Oracle® Enterprise Manager Ops Center

Configure and Install Guest Domains

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This guide provides an end-to-end example for how to use Oracle Enterprise Manager Ops Center.

Introduction

Using Oracle Enterprise Manager Ops Center, you can configure and install guest domains on Oracle VM Server for SPARC systems.

A guest domain is a virtual machine with resources, such as CPU Threads, memory, virtual I/O devices, and its own operating system that runs independently on Oracle VM Server for SPARC control domain.

Oracle Enterprise Manager Ops Center provides profiles and plans to create guest domains and provision OS on them.

This guide describes how to create a guest domain on an Oracle VM Server for SPARC system. In this example, the guest domain uses virtual I/O resources and has the following characteristics:

- Resource configuration of 2 CPU threads, 4 GB of memory, and 20 GB of virtual disk space.
- Local storage library to store the metadata and for the virtual disks.
- Oracle Solaris 11.1 SRU 8.4 operating system provisioned on the guest domain.
- Operating system is automatically installed with Zone Virtualization Controller Agent.
- Guest domain operating systems are not placed in a zones server pool.

See Related Articles and Resources for more information about Oracle VM Server for SPARC and creating logical domains.

What You Will Need

You need the following to configure and deploy guest domains:

- **Oracle VM Server for SPARC system**

  An Oracle SPARC server installed and configured with Oracle VM Server for SPARC. In this example, an Oracle SPARC T4-2 server is installed and configured with Oracle VM Server for SPARC 3.1 version using Oracle Enterprise Manager Ops Center.

- **Network Connection**

  You use virtual switch to provide network connection to the guest domain.

  When you create guest domains, you can define the following details for a network connection:

  – Service domain that provides the network interface for connection.

  – The virtual switch for the selected networks.

  – The tagging mode for the network. You must have at least one network connection in untagged mode for using it for OS provisioning the guest domain. If the network is already VLAN tagged, then select untagged mode for the network while creating the guest domain.

  In this example, the guest domain is connected to a network using virtual switch. This results in creation of a vnet which is used for provisioning OS on the guest domain. In Oracle Enterprise Manager Ops Center, you can use only virtual switch for provisioning OS on the guest domain.

- **Storage Libraries**

  The local storage library is used for virtual disks of the guest domains and to store the guest domain metadata. In this example, 20 GB of virtual disk is created for the guest domain.

- **OS Image**

  You must install and configure Oracle Enterprise Manager Ops Center in Oracle Solaris 11 OS and populate the Oracle Solaris 11 Library with SRUs. You can select an Oracle Solaris 11 OS of particular SRU version.

- **Roles and Permissions**

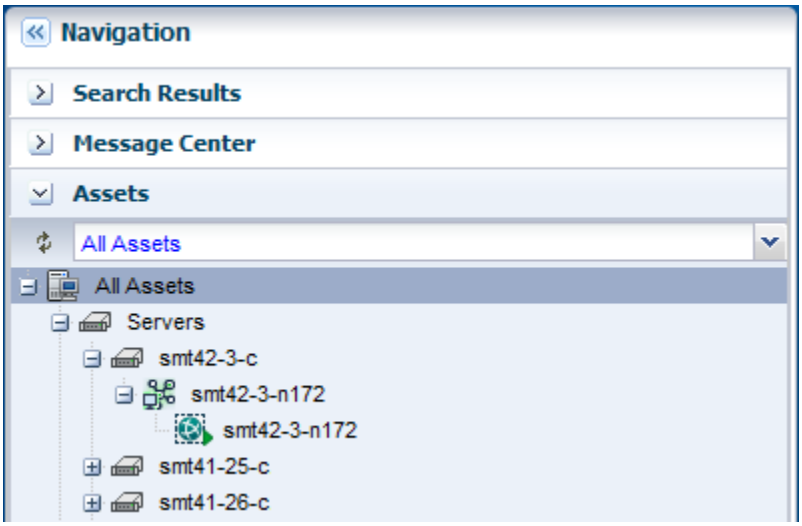
  A user with the following roles:

  – Virtualization Admin role to create guest domains and server provisioning.

  – Plan/Profile Admin role to create profiles and plan for guest domain creation and provisioning.

Hardware and Software Configuration

In this example, the guest domain is installed on Oracle VM Server for SPARC 3.1 version. The control domain is configured and deployed in stand-alone mode and it is not placed in a server pool.



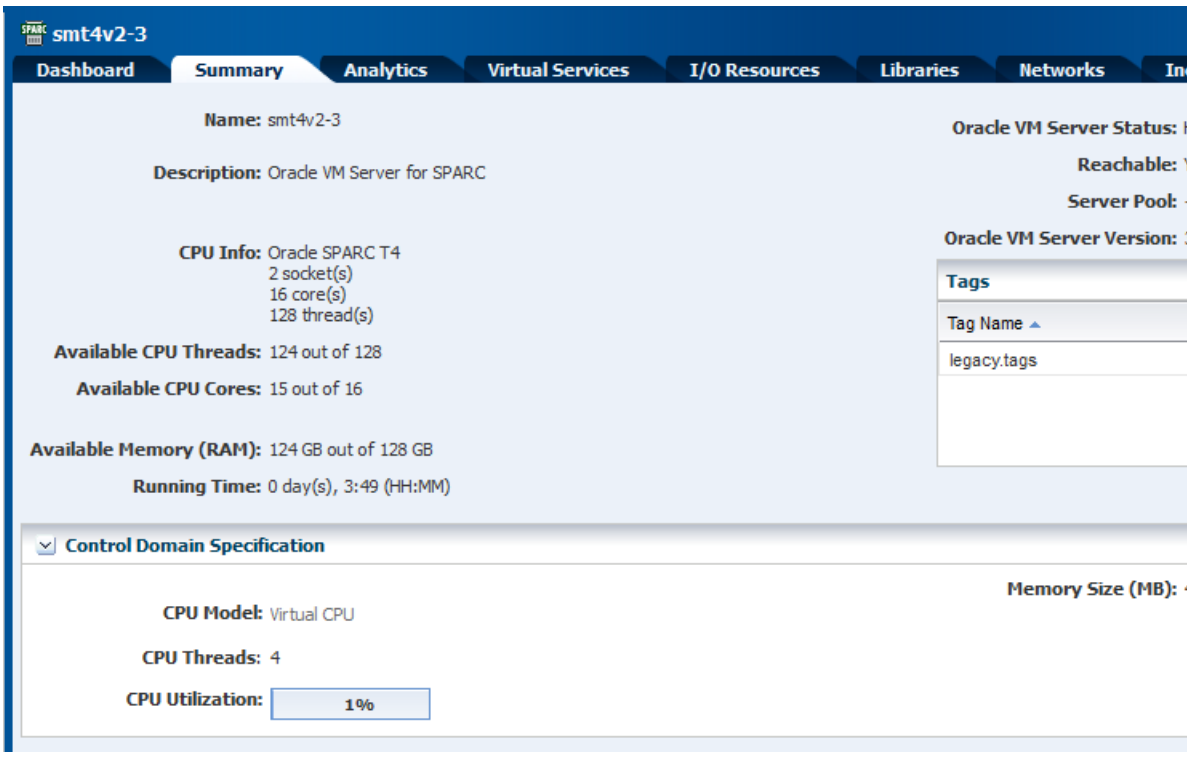
The Oracle VM Server for SPARC configuration is summarized as follows:

- Oracle SPARC T4-2 server

  Sixteen core with eight threads per each core. Total 128 CPU Threads.

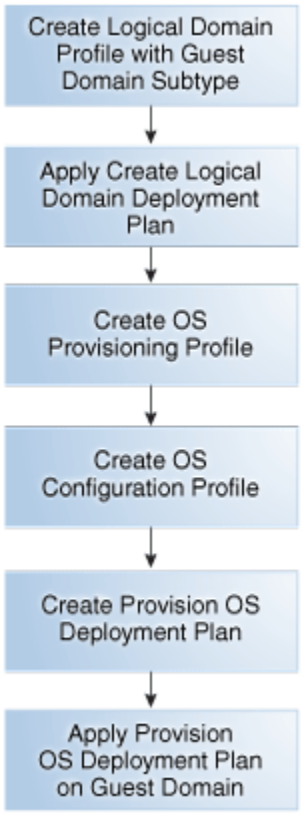
- 128 GB of memory
- Installed with Oracle VM Server for SPARC 3.1 version
- The control domain is configured with the following parameters:
  - Four CPU Threads
  - Four GB of memory

The Oracle VM Server for SPARC configuration installed and configured on SPARC T4-2 server and displayed in the UI as follows:



Configuring and Installing Guest Domains

The necessary profiles and plans that must be created and applied to create guest domains are illustrated in the following illustration in the order of sequence:



The steps to configure and install guest domains are as follows:

1. Creating a Guest Domain Profile
2. Deploy Guest Domain Plan
3. Creating an OS Provisioning Profile
4. Create an OS Configuration Profile
5. Creating a Provision OS Plan
6. Deploying the Provision OS Plan on the Guest Domain

Creating a Guest Domain Profile

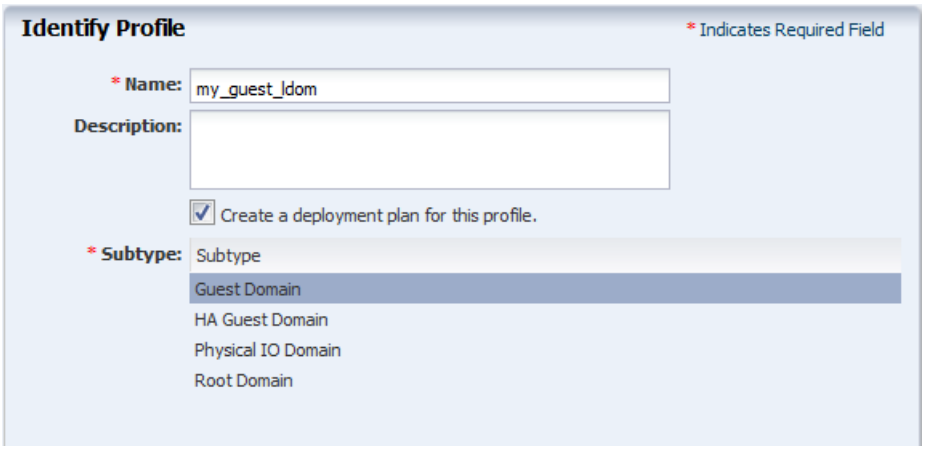
Create a guest domain with the following resource requirements:

- Two CPU Threads
- 4 GB of memory
- Native CPU architecture
- Local file system to store the metadata and for virtual disks
- A network connection to connect to the external network

1. Select the **Plan Management** section.
2. Expand **Profiles and Policies** and select **Logical Domain**.
3. Click **Create Profile** in the Actions pane.

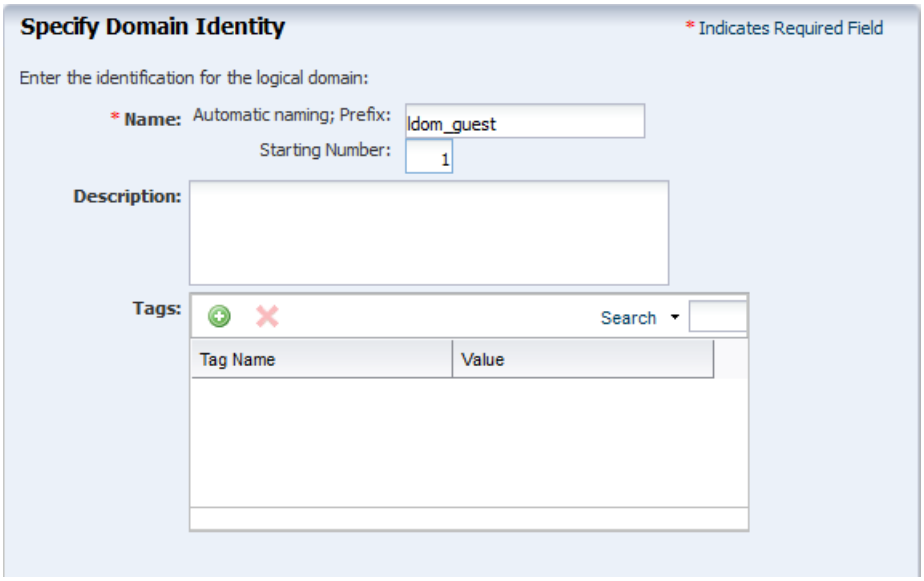
   The Create Logical Domain Profile wizard is displayed.
4. Enter a name and description to identify the profile.

   Retain the option to create a deployment plan for this profile. Select Guest Domain in the Subtype.



   Click **Next**.
5. Enter the name of the guest domain as *ldom_guest* and the starting number as 1. The guest domain will be created as *ldom_guest1*.

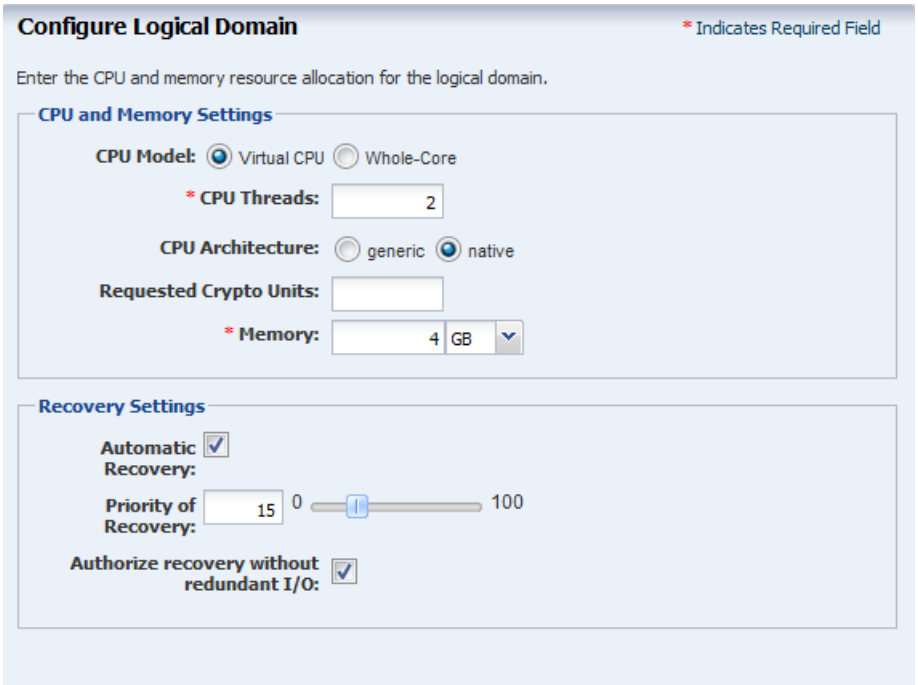
   Provide description and add new tags for the guest domain. All the logical domains created using this profile use the same description and tags.



Click **Next** to configure the CPU Threads and memory.

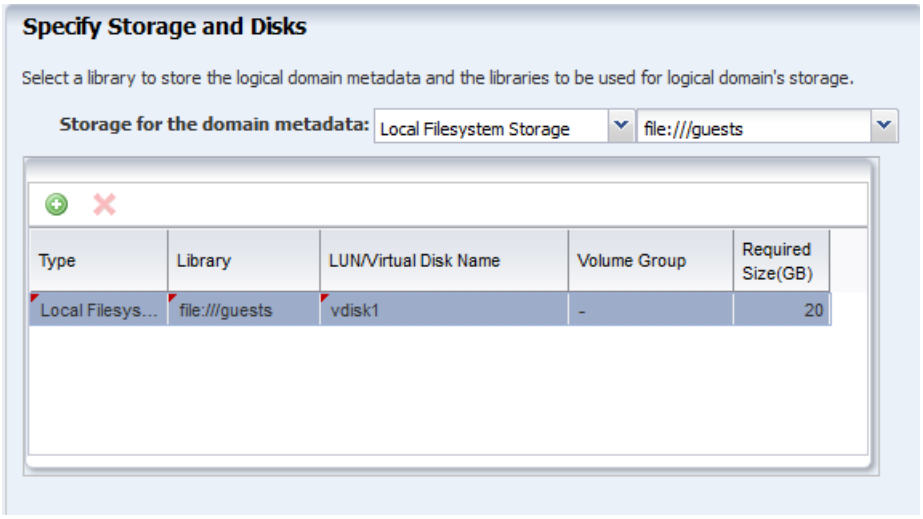
6. The threads in the physical CPU of the Oracle VM Server are dedicated to the logical domains. Enter the values for CPU Threads and memory to be allocated for the guest domain:

   - 2 CPU Threads.
   - 4 GB of memory.
   - Do not specify a value for Crypto Units. Depending on the number of CPU threads, the Crypto units are assigned automatically.
   - Select **native** for the CPU architecture which limits the domain migration only to compatible Oracle VM Server for SPARC systems.
   - Select **Automatic Recovery** and provide the value for **Priority of Recovery** as **15**, and select to authorize the recovery even when there is no redundant I/O resources to provide virtual disk multipathing.



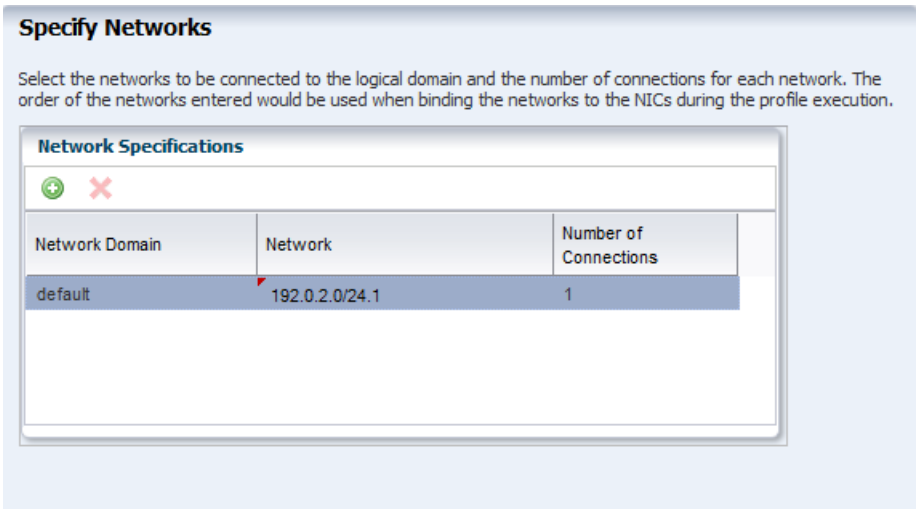
Click **Next** to specify the storage for the logical domains.

7. Select **Local Filesystem Storage** to store the logical domain's metadata and for the virtual disks. Enter the disk size as 20 GB.



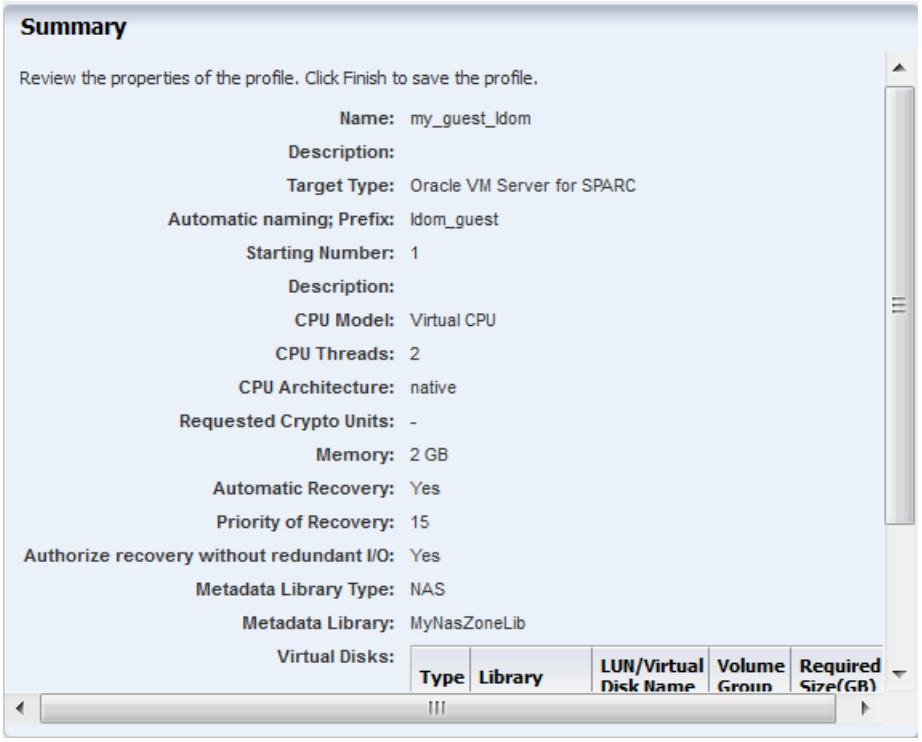
Click **Next** to specify the networks for the domains.

8. Select the network from the list of available networks in Oracle Enterprise Manager Ops Center. Ensure that the selected network is already attached to the control domain. Enter the number of connections for the network.



Click **Next** to view the summary of the logical domain details.

9. Review the information and click **Finish** to save the profile.

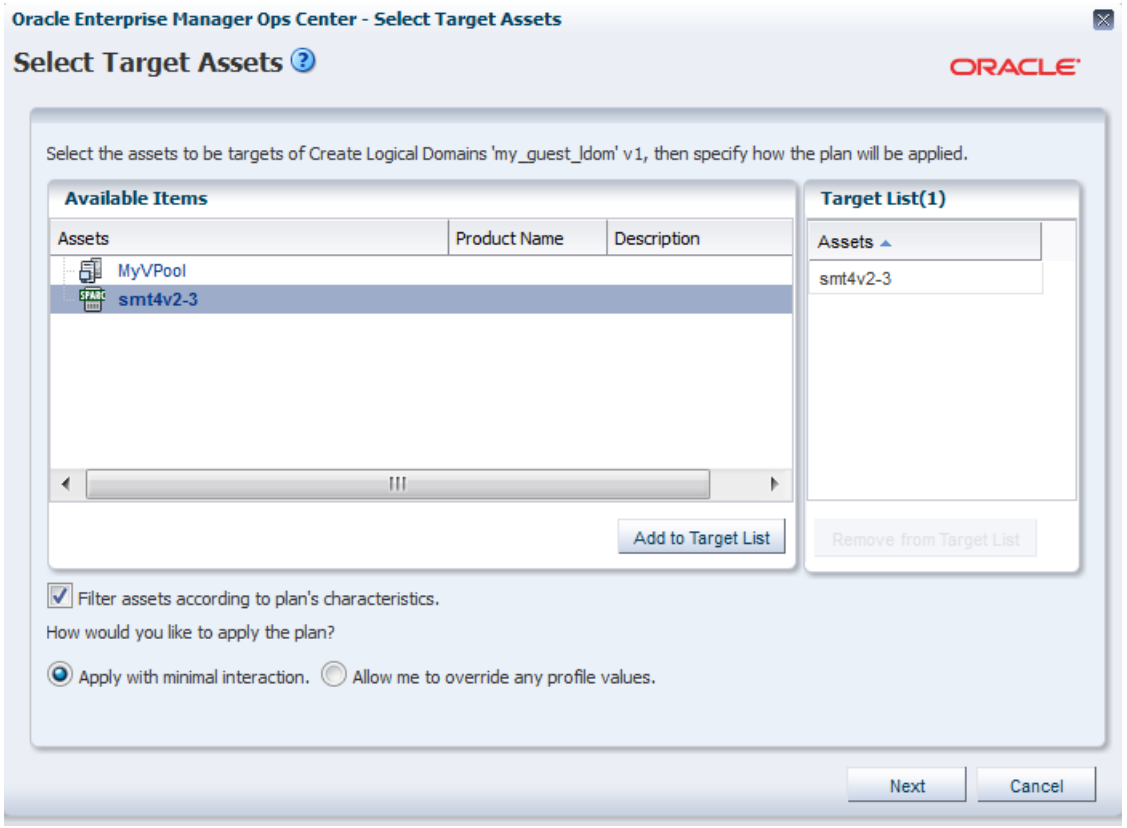


The job is initiated to create the profile. The option **Create a deployment plan for this profile** is selected in this profile, and a deployment plan with the same is created and displayed under Create Logical Domains in the Deployment Plans tree.

Deploy Guest Domain Plan

Deploy the automatically created guest domain plan to create guest domains. The guest domain will be created without any OS provisioned on it.

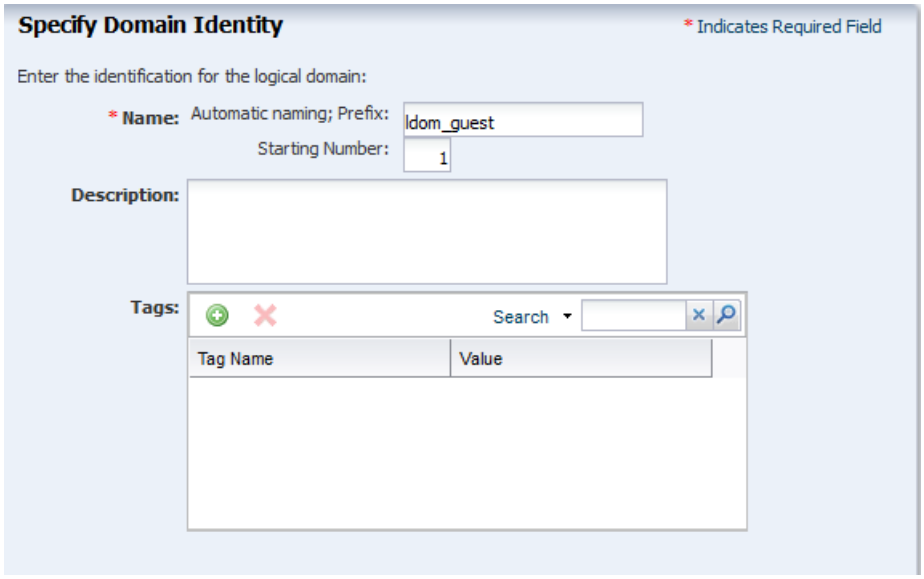
1. Select the **Plan Management** section in the Navigation pane.
2. Expand **Deployment Plan** and select **Create Logical Domain**.
3. Select the plan from the list of plans and click **Apply Deployment Plan** in the Actions pane.
4. In the **Select Targets** window, select the Oracle VM Server for SPARC system on which you want to create guest domains.



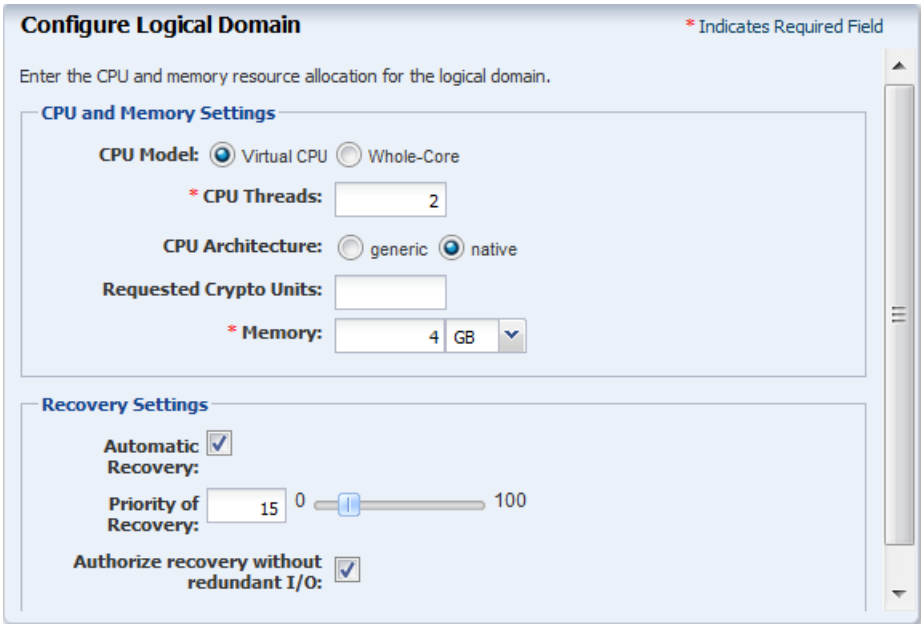
Click **Add to Target List** to move the selected target Oracle VM Server to the Target List. Select to apply the deployment plan in minimum interaction mode.

Click **Next**.

5. The Specify Domain Identity step is displayed. Confirm the given name in the profile and click **Next**.



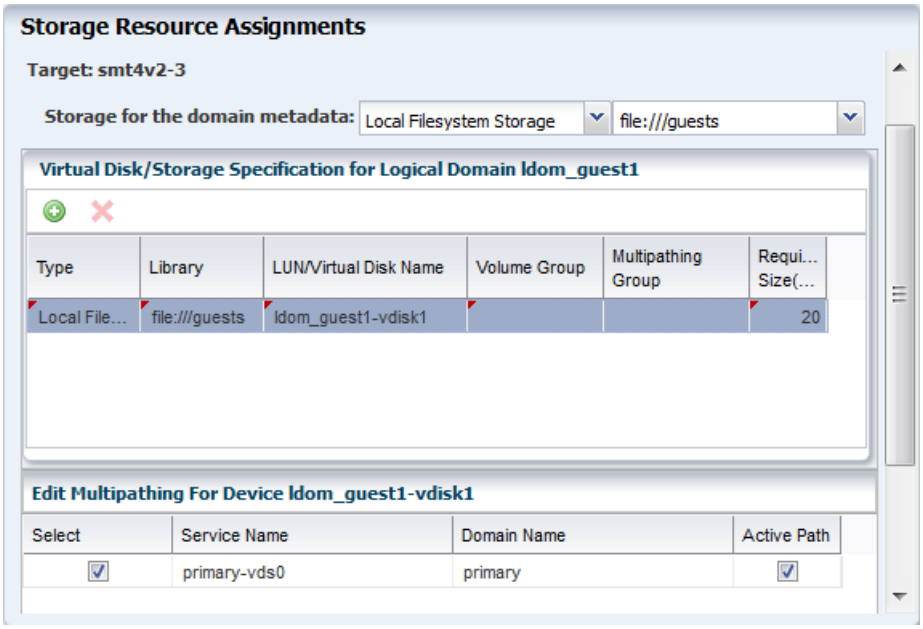
6. Confirm the values for CPU and memory configuration of guest domain in Configure Logical Domain step. Also, retain the automatic recovery settings for the guest domain.



Click **Next**.

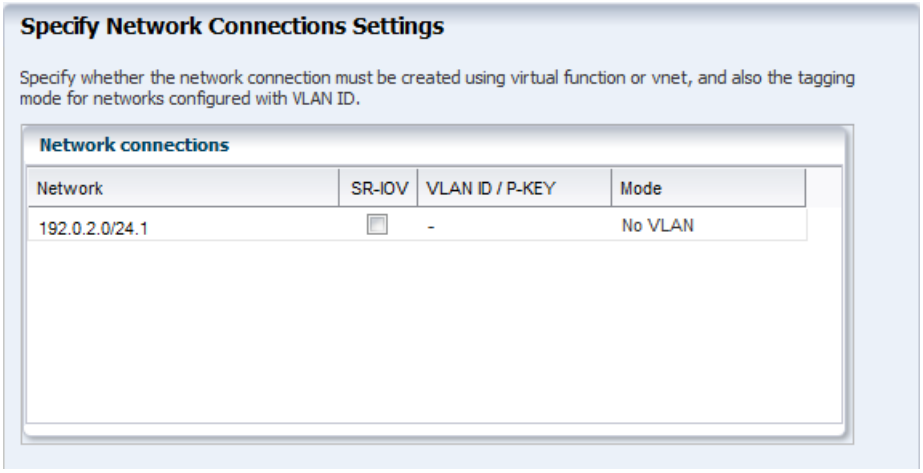
7. In the Storage Resource Assignments step, the storage library selected for storing guest domain metadata and for virtual disks are taken from the profile.

   There is only one path to access the backend storage and the multipathing group name is not entered. Therefore, multipathing group is not created for this virtual disk.



Click **Next**.

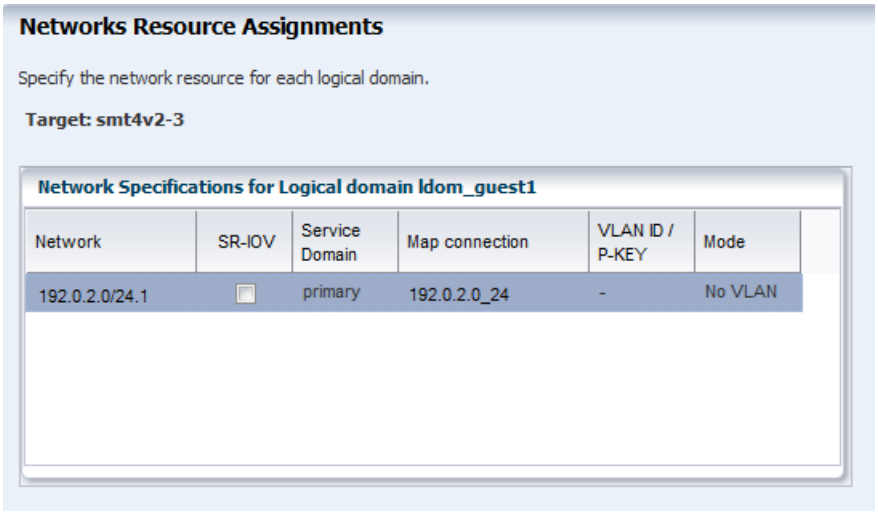
8. Specify the network connection settings. In this example, a non SR-IOV network is selected.



Click **Next**.

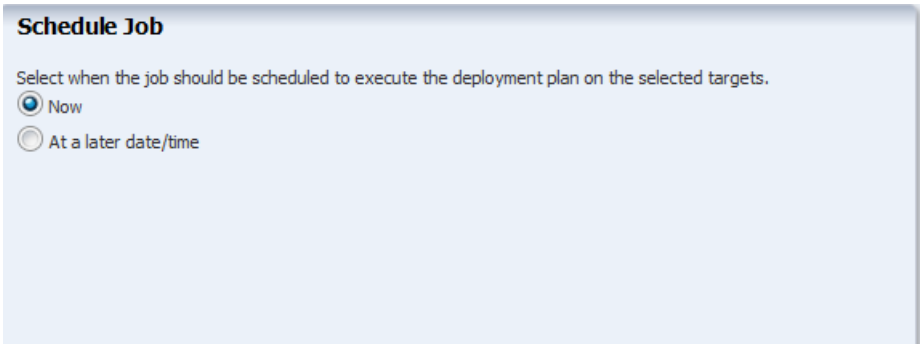
9. Provide the following information about the network resource selected for the guest domain:

   - Select **primary** as the **Service Domain** that provides the network interface for the network connection.
   - In the **Map Connection** column, select the virtual switch through which you want to connect the guest domain to the network.



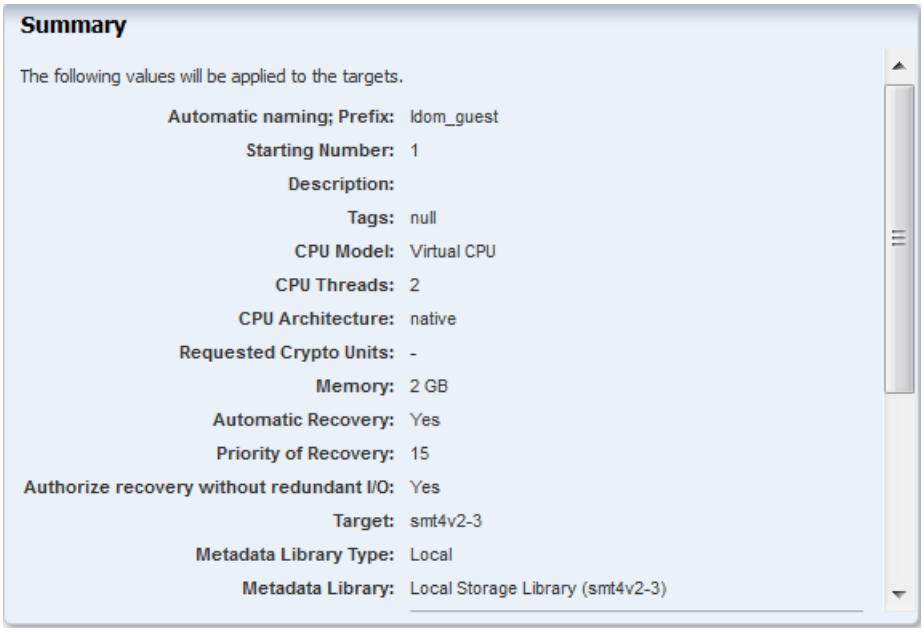
Click **Next**.

10. Schedule the job to run now.

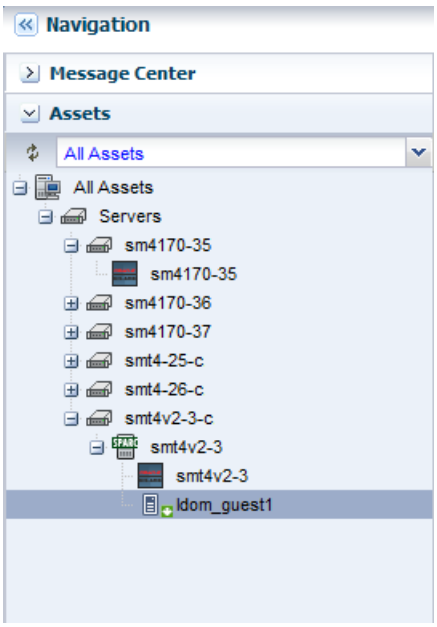


Click **Next**.

11. Review the properties and click **Apply** to apply the deployment plan to create logical domain.



The job runs and a guest domain is created. The guest domain appears in the UI under the corresponding control domain:



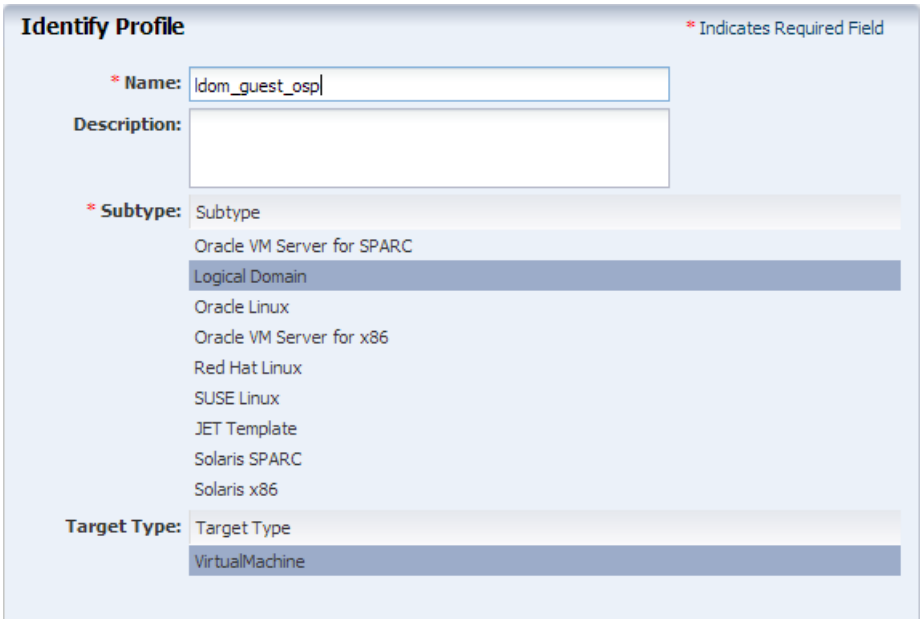
The guest domain is in the installing state as the operating system is not yet provisioned on it. The next step after creating guest domain is to provision OS on it.

Creating an OS Provisioning Profile

Create a new OS provisioning profile for the Oracle Solaris 11.1 OS that must be provisioned on the guest domain. You can also edit the default profiles that are created for the Oracle Solaris 11.1 OS. The procedure in this section describes about creating a new OS provisioning profile.

1. Select the **Plan Management** section in the Navigation pane.
2. Expand **Profiles and Policies** and select **OS Provisioning** profile.
3. Click **Create Profile** in the Actions pane.

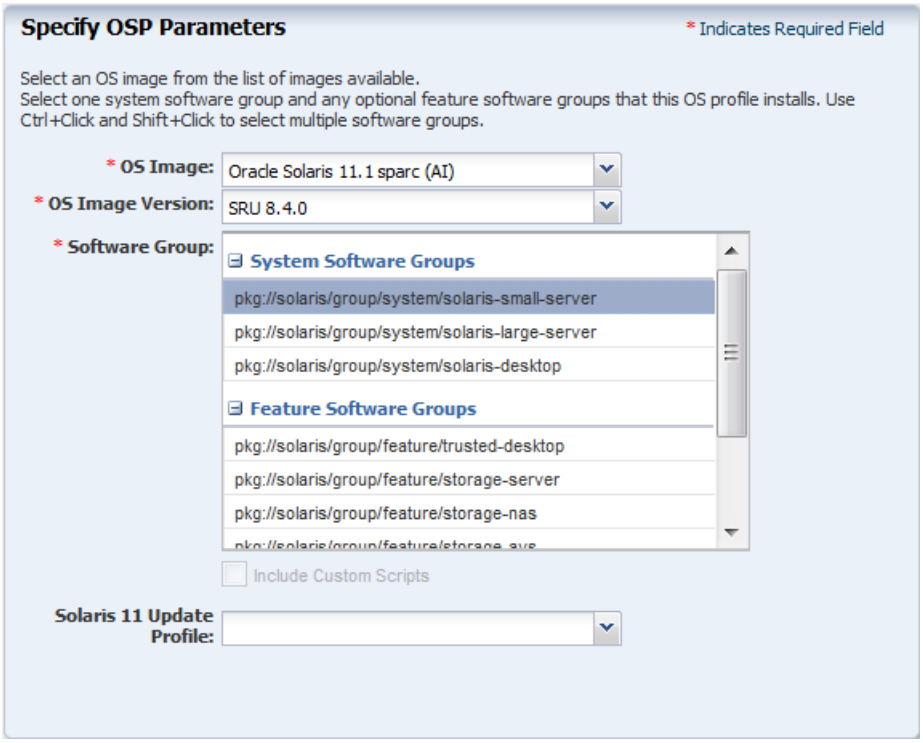
   The Create Profile - OS Provisioning wizard is displayed.
4. Provide the following details for the profile identification:
   - Enter the name of the profile as *ldom_guest_osp*.
   - Enter a suitable description for the profile.
   - Select Logical Domain as the Subtype.



Click **Next** to specify the provisioning parameters.

5. Select the following OSP parameters:

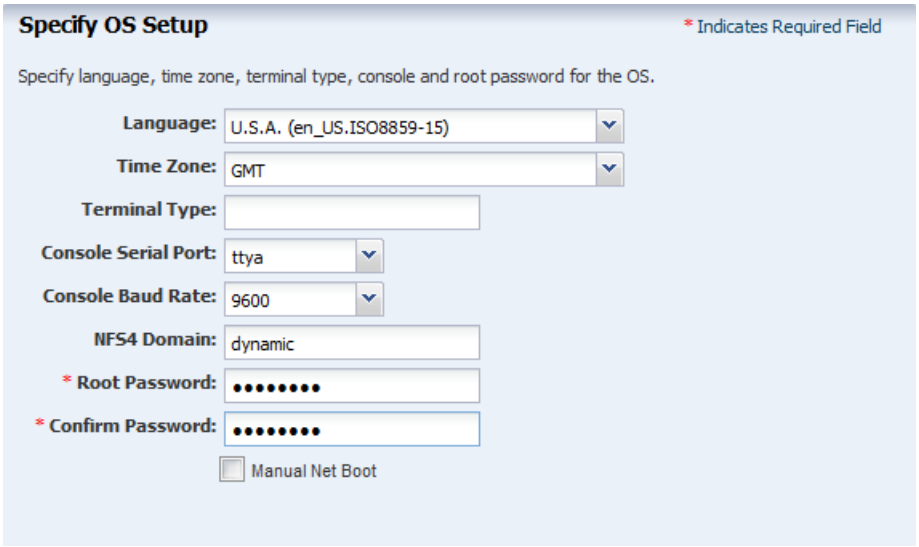
   - The Oracle Solaris 11.1 OS and the SRU from the list.
   - `solaris-small-server` as the Software Group from the list.



Click **Next** to specify the OS Setup.

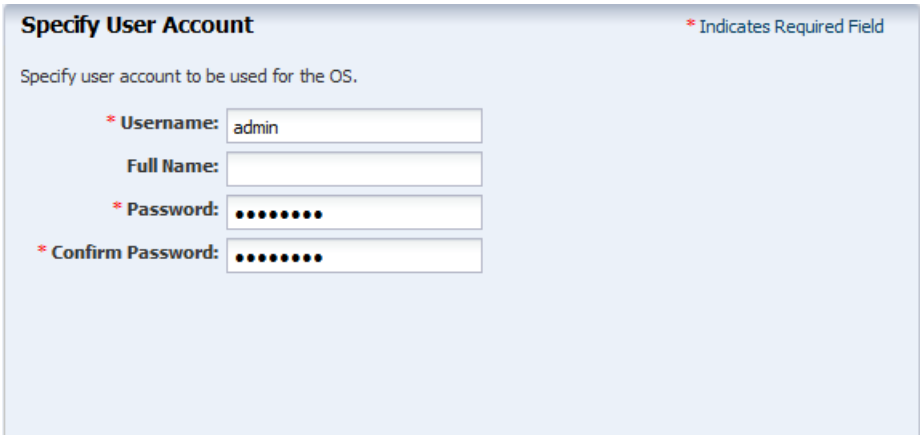
6. Specify the OS setup parameters:

   - Enter the time zone, language, terminal type, console serial port, and console baud rate.
   - Enter the root password.
   - The NFS4 domain is set to dynamic in this example. If a naming service is configured in your environment, enter the NFS4 domain value.



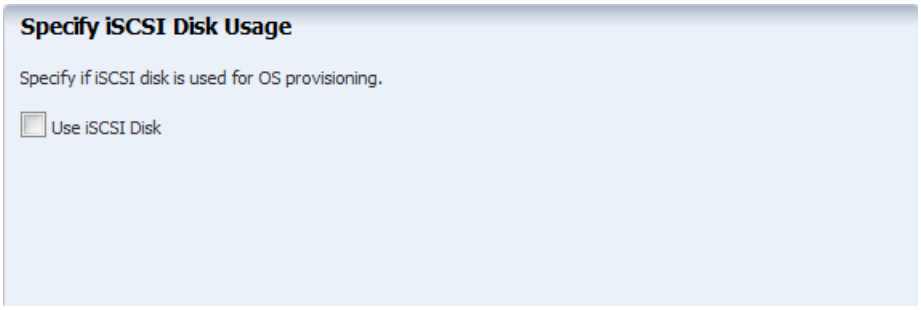
   Click **Next**.

7. Create a user account to SSH to the OS after provisioning. Provide a user name and password for the account.



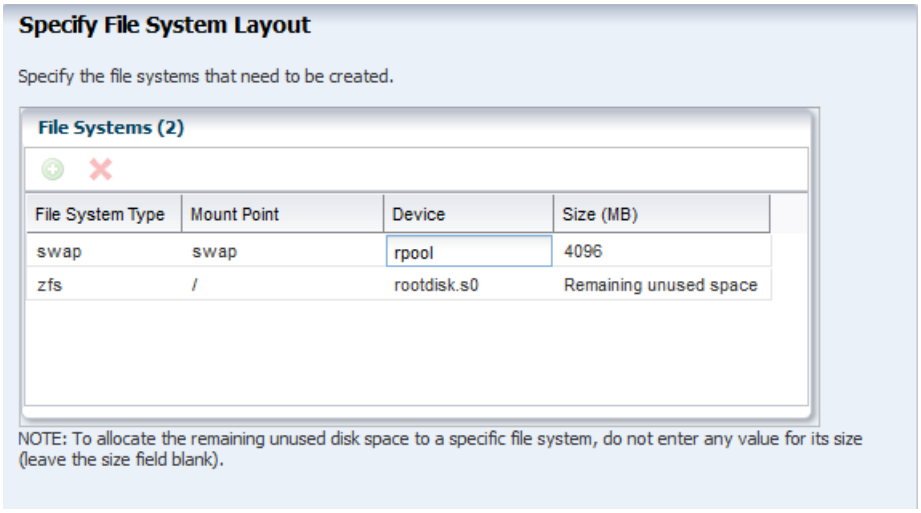
   Click **Next** to specify whether you want to use iSCSI disks for OS provisioning.

8. Do not select the option to use iSCSI disk as this example does not involve the use of iSCSI disk for OS provisioning.



Click **Next**.

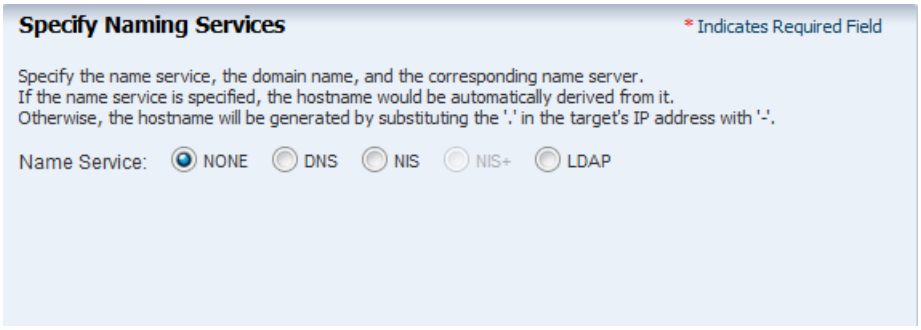
9. The root (/) and a swap file system are defined by default. You can change the swap size. Click the **Add** icon to add more ZFS file systems. UFS File System Type is available when you are provisioning Oracle Solaris 10 1/13 OS.



Click **Next** to specify the name service.

10. If you have a naming service in place, select the appropriate one and provide the setup details. In this procedure, select **None** for the naming service.

    If you have any naming service in your setup, refer to the help in the wizard or the *Oracle Enterprise Manager Ops Center Operations Guide* for information about specifying the naming services.



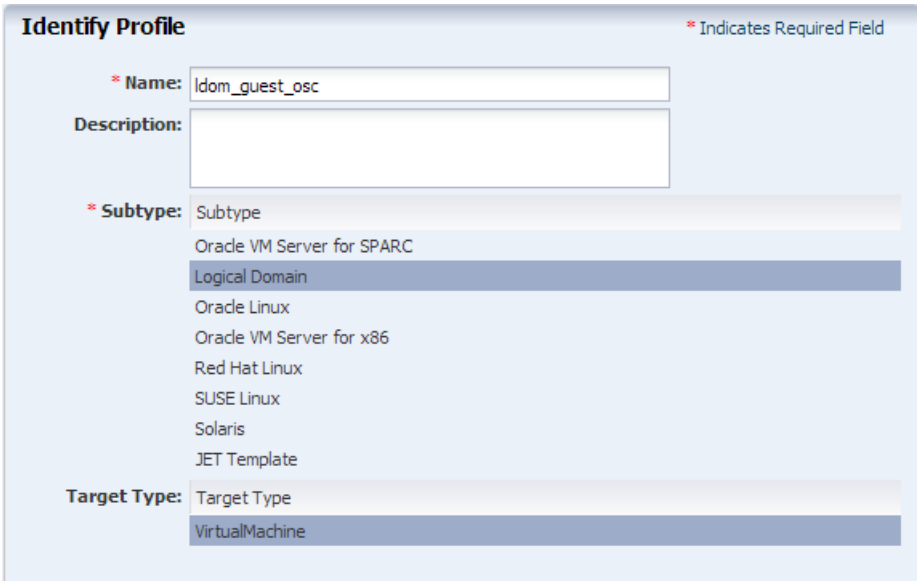
Click **Next** to view the summary of the parameters selected for the profile.

11. Review the parameters selected for the profile and click **Finish** to create the OS provisioning profile.

The OS provisioning profile is created and listed under the OS provisioning profiles. Use this profile to create a Provision OS plan.

Create an OS Configuration Profile

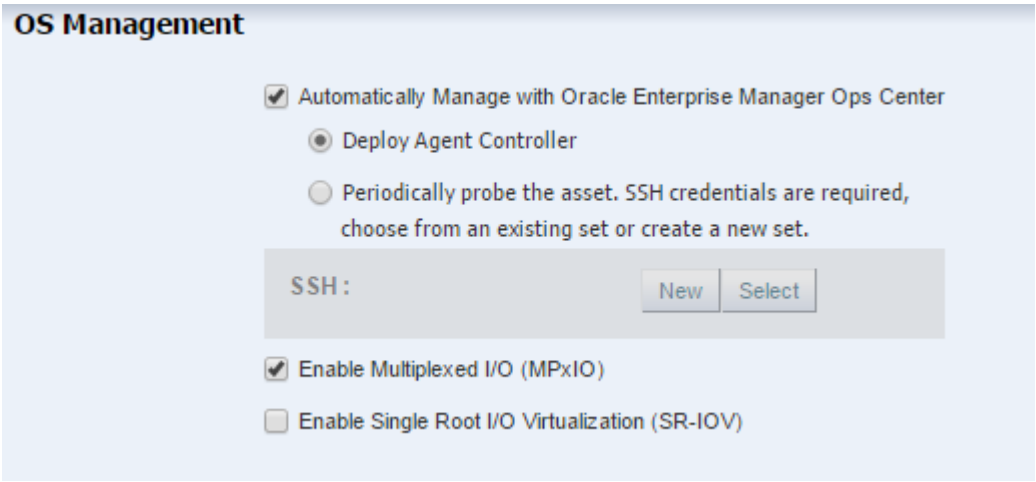
1. Select the **Plan Management** section and expand **Profiles and Policies**.
2. Select **OS Configuration** and click **Create Profile** in the Actions pane.
3. Enter the following details to identify the profile:
   - Name and description of the profile.
   - Select Logical Domain as the Subtype and Virtual Machine as the Target Type.



Click **Next** to set the OS Management properties

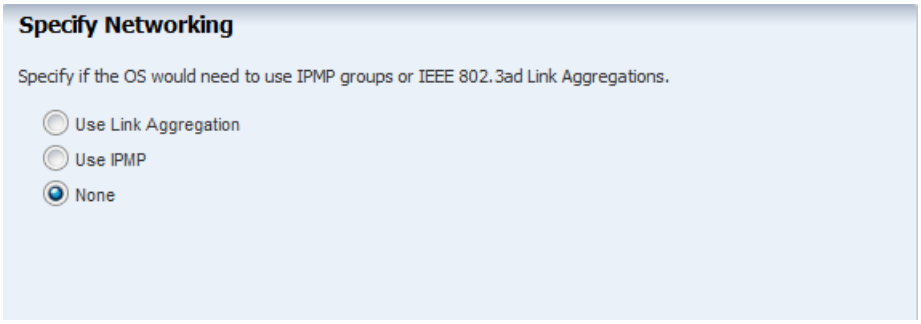
4. Select to manage the OS automatically and deploy the Agent Controller to manage the asset. Select the option **Enable Multiplexed I/O** so that you can associate block storage libraries such as FC and iSCSI for storage with the OS.

   Deselect the option **Enable Single Root I/O Virtualization (SR-IOV),** the option is only applicable to root domains.



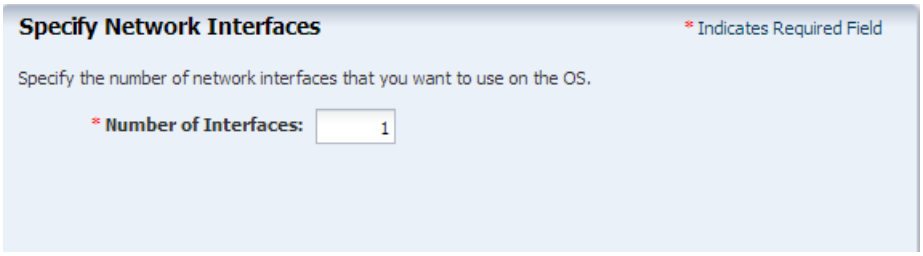
Click **Next** to specify the networking details.

5. Select **None** as the networking option for the OS.



Click **Next** to specify the networking details for the OS such as network interface.

6. Enter the number of network interfaces that must be used on the OS. The details of the interfaces are collected while deploying the plan.



Click **Next** to view the summary of the parameters selected for OS configuration.

7. Review the parameters and click **Finish** to create the OS configuration profile.

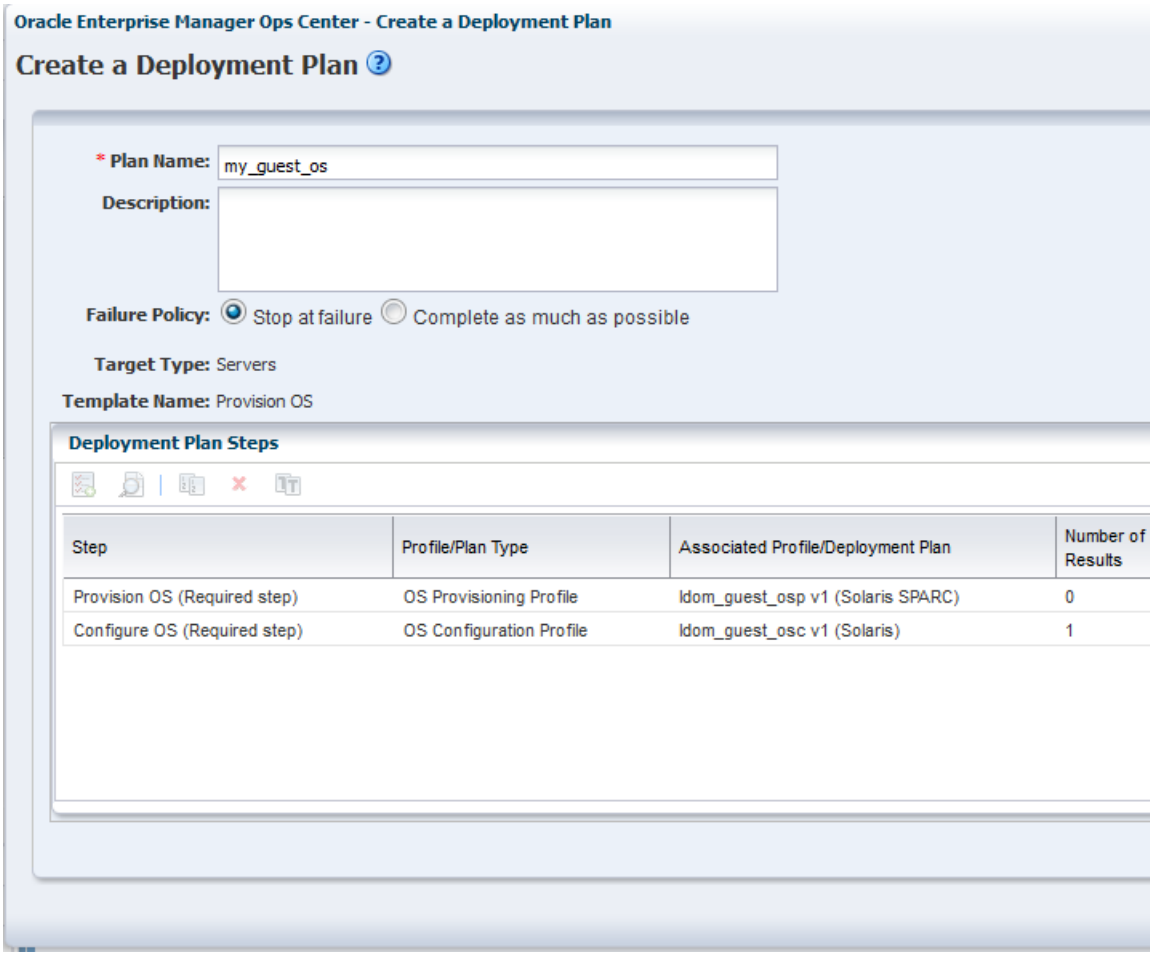
Creating a Provision OS Plan

Create a Provision OS plan that includes the OS Provisioning and OS Configuration profile created in the previous procedures. The provision plan will then be applied on the created guest domain.

1. Select **Plan Management** section in the Navigation pane.
2. Expand **Deployment Plans** and select **Provision OS**.

3. Click **Create Plan from Template** in the Actions pane.
4. In the **Create Deployment Plan** window, enter the following details:
   - Name of the plan as *my_guest_os*.
   - Description for the plan.
   - Select **Stop at failure** for Failure Policy.
   - Select the **OS Provisioning Profile** and the **OS Configuration Profile** created for provisioning OS on the guest domain.

   Click **Save** to save the deployment plan.



The deployment plan is created and listed under Provision OS Deployment Plan list.

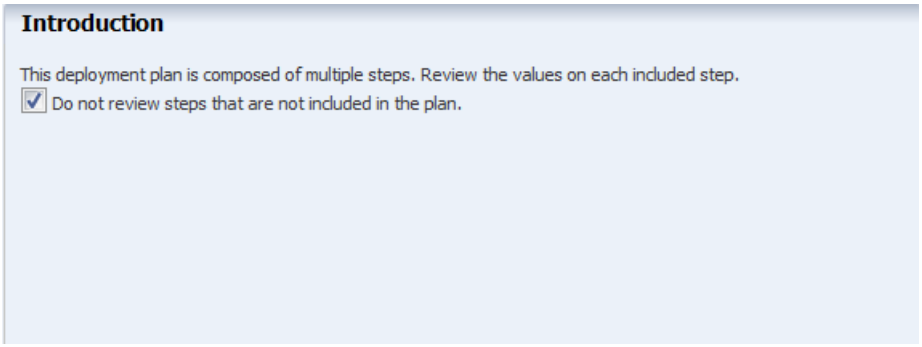
Deploying the Provision OS Plan on the Guest Domain

Deploy the provision OS plan to provision the OS on the selected guest domains.

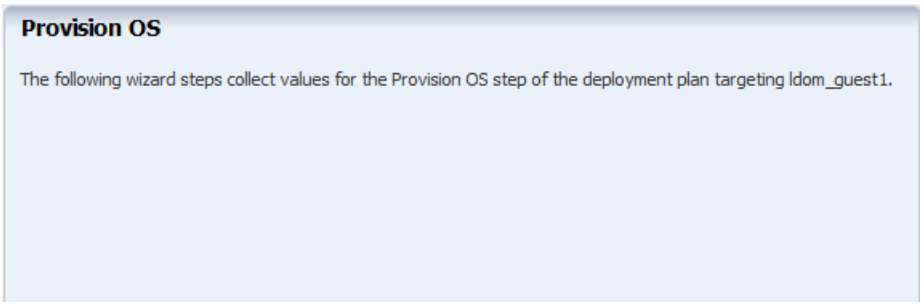
1. Select the **Plan Management** section in the Navigation pane.

2. Expand **Deployment Plans** and select **Provision OS** plan.
3. Select the newly created plan and click **Apply Deployment Plan**.
4. In the **Select Targets Assets** window, select the guest domain that is in the installing state.
5. Click **Add to Target List** to add the guest domain to the Target List.

   Click **Next**.
6. The OS deployment wizard is displayed. In the Introduction step, the option to not to review the steps that are not included in the plan is selected.



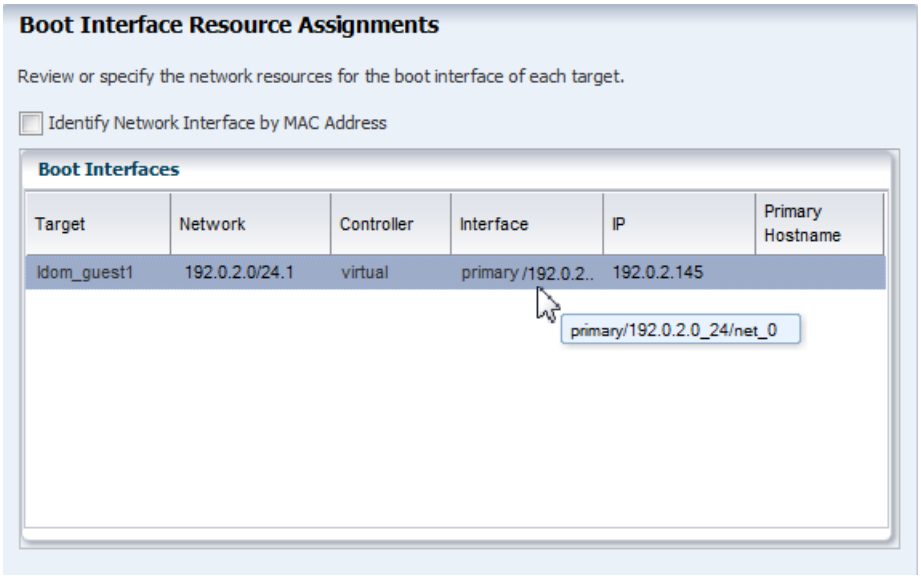
   Click **Next**.
7. The plan consists of the OS provisioning profile and OS configuration profile. The application of the plan starts with the Provision OS step.



   Click **Next** to define the boot interface resources.
8. In the Boot Interface Resource Assignment step, enter the following details:

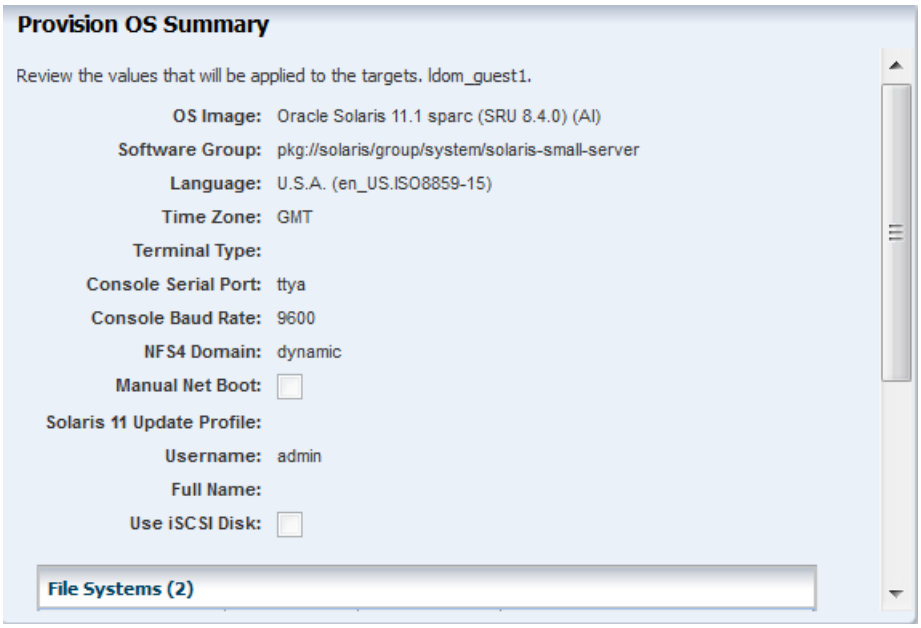
   - Select the network from the list. The networks that are attached with the control domain are listed.
   - The Controller is virtual as the network connection available to the guest domain is a virtual network.
   - The virtual switches that are available for the selected network are listed in the Interface list. In this example, the interface is read as the virtual switch *192.0.2.0_24* created on the network interface net_0 provided by the primary domain.

- Provide the IP address for the boot interface.
- (Optional) Provide the host name for the target.

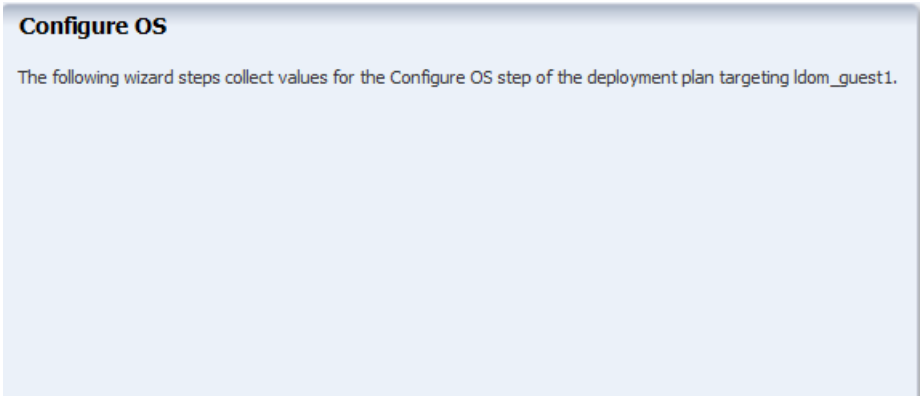


Click **Next**.

9. Review the summary of information for OS provisioning and click **Next**.



10. The application of the OS configuration profile starts in the wizard.



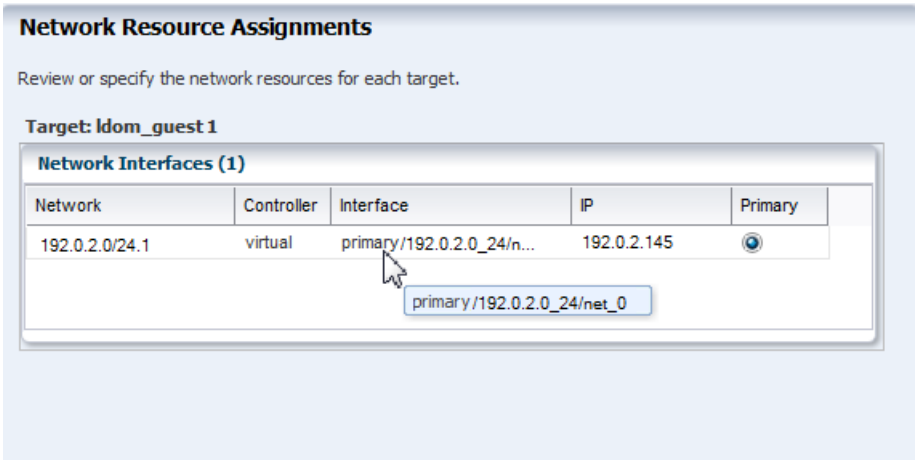
Click **Next**.

11. The boot interface network details are populated in this step. In this example, there was only one network interface selected to be configured on the OS. Therefore, the network resource is populated with the boot interface network details.

    If you have selected more than one interface to be configured on the OS, the first interface is always overwritten by the boot interface network details. Always define the first interface as the boot interface. You can select the interface that you want to be the primary interface. Specify the network resources for the selected interfaces:

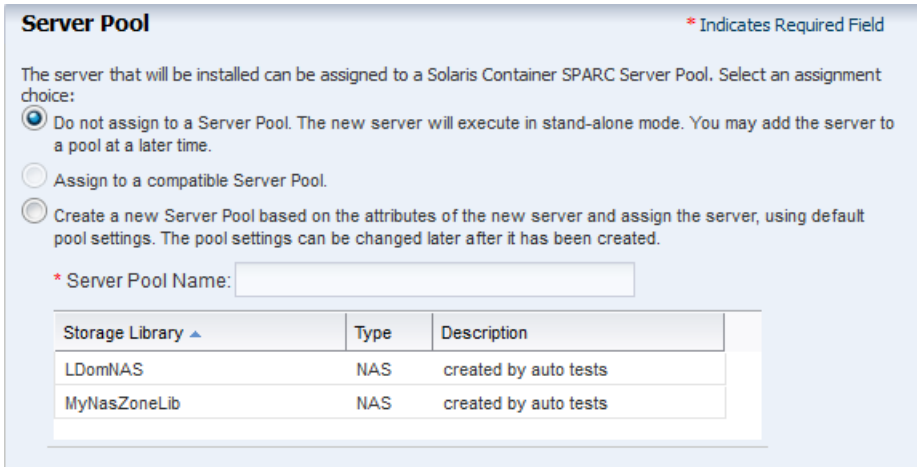
    - Select the network in the **Network** column.
    - Select **virtual** in the **Controller** column. The virtual controller provides the network interface for communication.

      The virtual switches that are available for the selected network are listed in the Interface list. In this example, the interface is read as the virtual switch *192.0.2.0_24* created on the network interface *net_0* provided by the primary domain.
    - Select the network interface.
    - Enter the IP address for OS provisioning.
    - Select the primary interface.



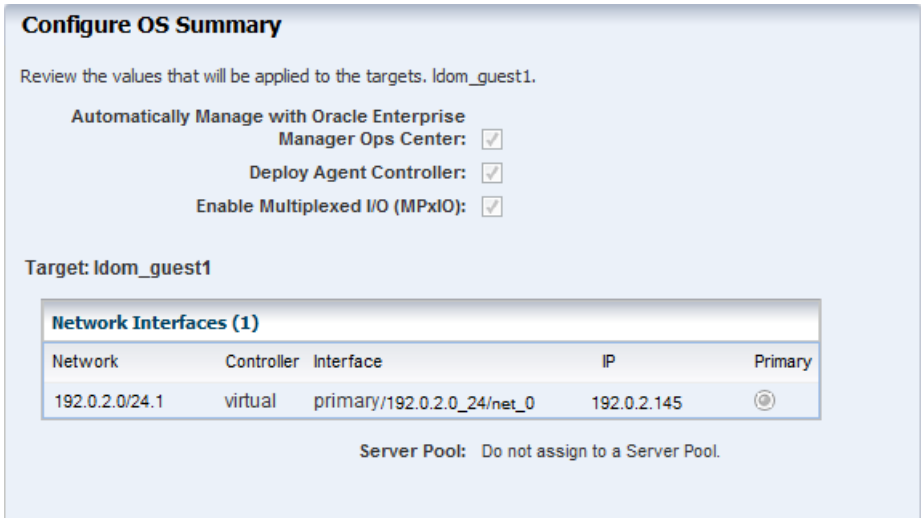
Click **Next**.

12. In this example, the OS is not placed in a server pool for zones.

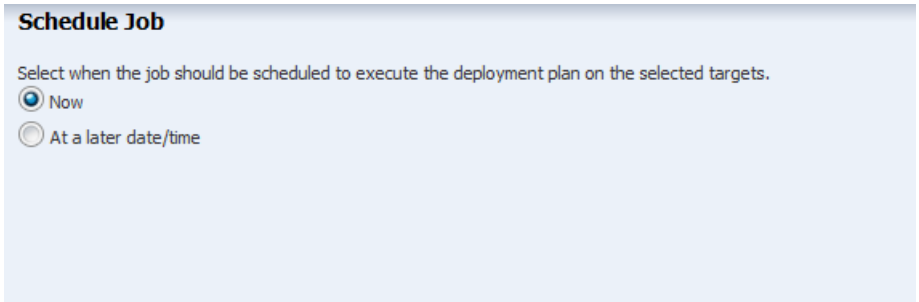


Click **Next**.

13. Review the summary of OS configuration parameters and click **Next**.

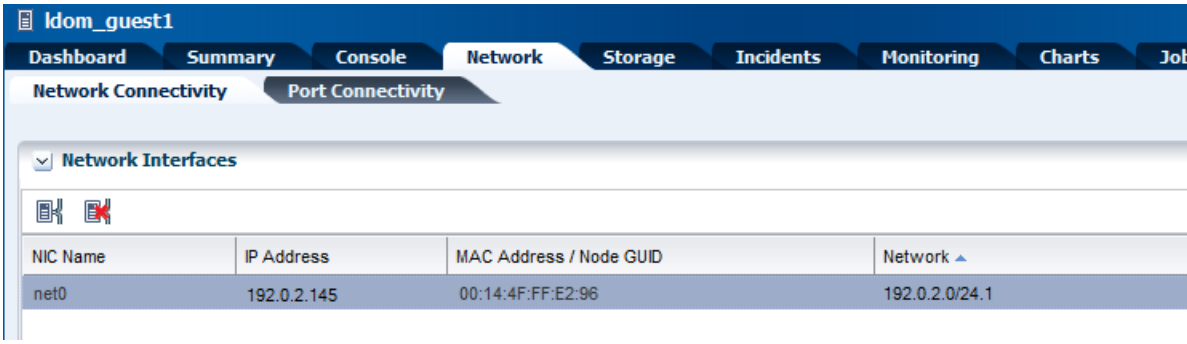


14. Schedule the job to run now and click **Apply**.



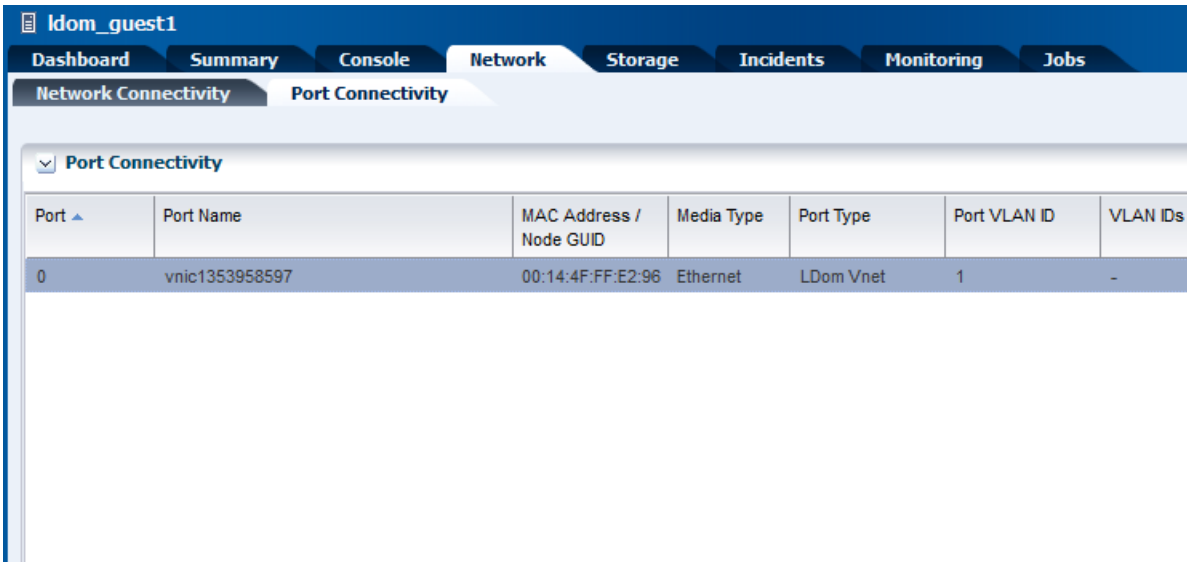
The OS is provisioned on the guest domain and the domain is displayed in the UI.

You can view the network details of the guest domain which is now updated with the NIC and IP address that is in use.



The **Port Connectivity** sub tab in the **Network** tab displays the following information:

- Port Name
- MAC Address
- Media Type
- Port Type
- Port VLAN ID
- VLAN IDs
- Alternate MAC Addresses



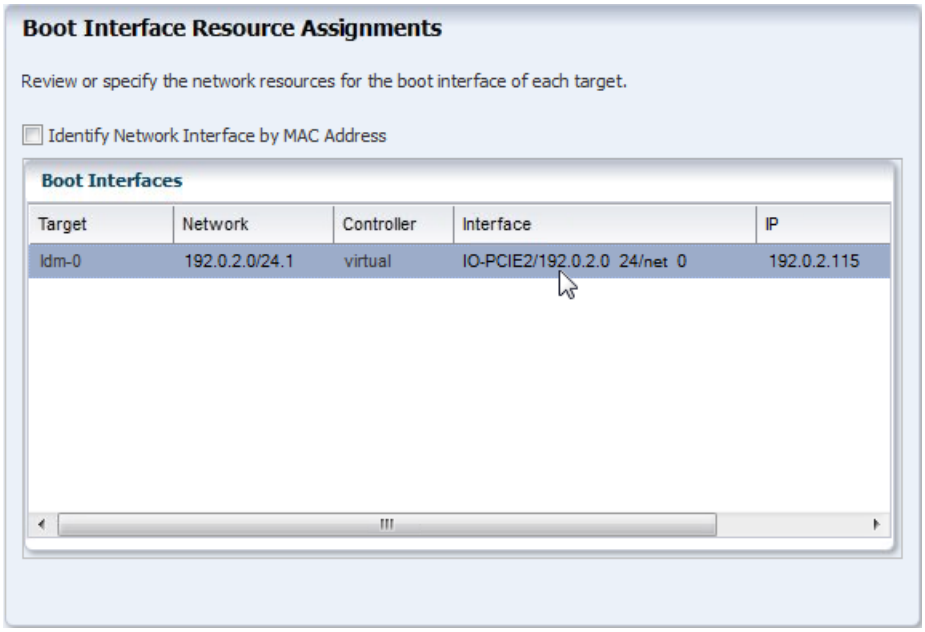
The port connectivity displays the virtual network device (vnet) created for the network connection. The vnet name is of the format *vnicxxxxxxxx*. Since, the network is connected using Oracle Enterprise Manager Ops Center, the alternate MAC

addresses are created automatically. The default number of alternate MAC addresses created is 20 and can be edited.

The alternate MAC addresses are required and used when you create zones in the guest domain OS. Refer to *Oracle Enterprise Manager Ops Center Virtualization Guide* for more information about alternate MAC address.

Network Connections

The network connection provided to the guest domains step vary according to the service domain that provides the network interface. When the network interface is provided by I/O domain or root domains, the network resource assignment is displayed in the UI as:



What's Next?

To enable migration of the guest domain, you can move the metadata storage from local storage library to shared storage such as NAS. Once the metadata is on shared storage, you can migrate the guest domains between Oracle VM Server systems in a server pool.

You can also perform the following operations on the guest domains:

- Shut down and start
- Reboot
- Add storage
- Connect to network

Related Articles and Resources

The Oracle Enterprise Manager Ops Center 12*c* Release 3 documentation is available at http://docs.oracle.com/cd/E59957_01/index.htm.

Refer to the following resources for more information:

- *Oracle Enterprise Manager Ops Center Virtualize Reference*
- *Oracle Enterprise Manager Ops Center Operate Reference* for more information about uploading or importing OS images.
- http://www.oracle.com/technetwork/documentation/vm-sparc-194287.html for Oracle VM Server for SPARC documentation.

See the Deploy How To library at http://docs.oracle.com/cd/E59957_01/nav/deploy.htm and the Operate How To library at http://docs.oracle.com/cd/E59957_01/nav/operate.htm for deployment and operational examples.

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