Oracle® Enterprise Manager Ops Center

Creating Non-Global Zones Using a SAN Storage Library 12c Release 3 (12.3.0.0.0)

E65613-01

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

Introduction

Oracle Enterprise Manager Ops Center provides comprehensive lifecycle management for Oracle Solaris and Linux operating systems in your data center.

In M7 servers, NFS or iSCSI resources are not discovered during storage discovery, including the DSL library. Therefore, new non-global zones will have to use a static SAN library for file system and NAS storage library for metadata.

In this document, you learn how to create non-global zones using a SAN storage library.

See Related Resources for links to related information and articles about discovering and managing other assets.

The following sections are described in detail:

- Prerequisites
- Creating Resources on the ZFS Storage Appliance
- Creating Resources in Oracle Enterprise Manager Ops Center
- Creating Non-Global Zone Using SAN Storage Library

Prerequisites

The following are the prerequisites:

- Oracle SuperCluster discovered and managed by Oracle Enterprise Manager Ops Center.
- Access to ZFS storage appliance user interface.
- NAS storage library for zone metadata created on the ZFS storage and discovered in Oracle Enterprise Manager Ops Center.
- At least one global zone discovered in Oracle Enterprise Manager Ops Center.

Creating Resources on the ZFS Storage Appliance

Create a new target on the ZFS storage appliance, assign it to a target group, and then create a new LUN within the target group.

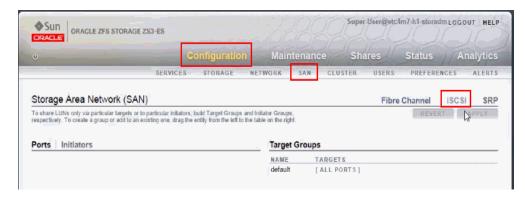


Create a Target

Perform the following steps to create a target.

- 1. Log in to Oracle Enterprise Manager Ops Center.
- **2.** Navigate to Storage, then select the active storage appliance.
- 3. In the Actions pane, click Launch Appliance UI.
- **4.** Log in using the required credentials.
- 5. In the ZFS home screen, click **Configuration**, then click **SAN** tab.

Figure 1 ZFS Storage Appliance User Interface



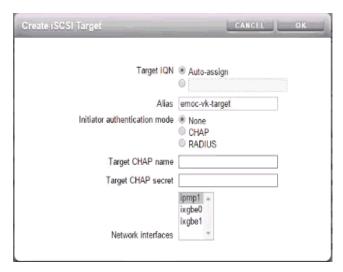
- **6.** In the Storage Area Network area, click **iSCSI**.
- 7. In the Targets column, click the Add icon to add a target.

Figure 2 Add Target



8. The Create iSCSI Target screen opens. In the Alias field, enter the target name, then click **OK**.

Figure 3 Create iSCSI Target Screen



Assign the Target to a Target Group

After you have the target created, you must assign the target to a target group.

Perform the following steps to assign the target to a target group.

- 1. In the Targets column, select the new target.
- 2. Drag and drop the target to the Target Groups column. If you want to create a new Target Group, drag and drop the Target to the bottom of Target Groups list in the placeholder.
- 3. Click Apply.

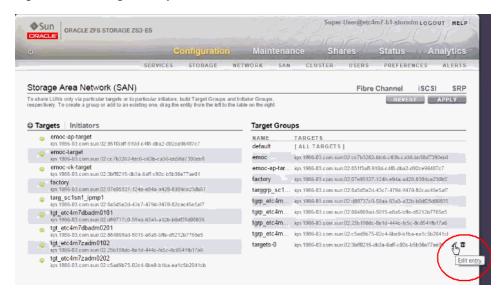
Edit the Target Group

You can edit the name of the target group.

Perform the following steps to edit the target group.

1. Select the new target group.

Figure 4 Edit Target Group



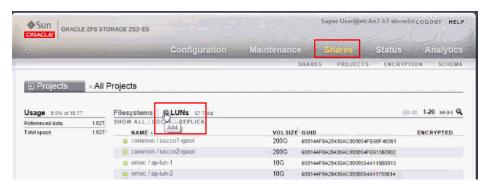
- 2. Click the edit entry icon displayed next to the selected group.
- **3.** Edit the name of the target group as required, then click **OK**.

Create LUNs and Assign to a Target Group

Perform the following steps to create logical units.

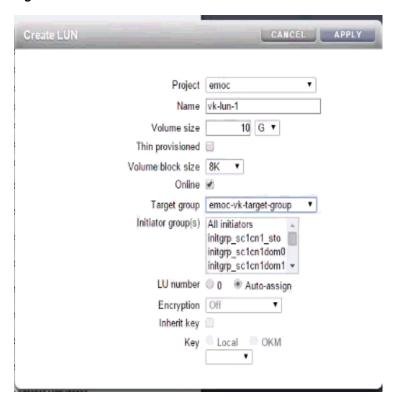
1. In the ZFS storage appliance user interface, click **Shares**, then click **LUNs**.

Figure 5 Add LUNs



2. Click the Add icon next to LUNs. The Create LUN screen opens.

Figure 6 Create LUN



- **3.** In the Project field, select **emoc** from the drop-down list.
- **4.** In the Name field, enter a name for the LUN.
- **5.** In the Volume field, enter the required size of the LUN.
- **6.** In the Target group field, select the new target group from the drop-down list.
- In the Initiator group(s) field, select All Initiators.
- **8.** Click **Apply**. The LUN is created and is displayed in the Logical Units list.

Creating Resources in Oracle Enterprise Manager Ops Center

You can create a new SAN storage library containing the new LUNs, assign the library to a server pool, discover iSCSI targets on the server pool members, and create a new non-global zone in the server pool using the new SAN storage library.

Within a single SAN storage library, use LUNs only from a single storage pool. Do not mix LUNs from different storage pools.

The new SAN storage library can be created both within and outside the server pool.

- Create a SAN Storage library Within the Server Pool
- Create a SAN Storage Library Outside the Server Pool

Create a SAN Storage library Within the Server Pool

Perform the following steps to create a new SAN storage library within the server pool.

Create New SAN Storage Library

Perform the following steps to create a new SAN storage library.

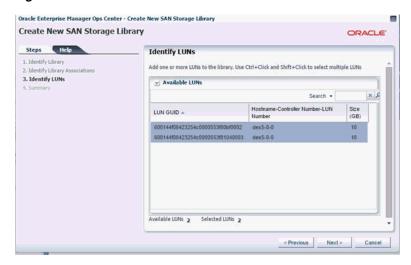
- 1. Log in to Oracle Enterprise Manager Ops Center.
- 2. In the Navigation pane, click **Libraries**, then expand **Storage Libraries**.
- **3.** Expand Block Storage, then click **Static Block Storage**.
- **4.** In the Actions pane, click **New SAN Storage Library**. The Create New SAN Storage Library wizard opens.
- **5.** Enter a name and description for the library, then click **Next**.
- **6.** In the Identify Library Associations screen, select **Create the library associations later**, then click **Next**.

Figure 7 Identity Library Association



7. In the Identify LUNs screen, select all the LUNs that you want to associate to the library, then click **Next**.

Figure 8 Select LUNs

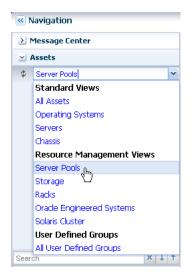


8. Review and click **Finish** to submit the job. After the job completes, the new SAN storage library is created.

Create Server Pool and Assign Members

Create a server pool backed by zone metadata NAS storage library and assign the new SAN storage library to it. After the SAN storage library is assigned, add global zones to the server pool.

1. Select **Server Pools** in the Resource Management Views.

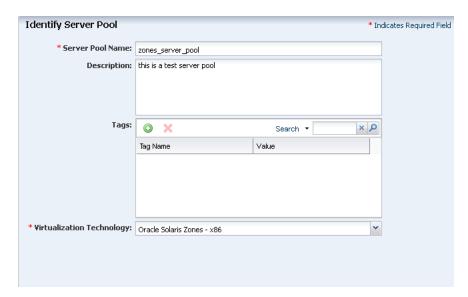


2. Click **Create Server Pool** in the Actions pane.

The Create Server Pool Wizard is displayed.

- **3.** Enter the following details in the server pool identification:
 - A name and description for the server pool.
 - It is optional to enter tags for the server pool. In this example, do not enter the tags.
 - Select Oracle Solaris Zones x86 or SPARC in the list of Virtualization Technology.

Click Next to continue.



4. From the list of compatible managed global zones, select the two global zones to add to the server pool and click **Next**.



5. Select the default network domain to associate with the server pool.



For default network domain, you are not required to establish the connection between the server and the network fabrics. You can directly proceed to attach the networks and configure the interfaces of the servers. Click **Next**.

6. Select the networks from the list to attach to all the selected global zones of the server pool.

For Oracle Solaris 11 OS, the network is always attached to it in exclusive IP mode. This is because the zones that will be created on Oracle Solaris 11 OS are exclusive IP zones by default. You can connect to multiple networks and make multiple connections to each network for Oracle Solaris 11 OS. You must have sufficient NICs to cater to the number of network connections. In this example, the server pool is connected to the management network of the global zones and the number of network connections is also limited to one (1).

Click Next.



7. The selected network in the previous step is already connected to the selected global zones, therefore the configuration settings for the network connection are not displayed.

Click Next to continue.



8. The storage libraries that are accessible from the selected global zones are listed. Select the storage libraries that you want to associate with the server pool.

In this example, select the SAN and NAS storage library, and click **Next**.

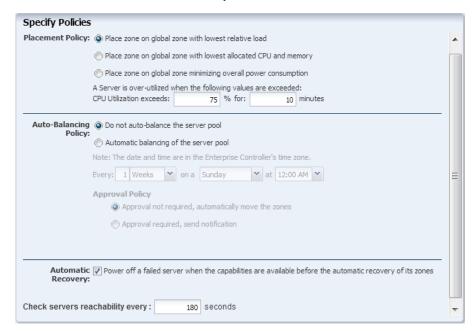


- **9.** Set the server pool policy as follows:
 - Select the Placement Policy to place the zone on the global zone with lowest relative load.
 - Set the CPU Utilization threshold value to be 85% for 10 minutes.
 - Select the Automatic balancing of the server pool option.
 Set the balancing to occur everyday at 12:00 a.m.

Select Approval required, send notification option. This will ensure that the zones are migrated with your approval.

Deselect the automatic recovery option.

Click **Next** to view the summary.



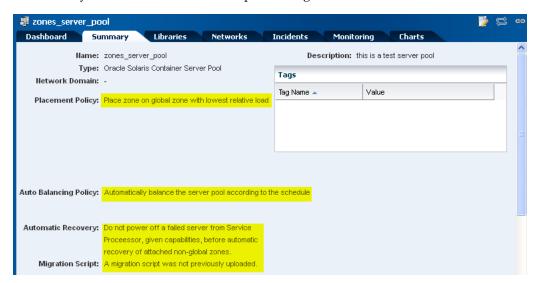
10. Review the information and click **Finish** to create the server pool.

The new server pool appears in the Server Pools list.

You can view the server pool dashboard for the policies selected as shown in the following figure:



Select the server pool Summary tab to view the settings as seen in the Dashboard. From here, you can also edit the server pool configuration.



The Actions pane lists the options that are available to manage the server pool, such as editing the attributes, editing the tags, balancing the resources, associating the network domain, attaching networks, associating libraries, and adding global zones.



When you have networks configured with VLAN ID, you can set the tagging mode for the global zones added to the server pool.

Discover iSCSI Target on the Server Pool Members

Perform the following steps to discover the iSCSI target on the server pool members.

- **1.** In the Navigation pane, under Assets, select **Server Pools** and choose the new server pool.
- **2.** In the Actions pane, click **Discover iSCSI Targets**. The Add iSCSI Targets wizard opens.
- **3.** In the Discover iSCSI Targets screen, select **Add target using specific iSCSI address** option in the Method field.
- **4.** In the Address Type field, select **IQN** from the drop-down list.
- In the ISCSI Address field, enter the target group IQN address. (See Create a Target.)
- **6.** In the IP Address field, enter the ZFS storage appliance (default IP is 192.168.28.1).
- Click Add iSCSI Targets.
 After the job completes, the LUNs are displayed. Refresh the list to populate new data.

Create a SAN Storage Library Outside the Server Pool

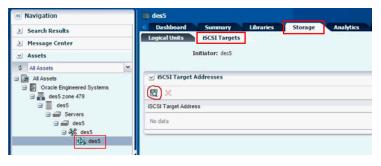
Perform the following steps to create a new SAN storage library outside the server pool.

Add iSCSI Targets to a Global Zone

Perform the following steps to add iSCSI elements to a global zone.

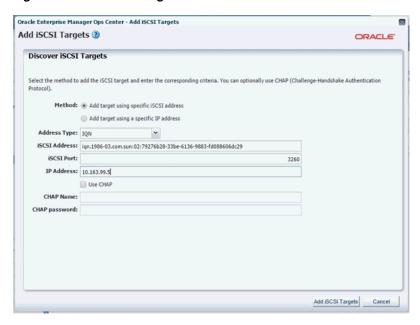
- 1. Log in to Oracle Enterprise Manager Ops Center.
- **2.** In the Navigation pane, under Assets, select a global zone.
- **3.** In the center pane, click **Storage**, then click **iSCSI Targets** tab.

Figure 9 Discover iSCSI Targets



4. In the iSCSI Target Addresses section, click the **Discover iSCSI Targets** icon. The Add iSCSI targets screen opens.

Figure 10 Add iSCSI Targets



- 5. In the Method field, choose Add target using specific iSCSI address.
- 6. In the Address Type field, select IQN from the drop-down list.
- **7.** In the iSCSI Address field, enter the target group IQN address. (See Create a Target.)
- **8.** In the IP Address field, enter the IP address of the ZFS storage.
- Click Add iSCSI Targets.

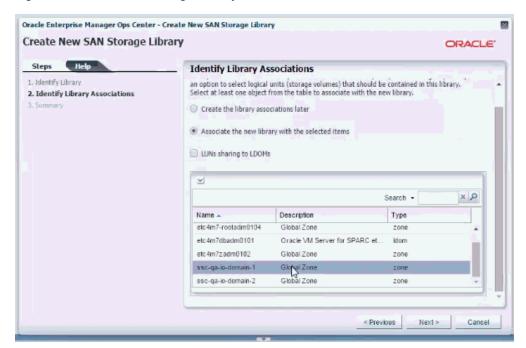
After the job completes, the logical units are displayed in the List of LUN(s) table.

Create a SAN Storage Library

Perform the following steps to create a new SAN storage library.

- 1. Log in to Oracle Enterprise Manager Ops Center.
- **2.** In the Navigation pane, click **Libraries**, then expand **Storage Libraries**.
- **3.** Expand Block Storage, then click **Static Block Storage**.
- **4.** In the Actions pane, click **New SAN Storage Library**. The Create New SAN Storage Library wizard opens.
- 5. Enter a name and description for the library, then click **Next**.
- **6.** In the Identify Library Associations screen, select **Associate the new library with the selected items**, then select the global zone from the list.

Figure 11 Create SAN Storage Library



- 7. Click Next.
- **8.** In the Identify LUNs screen, select all the LUNs that you want to associate to the library, then click **Next**.
- **9.** Review and click **Finish** to submit the job. After the job completes, the new SAN storage library is created.

Creating Non-Global Zone Using SAN Storage Library

Perform the following steps to create a non-global zone using SAN storage library.

1. Create an Oracle Solaris 11 Zone Profile and Plan

The profile captures the zone configuration, including defining the storage and network details. The plan executes the configuration on selected targets. You can use and reuse the profile and plan to create zones with a consistent configuration.

2. Deploy the Plan to Create a New Zone

When you deploy a plan, you identify the target operating systems and the number of zones to create. Before you submit the job to deploy the plan, you can modify some configuration details. In this example, the profile uses a default host name that you will modify when you deploy the plan.

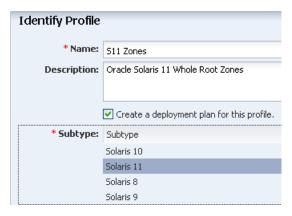
Create an Oracle Solaris 11 Zone Profile and Plan

Creating a zone profile defines the zone configuration details and creates a deployment plan.

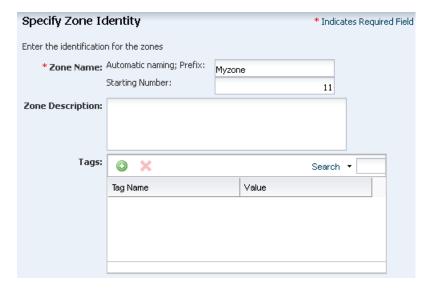
 Click Plan Management, then expand Profiles and Policies. Right-click Oracle Solaris Zone, then click Create Profile.



2. Enter a name and description for the profile, then select Oracle Solaris 11 from the Subtype list. The option to create a deployment plan for this profile is selected.



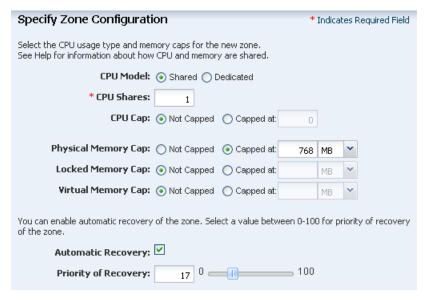
3. To identify the zones that are created with this profile, enter a zone prefix name, such as Myzone, and a number to start the series. The name of a new zone includes its number. Do not add any tags for the zone for this example.



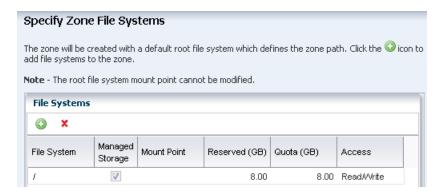
4. Select **Install from IPS Repository**, then click **Next**.



5. Select the **Shared** CPU model and enter **1** (one) to define the number of CPU shares. Set the memory thresholds and verify that the locked memory threshold value is less than or equal to the physical memory threshold. For automatic recovery of the zone, and the priority level of the recovery, select the **Automatic Recovery** check box, then enter the priority level. In this example, recovery priority of this zone is 17. If there are only enough resources to recover three zones, only the zones with highest numbers are recovered. For example, if you have a global zone with five zones: z1, z2, z3, z4, z5 with respective priority 6, 30, 17, 66, 100. When there are only enough resources to recover three zones, only z5(100), z4(66) and z2(30) are recovered.



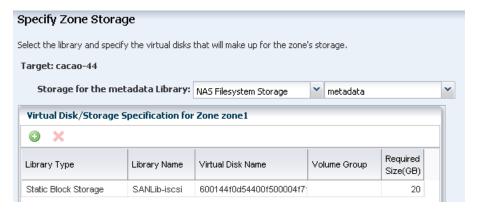
6. The default root file system appears. Do not define additional file systems. You define the SAN storage when you apply the deployment plan. Click **Next**.



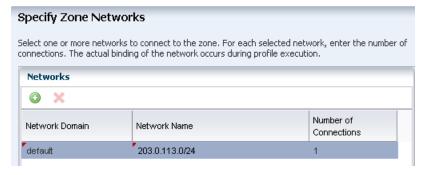
7. Select **NAS Filesystem Storage** for the zone metadata in the drop-down menus. Select **Static Block Storage** as the SAN storage for the zone data. Select the library and size. This example uses 20 GB in SAN storage, the minimum required size is 8 GB

Note: It is possible to specify an NFS share for the zone data, but this is not an officially supported configuration.

Click Next.

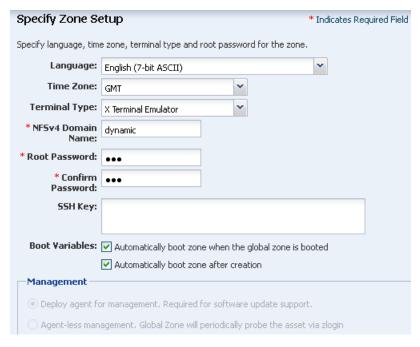


8. The default network domain appears on the page. Enter a network for the zone and the number of connections. This example uses 1 network connection.



- **9.** Define the language, time zone, terminal-type, and root password for the zone, and for all zones that you create with this profile.
 - A naming service is not configured in the environment. For this example, accept the default value, dynamic, for the NFSv4 Domain Name.

- Enter the root password.
- Set the boot variables for the new zone. You can set the zone to boot after it is created or whenever the global zone boots. This example has both options selected: automatically boot zone when the global zone is booted and automatically boot zone after creation.

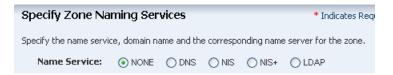


10. Enter a name, a user name, password and confirm password to create a user account. The name must begin with a letter and can only contain letters and numbers. Click **Next**.

Note: You are not required to create a user account. If you do not create a user account, then you must still provide a root password. In this case, root is a regular user.



11. Click **Next** to skip the Zone Naming Service.



12. Click **Finish** to create the zone profile and deployment plan.

The zone profile and the corresponding deployment plan appear in the list of Oracle Solaris Zone Profiles and Oracle Solaris Zone Plans.



Deploy the Plan to Create a New Zone

Use the plan that you created in Create an Oracle Solaris 11 Zone Profile and Plan to create a non-global zone, and then view the new zone in the UI. You have the opportunity to make changes in the plan before you submit the job to apply the plan. For example, you could edit the plan to create multiple zones.

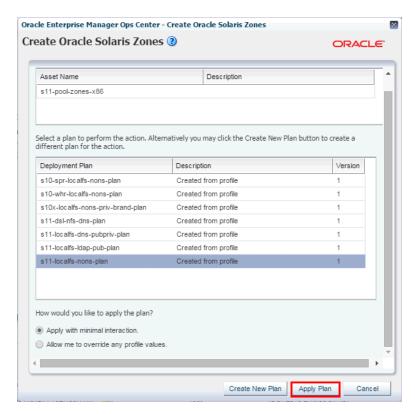
You can create non-global zones within and outside the server pool.

- Create Non-Global Zones Within the Server Pool
- Create Non-Global Zones Outside the Server Pool

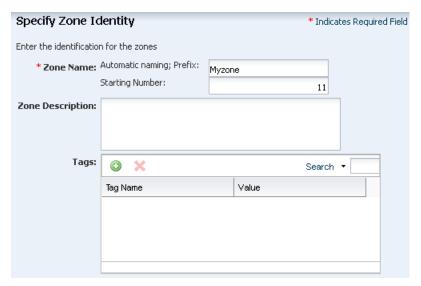
Create Non-Global Zones Within the Server Pool

Perform the following steps to create non-global zones within the server pool.

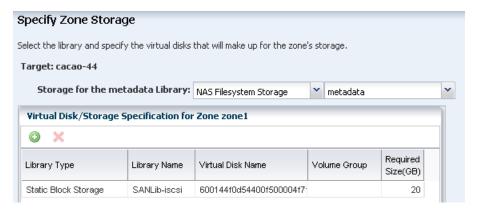
- 1. In the Navigation pane, under Assets, select Server Pools from the drop-down list.
- 2. Select a server pool, then in the Actions pane, click **Create Oracle Solaris Zones**.
- **3.** In the Create Oracle Solaris Zones screen, select a deployment plan, then click **Apply Plan**.



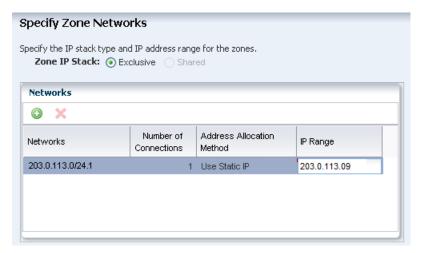
4. In the Specify the Zone Identity wizard, the Automatic Naming; Prefix field and Starting Number field are populated with the information from the profile.



5. The zone storage is populated based on the profile. Click Next.



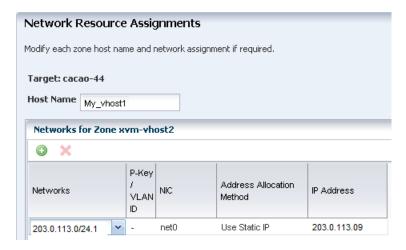
6. Select the **Exclusive** zone IP stack. Select a network from the list of available networks, then enter the IP address in the IP Range field. Click **Next**.



7. The Network Resource Assignments page shows the host name, shared network and IP address that you defined in the profile. In the Host Name field, change the name from the default name that you provided in the profile to a different name. In this example, change the host name from Myzone to My_vhost2.

You can change the following parameters before you deploy the plan:

- **Host name**: You can change the zone's host name to be different from the zone name, which might be useful when you are using a naming server.
- Network Connections: You can add, modify, or delete network connections. For example, you can have Network1 and Network2. When you create two zones you can connect Myzone1 to Network1 and Network 2 and connect Myzone2 to Network1 and remove Network2.
- IP address: The IP address for a set of zones appears in a range. You can enter the IP addresses in a comma delimited list.



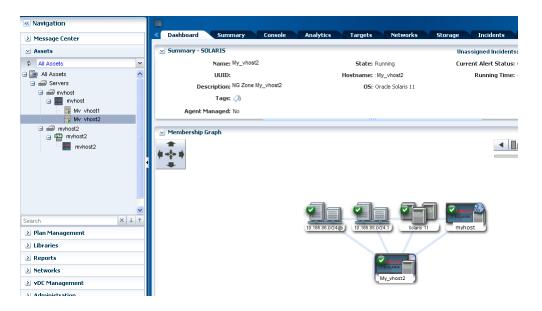
8. Select **Now** to start the job when you finish the wizard and apply the plan. Click **Next** to display the Summary page.



- **9.** Click **Apply** to run the job. When the job finishes successfully, the new zone appears in the Asset tree.
- **10.** Click the operating system in the Assets section of the Navigation pane to display the dashboard with both zones.



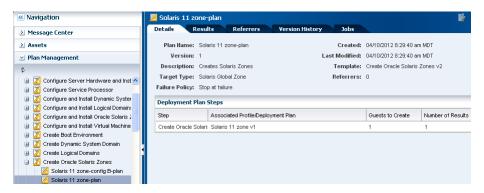
11. Click the zone in the Assets section of the Navigation pane to view the zone dashboard.



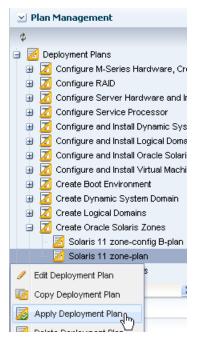
Create Non-Global Zones Outside the Server Pool

Perform the following steps to create non-global zones outside the server pool.

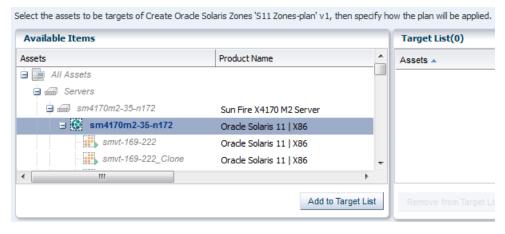
 Click Plan Management, expand Deployment plans, expand Create Oracle Solaris Zones, then click the plan that you created.



2. Right click, then click **Apply Deployment Plan**.



3. Select a global zone target from the list of Available Items. Click **Add to Target List**. Use the default setting for applying the plan with minimal interaction. Click **Next**.



4. Perform steps 4 to 11 described in "Create Non-Global Zones Within the Server Pool" to complete the procedure.

What's Next

You can install an agent on the non-global zone.

Related Resources

For more information, see the Oracle Enterprise Manager Ops Center Documentation Library at http://docs.oracle.com/cd/E59957_01/index.htm.

Documentation Accessibility

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Oracle Enterprise Manager Ops Center Creating Non-Global Zones Using a SAN Library, 12c Release 3 (12.3.0.0.0)

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