

Oracle® Enterprise Manager Ops Center

Lifecycle Management of Logical Domains

12c Release 2 (12.2.2.0.0)

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

Introduction

You can use Oracle Enterprise Manager Ops Center to provision Oracle VM Server for SPARC, create logical domains on them, and provision operating systems on the logical domains. You can also pool the Oracle VM Server for SPARC systems in a server pool which provides load balancing, high availability capabilities, and sharing resources with all the members of the pool.

Each logical domain can be created, destroyed, reconfigured, and rebooted independently, without requiring the server to be powered off. You can run a variety of applications in different logical domains to keep them independent for performance and security purposes.

You can create logical domains with the following subtypes in Oracle Enterprise Manager Ops Center:

- **Physical I/O domain:** An I/O domain that has direct access to a physical I/O device, such as the PCIe Controller. The I/O domain shares the physical I/O device with other domains in the form of virtual devices.
- **Root domain:** An I/O domain that has PCIe root complex assigned to it.
- **Guest domain:** A non-I/O domain that has virtual devices such as virtual disks and virtual network interfaces.
- **HA Guest domain:** A non-I/O domain with high availability provided by redundant network connections and redundant access to the virtual disk of the guest domain.

Roles assigned to a logical domain in Oracle Enterprise Manager Ops Center can be one or more of the following: io, guest, service, or root.

This example describes a set of basic operations to manage the lifecycle of a logical domain created in an Oracle VM Server for SPARC server pool. These actions will enable you to perform other management operations to the logical domain, such as connecting networks, adding storage, and modifying the configuration among other actions.

See [Related Articles and Resources](#) for links to related information and articles.

What You Will Need

You will need the following to manage your logical domains:

- A user with the Virtualization Admin role.
- Two agent-managed logical domain in running status created or discovered using Oracle Enterprise Manager Ops Center in an Oracle VM Server for SPARC server pool. In this example, you use two logical domains created in Oracle Enterprise Manager Ops Center, a guest and an I/O domain.

Lifecycle Management of Logical Domains

In this example, you use the Oracle Enterprise Manager Ops Center user interface (UI) to perform actions to manage the lifecycle of a logical domain. These actions are described in the following sections:

- [Identifying the Status of a Logical Domain](#) – this section describes the available status for a logical domain, and how to verify its current status.
- [Basic Logical Domain Operations](#) – this section describes how to reboot, shut down, start, and delete a logical domain. These operations are available to all logical domains regardless of its subtype. However, users have to be careful when rebooting or shutting down I/O domains and root domains when they provide virtual disk services to guest domains.

In this example, you use the logical domains named *ldomVnet1* and *iodom1* created in an Oracle VM Server for SPARC server pool named *ldoms Pool*.

Identifying the Status of a Logical Domain

In the Oracle Enterprise Manager Ops Center UI, you can see a logical domain in one of the following status:

- **Running** – In this status, the logical domain is powered on and the OS is booted.
- **Shutdown/detached** – In this status, the logical domain is shut down and disassociated from the control domain, disconnected from its networks and storage resources, and all the associated resources are released.
- **Shutdown** – In this status, the logical domain is shut down but it still associated to the control domain, connected to its network and storage resources.
- **Installing** – In this status, a logical domain was created and the job for OS and agent provisioning is still in progress or not yet installed.
- **Unreachable** – In this status, the logical domain cannot be contacted for information. This status indicates a network problem or a problem with the logical domain or the control domain.

You can verify the status of a logical domain directly in the Navigation pane, or in the Dashboard page of the logical domain.

In the Navigation pane, one of the following icons is placed next to the logical domain to show its current status:

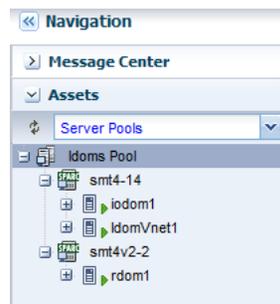
Icon	Status
	Running

Icon	Status
	Shutdown or Shutdown/detached
	Installing
	Unreachable

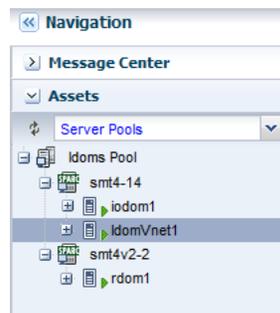
In the logical domain Dashboard page you can verify its current status along with other information of the logical domain such as operating system, tags, running time, or incidents.

To verify the status of a logical domain in the Dashboard page:

1. Expand Assets in the Navigation pane, then select Server Pools from the list.

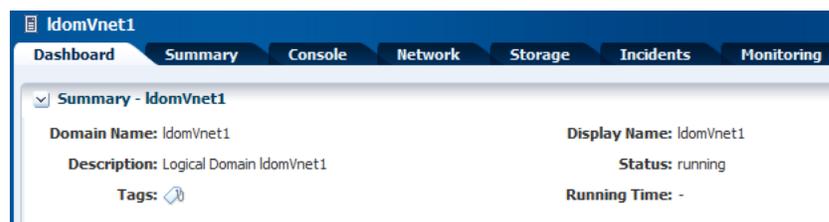


2. Select the logical domain listed under the *Idoms Pool* server pool in the Navigation pane.



3. Verify that the status of the logical domain is running.

The status is part of the information displayed in the Dashboard page of the logical domain.



Basic Logical Domain Operations

This section covers the following operations:

- [Rebooting a Logical Domain](#)

- [Shutting Down a Logical Domain](#)
- [Starting a Logical Domain](#)
- [Deleting a Logical Domain](#)

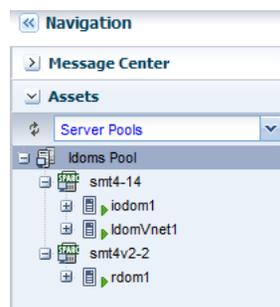
Rebooting a Logical Domain

You can reboot a logical domain that is in the running status. You might want to perform a reboot after a system configuration change or any particular need for your applications.

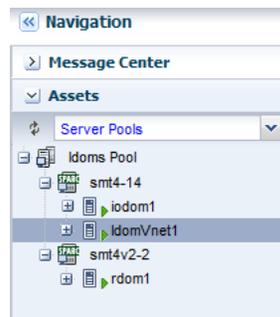
When rebooting a logical domain of the I/O or root subtype, you need to be careful if they are providing virtual disk services to guest domains.

This example shows you how to reboot a running guest domain.

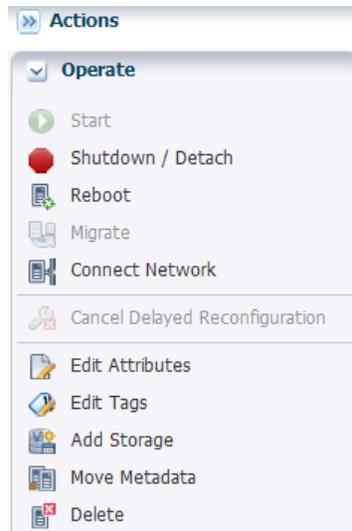
1. Expand Assets in the Navigation pane, then select Server Pools from the list.



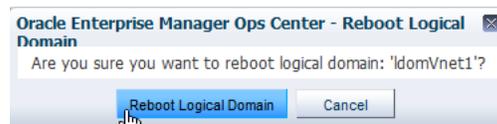
2. Select the logical domain listed under the server pool in the Navigation pane.
You can verify that the status of the logical domain is running.



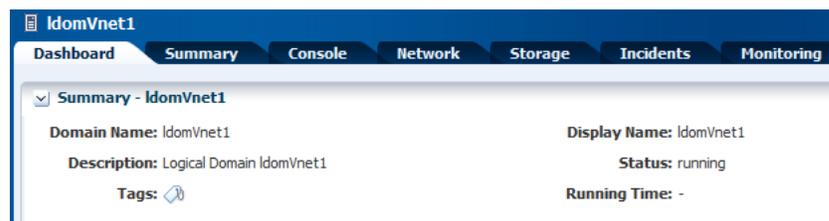
3. Click **Reboot** in the Actions pane.



4. Click **Reboot Logical Domain** to confirm.



5. After the job completes, verify that the logical domain is in running status.



Shutting Down a Logical Domain

You might want to perform a shut down for a system configuration change or any particular need for your applications. You can use the Shutdown / Detach action to perform one of the following actions:

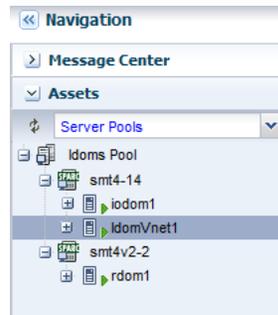
- Shutting down a logical domain – The status of the logical domain is changed to shutdown. The logical domain is still associated with the control domain, and connected to its network and storage resources. When you start a shutdown domain, you are not required to define the server and the resources
- Shutting down and detaching a logical domain – The status of the logical domain is changed to shutdown/detach. The logical domain is disconnected from its networks, disassociated from the control domain, and all the associated resources are released. To start the logical domain, you have to define and select the server, network, and storage resources. The option to shut down and detach a logical domain is not available for all logical domain subtypes.

The following sections are examples for:

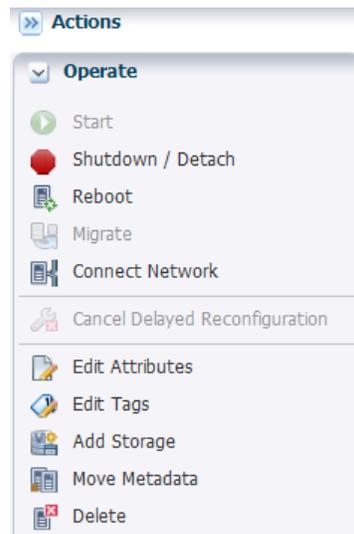
- [Shutting Down and Detaching a Guest Domain](#) – In this example, you shut down and detach a running logical domain created as a guest domain subtype in a server pool.
- [Shutting Down an I/O Domain](#) – In this example, you shut down a running logical domain created as an I/O domain subtype in a server pool. When shutting down a logical domain of the I/O or root subtype, you need to be careful if they are providing virtual disk services to guest domains.

Shutting Down and Detaching a Guest Domain

1. Select the logical domain listed under the server pool in the Navigation pane.
You can verify that the status of the logical domain is running.



2. Click **Shutdown / Detach** in the Actions pane.



3. Review the information and click **Next** to continue.

In case the selected logical domain does not support the detach action, you will only have the option to shut down.



4. Click **Shutdown and Detach** to confirm.



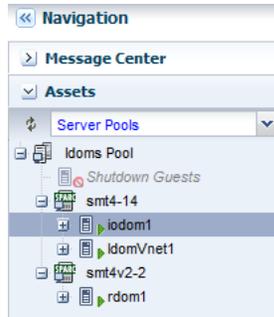
5. Verify that the status of the logical domain is changed to shutdown/detached after the job completes.



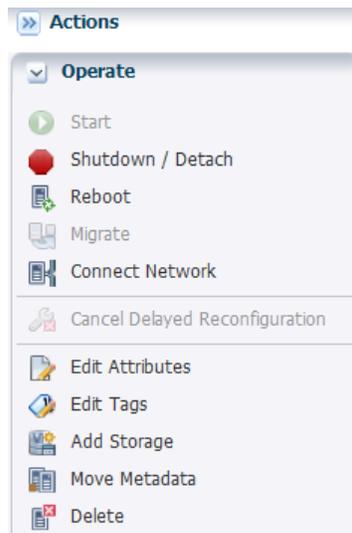
Shutting Down an I/O Domain

1. Select the logical domain listed under the server pool in the Navigation pane.

You can verify that the status of the logical domain is running.

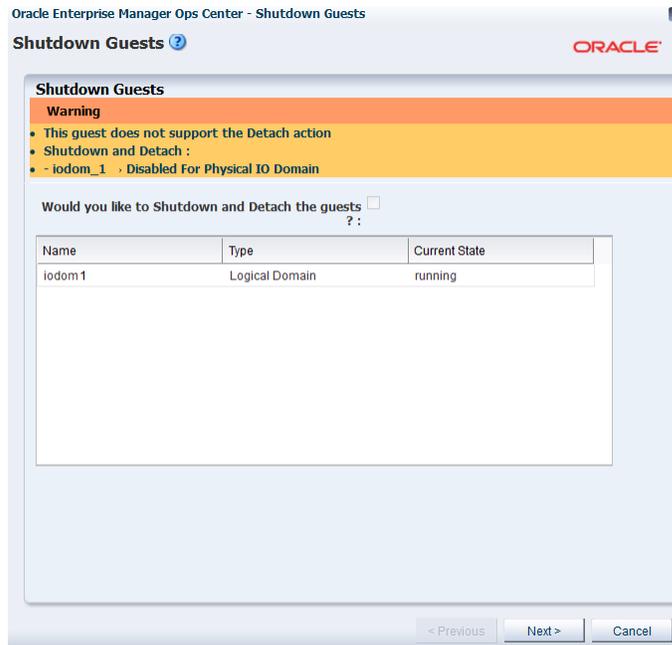


2. Click **Shutdown / Detach** in the Actions pane.

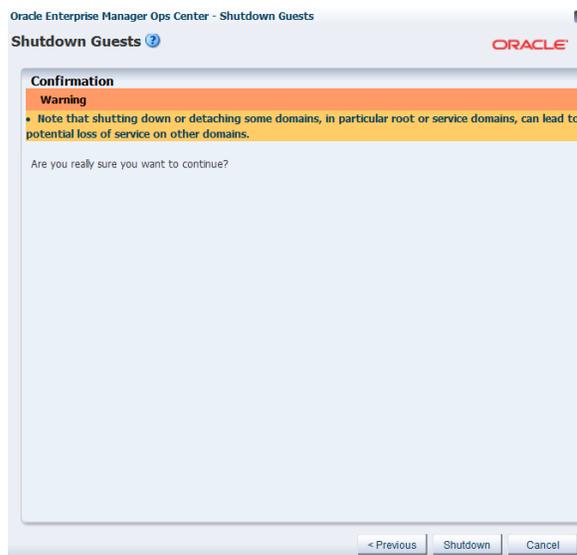


3. Review the information and click **Next** to continue.

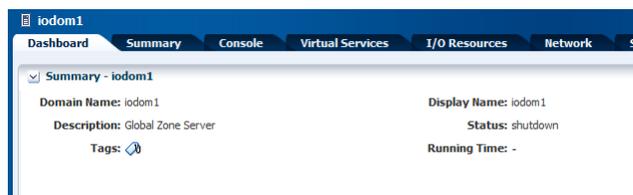
The action to detach is disabled for this logical domain, you can see warning message explaining the reason.



4. Click **Shutdown** to confirm.



5. Verify that the status of the logical domain is changed to shutdown after the job completes.



Starting a Logical Domain

You can start a logical domain with the same configuration that is maintained in its storage library.

You can start a logical domain from a shutdown or shutdown and detached state.

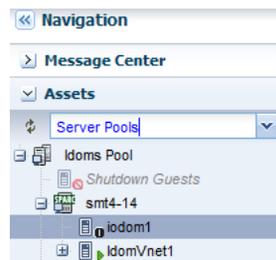
The logical domain in shutdown state starts immediately in the same Oracle VM Server. When starting a logical domain is in shutdown and detached state, you need to define the Oracle VM server, network, and storage resources to start the logical domain. For a logical domain in shutdown and detached state placed in a server pool, you can also select a different server pool.

The following sections are examples for:

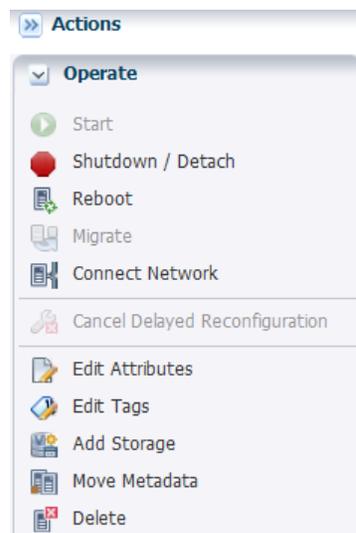
- **Starting a Shutdown Logical Domain:** In this example, you start a shutdown logical domain created as an I/O domain subtype in a server pool
- **Starting a Shutdown and Detached Logical Domain:** In this example, you shut down and detach a running logical domain created as a guest domain subtype in a server pool. This logical domains is connected to the network using virtual functions, by using the network interface from the control domain to connect to the network.

Starting a Shutdown Logical Domain

1. Select the shutdown logical domain listed under the server pool in the Navigation pane.



2. Click **Start** in the Actions pane.



3. Verify the status of the logical domains is changed to running after the job completes.



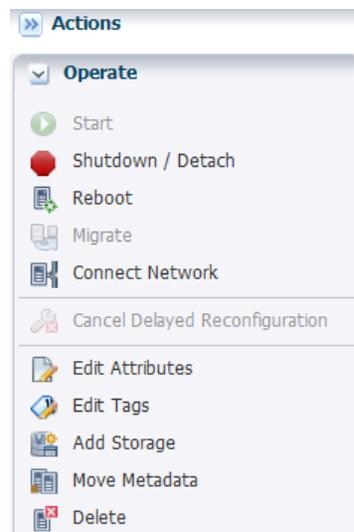
Starting a Shutdown and Detached Logical Domain

1. Select the logical domain listed under Shutdown Guests of the server pool in the Navigation pane.

You can verify that the status of the logical domain is shutdown/detached in the Dashboard page.



2. Click **Start** in the Actions pane.



3. Select from the list the server pool to run the logical domain on, then click **Next**.

Select Server Pool

Logical Domain Name: IdomVnet1 State: Shutdown/Detached
 CPU Threads: 4 OS: generic
 Memory: 8.00 GB

Requested Crypto Units: -1

Select the server pool on which to run the logical domain.

Server Pool: Idoms Pool

Note that any logical domain networks that are not associated with the target server pool will not be available after it starts.

< Previous **Next >** Cancel

4. Select from the list the Oracle VM Server to host the logical domain, then click **Next**.

Select Oracle VM Server

Logical Domain Name: IdomVnet1 State: Shutdown/Detached
 CPU Threads: 4 OS: generic
 Memory: 8.00 GB Server Pool: Idoms Pool

Requested Crypto Units: -1

Select an Oracle VM Server to host the logical domain.

Name ▲	Logical Domains	Available Memory (GB)	Available CPU Threads	CPU Utilization	Available Crypto Units	Power Utilization
smt4-14	1	109.69	48	1%	0	0%
smt4v2-2	1	111.44	20	0%	0	0%

< Previous **Next >** Cancel

5. Specify the virtual switch or virtual function through which you connect the logical domain MAC address to the network, then click **Next**.

In this example, you specify a virtual function by selecting *primary* as the service domain to use the network interface from the control domain to provide the network connection. Other available network interfaces from other I/O domains are listed in the Service Domain field with the respective names of the domains.

Specify Network Interfaces

Some networks of the logical domain may have multiple connections in the Oracle VM Server. Thus, you will need to specify which virtual-switches the logical domain MAC address should be connected to.

MAC Address	Network	VLAN ID	Service Domain	SR-IOV	Map connection
00:14:4F:FC:D7:C6	10.166.32.0/22.1	-	primary	<input type="checkbox"/>	10.166.32.0_22

< Previous **Next >** Cancel

- Specify the storage devices for the logical domain, then click **Next**.

In this example, a virtual disk is specified for the logical domain. You also configure the virtual disk with multipathing by selecting *primary-vds0* as Service Name to provide an alternate path to access the back-end storage through the control domain. Each path can be from a primary, I/O, or root domain and it is exposed as virtual disk servers in the control domain.

Specify Storage Devices

Multipathing Configuration

Disk Name	Multipathing Group
600144f0d54400f500004fe897c00001	

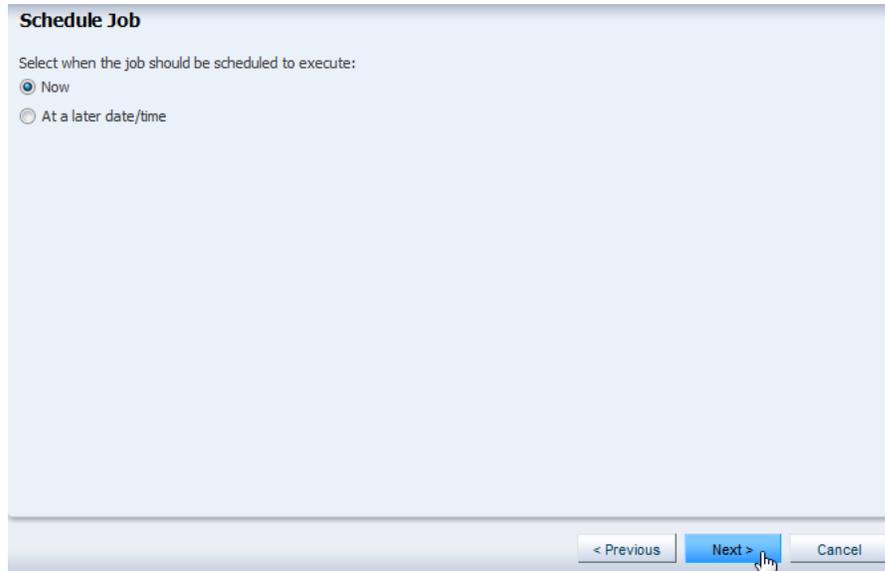
Edit Multipathing For Device 600144f0d54400f500004fe897c00001

Select	Service Name	Domain Name	Active Path
<input checked="" type="checkbox"/>	primary-vds0	primary	<input checked="" type="checkbox"/>

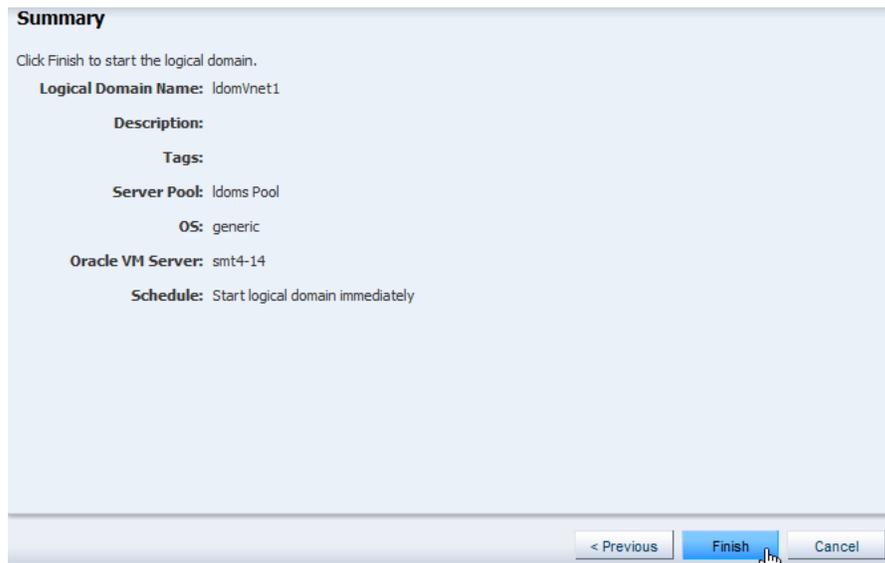
< Previous **Next >** Cancel

- Specify when you want to start the logical domain, then click **Next**.

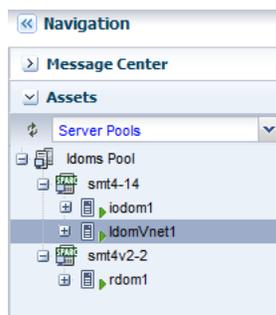
In this step, the option to start the logical domain immediately is selected.



8. Review the logical domain information, then click **Finish**.



9. Verify that the status of the logical domain is changed to running after the job completes.



Deleting a Logical Domain

You can delete a running, installing, shutdown, or a shutdown/detached logical domain. When deleting a logical domain, the logical domain is disconnected from the associated networks and is disassociated from the control domain. All the associated resources are released and the domain configuration is removed from the library.

All the references to the logical domain, including disk image and snapshots are removed from the system. However, the logical domain profile and plan remain unaffected.

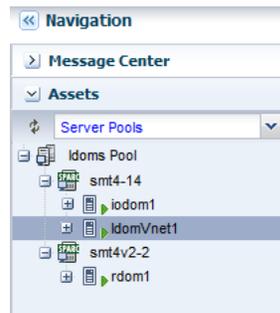
If the logical domain is a service domain that provides virtual I/O services to other running logical domains, then you cannot delete the logical domain.

Starting with the 12.2.2.0.0 release, you can use the **Delete** action to delete root domains that have virtual functions on SR-IOV enabled PCIe devices if other domains are not using a virtual function from that root domain. For previous releases, you must delete all the associated virtual functions created on the SR-IOV enabled PCIe devices before proceeding to delete the root domain, the virtual functions must be deleted manually in the reverse order from the command line prompt of the control domain.

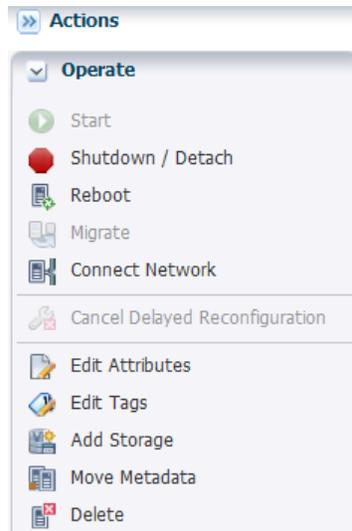
This example shows you how to delete a guest domain in running status and without virtual functions assigned. If you want to delete guest domains assigned with virtual functions, you must first remove the virtual functions from the domain and then delete the guest domains.

1. Select the logical domain listed under the server pool in the Navigation pane.

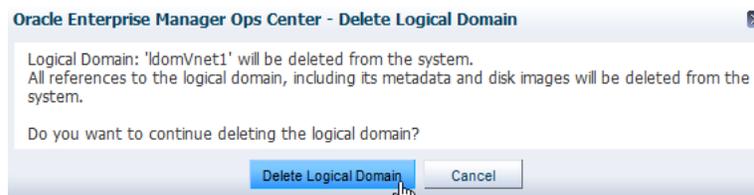
You can verify that the status of the guest domain is running.



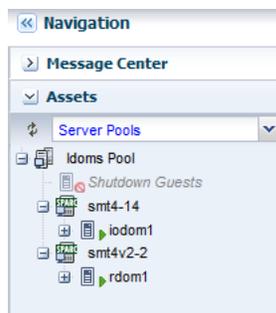
2. Click **Delete** in the Actions pane.



3. Click **Delete Logical Domain** to confirm.



4. After the job completes, verify that the logical domain is no longer listed under the server pool in the Navigation pane.



What's Next?

You can perform logical domain configuration actions such as add storage, modify CPU and memory allocation, or connect networks.

Related Articles and Resources

The following chapters in the *Oracle Enterprise Manager Ops Center Feature Reference Guide* contain more information:

- See [Oracle VM Server for SPARC](#) for more information about how to manage Oracle VM Server for SPARC servers and logical domains.
- See [Server Pools](#) for information about how server pools can help you to balance and share resources and provide high availability capabilities.

For more end-to-end examples, see the workflows and how to documentation in the Operate How To library at http://docs.oracle.com/cd/E40871_01/nav/operatehowto.htm.

For more information, see the Oracle Enterprise Manager Ops Center Documentation Library at http://docs.oracle.com/cd/E40871_01/index.htm.

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