr” to verify the current health of the server</td><td>$ alarmMgr --alarmStatus

NOTE: This command should return no output on a healthy system.

“Check off” the associated Check Box as addition is completed for each Server.
☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B
☐ MP-1 ☐ MP-2 ☐ MP-3 ☐ MP-4</td></tr>
<tr><td>15.
☐</td><td>Target Server:
Exit the SSH session for the target server</td><td>$ exit
logout
Connection to 192.168.1.16 closed.
#

“Check off” the associated Check Box as addition is completed for each Server.
☐ NOAMP-A ☐ NOAMP-B ☐ SOAM-A ☐ SOAM-B
☐ MP-1 ☐ MP-2 ☐ MP-3 ☐ MP-4</td></tr>
<tr><td>16.
☐</td><td>NOAMP Server A:

Exit terminal session</td><td># exit
logout
Connection to 192.168.1.4 closed.
#</td></tr>
<tr><td colspan="3">THIS PROCEDURE HAS BEEN COMPLETED</td></tr>
</table>

5.4 Configure XSI Networks (All SOAM Sites)

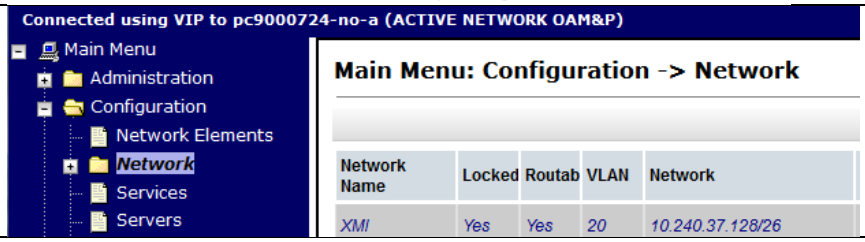
This procedure cofnigures the XSI networks used on MP to support signaling traffic.

Requirements:

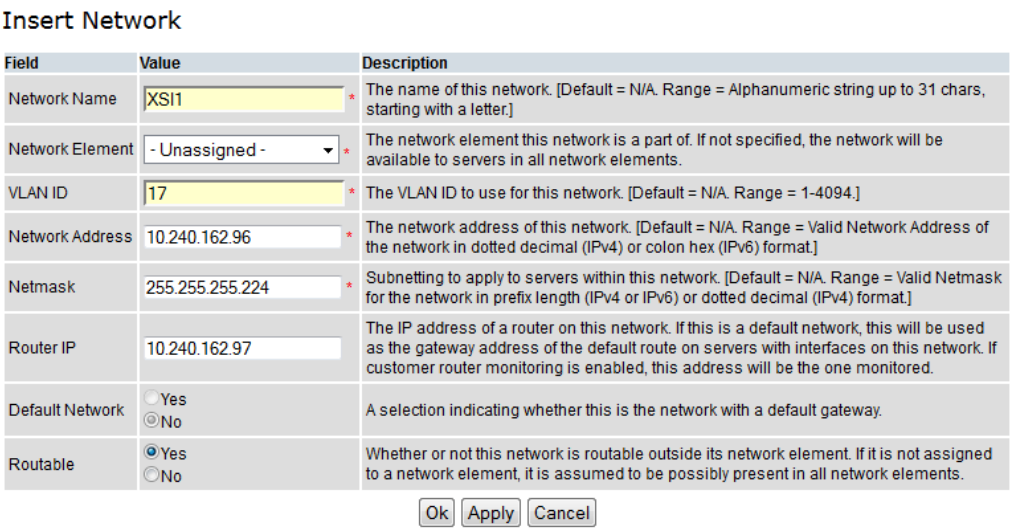
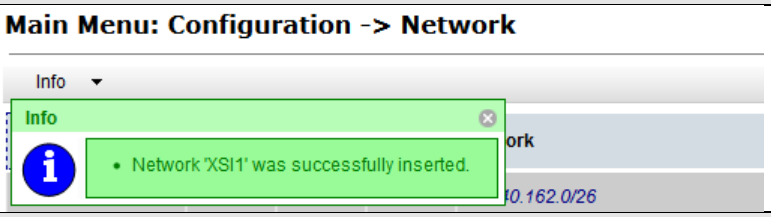
- **Section 5.3 Apply Configuration To Remaining Servers** has been completed

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

Procedure 8: Configure XSI Networks

Step	Procedure	Result
1. ☐	**NOAMP Server A:** Launch an approved web browser and connect to the NOAMP Server A IP address **NOTE:** Choose **"Continue to this website (not recommended)"** if presented with the "security certificate" warning. **Login** to the GUI using the default user and password.	
2. ☐	**NOAMP Server A** Select… **Main Menu** **→ Configuration** ***→Network*** …as shown on the right.	

Procedure 8: Configure XSI Networks

Step	Procedure	Result
3. ☐	**NOAMP Server A** Add the **XSI1** network	Click the **Insert** button.  Output similar to that shown below may be observed.  Enter all of the above fields for the **XSI1** network according to the customer's network parameters. The default values for **Network Element** (Unassigned), **Default Network** (No) and **Routable** (Yes) should be retained. ComAgent Service may be configured to run on XSI1 in **Section** 0. In such case, the XSI1 network shall be used for MP⇔NOAMP ComAgent Traffic. This network may or may not be used for MP Signaling Traffic. **Note**: Network names can be overloaded to support multiple subnets. When defining network for ComAgent Service, use same network name for Primary and DR Site. **Note:** 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.
4. ☐	**NOAMP Server A** Repeat as required	Repeat **Step 3** of this procedure to **Insert**additional signaling networks(**XSI2,** etc) if applicable.
5. ☐	**NOAMP Server A** New XSI network is displayed along with a success message.	
THIS PROCEDURE HAS BEEN COMPLETED		

6.0 OAM PAIRING

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

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

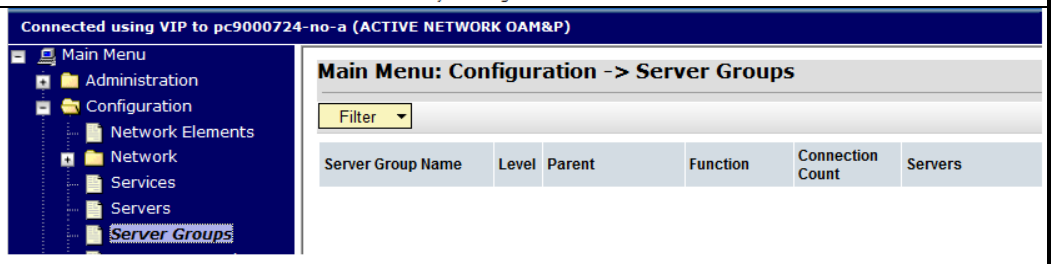
This procedure creates active/standby pair for the NOAMP servers at the Primary Provisioning Site..

Requirements:

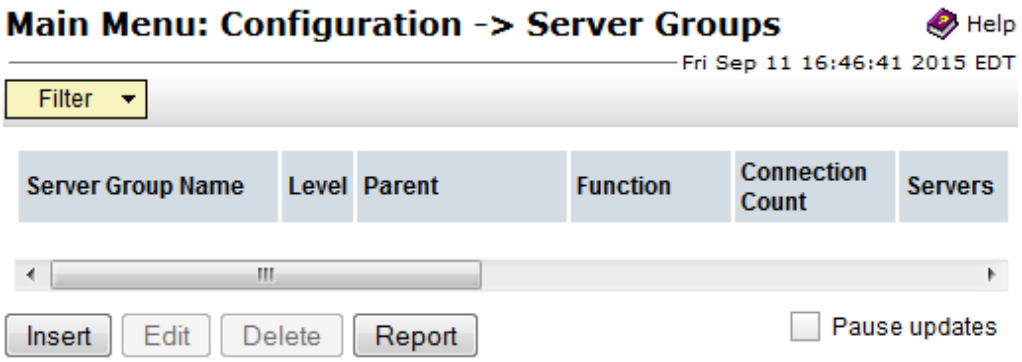
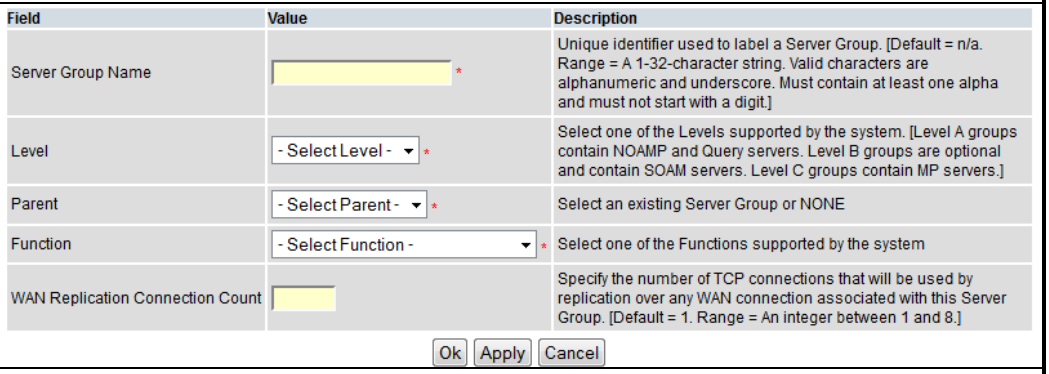
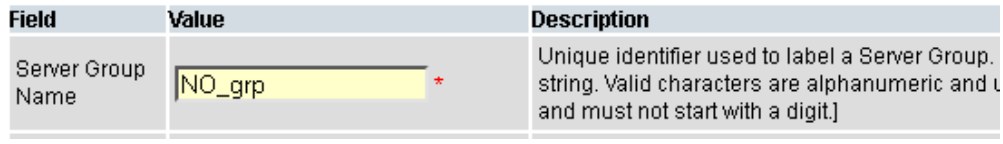
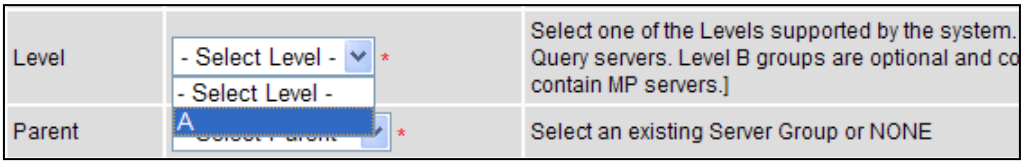
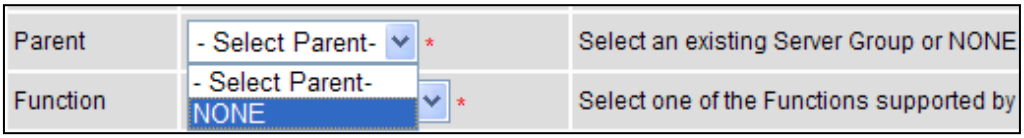
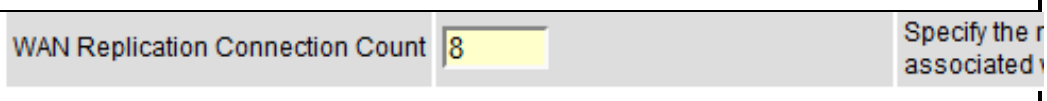
- **Section 5.3 Apply Configuration To Remaining Servers** has been completed

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

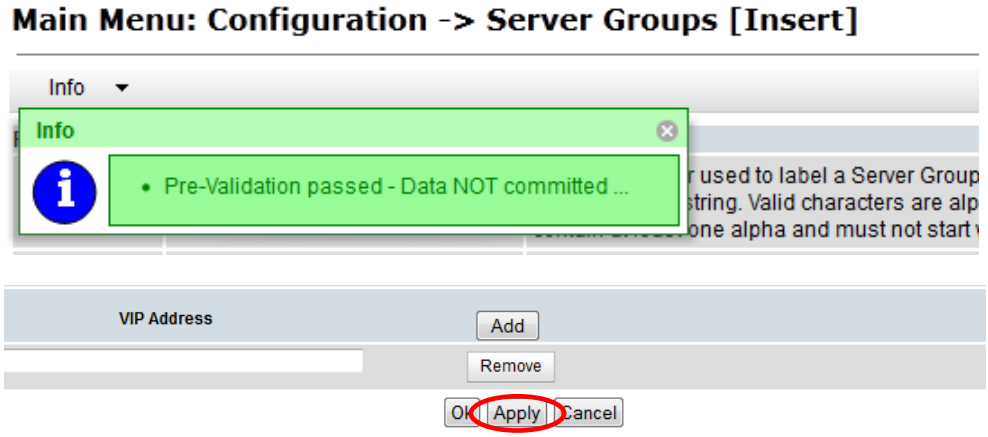
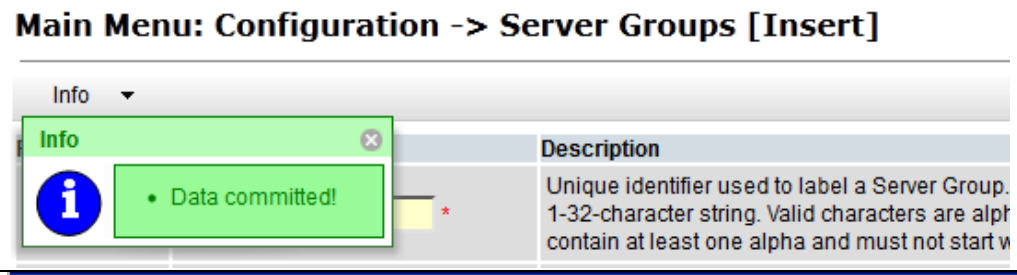
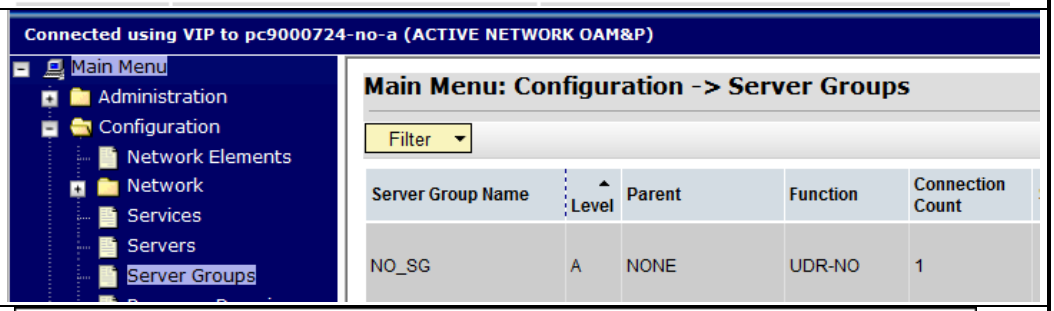
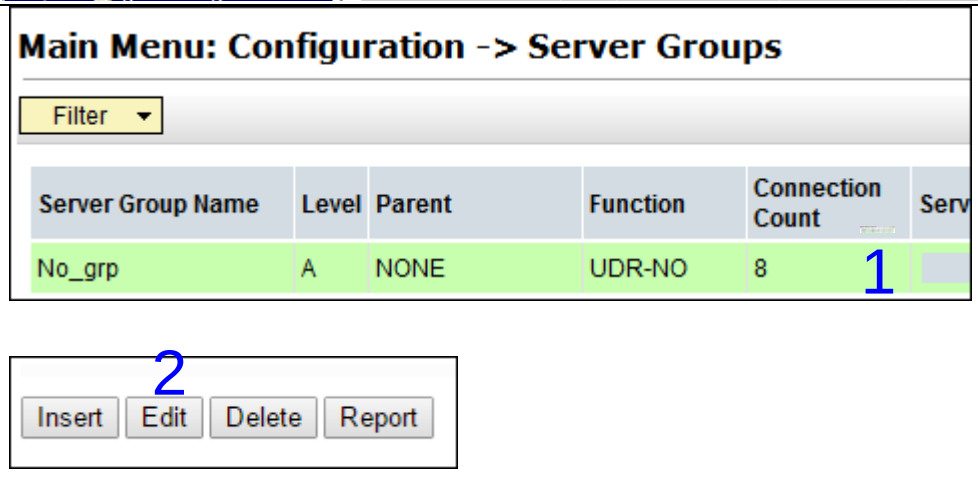
Procedure 9: OAM Pairing for Primary NOAMP Servers (1st NOAMP site only)

Step	Procedure	Result
1. ☐	**NOAMP Server A:** Launch an approved web browser and connect to the NOAMP Server A IP address **NOTE:** Choose **"Continue to this website (not recommended)"** if presented with the "security certificate" warning. **Login** to the GUI using the default user and password.	
2. ☐	**NOAMP Server A:** *Configuring Server Group* Select… **Main Menu** **→ Configuration** **→ *Server Groups*** …as shown on the right.	

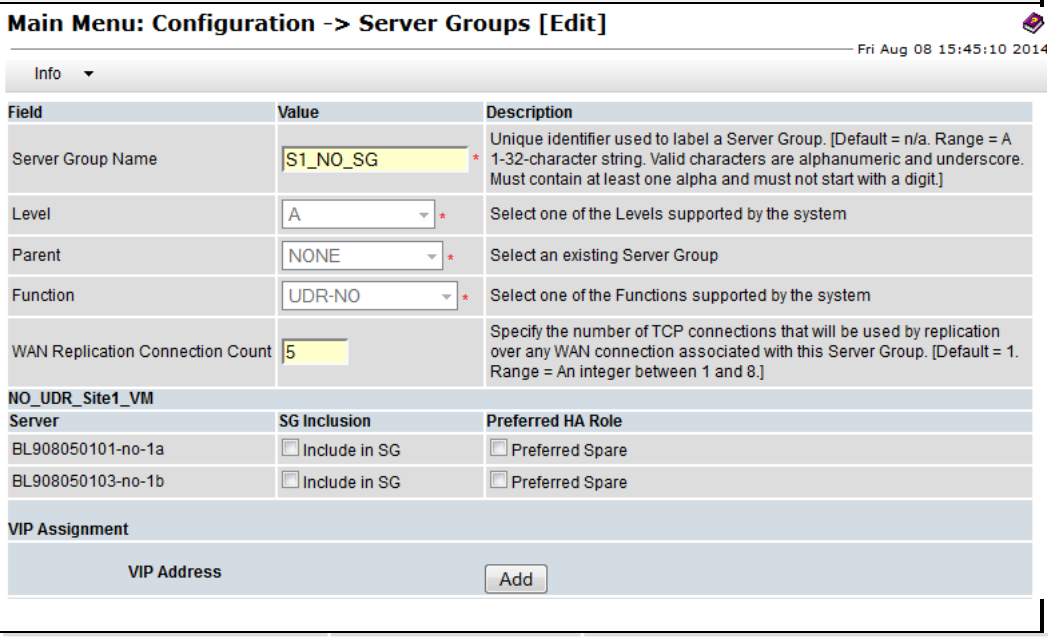
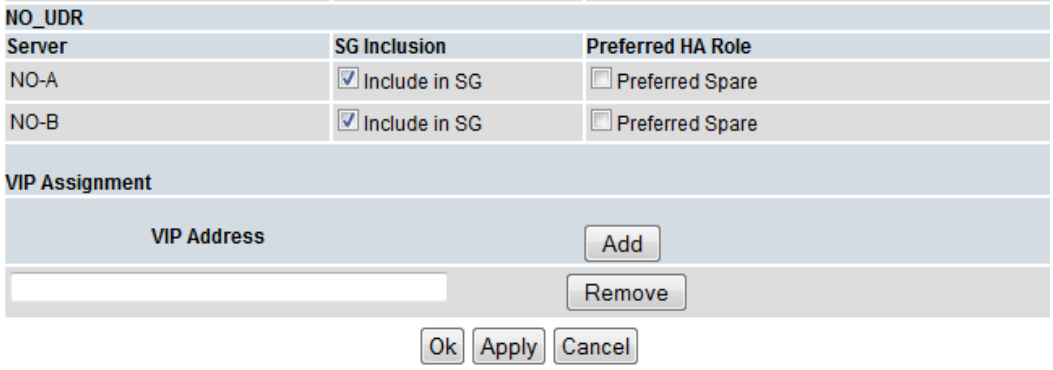
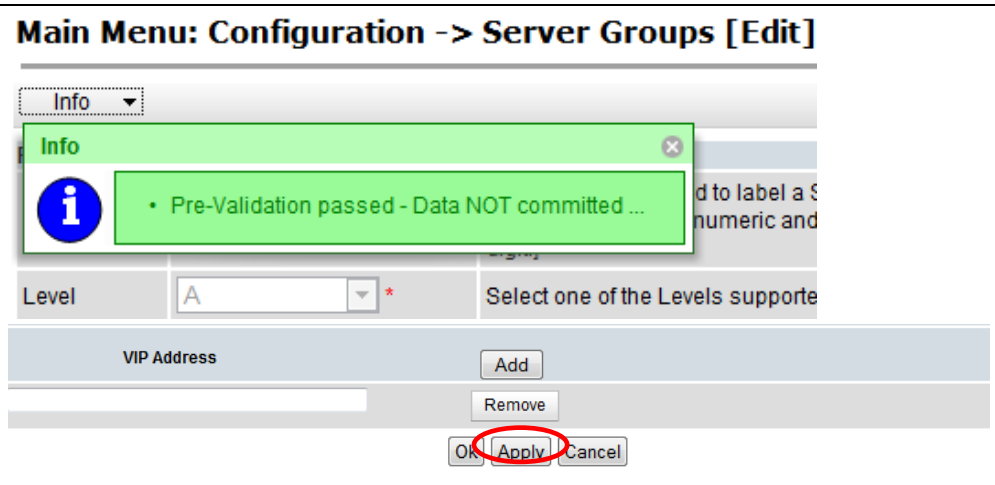
Procedure 9: OAM Pairing for Primary NOAMP Servers (1st NOAMP site only)

Step	Procedure	Result
3. ☐	**NOAMP Server A:** Click the **"Insert"** dialogue button from the bottom left corner of the screen. **NOTE:** *The user may need to use the vertical scroll-bar in order to make the **"Insert"** dialogue button visible.*	
4. ☐	**NOAMP Server A:** The user will be presented with the **"Server Groups [Insert]"** screen as shown on the right.	
5. ☐	**NOAMP Server A:** Input the **Server Group Name**.	
6. ☐	**NOAMP Server A:** Select **"A"** on the **"Level"** pull-down menu.	
7. ☐	**NOAMP Server A:** Select **"None"** on the **"Parent"** pull-down menu.	
8. ☐	**NOAMP Server A:** Select "**UDR-NO**" on the "**Function**" pull-down menu.	
9. ☐	**NOAMP Server A:** Input value "**8**" into "**WAN Replication Connection Count**".	

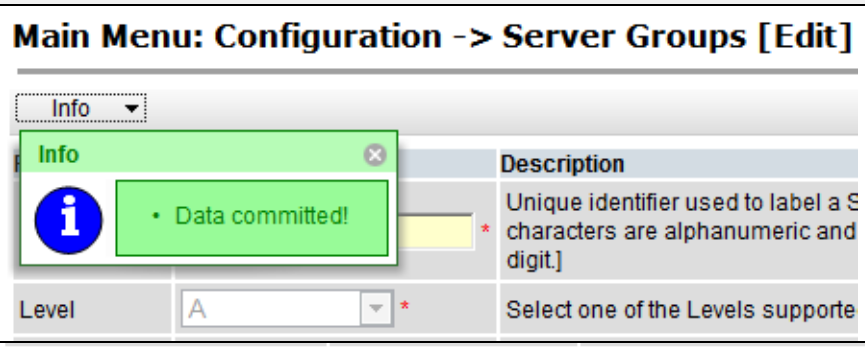
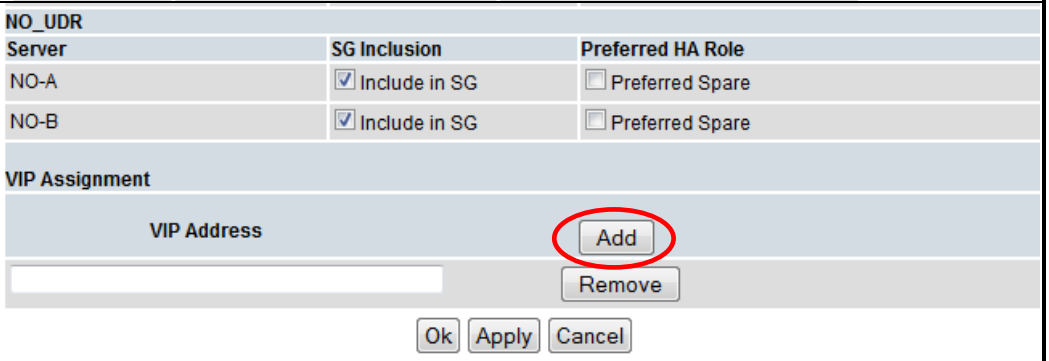
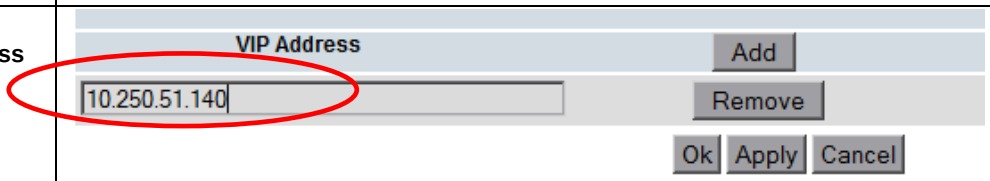
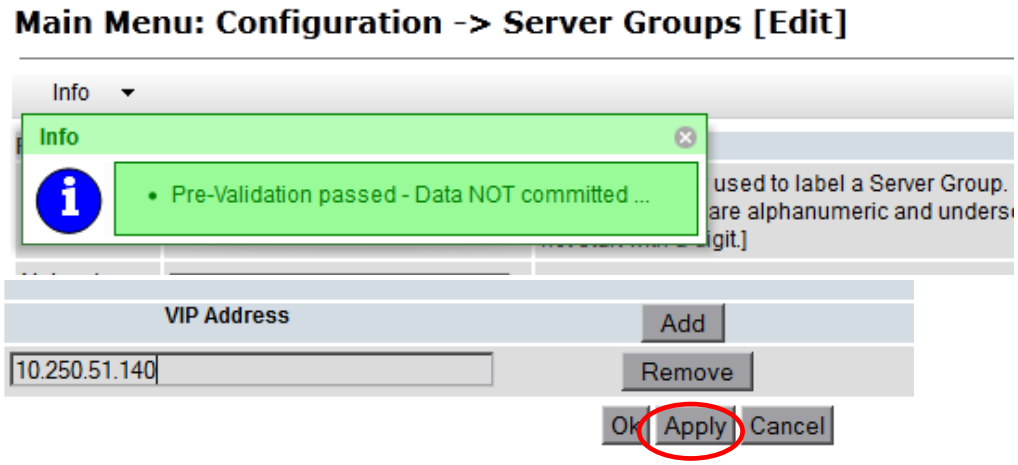
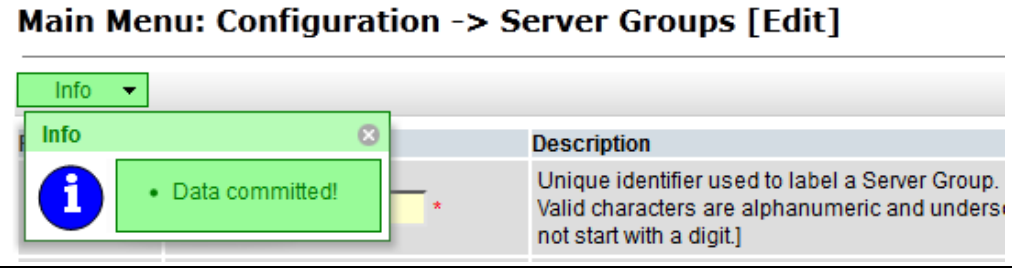
Procedure 9: OAM Pairing for Primary NOAMP Servers (1st NOAMP site only)

Step	Procedure	Result
10. ☐	**NOAMP Server A:** By clicking **Info** the user should be presented with a banner information message stating **"Pre-Validation passed"**. Select the **"Apply"** dialogue button.	
11. ☐	**NOAMP Server A:** The user should be presented with a banner information message stating **"Data committed"**.	
12. ☐	**NOAMP Server A:** Select… **<u>Main Menu</u>** **→ Configuration** **→ *Server Groups*** …as shown on the right.	
13. ☐	**NOAMP Server A:** **1)** Select the **Server Group** entry just added. The line entry should now be highlighted in **GREEN**. **2)** Select the **"Edit"** dialogue button from the bottom left corner of the screen. **NOTE:** *The user may need to use the vertical scroll-bar in order to make the **"Edit"** dialogue button visible.*	

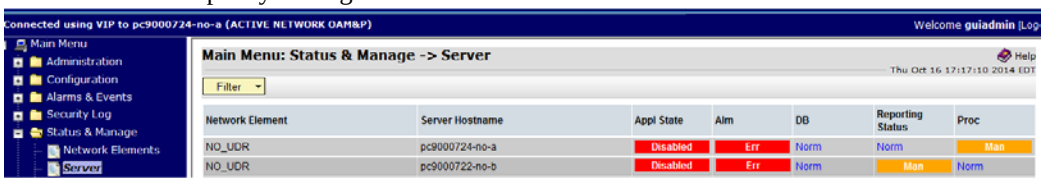
Procedure 9: OAM Pairing for Primary NOAMP Servers (1st NOAMP site only)

Step	Procedure	Result
14. ☐	**NOAMP Server A:** The user will be presented with the **"Server Groups [Edit]"** screen as shown on the right.	
15. ☐	**NOAMP Server A:** Check the boxes to include the **"A"** server and the **"B"** server into the NOAMP **Server Group**. Note: For Single Server Installation, only NO-A will be displayed; therefore only one box will be selected.	
16. ☐	**NOAMP Server A:** By clicking **Info** the user should be presented with a banner information message stating **"Pre-Validation passed"**. Select the **"Apply"** dialogue button.	

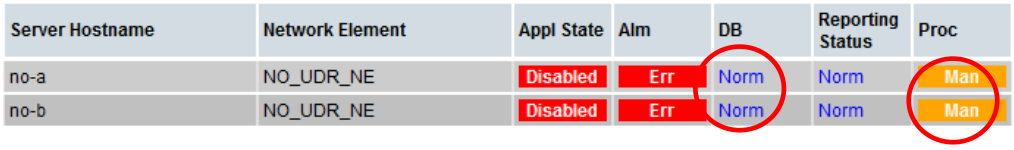
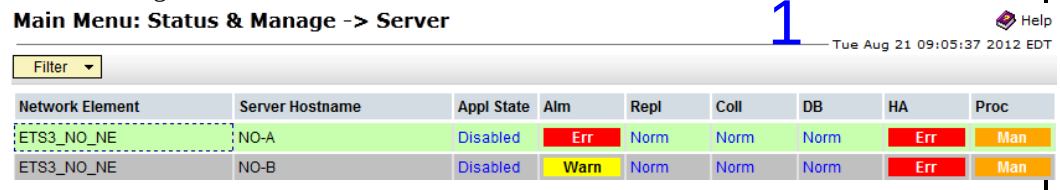
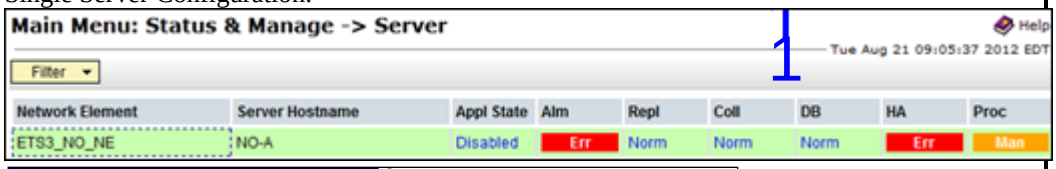
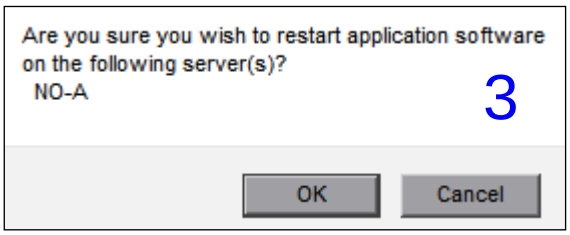
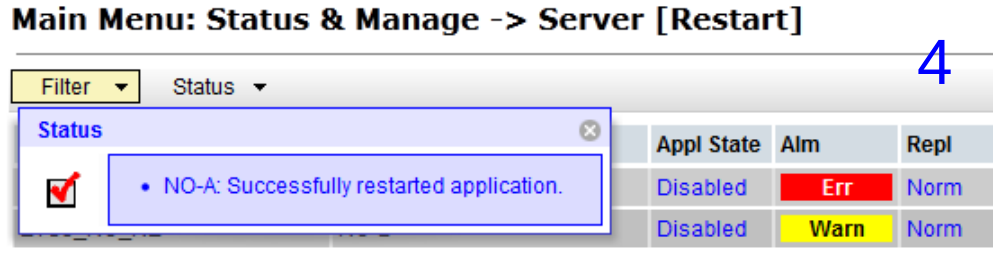
Procedure 9: OAM Pairing for Primary NOAMP Servers (1st NOAMP site only)

Step	Procedure	Result
17. ☐	**NOAMP Server A:** The user should be presented with a banner information message stating **"Data committed"**.	
18. ☐	**NOAMP Server A:** Click the **"Add"** dialogue button for the **VIP Address**. **Note**: VIP Address optional for Single Server Configuration.	
19. ☐	**NOAMP Server A:** Input the **VIP Address**	
20. ☐	**NOAMP Server A:** By clicking **Info** the user should be presented with a banner information message stating **"Pre-Validation passed"**. Select the **"Apply"** dialogue button.	
21. ☐	**NOAMP Server A:** The user should be presented with a banner information message stating **"Data committed"**.	

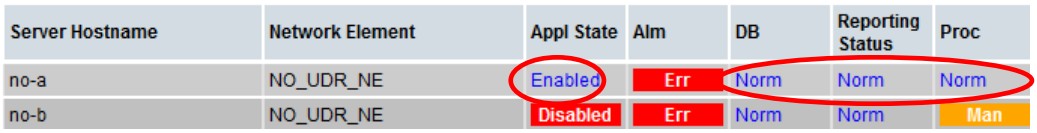
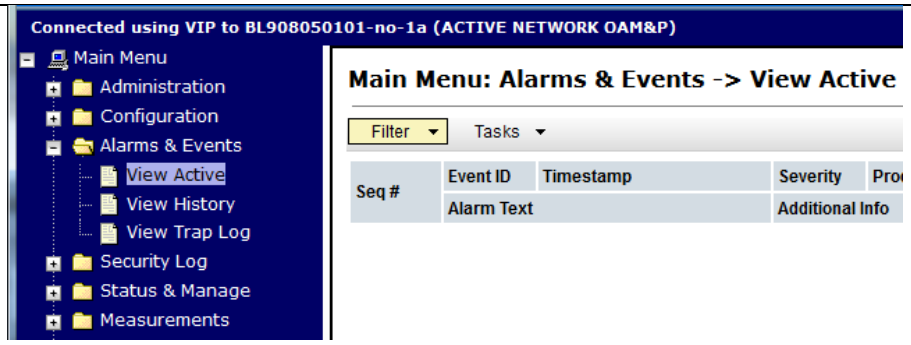
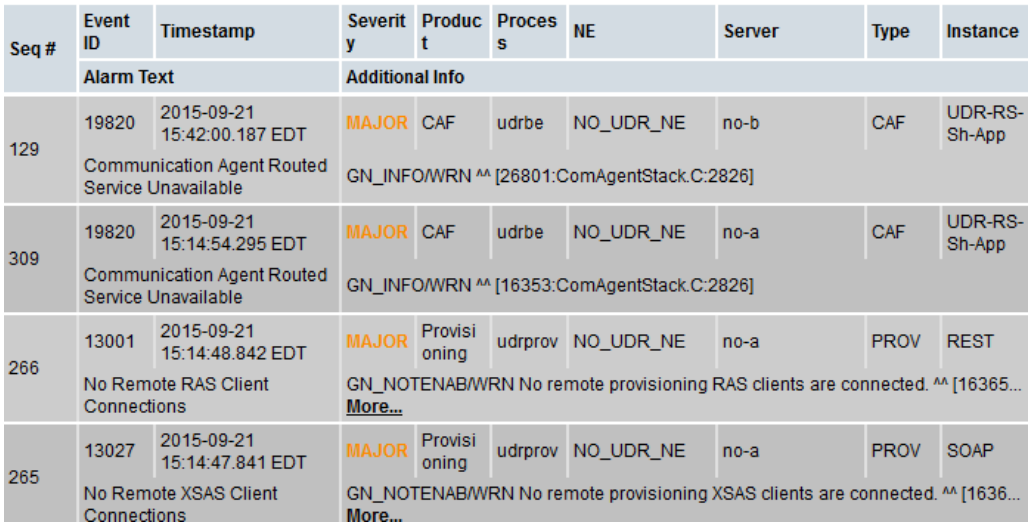
Procedure 9: OAM Pairing for Primary NOAMP Servers (1st NOAMP site only)

Step	Procedure	Result
22. ☐	**NOAMP Server A:** Click the **"Logout"** link on the OAM A server GUI.	
23. ☐	**IMPORTANT:** Wait at least **5 minutes** before proceeding on to the next Step.	• Now that the server(s) have been paired within a Server Group they must establish a master/slave relationship for High Availability (HA). It may take several minutes for this process to be completed. • **Note**: Single Server Configuration will not need to establish the master/slave relationship for High Availability (HA). Allow a minimum of **5 minutes** before continuing to the next Step.
24. ☐	**Active NOAMP VIP:** Launch an approved web browser and connect to the NOAMP Server A IP address **NOTE:** Choose **"Continue to this website (not recommended)"** if presented with the "security certificate" warning. **Login** to the GUI using the default user and password.	
25. ☐	**NOAMP VIP:** *Restarting the NOAMP Server Application* Select… **Main Menu** **→ Status & Manage** **→ *Server*** …as shown on the right.	Normal or Low Capacity Configuration:  Single Server Configuration: 

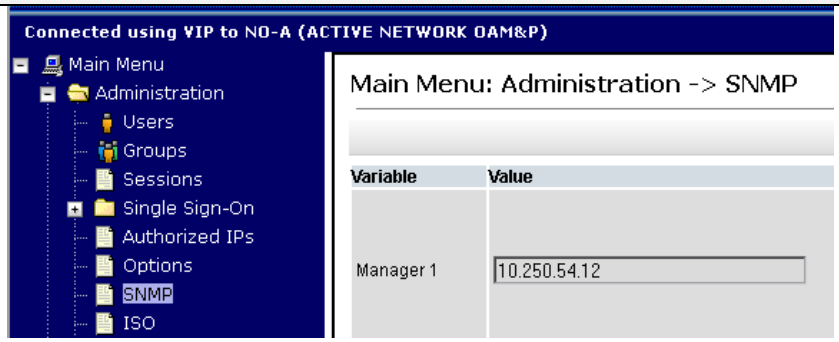
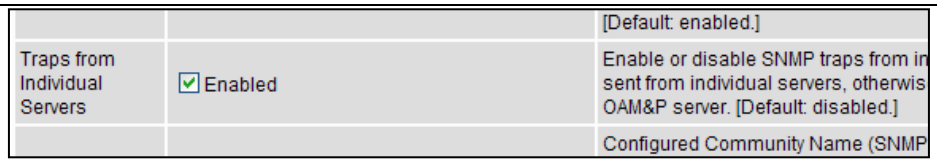
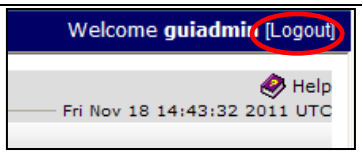
Procedure 9: OAM Pairing for Primary NOAMP Servers (1st NOAMP site only)

Step	Procedure	Result
26. ☐	**NOAMP VIP:** **1)** The **"A"** and **"B"** servers should now appear in the right panel. Note: For single server, only the "A" server will appear. **2)** Verify that the **"DB"** status shows **"Norm"** and the **"Proc"** status shows **"Man"** for one/both servers before proceeding to the next Step.	Normal or Low Capacity Configuration:  Single Server Configuration: 
27. ☐	**NOAMP VIP:** **1)** Using the mouse, select **NOAMP Server A**. The line entry should now be highlighted in **GREEN**. **2)** Select the **"Restart"** dialogue button from the bottom left corner of the screen. **3)** Click the **"OK"** button on the confirmation dialogue box. **4)** The user should be presented with a confirmation message (in the banner area) for **NOAMP Server A** stating: **"Successfully restarted application"**. **NOTE:** *The user may need to use the vertical scroll-bar in order to make the **"Restart"** dialogue button visible.*	Normal Configuration:  Single Server Configuration:    

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

Step	Procedure	Result
28. ☐	**NOAMP VIP:** Verify that the **"Appl State"** now shows **"Enabled"** and that the **"DB, Reporting Status & Proc"** status columns all show **"Norm"** for **NOAMP Server A** before proceeding to the next Step.	 **NOTE:** If user chooses to refresh the Server status screen in advance of the default setting (15-30 sec.). This may be done by simply reselecting the **"Status & Manage → Server"** option from the Main menu on the left.
29. ☐	**NOAMP VIP:** Restart **NOAMP Server B**.	**`Note: Don't perform this step for single server installations.`** `Repeat steps 27 and 28 above to restart NOAMP Server B.`
30. ☐	**NOAMP VIP:** *Verifying the NOAMP Server Alarm status* Select… **Main Menu** **→ Alarms & Events** **→ *View Active*** …as shown on the right.	
31. ☐	**NOAMP VIP:** Verify that the noted **Event IDs** are the only alarms present on the system at this time.	 Verify that only the following Event IDs are the only alarms present: - **13075** (*"Provisioning Interfaces Disabled"*) - **19820** (*"Communicaton Agent Routed Service Unavailable"*) **Note:** *It may take a few minutes for residual process alarms to clear.*

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

Step	Procedure	Result
32. ☐	**NOAMP VIP:** Configuring SNMP for Traps from Individual Servers Select… **Main Menu** **→ Administration** **→Remote Servers** **→ *SNMP Trapping*** …as shown on the right.	
33. ☐	**NOAMP VIP:** **1)** Using the cursor, place a "check" in the check box for **"Traps from Individual Servers"**. **2)** Click the **"OK"**button located at thebottom in the center of the screen. **3)** Verify that a banner message stating ***"Data committed"*** is received.	 1  2  3
34. ☐	**NOAMP VIP:** Click the **"Logout"** link on the server GUI.	
THIS PROCEDURE HAS BEEN COMPLETED		

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

The user should be aware that during the OAM Pairing procedure, various errors may be seen at different stages of the procedure. During the execution of a step, the user is 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:

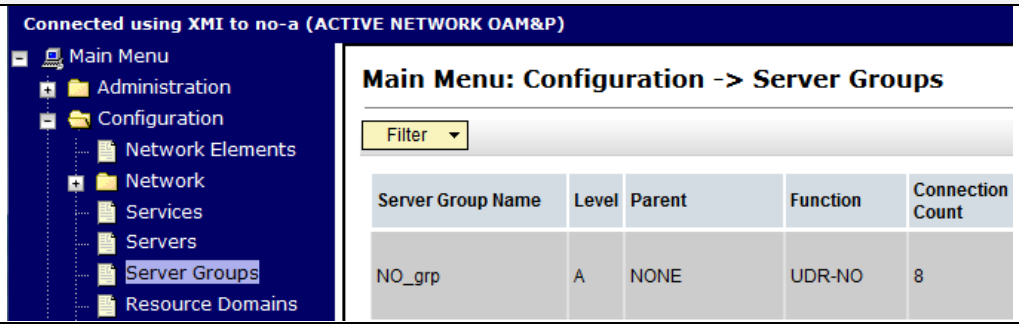
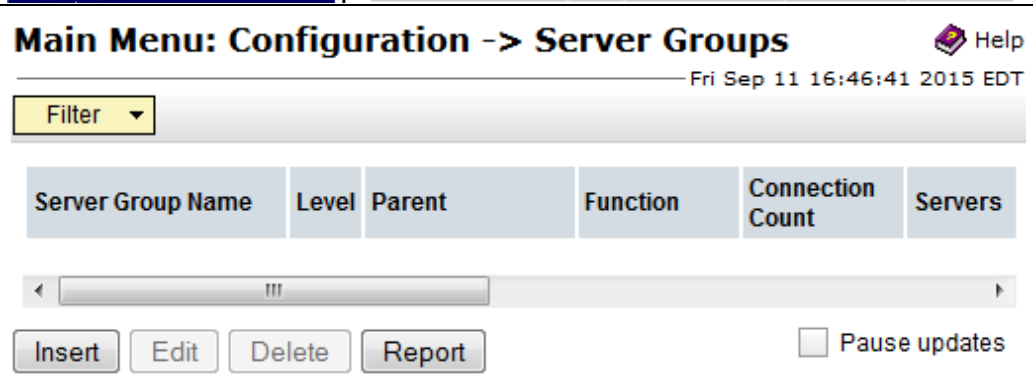
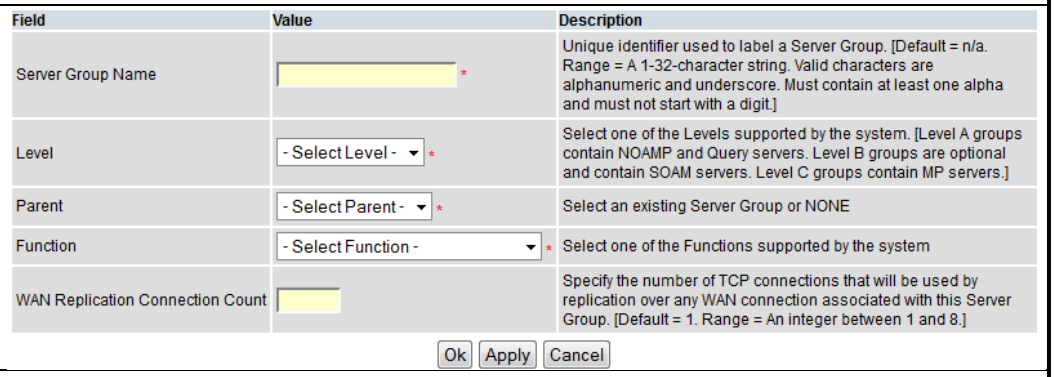
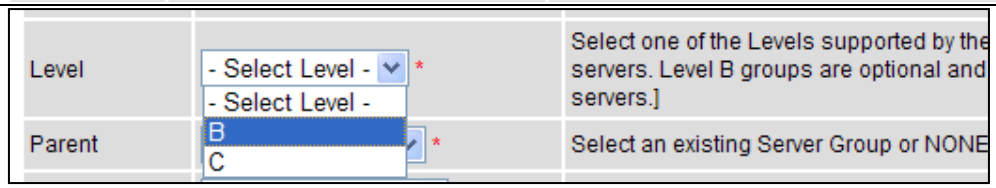
- **Section 5.0 Oracle Communications User** Data Repository Server Configuration has been completed
- **Section 6.1 OAM Pairing for Primary NOAMP Servers (1st NOAMP site only)** has been completed

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

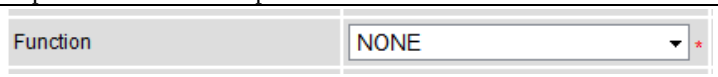
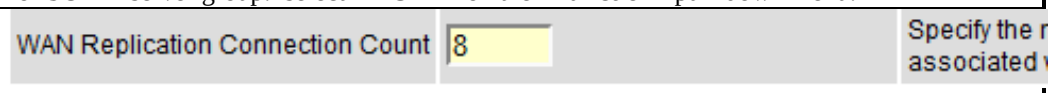
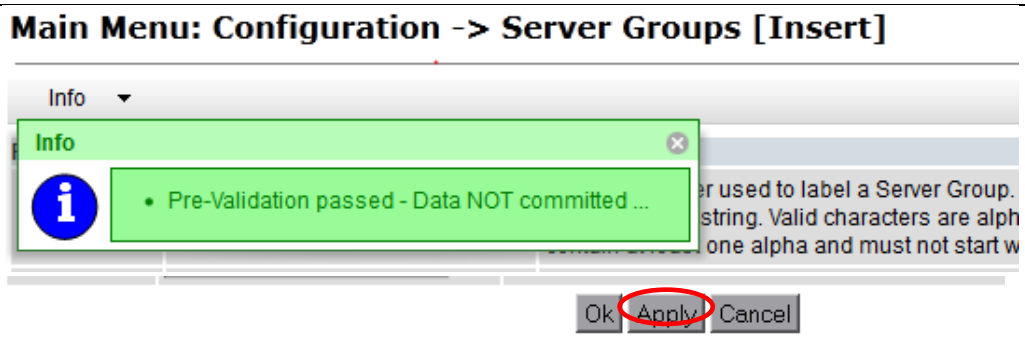
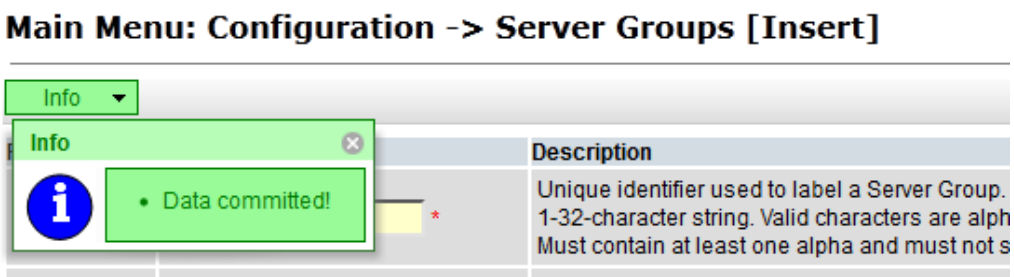
Procedure 10: OAM Pairing for SOAM and DR Sites (All SOAM and DR sites)

Step	Procedure	Result
1. ☐	**Active NOAMP VIP:** Launch an approved web browser and connect to the NOAMP Server A IP address **NOTE:** Choose **"Continue to this website (not recommended)"** if presented with the "security certificate" warning. **Login** to the GUI using the default user and password.	
2. ☐	**Active NOAMP VIP:** *For **Primary NOAMP Standby** server only:* Mark the server 'forced standby' **Main Menu** **→ Status & Manage** **→ *HA*** Click "**Edit**" button on bottom left Find the row for the Primary NOAMP Standby server and change **"Max Allowed HA Role" to "Standby".**	* **Note**: Don't perform this step for single server installations. **Main Menu: Status & Manage -> HA** Filter Hostname / OAM HA Role / Application HA Role / Max Allowed HA Role / Mate Hostname List / Network Element / Server Role / Active VIPs 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 / Unavailable / Unavailable / / / UDR_SO_A / System OAM SO-B / Unavailable / Unavailable / / / UDR_SO_A / System OAM MP1 / Unavailable / Unavailable / / / UDR_SO_A / MP MP2 / Unavailable / Unavailable / / / UDR_SO_A / MP **Main Menu: Status & Manage -> HA [Edit]** Info Hostname / Max Allowed HA Role / Description NO-A / Active / The maximum desired HA Role for NO-A NO-B / Standby / The maximum desired HA Role for NO-B Ok Cancel

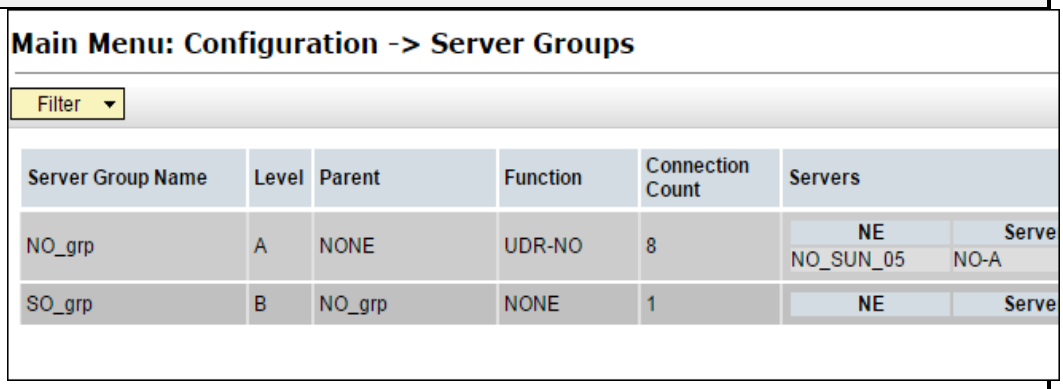
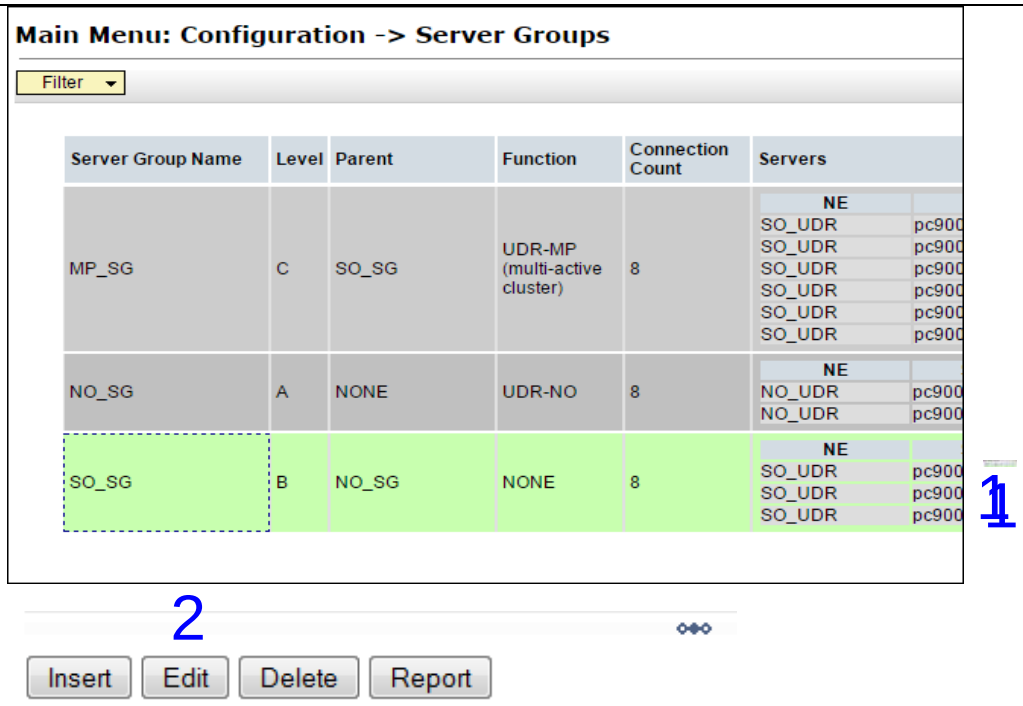
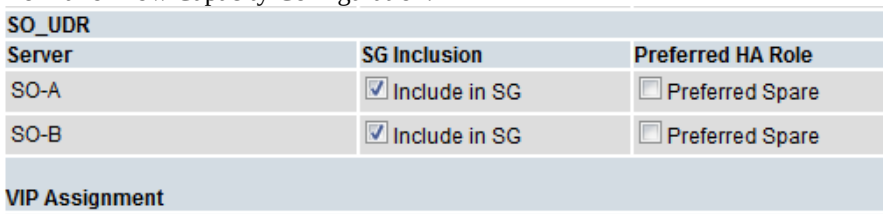
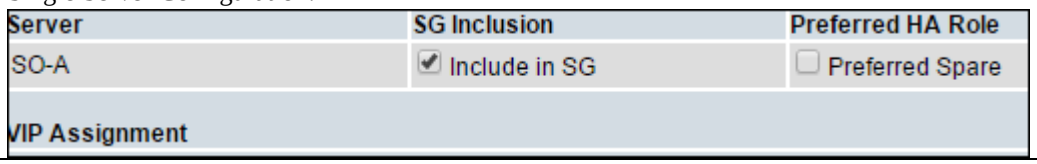
Procedure 10: OAM Pairing for SOAM and DR Sites (All SOAM and DR sites)

Step	Procedure	Result
3. ☐	**Active NOAMP VIP:** Select… **Main Menu** → **Configuration** → ***Server Groups*** …as shown on the right.	
4. ☐	**Active NOAMP VIP:** Click the **"Insert"** dialogue button from the bottom left corner of the screen. **NOTE:** *The user may need to use the vertical scroll-bar in order to make the **"Insert"** dialogue button visible.*	
5. ☐	**Active NOAMP VIP:** Configuring the SOAM or DR NOAMP Server Group The user will be presented with the **"Server Groups [Insert]"** screen as shown on the right.	
6. ☐	**Active NOAMP VIP:** Input the **Server Group Name**.	
7. ☐	**Active NOAMP VIP:** Assign the correct group **Level**.	 Note: Use these setting for group level: • For DR NOAMP server group: select **"A"** on the **"Level"** pull-down menu.. For SOAM server group: select **"B"** on the **"Level"** pull-down menu.

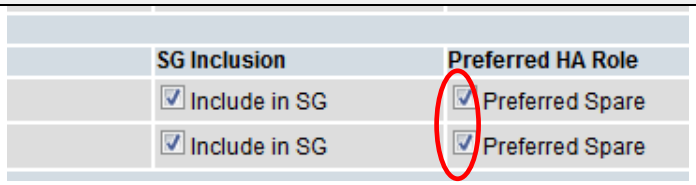
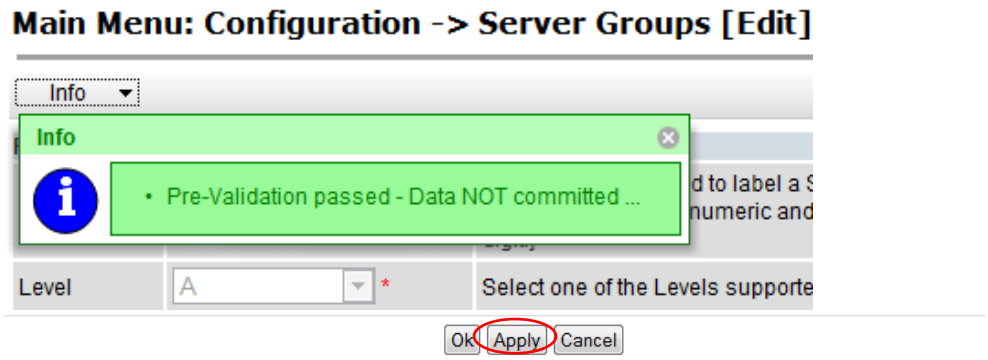
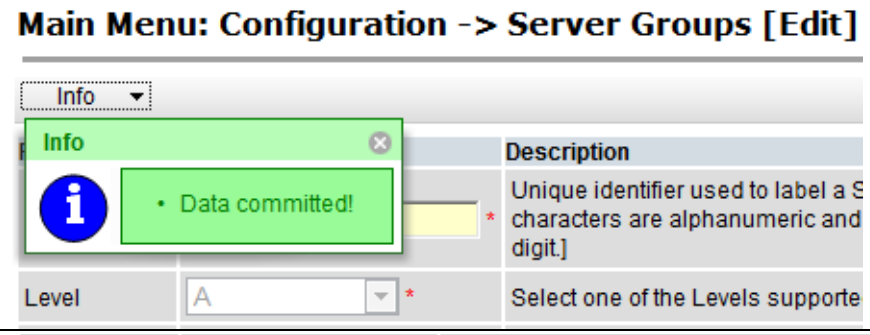
Procedure 10: OAM Pairing for SOAM and DR Sites (All SOAM and DR sites)

Step	Procedure	Result
8. ☐	**Active NOAMP VIP:** Assign the correct **Parent**.	 **Note**: Use these setting for parent: • For DR NOAMP server group: select "**NONE**" on the **"Parent"** pull-down menu. For SOAM server group: select the 1st NOAMP Site's server group, as entered in Section 6.1 step 5 on the **"Parent"** pull-down menu.
9. ☐	**Active NOAMP VIP:** Assign the correct **Function**.	 **Note**: Use these setting for function: • For DR NOAMP server group: select "**UDR-NO**" on the **"Function"** pull-down menu. For SOAM server group: select "**NONE**" on the **"Function"** pull-down menu.
10. ☐	**Active NOAMP VIP:** *For DR NOAMP only:* Input value "**8**" into "**WAN Replication Connection Count**".	
11. ☐	**Active NOAMP VIP:** By clicking **Info** the user should be presented with a banner information message stating **"Pre-Validation passed"**. Select the **"Apply"** dialogue button.	
12. ☐	**Active NOAMP VIP:** The user should be presented with a banner information message stating **"Data committed"**.	

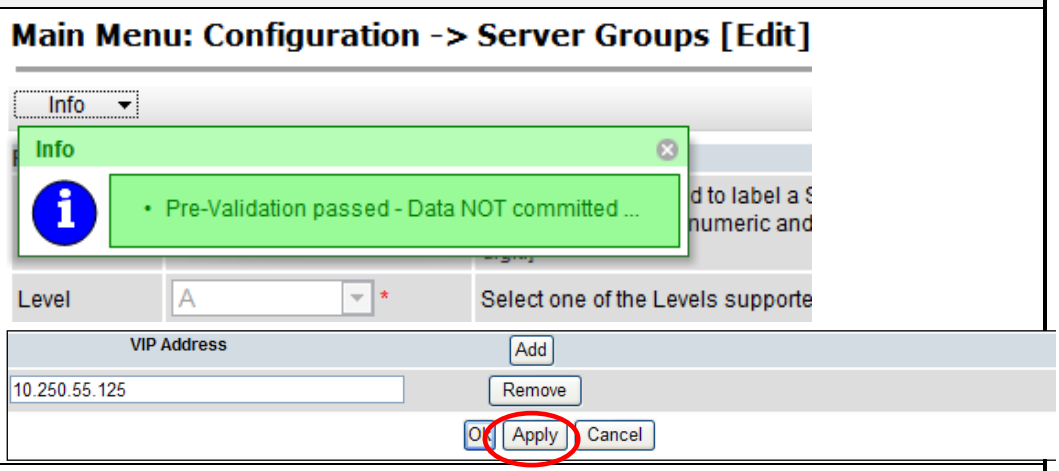
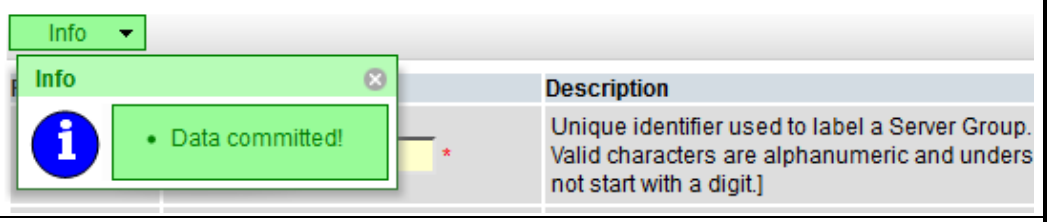
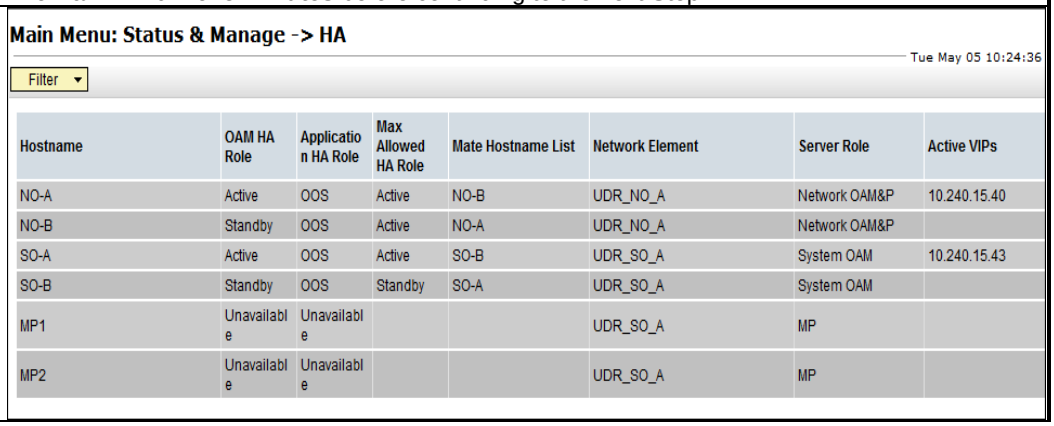
Procedure 10: OAM Pairing for SOAM and DR Sites (All SOAM and DR sites)

Step	Procedure	Result
13. ☐	**Active NOAMP VIP:** Select… **Main Menu** → **Configuration** → ***Server Groups*** …as shown on the right. Note: **Server Group** entry should be shown on the **"Server Groups"** configuration screen as shown on the right.	
14. ☐	**Active NOAMP VIP:** **1)** Select the **Server Group** entry applied in **Step 7**. The line entry should now be highlighted in **GREEN**. **2)** Select the **"Edit"** dialogue button from the bottom left corner of the screen. **NOTE:** *The user may need to use the vertical scroll-bar in order to make the **"Edit"** dialogue button visible.*	
15. ☐	**Active NOAMP VIP:** Select the **"A"** server and the **"B"** server from the list of **"Servers"** by clicking the check box next to their names. Note: For Single Server Installation, only SO-A will be displayed; therefore only one box will be selected.	Normal or Low Capacity Configuration:  Single Server Configuration: 

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

Step	Procedure	Result
16. ☐	**Active NOAMP VIP:** *For **DR NOAMP** servers only:* Check the Preferred Spare boxes next to their names	 ***NOTE:*** **DR NOAMP** will not be 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.
17. ☐	**Active NOAMP VIP:** By clicking **Info** the user should be presented with a banner information message stating **"Pre-Validation passed"**. Select the **"Apply"** dialogue button.	
18. ☐	**Active NOAMP VIP:** The user should be presented with a banner information message stating **"Data committed"**.	
19. ☐	**Active NOAMP VIP:** Click the **"Add"** dialogue button for the **VIP Address**.	
20. ☐	**Active NOAMP VIP:** Input the **VIP Address**	

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

Step	Procedure	Result
21. ☐	**Active NOAMP VIP:** By clicking **Info** the user should be presented with a banner information message stating **"Pre-Validation passed"**. Select the **"Apply"** dialogue button.	
22. ☐	**Active NOAMP VIP:** The user should be presented with a banner information message stating **"Data committed"**.	 Main Menu: Configuration -> Server Groups [Edit] Info Info • Data committed! Description Unique identifier used to label a Server Group. Valid characters are alphanumeric and unders not start with a digit.]
23. ☐	**IMPORTANT:** Wait at least **5 minutes** before proceeding on to the next Step.	• Now that the server(s) have been paired within a Server Group they must establish a master/slave relationship for High Availability (HA). It may take several minutes for this process to be completed. • 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:** Select… **Main Menu** **→ Status & Manage** **→ *HA*** …as shown on the right.	 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 |

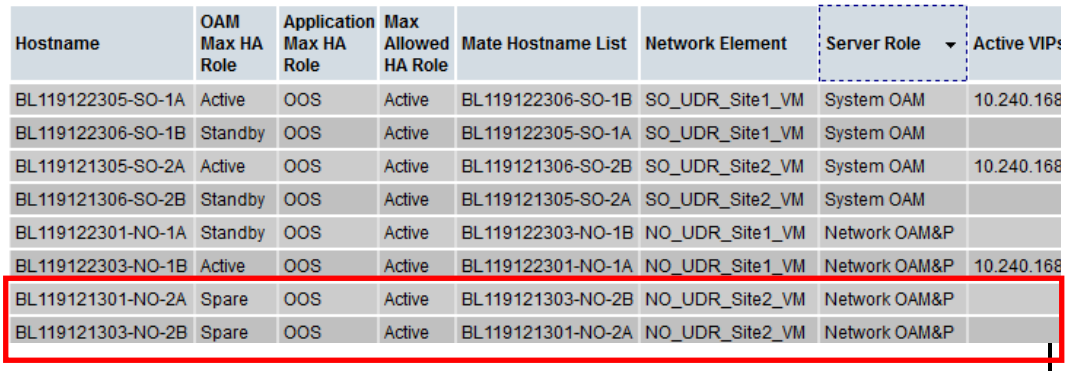
Procedure 10: OAM Pairing for SOAM and DR Sites (All SOAM and DR sites)

<table>
<tr><th>Step</th><th>Procedure</th><th>Result</th></tr>
<tr><td>25.

☐</td><td>Active NOAMP VIP:

<u>Note:</u>

DR NOAMP servers will have OAM MAX HA Role of Spare and no Active VIPs (shown in red)

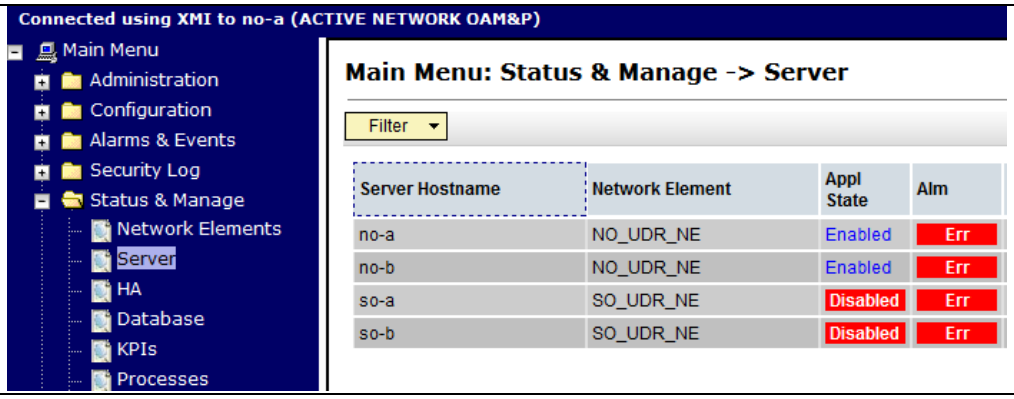
SOAM server(s) will have OAM MAX HA Role of Active or Standby and an Active VIP.</td><td>Normal or Low Capacity Configuration:
 
<table>
<tr><th>Hostname</th><th>OAM Max HA Role</th><th>Application Max HA Role</th><th>Max Allowed HA Role</th><th>Mate Hostname List</th><th>Network Element</th><th>Server Role</th><th>Active VIPs</th></tr>
<tr><td>BL119122305-SO-1A</td><td>Active</td><td>OOS</td><td>Active</td><td>BL119122306-SO-1B</td><td>SO_UDR_Site1_VM</td><td>System OAM</td><td>10.240.168</td></tr>
<tr><td>BL119122306-SO-1B</td><td>Standby</td><td>OOS</td><td>Active</td><td>BL119122305-SO-1A</td><td>SO_UDR_Site1_VM</td><td>System OAM</td><td></td></tr>
<tr><td>BL119121305-SO-2A</td><td>Active</td><td>OOS</td><td>Active</td><td>BL119121306-SO-2B</td><td>SO_UDR_Site2_VM</td><td>System OAM</td><td>10.240.168</td></tr>
<tr><td>BL119121306-SO-2B</td><td>Standby</td><td>OOS</td><td>Active</td><td>BL119121305-SO-2A</td><td>SO_UDR_Site2_VM</td><td>System OAM</td><td></td></tr>
<tr><td>BL119122301-NO-1A</td><td>Standby</td><td>OOS</td><td>Active</td><td>BL119122303-NO-1B</td><td>NO_UDR_Site1_VM</td><td>Network OAM&P</td><td></td></tr>
<tr><td>BL119122303-NO-1B</td><td>Active</td><td>OOS</td><td>Active</td><td>BL119122301-NO-1A</td><td>NO_UDR_Site1_VM</td><td>Network OAM&P</td><td>10.240.168</td></tr>
<tr><td>BL119121301-NO-2A</td><td>Spare</td><td>OOS</td><td>Active</td><td>BL119121303-NO-2B</td><td>NO_UDR_Site2_VM</td><td>Network OAM&P</td><td></td></tr>
<tr><td>BL119121303-NO-2B</td><td>Spare</td><td>OOS</td><td>Active</td><td>BL119121301-NO-2A</td><td>NO_UDR_Site2_VM</td><td>Network OAM&P</td><td></td></tr>
</table></td></tr>
<tr><td>26.

☐</td><td>Active NOAMP VIP:

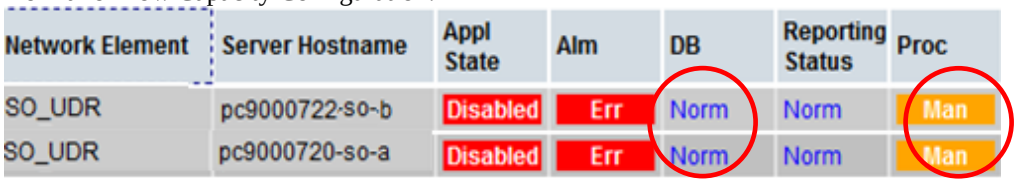
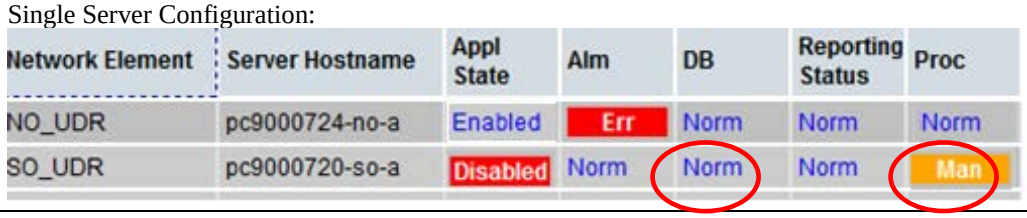
Restarting the OAM Server Application

Select…

<u>Main Menu</u>
→ Status & Manage
→ Server

…as shown on the right.</td><td> 
</td></tr>
<tr><td>27.

☐</td><td>Active NOAMP VIP:
1) The “A” and “B” servers should now appear 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 next Step. (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>
</table>

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

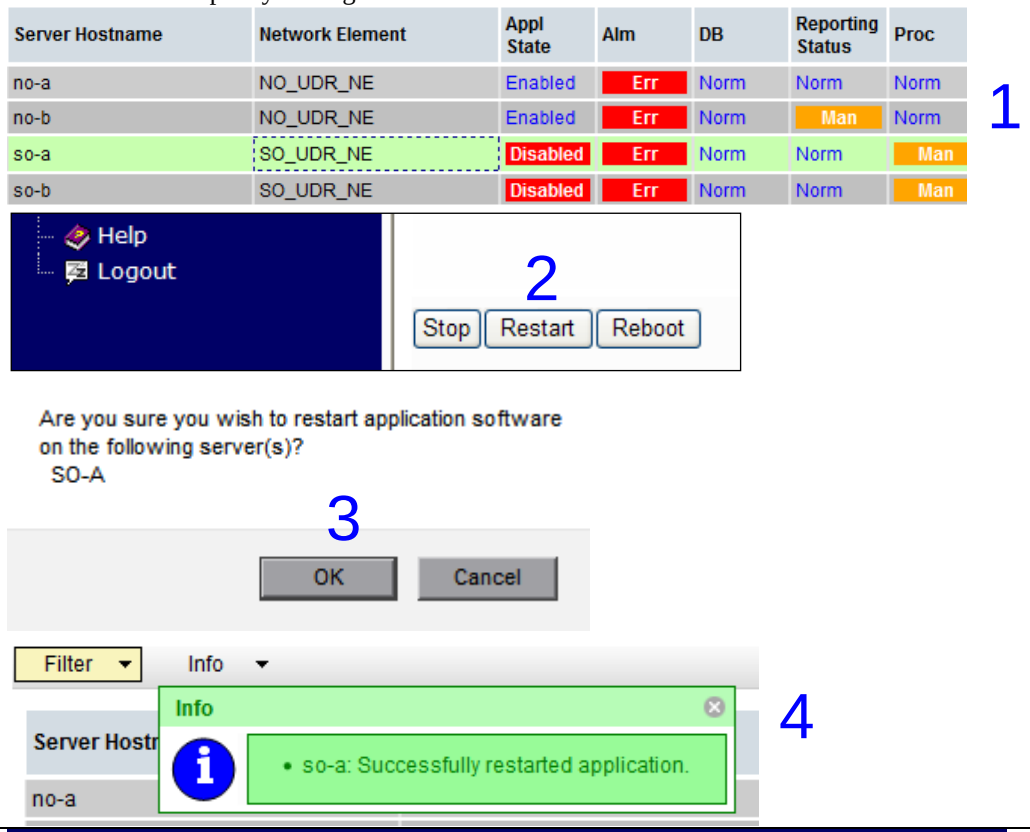
<table>
<tr><th>Step</th><th>Procedure</th><th>Result</th></tr>
<tr><td>28.

☐</td><td>Active NOAMP VIP:
1) Using the mouse, select Server A. The line entry should now be highlighted in GREEN.

2) Select the “Restart” dialogue button from the bottom left corner of the screen.

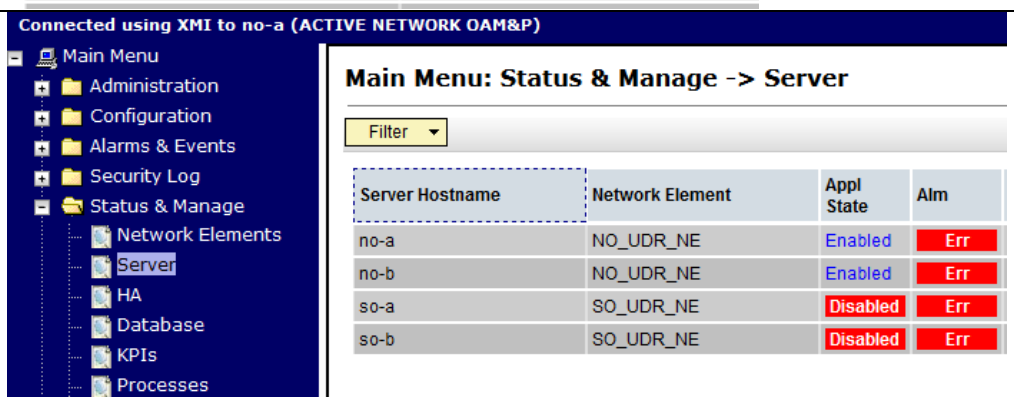
3) Click the “OK” button on the confirmation dialogue box.

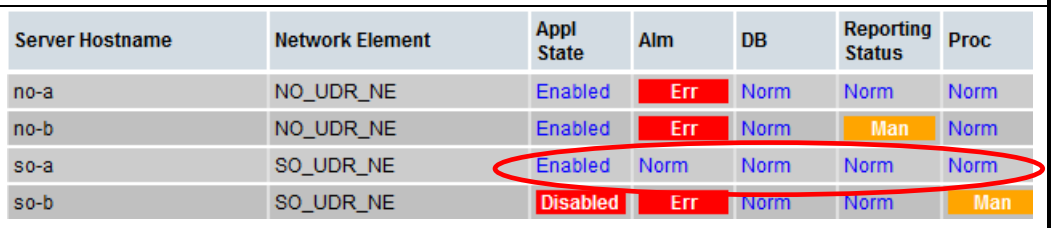
4) The user should be presented with a confirmation message (in the banner area) for Server A stating: “Successfully restarted application”.

NOTE: The user may need to use the vertical scroll-bar in order to make the “Restart” dialogue button visible.</td><td>Normal or Low Capacity Configuration:
 
</td></tr>
<tr><td>29.

☐</td><td>Active NOAMP VIP:
Select…

<u>Main Menu</u>
→ Status & Manage
→ Server

…as shown on the right.</td><td> 
</td></tr>
<tr><td>30.

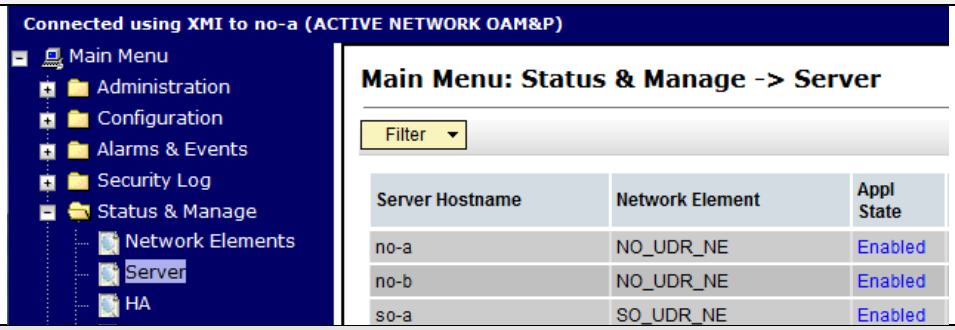
☐</td><td>Active NOAMP VIP:
Verify that the “Appl State” now shows “Enabled” and that the “Alm, DB, Reporting Status & Proc” columns all show “Norm” for OAM Server A before proceeding to the next Step.</td><td> 

NOTE: If user chooses to refresh the Server status screen in advance of the default setting (15-30 sec.). This may be done by simply reselecting the “Status & Manage → Server” option from the Main menu on the left.</td></tr>
</table>

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

<table>
<tr><th>Step</th><th>Procedure</th><th>Result</th></tr>
<tr><td>31.
☐</td><td>Active NOAMP VIP:
Select…

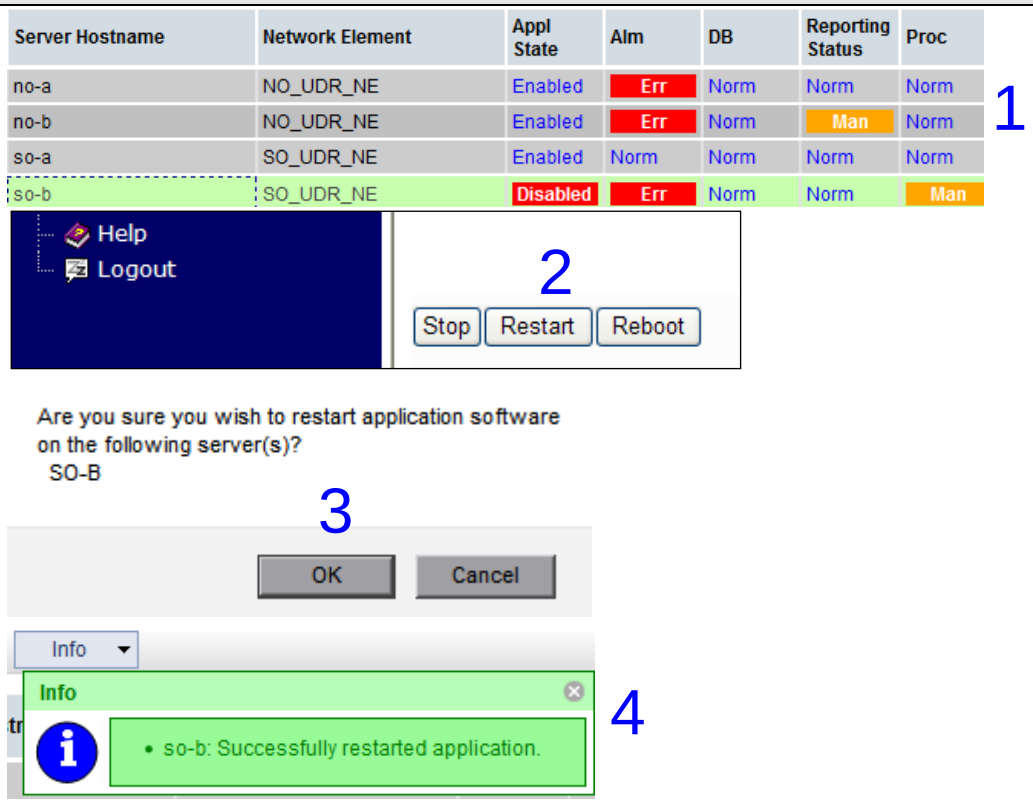
<u>Main Menu</u>
→ Status & Manage
→ Server

…as shown on the right.</td><td> 
</td></tr>
<tr><td colspan="3">Perform steps 32 – 35 for multiple server configurations only (not single server).</td></tr>
<tr><td>32.
☐</td><td>Active NOAMP VIP:
1) Using the mouse, select Server B. The line entry should now be highlighted in GREEN.

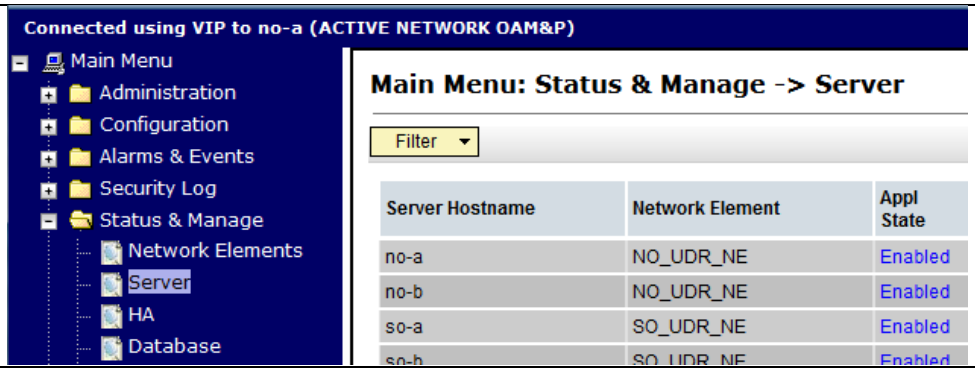
2) Select the “Restart” dialogue button from the bottom left corner of the screen.

3) Click the “OK” button on the confirmation dialogue box.

4) The user should be presented with a confirmation message (in the banner area) for Server B stating: “Successfully restarted application”.

NOTE: The user may need to use the vertical scroll-bar in order to make the “Restart” dialogue button visible.</td><td> 
</td></tr>
<tr><td>33.
☐</td><td>Active NOAMP VIP:
Select…

<u>Main Menu</u>
→ Status & Manage
→ Server

…as shown on the right.</td><td> 
</td></tr>
</table>

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

<table>
<tr><th>Step</th><th>Procedure</th><th>Result</th></tr>
<tr><td>34.
☐</td><td>Active NOAMP VIP:
Verify that the “Appl State” now shows “Enabled” and that the “Alm, DB, Reporting Status & Proc” columns all show “Norm” for Server B 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>Enabled</td><td>Norm</td><td>Norm</td><td>Norm</td><td>Norm</td></tr>
</table>
NOTE: If user chooses to refresh the Server status screen in advance of the default setting (15-30 sec.). This may be done by simply reselecting the “Status & Manage → Server” option from the Main menu on the left.
</td></tr>
<tr><td colspan="3">Repeat all steps above for each DR NOAMP and SOAM site being installed.</td></tr>
<tr><td>35.
☐</td><td>Active NOAMP VIP:
For Primary NOAMP Standby server only:
Move the server back to ‘Active’

<u>Main Menu</u>
→ Status & Manage
→ HA[Edit]

Find the row for the Primary NOAMP Standby server and change “Max Allowed HA Role” back to “Active”.</td><td>
Main Menu: Status & Manage -> HA [Edit]
<table>
<tr><th>Hostname</th><th>Max Allowed HA Role</th><th>Description</th></tr>
<tr><td>NO-A</td><td>Active</td><td>The maximum desired HA Role for NO-A</td></tr>
<tr><td>NO-B</td><td>Active</td><td>The maximum desired HA Role for NO-B</td></tr>
<tr><td>SO-A</td><td>Active</td><td>The maximum desired HA Role for SO-A</td></tr>
<tr><td>SO-B</td><td>Active</td><td>The maximum desired HA Role for SO-B</td></tr>
</table>
Ok Cancel
</td></tr>
<tr><td>36.
☐</td><td>Active NOAMP VIP:
Click the “Logout” link on the server GUI.</td><td>
Welcome guiadmin [Logout]
Help
Fri Nov 18 14:43:32 2011 UTC
</td></tr>
<tr><td colspan="3">THIS PROCEDURE HAS BEEN COMPLETED</td></tr>
</table>

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

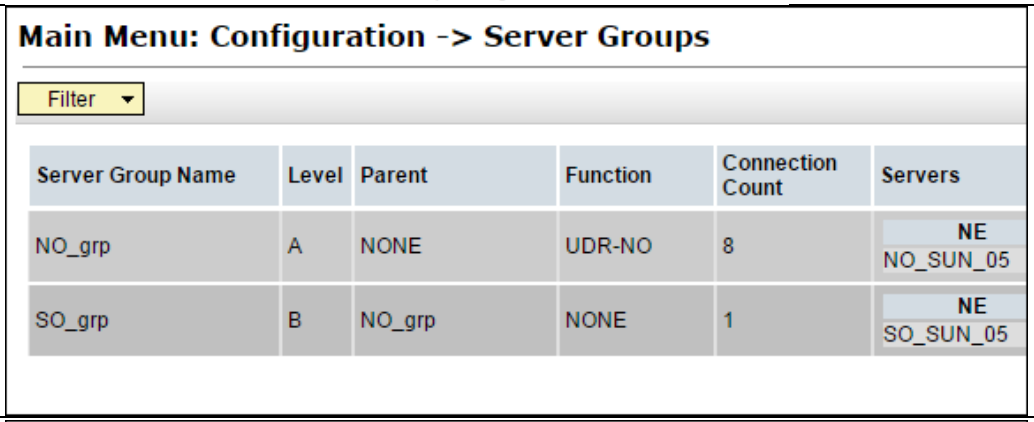
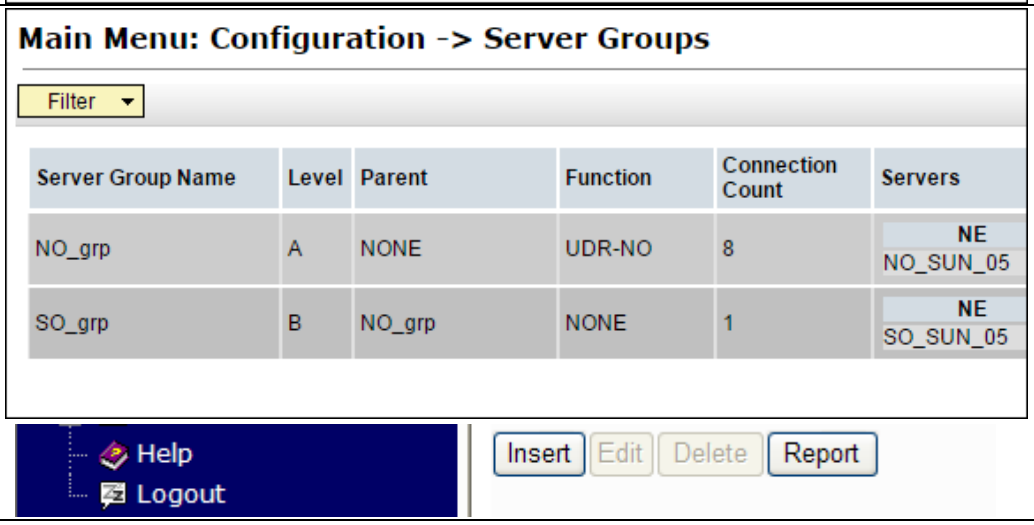
The user should be aware that during the Message Processor (MP) installation procedure, various errors may be seen at different stages of the procedure. During the execution of a step, the user is directed to ignore errors related to values other than the ones referenced by that step.

Requirements:

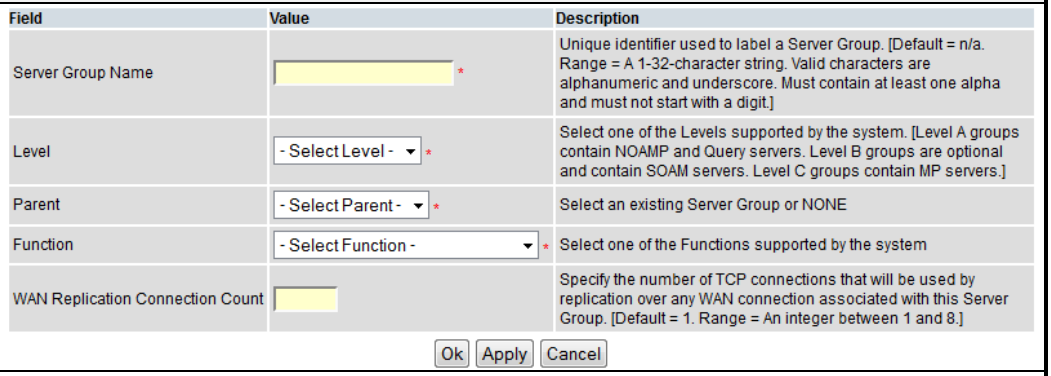
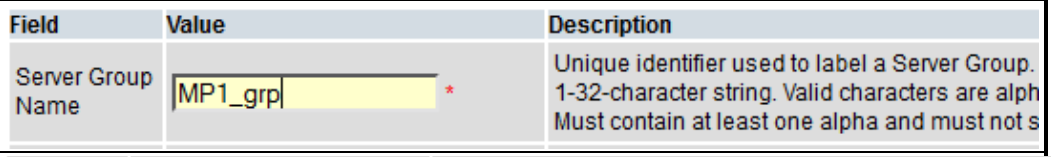
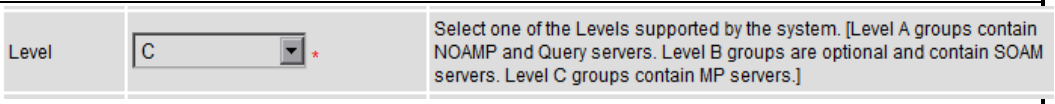
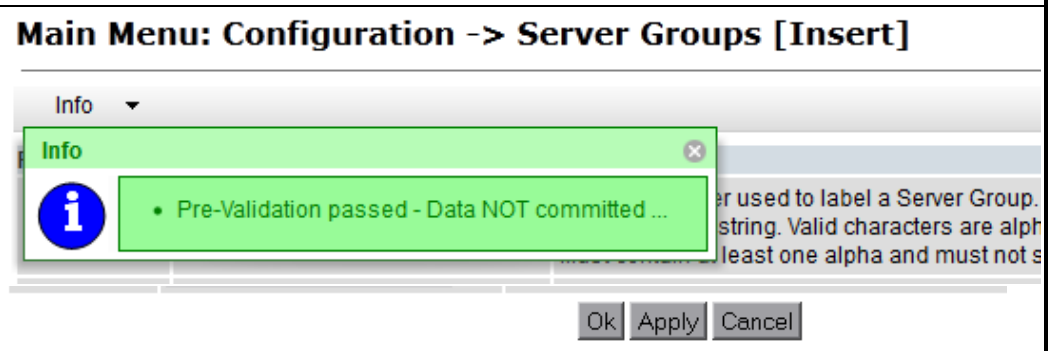
- **Section 6.2 OAM Pairing for SOAM and DR Sites (All SOAM and DR sites)** has been completed

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

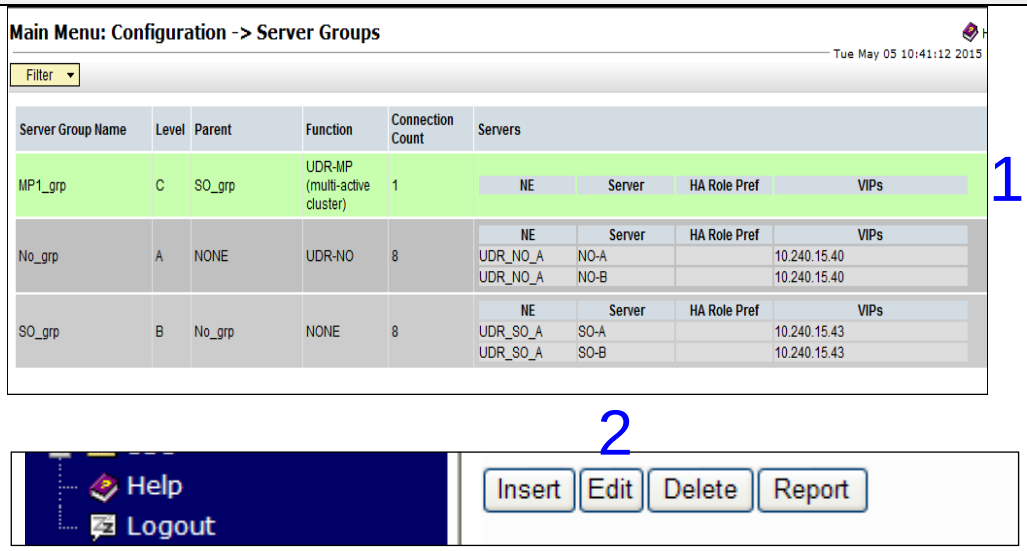
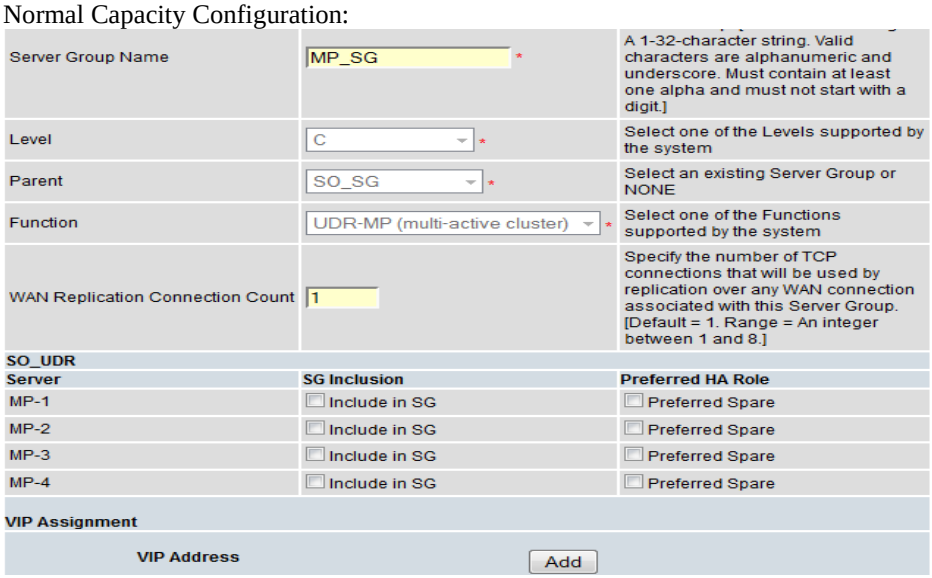
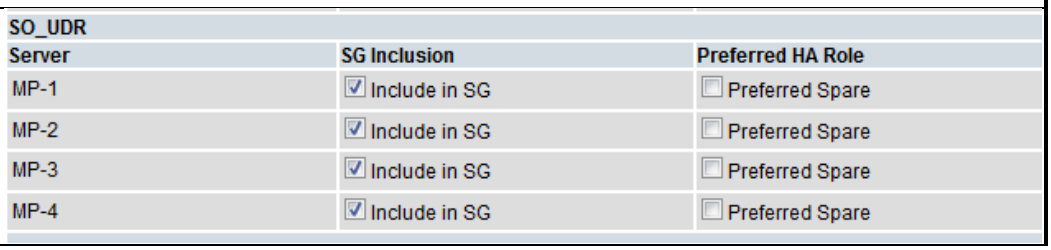
Procedure 11: OAM Pairing for MP Server Groups (All SOAM sites)

Step	Procedure	Result
1. ☐	**Active NOAMP VIP:** Launch an approved web browser and connect to the NOAMP Server A IP address **NOTE:** Choose **"Continue to this website (not recommended)"** if presented with the "security certificate" warning. **Login** to the GUI using the default user and password.	
2. ☐	**Active NOAMP VIP:** Select… **Main Menu** → **Configuration** → ***Server Groups*** …as shown on the right.	
3. ☐	**Active NOAMP VIP:** Click the **"Insert"** dialogue button from the bottom left corner of the screen. **NOTE:** *The user may need to use the vertical scroll-bar in order to make the **"Insert"** dialogue button visible.*	

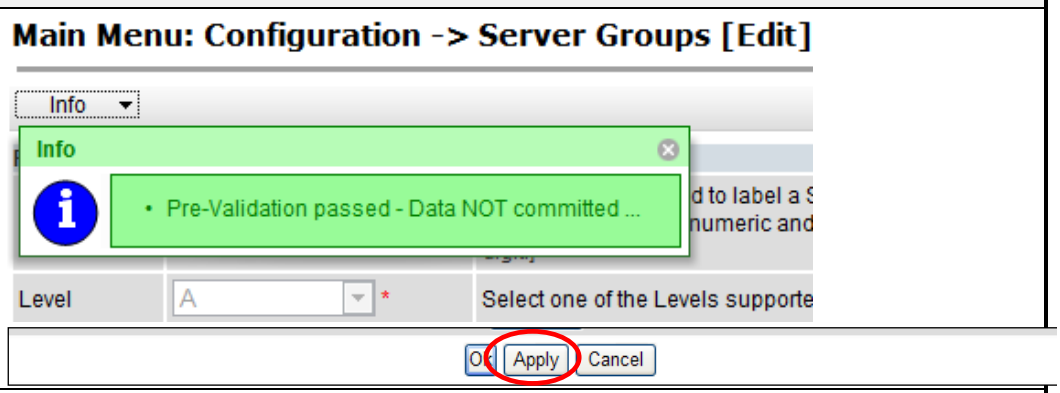
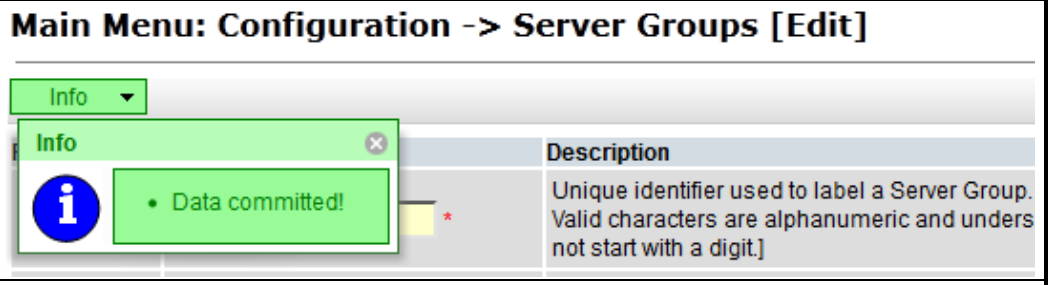
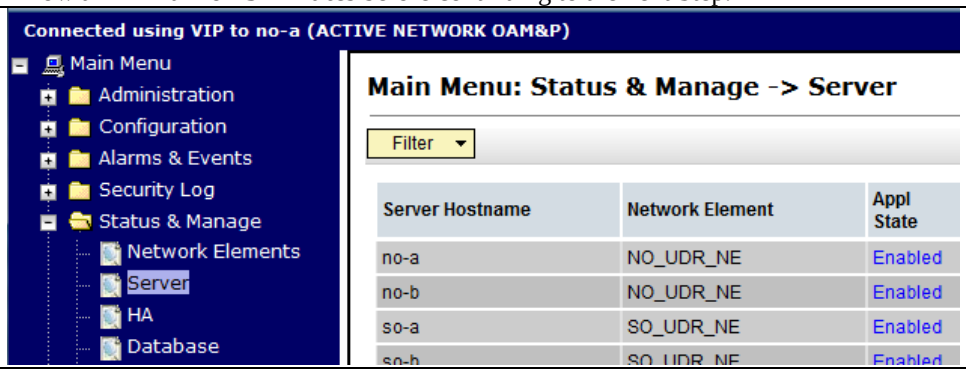
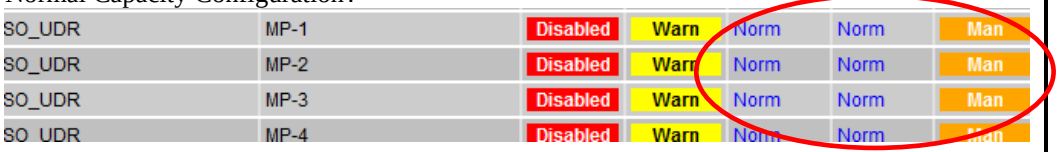
Procedure 11: OAM Pairing for MP Server Groups (All SOAM sites)

Step	Procedure	Result
4. ☐	**Active NOAMP VIP:** The user will be presented with the **"Server Groups [Insert]"** screen as shown on the right	
5. ☐	**Active NOAMP VIP:** Input the **Server Group Name**.	
6. ☐	**Active NOAMP VIP:** Select **"C"** on the **"Level"** pull-down menu..	
7. ☐	**Active NOAMP VIP:** Select the desired SOAM server group on the **"Parent"** pull-down menu.	
8. ☐	**Active NOAMP VIP:** Select "**UDR-MP (multi-active cluster)**" on the "**Function**" pull-down menu.	
9. ☐	**Active NOAMP VIP:** By clicking **Info** the user should be presented with a banner information message stating **"Pre-Validation passed"**. Select the **"OK"** dialogue button.	

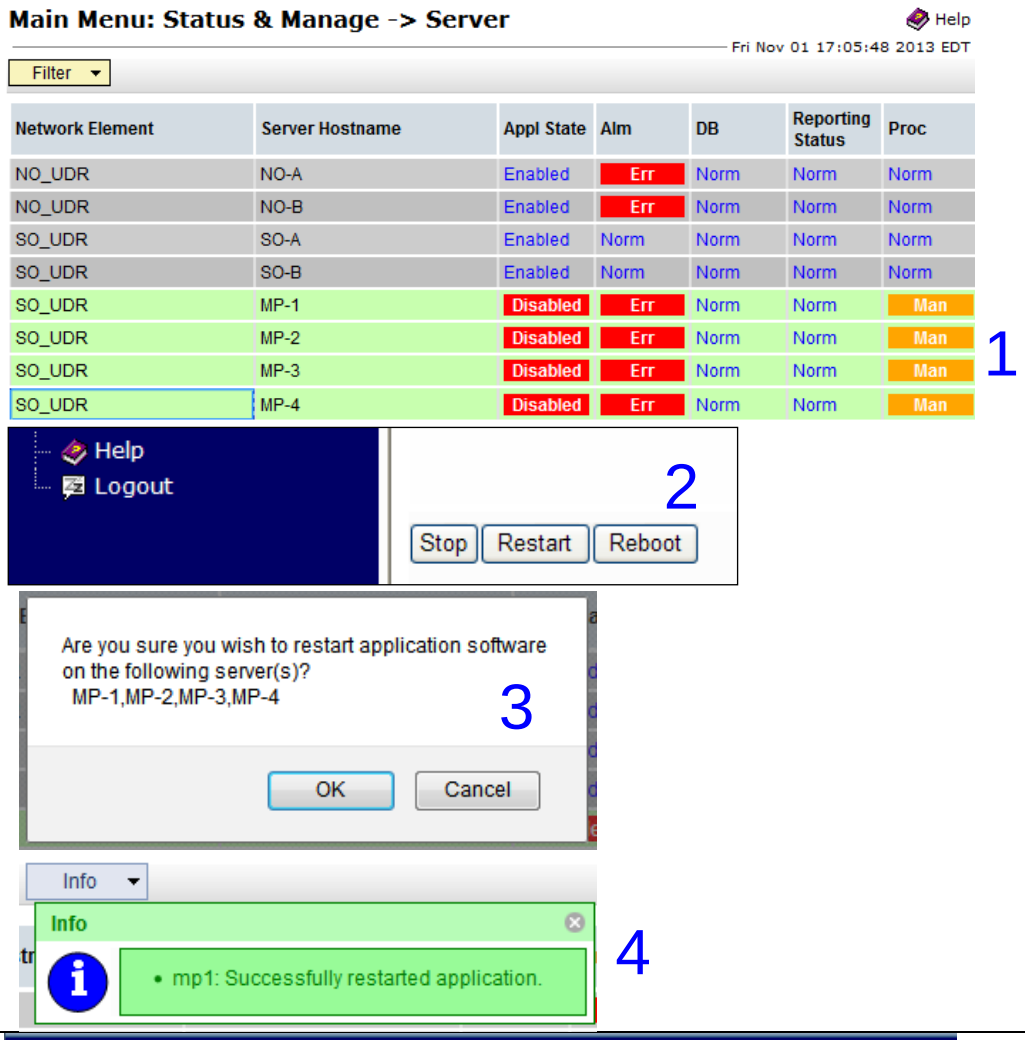
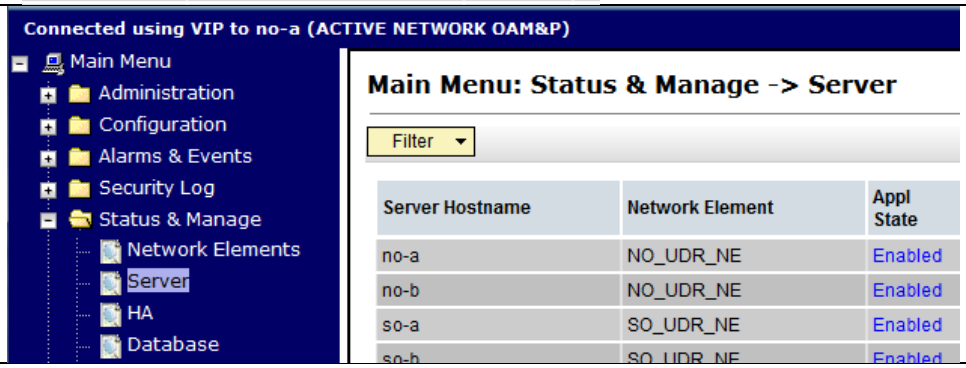
Procedure 11: OAM Pairing for MP Server Groups (All SOAM sites)

Step	Procedure	Result
10. ☐	**Active NOAMP VIP:** **1)** Using the mouse, select the MP Server Group associated with the MP being installed. **2)** Select the **"Edit"** dialogue button from the bottom left corner of the screen.	
11. ☐	**Active NOAMP VIP:** The user will be presented with the **"Configuration → Server Groups [Edit]"** screen as shown on the right	Normal Capacity Configuration: 
12. ☐	**Active NOAMP VIP:** Put a check mark in the box labeled **"Include in SG"** for each MP to be included in this Server Group.	

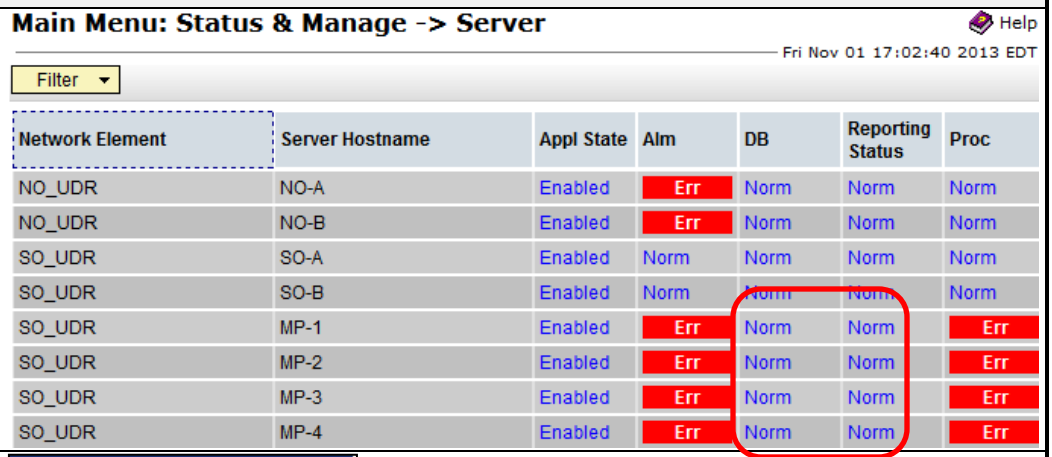
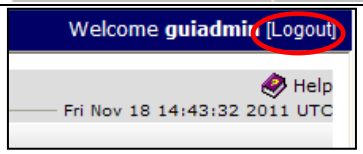
Procedure 11: OAM Pairing for MP Server Groups (All SOAM sites)

Step	Procedure	Result
13. ☐	**Active NOAMP VIP:** By clicking **Info** the user should be presented with a banner information message stating **"Pre-Validation passed"**. Select the **"Apply"** dialogue button.	
14. ☐	**Active NOAMP VIP:** The user should be presented with a banner information message stating **"Data committed"**.	 Main Menu: Configuration -> Server Groups [Edit] Info Info • Data committed! Description Unique identifier used to label a Server Group. Valid characters are alphanumeric and unders not start with a digit.]
15. ☐	**IMPORTANT:** Wait at least **5 minutes** before proceeding on to the next Step.	• Now that the Message Processor(s) have been placed within their respective 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 processs 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:** Select… **Main Menu** → **Status & Manage** → ***Server*** …as shown on the right.	
17. ☐	**Active NOAMP VIP:** Verify that the **"DB & Reporting Status"** status columns show **"Norm"** for the MPs at this point. The **"Proc"** column should show **"Man"**.	Normal Capacity Configuration: 

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

Step	Procedure	Result
18. ☐	**Active NOAMP VIP:** **1)** Select each **"MP"** with **"Man"** status using the mouse and holding the **Ctrl** key. The line entries should be highlighted in **GREEN**. **2)** Select the **"Restart"** dialogue button from the bottom left corner of the screen. **3)** Click the **"OK"** button on the confirmation dialogue box. **4)** The user should be presented with a confirmation message (in the banner area) stating: **"Successfully restarted application"**. **NOTE:** The user may need to use the vertical scroll-bar in order to make the **"Restart"** dialogue button visible.	
19. ☐	**Active NOAMP VIP:** Select… **<u>Main Menu</u>** **→ Status & Manage** **→ *Server*** …as shown on the right.	

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

Step	Procedure	Result
20. ☐	**Active NOAMP VIP:** Verify that the **"Appl State"** now shows **"Enabled"** and that the **"DB & Reporting Status"** status columns all show **"Norm"** for the **MPs**. The **"Alm & Proc"** columns may show **"Err"** at this point.	
21. ☐	**Active NOAMP VIP:** Click the **"Logout"** link on the server GUI.	
THIS PROCEDURE HAS BEEN COMPLETED		

7.0 APPLICATION CONFIGURATION

7.1 Configure Signaling Routes

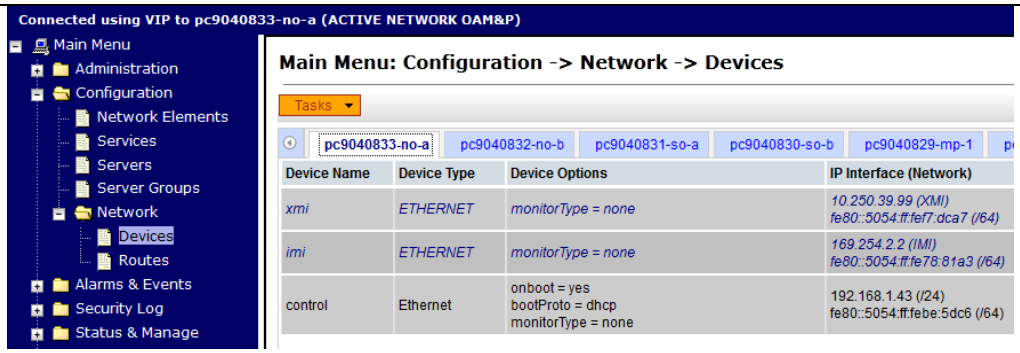
This procedure configures the XSI signaling route for all MP Servers.

Requirements:

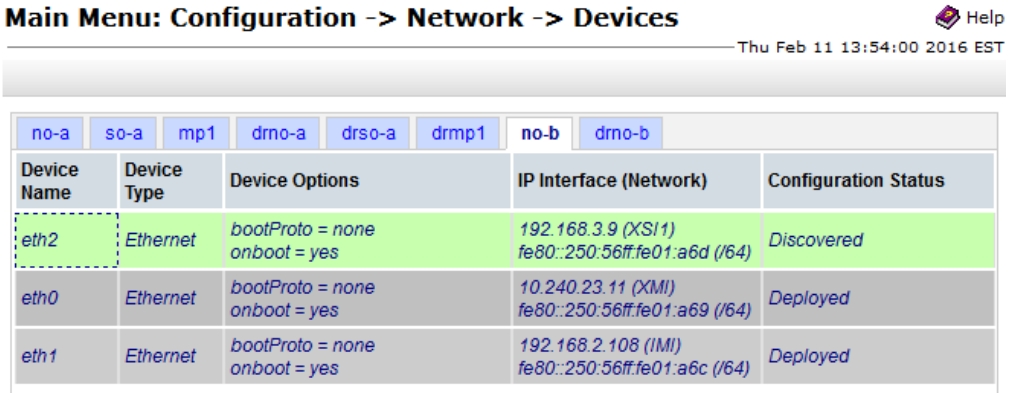
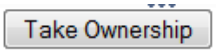
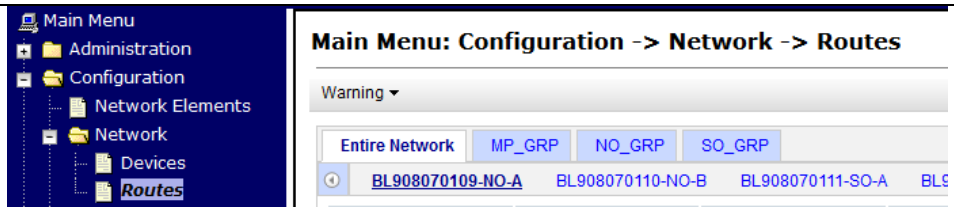
- **Section 6.0 OAM Pairing** has been completed

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

Procedure 12: Configure Signaling Routes

Step	Procedure	Result
1. ☐	**Active NOAMP VIP:** Launch an approved web browser and connect to the NOAMP Server A IP address **NOTE:** Choose **"Continue to this website (not recommended)"** if presented with the "security certificate" warning. **Login** to the GUI using the default user and password.	
2. ☐	**Active NOAMP VIP** Select… **Main Menu** **→ Configuration** ***→Network*** ***→Devices*** …as shown on the right.	

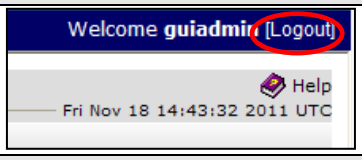
Procedure 12: Configure Signaling Routes

Step	Procedure	Result
3. ☐	**Active NOAMP VIP** Select the xsi device for the desired MP	Click on the desired **MP** tab. Set **Device** to **XSI-1** device (recorded in **B-3 step 3 or C-7 step 5**). Output similar to that shown below may be observed.  • **"Check off"** the associated **Check Box** as addition is completed for each **Server**. ☐ 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 desired MP	Click on the **Take Ownership** button.  • **"Check off"** the associated **Check Box** as addition is completed for each **Server**. ☐ 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:** Select… **Main Menu** → **Configuration** → ***Network*** → ***Routes*** …as shown on the right.	

Procedure 12: Configure Signaling Routes

Step	Procedure	Result
6. ☐	**Active NOAMP VIP:** Insert a new route for the MP server group.	Click on the desired **MP Server Group** tab on the top line. Then click on the **Entire Server Group** tab on the line below **Server Group** line. Output similar to that shown below may be observed. **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 Click on the **Insert** button [Insert] **"Check off"** the associated **Check Box** as addition is completed for each **Network**. ☐ XSI-1 ☐ XSI-2
7. ☐	**Active NOAMP VIP:** Add xsi signaling route to MP	Output similar to that shown below may be observed. **Main Menu: Configuration -> Network -> Routes [Insert]** Thu Mar 20 19:09:27 2014 Info Insert Route on MP_S2_SG Field | Value | Description Route Type: Net / Default / Host * — Select a route type. [Default = N/A. Options = Net, Default, Host. You can configure at most one IPV4 default route and one IPV6 default route on a given target machine.] Device: xsi1 * — Select the network device name through which traffic is being routed. The selction of AUTO will result in the device being selected automatically, if possible. [Default = N/A. Range = Provisioned devices on the selected server. Destination: 10.240.37.224 — The destination network address. [Default = N/A. Range = Valid Network Address of the network in dotted decimal (IPv4) or colon hex (IPv6) format.] Netmask: 255.255.255.240 — A valid netmask for the network route destination IP address. [Default = N/A. Range = Valid Netmask for the network in prefix length (IPv4 or IPv6) or dotted decimal (IPv4) format.] Gateway IP: 10.240.162.161 * — The IP address of the gateway for this route. [Default = N/A. Range = Valid IP address of the gateway in dotted decimal (IPv4) or colon hex (IPv6) format.] Ok Apply Cancel Set **Route Type** to desired value Set **Device** to the appropriate signaling device name (**eth2** or **eth3**) Enter **Destination:** This is the network address of the Diameter Sh clients that will connect to Oracle Communications User Data Repository on the signaling network. Enter **Netmask** for the Diameter Sh client network. Enter **Gateway IP** : This is the gateway for Oracle Communications User Data Repository's signaling network Click **Apply** button **"Check off"** the associated **Check Box** as addition is completed for each **Network**. ☐ XSI-1 (eth2) ☐ XSI-2 (eth3)

Procedure 12: Configure Signaling Routes

Step	Procedure	Result
8. ☐	Repeat the steps above for each signaling network.	
9. ☐	**Active NOAMP VIP:** Click the **"Logout"** link on the server GUI.	
THIS PROCEDURE HAS BEEN COMPLETED		

7.2 Configure SPR Application on MP (All SOAM Sites)

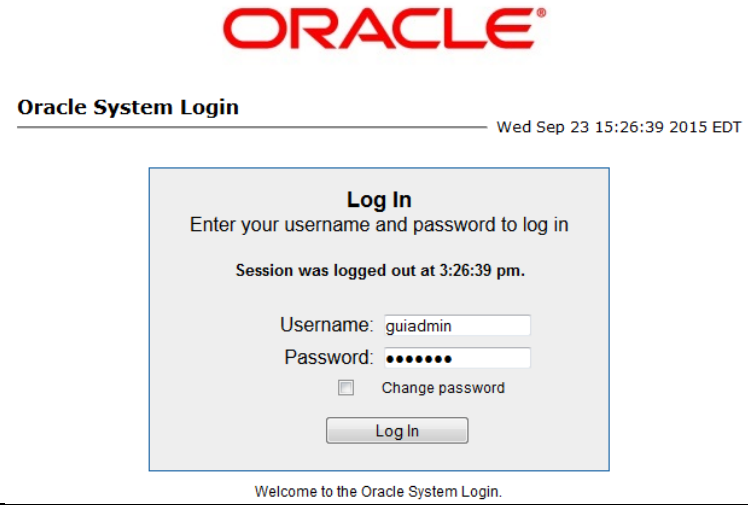
This procedure configures the SPR application for MP Servers on each SOAM site.

Requirements:

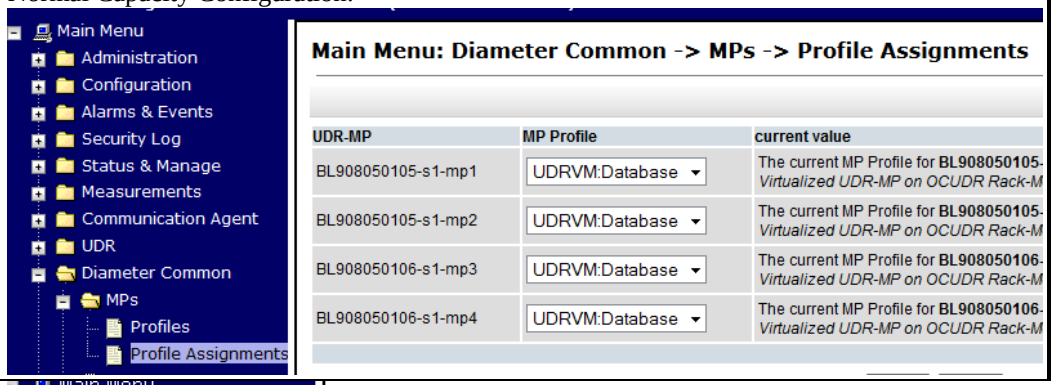
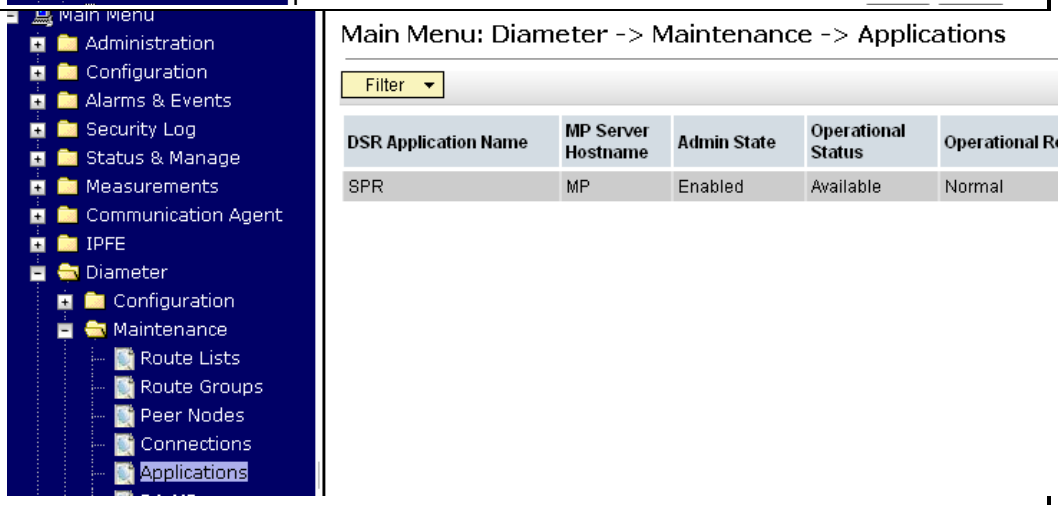
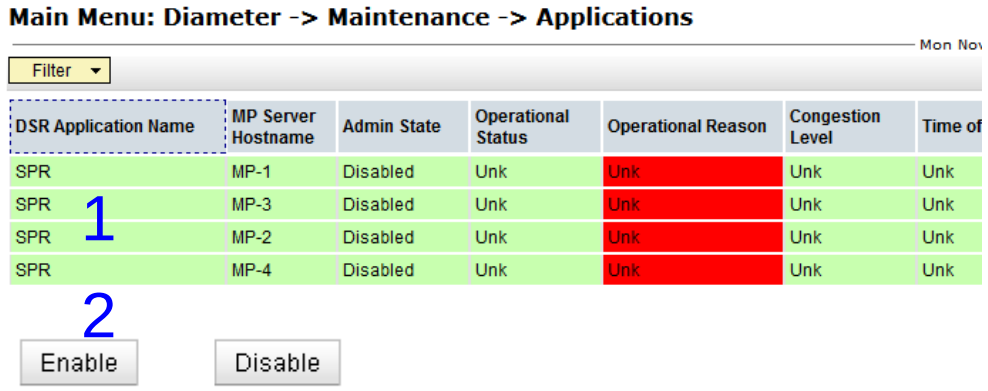
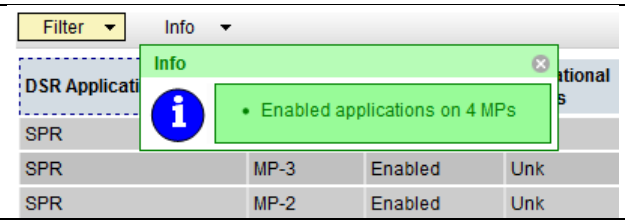
- **Section 7.1 Configure Signaling Routes** has been completed

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

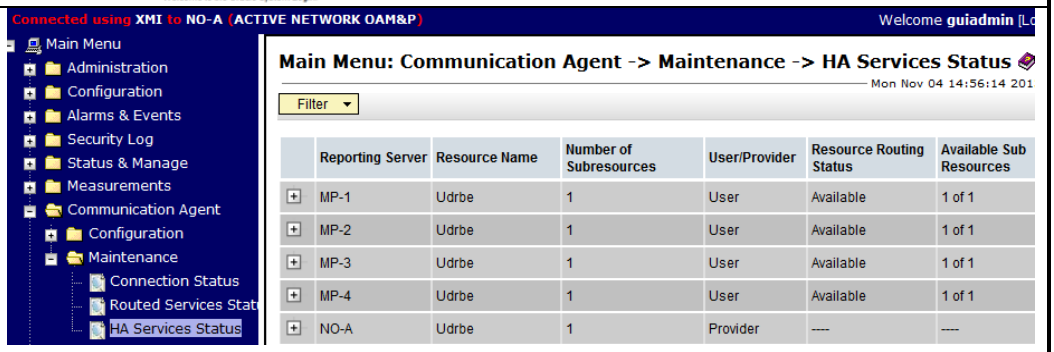
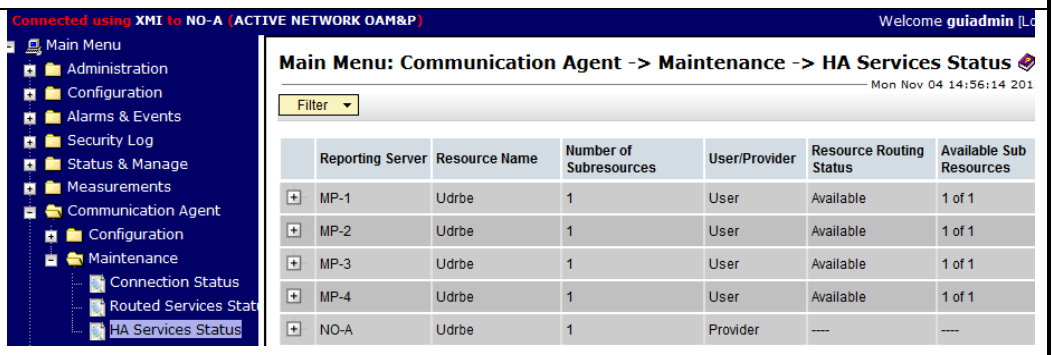
Procedure 13: Configure SPR Application on MP (All SOAM Sites)

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

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

Step	Procedure	Result
2. ☐	**SOAM VIP:** Select… **Main Menu** → ***Diamter Common*** → ***MPs*** →***Profile Assignments*** Select profile as **UDRVM:Database** and click on **Assign**	Normal Capacity Configuration: 
3. ☐	**SOAM VIP:** Select… **Main Menu** → ***Diameter*** → ***Maintenance*** → ***Applications*** …as shown on the right.	
4. ☐	**SOAM VIP:** **1)** Select the **"SPR"** Application on each **"MP"** using the mouse and holding the **Ctrl** key. The line entries should be highlighted in **GREEN**. **2)** Click on **Enable** Button	
5. ☐	**SOAM VIP:** The user should be presented with a banner information message stating **"Enabled application"**.	

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

Step	Procedure	Result
6. ☐	**SOAM VIP:** Click the **"Logout"** link on the server GUI.	
7. ☐	**Active NOAMP VIP:** The user should be presented the login screen shown on the right. Login to the GUI using the default user and password.	
8. ☐	**Active NOAMP VIP:** Verify service appears on NOAMP GUI page Select… **Main Menu** → **Communication Agent** → ***Maintenance*** → ***HA Services Status*** …as shown on the right.	
9. ☐	**Active NOAMP VIP:** Verify service appears on NOAMP GUI page Select… **Main Menu** → **Communication Agent** → ***Maintenance*** → ***HA Services Status*** …as shown on the right.	
10. ☐	**Active NOAMP VIP:** Click the **"Logout"** link on the server GUI.	
THIS PROCEDURE HAS BEEN COMPLETED		

7.3 Configure NOAMP Signaling Routes (All NOAM Sites)

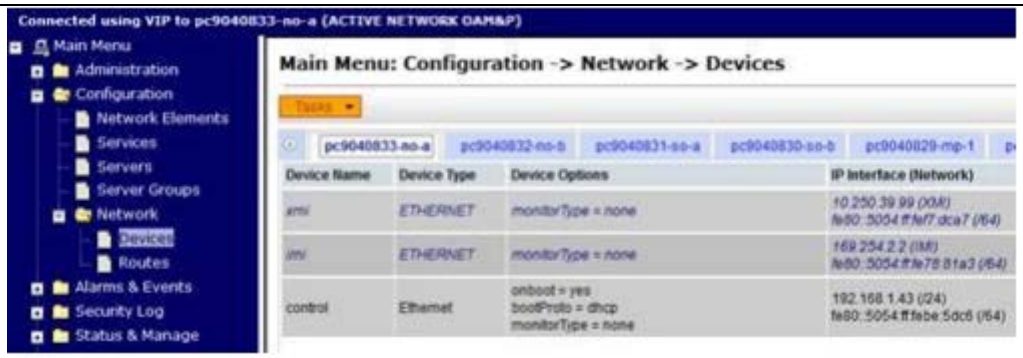
This procedure configures the XSI signaling route for the NOAMP and DR NOAMP Server Groups.

Requirements:

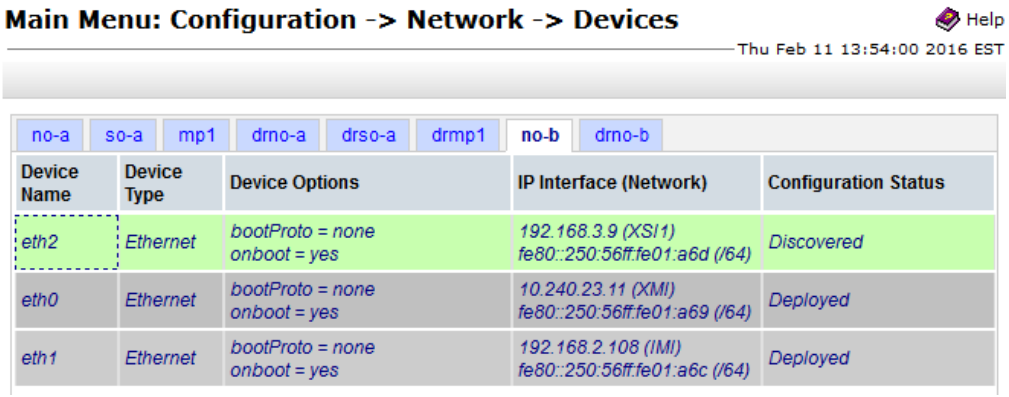
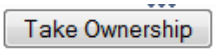
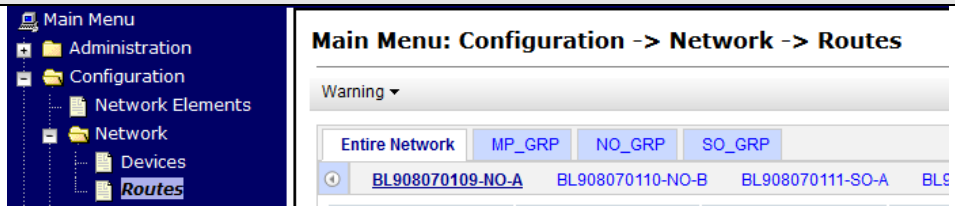
- **Section 7.2 Configure SPR Application on MP (All SOAM Sites)** has been completed

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

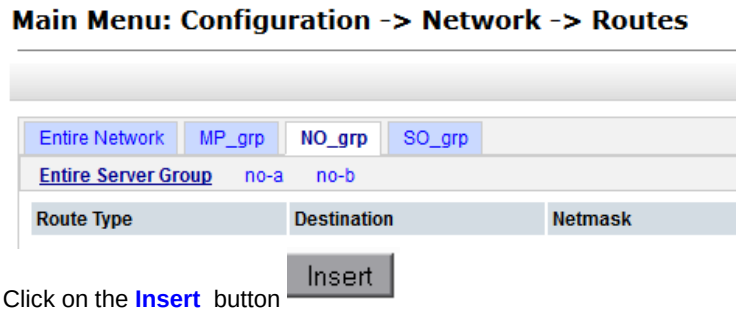
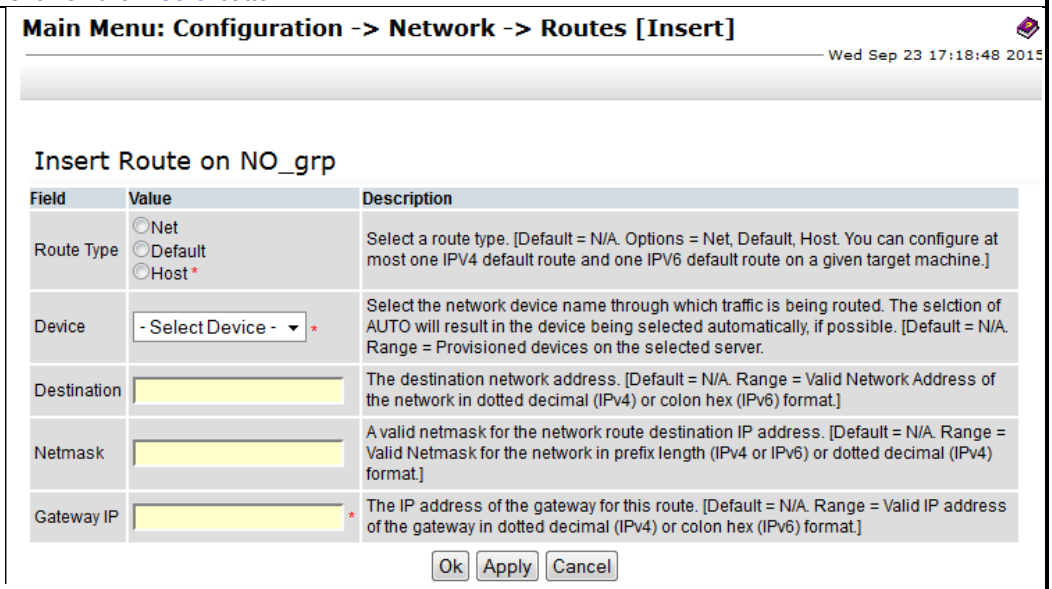
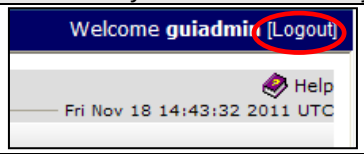
Procedure 14: Configure NOAMP Signaling Routes

Step	Procedure	Result
1. ☐	**Active NOAMP VIP:** Launch an approved web browser and connect to the NOAMP Server A IP address **NOTE:** Choose **"Continue to this website (not recommended)"** if presented with the "security certificate" warning. **Login** to the GUI using the default user and password.	
2. ☐	**Active NOAMP VIP** Select… **Main Menu** → **Configuration** →***Network*** →***Devices*** …as shown on the right.	 **"Check off"** the associated **Check Box** as addition is completed for each **Server**. ☐ NOAMP-A (XSI-1) ☐ NOAMP-B (XSI-1)

Procedure 14: Configure NOAMP Signaling Routes

Step	Procedure	Result
3. ☐	**Active NOAMP VIP** Select the xsi device for the desired NOAMP	Click on the desired **NOAMP** tab. Select the **XSI-1** device (recorded in **B-3 step 3 or C-7 step 5**). Output similar to that shown below may be observed.  **"Check off"** the associated **Check Box** as addition is completed for each **Server**. ☐ NOAMP-A (XSI-1) ☐ NOAMP-B (XSI-1)
4. ☐	**Active NOAMP VIP** Edit the xsi device for the desired NOAMP	Click on the **Take Ownership** button.  **"Check off"** the associated **Check Box** as addition is completed for each **Server**. ☐ NOAMP-A (XSI-1) ☐ NOAMP-B (XSI-1)
5. ☐	**Active NOAMP VIP** Repeat as required.	Repeat **Steps** 3 **-** 4 for each NOAMP and its Signaling network(s). **NOTE:** Steps 6 - 8 are only needed for geo-redundant systems.
6. ☐	**Active NOAMP VIP:** Select… **Main Menu** → **Configuration** → ***Network*** → ***Routes*** …as shown on the right.	

Procedure 14: Configure NOAMP Signaling Routes

Step	Procedure	Result
7. ☐	**Active NOAMP VIP:** Insert a new route for the **NOAMP** or **DR NOAMP** Server group.	Click on the desired **Server Group** tab on the top line. Then click on the **Entire Server Group** tab on the line below **Server Group** line. Output similar to that shown below may be observed.  Click on the **Insert** button
8. ☐	**Active NOAMP VIP:** Add signaling route	 Set **Route Type** to **Net** Set **Device** to **XSI-1** device (recorded in **B-3 step 3 or C-7 step 5**). Enter **Destination:** This is the network address of the remote MP server group that will connect to Oracle Communications User Data Repository NOAMP for ComAgent service. Enter **Netmask** for the remote network. Enter **Gateway IP**: This is the gateway for Oracle Communications User Data Repository's signaling network. Click **Apply** button
9. ☐	Repeat **Steps 6 - 8** if MP ⇔ ComAgent communication is intended to be configured on XSI1 . **Note**: Destination would be DR Site XSI1 Address if configuring Primary Site and vice-versa. **Note**: Netmask would be DR Site XSI1 Address if configuring Primary Site and vice-versa. **Note**: Gateway IP would be Primary Site XSI1 Gateway if configuring Primary Site and vice-versa.	
10. ☐	**Active NOAMP VIP:** Click the **"Logout"** link on the server GUI.	
THIS PROCEDURE HAS BEEN COMPLETED		

7.4 Configure Services on Signaling Network

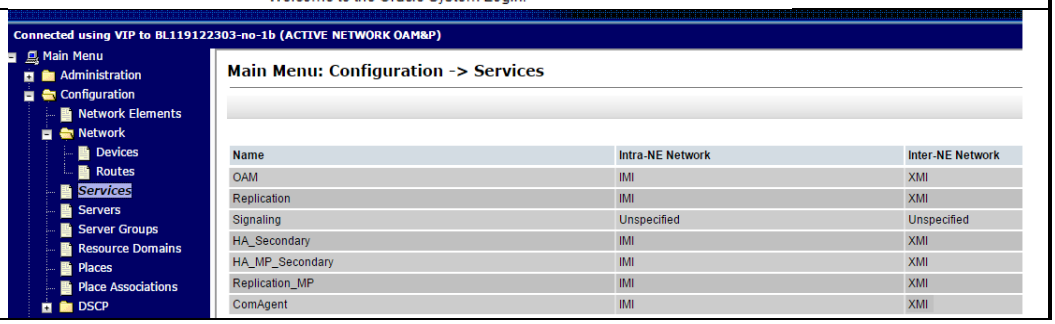
This procedure configures ComAgent communication between NOAMP and MP to use Signaling Network. This procedure also configures dual path HA heartbeat to use the XSI network.

Requirements:

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

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

Procedure 15: Configure Services on Signaling Network

Step	Procedure	Result
1. ☐	**Active NOAMP VIP:** Launch an approved web browser and connect to the NOAMP Server A IP address **NOTE:** Choose **"Continue to this website (not recommended)"** if presented with the "security certificate" warning. **Login** to the GUI using the default user and password.	
2. ☐	**Active NOAMP VIP:** Select… **Main Menu** **→ Configuration** **→ *Services*** …as shown on the right.	

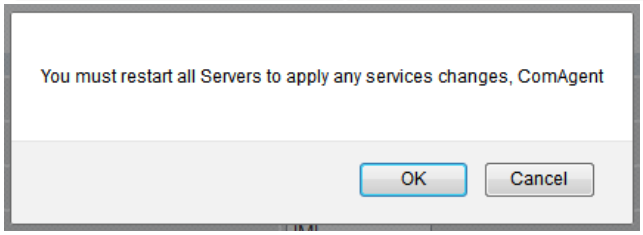
Procedure 15: Configure Services on Signaling Network

<table>
<tr><th>Step</th><th>Procedure</th><th>Result</th></tr>
<tr><td>3.

☐</td><td>Active NOAMP VIP:
1) Set two services values as shown on the right:

Inter-NE HA_Secondary → XSI1
Inter-NE ComAgent → XSI1

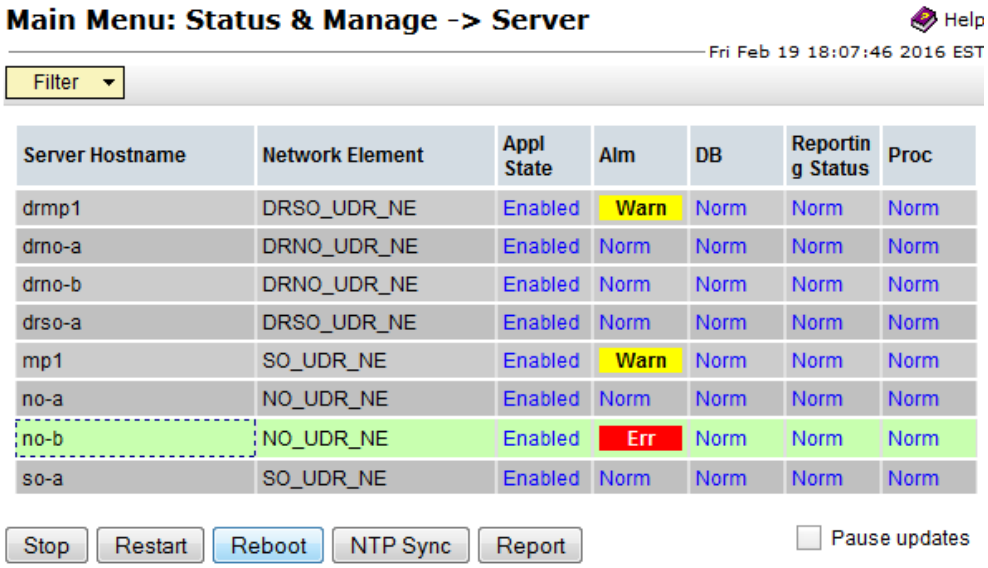
2) Select the “Apply” dialogue button.

3) Select the “OK” dialogue button in the popup window.</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 need to be restarted.
</td></tr>
<tr><td>4.

☐</td><td>Active NOAMP VIP:
The user will be presented with the “Services” configuration screen as shown on the right</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>

Procedure 15: Configure Services on Signaling Network

Step	Procedure	Result
5. ☐	**Reboot all NOAMP and MP Servers**	Reboot all NOAMP and MP servers either by the Active NOAMP GUI's Status & Manage -> Server screen with the **Reboot** button:  Or on the terminal of each server with the reboot command: $ sudo reboot Note: This should be executed on all NOAMPs and MPs.
THIS PROCEDURE HAS BEEN COMPLETED		

7.5 Accept Installation

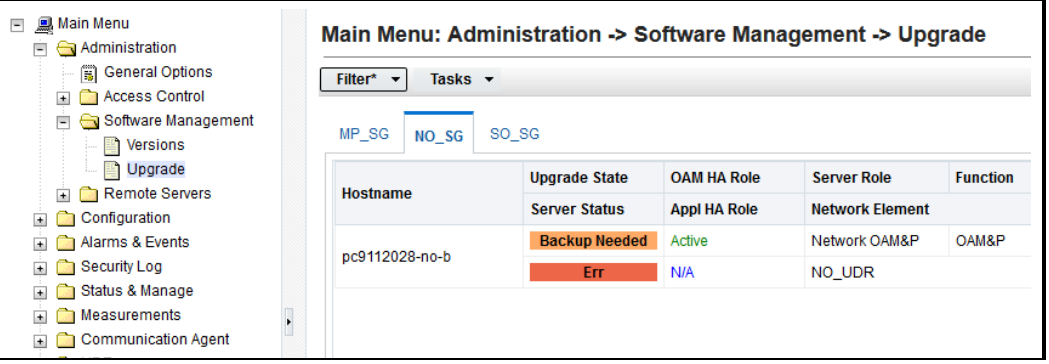
This procedure accepts the installation/upgrade on any servers that have not already been accepted. Depending on the manner of installtion, there may be no servers that require acceptance at this point in installation.

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

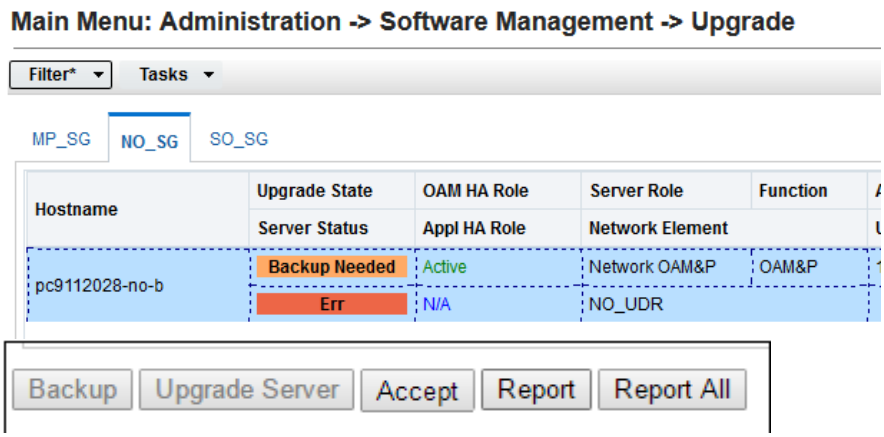
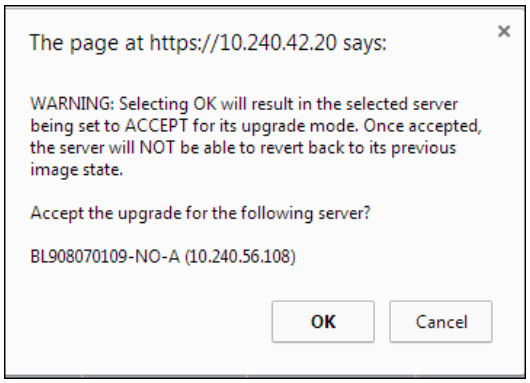
The Alarm 32532 (Server Upgrade Pending Accept/Reject) will be displayed for each server until one of these two actions (accept or reject) is performed.

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

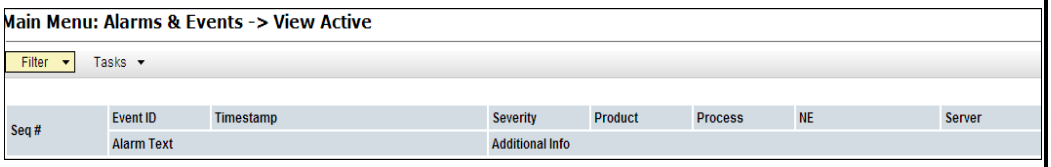
Procedure 16: Accept Installation

Step	Procedure	Result
1. ☐	**Active NOAMP VIP:** Launch an approved web browser and connect to the NOAMP Server A IP address **NOTE:** Choose **"Continue to this website (not recommended)"** if presented with the "security certificate" warning. **Login** to the GUI using the default user and password.	
2. ☐	**Active NOAMP VIP:** Select… **Main Menu** → **Administration** → ***Software Management*** → ***Upgrade*** …as shown on the right.	

Procedure 16: Accept Installation

Step	Procedure	Result
3. ☐	**Active NOAMP VIP (GUI):** Accept upgrade for selected server(s)	Accept upgrade of selected server(s) Select the server on which upgrade hasn't yet been accepted. Click the "**Accept**" button  A confirmation dialog will warn that once upgrade is accepted, the servers will not be able to revert back to their previous image states.  Click "**OK**" The Upgrade Administration screen re-displays. A pull-down Info message will indicate the server(s) on which upgrade was accepted.
4. ☐	**Active NOAMP VIP:** Accept upgrade of the rest of the system	Accept Upgrade on all remaining servers in the system: 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 upgrade is accepted on each server the corresponding Alarm ID **32532** (**Server Upgrade Pending Accept/Reject)** should be removed.

Procedure 16: Accept Installation

Step	Procedure	Result
5. ☐	**Active NOAMP VIP:** Verify accept	Check that alarms are removed: Navigate to this GUI page Alarms & Events > View Active  Verify that Alarm ID **32532** (**Server Upgrade Pending Accept/Reject)** is not displayed under active alarms on User Data Repository system
THIS PROCEDURE HAS BEEN COMPLETED		

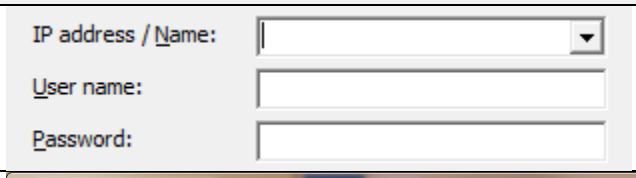
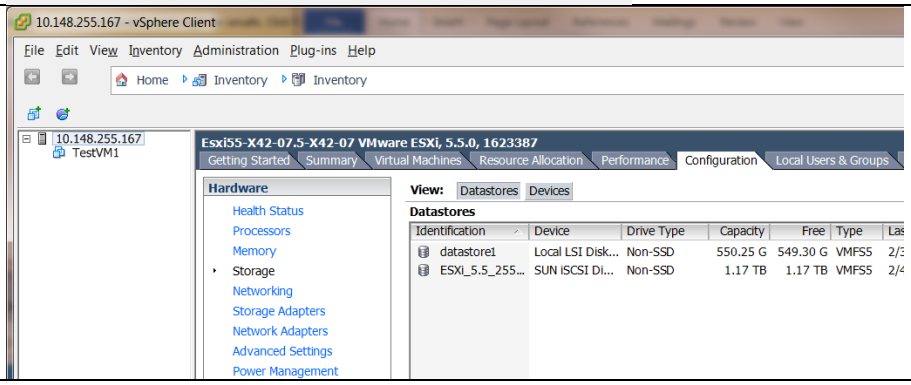
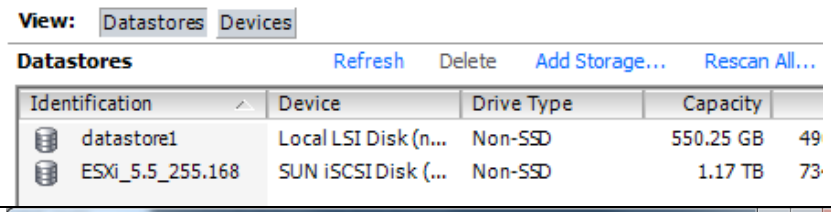
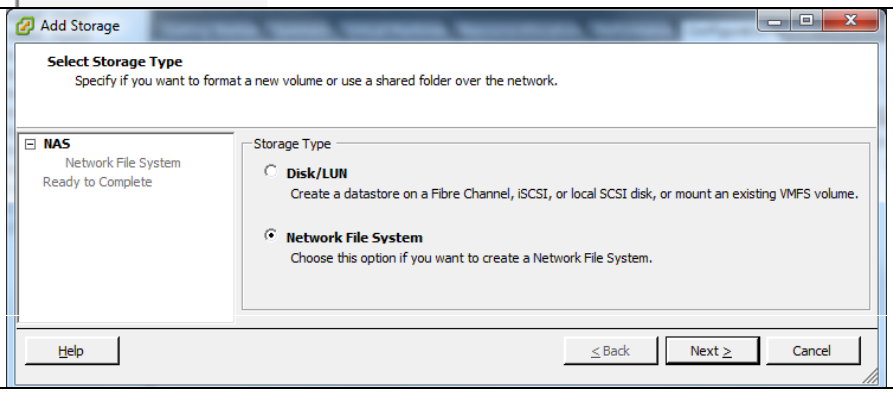
8.0 APPENDIXES

Appendix A. VMWARE VSPHERE ENVIRONMENT SETUP

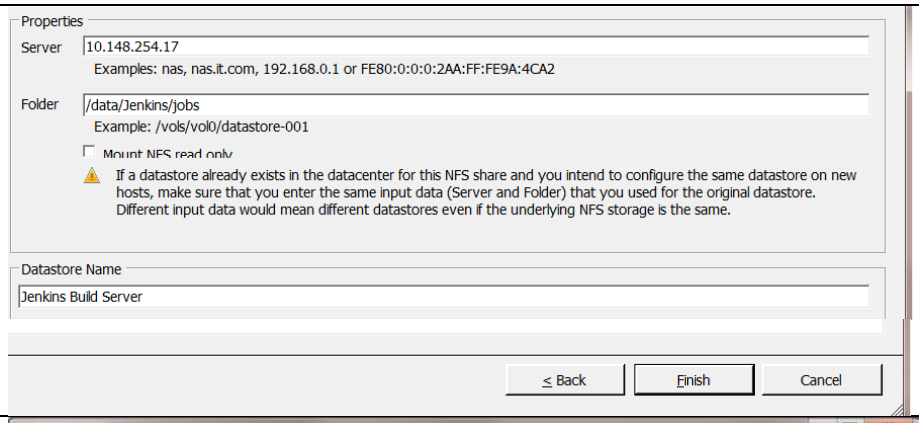
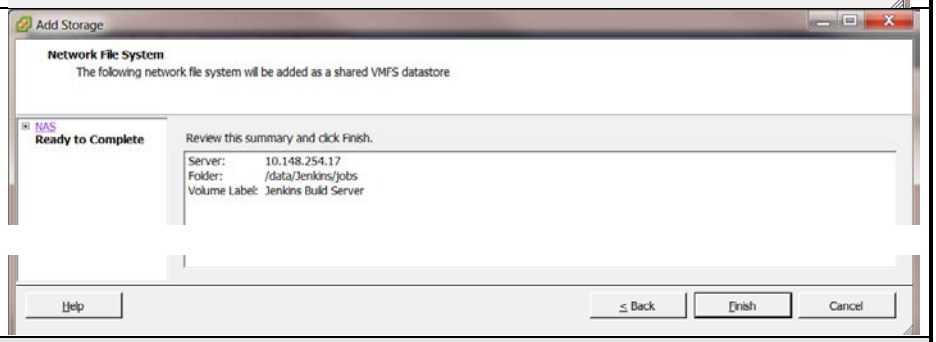
A-1 Host Datastore configuration using vsphere

The following procedure is executed to properly configure a datastore on the Host so that the appropriate storage is available for Oracle Communications User Data Repository component VMs. Steps and screenshots are taken from vSphere Client.

Procedure 17: Host Datastore Configuration with vSphere

S T E P #	This procedure configures host networking. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. If this procedure fails, contact Error! Not a valid result for table., and ask for assistance.	
1. ☐	Log into the Vmware client	
2. ☐	**VMware client:** **1)** Select the **Host** on the left tree menu **2)** Click the **Configuration** tab on right **3)** Click **Storage** under Hardware menu	
3. ☐	**VMware client:** Click **"Add Storage…"**	
4. ☐	**VMware client:** **1)** Select **Network File System** storage type **2)** Click **Next**	

Procedure 17: Host Datastore Configuration with vSphere

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 HAS BEEN COMPLETED		

A-2 Host networking configuration using vsphere

The following procedure is executed to properly configure the recommended Networking on the Host so that the appropriate vNICs are available for Oracle Communications User Data Repository component VMs. Steps and screenshots are taken from vSphere Client.

To view the currently available Networks on the Host, select the **Summary** tab. In the example below several OAM and Signaling Networks have been configured. Each of these is associated with vSwitch on the Host and physical ethernet.
Oracle Communications User Data Repository VMs can be associated with up to 5 vLAN Networks. All 5 vNICs should be created and configured in order to be available for the Guest. The expected vNICs correspond the the following dedicated interfaces of the Oracle Communications User Data Repository and so the recommendation is the label them similarly:

XMI – OAM Management Interface for the application

XSI1 – Signaling Interface

XSI2 – Signaling Interface

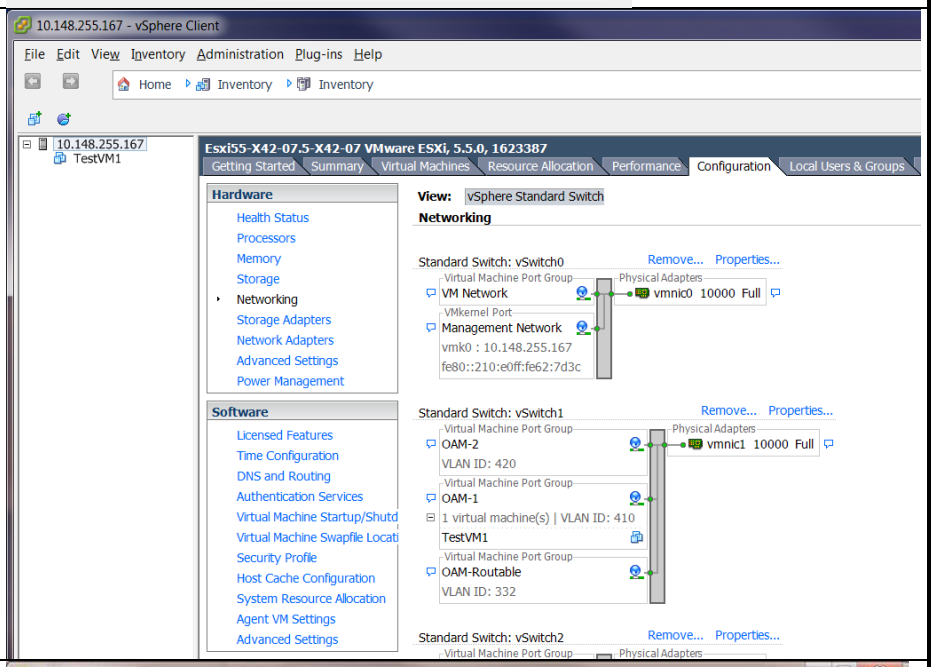
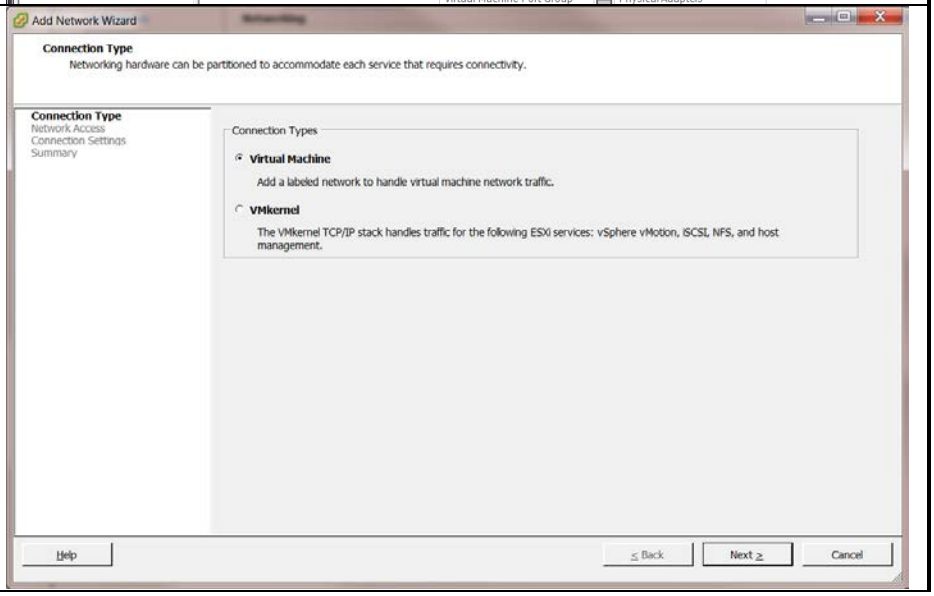
IMI – Replication Interface

Guest Management – Reserved for Guest management activities.

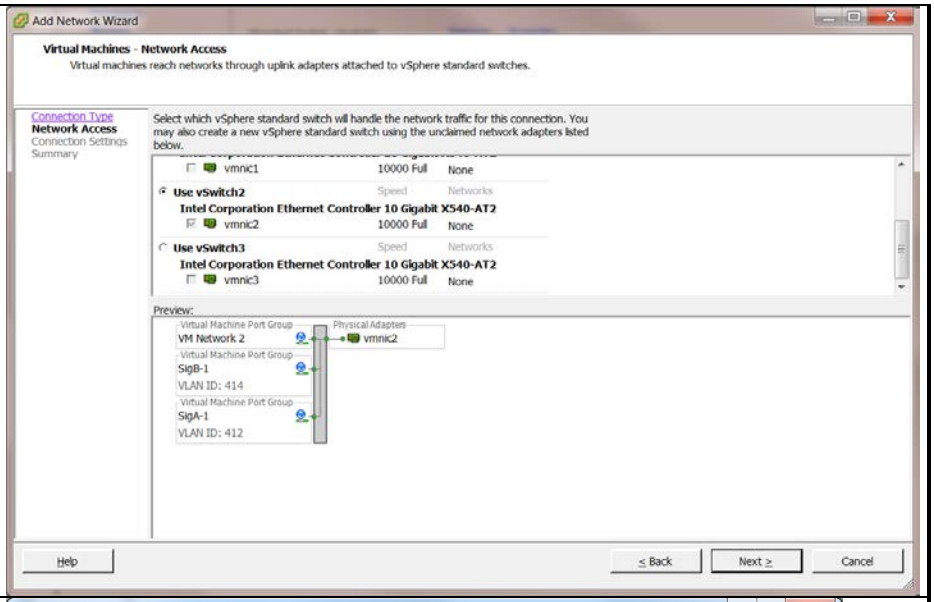
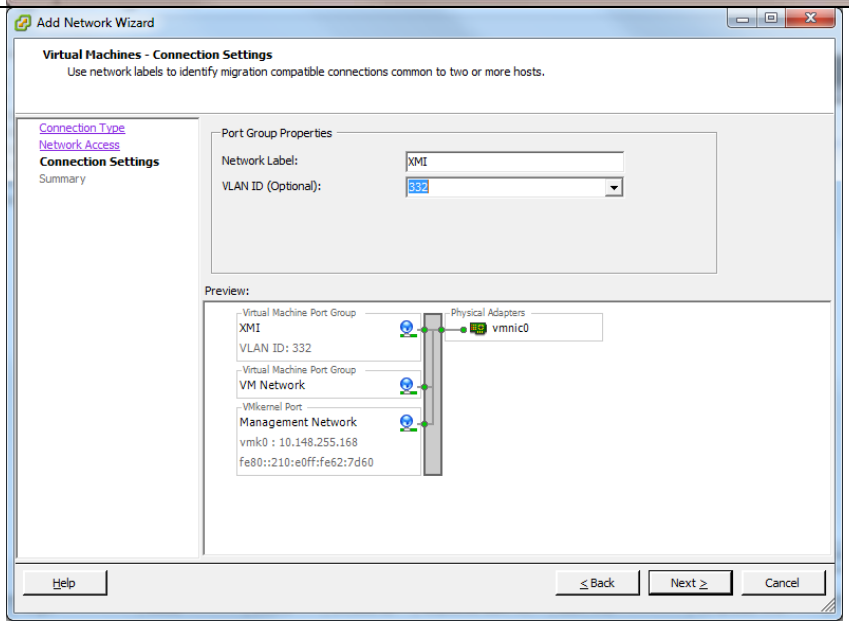
Procedure 18: **Host Networking Configuration with vSphere**

S T E P #	This procedure configures host networking. Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number. If this procedure fails, contact Error! Not a valid result for table., and ask for assistance.

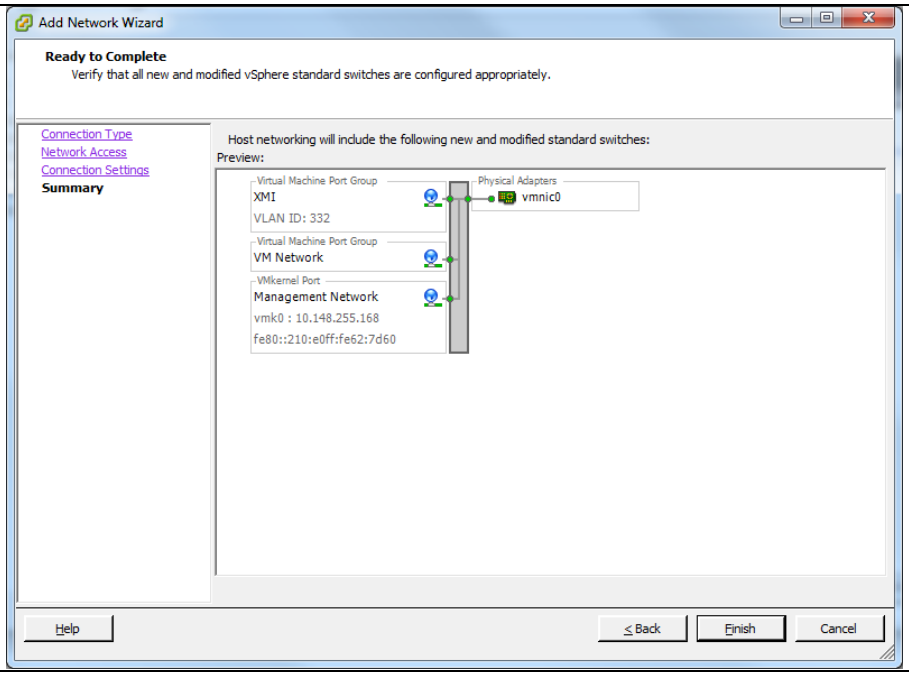
Procedure 18: Host Networking Configuration with vSphere

1. ☐	Log into the Vmware client	
2. ☐	**VMware client:** **1)** Select the **Host** on the left tree menu **2)** Click the **Configuration** tab on right **3)** Click **Networking** under Hardware menu	
3. ☐	**VMware client:** **1)** Select **Add Networking** from top **2)** Chose connection type **Virtual Machine** and click **Next**	

Procedure 18: **Host Networking Configuration with vSphere**

4. ☐	**VMware client:** Select appropriate **vSwitch type** based on the Host hardware and click Next	
5. ☐	**VMware client:** Label the **Network**, enter its **VLAN ID**, click **Next**	 Note: It is recommended that the name reflect how the Network will be used or referenced from within the Guest, ie XMI, IMI, XSI1, etc.

Procedure 18: Host Networking Configuration with vSphere

6. ☐	**VMware client:** Review input and click **Finish**	
7. ☐	Repeat this procedure for each network	Repeat this procedure for each network type that will be supported by this VMWare host: ☐ XMI ☐ IMI ☐ XSI-1 ☐ XSI-2 (optional)
THIS PROCEDURE HAS BEEN COMPLETED		

Appendix B. VMWARE VSPHERE ORACLE COMMUNICATIONS USER DATA REPOSITORY DEPLOYMENT

B-1 Create Guests from OVA

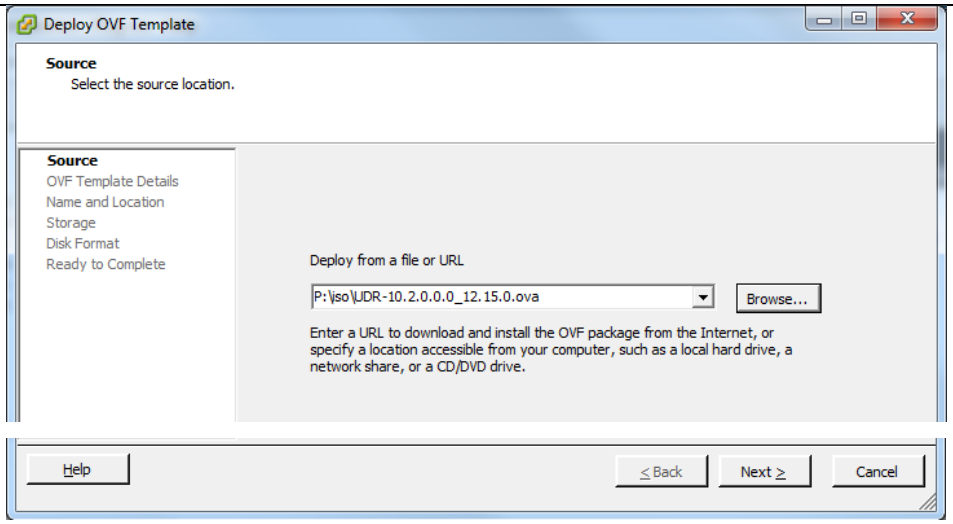
This procedure will create Oracle Communications User Data Repository virtual machines (guests) from OVA.

Needed material:

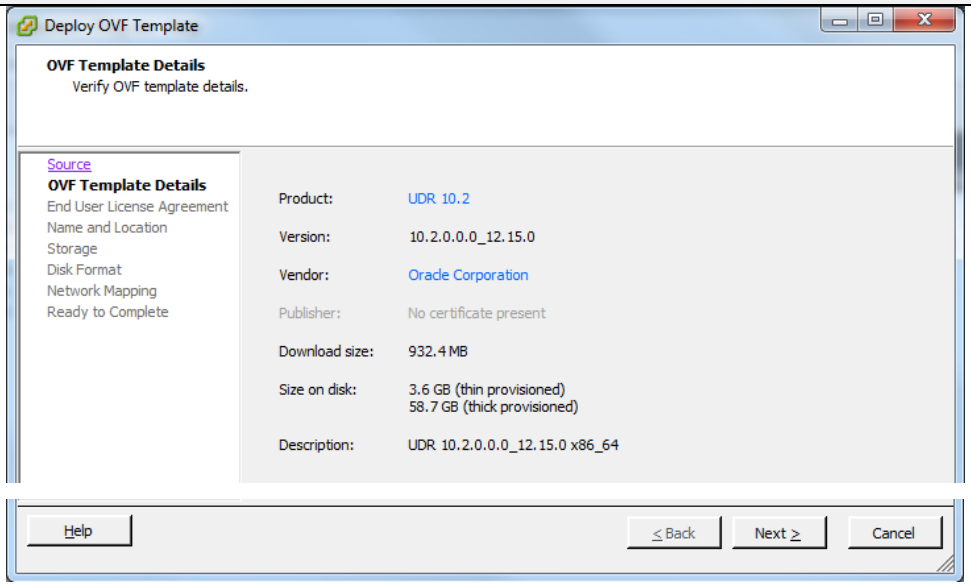
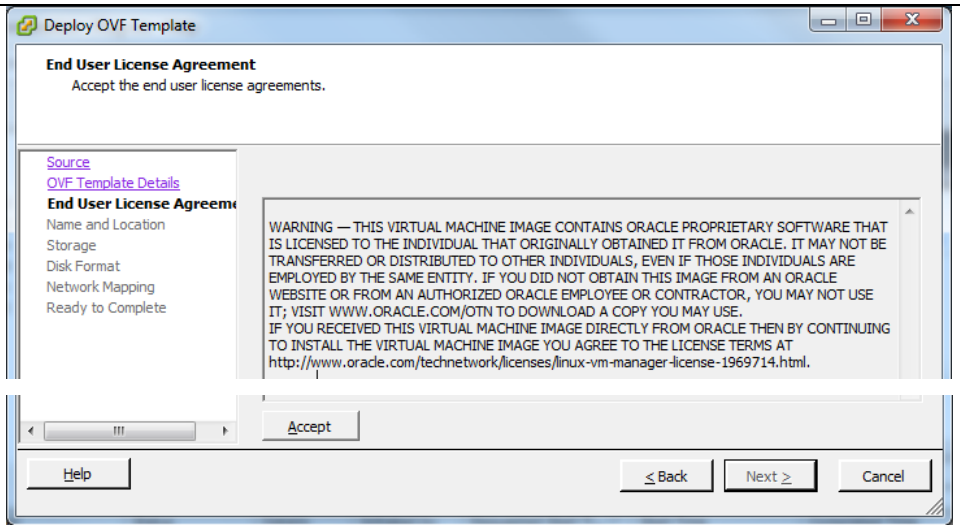
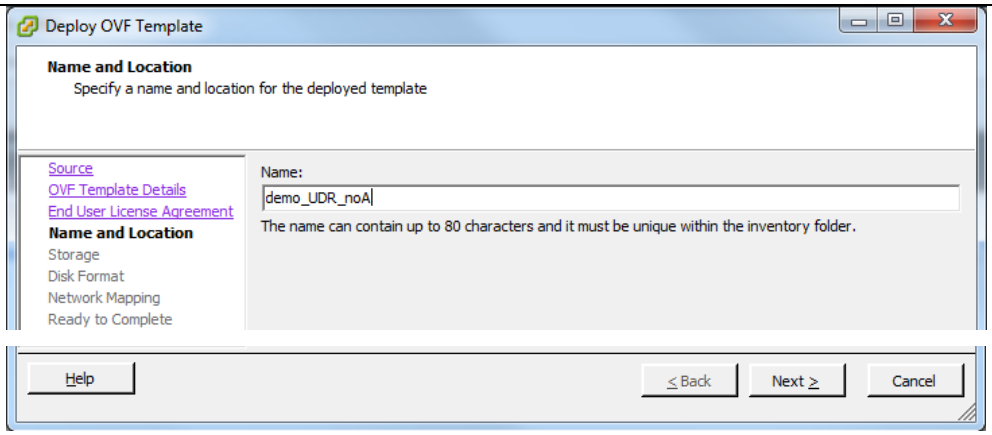
- Oracle Communications User Data Repository OVA

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

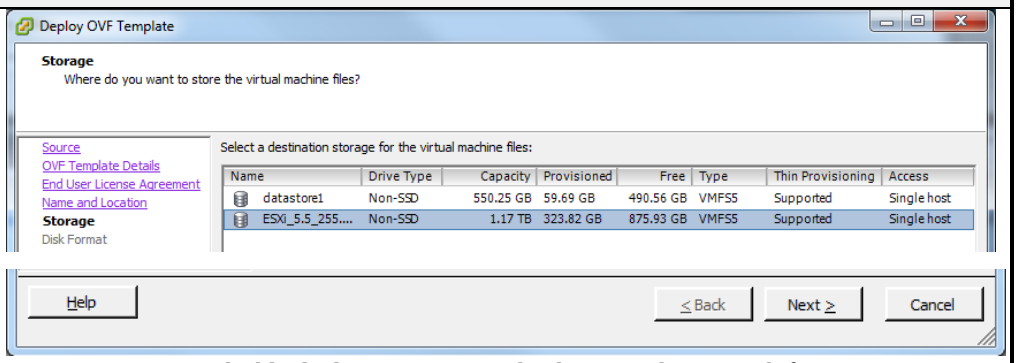
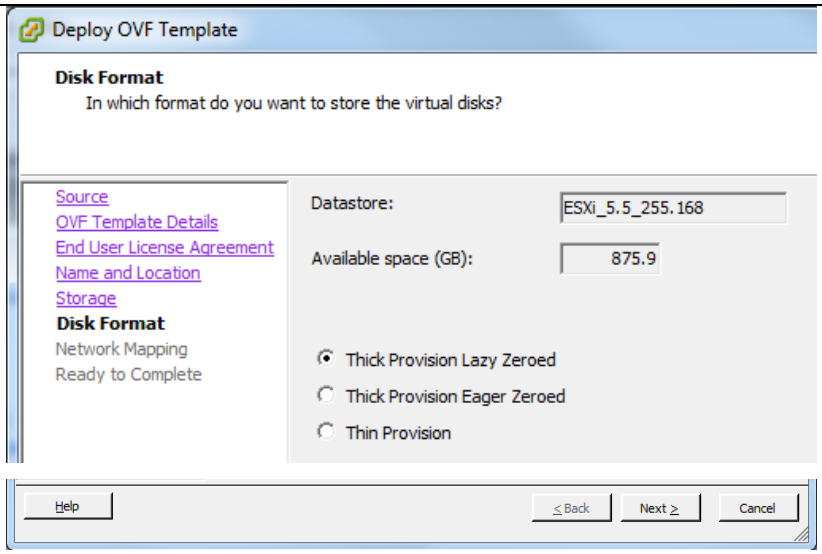
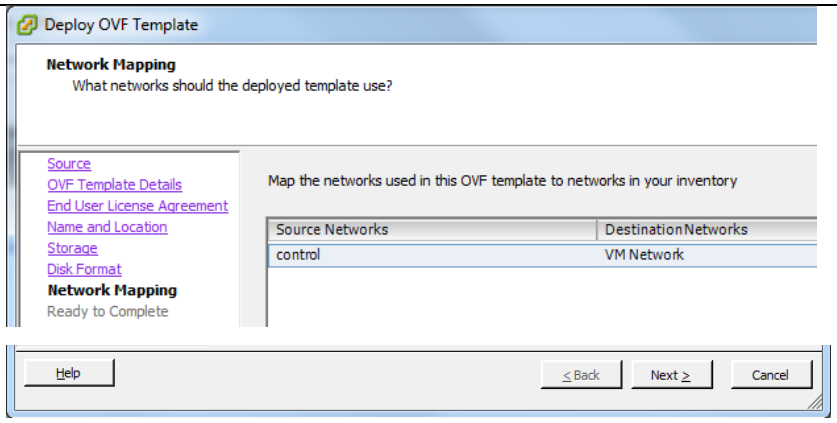
Procedure 19: Deploy Oracle Communications User Data Repository OVA

Step	Procedure	Result
1. ☐	Log into the VMware client	
2. ☐	**VMware client:** Select… **→ File** ***→ Deploy OVF Template***	
3. ☐	**VMware client:** **1)** Click **Browse** button and select the OVA file **2)** Click **Next**	

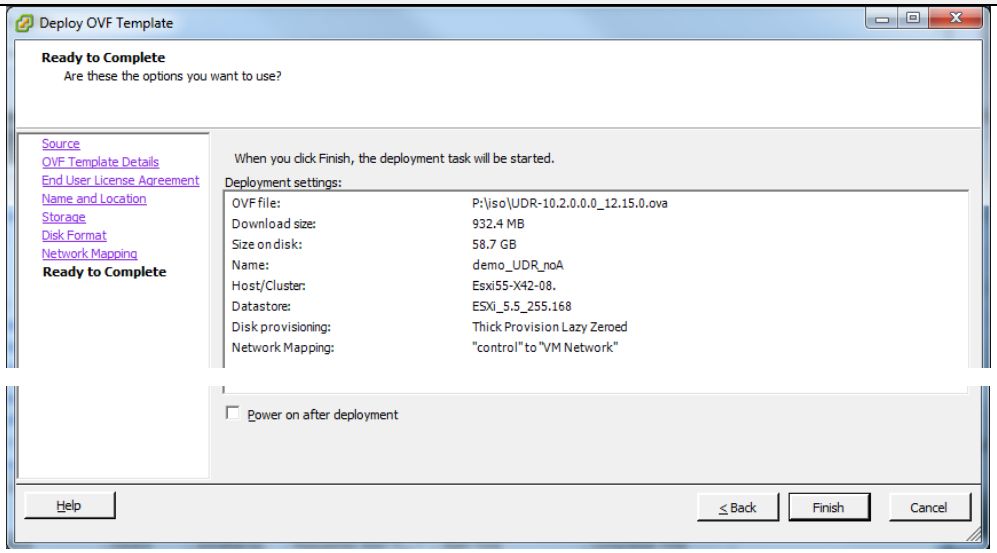
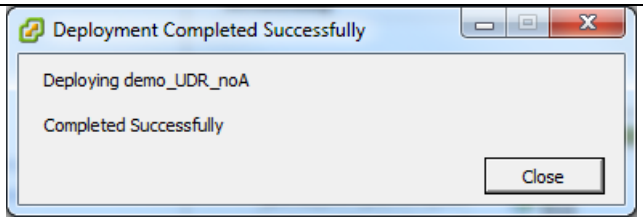
Procedure 19: Deploy Oracle Communications User Data Repository OVA

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

Procedure 19: Deploy Oracle Communications User Data Repository OVA

Step	Procedure	Result
7. ☐	**VMware client:** Select **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**	

Procedure 19: Deploy Oracle Communications User Data Repository OVA

Step	Procedure	Result
10. ☐	**VMware client:** Review deployment settings and click **Finish**	
11. ☐	**VMware client:** After a wait a deployment status message is displayed. Click **Close**.	
THIS PROCEDURE HAS BEEN COMPLETED		

B-2 Configure Guest Resources

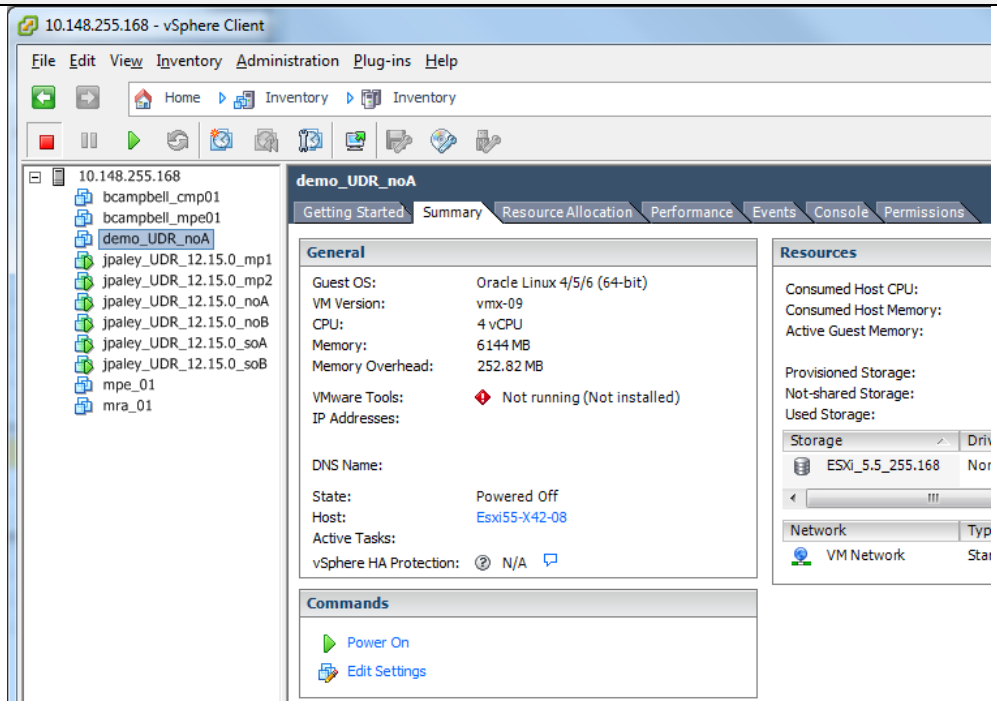
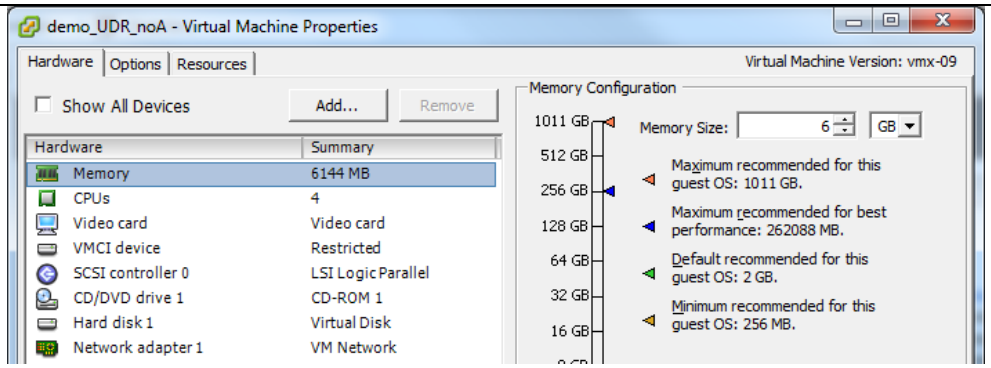
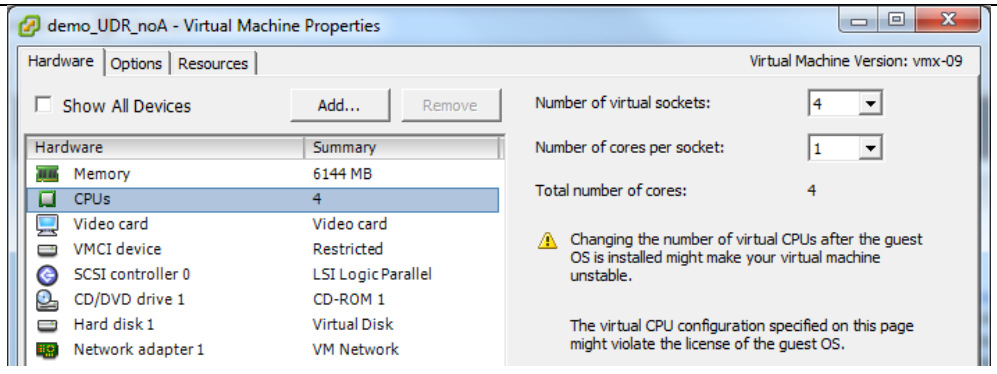
This procedure will configure the required resource allocations and associations for Oracle Communications User Data Repository virtual machines (guests) and power them on.

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

Procedure 20: Configure Guest Resources

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

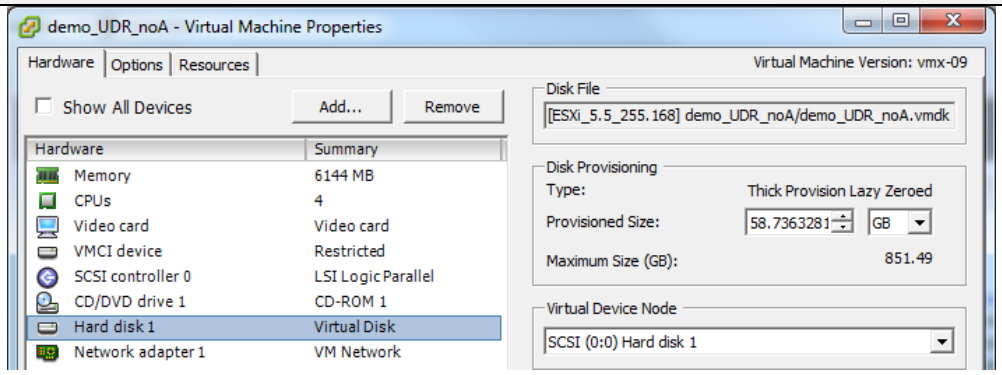
Procedure 20: Configure Guest Resources

Step	Procedure	Result
2. ☐	**VMware client:** **1)** Select the Oracle Communications User Data Repository virtual machine from the left tree menu **2)** Click the **Summary** tab **3)** Click **Edit Settings** under Commands	
3. ☐	**VMware client:** Select **Memory** from the Hardware menu and adjust **Memory Size** to suit the server's role **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].	

Procedure 20: Configure Guest Resources

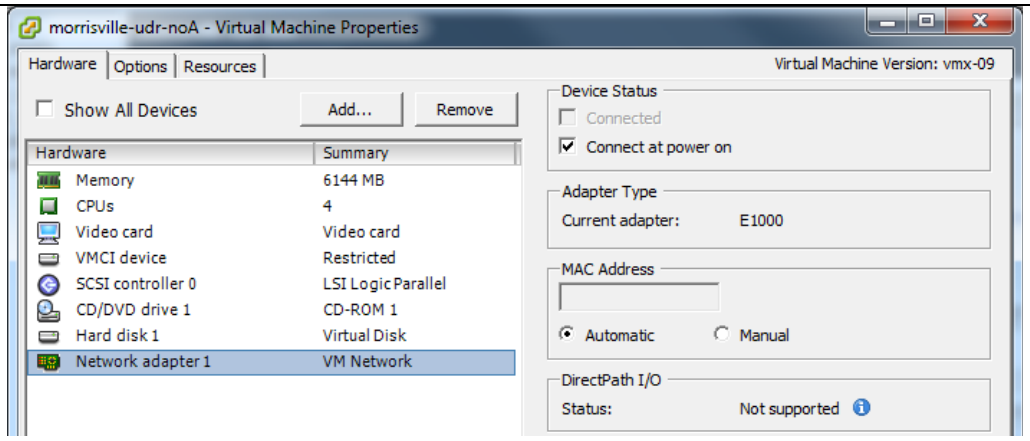
<table>
<tr><th>Step</th><th>Procedure</th><th>Result</th></tr>
<tr><td>5.

☐</td><td>VMware client:

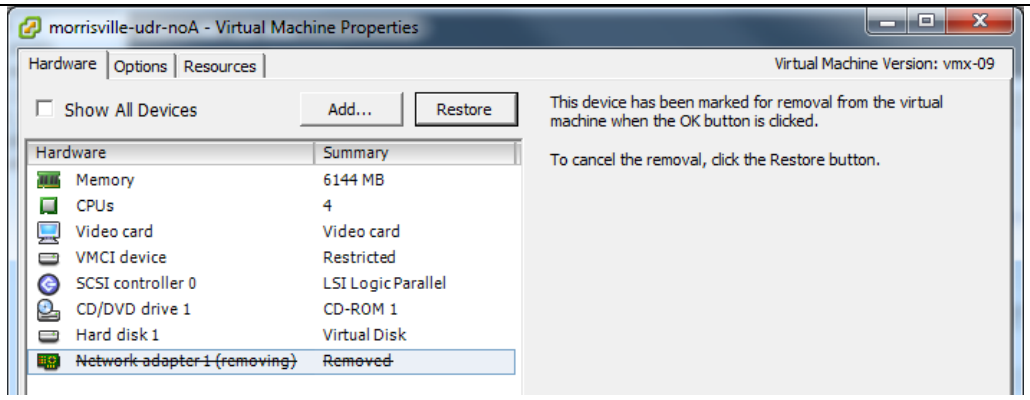
Select Hard disk 1 from the Hardware menu and adjust the Provisioned Size according to [1].</td><td> 
</td></tr>
<tr><td>6.

☐</td><td>VMware client:

1) Select any Network adapter that may exist by default

2) Click the Remove tab</td><td> 
</td></tr>
<tr><td>7.

☐</td><td>VMware client:

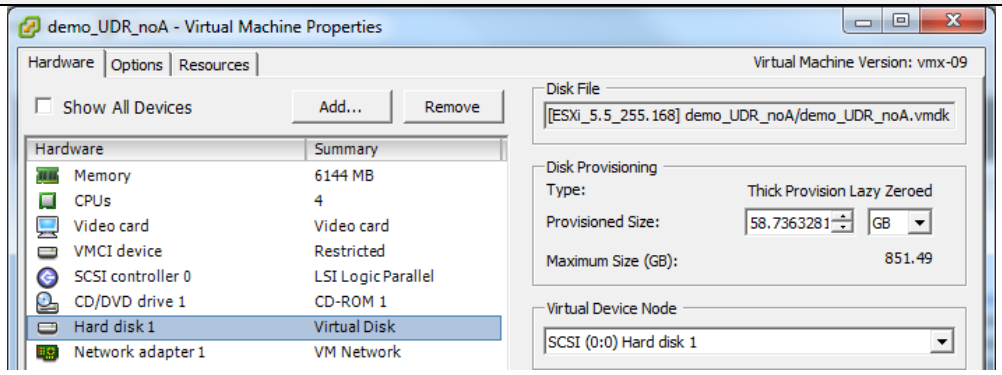
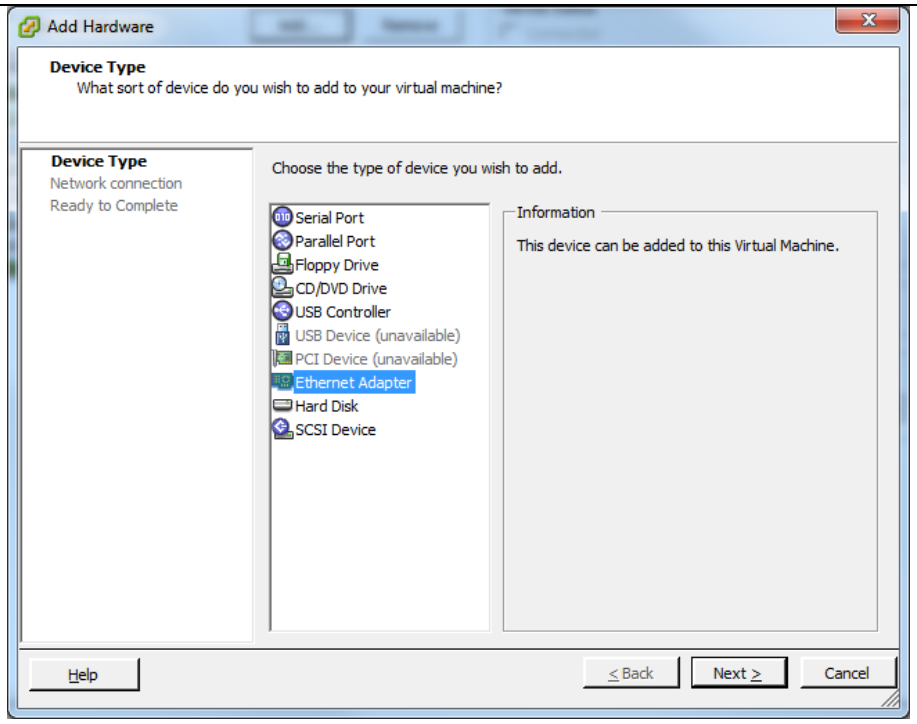
The network adapter will be crossed out and a removal message displayed</td><td> 
</td></tr>
<tr><td>8.

☐</td><td>VMware client:

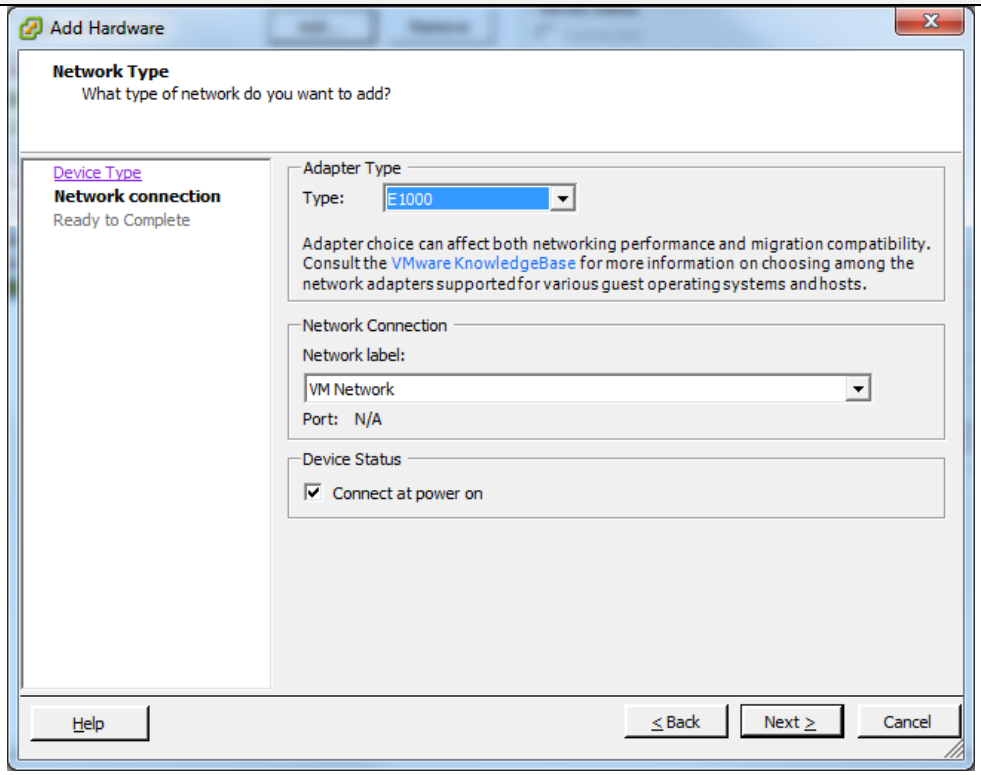
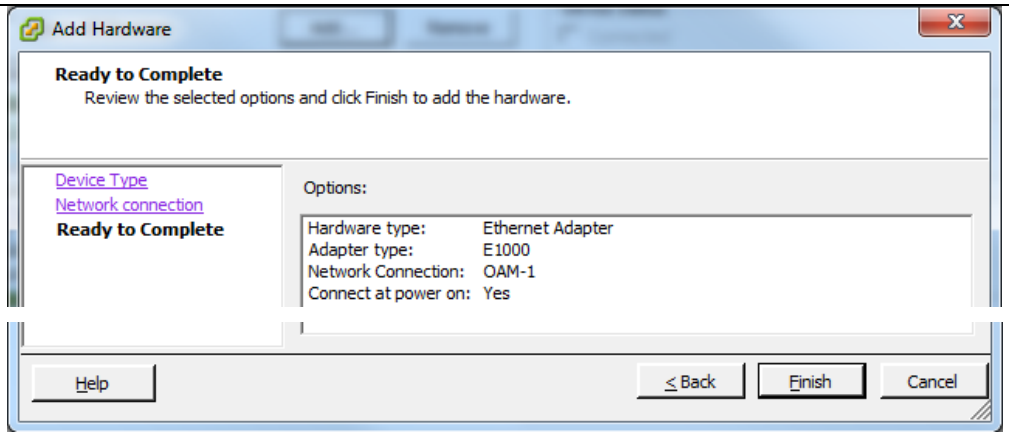
Take note of the order in which networks are added.</td><td>Note: The order in which networks are added by the following steps affects their device order within the virtual machine. Care should be taken to add them in the order they appear for each server:

<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>

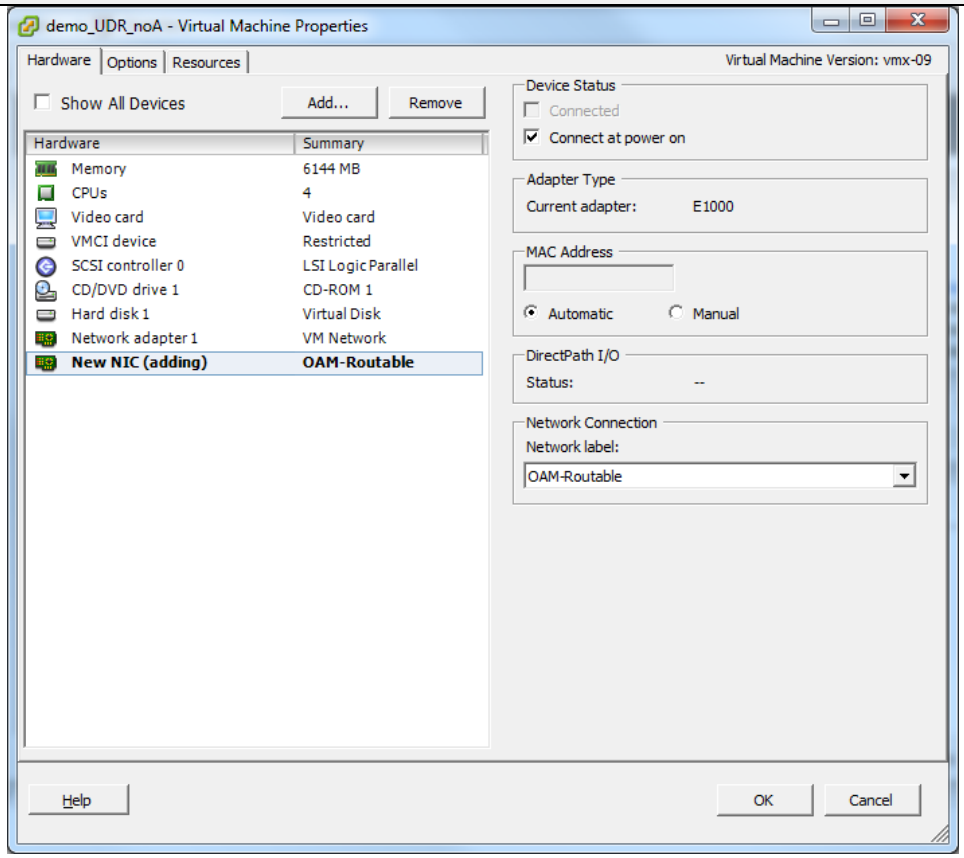
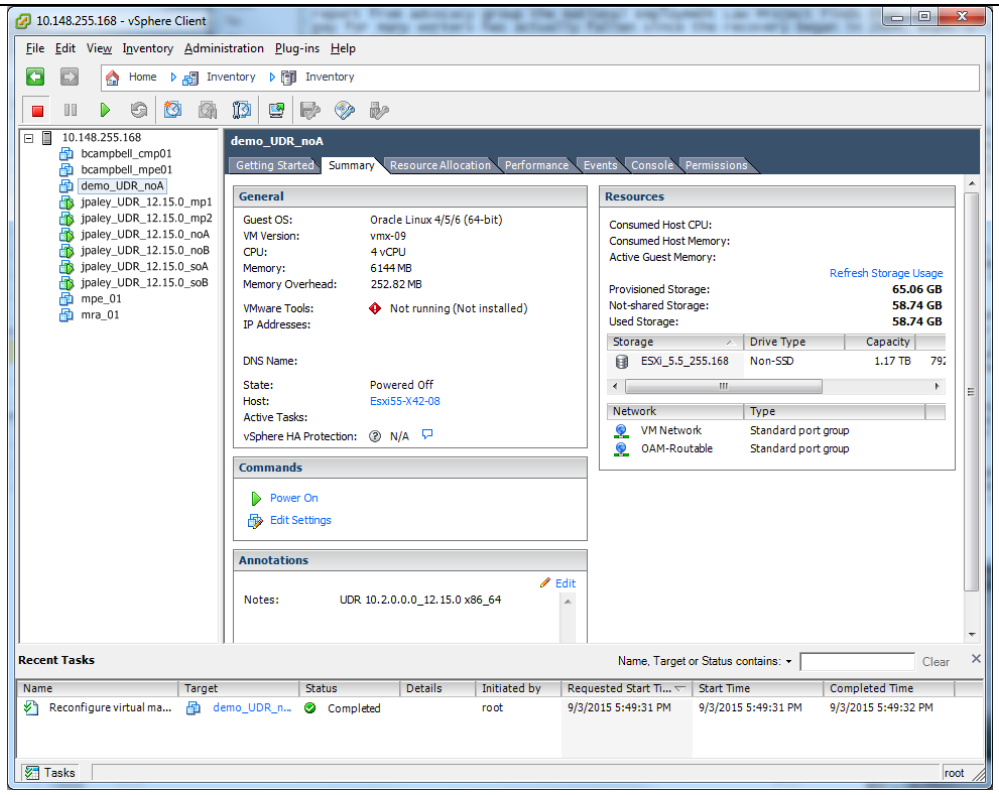
Procedure 20: Configure Guest Resources

Step	Procedure	Result
9. ☐	**VMware client:** Click '**Add…**" button from Hardware tab	
10. ☐	**VMware client:** Select **Ethernet Adapter** from the list of devices and click **Next**	

Procedure 20: Configure Guest Resources

Step	Procedure	Result
11. ☐	**VMware client:** **1)** Select **Adapter Type** to conform to your virtual host **2)** Select the **Network Label** to match the desired network type **3)** Click **Next**	
12. ☐	**VMware client:** Confirm Option settings and click **Finish**	
13. ☐	**VMware client:** **Repeat** as required	**Repeat Steps 9 - 12** to add every network appropriate for the server's role.

Procedure 20: Configure Guest Resources

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

Procedure 20: Configure Guest Resources

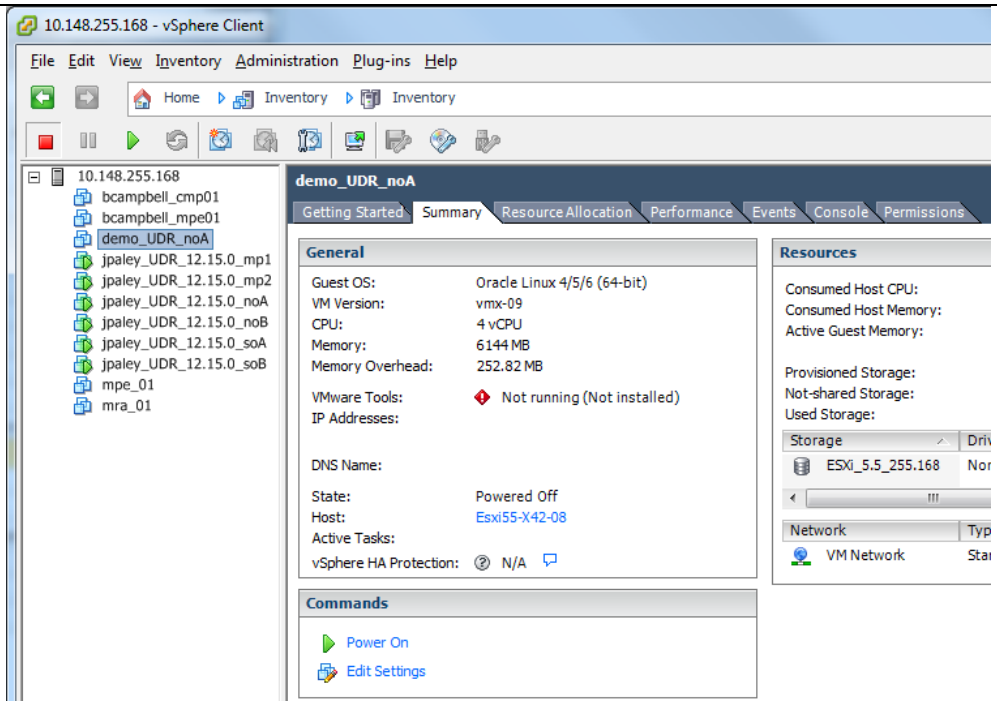
Step	Procedure	Result
THIS PROCEDURE HAS BEEN COMPLETED		

B-3 Configure Guest Network

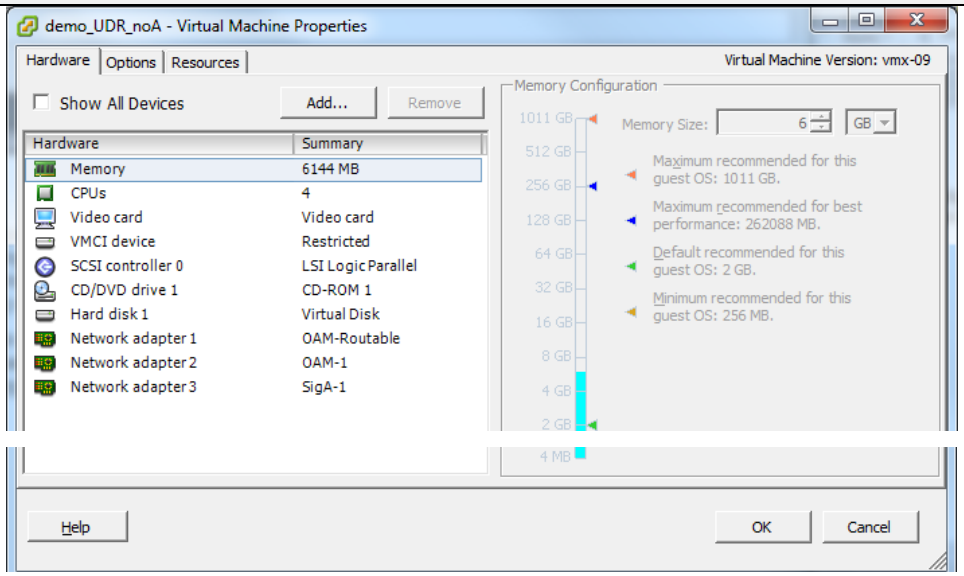
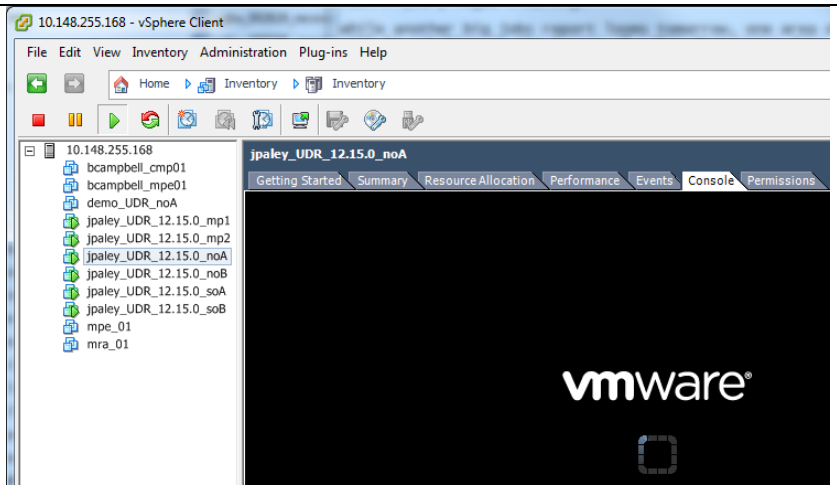
This procedure will configure the OAM network on Oracle Communications User Data Repository virtual machines (guests).

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

Procedure 21: Configure Guest OAM Network

Step	Procedure	Result
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)** Click the **Summary** tab **3)** Click **Edit Settings** under Commands	

Procedure 21: Configure Guest OAM Network

Step	Procedure	Result
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# assigment of the following networks: XMI: _____ IMI: _____ XSI-1: _____ XSI-2 : _____ *(optional)*
4. ☐	**VMware client:** **1)** Click the **Console** tab **2)** Click inside the console window to bring focus there **Note:** Press **Ctrl-Alt** keys to escape from console.	

Procedure 21: Configure Guest OAM Network

Step	Procedure	Result
5. ☐	**VM Console:** Login to console as admusr	`login as: admusr` `Password:`

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 shown here (eth0) if the order of network adapter insertion was other than shown. Refer to **Step 3** for this assignment.

7. ☐	**VM Console:** Configure **XSI** network **(NO and MP Server Only)**	Set the XSI device for routable signaling network access (Only for **NO** & **MP Servers**): 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 shown here (eth2) if the order of network adapter insertion was other than shown. Refer to **Step 3** for this assignment.
8. ☐	**VM Console:** **Repeat** as required **(MP Server Only)**	**Repeat Step 7** to add **XS1-2 (eth3)** if a second signaling network is in use (Only for **MP Servers**). Adjust input parameter values accordingly.
9. ☐	**VM Console:** Exit console	`$ exit` **Note:** Press **Ctrl-Alt** keys to escape from console.
THIS PROCEDURE HAS BEEN COMPLETED		

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

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

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

Needed material:

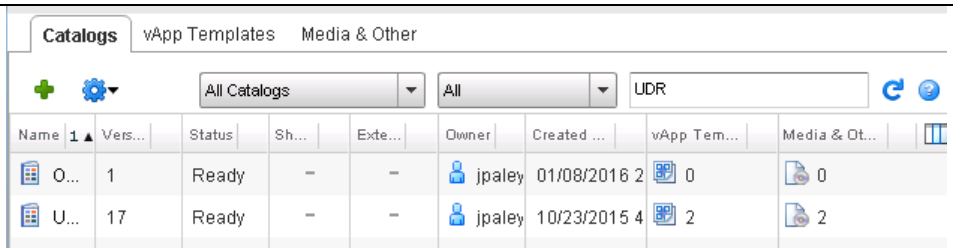
- Oracle Communications User Data Repository OVA

Optional material (*required for ISO install only*):

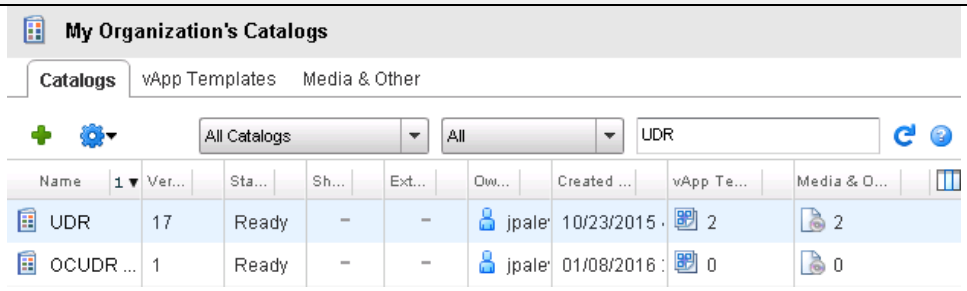
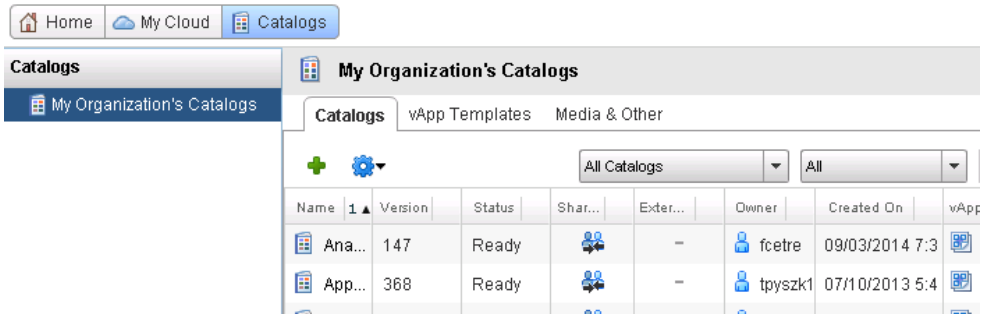
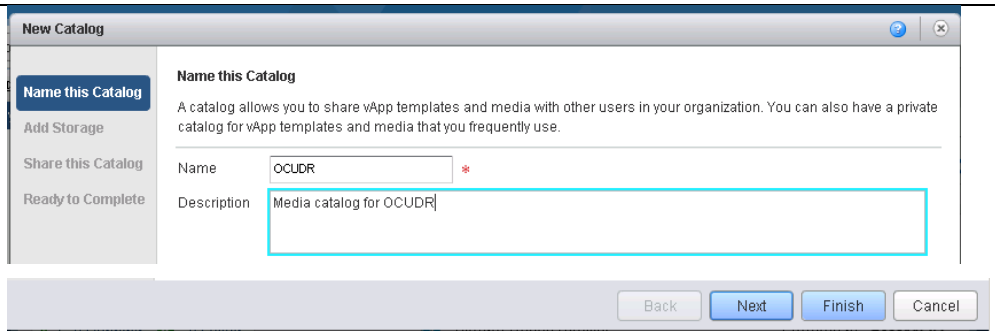
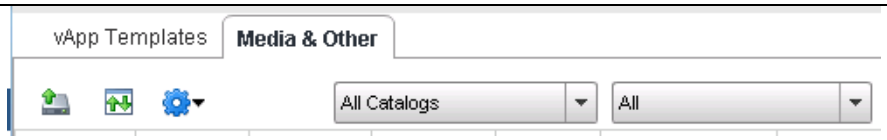
- Oracle Communications User Data Repository ISO
- TPD Platform ISO

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

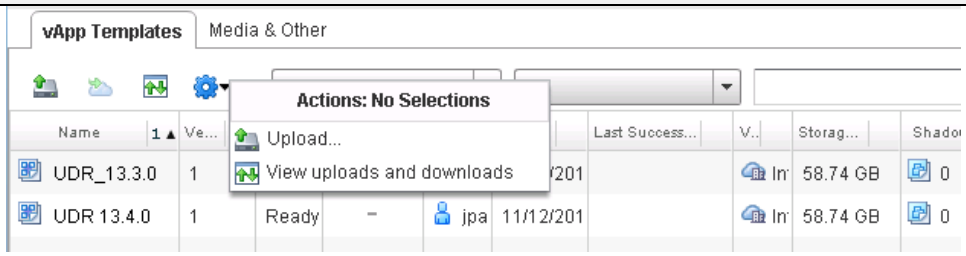
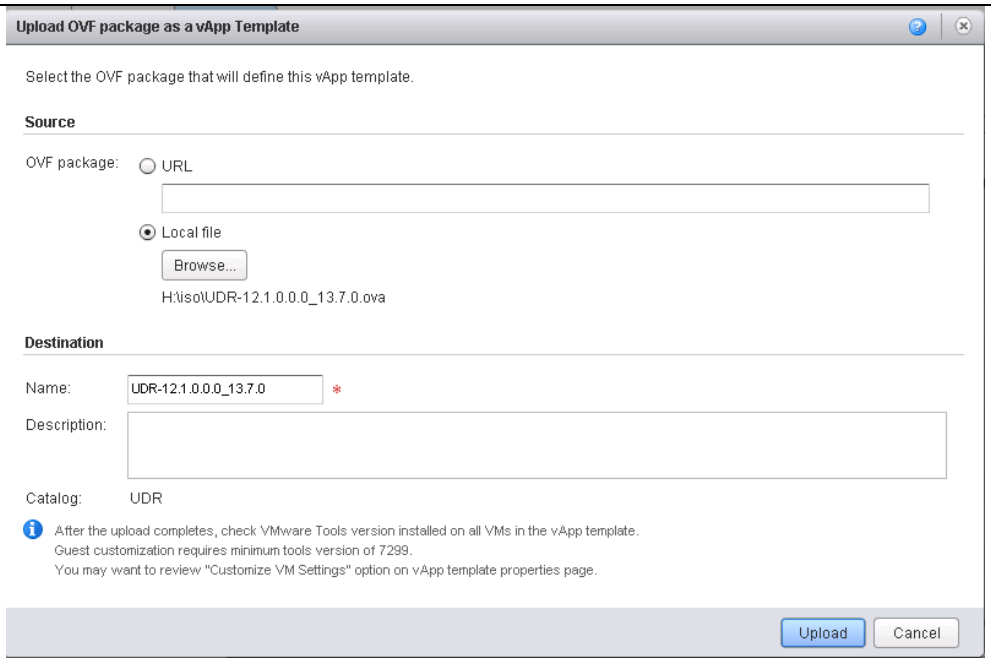
Procedure 22: vCloud Director Oracle Communications User Data Repository Media Upload

Step	Procedure	Result
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.	

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

Step	Procedure	Result
3. ☐	**vCloud Director:** Click on the name hyperlink for the appropriate catalog and proceed to **Step 6**	 Note: If a catalog for Oracle Communications User Data Repository does not yet exist, create one with the following two steps.
4. ☐	**vCloud Director:** Select… → **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 new catalog.
6. ☐	**vCloud Director:** Select.. **vApp Templates** for OVA upload or **Media & Other** for ISO upload	

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

Step	Procedure	Result
7. ☐	**vCloud Director:** Select… **→ Blue Gear Symbol** ***→ Upload…***	
8. ☐	**vCloud Director:** Select **Source** as either URL or local file then input a **Name**. Click **Upload.**	
THIS PROCEDURE HAS BEEN COMPLETED		

C-2 Create vApp

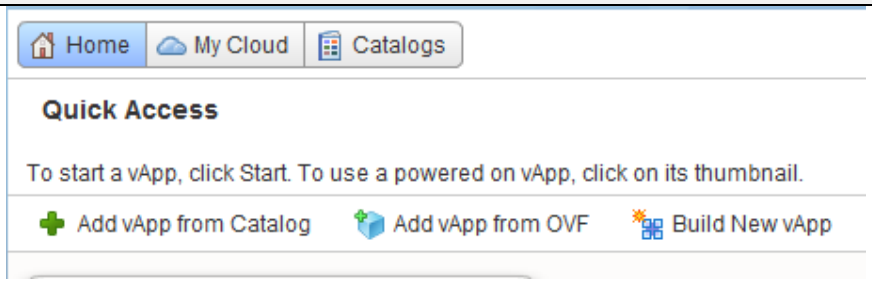
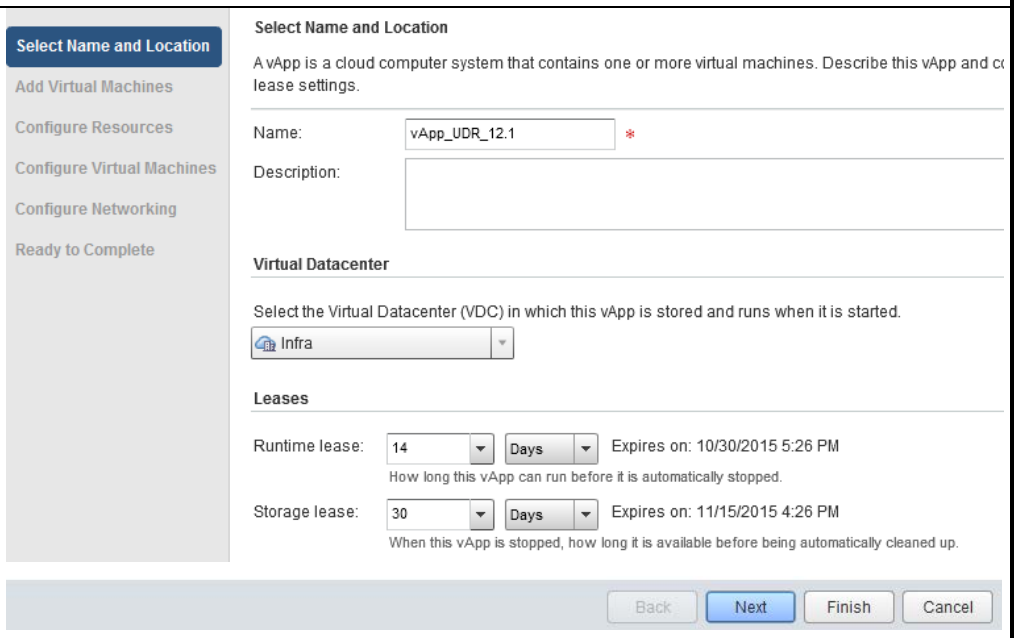
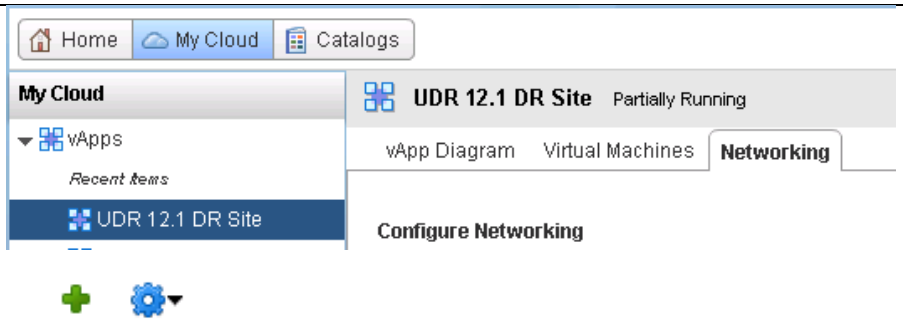
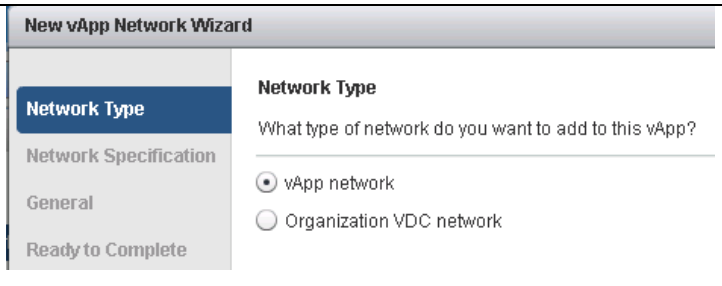
This procedure will create and configure a new vApp virtual appliance.

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

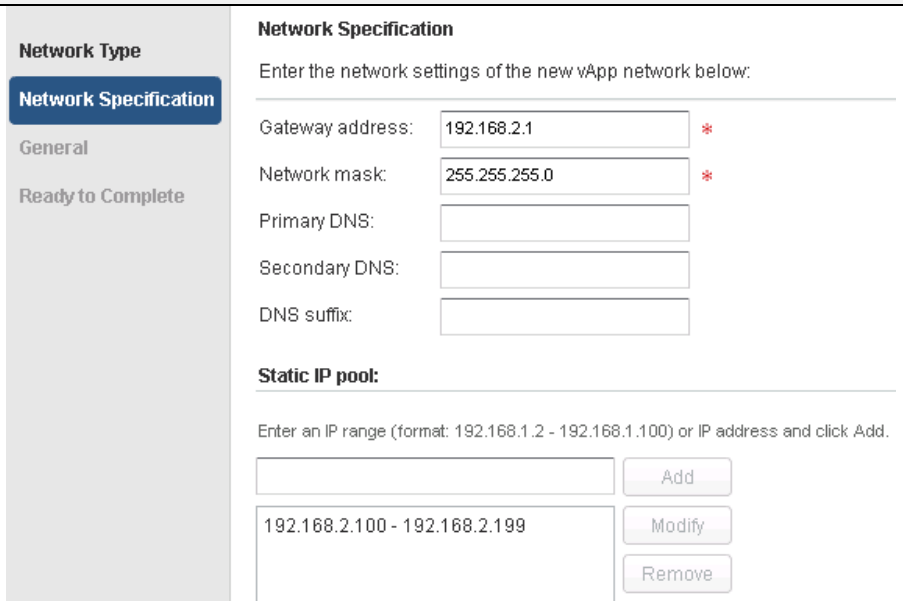
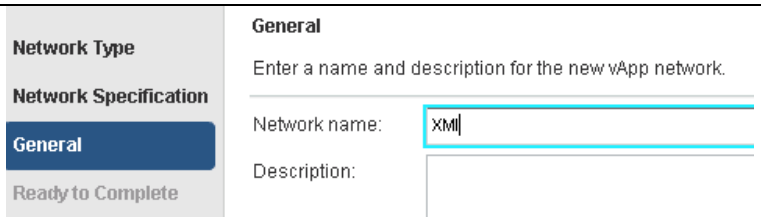
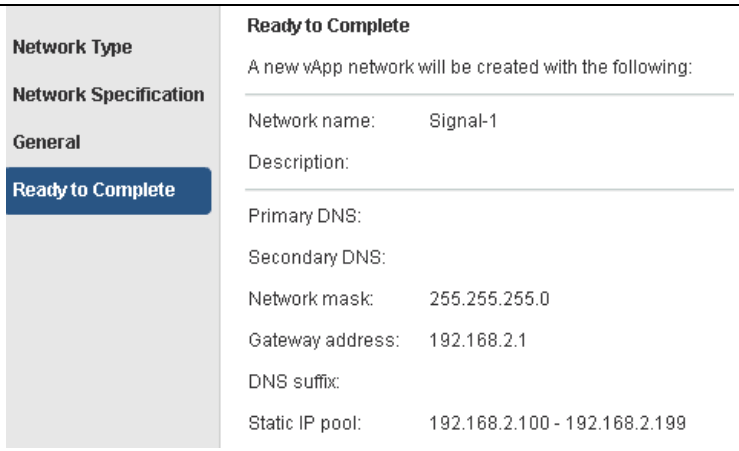
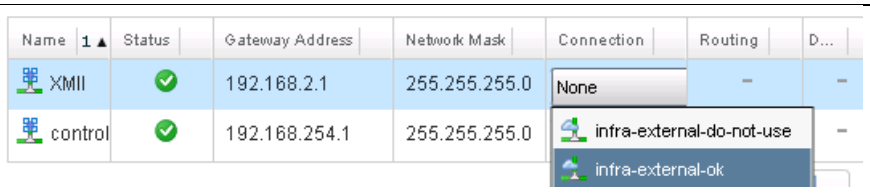
Procedure 23: Create vApp

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

Procedure 23: Create vApp

Step	Procedure	Result
2. ☐	**vCloud Director:** Select **Home** tab ***Build New vApp***	
3. ☐	**vCloud Director:** 1. Enter **Name** for the vApp and other parameters as required. 2. Click **Finish**.	
4. ☐	**vCloud Director:** Select… **→ My Cloud** ***→ <vApp Name>*** ***→ Networking*** **Then click the + icon to add a network**	
5. ☐	**vCloud Director:** Select the **vApp network**. Click **Next**.	

Procedure 23: Create vApp

Step	Procedure	Result
6. ☐	**vCloud Director:** Enter desired parameters for your internal network. Be sure to have sufficient address space for the number of servers you expect to deploy. Click **Next**.	
7. ☐	**vCloud Director:** Enter a **Name** for your network using [1] as a guide. Click **Next**.	
8. ☐	**vCloud Director:** Review the network data 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** drop box. Otherwise, leave **Connection** setting as **None**.

Procedure 23: Create vApp

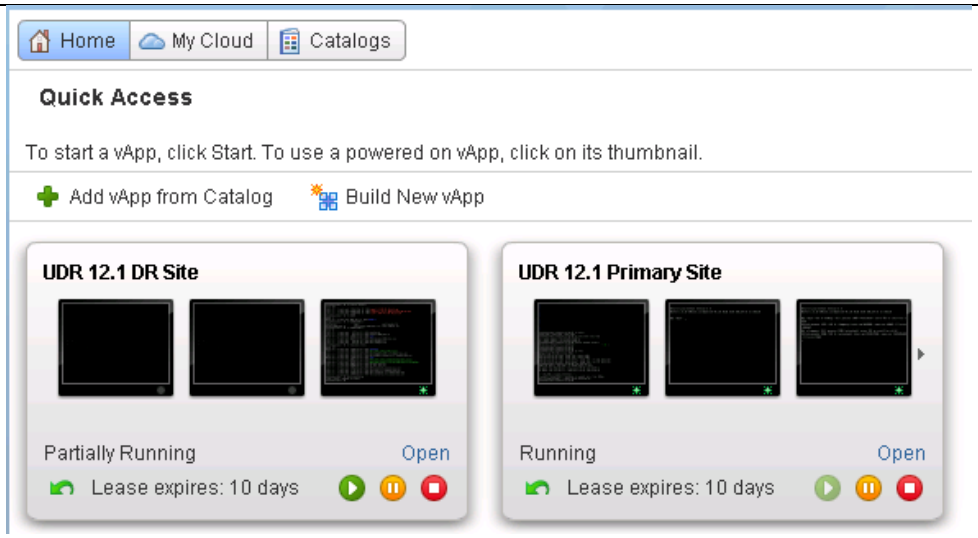
Step	Procedure	Result
10. ☐	**vCloud Director:** Click **Apply**.	
THIS PROCEDURE HAS BEEN COMPLETED		

C-3 Create Guests from OVA

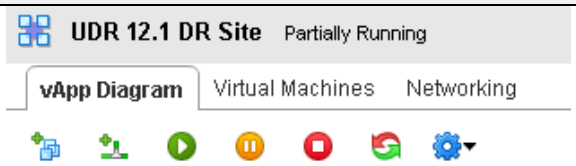
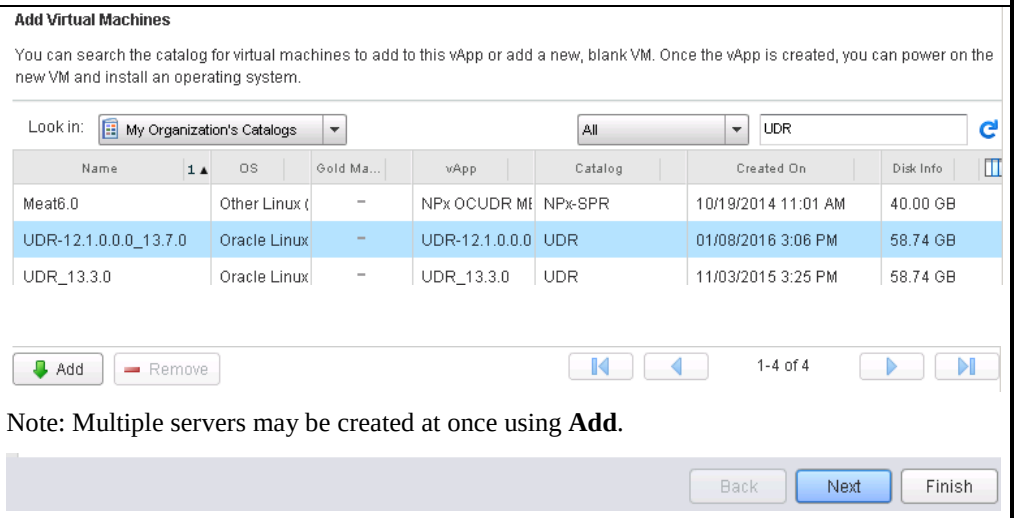
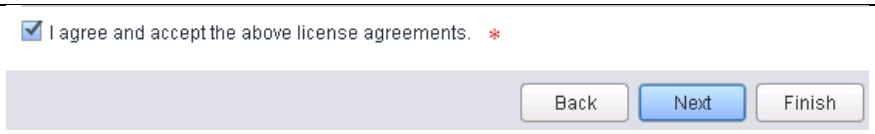
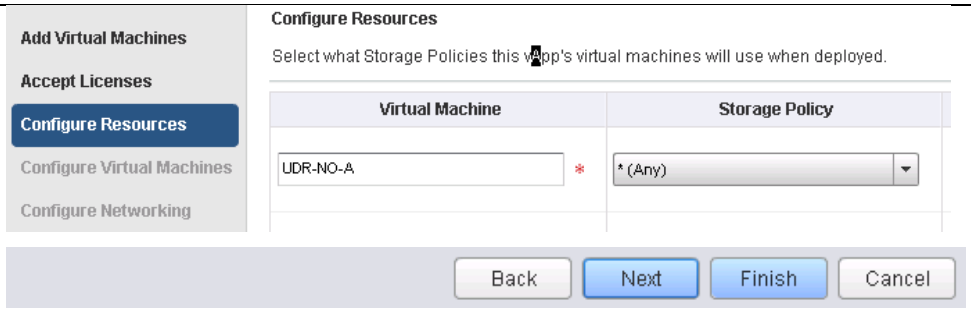
This procedure will create Oracle Communications User Data Repository virtual machines (guests) from OVA.

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

Procedure 24: Create Guests from OVA with vCloud Director

Step	Procedure	Result
1. ☐	Log into the VMware vCloud Director	
2. ☐	**vCloud Director:** Select **Open** hyperlink 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 next step to create it.

Procedure 24: Create Guests from OVA with vCloud Director

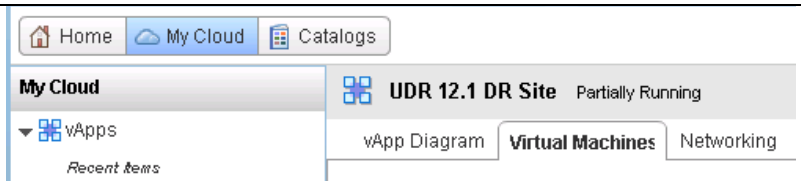
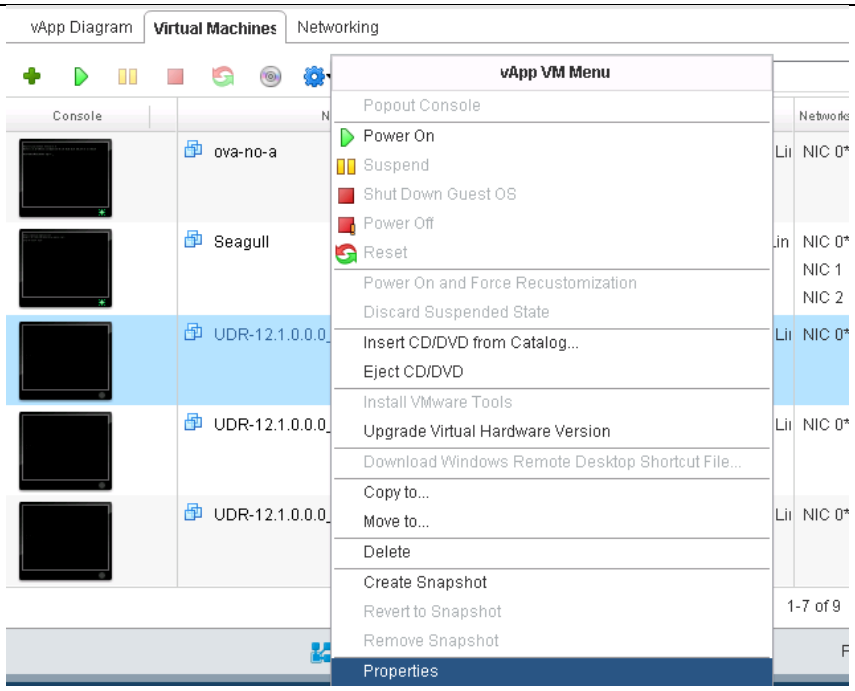
Step	Procedure	Result
3. ☐	**vCloud Director:** Select icon on left to **Add VM**	
4. ☐	**vCloud Director:** 1. Enter name in the **search field** and press Enter 2. Select Oracle Communications User Data Repository media name 3. Click **Add** 3. Click **Next**	 Note: Multiple servers may be created at once using **Add**.
5. ☐	**vCloud Director:** 1. **Check box** to agree with license 2. Click **Next**	
6. ☐	**vCloud Director:** 1. **Rename** virtual machine(s) to suit its location and role 2. Click **Finish**	
THIS PROCEDURE HAS BEEN COMPLETED		

C-4 Configure Guest Resources

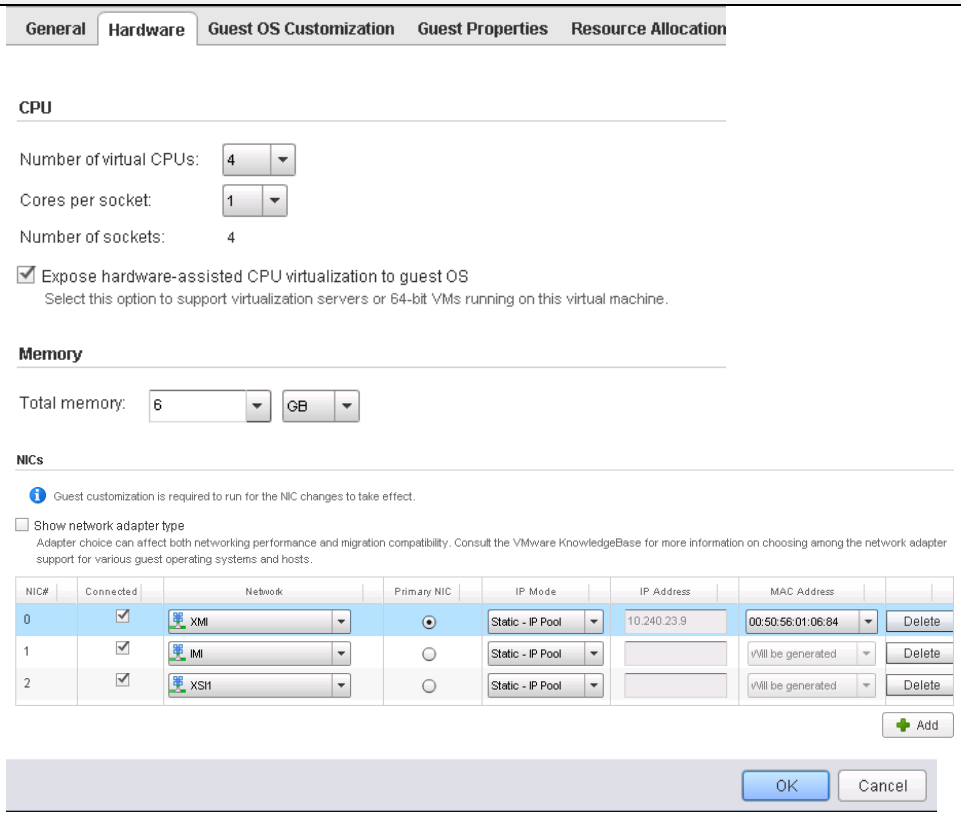
This procedure will configure Oracle Communications User Data Repository virtual machines (guests) which have been created from OVA.

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

Procedure 25: Configure Guests from OVA with vCloud Director

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

Procedure 25: Configure Guests from OVA with vCloud Director

Step	Procedure	Result
5.	**vCloud Director:** Under the **Hardware** tab… **1)** Adjust the number of Virtual CPUs and Total Memory to match the server's role in [1]. **2)** Check **Expose hardware-assisted CPU virtualization** box. **3)** Adjust **NICs** to match the server's role in [1]. **4)** Click **OK.**	
	THIS PROCEDURE HAS BEEN COMPLETED	

C-5 Create Guests from ISO

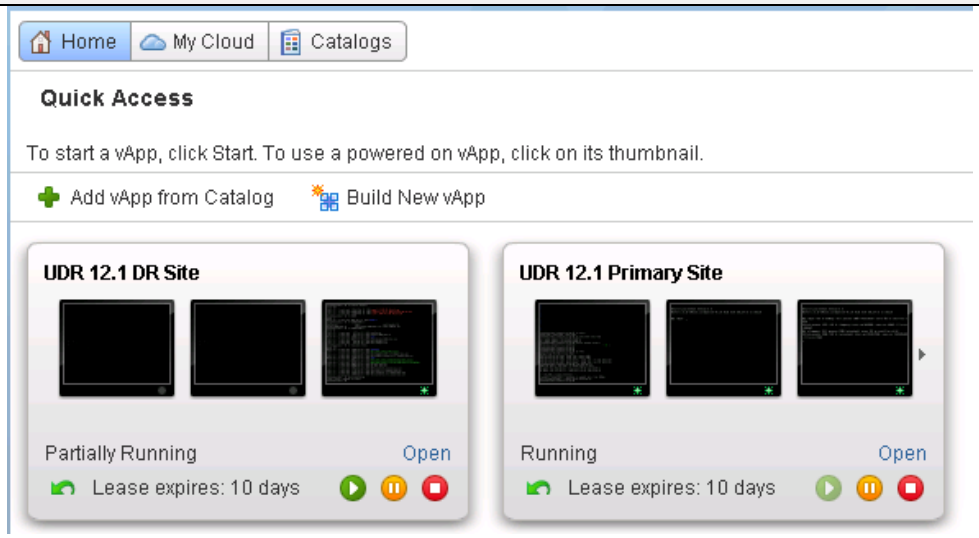
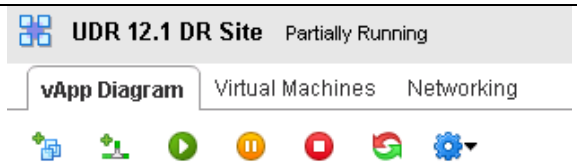
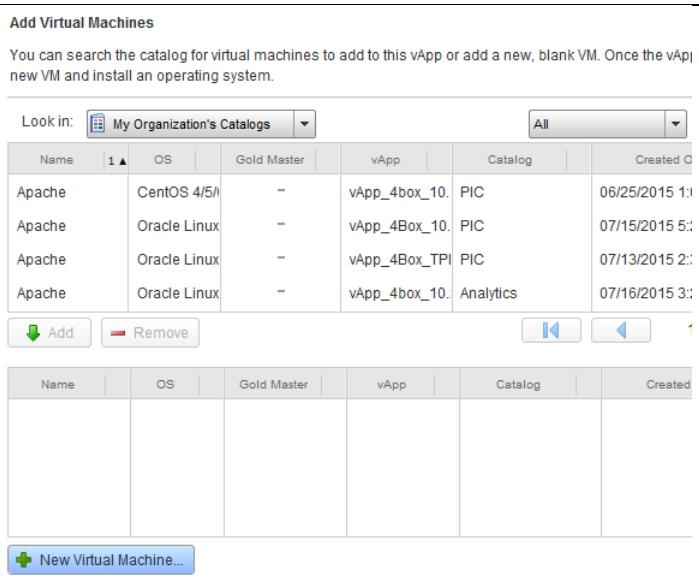
This procedure will create Oracle Communications User Data Repository virtual machines (guests) from ISO.

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

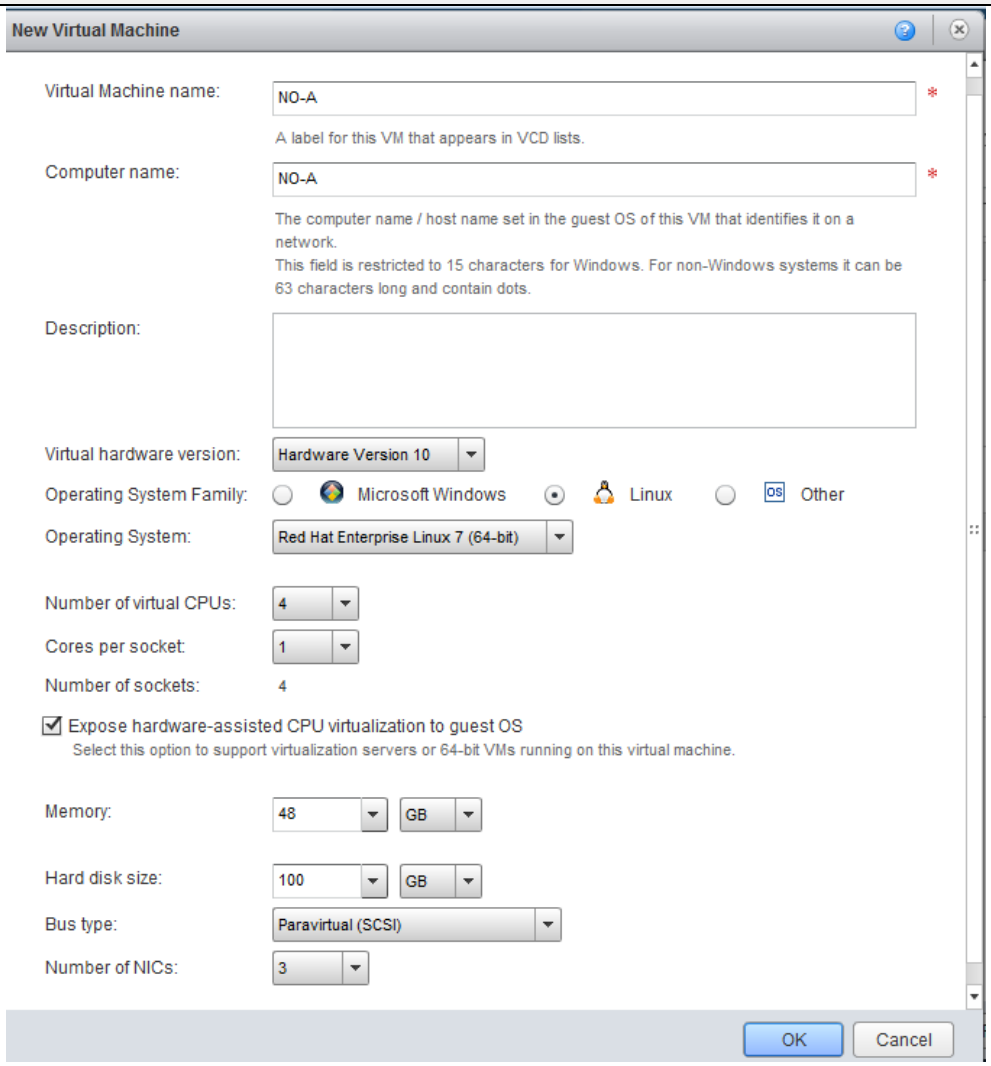
Procedure 26: Create Guests from ISO with vCloud Director

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

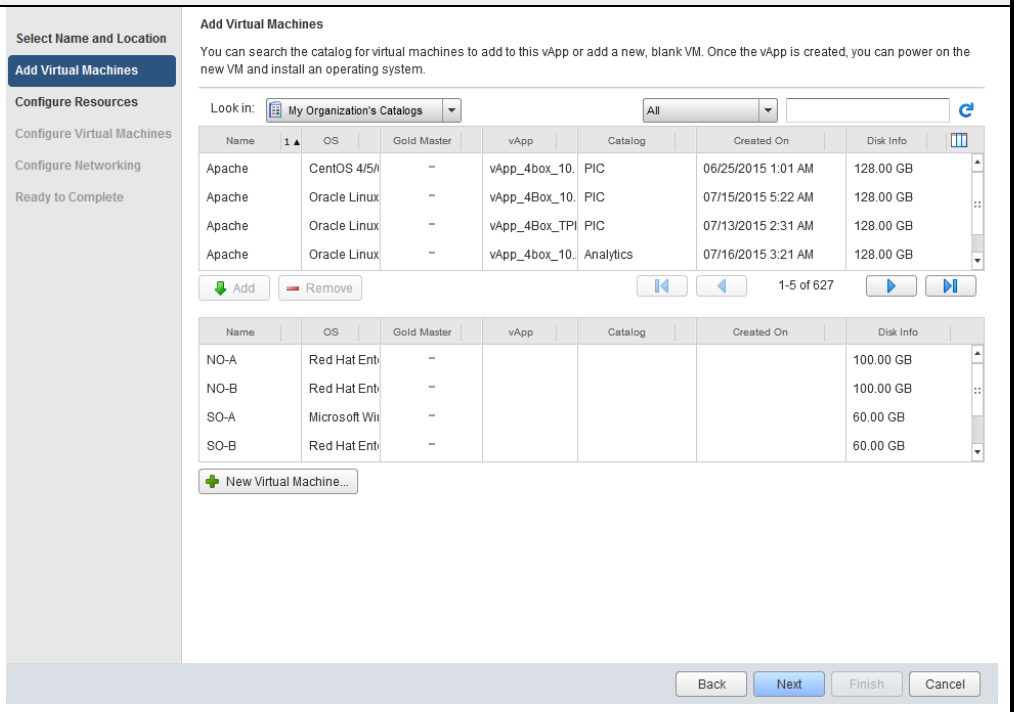
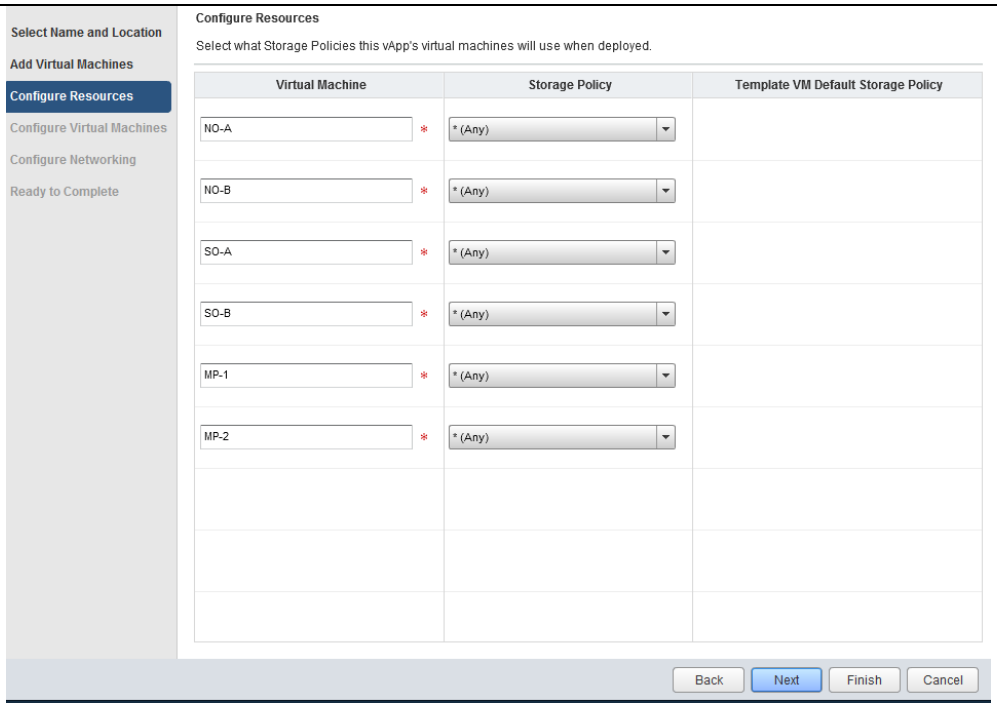
Procedure 26: Create Guests from ISO with vCloud Director

Step	Procedure	Result
2. ☐	**vCloud Director:** Select **Open** hyperlink 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 next step to create it.
3. ☐	**vCloud Director:** Select icon on left to **Add VM**	
4. ☐	**vCloud Director:** Click **New Virtual Machine** button.	

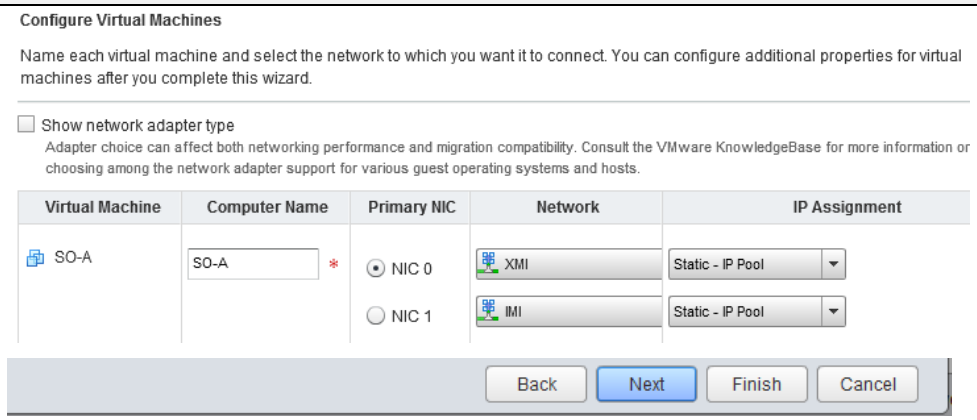
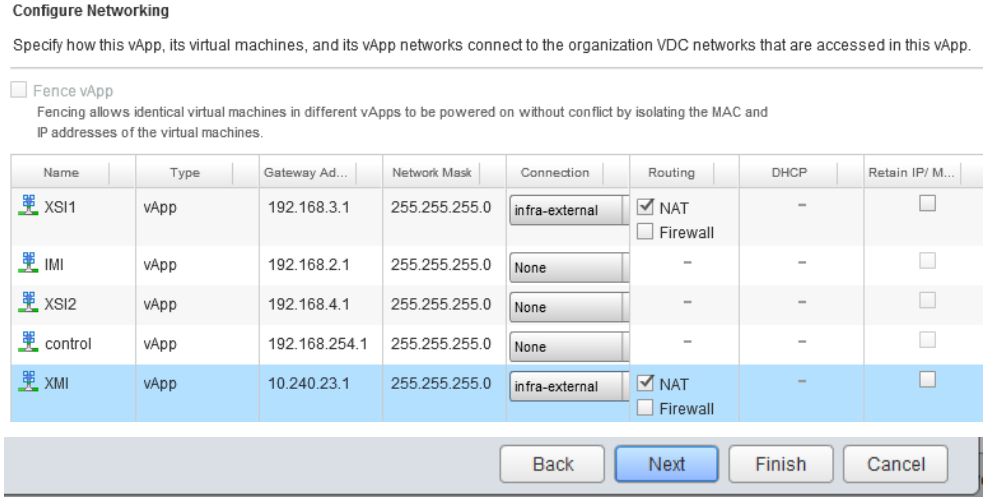
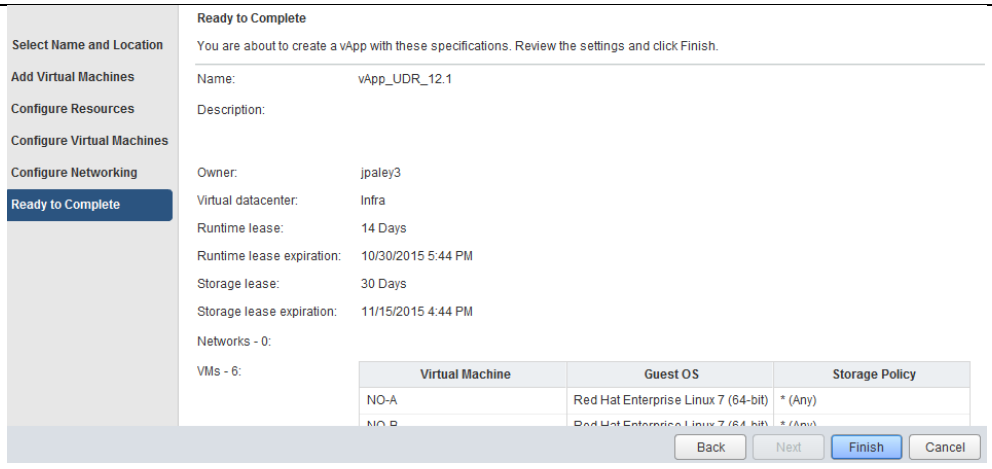
Procedure 26: Create Guests from ISO with vCloud Director

Step	Procedure	Result
5. ☐	**vCloud Director:** **1.** Enter **Name** and **Computer Name** for VM. **2.** Set Operating System Family = **Linux**. **3. Check** 'Expose hardware-assisted CPU…" box. **4.** Enter all **resource parameters** according to the role given in OCCUR Resource Profile [1]. **5.** Click **OK**.	

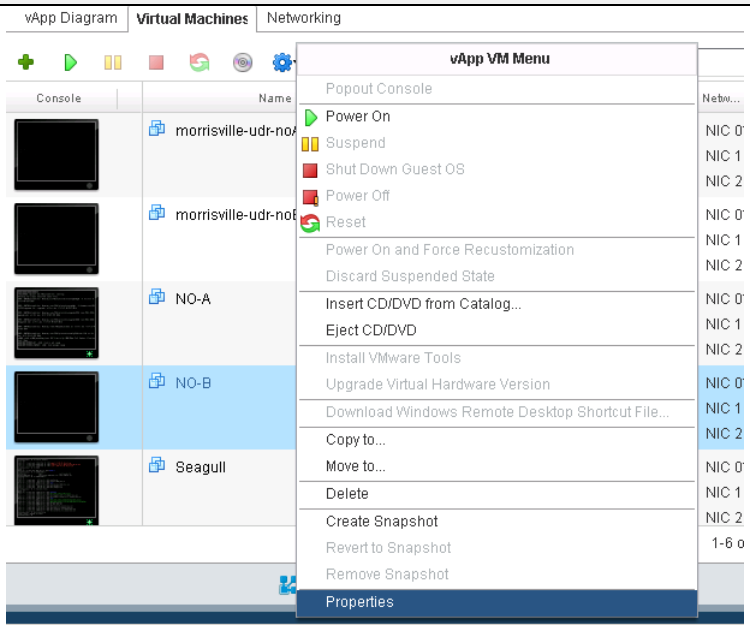
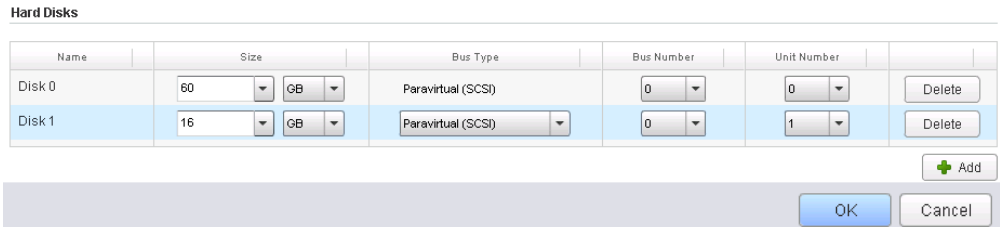
Procedure 26: Create Guests from ISO with vCloud Director

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

Procedure 26: Create Guests from ISO with vCloud Director

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

Procedure 26: Create Guests from ISO with vCloud Director

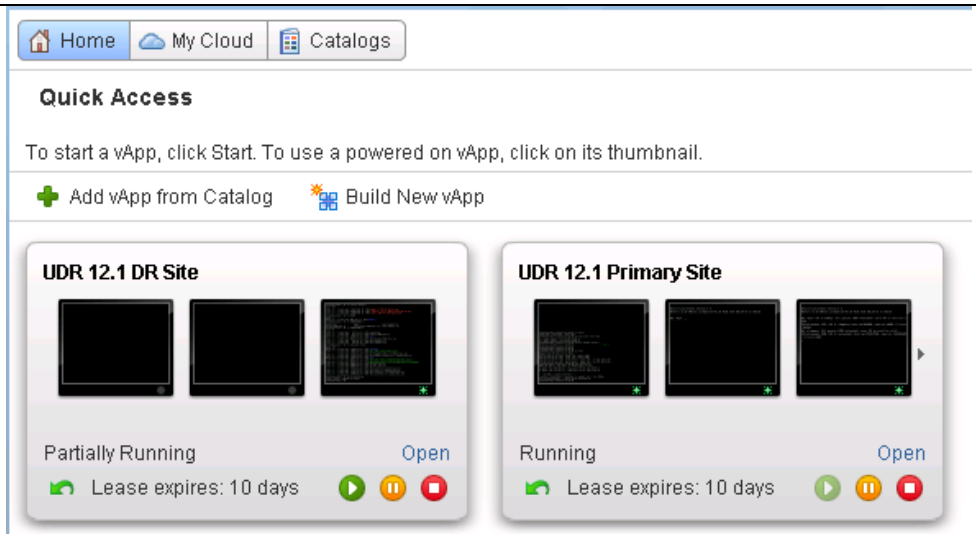
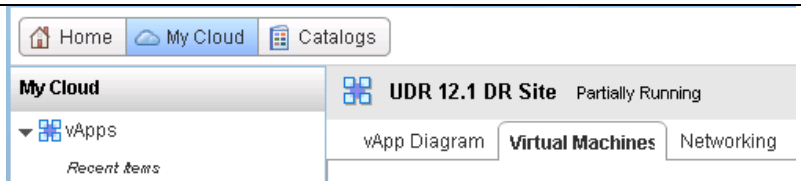
Step	Procedure	Result
11. ☐	**vCloud Director:** 1. Select the VM. 2. Click the **Blue Gear** icon. 3. Select **Properties.**	
12.	**vCloud Director:** 1. Select the **Hardware** tab. **2.** Adjust size of **Disk 0** to match **VM profile [1].**	
13.	**vCloud Director:** **Only If** the VM uses a second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

C-6 Install Guests from ISO

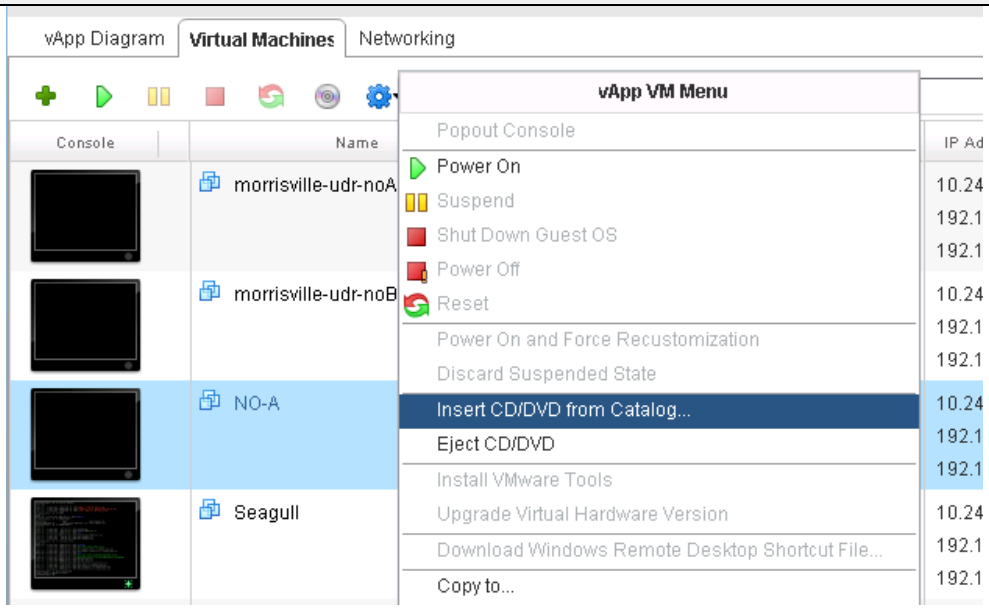
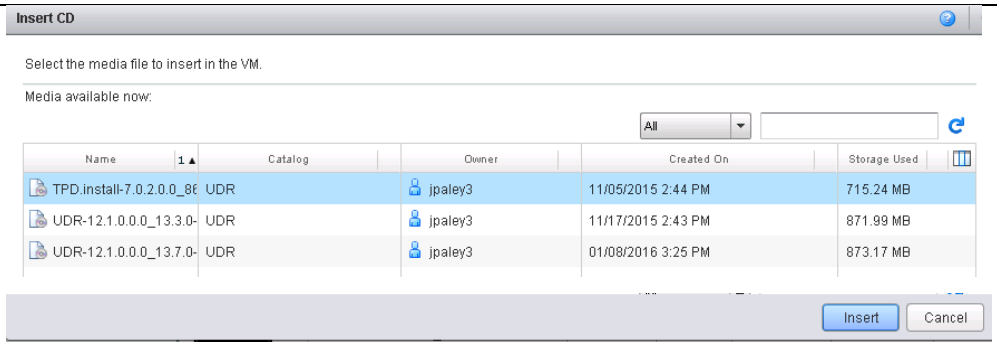
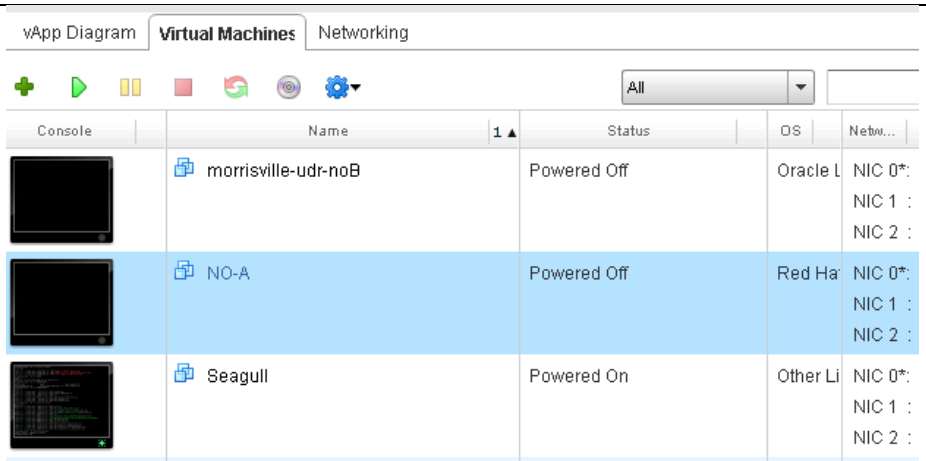
This procedure will create Oracle Communications User Data Repository virtual machines (guests) from ISO.

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

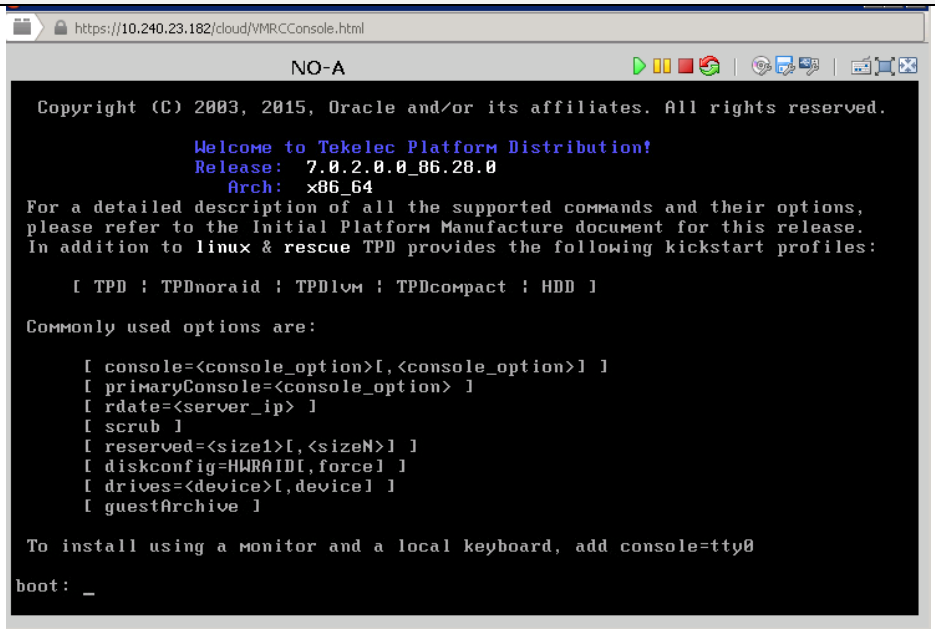
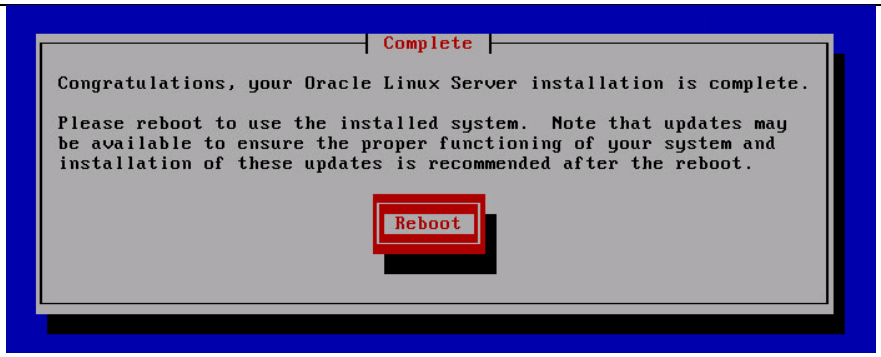
Procedure 27: Install Guests from ISO with vCloud Director

Step	Procedure	Result
1. ☐	Log into the VMware vCloud Director	
2. ☐	**vCloud Director:** Select **Open** hyperlink for the Oracle Communications User Data Repository vApp then procede to **Step 5.**	 Note: Current vApps are listed on the Home Page. If a new vApp is required continue with the next step to create it.
9. ☐	**vCloud Director:** Select… → **My Cloud** → ***Virtual Machines***	

Procedure 27: Install Guests from ISO with vCloud Director

Step	Procedure	Result
10. ☐	**vCloud Director:** 1. Select the VM. 2. Click the **Blue Gear** icon. 3. Select **Insert CD/DVD from Catalog**.	
11. ☐	**vCloud Director:** 1. Select **TPD ISO**. 2. Click **Insert**	
12. ☐	**vCloud Director:** 1. Click on the **Green Play icon** to start the VM 2. Click the **Console** raise console window	

Procedure 27: Install Guests from ISO with vCloud Director

Step	Procedure	Result
13. ☐	**vCloud Director:** Initiate operating system install by entering the given text into console boot prompt	 **boot:** **TPDnoraid console=tty0**
14. ☐	When installation completes, press **Enter** to reboot	 Note: Escape the console session with keyboard combination **Ctrl – Alt**
15. ☐	After reboot, log into console	Hostnameb6092a316785 login: **root** password:
16. ☐	*Verify that the TPD release is **7.0.2.x***	`# getPlatRev` `7.0.2.0.0-86.34.0`
17. ☐	*Execute **"alarmMgr" command** to verify health of the server before Application install.*	`# alarmMgr --alarmStatus` ***NOTE**: This command should return no output on a healthy system.*

Procedure 27: Install Guests from ISO with vCloud Director

Step	Procedure	Result
18. ☐	*Execute **"verifyIPM"** 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.*
19. ☐	*Create physical volume **sdb***	`# pvcreate /dev/sdb` `Physical volume "/dev/sdb" successfully created`

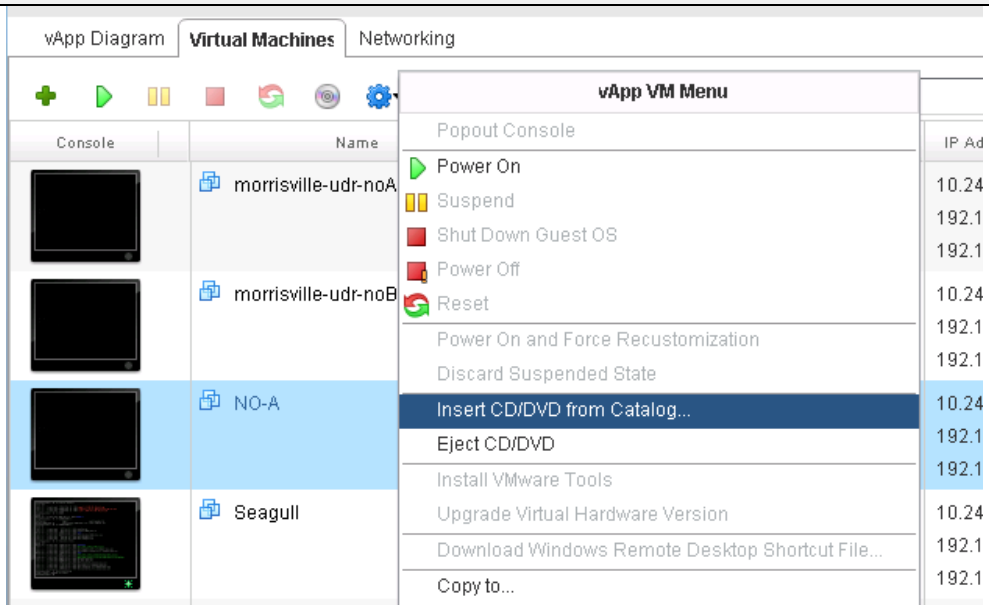
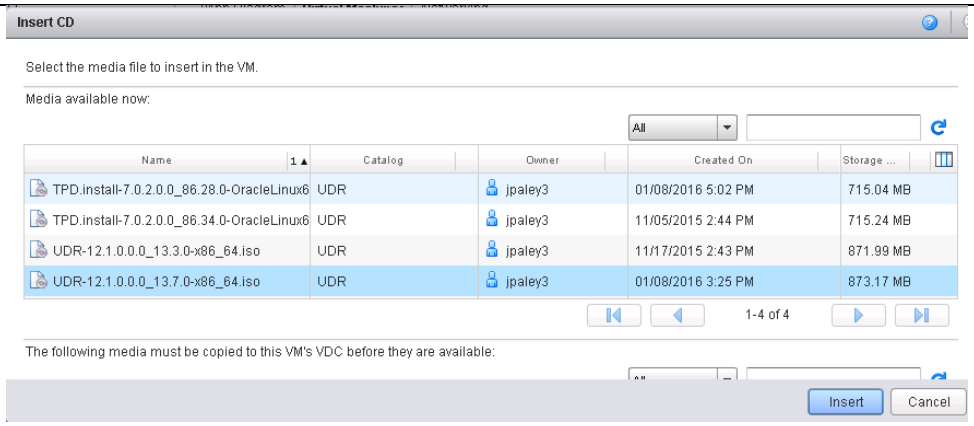
20. ☐	*Create volume group **stripe_vg***	`# vgcreate stripe_vg /dev/sdb`
		
		`Volume group "stripe_vg" successfully created`

21. ☐	*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`

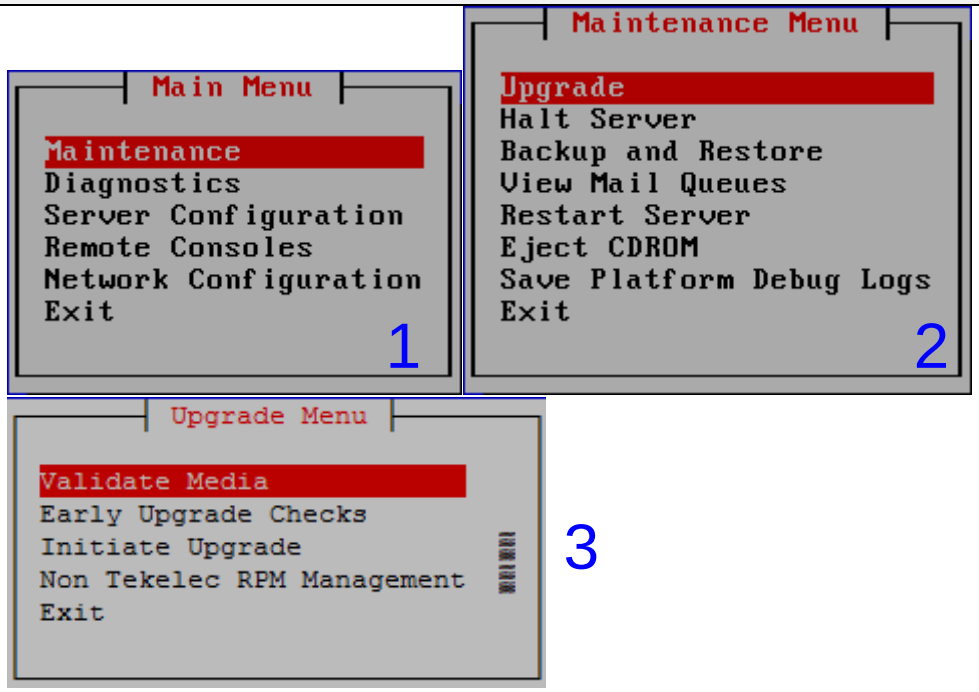
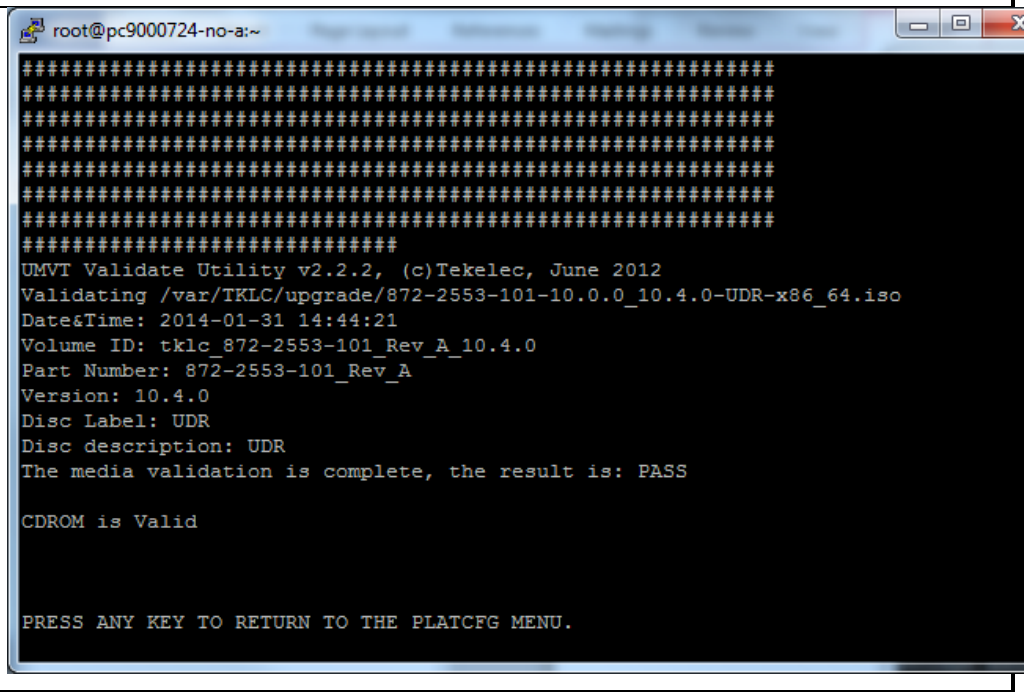
22. ☐	*Make filesystem on **rundb***	`# mkfs -t ext4 /dev/stripe_vg/rundb`
		`mke2fs 1.43-WIP (20-Jun-2013)`
		`Filesystem label=`
		`OS type: Linux`
		`Block size=4096 (log=2)`
		`Fragment size=4096 (log=2)`
		`Stride=0 blocks, Stripe width=0 blocks`
		`25231360 inodes, 100925440 blocks`
		`5046272 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.`

23. ☐	*Execute the following syscheck/restart steps in order*	`# syscheck --reconfig disk`
24. ☐	*Escape console*	Escape the console session with keyboard combination **Ctrl – Alt**

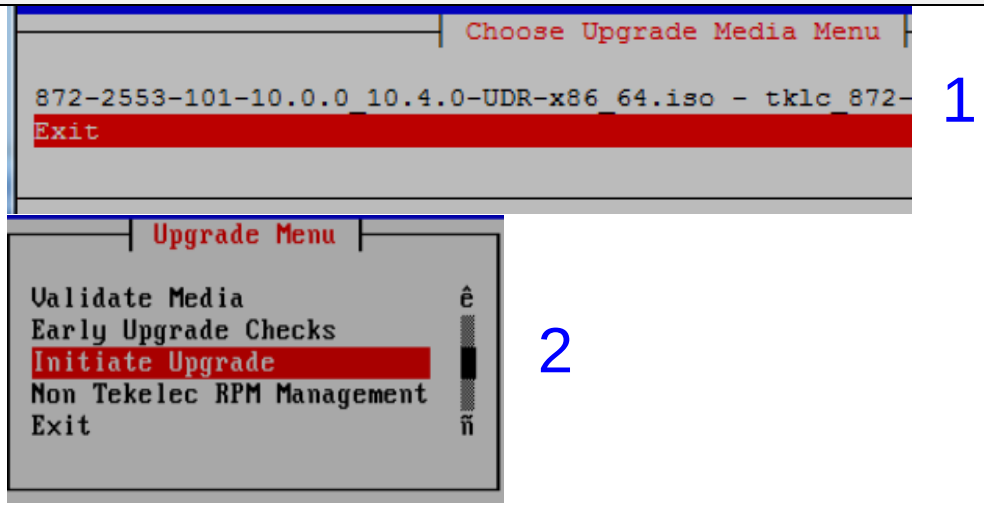
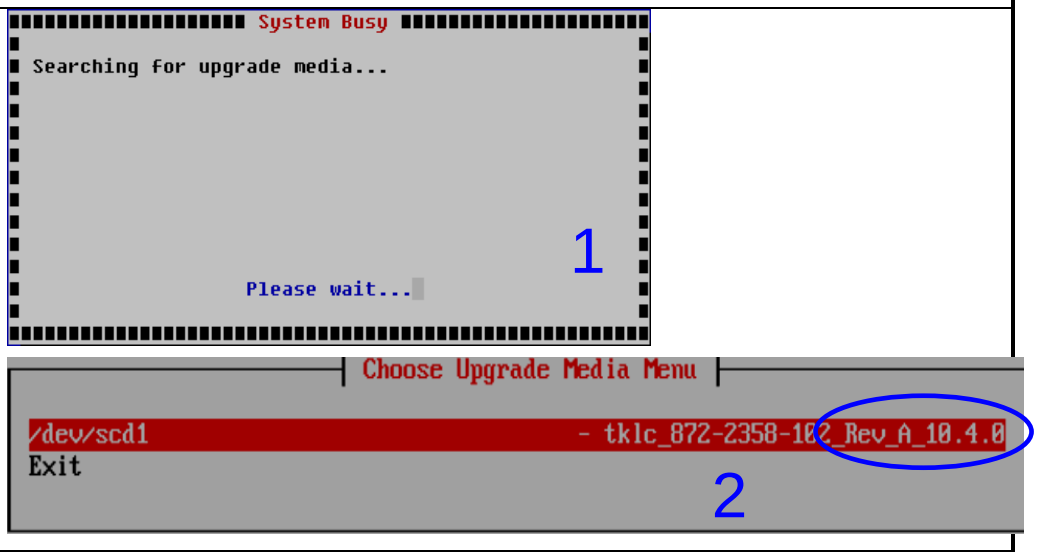
Procedure 27: Install Guests from ISO with vCloud Director

Step	Procedure	Result
25. ☐	**vCloud Director:** 1. Select the VM. 2. Click the **Blue Gear** icon. 3. Select **Insert CD/DVD from Catalog**.	
26. ☐	**vCloud Director:** 1. Select **Oracle Communications User Data Repository ISO**. 2. Click **Insert**	
27. ☐	**VM Console:** 1. Re-enter the console window 2. Login to the **"platcfg"** utility.	`[root@hostname1260476221 ~]# su - platcfg`

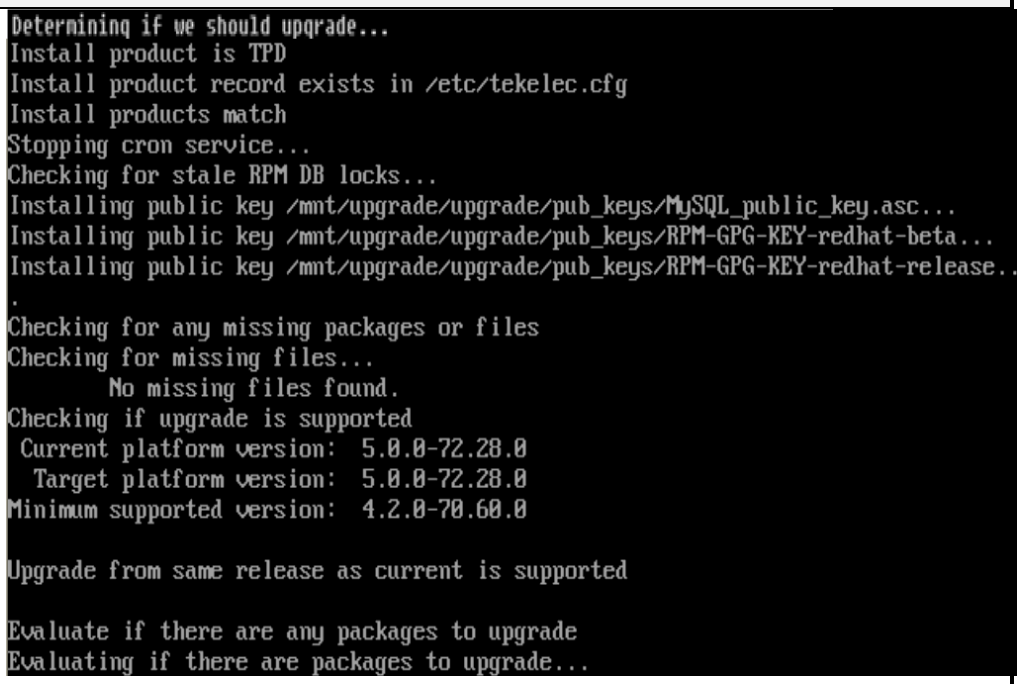
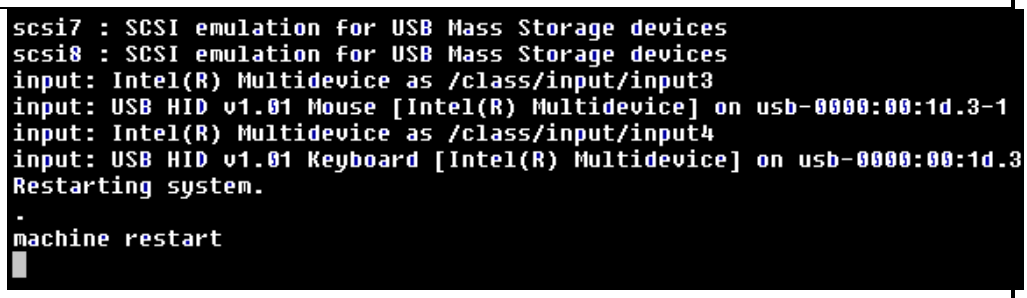
Procedure 27: Install Guests from ISO with vCloud Director

Step	Procedure	Result
28. ☐	**VM Console:** From the **"platcfg"** Main Menu… Select each option as shown on the right, pressing the **Enter** key after each selection.	
29. ☐	**VM Console:** From the **"platcfg"** Main Menu… Verify "CDROM is Valid." …… then press any key to return to platcfg menu.	

Procedure 27: Install Guests from ISO with vCloud Director

Step	Procedure	Result
30. ☐	**VM Console:** From the **"platcfg"** Main Menu… Select each option as shown on the right, pressing the **Enter** key after each selection.	
31. ☐	**VM Console:** Verify that the Application release level shown matches the target release. Press **Enter**.	

Procedure 27: Install Guests from ISO with vCloud Director

Step	Procedure	Result
32. ☐	**VM Console:** Output similar to that shown on the right may be observed as the Application install progresses.	
33. ☐	**VM Console:** Output similar to that shown on the right may be observed as the server initiates a post-install reboot.	
34. ☐	**VM Console:** After the server has completed 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>***

Procedure 27: Install Guests from ISO with vCloud Director

Step	Procedure	Result

35. ☐	**VM Console:**
	
	Output similar to that shown on the right will appear as 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 ~]$`

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

37. ☐	**VM Console:**
	
	Verify that the Application release level shown matches the target release.
		`[admusr@ pc9000724-no-a ~]$ appRev`
		`Install Time: Fri Feb 9 04:48:18 2018`
		`Product Name: UDR`
		`Product Release: 12.4.0.0.0_16.14.0`
		`Base Distro Product: TPD`
		`Base Distro Release: 7.5.0.0.0_88.45.0`
		`Base Distro ISO: TPD.install-7.5.0.0.0_88.45.0-OracleLinux6.9-x86_64.iso`
		`ISO name: UDR-12.4.0.0.0_16.14.0-x86_64.iso`
		`OS: OracleLinux 6.9`

38. ☐	*Change directory*	`$ cd /var/TKLC/backout`
39. ☐	*Perform upgrade acceptance.*	`$ sudo ./accept`
40. ☐	**VM Console:** *Reboot the server*	Reboot the server: `$ sudo reboot` Wait until the reboot completes and re-login with admusr credentials.
41. ☐	**VM Console:** *Verify server health*	Verify server health: `$ alarmMgr --alarmStatus` ***Note**: This command should return only one alarm related to pending upgrade acceptance.*

Procedure 27: Install Guests from ISO with vCloud Director

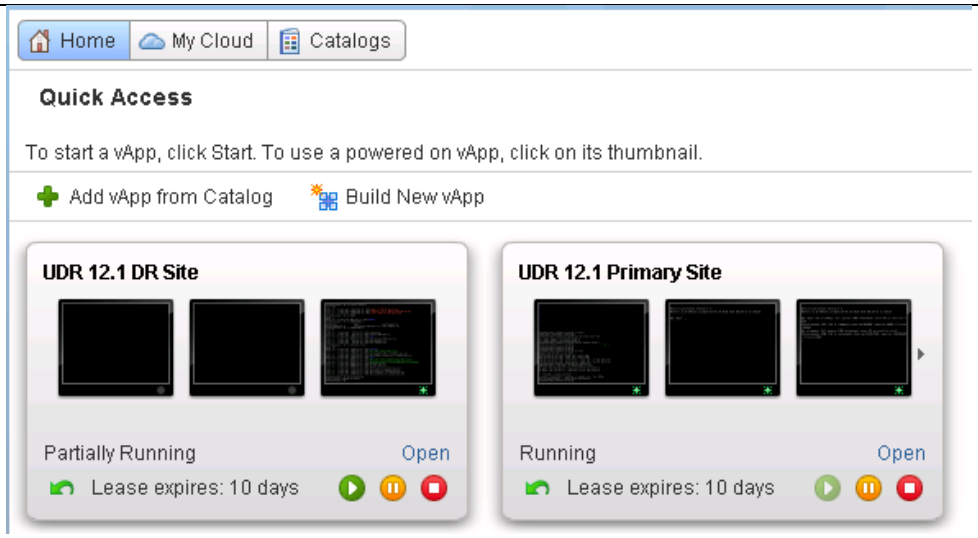
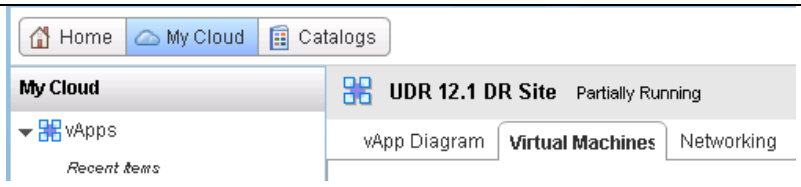
Step	Procedure	Result
THIS PROCEDURE HAS BEEN COMPLETED		

C-7 Configure Guests Network

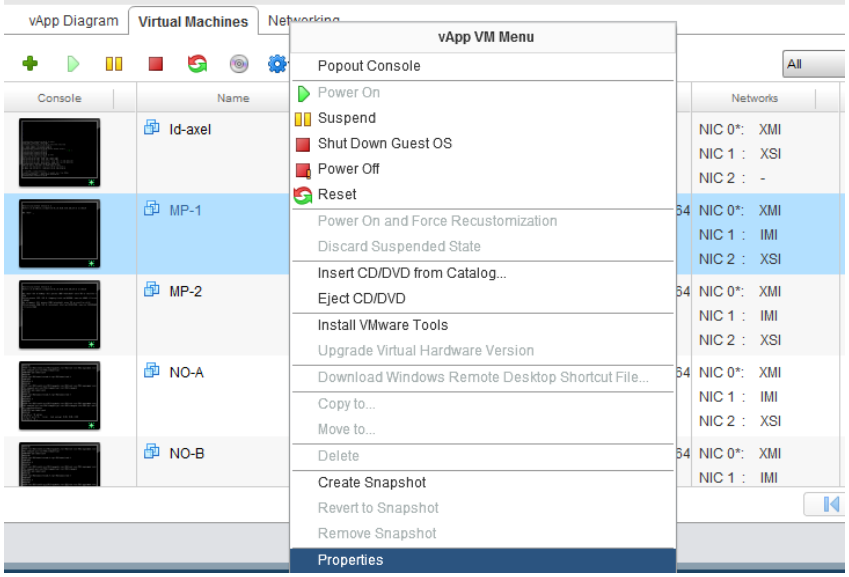
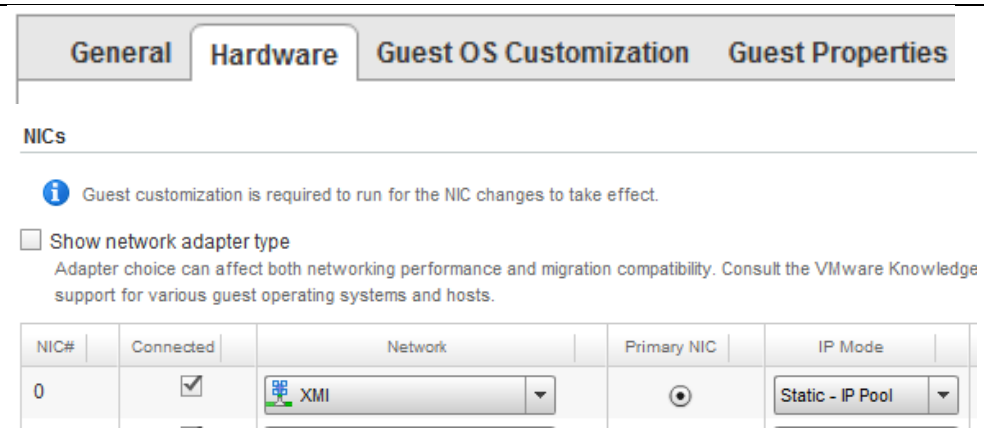
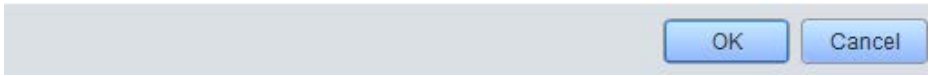
This procedure will create Oracle Communications User Data Repository virtual machines (guests) from ISO.

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

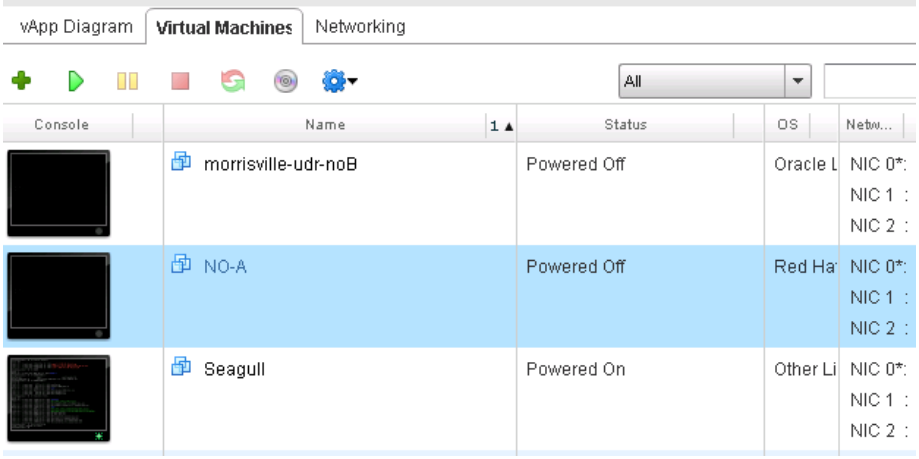
Procedure 28: Configure Guest OAM Network

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

Procedure 28: Configure Guest OAM Network

Step	Procedure	Result
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#** assigment of application networks 3. Click **Cancel**	 Note the device NIC# assigment of the following networks: XMI: _____ IMI: _____ XSI-1: _____ XSI-2 : _____ *(optional)* 

Procedure 28: Configure Guest OAM Network

Step	Procedure	Result
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. Use '**set**' otherwise.
		`$ 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 shown here (eth0) if the order of network adapter insertion was other 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** & **MP Servers**): Note: Where ethX 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 shown here (eth2) if the order of network adapter insertion was other than shown. Refer to **Step 5** for this assignment.
10. ☐	**VM Console:** **Repeat** as required **(MP Server Only)**	**Repeat Step 7** to add **XS1-2 (eth3)** if a second signaling network is in use (Only for **MP Servers**). Adjust input parameter values accordingly

Procedure 28: Configure Guest OAM Network

Step	Procedure	Result
11. ☐	**VM Console:** Exit console	$ `exit` **Note:** Press **Ctrl-Alt** keys to escape from console.
THIS PROCEDURE HAS BEEN COMPLETED		

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 Note: The content of this appendix is for informational purposes only. Please consult the latest documents from the vendor of your OpenStack distrobution.

D-1 OpenStack Image Creation from OVA

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

Needed material:

- Oracle Communications User Data Repository OVAs

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

Procedure 29: OpenStack Image Creation from OVA

Step	Procedure	Result
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 Feb 9 21:10:59 2016 from 10.182.167.73 [root@pc12107008 ~]# **mkdir -p /home/ova** [root@pc12107008 ~]# **cd /home/ova**
2. ☐	Transfer OVA file this dir using sftp tool	[root@pc12107008 ova]# **ll** -rw-r--r-- 1 root root 1519329280 Feb 2 03:40 UDR-12.4.0.0.0_16.14.0.ova
3. ☐	Untar this ova file	[root@pc12107008 ova]# **tar xvf UDR-12.4.0.0.0_16.14.0.ova** UDR-16_14_0.ovf UDR-16_14_0.mf UDR-16_14_0.vmdk
4. ☐	Convert this vmdk file to qcow2 file	[root@pc12107008 ova]# **qemu-img convert -O qcow2 UDR-16_14_0.vmdk UDR-16_14_0.qcow2**

Procedure 29: OpenStack Image Creation from OVA

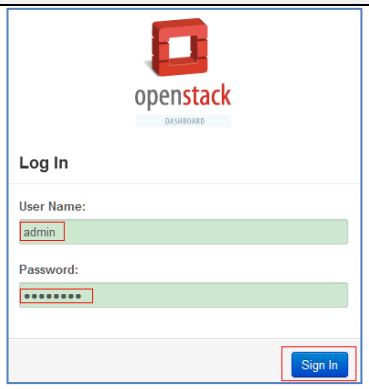
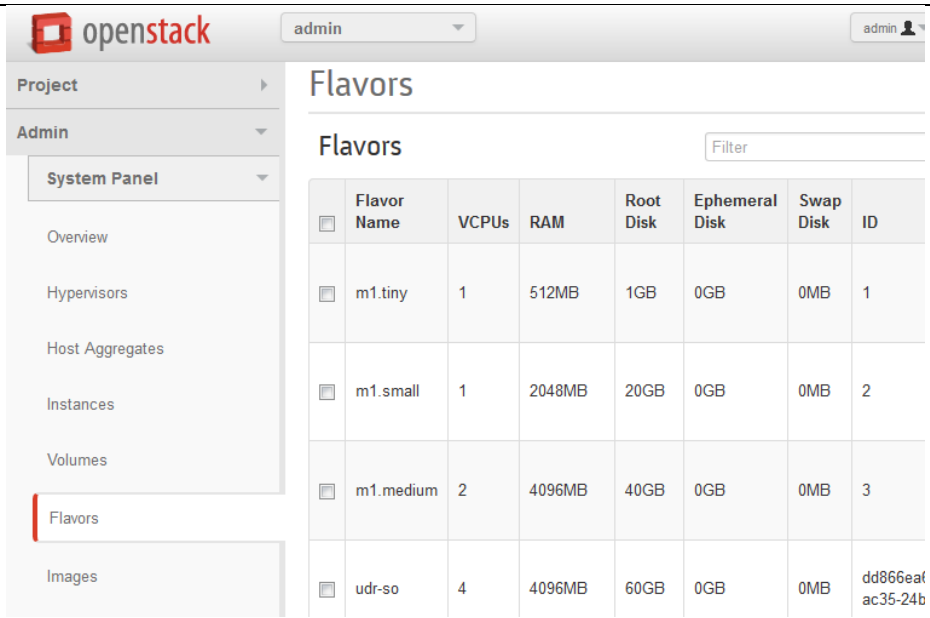
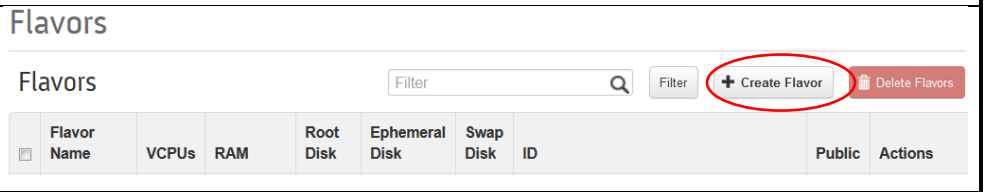
Step	Procedure	Result
5. ☐	Import converted qcow2 file into OpenStack	[root@pc12107008 ova]# **source /root/keystonerc_admin** [root@pc12107008 ova(keystone_admin)]# **time glance image-create --name UDR-16_14_0 --disk-format=qcow2 --container-format=bare --visibility=public--file= UDR-16_14_0.qcow2** +------------------+--------------------------------------+ | Property | Value | +------------------+--------------------------------------+ | checksum | 81e7f682231b108e29053e9516ff91ac | | container_format | bare | | created_at | 2018-02-9T06:56:51 | | 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-16_14_0 | | 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 HAS BEEN COMPLETED		

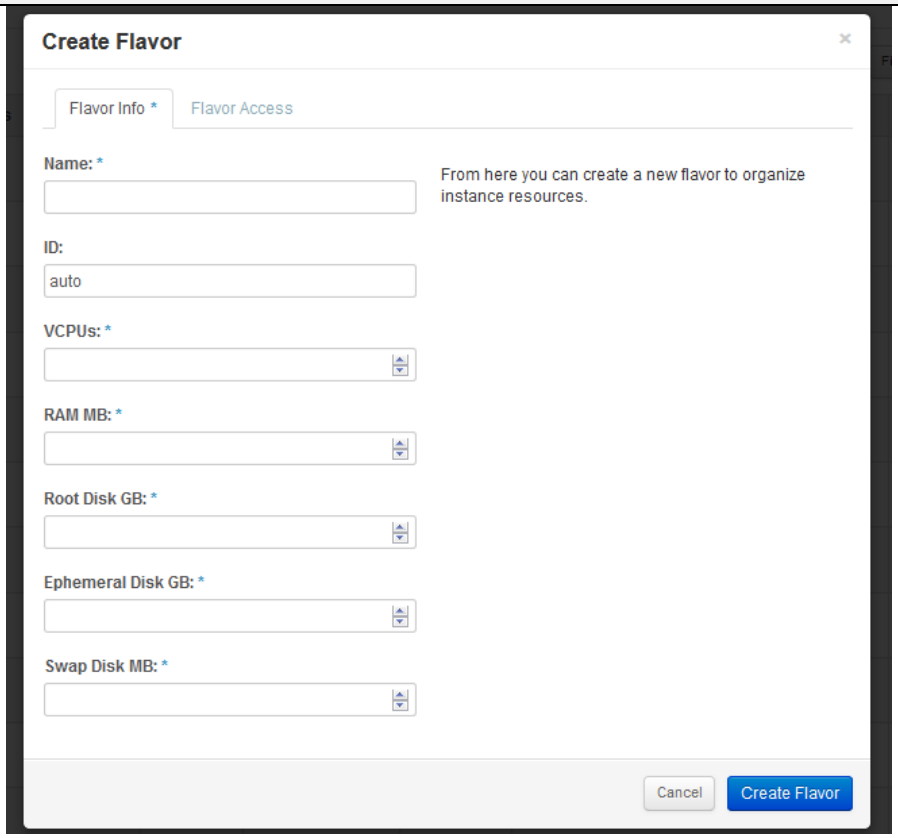
D-2 Create Resource Profiles (Flavors)

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

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

Procedure 30: Create Resource Profiles (Flavors)

Step	Procedure	Result
1 ☐	Login to the OpenStack GUI **Note:** Flavor Profile creation may require administrative privilige.	
2 ☐	Select… **Main Menu** **→ Admin** ***→System Panel*** ***→Flavors*** …as shown on the right.	
3 ☐	Click the "+ **Create Flavor**" button	

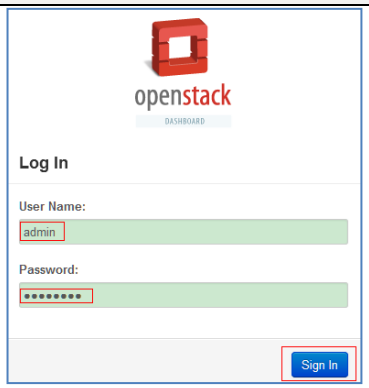
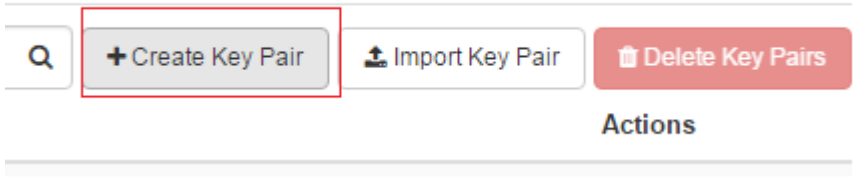
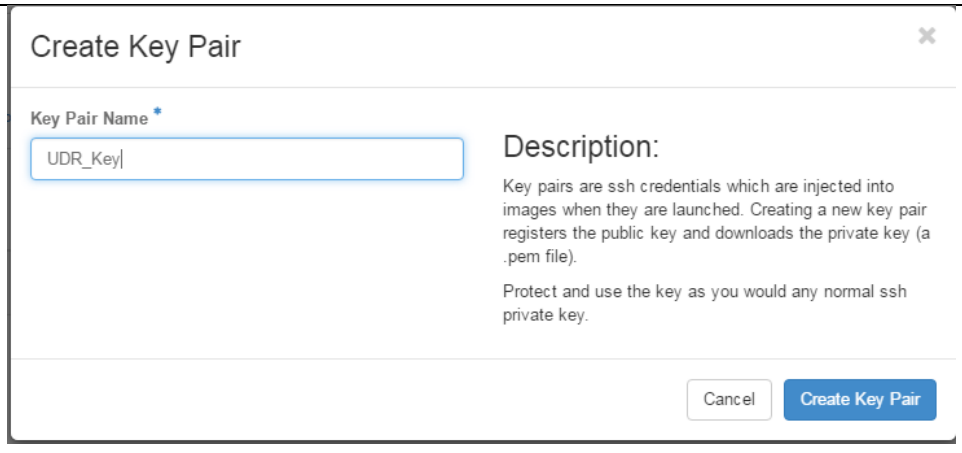
Step	Procedure	Result
4 ☐	Enter Flavor Details using **Appendix G** Resource Profile as a guide * **Name:** - udr-no - udr-so - udr-mp **ID:** auto **VCPUs**: vCPUs* **RAM**: RAM* **Root Disk**: Storage* **Ephemeral Disk:** 0 **Swap Disk:** 0 Note: UDR does not require Ephemeral or Swap Disk. Then click **Create Flavor.**	
5 ☐	Repeat for each server type	Repeat **Steps** 3 and 4 above for each additional server type: **udr-so**, **udr-mp**.
THIS PROCEDURE HAS BEEN COMPLETED		

D-3 Create Key Pair

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

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

Procedure 31: Create Key Pair

Step	Procedure	Result
1. ☐	Login to the OpenStack GUI **Note:** Flavor Profile creation may require administrative privilige.	
2. ☐	Select… **Main Menu → Compute →Access & Security →*Key Pairs*** …as shown on the right.	
3. ☐	Click the "+ **Create Key Pair**" button	
4. ☐	Enter Key Pair Name Then click **Create Key Pair.**	

Step	Procedure	Result
5. ☐	The Key pair automatically get downloaded to your computer.	The generated Key Pair gets downloaded automatically on creation. This shall be used for SSH Access to VM Instances.
THIS PROCEDURE HAS BEEN COMPLETED		

D-4 Update UDR Stack Yaml File

This procedure updates UDR Stack Yaml File to be used in VM creation.

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

Procedure 32: Create Key Pair

Step	Procedure	Result
1. ☐	Download the yaml file	 Udr_2k_level2.heat.yaml  Udr_7k_level2.heat.yaml  Udr_12.5k_level2.heat.yaml  Udr_lab_level2.heat.yaml
2. ☐	Update Image name or ID with the name of the UDR Qcow2 to be used	Change the value highligted in yellow. label: Image name or ID description: UDR Image to be used for launching UDR VM default: UDR-12.4.0.0.0_16.14.0
3. ☐	Update the NTP Server IP	Change the value highligted in yellow. label: NTP server description: IP address of the NTP server used for UDR VM syncing time default: 192.168.56.180
4. ☐	Update the NOAMP flavor name if different	Change the value highligted in yellow. label: Flavor for NOAMP description: Type of instance (flavor) to be used for launching UDR NOAMP VM default: udr-no
5. ☐	Update the SOAM flavor name if different	Change the value highligted in yellow. label: Flavor for SOAM description: Type of instance (flavor) to be used for launching UDR SOAM VM default: udr-so

Step	Procedure	Result
6. ☐	Update the MP flavor name if different	Change the value highligted in yellow. label: Flavor for MP description: Type of instance (flavor) to be used for launching UDR MP VM default: udr-mp
7. ☐	Update the XMI Network name if different	Change the value highligted in yellow. label: UDR XMI network description: Network name or ID to attach UDR XMI network to. default: xmi
8. ☐	Update the IMI Network name if different	Change the value highligted in yellow. label: UDR IMI network description: Private network name or ID to attach UDR IMI network to. default: imi
9. ☐	Update the XSI1 Network name if different	Change the value highligted in yellow. label: UDR XSI1 network description: Network name or ID to attach UDR XSI1 network to. default: xsi1
10. ☐	Update the XSI2 Network name if different	Change the value highligted in yellow. label: UDR XSI2 network description: Network name or ID to attach UDR XSI2 network to. default: xsi2
11. ☐	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
12. ☐	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
13. ☐	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

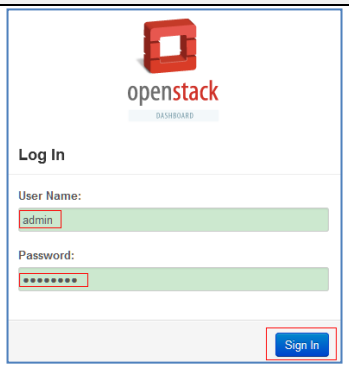
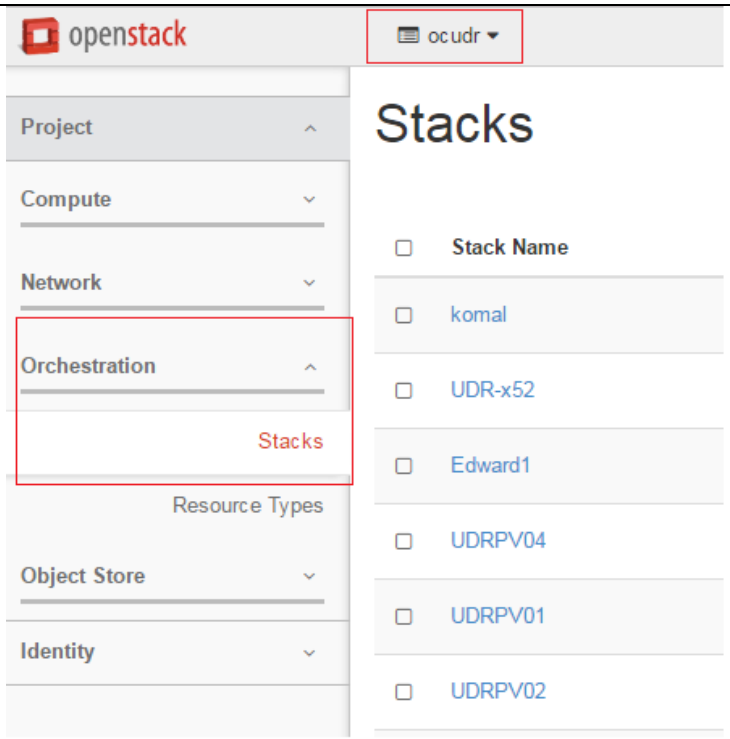
Step	Procedure	Result
THIS PROCEDURE HAS BEEN COMPLETED		

D-5 Create VM Instances Using Yaml File

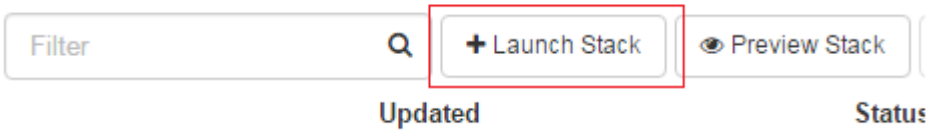
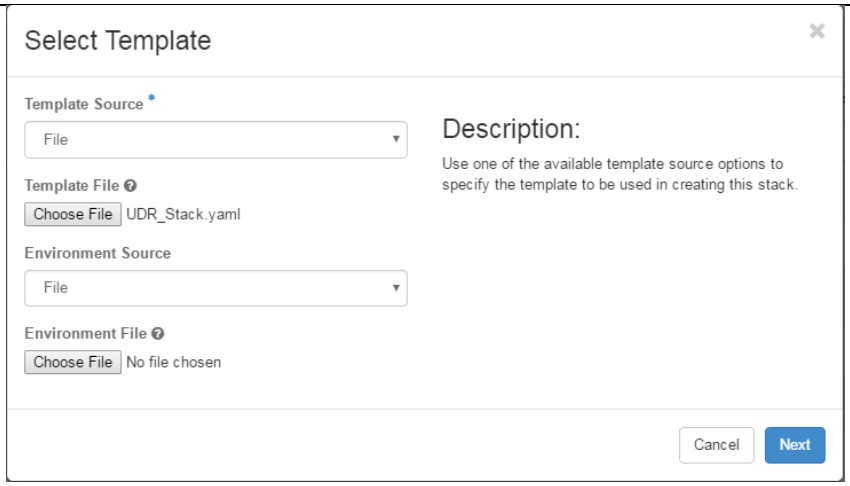
This procedure will create and configure all vm instances needed for OCUDR configuration.

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

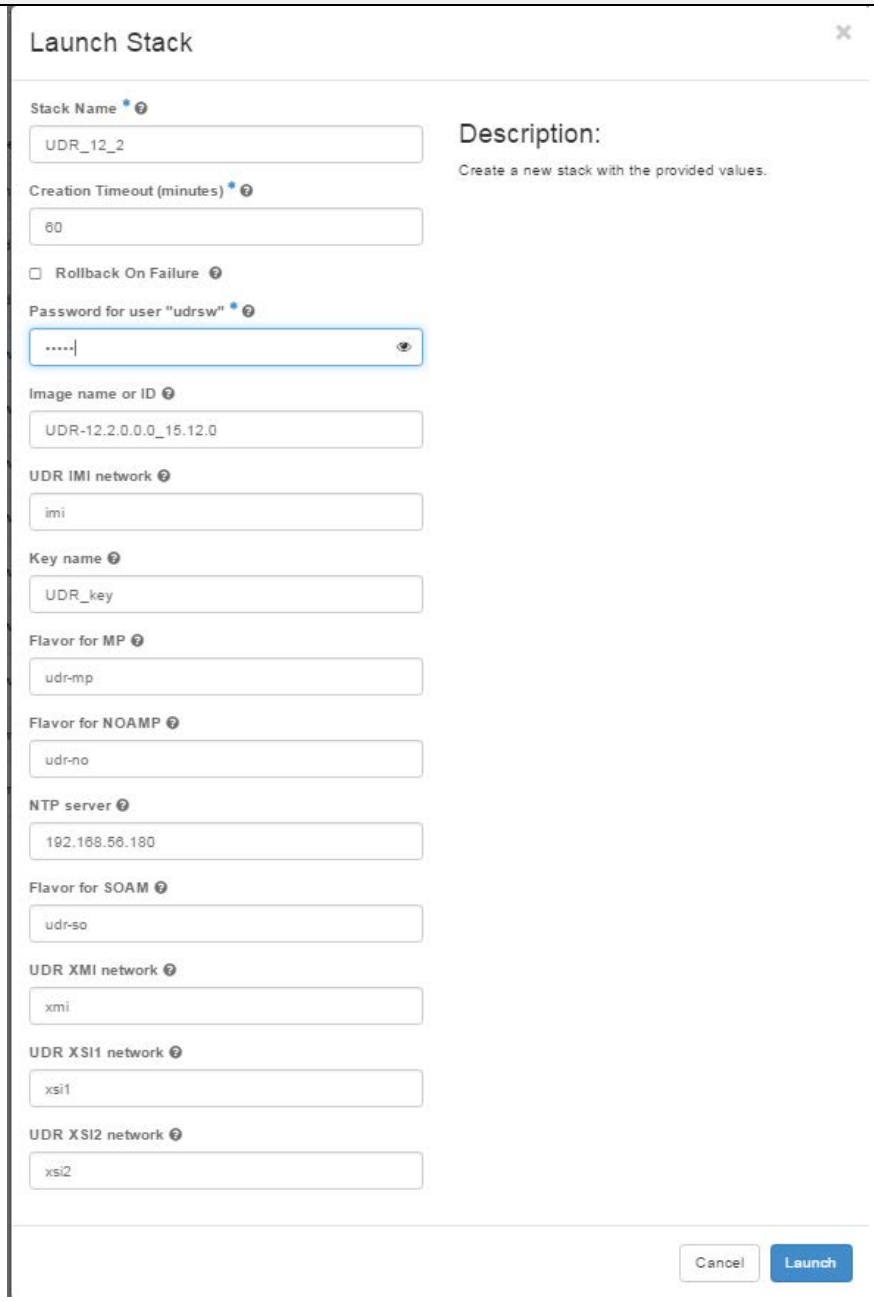
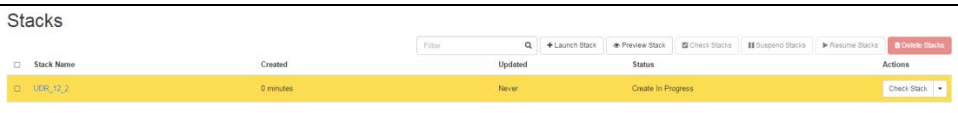
Procedure 33: Create VM Instances Using Yaml File

Step	Procedure	Result
1. ☐	Login to the OpenStack GUI	
2. ☐	1. Select project, (ex: “ocudr”). 2. Click **→Project** **→Orchestration** **→Stacks** to show all Stacks created under this project:	

Procedure 33: Create VM Instances Using Yaml File

Step	Procedure	Result
3. ☐	Click **Launch Stack**	
4. ☐	1. Select the Template File and Click Next	

Procedure 33: Create VM Instances Using Yaml File

Step	Procedure	Result
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 HAS BEEN COMPLETED		

D-6 Extend VM Instance Volume Size

This procedure will extend a VM instance's storage capacity using filesystem utilities.

Important Note: The steps here only apply to servers where storage demands exceed the server's default size 60GB. The numbers here will vary depending on the unique needs of such deployments and specific hardware resource availability. This is to be taken as an example only. The suitability of these steps cannot be guarenteed across all deployment scenarios.

This steps below should be executed only as per 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 off (√) each step as it is completed. Boxes have been provided for this purpose under each step number.

Procedure 34: Extend VM Instance Volume Size

Step	Procedure	Result
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>`

3. ☐	Use fdisk to create new partition on /dev/vda
	
	NOTE:
	First cylinder of /dev/vda3 is calculated from **End cylinder** of /dev/vda2, say 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.`

Step	Procedure	Result
4. ☐	Reboot instance	`[root@hostnameb267a6968148 ~]# init 6`

5. ☐	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. ☐	Create pv /dev/vda3	`[root@hostnameb267a6968148 ~]# pvcreate /dev/vda3` `  Physical volume "/dev/vda3" successfully created`
7. ☐	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-log_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`

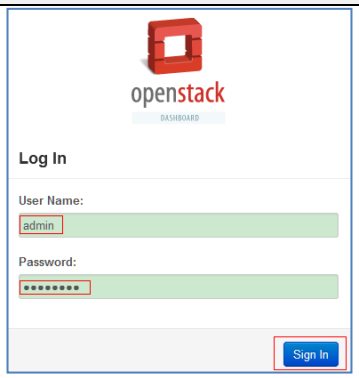
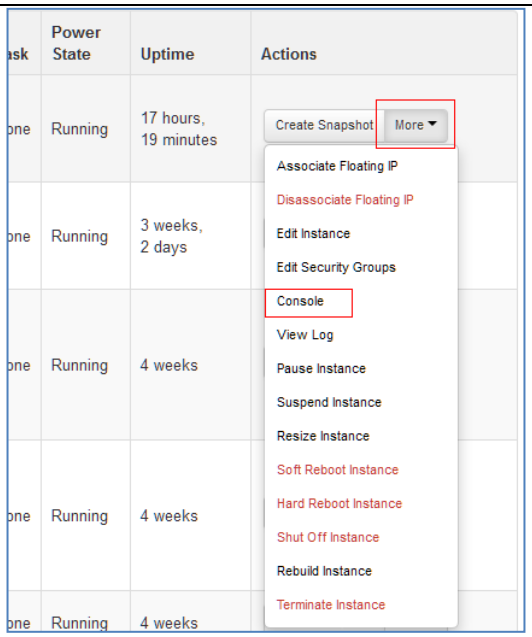
Step	Procedure	Result
9. ☐	Extend logical volumes for 7K or 12.5K profile *** Only required for NOAMP VM Instance**	**# lvextend -L +115343360K /dev/vgroot/run_db** **# lvextend -L +104857600K /dev/vgroot/filemgmt** **# lvextend -L +6291456K /dev/vgroot/logs_process** **# lvextend -L +10485760K /dev/vgroot/apw_tmp** **# resize2fs /dev/mapper/vgroot-filemgmt** **# resize2fs /dev/mapper/vgroot-run_db** **# resize2fs /dev/mapper/vgroot-log_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
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-log_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 HAS BEEN COMPLETED		

D-7 VM Instance Network Configuration

This procedure will configure network interfaces for vm instance.

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

Procedure 35: VM Instance Network Configuration

Step	Procedure	Result
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`

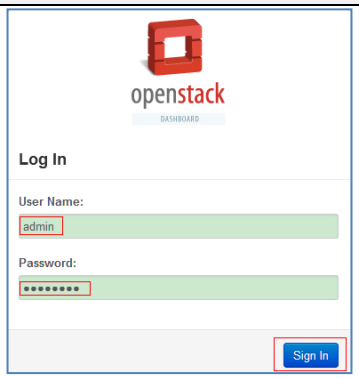
Step	Procedure	Result
5. ☐	Set ip address for this interface	[root@ hostnamea0c2d9aa8bce ~]# **netAdm set --device=eth0 --onboot=yes \ --netmask=<netmask> --address=<ip_address>** Interface eth0 updated
6. ☐	Add default router	[root@ hostnamea0c2d9aa8bce ~]# **netAdm add --route=default --device=eth0 \ --gateway=10.240.174.1** Route to eth0 added
7. ☐	Add eth1 interface	[root@ hostnamea0c2d9aa8bce ~]# **netAdm add --device=eth1** Interface eth1 added
8. ☐	Add eth2 interface ***NOAMP & MP only***	*Note: Execute 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: Execute 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 HAS BEEN COMPLETED		

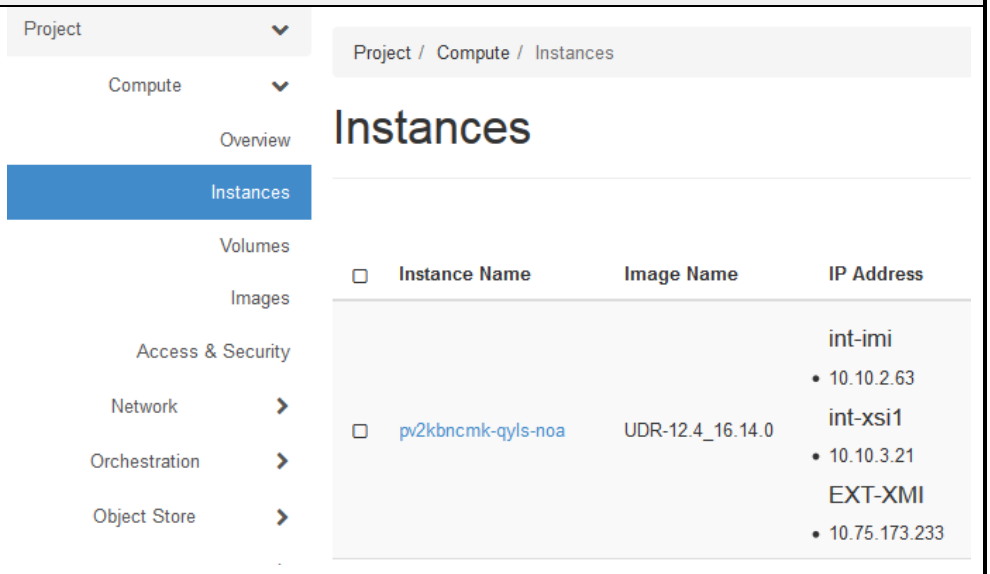
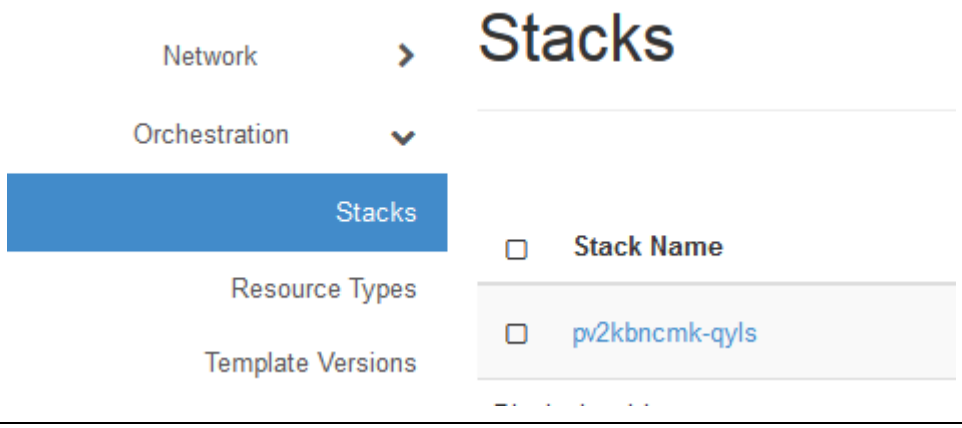
D-8 Virtual IP Address Assignment

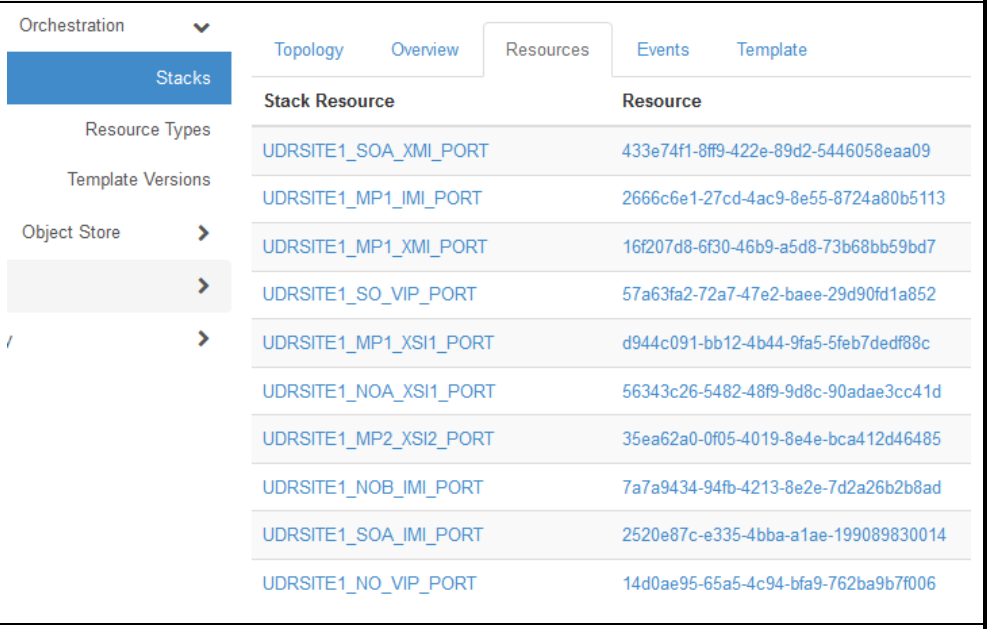
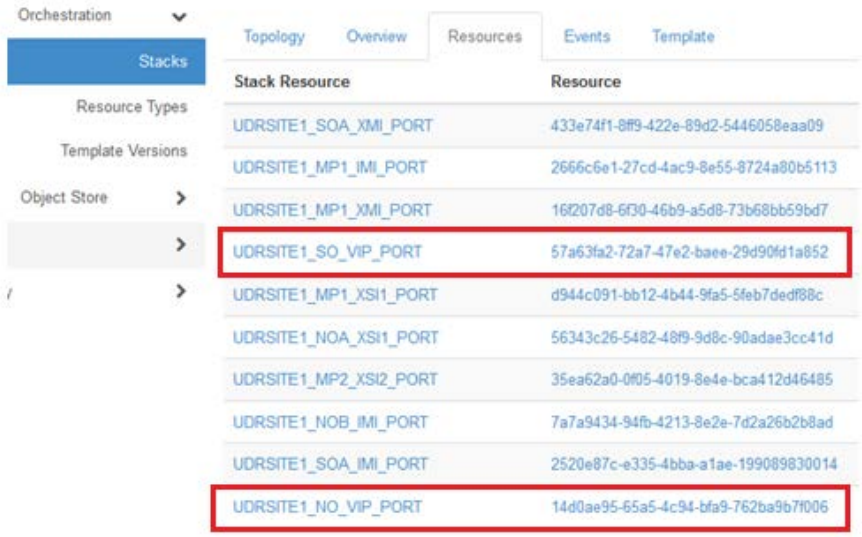
This procedure will configure a VIP for a virtual machine. Administrative access to the OpenStack controller node is required.

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

Procedure 36: Virtual IP Address Assignment

Step	Procedure	Result
1. ☐	Login to the OpenStack GUI	

Step	Procedure	Result
2. ☐	1. Select project, (ex: "UDR"). 2. Click **→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. Select… **→Project** **→Orchestration** **→Stacks** 2. Click the **Stack Name** for expandd detail	

Step	Procedure	Result
5. ☐	1. Under the **Resource** tab, find the VIP PORT for NOAMP and SOAM servers.	
6. ☐	Copy or record the Port ID for NOAMP and SOAMP	
7. ☐	Copy or record all required Port IDs.	**Repeat Step 5 and Step 6** to copy or record the **Port ID** of both servers: NOAMP and SOAM. NOAMP: _____ SOAM: _____

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]#`

Step	Procedure	Result
9. ☐	**OpenStack Controller node:** Initialize environment variables	`controller ~]# source keystonerc_udrsw`

10. ☐	**OpenStack Controller node:**
	
	Assign VIP by Port IDs
		Assign the desired VIP address to both A and B servers sharing the VIP:
		
		`[root@control01 ~(keystone_udrsw)]# openstack floating ip create --port <NOAMP/SOAM_VIP_Port_ID> EXT-XMI`
		
		`E.g.: openstack floating ip create --port fc7b8473-b39d-477f-8b2b-7e0a3b45ce5b EXT-XMI`

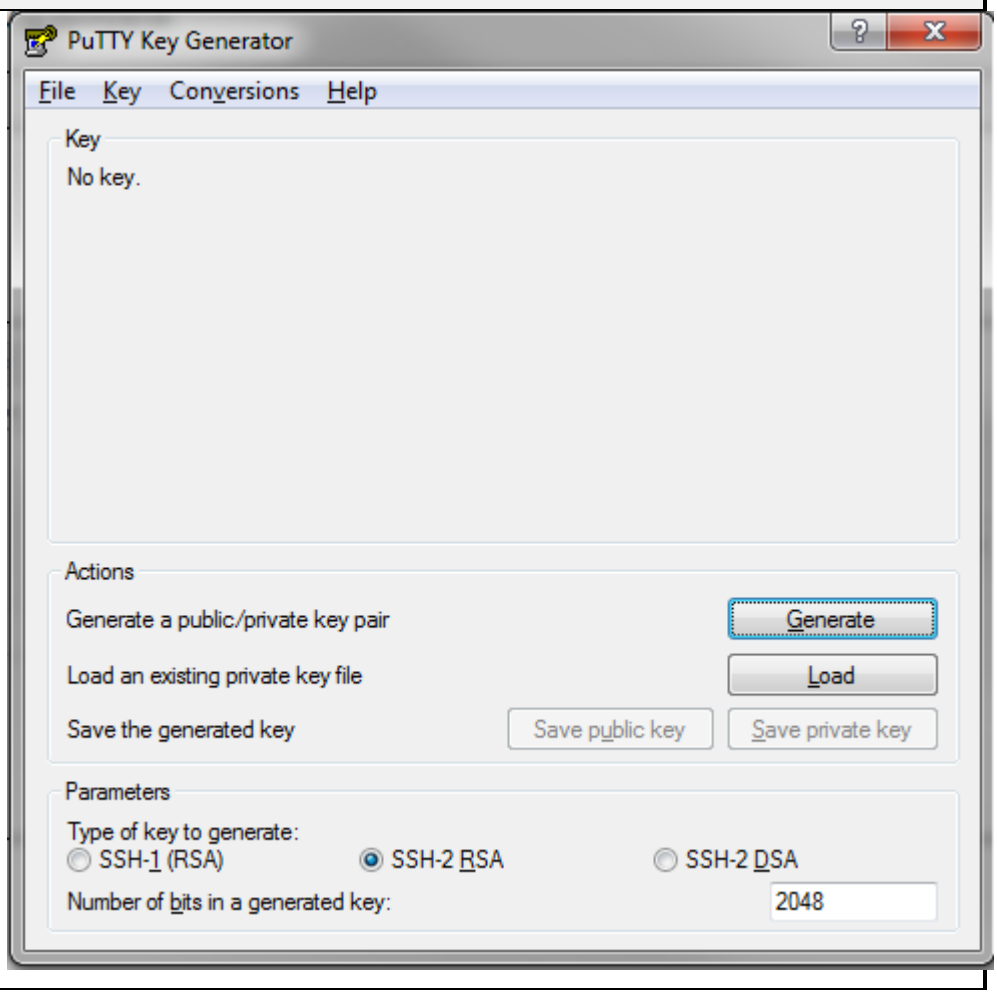
11. ☐	**OpenStack Controller node:** Repeat if needed	Repeat **Step 10** as required for any other server pairs requiring a VIP.
12. ☐	**OpenStack Controller node:** Confirm VIP association	VIP associations may be confirmed with the following command by Port ID: `[root@control01 ~(keystone_udrsw)]# neutron port-show <port_id>` +-----------------------+---+ | Field | Value | +-----------------------+---+ | admin_state_up | True | | allowed_address_pairs | {"ip_address": "10.240.221.36", "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": "10.240.221.38"} | | 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 | +-----------------------+---+
THIS PROCEDURE HAS BEEN COMPLETED		

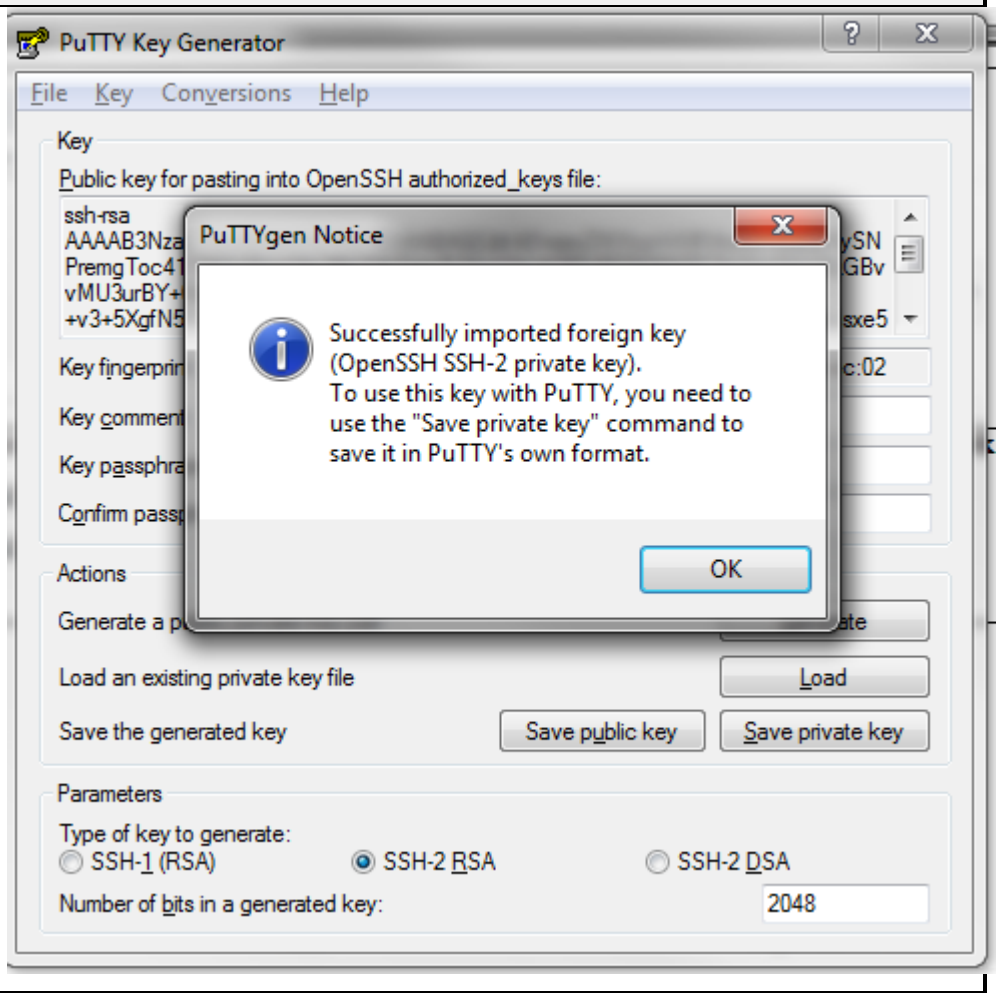
D-9 Generate Private Key for SSH Access

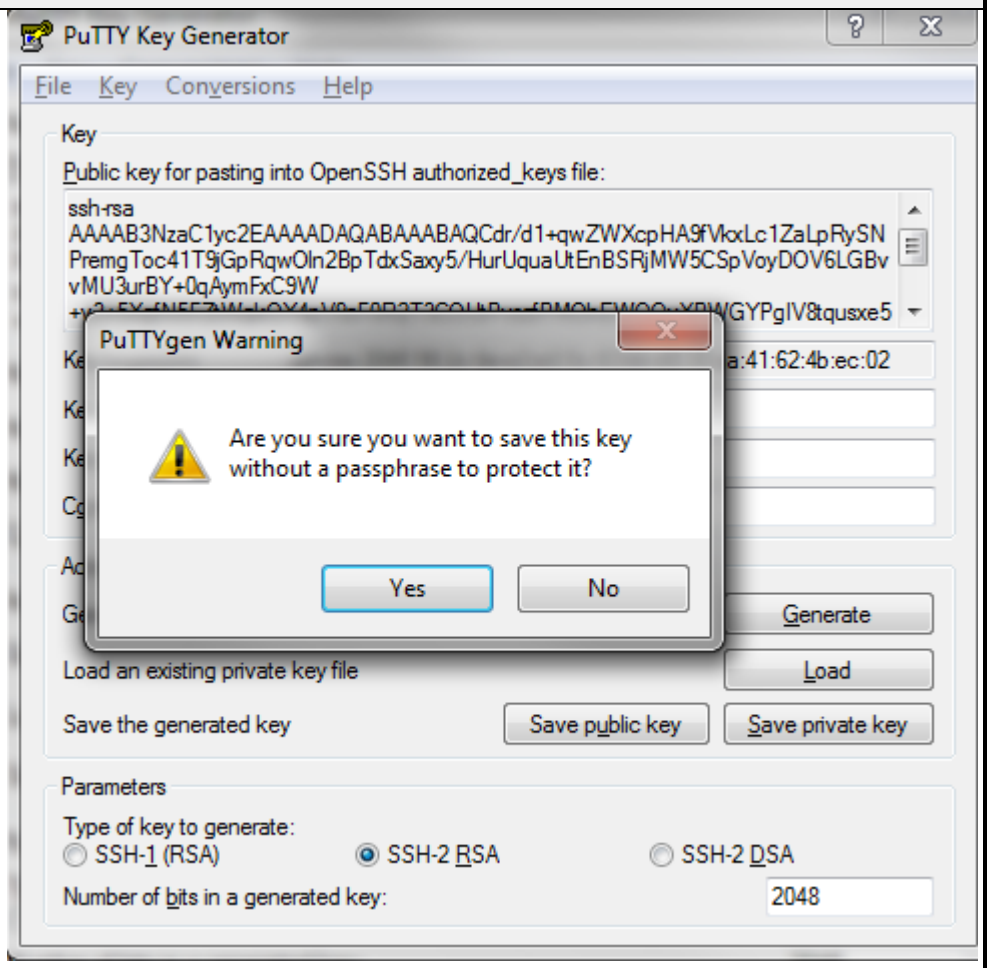
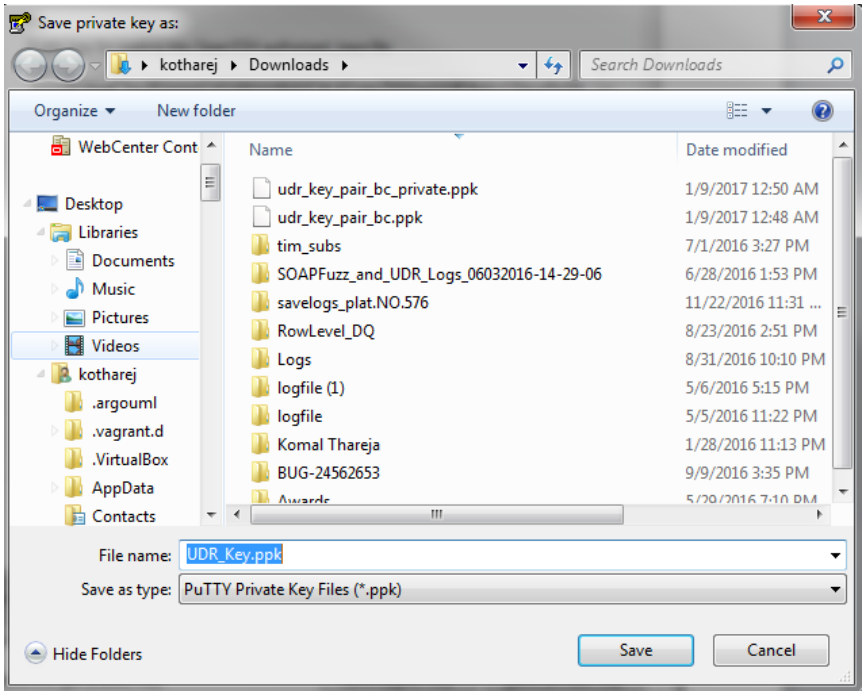
This procedure is used to generate Private Key to be used for accessing VM instance via SSH.

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

Procedure 37: Generate Private Key for SSH Access

Step	Procedure	Result
1. ☐	Launch PuTTyGen	

Step	Procedure	Result
2. ☐	Load the Key file i.e *.pem generated in D-3: Create Key Pair Click OK	

Step	Procedure	Result
3. ☐	Save the Private Key by Clicking "Save Private Key" Click Yes Click Save	 

Step	Procedure	Result
THIS PROCEDURE HAS BEEN COMPLETED		

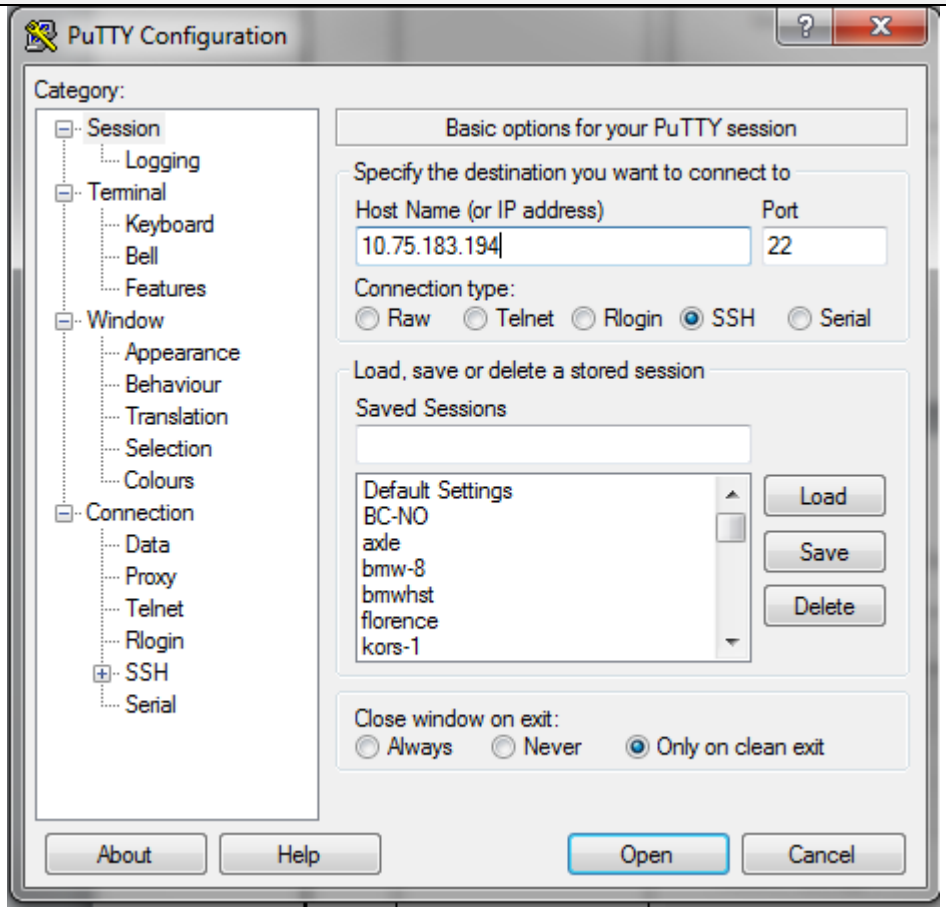
D-10 Accessing VM Instance using SSH

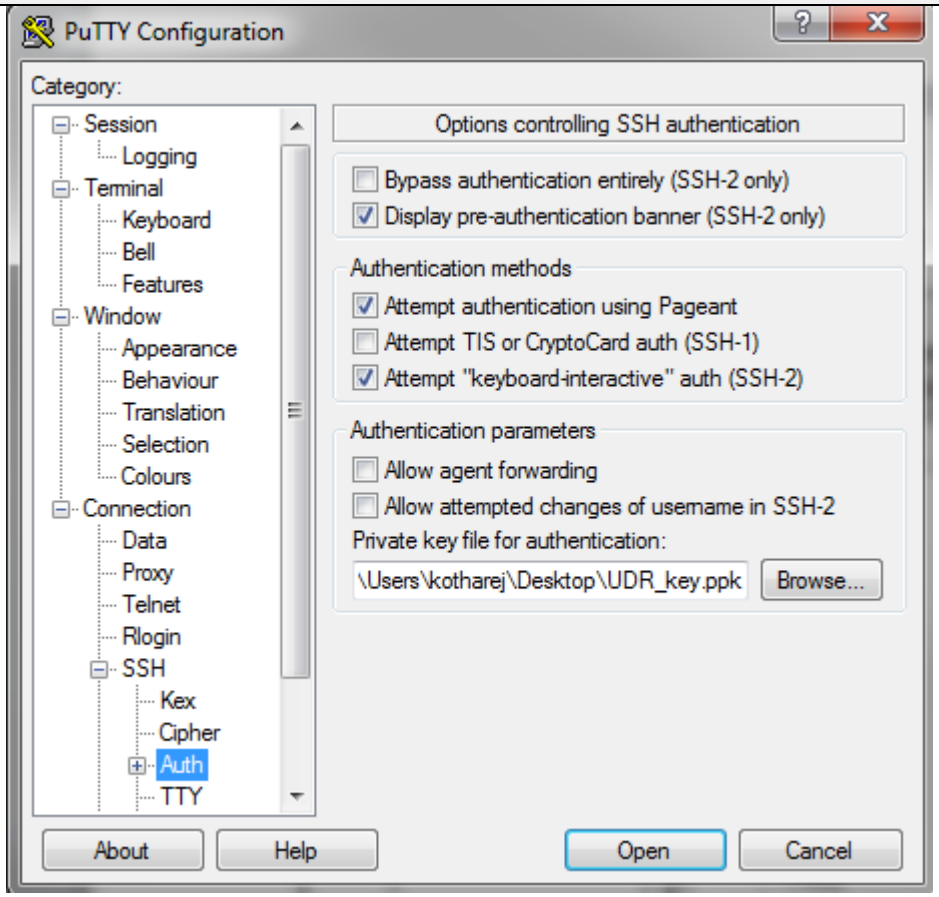
This procedure is used to access VM instance via SSH. This procedure assumes following:

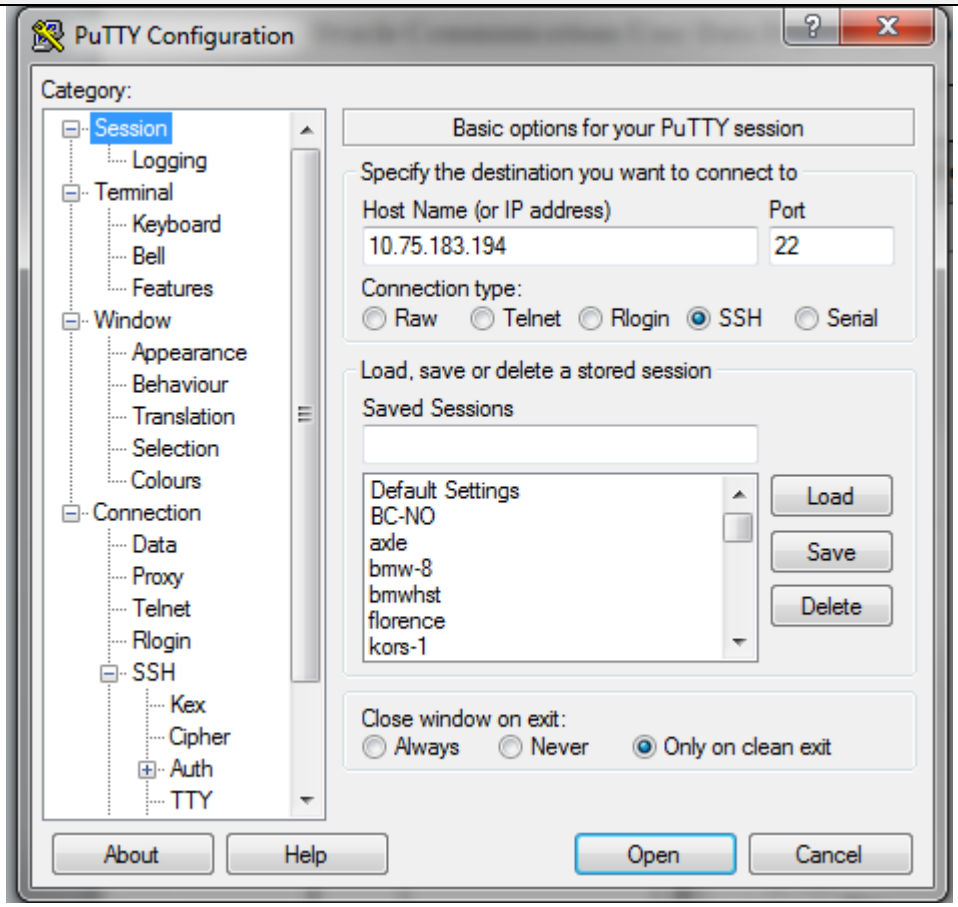
- Network configuration on VM insatance is complete or floating IPs have been associated with VM instance
- Private Key has been generated as per D-9: Generate Private Key for SSH Access

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

Procedure 38: SSH Access to VM Instance

Step	Procedure	Result
1. ☐	Launch Putty **Specify IP Address of the VM Instance**	

Step	Procedure	Result
2. ☐	Under the **SSH → Auth Select the *.ppk file** generated by 0: Generate Private Key for SSH Access	

Step	Procedure	Result
3. ☐	From Session Category, click Open to launch the SSH connection Specify username **admusr** when prompted	
THIS PROCEDURE HAS BEEN COMPLETED		

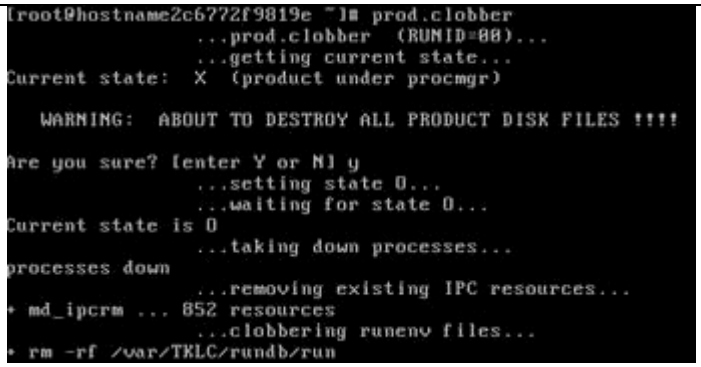
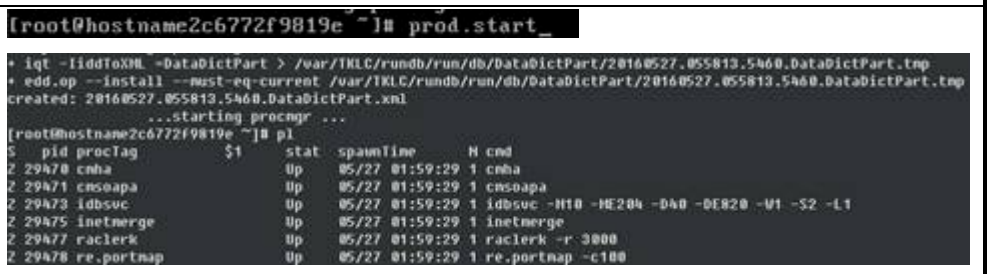
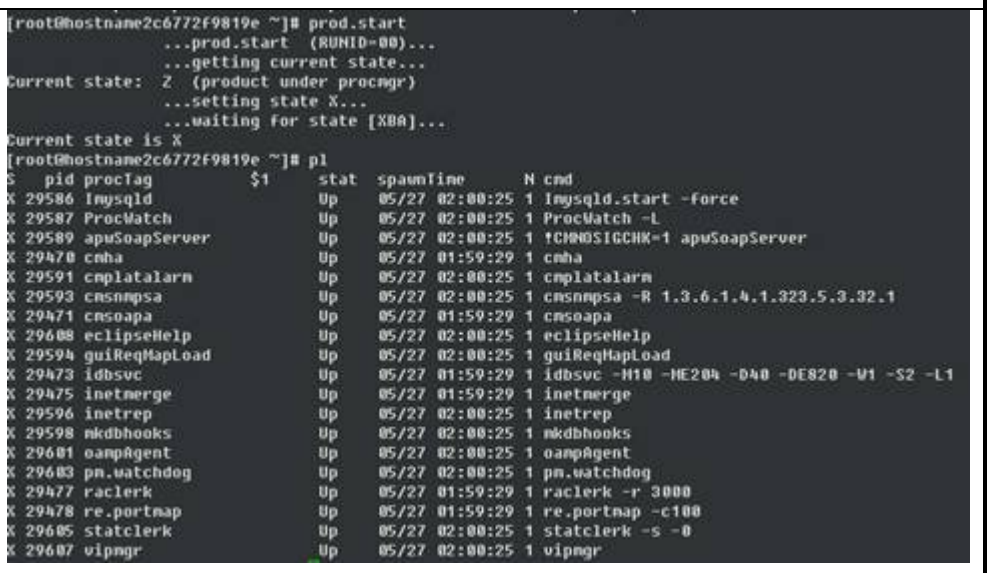
D-11 Clobber the database on VM Instance

This procedure clobbers the database on VM instance.

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

Procedure 39: Clobber Database on VM Instance

Step	Procedure	Result
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>`

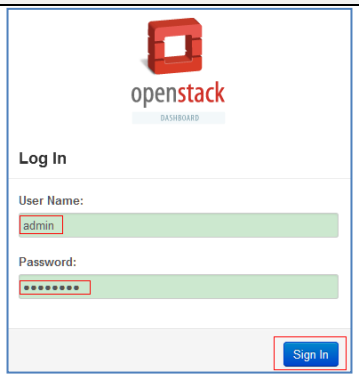
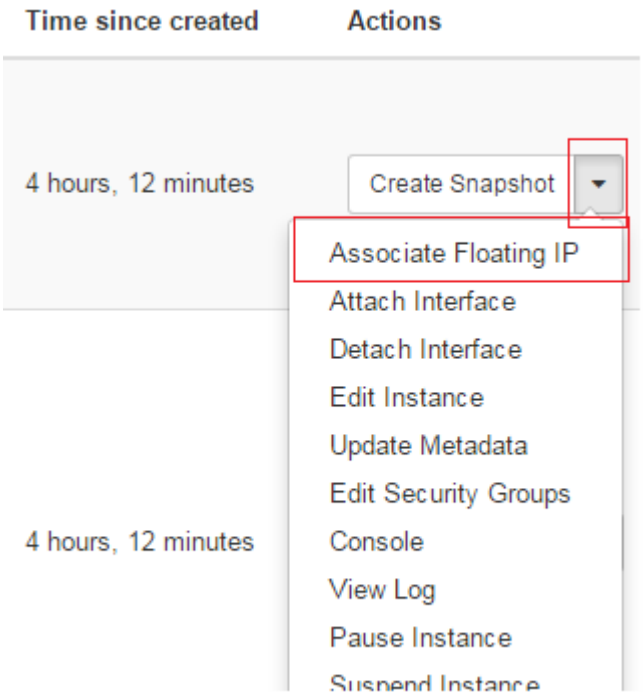
3. ☐	Run prod.clobber on newly created instances	
4. ☐	Run prod.start on instance After start, use "pl" to check process status, after first start, only afew process will start	
5. ☐	Run prod.start again on instance, this time, all process will be started	
THIS PROCEDURE HAS BEEN COMPLETED		

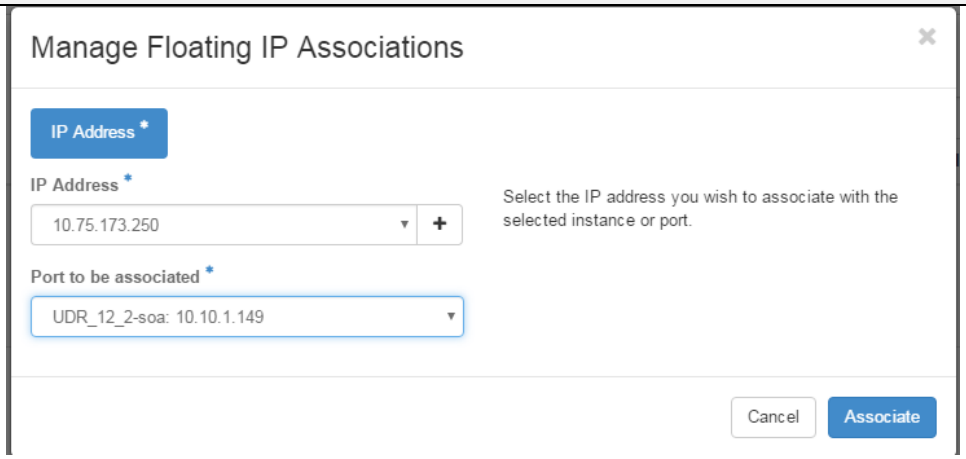
D-12 Associating Floating IPs

This procedure will associate Floating IP to vm instance.

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

Procedure 40: Associate Floating IP

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

Step	Procedure	Result
3. ☐	Select the IP Addresss and Port to be associated Click Associate	
THIS PROCEDURE HAS BEEN COMPLETED		

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 customer site at which 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 will not be possible.

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 network(s) 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 to the user 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

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 Opertation, Administration, Maintenace, and Provisioning	4	4	8	14	6	16	32	64	60	220	400	400
SOAM	Site (node) Opertation, Adminstration, Maintenace	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

*- SOAM can run with only 2 CPU. This will not create a performance degradation though Server Hardware Configuration Error alarm will be raised and remain on the system.

Notes:

- 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

		Interface Assignment						
Product	**Role**	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:NOAMP	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)	

Red = Port values are configurable (default value shown)

Appendix J. INSTALL UDR ON ORACLE LINUX OS VIA KVM

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

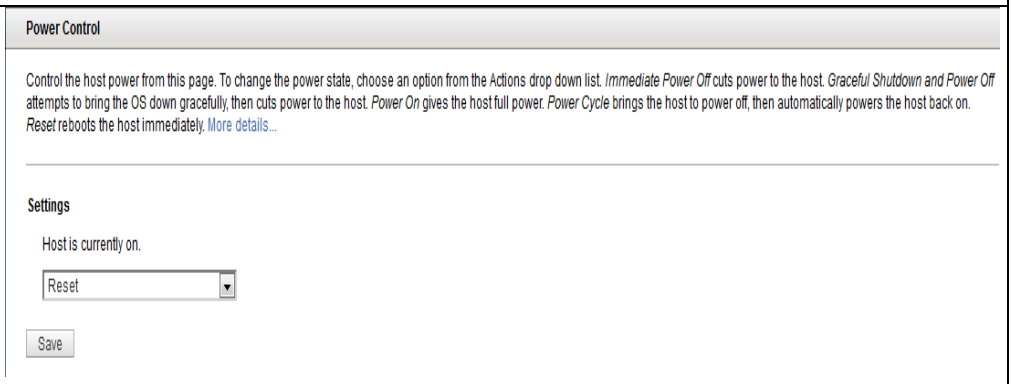
This procedure will install UDR configuration on Oracle Linux OS with direct KVM as hypervisor.

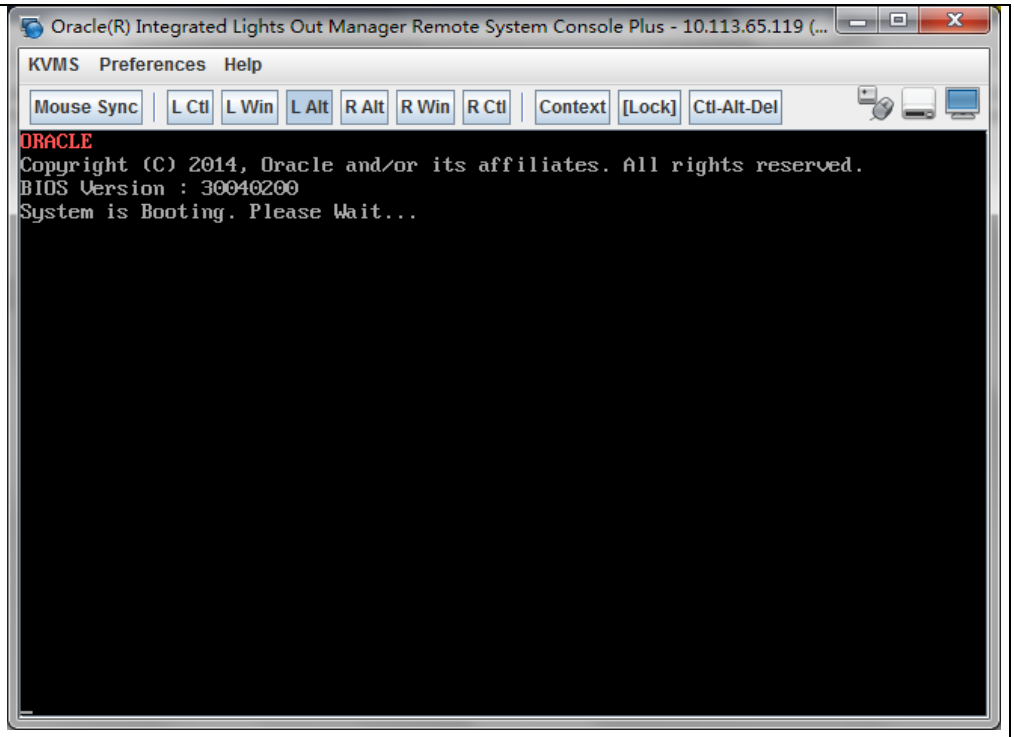
Note:

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

Procedure 41: Install UDR on Oracle Linux/KVM

Step	Procedure	Result
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 [2]. … to mount the Oracle Linux OS software ISO.
2. ☐	For each **Oracle X5-2 RMS:** Reboot host Login to X5-2 iLo GUI browser page and launch remote console In ILO GUI, navigate to "**Host Management**" -> "**Power Control**" menu, select "**Reset**" in dropdown menu and click "**Save**" to reboot host.	 In remote console window you'll see host is rebooting.

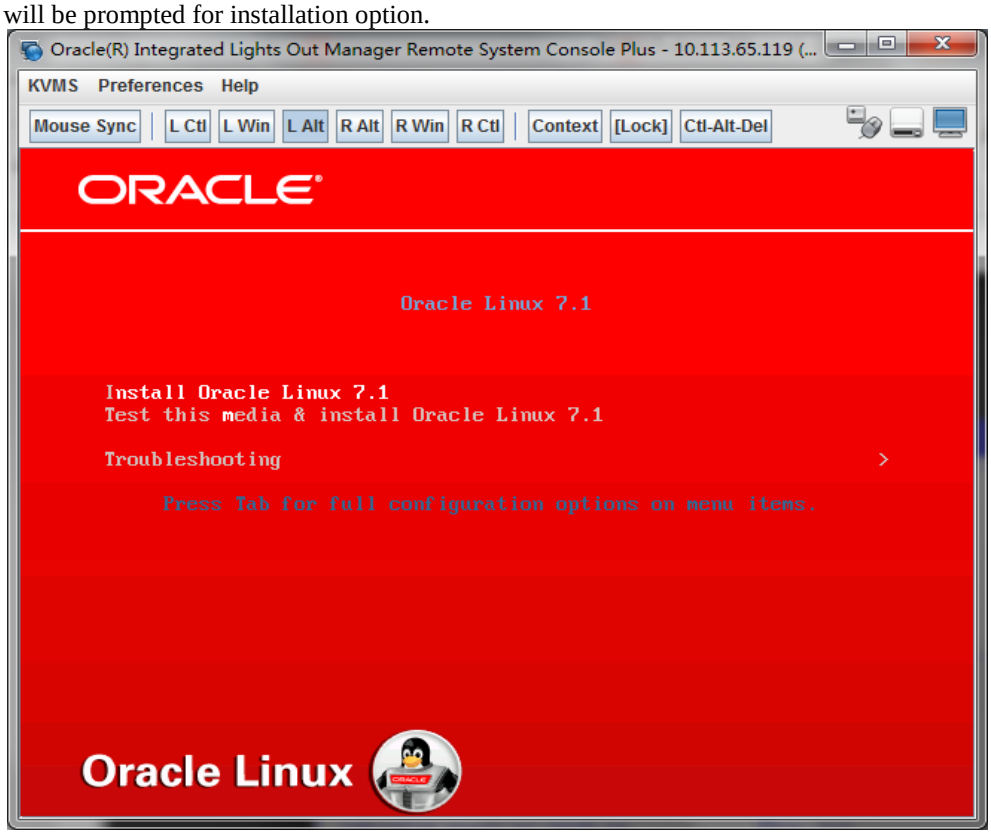


Wait for a couple of minutes for reboot to complete.

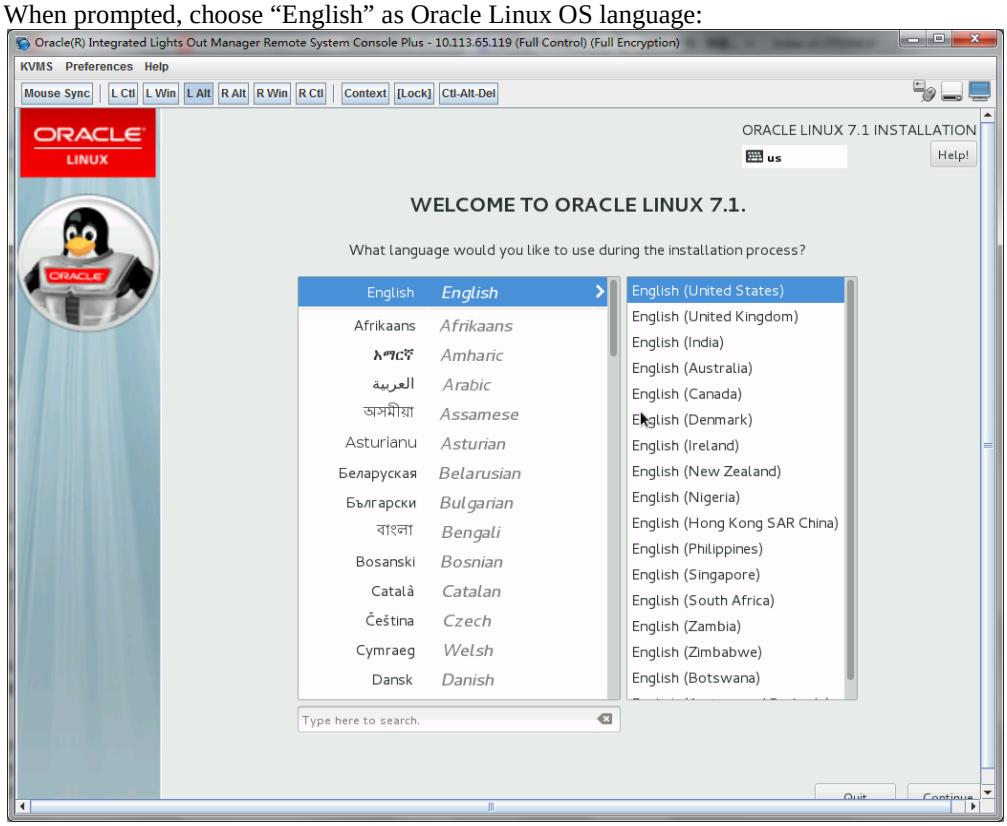
3. ☐ For each **Oracle X5-2 RMS:**

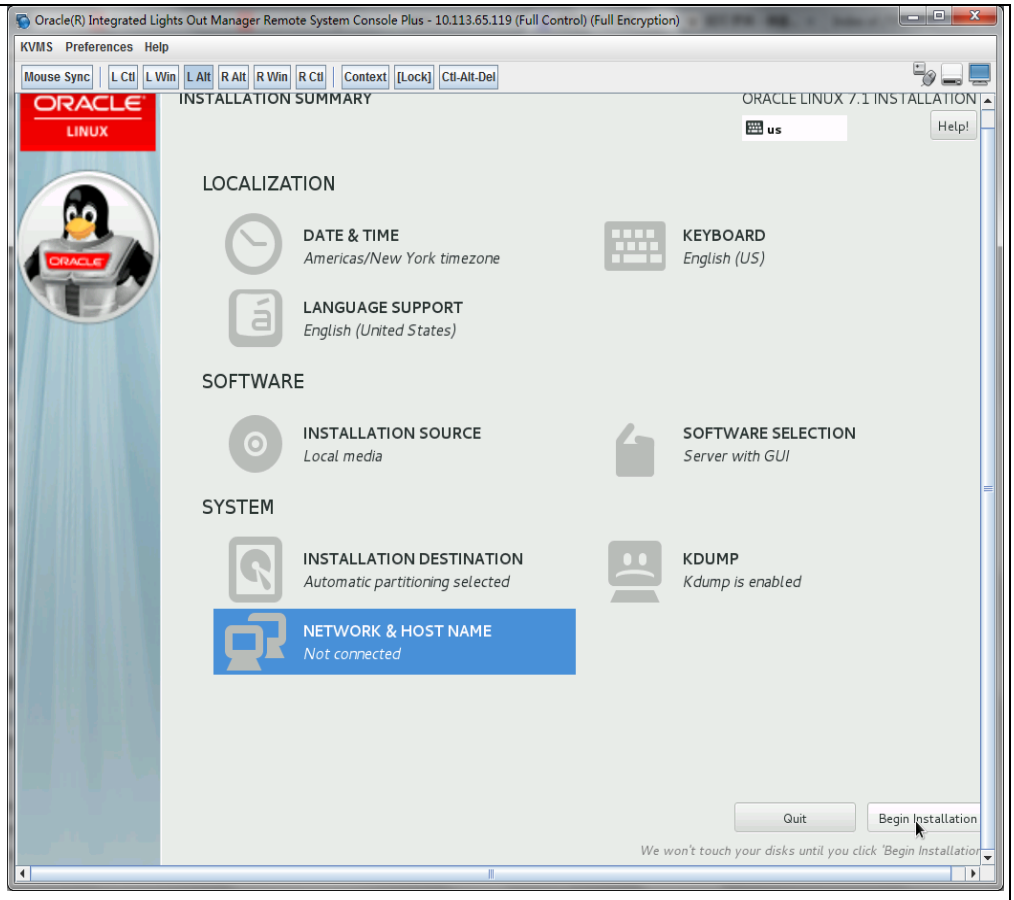
Initiate Oracle Linux Platform installation

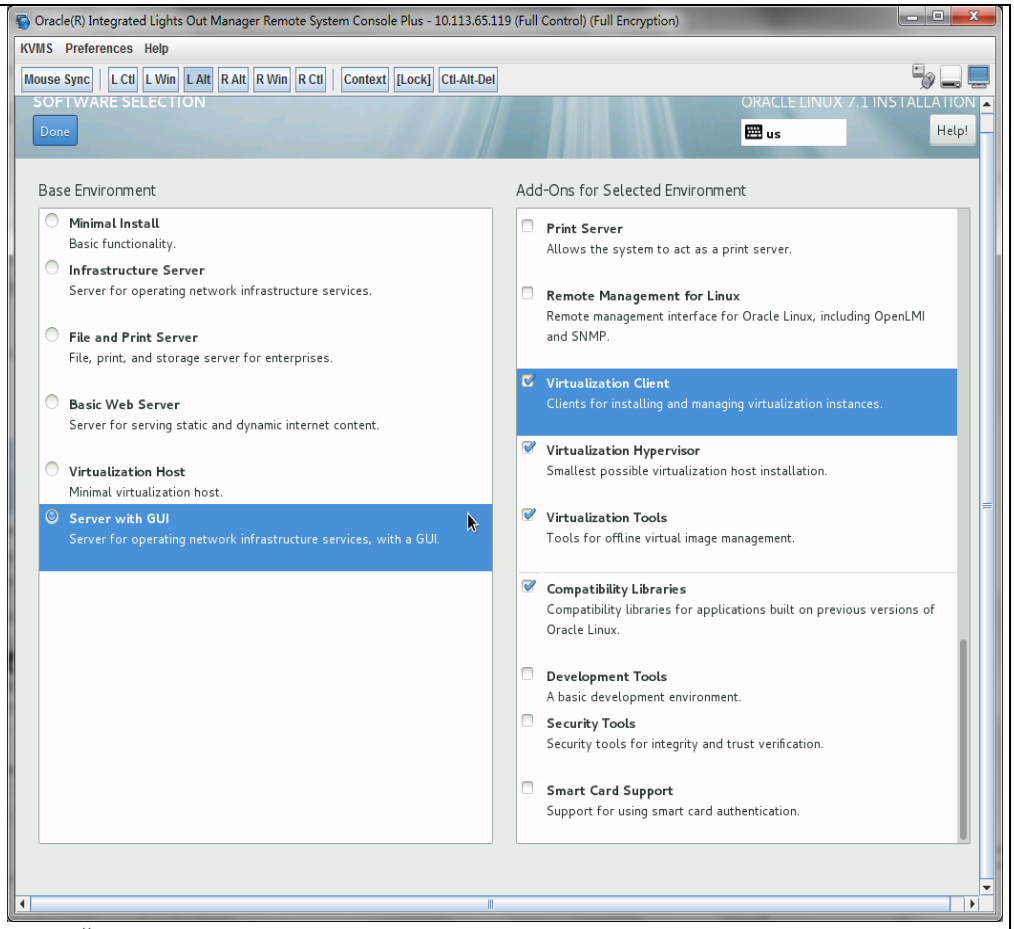
Once reboot completed, host will boot with Oracle Linux installation ISO and GUI screen will be prompted for installation option.

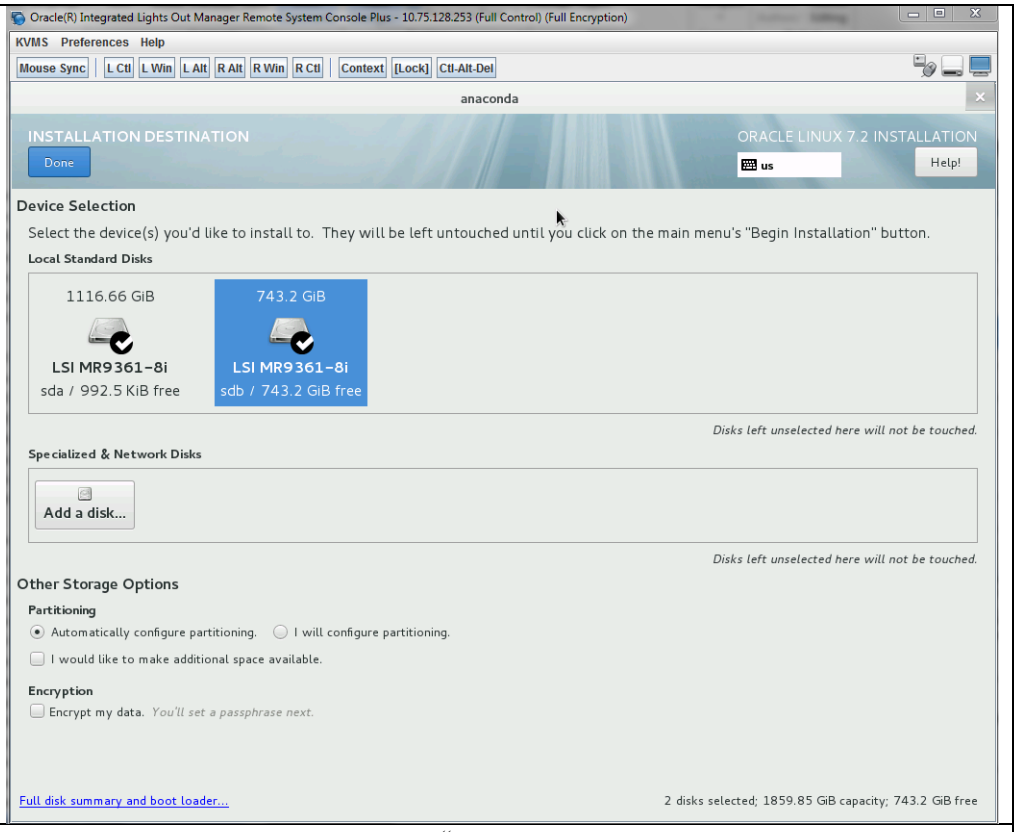


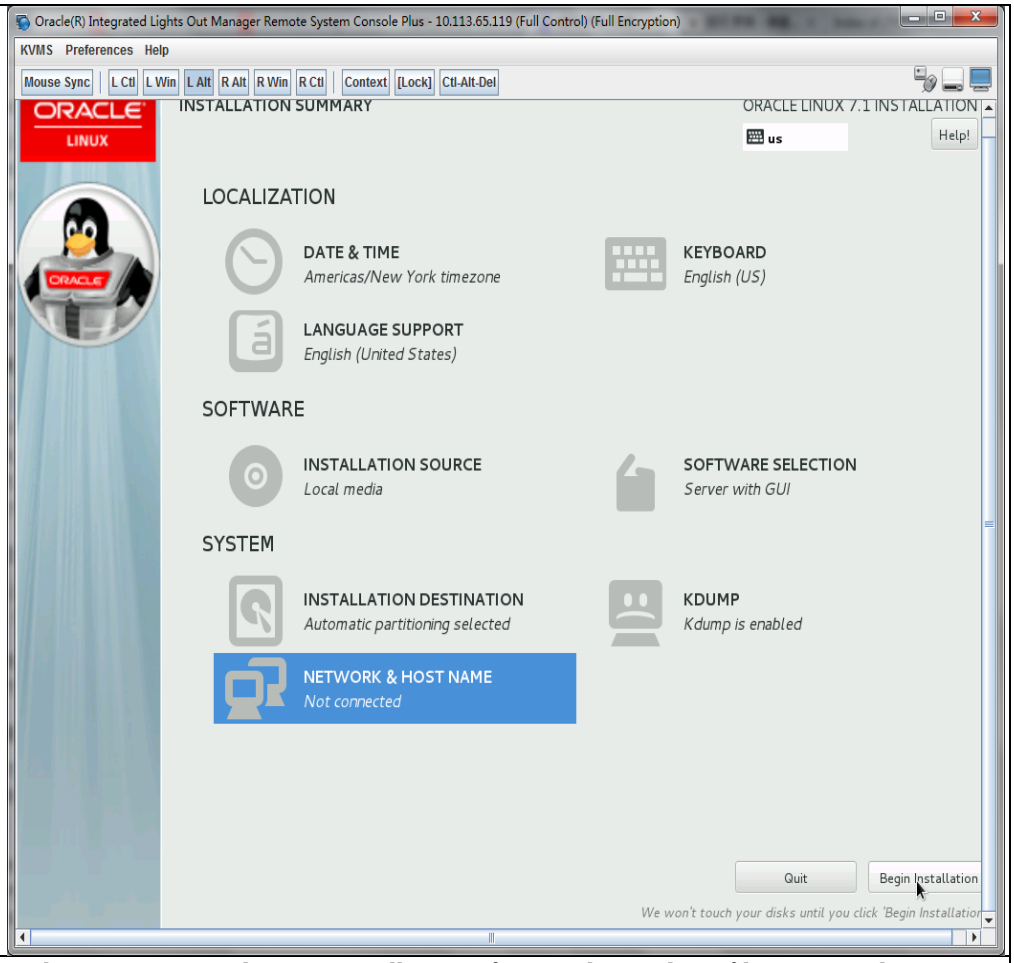
Choose option of “Install Oracle Linux 7.x” to continue.

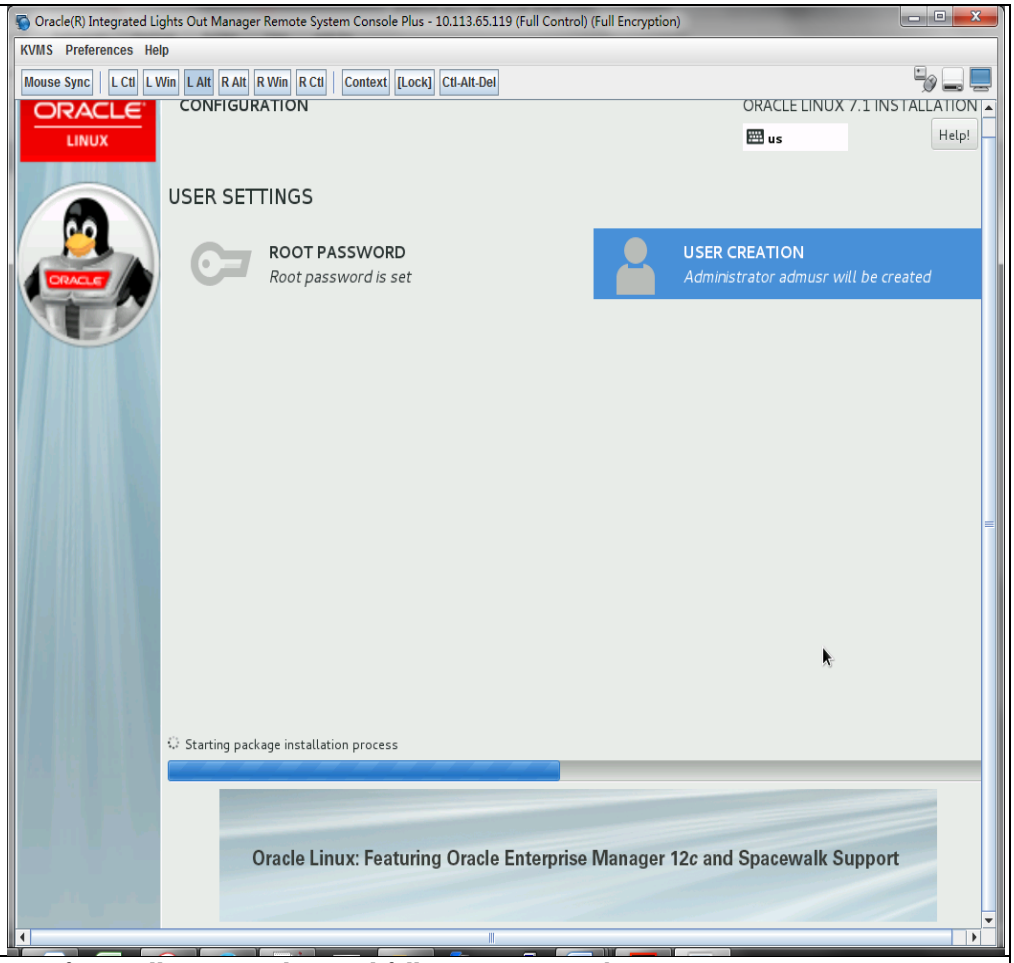
4. ☐	For each **Oracle X5-2 RMS:** Choose Oracle Linux OS language	When prompted, choose “English” as Oracle Linux OS language:  Press “Continue” button to go to next step.
5. ☐	For each **Oracle X5-2 RMS:** Setup time zone	The next page will prompt for Oracle Linux OS installation required information to start installation.

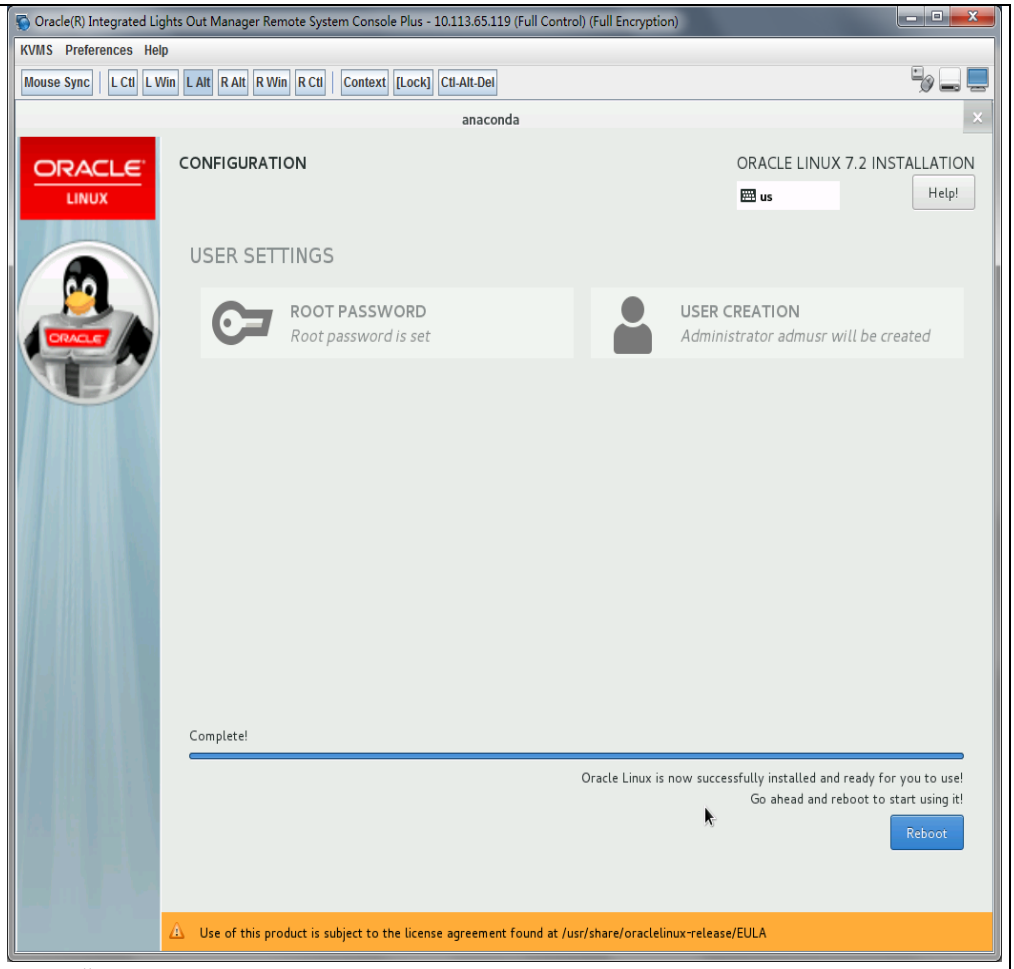
		 Click into **LOCALIZATION -> DATE & TIME** menu: Set time zone as Americas/New York. Click "Done" to save up changes and goes back to main configuration page.
6. ☐	For each **Oracle X5-2 RMS:** Setup installation base environment	Click into **SOFTWARE -> SOFTWARE SELECTION** menu. Choose "Server with GUI" group, and make sure following add-ons are selected: ➢ Virtualization Client ➢ Virtualization Hypervisor ➢ Virtualization Tools ➢ Compatibility Libraries

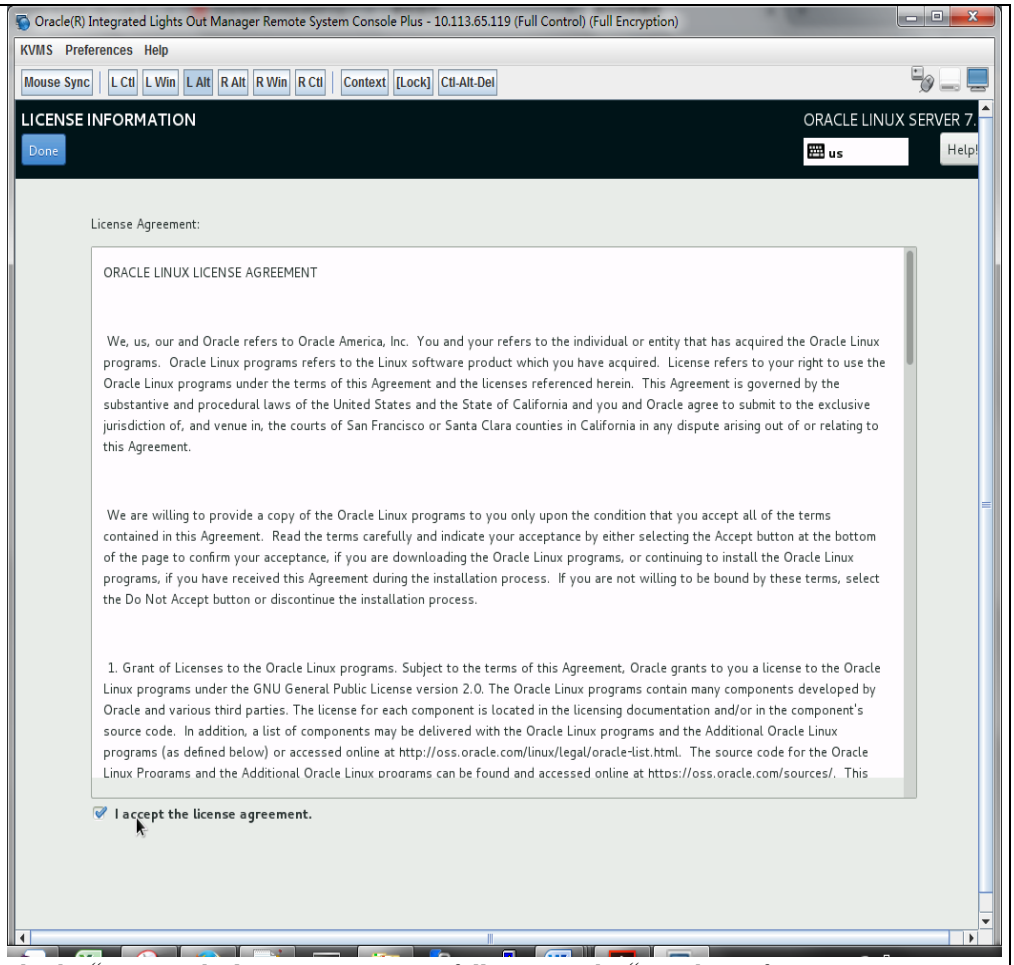
		 Click “Done” to save up changes and goes back to main configuration page.
7. ☐	For each **Oracle X5-2 RMS:** Setup installation destination	Click into **SYSTEM -> INSTALLATION DESTINATION** menu. Select ’sda’ and ‘sdb’ to use, and check “Automatically configure partitioning”, click ‘Done’ to continue.

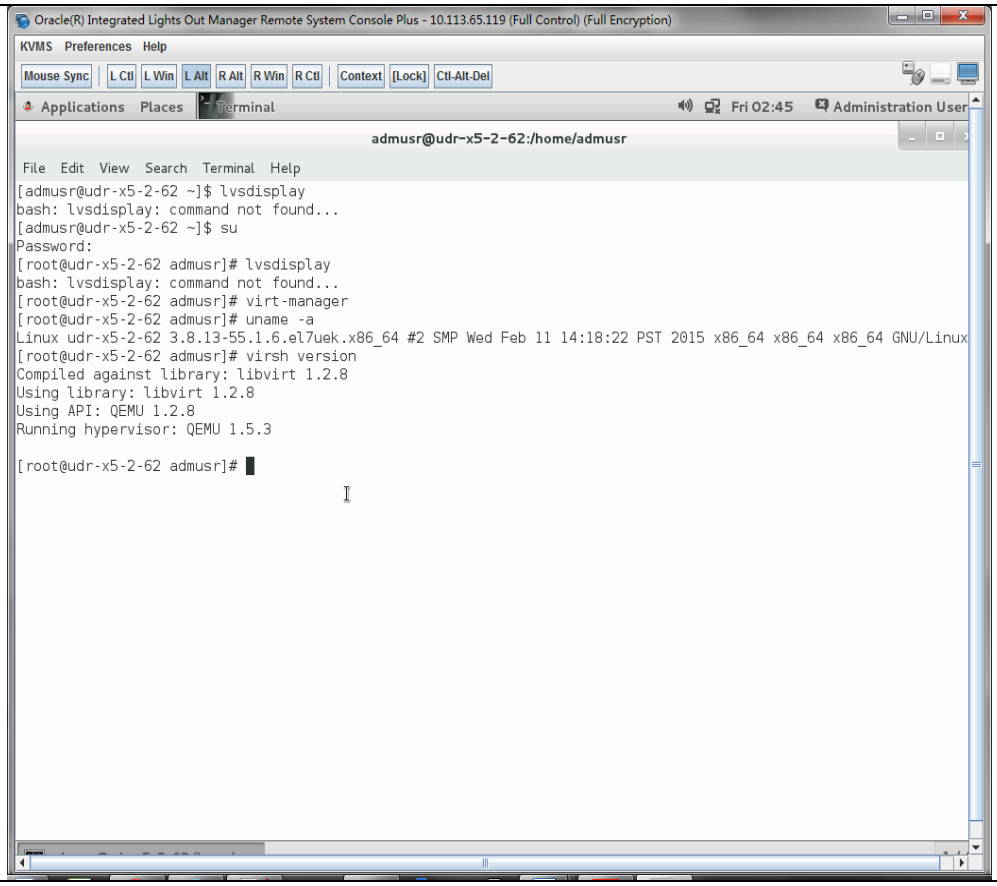
		
8. ☐	For each **Oracle X5-2 RMS:** Review configuration and start to install	Review all information before clicking "Begin Installation" button: (You don't need to configure network right now, we'll leave that part after Oracle Linux OS is installed.)

		
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:

		
10. ☐	For each **Oracle X5-2 RMS**: Reboot host after installation completed	Wait for installation complete until following screen is shown:

		 Click "Reboot" button to reboot.
11. ☐	For each **Oracle X5-2 RMS**: Read & Accept license agreement	After reboot is done, license agreement page with be prompted:

		 Check “I accept the license agreement”, following with “Finish Configuration” to continue. Later you’ll be prompted for ULN setting, skip that step.
12. ☐	For each **Oracle X5-2 RMS**: Verify kernel version and KVM version	Open SSH console window and check following:

13. ☐	For each **Oracle X5-2 RMS**:
	
	Change network interface name pattern to 'ethx'
		Edit /etc/default/grub to append 'net.ifnames=0' to option GRUB_CMDLINE_LINUX:
		
		`[root@udr-x5-2-62-ol7 admusr]# cat /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"`
		
		Recreate the grub2 config file with following command:
		`# grub2-mkconfig -o /boot/grub2/grub.cfg`
		
		Restart host with 'shutdown –r' command and verify that network interface are with 'ethx' name pattern now.

14. ☐	For each **Oracle X5-2 RMS**:
	
	Create bond0 device
		Create device bond0 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"`
		
		Save up file and exit.

		Create device eth0 configuration file: # **vim /etc/sysconfig/network-scripts/ifcfg-<nic1>** DEVICE=<nic1> TYPE=Ethernet ONBOOT=yes NM_CONTROLLED=no BOOTPROTO=none MASTER=bond0 SLAVE=yes Save up file and exit. Create device eth1 configuration file: # **vim /etc/sysconfig/network-scripts/ifcfg-<nic2>** DEVICE=<nic2> TYPE=Ethernet ONBOOT=yes NM_CONTROLLED=no BOOTPROTO=none MASTER=bond0 SLAVE=yes Save up file and exit. Bring up devices into services: # **ifup <nic1>** # **ifup <nic2>** # **ifup bond0**
15. ☐	For each **Oracle X5-2 RMS**: Create IMI bridge	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 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> Bring up devices into services: # **ifup bond0.<imi_vlan>** # **ifup imi**
16. ☐	For each **Oracle X5-2 RMS**: Create XMI bridge	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

		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> Set default route for xmi network: # **vim /etc/sysconfig/network-scripts/route-xmi** default via <xmi_gateway> table main Bring up devices into services: # **ifup bond0.<xmi_vlan>** # **ifup xmi**
17. ☐	For each **Oracle X5-2 RMS**: Create bond1 device	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" 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 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 Bring up devices into services: # **ifup <nic3>** # **ifup <nic4>** # **ifup bond1**
18. ☐	For each **Oracle X5-2 RMS**: Create xsi1/xsi2	Create device bond1.<xsi1_vlan> configuration file: # **vim /etc/sysconfig/network-scripts/ifcfg-bond1.<xsi1_vlan>** BOOTPROTO=none VLAN=yes

	bridge	ONBOOT=yes TYPE=Ethernet DEVICE=bond1.<xsi1_vlan> BRIDGE=xsi1 NM_CONTROLLED=no 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> Bring up devices into services: # **ifup xsi1** # **ifup bond1.<xsi1_vlan>** Perform similar operations 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
20. ☐	For each **Oracle X5-2 RMS**: Set NTP service	Modify /etc/chrony.conf, comment out all server * entries and append your NTP server IP to the list with prepending ‘server ‘ text: # 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 144.25.255.140 Force ntp to sync with newly added server: # **ntpdate 144.25.255.140** # **timedatectl** Verify time synced: [root@udr-x5-2-62 log]# **chronyc tracking** Reference ID : 144.25.255.140 (144.25.255.140) 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 dir	[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-12.4.0.0.0_16.14.0.ova
23. ☐	Untar this ova file	[root@pc9112020 ova]# **tar xvf UDR-12.4.0.0.0_16.14.0.ova** UDR-16_14_0.ovf UDR-16_14_0.mf UDR-16_14_0.vmdk
24. ☐	Convert this vmdk file to qcow2 file	[root@pc9112020 ova]# **qemu-img convert -O qcow2 DR- UDR-12.4.0.0.0_16.14.0.ova.vmdk UDRNO-16_14_0.qcow2**
25. ☐	Copy the qcow2 files for SO and MP	[root@pc9112020 ova]# cp **UDRNO-16_14_0.qcow2 UDRSO-16_14_0.qcow2** [root@pc9112020 ova]# cp **UDRNO-16_14_0.qcow2 UDRMP-16_14_0.qcow2**
26. ☐	Configure storage for corresponding qcow2 files	Configure storage qcow2 files as per corresponding VMs. Refer 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 will be: **qemu-img resize UDRNO-16_14_0.qcow2 220G**
27. ☐	Create OCUDR VMs. Repeat this step for each VM.	Create OCUDR VMs: NO, SO and MP using appendix below. Repeat the below procedure for each VM Appendix M : Install OCUDR VMs using KVM GUI "Check off" the associated Check Box as addition is completed for each Server. ☐ 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 and 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	Follow instructions in... Step 5 - 6 of Appendix L.6 Configure TVOE Server (Hostname, Time Zone, SNMP, NTP, etc) in [2] . … to configure NTP service for each VM.
31. ☐	Extend VM Instance volume	Extend volumes for various VM Instances depending on flavor following: Appendix D-6: Extend VM Instance Volume Size "Check off" the associated Check Box as addition is completed for each Server. ☐ NOAMP ☐ SOAM ☐ MP
THIS PROCEDURE HAS BEEN COMPLETED		

Appendix K. MY ORACLE SUPPORT (MOS)

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

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

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

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

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

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 appears. Most products covered by these documentation sets will appear under the headings “Network Session Delivery and Control Infrastructure” or “Platforms.”
4. Click on your Product and then the Release Number.
   A list of the entire documentation set for the selected product and release appears.
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 OCUDR VM VIA KVM GUI

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

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

Note:

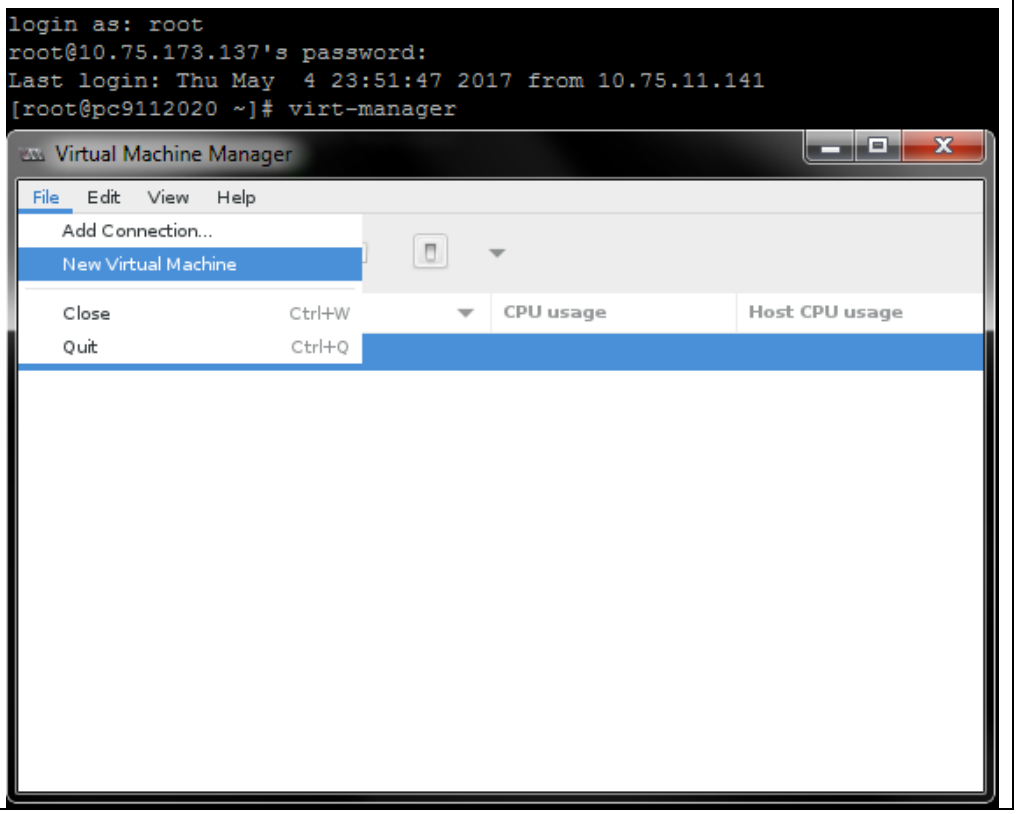
- This procedure needs to be done for each VM: NO, SO and MP

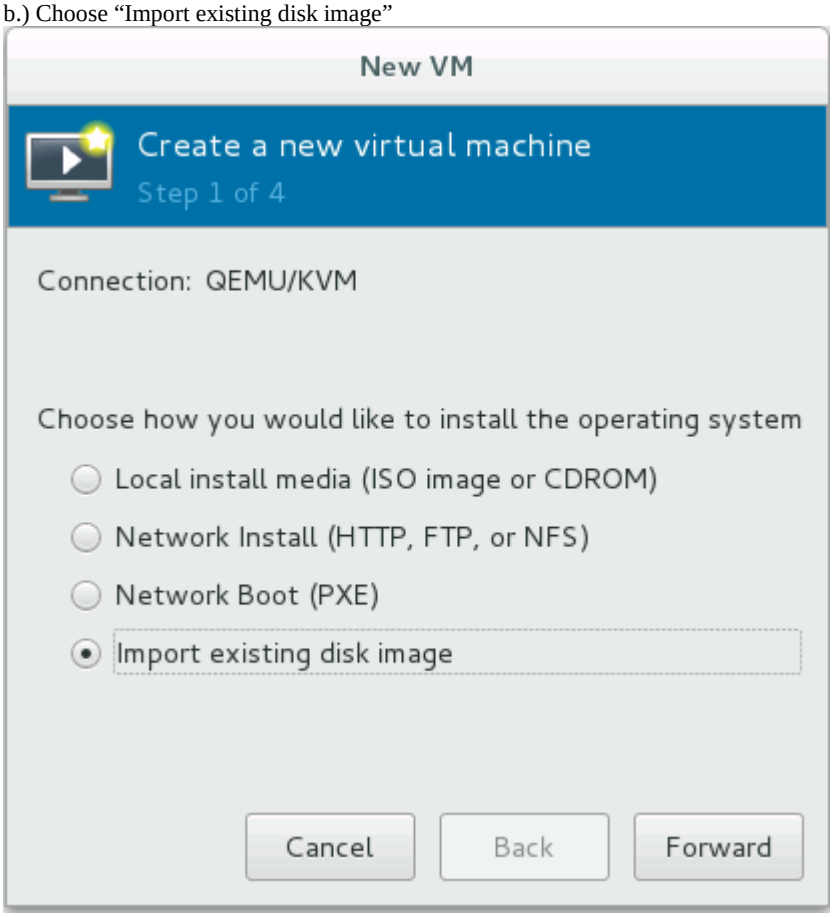
Requirements:

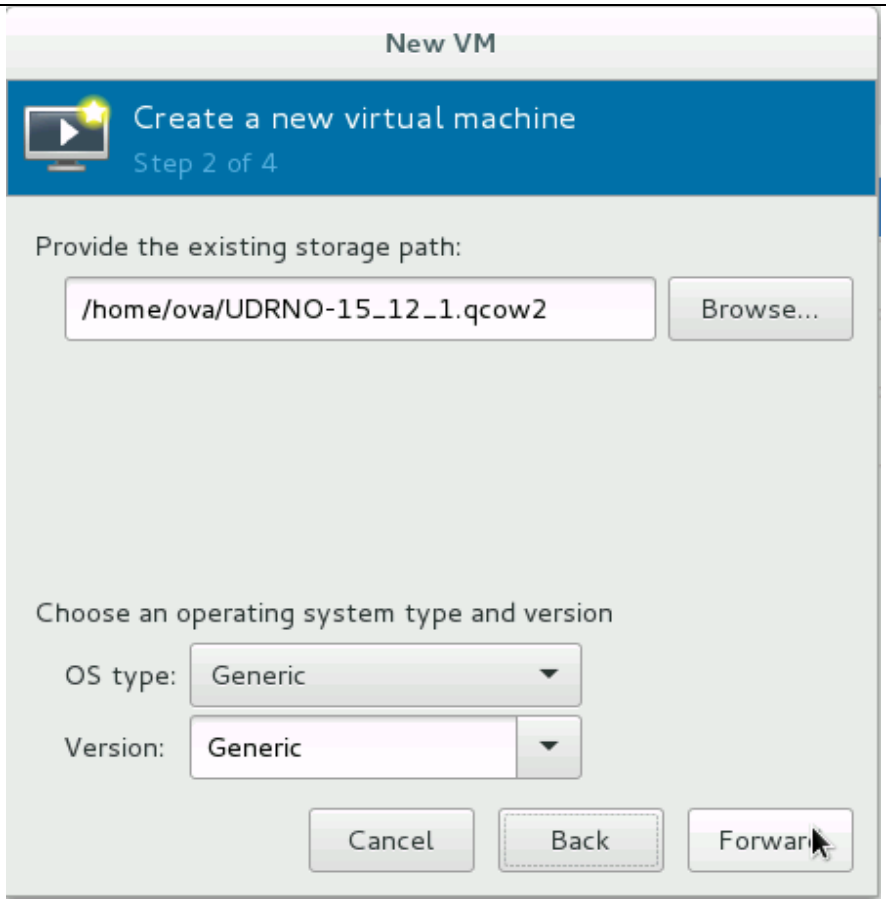
- **Appendix J Install UDR on Oracle Linux OS via KVM Steps: 1-25** must be complete.

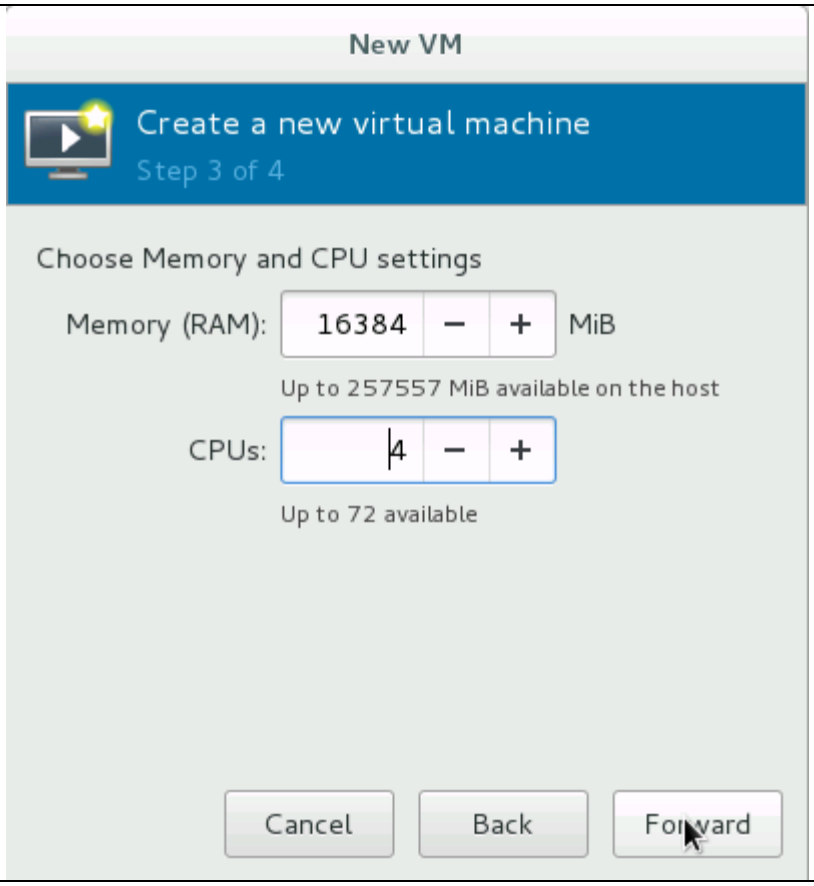
Check off (√) each step as it is completed. Boxes have been provided for this purpose under each step number.

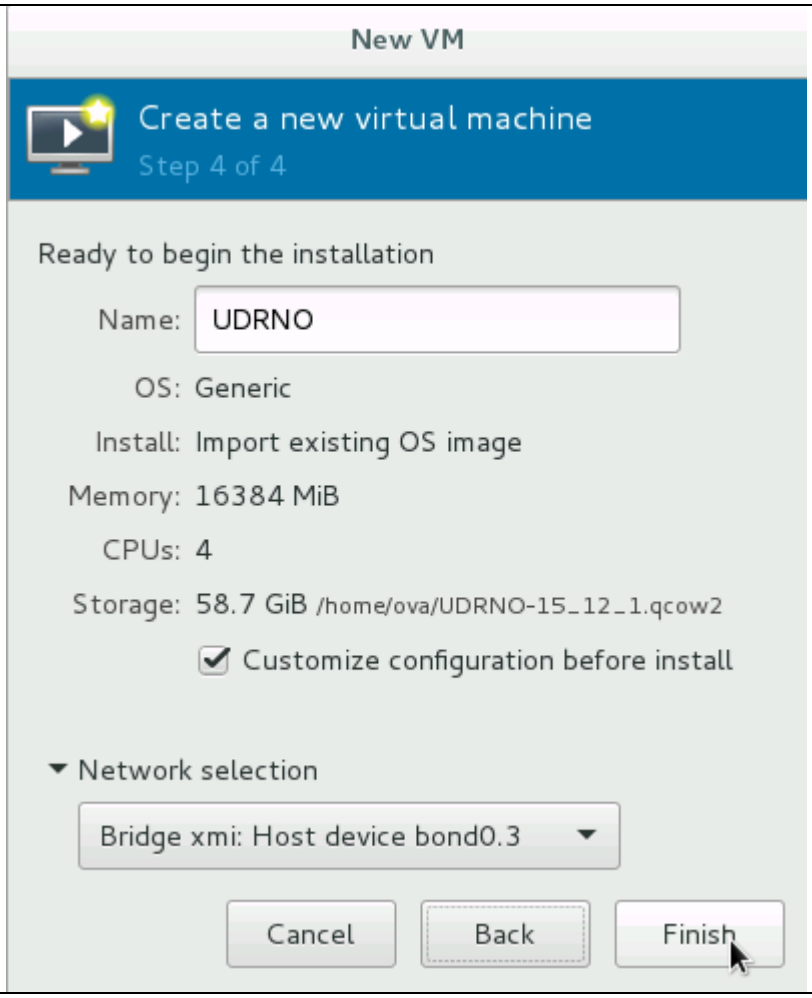
Procedure 42: Create and Install OCUDR VMs via KVM GUI

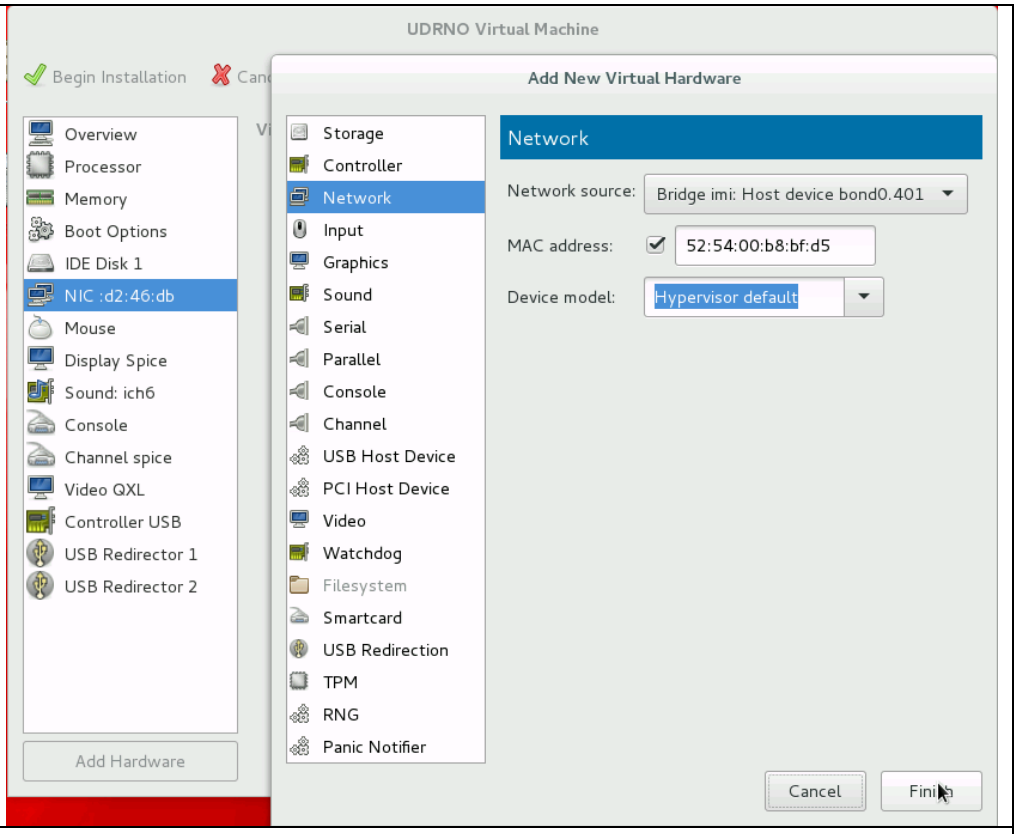
Step	Procedure	Result
1. ☐	Login to the host machine and open the Virual Machine Manager	Login to the host machine which has Oracle Linux installed and open the Virtual Machine Manager via command-line using command 'virt-manager' as shown below: **Note:** Make sure X11 forwarding is enabled before running virt-manager command on CLI. 

2. ☐	Create a new Virtual Machine using the Virtual Manager GUI	On Virtual Manager GUI, a). Click File -> New Virtual Machine as below: b.) Choose “Import existing disk image” 
3. ☐	Select the image file	Select the qcow2 from the location:/home/ova (as done Step 24-25 in Appendix J) by browsing the location as below and Click Forward

		
4. ☐	Select RAM and vCPUs for VM	For each VM, select the RAM and vCPUs as per the required resource profile. Refer to Appendix G. Click Forward as below:

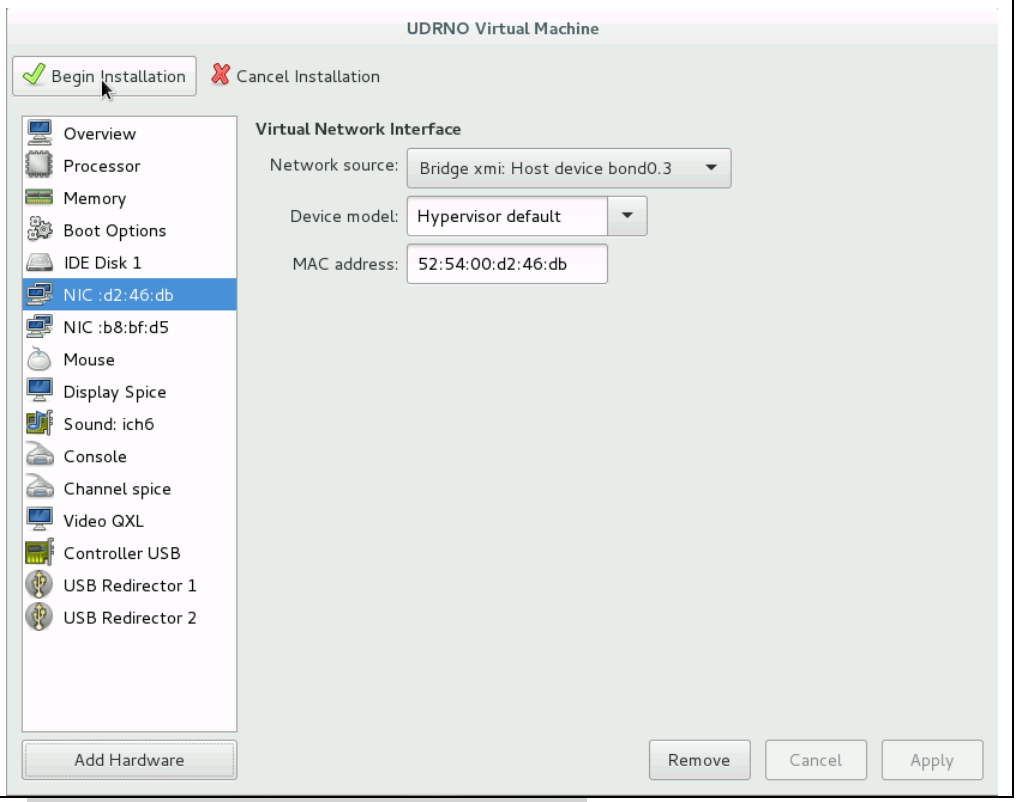
		
5. ☐	Verify and customize VM	Update the VM name and choose “Customize configuration before install”. Under Network selection, choose XMI bridge and click Finish:

		
6. ☐	Customize the network configuration	On the next screen, click Add Hardware. The below screen will be seen. Under Network, choose the IMI bridge. For NO and SO, choose IMI bridge only. For MP, add XSI1 along with IMI by repeating this step. Click Finsh.



7. ☐ Verify and begin installation

After adding all bridges, verify and begin the VM installation:



THIS PROCEDURE HAS BEEN COMPLETED

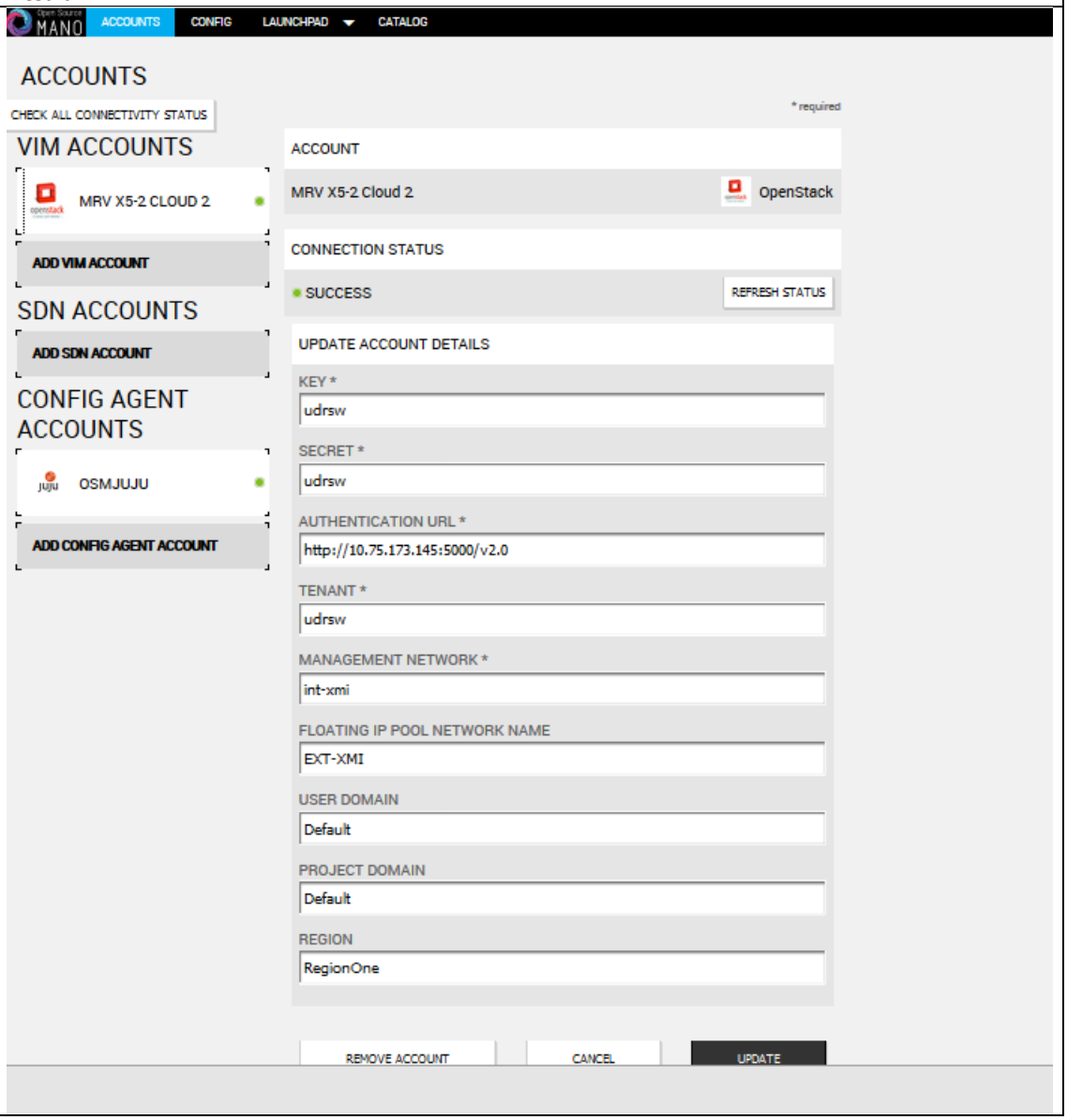
Appendix N. ORCHESTRATING UDR VIA OSM

Pre-requisites :

- OSM Relase Two must be successfully installed.
- A standalone JUJU server must be successfully bootstrapped .

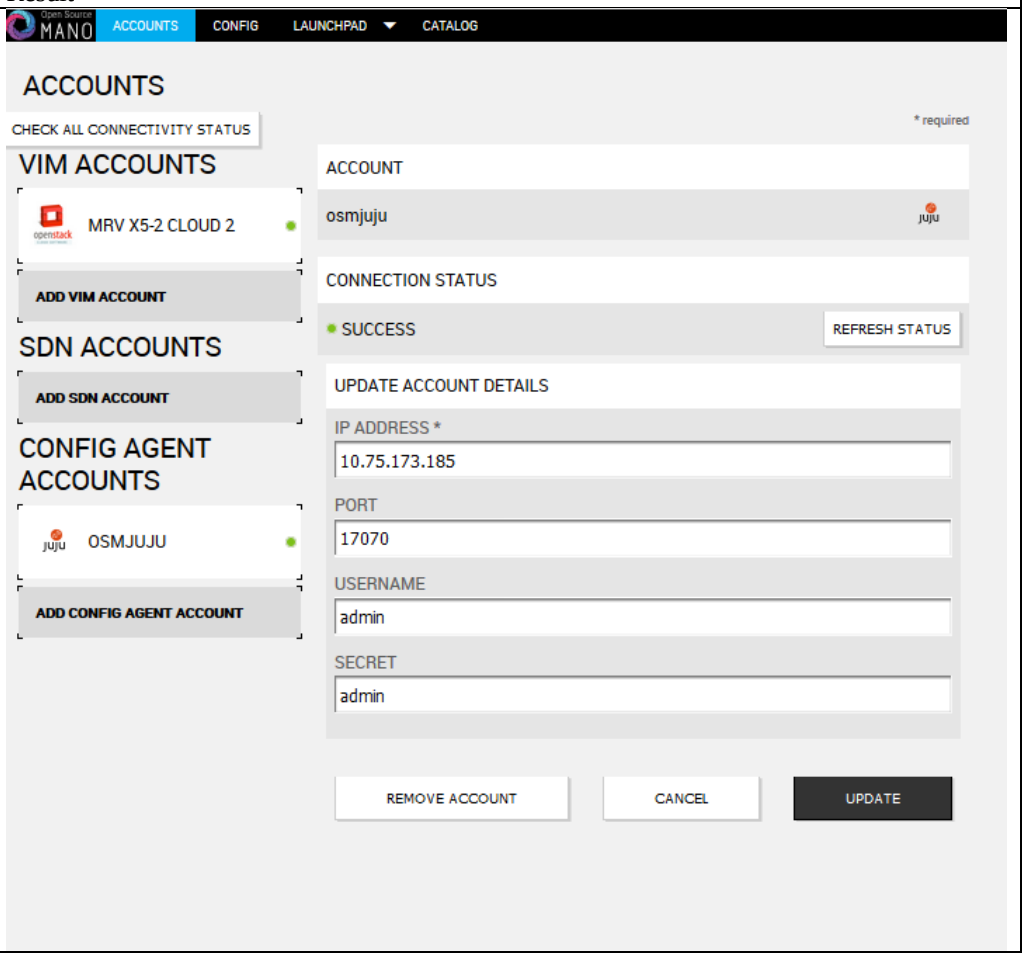
N-1 Configure Openstack VIM to run with OSM

On the OSM GUI, navigate to the Accounts Tab and click on “Add VIM Account”. A screen like the one below will appear. Fill the OpenStack VIM details and add the VIM account.

Procedure	Result
Add the VIM details in the Account Tab -> VIM ACCOUNTS on OSM GUI.	

N-2 Configure Config Agent Account (Juju Server)

Add the details of standalone JUJU server as a Config Agent account in order to enable OSM to communicate with JUJU Server. On the OSM GUI, navigate to Accounts tab and click on Add Config Agent Account. A screen like the one below will appear. Fill in the JUJU Server details and add the account.

Procedure	Result
Add the CONFIG AGENT (juju) account details in the Account Tab -> CONFIG AGENT ACCOUNTS on OSM GUI.	

N-3 Build and Deploy UDR NSD/VNFD Package

Build and Deploy scripts are attached below and should be run in order to upload UDR NSDs and VNFDs to OSM.

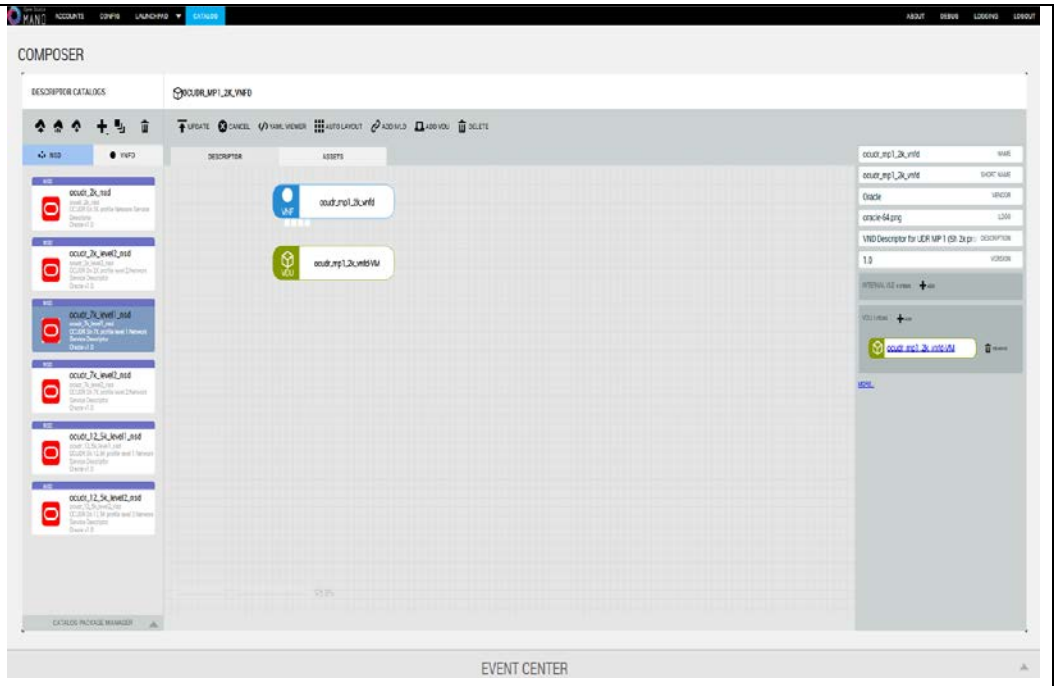
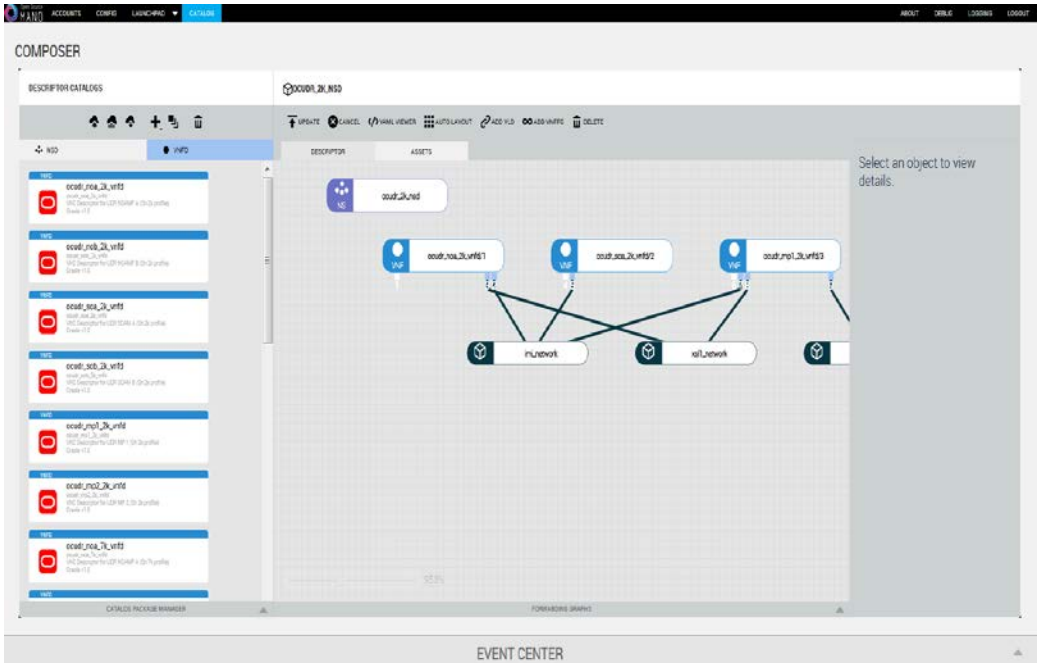
1. SSH Logon to Juju Server and fetch build and deploy source scripts :

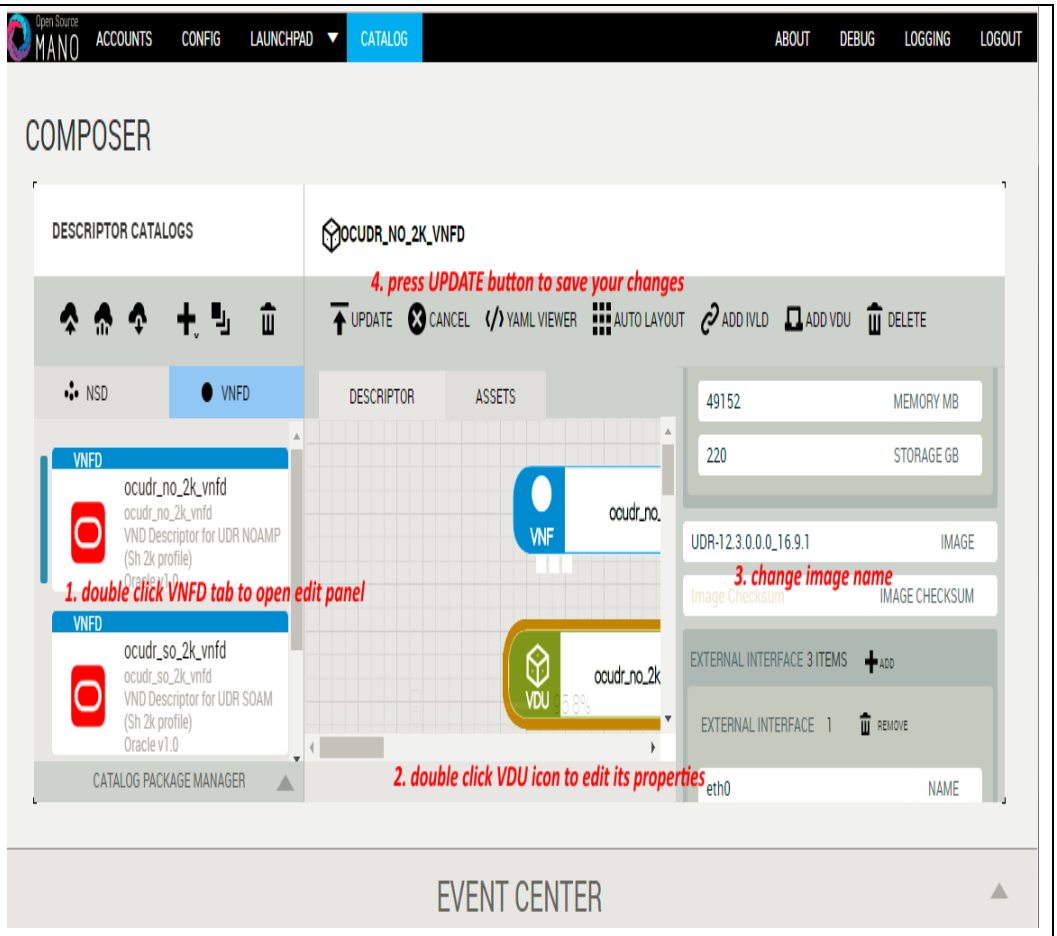
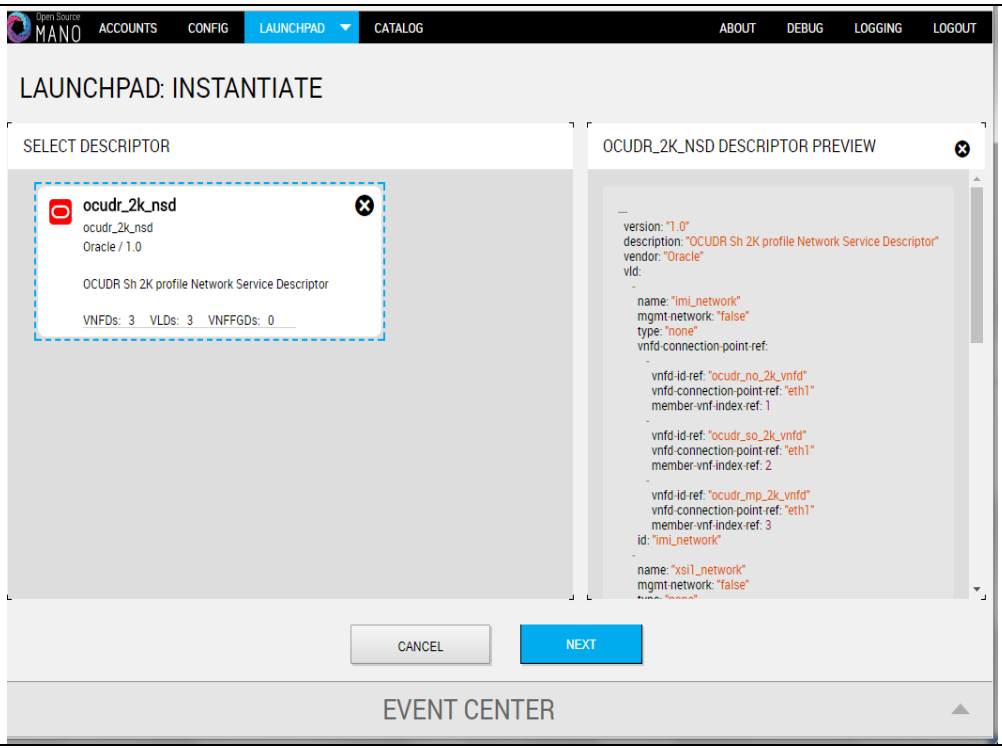
Step	Procedure	Result

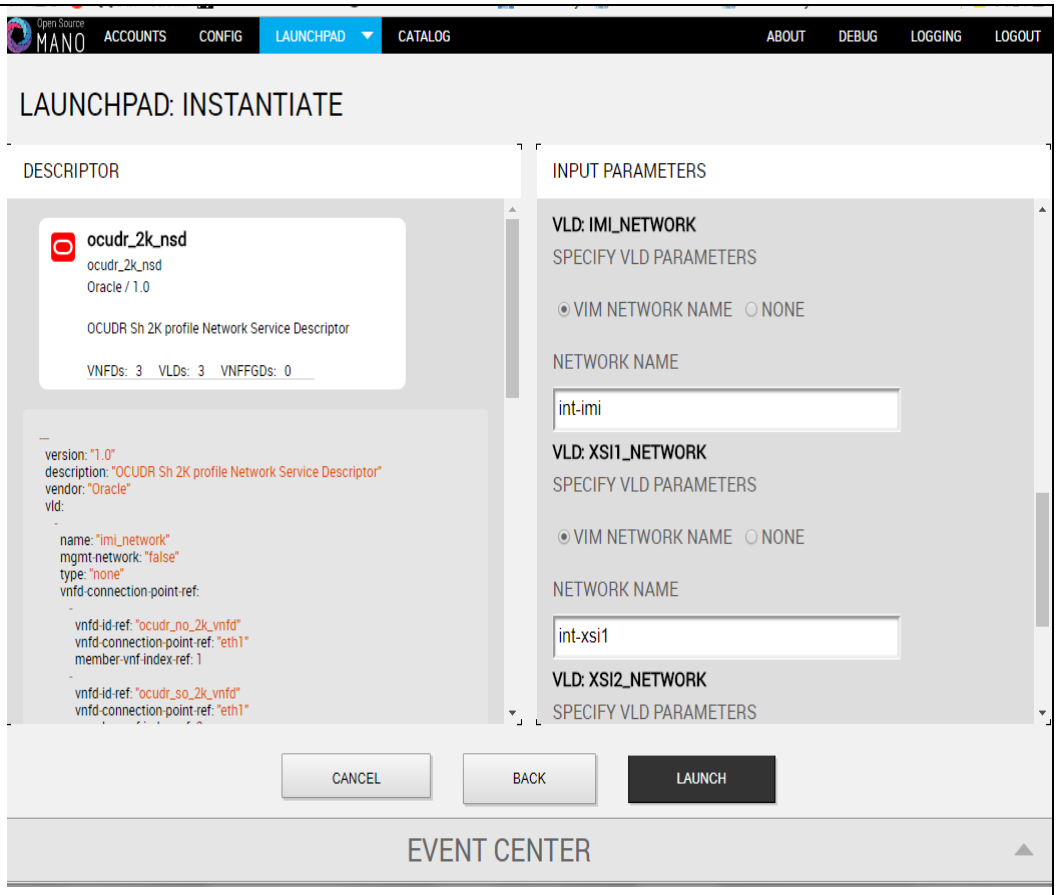
1	SSH Logon to JUJU server and fetch the build and deploy source scripts
	
	1) Copy the qcow2 file made from the ova file of UDR image to the juju server.
	
	2) Run the following commands:
	
	$ sudo guestmount -a UDR-12.4.0.0.0_16.13.1.qcow2 -m /dev/mapper/vgroot-plat_usr /mnt
	
	$ sudo cp /mnt/TKLC/udr/cloud/OSM-support.tar.gz ./
	
	$ sudo guestunmount /mnt
	
	3) These commands will extract osm-supprt.tar.gz file from qcow2 image
	
	4)Untar the file to osm-support directory
		Copied Image on Juju Server :
		
		`ubuntu@edward-juju-server:~$ ls -l UDR-12.4.0.0.0_16.13.0.qcow2`
		`-rw-r--r-- 1 ubuntu ubuntu 4345757696 Jan 23 09:57 UDR-12.4.0.0.0_16.13.0.qcow2`
		`ubuntu@edward-juju-server:~$`
		
		Extracted osm-support directory from qcow2 Image
		
		`ubuntu@edward-juju-server:~$ cd osm-support/`
		`ubuntu@edward-juju-server:~/osm-support$ ls`
		`build build.sh charms deploy.sh doc nsd vnfd`
		`ubuntu@edward-juju-server:~/osm-support$`

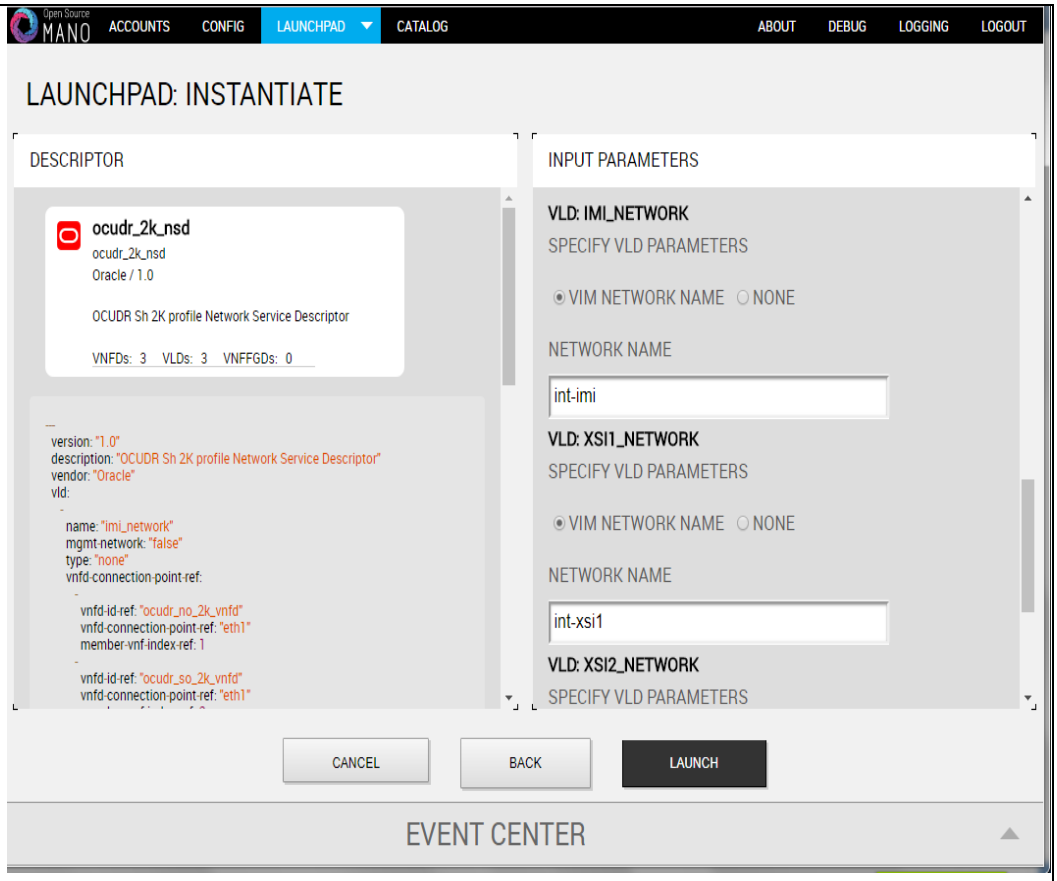
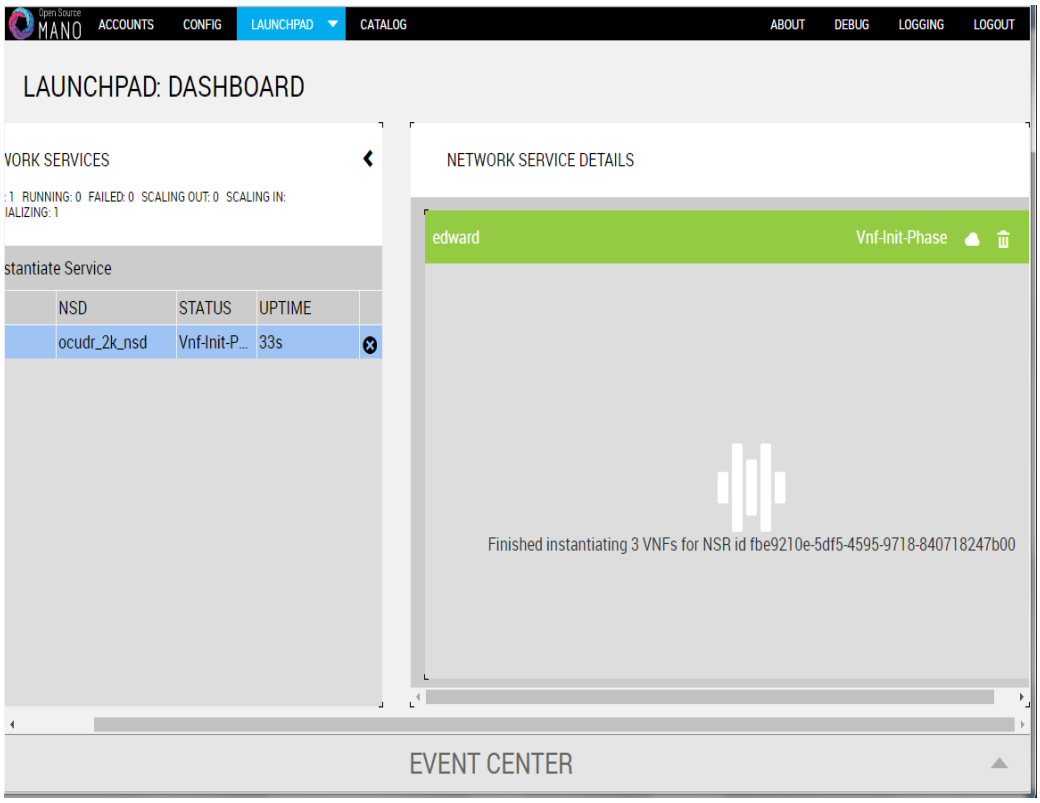
2	Navigate to OSM-Support directory and Run the build script
	
	$ ./build.sh
	
	Note : Monitor the console output make sure the build script is
		`ubuntu@edward-juju-server:~/osm-support$ ./build.sh`
		`ocudr_soa_2k_vnf/`
		`ocudr_soa_2k_vnf/ocudr_soa_2k_vnfd.yaml`
		`ocudr_soa_2k_vnf/README`
		`ocudr_soa_2k_vnf/icons/`
		`ocudr_soa_2k_vnf/icons/oracle-64.png`
		`ocudr_soa_2k_vnf/checksums.txt`
		`ocudr_soa_2k_vnf/cloud_init/`
		`ocudr_soa_2k_vnf/cloud_init/ocudr_soa_2k_vnfd-VM.init`
		`ocudr_sob_2k_vnf/`

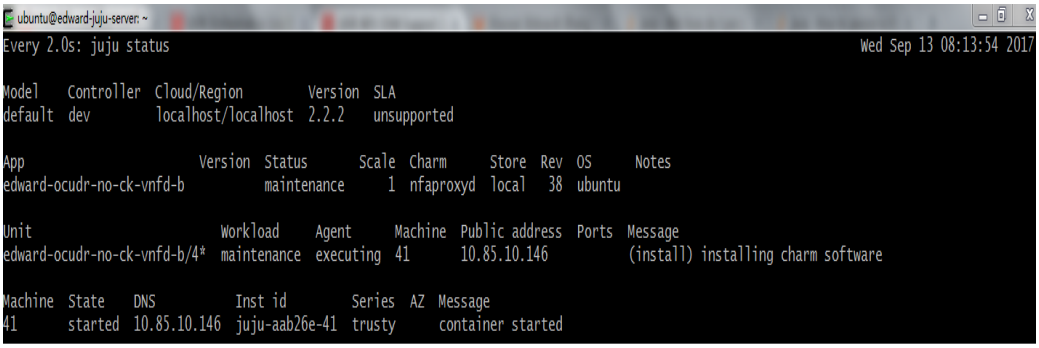
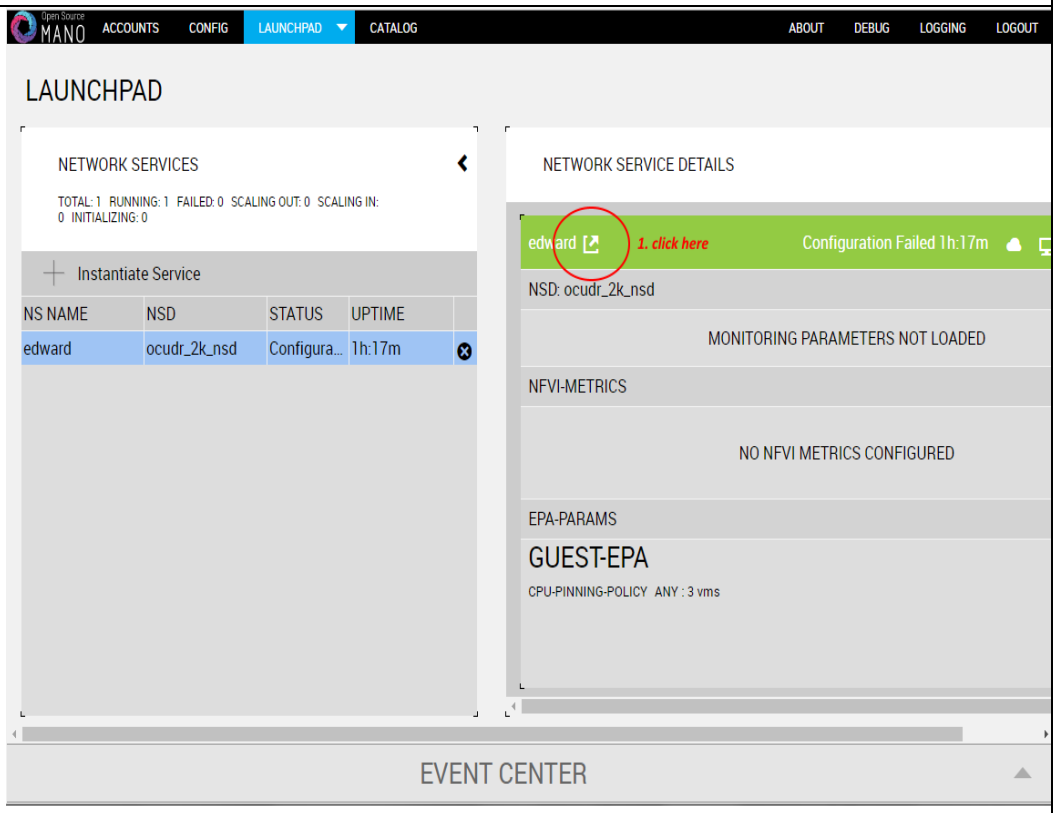
	completed successfully	ocudr_nob_12_5k_vnf/cloud_init/ocudr_nob_12_5k_vnfd-VM.init build: Composing into /home/ubuntu/osm-support/charms build: Destination charm directory: /home/ubuntu/osm-support/charms/tnfaproxyd build: Processing layer: layer:basic build: Processing layer: layer:sshproxy build: Processing layer: layer:vnfproxy build: Processing layer: nfaproxyd (from charms/nfaproxyd) proof: I: Includes template icon.svg file. proof: W: Includes template README.ex file proof: W: README.ex includes boilerplate: Step by step instructions og the charm: proof: W: README.ex includes boilerplate: You can then browse to http address to configure the service. proof: W: README.ex includes boilerplate: - Upstream mailing list or t information proof: W: README.ex includes boilerplate: - Feel free to add things i useful for users proof: I: all charms should provide at least one thing ocudr_12_5k_level1_ns/ ocudr_12_5k_level1_ns/README ocudr_12_5k_level1_ns/icons/ ocudr_12_5k_level1_ns/icons/oracle-64.png ocudr_12_5k_level1_ns/ocudr_12_5k_level1_nsd.yaml ocudr_12_5k_level1_ns/checksums.txt ocudr_12_5k_level2_ns/ ocudr_12_5k_level2_ns/README ocudr_12_5k_level2_ns/icons/ ocudr_12_5k_level2_ns/icons/oracle-64.png ocudr_12_5k_level2_ns/checksums.txt ocudr_12_5k_level2_ns/ocudr_12_5k_level2_nsd.yaml ubuntu@edward-juju-server:~/osm-support$
3	Once the build script is run successfully, run the deploy script inside OSM-support directory Pre-requisite : OSM host IP is required to run deploy.sh, Open the deploy script with a editor and change the env variable of "OSM_HOSTNAME" to your OSM host IP before running deploy.sh. $./deploy.sh	ubuntu@edward-juju-server:~/osm-support$ ./deploy.sh failed to delete vnfd ocudr_noa_2k_vnfd failed to delete vnfd ocudr_nob_2k_vnfd failed to delete vnfd ocudr_soa_2k_vnfd failed to delete vnfd ocudr_sob_2k_vnfd failed to delete vnfd ocudr_mp1_2k_vnfd failed to delete vnfd ocudr_mp2_2k_vnfd

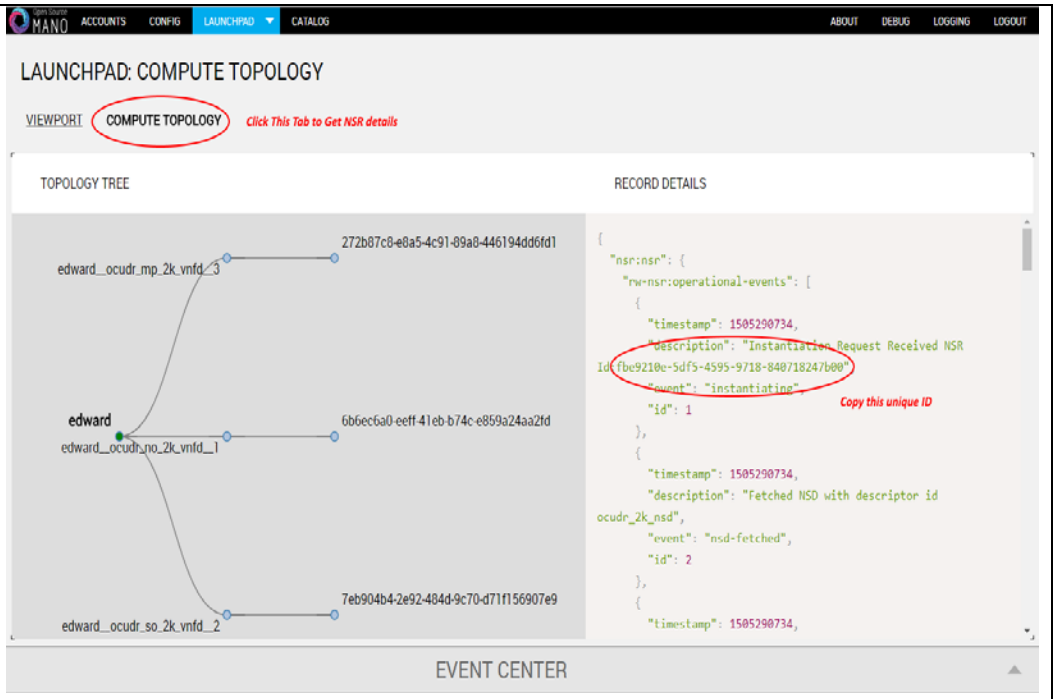
4	Logon to OSM GUI, verify that UDR NSD/VNFD has been uploaded successfully:	 

5	Optional Step : Change UDR image name : Open The OSM GUI and browse to CATALOG Tab Follow the steps mentioned in the image to change UDR Image Name : 1. Double Click VNFD Tab to open edit pane 2. Double click VDU to edit its properties 3. Change Image Name 4. Click on Update button to save changes **NOTE : UDR image name should match with the one you intend to use and an image with the same name should be available on openstack**	
6	Open the OSM GUI. Browse to "LAUNCHPAD" tab and click "Instantiate Service" button, select "OCUDR_2k_nsd" and click "Next":	
7	Fill in required	

	information and click "Launch", fill in instance name as you prefer: Note : Fill in the VLD:*_network correctly: VLD:IMI_NETWORK -> int-imi, VLD:XSI1_NETWORK --> int-xsi1, VLD:XSI2_NETWORK --> int-xsi2	

		
8	Wait for the instantiation operation to complete Note : In OSM Release Two, UDR NSR result can be incorrectly shown on GUI. To check the status correctly, logon to juju server and issue the command $watch juju status The screen will show a message. Wait for the cleanup of the message. The cleanup of message indicates success. (Refer to the second figure in this step)	

		
9	After instantiation is done, query UDR NSR ID from OSM GUI and configure the parameter of 'udr-nsr-id' in NO charm: Follow the steps in the image to Add UDR NSR ID in NO charm	



N-4 Perform Orchestration operations via OSM

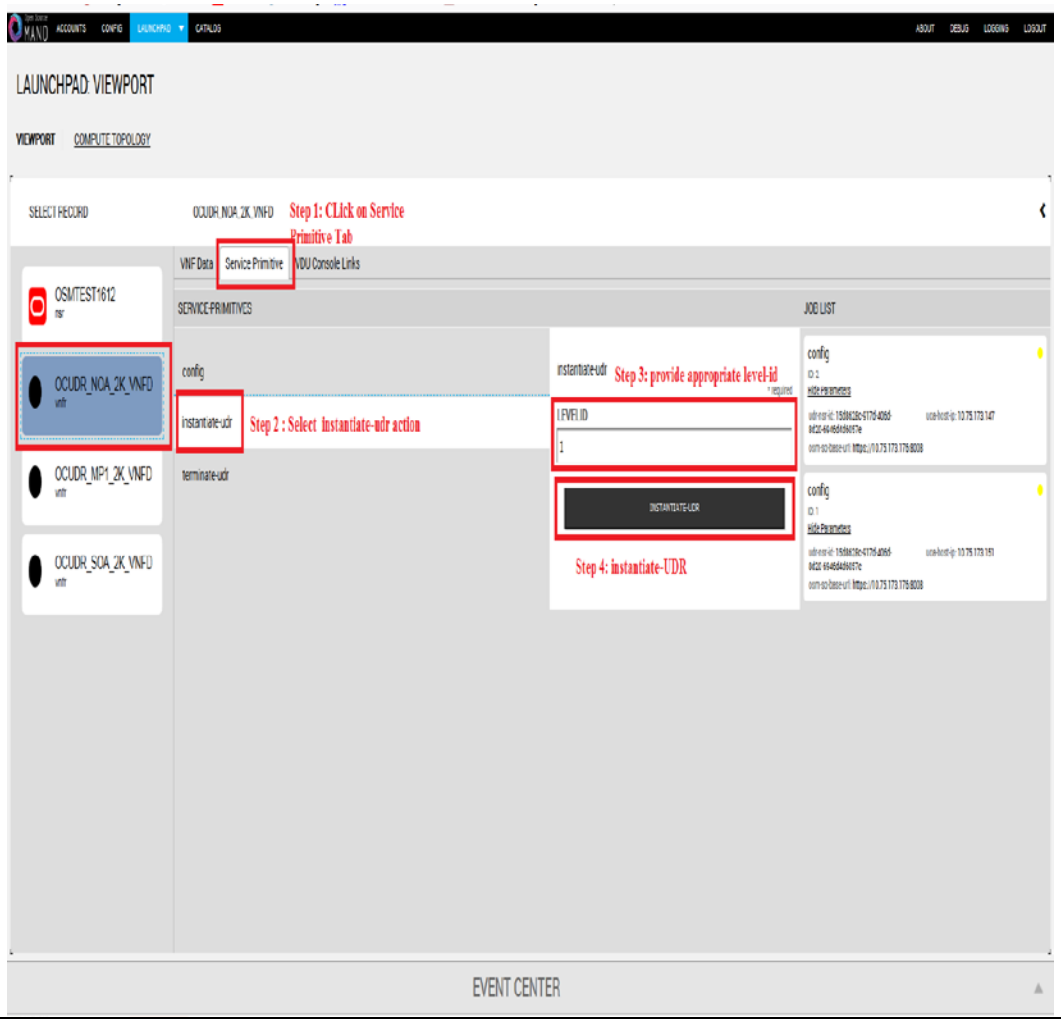
Once the UDR NSR ID is added in the NO charm, UDR Orchestration operations can be performed. Currently OSM supports two operations , namely

1. Instantiation

2. Termination

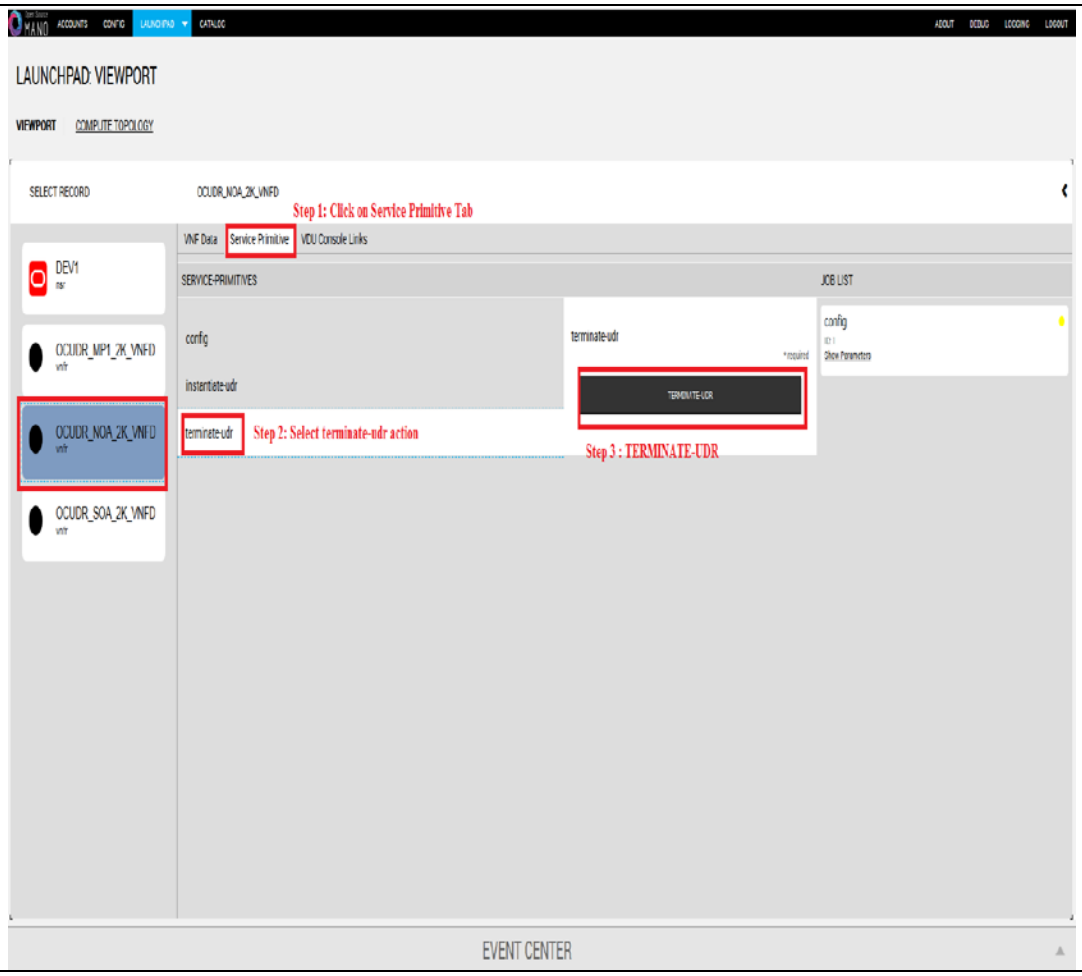
N.41 Instantiate OCUDR

Once the steps in Appendix N-3 are completed successfully, an OCUDR instance can be instantiated either to level1 or level 2.

Navigate to Launchpad -> Viewport -> OCUDR_NO_VM • Click on the service Primitive Tab • Select instantiate-udr action • Provide the levelId to instantiate OCUDR • Click on instantiate-UDR	

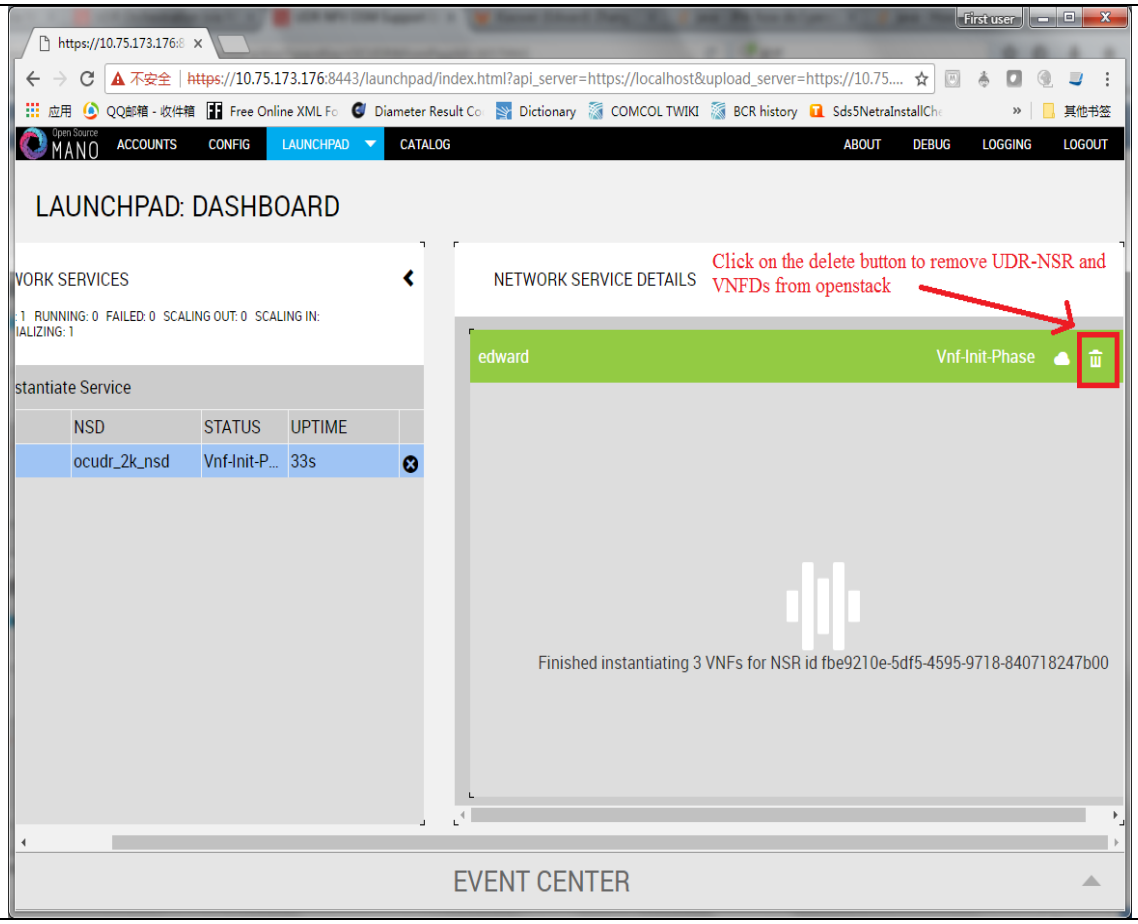
N.42 Terminate OCUDR

Navigate to Launchpad -> Viewport ->	

OCUDR_NO_VM • Click on the service Primitive Tab • Select terminate-udr action • Click on terminate-UDR	

Manually remove the UDR NSR to remove the deployed VNFDs from openstack

- Naviagte to LAUNCHPAD -> DASHBOARD on OSM GUi and click on delete icon for the corresponding UDR-NSR



Appendix O. ORCHESTRATING OCUDR VIA TACKER

Pre-requisites :

1. Openstack Pike with Tacker service must be installed
2. OCPM is successfully instantiated and NFAgent service is up and running. Also a public IP should be available to access the NFAgent service.

O-1 Tacker Configuration

Edit the tacker.conf file – location : /usr/local/etc/tacker/tacker.conf – and add the following configuration options to it :

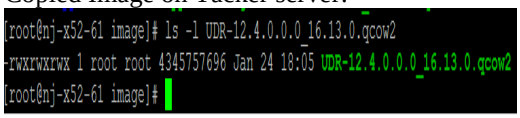
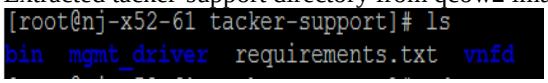
```
[udr]

#
# From tacker.vnfm.mgmt_drivers.udr.udr
#

# IP address on which host NFAgent service is deployed (string value)
nfagent_ip = 10.113.79.112

# user name to login NFAgent (string value)
#user = admusr

# password to login NFAgent (string value)
#password =

# time to wait for UDR VMs to be ready for application configuration (seconds)
#udr_init_wait_sec = 600
udr_init_wait_sec = 900
```

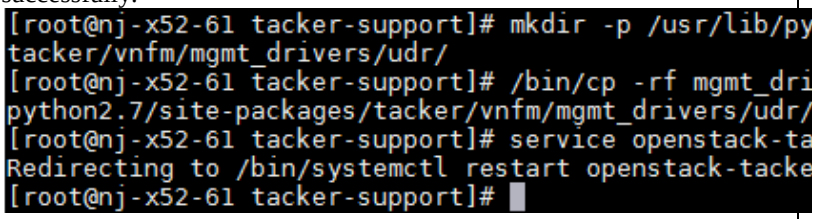
Configuration Options

- nfagent_ip : The public IP Address of the NFAgent service deployed as a pre-requisite before this step
- user : user name to login NFAgent (string value)
- password : password to login NFAgent (string value)
- udr_init_wait_sec : # time to wait for UDR VMs to be ready for application configuration (seconds)

O-2 Install UDR Tacker Support Scripts

Step	Procedure	Result

1	SSH Logon to Tacker server
	
	1) Copy the qcow2 file made from the ova file of UDR image to the tacker server (controller Node).
	
	2) Run the following commands:
	
	$ sudo guestmount -a UDR-12.4.0.0.0_16.13.1.qcow2 -m /dev/mapper/vgroot-plat_usr /mnt
	
	$ sudo cp /mnt/TKLC/udr/cloud/Tacker-support.tar.gz ./
	
	$ sudo guestunmount /mnt
	
	3) These commands will extract Tacker-supprt.tar.gz file from qcow2 image
	
	4)Untar the file to tacker-support directory
		Copied Image on Tacker server:
		 
		
		Extracted tacker-support directory from qcow2 image
		 

2	Browse to the directory where the tacker scripts are copied on the controller Node. Run the following commands : [1] `sudo mkdir -p /usr/lib/python2.7/site-packages/tacker/vnfm/mgmt_drivers/udr` [2] edit mgmt_driver/udr/udr.py to navigate to line 102: level = self.cluster_info['options']['LEVEL'] Replace it with: level = str(self.cluster_info['options']['LEVEL']) [3] `sudo cp mgmt_driver/udr/*.py /usr/lib/python2.7/site-`	Inspect tacker.log to verify that UDR management Driver is installed successfully. 

	packages/tacker/vnfm/mgmt_drivers/udr/ [4] sudo service openstack-tacker-server restart **Note : please change /usr/lib/python2.7/site-packages/tacker with the tacker script installation directory per local tacker installation path.**	
3	Deploy VNFD for UDR 2k level 2 VNF [1] Edit vnfd/udr-2k-vnfd.yaml and find occurrences of 'init 6' (there're 6 occurrences in total), prepend line: echo 'ifconfig eth0 mtu 1450' >> /etc/rc.d/rc.local before each occurrence of 'init 6', like following: echo 'ifconfig eth0 mtu 1450' >> /etc/rc.d/rc.local init 6 [2] source keystone rc file of openstack: source ~/keystonerc_admin [3] Deploy the updated VNFD file with following command: tacker vnfd-create --vnfd-file vnfd/udr-2k-vnfd.yaml udrvnfd	Verify that VNFD is deployed successfully. [root@nj-x52-61 tacker-support]# vim vnfd/udr-2k-vnfd [root@nj-x52-61 tacker-support]# tacker vnfd-create --vnfd.yaml udr-2k-vnfd You must provide a username or user ID via --os-user or --os-user-id, env[OS_USER_ID] [root@nj-x52-61 tacker-support]# source ~/keystonerc_ [root@nj-x52-61 tacker-support(keystone_admin)]# tack file vnfd/udr-2k-vnfd.yaml udr-2k-vnfd Created a new vnfd: +-----------------+---------- | Field | Value +-----------------+---------- | created_at | 2018-02-05 03:47:24.167240 | description | Demo with udr cluster | id | 0874def4-0ac5-4352-bc7a-cff6139d6 | name | udr-2k-vnfd | service_types | vnfd | template_source | onboarded | tenant_id | 45a69279f4be47d89556b5299bdec769 | updated_at | +-----------------+---------- [root@nj-x52-61 tacker-support(keystone_admin)]#

O-3 Perform Orchestration Operations via Tacker

After the succesfull completion of Appendix O-2, you can proceed with the orchestration of OCUDR. Currently Tacker supports two orchestration operations , namely :

1. Instantiation (CREATE UDR VNF)
2. Termination (DELETE UDR VNF)

O.31 CREATE UDR VNF (Instantiation)

Procedure	Results

Issue the following command to create UDR VNF (assumes to have sourced the keystone rc file for openstack) :

```
tacker vnf-create
--vnfd-name
udrvnfd
<udr_vnf_name> --
param-file
udrvnf-param.yaml

where,

udr_vnf_name
should be
replaced with
the name you
choose for udr
vnf.

udrvnf-param.yaml
: Configuration
file used for
customizing input
parameters in UDR
VNFD Template.
Change the file
parameters as
required to get
the desired
configuration.
```

Example of udrvnf-param.yaml

```
xmi_network:
int-xmi
imi_network:
int-imi
xsi1_network:
int-xsi1
xsi2_network:
int-xsi2image:
UDR-
12.3.0.0.0_16.9
.0.2
```

```
[root@nj-x52-61 tacker-support]# source ~/keystonerc_admin
[root@nj-x52-61 tacker-support(keystone_admin)]# tacker vnf-creat
ame udr-2k-vnfd udrpv1
Created a new vnf:
+----------------+--------------------------------------+
| Field          | Value                                |
+----------------+--------------------------------------+
| created_at     | 2018-02-05 04:52:52.342068           |
| description    | Demo with udr cluster                |
| error_reason   |                                      |
| id             | e60483c1-94a2-4af6-b415-1a740de59c64 |
| instance_id    | 204ad65b-8835-4052-ae57-79d3859a53d7 |
| mgmt_url       |                                      |
| name           | udrpv1                               |
| placement_attr | {"vim_name": "tacker"}               |
| status         | PENDING_CREATE                       |
| tenant_id      | 45a69279f4be47d89556b5299bdec769     |
| updated_at     |                                      |
| vim_id         | 7ae4f37b-056b-45de-a131-62463bdfce6d |
| vnfd_id        | 0874def4-0ac5-4352-bc7a-cff6139d6df4 |
+----------------+--------------------------------------+
[root@nj-x52-61 tacker-support(keystone_admin)]#
```

To inspect the detailed log for creating UDR VNF, refer to tacker log use following command:
$ sudo tail -f /var/log/tacker/tacker.log

O.32 DELETE UDR VNF (Termination)

Procedure	Results

Issue the following command to delete UDR VNF :
 	
`tacker vnf-delete <udr_vnf_name>`
 	
`where,`
 	
`udr_vnf_name should be replaced with the name of udr vnf you want to terminate.`