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# Active System Manager Solution Guide

## Active System 1000 for Hyper-V

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*Version 7.1*



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## Introduction to the Active System 1000 Solution

Today, many IT organizations are missing deadlines or cannot respond fast enough to customer demands, have insufficient IT budgets, or have to manage trade-offs. In response, convergence in the data center has emerged as a trend in IT to address the growing needs for agility, efficiency, and quality. IT organizations are rapidly adopting converged infrastructure solutions to lower the cost of running critical workloads, enable faster infrastructure deployments, and drive simplicity and speed of management.

Below are some high-level solutions for the Dell™ Active System (AS) 1000:

- **Rapid and Simple Scalability**—The Dell AS 1000 is a part of the Active Infrastructure family, which includes fully pre-integrated converged infrastructure solutions. As one of the pre-integrated solutions offered, the Dell Active System 1000 is a scalable blade server and storage infrastructure designed to support private cloud infrastructures. Able to add compute and storage capacity as needed in a non-disruptive manner, the Active System 1000 offers many different configuration options for varying business conditions and sizes for a highly utilized IT infrastructure.
- **Quick and Easy Provisioning**—The Dell Active System 1000 allows for more rapid application deployments through minimized design, test, procurement, integration, and configuration phases. One key feature of the Active System 1000 is the Active System Manager, which offers streamlined, automated processes, as well as a quick response to dynamic business needs through template-based, modular infrastructure provisioning. This allows IT infrastructures to achieve higher efficiencies and more accurate delivery of IT services. A single IT generalist can manage most common tasks via the streamlined and automated processes delivered through the Active System Manager.
- **Automated and Efficient**—The Dell Active System 1000 enables your data center to reach its maximum potential, and reduces the complexity and amount of time spent manually managing storage functions through automation for a more efficient and simplified management. This allows the Dell Active System 1000 to support the efficient, agile delivery of applications and IT services made possible by a private cloud infrastructure, delivering true IT as a Service through private cloud benefits such as self-service portals and chargebacks.

This document describes the deployment and management of Active System Manager 7.1 on Active System 1000 infrastructures.

## 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 following web site:

[www.dell.com/support/softwarecontacts](http://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:

- Active System 1000 Spec Sheet
- Active System 1000 VMware ESX 5.x Reference Architecture
- Active System Manager 7.1 User Guide
- Active System Manager 7.1 Web Interface User Guide

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

1. Navigate to [www.dell.com/support/manuals](http://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 Microsoft System Center, Dell PowerEdge blade servers, Dell PowerEdge M I/O Aggregator, Dell Force10 S4810 switch, Dell Force10 S55 switch, Brocade 6510 Fibre Channel Switches and Dell Compellent Storage. Readers can skip the sections of products with which they are familiar.

Table 1. AS1000 Solution Component

Component	Description	Role
Hyper-V Cluster	PowerEdge M620 Blade servers running Windows Server 2012 Datacenter Edition with SP1 and Hyper-V Role enabled	Host Virtual Machines (VM)
Management Cluster	PowerEdge R620 servers running Microsoft® Windows Server® 2012 Datacenter Edition with SP1	Host optional System Center VMM 2012, and Compellent Enterprise Manager, and Dell OpenManage Essentials
Storage	Dell Compellent SC8000 controllers with 24 bay 2.5" SAS enclosures or 12 Bay 3.5" SAS enclosures	Provide shared storage for the Hyper-V cluster to host the VMs
LAN Traffic Switches	Two Force10 S4810 and Dell 10GBE Pass-Through modules for	Support VM, Live Migration, Management, iSCSI and

	the chassis	Cluster traffic
OOB management Switch	One Force10 S55	Provide Management OOB management connectivity
SAN Traffic Switches	Two Brocade 6510 FC Switches	Support Fibre Channel data

## Active System 1000-Supported Configurations

Table 1 lists the Active System Manager solution for the Active System 1000-supported configurations.

Table 2. Active System 1000-Supported Configurations

Configuration	Support
M1000e chassis and supported blade types (M620)	Support firmware images as per the Active System Manager solution for Active System 1000
Dell Force10 Top-of-Rack (ToR) S4810 switches	Supported firmware versions as per the Active System Manager solution for Active System 1000.
Brocade 6510 Fiber Switch and Dell 8   4 I/O modules	Supported firmware versions as per the Active System Manager solution for Active System 1000.
Compellent SC8000 controllers with SAS enclosures	Supported firmware versions as per the Active System Manager solution for Active System 1000
Hyper-V installation support on blade servers	Windows 2012 Server image
Microsoft System Center 2012	

## Active System Manager Deployment

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

- Deploying VHD
- Assigning IP Address to the Active System Manager Appliance
- Installing Active System Manager License
- Configuring Active System Manager Services
- Installing the Active System Manager Client

## Deployment Options

The Active System Manager solution for Active System 1000 is packaged as a virtual appliance and is made available for VMware vCenter 5.1 and the Windows Server 2012 System Center Virtual Machine Manager (SCVMM):

- Open Virtualization Format (OVF) for VMware—The disk format is VMware virtual machine disk (VMDK).
- Hyper-V virtualization environment—The disk format is virtual hard disk (VHD) for Hyper-V.

Table 3. Deployment Options

Virtual Appliance Filenames	Platform
Dell-ActiveSystemManager-7.1.xyztp_VMware.zip	VMware vCenter 5.1
Dell-ActiveSystemManager-7.1.0.xyztp_Microsoft.zip	Microsoft Server 2012 with Hyper-v

## Deployment Prerequisites

Before using the Active System Manager solution for end-to-end provisioning of Active System 1000 components, ensure that the prerequisites listed in Table 4 are in place.

Table 4. Deployment Prerequisites

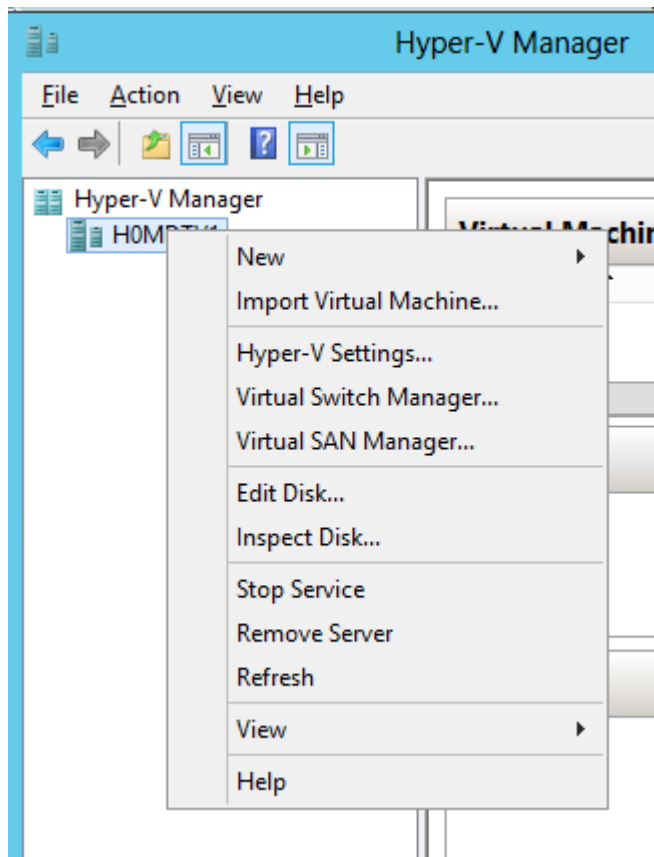
Specification	Prerequisite
Active System 1000 units connected per the <i>Active System 1000 Reference Architecture and Design Guidelines</i>	
Management server is configured per the <i>Active System 1000 Reference Architecture and Design Guidelines</i>	
Firmware and BIOS Requirements	All the equipment needs to be configured with firmware versions as listed in section Appendix B—Firmware and Software Base Lineup
For the Active System 1000 chassis, blade server, and IO aggregators:	<ul style="list-style-type: none"> <li>• CMC for M1000e chassis(s) is configured and has the management IP address and login credentials assigned</li> <li>• Server iDRAC and IOA is configured and has the management IP address and login credentials assigned using CMC Management interface.</li> </ul> <p>The username (root) and password for CMC, IOA and iDRAC need to be identical.</p>
Force10 S4810 switches (Top-of-Rack [ToR])	<ul style="list-style-type: none"> <li>• The management IP address is configured for the ToR switches.</li> <li>• The A1000 base configuration is applied on both switches.</li> <li>• VLANs are created on the switches per the Active System 1000 deployment specification.</li> <li>• The virtual machine (VM) traffic VLANs will be created dynamically by Active System Manager.</li> </ul>
Brocade 6510 Fiber Switch and Dell 8   4 I/O modules	<ul style="list-style-type: none"> <li>• The management IP address is configured for the Brocade switches</li> </ul>
Compellent Storage Array	<ul style="list-style-type: none"> <li>• The management IP is configured for Storage Array</li> </ul>
Microsoft System Center 2012	<ul style="list-style-type: none"> <li>• Microsoft System Center 2012 is configured and accessible via the management and hypervisor management network.</li> <li>• Appropriate licenses are deployed.</li> </ul>

## Deploying VHD

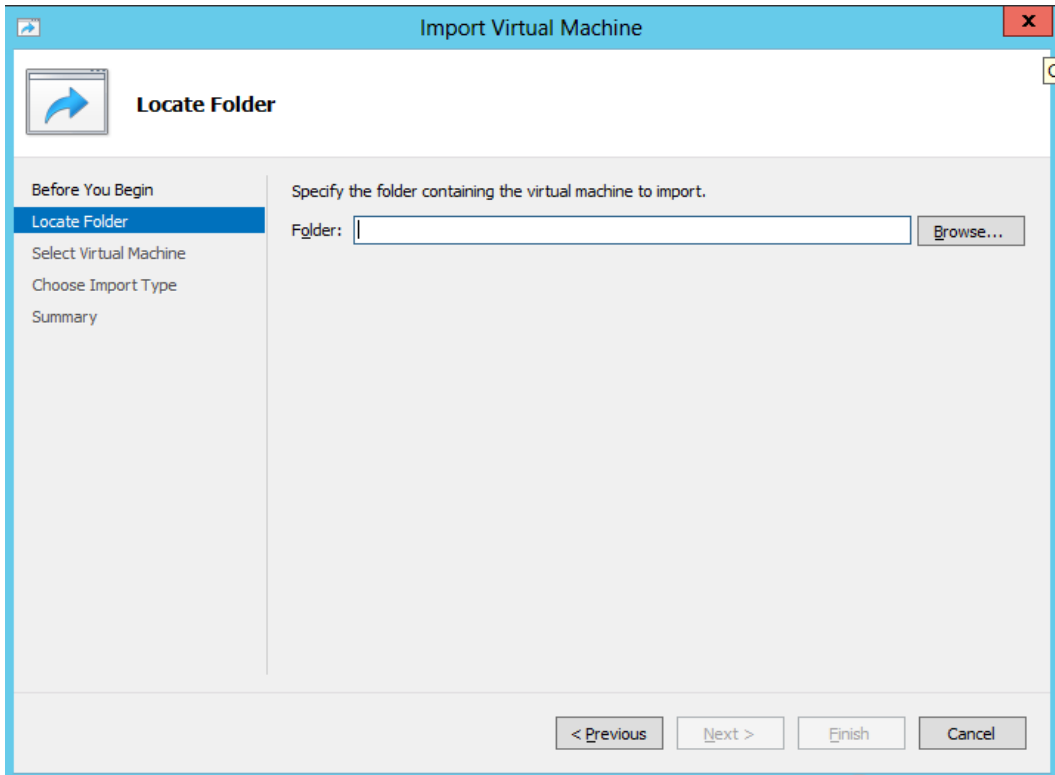
The Active System Manager Open Virtualization Format (VHD) can be imported on to a Hyper-V host using the Hyper-V "Import Virtual Machine" process. When booted, the Active System Manager virtual machine (VM) will get its IP address from an existing DHCP server. In case the DHCP server is not configured, then assign the IP Address manually to the appliance.

### Importing VHD Using Hyper-V Manager

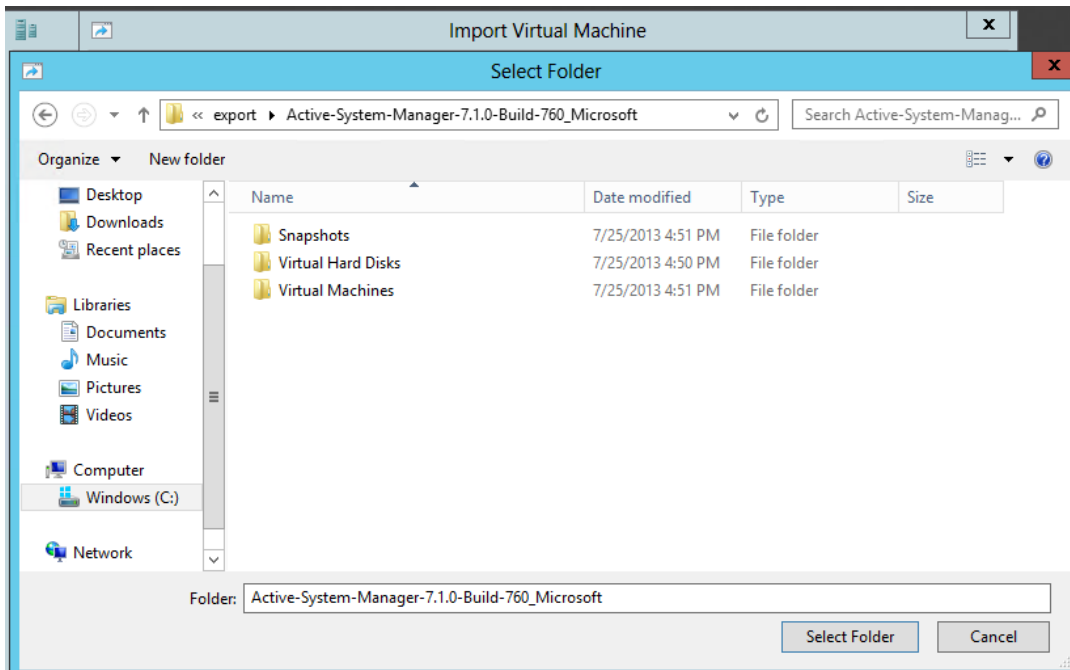
1. From Hyper-V Manager, right-click on a host and select **Import Virtual Machine**.



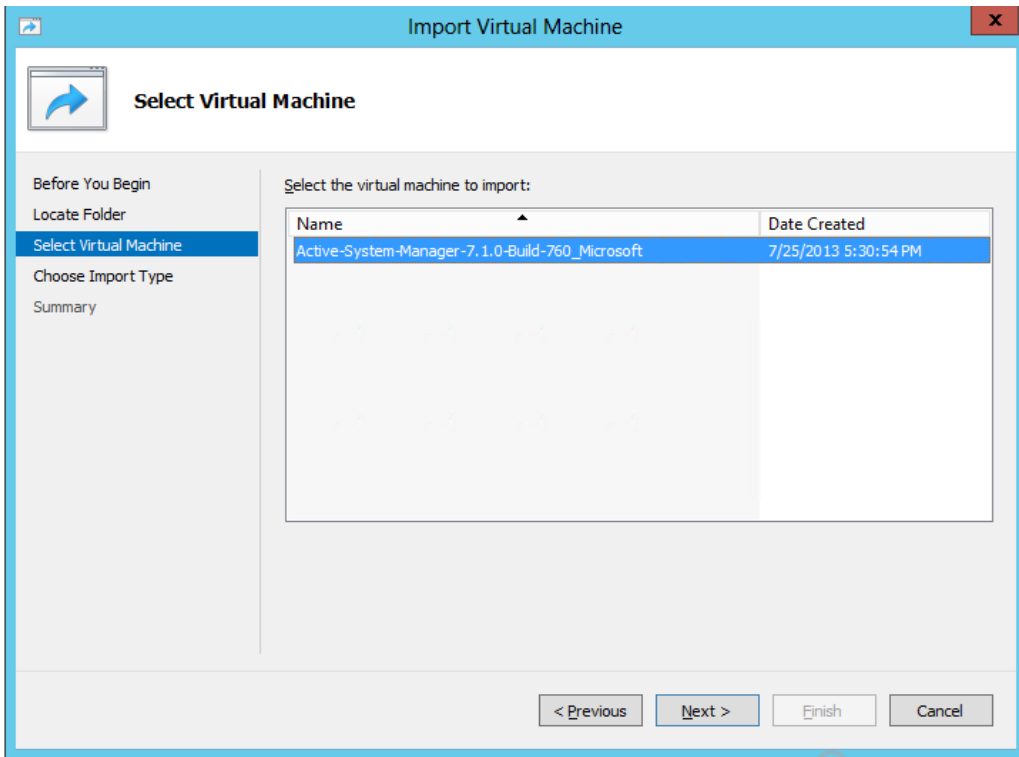
2. On the **Locate Folder** page, **Browse** to the location where the VDH is available in the extracted format



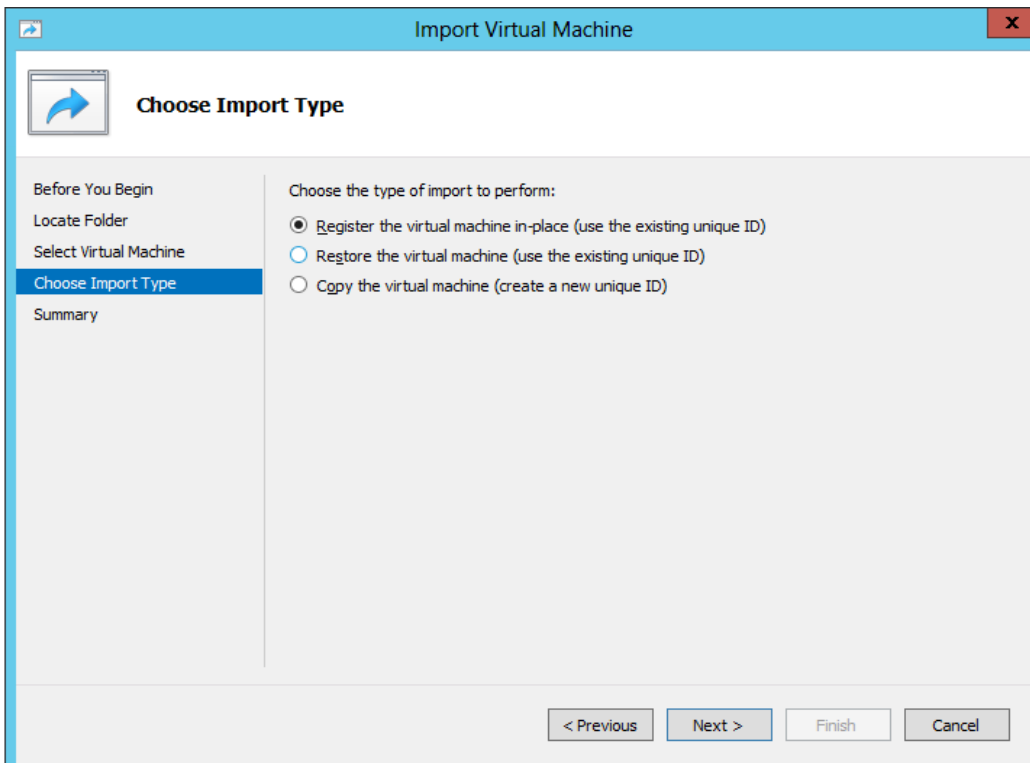
3. Click **Select Folder** and click **Next**.



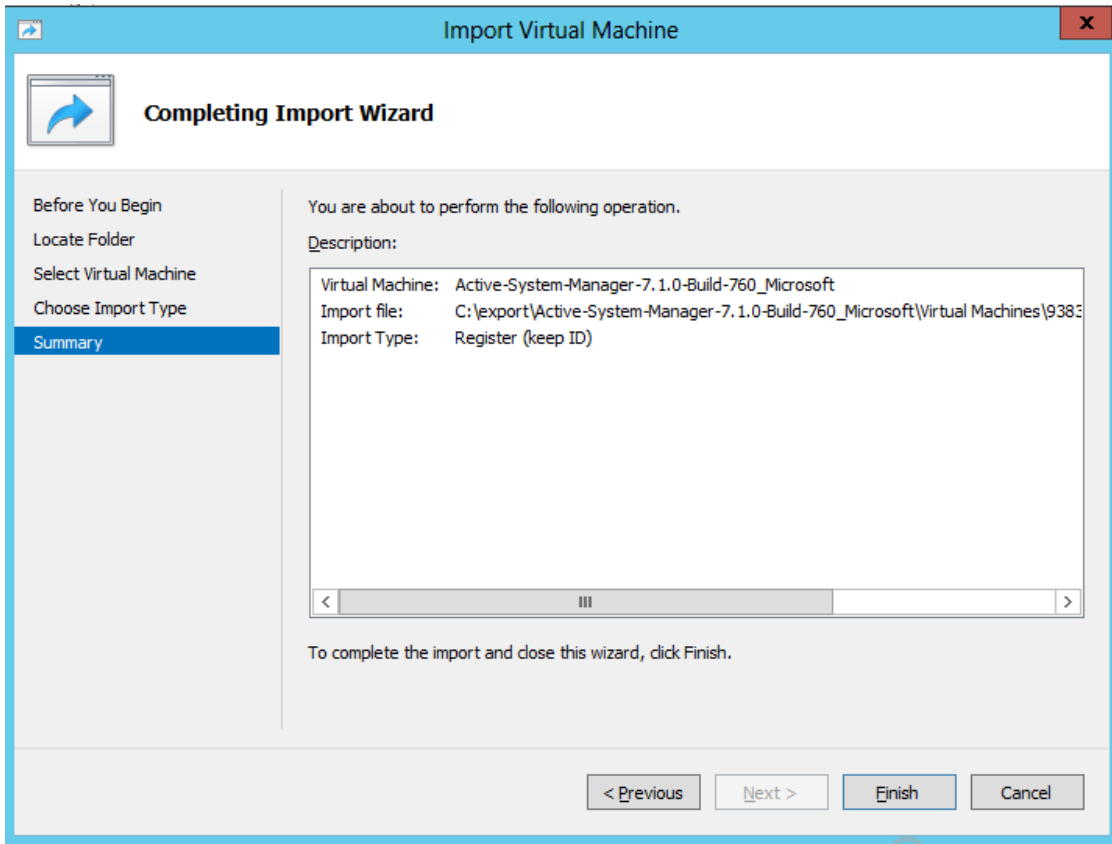
4. On the Select Virtual Machine page, select the VM and click Next.



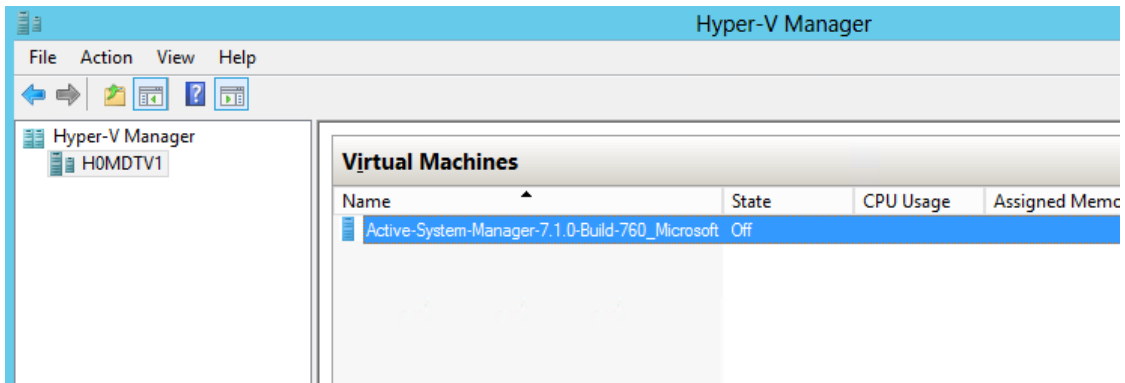
5. On the Choose Import Type page, select Register the virtual machine in place (use the existing unique ID) and click Next.



6. On the Summary page, click Finish.

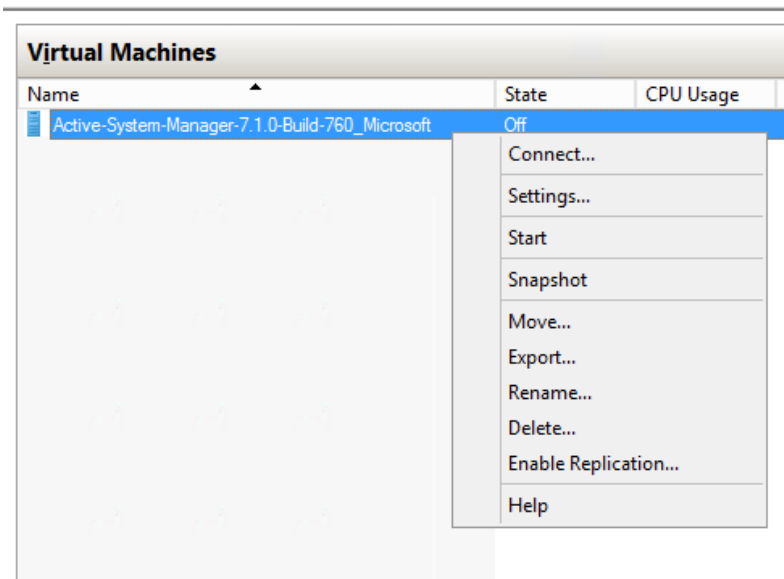


7. The newly imported Virtual Machine appears on the Hyper-V Manager.

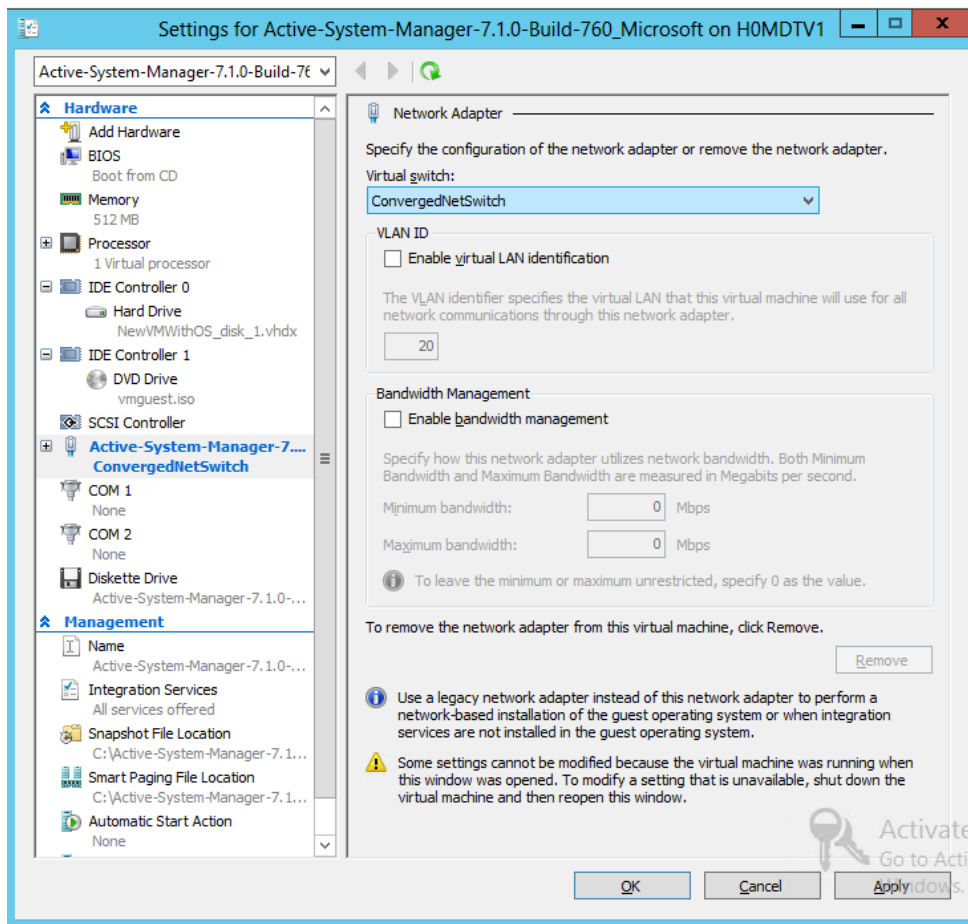




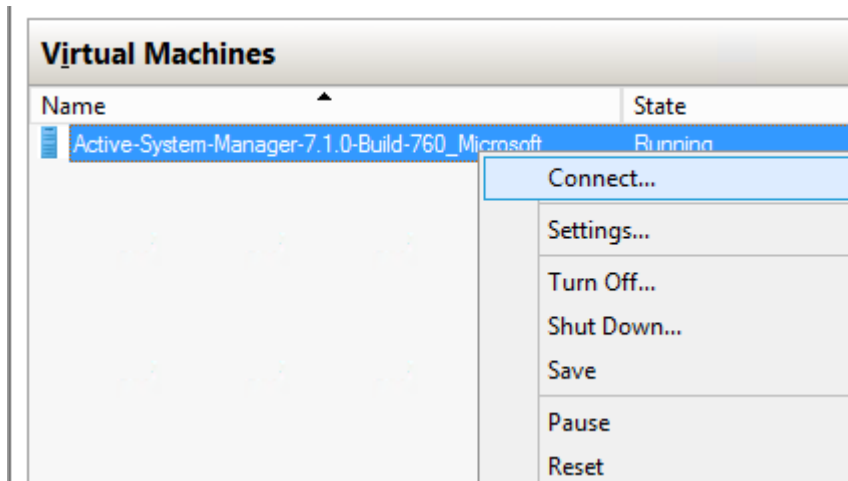
- Right-click the Virtual Machine and select **Start** to power-on the Virtual Machine.



- Select the network name. The VM needs to be mapped to the Hypervisor Management Network. All the networks (e.g. OOB, Hypervisor Management, vMotion and VM workloads) are expected to be accessible from the appliance.



10. Right-click the Virtual Machine and select **Connect** to launch the console.



## 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**.
  - 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 as described in following sections 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.

Most 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.

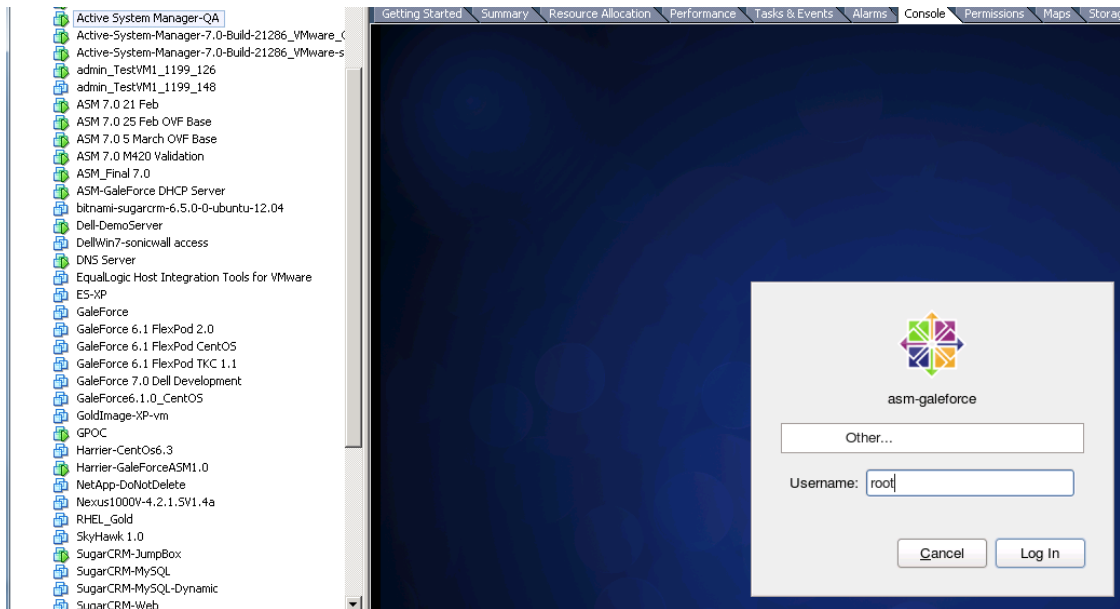
Table 5. Key Access Credentials

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

## Assigning IP Address to the Active System Manager

To assign the IP Address to the Active System Manager appliance perform the following steps.

1. On the vSphere or Hyper-v manager client, select the deployed Active System Manager appliance and open its console.

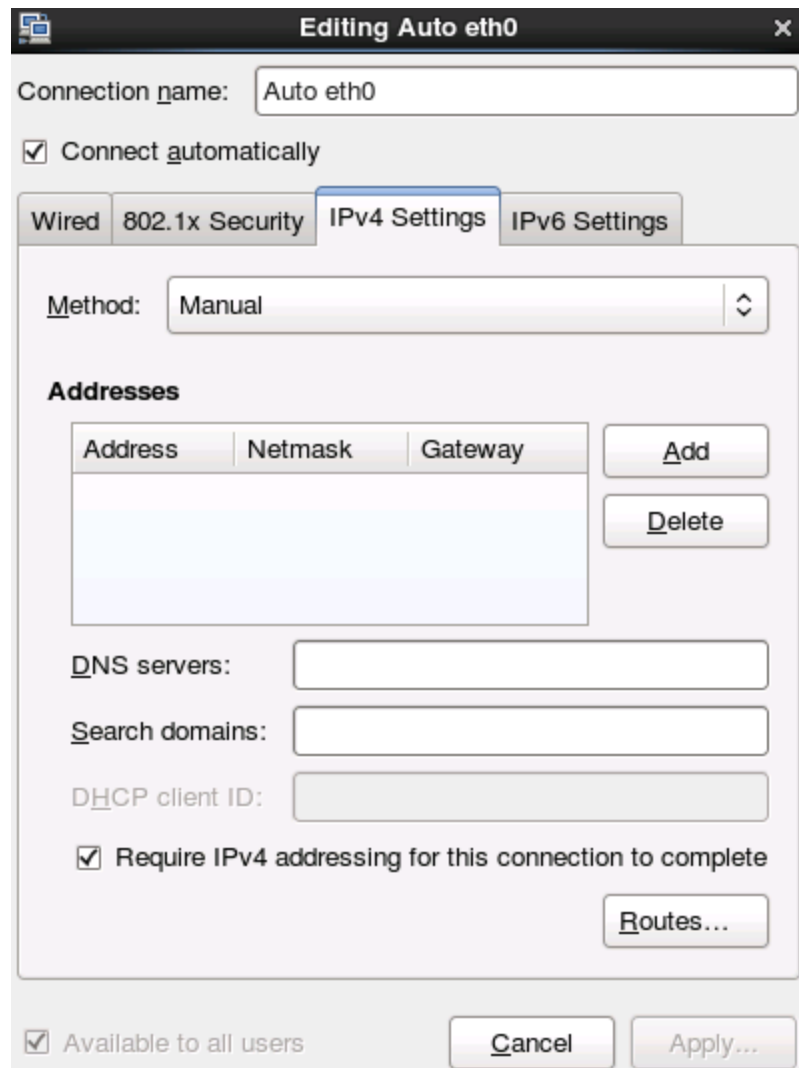


2. Login as root user. Root user credentials are given in Table 5 - Key Access Credentials.
3. Go to System ->Preferences ->Network Connections. This will open a wizard.



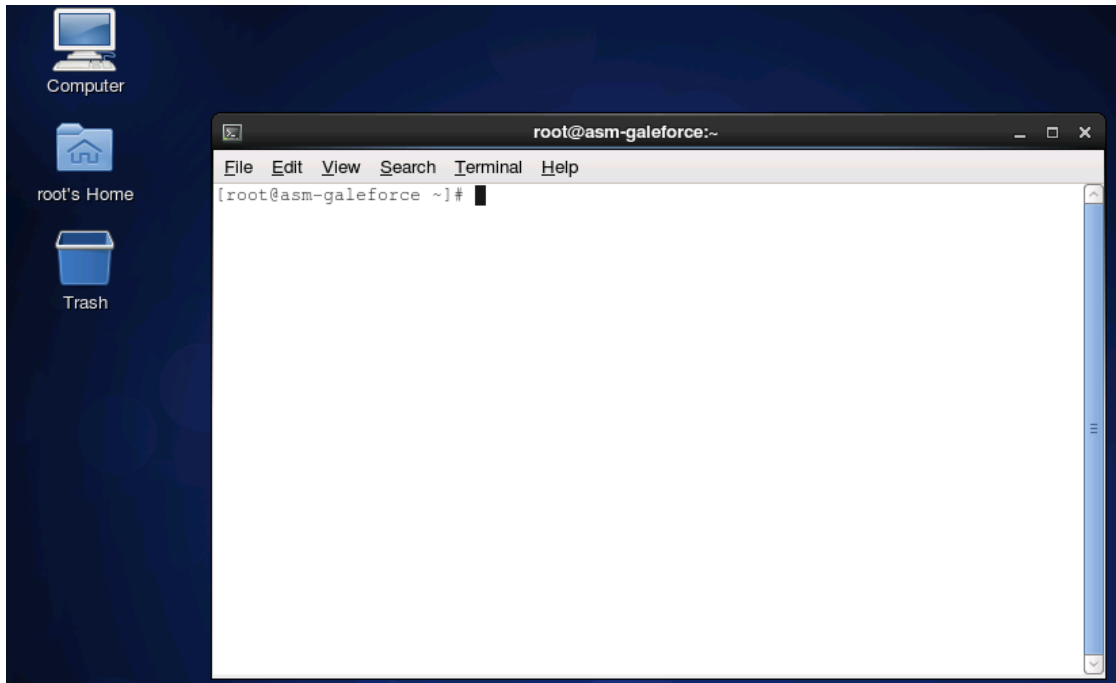
4. From Wizard above, Select appliance NIC on which IP address needs to be configured manually and then click on Edit

5. Selecting the Edit button on Network connections Wizard will open up the following dialog. For updating the IP address, select the IPv4 settings and select the method as "Manual" as shown in the below dialog.



6. Select Add button in dialog above to provide the IP address and other networking details like DNS.
7. Add the ASM IP address to the `/etc/hosts` file and update the system to use an NTP server for date and time
  - a. Stop ASM services. Stopping ASM service is described in [Stopping Services](#)
  - b. Update the `/etc/hosts` file with the DNS name of the NTP server in your environment.
  - c. Update the `/etc/hosts` file with the following line:  
`<IP Address> asm-galeforce`
  - d. Configure the system to use NTP server to update date and time.
  - e. Restart ASM service. Starting ASM service is described in [Starting Services](#)

8. Once this is done, open the terminal by clicking on Applications -> System Tools -> Terminal



9. Then execute the command `"/etc/init.d/network restart"`.
10. Login to the appliance with the newly configured IP Address. This will ensure that IP address is configured correctly on appliance.

## Accessing the Active System Manager Web Client for the First Time

To access the Active System Manager web client, perform the following steps:

**NOTE:** If you are trying to access the Active System Manager for the first time, you must have a valid license to log on to the Active System Manager web portal.

1. In your internet browser, enter the following URL:  
`http://<your server name>:<Active System Manager port number>`

For example:

`http://192.168.0.1:40500` or `http://asm-galeforce:40500`

The copyright information displays and after a few seconds, the Please Sign In page displays.

2. In the Please Sign In page, enter the delladmin Username (admin) and Password (admin), and click Sign In.

**NOTE:** The administrator can use the admin /admin factory-supplied default credentials. Using these default credentials, the super administrator can create multiple administrators.

3. In the License Deployment page, copy and paste the content of the license file provided in the License File text box. Click Submit to log on to the Active System Manager.

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

## Configuring Active System Manager Services

### Starting Services

Appliance is configured to start Active System Manager Services during start-up. Following are the steps for starting the appliance manually.

1. Log in as user "delladmin". The password is listed in Table 5 - Key Access Credentials.

1. 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

Following are the steps for stopping the services manually.

2. Log in as user "delladmin". The password is listed in Table 5 - Key Access Credentials.
3. Execute following command

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

## Verifying Service Status

To verify that all Active System Manager services are up and running, perform the following steps:

4. Log in as user "delladmin". The password is listed in Table 5 - Key Access Credentials.
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
```

Sample output:

```
Active System Manager Services Status

Installation
-----
Release Version: 7.1
Build Number: 471

Database
-----
Vendor: Oracle (Ver: 11.2.0.1.0)
Host: asm-galeforce Port: 1521
Service name: DB11G
Status: Running
```



```
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 the Active System Manager Client Software on Linux

NOTE: When installing an Active System Manager client, it is recommended to use the same NTP server for the client system as the Active System Manager server so that client and server are synchronized to the same date and time. Otherwise, orchestrations may not start at the expected times.

### Installing Active System Manager Client Software on Windows

To install the Active System Manager Client software on a Microsoft Windows OS, perform the following steps:

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 it.
3. A Security Warning window prompts you to run the file.
4. Click **Run** to enable the installation wizard to guide you through the installation process.

**NOTE:** If an existing version of the client is on the client machine, invoking the installer will prompt you to select to uninstall the existing version already on the system. Once selected, the installer will uninstall the existing version and then exit. You must perform the originally intended install after uninstalling the previous version as a single step.

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

## Installing the Active System Manager Client Software on Linux

To install the Active System Manager Client software on Linux, perform the following steps:

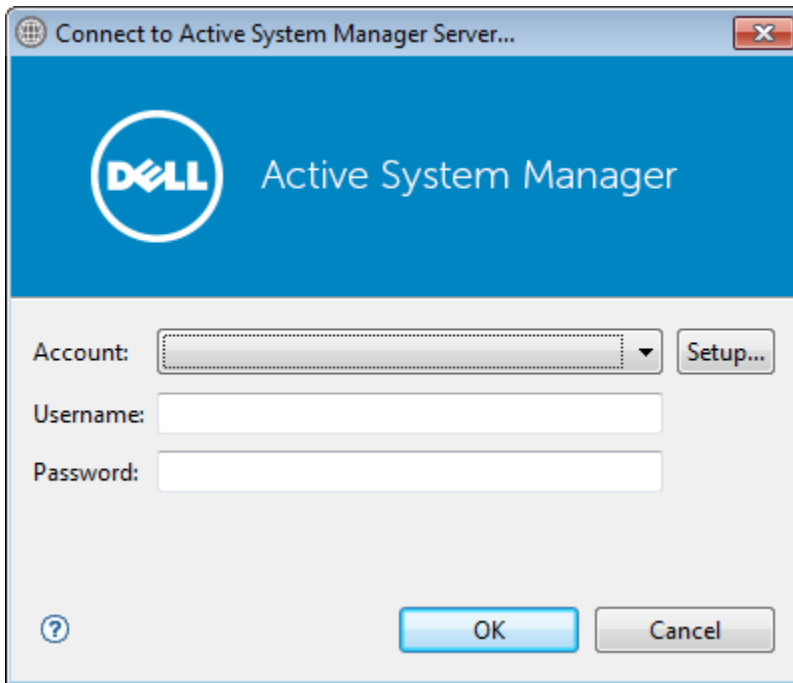
1. Download the `ActiveSystemManager-linux.gtk.x86_7.0.0_xyzt.zip` file.
2. Unzip the file into a specific folder destination on your hard drive.
3. Create the Active System Manager folder and move the file contents to this location.
4. In the console, execute the file "Active System Manager"

## Accessing Active System Manager using Windows client software

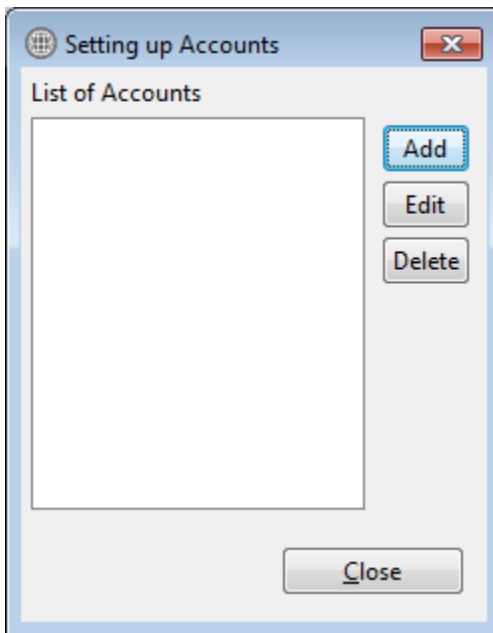
1. Launch the client software application



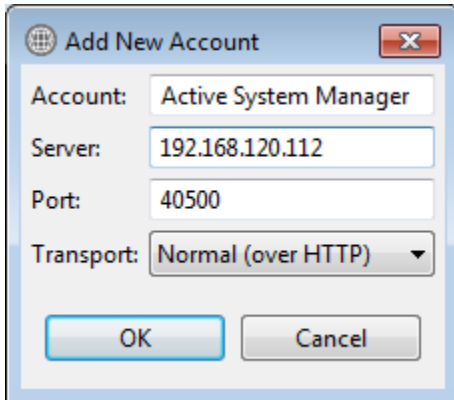
2. Create the account setup. Select button "Setup..."



3. Select button "Add"



4. Provide the name of the connection and IP Address of the appliance. The name of the connection can be any descriptive as shown in the screenshot below

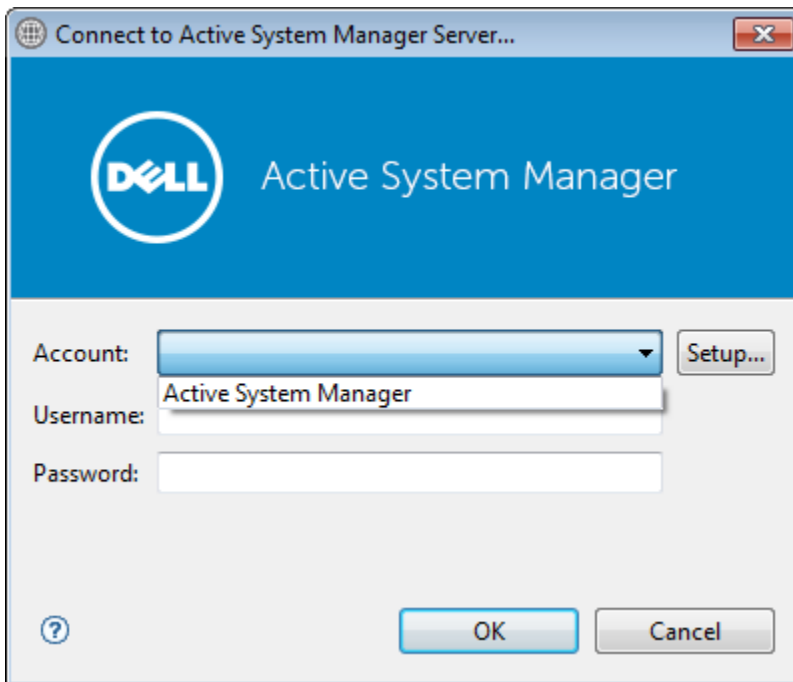


The screenshot shows a dialog box titled "Add New Account". It contains the following fields and values:

- Account: Active System Manager
- Server: 192.168.120.112
- Port: 40500
- Transport: Normal (over HTTP)

At the bottom of the dialog box, there are two buttons: "OK" and "Cancel".

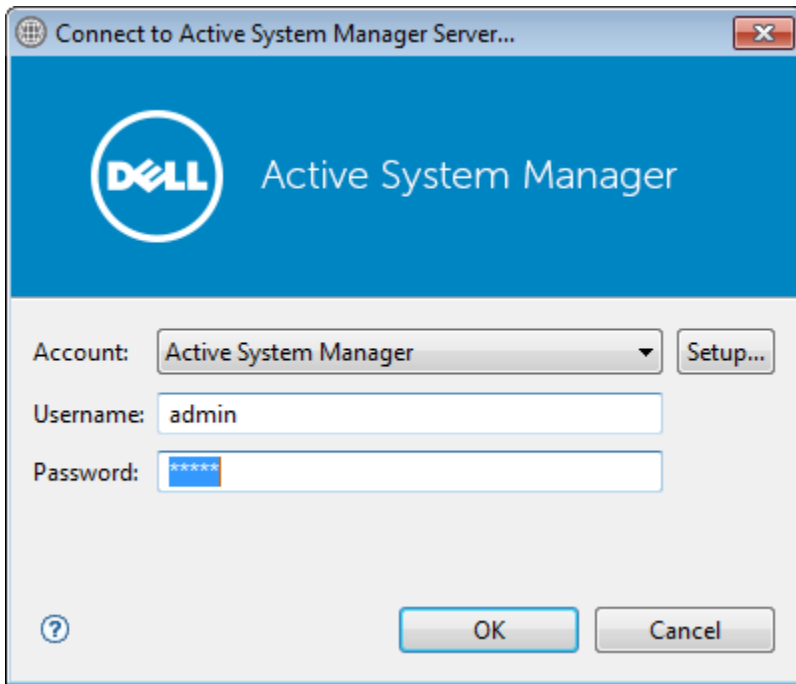
5. Select "OK" and close the "Setting up Account" dialog box.
6. Select the account created in earlier step



The screenshot shows a dialog box titled "Connect to Active System Manager Server...". It features the Dell logo and the text "Active System Manager". Below this, there are the following fields and buttons:

- Account: A dropdown menu with "Active System Manager" selected.
- Username: A text input field.
- Password: A text input field.
- Buttons: "Setup...", "OK", and "Cancel".

5. Provide the username and the password for the appliance. The default username and password is admin/admin and select OK. This will launch the Active System Manager Application.



## Active System Manager Setup

This section captures the sequence of steps which should be followed within Active System Manager for managing deploying the blade servers in the Active System 1000. The sequence of steps includes:

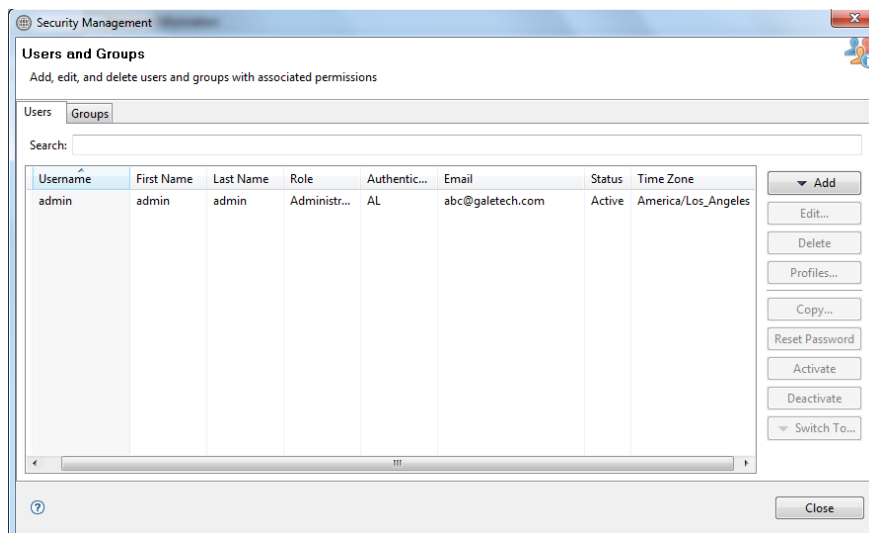
1. User and Group Management
2. Discovering Active System 1000 Components
3. Software Repositories in Active System Manager Appliance

## User and Group Management

You can manage users and groups within the Active System Manager either directly (by entering the values for individual users and groups from the Windows Client graphical user interface [GUI]), 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.

Figure 1. Security Management—Users and Groups



For details on user and group administration, see Chapter 4, “User Profile Management” in the Active System Manager *User Guide*. *User guide is downloadable from the “Help” menu of Active System Manager 7.1 Web Portal or Thick client (Eclipse based)*

## Discovering Active System 1000 Components

Discovery of the Active System 1000 components includes:

- Dell M1000e Chassis
- Dell M620 Blade servers

NOTE: If your blade servers are configured to boot using UEFI, you must manually change the boot mode to BIOS before running discovery.

- Dell PowerEdge M I/O Aggregators
- Force10 Top-Of-Rack (ToR) S4810 switches
- Brocade 6510 Fiber switches
- Dell Compellent Storage Array
- Microsoft System Center 2012 components

## Initiating Discovery

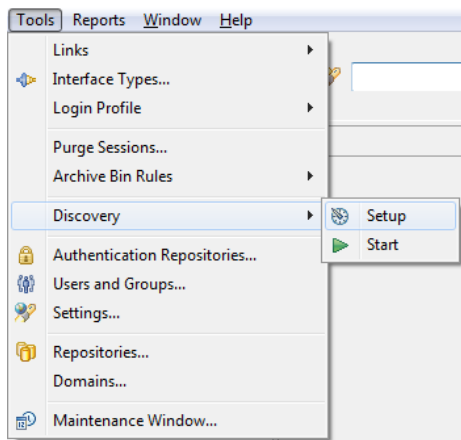
To initiate the Discovery process, perform the following tasks in the order given below:

1. Opening the Discovery Settings
2. Adding Details for the Active System 1000 Unit
3. Adding SCVMM Properties
4. Starting the Discovery

## Configuring Discovery Setup

To configure Discovery settings, perform the following steps:

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



## Adding Details for the Active System 1000 Unit

When specifying discovery details, keep the following in mind:

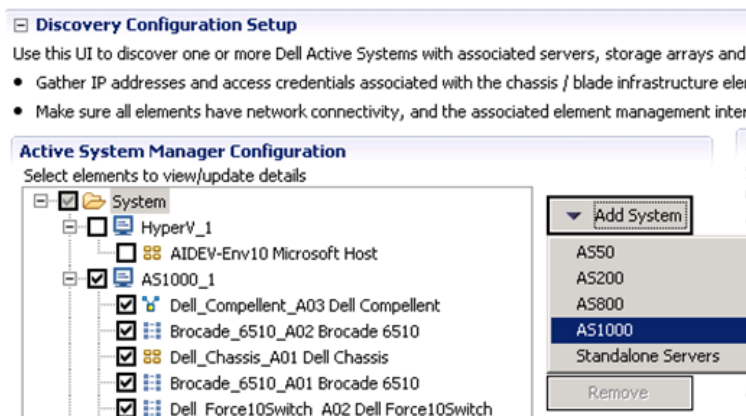
- In general for all the devices, when defining names and provisioning parameters, you should avoid using the following special characters: @ # \$ % ^ ( ) + = " | } { [ ] . , | : ; " ' ? / >
- The volume names of the Compellent Storage Array can contain only alphanumeric characters, and the following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

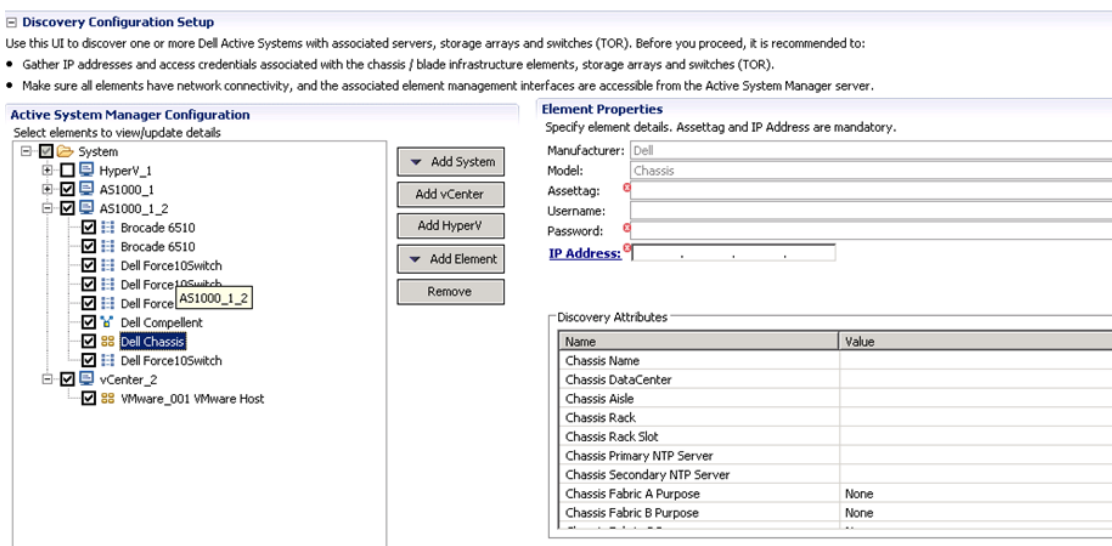
To add details for the Active System 1000 unit, click **Add System**. This feature displays names for Active System 1000 components that will be discovered; for example:

- Dell Chassis
- Dell Compellent Storage Array
- Dell Force10
- Brocade Switches

Figure 2. Adding System Details



1. Select the individual components and provide the required IP address/login credentials.



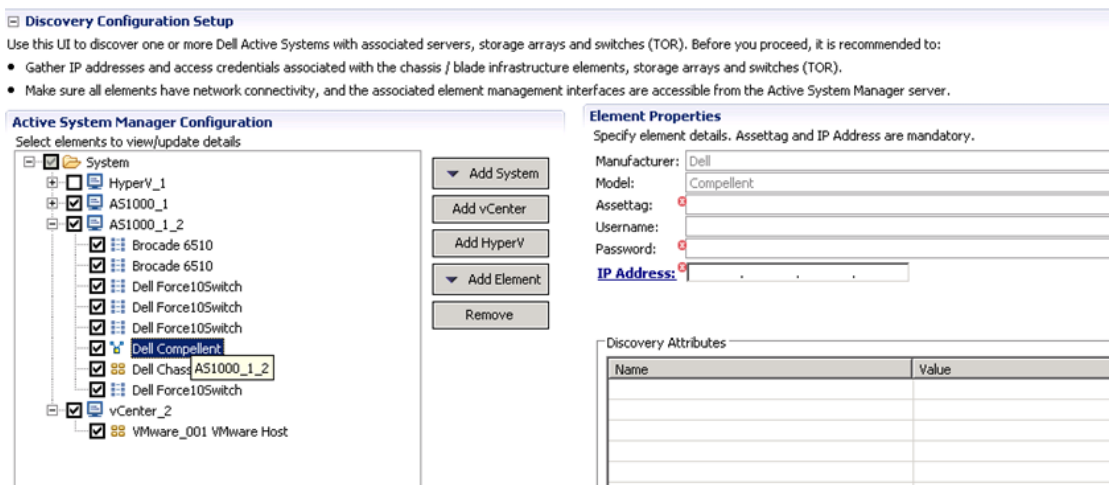
- **Assettag**—Required. Unique key or name used to import or identify the Dell M1000e Chassis within Active System Manager. For example Assettag



Dell\_Chassis\_001 (a unique name) can be used to track the chassis in Active System Manager

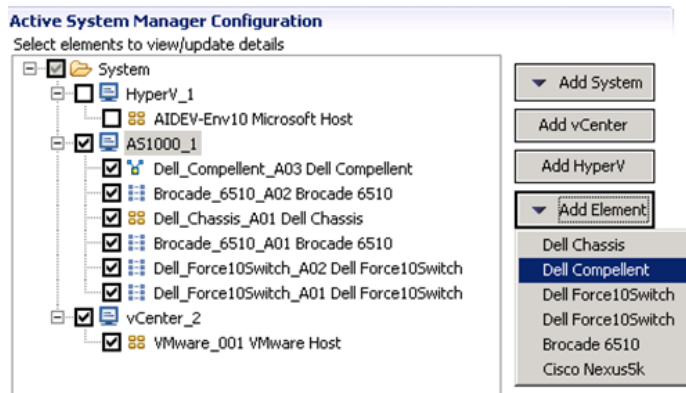
- **Username**—Username to access and manage the Dell M1000e Chassis.
- **Password**—Password to access and manage the Dell M1000e Chassis.
- **IP Address**—Required. IP address for the Dell M1000e Chassis CMC. The CMC should be IP reachable from the Active System Manager server.
- **Chassis Fabric A Purpose**—Required. Must be set to “All LANs”
- **Chassis Fabric B Purpose**—Required. Must be set to “Fibre Channel (FC)”
- **iDRAC Root Password**—Required.
- **IOM Password**—All passwords for IOMs must be set to the same value and provided here.
- **SNMP Community Name**—Required. For example, “public”.

2. Provide the following element properties for the Dell Compellent Storage Array system:

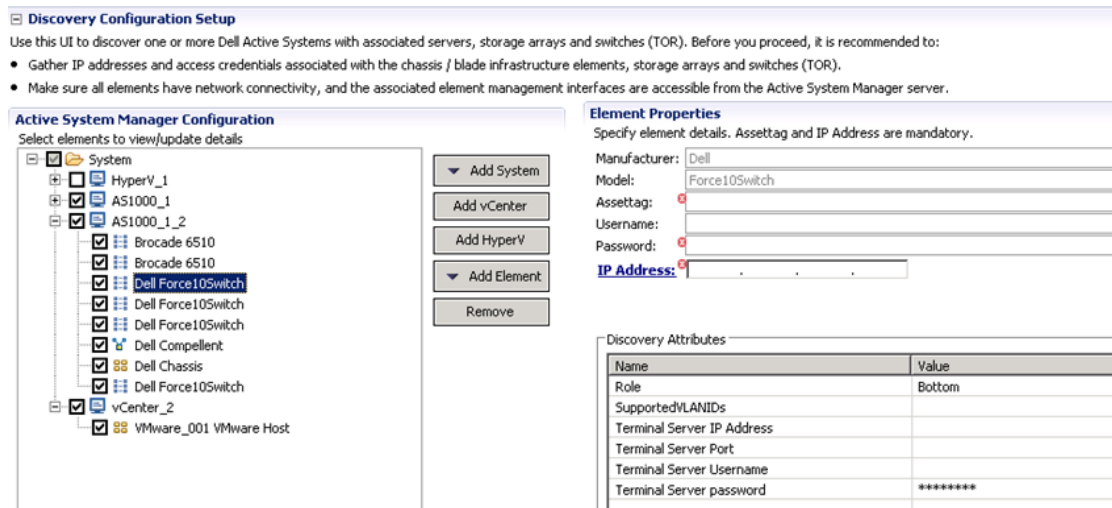


- **Assettag**—Required. Unique key or name for the Compellent Storage Array, which is used to import or identify a Compellent Storage Array in the Active System Manager. For example, Assettag Dell\_Compellent\_PS6100\_1 (a unique name) can be used to track the storage array in Active System Manager
- **Username**—Required. Username to access and manage the Compellent Storage Array.
- **Password**—Required. Password to access and manage the Compellent Storage Array.
- **IP Address**—Required. IP address for the Compellent Storage Array.

For adding a new element in an existing Active System 1000 unit, click **Add Element**, select **Dell Compellent Storage Array**, and provide required details to initiate discovery:



3. For Dell Force10 Switch (ToR) discovery, provide the following element properties and discovery attributes:



- **Assettag**—Required. Unique key or name for Dell Force10 Switch which is used to import or identify the Force10 Switch in Active System Manager. For example, Assettag Dell\_Force10-S4810\_1 (a unique name) can be used to track the Force10 Switch in Active System Manager
- **Username**—Required. Username to manage the Force10 switch.
- **Password**—Required. Password to manage the Force10 switch.
- **IP Address**—Required. Management IP address for the Force10 switch. This should be IP reachable from the Active System Manager server.
- **Role**—(Optional) Top / Bottom.
- **SupportedVLANIDs**—Required. VLAN IDs that could be provisioned on the Top-Of-Rack (ToR) switch. Sample input format (2..1024); the switch will support a VLAN range from 2 to 1,024.

In case the values are not specified, default VLAN range (2..1024) will be automatically populated for the Force10 switch in the inventory.

- **Terminal Server IP Address**—Optional, not relevant for discovery. Required if switch to be managed using the Terminal Server port.
- **Terminal Server Port**— Optional, not relevant for discovery. Required if switch to be managed using Terminal Server port.
- **Terminal Server Username**— Optional, not relevant for discovery. Terminal Server username (if configured)
- **Terminal Server Password**— Optional, not relevant for discovery. Terminal Server password (if configured)

NOTE: Keep in mind, since there are two Force10 ToR switches in an AS1000 this step needs to be done twice, once for the top switch and one for the bottom switch.

4. For Brocade 6510 Fibre Switch (ToR) discovery, provide the following element properties and discovery attributes:

**Discovery Configuration Setup**

Use this UI to discover one or more Dell Active Systems with associated servers, storage arrays and switches (TOR). Before you proceed, it is recommended to:

- Gather IP addresses and access credentials associated with the chassis / blade infrastructure elements, storage arrays and switches (TOR).
- Make sure all elements have network connectivity, and the associated element management interfaces are accessible from the Active System Manager server.
- **Note:**The full POD discovery should succeed atleast once for the links creation in the system.

**Active System Manager Configuration**

Select elements to view/Update details

**Element Properties**

Specify element details. Assettag, Username, Password and IP Address are mandatory.

Manufacturer: Brocade

Model: 6510

Assettag: AS1000v-B6510-TOP

Username: admin

Password: [masked]

IP Address: 172 . 21 . 220 . 35

**Discovery Attributes**

Name	Value
Role	Top
EffectiveConfiguration	AS1000_Top_Config

- **Assettag**—Required. Unique key or name for Brocade 6510 Switch which is used to import or identify the Brocade Switch in Active System Manager.
- **Username**—Required. Username to manage the Brocade switch.
- **Password**—Required. Password to manage the Brocade switch.
- **IP Address**—Required. Management IP address for the Brocade switch. This should be IP reachable from the Active System Manager server.
- **Effective Configuration**—Required. An effective configuration is a subset of the defined zone configuration, containing only the zone configuration objects that are currently enabled; only one configuration can be effective at a time, but multiple configurations can be defined in the database.

For example, if the zone config on the top and bottom switch for use by Active System Manager is "Config\_Top" and "Config\_Bottom", then the "Config\_Top" string should be used for "Effective Configuration" parameter of the Top FC switch, and "Config\_Bottom" should be used as the "Effective Configuration" parameter of the Bottom FC switch.

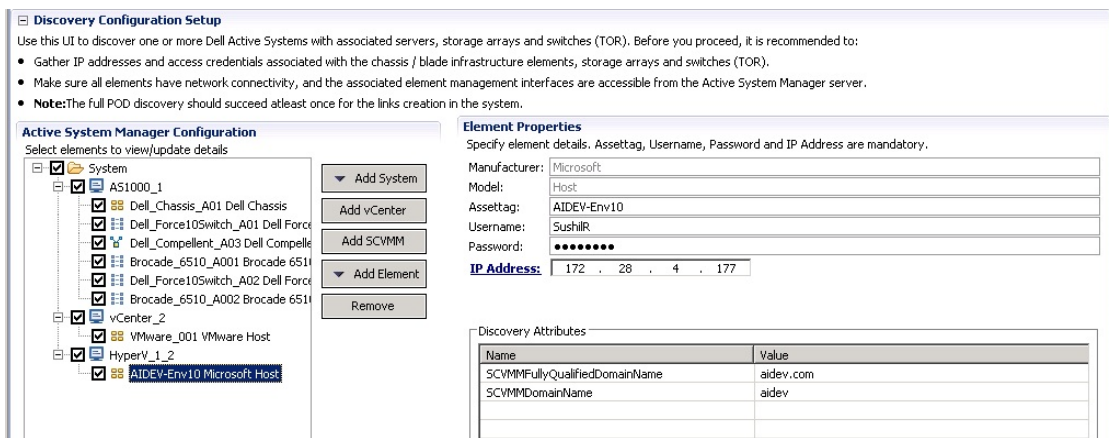
- **Role**—Required. There should be one "Top" and one "Bottom" Brocade FC switch.

### Adding Hyper-V System Properties

Prior to executing discovery of a Hyper-V environment, it is critical that SSH is properly set up on your Hyper-V server and in some cases where the default installation is not accepted, modification must be made to your ssi.properties file for the Microsoft Host resource adapter. For additional information on setting up SSH, see Appendix D.

To add Hyper-V system properties, perform the following steps:

1. On the Active System Manager > **System** > **Hyper-V** configuration, click **Add SCVMM**.
2. For SCVMM discovery, provide the following system properties:



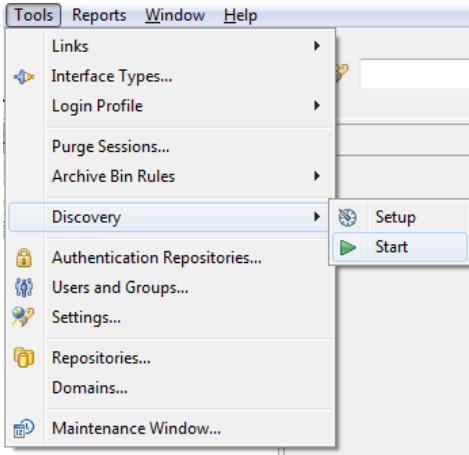
- **AssetTag**—Required. Unique key or name for SCVMM which is used to import or identify from SCVMM in the Active System Manager.
- **Username**—Required. Username to access and manage the SCVMM. Keep in mind, this value is case-sensitive and must match the Active Directory username exactly.
- **Password**—Required. Password to access and manage the SCVMM.
- **IP Address**—Required. IP address for the SCVMM application. This must be IP reachable from the Active System Manager server.
- **SCVMMDomainName**— Required. SCVMM User Domain for login on the server where SCVMM application is running.
- **SCVMMFullyQualifiedDomainName**—Required. SCVMM Fully Qualified Domain for login on the server where SCVMM application is running.

### Starting the Discovery Process

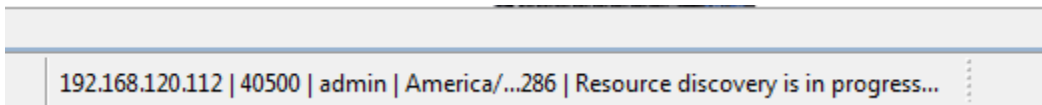
To start the Discovery process, perform the following steps:

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.



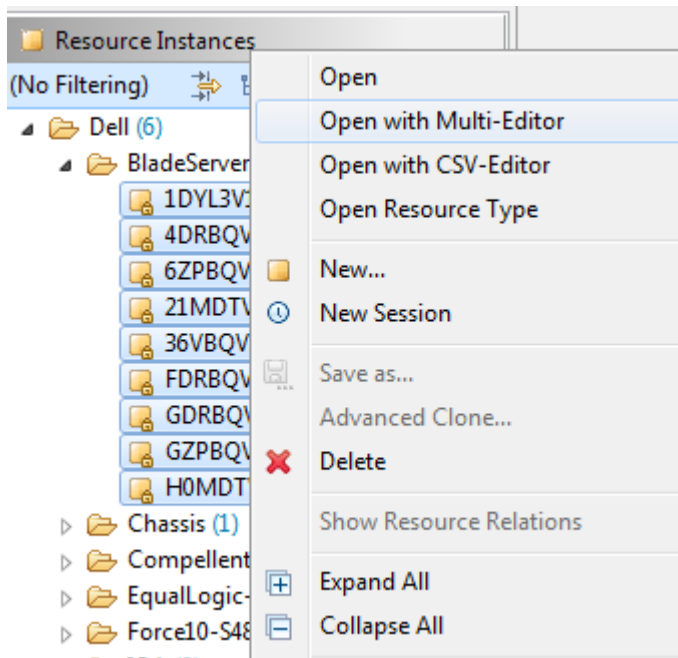
You can view the discovery progress indication at the task bar shown in the bottom of the client:



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

3. After completing the Active System 1000 components discovery, update the following information manually in the Active System Manager for all blade servers and Compellent array. These parameters will be used for configuring the Hyper-V Server.

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



The following parameters must be updated for each Dell server in the ASM inventory. These are required for end-to-end Hyper-V host provisioning:

- **WindowsComputerName** - Hostname to be assigned to the Hyper-V Host  
NOTE: The WindowsComputerName parameter value should not exceed 15 characters in the inventory.
- **WindowsDomainAdminUser** - Windows Domain Admin User name used for adding the host to Domain Controller
- **WindowsDomainPassword** - Windows Domain Admin User Password used for adding the host to Domain Controller
- **WindowsDomainFullyQualifiedName** - Windows Domain FQDN name used for adding the host to Domain Controller (e.g. abcdomain.com)
- **WindowsDomainName** - Windows Domain name used for adding the host to Domain Controller (e.g. abcdomain)
- **WindowsPassword** - Local Admin Password to be configured on the Hyper-V host
- **WindowsProductKey** - Windows Product Key to be used for the installation

The following parameters must be updated for the Compellent array inventory. The values for fault domain aliases are set on the Brocade switches. These aliases are created in the Zone Admin interface. The Fault Domain alias is the grouped alias that contains all of the virtual port aliases created on the Brocade switch which contains the aliases for the physical and virtual ports of the Compellent array.:

- **FaultDomainAlias1** - Alias name for WWPN of Compellent which exists on Brocade switch 6510. For example, "Compellent\_Top"

- **FaultDomainAlias2** - Alias name for WWPN of Compellent which exists on Brocade switch 6510. For example, "Compellent\_Bottom"

## Software Repositories in Active System Manager Appliance

Configuring the following repositories is described in the Active System Manager User's Guide, Chapter 6 - Firmware Management:

- Updating Repository Elements for Dell Servers

Configuring the following repositories is described in this document:

- Updating Repository Elements for Windows Image Repository
- Updating Repository Elements for IOA Switch configuration and Images
- Updating Repository Elements for Brocade Firmware
- Updating Repository Elements for Brocade Switch Configuration
- Updating Repository Elements for ToR Switch Configurations and Images
- Updating Repository Elements for Hyper-V Baseline Images

### Updating Repository Elements for Windows Image Repository

#### Increase the Scratch Space Size of the Image

If you are using a Windows ISO image purchased from Dell, you can skip this section.

When using a non-Dell Windows image, an update must be made to the ISO to increase the scratch space size of the image, because Dell drivers are attached and copied to this location and the size of the Dell OS driver pack exceeds the default 32MB limit provided. Typically, the size needs to be increased no more than 128 MB, but larger sizes could be required in future OS driver pack releases.

Prerequisites:

- Latest supported Windows Assessment and Deployment Kit (ADK).
- UltraISO or other software for extracting ISO content.

To increase the scratch space size on a non-Dell ISO:

1. Extract the ISO content using UltraISO software.

The following steps assume you've extracted the contents to **C:\ExtractedFile**.

2. Create mount directory.

The following steps assume **C:\Mount**.

3. Open Command Prompt and mount **boot.wim**.

```
dism /mount-wim /wimfile:"C:\ExtractedFile\sources\boot.wim" /index:2
/mountdir:"C:\Mount"
```

4. Set the scratch space size.

```
dism /image:"C:\mount" /set-ScratchSpace:128
```

5. Unmount wim file.

```
dism /unmount-wim /mountdir:"C:\mount" /commit
```

6. Re-create ISO.

Use "oscdimg.exe" application from ADK. The oscdimg.exe used in the following command is typically located in C:\Program Files\Windows Kits\8.0\Assessment and Deployment Kit\Deployment Tools\amd64\

NOTE: There is no space after **l** and before `<volumeLabel>`.

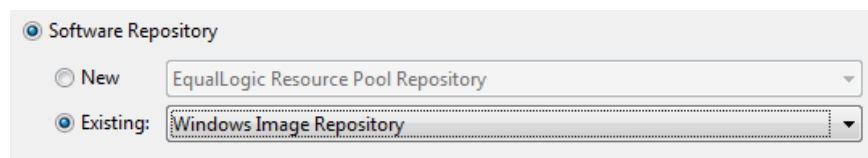
```
oscdimg.exe -m -h -o -u2 -udfver102 -l<volumeLabel> -  
bootdata:2#p0,e,b"C:\Extractedfile\boot\ETFSBOOT.COM"#pEF,e,b"C:\Extra  
ctedfile\efi\microsoft\boot\efisys.bin" "C:\Extractedfile"  
"C:\<ISO_name>.is
```

For additional information, see <http://technet.microsoft.com/en-us/library/hh824936.aspx>.

## Updating Repository Elements for Windows Image Repository

To update these repository elements, perform the following steps:

1. Copy a new Windows 2012 Datacenter .iso to the "/var/nfs" directory of the ASM appliance. This Windows .iso must be called "WS2012\_DC.iso" and is used as the base image for any deployments. There is a dummy file shipped in the "/var/nfs" directory by the name "WS2012\_DC.iso" which must be replaced with the actual Windows image.
2. Open the **Software Repositories** view in the setup perspective by clicking Setup -> Software Repositories on the thick client.
3. Right-click the view and select **Repositories**.
4. Click the **Software Repository** > **Existing** radio buttons.
5. Using the drop-down menu, select **Windows Image Repository** and click **Next**.



The screenshot shows a configuration window for a Software Repository. At the top, there is a section titled "Software Repository" with a radio button selected. Below this, there are two radio buttons: "New" and "Existing". The "Existing" radio button is selected. To the right of the "Existing" radio button is a dropdown menu. The dropdown menu is open, showing a list of repository types, with "Windows Image Repository" selected and highlighted. The text "EqualLogic Resource Pool Repository" is visible above the dropdown menu.

6. 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 needs to be updated in case the default username/password is updated and click **Next**.

NOTE: Even if the default value of this entry is a DNS name, an actual IP address is required instead. DNS names will not work properly when the iDRAC uses this to mount the .iso during a Windows installation.



- Click **Discover** to initiate the discovery of the repository files. This step is required only in case a new ISO image is added to the appliance.

This will list the discovered element in the repository.

**NOTE:** User needs to copy the Windows 2012 System Center ISO image under /var/nfs folder on the ASM appliance with the same name WS2012\_DC.iso. This will be used for installing the ISO image on Blade servers.

Name	Path	Type	Base	Association
WS2012_DC.iso		Image File	<input checked="" type="checkbox"/>	

- Right-click the selected discovered elements and update the Type to **Image File**, and click **Finish**.
- Click **Associate** to associate the selected element with the Microsoft Host resource type and click **Finish**.

## Updating Repository Elements for IOA Switch configuration and Images

To update these repository elements, perform the following steps:

- Open the **Software Repositories** view in the setup perspective by clicking Setup -> Software Repositories on the thick client.
- Right-click the view and select **Repositories**.
- Click the **Software Repository** > **Existing** radio buttons.
- Using the drop-down menu, select **Dell IO Module Firmware repository** and click **Next**.

- Provide Name, Description and update the following Repositories Properties, and click Next.

**Host:** ASM server IPAddress

**BaseDirPath:** Image Base Directory file location exists at tftpboot location.

For example: Dell/IOM

**TFTPROOTPATH:** TFTP Root path location located in ASM server.

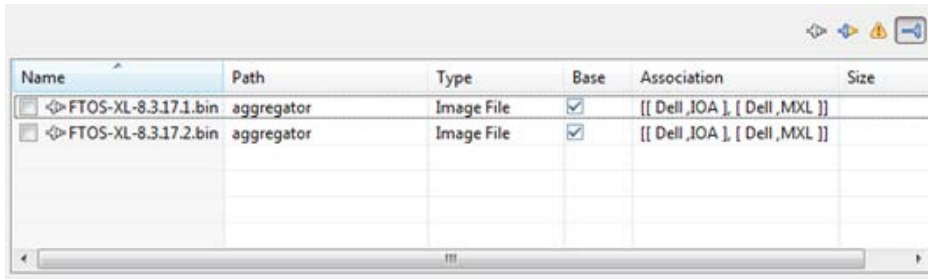
For example: /var/lib/tftpboot

**SSH Username:** ASM server SSH username

**SSH Password:** ASM server SSH password

- Click **Discover** to initiate the discovery of the repository files.

This will list the discovered element in the repository:



Name	Path	Type	Base	Association	Size
<> FTOS-XL-8.3.17.1.bin	aggregator	Image File	<input checked="" type="checkbox"/>	[[ Dell ,IOA ], [ Dell ,MXL ]]	
<> FTOS-XL-8.3.17.2.bin	aggregator	Image File	<input checked="" type="checkbox"/>	[[ Dell ,IOA ], [ Dell ,MXL ]]	

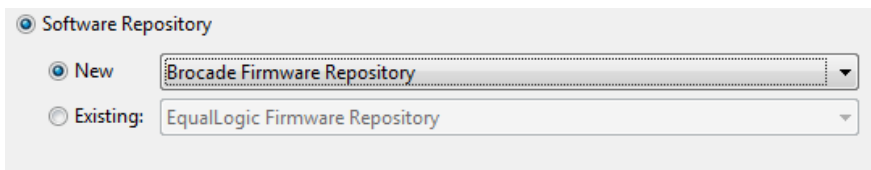
NOTE: Before initiating 'Discover', please make sure required image files should be copied at following location /var/lib/tftpboot/Dell/IOM/FTOS-XL-8.3.17.1.bin

- Click **Associate** to associate the selected element with the Dell IOA resource type and click **Finish**.

## Updating Repository Elements for Brocade Firmware Repository

To update these repository elements, perform the following steps:

- Open the **Software Repositories** view in the setup perspective by clicking **Setup** -> **Software Repositories** on the thick client.
- Right-click the view and select **Repositories**.
- Click the **Software Repository** > **New** radio buttons.
- Using the drop-down menu, select **Brocade Firmware Repository** and click **Next**.



**Software Repository**  
 **New**   
 **Existing:**

- Provide Name, Description and update the following Repositories Properties, and click **Next**.

**Host:** Repository Server IP Address, this can be ASM server IPAddress

**Port:** Repository Server Port, by default its value is 22

**Username:** Repository server username

**Password:** Repository server password

**Base Directory:** Repository server base directory path where Brocade switch image files are copied. If image files are located at /var/lib/tftpboot/images/Brocade/6510 folder then base directory path value would be '/var/lib/tftpboot'.

- Click **Discover** to initiate the discovery of the repository files.

This will list the discovered element in the repository:

Name	Path	Type	Base	Association
<input checked="" type="checkbox"/> v7.1.0		Image File	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/> v7.1.0a		Image File	<input checked="" type="checkbox"/>	

NOTE: Before initiating 'Discover', please make sure Brocade switch image files should be copied at required location.

For example if base directory path is /var/lib/tftpboot then image files should be copied at following location /var/lib/tftpboot/images/Brocade/6510/v7.1.0

7. Click Associate to associate the selected element with the Brocade 6510 resource type and click Finish

## Updating Repository Elements for Brocade Switch Configuration

To update these repository elements, perform the following steps:

1. Open the **Software Repositories** view in the setup by clicking **Setup -> Software Repositories** on the thick client.
2. Right-click the view and select **Repositories**.
3. Click the **Software Repository > New** radio buttons.
4. Using the drop-down menu, select **Brocade Configuration Repository** and click **Next**.

5. Provide Name, Description and update the following Repositories Properties, and click **Next**.

**Host:** Repository Server IP Address, can be ASM server IPAddress

**Port:** Repository Server Port, by default its value is 22

**Username:** Repository server username

**Password:** Repository server password

**Base Directory:** Repository server base directory path where Brocade switch configuration files are copied. For example, if configuration files are located at /var/lib/tftpboot/configurationFiles/Brocade/6510/<assetTag> then base directory path value would be '/var/lib/tftpboot'.

6. Click **Discover** to initiate the discovery of the repository files.

The list of discovered elements in the repository display.

Name	Path	Type	Base	Association
<input checked="" type="checkbox"/> config.txt	.	Configuration File	<input checked="" type="checkbox"/>	

NOTE: Before initiating 'Discover', please make sure Brocade switch configuration files should be copied at required location for each switch.

For example if base directory path is /var/lib/tftpboot then configuration files should be copied at following location  
/var/lib/tftpboot/configurationFiles/Brocade/6510/<assetTag>/config.txt

7. Click **Associate** to associate the selected element with the **Brocade** resource type and click **Finish**.

## Updating Repository Elements for ToR Switch Configurations and Images

To update these repository elements, perform the following steps:

1. Open the **Software Repositories** view in the setup perspective by clicking Setup -> Software Repositories on the thick client.
2. Right-click the view and select **Repositories**.
3. Click the **Software Repository > Existing** radio buttons.
4. Using the drop-down menu, select **Force10 ToR Switch Configuration and Images Repository** and click **Next**.

5. Provide Name, Description and update the following Repositories Properties, and click **Next**.

Repository Properties

**Host:** Repository Server IP Address, can be ASM server IPAddress

**Port:** Repository Server Port, by default its value is 22

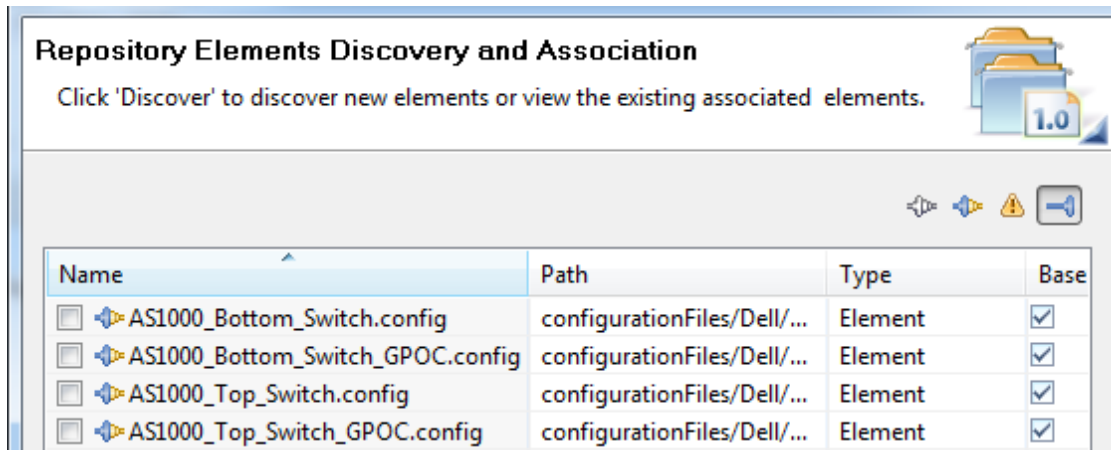
**Username:** Repository server username

**Password:** Repository server password

**Base Directory:** Repository server base directory path where Force10 switch configuration files and images are copied. For example, configuration files are located at /var/lib/tftpboot/configurationFiles/Dell/Force10/<assetTag> and images are located at /var/lib/tftpboot/images/Dell/Force10/<assetTag> then base directory path value would be '/var/lib/tftpboot'.

- Click **Discover** to initiate the discovery of the repository files.

The list of discovered elements in the repository display:



NOTE: Before initiating 'Discover', please make sure Force10 switch configuration files and images should be copied at required location for each switch.

For example if base directory path is /var/lib/tftpboot

- Configuration files should be copied at following location  
/var/lib/tftpboot/configurationFiles/Dell/Force10/<assetTag>/config.txt
- Image files should be copied at following location  
/var/lib/tftpboot/configurationFiles/Dell/Force10/FTOS-SE-8.3.12.1.bin

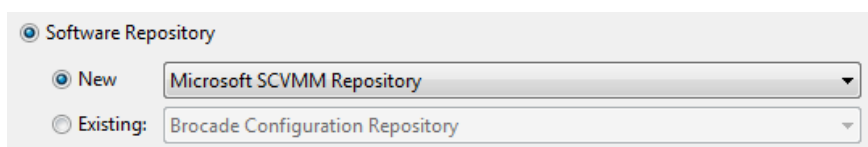
- Right-click the selected discovered elements and update the Type to **Configuration File / image**, and click **Finish**.
- Click **Associate** to associate the selected element with the **Dell Force10Switch** resource type/instance and click **Finish**.

## Updating Repository Elements for Hyper-V Baseline Images

This repository contains Hyper-V baseline images for creating VM clones.

To update the repository elements for Hyper-V baseline images, perform the following steps:

- Open the **Software Repositories** view in the setup perspective by clicking Setup -> Software Repositories on the thick client
- Right-click the view and select **Repositories**.
- Click the **Software Repository > New** radio buttons.
- Using the drop-down menu, select **Microsoft SCVMM Repository** and click **Next**.



5. Update the SCVMM host (IP address), username, and password, and click **Next**.
6. Click **Discover** to initiate the discovery of the repository files. The list of VMs managed by the SCVMM display.
7. Right-click the selected discovered element, select **Set Type > Image File**, and click **Finish**.
8. Click **Associate** to associate the selected element with the **Microsoft** resource type and click **Finish**.

## Configuring Networks

This section discusses configuring networks required for Orchestration and end-to-end configuration. The various networks have to be configured prior to executing an orchestration:

- Accessing the Network Configuration Setup
- Configuring the Networks
- Configuring Default Server Templates

### Accessing the Network Configuration Setup

The network configuration setup can be accessed from the **Tools->Discovery->Networking** as shown in the below picture.

This will open a new page, where the new networks can be configured and default networks can be modified.

**NOTE:** DHCP addressing of the Hypervisor Management, Cluster Private, or Live Migration networks is not supported in a Hyper-V environment.

### Configuring the Networks

AS 1000 come with 6 different types of networks already added. These networks have to be modified as per the environment in which the AS 1000 being used. The below sections describes configuring the same.

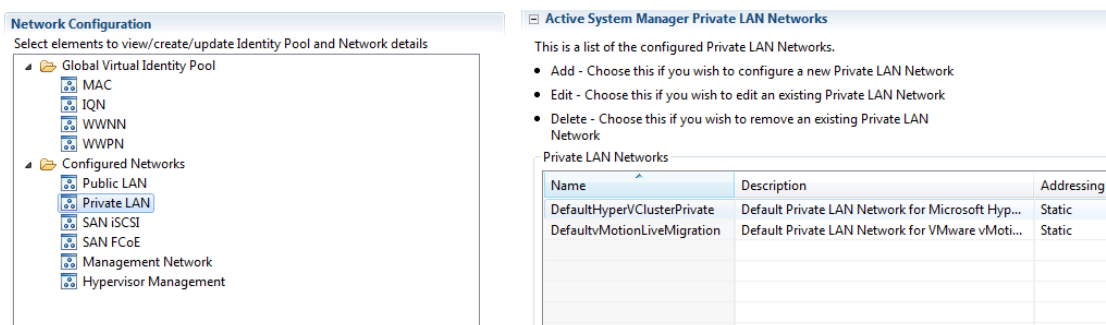
**NOTE:** Keep in mind, you must modify the VLAN ID for the iSCSI network, even if it is not being used, to a VLAN ID other than 1.

For more information about networks, see the *Active System Manager 7.1 User Guide* Chapter 10, "Network Management".

### Configuring an existing Network

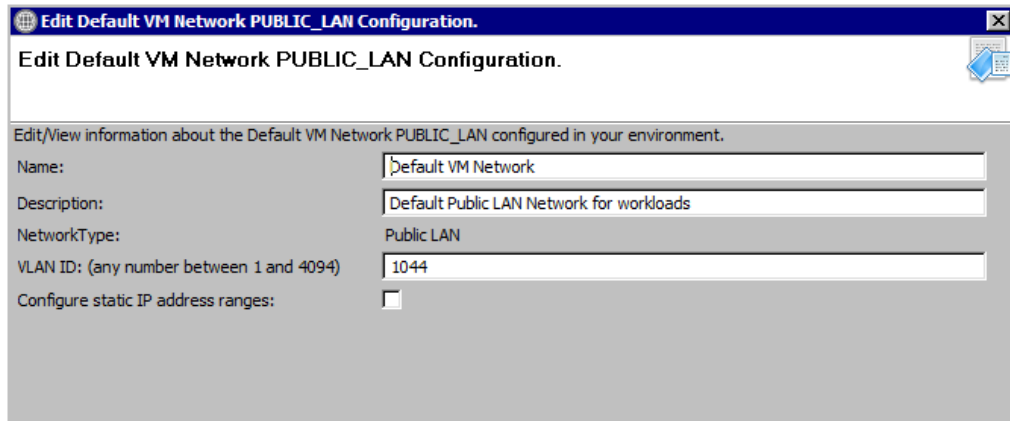
In order to configure any network, select the network that needs to be configured, then the list of existing networks that are part of this network category are opened as shown below.

Figure 3. Network Setup Wizard



From the list of pre-configured networks, select the network that needs to be modified and press the edit button. This opens a new Window where the network parameters like vlan id, dhcp/static can be modified.

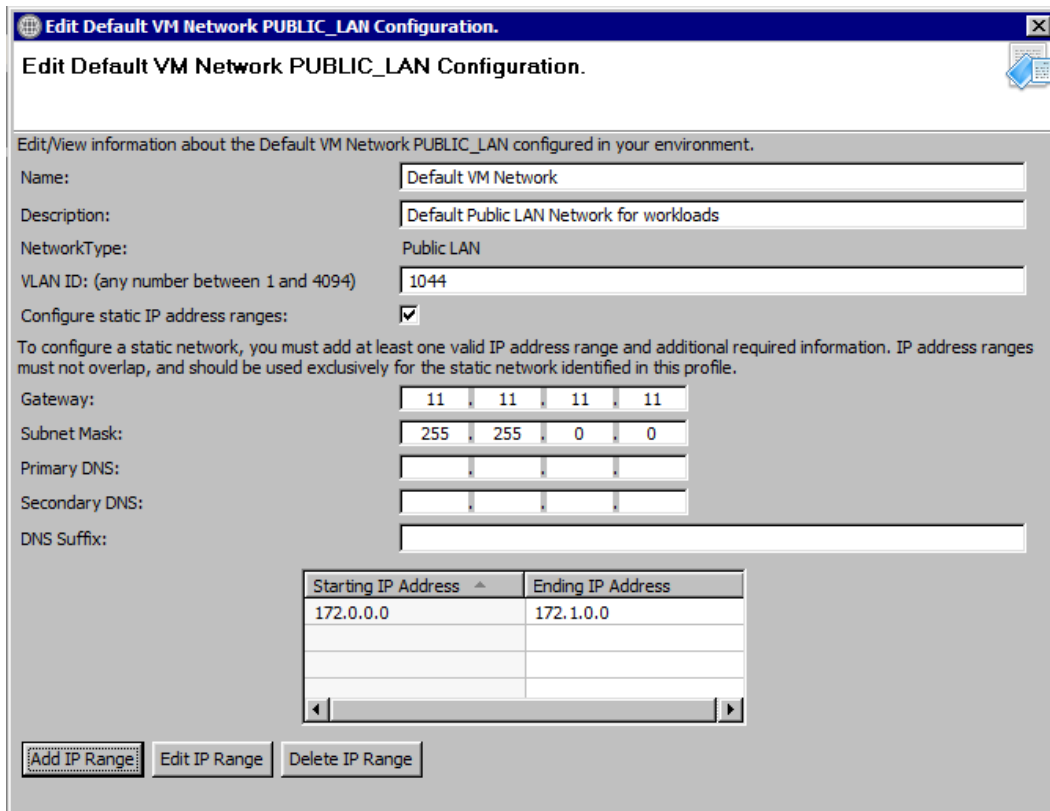
Figure 4. Editing an existing network



### Configuring Static Network

If the static network ranges have to be configured, then selecting the “configure static IP address ranges” check box enables the other options where the static ranges can be configured as shown below.

Figure 5. Editing an existing Static network





In order to configure a new ip address range, press “Add IP Range” button, this will open new textboxes in the same window where the starting and ending ipaddress can be specified. Once the valid ip addresses are specified, press the “Save IP Range” button to save the data mentioned. Please see the below figure for more details.

Figure 6. IP Address range

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

In order to configure the existing ip range, select the already configured range and select “Edit IP Range” button to modify the existing range and save them.

The below table summarizes the list of values that needs to be configured for a network.

Table 6. Values required for configuring network

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	(Optional) Gateway ip for this network
Subnet Mask	Subnet mask of this network
Primary DNS	(Optional) Primary DNS
Secondary DNS	(Optional) Secondary DNS (not mandatory)
DNS Suffix	(Optional) Domain name
Starting IP Address	The starting ip address
Ending IP Address	The ending ip address

## Configuring Default Server Templates

The AS1000 Orchestration applies the Server templates to the server at the time of Set-Up. Refer to the "Server Profile Templates" document for information on configuring the default templates.

Following is the mapping of the Default Server Template networks with the networks configured on the Hyper-V host

Table 7. Default Hyper-V host Mapping

Type of Network	Server Template Network Name	Hyper-V host Network Mapping
Hypervisor Management	DefaultHypervisorManagement	Management Network
Public LAN	DefaultWorkload	Virtual Machine Network
Private LAN	DefaultvMotionLiveMigration,	Live Migration Network
Private LAN	DefaultHyperVClusterPrivate	Cluster Private Network

- Server Template names should not contain spaces.
- Server Templates for Active System 1000 Hyper-V should have VM NICs with the names: LAN\_NIC and SAN\_NIC.
- Attaching more than one Server Profile Template to a physical orchestration template will cause the physical orchestration to fail.
- In case multiple VM Workload VLANS are required, then use the "Add.." button to add more. The networks needs to be added with naming convention "Workload-<VLANID" e.g. Workload-20

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.

- All the four networks listed above needs to have unique VLAN ID.

The network names should contain following substring for enabling RA to identify proper networks

- Hypervisor Management network should contain "HypervisorManagement" substring.
- Compute Live Migration network should contain "vMotionLiveMigration" substring.
- Compute Cluster Private network should contain "HyperVClusterPrivate" substring
- Hypervisor Management, LiveMigration and Cluster network must be configured with static IP Address configuration.

Figure 7. Hyper-V host network settings

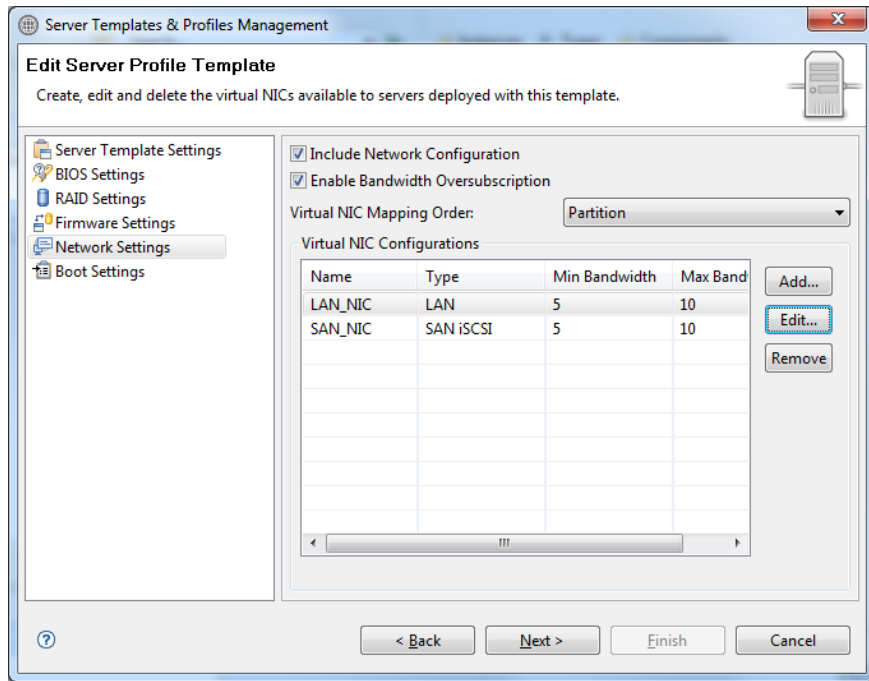
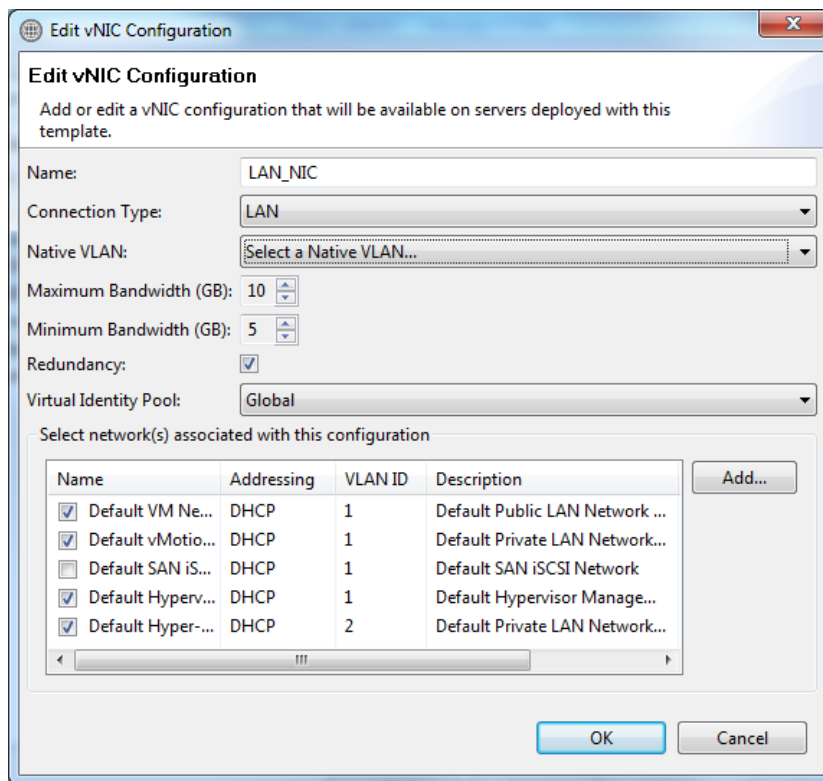


Figure 8. Hyper-V host vNIC configuration



For more information about server templates and profiles, see the Active System Manager 7.1 User Guide Chapter 7, "Server Templates and Profiles".

## Physical Templates and Orchestration

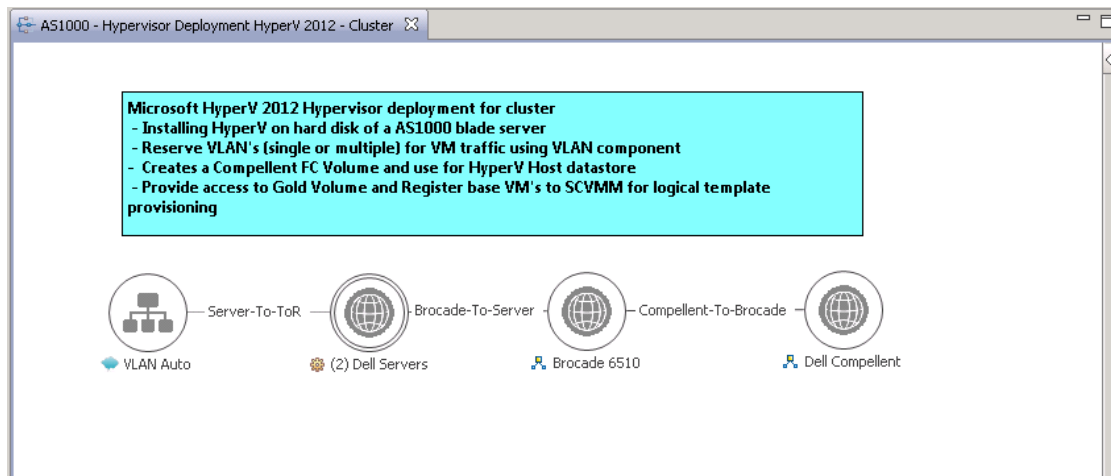
This section describes the following topics related to physical templates and orchestration:

- Multiple Blade Server for Cluster Provisioning
- Associated Orchestration with Cluster and Standalone Host Templates
- Additional Storage for Cluster or Host
- Updating Physical Templates

### Multiple Blade Server for Cluster Provisioning

Template 'AS1000 - Hypervisor Deployment HyperV 2012 - Cluster' can be used for installing Microsoft Windows 2012 on an HDD disk using ISO Boot. You can specify one or more blade servers using this template for creating a cluster.

Figure 9. Multiple Blade Server for Cluster Provisioning



While scheduling the template, user would be prompted to provide values for the following orchestration parameters:

Figure 10. Global Orchestration parameters

Name	Value	Description
HyperV Imaging		
WindowsOperatingSystem	Microsoft Windows Server 2012	Default Installation - Microsoft Windows Server 2012
WindowsServerSystemLanguage	en-us	Language to be configured on the HyperV Server
SCVMMServerIP		SCVMM Server IP Address configured in the discovery
HyperVClusterName		SCVMM Cluster to be created / used
WindowsServerTimeZone	India Standard Time	Timezone to be configured on the HyperV Server
HyperVHostGroupName	All Hosts	Name of the Host-group where hosts needs to be added. Host-group must pre-exists on
HyperVInstallationImage	san://Windows Image Rep/WS2012_...	Windows Installation ISO available in the repository
ServerProfileTemplate	AS1000_Hyper-V_template	Server Profile Template
Network		
LogicalNetworkName	ConvergedNetSwitch	Logical Network Name to be created on SCVMM
VMNetworkName	ConvergedNetSwitch	VM Network to be created on SCVMM for the Logical Network
HyperVClusterIPAddress		SCVMM Cluster IP Address
Storage		
ClusterVolumeSize	500	
QuorumVolumeName	AS1000DCQuorumVolume	Quorum Volume to be created on Compellent Storage
QuorumDiskSize	1	Disk size of quorum volume

All global orchestration parameters are mandatory. Below table describes the global parameters for orchestration

Table 8. Orchestration Input Parameters

Category	Parameter Name	Input Type	Description
Hyper-V Imaging	WindowsOperatingSystem	Mandatory	Windows operating system used for imaging blade servers
	WindowsServerSystemLanguage	Mandatory	Windows Server System Language which should be used for configuring Hyper-V machine
	SCVMMServerIP	Mandatory	SCVMM ServerIP address
	HyperVClusterName	Mandatory	Cluster Name that's get created on SCVMM and all Hyper-V host are added in cluster <b>NOTE:</b> The <b>HyperVClusterName</b> parameter name can contain only alphanumeric characters, and the following special characters: colon (:), period (.), and dash (-)."
	WindowsServerTimeZone	Mandatory	Windows Server Time Zone which should be used for configuring Hyper-V machines
	HyperVHostGroupName	Mandatory	Hyper-V Host group Name that gets created on SCVMM and all Hyper-V host are added in host group. If a new host group other than "All Hosts" needs to be

			specified, this value should be entered as "All Hosts\ <new host group name>". For example, "All Hosts\ASM09"
	HyperVInstallationImage	Mandatory	Windows 2012 image from imaging the blade server
	ServerProfileTemplate	Mandatory	Server Profile template which should be used for hardware configuration for blade servers
Network	LogicalNetworkName	Mandatory	Name of Logical Network created on Hyper-V Host
	VMNetworkName	Mandatory	Name of VM Network created on Hyper-V Host
	HyperVClusterIPAddress	Mandatory	IP Address for cluster
Storage	ClusterVolumeSize	Mandatory	Datastore size (in GB) to be provisioned on Hyper-V host machines for cluster provisioning
	QuorumVolumeName	Mandatory	Name of Quorum volume need to be create on Hyper-V host machines
	QuorumDiskSize	Mandatory	Size for Quorum Disk Size(in GB) on Hyper-V Host

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

1. Reserves single or multiple VLANs for VM traffic using a VLAN component. In case the VLAN reserved in the session are not already configured on the ToR switches then VLANs are created and tagged to appropriate port-channels.
2. IOA Configuration based on Networks defined in Server Profile template and VLAN defined in VLAN component  
  
VLAN's associated with networks in the Server Profile template and VLAN defined in the VLAN component in the physical template are created on the IOA server facing interfaces as Tagged VLANs.
3. NIC Partitioning as defined in Server Profile template which is enabled for AS 1000. A single Ethernet partition for all of the standard Ethernet networks/VLANs should be created and a single Ethernet partition for iSCSI traffic.  
  
**NOTE:** The iSCSI partition is not used in most standard deployments, but is made available in the event iSCSI traffic is required at the VM level to accommodate certain application designs.
4. Set NIC Attributes as defined in Server Profile template

5. Create the ISO files for each server dynamically based on the Server IP Address, Hostname, Name server values provided in the database.
6. Mount the ISO using iDRAC Virtual Media on all the Servers and initiate the installation process.
7. Mount the OS Deployment drivers available in the iDRAC MASER Partition. The OS drivers for Microsoft Windows 2012 must be available on the MASER Partition. In case latest drivers are not installed then use ASM firmware image option / iDRAC Web Console to load the drivers.
8. Mount the Windows Installation ISO using NFS service and initiate the Windows installation. Post installation step includes:
  - a. Configuration of following roles / services
    - i. Hyper-V
    - ii. Failover-Clustering
    - iii. Remote-Desktop-Service
    - iv. Multi-Path
  - b. Configure NIC Team. The script is using all the 10Gb interfaces in UP state as member of the NIC Team
  - c. Configure the network switches as per the reference architecture document
  - d. Configure FC Target on the server
  - e. Configure the external FC storage accessible on the server
  - f. Install BACS software
  - g. Add the host to the domain, if the domain credentials are provided.
  - h. Add the domain account to the Local Administration group.
9. Create two volumes on the Compellent Storage Array
 

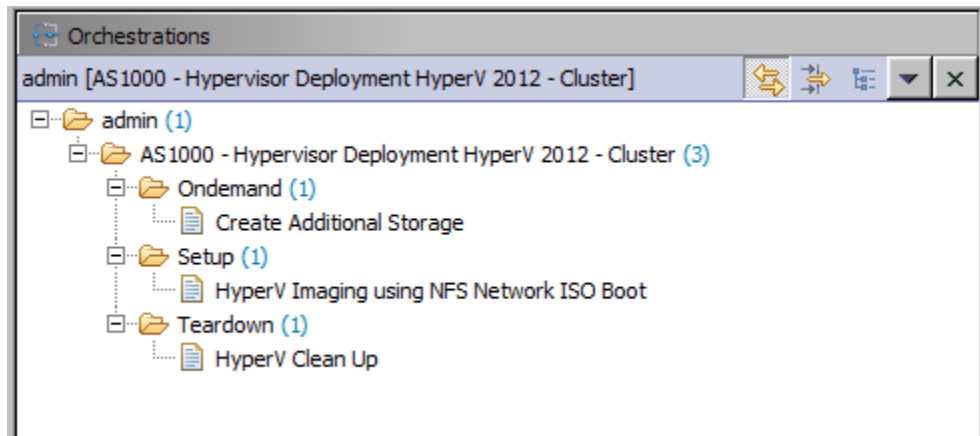
The volumes are created per physical session based on the size specified in the global parameters for ClusterVolumeSize and QuorumVolumeSize.
10. Add all hosts in the session to the SCVMM Host-Group.
11. Create Hyper-V Cluster (if not already exists) on the specified SCVMM.
12. Add hosts to the Hyper-V cluster.
13. Convert the Volume created for cluster as Cluster Shared Volume (CSV).
14. The datastore created in the orchestration is used for provisioning the VM in the logical workload templates. Provides access to Gold volume and using Gold volume, creates base VMs.

Post deployment, it is a best practice to run cluster validation on any newly deployed Hyper-V clusters. For more information, see "Validate Hardware for a Windows Server 2012 Failover Cluster" at: <http://technet.microsoft.com/en-us/>.

## Associated Orchestrations with Cluster and Standalone Host Templates

Each physical template has three orchestrations (Figure 11) associated with it:

Figure 11. On-demand Orchestrations



- **On-demand**—*Create Additional Storage*  
This orchestration can be executed on-demand when the session is in a Running state.
- **Setup**—Hyper-V Imaging using NFS Network ISO Boot  
This orchestration executes when template provisioning starts and the session is in the Setting Up state.
- **Teardown**—*Teardown*  
This orchestration executes when template provisioning start and session is in Cleaning Up state.

## Additional Storage for Cluster or Host

For additional storage or datastore needed on a cluster host reserved through the Active System Manager, you can execute on-demand orchestration from a running session:

- On-demand orchestration is designed to create additional storage on Compellent and add it to the Cluster as CSV.
- The additional storage will be created with the size specified in the Global Parameter "ClusterVolumeSize"

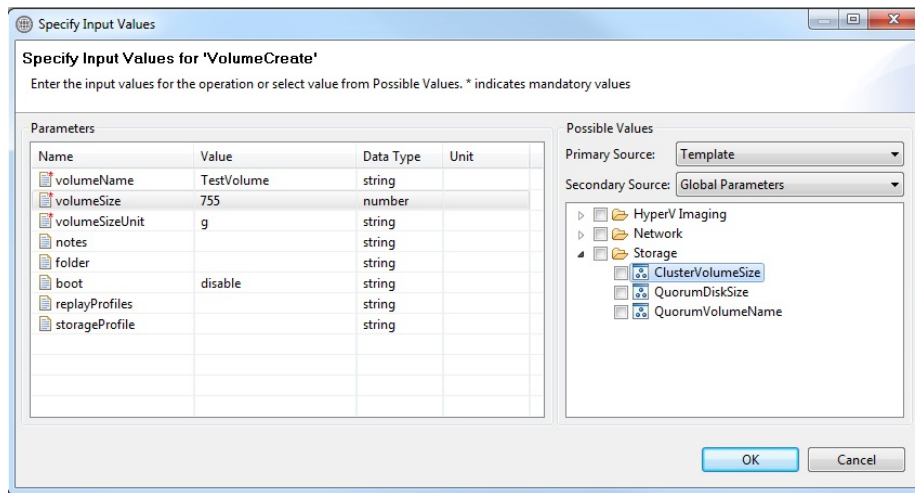
In case different size of volume needs to be created:

- a. Update the value of the global parameter
- b. Save the running session
- c. Execute the On-Demand orchestration.



Alternatively, if you do not want to update the global parameter:

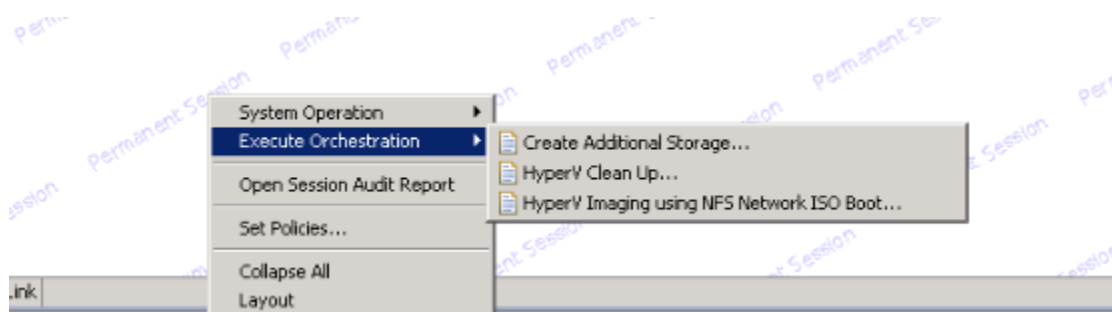
- a. Disable (uncheck) the **ClusterVolumeSize** parameter under Global Parameters → Storage



- b. Specify the custom size directly on the "Input Values" screen
- c. Execute the orchestration

For executing on demand orchestration, open the session by double-clicking it. On the session, right click and select the **Create Additional Storage** orchestration for execution; see Figure 12.

Figure 12. Create Additional Storage



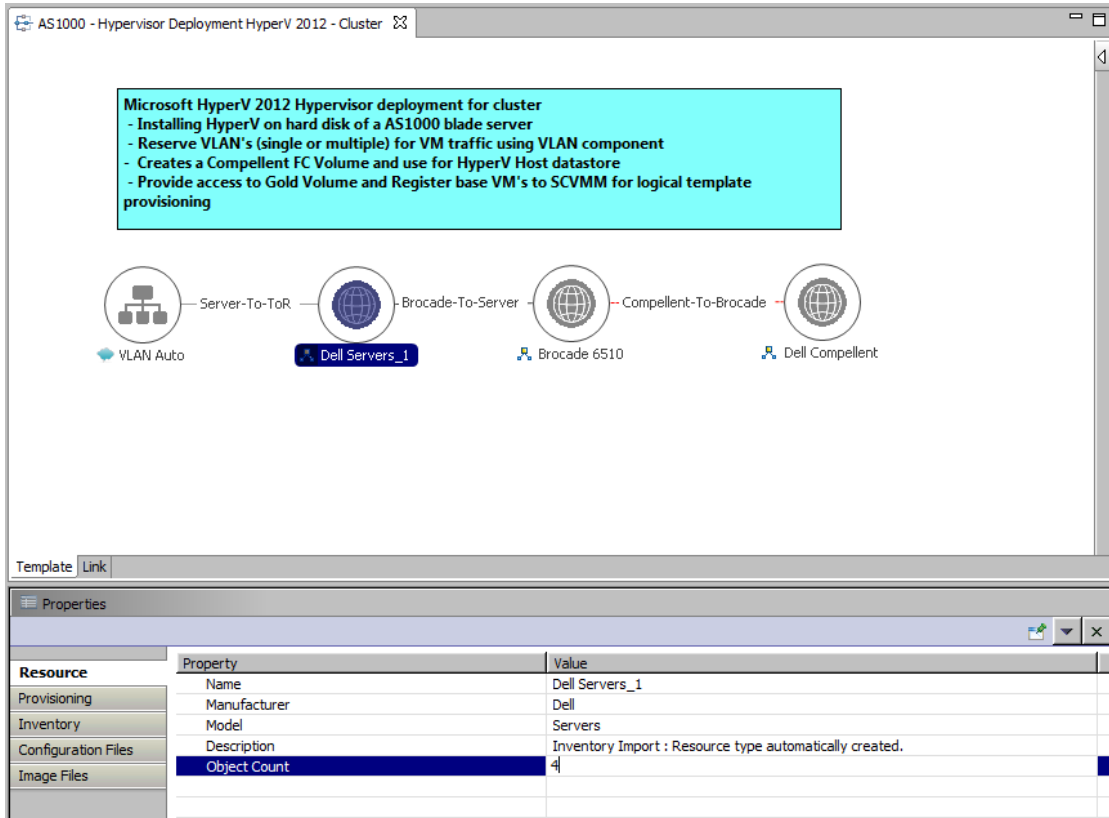
When executed, orchestration performs the following sequence of operations:

- Creates a new volume on Compellent
- Allows access to specific Hyper-V cluster
- Creates a data store on Hyper-V cluster

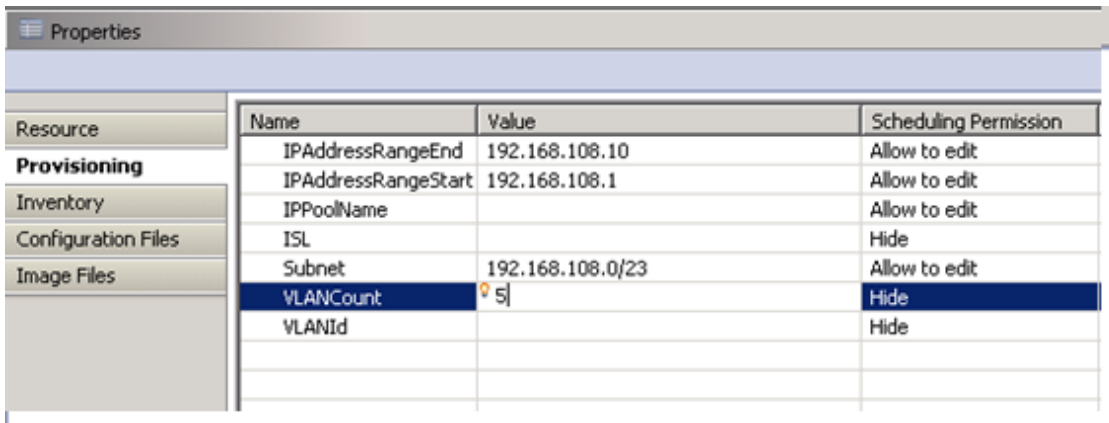
## Updating Physical Templates

To update cluster and standalone templates that require specific data before scheduling a template for cluster provisioning, perform the following steps:

1. Update the template for a blade server. Updates the blade server count for cluster provisioning.



2. Save the template by Ctrl+S or by selecting the save icon on the thick client after making the changes.
3. Update the template for VLANs.



4. Select the **VLAN Component**, click the **Inventory** tab, and update the **VLANCount** with the number of VLANs to be provisioned.

The VLAN defined in the VLAN component are the Workload VLAN's, other VLAN's should be statically configured on the ToR switches.

5. Update the **VLAN ID** range, as applicable, and update the **VLANId** parameter.

<b>Provisioning</b>		
Inventory	VLANCount	Hide
Configuration Files	VLANId (100..104),106	Hide

6. Save the template

## Workload Provisioning Using Logical Templates

This section describes the following workload provisioning options using the Logical templates:

- Pre-requisites to provision a Virtual Machine
- Two VMs with a VLAN
- Single Virtual Machine with a VLAN
- Updating a Baseline VM Image on Logical Templates

## Pre-requisite to Provision a Virtual Machine

You need the following to provision a virtual machine:

- **HardwareProfileName**: To provision Virtual Machine from VM template which is defined in SCVMM library, user needs to provide the hardware profile name.  
This parameter is optional if Virtual Machine is going to provision from Base VM.
- **DynamicMemoryMinimumMB** : Since provisioning parameter 'EnableDynamicMemory' is set to True by default , user needs to provide the value of 'DynamicMemoryMinimumMB' and its value should be less than the value of RAM (default 1024 MB), given in ASM Logical Template->Virtual Machine->Inventory.  
User can skip this parameter by setting 'EnableDynamicMemory' to False.
- **GuestCustomizationFlag**: The default value of 'GuestCustomizationFlag' is False.  
If user wants to customize the guest OS, set the value of 'GuestCustomizationFlag' as True and provide the value of following provisioning parameter.

NOTE: Due to SCVMM limitations, you can customize the guest OS only on a VM template clone, not on the Gold VM.

- LocalUserName
- LocalUserPassword
- DomainName
- DomainUserName
- DomainUserPassword
- ProductKey
- TimeZone
- GuiRunOnceCommands

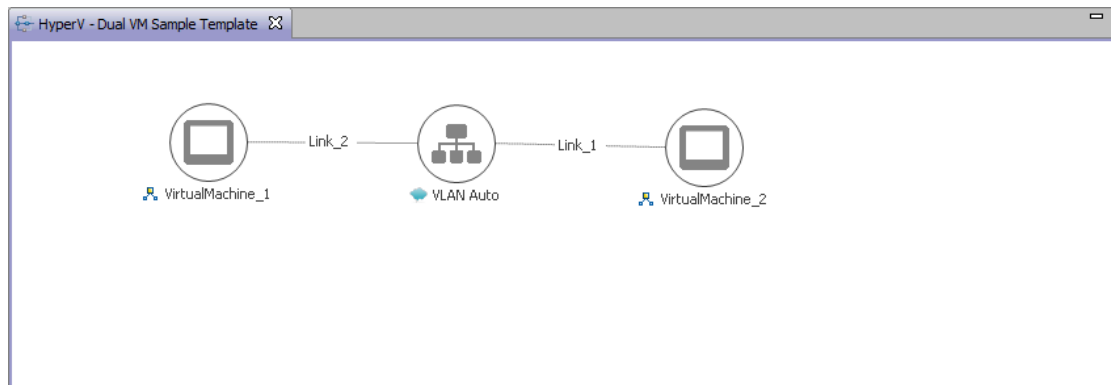
NOTE:

- Refer to the Hyper-V RA readme.txt file for additional information.
- The default value for the **InstallVirtualizationGuestServices** parameter is **True**. Changing this parameter to **False** can cause your orchestration to fail.

## Two VMs with a VLAN

The HyperV - Dual VM Sample Logical template (Figure 13) can be used to create VM workloads by scheduling a logical template over existing physical resources sessions, to consume the compute and storage resources of specific physical components.

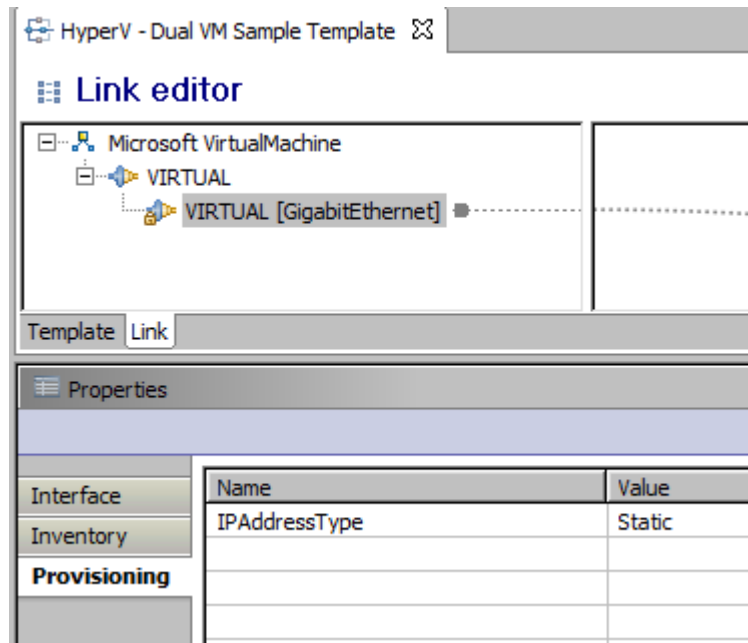
Figure 13. Two VMs Connected to a VLAN



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

- Clones and powers on two Hyper-V VMs based on the SCVMM template or Gold VM Image associated in the template.
- During clone process, configure network adapters corresponding to VLAN component on VM Network.
- VM provisioned are assigned their IP address using DHCP or Static IP Pool which is defined in the logical template. By default, VM learns its IP address from the IP Pool which is created in SCVMM during the Physical template session. User can change the IP addressing to DHCP using the interface level provisioning parameter; default value for this provisioning parameter is *Static* which can be changed to *DHCP*.

Figure 14. Updating IP address type



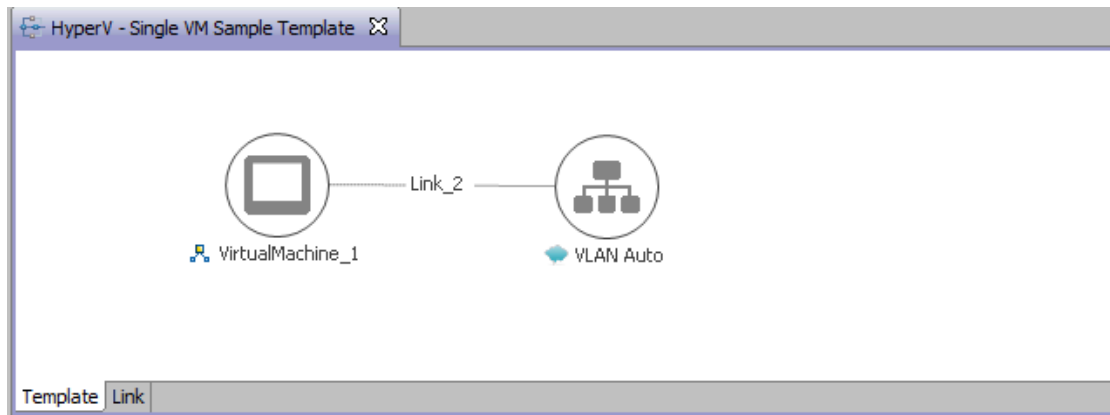
- Once the VMs are provisioned the user can also launch custom applications as applicable using custom methods from Active System Manager- Windows client.
- For Application launch:
  - Select a VM in a session
  - Right click on the VM
  - Select the Applications
  - Select the Application to be launched

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.

## Single Virtual Machine with a VLAN

The HyperV - Single VM Sample template (Figure 15) can be used to create VM workloads by scheduling logical template over existing physical resources session, to consume the compute and storage resources of specific physical components.

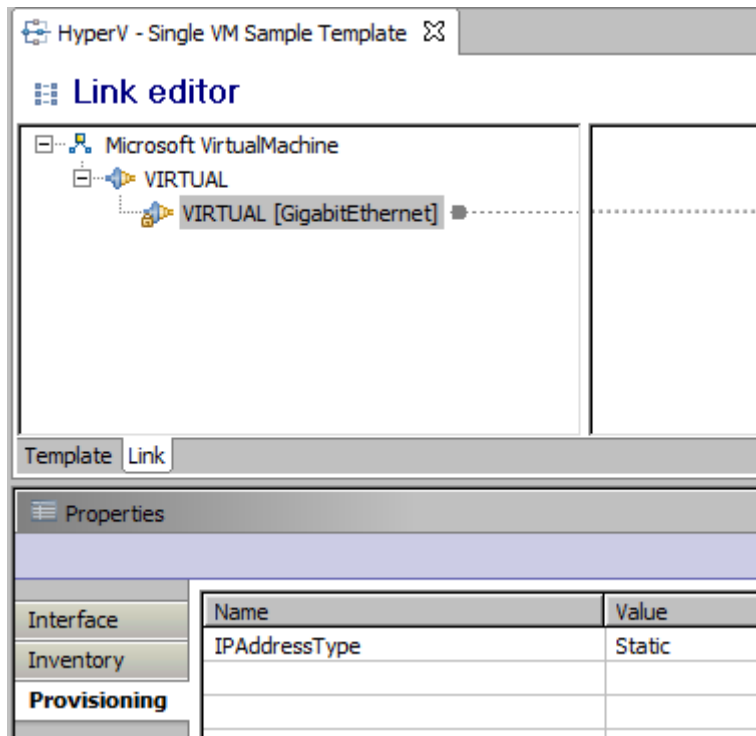
Figure 15. Single VM Connected to a VLAN



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

- Clones and powers on a Hyper-V VMs based on the SCVMM templates or Gold VM Image associated in the template.
- During clone process, configure network adapters corresponding to VLAN component on VM Network.
- VM provisioned are assigned their IP address using DHCP or Static IP Pool which is defined in the logical template. By default, VM learns its IP address from the IP Pool which is created in SCVMM during the Physical template session. User can change the IP addressing to DHCP using the interface level provisioning parameter; default value for this provisioning parameter is *Static* which can be changed to *DHCP*.

Figure 16. Updating IP address type



- Once the VMs are provisioned, you can also launch custom applications using custom methods from the Active System Manager Windows client.

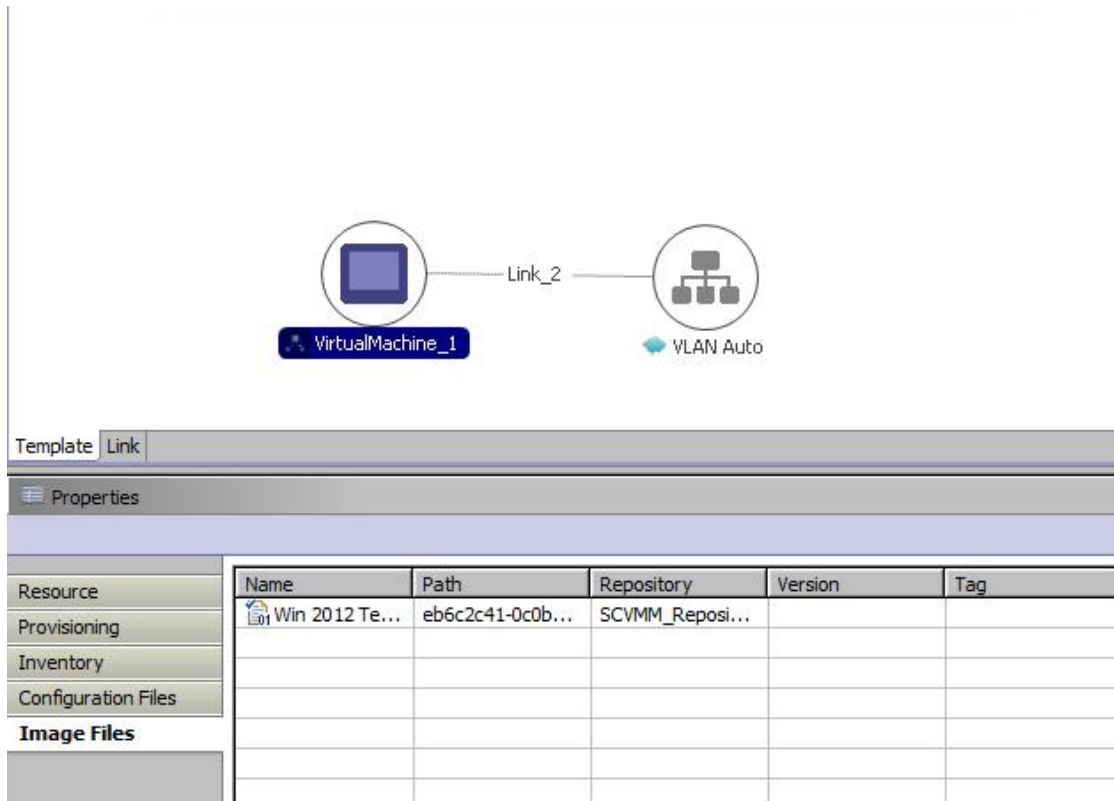
NOTE: While scheduling a template with VM having multiple interfaces, even if VM is mapped to a Host having multiple interfaces, all the interfaces of VM are mapped to the same interface of the Host.

## Updating a Baseline VM Image on Logical Templates

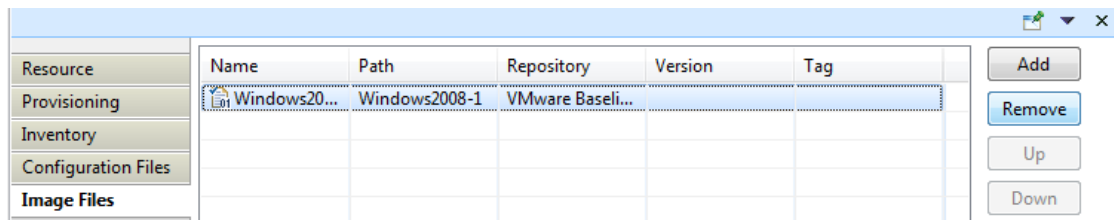
To update the baseline VM image associated with the VM object in the template, perform the following steps:



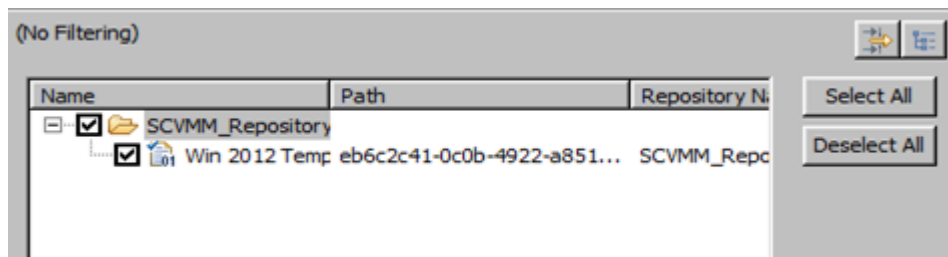
1. Select the VM object in the template and click the **Image Files** tab.



2. Select the already associated image file and click **Remove** to remove the existing association.



3. Click **Add** and select the VM template to be associated with the VM object.



## Operation Center View—Administrative Operations

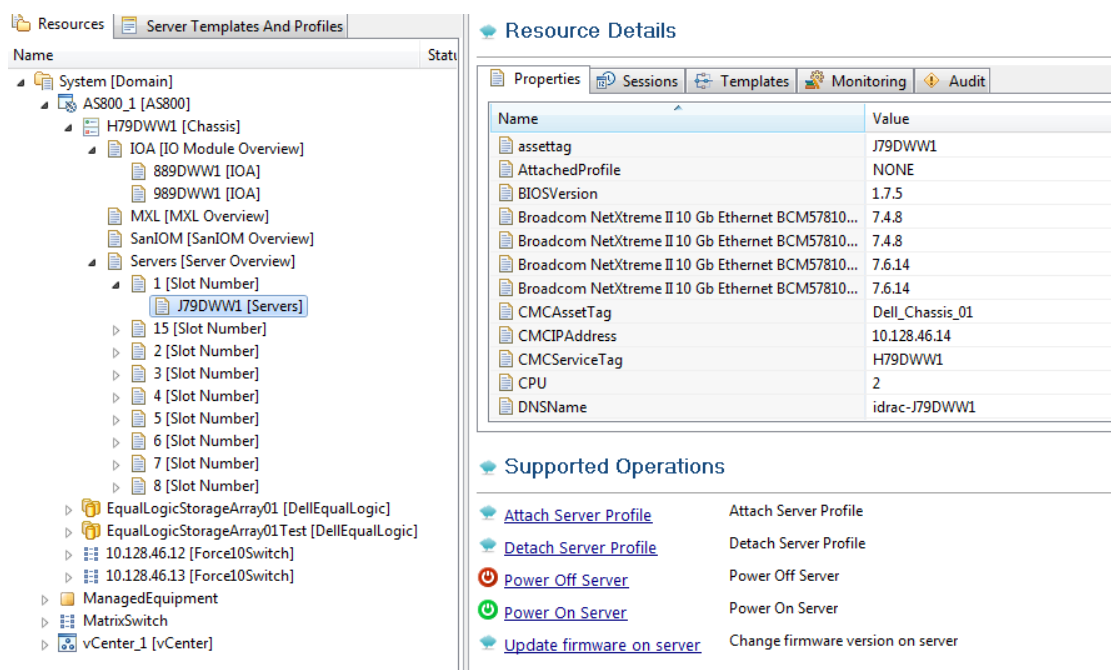
This section describes the administrative operations available in the Operation Center view:

- Managing Dell Blade Server
- Managing Dell IOA
- Managing Dell Force10 ToR Switch
- Managing Brocade Switch
- Managing Hyper-V Objects

## Managing Dell Blade Server

Blade servers along with their attributes are discovered and populated in the Active System Manager Operation Center view. This view (Figure 178) enables methods to be executed on blade servers for on demand provisioning, as required.

Figure 17. Blade Servers view



Blade Server operations

Operation	Description
Attach Server Profile	This method attaches a server profile to a server.
Detach Server Profile	This method detaches a server profile from a server.
Power Off Server	This method is used to power off the blade servers using server iDRAC.

<b>Power On Server</b>	This method is used to power on the blade servers using server iDRAC.
<b>Update firmware on server</b>	This method applies firmware DUPs for components (LC, iDRAC, BIOS etc) for a server.

## Managing Dell IOA Switch

Dell IOA along with their attributes are discovered and populated in the Active System Manager Operation Center view. This view (Figure 18) enables methods to be executed on Dell IOA for on demand provisioning, as required.

Figure 18. Dell IOA Switch view

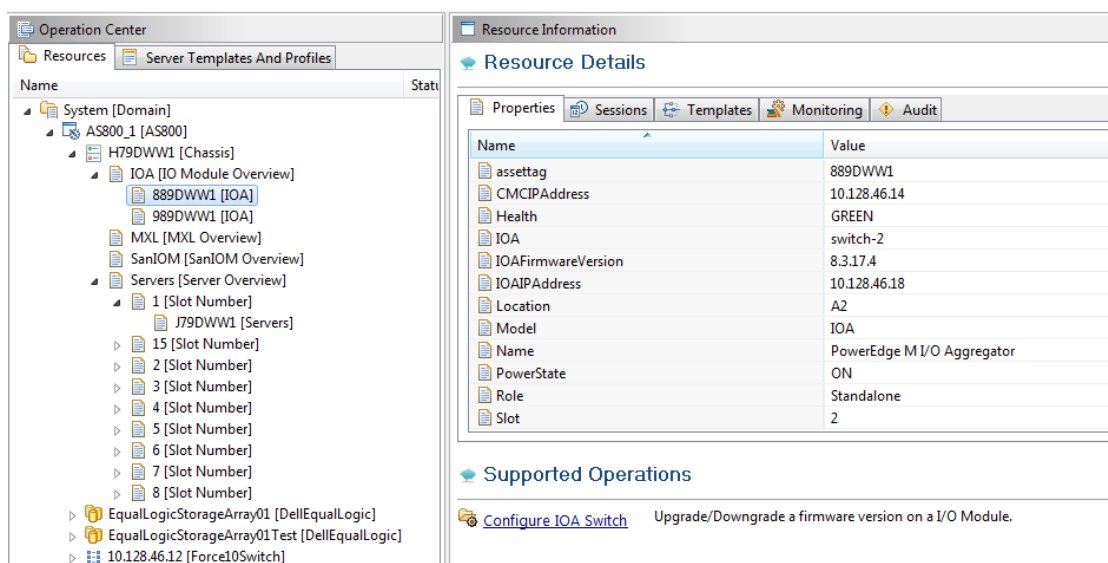


Table 9. Dell IOA Switch operations

Operation	Description
<b>Configure IOA Switch</b>	This method is used to upgrade or downgrade a firmware version on an I/O module.

## Managing Dell Force10 ToR Switch

Dell Force10 ToR Switches along with their attributes are discovered and populated in the Active System Manager Operation Center view. This enables methods to be executed on Dell ForceToR Switches for on demand provisioning, as required.

Figure 19. Force10 ToR Switch view

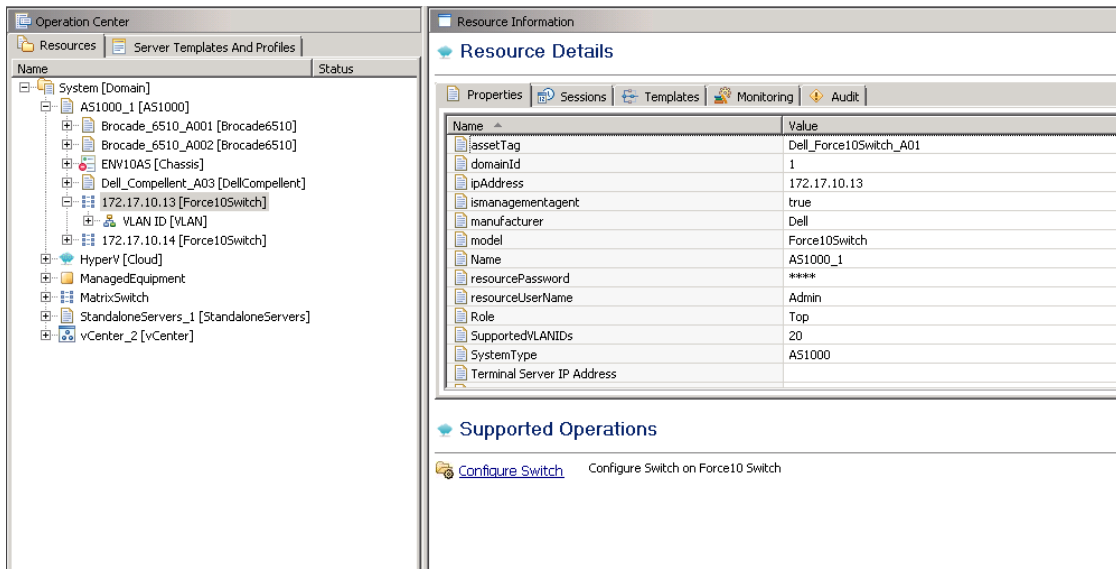


Table 10. Force10 ToR Switch operations

Operation	Description
Configure Switch	This method is used to upgrade or downgrade a firmware version on a Dell Force10 ToR switch.

## Managing Brocade Switch

Brocade switches along with their attributes are discovered and populated in the Active System Manager Operation Center view. This view (Figure 20) enables methods to be executed on Brocade switch for on demand provisioning, as required.

Figure 20. Brocade Switch view

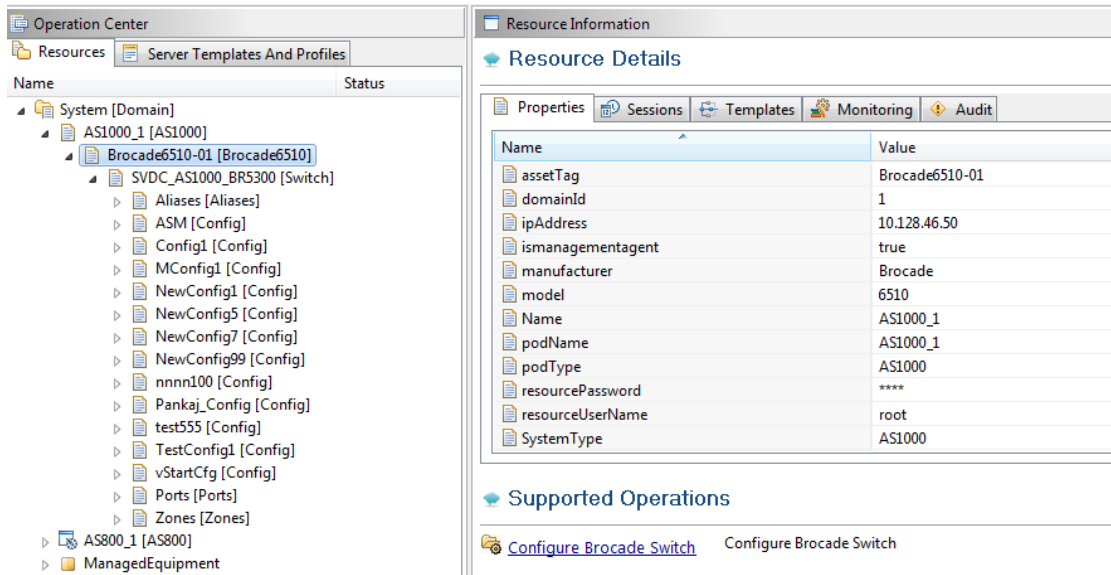


Table 11. Brocade Switch operations

Operation	Description
Configure Brocade Switch	This method is used to upgrade or downgrade a firmware version on a Brocade switch. Also method can be used to update the switch configuration.

## Managing Hyper-V Objects

This section describes operations that can be performed from Operation Center view on following Hyper-V SCVMM managed objects:

- Hyper-V Host Group
- Hyper-V Clusters
- Hyper-V Hosts
- Hyper-V Virtual Machines

### Hyper-V Host Group

Hyper-V Host Group along with their attributes, are discovered and populated in the Active System Manager Operation Center view. This view (Figure 21) enables methods to be executed on Hyper-V host group for on demand provisioning, as required.

Figure 21. Hyper-V Host Group view

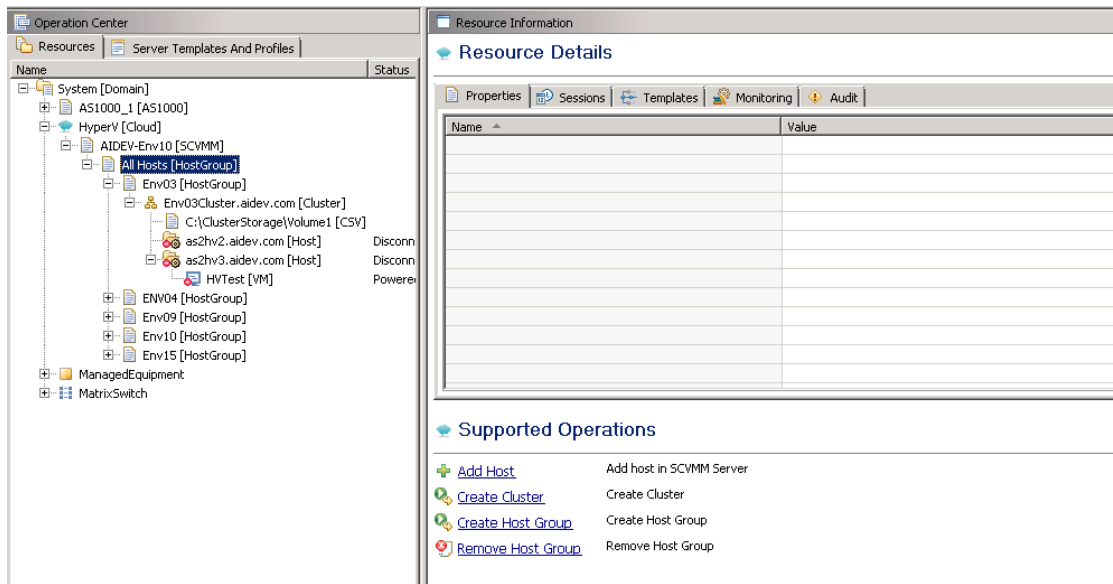


Table 12. Hyper-V Host Group operations

Operation	Description
Add Host	This method adds a host in SCVMM server.
Create Cluster	This method adds cluster in SCVMM server.
Create Host Group	This method creates new host group.
Remove Host Group	This method removes a host group.

## Hyper-V Clusters

Hyper-V Clusters along with their attributes are discovered and populated in the Active System Manager Operation Center view. This view (Figure 22) enables methods to be executed on clusters for on demand provisioning, as required.

Figure 22. Hyper-V Clusters view

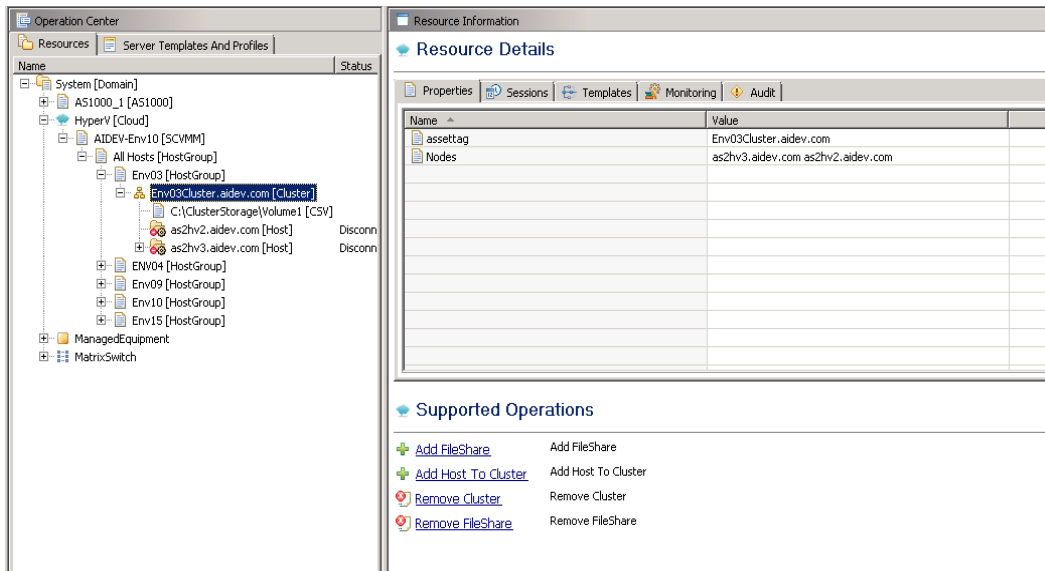


Table 13. Hyper-V Cluster Operations

Operation	Description
Add FileShare	This method adds fileshare to a cluster in SCVMM Server.
Remove FileShare	This method removes fileshare from cluster in SCVMM Server.
Add Host to Cluster	This method adds a host to cluster in SCVMM Server.
Remove Cluster	This method removes a cluster from SCVMM Server.

## Hyper-V Hosts

Hyper-V hosts, along with their attributes, are discovered and populated in the Active System Manager Operation Center view. This view (Figure 234) enables methods to be executed on hosts for on demand provisioning, as required.

Figure 23. Hyper-V Host view

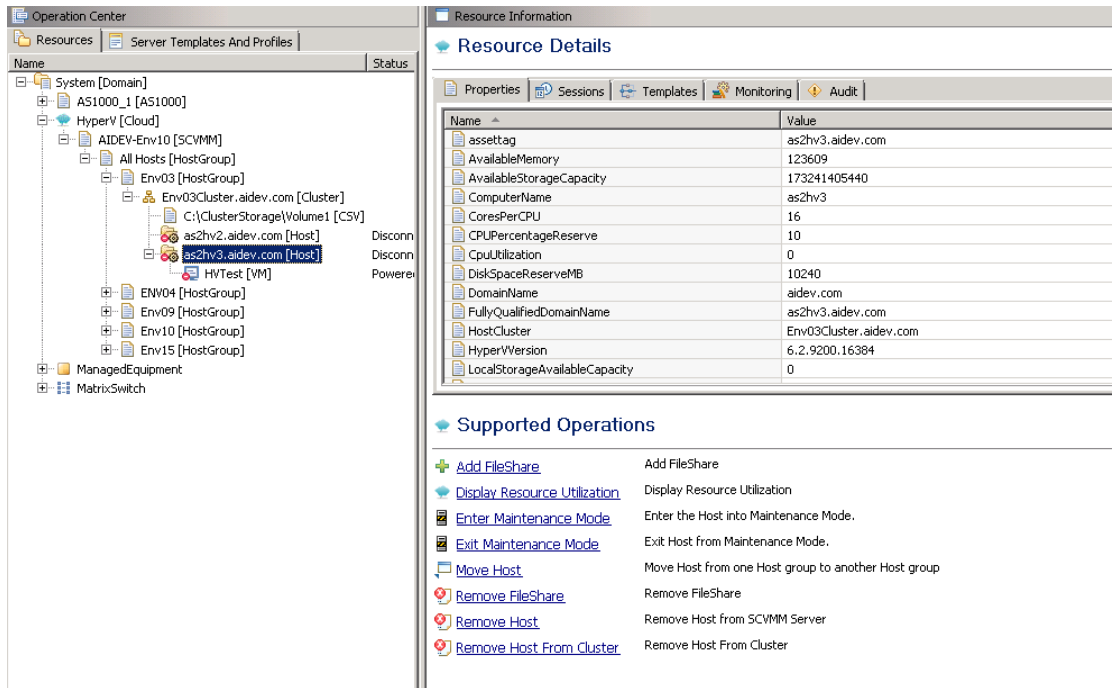


Table 14. Hyper-V Hosts operations

Operation	Description
Add FileShare	This method adds a fileshare to host in SCVMM Server.
Move Host	This method moves a host to another existing Host Group.
Remove Host	This method removes host from SCVMM Server.
Enter Maintenance Mode	This method takes a host into maintenance mode.
Exit Maintenance Mode	This method takes a host out of Maintenance Mode.
Display Resource Utilization	This method views the resource utilization (Memory and Storage usage) of the host.
Remove FileShare	This method removes fileShare from host in SCVMM server.
Remove Host From Cluster	This method removes a host from a cluster in SCVMM Server.

## Hyper-V Virtual Machines

Hyper-V Virtual Machines, along with their attributes, are discovered and populated in the Active System Manager Operation Center view. This view (Figure 24) enables methods to be executed on Hyper-V Virtual Machines for on demand provisioning, as required.



Figure 24. Hyper-V Virtual Machines view

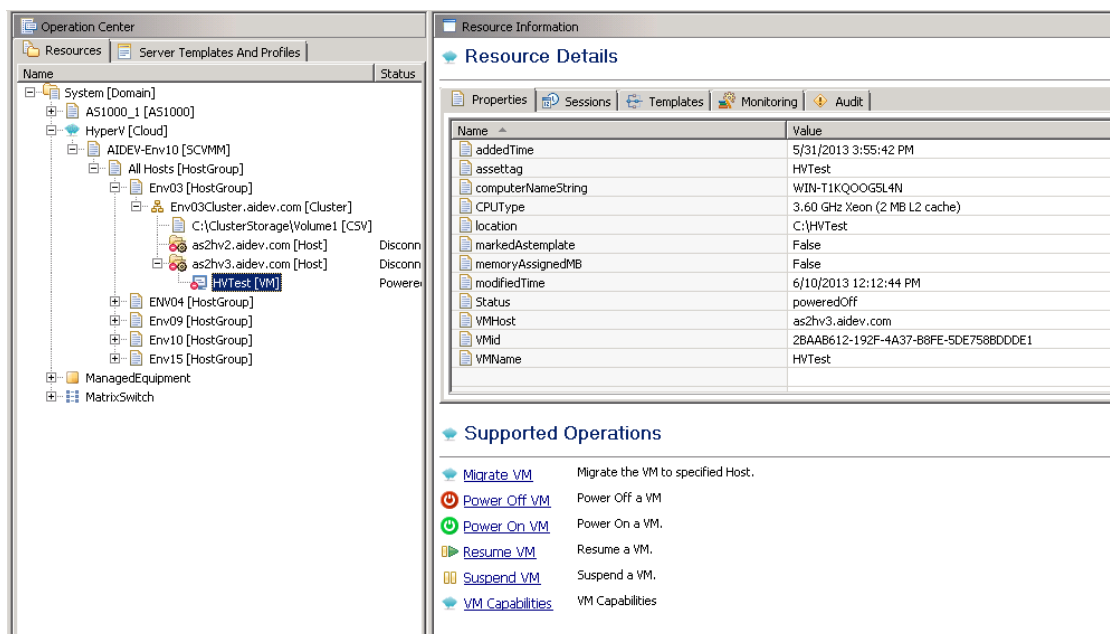


Table 15. Hyper-V Virtual Machines operations

Operation	Description
Migrate VM	This method migrates VMs from one host to another host.
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.
VM Capabilities	This method displays the VM capabilities by displaying properties such as CPU, Memory, and Hostname.

## Dashboard Reports

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

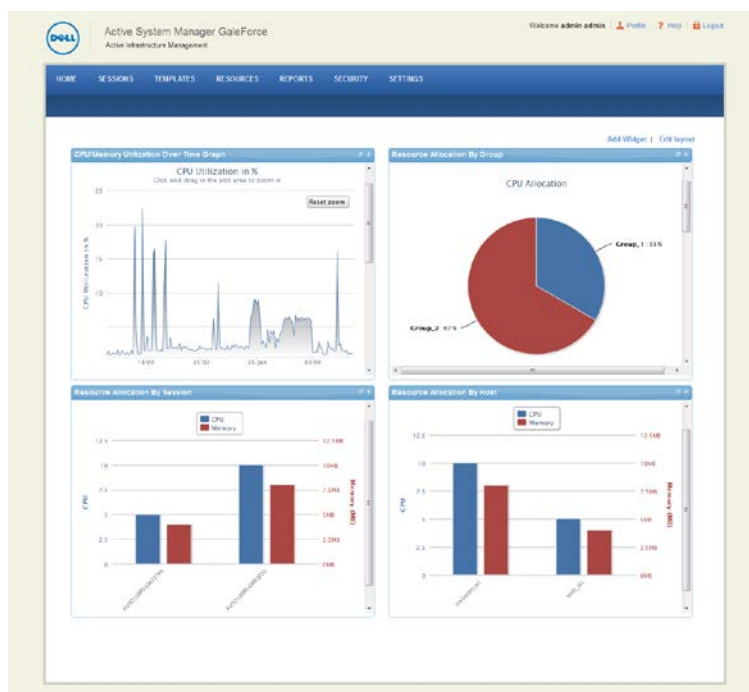
- Resource Allocation by Sessions Report
- Resource Allocation by Hosts Report
- Resource Allocation by Groups Report
- Top Ten Resource Allocation Report
- Top Ten Resource Utilization Report
- VM Utilization by Session Report
- Host Utilization (Consolidated) Report
- Cluster Utilization (Consolidated) 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 sessions, and can be used to view the CPU and memory allocation in a data center environment at that particular instant.

Figure 2526 displays an example of a Resource Allocation by Sessions report.

Figure 25. Resource Allocation by Sessions Report

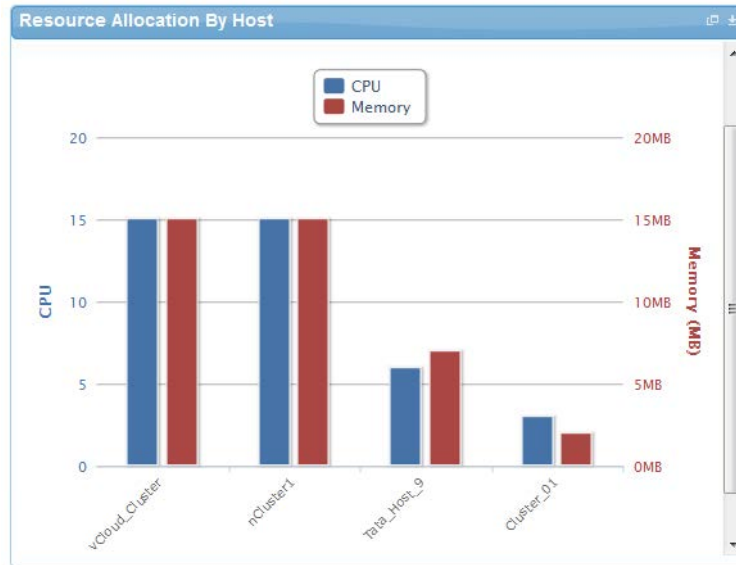


## Resource Allocation by Hosts Report

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 2627 displays an example of a Resource Allocation by Hosts report.

Figure 26. Resource Allocation by Hosts Report

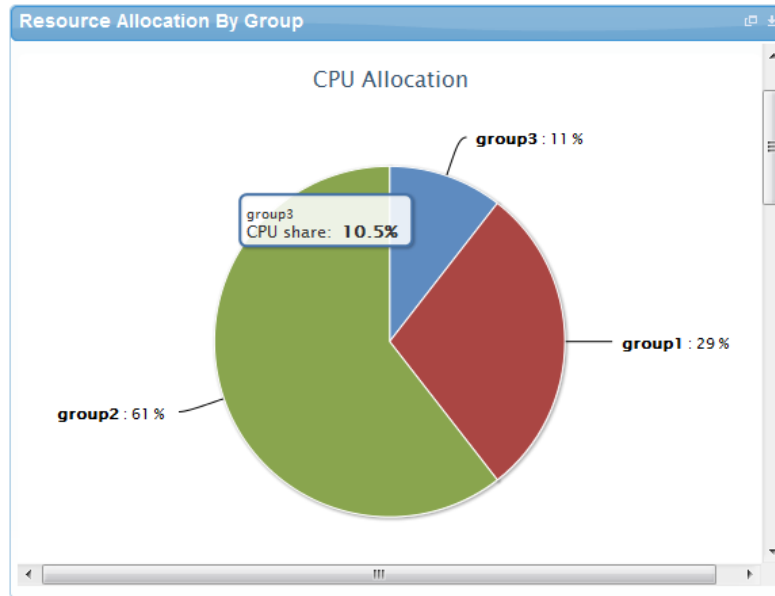


## Resource Allocation by Groups Report

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 27 displays an example of a Resource Allocation by Groups report.

Figure 27. Resource Allocation by Groups Report



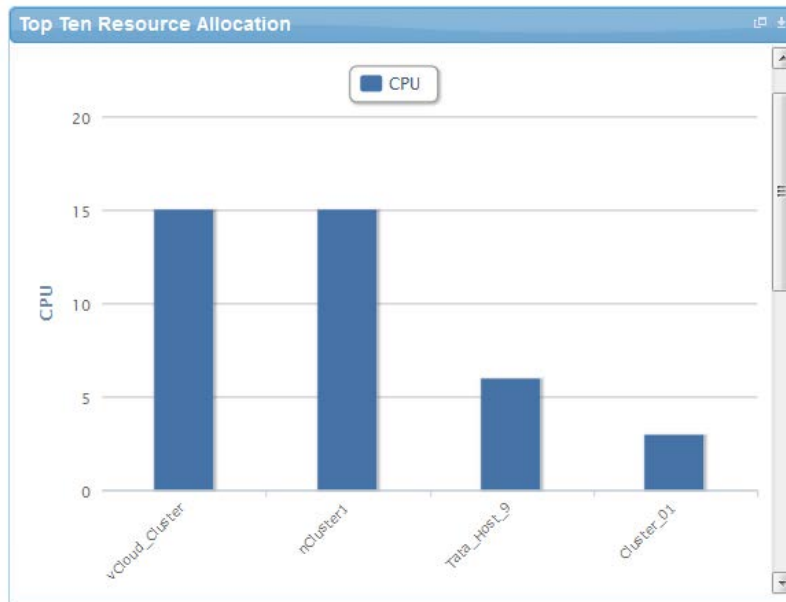
## Top Ten Resource Allocation Report

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 2829 displays an example of a Top Ten Resource Allocation report.

Figure 28. Top Ten Resource Allocation Report



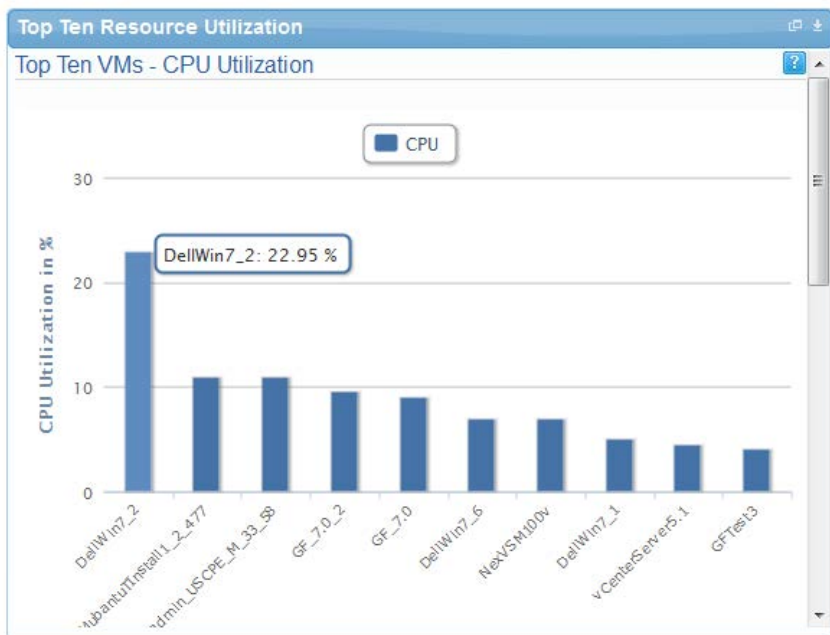
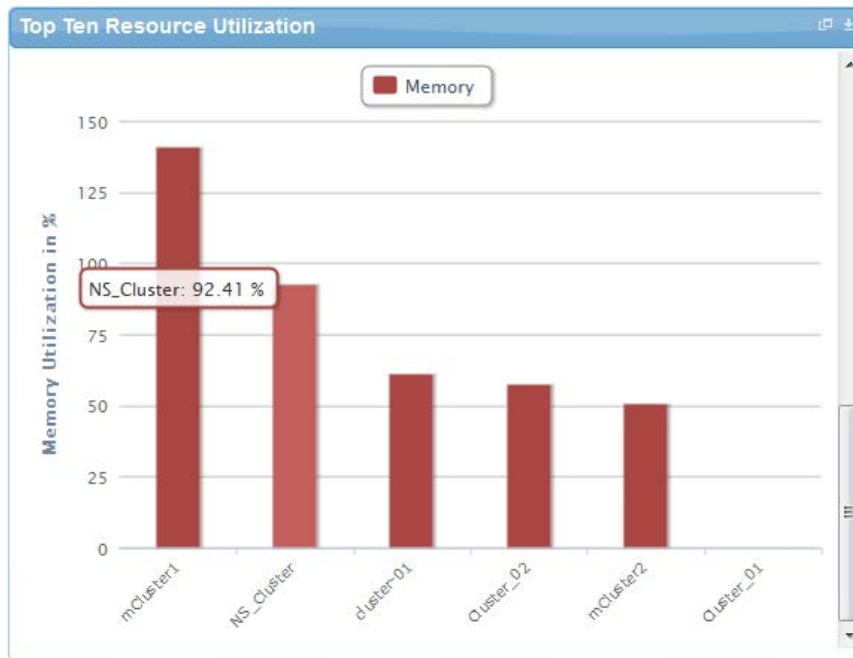
## Top Ten Resource Utilization Report

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 2930 displays an example of a Top Ten Resource Utilization report.

Figure 29. Top Ten Resource Utilization Report

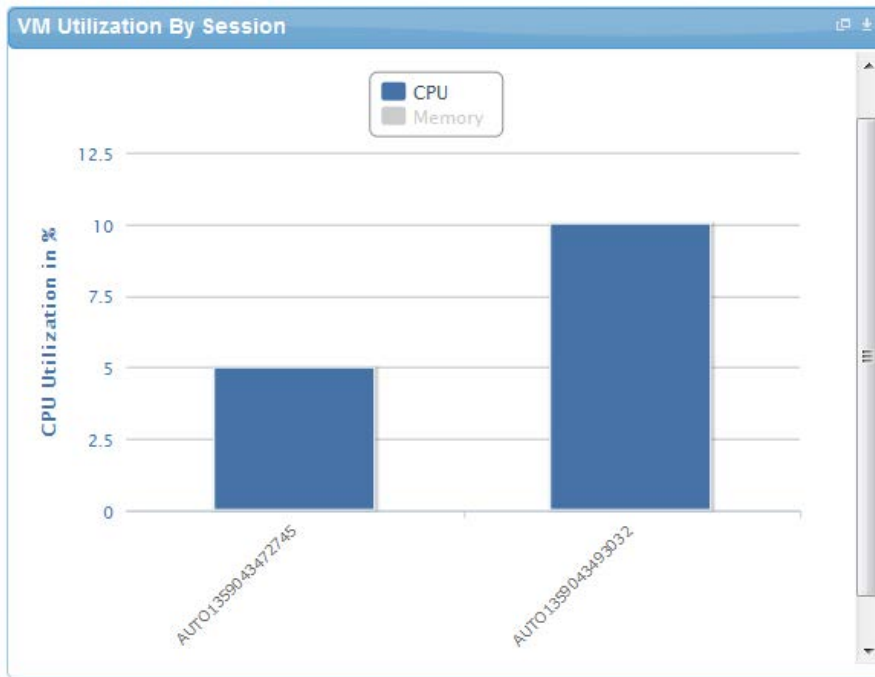


## VM Utilization by Session Report

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 3031 displays an example of a VM Utilization by Session Report.

Figure 30. VM Utilization by Session Report

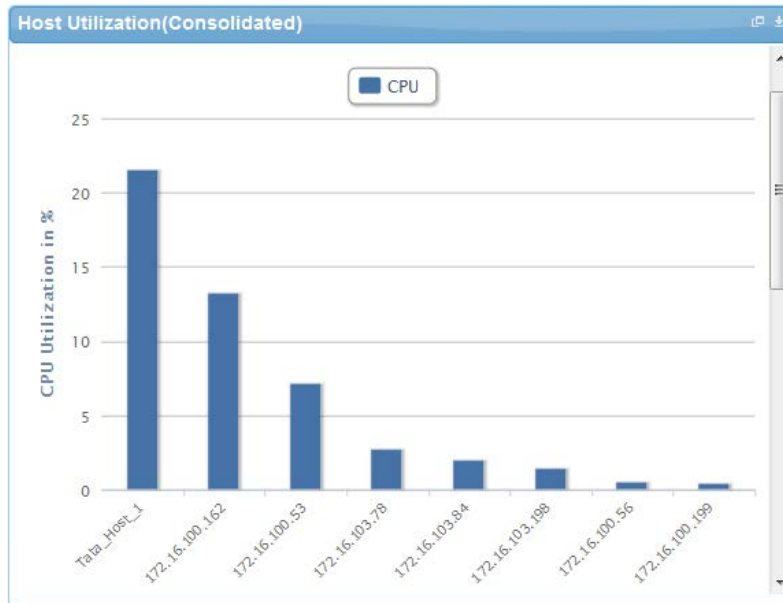


## Host Utilization (Consolidated) Report

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 3132 displays an example of a Host Utilization (Consolidated) report.

Figure 31. Host Utilization (Consolidated) Report

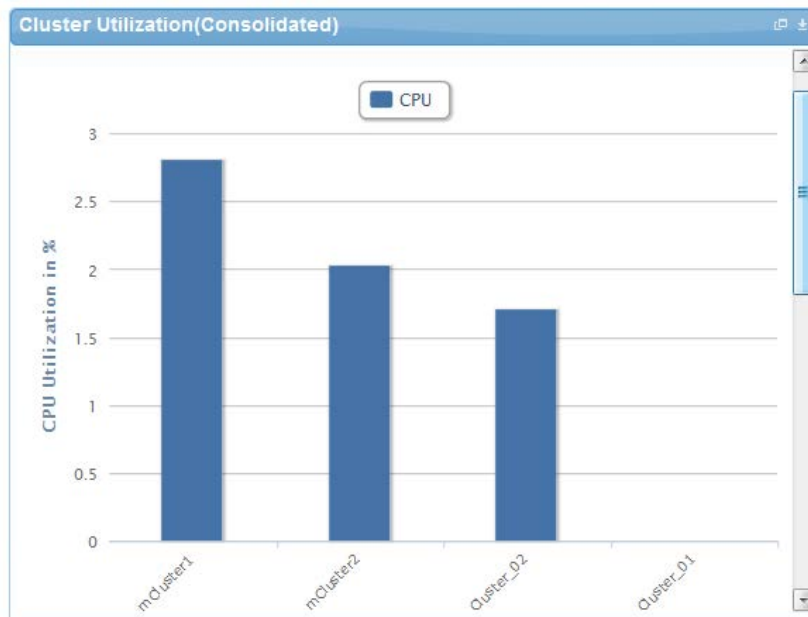


## Cluster Utilization (Consolidated) Report

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

Figure 32 displays an example of a Cluster Utilization (Consolidated) report.

Figure 32. Cluster Utilization (Consolidated) Report



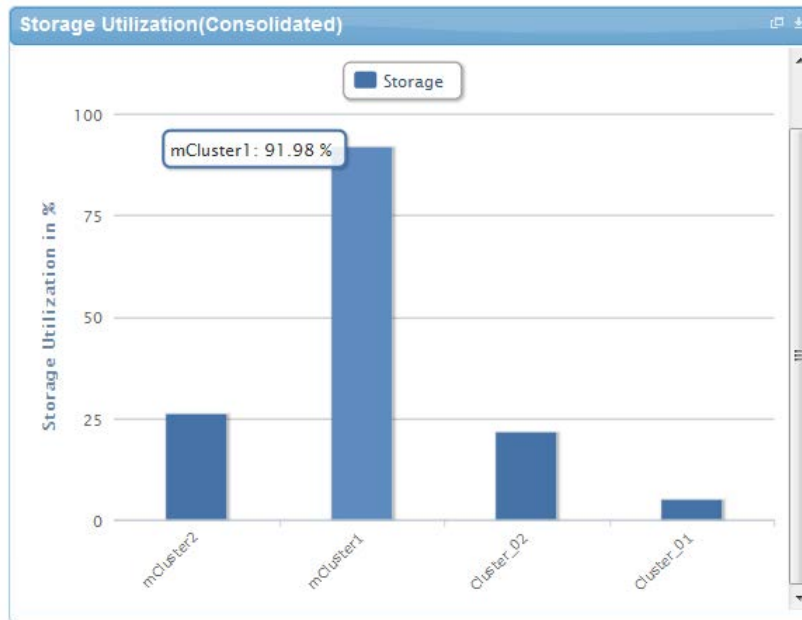


## Storage Utilization (Consolidated) Report

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

Figure 33 displays an example of a Storage Utilization (Consolidated) Report.

Figure 33. Storage Utilization (Consolidated) Report

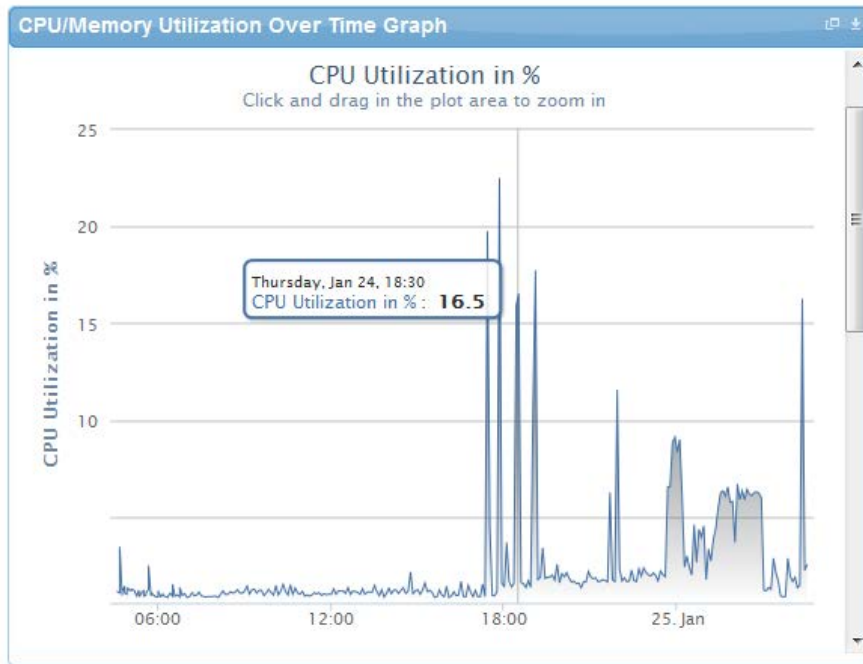


## CPU and Memory Utilization Showback Report

This report provides CPU and memory utilization of Hosts in percentage over a period of given time (e.g. Weekly, Daily, and Hourly).

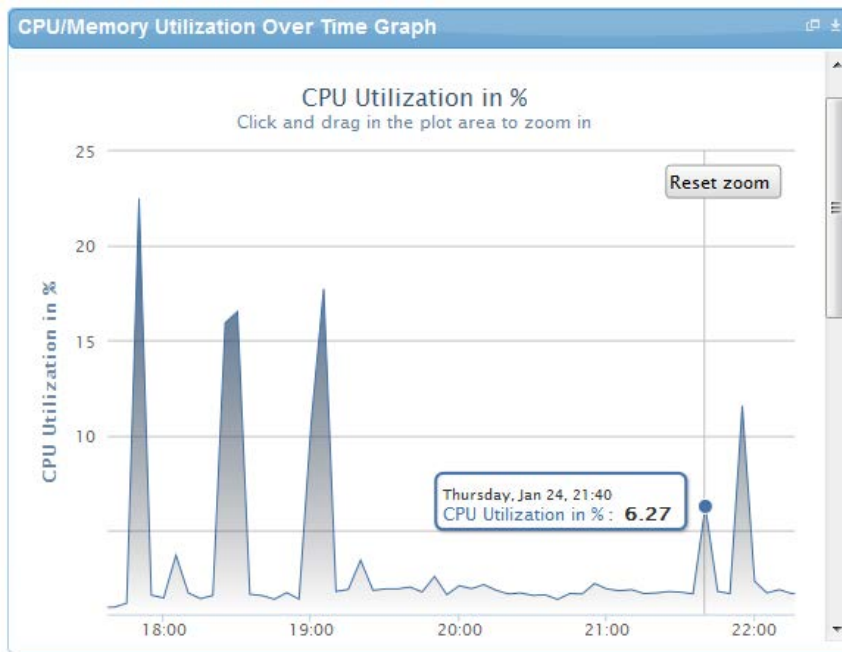
Figure 3435 displays an example of a CPU and Memory Utilization Showback report.

Figure 34. 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** (see Figure 356).

Figure 35. Reset Zoom



## Appendix A—Deployment Activities

### Verifying Active System Manager Services

To verify that all Active System Manager services are up and running, perform the following steps:

1. Log in as the user who installed the services.
1. Run the following script to display the current status of all services, including the Oracle database status:

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

Below is sample output:

```
Active System Manager Services Status  
  
Installation  
-----  
Release Version: 7.0  
Build Number: 21286  
  
Database  
-----  
Vendor: Oracle (Ver: 11.2.0.1.0)  
Host: asm-galeforce Port: 1521  
Service name: DB11G  
Status: Running  
  
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
```

## Appendix B—Firmware and Software Base Lineup

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

Table 16. Firmware and Software versions

Device	Revision
<b>Active System 1000 PowerEdge M620 Hyper-V Host Server</b>	
BIOS	1.7.6
CPLD	1.0.4 A00
iDRAC7 Enterprise	1.40.40 Build 13
LCC (Life Cycle Controller) 2	1.1.5.165
Network Controller Broadcom 57810-k Firmware	7.6
Broadcom 57810- k Driver	17.6
QLogic QME2572 8Gb FC	4.0.0.18
Windows Server 2012	Datacenter Edition with Hyper-V role enabled
<b>Active System 1000 PowerEdge R620 Hyper-V Management Server</b>	
BIOS	1.6.0
iDRAC7 Enterprise	1.40.40 Build 13
LCC (Life Cycle Controller) 2	1.1.5.165
Network Controller Broadcom 57810-k Firmware	7.6
Network Controller Broadcom 57810k Driver	17.6
QLogic 2562 Dual Port LP 8Gb FC	5.0.0.11
Windows Server 2012	Datacenter Edition with Hyper-V role enabled
<b>Active System 1000 Chassis, Storage, and Switches</b>	
CMC	4.4
Dell 8/4Gb FC SAN IOM	7.0.2

Device	Revision
Dell PowerEdge M I/O Aggregator	8.3.17.4
Dell Networking S4810 (LAN)	9.1
Brocade 6510 (SAN)	7.0.2
Dell Networking S55 (OOB)	8.3.5.3
Compellent SC8000	6.3.2
<b>Active System 1000 Hyper-V Management VMs and Software</b>	
Active System Manager	7.1
System Center 2012 - VMM	Data Center Edition
Windows 2012 Datacenter	
Open Manage Essentials	v1.2
Compellent Enterprise Manager	EM 6.3
Compellent SMI-S Provider	Included with Enterprise Manager Data Collector

## Appendix C—Planning Worksheet

### Out of Band Management IP Address Configuration

Equipment	IP Address	Subnet Mask	Gateway	Username	Password
Chassis 1 CMC					
Chassis 2 CMC					
Force10 S4810 Switch1					
Force10 S4810 Switch2					
Brocade 6510 Switch1					
Brocade 6510 Switch1					
Compellent Management					
Microsoft System Center 2012 (SCVMM)					
Active System Manager Appliance					

### Hyper-V Host Information for Hyper-V imaging

Following parameters for each server is required:

- WindowsComputerName - Hostname to be assigned to the Hyper-V Host  
NOTE: The WindowsComputerName parameter value should not exceed 15 characters in the inventory.
- WindowsDomainAdminUser - Windows Domain Admin User name used for adding the host to Domain Controller
- WindowsDomainPassword - Windows Domain Admin User Password used for adding the host to Domain Controller
- WindowsDomainFullyQualifiedName - Windows Domain FQDN name used for adding the host to Domain Controller (e.g. abcdomain.com)
- WindowsDomainName - Windows Domain name used for adding the host to Domain Controller (e.g. abcdomain)
- WindowsPassword - Local Admin Password to be configured on the Hyper-V host
- WindowsProductKey - Windows Product Key to be used for the installation

- WindowsUserName - Windows local Domain Admin. "Administrator" needs to be used in the inventory parameter

## VLAN Configuration

Traffic Type	VLAN
HypervisorManagement	
Workload	
HyperVClusterPrivate	
vMotionLiveMigration	

## Hyper-V Workloads

- Administrator needs to create a volume on Compellent storage array manually
- This volume needs to contain the base line VMs that will be used for creating the VM workloads



## Appendix D—Install and Configure OpenSSH

Windows x64 OpenSSH 6.2p1 version to be installed on SCVMM server.

To install OpenSSH:

1. Download the Windows x64 setupssh-6.2p1 (x64) - v1.exe version, available at <http://www.mis-software.com\opensshd.html>.
2. Execute the setup.exe for installation.

Options that needs to be selected during OpenSSH installation.

- d. In 'Install under Local System or SSHD\_Server Account' window, select 'Run As SSHD\_SERVER (Required for W2k3)' option and Press Next.
- e. In 'Setup Privilege Separation' window, select 'Yes (Required for W2K3)' option and Press Next.
- f. In 'Create Password and Group files', select 'Domain Users' option and Press Next.

Steps for Configuring OpenSSH on SCVMM server.

1. Open '/etc/sshd\_config' file inside OpenSSH installation directory path using notepad.
2. Update the file with following contents in the end:

```
Subsystem      sftp    internal-sftp
```

NOTE: Comment existing 'Subsystem' line before adding the new lines.

3. Restart opensshd services using following commands:

```
Net stop opensshd
Net start opensshd
```

- OpenSSH must be installed on SCVMM server as Domain Admin User.
- Access credentials for SCVMM login using SSH are case sensitive.

Example, If username is Administrator, using 'Administrator' will work but 'administrator' will fail.

Update 'scriptPath' property value in Microsoft Hyper-V Host and Virtual Machine ssi.properties with openSSH user directory, if its value is different from the default specified value.

SSIOBJ: scriptPath "C:\\Program Files\\OpenSSH\\home".

## Appendix E—FAQs

1. SSI properties will be overwritten when upgrading RA

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

- Login the Active System Manager server as “delladmin” user
- cd \$HOME/asm-galeforce/gf/common/integrations
- cp -r <manufacturer>/<model> <manufacturer>/<model>\_<CurrentDate>

2. What about images and firmware's released after this release of Active System Manager 7.1?

Active System Manager 7.1 is validated with firmware and images as specified in Images and firmware versions that are released after Active System Manager 7.1 should work but this should be validated with the solution.

3. What is base level configuration and what does it consist of for Dell Force10 switches?

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

**DellForce10SampleConfig**

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

Yes, HTTPS is supported on Active System Manager.

5. What is the difference between synchronize and discovery

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

- Inventory information
- Operation center view
- Link information

Synchronize process discovers only the Operation center view hierarchy.

6. Is terminal server connectivity required for Dell Force10 switches?

Terminal server connectivity to Dell Force10 switches is optional.

7. 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.

8. Using Active System Manager, can I create an IP pool based on class A/B/C address in SCVMM?

Active System Manager supports IP pool creation in SCVMM, which utilizes the complete class A/B/C address. Active System Manager does not support dividing a class address into multiple subnets.

If the requirement is to use a class address, which is divided into multiple subnets, then you should manually create the IP Pool in SCVMM and associate the same with the required VLAN in the SCVMM.

9. How would a user know what's 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. Refer screen shot below for examples

Name	Value	Description
HyperV Imaging		
WindowsOperatingSystem	Microsoft Windows Server 2012	Default Installation - Microsoft Windows Server 2012
WindowsServerSystemLanguage	en-us	Language to be configured on the HyperV Server
SCVMMServerIP		SCVMM Server IP Address configured in the discovery
HyperVClusterName		SCVMM Cluster to be created / used
WindowsServerTimeZone	India Standard Time	Timezone to be configured on the HyperV Server
HyperVHostGroupName	All Hosts	Name of the Host-group where hosts needs to be added. Host-group must pre-exists on
HyperVInstallationImage	san://Windows Image Rep/WS2012_...	Windows Installation ISO available in the repository
ServerProfileTemplate	AS1000_Hyper-V_template	Server Profile Template
Network		
LogicalNetworkName	ConvergedNetSwitch	Logical Network Name to be created on SCVMM
VMNetworkName	ConvergedNetSwitch	VM Network to be created on SCVMM for the Logical Network
HyperVClusterIPAddress		SCVMM Cluster IP Address
Storage		
ClusterVolumeSize	500	
QuorumVolumeName	AS100DDCQuorumVolume	Quorum Volume to be created on Compellent Storage
QuorumDiskSize	1	Disk size of quorum volume

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

The new images and firmware versions can be added to the appliance whenever the new versions are available. The new versions should be discovered by respective software repositories and then needs to be associated with the proper resource types and instances before they can be used for provisioning various resources in the environment. Refer section Updating Repository Elements for Windows Image Repository

11. How to change the hostname of the Active System Manager Server?

Steps to change hostname of the Active System Manager server:

- a. Log in to the Active System Manager appliance as a root user.
- b. Open the /etc/sysconfig/network file and specify the new host name in the HOSTNAME field.
- c. Specify the host name in the /etc/hosts file.

- d. Run the reboot command to restart the server.
- e. Log in to the server as a delladmin user after restarting the server.
- f. Run the hostname command to verify if the new host name is configured as host name.
- g. Stop the Active System Manager services.
- h. Change the directory using `cd $HOME/asm-galeforce/gf/sbin`
- i. Run `./updateHostName.sh` and follow the instructions to configure the host name in the Active System Manager installation.
- j. Delete the following files from the `/home/delladmin/directory:*.ssh/id_rsa *.ssh/id_rsa.pub`
- k. Create a password less connection using the command `ssh-keygen`.
- l. Start the Active System Manager Services. For details on starting and stopping the Active System Manager services, see the Configuring Active System Manager Services section.

12. Can I add capacity to a cluster created using an ASM session?

You can add capacity to a cluster by running a new session (session\_2) and running the same orchestration that you used for the currently running session (session\_1) which created a cluster using ASM. The new session (session\_2) will add the server/capacity to the same cluster that was created using session\_1.

13. Can I add a new server in a session to add capacity to a cluster created using ASM session?

This is not supported. A cluster, once created, cannot be updated to add more capacity. You should cancel the reservation and recreate a session with increased capacity (increased server count) to create a cluster with more capacity.

14. Can I remove a server from a session, to either free up the unused servers or to removing servers that have gone bad.

No. This is not a supported use case.

15. 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.

16. How to remove a server from a session, to free up the unused servers or removing servers which are gone bad.

Server can be removed from the session but no cleanup operations are currently performed while removing a specific server from the session. User needs to cancel the session for removing servers from a session.

17. Can I managed multiple Active System, same type (e.g. 2X AS1000) or different type (e.g. AS1000 and AS200), using a single ASM appliance

Yes a single ASM appliance can be used to manage multiple ASM appliance for the same type or different type

18. ASM Template validation fails and template cannot be scheduled if Active System elements are discovered separately

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

19. 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.

20. Can I change the default Open SSH installation path for Hyper-V RA?

User can change the default Open SSH installation path for Hyper-V RA. The default Open SSH installation path is externalized in the Microsoft Host RA ssi.properties. User can update this property from the client in case installation path is different from default Open SSH installation path. Example

```
SSIOBJ: scriptPath "C:\\Program Files\\OpenSSH\\home"
```

**NOTE:** The above path is the default installation path, if you have changed from the default install path, you will need to update this path prior to discovering your ASM instance.

21. What are the best practices for providing Asset Tag during discovery of an Active System?

User need to ensure that the Asset Tag provided in discovery setup does not match with the Manufacture or Model name pattern. For example, if Manufacture is EqualLogic and Model is StorageArray, the assetTag used during discovery should not have a pattern which matches either of "EqualLogic" or "StorageArray".

**NOTE:** In case user provides a name with pattern that matches Manufacture or Model than Virtual Object imported in ASM does not have the "Hypevisor" flag checked in inventory. User will have to manually enable the Hypervisor flag in this case. For enabling the Hypervisor flag on a resource instance in inventory, refer the ASM User Guide.

22. How the Workload VLAN's which is defined in the VLAN component in ASM Template and Server Profile is configured by ASM?

ASM configures only Workload VLANs which are defined in ASM Template for Top of Rack switches configuration. However IOA is configured with VLAN's which are

defined in VLAN component as well as Workload VLAN's defined in Server profile template. Thus for ensuring IOA and ToR switches are configured with same set of workload VLAN's, make sure that workload VLAN's defined in Server profile template should be a subset of VLANs defined on the VLAN component in ASM template.

23. What are the supported GuestOS for Hyper-V VM creation in ASM 7.1?

ASM 7.1 supports only Windows 2012 GuestOS for VM creation based on Hyper-V.

24. 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.

25. You cannot schedule more VMs than the value of inventory level capacity parameter 'CPU/RAM', which represents the 'Logical Processor' count and 'RAM'.

For example:

Physical Session: A cluster with 4 Blades, 16 logical processors and 32 GB RAM each.  
Total CPU = 64, RAM = 128

Logical Template: VM 'Guest Capacity' inventory parameter has CPU = 4, RAM = 8192, Object Count = 4

Total of 4 sessions, i.e. 16 VMs can be scheduled at a time.

To work around this, provide value (in %) to the 'Over Subscription' property of the inventory level capacity parameters 'CPU/RAM'.

For example:

Updating 'Over Subscription' at cluster level, to '100' results in 8 sessions, i.e. 32 VMs can be scheduled at a time.

Updating 'Over Subscription' at cluster level, to '200' results in 12 sessions, i.e. 48 VMs can be scheduled at a time.

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

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

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 the requirement and if you face bottleneck because of it. ASM has been validated with parallel executions.

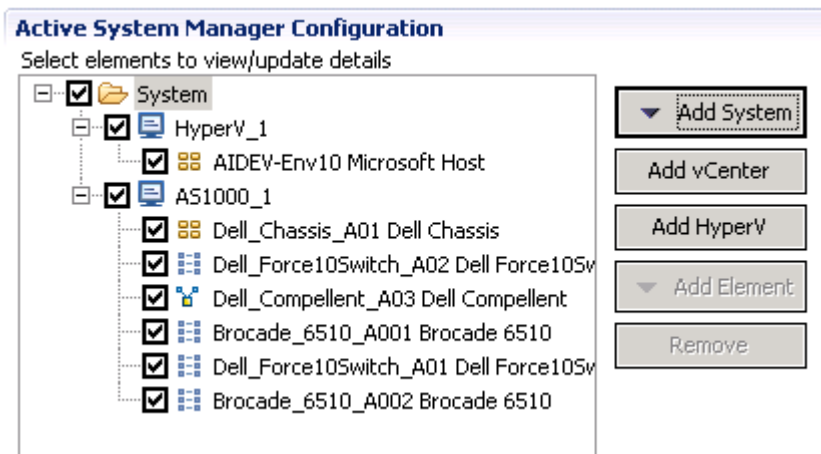
Therefore, to reduce the waiting time, it is recommended to set the thread pool size and parallel execution count to less than or equal to 50.

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

1. Log in as **delladmin** user.
  2. Open the `./common/etc` folder using the following command:  

```
cd asm-galefore/gf/common/etc
```
  3. Open the `remoteExecServer.xml` file and set the value for the following parameters to less than equal to 50:
    - a. Set `poolsize` - Attribute in the `threadpool` node
    - b. Set `executioncount` - Attribute in `maxparallel` node
  4. Run the `reboot` command to restart the server.
27. If Hyper-V and Active System Nodes is left unchecked in discovery configuration then discovery initiated from orchestration does not discover Hyper-V or Active System Elements

This is as per design, for discovery to work the Active System elements and applicable Hyper-V entries should be checked in the discovery setup. For example for AS1000 system, the Discovery setup should be setup as shown in figure below



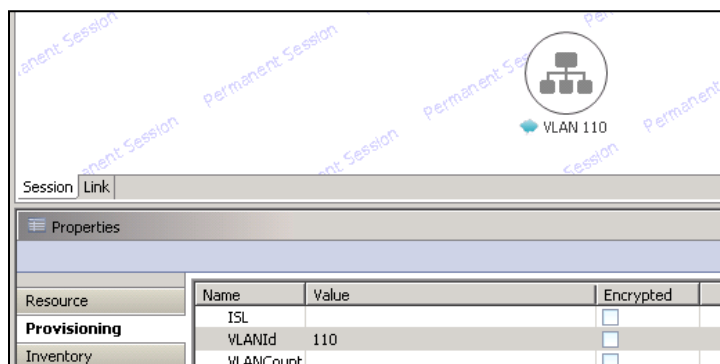
28. Can I add new VLANs to a running physical session?

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

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

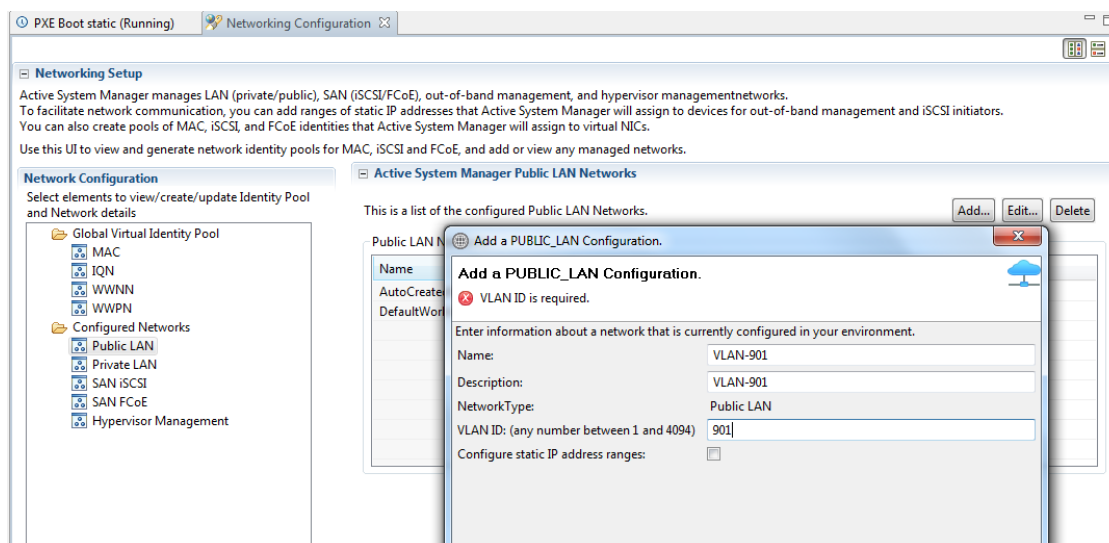
- a. From **Components** view, drag and drop a new VLAN component in a running session.
- b. Click **Save** in order to save the changes done to the running session.  
This step reserves a random VLAN ID from a range defined on the switch in the Active System Manager Inventory. To specify a specific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

Figure 36. 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**.

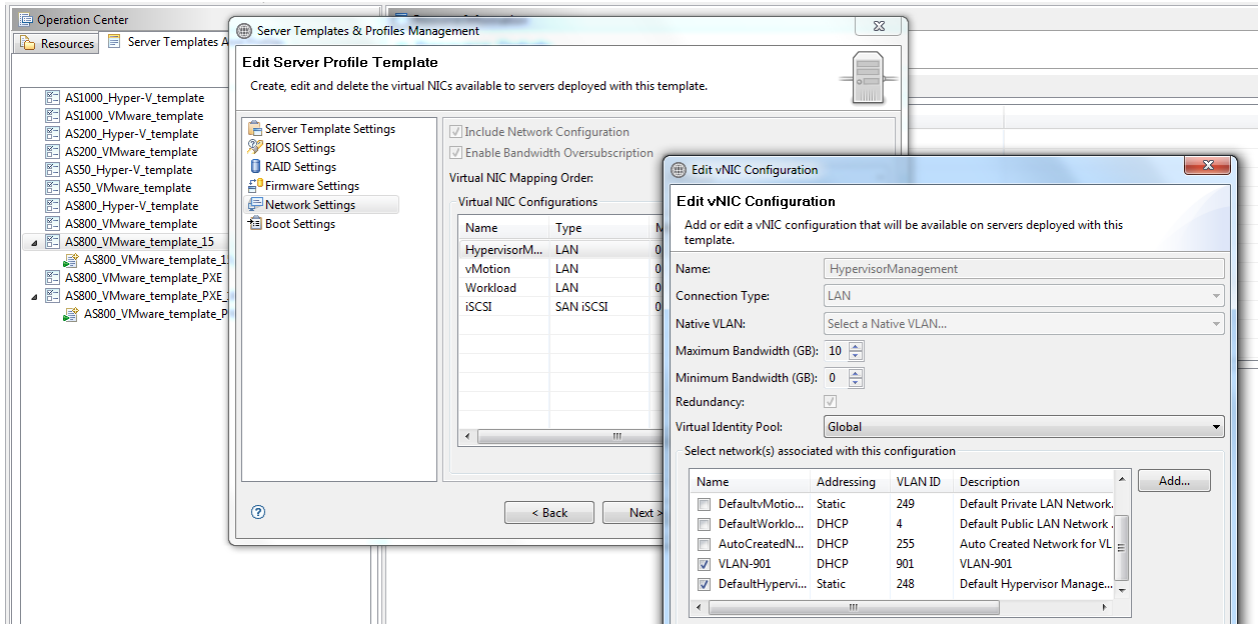
Figure 37. Add a PUBLIC\_LAN Configuration



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



Figure 38. Edit vNIC Configuration

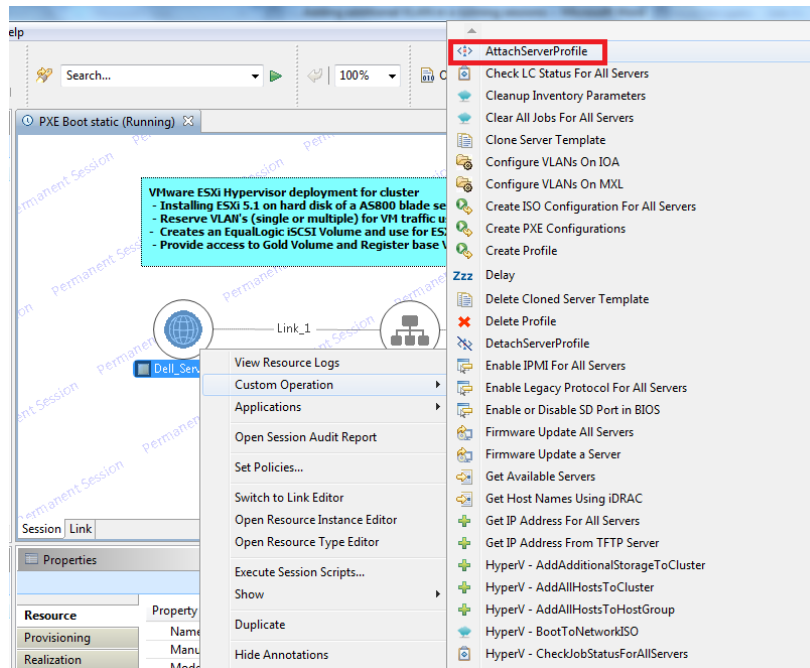


f. Execute the custom operation **AttachServerProfile** with following parameters:

- 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 39. 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.