Active System Manager Solution Guide
Active System 200 for Hyper-V

Version 7.1

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Introduction to the Active System 200 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) 200:

- **Rapid and Simple Scalability**—The Dell AS 200 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 200 is a scalable rack servers 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 200 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 200 allows for more rapid application deployments through minimized design, test, procurement, integration, and configuration phases. One key feature of the Active System 200 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 through the streamlined and automated processes delivered through the Active System Manager.
- **Automated and Efficient**—The Dell Active System 200 enables your data center to reach its maximum potential. It reduces the complexity and amount of time spent manually managing storage functions through automation for more efficient and simplified management. This allows the Dell Active System 200 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 200 infrastructures.

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 200 Spec Sheet
- Active System 200 HyperV 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 7.1 documentation:

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

Overview

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

Table 1 lists the Active System Manager solution for the Active System 200-supported components.

Table 1. Active System 200-Supported Components

Component	Details
Hyper-V Hypervisor	Minimum 3x and maximum 7x Dell PowerEdge R720 Server Microsoft Windows Server 2012 Datacenter edition having Hyper-V role enabled: • 1x Broadcom 5720 Quad port 1Gb Network Daughter Card (rNDC) • Broadcom 57810 dual port 10Gb NIC (Add-in Card)
Converged Fabric Switch	• 2xDell Force10 S4810
Storage	• Minimum 1x and up to 4x Dell EqualLogic PS6110 series arrays
Management Infrastructure	• 2x Dell PowerEdge R620 servers with embedded VMware vSphere 5.1 hosting management VMs. Or • 12x Dell PowerEdge R420 server with Microsoft Windows Server 2012 with Hyper-V role enabled and hosting management VMs • 1x Dell Force10 S55 used as a 1Gb out-of-band management switch
Management components hosted in the management infrastructure	• Active System Manager • EqualLogic SAN HQ • OpenManage Essentials with Repository Manager • Microsoft Windows Server 2012 with Hyper-V Role enabled (200m) • Customer provided or trial version of Microsoft System Center 2012 SP1 Virtual Machine Manager (200m) • Dell Management Plugin for vCenter (200v)

Table 2 lists the Active System Manager solution for the Active System 200-supported configurations.

Table 2. Active System 200-Supported Configurations

Configuration	Support
Dell PowerEdge R720 Servers	Support firmware images as per the Active System Manager solution for Active System 200. **NOTE:** Add on NICs must be in slot 2 to successfully run orchestrations.
Dell Force10 Top-of-Rack (ToR) S4810 switches	Supported FTOS and base configuration are packaged in the virtual appliance. The base configuration must be updated for management IP and virtual LAN (VLAN) per data center deployment need.
Dell EqualLogic PS6110 Storage Array	Supported firmware versions will be packaged in the virtual appliance.
Microsoft Windows Server 2012 for virtual machine (VM) workloads	Microsoft Windows Server 2012 image must be manually copied to the virtual appliance.
Hyper-V installation support on rack servers Dell PowerEdge R720	Hyper-V installation support on rack servers Dell PowerEdge R720.

Active System Manager Deployment

This section describes the options, prerequisites, and methods to deploy Active System Manager.

Deployment Options

The Active System Manager solution for Active System 200 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); see Table 3:

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

Table 3. Deployment Options

Virtual Appliance Filenames	Platform
Dell-ActiveSystemManager-7.1.0.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 200 components, make sure that the prerequisites listed in Table 4 are in place.

Table 4. Deployment Prerequisites

Specification	Prerequisite
Connection requirements	Active System 200 units connected per the Active System 200 *Reference Architecture and Design Guidelines*
Management server requirements	Management server is configured per the Active System 200 *Reference Architecture and Design Guidelines*
Firmware and BIOS requirements	All equipment must be configured with firmware versions as listed in section *Appendix* D—Firmware and Software Base Lineup
For the Active System 200 R720 Servers:	• R720 servers are configured and have the management IP address and login credentials assigned NOTE: The username (root) and password required.
Force10 S4810 switches (Top-of-Rack [ToR])	• The management IP address is configured for the ToR switches. • The AS200 base configuration is applied on both switches. • VLANs are created on the switches per the Active System 200 deployment specification.

	• The virtual machine (VM) traffic VLANs are created dynamically by Active System Manager.
EqualLogic Storage Array	• The group IP and management IP are configured for Storage Array. • All storage array members are added to the group.
Microsoft SCVMM 2012 SP1	• SCVMM 2012 is configured and accessible through the management and Hypervisor management network. • Appropriate licenses are deployed on SCVMM.

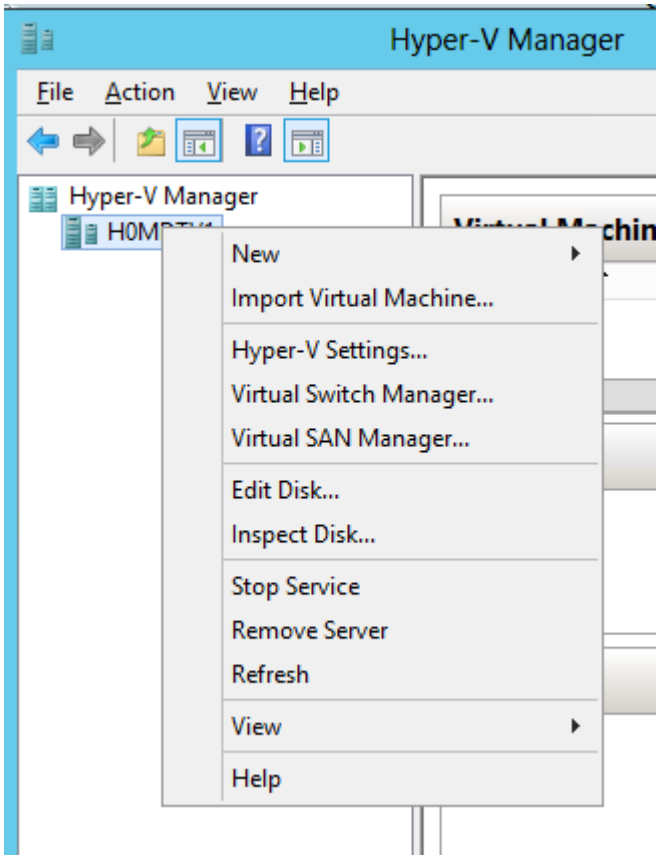
Deploying VHD

The Active System Manager Virtual Hard Disk (VHD) can be imported on to a Hyper-V host using the **Hyper-V Manager ➔ Import Virtual Machine** option. When booted, the Active System Manager VM gets its IP address from an existing DHCP server. If a DHCP server is not configured, manually assign the IP address to the appliance.

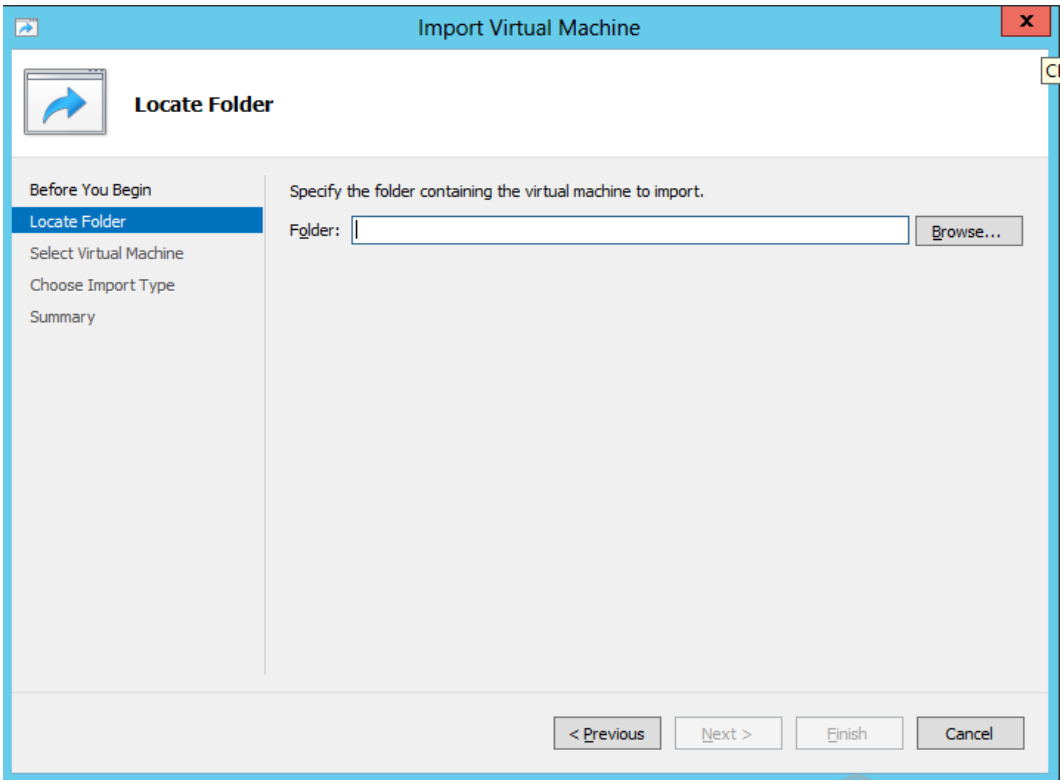
Importing the VHD Using Hyper-V Manager

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

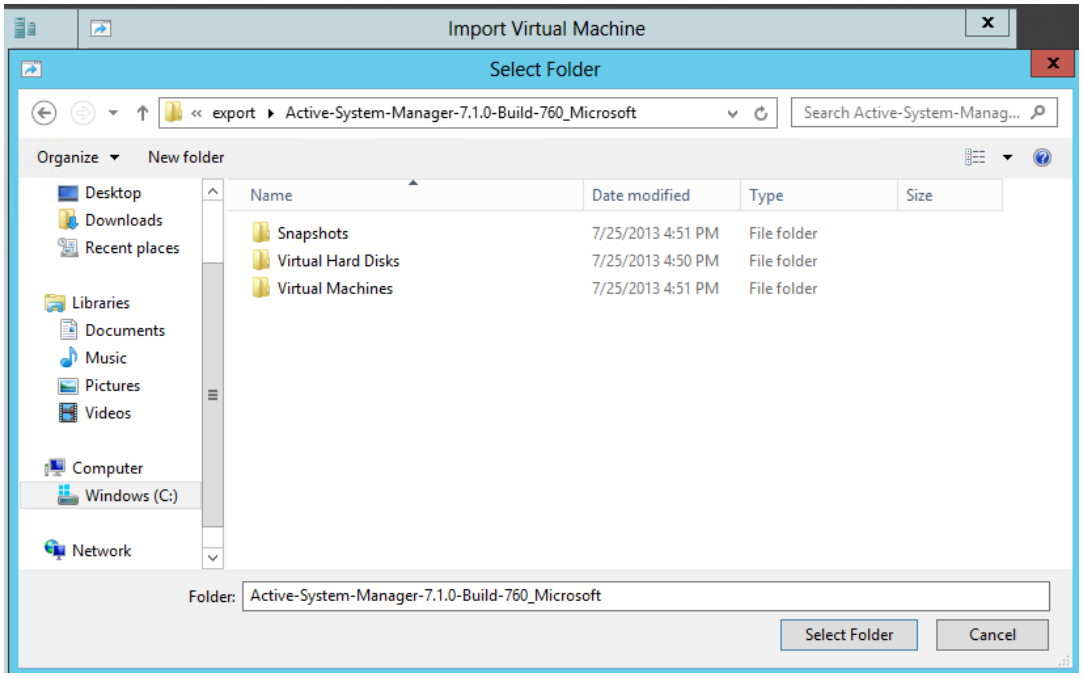
Figure 1. Hyper-V Manager → Import Virtual Machine



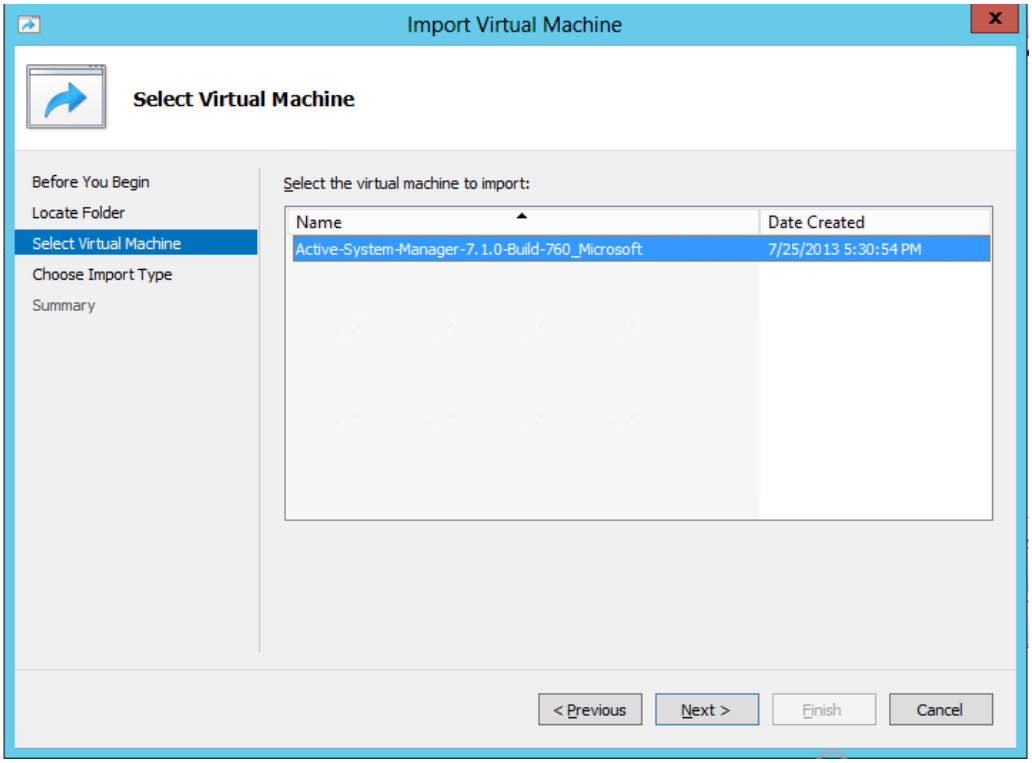
2. On the **Locate Folder** page, **Browse** to the location where the VDH is available in the extracted format



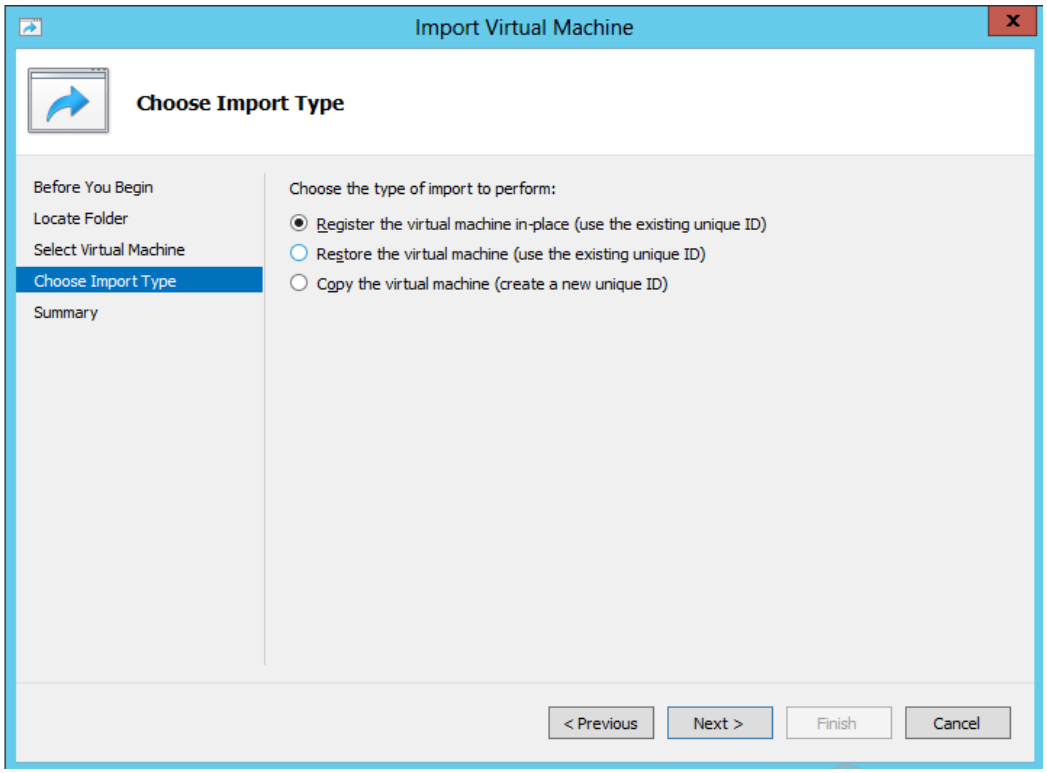
3. Click **Select Folder** and click **Next**.



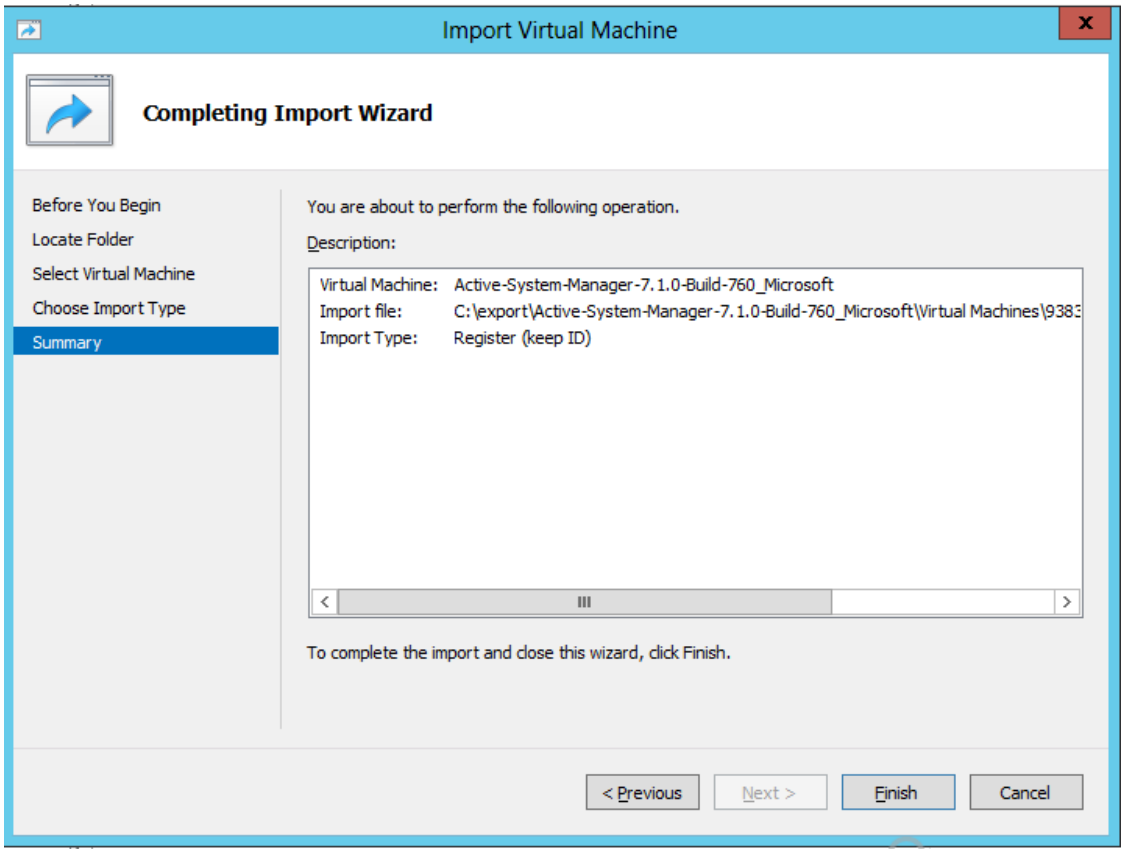
4. On the **Select Virtual Machine** page, select the VM and click **Next**.



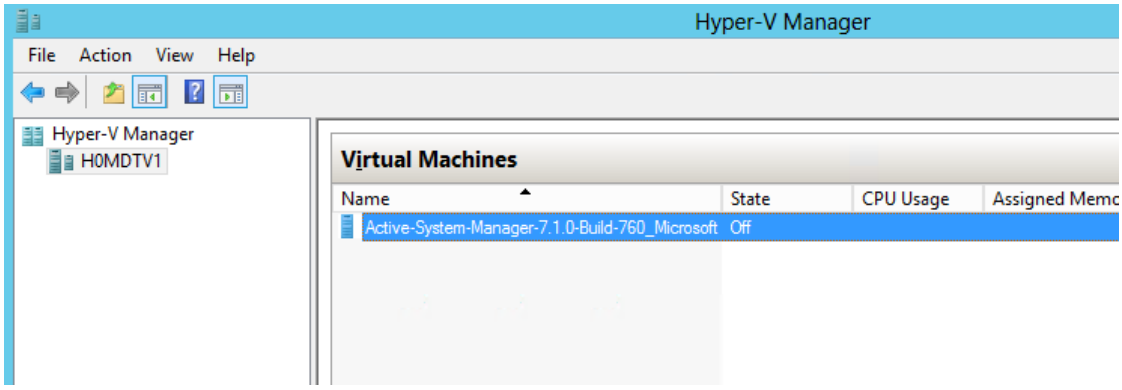
5. On the **Choose Import Type** page, select **Register the virtual machine in place (use the existing unique ID)** and click **Next**.



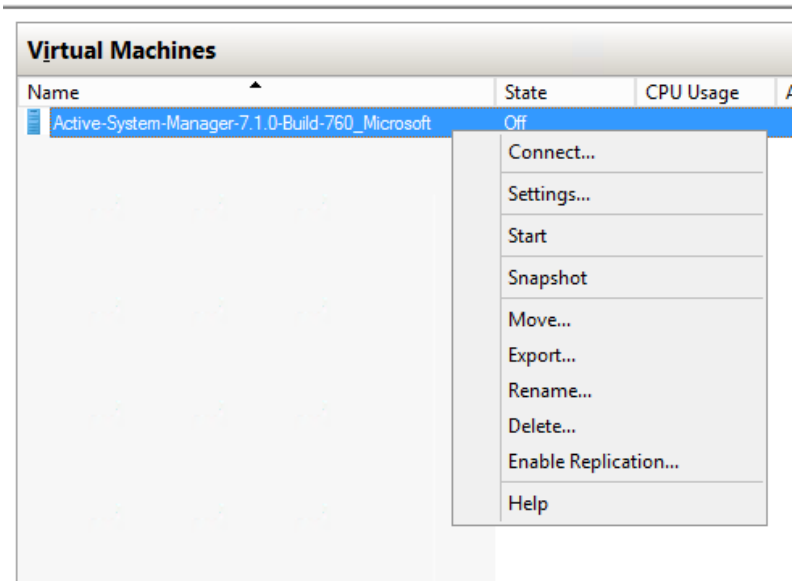
6. On the **Summary** page, click **Finish**.



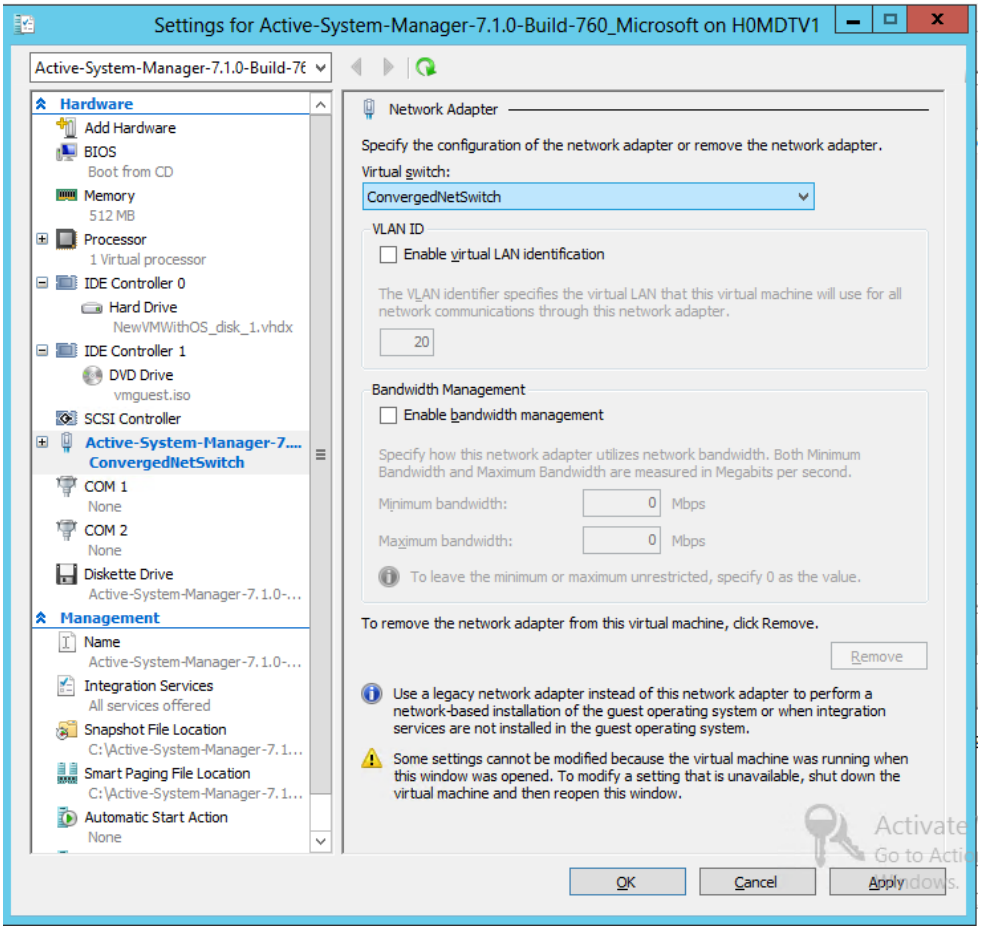
7. The newly imported Virtual Machine appears on the Hyper-V Manager.



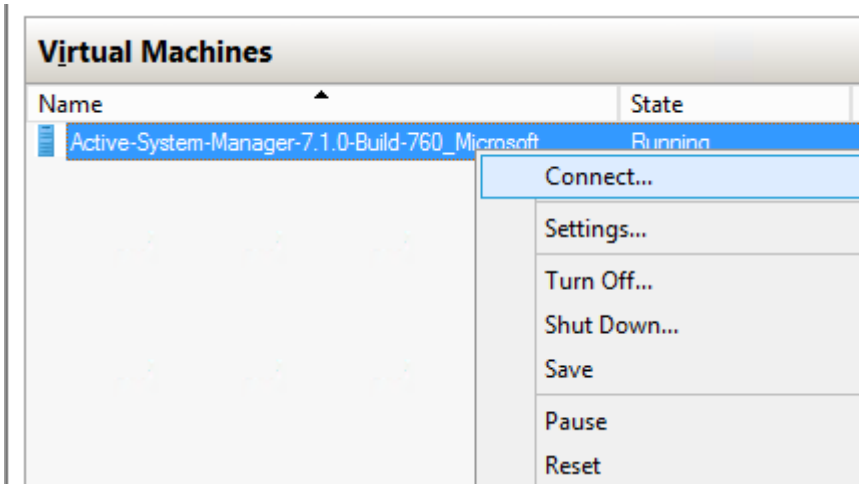
8. Right-click the Virtual Machine and select **Start** to power-on the Virtual Machine.



9. 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.



11. Use the necessary key access credentials (see Table 5).

Changing Key Access Credentials

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

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

```
cd $HOME/asm-galeforce/gf/sbin

./stopasm.sh
```

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

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

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

```
su

<Enter root password>

passwd delladmin

<Enter new password>

<Re-enter new password>
```

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

   IMPORTANT: Do not rename the user accounts, only change their passwords.

4. Reboot your Active System Manager VM.

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

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

   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 Manage 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 Appliance

1. On the vSphere or Hyper-V Manager client, select the deployed **Active System Manager** appliance and open its console.
2. Log in as the **root** user. Root user credentials are given in Table 5.
3. Navigate to **System➔Preferences➔Network Connections** to launch the Network Connections wizard.
4. Select the network interface card (NIC) appliance on which IP address should be manually configured, and click **Edit**.
5. On the **Editing** dialog box, click the **IPv4 Settings** tab. Select **Manual** for the **Method**.
6. Click **Add** and enter the IP address and other networking information (for example, DNS). Click **Apply**.
7. Open the terminal console by clicking **Applications ➔ System Tools ➔ Terminal**.
8. Execute the following command:

   ```
   /etc/init.d/network restart
   ```

9. Log into the appliance with the newly-configured IP address. This will ensure that the IP address is configured correctly on the 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 onto the Active System Manager web portal.

1. In your internet browser, enter the following URL:

   http://<your server name>:<Active System Manager port number>

   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 onto the Active System Manager.

Adding Additional Licenses

To add a license:

1. Perform one of the following procedures:

   - To add a license using the 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 the **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 a 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 a product license.

The Dell Support team responds to your software license request with a license file.

6. In the Deploy Product License section, copy and paste the content of the license file provided in the License File text box.

7. Click **Submit**.

Configuring Active System Manager Services

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

Starting Services

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

8. Log in as user **delladmin** (see Table 5).
9. Execute following command:

```
cd $HOME/asm-galeforce/gf/sbin

./startasm.sh
```

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

Stopping Services

To stop the services manually:

10. Log in as user **delladmin** (see Table 5).
11. Execute following command:

```
cd $HOME/asm-galeforce/gf/sbin

./stopasm.sh
```

Verifying Service Status

To verify that all Active System Manager services are running:

12. Log in as user **delladmin** (see Table 5).
13. Run the following script to display the current status of all services, including the Oracle database status:

```
cd asm-galeforce/gf/sbin

./asmstatus.sh
```

Figure 2. Sample Active System Manager Services Status Output

```
                Active System Manager Service

---------------------------------

Host: asm-galeforce Port: 40500 Secure Port: 50500

Enterprise: Dell

Lab: DEMO

Status: Running
```

```
Domain Services

---------------

1. Domain     : System (Id: 1)

   Description:

   ------------------------------------------------------

   Session server

      Host: asm-galeforce  Port: 40500  Secure Port: 50500

      Status: Running
```

Installing the Active System Manager Client

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

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

Installing Active System Manager Client Software on Windows

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

   A Security Warning window prompts you to run the file.
3. Click **Run** and complete the installation wizard.

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

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

Installing Active System Manager Client Software on Mac

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

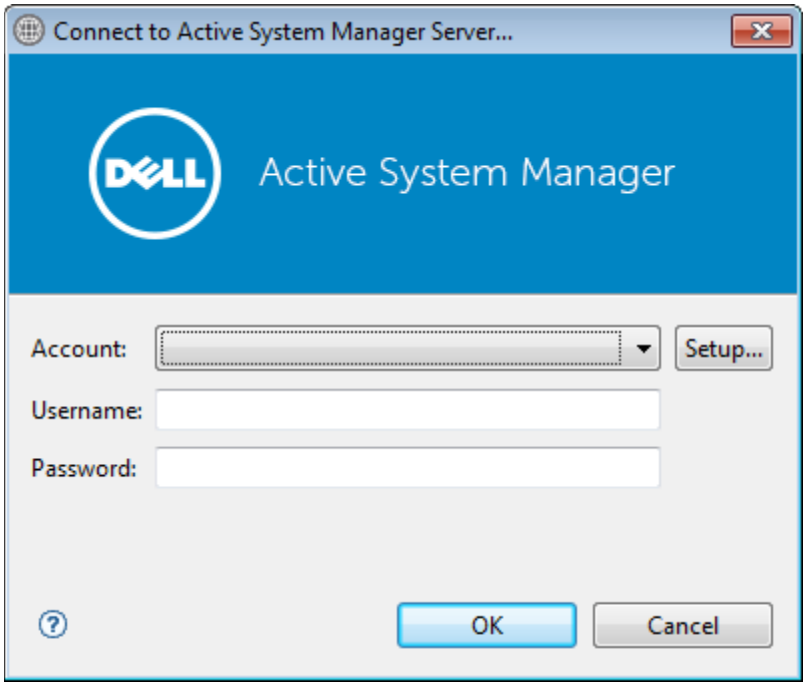
Installing Active System Manager Client Software on Linux

1. Download the **ActiveSystemManager-linux.gtk.x86_7.1.0_xyzt.zip** file.

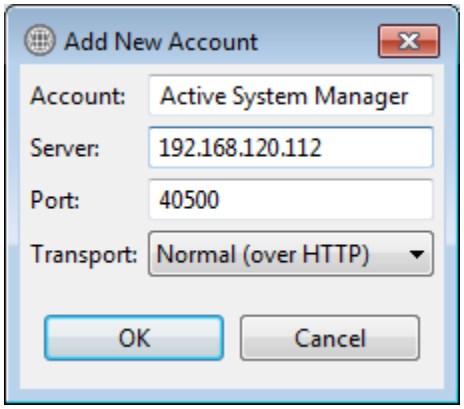
2. Unzip the file into a specific folder destination on your hard drive.
3. Create an Active System Manager folder and move the file contents to this location.
4. In the console, execute the **Active System Manager** file.

Accessing Active System Manager Using the Windows Client Software

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



3. On the **Setting Up Accounts** dialog box, click **Add**.
4. Enter a unique and descriptive **Account** name for the account and **Server** IP address of the appliance.



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

Active System Manager Setup

This section describes the steps to manage and deploy the server rack server s in the Active System 200.

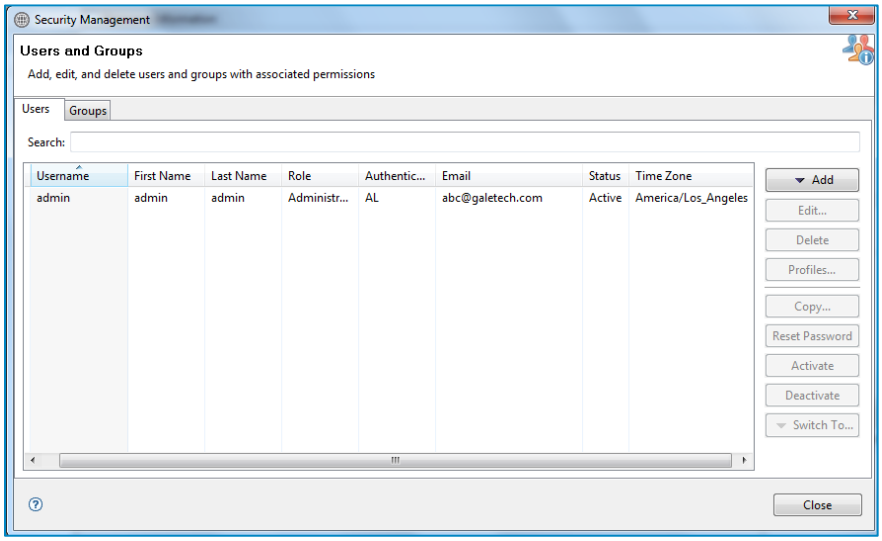
User and Group Management

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

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

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

Figure 3. Security Management—Users and Groups



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

Discovering Active System 200 Components

Discovery of the Active System 200 components includes:

- Dell R720 Server Rack servers
- Force10 Top-Of-Rack (ToR) S4810 switches
- Dell EqualLogic Storage Array
- SCVMM with Microsoft Windows Server 2012

Initiating Discovery

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

- Opening the Discovery
- Adding Details for the Active System
- Adding SCVMM Properties

Opening the Discovery Settings

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 200 Unit

NOTE:

- In general for all the devices, when defining names and provisioning parameters, you should avoid using the following special characters: @ # $ % ^ () + = " | } { [ ] . , | : ; " ' ? / > <
- The volume names of the Dell EqualLogic Storage Array can contain only alphanumeric characters, and the following special characters: colon (:), period (.), and dash (-).
- When discovering a POD, the value for the AssetTag cannot contain any of the strings in the following names: Dell, Force10Switch, EqualLogicStorageArray, VMware, or Host. For example, AssetTag cannot have a value of “Storage” as this value matches exactly with a string in “EqualLogicStorageArray”.

To add details for the Active System 200 unit, click **Add System**. This feature displays names for Active System 200 components that will be discovered; for example:

- Dell R720 Servers
- Dell EqualLogic Storage Array
- Dell Force10

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 PowerEdge R720 Servers within Active System Manager. For example Assettag Dell_R720_001 (a unique name) can be used to track the chassis in Active System Manager
- **Username**—Username to access and manage the Dell PowerEdge R720 Server.
- **Password**—Password to access and manage the Dell PowerEdge R720 Server.
- **IP Address**—Required. IP address for the Dell PowerEdge R720 Server . The Server should be IP reachable from the Active System Manager server.

2. Provide the following element properties for the Dell EqualLogicStorageArray system:

- **Assettag**—Required. Unique key or name for the EqualLogic Storage Array, which is used to import or identify an EqualLogic Storage Array in the Active System Manager. For example, Assettag Dell_EqualLogic_PS6100_1 (a unique name) can be used to track the EqualLogic array in Active System Manager.
- **Username**—Group username to access and manage the EqualLogic Storage Array.

- **Password**—Group password to access and manage the EqualLogic Storage Array.
- **IP Address**—Required. Group Management IP address for the EqualLogic Storage Array. Group Management IP should be reachable (via ping to test) from the ASM server Group IP of the EqualLogic Array should be IP reachable from the Active System Manager server.

NOTE: If there are multiple storage groups, there should be an entry for each of the Storage Group in the **Discovery Configuration Setup** view. To add a new element in an existing Active System 200 unit, click **Add Element**, select **Dell EqualLogicStorageArray**, 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**—Username to manage the Force10 switch.
- **Password**—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**—VLAN IDs that could be provisioned on the Top-Of-Rack (ToR) switch. Sample input format (2..1024); the switch supports a VLAN range from 2 to 1,024.
  - **Terminal Server IP Address**—Optional. Required if switch to manage is using the Terminal Server port.
  - **Terminal Server Port**— Optional. Required if switch to manage is using Terminal Server port.
  - Terminal Server Username—Optional. Terminal Server username (if configured)
  - Terminal Server Password—Optional. Terminal Server password (if configured)

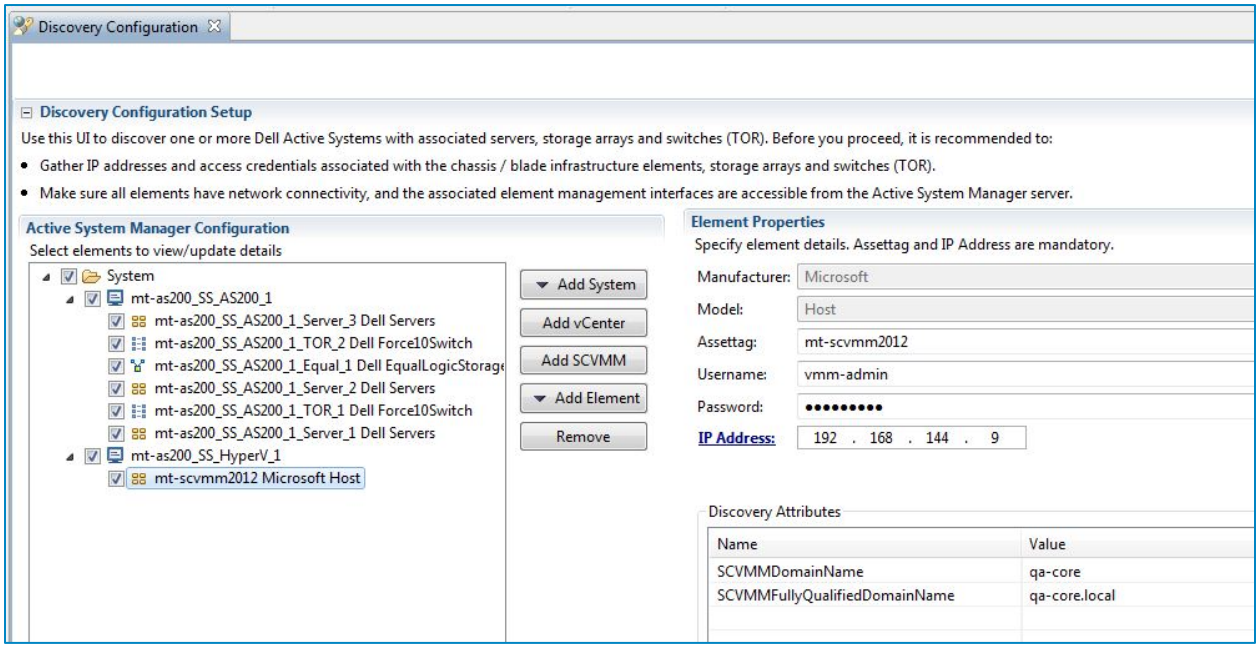
Adding SCVMM System Properties

1. On the Active System Manager ➔ **System** ➔ **vCenter** configuration, click **Add SCVMM**.
2. For SCVMM discovery, provide the following system properties:

- **Name**—Unique key or name for SCVMM which is used to import or identify SCVMM in the Active System Manager.
- **Username**—Username to access and manage the SCVMM. This user must have full administrator rights to the SCVMM. If the SCVMM Server is part of a Windows Domain, then enter the username as **username@domain**.
- **Password**—Password to access and manage the SCVMM.
- **IP Address**—IP address for the SCVMM application. This must be IP reachable from the Active System Manager server
- **adminUserDomain** – Required, Admin User Domain for login to the SCVMM application. Admin user domain should be specified with fully-qualified domain name.

- **SCVMMDomainName** – Required, SCVMM Admin User Domain for login to the SCVMM application.
- **SCVMMFullyQualifiedDomainName**: Required, Admin user domain name should be specified with fully-qualified domain name.

Figure 4. Domain name for the SCVMM in discovery attribute



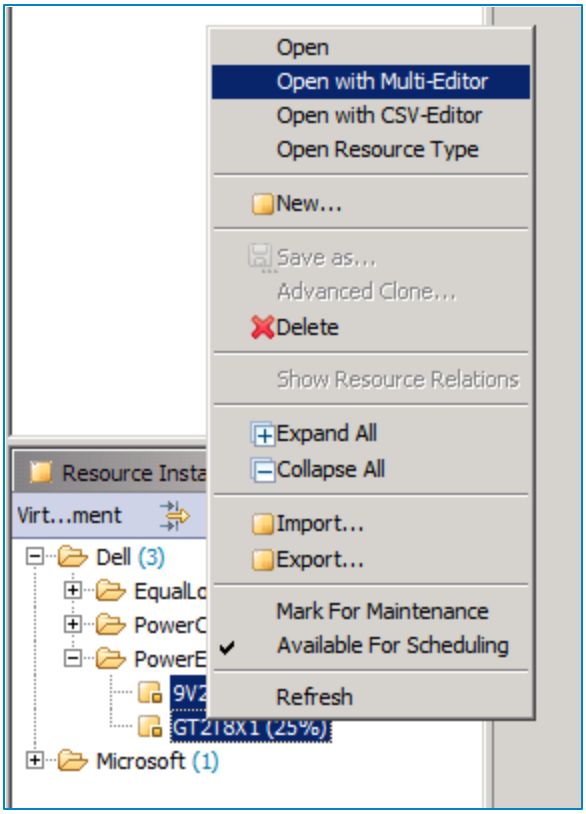
Starting the Discovery Process

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

   NOTE:

   - You can view the discovery progress from the task bar shown at the bottom of the client.
   - If the discovery progress is initiated when a discovery process is already in progress, the Active System Manager user is prompted with a message, indicating the same.
3. After completing the Active System 200 components discovery, update the following information manually for all serverrack servers. These parameters will be used for configuring the ESXi Server with appropriate information (for example, IP Address, hostname, iSCSI IP Address).

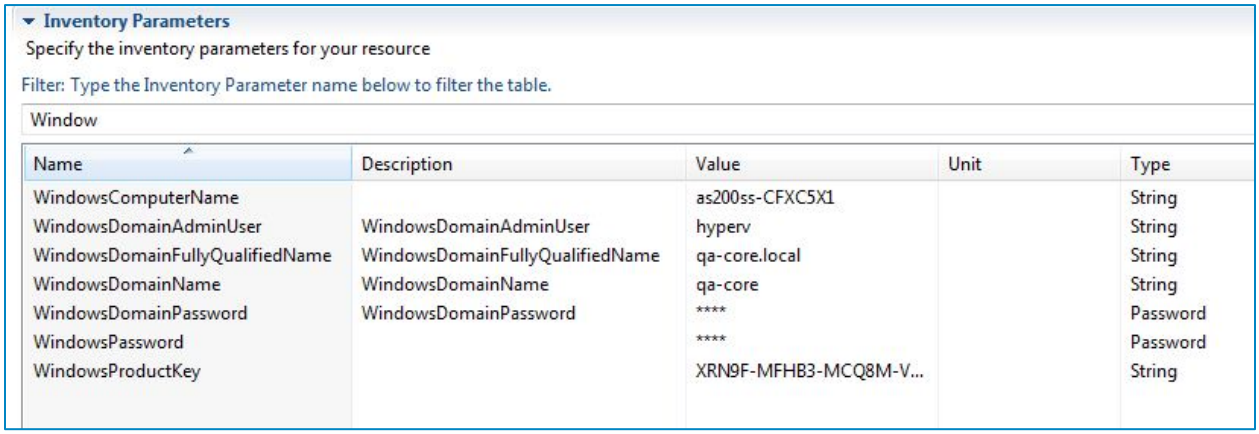
   This information can be updated by using the multi-editor feature or by opening individual server instances. You can launch the multi-editor by selecting multiple server instances and right-clicking **Open with Multi-Editor**.



The following parameters must be updated:

- **WindowsComputerName—**Hostname to be assigned to the Hyper-V server
- **WindowsDomainAdminUser—**Domain user to be created on the Hyper-V server
- **WindowsDomainFullyQualifiedName—**Fully-qualified domain name to be assigned to the Hyper-V server
- **WindowsDomainName—**Domain name to be assigned to be assigned to the Hyper-V server
- **WindowsDomainPassword—**Password for the newly created domain user on the Hyper-V server
- **WindowsPassword—**Password for the Windows user having administrator privileges
- **WindowsProductKey—**Product key for the Windows Server 2012 installation

Figure 5. Server Inventory Parameters



Software Repositories Available in the Active System Manager Virtual Appliance

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

- NFS ISO Bootable images - Applicable for Dell Servers, where the repository has the Windows Server 2012 ISO bootable images.
- SCVMM Baseline images - Applicable for Microsoft Virtual Machines, where the repository has the Gold VM image already configured.

  As part of the AS 200, we will be using Windows Server 2012 NFS ISO Bootable images repository and SCVMM Baseline Images repository extensively. Refer the below sections for updating the details of these repositories.

Updating Repository Elements for Firmware Images on EqualLogic Firmware Repo

The EqualLogic StorageArray repository contains firmware images to be used for updating the firmware on EqualLogic Storage Arrays.

1. Open the **Software Repositories** view in the setup perspective by clicking **Setup → Software Repositories** on the client.
2. In the **Software Repositories** view, right-click and select **Repositories**.
3. On the **Software Repository—Select Repository Type** dialog box, select **Software Repository** and **Existing**.
4. Select the **Repository Type** from the list and click **Next**.
5. Update the IP address, username, password, and base directory (location on the server where the firmware images are present, it can be the access information for the Active System Manager appliance as appliance is shipped with latest firmware images; otherwise, it can the access information for the remote server having the firmware images residing on it, the server should be SSH reachable from the Active System Manager appliance) for the image server, and click **Next**.
6. On the **Software Repository—Update EqualLogic Firmware Repository** dialog box, click **Finish**.

   NOTE: If a new image is added to the appliance, skip this step.
7. On the **Software Repository—Repository Elements Discovery and Association** dialog box, click **Discover** to display all the firmware images available on the image server.
8. Click **Associate** to associate the image file with the required **Resource Types** (Dell EqualLogic Storage Array and EqualLogic Storage Pool).
9. Select resource types and click **OK**.

Updating Repository Elements for EqualLogic Storage Resource Pools

The EqualLogic Storage Resource Pool repository contains the information of the Storage Pools available on EqualLogic Storage Arrays.

1. Open the **Software Repositories** view in the setup perspective by clicking **Setup → Software Repositories** on the client.
2. In the **Software Repositories** view, right-click and select **Repositories**.
3. On the **Software Repository—Select Repository Type** dialog box, select **Software Repository** and **Existing**.
4. Select **EqualLogic Storage Resource Pools** from the list and click **Next**.
5. On the **Software Repository—Update EqualLogic Resource Pool Repository** dialog box, update the **Host**, **Username**, and **Password** parameters. These parameters correspond to storage group Management IP address, group username, group password respectively, and click **Next**.
6. Click **Finish**.

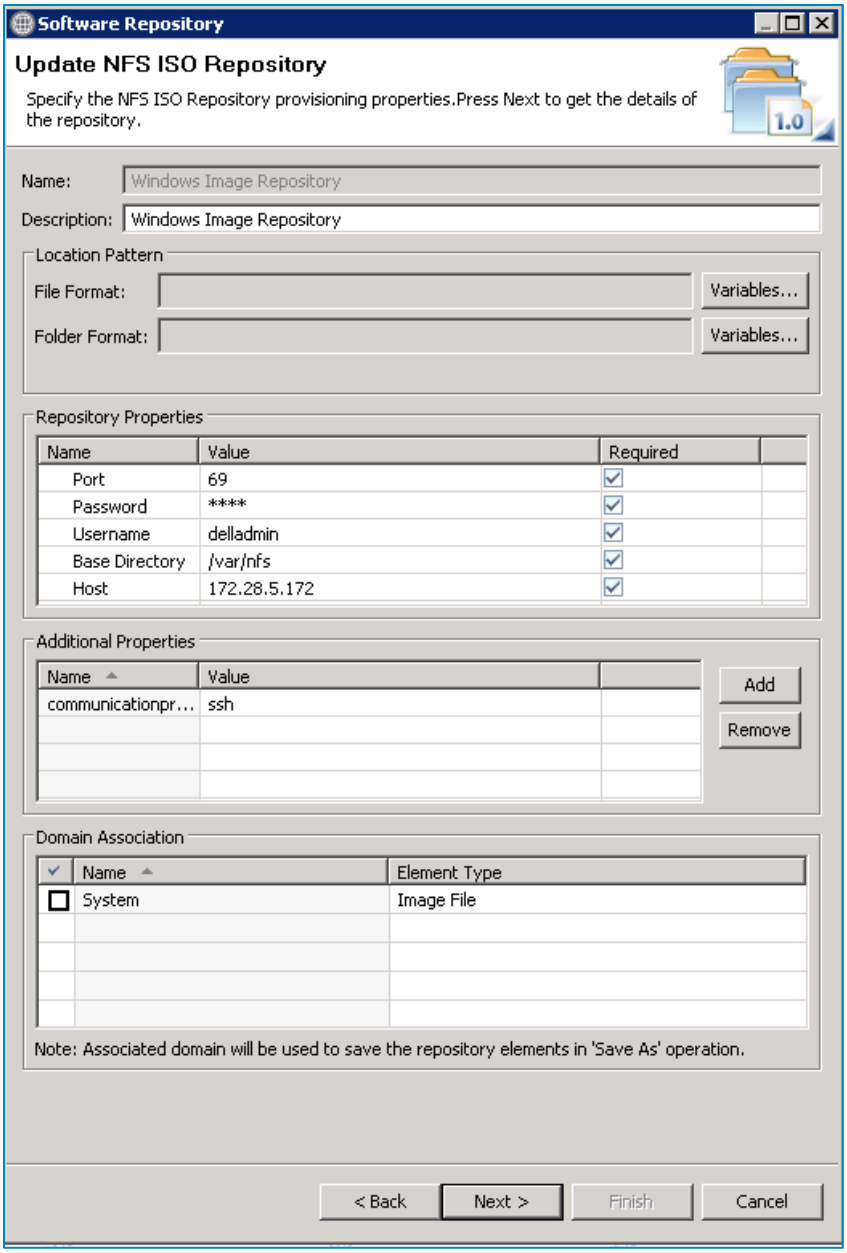
NOTE: If a new resource pool is added and information needs to be updated, skip this step.

7. On the **Software Repository—Repository Elements Discovery and Association** dialog box, click **Discover** to display all the storage pools available on the Storage Array.
8. Right-click the selected Resource Pool and set the Type to **Image File,** and click **Finish**.
9. Click **Associate** to associate the storage pools with the required Resource Types (Dell EqualLogic-PS6110 and EqualLogic Storage Pool), and click **Finish**.

Add NFS ISO Repository for Hyper-V

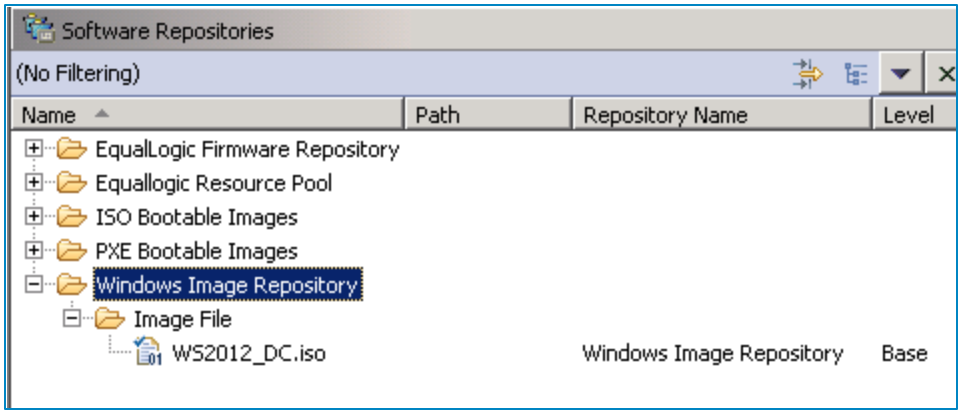
1. Open the **Software Repositories** view in the setup perspective by clicking **Setup ➔ Software Repositories** on the client.
2. In the **Software Repositories** view, right-click and select **Repositories**.
3. On the **Software Repository—Select Repository Type** dialog box, select **Software Repository** and **Existing**.
4. Select **Windows Image Repository** from the list, and click **Next**.
5. On the **Software Repository— In the dialog box, input the name field,** update the **Host** IP to the value with the IP address of the Active System Manager appliance.

   The Username and Password are configured with default appliance username and password.



1. Click on **Next** → **Discover** → Select "WS2002_DC.iso." once it's discovered → Set Type to Image File and Associate with Dell Servers.
2. Click **Finish**.

Once the NFS repository is added, you will see the WS2012 images in the repository.


Software Repositories
(No Filtering)
Name
Path
Repository Name
Level
EqualLogic Firmware Repository
Equallogic Resource Pool
ISO Bootable Images
PXE Bootable Images
Windows Image Repository
Image File
WS2012_DC.iso
Windows Image Repository
Base

Configure Networking

Active System Manager manages LAN (private/public), SAN (iSCSI/FCoE), out-of-band management, and hypervisor management networks.

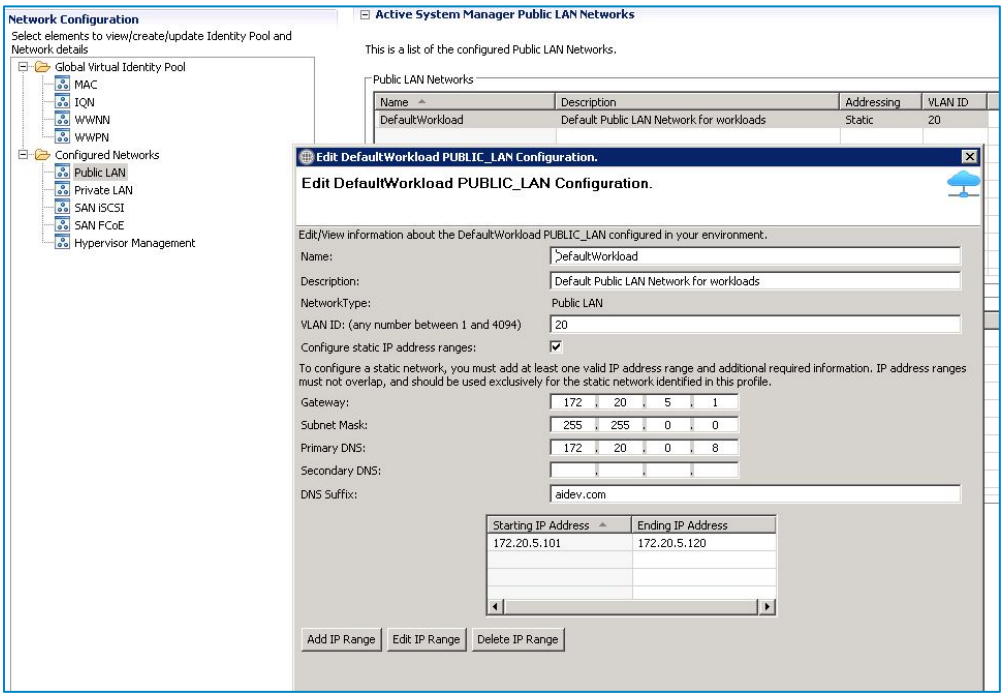
To facilitate network communication, you can add ranges of static IP addresses that Active System Manager will assign to devices for out-of-band management and iSCSI initiators.

You can also create pools of MAC, iSCSI, and FCoE identities that Active System Manager will assign to virtual NICs. For more information about networks, see the *Active System Manager 7.1 User Guide* Chapter 10, "Network Management".

From Setup Perspective → Networking → Configured Networks, enter VLAN ID for the default networks:

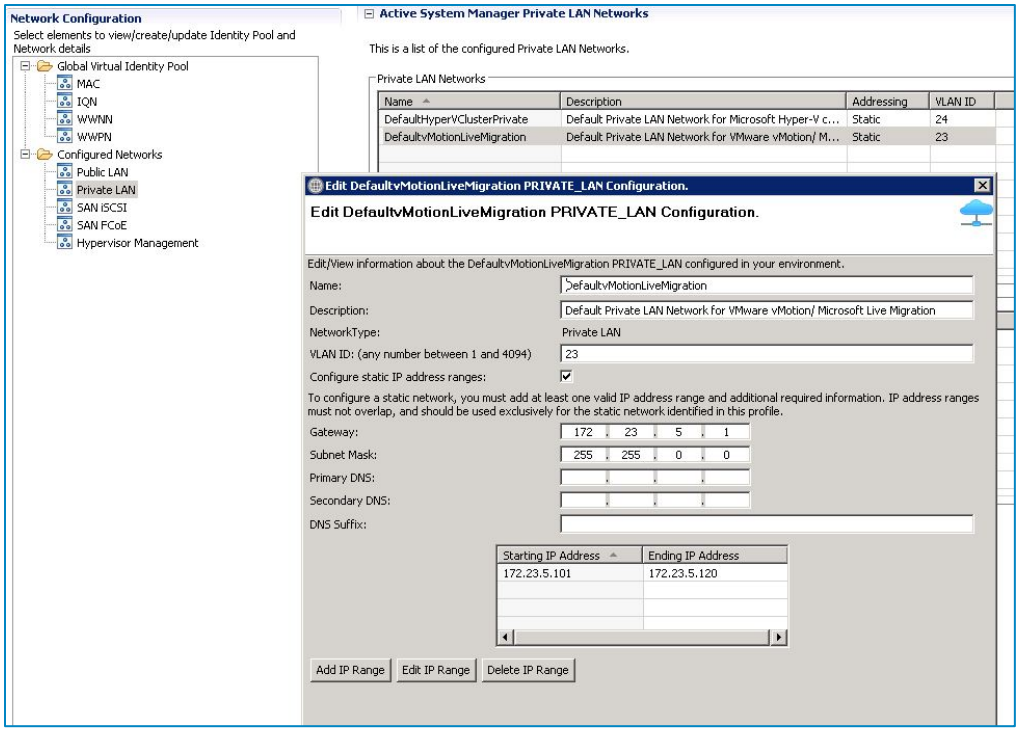
Default VM Network

Public LAN → Default VM Network:



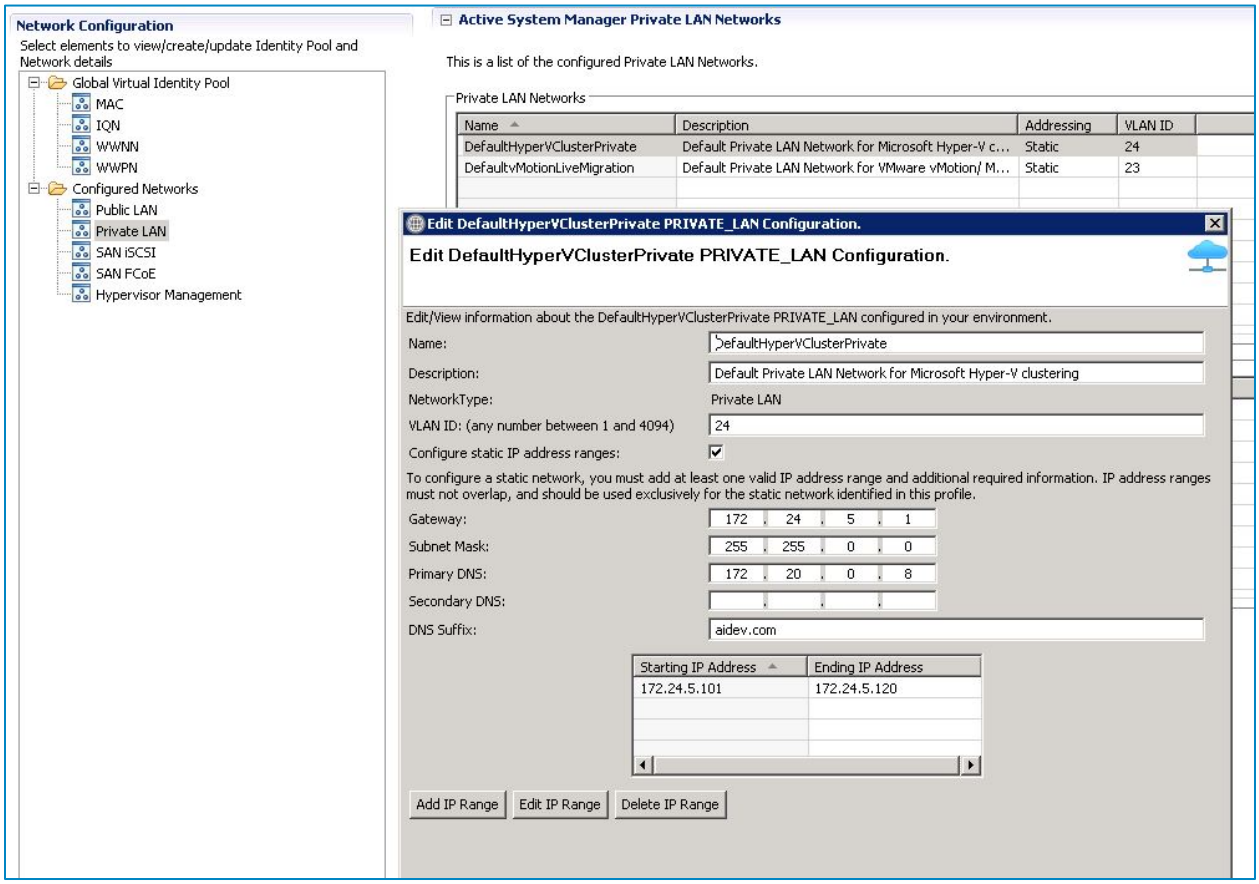
Default vMotion/Live Migration

Private LAN → Default vMotion/Live Migration:


Network Configuration
Select elements to view/create/update Identity Pool and Network details
Global Virtual Identity Pool
MAC
IQN
WWNN
WWPN
Configured Networks
Public LAN
Private LAN
SAN iSCSI
SAN FCoE
Hypervisor Management
Active System Manager Private LAN Networks
This is a list of the configured Private LAN Networks.
Private LAN Networks
Name
Description
Addressing
VLAN ID
DefaultHyperVClusterPrivate
Default Private LAN Network for Microsoft Hyper-V c...
Static
24
DefaultvMotionLiveMigration
Default Private LAN Network for VMware vMotion/ M...
Static
23
Edit DefaultvMotionLiveMigration PRIVATE_LAN Configuration.
Edit DefaultvMotionLiveMigration PRIVATE_LAN Configuration.
Edit/View information about the DefaultvMotionLiveMigration PRIVATE_LAN configured in your environment.
Name:
DefaultvMotionLiveMigration
Description:
Default Private LAN Network for VMware vMotion/ Microsoft Live Migration
NetworkType:
Private LAN
VLAN ID: (any number between 1 and 4094)
23
Configure static IP address ranges:
To configure a static network, you must add at least one valid IP address range and additional required information. IP address ranges must not overlap, and should be used exclusively for the static network identified in this profile.
Gateway:
172 . 23 . 5 . 1
Subnet Mask:
255 . 255 . 0 . 0
Primary DNS:
Secondary DNS:
DNS Suffix:
Starting IP Address
Ending IP Address
172.23.5.101
172.23.5.120
Add IP Range
Edit IP Range
Delete IP Range

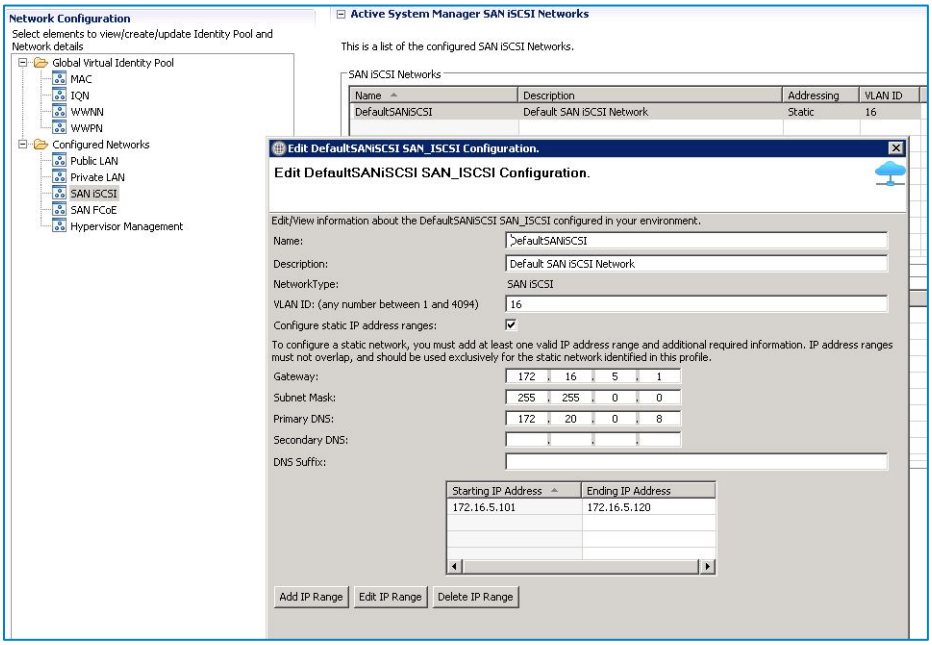
Hyper-V Cluster Private Vlan

Private LAN → HyperVClusterPrivateVlan:



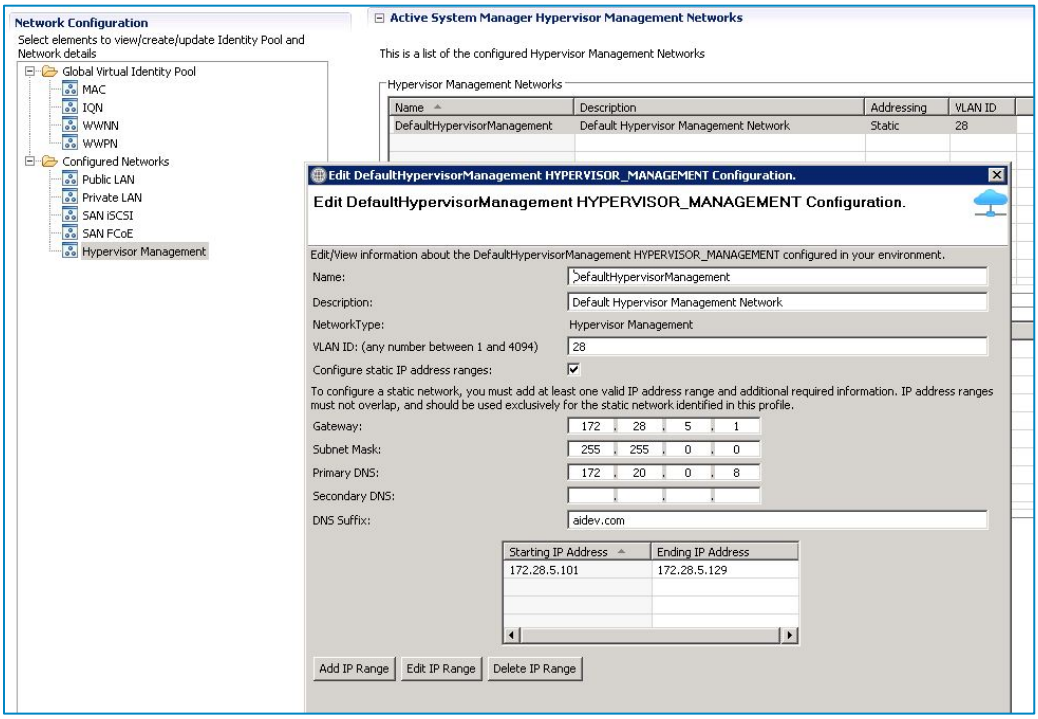
SAN iSCSI VLAN

SAN iSCSI → Default SAN iSCSI:

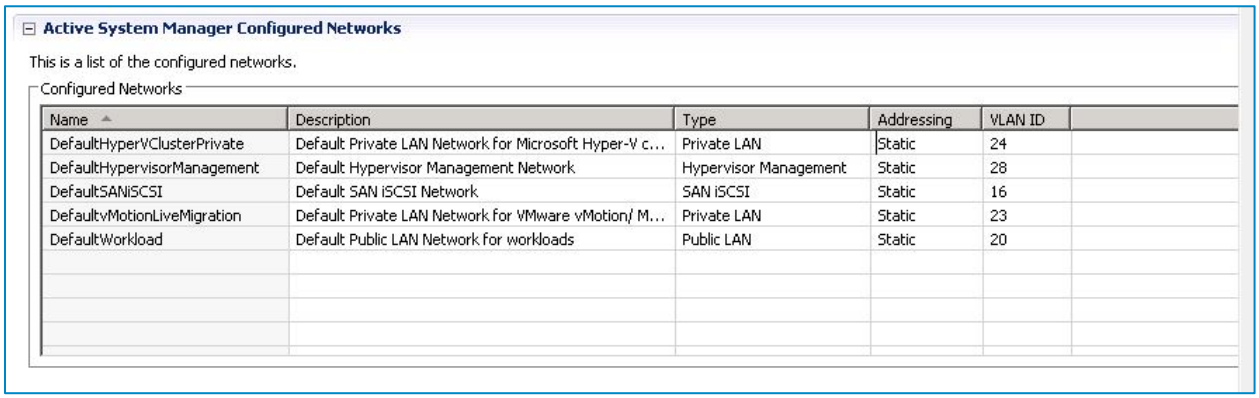


Hypervisor Management

Hypervisor Management → Default Hypervisor Management:



Confirm all the networks are static for Hyper-V



Name	Description	Type	Addressing	VLAN ID
DefaultHyperVClusterPrivate	Default Private LAN Network for Microsoft Hyper-V c...	Private LAN	Static	24
DefaultHypervisorManagement	Default Hypervisor Management Network	Hypervisor Management	Static	28
DefaultSANiSCSI	Default SAN iSCSI Network	SAN iSCSI	Static	16
DefaultvMotionLiveMigration	Default Private LAN Network for VMware vMotion/ M...	Private LAN	Static	23
DefaultWorkload	Default Public LAN Network for workloads	Public LAN	Static	20

The network names should contain the 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

Server Profiles and Templates

A server profile template represents a desired configuration of the infrastructure that is being managed. A server profile template is a template that encapsulates how components within a server such as the BIOS, RAID, iDRAC, NIC or Boot order need to be configured. It has references to

- Server profile template - defines how the server or compute resource should be configured.
- Network profile – defines the networks that the workload should access.
- Firmware version – define a specific firmware that required for this server profile

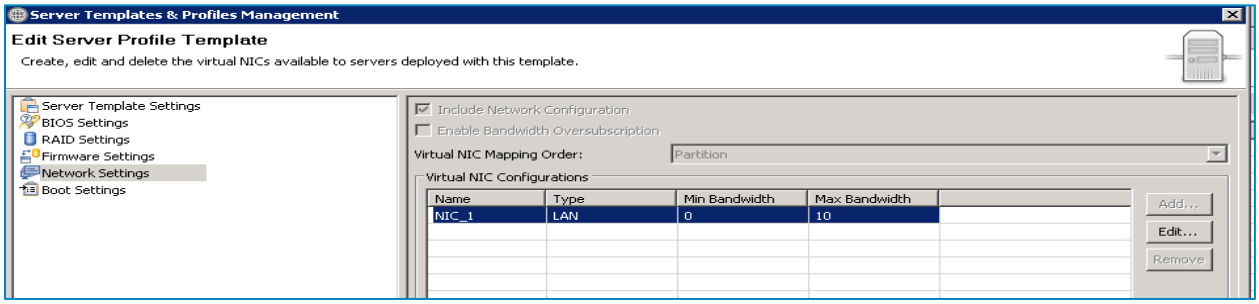
AS200 Active System comes with Default Hyper-V Server Profile templates. For more information about server templates and profiles, see the *Active System Manager 7.1 User Guide* Chapter 7, "Server Templates and Profiles".

NOTE:

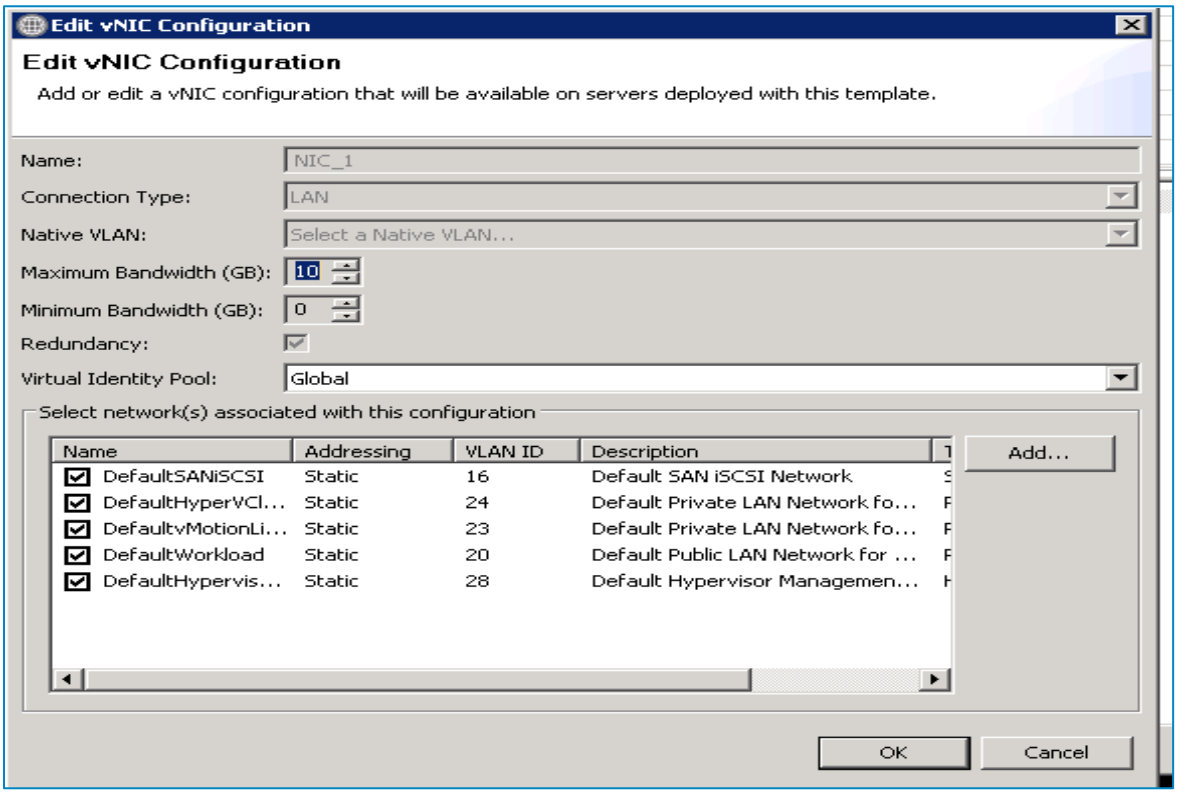
- Active System Manager does not pick up the workload VLAN based on the VLAN ID defined in the Network setting. The workload VLANs are randomly picked up based on the VLAN range defined for the layer 2 switch in the Active System Manager Inventory System. If a specific workload VLAN ID is needed, it should be specified in the VLAN Resource Type → Provisioning settings in the physical template.
- Attaching more than one Server Profile Template to a physical orchestration template will cause the physical orchestration to fail.

To Create/Modify Server Profile Templates, select Operations and then Server Profiles and Templates.

Orchestration uses the default server profile templates shipped with ASM based on his test environment setup. Hyper-V case NIC partitioning is disabled. 1 vNIC is using the whole 10Gb bandwidth.



Hyper-V server profile NIC configuration shows all the Hyper-V vlans carried on 1 NIC



Naming conventions for the networks(Converged/Mgmt, Live Migration, Workload, Cluster, iSCSI) are :

HypervisorManagement – ConvergedNetSwitch

LiveMIgration / vMotion – LiveMigration

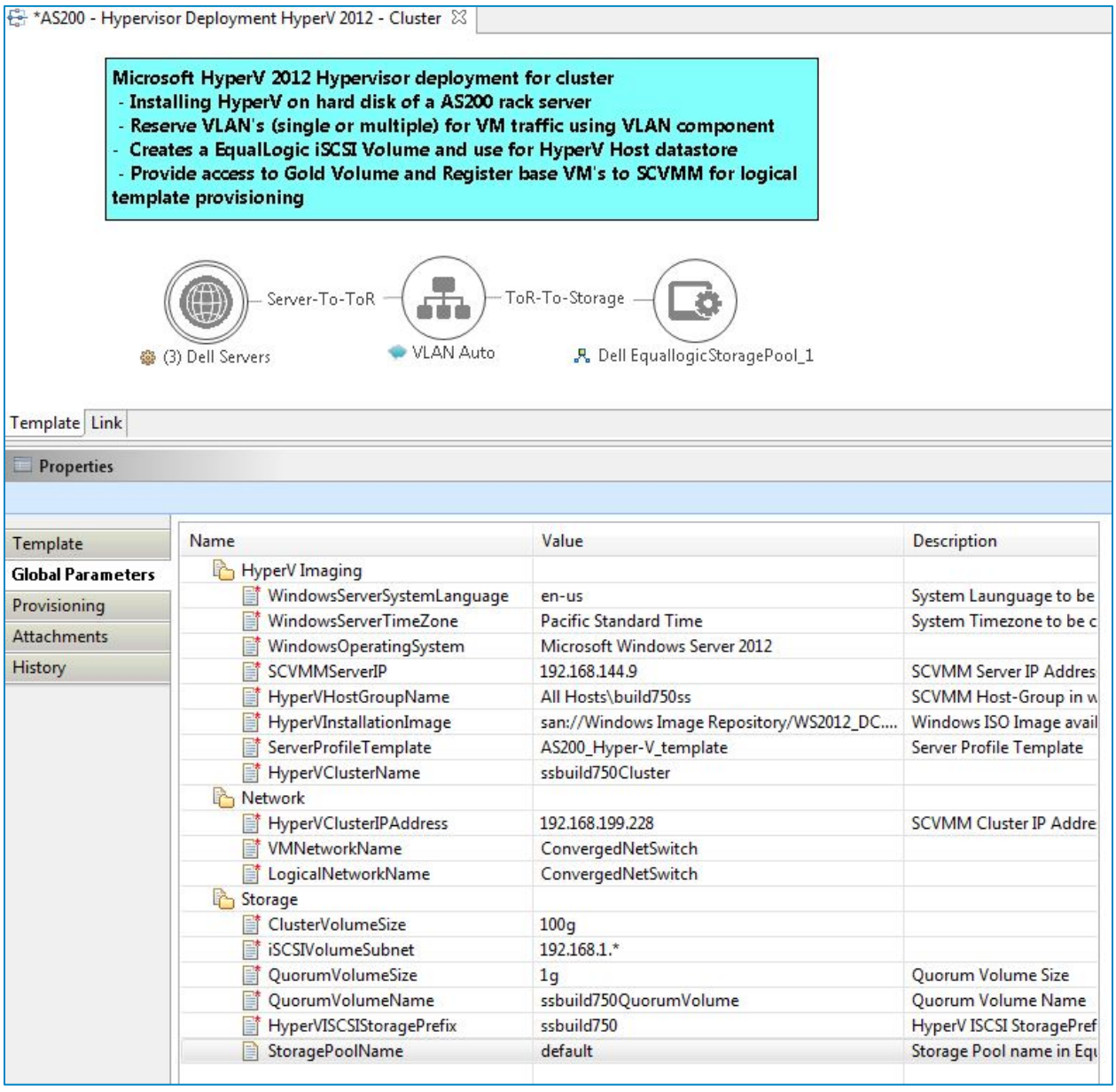
HyperV Cluster – Cluster

Workload – VLAN used in the ASM template

Physical Templates and Orchestration

Cluster Hyper-V 2012 Provisioning

You must modify the Global Parameters prior to running any orchestration.



Orchestration Inputs

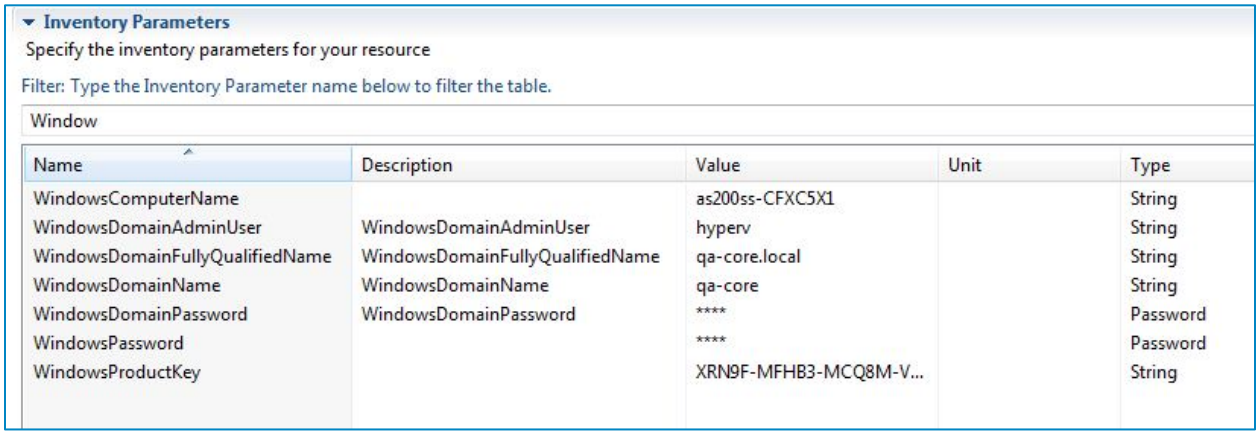
While scheduling the template, user would be prompted to provide values for the following orchestration parameters:

The parameters such as ServerProfileTemplate with an icon associated with it are mandatory. The following table describes the global parameters that can be provided to orchestration.

Table 6. Global Parameters

Category	Parameter	Input Type	Description
Hyper-V Imaging	WindowsServerSystemLanguage	Mandatory	Windows Server System Language which should be used for configuring Hyper-V machine.
	WindowsServerTimeZone	Mandatory	Windows Server Time Zone which should be used for configuring Hyper-V machines.
	WindowsOperatingSystem	Mandatory	Windows operating system used for imaging rack servers.
	SCVMMServerIP	Mandatory	SCVMM ServerIP address
	HyperVHostGroupName	Mandatory	Hyper-V Host group Name that's get created on SCVMM and all Hyper-V host are added in host group.
	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.
	HyperVClusterName	Mandatory	Cluster Name that is get created on SCVMM and all Hyper-V host are added in cluster **NOTE:** The **HyperVClusterName** can contain only alphanumeric characters, and the following special characters: colon (:), period (.), and dash (-).
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

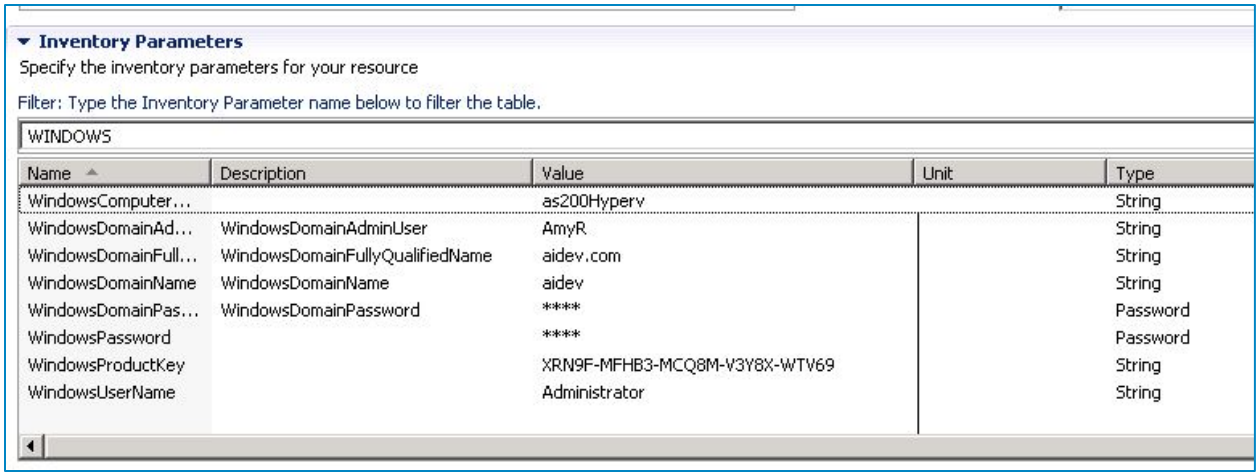
			provisioning
	iSCSIVolumeSubnet	Mandatory	
	QuoramVolumeSize	Mandatory	Size for Quram Volume Size(in GB) on Hyper-V Host.
	QuoramVolumeName	Mandatory	Name of Quram volume need to be create on Hyper-V host machines.
	HyperVISCSIStoragePrefix	Mandatory	
	StoragePoolName	Optional	



Server Inventory properties

Server Inventory: For Hyper-V Physical template provisioning we need to provide the value of the parameters starting with “Windows*” as listed in the screenshot in your email. All the other required parameters are populated by the orchestration method “UpdataSeverProfileParameters”. The values of the parameters populated by the method are derived from the network definition in the associated server profile template.

NOTE: WindowsComputername parameter value should be restricted to 15 characters in the Inventory parameter of the DIS



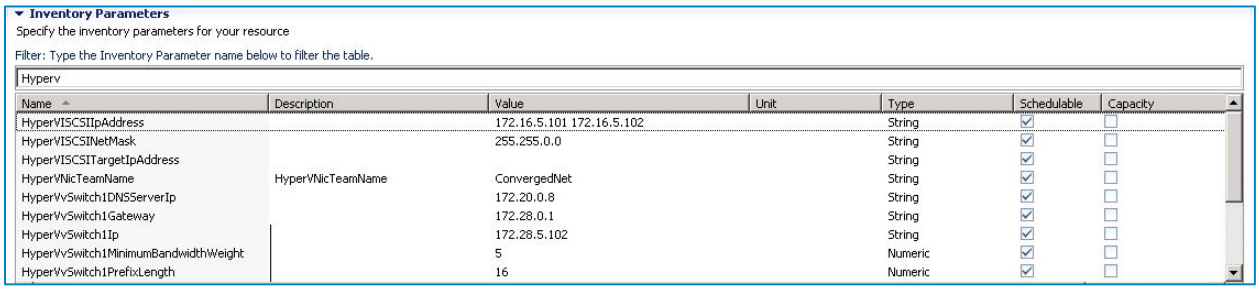
Schedule the template

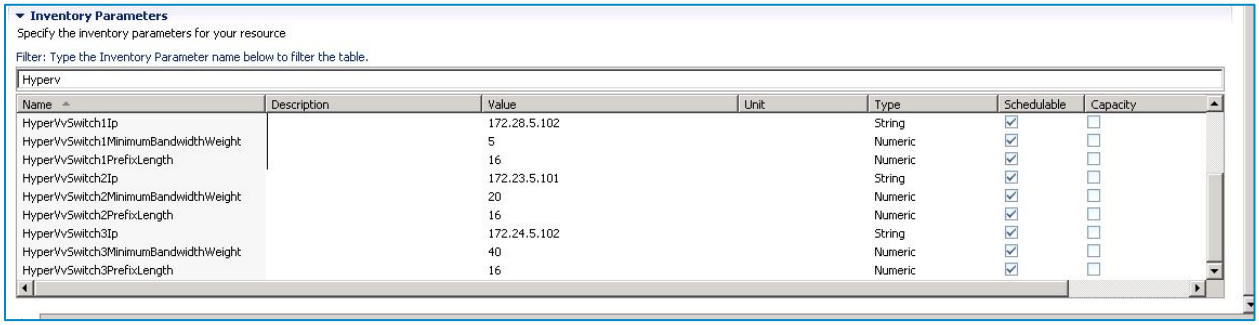
Now schedule the physical template to run in a session, and start orchestrating (check to make sure your appliance time is set up correctly, if the appliance's time is before the client time, orchestration will never start).

In the Session

Once the session is in execution state, you can check the server inventory data is populated correctly.

Open the server inventory and look for HyperV* to check the Hyper-V switches are correctly set the IP/data.





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 Hyper-V template

The AS200 Hyper-V template has three orchestrations associated with it:

a. **On-demand**—*Create Additional Storage*

This orchestration can be executed on demand when the session is in *Running* state.

b. **Setup**—*HyperV Imaging using NFS Network ISO Boot*

This orchestration executes when template provisioning starts and the session is in the *Setting Up* state.This will deploy Hyper-V on the servers.

c. **Teardown**—*HyperV Clean Up*

This orchestration executes when a session which is in *Running* state is cancelled.

Setup—Hyper-V Imaging using NFS Network ISO Boot

The AS200 - *Cluster HyperV 2012 Hypervisor deployment* template can be used for installing Hyper-V on the hard disk of the rack server, using iDRAC ISO Boot. You can specify one or more rack servers using this template for creating a cluster.

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

1. Reserves single or multiple VLANs for VM traffic using a VLAN component. If the VLAN reserved in the session is not already configured on the ToR switches, then the VLANs are created and tagged to appropriate port-channels.
2. Creates the ISO files for each server dynamically based on the Service tag of the server.
3. Mounts the ISO using iDRAC Virtual Media on all the servers and initiates the installation process.
4. Creates two volumes on the EqualLogic Storage Array
    a. A Quorum volume and a Cluster volume is created based on the size specified in the orchestration input.
    b. Access to the volumes is granted to the each of the servers.
    c. The servers then connect to the EqualLogic storage and initialize the discovered disks.
5. Creates a Cluster (if not already existing) on the specified SCVMM server.
6. Adds Hyper-V hosts to the Cluster.
7. Creates a Host Group (if not already existing) on the specified SCVMM server.
8. Add Hyper-V hosts to the host group.
9. Creates a LogicalNetwork on SCVMM and associates it with the VLAN configured using the VLAN component in step 1.
10. Creates a VMNetwork on the SCVMM server and associates it with the LogicalNetwork created in step 9.The Hyper-V hosts are also binded to this VMNetwork
11. Creates an IP pool on the SCVMM server having IP addresses in the range specified in the orchestration input. This IP pool is associated with the LogicalNetwork created in step 9.

NOTE: You should update the template for necessary inputs before scheduling this template for cluster provisioning.

On Demand Orchestration

For additional cluster storage on a Hyper-V host reserved through the Active System Manager, you can execute on-demand orchestration from a *Running* session.

For executing the on demand orchestration, open the session by double-clicking it. On the session, Right click on the session and select **Execute Orchestration ➔Create Additional Storage.**

Orchestration performs the following sequence of operations:-

- Creates a new volume on EqualLogic storage.
- Allows access to the new volume to each of the Hyper-V hosts.
- The volume is configured and added to the cluster.

Teardown Orchestration

This orchestration will stop any running physical session and cleanup the resources provisioned as part of it. In order to execute a tear down orchestration, perform either of following:

1. From the sessions tab on the left, right click on any running session and select cancel. This will execute the tear-down orchestration.
2. Alternatively, right click on any running session and from the pop-up opened, select **Execute Orchestrations -> "HyperV Clean Up.."**
   As part of the tear-down orchestration, the following actions are executed
   a. Removes all the hosts from the Host Group and Cluster on SCVMM server.
   b. Removes the Host Group from SCVMM
   c. Cleans up the local disk on the servers where Hyper-V is installed.
   d. Powers off the servers

Provisioning Logical Templates

The following sections describe logical templates and provisioning workloads, which can be run only on top of a fully successful physical session.

NOTE: 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-Logical Template with Two VM Connected to a VLAN* template 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 6. Two VMs Connected to a VLAN

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

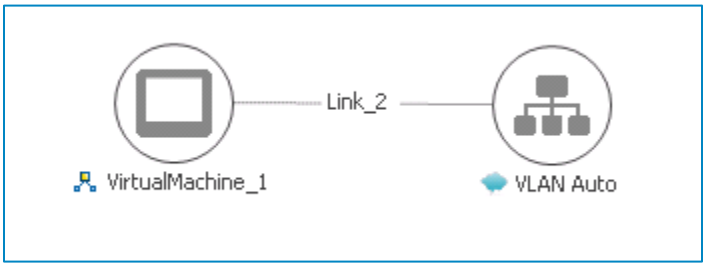
- Clones and powers on two Hyper-V VMs based on the Gold VM Image associated with the template.
- Creates Network Site corresponding to VLAN component on Logical Network

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

Single Virtual Machine with VLAN

The *HyperV-Logical Template with One VM Connected to a VLAN* template 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 7. Single VM Connected to a VLAN



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

- Clones and powers on a single Hyper-V VMs based on the Gold VM image associated with the template.
- Creates Network Site corresponding to VLAN component on Logical Network

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

Microsoft SQL Workloads

The *HyperV-Microsoft SQL Workloads* logical template can be used to create SQL workloads by scheduling logical template over existing physical resources session.

- Supported SQL version - SQL Server 2012 SP1
- Supported Operating System version - Windows 2012 Data Center Edition (server core mode NOT supported)
- Supported Active System - Active System 200 for Hyper-V
- Number of VMs and SQL installs supported by the template - A single execution of the SQL workload template supports creation of a single VM and installation of a single SQL instance.

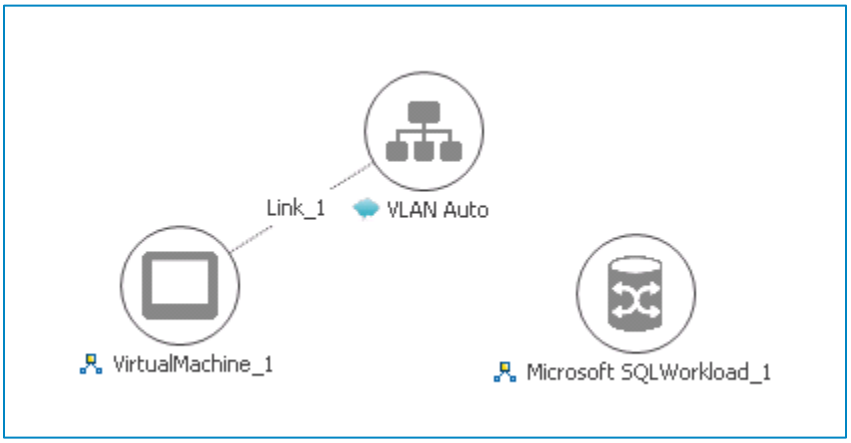
Considerations to ensure SQL workload template runs successfully:

- Domain firewall is turned OFF
- SQL and Windows ISO images are not corrupted
- SQL and Windows ISO are on the share of a machine that is part of the domain
- Paths to the SQL and Windows ISO images are accurate
- VM on which SQL will be installed is set to join a domain as part of VM creation

SQL Installation progress can be viewed by launching the RDP session of the VM.

Input the SQL/Windows ISO image share path in the template using the format:
`//Sharename/<pathToIsoImage>`

Figure 8. Microsoft SQL Workloads



Customizing the Guest OS (Optional)

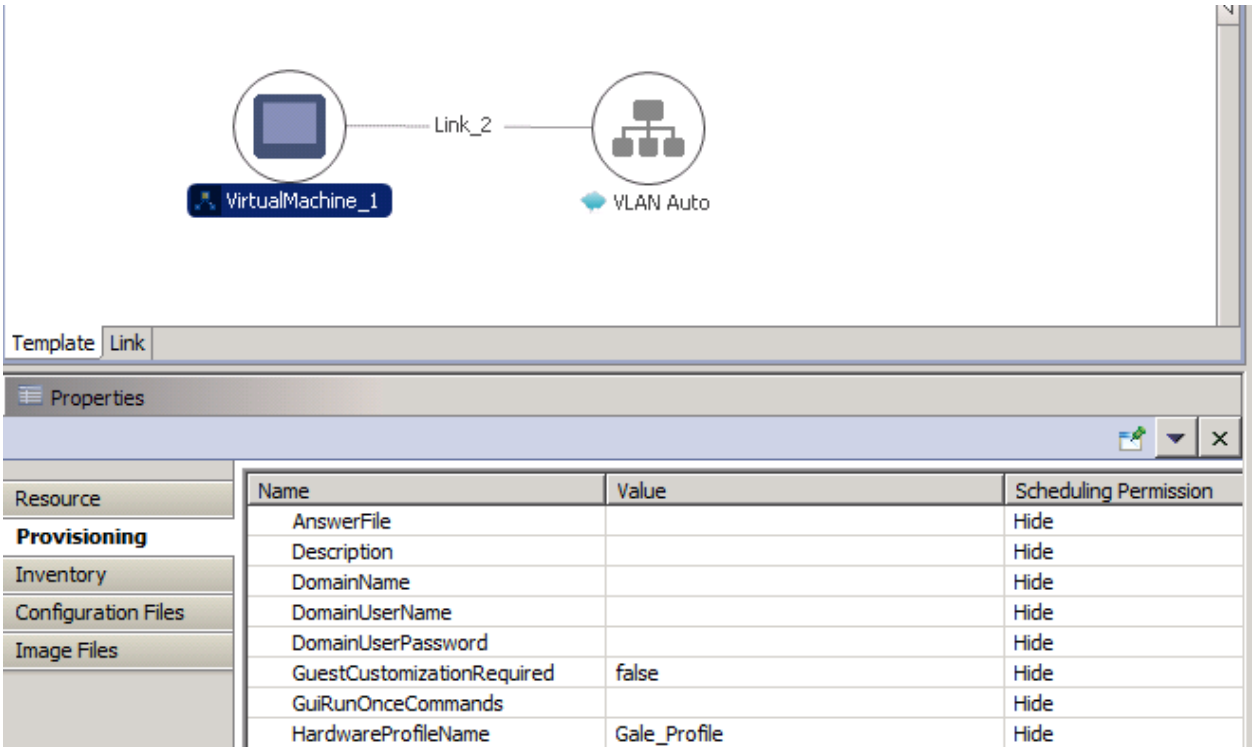
Active System Manager supports Windows 2012 and Windows 2008 based Guest OS for VM creation. However, during Windows 2008 VM creation, Active System Manager is not able to retrieve the VM IP address. In this case, the Windows 2008 VM does have an IP address, but Active System Manage is not able to retrieve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

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

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

1. Open the logical template.
2. Select **Virtual Machine** object.
3. In the **Provisioning** tab, set **GuestCustomizationRequired** to **true** and update the following properties:
    a. DomainName
    b. TimeZone
    c. AnswerFile
    d. LocalUserName
    e. LocalUserPassword
    f. DomainUserName
    g. DomainUserPassword
    h. GuiRunOnceCommands
    i. ProductKey

Figure 9. Customizing the Guest OS

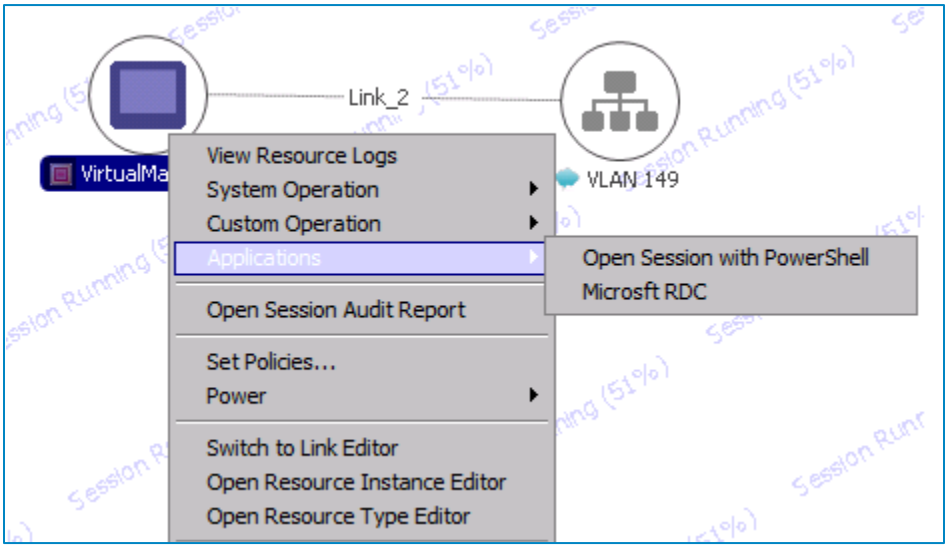


Launching Applications from the Logical Session

Once the VMs are provisioned the user can also launch custom applications as applicable 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

Figure 10. Launch Applications



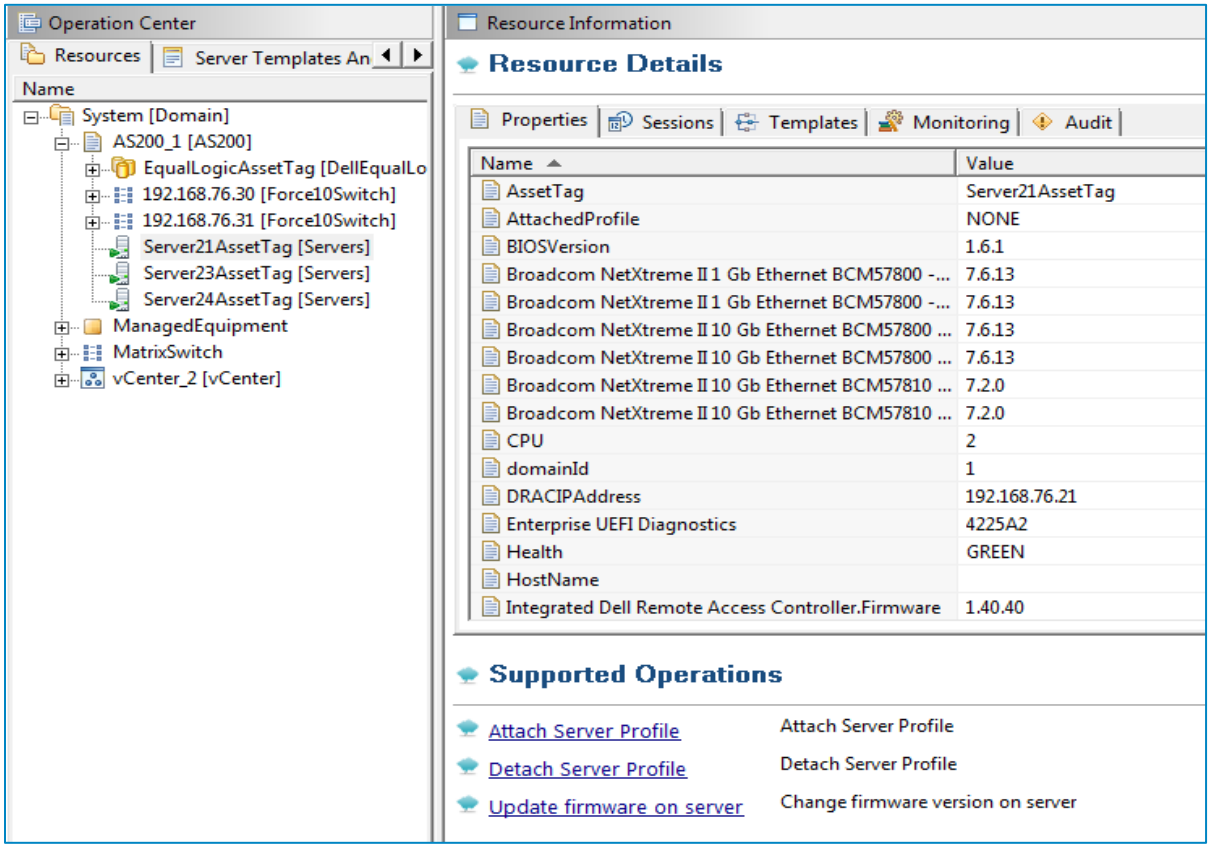
Operation Center View—Administrative Operations

The following sections describe Active System Manager administrative operations.

Managing Servers

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

- Attach Server Profile—Used for attaching a server profile.
- Detach Server Profile—Used for detaching a server profile.
- Update firmware on server-to update the firmware on the server.



Managing EqualLogic Storage

Table 7 lists and defines the group members provided in the Active System Manager EqualLogic Storage Operation Center view.

Table 7. EqualLogic Group Members

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

Managing Volume

Table 8 lists and defines the operations provided in the Active System Manager EqualLogic Storage Operation Center view.

Table 8. EqualLogic Group Members

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

Managing Storage

The following operations are provided on the Active System Manager EqualLogic Storage Operation Center view for performing administrative tasks:

- Storage group-level supported operations
- Storage member-level supported operations

Table 9. Storage Group-Level Supported Operations

Operation	Description	Input Parameter
DCBSetDefaultVlan	Sets a default VLAN ID for Data Center Bridging (DCB) on an EqualLogic storage array	*vLanId*—Default vLanId for dcb
DCBSetState	Enables or disables DCB on an EqualLogic	*dcbState* {**enable** | **disable**}

	storage array.	
PoolCreate	Creates a new storage pool in the storage group.	*poolName*—Storage pool name

Figure 11. Storage Member-Level Supported Operations

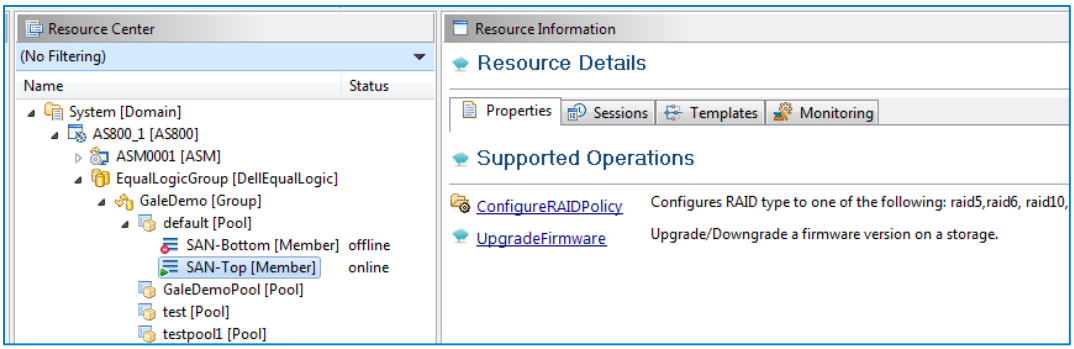


Table 10. Storage Member-Level Supported Operations

Operation	Description	Input Parameter
ConfigureRAIDPolicy	Configures the required redundant array of independent disks (RAID) level on an EqualLogic Storage Array.	*raidType* {**raid6** | **raid10** | **raid50**}
UpgradeFirmware	Upgrades the firmware image on an EqualLogic Storage Array.	*imageName*—Image from repository. *delayInMinutesAfterRestart*—Introduce wait once the firmware is installed and the member storage device is restarted, the RA connects the storage after this defined delay (in minutes) after the restart parameter.

Managing Hyper-V Objects

This section describes operations that can be performed from Operation Center view on following 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 12) enables methods to be executed on Hyper-V host group for on demand provisioning, as required.

Figure 12. Hyper-V Host Group view

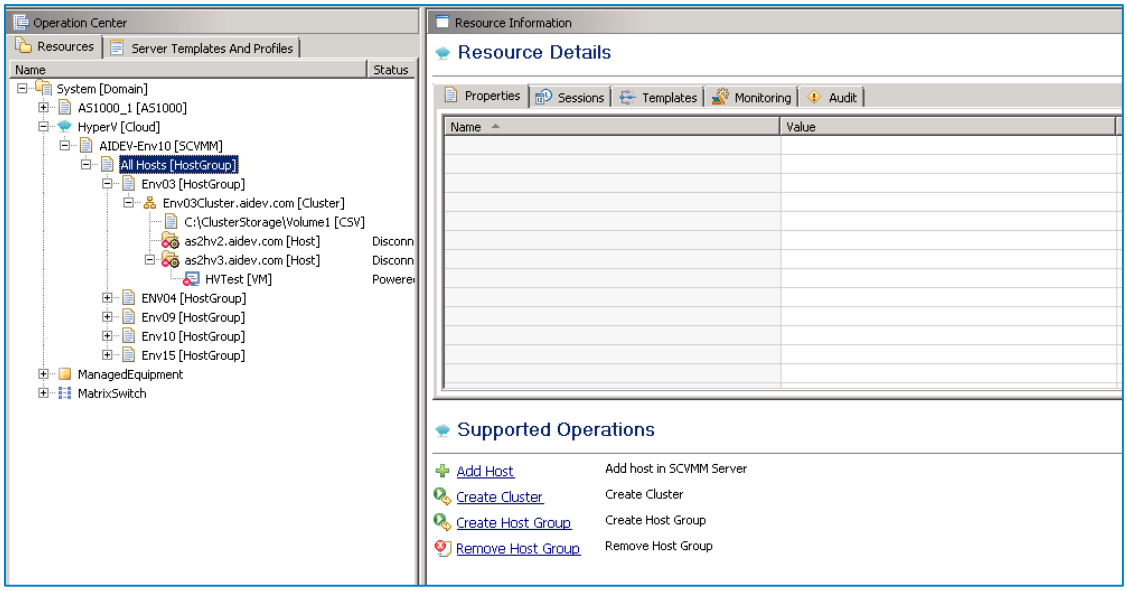


Table 11. Hyper-V Host Group operations

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 13) enables methods to be executed on clusters for on demand provisioning, as required.

Figure 13. Hyper-V Clusters view

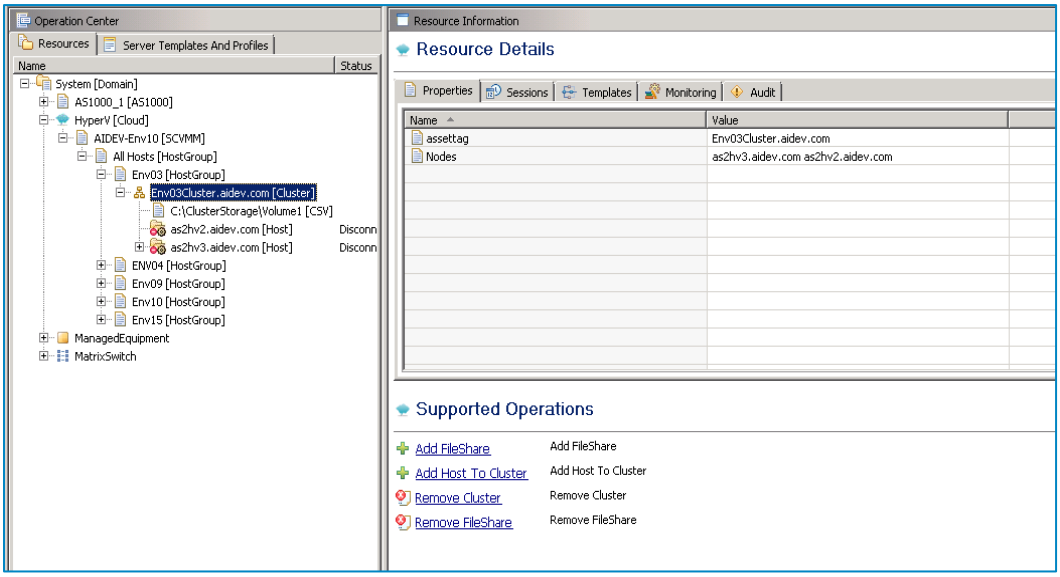


Table 12. Hyper-V Cluster Operations

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.
AddHost 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 14) enables methods to be executed on hosts for on demand provisioning, as required.

Figure 14. Hyper-V Host view

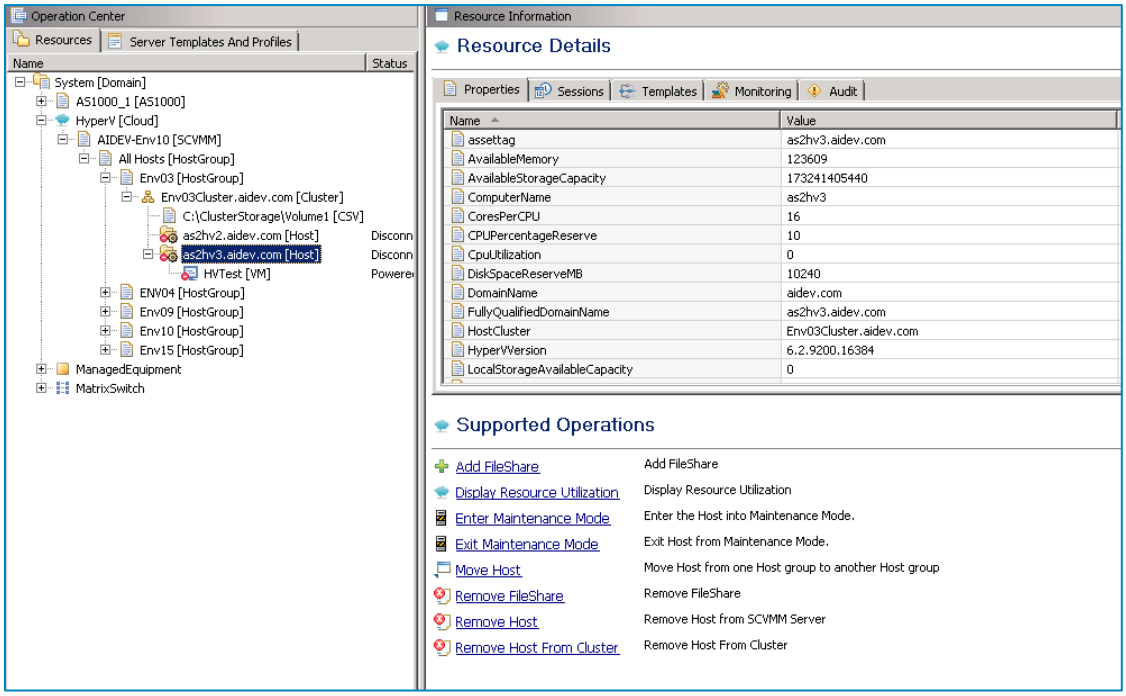


Table 13. Hyper-V Hosts operations

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 15) enables methods to be executed on Hyper-V Virtual Machines for on demand provisioning, as required.

Figure 15. Hyper-V Virtual Machines view

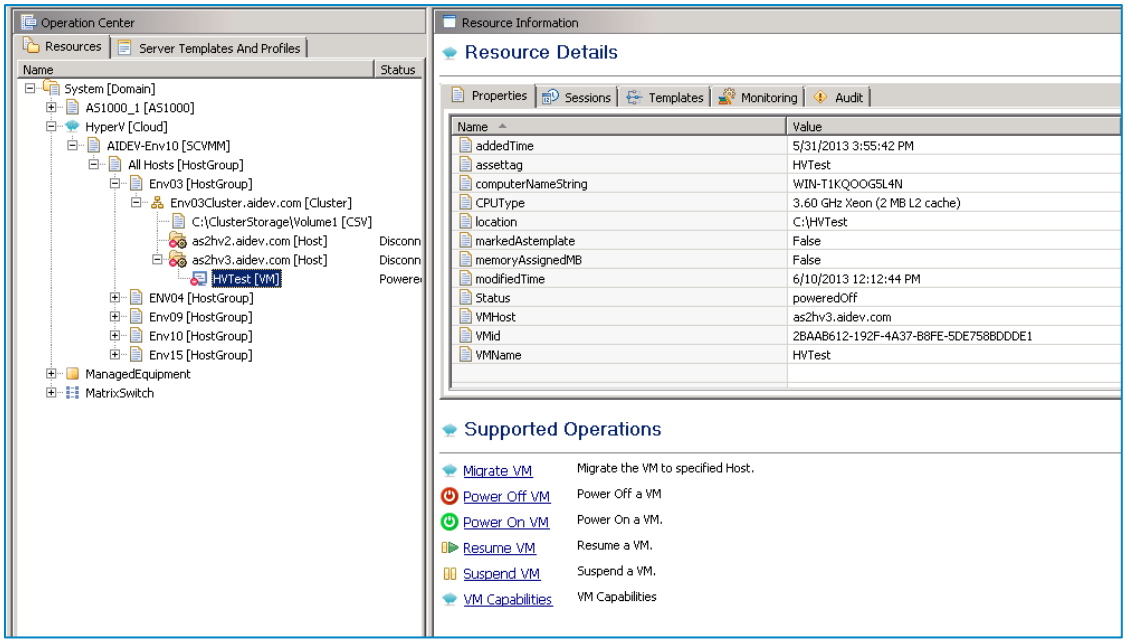


Table 14. Hyper-V Virtual Machines operations

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, Hostname.

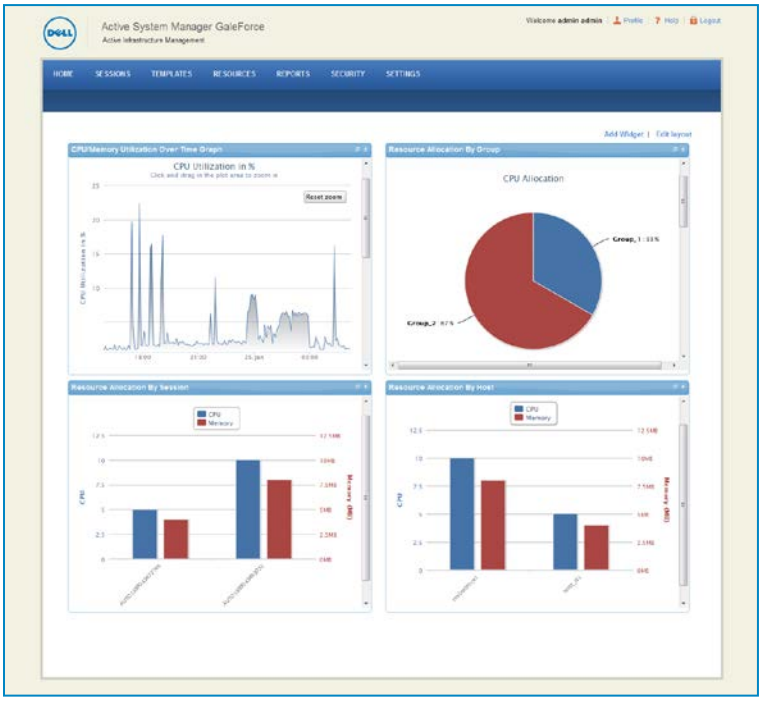
Dashboard Reports

The following sections describe the Active System Manager dashboard reports.

Resource Allocation by Sessions Report

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

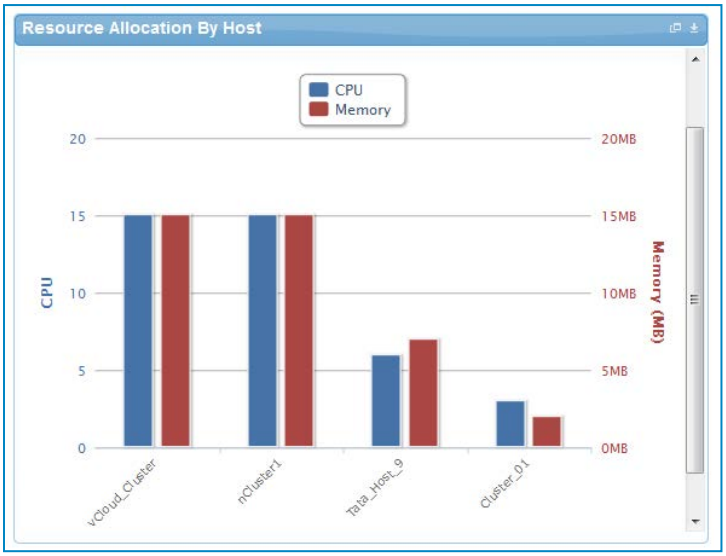
Figure 16. Resource Allocation by Sessions report



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.

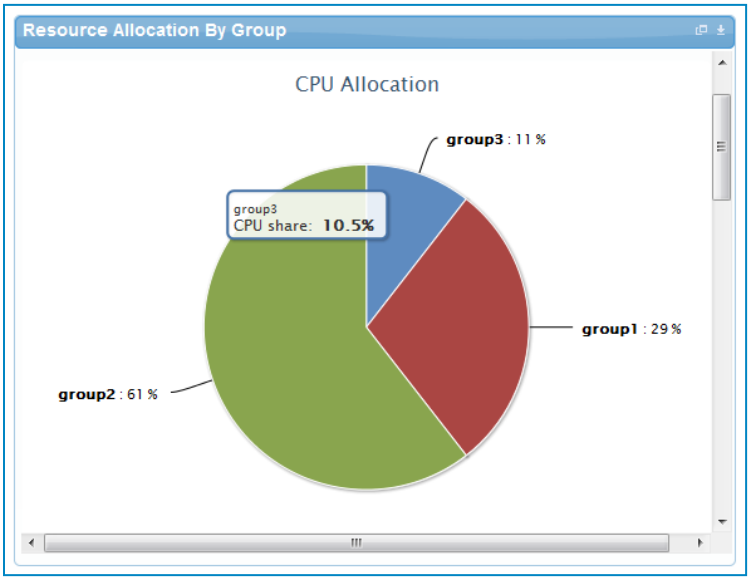
Figure 17. Resource Allocation by Hosts report



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 18. 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 19. 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 20. Top Ten Resource Utilization report by cluster

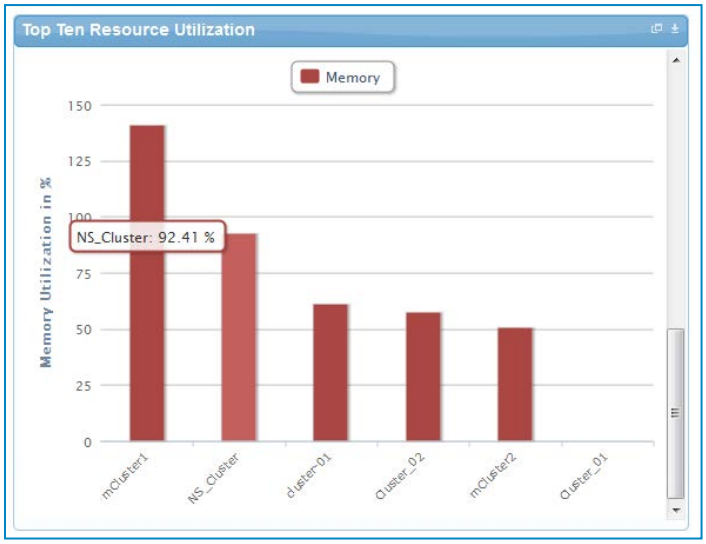
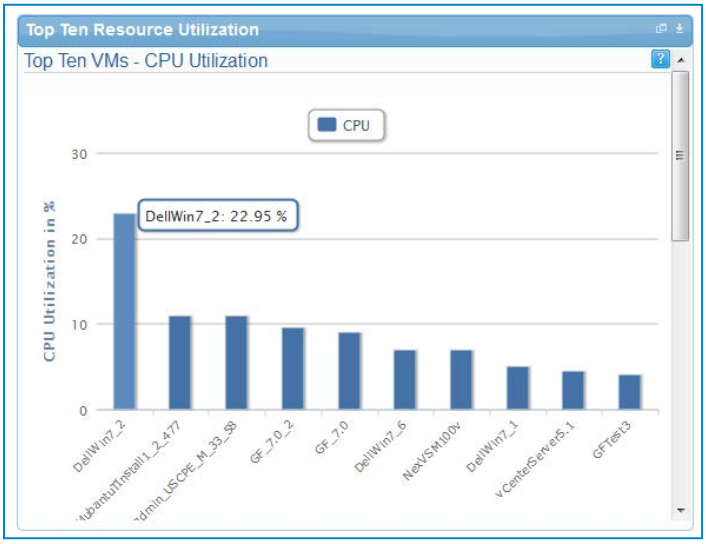


Figure 21. Top Ten Resource Utilization report by host



VM Utilization by Session Report

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

Figure 22. VM Utilization by Session report

Host Utilization (Consolidated) Report

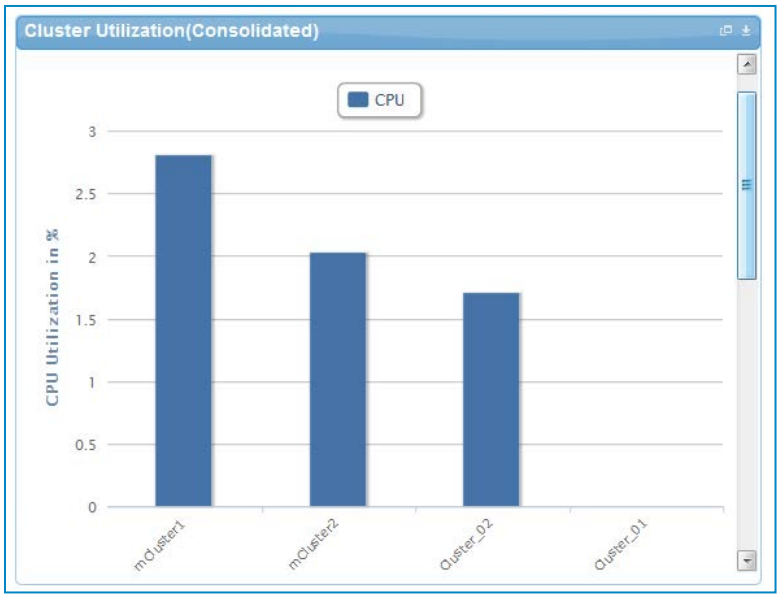
This report displays information about how much capacity is being utilized on a host by all running VMs, with respect to the allocated capacity. This report is available for CPU and memory attributes.

Figure 23. Host Utilization (Consolidated) report

Cluster Utilization (Consolidated) Report

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

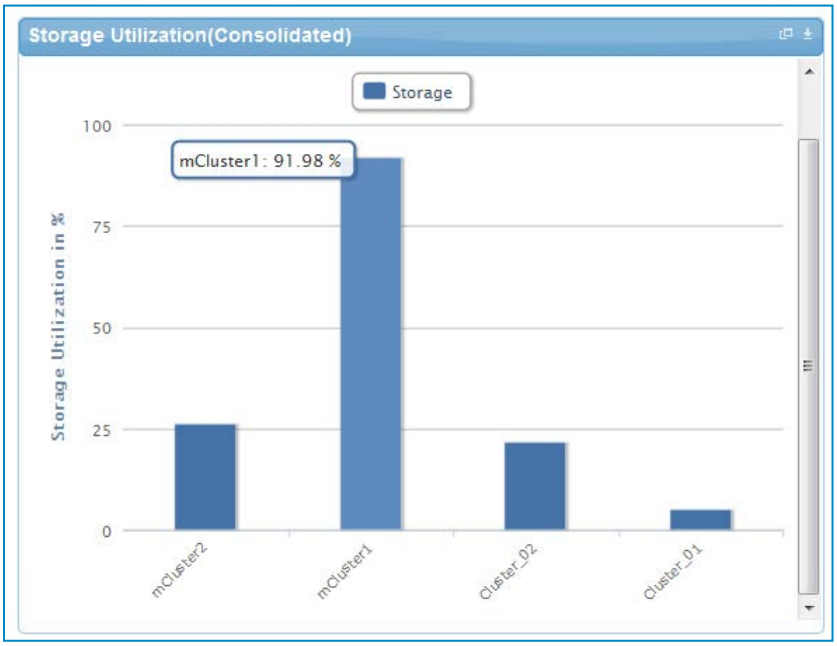
Figure 24. Cluster Utilization (Consolidated) report



Storage Utilization (Consolidated) Report

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

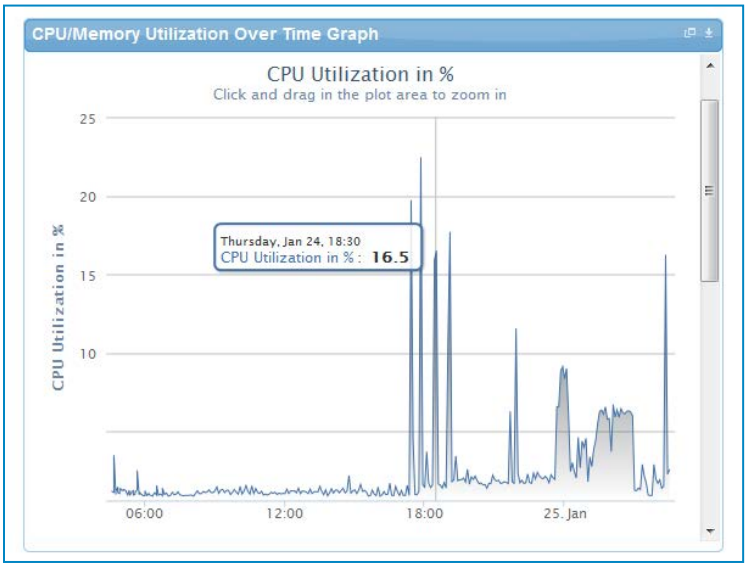
Figure 25. Storage Utilization (Consolidated) report



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 26. CPU & Memory Utilization Showback Report



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

Appendix A—Bill of Materials

Table 11 displays the bill of materials, grouped by Resource Adapters.

Table 15. Build of Material—Resource Adapters

Vendor	Model	Description
Dell	Servers	Dell Servers resource adapter using WSMAN and RACADM CLI used for provisioning the servers
Dell	EqualLogicPS6110	Management of EqualLogic storage
Dell	EqualLogicStoragePool	Management of EqualLogic storage pool
Dell	Force10-S4810	Management of ToR switches
Hyper-V	R720 Severs	Microsoft SCVMM 2012 SP1

Table 12 displays the list of bill of materials, grouped by templates.

Table 16. Bill of Material—Templates

ID	Description	Workflows
1—Physical	AS200 -Cluster - VMware ESXi 5.1 Hypervisor deployment ISO boot	Configure ESXi Servers using ISO Boot, Cleanup-Orchestration, and VMFS Datastore Provision.
	AS200 – Cluster HyperV 2012 Hypervisor Deployment	Configure Hyper-V hypervisor cluster
3-Physical	AS200 - Standalone - VMware ESXi 5.1 Hypervisor deployment PXE boot	Configure ESXi servers using PXE Boot, Cleanup-Orchestration, and VMFS Datastore Provision.
4-Physical	AS200 - Standalone - VMware ESXi 5.1 Hypervisor deployment ISO boot	Configure ESXi servers using ISO Boot, Cleanup-Orchestration, and VMFS Datastore Provision.
5—Logical	Logical template with one VM connected to a VLAN	Built-in orchestration.
6—Logical	Logical template with two VMs connected to a VLAN	Built-in orchestration.

ID	Description	Workflows
7-Logical	HyperV - Logical template with one VM connected to a VLAN	Built-in orchestration
8-Logical	HyperV - Logical template with two VMs connected to a VLAN	Built-in orchestration
9-Logical	HyperV Microsoft SQL workload	Built-in orchestration

Appendix B— Planning Worksheet

Table 17. Out of Band Management IP Address Configuration

Equipment	IP Address	Subnet Mask	Gateway	Username	Password
iDRAC for all R720					
Force10 S4810 Switch1					
Force10 S4810 Switch2					
EqualLogic Storage Array Group Management					
EqualLogic Storage Array Group on iSCSI Network					
Active System Manager Appliance					
SCVMM					

Hyper-V Server Configuration

The following parameters for each server are required:

- WindowsComputerName – Hostname to be assigned to the Hyper-V Host
- 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	
SANiSCSI	
Workload	
HyperVClusterPrivate	
vMotionLiveMigration	

Hyper-V Workloads

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

Appendix C—SCVMM Setup Requirements

Considerations after creating the SCVMM Server:

- The SCVMM server should be a member of an Active Directory domain.
- OpenSSH should be installed on the SCVMM server.

Installing OpenSSH Server on a SCWMM Server

Windows X64 OpenSSH 6.2p1 version should be installed on SCVMM server.

1. Download the **Windows X64 setupssh-6.2p1-2(x64)-v1.exe** version, available at: http://www.mls-software.com/opensshd.html
2. Double-click the **setup.exe** for installation.

   Options that needs to be selected during OpenSSH installation:

   a. In **Install under Local System or SSHD_Server Account** window, select **Run As SSHD_SERVER (Required for W2k3)** and click **Next**.

   b. In **Setup Privilege Separation** window, select **Yes (Required for W2K3)** and click **Next**.

   c. In **Create Password and Group files**, select **Domain Users**, and click **Next**.

Configuring OpenSSH Server on a SCWMM Server

1. Execute the cmd prompt.
2. Go to **bin** directory inside OpenSSH installation directory path:

   `cd <openSSHInstallationDirPath>/bin`

3. Create group file using `mkgroup` command:

   ```
   mkgroup -d > ..\etc\group
   ```

4. Create passwd file using `mkpasswd` command:

   ```
   mkpasswd -d -u Administrator > ..\etc\passwd
   ```

5. Open **etc/sshd_config** file inside openSSH installation directory path using Notepad.
6. Append the following text to the file:

   ```
   Subsystem   sftp   internal-sftp

   PubkeyAuthentication no
   ```

   NOTE: Comment out existing `Subsystem` line before adding the new lines.
7. Restart **opensshd** services using following commands:

   ```
   net stop opensshd

   net start opensshd
   ```

8. Verify the SSH connectivity using any available SSH tool.

Appendix D—Firmware and Software Base Lineup

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

Table 18. Firmware and Software Versions

Device	Revision
Host Server(Dell PowerEdge R720)	
BIOS	1.6.0
iDRAC7 Enterprise	1.40.40
LCC (Life Cycle Controller) 2	1.1.5.165
Network Controller Broadcom 57810 FW	7.6
Windows Server 2012	Datacenter Edition with Hyper-V role enabled
EqualLogic HIT KIT	4.6
Active System 200 Dell PowerEdge R620 Hyper-V Management Server	
BIOS	1.6.0
iDRAC7 Enterprise	1.40.40
LCC (Life Cycle Controller) 2	1.1.5.165 (A00)
Network Controller Broadcom 57810 Firmware	7.6 (A00)
Network Controller Broadcom 57810 Driver	17.6.0
EqualLogic HIT Kit	4.6
Windows Server 2012	Datacenter Edition with Hyper-V role enabled
Switch and Storage	
Force 10 S4810 (LAN)	9.1.0.0
Force 10 S55 (OOB)	8.3.5.3
EqualLogic Firmware	6.0.5
Dell 2700W UPS FW	1.14.0003 (A07)

Device	Revision
Dell UPS NMC FW	1.16.0001 (A08)
Active System 200 Hyper V Management VMs & Software	
System Center 2012 SP1 VMM	SP1
Windows Server 2012	Datacenter Edition with Hyper-V role enabled
OpenManage Essentials	1.2
OpenManage Repository Manager	1.4.113
EqualLogic SAN HeadQuarters	2.6
EqualLogic HIT Kit	4.6

Appendix E—FAQs

1. Volumes on the EqualLogic storage array are not removed for cancelled sessions. This wastes storage space and consumes iSCSI connections.

   Dell recommends that users manually clean up the unused volumes on the EqualLogic storage array and iSCSI connections after the session is canceled.

   The orchestrations assume that Port Channel 2 is configured on the switches. If not, a failure will occur, indicated by red links on the session.

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

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

   Also as best practice:

   a. You should make a copy of the template and make the required modification in the cloned template.

   b. Keep the copy of the original templates by exporting them locally on a client machine and importing them back as needed.

3. Are SSI properties overwritten when upgrading the RA?

   Yes upgrading the RA will override the ssi.properties file. As best practice, before upgrading the RA, back up the RA directory by following the steps below:

   1. Log into the Active System Manager server as “delladmin” user.
   2. cd $HOME/asm-galeforce/gf/common/integrations
   3. cp –r <manufacturer>/<model> <manufacturer>/<model>_<CurrentDate>

4. How is the Gold Volume on EqualLogic storage array secured?

   You secure the Gold Volume by creating access rights for the chap users.

   To create the Gold Volume:

   1. Create a volume of appropriate size on EqualLogic Storage array.
   2. Associate the IP subnet and iSCSIPrefix with the newly-created volume.
   3. Connect to the management host and configure the newly created datastore.

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

   Images and firmware versions that are released after Active System Manager 7.1 should work, but this should be validated with the solution.

6. 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 files.

7. Is it required to create pools on a Dell EqualLogic storage array?

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

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

   Yes, HTTPS is supported on Active System Manager.

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

   Terminal server connectivity to Dell Force10 switches is optional.

10. 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 the Active System Manager appliance should be modified with the new password.

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

    To change the hostname of the Active System Manager server:

    a. Log into 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 into 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. 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.

13. Can I change the default SFTP installation path for Hyper-V RA?

    Users can change the default SFTP installation path for Hyper-V RA. The default SFTP installation path is externalized in the Microsoft Host RA ssi.properties. Users can update this property from the client if the installation path is different from the default SFTP installation path. Example
    SSIOBJ:scriptPath "C:Program Files\\OpenSSH home"

14. While creating or editing the Server Profile Template or attaching the 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 must be from the same repository.

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

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

16. 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.

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

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

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

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

    a. Log in as delladmin user.

    b. Open the `./common/etc` folder using the following command:

       ```
       cd asm-galefore/gf/common/etc
       ```

    c. Open the **remoteExecServer.xml** file and set the value for the following parameters to less than equal to 50:

       - **Set poolsize –** Attribute in the threadpool node

- **Set executioncount –** Attribute in maxparallel node

d. Run the **reboot** command to restart the server.

18. 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.