

Oracle® Enterprise Manager Ops Center

Configuring a Virtual Datacenter

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

Introduction to Virtual Datacenter

The Virtual Datacenter (vDC) is the consolidation of your virtualization servers, storage and network resources managed in Oracle Enterprise Manager Ops Center. You can build and operate cloud services in your data center using these resources. The resources are leveraged to be used optimally and securely for mixed and changing workloads.

To deploy Infrastructure-as-a-Service (IaaS) cloud platform service, Oracle Enterprise Manager Ops Center provides the vDC Management feature. You must have the Cloud Administrator role to set up the infrastructure and create virtual datacenters in your enterprise. The physical resources allocated to a vDC are entitled to accounts as virtual resources under quotas set by the cloud administrator. Accounts provide the required capabilities to manage the allocated resources. For each vDC, create accounts that serve as a container for virtual resources. The allocated resources of vDC are entitled to accounts, and the accounts are in turn entitled to cloud users. A cloud user uses the allocated resources to deploy, and manage the applications.

The setting up of infrastructure for the cloud platform can vary depending on the virtualization technology. You can use Oracle VM Server for x86, Oracle Solaris Zones, or Oracle VM Server for SPARC as the virtualization technology to setup the cloud infrastructure.

This guide describes how to setup the cloud platform on Oracle VM Server for x86 virtualization technology. The example is built on the assumption that you have installed and configured Oracle VM Manager and Oracle VM Server. The storage resources are assigned and there is a server pool created with an Oracle VM Server.

There are different ways by which you can set up the infrastructure for the virtual datacenter in Oracle Enterprise Manager Ops Center. This example describes a possible method. For more information, see [Related Resources and Articles](#).

This example takes you through the following procedures:

- Discover Oracle VM Manager and its associated components, such as Oracle VM Server, Oracle VM Storage Repositories, and the server pool.
- Create a network domain to provide networking capabilities to the virtual datacenter. This example also shows how to assign VLAN IDs to host-manage the fabrics on which the Oracle VM Server network is present and create a network domain that logically group these networks.

There are different methods of network management in Oracle Enterprise Manager Ops Center. This example describes a method to set up the networks for creating a virtual datacenter. Refer to *Oracle Enterprise Manager Ops Center Feature Reference Guide* for more information about network management.

- Associate the network domain with the server pool.
- Create a virtual datacenter with the physical resources defined for the cloud platform.
- Create accounts that serve as a container for virtual resources allocated from a virtual datacenter and provide access to the cloud users.

What You Will Need

You need the following resources for configuring a virtual datacenter in Oracle Enterprise Manager Ops Center:

- Oracle VM Server for x86 setup with the following components:
 - Oracle VM Manager
 - A server pool with an Oracle VM Server
 - Oracle VM Storage repositories
- VLAN IDs to assign to the fabric.

Configuring a Virtual Datacenter

The following procedures describe the steps to create a vDC:

- [Discover Oracle VM Server for x86](#)
- [Set up the Network](#)
- [Set up the Server Pool](#)
- [Set up the Storage](#)
- [Create a Virtual Datacenter](#)
- [Create an Account](#)
- [Create and Assign Cloud User to Accounts](#)
- [Cloud User View and Actions](#)

Discover Oracle VM Server for x86

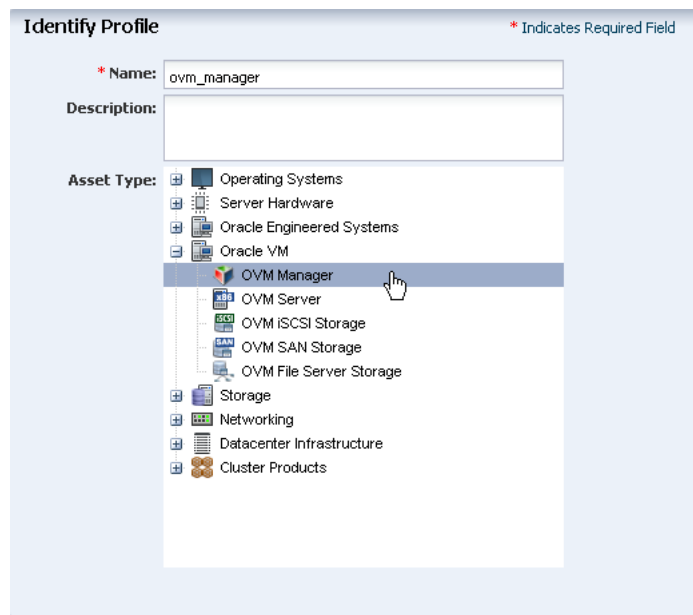
Refer to *Oracle VM User's Guide* for installing and configuring Oracle VM Server for x86.

In this scenario, it is assumed that you have installed and configured the Oracle VM Manager, discovered and owned an Oracle VM Server and placed it in a server pool. When you log in to Oracle VM Manager UI, the following details appears as shown in the figure:



In this figure, the Oracle VM Server is discovered and placed in the server pool named *spool1*. Discover the Oracle VM Manager in Oracle Enterprise Manager Ops Center. The Oracle VM Server, server pool, and the storage repository are automatically discovered and displayed in the UI. The following procedure describes how to create a discovery profile for an Oracle VM Manager:

1. Click Plan Management section in the Navigation pane.
2. Expand Profiles and Policies and select Discovery.
3. Click Create Profile in the Actions pane.
4. Enter a name for the profile and select Oracle VM Manager in the Asset Type. Click Next.



5. In this example, skip the Tags and IP Ranges steps, and click Next.
6. In the Discovery Credentials step, click New to enter the credentials of the Oracle VM Manager.
7. In the Create Credentials window, enter the following details: Enter the credentials of the Oracle VM Manager.
 - Enter the name and description for the Oracle VM Manager credentials.
 - Enter the username and password of the Oracle VM Manager.
 - The Protocol and TCP are selected by default. Retain the default values.

Click Create to store the Oracle VM Manager credential.

Oracle Enterprise Manager Ops Center - Create Credentials

Create Credentials ? ORACLE

* Indicates Required Field

* Name: ovm_manager

Description:

Oracle VM Manager

* Username: root

* Password: ●●●●●●

* Confirm Password: ●●●●●●

* Protocol: TCP

* Port: 54321

Create Cancel

8. The credential of the Oracle VM Manager appears as shown in the figure. Click Next to view the summary.

Discovery Credentials

Optionally specify the discovery and/or management credential sets for each protocol. These credentials are used to probe the assets.

Discovery

Oracle VM: ovm_manager New Select Clear

9. Click Finish to create the profile.

Summary

Review the properties of the profile, then click Finish.

Name: ovm_manager

Description:

Discovery Credentials:

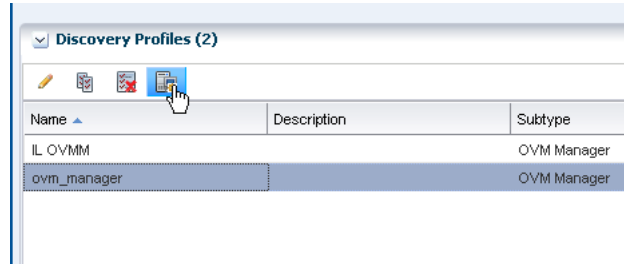
| Name | Protocol Type |
|-------------|---------------|
| ovm_manager | Oracle VM |

OVM Protocol: TCP

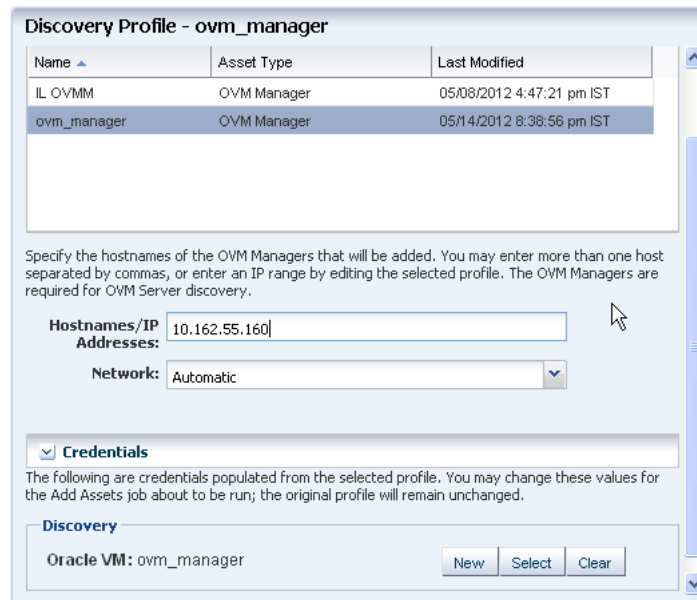
OVM Port: 54321

After the discovery profile of Oracle VM Manager is created, use it to discover the Oracle VM Manager.

1. Expand Profiles and Policies in the Plan Management section.
2. Select Discovery in the tree and select the profile created for Oracle VM Manager.
3. Click the Add Assets icon to launch the Add Assets wizard.

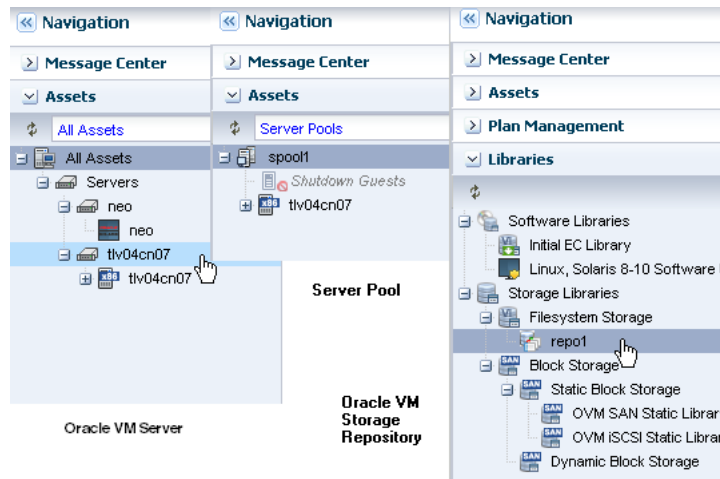


4. In the Discovery Profile step, select the profile and enter the IP address of the Oracle VM Manager.



5. Click Add Now to initiate the Oracle VM Manager discovery.

The discovery of Oracle VM Manager leads to the discovery of existing Oracle VM Servers, server pools, and Oracle VM Storage Repositories. The following figure show the discovered resources:



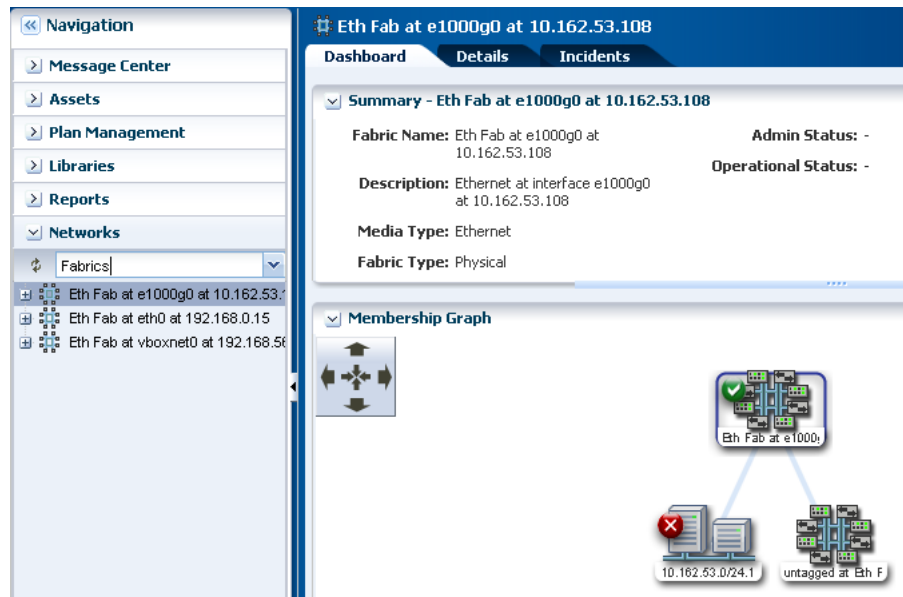
Set up the Network

In Oracle Enterprise Manager Ops Center, all the networks and fabrics associated with the Oracle VM Server are initially placed in the default network domain. A vDC requires a separate network domain to be associated with the server pool. You must create a network domain to associate with the server pool.

Depending on the type of network infrastructure, there are different ways of creating and managing the networks in Oracle Enterprise Manager Ops Center. One such type of network configuration is described here and this need not be the only prescribed method.

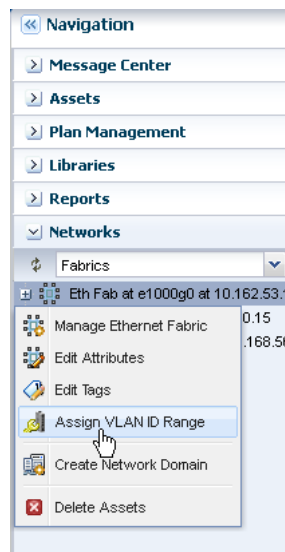
Oracle Enterprise Manager Ops Center supports fully managed, host-managed, and unmanaged networks.

In this example, the fabric in which the network of Oracle VM Server resides, is listed as Unmanaged. Assign VLAN IDs of defined range to the Ethernet fabric and make it host-managed fabric. Using a host-managed fabric enables the creation of dynamic private networks on the fabric. In the Network section, select the Fabrics view. The Ethernet fabric appears as shown in the figure:



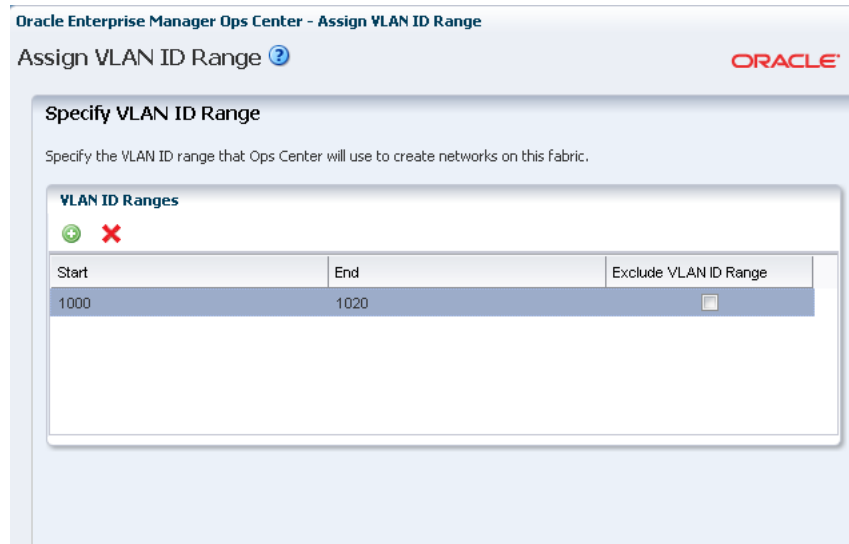
The following procedure describes how to assign the VLAN IDs:

1. Select the Ethernet fabric from the list in the Network section.
2. Right-click the fabric and select Assign VLAN ID Range option.



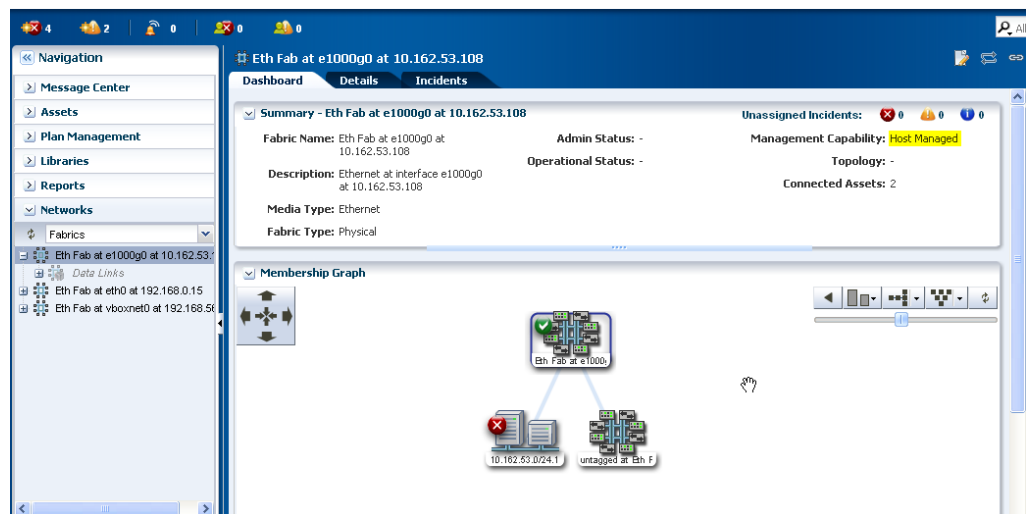
The Assign VLAN ID Range window is displayed.

3. Enter the Start and End of the VLAN ID range.



4. Click Save to assign the VLAN ID Range to the fabric.

The specified VLAN ID range is used to create networks in the fabric. In this example, the range is from 1000 to 1020, which translates to 20 networks that can be created on this fabric. In this scenario, Oracle Enterprise Manager Ops Center does not manage the Switch, ensure that you have enabled the VLAN IDs on the Switch Ports connected to the hosts in the fabric. The fabric appears as shown in the following figure:



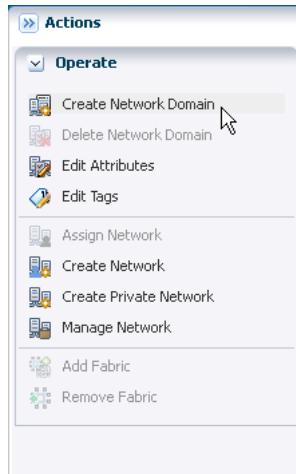
Now, you can create a network domain using this fabric and associate it with the server pool.

Create Network Domain

You require a network domain to associate with the server pool. Create a network domain using the host-managed fabric setup in the previous procedure.

1. Click Network section in the Navigation pane.
2. Click Create Network Domain in the Actions pane.

The Create Network Domain wizard is displayed.



3. Enter a name and description for the network domain.

Click Next to add the fabrics.

Identify Network Domain * Indicates Required Field

Specify the name, description, tags, physical fabric, and maximum number of networks for the network domain. Ops Center will automatically assign P-keys/VLAN IDs for the selected physical fabric.

* **Domain Name:**

Description:

Tags: + -

| Tag Name | Value |
|----------|-------|
| | |

4. Select the host-managed fabric from the list.

Click Next to specify the dynamic private networks.

Add Fabrics

The network domain is implemented upon a set of fully and unmanaged switched fabrics. The public and private networks will be drawn from this set (and specified in later steps). Including at least one fully managed or host managed fabric here will enable private networks to be created dynamically upon demand. If such a fabric is not included then private networks must be drawn from existing managed networks.

| Fabrics | | |
|-------------------------------------|------------|-----------------------|
| Fabric Name ▲ | Media Type | Management Capability |
| Eth Fab at e1000g0 at 10.162.53.108 | Ethernet | Host Managed |
| Eth Fab at eth0 at 192.168.0.15 | Ethernet | Unmanaged |
| Eth Fab at vboxnet0 at 192.168.56.1 | Ethernet | Unmanaged |

- The selected fabric and the number of networks that can be created is displayed. The network creation limit is defined from the VLAN ID range specified for the fabric.

In this example, the network creation limit is kept to 20. Click Next to associate the network with the network domain.

Specify Dynamic Private Networks * Indicates Required Field

Specify the resources Ops Center uses to dynamically and autonomously create private networks on this managed network domain. Resources include the fabric that will carry the networks, limit on number of networks that can be created and any IP address spaces that should not be used.

* Fabric Name: Eth Fab at e1000g0 at 10.162.53.108

Network Creation Limit: 20

Reserved IP Address Ranges

+ ×

| From IP Address | To IP Address |
|-----------------|---------------|
|-----------------|---------------|

- Select the Oracle VM Server network that must be part of the network domain. Click Next.

Associate Networks

A network domain consists of fabrics that carry networks and which can be used to create new networks as well as existing networks that are already known to the system. The associate networks step allows the selection of just those existing networks which are required to be part of the domain. The table lists all the existing networks on the fabrics selected in step 2. Use the associate tick box to choose which of these are included in the domain.

| Network Name | Network Address | Associate |
|---|-----------------|-------------------------------------|
| Fabric Name: Eth Fab at e1000g0 at 10.162.53.108 (1 Item) | | |
| 10.162.53.0/24.1 | 10.162.53.0/24 | <input checked="" type="checkbox"/> |

- View the summary and click Finish to create the network domain.

Summary

Click Finish to create the Network Domain

Domain Name: vcdomain

Description: This is a domain network for vDC.

Fabrics

| Fabric Name | Media Type | Management Capability |
|-------------------------------------|------------|-----------------------|
| Eth Fab at e1000g0 at 10.162.53.108 | Ethernet | Host Managed |

Private Networks

| Private Network Type | Network Name | Network Creation Limit |
|----------------------|-------------------------------------|------------------------|
| Dynamic | Eth Fab at e1000g0 at 10.162.53.108 | 20 |

Assigned Networks

| Network Name | Network Address | Fabric Name |
|------------------|-----------------|-------------------------------------|
| 10.162.53.0/24.1 | 10.162.53.0/24 | Eth Fab at e1000g0 at 10.162.53.108 |

Tags

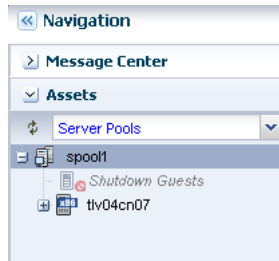
| Tag Name | Value |
|----------|-------|
|----------|-------|

The network domain appears as shown in the figure:

Set up the Server Pool

In this example, it is assumed that there is a server pool with an Oracle VM Server which is discovered when you discover the Oracle VM Manager. If you want to create a server pool, refer to *Oracle Enterprise Manager Ops Center Creating Server Pool for Oracle VM Server for x86 Guide*.

The server pool appears as shown in the figure:



This server pool must be associated with a network domain so that it is available for creating a vDC.

Associate the Network Domain

When you associate a network domain with the server pool, you must define the physical interface of the Oracle VM Server that connects to all the fabrics in the domain.

The following procedure describes how to associate a network domain with the server pool:

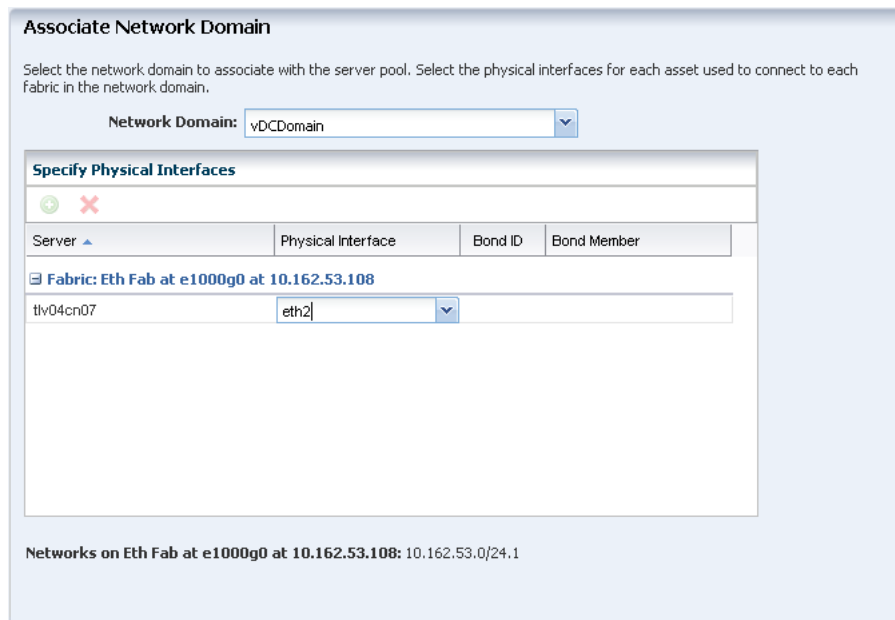
1. In the Asset section, select Server Pools in the Resource Management View.
2. Select the Oracle VM Server server pool from the list.
3. Click Associate Network Domain in the Actions pane.

The Associate Network Domain wizard is displayed.

4. Select the network domain from the list.

Select the physical interface of the Oracle VM Server in the server pool to connect to the fabric in the network domain.

Skip the options to bond the interfaces and click Next to view the summary.



5. View the summary and click Finish to associate the network domain with the server pool.

Summary

Click Finish to associate the network domain with the server pool.

Network Domain: vDCDomain

Fabric Interfaces

| Fabric | Oracle VM Server | Physical Interface | Bond ID | Bond Member |
|-------------------------------------|------------------|--------------------|---------|-------------|
| Eth Fab at e1000g0 at 10.162.53.108 | tlv04cn07 | eth2 | | |

The network domain is associated with the server pool and it is displayed as shown in the figure:

Set up the Storage

The Oracle VM Storage Repositories that are associated with the server pool are listed as shown in the figure:

| Name | Image Type |
|------------------------------------|-------------|
| Image Type: OvfAssembly (9) | |
| OVAB | OvfAssembly |
| OVAB | OvfAssembly |

This storage is used to store volumes and templates in a vDC.

Create a Virtual Datacenter

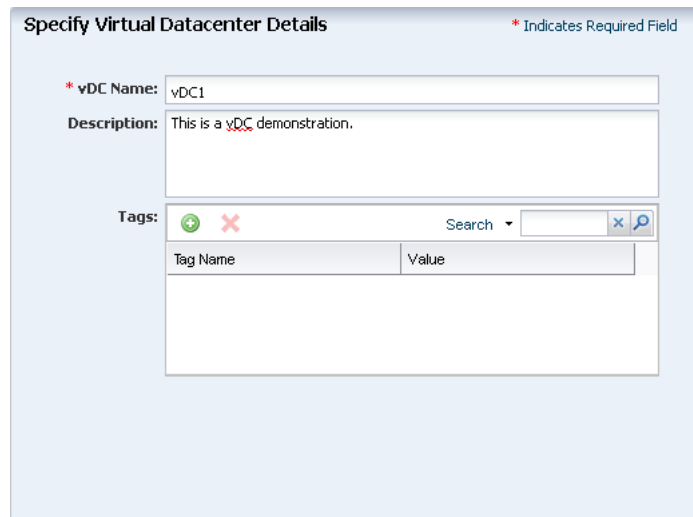
With all the requirements setup, you are now ready to create a virtual datacenter (vDC). The following procedure takes you through the steps to create a vDC:

1. Select vDC Management from the Navigation pane.
2. Click Create Virtual Datacenter in the Actions pane.

The Create Virtual Datacenter wizard is displayed.

3. Skip the introduction and click Next to continue.
4. Enter a name and description for the vDC.

Click Next.

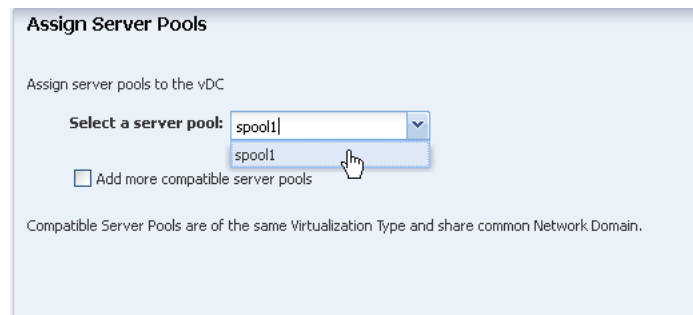


The screenshot shows the 'Specify Virtual Datacenter Details' wizard. It includes a title bar with the text '* Indicates Required Field'. The form contains the following fields:

- * vDC Name:** A text box containing 'vDC1'.
- Description:** A text area containing 'This is a vDC demonstration.'
- Tags:** A section with a search bar and a table. The table has two columns: 'Tag Name' and 'Value'. The table is currently empty.

5. Select the Oracle VM Server for x86 server pool from the list.

In this example, there is only one server pool to add to the vDC. Click Next to configure the volume storage.



The screenshot shows the 'Assign Server Pools' wizard. It includes the title 'Assign Server Pools' and the instruction 'Assign server pools to the vDC'. The form contains the following elements:

- Select a server pool:** A dropdown menu with 'spool1' selected and another 'spool1' option visible in the list.
- Add more compatible server pools
- A note: 'Compatible Server Pools are of the same Virtualization Type and share common Network Domain.'

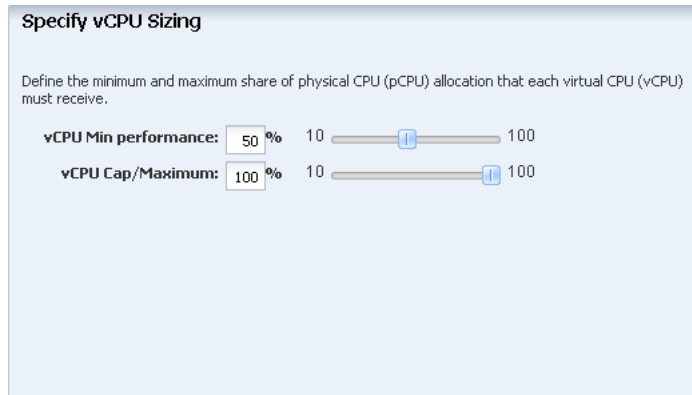
6. Select the storage resource that is used for creating volumes and storing server templates.

The storage resource assigned to the server pool is listed out here. Click Next to continue.

7. Select the minimum and maximum share of the physical CPU that must be available for each vCPU.


The vDC resources are allocated to accounts. Each account has the quota defined for vCPU, memory and storage resources. Depending on the load on the vServers in the account, you can oversubscribe the number of physical CPUs.

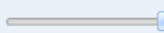
Click Next to view the summary.



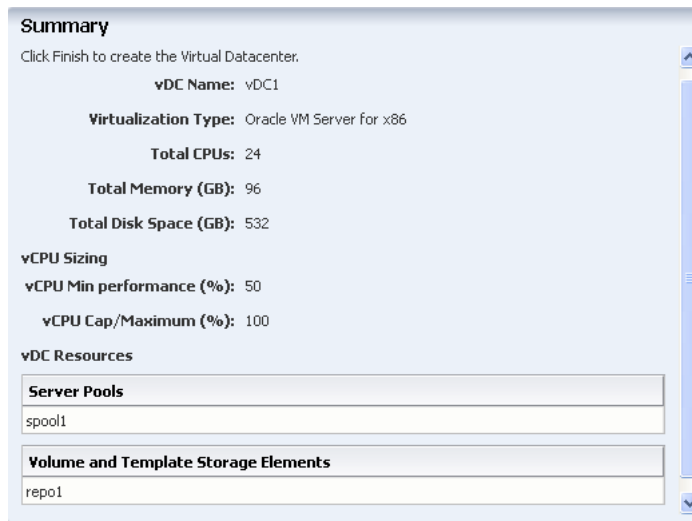
Specify vCPU Sizing

Define the minimum and maximum share of physical CPU (pCPU) allocation that each virtual CPU (vCPU) must receive.

vCPU Min performance: % 10  100

vCPU Cap/Maximum: % 10  100

8. Review the information for creating vDC and click Finish to create the vDC.



Summary

Click Finish to create the Virtual Datacenter.

vDC Name: vDC1

Virtualization Type: Oracle VM Server for x86

Total CPUs: 24

Total Memory (GB): 96

Total Disk Space (GB): 532

vCPU Sizing

vCPU Min performance (%): 50

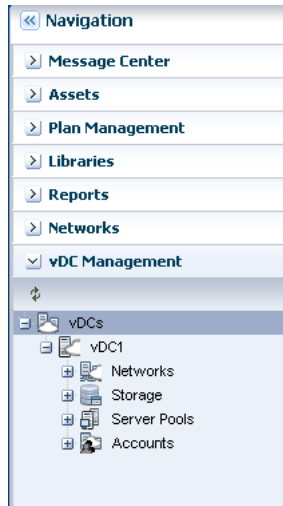
vCPU Cap/Maximum (%): 100

vDC Resources

| Server Pools |
|--------------|
| spool1 |

| Volume and Template Storage Elements |
|--------------------------------------|
| repo1 |

The newly created vDC appears as shown in the figure:



You can now create accounts in the vDC and provide access to the cloud users. Use the Update Virtual Datacenter option to add resources such as server pools and storage to the vDC. You can monitor the usage of the resources and ensure to use the resources to the fullest.

Create an Account

Accounts are containers for virtual resources allocated from a vDC. The resource allocation for all the accounts in a vDC can be more than the available resources. This oversubscription of the resources must be identified and planned for a vDC. Ensure that there are adequate resources available for cloud users to operate efficiently.

The following procedure describes how to create an account in a vDC:

1. Select a vDC from the vDC Management section.
2. Click Create Account in the Actions pane.

The Create Account wizard is displayed.

3. Enter a name and description for the account.

Click Next.

Specify Account Details * Indicates Required Field

* Name:

Description:

Tags: + × Search ✕ 🔍

| Tag Name | Value |
|----------|-------|
| | |

4. Specify the following account resources:
 - Specify the resource quotas for vCPU, memory and storage to the account.
 - Enter the number of private virtual networks that can be created in this account.
 - The number of IP addresses that are available in the public network is displayed. Enter the number of IP addresses that are available for the account usage. In this example, there are no available public IP addresses and hence it is displayed as 0 in the following figure.

Specify Account Resource Limits

Set the quota for each vDC resource that the account can use. The Resource Quota Information displays the usage of the vDC resources.

vCPU:

Memory: GB

Storage: GB

Resource Quota Information

- ✓ vCPU is undersubscribed, -8 vCPUs used from vDC capacity of 24
- ✓ Memory is undersubscribed, 32 GB used from a vDC capacity of 95 GB
- ✓ Storage is undersubscribed, 50 GB used from a vDC capacity of 532 GB

Number of private vNets: 4096

Use the table below to edit the public network resource limits.

| Public Networks Resource Limits | | | |
|--|----------------|---------------------|-------|
| Name | Subnet | Available Addresses | Limit |
| <input checked="" type="checkbox"/> 10.162.53.0/24.1 | 10.162.53.0/24 | 0 | 0 |

If you require to allocate some IP addresses to the account, you must use the Edit Managed IP Ranges option in the Network section to setup the available IP ranges. Allocate the IP ranges before creating an account.

Click Next to continue.

5. Select the cloud users to whom you want to provide access to the account. See [Create and Assign Cloud User to Accounts](#) for more information about adding users.

Click Next to view the summary.

Assign Users

Assign users to the account.

Available Cloud Users

root

Assigned Cloud Users

cluser1

6. Review the account information and click Finish to create the account.

Summary
Click Finish to create the Account.

Account Identification
Name: Account1
Description: This is a new account.

Resource Limits Information
vCPU: 16
Storage (GB): 50
Memory (GB): 32
Number of private vNets: 15

Public networks

| Name | Subnet | Available Addresses | Limit |
|------------------|----------------|---------------------|-------|
| 10.162.53.0/24.1 | 10.162.53.0/24 | 0 | 0 |

Users

| |
|---------|
| cluser1 |
|---------|

The newly created account appears as shown in the figure:

vDC Management

- vDCs
 - vDC1
 - Networks
 - Storage
 - Server Pools
 - Accounts
 - Account1

You can view the resources that have been allocated to the account in the Dashboard.

Account1 - vDC: Account

Account Name: Account1
Description: This is a new account.
Virtual Datacenter: vDC1

Resource Allocation

| Resource | Quota | Utilization |
|----------|---------|------------------|
| CPU | 16 | 0.0% |
| Memory | 32.0 GB | 0.0 GB |
| Storage | 50.0 GB | 0.0% |
| vNet | 15 | Created vNets: 0 |

Resource Usage

CPU: Last 24 hours

Total usage: 1.0

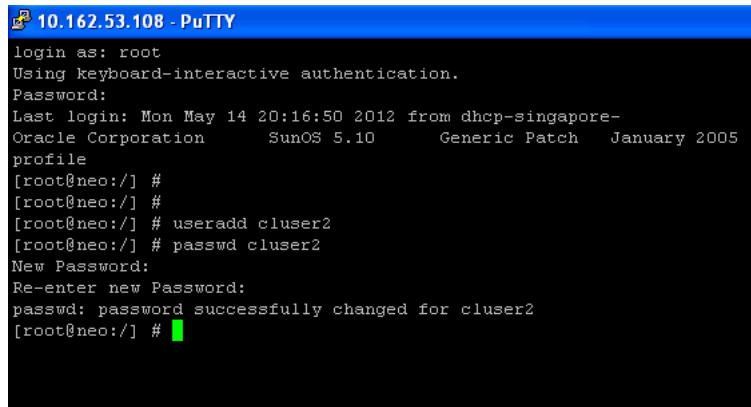
The cloud users who have access to the account have their visibility of their allocated resources from this section.

Create and Assign Cloud User to Accounts

As cloud administrator, you can create cloud users and provide them access to Accounts. The cloud user is associated with an existing user on the OS under the Enterprise Controller. The ways to create this operating system user vary by type of OS and type of name service, for example, file based, NIS, or LDAP.

Use the following Oracle Solaris OS command for a simple local file based user account.

```
useradd <cloud user name>
passwd <cloud user name>
```



```
10.162.53.108 - PuTTY
login as: root
Using keyboard-interactive authentication.
Password:
Last login: Mon May 14 20:16:50 2012 from dhcp-singapore-
Oracle Corporation      SunOS 5.10      Generic Patch  January 2005
profile
[root@neo:/] #
[root@neo:/] #
[root@neo:/] # useradd cluser2
[root@neo:/] # passwd cluser2
New Password:
Re-enter new Password:
passwd: password successfully changed for cluser2
[root@neo:/] # █
```

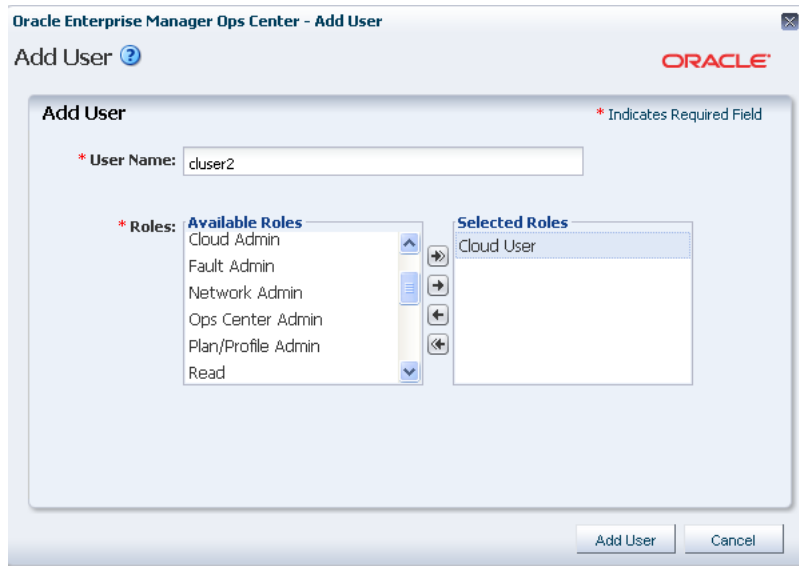
Adding a User

Use the following procedure to add the user and assign the role of cloud user:

1. Select Administration section in the Navigation pane.
2. Select Local Users under Enterprise Controller.
3. Click Add User in the Actions pane.

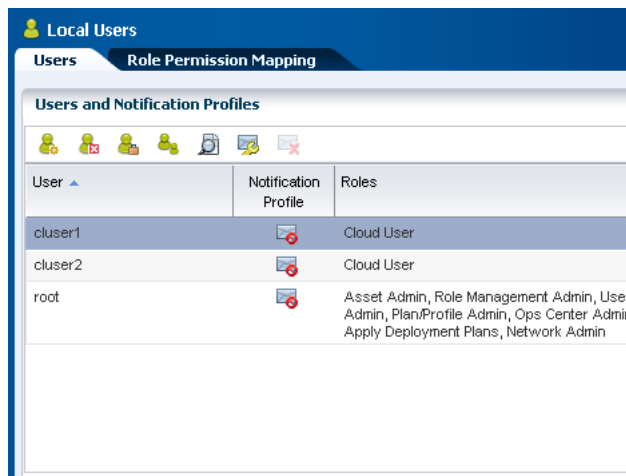
The Add User window is displayed.

4. Enter the username that was previously added and select the Cloud User role from the list.

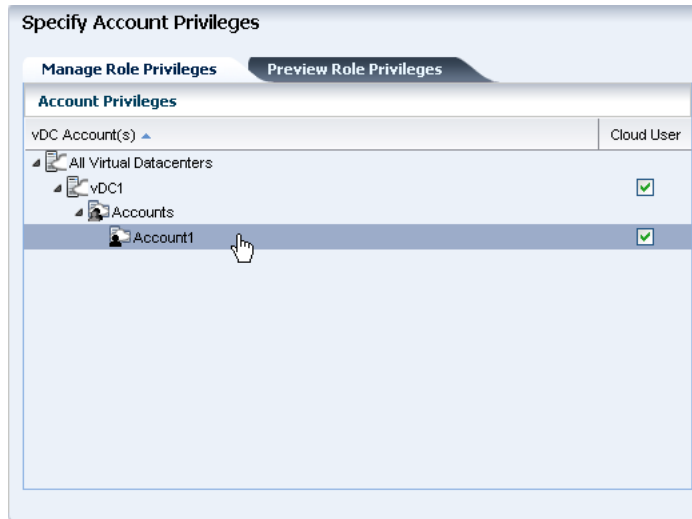


5. Click Add User to add the cloud user.

The new cloud user appears as shown in the figure:

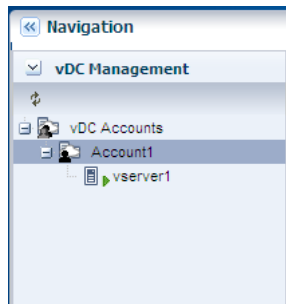


Set the privileges to the accounts to which the cloud users are entitled. Use the option Manage User Roles to set the access to the accounts. Refer to *Oracle Enterprise Manager Ops Center Administration Guide* for more information about managing user roles.

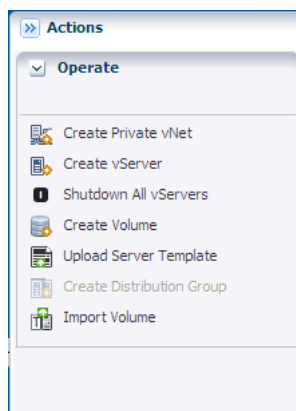


Cloud User View and Actions

When a cloud user logs in to Oracle Enterprise Manager Ops Center, the user view is restricted to the entitled accounts. The following figure shows the cloud user view login:



The cloud user has the following actions available for creating and managing the vServers:



For more information about creating and managing vServer, refer to *Oracle Enterprise Manager Ops Center Creating vServers*.

What's Next?

Learn more about the Cloud API and CLI that is available for a cloud user to manage the resources efficiently in an account. Refer to *Oracle Enterprise Manager Ops Center Cloud Infrastructure API and CLI Reference Guide* for more information.

Related Resources and Articles

Oracle Enterprise Manager Ops Center Feature Reference Guide

Oracle Enterprise Manager Ops Center Cloud Infrastructure API and CLI Reference Guide

Oracle Enterprise Manager Ops Center Creating Server Pool for Oracle VM Server for x86

Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at

<http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc>.

Access to Oracle Support

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