

Oracle® Enterprise Manager Ops Center

Exploring Your Server Pools

12c Release 1 (12.1.2.0.0)

E27354-02

November 2012

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

Introduction

This guide explores the options available for managing the server pool configuration and policies in Oracle Enterprise Manager Ops Center. When you create a server pool, the required resources are provided and policies are set. You can add more storage and network resources to the server pool for the guest usage. Also, you can modify the policies set for the server pool.

In this example, the following aspects of a server pool are covered:

- Modify server pool configuration
- Add more virtualization hosts
- Associate network domain
- Add network and storage resources
- Balance the load of the servers in the server pool

All the actions described in this example are applicable for server pools of all types of virtualization technology. However, for each server pool, there are differences in the network deployment to the server pool and supported storage libraries.

See [Related Articles and Resources](#) for more information about server pools.

What You Will Need

In this example, the following types of server pool are used to demonstrate the actions:

- Oracle VM Server for SPARC server pool
- Oracle Solaris Zones server pool
- Oracle VM Server for x86 server pool

You must have the following resources to execute the actions:

- Virtualization Admin role to perform all the operations described in this example.
- Server pool of any type of the virtualization technology.
- Storage libraries to associate with the server pool.
- User-defined network domains to associate with the server pool.

- Network resources to attach to the server pool.

Exploring Your Server Pool Actions

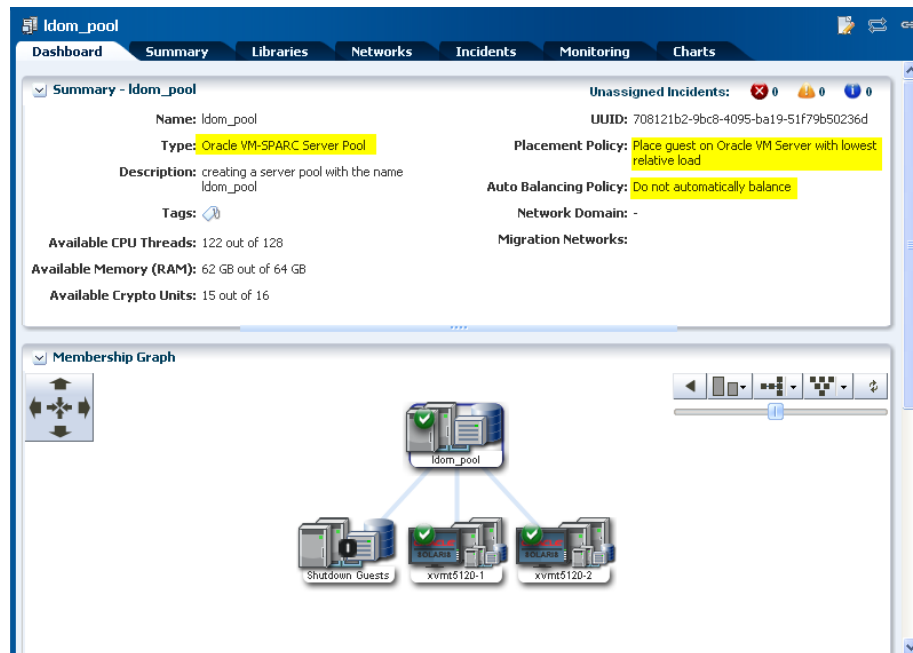
The following actions are available to manage the server pools created in Oracle Enterprise Manager Ops Center:

- [Editing Server Pool Configuration](#)
- [Adding Virtualization Hosts](#)
- [Associating Storage Libraries](#)
- [Associating Network Domains](#)
- [Attaching Networks](#)
- [Balancing Server Pool Resources](#)

Editing Server Pool Configuration

You can always modify the configuration of a server pool. In this example, Oracle VM Server for SPARC server pool is modified from the configuration set during the creation.

The Oracle VM Server for SPARC server pool is of the following configuration:

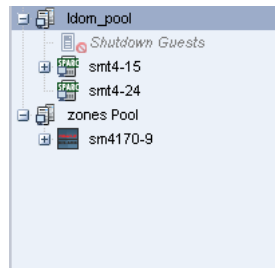


Modify the following details of the server pool:

- Name and description.
- Set the placement policy to place the guest on the Oracle VM Server with lowest allocated CPU and memory.
- Set the CPU allocation threshold to 80% for 10 minutes.
- Set the memory allocation threshold to 80%.

The following procedure details the steps required to modify the Oracle VM Server for SPARC server pool configuration.

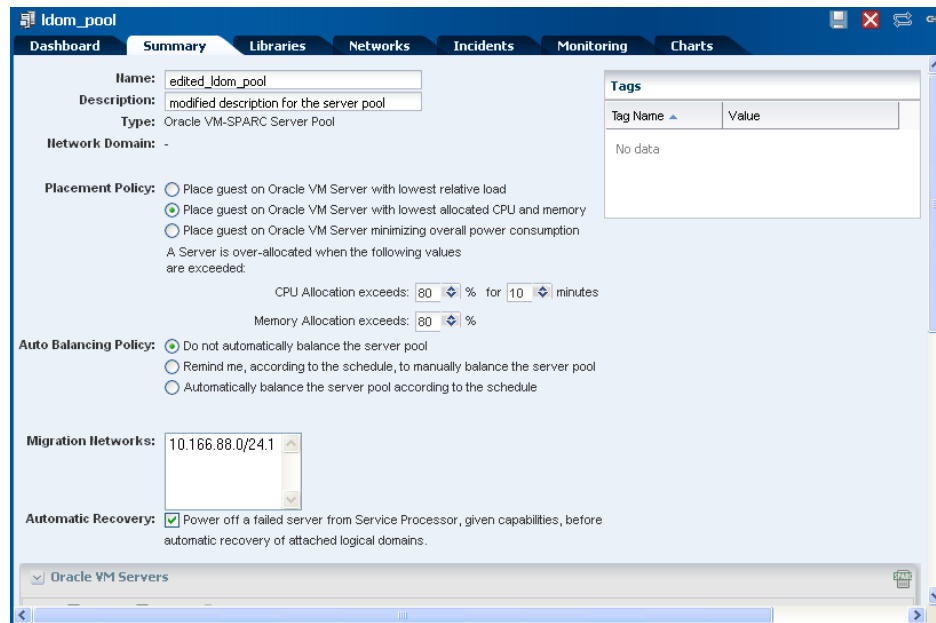
1. Select Server Pool in the Resource Management view.
2. Select the Oracle VM Server for SPARC server pool from the list.



3. Click Edit Attributes in the Actions pane.

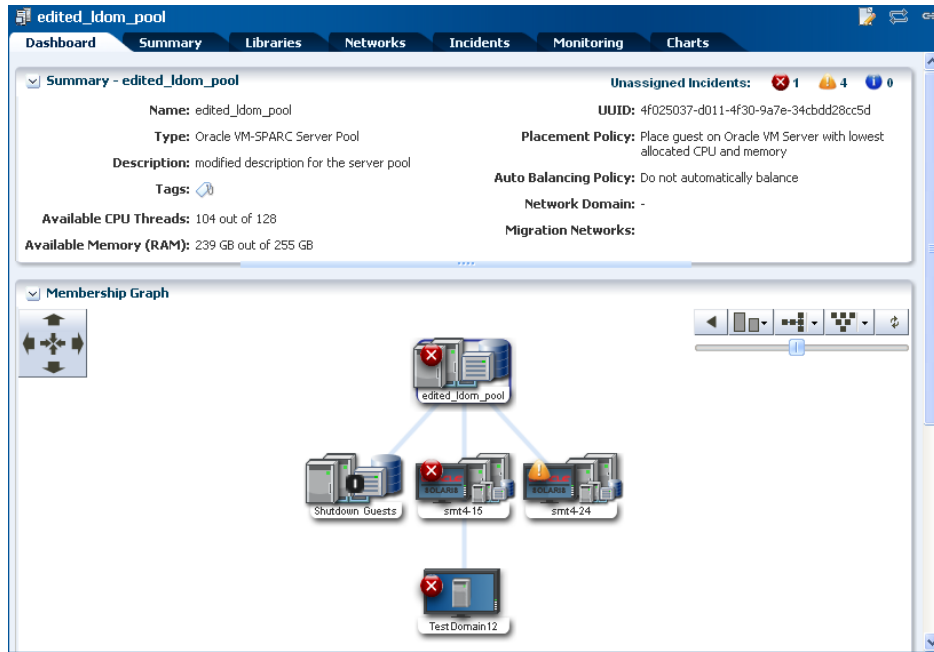
The Summary page of the server pool is displayed with the configuration settings that can be edited.

4. Edit the following parameters:
 - Change the Name to edited_ldom_pool.
 - Change the Description to modified description for the server pool.
 - Select the Placement Policy option to place the guest on the Oracle VM Server with lowest allocated CPU and memory.
 - Set the CPU and memory allocation thresholds to 80%.



5. Click the Save icon to accept the changes.

The Oracle VM Server for SPARC server pool displays the modified configuration.

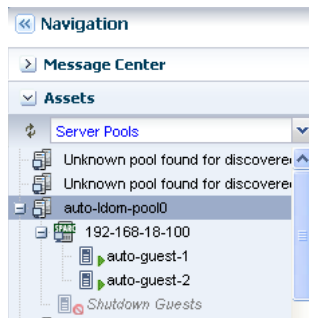


Adding Virtualization Hosts

Depending on the type of the server pool, you can add Oracle VM Servers or global zones to the pool. The options vary according to the type of the pool. When you add a virtualization host to the server pool, you must connect to the network attached to the server pool.

In this example, an Oracle VM Server for SPARC system is added to an Oracle VM Server for SPARC server pool. The server pool is not associated with user-defined network domain.

1. Select Server Pools in the Resource Management View.
2. Select the Oracle VM Server for SPARC server pool from the list of server pools.



3. Click Add Oracle VM Servers in the Actions pane.
The Add Oracle VM Servers to Server Pool wizard is displayed.
4. Select a compatible Oracle VM Server for SPARC system from the list.
The list of Oracle VM Server for SPARC systems that are without logical domains is displayed. Click Next to continue.

Select Members

Select one or more assets to be added to the server pool.

Oracle VM Server	Description	Member of
192-168-18-101	Oracle VM Server for SPARC	

- The selected Oracle VM Server is already connected to the server pool networks. There is no requirement to configure the interfaces of the Oracle VM Server with the server pool network.

Click Next to view the summary.

Configure Interfaces

Specify the configuration settings for each network connection. If no rows are displayed in the table below, the selected network connections have already been correctly configured.

Server Pool Name: auto-ldom-pool0

Specify Configuration Settings for each Network Connection			
Oracle VM Server	NIC	Address Allocation Method	IP Address
No data			

- Review the information and click Finish to add the Oracle VM Server for SPARC to the server pool.

Summary

Click Finish to add the selected assets to the server pool.

Destination Server Pool: auto-ldom-pool0

Network Domain:

Oracle VM Servers To Add

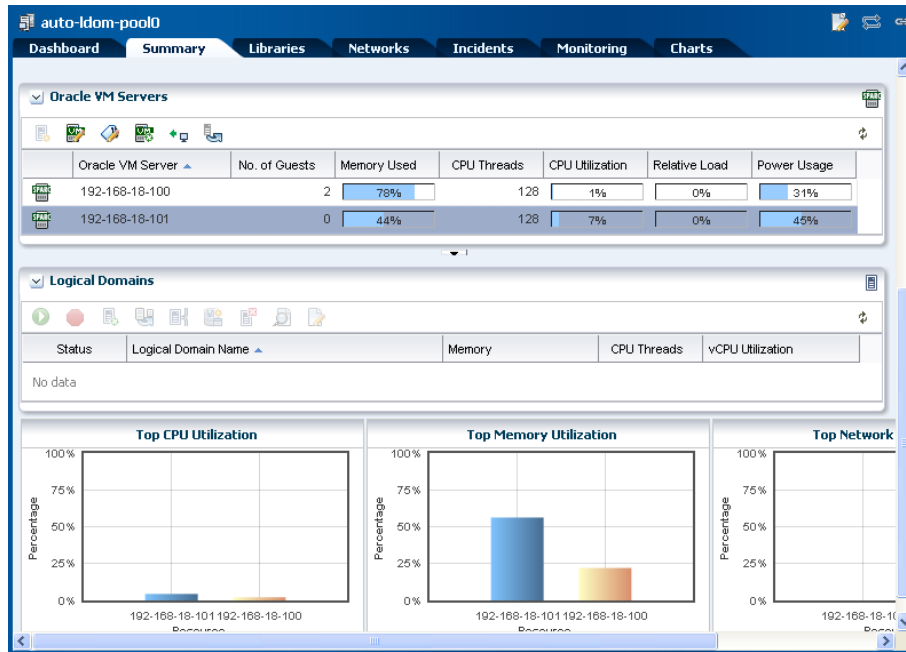
Oracle VM Server	Source Server Pool
192-168-18-101	-

Network Connections

Oracle VM Server	Network	P-Key / VLAN ID	NIC	Host IP Address
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The Oracle VM Server is added to the server pool and appears in the server pool as shown in the figure:

The Summary page of the server pool reflects the added Oracle VM Server for SPARC as shown in the figure:



Associating Storage Libraries

Storage libraries provides the storage resources required for the guests in a server pool. You must associate one or more storage libraries with the server pool to provide virtual disk storage to guests. The type of library that can be associated with a server pool, depends on the virtualization type of the server pool. Refer to *Oracle Enterprise Manager Ops Center Feature Reference Guide* for more information.

In this example, a Dynamic Storage Library is associated with the Oracle VM Server for SPARC server pool. The Oracle VM Server for SPARC server pool is of the following configuration:

- Two Oracle VM Server for SPARC 2.1 systems are in the server pool.
- Placement policy is set to place the guest on Oracle VM Server with lowest relative load.
- The server pool is not set to automatically balance for the load.

Summary - auto-Idom-pool0

Name: auto-Idom-pool0
 Type: Oracle VM-SPARC Server Pool
 Description:
 Tags:

Available CPU Threads: 243 out of 256
 Available Memory (RAM): 68 GB out of 80 GB
 Available Crypto Units: 31 out of 32

Unassigned Incidents:

UUID: c0d93f66-248d-4472-bfde-ecfff1be7d88
 Placement Policy: Place guest on Oracle VM Server with lowest relative load
 Auto Balancing Policy: Do not automatically balance
 Network Domain: -
 Migration Networks: 192.168.18.0/24.1

Membership Graph

The graph shows the auto-Idom-pool0 connected to three hosts: 192-168-18-100, 192-168-18-101, and Shutdown Guests.

The server pool has the following libraries associated with it:

Associated Libraries

Library Name	Type	URL	Size (GB)	Used Space
auto-san-lib0	SAN	fc://fe5fea80-db47-4343-93ff...	140	100%
nfs://192.168.18.1:2049/cvm/lib2	NAS	nfs://192.168.18.1:2049/cvm/lib2	115	72%

The Dynamic Storage Library has the following configuration:

Dynamic Library (10.133.248.48)

Library Name: Dynamic Library (10.133.248.48...)
 Library Description: Dynamic Storage Library of 10.133.248.48 Storage Array
 Added: 04/19/2012 10:27:03 am IST
 Modified: 04/19/2012 10:27:03 am IST
 State: OK

Tags:
 Total Storage Size: 454 GB
 Allocated Storage: 0 GB

LUNs

LUN Name	Allocated To	LUN GUID	Size (GB)	Type
rvr_lun2		600144f0a3be5c9200004de2acbb0...	1	-
sample		600144f0eeb26fc900004f96093c0...	3	-
test4ISOPVM4b1_lun		600144f0eeb26fc90000417c66360...	1	-
test4ISOPVM4bDSL1_lun		600144f0eeb26fc90000417c68720...	1	-
test5Netboot5a1_lun-		600144f0eeb26fc90000417c28aa0...	1	-

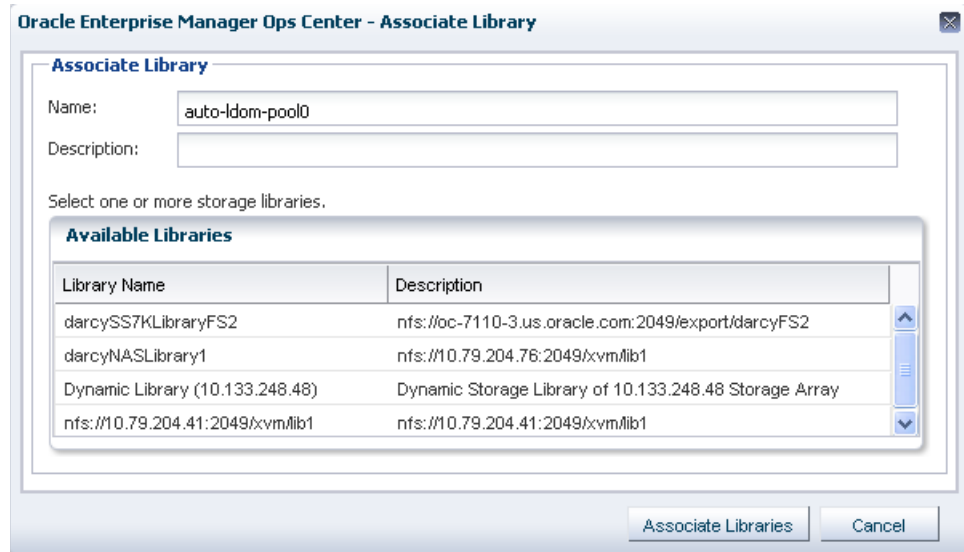
LUN Details

Name: sample
 GUID: 600144f0eeb26fc900004f96093c000b
 Status: -
 Vendor: Sun Storage 7110
 Product: -
 Revision: -

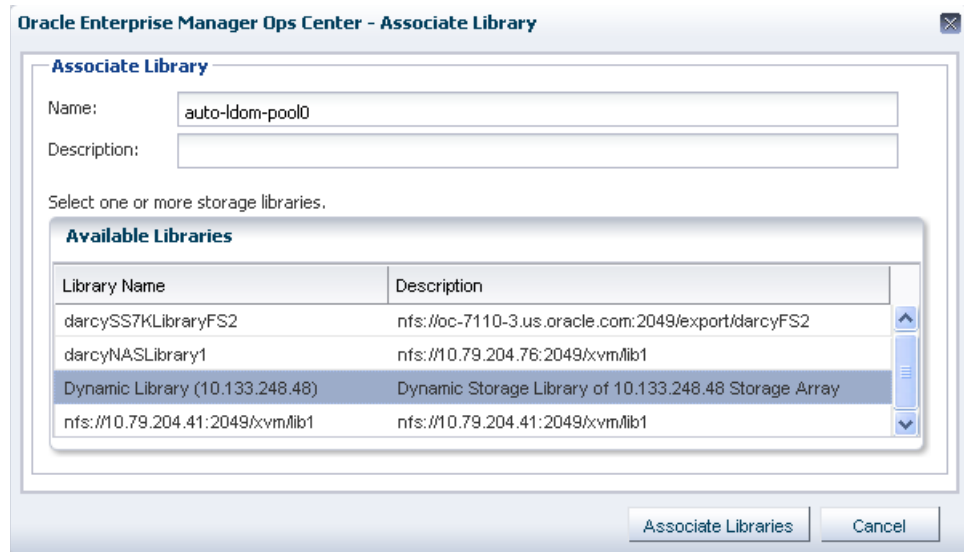
The following procedure describes the steps to associate the library with the server pool:

1. Select Server Pool in the Resource Management View.
2. Select the Oracle VM Server for SPARC server pool in the list of server pools.
3. Click Associate Libraries in the Actions pane.

The Associate Library window is displayed.



4. Select the Dynamic Storage Library from the list.



5. Click Associate Libraries to confirm the action.

The selected library is associated with the Oracle VM Server for SPARC server pool and displayed in the list of associated libraries.

Library Name	Type	URL	Size (GB)	Used Space
Dynamic Library (10.133.248.48)	Dynamic Sto...	dsl://82d14d7eb4a482b2812c...	454	100%
auto-san-lib0	SAN	fc://fe5fea80-db47-4343-93ff...	140	100%
nfs://192.168.18.1:2049/xvm/lib2	NAS	nfs://192.168.18.1:2049/xvm/lib2	115	72%

The associated library can then be used for guest storage in the server pool. You can use the Disassociate Library icon in the Libraries page to disassociate the library from the server pool.

Associating Network Domains

You can associate a user-defined network domain with a server pool. When you associate a network domain with the server pool, you can attach only the networks available in the network domain. You must connect the physical interface of all the servers in the server pool to each fabric in the network domain.

In this example, a user-defined network domain is associated with an Oracle Solaris Zones server pool.

The user-defined network domain has the following configuration:

Network Domain: BRM Domain 1
 Description: BRM Domain 1
 Number of Networks: 1501
 Reserved Fabric Tags: -
 Fabric used to Provision: BRM Fabric 1

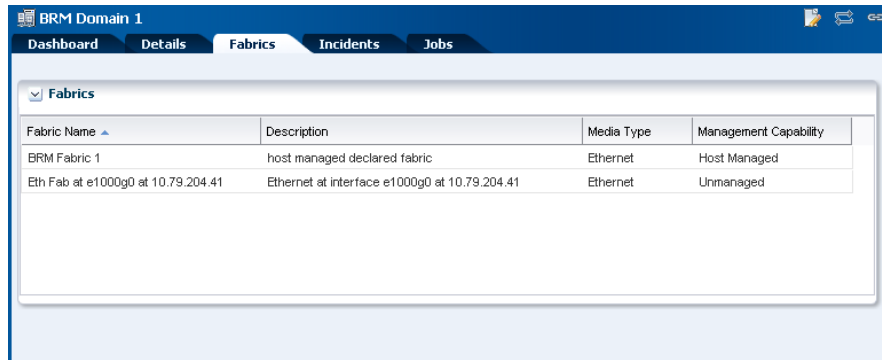
Network Name	Network Address	P-Key / VLAN ID	Media Type
No data			

Network Name	Network Address	P-Key / VLAN ID	Media Type
10.79.207.0/24.1	10.79.207.0	-	Ethernet

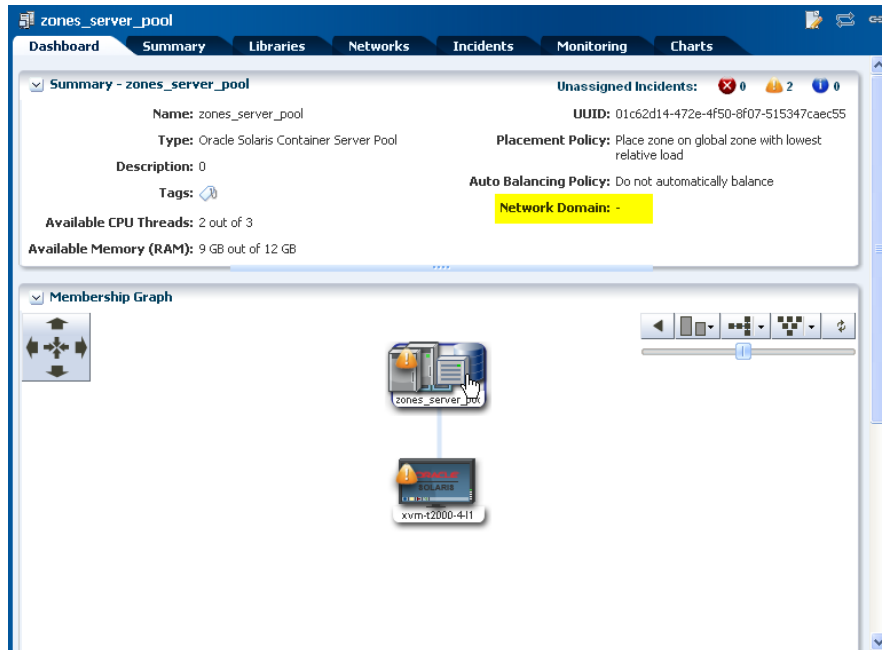
From IP Address	To IP Address (optional)
No data	

From IP Address	To IP Address (optional)
No data	

The network domain has the following fabrics:

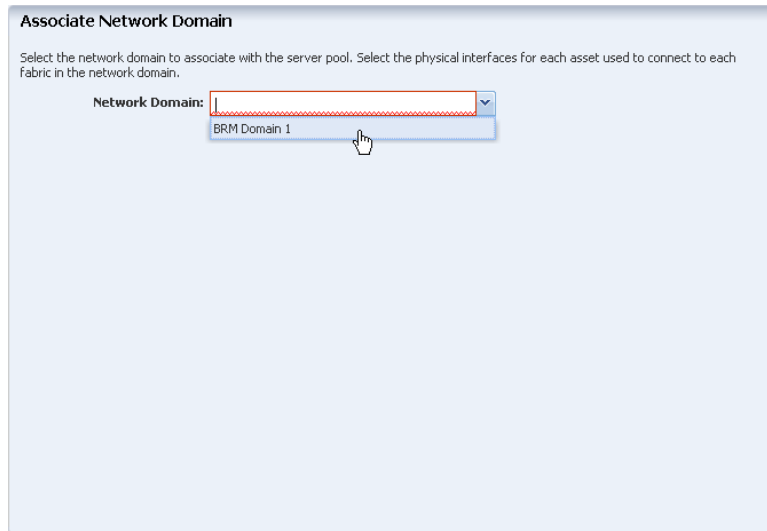


The default network domain is associated with the zones server pool which can be seen from the Dashboard page of the server pool.

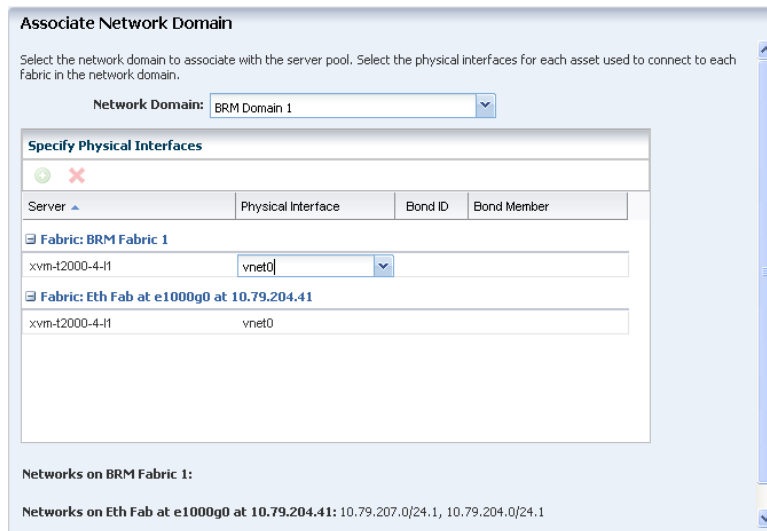


The following procedure takes you through the steps to associate the network domain with the server pool:

1. Select Server Pool in the Resource Management Views.
2. Click the zones server pool listed in the Navigation pane.
3. Click Associate Network Domain in the Actions pane.
The Associate Network Domain wizard is displayed.
4. Select the network domain from the list to associate with the server pool.



5. Select the physical interfaces of the servers in the server pool to connect to each fabric in the network domain.



You must have sufficient physical interfaces to configure the bonding. Bonding is similar to link aggregation. In this example, the interfaces are not bonded.

Click Next to continue to the Summary step.

6. Review the details in the Summary step 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: BRM Domain 1

Fabric Interfaces

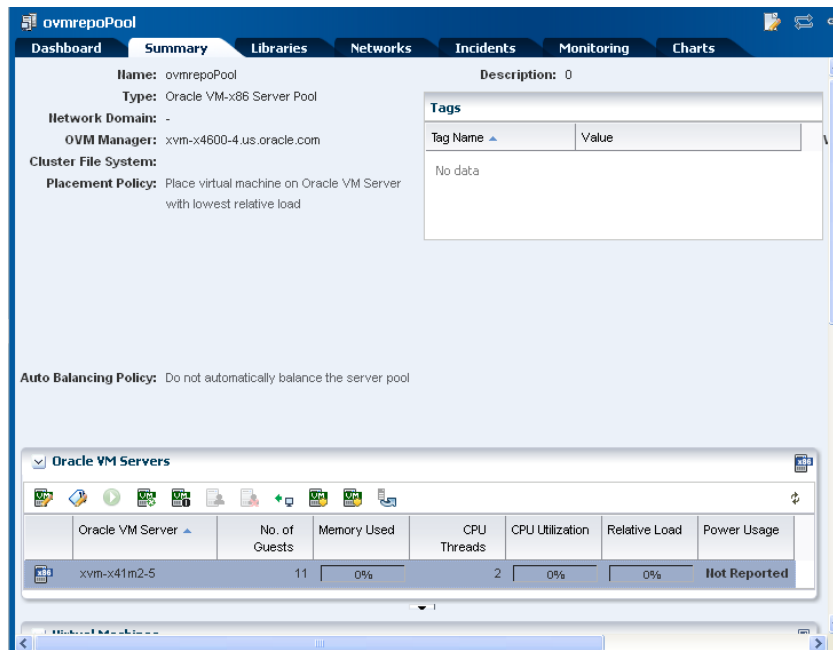
Fabric	Global Zone	Physical Interface	Bond ID	Bond Member
BRM Fabric 1	xvm-t2000-4-I1	vnet0		
Eth Fab at e1000g0 at 10.79.204.41	xvm-t2000-4-I1	vnet0		

The network domain is associated with the zones server pool and the Dashboard page is updated with the network domain details for the server pool.

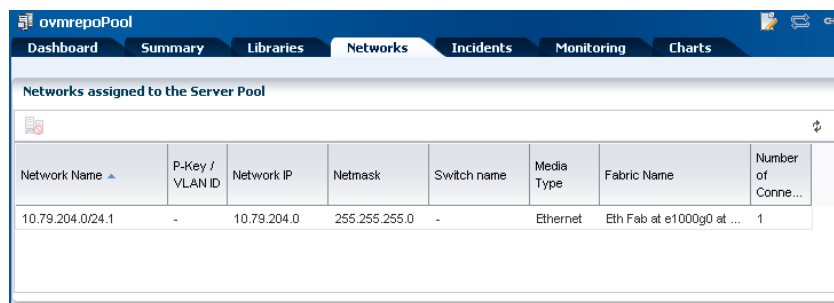
Attaching Networks

When a server pool is associated with a user-defined network domain, only the networks in that domain are available to be attached to the server pool. For the default network domain, all the network discovered and managed in Oracle Enterprise Manager Ops Center are available. Multiple connections to a network depends on the type of virtualization technology of the server pool. Refer to *Oracle Enterprise Manager Ops Center Feature Reference Guide* for more information.

In this example, a network is attached to an Oracle VM Server for x86 server pool. You can make only single network connection to a network for this server pool. The Oracle VM Server for x86 server pool is of the following configuration:



The server pool is attached to the following network resource:



The following procedure describes the step to attach network to the Oracle VM Server for x86 server pool:

1. Select Server Pools in the Resource Management View.
2. Select the Oracle VM Server for x86 server pool in the list.
3. Click Attach Networks in the Actions pane.

The Attach Network wizard is displayed. All the networks in Oracle Enterprise Manager Ops Center are displayed.

4. Select the network which you want to attach to the server pool.
Click Next to configure the networks.

Select Networks

Select one or more networks to connect to the server pool. The current connection column shows the existing number of connections between the network and server pool.

Network Domain: -

Network Name ▲	P-Key / VLAN ID	Network IP	Current Connections
10.133.244.0/22.1	-	10.133.244.0	0
10.133.248.0/21.1	-	10.133.248.0	0
10.79.204.0/24.1	-	10.79.204.0	1
10.79.205.0/24.1	-	10.79.205.0	0
10.79.207.0/24.1	-	10.79.207.0	0
192.168.18.0/24.1	-	192.168.18.0	0

5. You cannot make multiple connections to a network for an Oracle VM Server for x86 server pool. Skip this step and click Next to continue.

Configure Networks

Increment the Total Connections to reflect the required number of connections.

Configure Networks to be Connected

Network Name	P-Key / VLAN ID	Network IP	Current Connections	Total Connections
10.79.205.0/24.1	-	10.79.205.0	0	1

6. Provide the following information to configure the interfaces:

- Select the NIC from the list.
- Select Use Static IP for the Address Allocation Method.
- Enter the IP address for the network connection.

Click Next to view the summary.

Configure Interfaces

Specify the configuration settings for each network connection.

Asset/Server Pool ovmrepoPool
Name:

Specify Configuration Settings for each Network Connection

Hostname	NIC	Address Allocation Method	IP Address
[-] Network: 10.79.205.0/24.1			
xvm-x41m2-5	eth1	Use Static IP	10.79.205.50

7. Review the summary and click Finish to attach the network to the server pool.

Summary

Click Finish to attach the networks to the server pool.

Server Pool: ovmrepoPool

Assigned Networks

Network Name	P-Key / VLAN ID	Network IP	Current Connections	Total Connections
10.79.205.0/24.1	-	10.79.205.0	0	1

Network Interfaces

Oracle VM Server	Network	NIC	Address Allocation Method	Host IP Address
xvm-x41m2-5	10.79.205.0/24.1	eth1	Use Static IP	10.79.205.50

The selected network is attached to the server pool and appears in the Networks page:

The screenshot shows the Oracle VM Manager interface for the 'ovmrepoPool' server pool. The 'Networks' tab is active, displaying a table of networks assigned to the server pool. Below this, there is a 'Hosts network summary' table.

Networks assigned to the Server Pool

Network Name	P-Key / VLAN ID	Network IP	Netmask	Switch name	Media Type	Fabric Name	Number of Conne...
10.79.204.0/24.1	-	10.79.204.0	255.255.255.0	-	Ethernet	Eth Fab at e1000g0 at ...	1
10.79.205.0/24.1	-	10.79.205.0	255.255.255.0	-	Ethernet	Eth Fab at mgmtEth at ...	1

Hosts network summary

Virtual Host Name	IP Address	Status
xvm-x41m2-5		Unknown

When you attach network to an Oracle VM Server for x86 server pool, the network is assigned the virtual machine role by default. This can be viewed in the Oracle VM Manager of the corresponding Oracle VM Server.

Network Name	P-Key / VLAN ID	Network IP	Network Role			
			Server Managem...	Cluster Heartbeat	Live Migrate	Virtual Machine
Network Domain: default (2)						
10.79.204.0/24.1		10.79.204.0	✓	✓	✓	✓
10.79.205.0/24.1		10.79.205.0				✓

Balancing Server Pool Resources

If a server pool is set not to balance the resources automatically, you can use the Balance Resources option to check and balance the load of the servers in the server pool.

When the load of the virtualization servers exceeds the threshold, you can reduce the load by migrating some of the guests to other servers in the server pool. Use the Balance Resources option as described in the following procedure to check the load on the servers and also the proposed guest layout if the server load exceeds the threshold:

1. Select the server pool for which you want to check the load.
2. Click Balance Resources in the Actions pane.

The Balance Server Pool Resources window is displayed.

Oracle Enterprise Manager Ops Center - Balance Server Pool Resources

Balance Server Pool Resources

Server Pool Name: zones_server_pool
 Description: 0
 Placement Policy: Place guest on least loaded virtualization host

Virtualization Host Utilization				
Virtualization Host	Guests	Memory Used	CPU Used	Load
ocbrm-octest2	0	83%	3%	0%
xvm-t2000-4-11	2	73%	19%	0%

Balancing resources might require guests to be moved to a different virtualization host. The guest redistribution displayed in the following table is based on the server pool's placement policy. To move guests to the target virtual hosts, click Balance Resources.

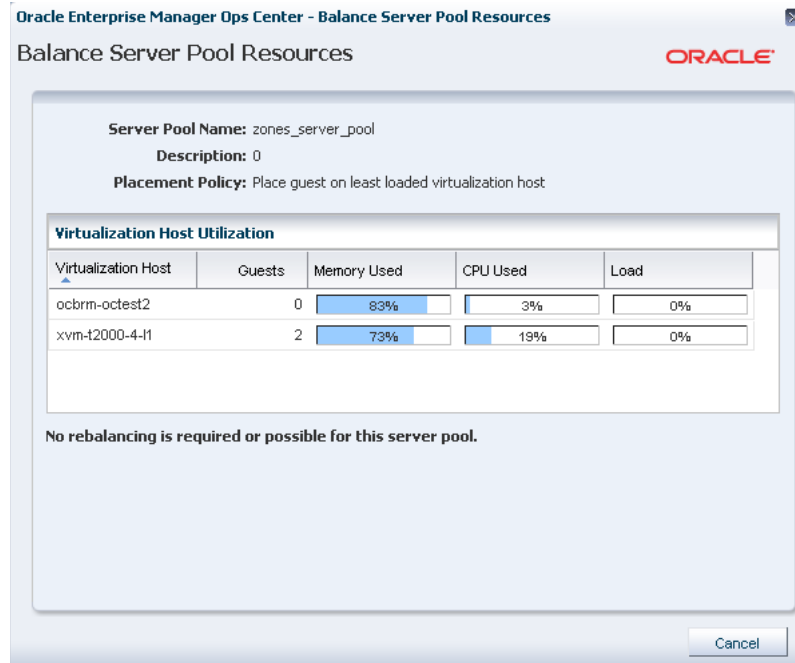
Proposed Guest Layout	
guest	Virtualization Host
brown	xvm-t2000-4-11
testjc-3	ocbrm-octest2

Balance Resources Cancel

3. When the load in a server exceeds the set threshold, a guest layout is proposed. The possible server to which the guest can be migrated is displayed. To accept the proposal, click Balance Resources.

This initiates the guest migration job. In this example, the zones are migrated to the proposed global zone in the server pool. When the zones are to be migrated, the zones are checked for patch compatibility between the source and target global zones. Depending on the requirement, the zone's patches and packages are updated to the target global zone level and then migrated.

When the virtualization servers load is within the set threshold, the balance resources window is displayed as follows:



This option is not applicable for Oracle VM Server for x86 server pool as it does not allow manual auto balancing job.

What's Next?

You can manage the server pool and create guests in the server pool. You can assign the resources to the guests. The other options that are available to manage a server pool are:

- Apply a monitoring profile
- Extract a monitoring profile
- Create guests

See [Related Articles and Resources](#) for more information about monitoring policies and creating guests in the server pool.

Related Articles and Resources

Refer to the following documentation resources for more information:

- *Oracle Enterprise Manager Ops Center Feature Reference Guide*
- *Oracle Enterprise Manager Ops Center Creating Oracle Solaris 11 Zones*
- *Oracle Enterprise Manager Ops Center Configuring and Installing Logical Domains*

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Oracle Enterprise Manager Ops Center Exploring Your Server Pools, 12c Release 1 (12.1.2.0.0)
E27354-02

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