
Active System Manager Solution Guide

Active System 50 for VMware

Version 7.1



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Introduction to the Active System 50 solution

Dell™ Active Infrastructure is a family of converged infrastructure solutions that combine servers, storage, networking, and infrastructure management into an integrated and optimized system that provides general purpose virtualized resource pools. Active Infrastructure leverages Dell innovations including unified management with Active System Manager, LAN and SAN fabrics, and rack server architecture. Active Infrastructure helps IT rapidly respond to dynamic business demands, maximize datacenter efficiency, and strengthen IT service quality.

The Active System 50 includes Dell PowerEdge™ R620 servers, Dell EqualLogic™ PS6100 Series iSCSI storage and Dell PowerConnect™ 7024 switches.

An optional Dell PowerEdge R420 server is available to host Dell and customer management tools. Additionally, this management server can be configured with the optional Dell Active System Manager to build private cloud solutions that address key needs in for small to medium business and data centers.

Active System 50 is offered in configurations with either VMware® vSphere™ or Microsoft® Windows Server® 2012 with Hyper-V® role enabled Hypervisors. The VMware vSphere solution is the Active System 50v and the Microsoft Hyper-V solution is the Active System 50m. This document defines the solution guide for Active System 50v.

Audience

IT administrators and IT managers, who have purchased, or are planning to purchase an Active System configuration, can use this document to understand the design elements, hardware and software components, and the overall architecture of the solution.

Support

Contact Dell technical Support by visiting the Dell web site at www.dell.com/support/softwarecontacts.

Technical Documentation

The Dell Active System Manager documentation enables you to better understand your current Active Infrastructure, its deployment, and management software.

For this release, we recommend that you familiarize yourself with the following documentation:

- *Reference Architecture for Active System 50 with VMware vSphere:*
<http://www.dell.com/us/business/p/dell-vstart-50/pd>
- *Specification Guide for Active System 50 with VMware vSphere:*
<http://www.dell.com/us/business/p/dell-vstart-50/pd>
- *Design and Implementation Guide for Active System 50 with VMware vSphere*
- *Active System Manager User Guide Release 7.1*
- *Active System Manager Web Interface User Guide Release 7.1*

To access the latest Active System Manager documentation for Version 7.1:

1. Navigate to www.dell.com/support/manuals, click **Choose from a list of all Dell products** and click **Continue**.
2. Click **Software and Security** → **Enterprise System Management** → **Active System Manager** → **Dell Active System Manager Version 7.1**.

Overview

This section provides a high-level product overview of the Active System supported components and configurations.

Table 1 lists the Active System Manager solution for the Active System 50-supported components.

Table 1. Active System 50-Supported Components

Component	Details
Compute Cluster	<ul style="list-style-type: none"> Up to 2x Dell PowerEdge R620s and embedded VMware vSphere 5.1
ToR Switches	<ul style="list-style-type: none"> 2xPowerConnect 7024 for LAN connectivity 2xPowerConnect 7024 for SAN connectivity
Storage	<ul style="list-style-type: none"> Up to 2x Dell EqualLogic PS6100 series arrays
Management Infrastructure	<ul style="list-style-type: none"> 1x Dell PowerEdge R420 server with embedded VMware vSphere 5.1 hosting management VMs. <p>OR</p> <ul style="list-style-type: none"> 1x Dell PowerEdge R420 server with Microsoft Windows Server 2012 having Hyper-V role enabled and hosting management VMs.
Management components hosted in the management infrastructure	<ul style="list-style-type: none"> Dell Active System Manager VMware vCenter Server Dell Management Plug-in for VMware vCenter Dell OpenManage Essentials Dell EqualLogic Virtual Storage Manager (VSM) for VMware Dell EqualLogic SAN Headquarters (HQ) VMware vCloud Connector Dell Repository Manager

Active System 50 Supported Configurations

Table 2 lists the Active System Manager solution for the Active System 50-supported configurations.

Table 2. Active System 50-Supported Configurations

Configuration	Support
Supported rack servers (R620)	Support firmware images as per the Active System Manager solution for Active System 50
Dell PowerConnect Top-of-Rack (ToR) 7024 switches	The base configuration should be updated for virtual LAN (VLAN) as per data center deployment need.
Dell EqualLogic PS6100 Storage Array	Supported firmware versions will be packaged in the virtual appliance.
VMware vCenter 5.1 for virtual machine (VM) workloads	
ESXi 5.1 installation support on rack servers Dell PowerEdge R620	Supported ESXi 5.1 image will be bundled in the virtual appliance

Deployment Options

The Active System Manager solution for Active System 50 is packaged as a virtual appliance and is made available for VMware vCenter 5.1; see Table 3:

- Open Virtualization Format (OVF) for VMware—disk format is VMware virtual machine disk (VMDK).

Table 3. Active System Manager Deployment

Virtual Appliance Filenames	Platform
Dell-ActiveSystemManager-7.1.0.xyztp_VMware.zip	VMware vCenter 5.1

Deployment Prerequisites

Before using the Active System Manager solution for end-to-end provisioning of Active System 50 components, make sure that the prerequisites listed in Table 4 are in place.

Table 4. Deployment Prerequisites

Specification	Prerequisite
Connection requirements	Active System 50 units connected per the Active System 50 Reference Design and Implementation Guidelines
Management server requirements	Management server is configured per the Active System 50 Reference Design and Implementation Guidelines
Firmware and BIOS requirements	All equipment must be configured with firmware versions as listed in Appendix B—Planning Worksheet
For the Active System 50 Hypervisor Servers (R620) :	<ul style="list-style-type: none"> • Server iDRAC is configured and has the OOB IP address and login credentials.
Dell PowerConnect 7024 switches	<ul style="list-style-type: none"> • The management IP address is configured for the switches. • The AS 50 base configuration is applied on 4 switches. • VLANs are created on the switches per the Active System 50 deployment specification. • The virtual machine (VM) traffic VLANs will be created dynamically by Active System Manager. • Switches have access users with enable passwords. • Switches have SSH connectivity enabled.
EqualLogic Storage Array	<ul style="list-style-type: none"> • The group IP and management IP are configured for Storage Array. • All storage array members are added to the group.
VMware vCenter 5.1	<ul style="list-style-type: none"> • vCenter 5.1 is configured and accessible via the management and hypervisor management network. • Appropriate licenses are deployed on the vCenter.

Active System Manager Deployment

The following topics describe how to deploy the Active System Manager:

- Deploying OVF
- Changing Key Access Credentials
- Assigning IP Address to the Active System Manager Appliance
- Installing the Active System Manager License Using the Web Client
- Configuring Active System Manager Services

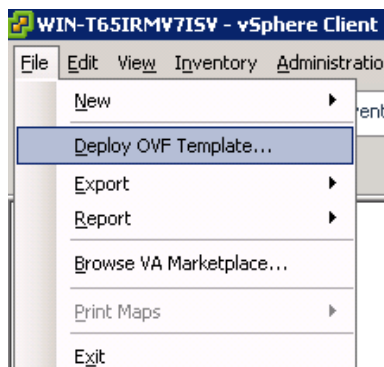
Deploying OVF

The Active System Manager Open Virtualization Format (OVF) can be imported on to an ESXi host using the VMware OVF import process. When booted, the Active System Manager virtual machine (VM) will get its IP address from an existing DHCP server. If the DHCP server is not configured, then assign the IP address manually to the appliance. The IP assignment should be from hypervisor management VLAN.

Importing OVF from the vSphere Client

1. On the vSphere Client menu, click **File** → **Deploy OVF Template**.

Figure 1. Deploy OVF Template Menu Option



2. Browse to the OVF file (**Active-System-Manager-7.x-Build-xxxxx_VMware.ovf**) and click **Next**.
3. Accept the End-User License Agreement.
4. In the **Name** field, enter the VM name and click **Next**.
5. Select the appropriate datastore name where the VM must be hosted.
6. Select the disk format.
Thin provisioning is supported and recommended.
7. Select the network name.
The VM must be mapped to the Hypervisor Management Network. All networks (for example, OOB, Hypervisor Management, vMotion, iSCSI, and VM workloads) are expected to be accessible from the appliance.
8. Use the following necessary key access credentials.

Table 5. Key Access Credentials

VM Access Credentials	Username/Password
Active System Manager server installation login	delladmin/delladmin
Active System Manager server root	root/Dell@123
Active System Manager client applications	admin/admin

Changing Key Access Credentials

Passwords should be changed at the time of deployment. You should change the passwords before creating or changing any of the software repositories.

1. Stop Active System Manager services:
 - a. Log in as user **delladmin** (see Table 5).
 - b. Execute following commands:

```
cd $HOME/asm-galeforce/gf/sbin
./stopasm.sh
```

Make sure that all of the services are stopped before continuing.

2. Change the passwords using the standard Linux command `passwd` to change the passwords for any of the three stock accounts.
 - o root
 - o delladmin
 - o oracle

You will need root access to modify the passwords. Run the following commands:

```
su
<Enter root password>
passwd delladmin
<Enter new password>
<Re-enter new password>
```

3. Repeat these steps until all three user accounts have been modified.

IMPORTANT: Do not rename the user accounts, only change their passwords.
4. Reboot your Active System Manager VM.

After you have changed your passwords you must reboot your Active System Manager VM. Before you reboot, make any other changes such as IP address or time (NTP) configurations and then reboot once to encompass all of your changes.

5. Update any already existing software repositories that are running on the Active System Manager appliance.

All of your software repositories depend on credentials to be able to access firmware, ISO files, PXE boot files, etc. If the passwords are changed as part of an initial deployment, there will be fewer repositories to update with the new credentials. If you change passwords on an Active System Manager server that has been in use for a while, you may have many more repositories to update.

Assigning IP Address to the Active System Manager Appliance

This procedure is necessary only if the Active System Manager does not automatically obtain IP address from DHCP.

1. On the vSphere or Hyper-V Manager client, select the deployed **Active System Manager** appliance and open its console.
2. Log in as the **root** user. Root user credentials are given Use the following necessary key access credentials.
3. Key Access Credentials.
4. Navigate to **System**→**Preferences**→**Network Connections** to launch the Network Connections wizard.
5. Select the network interface card (NIC) appliance on which IP address should be configured manually and click **Edit**.
6. On the **Editing** dialog box, click the **IPv4 Settings** tab. Select **Manual** for the **Method**.
7. Click **Add** and enter the IP address and other networking information (for example, DNS). Click **Apply**

Figure 2. Assigning IP Addresses

Wired 802.1x Security **IPv4 Settings** IPv6 Settings

Method: Manual

Addresses

Address	Netmask	Gateway
192.168.120.156	24	

DNS servers: 192.168.120.216

Search domains:

DHCP client ID:

Require IPv4 addressing for this connection to complete

Available to all users

Buttons: Add, Delete, Routes..., Cancel, Apply...

8. Open the terminal console by clicking **Applications** → **System Tools** → **Terminal**.
9. Execute the following command:


```
/etc/init.d/network restart
```
10. Log in to the appliance with the newly configured IP address. This will ensure that the IP address is configured correctly on the appliance.

Adding Additional Licenses

To add a license:

1. Perform one of the following methods:
 - To add a license using web client, click **Settings** → **License** on the menu bar.
 - To add a license using thick client, click **Tools** → **Settings** on the menu bar, and click **License** tab.

The License screen displays the current licensing information and associated live (current) counters.

2. Optional. In the License screen, click the Refresh icon to refresh the resource count and view the currently allocated resources.
3. Click **Get New License**. The next license screen allows you to request and deploy or install new product license.
4. In the **Request Product License** section, click **NOW** and enter the following contact details:
 - First name
 - Last name (optional)
 - Email address
 - Company name
 - Group or organization name
5. Click **Send Email** to send an email (support@dell.com) to the Dell Support team, requesting for a product license.

The Dell Support team responds to your software license request with a license file.
6. In the **Deploy Product License** section, copy and paste the content of the license file provided in the **License File** text box.
7. Click **Submit**.

Configuring Active System Manager Services

The following sections describe how to start, stop, and verify Active System Manager services.

Starting Services

The appliance is configured to start Active System Manager services during start-up. To start the services manually:

1. Log in as user **delladmin** (see Table 5).

Execute following command:

```
cd $HOME/asm-galeforce/gf/sbin  
  
./startasm.sh
```

NOTE: The Active System Manager services must not be started by user **root**.

Stopping Services

To stop the services manually:

1. Log in as user **delladmin** (see Table 5).

Execute following command:

```
cd $HOME/asm-galeforce/gf/sbin  
  
./stopasm.sh
```

Verifying Service Status

To verify that all Active System Manager services are running:

1. Log in as user **delladmin** (see Table 5).

Run the following script to display the current status of all services, including the Oracle database status:

```
cd asm-galeforce/gf/sbin
./asmstatus.sh
```

Figure 3. Sample Active System Manager Services Status Output

```
Active System Manager Service
-----
Host: asm-galeforce Port: 40500 Secure Port: 50500
Enterprise: Dell
Lab: DEMO
Status: Running

Domain Services
-----
1. Domain      : System (Id: 1)
   Description:
   -----
   Session server
       Host: asm-galeforce Port: 40500 Secure Port: 50500
       Status: Running
```

Installing the Active System Manager Client

You can install the Active System Manager Client on the following platforms:

- Installing Active System Manager Client Software on Windows
- Installing Active System Manager Client Software on Mac
- Installing Active System Manager Client Software on Linux

Installing Active System Manager Client Software on Windows

1. Download the Active System Manager installer, x64 version should be downloaded for x64 OS and x32 should be downloaded for x32 based OS.
2. On your desktop, click **Start** → **Run** → **Browse**, navigate to the **setup.exe** file, and click **OK**. Alternatively, from your Windows Explorer window, navigate to the **setup.exe** file and double-click.

A Security Warning window prompts you to run the file.

2. Click **Run** and complete the installation wizard.

NOTE: If an existing version of the client is on the client machine, invoking the installer prompts you to uninstall the existing version already on the system. Once selected, the installer uninstalls the existing version and then exits. Restart the installer to install the new version.

3. Click **Finish** to complete the installation process.

Installing Active System Manager Client Software on Mac

1. Download the **ActiveSystemManager-macosx.x86_64_7.1.0_xyzt.zip** file.
2. Unzip the file into a specific folder destination on your hard drive.
3. Create an Active System Manager folder and move the file contents to this location.
4. Execute the **Active System Manager.app** file.

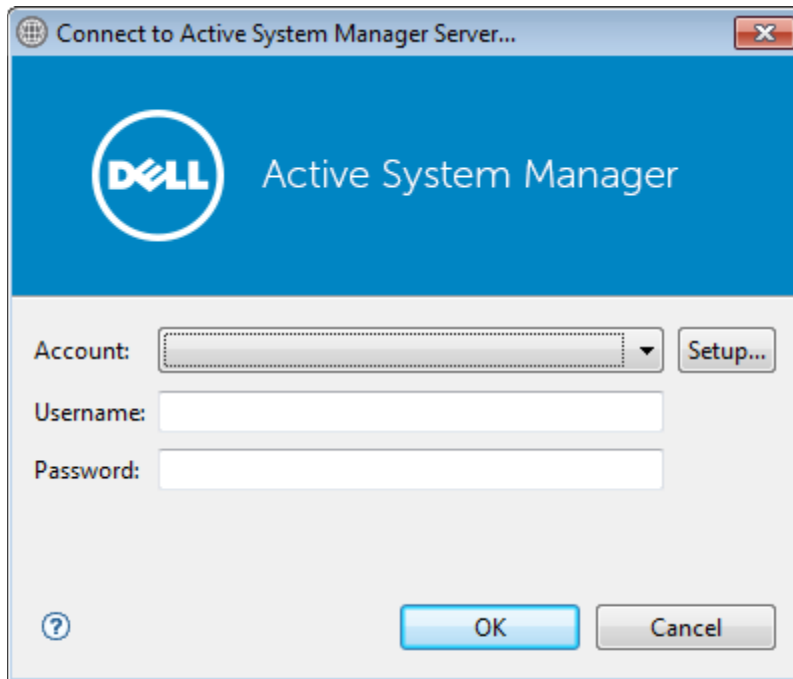
Installing Active System Manager Client Software on Linux

1. Download the **ActiveSystemManager-linux.gtk.x86_7.1.0_xyzt.zip** file.
2. Unzip the file into a specific folder destination on your hard drive.
3. Create an Active System Manager folder and move the file contents to this location.
4. In the console, execute the **Active System Manager** file.

Accessing Active System Manager Using the Windows Client Software

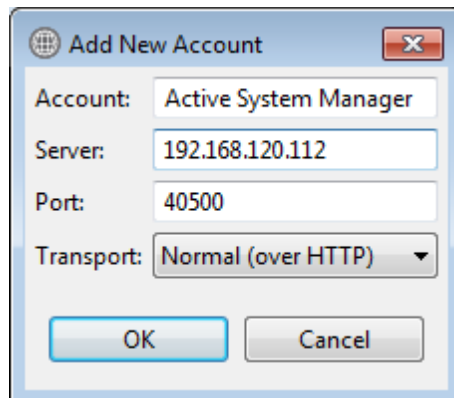
1. Launch the client software application.
2. On the **Connect to Active System Manager Server** dialog box, click **Setup**.

Figure 4. Connecting to the Active System Manager Server



3. On the **Setting Up Accounts** dialog box, click **Add**.
4. Enter a unique and descriptive **Account** name for the account and **Server IP** address of the appliance. The name of the account can be any descriptive as shown in the following figure.

Figure 5. Adding New Account



5. Click **OK**.
6. Select the account created earlier.
7. Enter the username and the password for the appliance. The default username and password is **admin/admin**.
8. Click **OK** to launch the Active System Manager application.

Active System Manager Setup

This section describes the steps to manage and deploy the rack servers in the Active System 50. The sequence of steps includes:

- Managing Users and Groups
- Discovering Active System 50 Components

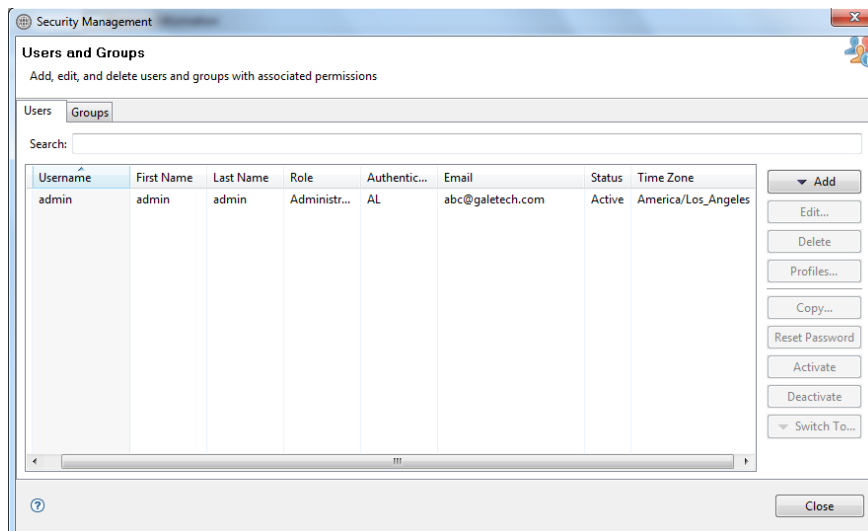
Managing Users and Groups

You can manage users and groups within the Active System Manager by either manually entering individual users and groups, or by importing users from an external repository, such as Lightweight Directory Access Protocol (LDAP), Active Directory (AD), or Network Information Service (NIS).

For user management, log in to the Windows client and navigate to **Tools** → **User and Groups**. The **Security Management—Users and Groups** dialog box displays.

NOTE: Set the time zone to match the time on the workstation that the Active System Manager client is installed.

Figure 6. Security Management—Users and Groups



For details on user and group administration, see the “User Profile Management” chapter in the *Active System Manager User Guide*, which is downloadable from the Active System Manager 7.1 web portal (**Help** menu) or from the Thick client (Eclipse-based).

Discovering Active System 50 Components

Active System 50 components to be discovered include:

- Dell R620 rack servers
- PowerConnect Top-Of-Rack (ToR) 7024 switches
- Dell EqualLogic Storage Array
- VMWare vCenter 5.1

Initiating Discovery

To initiate the Discovery process, perform the following tasks in this order:

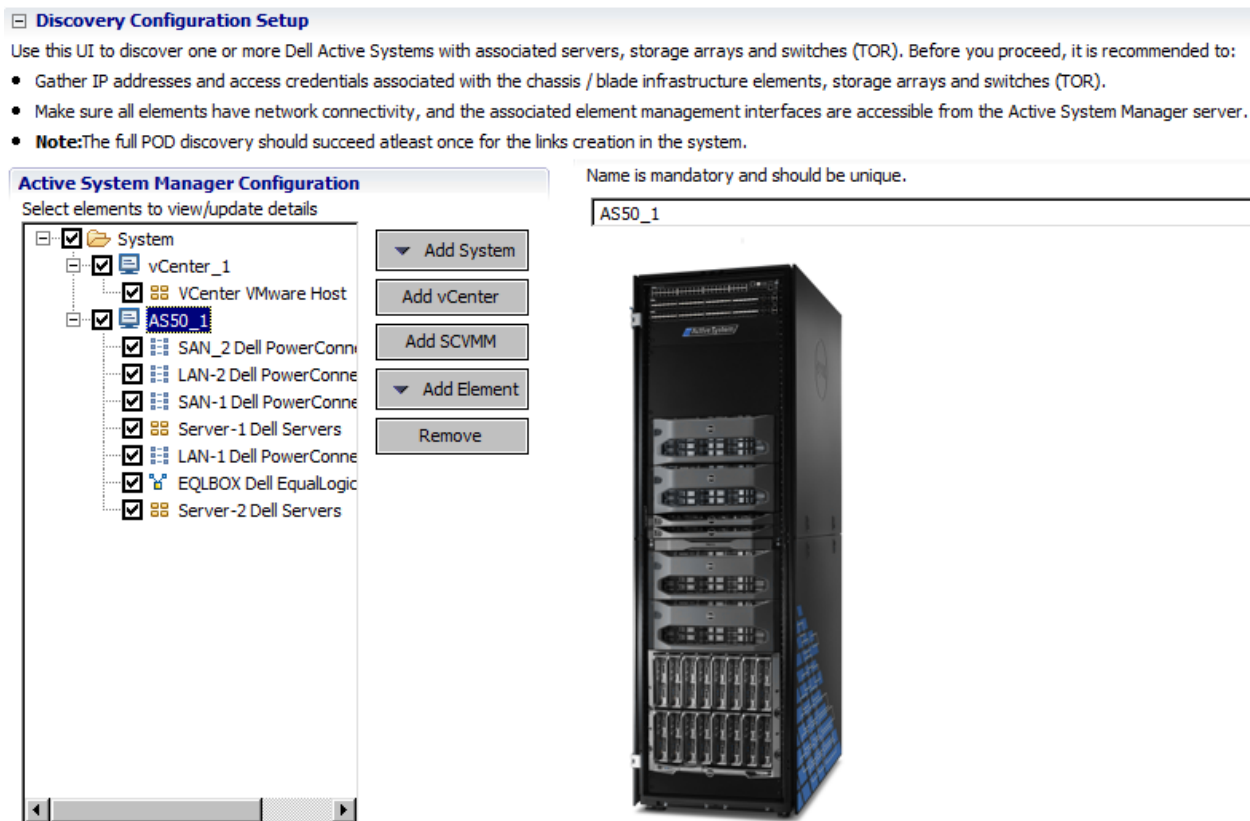
- Configuring Discovery Setup
- Adding Details for the Active System
- Adding VMware System Properties
- Starting the Discovery Process

Configuring Discovery Setup

1. Connect to the Active System Manager Client using user credentials with Administrator privileges.
2. Select **Tools** → **Discovery** → **Setup**.

The Discovery Configuration Setup page displays.

Figure 7. Discovery Configuration Setup Page



Adding Details for the Active System 50 Unit

NOTE:

- In general for all the devices, when defining names and provisioning parameters, you should avoid using the following special characters: @ # \$ % ^ () + = " | } { [] . , | : ; ' ' ? / > <
- The volume names of the Dell EqualLogic Storage Array can contain only alphanumeric characters, and the following special characters: colon (:), period (.), and dash (-).

- When discovering a POD, the value for the AssetTag cannot contain any of the strings in the following names: Dell, Force10Switch, EqualLogicStorageArray, VMware, or Host. For example, AssetTag cannot have a value of “Storage” as this value matches exactly with a string in “EqualLogicStorageArray”.

1. Click **Add System** → **AS50**. The following AS 50 components are listed:

- Dell Servers
- Dell EqualLogic Storage Array
- Dell PowerConnect 7024

2. Provide the following element properties for each of the **Dell Servers** component:

Input Name	Description
Assettag	Unique key or name used to import or identify the R620 server within Active System Manager
Username	iDRAC username to access and manage the Dell R620 server
Password	iDRAC password to access and manage the Dell R620 server
IP Address	iDRAC IP address of the Dell R620 server iDRAC. The iDRAC should be IP reachable from the Active System Manager server.

3. Provide the following element properties for the **Dell EqualLogicStorageArray** component:

Input Name	Description
Assettag	Unique key or name for the EqualLogic Storage Array, which is used to import or identify an EqualLogic Storage Array in the Active System Manager. For example, Assettag Dell_EqualLogic_PS6100_1 (a unique name) can be used to track the EqualLogic array in Active System Manager.
Username	Management username to access and manage the EqualLogic Storage Array.
Password	Management password to access and manage the EqualLogic Storage Array
IP Address	Management IP address for the EqualLogic Storage Array. Management IP should be reachable (via ping to test) from the ACTIVE SYSTEM MANAGER server

NOTE: If there are multiple storage groups, there should be an entry for each of the Storage Group in the **Discovery Configuration Setup** view. To add a new element in an existing Active System 50 unit, click **Add Element**, select **Dell EqualLogicStorageArray**, and provide required details to initiate discovery.

4. Provide the following element properties for the **Dell PowerConnect 7024** switch component:

Input Name	Description
Assettag	Unique key or name for Dell PowerConnect 7024 Switch which is used to import or identify the 7024 Switch in Active System Manager. For example, Assettag Dell_PowerConnect-7024_1 (a unique name) can be used to track the 7024 Switch in Active System Manager
Username	Username to manage the switch
Password	Password to manage the switch
IP Address	Management IP address for the switch. This should be IP reachable from the Active System Manager server.
SupportedVLANIDs	(Optional) VLAN IDs that could be provisioned on the LAN switch. Sample input format (2..1024); the switch supports a VLAN range from 2 to 1,024.
enablePassword	Password to manage the switch.
Role	(Optional) It is recommended not to edit the role. The IP Address, Username and Password fields mentioned above should be entered for the switch corresponding to this role.

NOTE:

- Discovery will fail if SSH is not enabled in the switches, see Appendix D—Enabling SSH in PowerConnect 7024 switches.
- To run a successful orchestration, the full POD along with vCenter should be discovered together. See Appendix F—FAQs for more details.

Adding VMware System Properties

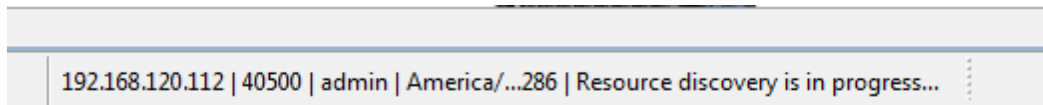
1. In the **Active System Manager Configuration** area, click **Add vCenter**.
2. Click on the VMware Host, and provide the following system properties:

Input Name	Description
Name	Unique key or name for VMware vCenter which is used to import or identify vCenter in the Active System Manager.
Username	Username to access and manage the vCenter. This user must have full administrator rights to the vCenter. If the vCenter Server is part of a Windows Domain, then enter the username as username@domain.
Password	iDRAC Password to access and manage the Dell R620 server
IP Address	IP address for the vCenter application. This must be IP reachable from the Active System Manager server.

Starting the Discovery Process

1. Connect to the Active System Manager Client using user credentials with Administrator privileges.
2. On the menu bar, click **Tools** → **Discovery** → **Start**, which initiates the discovery process for components that were set up during the discovery configuration setup.

NOTE: You can view the discovery progress from the task bar shown at the bottom of the client.



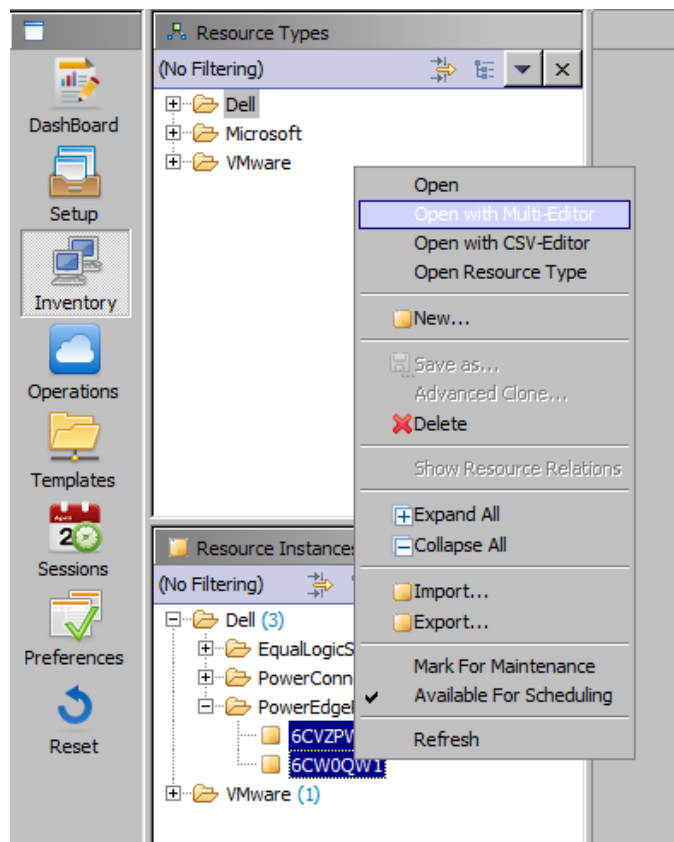
If the discovery progress is initiated when a discovery process is already in progress, the Active System Manager user is prompted with a message, indicating the same.

Configuring Server Inventory

After completing the Active System 50 components discovery, the inventory is populated. The rack server's inventory has to be updated with appropriate parameters that will be used for configuring the ESXi Server to be deployed on them (for example, IP Address, hostname, iSCSI IP Address).

This information can be updated by using the multi-editor feature or by opening individual server instances from the Inventory. You can launch the multi-editor by selecting multiple server instances and right-clicking **Open with Multi-Editor**.

Figure 8. Open with Multi-Editor



The following parameters must be updated:

- **ESXiSCSIChapUsername**—iSCSI Chap username used to access volume of EqualLogic Storage Array
- **ESXiSCSIChapSecret**—iSCSI Chap secret corresponding to iSCSI Chap username.
- **ESXServerHostname**—Hostname to be assigned to the ESXi server.
- **ESXServerPassword**—Server root password to be assigned during unattended installation.

Configuring the Software Repositories required for AS 50 Orchestration

The following VMware repositories are pre-packaged and available in the Active System Manager virtual appliance:

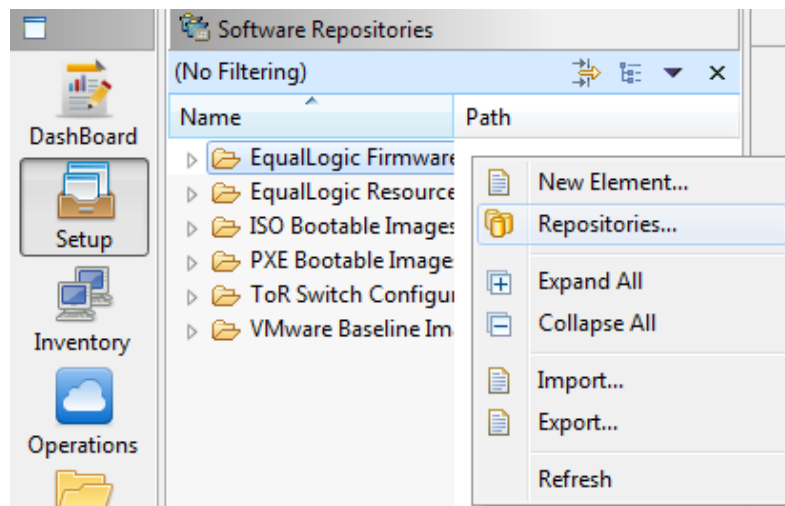
- VMware ESXi images
- EqualLogic firmware Repository - Applicable for Dell EqualLogic Storage
- Updating Repository Elements for ISO Bootable Images - Applicable for Dell Servers, where the repository has the ESXi “ISO bootable images”.

As part of the AS 50, we will be using VMware ESXi images repository and ISO Bootable Images. Refer the below sections for updating the details of these repositories.

Updating Repository Elements for ISO Bootable Images

1. Open the **Software Repositories** view in the setup perspective by clicking **Setup** → **Software Repositories** on the client.

Figure 9. Repository View



2. In the **Software Repositories** view, right-click and select **Repositories**.
3. On the **Software Repository—Select Repository Type** dialog box, select **Software Repository** and **Existing**.
4. Select **ISO Bootable Images** from the list, and click **Next**.
5. On the **Software Repository— Update Trivial File Transfer Protocol for ISO Boot** dialog box, update the **Host** attribute value with the IP address of the Active System Manager appliance.

The Username and Password are configured with default appliance username and password. These need to be updated if the default ASM appliance username/password is changed in server, or make sure the default hostname mentioned is resolvable in the network.

Figure 10. Updating Software Repository for ISO Boot

Software Repository

Update Trivial File Transfer Protocol for ISO Boot

Specify the Trivial File Transfer Protocol for ISO Boot provisioning properties. Press Next to get the details of the repository.

Name: ISO Bootable Images

Description: ISO Bootable Images

Location Pattern

File Format: Variables...

Folder Format: Variables...

Repository Properties

Name	Value	Required
Host	192.168.122.184	<input checked="" type="checkbox"/>
Port	69	<input checked="" type="checkbox"/>
Communic...	ssh	<input checked="" type="checkbox"/>
	****	<input type="checkbox"/>

Additional Properties

Name	Value

Add

Remove

Domain Association

<input checked="" type="checkbox"/>	Name	Element Type
<input type="checkbox"/>	System	Image File

Note: Associated domain will be used to save the repository elements in 'Save As' operation.

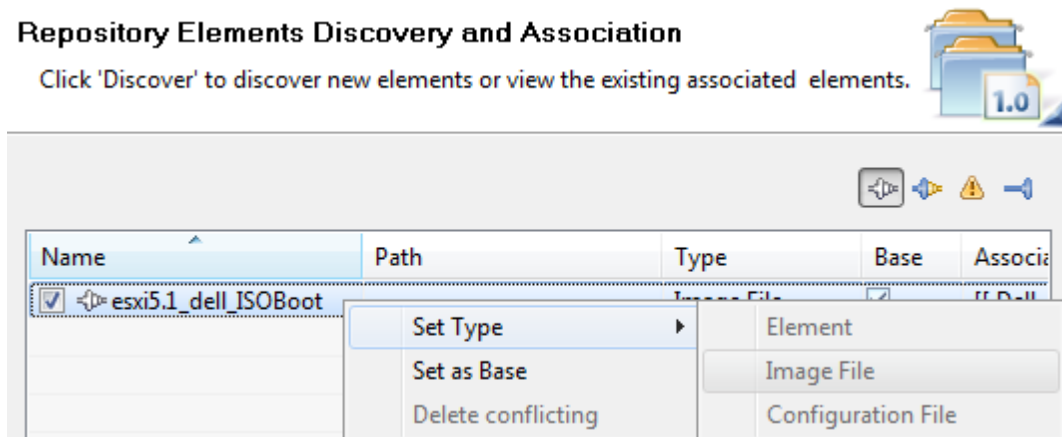
< Back Next > Finish Cancel

6. Click **Next** to display the list of repository files.
7. Click **Discover** to initiate the discovery of the repository files. A list of discovered elements displays.

NOTE: This step is required only if a new ISO image is added to the appliance.

8. Right-click the discovered elements, set the Type to **Image File**, and click **Finish**.

Figure 11. Updating Discovered Elements Type to Image File



9. Click **Finish**.

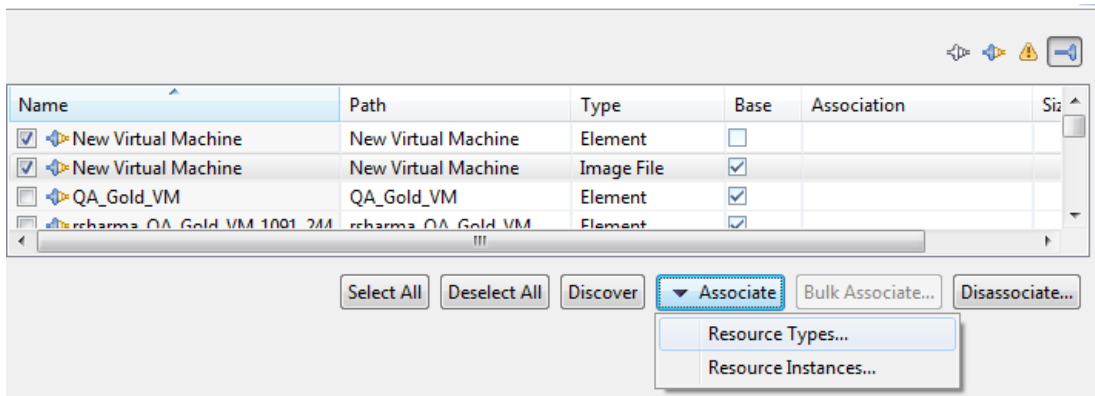
Updating Repository Elements for VMware Baseline Images

This repository contains VMware baseline images for creating VM clones.

NOTE: This procedure is required only during logical template provisioning for enabling the cloning of template/gold VMs for workload deployment.

1. Open the **Software Repositories** view in the setup perspective by clicking **Setup** → **Software Repositories** on the client.
2. In the **Software Repositories** view, right-click and select **Repositories**.
3. On the **Software Repository—Select Repository Type** dialog box, select **Software Repository and Existing**.
4. Select **VMware Baseline Images** from the list, and click **Next**.
The **Repository Properties** dialog box displays.
5. Update the VMware vCenter host (IP address), username, and password.
6. Click **Next** to display the list of repository files.
7. Click **Discover** to initiate the discovery of the repository files.
The list of VMs managed by the vCenter displays.
8. Right-click the discovered element, set the **Type** to **Image File**, and click **Finish**.
9. Click **Associate** to associate the selected element with the **VMware VM** resource type, and click **Finish**.

Figure 12. Associating Resource Types



Configuring Networks

This section discusses about configuring the networks that are to be used in AS 50 Orchestration and configuration. The various networks have to be configured prior to doing an orchestration. For more information about networks, see the *Active System Manager 7.1 User Guide* Chapter 10, "Network Management".

Accessing the Network Configuration Setup

The network configuration setup can be accessed from the **Tools->Discovery->Networking** as shown in Figure 13. This will open a new page where the new networks can be configured and default networks can be modified.

Configuring the Default Networks

AS 50 come with 6 different types of networks already added. These networks have to be modified as per the environment in which the AS 50 is being used. The below sections describes configuring those networks.

Configuring Existing Networks

In order to configure any network, select the network that needs to be configured. The list of existing networks that are part of this network category are displayed.

Figure 13. Network Setup Wizard

Network Configuration
Select elements to view/create/update Identity Pool and Network details

- Global Virtual Identity Pool
 - MAC
 - IQN
 - WWNN
 - WWPN
- Configured Networks
 - Public LAN
 - Private LAN**
 - SAN iSCSI
 - SAN FCoE
 - Management Network
 - Hypervisor Management

Active System Manager Private LAN Networks

This is a list of the configured Private LAN Networks.

- Add - Choose this if you wish to configure a new Private LAN Network
- Edit - Choose this if you wish to edit an existing Private LAN Network
- Delete - Choose this if you wish to remove an existing Private LAN Network

Add Edit Delete

Private LAN Networks

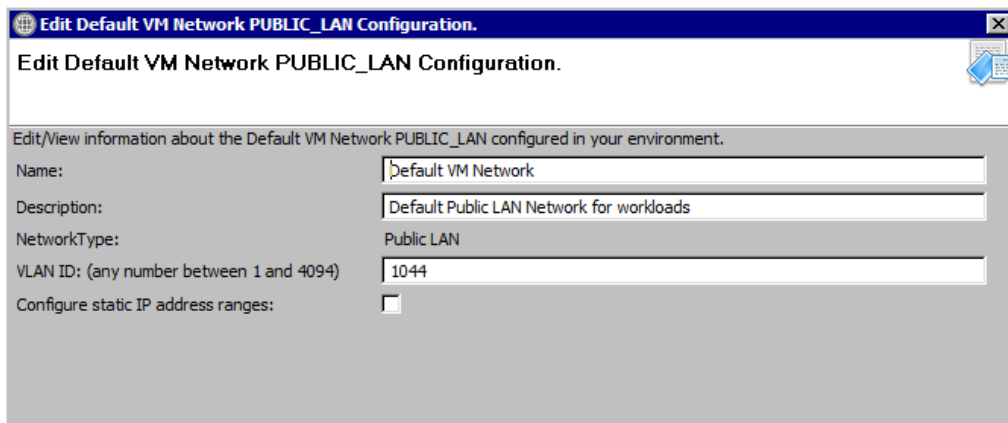
Name	Description	Addressing	V
Default Hyper-V Cluster Private	Default Private LAN Network for Microsoft Hyper-V c...	DHCP	2
Default vMotion/Live Migration	Default Private LAN Network for VMware vMotion/ M...	Static	1

From the list of pre-configured networks, select the network that needs to be modified and click the **Edit** button. From the **Edit** dialog box, you can modify network parameters.

NOTE:

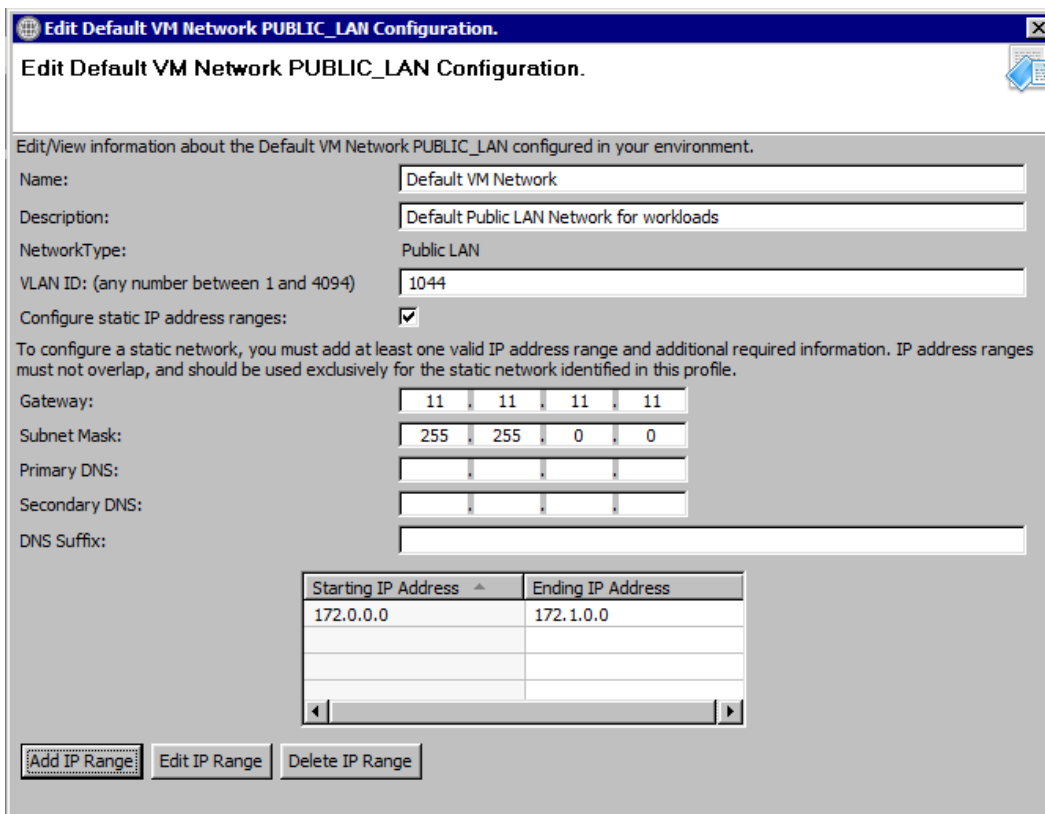
- AS50 does not support SAN FCoE networks.
- The Default Hyper-V Cluster Private network in Private LAN is needed only for Hyper-V orchestration. It does not have to be configured for VMWare orchestration.
- Active System Manager does not pick up the workload VLAN based on the VLAN ID defined in the Network setting. The workload VLANs are randomly picked up based on the VLAN range defined for the layer 2 switch in the Active System Manager Inventory System. If a specific workload VLAN ID is needed, it should be specified in the VLAN Resource Type → Provisioning settings in the physical template.

Figure 14. Editing an Existing Network



To configure static network ranges, select the **Configure static IP address ranges** check box.

Figure 15. Editing an Existing Static Network



Adding Static IP Address Ranges

1. Click **Add IP Range**.
2. Specify the starting and ending IP addresses.
3. Click **Save IP Range**.

Figure 16. Adding IP Address Range

The screenshot shows a network configuration window. At the top, there are several input fields: Gateway (172.21.172.126), Subnet Mask (255.255.255.128), Primary DNS (172.17.0.1), Secondary DNS (empty), and DNS Suffix (empty). Below these is a table with two columns: 'Starting IP Address' and 'Ending IP Address'. The first row contains '172.21.172.1' and '172.21.172.55'. Below the table are two more input fields: 'Starting IP Address' (with a dropdown arrow) and 'Ending IP Address'. At the bottom, there are two buttons: 'Save IP Range' and 'Cancel'.

To configure an existing IP range, select the already configured range, and click **Edit IP Range**.

Table 6 summarizes the list of values that needs to be configured for a network.

Table 6. Values Required for Configuring Networks

Entry	Details
VLAN ID	The VLAN ID that configured on the switch for this network type.
Configure Static IP address ranges	For configuring static IP addresses
Gateway	Gateway IP for this network
Subnet Mask	Subnet mask of this network
Primary DNS	Primary DNS
Secondary DNS	Secondary DNS (not mandatory)
DNS Suffix	Domain name
Starting IP Address	The starting IP address
Ending IP Address	The ending IP address

Network mappings

Table 7 shows the mapping of the Default Server Template networks with the networks to be configured on the ESXi server.

Configuring Default Server Templates

The Active System 50 orchestration applies the server templates to the server at the time of setup. Refer to the *Active System Manager User Guide* for more information on configuring the default templates.

Perform the following steps if multiple VM Workload VLANs are required:

1. On the Active System Manager **Operation Center** view, right-click a server template in the **Server Templates And Profiles** tab, and click **Edit**.
2. In the **Edit Server Profile Template** wizard, navigate to the **Network Settings** window by clicking **Next**.
3. Click **Add** and specify the required parameters in the **Add vNIC Configuration** to add multiple VM Workload VLANs. The networks need to be added with naming convention **Workload-*<VLANID>***. For example, **Workload-20**.

NOTE:

- Server Template names should not contain spaces.
- Active System Manager does not pick up the workload VLAN based on the VLAN ID defined in the Server Profile Template. The workload VLANs are picked up based on the VLAN range defined for the layer 2 switch in the Active System Manager Inventory System.
- Attaching more than one Server Profile Template to a physical orchestration template will cause the physical orchestration to fail.

Map the Default Server Template networks with the networks configured on the ESXi server as specified in the following table.

Table 7. Default Hyper-V Host Mapping

Network Type	Server Template Network Name	VMware ESXi Network Mapping
Hypervisor Management	DefaultHypervisorManagement	ESXi Management Network
Public LAN	DefaultWorkload	Virtual Machine Network
Private LAN	DefaultvMotionLiveMigration	ESXi vMotion Network
SAN iSCSI	DefaultSANiSCSI	ESXi iSCSI Network to access EqualLogic storage array.

The following networks should have unique VLAN IDs:

- Hypervisor Management
- Public LAN
- Private LAN
- SAN iSCSI

NOTE:

- Active System Manager does not pick up the workload VLAN based on the VLAN ID defined in the Network setting. The workload VLANs are randomly picked up based on the VLAN range defined for the layer 2 switch in the Active System Manager Inventory System. If a specific workload VLAN ID is needed, it should be specified in the VLAN Resource Type → Provisioning settings in the physical template.
- Attaching more than one Server Profile Template to a physical orchestration template will cause the physical orchestration to fail.
- DHCP is supported for Hypervisor Management, vMotion, and workload networks.
- The SAN iSCSI network must be configured with static IP Address configuration.

Creating Server Templates for PXE Boot Orchestration

The server template for PXE boot orchestration can be created using an existing default VMware ISO Boot template. User is required to add the details of the Native VLAN in the HypervisorManagement network.

To create Server template for PXE boot orchestration:

1. On the **Active System Manager Operation Center** view, right-click a VMware server template to clone in the **Server Templates And Profiles** tab, and click **Clone Template**.
2. In the **Edit Server Profile Template** wizard, modify the cloned template, and navigate to the **Network Settings** screen by clicking **Next**.
3. In the **Network Settings** screen, select the **HypervisorManagement** network type, and click **Edit** and modify the required parameters in the **Edit vNIC Configuration** dialog.

Physical Templates and Orchestration

Active System Manager is shipped with two AS 50 VMware physical templates for provisioning ESXi on rack servers.

1. **AS50 - Hypervisor Deployment ESXi - ISO - Cluster** template can be used for installing ESXi 5.1 on an SD card, configuring it to a VCenter Cluster, using ISO Boot
2. **AS50 - Hypervisor Deployment ESXi - ISO - Standalone** template can be used for installing ESXi 5.1 on an SD card, configuring it as a standalone server to the VCenter, using ISO Boot

Updating Physical Templates

This section lists all of the mandatory input parameters that have to be updated prior to provisioning the cluster and standalone templates.

If the Hypervisor server needs to be run in cluster mode then apply the changes in **AS50 - Hypervisor Deployment ESXi - ISO - Cluster** else apply the changes in **AS50 - Hypervisor Deployment ESXi - ISO - Standalone**.

Updating Global Parameters of the Template

The Global parameters have to be modified prior to running any orchestration. The Global parameters can be updated from the **Global parameters** tab of the template as shown in Figure 17. Table 8 specifies the list of mandatory global parameters that need to be configured.

NOTE: Traffic shaping can limit the bandwidth usage of your VMs. To make sure that VMware Traffic Shaping is disabled for Workload before scheduling the Physical Orchestration for ESXi provisioning, complete the following procedure:

1. From vCenter, click on the ESXi host.
2. Click the **Configuration** tab.
3. Click on the **Networking** link.
4. Click on **Properties of the vSwitch** which contains the VM-Workgroup port group.
5. Click on the **VM-Workgroup port group** and click **Edit**.
6. Click the **Traffic Shaping** tab.
7. Select **Disable** in the drop-down menu.
8. Deselect **Status**.
9. Click **OK**.
10. Click **Close**

Figure 17. Updating Global Parameters

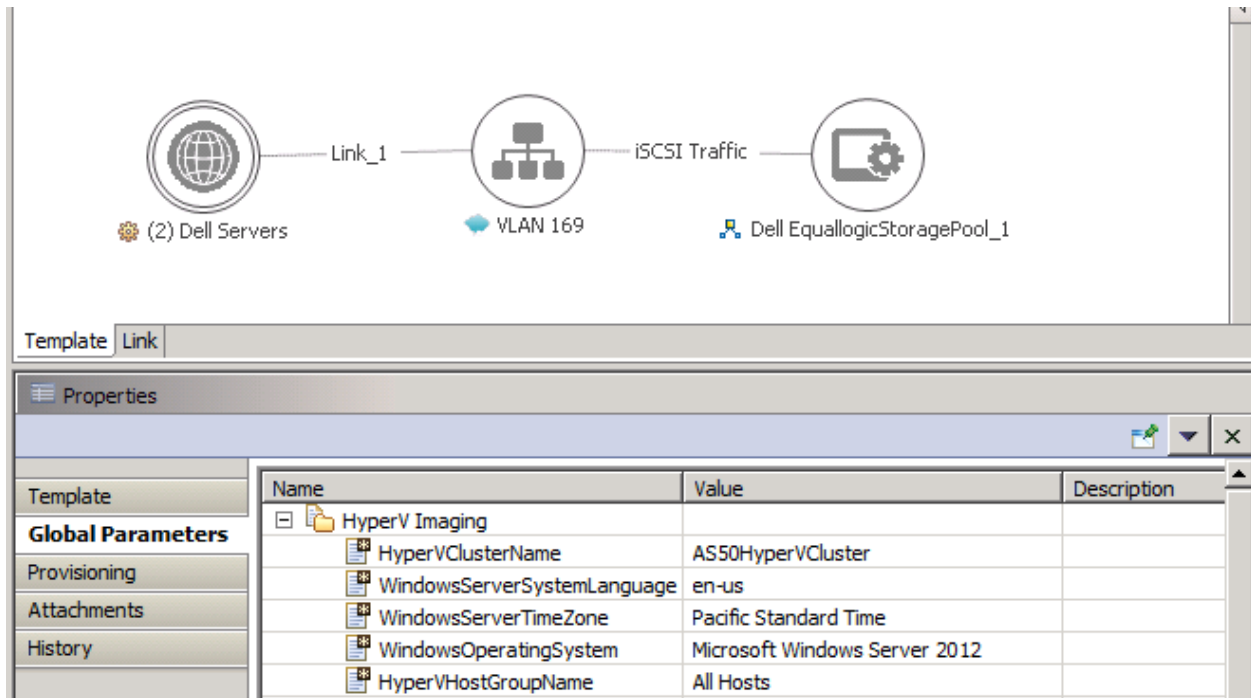


Table 8. List of Mandatory Global Parameters to Configure

Parameter	Description
Compute Information	
ImageName	Selects the ESXi image from the repository. The orchestration is already mapped with an existing ESXi image available on the appliance.
ESXServerLicenseKey	License key for the VMware ESXi hosts that will be provisioned by the orchestration. NOTE: This is optional. Default case ESXi will be in evaluation mode.
ASMServerIPAddress	The IP address of the Active System Manager server.
Storage Information	
StoragePoolName	Name of the pool on which the volume should be created for provisioning the datastore. This input should be provided from the EqualLogic Resource Pool repository.
DatastoreVolumeSize	Size in GB of the datastore to be provisioned on servers or a cluster. Default is 100g.
GoldDatastoreVolumeName	Volume name consisting of baseline VM images that will be used for cloning new VMs.

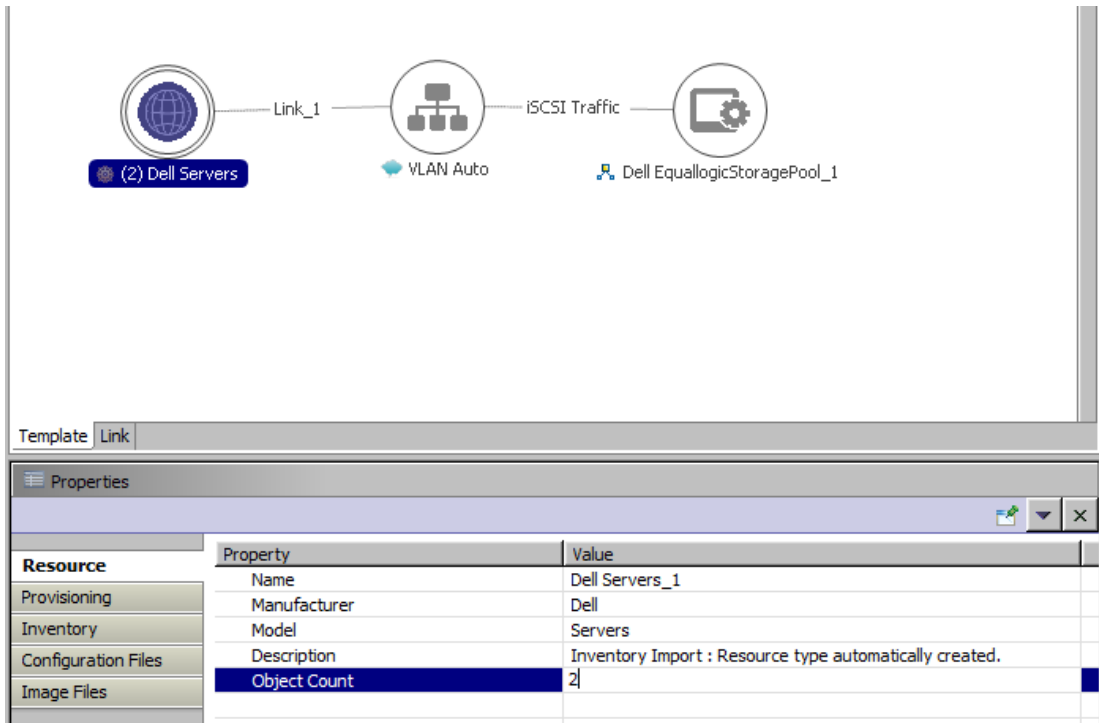
	This is optional. If this field is provided, The VMs in this volume will be added to vCenter, which can be later used in VM baseline repository creation for logical templates.
vCenter Information	
vCenterIPAddress	vCenter IP Address as provided in the Discovery Setup configuration.
vCenterClusterName	vCenter cluster name that will be provisioned by the orchestration. NOTE: The cluster name passed as an argument must not be the Management cluster. This parameter is not applicable in AS50 Standalone - VMware ESXi 5.1 Hypervisor deployment ISO boot template
vCenterDatacenter	vCenter data center to be used for provisioning.
vCenterFolderName	(optional) The vCenter folder where the ESXi hosts needs to be provisioned during the orchestration

Updating Object Count of the Dell Servers

By default, the standalone template deploys ESXi on a single free server in the inventory, and the cluster template deploys on two free servers. This behavior can be changed by editing the properties in the template as given below:

1. Select the **Dell Servers** object in the Template.
2. Update **Properties** → **Resource tab** → **Object Count** value with the required number that needs to be provisioned.
3. Save the template.

Figure 18. Updating Template for Rack Server

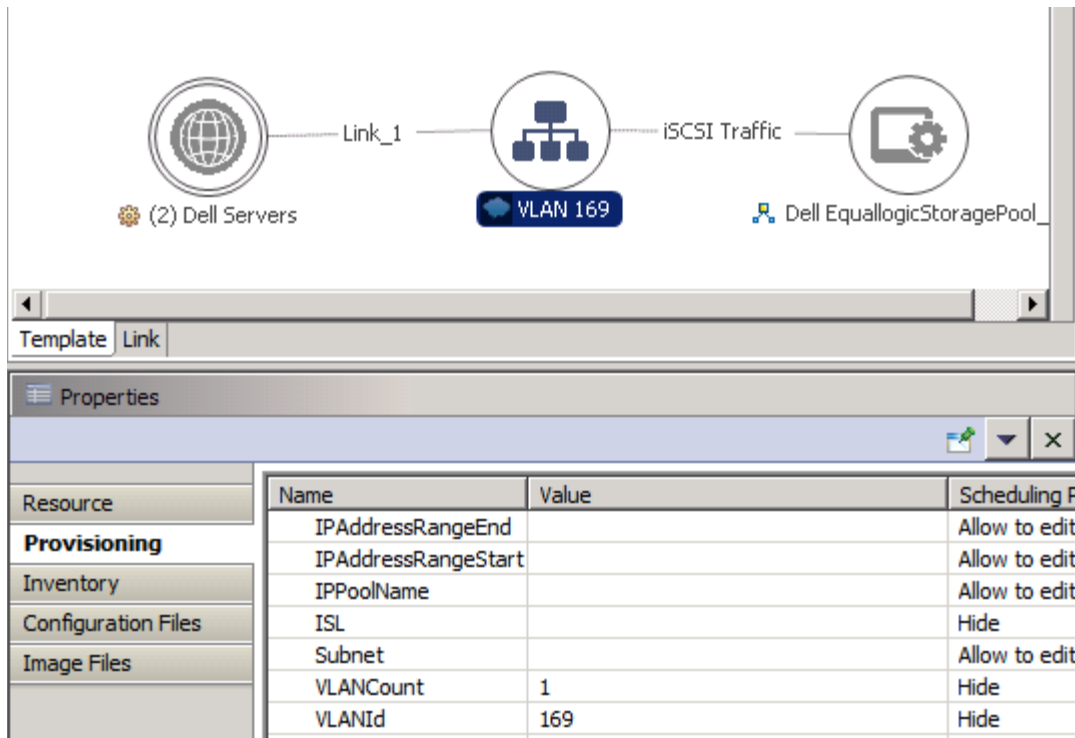


NOTE: The **Object Count** can be given a maximum value of 2, as AS 50 can support only 2 servers.

Updating VLAN Auto Properties

1. Select the **VLAN Component**, click the **Provisioning** tab, and update the **VLANCount** with the number of VLANs to be provisioned.
2. Update the **VLANId** parameter, as applicable.
3. Save the template.

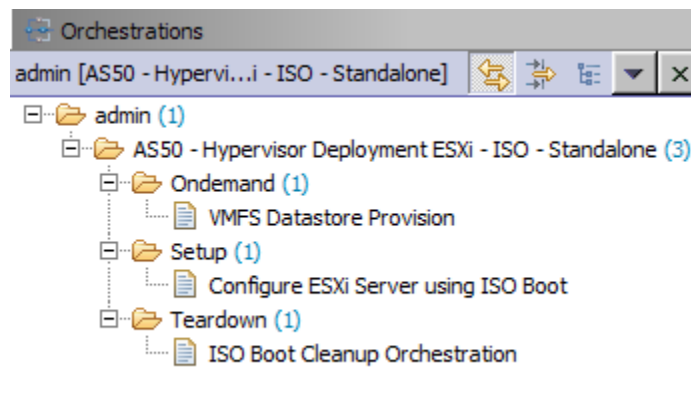
Figure 19. Updating VLAN Auto Properties



Associated Orchestrations with Cluster/Standalone Host Templates

Each physical template has three orchestrations associated with it:

Figure 20. Orchestrations



- **On-demand**—*VMFS Datastore Provision*
This orchestration can be executed on-demand when the session is in a *Running* state.
- **Setup**—*Configures the ESXi Servers using ISO Boot*
This orchestration executes when template provisioning starts and the session is in the *Setting Up* state.
- **Teardown**—*Cleanup-Orchestration*

This orchestration executes when template provisioning start and session is in Cleaning Up state.

Set-Up Orchestration - Operations Executed

This section gives details about the different sequence of operations that are executed as part of scheduling the different templates available for AS 50.

Default Server Templates

The AS 50 Orchestration applies the Server templates to the server at the time of Set-Up. For more information about server templates and profiles, see the *Active System Manager 7.1 User Guide* Chapter 7, "Server Templates and Profiles".

AS 50 Cluster template Set-Up Orchestration

When **AS50 - Hypervisor Deployment ESXi - ISO - Cluster** template is scheduled, it performs the following sequence of operations:

1. Reserves single or multiple VLANs for VM traffic using a VLAN component.
 2. Creates the server profile and attaches it to the server, the attach server profile does the following:
 - a. Configures the minimum and maximum bandwidth
 - b. Sets SD card as the first boot device
 - c. Disables iSCSI Offload on the NIC ports
 3. Creates the ISO files for each server dynamically based on the Server IP Address, Hostname, Name server values provided in the database.
 4. Mounts the ISO using iDRAC Virtual Media on all the servers and initiates the installation process.
 5. Configures the vSwitch configuration:
 - a. Creates the vSwitch and port-groups based on Active System 50 deployment specification
 - b. Tags the port-groups with appropriate VLANs as specified in the template
 - c. Creates iSCSI Port-groups and configures the MEM.
 4. Creates a volume of the EqualLogic Storage Array:
 - a. The new volume is created per physical session based on the size specified in the orchestration input.
 - b. The authentication of the new volume is configured based on the Chap username and secret key specified in the inventory of the servers.
 6. Creates a vCenter Cluster/Datacenter (if it does not already exist) on the specified vCenter. The cluster is created with default settings (**DRS - On, HA - On, EVC - Disabled**).
- NOTE: The cluster name passed as an argument must not be the Management cluster.
7. Adds hosts to the vCenter cluster.

The datastore created in the orchestration is used for provisioning the VM in the logical workload templates, provides access to Gold volume, and mounts the base VMs onto the cluster.

Installs EqualLogic MEM VIBs. The MEM package is transferred to the volume created in the above step to enable the installation.

Registers base VMs to the vCenter for logical template provisioning.

AS 50 Standalone template Set-Up Orchestration

When **AS50 - Hypervisor Deployment ESXi - ISO - Standalone** template is scheduled, this template performs the following sequence of operations:

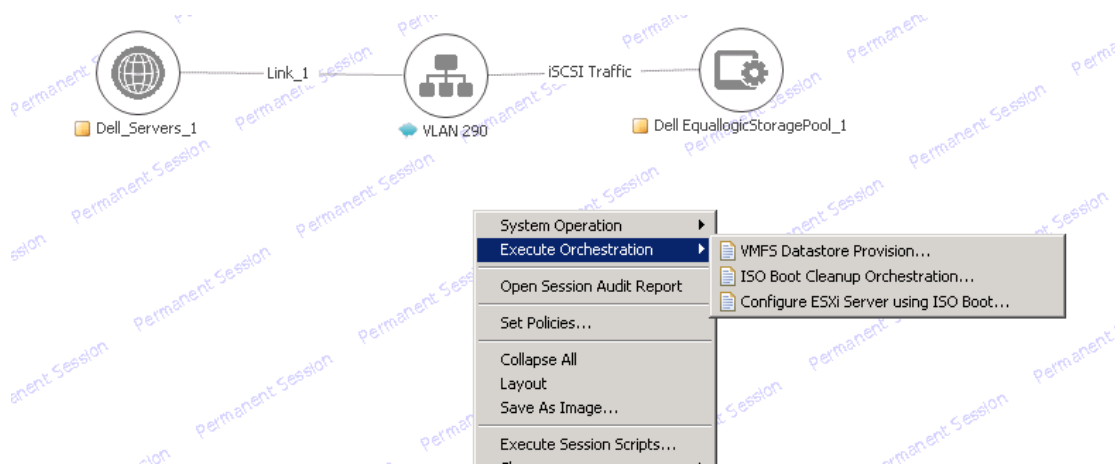
1. Reserves single or multiple VLANs for VM traffic using a VLAN component.
2. Creates the server profile and attaches it to the server, the attach server profile does the following:
 - a. Configures the minimum and maximum bandwidth
 - b. Sets SD card as the first boot device
 - c. Disables iSCSI Offload on the NIC ports
3. Creates the ISO files for each server dynamically based on the Server IP Address, Hostname, Name server values provided in the database.
4. Mounts the ISO using iDRAC Virtual Media on all the servers and initiates the installation process.
5. Configures the vSwitch configuration:
 - a. Creates the vSwitch and port-groups based on Active System 50 deployment specification
 - b. Tags the port-groups with appropriate VLANs as specified in the template
 - c. Creates iSCSI Port-groups and configures the MEM.
6. Creates a volume of the EqualLogic Storage Array:
 - a. The new volume is created per physical session based on the size specified in the orchestration input.
 - b. The authentication of the new volume is configured based on the Chap username and secret key specified in the inventory database of the servers.
7. Adds hosts to the vCenter at datacenter level.
8. The datastore created in the orchestration is used for provisioning the VM in the logical workload templates, provides access to Gold volume, and mounts the base VMs onto the host.
9. Installs EqualLogic MEM modules. The MEM package is transferred to the volume created in the above step to enable the installation.
10. Registers base VMs to the vCenter for logical template provisioning.

On-Demand Orchestration - Additional Storage for Cluster or Host

For additional VMFS storage, or datastore needs on a cluster, or on a standalone ESXi host reserved through the Active System Manager, you can execute on-demand orchestration from a *running* session.

For executing the on-demand orchestration, open the session by double-clicking it. Right-click on the session, and select **Execute Orchestration → VMFS Datastore Provision**.

Figure 21. VMFS Datastore Provision



Orchestration performs the following sequence of operations:

- Creates a new volume on EqualLogic storage.
- Allows access to specific cluster or standalone ESXi hosts, as applicable.
- Creates a VMFS datastore on a cluster or standalone ESXi hosts, as applicable.

NOTE:

- Clicking **ISO Boot Cleanup orchestration** invokes the teardown orchestration.
- Clicking **Configure ESXi Server using ISO Boot** invokes the setup operation again. It is not recommended to run setup orchestration on a live session. It is safe to tear-down the current session and start over.

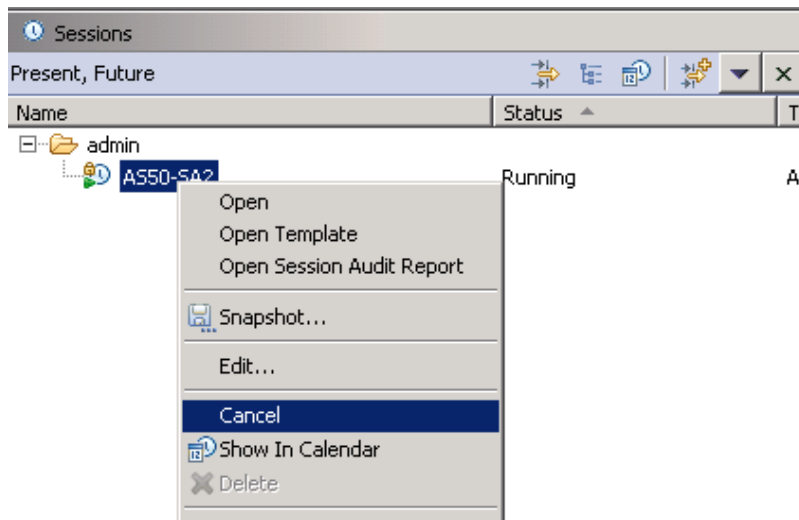
Tear-Down Orchestration

This orchestration will stop any running physical session and cleanup the provisioned resources.

Executing Tear-Down Orchestration

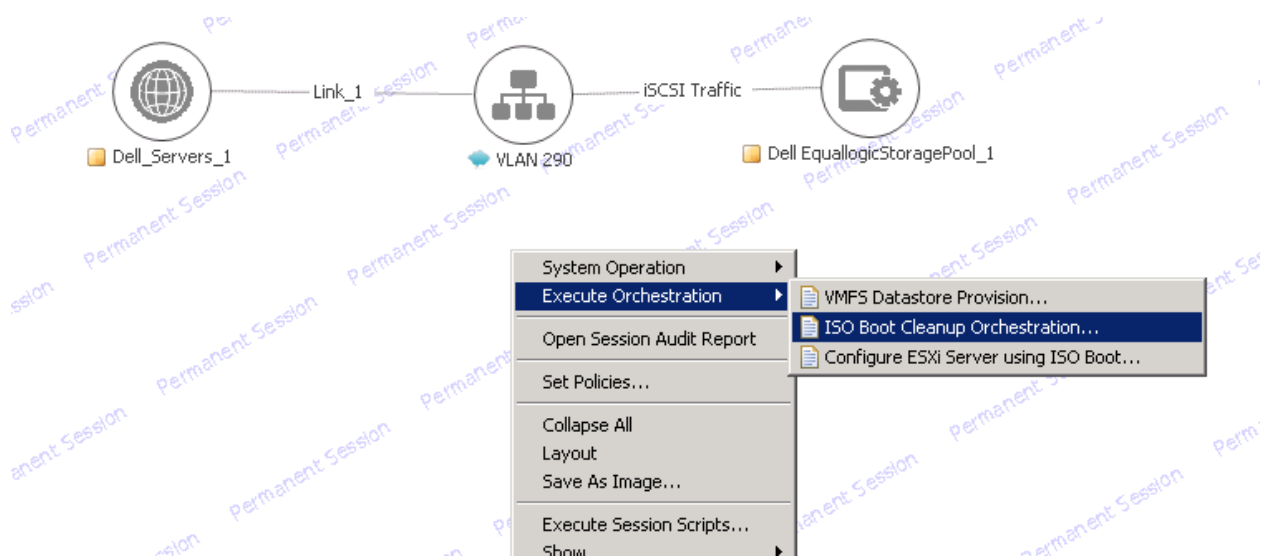
1. To execute a tear down orchestration, perform either of following:
 - From the **Sessions** tab on the left, right-click on any running session and select **Cancel**. This will execute the tear-down orchestration.

Figure 22. Tear Down a session by Cancelling



- o Alternatively, right-click on any running session and select **Execute Orchestrations** → **ISO Boot Cleanup Orchestration**.

Figure 23. Tear Down by selecting Orchestration



Clean up Actions executed in Tear-Down

As part of the tear-down orchestration, the Active System Manager completes the following actions:

1. Removes all the hosts that are running in the session from the vCenter.
2. Detaches the Server Profile from all the servers running in the session.
3. Releases IPs allocated back to the IP pool.
4. Deletes the Server Profile.
5. Powers off all the servers.

Workload Provisioning Using Logical Templates

The following sections describe running a logical template for provisioning VMs on the deployed ESXi. Refer to the **VMware RA readme.txt** file for customizing the Virtual Machines authored in the templates.

Active System Manager is shipped with two logical templates for provisioning VMs onto the ESXi. These templates can be used to create VM workloads by scheduling a logical template over existing physical resources sessions.

- The **Single VM Sample Template** can be used to clone One VMware VM.
- The **Dual VM Sample Template** can be used to clone two VMware VMs

The following configurations are applicable to both the templates.

Prerequisite to Provision a Virtual Machine

A Gold/Base VM must exist in the DataCenter, this Gold/Base VM will be used as gold image file to clone VMs.

The Gold VM and the template must contain one NIC with DHCP configuration accessible from the domain. This is required so that after the guest Customization, the VM receives a proper IP address which can be reached from the domain.

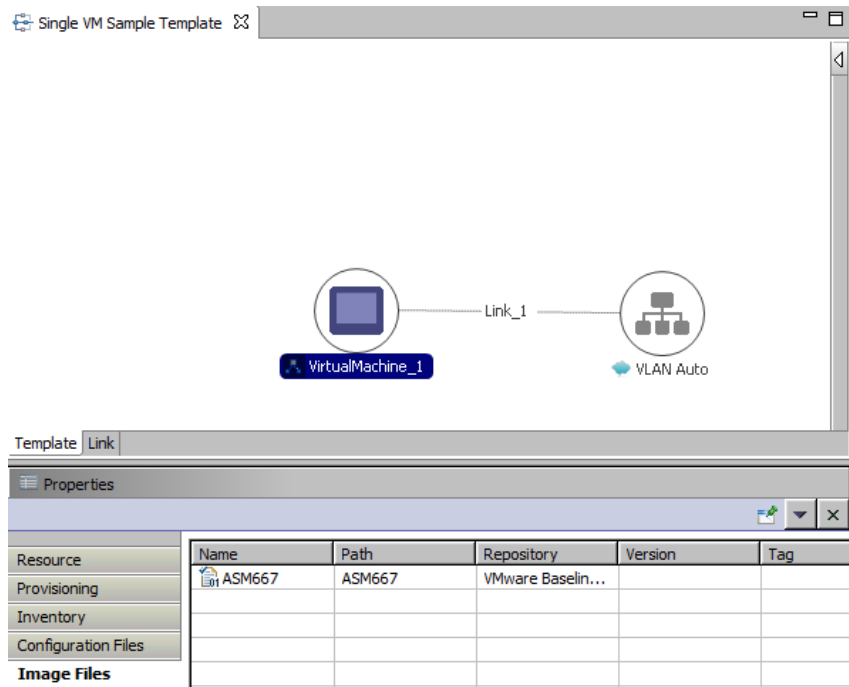
Updating the Image Files in Logical Template

NOTE: Make sure the repository for VM images has been set up properly. See Updating Repository Elements for VMware Baseline Images for more details.

The baseline VM image associated with the VM object in the template has to be updated prior starting the logical template provisioning.

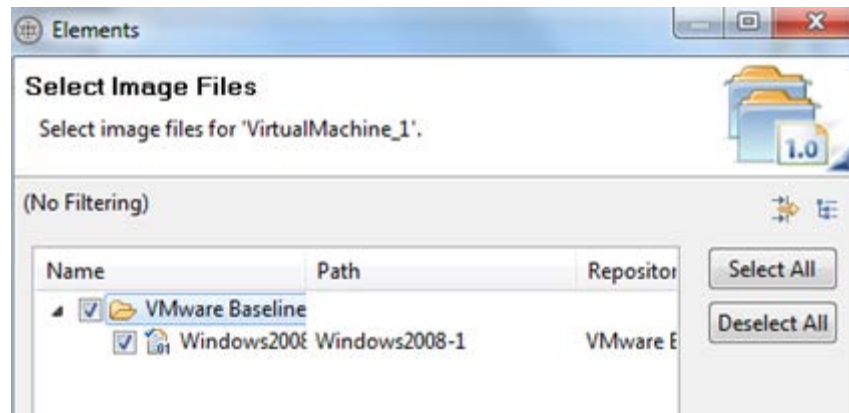
1. Select the VM object in the template and click the **Image Files** tab.

Figure 24. Image Files Properties



2. If there is already associated image file, click **Remove** to remove the existing association.
3. Click **Add** to select the gold VM image to be associated with the VM object.
4. Select the **Show all Image files** checkbox to open the list of configured repositories in the system.
5. From the **VMware Baseline Images** repository, select the VM image to be deployed.

Figure 25. Select Gold VM Image File



Customizing the Guest VM deployed on the ESXi

The logical template can be configured to customize the guest VM that will be deployed on the ESXi based on the associated gold VM image.

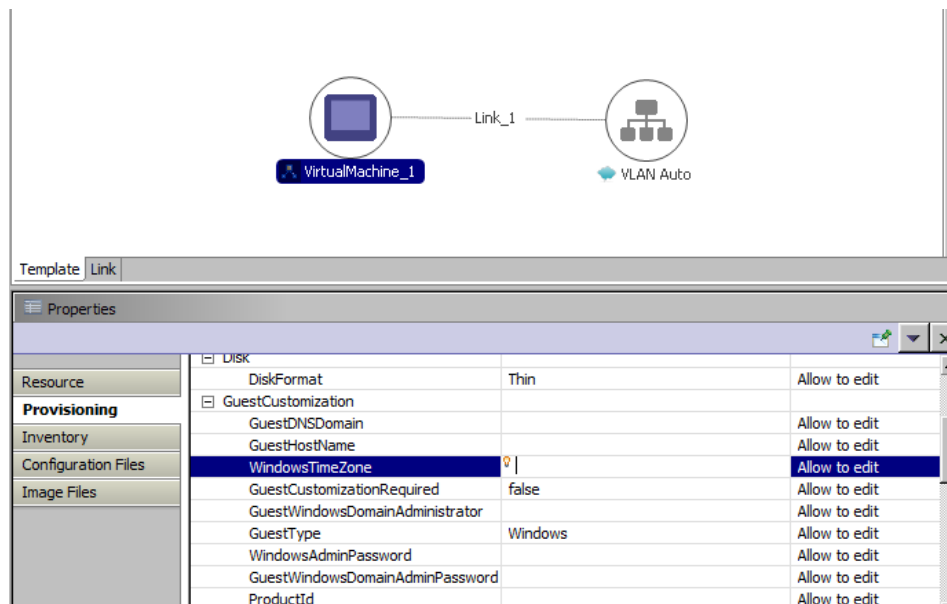
Customizing the Guest OS (Optional)

Active System Manager supports Windows 2012 and Windows 2008 based Guest OS for VM creation. However, during Windows 2008 VM creation, Active System Manager is not able to retrieve the VM IP address. In this case, the Windows 2008 VM does have an IP address, but Active System Manager is not able to retrieve the IP address using the supported API set.

In order to customize the Operating System that will be on the VM, complete the following steps.

1. Open the logical template.
2. Select **VirtualMachine** object.
3. In the **Provisioning** tab, in the **Guest Customization** section update the following properties:
 - a. GuestDNSDomain
 - b. GuestHostName
 - c. WindowsTimeZone
 - d. GuestCustomizationRequired
 - e. GuestWindowsDomainAdministrator

Figure 26. Customizing the Guest OS



Provisioning Logical Templates

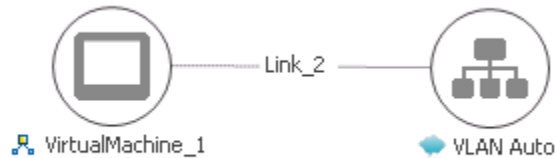
When scheduled, logical template performs the following sequence of operations:

- Clones and powers on one or two VMware VMs based on the gold VM image associated with the template
- Creates port-groups corresponding to VLAN component on vSwitch

Single Virtual Machine with VLAN

The **Single VM Sample Template** can be used to create VM workloads by scheduling logical template over existing physical resources session.

Figure 27. Single VM Connected to a VLAN



When scheduled, this template performs the following sequence of operations:-

- Clones and powers on a single VMware VMs based on the gold VM image associated with the template.
- Creates network site corresponding to VLAN component on logical network

NOTE: While scheduling a template with VM having multiple interfaces, even if VM is mapped to a Host having multiple interfaces, all the interfaces of VM are mapped to the same interface of the Host.

Two VMs with a VLAN

The **Dual VM Sample Template** can be used to create VM workloads by scheduling a logical template over existing physical resources sessions.

Figure 28. Two VMs Connected to a VLAN



When scheduled, this template performs the following sequence of operations:

- Clones and powers on two VMware VMs based on the gold VM Image associated with the template.
- Creates network site corresponding to VLAN component on logical network

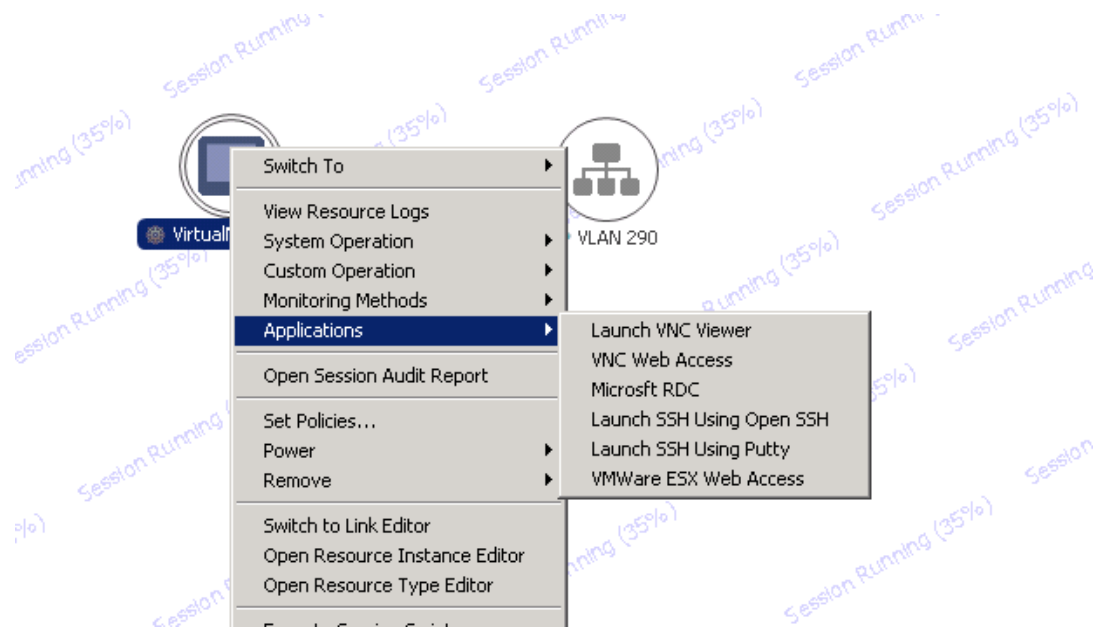
NOTE: While scheduling a template with VM having multiple interfaces, even if VM is mapped to a Host having multiple interfaces, all the interfaces of VM are mapped to the same interface of the Host.

Launching Applications from the Logical Session

Once the VMs are provisioned the user can also launch custom applications as applicable from Active System Manager.

1. Select a VM in a session.
2. Right-click on the VM, and select **Applications**.
3. Select the Application to be launched.

Figure 29. Launching Applications



Operation Center View—Administrative Operations

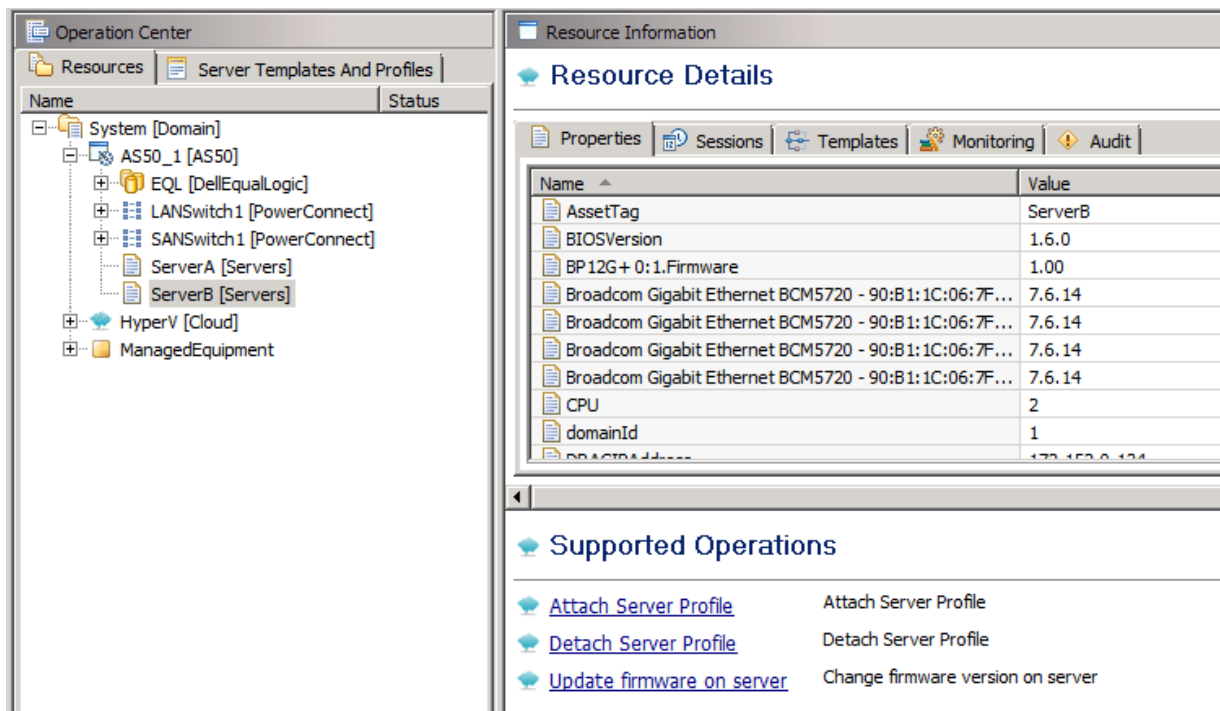
The following sections describe Active System Manager administrative operations.

Managing Rack Servers

The following operations are provided on the Active System Manager **Server Operation Center** view to perform administrative tasks:

- **Attach Server Profile**—Used to apply the configurations associated with Server Profile on the rack server using iDRAC
- **Detach Server Profile**—Used to remove the configurations associated with Server Profile from the rack server
- **Update firmware on server**—Used to update firmware for BIOS, iDRAC, Lifecycle Controller etc. on the rack server

Figure 30. Managing Rack Servers



Managing VMware vCenter Objects

This section describes the operations that can be performed from **Operation Center** view on following VMware vCenter managed objects:

- VMware Clusters
- VMware Hosts
- VMware Virtual Machines
- VMware Datastores

VMware Clusters

VMware Clusters along with their attributes are discovered and populated in the Active System Manager Operation Center view. This view (Figure 31) enables methods to be executed on clusters for on demand provisioning, as required.

Figure 31. VMware Clusters View

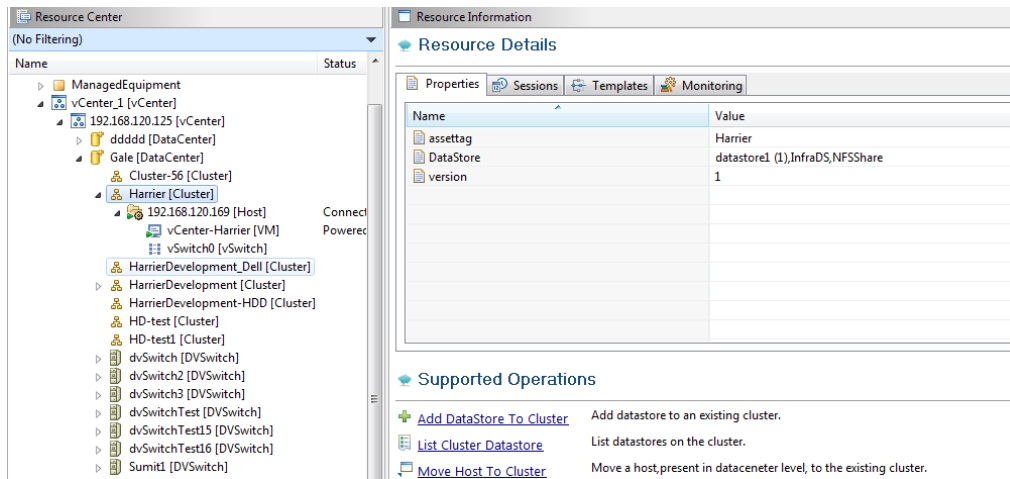


Table 9. VMware Cluster Operations

Operation	Description
Add DataStore to an existing cluster	This method is used to add an existing datastore to the cluster.
List Cluster Datastore	This method is used to view datastores on the host.
Move Host to Cluster	This method is used to add a server to the cluster.

VMware Hosts

VMware hosts, along with their attributes, are discovered and populated in the Active System Manager Operation Center view. This view (Figure 32) enables methods to be executed on hosts for on demand provisioning, as required.

Figure 32. VMware Host View

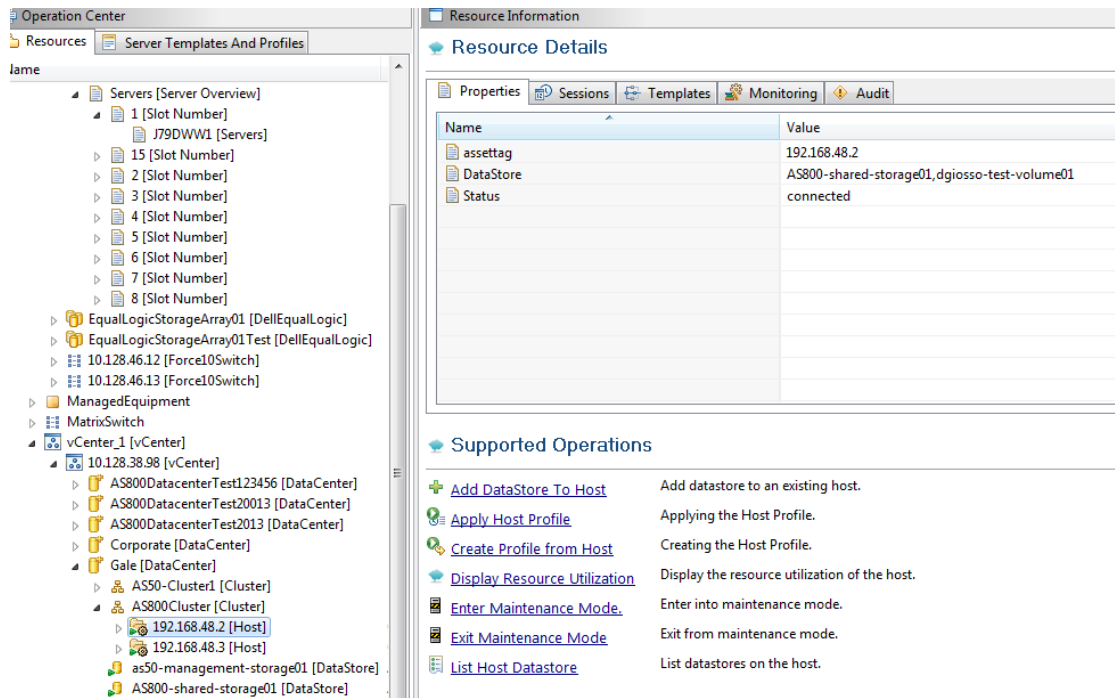


Table 10. VMware Hosts Operations

Operation	Description
Add DataStore to Host	This method is used to add an existing datastore to a cluster visible in Operations View.
Apply Host Profile	This method is used for applying the specified profile to a specified host. While applying the host profile, make sure that the physical configuration of the hosts are identical. For example, you cannot apply a profile having more than one physical NIC to a host having a single NIC.
Create Profile from Host	This method is used for creating a host profile from a specified host.
Enter Maintenance Mode	This method is used to put the ESX host into maintenance mode. VMs running on the ESX hosts are suspended or migrated based on the ESX host configuration and the parameters passed to this method.
Exit Maintenance Mode	This method is used to exit the ESX from maintenance mode and power on/restore the VMs which are suspended during the Enter Maintenance Mode operation.
Display Resource Utilization	This method is used to view the resource utilization of the host.
List Host Datastore	This method is used to view datastores on the host.

VMware Virtual Machines

VMware virtual machines, along with their attributes, are discovered and populated in the Active System Manager **Operation Center** view. This view (Figure 33) enables methods to be executed on VMware Virtual Machines for on demand provisioning, as required.

Figure 33. VMware Virtual Machines View

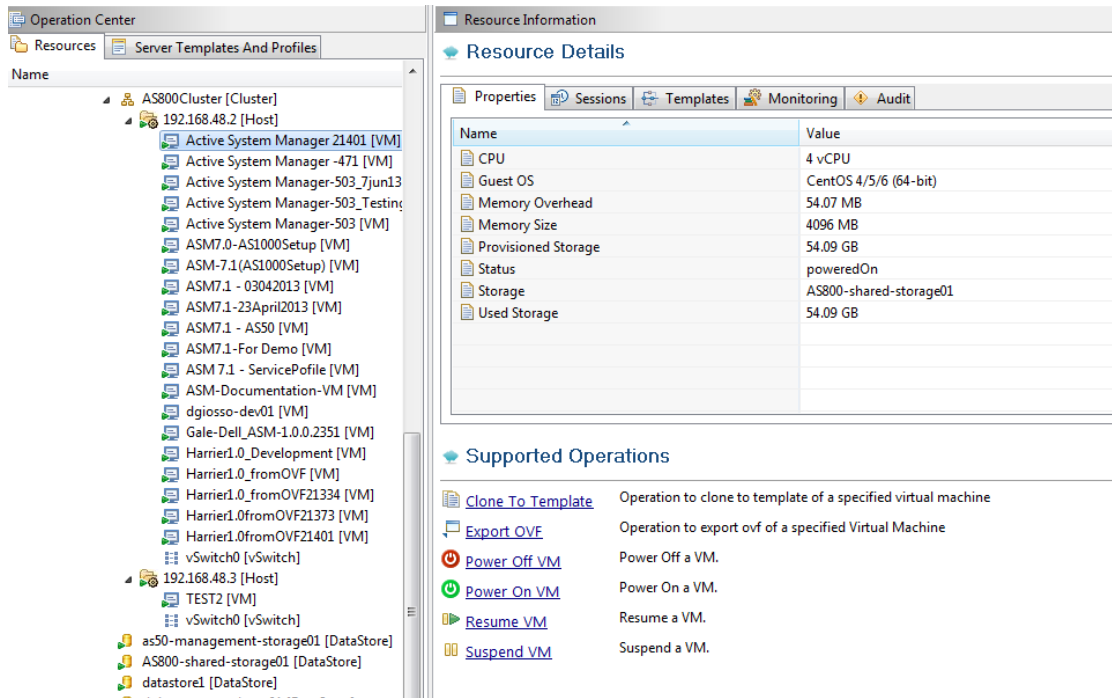


Table 11. VMware Virtual Machines Operations

Operation	Description
Clone to Template	This method is used to clone a VM to a template.
Export OVF	This method is used to convert a running VM to an OVF.
Power Off VM	This method is used to power off a VM.
Power On VM	This method is used to power on a VM.
Resume VM	This method is used to Resume a VM
Suspend VM	This method is used to suspend a running VM.

VMware Datastores

VMware datastores, along with their attributes, are discovered and populated in the Active System Manager **Operation Center** view. This view (Figure 34) enables methods to be executed on VMware datastores for on demand provisioning, as required.

Figure 34. VMware Datastores View

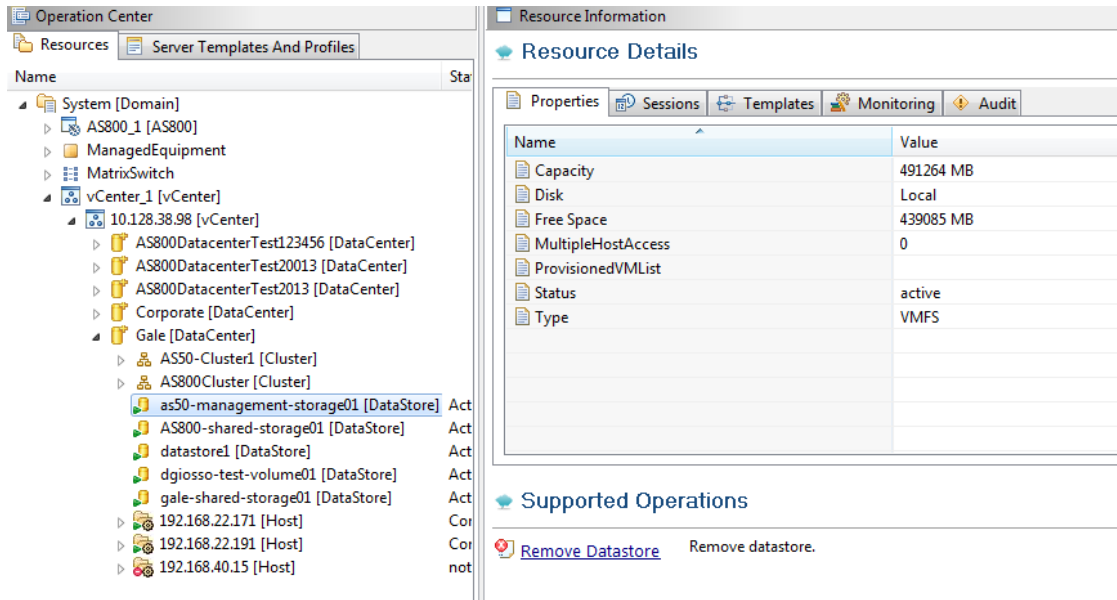


Table 12. VMware Datastore Operations

Operation	Description
Remove Datastore	This method is used to remove a datastore from vCenter.

Managing Dell EqualLogic Storage

This section describes operations that can be performed from Operation Center view on EqualLogic Storage objects.

Managing Storage Array Group

EqualLogic Arrays Groups along with their attributes are discovered and populated in the Active System Manager Operation Center view. This view (Figure 35) enables methods to be executed on EqualLogic Array Group for on demand provisioning, as required.

Table 14. Storage Array Pool Operations

Operation	Description
PoolAddMember	Adds a storage array to a given storage pool on an EqualLogic storage array.
PoolDelete	Deletes a storage pool present on an EqualLogic storage array.
PoolRename	Renames an existing storage pool present on an EqualLogic storage array.

Managing Storage Array Pool Member

EqualLogic Storage Array pool members along with their attributes are discovered and populated in the Active System Manager Operation Center view. This view (Figure 37) enables methods to be executed on EqualLogic Storage Array Pool Member for on demand provisioning, as required.

Figure 37. Storage Array Pool Member View

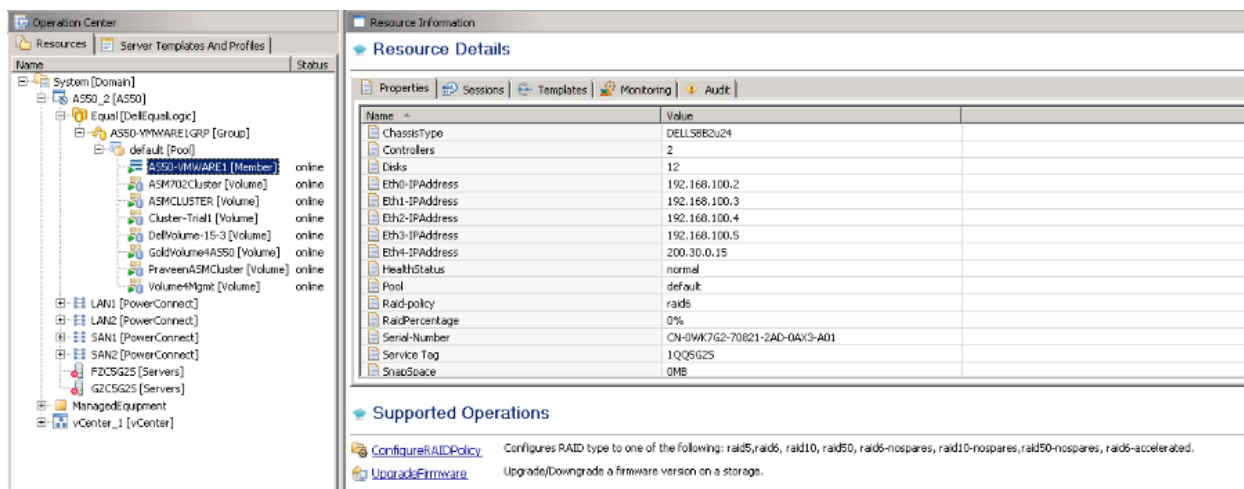


Table 15. Storage Array Pool Member Operations

Operation	Description
Configure Raid Policy	This method configures the required redundant array of independent disks (RAID) level on an EqualLogic Storage Array. Configure RAID type to one of the following RAID types - raid5,raid6, raid10, raid50, raid6-nospares, raid10-nospares, raid50-nospares, raid6-accelerated
Upgrade Firmware	This method upgrades or installs another version of the firmware.

Managing Storage Volume

Volume on EqualLogic storage along with their attributes are discovered and populated in the Active System Manager Operation Center view. This view (Figure 38) enables methods to be executed on EqualLogic volume for on demand provisioning, as required.

Figure 38. Storage Volume View

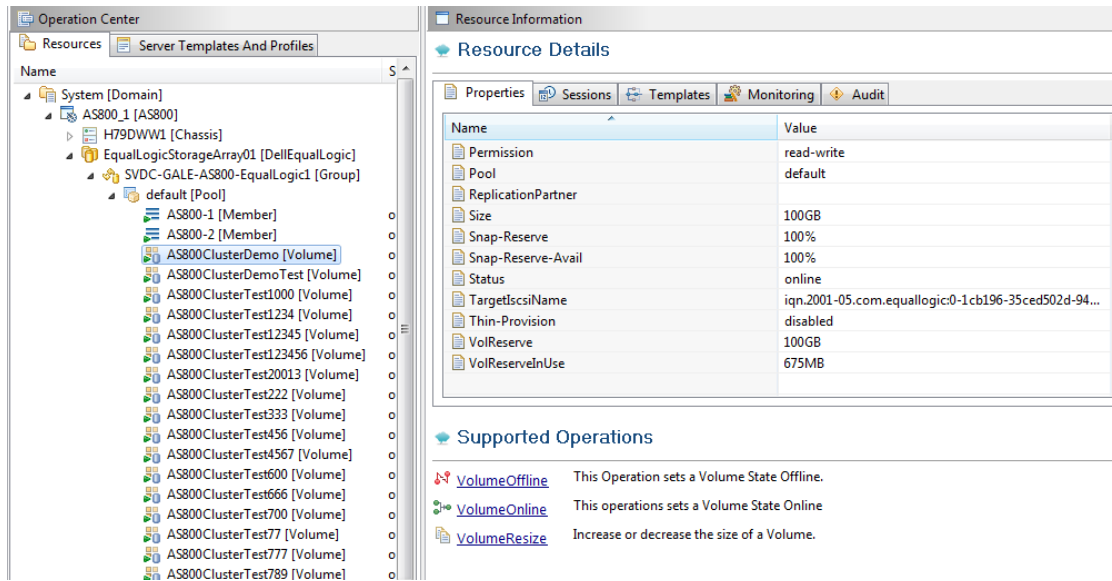


Table 16. EqualLogic Storage Volumes operations

Operation	Description
VolumeOffline	Offlines a volume present on an EqualLogic Storage Array.
VolumeOnline	Onlines a volume present on an EqualLogic Storage Array.
VolumeResize	Resizes a volume present on an EqualLogic Storage Array

Managing Dell Power Connect 7024 Switch

Dell PowerConnect 7024 Switches along with their attributes are discovered and populated in the Active System Manager Operation Center view. This view (Figure 39) enables methods to be executed on Dell PowerConnect 7024 Switches for on demand provisioning, as required.

Figure 39. Dell PowerConnect 7024 Switch View

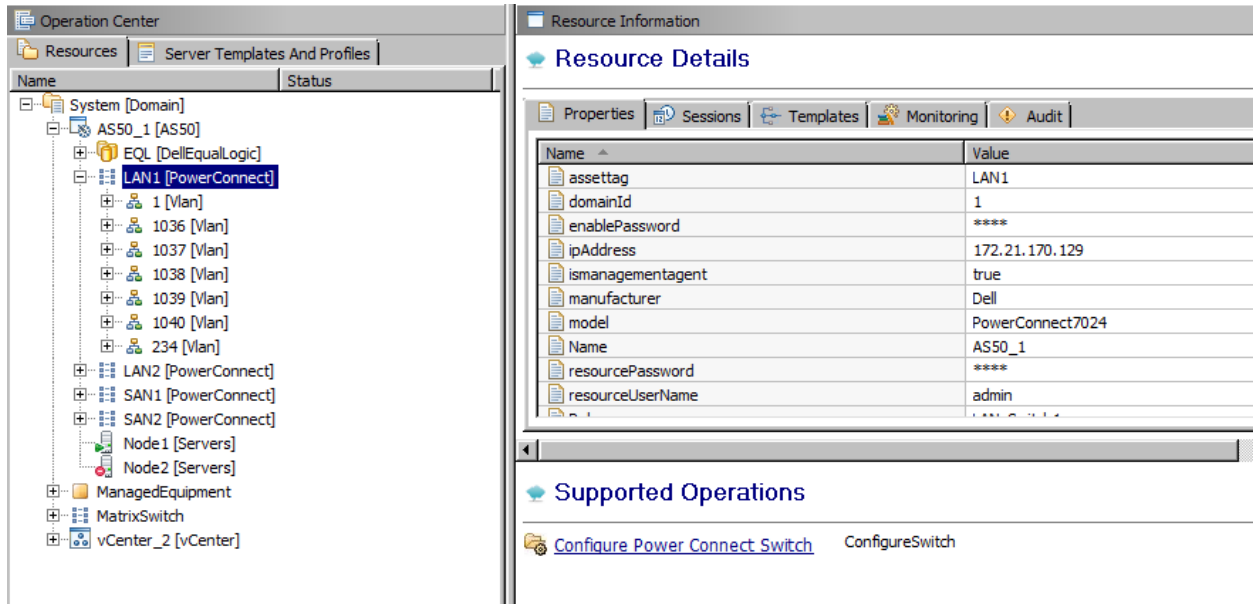


Table 17. Dell PowerConnect 7024 Switch Operations

Operation	Description
Configure Power Connect Switch	This method is used to upgrade or downgrade a firmware version on a Dell PowerConnect 7024 switch.

Dashboard Reports

The Active System Manager Dashboard displays allocation and utilization graphs for various resources like VM, cluster, host, storage, and so on, including:

Resource Allocation by Sessions Report

- Resource Allocation by Hosts Report

Resource Allocation by Groups Report

- Top Ten Resource Allocation Report
- Top Ten Resource Utilization Report
-

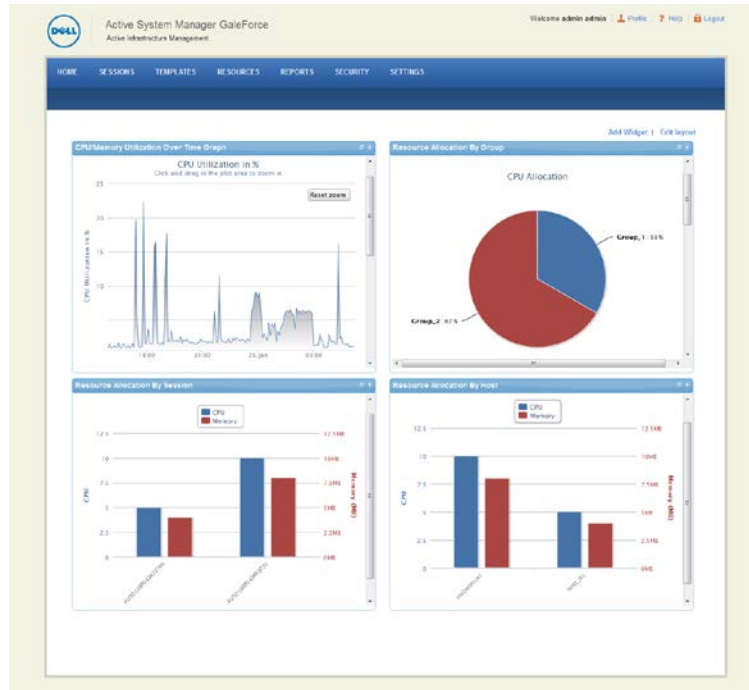
- VM Utilization by Session Report
- Host Utilization (Consolidated) Report

- Cluster Utilization (Consolidated) Report
- Storage Utilization (Consolidated) Report

Resource Allocation by Sessions Report

This report provides resource allocation data for sessions which are in a *Running* state. This report displays CPU and memory allocations grouped by Active System Manager session, and can be used to view the CPU and memory allocation in a data center environment at that particular instant.

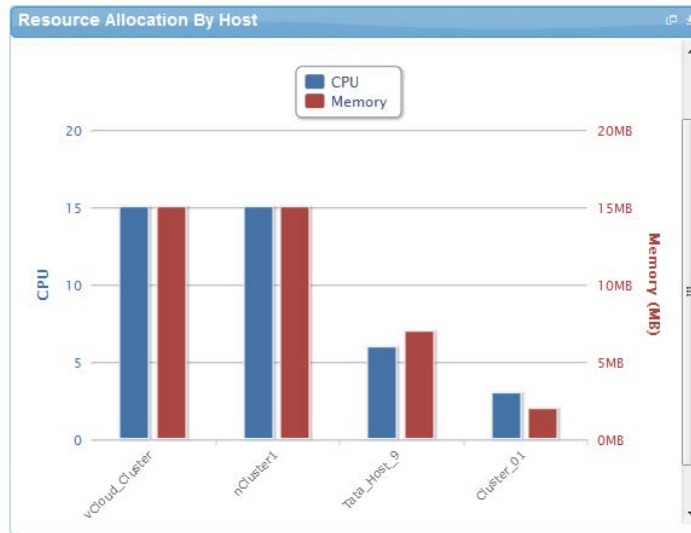
Figure 40. Resource Allocation by Sessions report



Resource Allocation by Hosts Report

This report provides resource allocation data for hosts on which some virtual resources are provisioned in running sessions. This report displays CPU and memory allocations grouped by hosts, and can be used to view a current usage of the CPU and memory allocation per host for a data center.

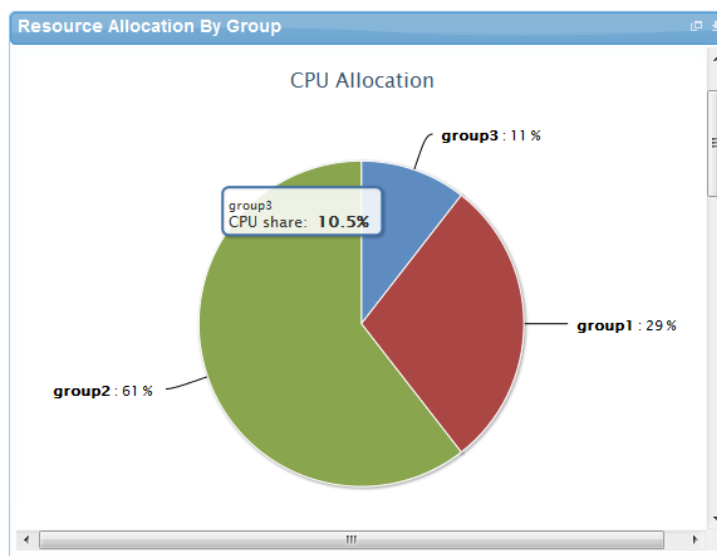
Figure 41. Resource Allocation by Hosts report



Resource Allocation by Groups Report

This report provides resource allocation data for virtual resources that are utilized in sessions owned by members of a group (grouped by group name). This report also captures the current allocation by groups and works for CPU and memory allocation.

Figure 42. Resource Allocation by Groups report

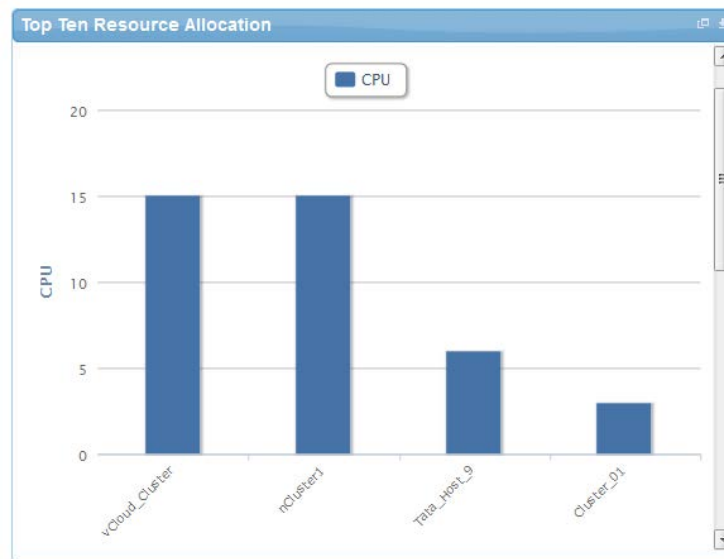


Top Ten Resource Allocation Report

This report includes three sub-options for different groupings:

- **By Host**—Lists top ten hosts which are currently in use and have allocated maximum CPU and memory attributes.
- **By User**—Displays the list of top 10 users who are currently consuming the maximum number of CPUs and memory.
- **By Group**—Similar to By User, but consolidated at the group level.

Figure 43. Top Ten Resource Allocation report



Top Ten Resource Utilization Report

This report is similar to the Top Ten Resource Allocation report; however, this report provides utilization data as opposed to allocation. The required data is made available using a monitoring method that continuously keeps polling the device, VM, or cluster for current utilization data. The data is persisted in the database and the last polled data is provided to the user. This report can be grouped by the following:

- VMs
- Hosts
- Clusters
- Storage

Figure 44. Top Ten Resource Utilization report by cluster

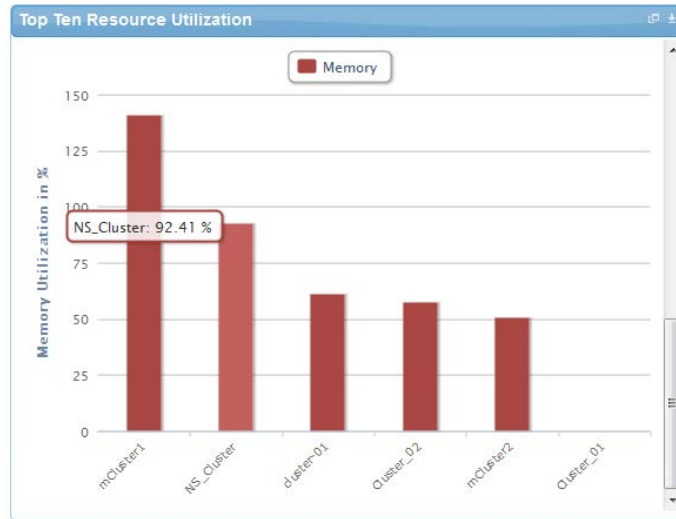
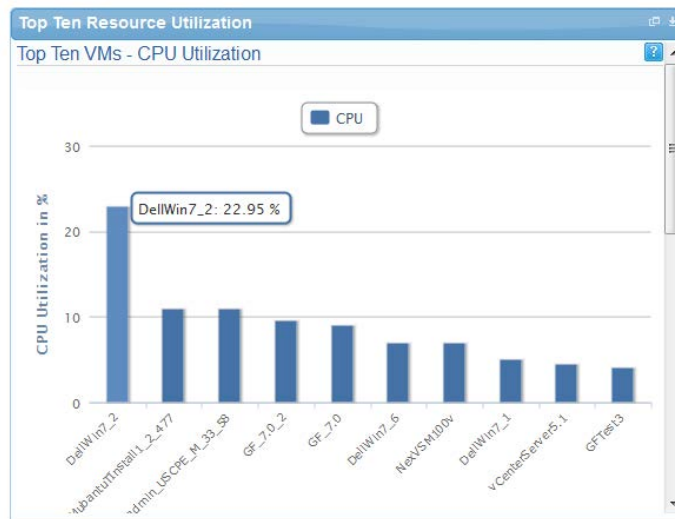


Figure 45. Top Ten Resource Utilization report by host



VM Utilization by Session Report

This report provides the most recent data for CPU and memory utilized on any VM, grouped by sessions. This data is available in terms of percentage with respect to the allocated limits.

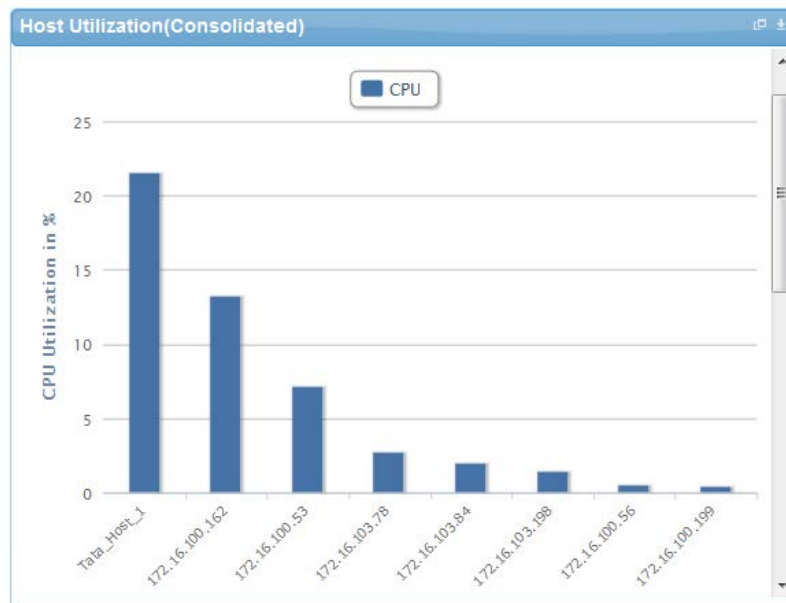
Figure 46. VM Utilization by Session report



Host Utilization (Consolidated) Report

This report displays information about how much capacity is being utilized on a host by all running VMs, with respect to the allocated capacity. This report is available for CPU and memory attributes.

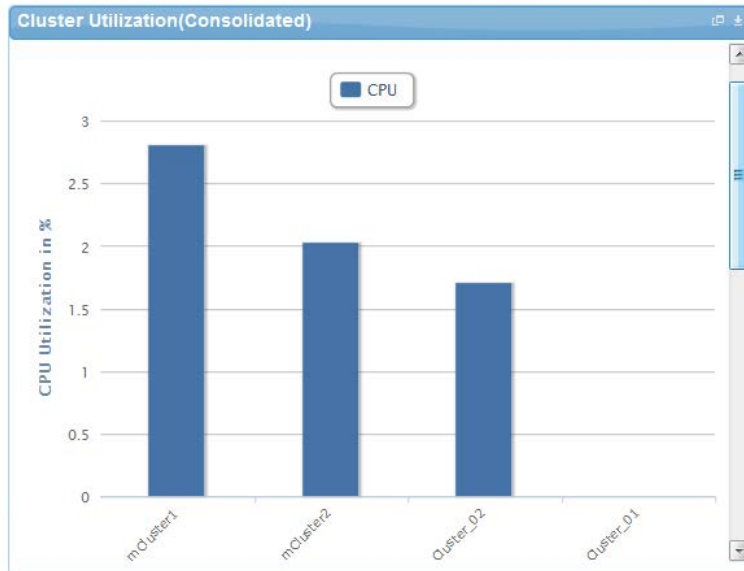
Figure 47. Host Utilization (Consolidated) report



Cluster Utilization (Consolidated) Report

This report is similar to the Host Utilization (Consolidated) report, except that it uses clusters.

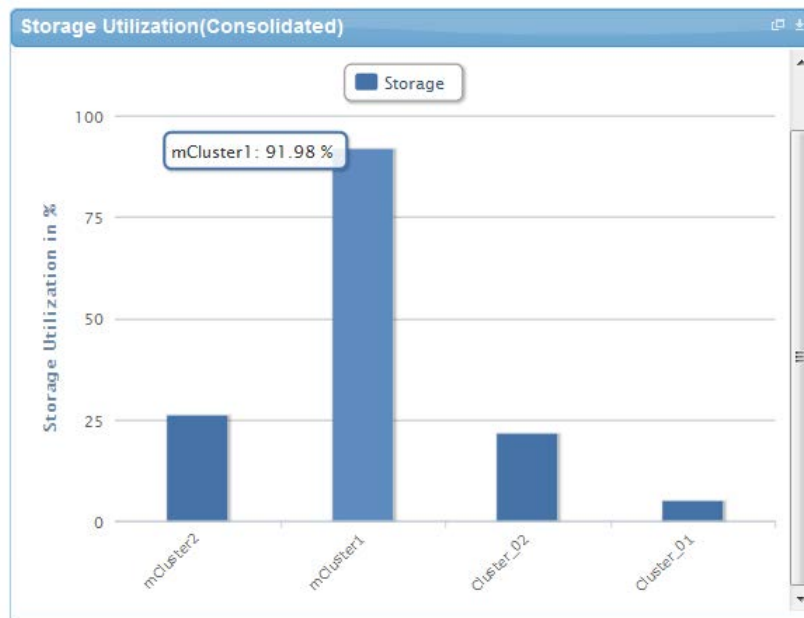
Figure 48. Cluster Utilization (Consolidated) report



Storage Utilization (Consolidated) Report

This report provides storage utilization as a percentage of allocated storage for clusters.

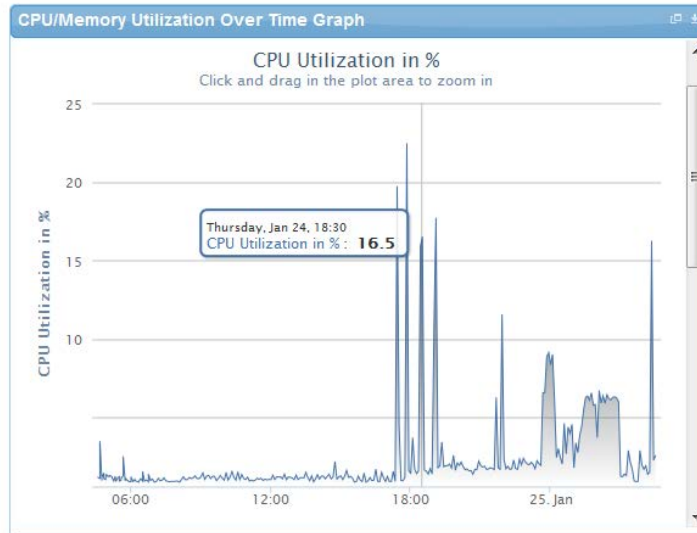
Figure 49. Storage Utilization (Consolidated) report



CPU and Memory Utilization Showback Report

This report provides CPU and memory utilization of hosts in percentage over a period of given time (for example, weekly, daily, and hourly).

Figure 50. CPU & Memory Utilization Showback Report



You can view the data for a specific time interval (with a minimum time interval limit of ten minutes between two data points). To view the specific time interval data, select a point and drag the mouse to a desired data point; this will show the data for the specific time interval. You can reset the time interval to default by clicking **Reset Zoom**.

Appendix A—Build of Materials

Table 18 displays the bill of materials, grouped by Resource Adapters.

Table 18. Build of Material—Resource Adapters

Vendor	Model	Description
Dell	PowerEdge R620	Dell Servers resource adapter using WSMAN and RACADM CLI used for provisioning the R620 Servers
Dell	EqualLogicStorageArray	Management of EqualLogic storage arrays
Dell	EqualLogicStoragePool	Management of EqualLogic storage pools
Dell	PowerConnect7024	Management of switches
VMware	Host	VMware vCenter Management
VMware	Virtual Machine	VMware Virtual Machine Instance Management

Table 19 displays the list of bill of materials, grouped by templates.

Table 19. Bill of Material—Templates

ID	Description	Workflows
1—Physical	AS50 Cluster - VMware ESXi 5.1 Hypervisor deployment ISO boot	Configure ESXi Servers using ISO Boot, Cleanup-Orchestration, and VMFS Datastore Provision.
2—Physical	AS50 Standalone - VMware ESXi 5.1 Hypervisor deployment ISO boot	Configure ESXi servers using ISO Boot, Cleanup-Orchestration, and VMFS Datastore Provision.
3—Logical	Logical Template with One VM Connected to a VLAN	Built-in orchestration.
4—Logical	Logical Template with Two VMs Connected to a VLAN	Built-in orchestration.

Appendix B—Planning Worksheet

Table 20. IP Address Configuration

Equipment	IP Address	Subnet Mask	Gateway	Username	Password
iDRAC R620 Server 1					
iDRAC R620 Server 2					
PowerConnect 7024 LAN switch 1					
PowerConnect 7024 LAN switch 2					
PowerConnect 7024 LAN switch 1					
PowerConnect 7024 san switch 2					
EqualLogic Storage Array Group Management					
Active System Manager Appliance					
vCenter					

ESXi Server IP Address Configuration

The following parameters for each server are required.

Table 21. ESXi Server IP Address Configuration

Name	Value
ESXiSCSIChapUsername	
ESXiSCSIChapSecret	
ESXServerHostname	
ESXServerDomainName	
ESXServerPassword	

VLAN for IOA Configuration

Table 22. VLAN Configurations

Traffic Type	VLAN
Management	
vMotion	
VM Workload(s)	
iSCSI Management / Traffic	

Appendix C—Adding New ESXi ISO Images

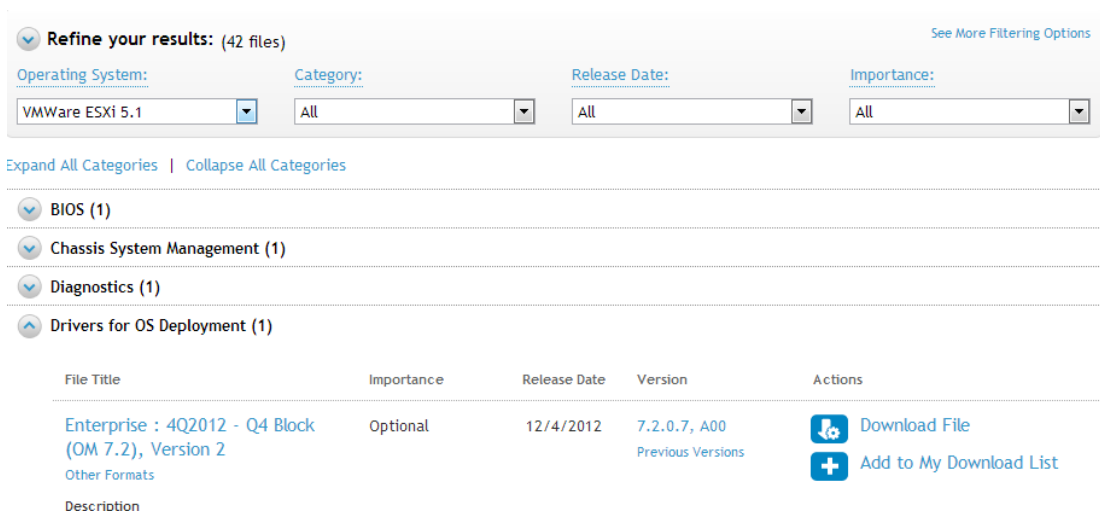
This appendix describes topics related to adding new ESXi images:

Preparing the VMware ESXi 5.x Installation Media

To prepare the VMware ESXi 5.x installation media, complete the following steps:

Download Image ISO

1. Login to: www.dell.com
2. Open the support and driver page: (http://www.dell.com/support/drivers/us/en/04/ProductSelector/Select?rquery=fkey-e-Drivers_PS)
3. Select **Server, Storage and Networking**.
4. Select **PowerEdge**.
5. Select **PowerEdge M620**.
6. From the **Operating System** drop-down list, select **VMware ESXi 5.1**.
7. Click **Drivers for OS Deployment**.



The screenshot shows a search results page on the Dell Support website. At the top, it says "Refine your results: (42 files)" with a link to "See More Filtering Options". Below this are four filter dropdowns: "Operating System:" (set to "VMWare ESXi 5.1"), "Category:" (set to "All"), "Release Date:" (set to "All"), and "Importance:" (set to "All"). Below the filters are links for "Expand All Categories" and "Collapse All Categories". A list of categories is shown with expand/collapse icons: "BIOS (1)", "Chassis System Management (1)", "Diagnostics (1)", and "Drivers for OS Deployment (1)". The "Drivers for OS Deployment (1)" category is expanded to show a table of results.

File Title	Importance	Release Date	Version	Actions
Enterprise : 4Q2012 - Q4 Block (OM 7.2), Version 2 Other Formats Description	Optional	12/4/2012	7.2.0.7, A00 Previous Versions	Download File Add to My Download List

8. On your Active System Manager appliance server, extract the contents of the installation ISO into a new directory using the following commands (login as root user):

```
# mkdir /tmp/dellISO
```

```
# mkdir /home/delladmin/ISOBootImages/esxi5.1_dell_ISOBoot_New
```

```
# mount -o loop VMware-VMvisor-Installer-5.1.0-799733.x86_64-Dell_Customized_RecoveryCD_A00.iso /tmp/dellISO
```

```
# cp -fr /tmp/dellISO /home/delladmin/ISOBootImages/esxi5.1_dell_ISOBoot_New
```



```
# chmod +w /home/delladmin/ISOBootImages/esxi5.1_dell_ISOBoot_New/*
```

NOTE: In case the newly added image need to replace the existing image, then execute following commands

```
mv /home/delladmin/ISOBootImages/esxi5.1_dell_ISOBoot_New
/home/delladmin/ISOBootImages/esxi5.1_dell_ISOBoot
```

Modifying the ESXi boot.cfg Configuration File

To confirm that the installation source is not in the root of the TFTP server, complete the following steps:

1. Update the `kernelopt` parameter to point the kickstart file to the CDROM:

```
# cat boot.cfg

bootstate=0

title>Loading ESXi installer

kernel=/tboot.b00

kernelopt=ks=cdrom:/KS.CFG

modules=/b.b00 --- /useropts.gz --- /k.b00 --- /chardevs.b00 --- /a.b00 ---
/user.b00 --- /s.v00 --- /misc_cni.v00 --- /net_bnx2.v00 --- /net_bnx2.v01 ---
/net_cnic.v00 --- /net_tg3.v00 --- /scsi_bnx.v00 --- /scsi_bnx.v01 ---
/net_bna.v00 --- /scsi_bfa.v00 --- /ima_be2i.v00 --- /scsi_be2.v00 ---
/net_igb.v00 --- /scsi_mpt.v00 --- /ima_qla4.v00 --- /net_qlcn.v00 ---
/scsi_qla.v00 --- /ata_pata.v00 --- /ata_pata.v01 --- /ata_pata.v02 ---
/ata_pata.v03 --- /ata_pata.v04 --- /ata_pata.v05 --- /ata_pata.v06 ---
/ata_pata.v07 --- /block_cc.v00 --- /ehci_ehc.v00 --- /weaselin.t00 ---
/esx_dvfi.v00 --- /xlibs.v00 --- /ipmi_ipm.v00 --- /ipmi_ipm.v01 ---
/ipmi_ipm.v02 --- /misc_dri.v00 --- /net_be2n.v00 --- /net_e100.v00 ---
/net_e100.v01 --- /net_enic.v00 --- /net_forc.v00 --- /net_ixgb.v00 ---
/net_nx_n.v00 --- /net_qlge.v00 --- /net_r816.v00 --- /net_r816.v01 ---
/net_s2io.v00 --- /net_sky2.v00 --- /net_vmxn.v00 --- /ohci_usb.v00 ---
/sata_ahc.v00 --- /sata_ata.v00 --- /sata_sat.v00 --- /sata_sat.v01 ---
/sata_sat.v02 --- /sata_sat.v03 --- /sata_sat.v04 --- /scsi_aac.v00 ---
/scsi_adp.v00 --- /scsi_aic.v00 --- /scsi_fni.v00 --- /scsi_hps.v00 ---
/scsi_ips.v00 --- /scsi_lpf.v00 --- /scsi_meg.v00 --- /scsi_meg.v01 ---
/scsi_meg.v02 --- /scsi_mpt.v01 --- /scsi_mpt.v02 --- /scsi_rst.v00 ---
/uhci_usb.v00 --- /tools.t00 --- /scsi_qla.v01 --- /dell_con.v00 ---
/xorg.v00 --- /imgdb.tgz --- /imgpayld.tgz

build=

updated=0

# chmod +w /home/delladmin/ISOBootImages/esxi5.1_dell_ISOBoot_New/*
```

Creating a Kickstart Configuration File

1. Create the image directory on the HTTP server base location:

```
# cd /home/delladmin/ISOBootImages/esxi5.1_dell_ISOBoot_New
```

NOTE: The name of the directory needs to be same as the image directory created on the TFTP server.

2. Create a file named `ks.cfg` inside the image directory.

The content of the file will be as shown below:

```
# Sample scripted installation file

# Accept the VMware End User License Agreement

vmaccepteula

# Set the root password for the DCUI and ESXi Shell

rootpw <PASSWORD>

clearpart --firstdisk=<FIRSTDISK> --overwritevmfs

# Install on the first local disk available on machine

install --firstdisk=<FIRSTDISK> --overwritevmfs

# Set the network to DHCP on the first network adapter, use the specified
hostname and do not create a portgroup for the VMs

<NETWORKCONTENT>

# reboots the host after the scripted installation is completed

reboot

%firstboot --interpreter=busybox

<FIRSTBOOTDATA>
```

NOTE:

- The value of `<PASSWORD>` will be replaced with the password string defined in the Resource Adapter configuration file. The default value is **iforgot**.

- The value of `<FIRSTDISK>` will be replaced by `local/usb`, depending on the boot sequence defined in the deployment template.
- The value of `<NETWORKCONTENT>` will be replaced for the DHCP or static IP address configuration. The default configuration is `dhcp`. In case the value of the IP address, subnet mask, and name-server is provided in the inventory, then the static IP address configuration will be applied on the server.
- The value of `<FIRSTBOOT>` will be replaced by the network configuration template file, available inside the Resource Adapter package.
- The `<FIRSTBOOT>` configuration also includes:
 - iSCSI initiator configuration
 - ESXi license key. The value is added if the license key information is available in the resource adapter configuration file.
 - Name of the local datastore

3. Copy the `ks.cfg` file to the HTTP Server base location.

```
mkdir -p /var/www/html/esxi5.1_dell_ISOBoot_New/
```

```
cp /home/delladmin/ISOBootImages/esxi5.1_dell_ISOBoot_New/ks.cfg  
/var/www/html/esxi5.1_dell_ISOBoot_New/ks.cfg
```

To replace an existing image directory, skip the above commands and execute the following:

```
mkdir -p /var/www/html/esxi5.1_dell_ISOBoot
```

```
cp /home/delladmin/ISOBootImages/esxi5.1_dell_ISOBoot/ks.cfg  
/var/www/html/esxi5.1_dell_ISOBoot/ks.cfg
```

Update the file permission on the newly added image:

```
chown -R delladmin:delladmin /home/delladmin/ISOBootImages
```

```
chmod -R +w /home/delladmin/ISOBootImages/
```

Adding the New Image to the Software Repositories

If the new image is added by replacing the earlier image directory, then no change is required.

If the new image is added with a new name/directory, then **ISO Bootable Image** repository needs to be updated as described in section **Updating Repository Elements for ISO Bootable Images**.

Appendix D—Enabling SSH in PowerConnect 7024 switches

1. Telnet to the Powerconnect switch or open the console connection to the switch.
2. Switch to enable mode.
3. Execute the following commands on the switch:

```
Configure
```

```
!DSA key generation
```

```
crypto key generate dsa
```

```
!RSA key generation
```

```
crypto key generate rsa
```

```
!enable SSH server
```

```
ip ssh server
```

```
line ssh
```

```
login authentication default
```

```
enable authentication default
```

```
end
```

```
write
```

Appendix E—Firmware and Software Base Lineup

The following table lists the minimum recommended firmware/software versions.

Table 23. Firmware and Software versions

Device	Revision
Compute and Management Server - R620 & R420	
BIOS	1.6.0
iDRAC7 Enterprise	1.40.40
LCC (Life Cycle Controller) 2	1.1.5.165
Network Controller Broadcom FW	7.6
EqualLogic MEM	1.1.2
VMware ESXi	5.1 U1 (Build 1065491 A01)
Management VMs and Software	
VMware vCenter Server	5.1 U1 (Build 1065491 A01)
Dell EqualLogic Virtual Storage Manager (VSM)	3.5.2
Dell OpenManage Plug-in for vCenter	1.6 (A00)
SAN HQ	2.6 EPA
VMware vCloud Connector	1.5
Dell OpenManage Essentials	1.2
Dell OpenManage Repository Manager	1.4.113
Cell Multi-UPS Management Console (MUMC)	1.6.0001
Storage, Switches, UPS	
PowerConnect 7024	5.1.0.1 (A13)
EqualLogic PS Array(s)	6.0.5
Dell 2700W UPS FW	1.14.0003 A07

Device	Revision
Compute and Management Server - R620 & R420	
Dell UPS NMC FW	1.16.0001 A08

Appendix F—FAQs

1. Volumes on EqualLogic Array are not removed for cancelled sessions. This wastes storage space and consumes iSCSI connections. How do you remove the volumes?

User should manually cleanup the unused volumes on the EqualLogic storage array and iSCSI connections after session is canceled.

2. Where is the VM created? Is there way to specify in which datastore it gets created?

The VM will be automatically created in the Cluster Storage Volume (CSV) to provide high availability. The location of the VM cannot be customized.

3. Is there a way to revert a template or import the original template?

The original templates are available on the appliance in folder `$HOME/DefaultTemplates`.

Ass a best practice:

- a. Make a copy of the template and make the required modification in the cloned template.
 - b. Keep the copy of the original templates by exporting them locally on a client machine and importing it as needed.
4. What is the difference between synchronize and discovery?

During the discovery process, the following information is discovered and added to Active System Manager:

- o Inventory information
- o Operation center view
- o Link information

During the synchronize process, information is discovers only for the **Operation Center** view hierarchy.

5. Are SSI properties overwritten when upgrading the RA?

Yes, upgrading the RA will override the `ssi.properties` file. As a best practice, before upgrading the RA, backup the RA directory by following the steps given below:

- a. Log in to the Active System Manager server as **delladmin** user.
- b. Run the following commands:

```
cd $HOME/asm-galeforce/gf/common/integrations
```

```
cp -r <manufacturer>/<model> <manufacturer>/<model>_<CurrentDate>
```

6. Will images and firmware released after this release of Active System Manager 7.1 work with Active System Manager 7.1?

Images and firmware versions that are released after Active System Manager 7.1 should work.

7. What is the base level configuration for Dell PowerConnect 7024 switches?

The base level configuration is the minimal set of configurations running on the switches that bring them to an operational state. Additional details of these configurations can be found in the embedded sample configuration file.

8. Is it a requirement to create pools on the Dell EqualLogic storage array?

Creating pool is optional. If there are no user-defined pools on the EqualLogic Storage array, then a newly created volume becomes part of the default storage pool. Pools can be created by executing the `PoolCreate` method on the EqualLogic group object in the **Operation Center View**.

9. Is HTTPS supported for connecting to Active System Manager?

Yes, HTTPS is supported on Active System Manager. The default HTTPS port is 50500.

10. Is terminal server connectivity required for Dell PowerConnect 7024 switches?

SSH connectivity is mandatory, but telnet connectivity is optional for PowerConnect 7024 switches.

11. Does the default password of the Active System Manager appliance get updated?

The appliance login password can be changed. If the password is changed, software repositories that are configured on Active System Manager Appliance should be modified with the new password.

12. How would a user know what are the optional parameters in an orchestration step method?

Parameters with the * sign suffixed in front of them are mandatory and the ones without * sign are optional.

13. How do you change the hostname of the Active System Manager server?

To change hostname of the Active System Manager server:-

- c. Log in to the Active System Manager as the `root` user.
- d. Open the `/etc/sysconfig/network` file, and specify the new host name in the `HOSTNAME` field.
- e. Update the host name in the `/etc/hosts` file.
- f. Run the `reboot` command to restart the server.
- g. Log in to the server as a `delladmin` user after restarting the server.
- h. Run the `hostname` command to verify if the new host name is configured as host name.
- i. Stop the Active System Manager services.
- j. Change the directory using `cd $HOME/asm-galeforce/gf/sbin`
- k. Run `./updateHostName.sh` and follow the instructions to configure the host name in the Active System Manager installation.
- l. Delete the following files from the `/home/delladmin/directory`:
 - `.ssh/id_rsa`

- `.ssh/id_rsa.pub`

- m. Create a password less connection using the command `ssh-keygen`.
- n. Start the Active System Manager Services. For details on starting and stopping the Active System Manager services, see *Configuring Active System Manager Services*.

14. When Active System elements are discovered separately, why does template validation fail?

This is as per design, the DIS links are discovered only when the complete Active System discovery is performed. DIS links are required for Active System Manager template validation

15. Interface mapping (DIS links) between the end devices is not correct as they don't represent the actual location of the end devices.

Links discovered during discovery don't represent the actual connection between the end devices, those are dummy connections. The DIS links are discovered so that we could represent connection/links in the ASM template. This allows scheduling of the ASM templates with links in ASM template.

16. While creating/editing the server profile template or attaching server profile to a server, can I select firmware files from different repositories?

No, selected firmware files must belong to a single repository. For example, if you choose iDRAC and BIOS firmware for update; both should be from the same repository.

17. How are gold volumes on a EqualLogic storage array secured?

Gold volumes are secured by creating the access rights for the CHAP users.

To create a gold volume:

1. Create a volume of appropriate size on an EqualLogic Storage array.
2. Associate the CHAP account and associate it with the newly created volume.
3. Connect to the management host and configure the newly created datastore.

18. When do I add new images and firmware versions in the appliance?

New images and firmware versions can be added to the appliance whenever the new versions are available. The new versions should be discovered by the respective software repositories and then must be associated with the proper resource types and instances before they can be used for provisioning various resources in the environment.

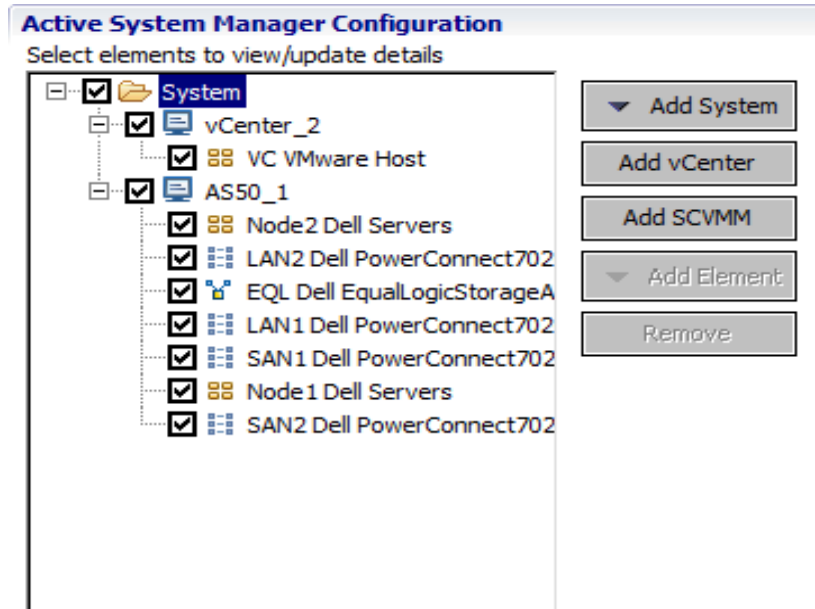
19. How to remove a server from a session, either to free-up the unused servers or because the server has broken.

The server can be removed from the session but no cleanup operations are currently performed while removing a specific server from the session. You must cancel the session and then remove the server from a session.

20. If vCenter and Active System Nodes are unchecked in discovery configuration, then discovery initiated from an orchestration does not discover vCenter or Active System Elements.

This is as per design, for discovery to work, the Active System elements and applicable vCenter entries should be checked in the discovery setup. For example, for AS50 system, the Discovery setup should be as shown in Figure 51.

Figure 51. AS 50 Discovery Setup



21. The Volume Create step of the AS50 Cluster - VMware ESXi 5.1 Hypervisor deployment ISO boot template fails.

This issue is observed because there is a connection limit of seven simulation connections to EqualLogic. The connections include SSH, Telnet, and Web GUI connections. This limit is fixed and not adjustable.

Recommendation/Workaround:

- o There should be only four sessions running in parallel using an EqualLogic Storage Group.
- o If you want to provision a 32-blade cluster, then build the cluster using eight blades in each session. Do not initiate the session at the same time; schedule them sequentially and with the interval of 60 minutes.

22. The MEM Configuration step of the AS50 Cluster - VMware ESXi 5.1 Hypervisor deployment ISO boot template fails.

This issue is observed because there is a connection limit of seven simulation connections to EqualLogic. The connections include SSH, Telnet, and Web GUI connections. This limit is fixed and not adjustable.

Recommendation/Workaround:

- o There should be only four sessions running in parallel using an EqualLogic Storage Group.

- o If you want to provision a 32-blade cluster, then build the cluster using eight blades in each session. Do not initiate the session at the same time; schedule them sequentially and with the interval of 60 minutes.

23. Why are orchestrations failing on servers with dual SD cards?

If a server has dual SD cards, the BIOS setting must be set to mirror mode to avoid orchestration failures.

24. How do I increase the number of logical deployments that can run concurrently on the system?

For better performance of the individual sessions, the appliance has a default limit of 10 parallel actions. Logical sessions are long-running, so deploying more than 10 at a time will cause the system to queue up sessions greater than 10. This will also prevent other logical or virtual actions from being run until the logical jobs clear. If you need to run large batches of logical jobs, the SSH session limit can be increased to allow other actions to be performed while those jobs are running.

The SSH session limit for parallel execution is set to 10 by default on the appliance. However, the session limit can be configured based on your requirements and if you are facing bottlenecks because of it. Active System Manager has been validated with parallel executions. Therefore, to reduce the waiting time, it is recommended to set the thread pool size and parallel execution count to less than or equal to 50.

To change the Parallel SSH execution limit on the appliance to 50:

- a. Log in as delladmin user.
- b. Open the `./common/etc` folder using the following command:

```
cd asm-galefore/gf/common/etc
```
- c. Open the `remoteExecServer.xml` file and set the value for the following parameters to less than equal to 50:
 - Set `poolsize` - Attribute in the threadpool node
 - Set `executioncount` - Attribute in maxparallel node
- d. Run the `reboot` command to restart the server.

25. On scheduling the template, the session is in confirmed state for a very long time.

The scheduled start time of the template could be later than the current time of the Active System Manager server. This issue happens when the Active System Manager server and the client machine are in different time zones.

26. Can I add new VLANs to a running physical session?

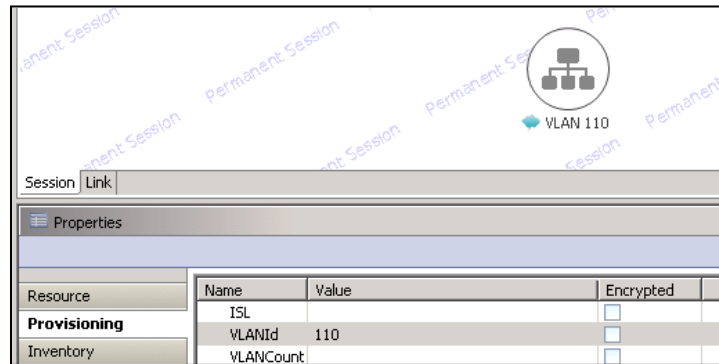
Yes, you can add new VLANs to a running session.

To add VLANs to a running session, perform the following steps:

- a. From **Components** view, drag and drop a new VLAN component in a running session.

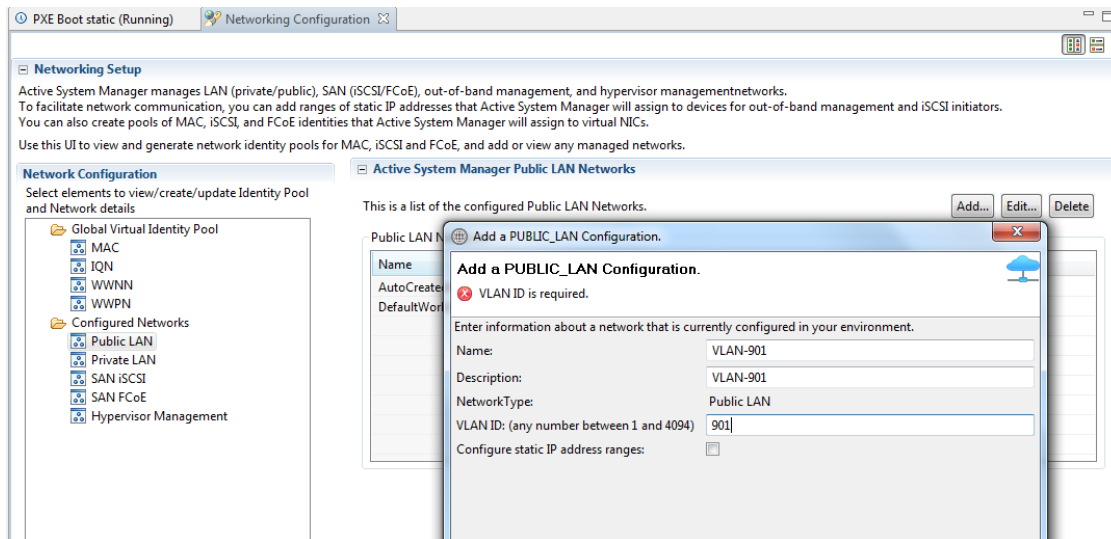
- b. Click **Save** in order to save the changes done to the running session. This step reserves a random VLAN ID from a range defined on the switch in the Active System Manager Inventory. To specify a specific VLAN ID, provide the value in the VLAN component as shown below:

Figure 52. VLAN ID



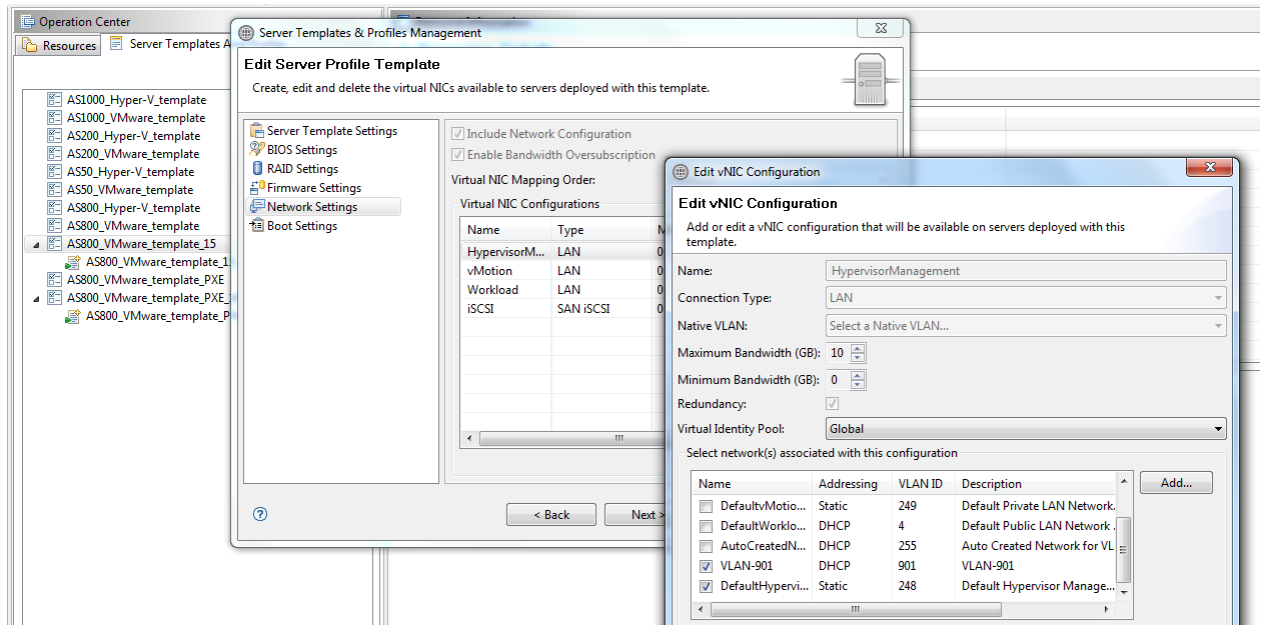
- c. From the link view in the running session, create the required links from the new VLAN component to the Dell Server instance and save the session. This step provisions the new VLANs on the switch.
- d. Add the new VLAN ID added in the running session manually to the list of Networks by going into the **Networking Configuration** tab available under **Setup**.

Figure 53. Add a PUBLIC_LAN Configuration



- e. Update the Server Profile Template to incorporate the new VLAN ID.

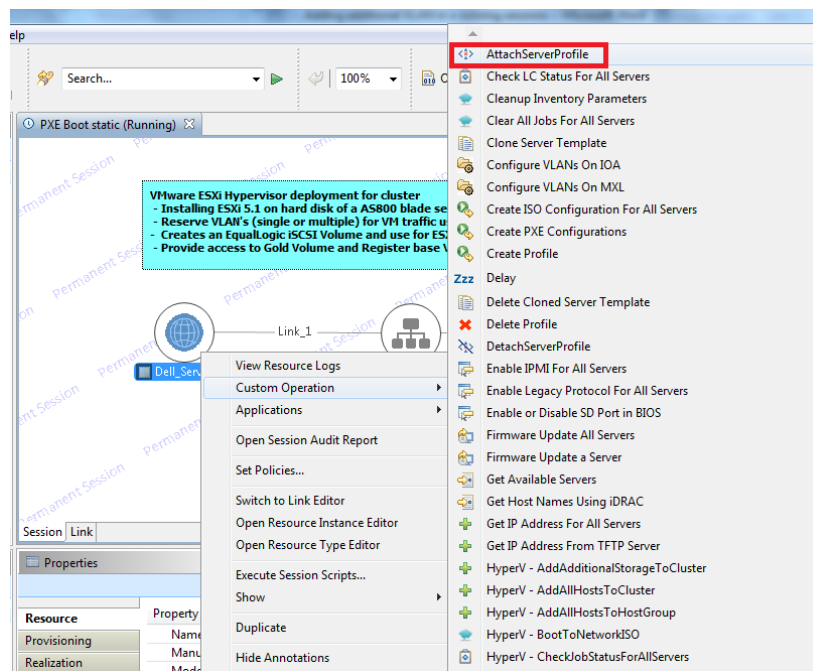
Figure 54. Edit vNIC Configuration



- f. Execute the custom operation **AttachServerProfile** with following parameters:
- Parameter **IOMsOnly** should be set to **true**
 - Parameter **ProfileIdList** should have the list of profile IDs in a comma separated format

This step provisions the new VLANs on the IOA.

Figure 55. Attach Server Profile



- g. Execute the Dell Server custom operation **VMware - Update ESXi Server Port Group VLAN Info** to configure the required port-groups on the vSwitch corresponding to new VLAN component in session.
This step adds the new VLANs to the ESXi Host.