# Active System Manager Solution Guide Active System 800

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# 1 Introduction to the Active System 800 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<sup>™</sup> Active System (AS) 800:

- Rapid and Simple Scalability—The Dell AS 800 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 800 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 800 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 800 allows for more rapid application deployments through minimized design, test, procurement, integration, and configuration phases. One key feature of the Active System 800 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 800 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 800 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 7.0 on Active System 800 infrastructures.

# 1.1. 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

# 1.2. Support

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

# 1.3. 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 800 Spec Sheet
- Active System 800 VMware ESX 5.x Reference Architecture
- Active System Manager 7.0 User Guide
- Active System Manager 7.0 Web Interface User Guide

To access the latest Active System Manager documentation for Version 7.0:

- 1. Navigate to <u>www.dell.com/support/manuals</u> and click **Choose** from a list of all Dell products.
- 2. Click Software, Monitors, Electronics & Peripherals > Software > Enterprise System Management > Dell Active System Manager v7.0.

# 1.4. Overview

This section provides a high-level product overview of VMware vSphere, Dell PowerEdge blade servers, Dell PowerEdge M I/O Aggregator, Dell Force10 S4810 switch, Dell Force10 S55 switch, and Dell EqualLogic Storage.















#### VMware vSphere 5.1 Hypervisor

- vMotion, Storage vMotion
- VMware HA and DRS

#### Dell PowerEdge Blade Servers for Compute Cluster

- Energy efficient PowerEdge M1000e endosure
- 12<sup>th</sup> generation M620 blade server
- Flex Address
- CMC and iKVM for endosure management

#### Dell PowerEdge M I/O Aggregator

- Highest Performance in a Blade Switch
- Highest Density in a Single Blade Switch
- Stackable for Simplified Management
- Scalability & Modular to Fit Your Business
- Support for converged networking with Data Center Bridging (DCB)

#### Dell PowerEdge Rack Servers for Management Cluster

- · 12th generation R620 rack servers
- · Concentrated computing power in 1U form factor
- Large memory and I/O capacity
- · Powerful systems management with Dell iDRAC and Lifecycle Controller

#### Dell Force10 S4810 Switches for Converged Network

- High-density 48-port 10 GbE switch with four 40 GbE uplinks
- Ultra-low-latency, non-blocking, cut-through switch for line-rate L2 and L3 performance
- Integrated network automation and virtualization tools via the Open Automation Framework
- Support for converged networking with Data Center Bridging (DCB)

#### Dell Force10 S55 Switch for Management

- High-density 48-port 1/10 GbE scalable switch
- Low-latency, non-blocking switch for line-rate L2 and L3 performance
- Integrated network automation and virtualization tools via the Open Automation Framework

#### Dell EqualLogic Storage

- 10GbE iSCSI SAN arrays with SFP+ and 10GBase-T support
- Thin Provisioning and Storage Tiering
- Support for converged networking with Data Center Bridging (DCB)
- Integration with VMware

#### Integrated Management

- Dell Active System Manager
- VMware vCenter Server
- Dell Management plug-in for VMware vCenter
- Dell OpenManage Essentials
- Dell EqualLogic Virtual Storage Manager (VSM) for VMware
- Dell EqualLogic SAN HeadQuarters (HQ)
- Dell Repository Manager

#### **Cloud Enablement**

VMware vCloud Connector for Dell vCloud connectivity

Table 1 lists the Active System Manager solution for the Active System 800-supported components.

| Component                           | Details   |  |  |
|-------------------------------------|---|--|--|
| VMware vSphere 5.1 Hypervisor       | Up to 2x Dell PowerEdge M1000e chassis with up to 32x Dell PowerEdge M620 Blade Servers and embedded VMware vSphere 5.1 |  |  |
| Converged Fabric Switch             | • 2xDell Force10 S4810  |  |  |
|                                     | <ul> <li>2x Dell PowerEdge M I/O Aggregator in each<br/>Dell</li> </ul>   |  |  |
|                                     | PowerEdge M1000e chassis  |  |  |
| Storage                             | <ul> <li>Up to 8x Dell EqualLogic PS6110 series<br/>arrays</li> </ul>   |  |  |
| Management Infrastructure           | • 2x Dell PowerEdge R620 servers with<br>embedded VMware vSphere 5.1 hosting<br>management VMs.                         |  |  |
|                                     | <ul> <li>1x Dell Force10 S55 used as a 1Gb out-of-<br/>band management switch</li> </ul>                                |  |  |
| Management components hosted in the | Dell Active System Manager  |  |  |
|                                     | VMware vCenter Server   |  |  |
|                                     | <ul> <li>Dell Management Plug-in for VMware<br/>vCenter</li> </ul>  |  |  |
|                                     | Dell OpenManage Essentials  |  |  |
|                                     | • Dell EqualLogic Virtual Storage Manager<br>(VSM) for VMware   |  |  |
|                                     | • Dell EqualLogic SAN Headquarters (HQ)   |  |  |
|                                     | VMware vCloud Connector   |  |  |
|                                     | Dell Repository Manager   |  |  |
|                                     |   |  |  |

| Table 1. Active | e Svstem | 800-Supported | <b>Components</b> |
|-----------------|----------|---------------|-------------------|

# 1.5. Active System 800-Supported Configurations

Table 2 lists the Active System Manager solution for the Active System 800-supported configurations.

| Configuration   | Support   |
|---|---|
| M1000e chassis and supported blade types (M620)       | Support firmware images as per the<br>Active System Manager solution for Active<br>System 800   |
| Dell Force10 Top-of-Rack (ToR) S4810 switches         | Supported FTOS and base configuration will<br>be packaged in the virtual appliance. The<br>base configuration should be updated for<br>management IP and virtual LAN (VLAN) per<br>data center deployment need. |
| Dell EqualLogic PS6110 Storage Array                  | Supported firmware versions will be packaged in the virtual appliance.  |
| VMware vCenter 5.1 for virtual machine (VM) workloads | Supported ESXi 5.1 image will be bundled in the virtual appliance   |
| ESXi 5.1 installation support on blade servers        |   |

#### Table 2. Active System 800-Supported Configurations

# 1.6. Deployment Options

The Active System Manager solution for Active System 800 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—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-7.0.0.xyztp_VMware.zip    | VMware vCenter 5.1                 |
| Dell-ActiveSystemManager-7.0.0.xyztp_Microsoft.zip | Microsoft Server 2012 with Hyper-V |

# 1.7. Deployment Prerequisites

Before using the Active System Manager solution for end-to-end provisioning of Active System 800 components, ensure that the prerequisites listed in Table 4 are in place.

#### Table 4.Deployment Prerequisites

| Specification   | Prerequisite   |
|---|--|
| Active System 800 units connected<br>per the Active System 800<br>Reference Architecture and<br>Design Guidelines |  |
| Management server is configured<br>per the Active System 800<br>Reference Architecture and<br>Design Guidelines   |  |
| Firmware and BIOS Requirements  | All equipment must be configured with firmware versions as<br>listed in section Appendix C—Firmware and Software Base<br>Lineup  |
| For the Active System 800 chassis,<br>blade server, and IO aggregators:   | <ul> <li>CMC for M1000e chassis 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> <li>The username (<b>root</b>) and password for CMC, IOA, and iDRAC must be identical.</li> </ul> |
| Force10 S4810 switches (Top-of-<br>Rack [ToR])  | <ul> <li>The management IP address is configured for the ToR switches.</li> <li>The A800 base configuration is applied on both switches.</li> <li>VLANs are created on the switches per the Active System 800 deployment specification.</li> <li>The virtual machine (VM) traffic VLANs will be created dynamically by Active System Manager.</li> </ul>           |
| EqualLogic Storage Array  | <ul> <li>The group IP and management IP are configured for<br/>Storage Array.</li> <li>All storage array members are added to the group.</li> </ul>  |
| VMware vCenter 5.1  | <ul> <li>vCenter 5.1 is configured and accessible via the<br/>management and hypervisor management network.</li> <li>Appropriate licenses are deployed on the vCenter.</li> </ul>  |
| PXE Setup for server deployment   | Details for deploying PXE Server is listed in section Appendix G–PXE Setup Requirements. This setup is needed for PXE boot of the servers only.  |

# 2 Active System Manager Deployment

# 2.1 Deploying OVF

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

#### 2.1.1 Importing OVF from the vSphere Client

To import OVF from the vSphere Client, perform the following steps:

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



2. Browse the OVF file and select Next.

#### Figure 2. Deploy OVF Template Source File Location

| Deploy OVF Template  |                           |
|--|---------------------------|
| Source<br>Select the source location.                          |                           |
| Source<br>OVF Template Details<br>Name and Location<br>Storage |                           |
| Disk Format<br>Ready to Complete                               | Deploy from a file or URL |

3. In the Name field, enter the VM name and click Next.

#### Figure 3. Name and Location of the Deployed Template

# Content of the second s



- 4. Select the appropriate datastore name where the VM must be hosted.
- 5. Select the disk format. (Thin provisioning is supported and recommended.)
- 6. Select the network name. The VM must be mapped to the Hypervisor Management Network. All networks (for example, OOB, Hypervisor Management, vMotion, iSCSI, and VM workloads) are expected to be accessible from the appliance.

#### Figure 4. Mapping the Networks Used in the OVF Template

| Map the networks used in this OVF template to netw | orks in your inventory |
|--|------------------------|
| Source Networks                                    | Destination Networks   |
| VM Network   | VM Network             |

7. Table 5 lists the necessary key access credentials to use.

#### 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 application               | admin/admin         |

# 2.2 Deploying VHD

The Active System Manager Open Virtualization Format (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.

#### 2.2.1. Importing the VHD Using Hyper-V Manager

To import the VHD from the Hyper-V Manager, perform the following steps:

**1.** On the Hyper-V Manager dialog box, select a host, right-click and select **Import Virtual Machine**.

| ∎∎Hyper-¥ Mana | ger                     |
|----------------|-------------------------|
| Eile Action    | View Window Help        |
| 🗢 🔿 🔁 🗖        |                         |
| Hyper-V Manag  | Jer<br>Virtual Mac      |
| MIN-4FEGS      | New +                   |
|                | Import Virtual Machine  |
|                | Hyper-V Settings        |
|                | Virtual Network Manager |
|                |                         |
|                | Edit Disk               |
|                | Inspect Disk            |
|                | Stop Service            |
|                | Remove Server           |
|                | Refresh                 |
|                | View                    |
|                | New Window from Here    |
|                |                         |
|                | Help                    |

Figure 5. Hyper-V Manager > Import Virtual Machine

2. Click **Browse**, navigate to the location where the VDH is available in the extracted format, and click **Import**.

#### Figure 6. Import Virtual Machine

| 🛃 Import Virtual Machine   | × |
|--|---|
| Specify the location of the folder that contains the virtual machine files.  |   |
| Location: Browse   |   |
| Settings   |   |
| Import settings:   |   |
| <ul> <li>Move or restore the virtual machine (use the existing unique ID)</li> </ul>   |   |
| C Copy the virtual machine (create a new unique ID)  |   |
| Duplicate all files so the same virtual machine can be imported again  |   |
| The same virtual machine cannot be imported again if you do not copy the files unless you have backed them up to another location first. |   |
| Import Cancel  |   |

#### Figure 7. Select Folder Option

| Hyper-V Manager       |          |  |                   |                        |          |   |
|-----------------------|----------|--|-------------------|------------------------|----------|---|
| 🛃 Import Virtual Mach | nine     |  | ×                 |                        |          |   |
| 💫 Select Folder       |          |  |                   |                        |          | × |
| 🕞 🖓 ~ 📕 • exp         | oort 👻 A | ctive-System-Manager-7.0-Build-21286_Microsoft 👻 | •                 | 🧐 🛛 Search Active-Syst | em-Manag | 2 |
| Organize 🔻 New fo     | lder     |  |                   |                        | •        | 0 |
|                       |          | Name *   | Date modified     | Туре                   | Size     |   |
| E 🔀 Favorites         |          | 🐌 Snapshots                                      | 2/25/2013 8:49 AM | File folder            |          |   |
| Downloads             |          | 鷆 Virtual Hard Disks                             | 2/25/2013 8:49 AM | File folder            |          |   |
| 📃 Recent Places       |          | 퉬 Virtual Machines                               | 2/25/2013 9:06 AM | File folder            |          |   |
|                       |          |  |                   |                        |          |   |
| E 💽 Computer          |          |  |                   |                        |          |   |
| E CD Drive (E:) W     | 'D       |  |                   |                        |          |   |
| 🗉 👝 New Volume (F:    | )        |  |                   |                        |          |   |
| ⊞ 👝 New Volume (M:    | :)       |  |                   |                        |          |   |
|                       | Folder:  | Active-System-Manager-7.0-Build-21286_Mic        | rosoft            |                        |          |   |
|                       |          |  |                   | Select Folder          | Cancel   |   |

3. Select a folder to house the VHD and click Select Folder.

#### Figure 8. Import Settings

| 💫 Import Virtual Machine   | × |
|--|---|
| Specify the location of the folder that contains the virtual machine files.  |   |
| Location: F:\export\Active-System-Manager-7.0-Build-21286_Microsoft\ Browse  |   |
| Settings   | ] |
| Import settings:   |   |
| <ul> <li>Move or restore the virtual machine (use the existing unique ID)</li> </ul>   |   |
| C Copy the virtual machine (create a new unique ID)  |   |
| Duplicate all files so the same virtual machine can be imported again  |   |
| The same virtual machine cannot be imported again if you do not copy the files unless you have backed them up to another location first. |   |
| Import Cancel  |   |

4. Verify the location that contains the virtual machine files and click Import.

#### Figure 9. Newly-Imported VM Displayed on the Hyper-V Manager

| ∎∎Hyper-¥ Manager       |   |       |           |
|-------------------------|---|-------|-----------|
| File Action View Window | Help  |       |           |
| 🗢 🔿 🔰 🖬 🚺 🖬             |   |       |           |
| Hyper-V Manager         | Virtual Machines                                |       |           |
|                         | Name 🔺  | State | CPU Usage |
|                         | Active-System-Manager-7.0-Build-21286_Microsoft | Off   |           |

5. Select the VM and click **Start** to power on the VM.

# Virtual Machines Name State Active-System-Manager-7.0-Build-21286\_Microsoft 04 Connect... Settings... Start Snapshot Export... Rename... Delete... Help

#### Figure 10. Starting the VM

6. Select the network. The VM should be mapped to the Hypervisor Management Network. All the networks (for example, OOB, Hypervisor Management, vMotion, iSCSI, and VM workloads) are expected to be accessible from the appliance.

| Settings for Active-System-Manager-7.   | D-Build-21286_Microsoft  |
|---|--|
| Active-System-Manager-7.0-Build-21286_N   | <b>₽</b> ] 4 ►   |
| ★ Hardware         Madd Hardware         BIOS         Boot from CD         Memory         4096 MB         Processor         4 Virtual processors         Image: Strate Controller 0         Image: Hard Drive         Active-System-Manager-7.0-B | Network Adapter Specify the configuration of the network adapter or remove the network adapter. Network: Local Area Connection - Virtual Network MAC Address Ø Dynamic Ø Static Ø - 15 - 50 - 78 - 64 - 06 |
| <ul> <li>IDE Controller 1</li> <li>VM-Bus Network Adapter</li> <li>Local Area Connection - Virtua</li> </ul>  | Enable spoofing of MAC addresses   |
| COM 1<br>None<br>COM 2<br>None<br>Diskette Drive<br>None  | Enable virtual LAN identification     VLAN ID     The VLAN identifier specifies the virtual LAN that this virtual machine will use for all     network communications through this network adapter.     Z  |

Figure 11. Selecting the Network

7. Click **Connect** to launch the console.

#### Figure 12. Connecting to Launch the Console



# 2.3 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.



#### Figure 13. Logging In to the Active System Manager

- 2. Log in as the root user. Root user credentials are given Key Access Credentials.
- Navigate to System >Preferences >Network Connections to launch the Network Connections wizard.

| lome 🕞 | NL             | atwork Connections |        |
|--------|----------------|--------------------|--------|
|        | Wired Wireless | Mobile Broadband   |        |
| h      | Name           | Last Used          | Add    |
|        | Auto eth0      | 3 minutes ago      |        |
|        | Auto eth2      | 24 days ago        | Edit   |
|        | Auto eth1      | 1 month ago        | Delete |
|        | System eth0    | never              |        |
|        |                |                    |        |

Figure 14. Network Connections Wizard

- 4. Select the network interface card (NIC) appliance on which IP address should be configured manually and click **Edit**.
- 5. When the Editing dialog box displays (see figure below) update the IP address: select the IPv4 settings, click the **Method** drop-down list and select **Manual**.

|                             | Editing Auto eth0                        | ×     |
|-----------------------------|--|-------|
| Connection <u>n</u> ame: A  | uto eth0                                 |       |
| ✓ Connect <u>a</u> utomatic | ally                                     |       |
| Wired 802.1x Securi         | ty IPv4 Settings IPv6 Settings           |       |
| Method: Manual              |  |       |
| Addresses                   |  | ×     |
| Address Ne                  | tmask Gateway <u>A</u> dd                | DSL   |
|                             | Delete                                   | i d   |
|                             |  | - 161 |
|                             |  | - 151 |
| DNS servers:                |  |       |
| Search domains:             |  |       |
| D <u>H</u> CP client ID:    |  |       |
| Require IPv4 a              | addressing for this connection to comple | te    |
|                             | Routes                                   |       |
|                             |  |       |
| Available to all use        | rs <u>C</u> ancel Apply.                 |       |

#### Figure 15. Editing

6. Click **Add** to provide the IP address and other networking details (for example, DNS), as shown in the next figure.

Figure 16. Adding IP Addresses

| Wired         | 802.1x Securit     | y IPv4 Sett   | ings     | IPv6 Se        | ettings   |        |
|---------------|--------------------|---------------|----------|----------------|-----------|--------|
| <u>M</u> etho | od: Manual         |               |          |                |           | \$     |
| Addr          | esses              |               |          |                |           |        |
| Ad            | ldress             | Netmask       | Gate     | eway           | Add       | t      |
| 19            | 2.168.120.156      | 24            |          |                | Dele      | te     |
|               |                    |               |          |                |           |        |
|               |                    |               |          |                |           |        |
| <u>D</u> N    | S servers:         | 192.168.120   | ).216    |                |           |        |
| <u>S</u> ea   | arch domains:      |               |          |                |           |        |
| D <u>H</u>    | CP client ID:      |               |          |                |           |        |
| $\checkmark$  | Require IPv4 a     | ddressing for | this     | connectio      | on to con | nplete |
|               |                    |               |          |                | Routes    |        |
| 🗹 Ava         | ilable to all user | s             | <u>(</u> | <u>C</u> ancel | Ap        | ply    |

Click Apply. Once this is done, open the terminal by clicking Applications > System Tools > Terminal.

| Computer    |   |        |
|-------------|---|--------|
|             | E root@asm-galeforce:~ _ C                                  | ×      |
|             | <u>File Edit View S</u> earch <u>T</u> erminal <u>H</u> elp |        |
| root's Home | [root@asm-galeforce ~]#                                     | $\sim$ |
| Trash       |   | =      |
|             |   | ×      |

#### Figure 17. Terminal Console

- 8. Execute the /etc/init.d/network restart command.
- 9. Log in to the appliance with the newly configured IP address. This will ensure that IP address is configured correctly on appliance.

# 2.4 Installing the Active System Manager License

To install the Active System Manager license via the web client, perform the following steps:

- 1. Close all Active System Manager clients (web client and thick RCP client) connected to the Active System Manager server. (The RCP client installation details are provided in the subsequent sections.)
- 2. Log in to the Active System Manager Services as the delladmin/delladmin user.
- 3. If the license.lic file already exists, create a backup available under **\$HOME/asm-**galeforce/gf/common/etc/license.lic.
- 4. Copy the new license file as **license.lic** in the **\$HOME/asm-galeforce/gf/common/etc** directory.

# 2.5 Configuring Active System Manager Services

#### 2.5.1 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 the **delladmin** user. The password is listed in the 2.1 Deploying OVF section.
- 2. Execute the following command:

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

#### Note:

The Active System Manager services must not be started by the root user.

#### 2.5.2 Stopping Services

Following are the steps for stopping the services manually.

- 1. Log in as the **delladmin** user. The password is listed in the 2.1 Deploying OVF section.
- 2. Execute the following command:

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

#### 2.5.3 Verifying Service Status

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

- 1. Log in as the **delladmin** user. The password is listed in the 2.1 Deploying OVF section.
- 2. Run the following script to display the current status of all services, including the Oracle database status:

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

#### Below is sample output:

Active System Manager Services Status

```
Installation
Release Version: 7.0
Build Number: 21286
Database
```

\_\_\_\_\_

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```
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
```

# 2.6 Installing the Active System Manager Client

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

- 2.6.1 Installing Active System Manager Client Software on Windows
- 2.6.2 Installing the Active System Manager Client Software on Mac
- 2.6.3 Installing the Active System Manager Client Software on Linux

#### 2.6.1 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
- 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 doubleclick it.

A Security Warning window prompts you to run the file.

3. 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 prompts you to select to uninstall the existing version already on the system. Once selected, the installer uninstalls the existing version and then exits. You must perform the originally intended install after uninstalling the previous version as a single step.

4. Click Finish to complete the installation process.

#### 2.6.2 Installing the Active System Manager Client Software on Mac

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

- 1. Download the ActiveSystemManager-macosx.x86\_64\_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. Execute the Active System Manager.app file.

#### 2.6.3 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 Active System Manager file.

#### 2.6.4 Accessing Active System Manager Using the Windows Client Software

To access the Active System Manager software using the Windows Client software, perform the following steps:

1. Launch the client software application.



#### Figure 18. Launching the Active System Manager Client Software

2. Click Setup to create the account setup.

Figure 19. Connecting to the Active System Manager Server

| Connect to Active System Manager Server |                       |  |  |  |  |  |
|---|-----------------------|--|--|--|--|--|
|   | Active System Manager |  |  |  |  |  |
| Account:                                | Setup                 |  |  |  |  |  |
| Username:                               |                       |  |  |  |  |  |
| Password:                               |                       |  |  |  |  |  |
|   |                       |  |  |  |  |  |
| 0                                       | OK Cancel             |  |  |  |  |  |

3. On the Setting Up Accounts dialog box, click **Add**. Name the account as the connection to the Active System Manager appliance.

Figure 20. Setting Up Accounts

| (IIII) Setting up Accounts | ×                     |
|----------------------------|-----------------------|
| List of Accounts           |                       |
|                            | Add<br>Edit<br>Delete |
| <u> </u>                   | lose                  |

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 following figure.

#### Figure 21. Adding New Account

| (III) Add New Account |                       |  |  |  |  |  |
|-----------------------|-----------------------|--|--|--|--|--|
| Account:              | Active System Manager |  |  |  |  |  |
| Server:               | 192.168.120.112       |  |  |  |  |  |
| Port:                 | 40500                 |  |  |  |  |  |
| Transport:            | Normal (over HTTP) 🔹  |  |  |  |  |  |
| OK Cancel             |                       |  |  |  |  |  |

- 5. Click **OK** and close the Setting Up Account dialog box.
- 6. Select the account created in earlier step 4.

Figure 22. Logging In to the Active System Manager

| (     Connect to Active System Manager Server |                       |  |  |  |  |
|---|-----------------------|--|--|--|--|
|   | Active System Manager |  |  |  |  |
| Account:<br>Username:                         | Active System Manager |  |  |  |  |
| Password:                                     |                       |  |  |  |  |
|   |                       |  |  |  |  |
| 0   | OK Cancel             |  |  |  |  |

7. Provide the username and the password for the appliance. The default username and password is **admin/admin**. Click **OK** to launch the Active System Manager application.

# 3 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 800.

# 3.1 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.

#### Note:

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

| Gecurit                     | ty Managen                           | nent                         |                |                 |           |                  |        |                     | ×   |
|-----------------------------|--------------------------------------|------------------------------|----------------|-----------------|-----------|------------------|--------|---------------------|---|
| Users a<br>Add, ed<br>Users | and Group<br>it, and delet<br>Groups | <b>ps</b><br>te users and gr | oups with asso | ciated permissi | ions      |                  |        |                     | 4   |
| Search:                     |                                      |                              |                |                 |           |                  |        |                     |   |
| Userna                      | ame                                  | First Name                   | Last Name      | Role            | Authentic | Email            | Status | Time Zone           | ✓ Add   |
| admin                       | 1                                    | admin                        | admin          | Administr       | AL        | abc@galetech.com | Active | America/Los_Angeles | Edit<br>Delete<br>Profiles<br>Copy<br>Reset Password<br>Activate<br>Deactivate<br>Switch To |
| •                           |                                      |                              |                |                 | III       |                  |        | 4                   |   |
| 0                           |                                      |                              |                |                 |           |                  |        |                     | Close   |

#### Figure 23. 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 7.0 web portal (**Help** menu) or from the Thick client(Eclipse-based).

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# 3.2 Discovering Active System 800 Components

Discovery of the Active System 800 components includes:

- Dell M1000e Chassis
- Dell M620 Blade servers
- Dell PowerEdge M I/O Aggregators
- Force10 Top-Of-Rack (ToR) S4810 switches
- Dell EqualLogic Storage Array
- VMware vCenter Server components

#### 3.2.1 Initiating Discovery

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

- 3.2.1.1 Configuring Discovery Setup
- 3.2.1.2 Adding Details for the Active System
- 3.2.1.3 Adding vCenter System Properties
- 3.2.1.4 Starting the Discovery Process

#### 3.2.1.1 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.

#### Figure 24. Discovery Menu Options



The Discovery Configuration Setup page displays.

#### Figure 25. Discovery Configuration Setup

| 💖 Discovery Configuration 🛛  |   |   | - E  |
|--|---|---|------|
|  |   |   | ::   |
| Discovery Configuration Setup  |   |   |      |
| Use this UI to discover one or more Dell Active Syste  | ems with associated serv  | ers, storage arrays and switches (TOR). Before you proceed, it is recommended to:   |      |
| <ul> <li>Gather IP addresses and access credentials assoc</li> </ul>   | iated with the chassis / b  | lade infrastructure elements, storage arrays and switches (TOR).  |      |
| Make sure all elements have network connectivit  | ty, and the associated ele  | ment management interfaces are accessible from the Active System Manager server.  |      |
| Active System Manager Configuration  |   | Active System Manager Domain  |      |
| Select elements to view/update details<br>Solution System<br>Solution System | Add System     Add vCenter     Add vCenter     Add Element     Remove | System domain comes pre-configured with Active System Manager. Based on your deployment, your<br>administrator may have configured multiple domains.  Add System Choose this option if you wish to add a full pre-fabricated converged Infrastructure for discovery. Add vCenter Choose this option to add the VMware vCenter <sup>™</sup> instance that will be used for managing the vSphevintualization environment. Add Element | ere™ |
| 😸 vCenter1 VMware Host   |   | Choose this option if you wish to add more elements to existing infrastructure.   |      |

#### 3.2.1.2 Adding Details for the Active System 800 Unit

To add details for the Active System 800 unit, click **Add System**. This feature displays names for Active System 800 components that will be discovered; for example:

- Dell Chassis
- Dell EqualLogic Storage Array
- Dell Force10

#### Figure 26. Adding System Details

#### 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 | l element management in | terfaces are accessible from t | he Active System | Manager server. |
|---|--|----------------------|-------------------------|--------------------------------|------------------|-----------------|
|---|--|----------------------|-------------------------|--------------------------------|------------------|-----------------|

| Active System Manager Configuration  |  | System pro                      | perties                        |
|--|--|---------------------------------|--------------------------------|
| Select elements to view/update details   |  | Name is ma                      | andatory and should be unique. |
| System          System         Solution         Solution         Total EqualLogic-PS6110         Dell Force10-S4810         Dell Force10-S4810 | <ul> <li>Add System</li> <li>Add vCenter</li> <li>Add Element</li> <li>Remove</li> </ul> | Name:<br>Username:<br>Password: |                                |

3. Select the individual components and provide the required IP address/login credentials per the figure.

#### Figure 27. Dell Chassis Element Properties

#### 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 addre | sses and access credentials associated | with the chassis / blade infr | rastructure elements, storage a | arrays and switches (TOR). |
|-----------------|--|-------------------------------|---------------------------------|----------------------------|
|-----------------|--|-------------------------------|---------------------------------|----------------------------|

| • 1 | lake sure all elements have network connectivit | , and the associated element management interfaces are ac | cessible from the Active System Manager serve |
|-----|---|---|---|
|-----|---|---|---|

- Assettag–Required. Unique key or name used to import or identify the Dell 0 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. 0
- Password-Password to access and manage the Dell M1000e Chassis. 0
- IP Address-Required. IP address for the Dell M1000e Chassis CMC. The CMC 0 should be IP reachable from the Active System Manager server.
- 4. Provide the following element properties for the Dell EqualLogicStorageArray system (Figure 7):

#### Figure 28. EqualLogicStorayArray Element Properties

| Discovery Configuration Setup   |                                 |   |                                  |
|---|---------------------------------|---|----------------------------------|
| Use this UI to discover one or more Dell Active Systems wit                 | h associated servers, storag    | ge arrays and switches (TOR). Before you p  | roceed, it is recommended to:    |
| <ul> <li>Gather IP addresses and access credentials associated w</li> </ul> | ith the chassis / blade infra   | structure elements, storage arrays and swit | ches (TOR).                      |
| <ul> <li>Make sure all elements have network connectivity, and</li> </ul>   | the associated element ma       | nagement interfaces are accessible from th  | ne Active System Manager server. |
| Active System Manager Configuration   |                                 | Element Properties                          |                                  |
| Select elements to view/update details                                      |                                 | Specify element details. Assettag and IP    | Address are mandatory.           |
| 🖌 🗁 System  | ▼ Add System                    | Manufacturer: Dell                          |                                  |
| ▲   |                                 | Model EqualLogic-PS6110                     |                                  |
| "A" Dell EqualLogic-PS6110  | Add vCenter                     | Assettag:                                   |                                  |
| Dell Force10-S4810  | <ul> <li>Add Element</li> </ul> | Username:                                   |                                  |
| Dell Force10-S4810  | Remove                          | Destruction                                 |                                  |
|   |                                 | Password:                                   |                                  |
|   |                                 | IP Address:                                 |                                  |
|   |                                 | Discovery Attributes                        |                                  |
|   |                                 | Name  | Value                            |
|   |                                 |   |                                  |
|   |                                 |   |                                  |

- Assettag–Required. Unique key or name for the EqualLogic Storage Array, 0 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 0 Array.
- **Password**—Group password to access and manage the EqualLogic Storage Array. 0
- IP Address-Required. Group Management IP address for the EqualLogic Storage 0 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.

The following figure displays an example of how to edit to the /etc/hosts file and how it should be saved: Save file > press **Esc** > type :wq! > press **Enter**.

```
Figure 29. Editing and Saving the /etc/hosts File
```



#### Note:

If there are multiple storage groups, there should be an entry for each of the Storage Group in the Discovery Configuration Setup view. For adding a new element in an existing Active System 800 unit, click Add Element, select Dell EqualLogicStorageArray, and provide required details to initiate discovery.



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

#### Figure 31. Dell Force10 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 recomme

| ctive System Manager Configuration  |                  | Element Properties   |                             |
|---|------------------|--|-----------------------------|
| elect elements to view/update details   | s<br>eArray<br>t | Specify element details. Assettag and<br>Manufacturer: Dell                        | I IP Address are mandatory. |
| <ul> <li>AS800_1_2</li> <li>Dell Chassis</li> <li>Dell EqualLogicStorageArray</li> <li>Dell Force10-S4810</li> <li>Dell Force10-S4810</li> <li>VCenter_1</li> <li>vCenter1 VMware Host</li> </ul> |                  | Model Force10-S4810 Assettag: Username: Password: IP Address: Discovery Attributes |                             |
|   |                  | Name   | Value                       |
|   |                  | Role   | Тор                         |
|   |                  | SupportedVLANIDs   |                             |
|   |                  | Terminal Server IP Address   |                             |
|   |                  | Terminal Server password   | *******                     |
|   |                  | Terminal Server Port   |                             |
|   |                  | Terminal Server Username   |                             |
- 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 managed using the Terminal Server port.

  - Terminal Server Username—Optional. Terminal Server username (if configured)
  - Terminal Server Password–Optional. Terminal Server password (if configured)

#### 3.2.1.3 Adding vCenter System Properties

To add vCenter system properties, perform the following steps:

- 1. On the Active System Manager > System > vCenter configuration, click Add vCenter.
- 2. For VMware vCenter discovery, provide the following system properties:

#### Figure 32. Adding vCenter System Properties

| ASM GaleForce Active System Configuration |   | System prop                     | perties                       |
|---|---|---------------------------------|-------------------------------|
| Select elements to view/update details    |   | Name is ma                      | ndatory and should be unique. |
| System                                    | Add System     Add vCenter     Add vCenter     Add Element     Remove | Name:<br>Username:<br>Password: | vCenter.2                     |

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

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# 3.2.1.4Starting 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.



## Note:

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



- If discovery progress is initiated again when a discovery process is already in progress, the Active System Manager user is prompted with a message, indicating the same.
- After completing the Active System 800 components discovery, update the following information manually in the Active System Manager for all blade servers. These parameters will be used for configuring the ESXi Server with appropriate IP Address, hostname, iSCSI IP Address etc.

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**.

### Figure 34. Open with Multi-Editor

| 📜 Reso     | urce Instances |          |           |                |           |         |               |        |
|------------|----------------|----------|-----------|----------------|-----------|---------|---------------|--------|
| (No Filter | ing) 🔺 🗄       |          | Open      |                |           |         |               |        |
| 🔺 🗁 D      | ell (6)        |          | Open wit  | h Multi-Editor |           |         |               |        |
| 4 ն        | BladeServer    |          | Open wit  | h CSV-Editor   |           |         |               |        |
|            | 🔲 1DYL3V:      |          | Onen Rec  |                |           |         |               |        |
|            | 📕 4DRBQV       |          | openites  | ource type     |           |         |               |        |
|            | 🛃 6ZPBQV       |          | New       |                |           |         |               |        |
|            | 21MDT          | 0        | New Sess  | ion            |           |         |               |        |
|            | 36VBQV         | Ŭ        |           |                |           |         |               |        |
|            | <b>FDRBQV</b>  | 8        | Save as   |                |           |         |               |        |
|            | GDRBQ          |          | Advance   | d Clone        |           |         |               |        |
|            | GZPBQ          | ~        | Delete    |                |           |         |               |        |
|            |                | <u> </u> | Delete    |                |           |         |               |        |
|            | Chassis (1)    |          | Show Res  | ource Relation | ıs        |         |               |        |
|            | Compellent     |          |           |                |           |         |               |        |
|            | EqualLogic-    | Ŧ        | Expand A  | .11            |           |         |               |        |
|            | Force10-S48    |          | Collapse  | All            |           |         |               |        |
|            |                |          |           |                |           |         |               |        |
| 🕞 1 D      | VI2V1 52       |          |           |                |           |         |               |        |
|            | Name           | Mar      | ufacturer | Model 🔺        | Asset Tag | Version | Role          | Shared |
| 1          | serveroc.com   | Dell     |           | BladeServer    | 1DYL3V1   | 1       | Manageipment  |        |
| 2          | 21MDTV1        | Dell     |           | BladeServer    | 21MDTV1   | 1       | Manageipment  |        |
| 3          | serveroc.com   | Dell     |           | BladeServer    | 36VBQV1   | 1       | Manageipment  |        |
| 4          | localhost      | Dell     |           | BladeServer    | 4DRBQV1   | 1       | Manageipment  |        |
| 5          | serveroc.com   | Dell     |           | BladeServer    | 6ZPBQV1   | 1       | Manage inment |        |
| 7          | serveroc.com   | Dell     |           | BladeServer    | GDRBQV1   | 1       | Manageipment  |        |
| 8          | serveroc.com   | Dell     |           | BladeServer    | GZPBQV1   | 1       | Manageipment  |        |
| 9          | serveroc.com   | Dell     |           | BladeServer    | H0MDTV1   | 1       | Manageipment  |        |

The following parameters must be updated:

- ISCSIvNICIPAddresses—Space-separated list of IP addresses to be assigned to iSCSI virtual network interface cards (vNICs). For example, for updating information for "vmnic6 vmnic7" using the Update Port Group with iSCSI VLAN operation, the value can be in the 192.168.120.XX 192.168.120.YY format. as an example and will depend on the environment subnet range. The IP Addresses needs to be separated by a space ""
- iSCSIChapUsername—iSCSI Chap username used to access volume of EqualLogic Storage Array
- iSCSIChapSecret-iSCSI Chap secret corresponding to iSCSI Chap username.
- ServerHostname-Hostname to be assigned to the ESXi server.
- ServerDomainName-Domain name to be assigned to the ESXi server.
- ServerNameServer—Name server to be assigned to the ESXi server. If there are multiple name servers, a comma "," separated valued should be provided.

- ServerGateway–Gateway for the ESX server.
- ServerNetmask-Netmask for the management NIC of ESX server.
- ServerIPAddress—IP address that must be assigned to management NIC of the ESX server. If the hypervisor must retrieve an IP address from the DHCP server, leave this parameter blank.
- ServerPassword-Server root password to be assigned during unattended installation.
- vMotionIPAddress—TBD
- vMotionSubnet (netmask)—TBD

# 3.3 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:

- Applicable for Dell Servers—"PXE bootable images", where the repository has the ESXi PXE bootable installer image already configured and "ISO bootable images" where the ESXi ISO bootable installer image is available.
- Applicable for Dell EqualLogic Storage—EqualLogic Storage Firmware.
- The repository has EqualLogic firmware images configured (EqualLogic Storage Resource Pools)
- ToR Switch Configurations and Images—The repository has switch images and a base configuration configured.
- VMware ESXi images

## Figure 35. Software Repositories



# 3.3.1 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.

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 client.

|           | 😤 Software Repositories  |          |                             |  |
|-----------|--|----------|-----------------------------|--|
|           | (No Filtering)   |          | 🚔 🗄 🔻 🗙                     |  |
| DashBoard | Name   | Path     |                             |  |
| Setup     | <ul> <li>EqualLogic Firmware</li> <li>EqualLogic Resource</li> <li>EqualLogic Resource</li> </ul>              | ()<br>() | New Element<br>Repositories |  |
| Inventory | <ul> <li>▷ ▷ PXE Bootable Image</li> <li>▷ ▷ ToR Switch Configur</li> <li>▷ ▷ VMware Baseline Image</li> </ul> | Ē        | Expand All<br>Collapse All  |  |
|           |  |          | Import<br>Export            |  |
|           |  |          | Refresh                     |  |

Figure 36. Software Repositories View

2. Right-click the view and select Repositories.

The Custom Repository–Select Repository Type dialog box displays.

# Figure 37. Selecting Repository Type to Update

| () Custom Repo | sitory  |
|----------------|---|
| Select Repo    | sitory Type<br>y type to create a new repository or select existing repository to update. |
| File Server    |   |
| New            | File Transfer Protocol 🔹  |
| Existing       |   |
| Software Cor   | figuration Management   |
| New            | Concurrent Versions System  |
| Existing       | •   |
| Software Rep   | ository   |
| New            | Equallogic Firmware Repository  |
| Existing:      | EqualLogic Storage Firmwares  |
|                |   |
|                |   |
|                |   |
| 0              | < Back Next > Finish Cancel   |

- 3. Click the **Software Repository** > **Existing** radio buttons.
- 4. Using the drop-down menu, select the Repository Type 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**.

The **Custom Repository–Update EqualLogic Firmware Repository** dialog box displays; see Figure 19.

| get the details of t | the repository.            | stovisioning property  |                  | 1.0            |
|----------------------|----------------------------|------------------------|------------------|----------------|
| Description: Equa    | allogic Firmware Repo      |                        |                  |                |
| Location Pattern     |                            |                        |                  |                |
| File Format:         |                            |                        |                  | Variables      |
| Folder Format:       |                            |                        |                  | Variables      |
| Repository Prope     | erties                     |                        |                  |                |
| Name                 | Value                      |                        | Required         | <b>^</b>       |
| Host                 | 192.168.120.183            |                        |                  | E              |
| Port                 | 22                         |                        |                  |                |
| Username             | delladmin                  |                        |                  |                |
| Name                 | Value                      |                        |                  | Add<br>Remove  |
| Domain Associat      | ion                        |                        |                  |                |
| ✓ Name               | *                          | Element Type           |                  |                |
| System               |                            | Image File             |                  |                |
| •                    | Ţ                          | I                      |                  | 4              |
| Note: Associated     | domain will be used to sav | ve the repository eler | ments in 'Save A | ls' operation. |

# Figure 38. Update EqualLogic Firmware Repository

6. Click Finish.

# Note:

If a new image is added to the appliance, skip this step.

| Software Reposit | ory                     |                   |         |              |
|------------------|-------------------------|-------------------|---------|--------------|
| Repository Ele   | ments Discovery and     | Association       | ociated |              |
| elements.        |                         |                   |         | 1.0          |
|                  |                         |                   |         | <⊳ ♦> 🕭 🔫    |
| Name             | Path                    | Туре              | Base    | Association  |
|                  |                         |                   |         |              |
|                  |                         |                   |         |              |
|                  |                         |                   |         |              |
|                  |                         |                   |         |              |
|                  |                         |                   |         |              |
|                  |                         |                   |         |              |
|                  |                         |                   |         |              |
|                  |                         |                   |         |              |
|                  |                         |                   |         |              |
| -                |                         |                   |         |              |
|                  |                         |                   |         |              |
|                  |                         |                   |         |              |
|                  |                         |                   |         | 4            |
| Select All Dese  | elect All Discover      | Associate Bulk As | sociate | Disassociate |
|                  |                         |                   |         |              |
|                  |                         |                   |         |              |
| 0                | < <u>B</u> ack <u>N</u> | ext > Eir         | iish    | Cancel       |

# Figure 39. Repository Elements Discovery and Association

7. Click **Discover** to display all the firmware images available on the image server.

# Figure 40. Repository Elements Discovery and Association

|                            |   |  | l   |  | ж  |
|----------------------------|---|--|---|--|--|
| iscovery a<br>lew elements | nd Association  | o <b>n</b><br>ng associated e                            | lements.  |  | 1.0  |
|                            | Path  | Ту   | =<br>pe   | 🗇 💠 🕭<br>Base  | -  |
| 68702045.tgz               |   | Im   | age File  | $\checkmark$   | [[   |
| Set Type                   | ۱.  | Element  |   |  |  |
| Set as Bas                 | se  | Image F  | ile   |  |  |
| Delete co                  | nflicting   | Configu  | ration File   |  |  |
|                            | ew elements<br>68702045.tgz<br>Set Type<br>Set as Bas | Path 68702045.tgz Set Type Set as Base Debte are dicting | ew elements or view the existing associated e Path Ty 68702045.tgz Im Set Type Element Set as Base Image F Beldtage filting | scovery and Association<br>ew elements or view the existing associated elements. | is covery and Association<br>ew elements or view the existing associated elements.<br>Path Type Base<br>68702045.tgz Image File<br>Set Type  Element<br>Set as Base Image File<br>Path Element |

8. Click **Associate** to associate the image file with the required Resource Types (Dell EqualLogic Storage Array and EqualLogic Storage Pool).

| Custom Repository  |   | -                  |         | • X         |
|--|---|--------------------|---------|-------------|
| Repository Elements Discovery a<br>Click 'Discover' to discover new elements | nd Association<br>or view the existing asso | ociated elements.  |         | 1.0         |
| A  |   |                    | 40      | � ▲ 🗖       |
| Name   | Path  | Туре               | Base    | Associatio  |
| ▼<br>kit_V5.2.1-R219658_2668702045.tgz                                       |   | Image File         | ~       | [[ Dell ,Eq |
|  |   | Image File         |         |             |
|  |   |                    |         |             |
| •  | 1   |                    |         | ۴           |
| Select All Deselect A  | II Discover As                              | sociate Bulk Assoc | iate Di | sassociate  |
|  | R   | esource Instances  |         |             |
| 0  | < Back Nex                                  | t > Finish         |         | Cancel      |

Figure 41. Associating Resource Types

## Figure 42. Associating Inventory

| Associate Inventory  | - O X  |
|--|--|
| Associate Inventory<br>Select resource types you wish to associate with the select<br>file elements.   | ed   |
| (No Filtering)   | い いっちょう いっちょう いっちょう いっちょう いっちょう しょうしょう しょう |
| <ul> <li>Dell</li> <li>Pell BladeServer</li> <li>Poll Chassis</li> <li>Dell EqualLogic-PS6110</li> <li>Poll EqualLogicStoragePool</li> <li>Poll Force10-S4810</li> <li>Poll IOA</li> <li>Dell Servers</li> <li>VMware</li> </ul> | Select All<br>Deselect All   |
| Э ОК (   | Cancel   |

9. Select resource types and click **OK**.

# 3.3.2 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.

To update these repository elements, perform the following steps:

1. Open the Software Repositories view in the setup perspective.



2. Right-click the view and select Repositories.

The Custom Repository-Select Repository Type dialog box displays.

#### Figure 43. Selecting Repository Type to Update

| () Custom Repo | sitory  | - 0 X  |
|----------------|---|--------|
| Select Repo    | sitory Type<br>y type to create a new repository or select existing repository to update. | 1.0    |
| File Server    |   |        |
| New            | File Transfer Protocol  | ~      |
| Existing       |   | ~      |
| Software Cor   | nfiguration Management  |        |
| New            | Concurrent Versions System  | ~      |
| Existing       |   | ~      |
| Software Rep   | ository   |        |
| New            | Equallogic Resource Pool Repository   | •      |
| Existing:      | EqualLogic Storage Resource Pools   | •      |
|                |   |        |
|                |   |        |
|                |   |        |
|                |   |        |
|                |   |        |
|                |   |        |
|                |   | Caral  |
| Ø              | < Back Next > Finish  | Cancel |

- 3. Click the Software Repository > Existing radio buttons.
- 4. Using the drop-down menu, select EqualLogic Storage Resource Pools and click Next.

The Software Repository–Update EqualLogic Resource Pool Repository dialog box displays.

Figure 44. Update EqualLogic Resource Pool Repository

| Software Reposit  | ory   |                                       |                   | - • •         |  |
|---|---|---------------------------------------|-------------------|---------------|--|
| Update EqualL<br>Specify the EqualL<br>get the details of t | ogic Resource Pool<br>ogic Resource Pool Reposi<br>he repository. | Repository<br>itory provisioning prop | perties.Press Nex | t to 1.0      |  |
| Name: Equa  | llogic Resource Pool  |                                       |                   |               |  |
| Description: Equa   | llogic Resource Pool  |                                       |                   |               |  |
| Location Pattern  |   |                                       |                   |               |  |
| File Format:  |   |                                       |                   | Variables     |  |
| Folder Format:  |   |                                       |                   | Variables     |  |
| Repository Prope  | rties   |                                       |                   |               |  |
| Name  | Value   |                                       | Required          |               |  |
| Host  | 192.168.120.82  |                                       |                   |               |  |
| Username  | grpadmin  |                                       | $\checkmark$      |               |  |
| Password  | ****  |                                       | $\checkmark$      |               |  |
| Name  | Value   |                                       |                   | Add<br>Remove |  |
| Domain Associati  | on  |                                       |                   |               |  |
| ✓ Name  | *   | Element Type                          |                   |               |  |
| System  | System  |                                       | Image File        |               |  |
|   |   |                                       |                   |               |  |
|   |   |                                       |                   |               |  |
| Note: Associated  | domain will be used to say  | ve the repository elem                | ents in 'Save As' | operation.    |  |
|   |   |                                       |                   |               |  |
| 0   | < <u>B</u> ack  | <u>N</u> ext >                        | <u>F</u> inish    | Cancel        |  |

- 5. 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. Click **Discover** to display all the storage pools available on the Storage Array.

# Figure 45. Discovering New Elements

| ) Software Rep | ository                                      |   |                            |                    |
|----------------|--|---|----------------------------|--------------------|
| Click 'Discove | Elements Discover<br>r' to discover new elem | ry and Associatio<br>ents or view the existin | <b>n</b><br>g associated e | elements.          |
|                |  |   |                            | <>> 🔶 📥 📑          |
| Name           | Path   | Туре  | Base                       | Association        |
|                |  |   |                            |                    |
|                |  |   |                            |                    |
|                |  |   |                            |                    |
|                |  |   |                            |                    |
|                |  |   |                            |                    |
|                |  |   |                            |                    |
|                |  |   |                            |                    |
|                |  |   |                            |                    |
|                |  |   |                            |                    |
|                |  |   |                            |                    |
| •              |  |   |                            | •                  |
| Select         | All Deselect All Dis                         | cover Associate                               | Bulk Assoc                 | ciate Disassociate |
|                |  |   |                            |                    |
|                |  |   |                            |                    |
|                |  |   |                            |                    |

8. Right-click the selected Resource Pool and update the Type to Image File, and click Finish.

Figure 46. Repository Elements Discovery and Association

| Custom Repository<br>Repository Eleme<br>Click 'Discover' to di | ents Discovery and<br>scover new elements or | d Associa<br>view the exis | <b>tion</b><br>ting associated ele | ements. |              |                    |
|---|--|----------------------------|------------------------------------|---------|--------------|--------------------|
| Name  | F  | Path                       | Тур                                | e l     | <⊳ ∢<br>Base | 🕨 🔔 🛋<br>Associati |
| 🔽 🗇 default   | Set Type                                     | •                          | Element                            | ~       | 2            | [[ Dell ,Ec        |
|   | Set as Base                                  |                            | Image File                         |         |              |                    |
|   | Delete confliction                           |                            | Configuration                      | Eile .  |              |                    |

9. Click **Associate** to associate the storage pools with the required Resource Types (Dell EqualLogic-PS6110 and EqualLogic Storage Pool), and click **Finish**.

| gure 47. As                                       | ssociatin                         | g Reso                       | urce Ty                          | /pes                   |         |             |
|---|-----------------------------------|------------------------------|----------------------------------|------------------------|---------|-------------|
| Custom Repository                                 |                                   |                              | -                                | -                      |         | • <b>X</b>  |
| Repository Elements<br>Click 'Discover' to discov | s Discovery a<br>ver new elements | nd Associa<br>or view the ex | <b>ation</b><br>isting associate | d elements.            |         | 1.0         |
|   |                                   |                              |                                  |                        | <>      | Þ 🛦 🛋       |
| Name  |                                   | Path                         |                                  | Туре                   | Base    | Associati   |
| 📝 🗇 default                                       |                                   |                              |                                  | Image File             |         | [[ Dell ,Ec |
|   |                                   |                              |                                  |                        |         |             |
|   |                                   |                              |                                  |                        |         |             |
|   |                                   |                              |                                  |                        |         |             |
|   |                                   |                              |                                  |                        |         |             |
|   |                                   |                              |                                  |                        |         |             |
|   |                                   |                              |                                  |                        |         |             |
|   |                                   |                              |                                  |                        |         |             |
|   |                                   |                              |                                  |                        |         |             |
|   |                                   |                              |                                  |                        |         |             |
| •   | III                               | 1                            |                                  |                        |         | 4           |
| Select  | All Deselect Al                   | Discover                     | 🗢 Associate                      | Bulk Associ            | ate Dis | associate   |
|   |                                   |                              | Resource                         | e Types<br>e Instances |         |             |
|   |                                   |                              |                                  |                        |         |             |
| (?)   |                                   | < Back                       | Next >                           | Finish                 |         | Cancel      |

# 3.3.3 Updating Repository Elements for PXE Bootable Images

To update these repository elements, perform the following steps:

1. Open the **Software Repositories** view in the Setup perspective.

## Figure 48. Software Repositories View

|             | 😤 Software Repositories   |      |                            |
|-------------|---|------|----------------------------|
| <b>1</b> 15 | (No Filtering)  |      | ⇒i ti≣ ▼ X                 |
| DashBoard   | Name  | Path |                            |
|             | <ul> <li>EqualLogic Firmware</li> <li>EqualLogic Resource</li> </ul>                                    |      | New Element                |
| Setup       | b 🗁 ISO Bootable Images   | ŋ    | Repositories               |
|             | <ul> <li>PXE Bootable Image</li> <li>P ToR Switch Configure</li> <li>P WMware Baseline Image</li> </ul> | Ē    | Expand All<br>Collapse All |
|             |   |      | Import<br>Export           |
| Operations  |   |      | Refresh                    |

2. Right-click the view and select Repositories.

The Custom Repository-Select Repository Type dialog box displays.

Figure 49. Selecting Repository Type to Update

| 🛞 Custom Repo  | sitory  |
|--|---|
| Select Repo  | sitory Type<br>y type to create a new repository or select existing repository to update. |
| ○ File Server  |   |
| New  | File Transfer Protocol *  |
| Existing     Existing     Existing     Existence     Existence |   |
| Software Cor   | figuration Management   |
| New  | Concurrent Versions System 👻  |
| Existing   | · · · · · · · · · · · · · · · · · · ·   |
| Software Rep   | ository   |
| New  | Dell ASM Template v   |
| Existing:  | PXE Bootable Images   |
|  |   |
|  |   |
|  |   |
|  |   |
|  |   |
|  |   |
|  |   |
| 0  | < Back Net > Einish Cancel  |

- 3. Click the **Software Repository** > **Existing** radio buttons.
- 4. Using the drop-down menu, select **PXE Bootable Images** and click **Next**.

The Update Trivial File Transfer Protocol for PXE Boot dialog box displays.

Figure 50. Update TFTP for PXE Boot

| Name   | PXE Bo          | ootable Images            |                       |                   |            |
|--------|-----------------|---------------------------|-----------------------|-------------------|------------|
| Descri | iption: PXE Bo  | ootable Images            |                       |                   |            |
| Loca   | ation Pattern   |                           |                       |                   |            |
| File   | Format:         |                           |                       |                   | Variables  |
| Fold   | er Format:      |                           |                       |                   | Variables  |
| Rep    | ository Propert | es                        |                       |                   |            |
| Na     | me              | Value                     |                       | Required          | *          |
|        | Host            | 192.168.122.101           |                       |                   | E          |
|        | Port            | 69                        |                       | ¥                 |            |
|        | Communic        | ssh                       |                       | $\checkmark$      |            |
|        |                 |                           |                       |                   | Remove     |
| Don    | nain Associatio | n                         |                       |                   |            |
| ~      | Name            | *                         | Element Type          |                   |            |
|        | System          |                           | Image File            |                   |            |
| Note   | e: Associated d | omain will be used to sav | e the repository elem | ents in 'Save As' | operation. |

- 5. Update the Host attribute value with the IP address of the Active System Manager appliance.
- 6. The Username and Password are configured with default appliance username and password. These needs to be updated If the default username/password is updated.
- 7. Click Next to display the list of repository files.
- 8. Click Finish.

# Note:

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

| Figure 51. | Discovering New Elements |
|------------|--------------------------|
| 7          |                          |

| Software Repository                             | Association             | -                  |      |
|---|-------------------------|--------------------|------|
| Click 'Discover' to discover new elements or vi | ew the existing associa | ited elements.     | 1.0  |
|   |                         | اي الحية الم       |      |
| Name  | Path                    | Туре               | E    |
| configurationFiles                              |                         | Element            | V    |
| 🔲 🚸 Dell  |                         | Element            | ~    |
| 📃 💠 EqualLogicImage                             |                         | Element            | ¥    |
|   |                         | Image File         | ¥    |
| esxi5.1_dell_192.168.120.113                    |                         | Element            | V    |
| esxi5.1_dell_192.168.120.190                    |                         | Element            | ¥    |
| esxi5.1_dell_ISOBOOT                            |                         | Element            | ~    |
| esxi5.1_dell_ISOBOOT_192.168.120.190            |                         | Element            | ~    |
| 📃 💠 pxelinux.cfg                                |                         | Element            | ¥    |
|   |                         |                    |      |
|   |                         |                    |      |
|   |                         |                    |      |
|   |                         |                    |      |
|   |                         |                    |      |
|   |                         |                    |      |
|   |                         |                    |      |
|   |                         |                    |      |
|   |                         |                    |      |
|   |                         |                    |      |
|   |                         |                    |      |
|   |                         |                    |      |
| Select All Deselect All Discover                | - Associate Bulk        | Associate Disassoc | iate |
|   |                         |                    |      |
|   |                         |                    |      |
|   |                         |                    |      |
|   | Nets                    | Einish Cours       | -1   |
| < Back  |                         | Canc               | el   |

9. Click Discover to initiate the discovery of the repository files. This step is required only if a new image is added to the repository.

This will list the discovered element in the repository.

| Figure 52. Li          | st of Repo | sitory Files |              |                 |
|------------------------|------------|--------------|--------------|-----------------|
|                        |            |              |              | <⊳ ♦ 📥 📑        |
| Name                   | Path       | Туре         | Base         | Association     |
| 🔲 🚸 configurationFiles |            | Element      |              |                 |
| 📃 🚸 Dell               |            | Element      | $\checkmark$ |                 |
| 📃 🚸 EqualLogicImage    |            | Element      | $\checkmark$ |                 |
| ■ <> esxi5.1_dell      |            | Image File   | $\checkmark$ | [[ Dell ,ASM ], |
| 📃 🚸 pxelinux.cfg       |            | Element      | $\checkmark$ |                 |
|                        |            |              |              |                 |

10. Right-click the selected discovered elements and update the Type to Image File, and click Finish.

| Figure 53   | Undating | Discovered | Flements <sup>1</sup> | Type | to Image | File  |
|-------------|----------|------------|-----------------------|------|----------|-------|
| i igule JJ. | opuating | Discovereu | LICITICITIS           | rype | to image | 1 ILC |

|                         |         |                   |   |     |              |              | sp 🐢 🛎 📑     |
|-------------------------|---------|-------------------|---|-----|--------------|--------------|--------------|
| Name                    |         | Path              |   | 1   | Гуре         | Base         | Association  |
| 🔲 🚸 configuratio        | onFiles |                   |   | E   | lement       | $\checkmark$ |              |
| 🔲 🚸 Dell                |         |                   |   | E   | lement       | $\checkmark$ |              |
| EqualLogic <sup>I</sup> | Se      | t Type            | Þ | E C | Element      |              | Dell ,ASM ], |
| 🔲 💠 pxelinux.cf         | Se      | t as Base         |   |     | Image File   |              |              |
|                         | De      | elete conflicting |   |     | Configuratio | n File       |              |

# 3.3.4 Updating Repository Elements for ISO Bootable Images

To update these repository elements, perform the following steps:

1. Open the Software Repositories view in the Setup perspective.





2. Right-click the view and select Repositories.

The Custom Repository-Select Repository Type dialog box displays.

Figure 55. Selecting Repository Type to Update

| ( Software Repo                             | ository 🖂 🗉 💻 🗙  |
|---|--|
| Select Repos<br>Select repositor<br>update. | sitory Type y type to create a new repository or select existing repository to |
| File Server                                 |  |
| New   | File Transfer Protocol 👻   |
| Existing                                    |  |
| Software Cor                                | figuration Management  |
| New   | Concurrent Versions System 👻   |
| Existing                                    |  |
| Software Rep                                | ository  |
| New   | Trivial File Transfer Protocol for PXE Boot                                    |
| Existing:                                   | ISO Bootable Images 🔹  |
|   |  |
|   |  |
|   |  |
| 0   | < Back Next > Einish Cancel  |

- 3. Click the **Software Repository** > **Existing** radio buttons.
- 4. Using the drop-down menu, select ISO Bootable Images and click Next.

The Update Trivial File Transfer Protocol for ISO Boot dialog box displays.

| Description: ISO Bootable Images Location Pattern File Format: Variables Folder Format: Variables Repository Properties Name Value Required Host 192.168.122.184 Value Required Communic ssh Additional Properties Name Value Add Remove Domain Association   | lame: ISO Bo                         | ootable Images             |                           |                         |
|---|--------------------------------------|----------------------------|---------------------------|-------------------------|
| Location Pattern File Format: Variables Folder Format: Variables Repository Properties Name Value Required Host 192.168.122.184 Value Communic ssh Additional Properties Additional Properties Name Value Add Remove Domain Association   | escription: ISO Bo                   | ootable Images             |                           |                         |
| File Format: Variables   Folder Format: Variables   Repository Properties Variables   Name Value   Host 192.168.122.184   Port 69   Communic ssh   Communic ssh   Value Additional Properties     Name Value   Additional Properties     Domain Association   | Location Pattern                     |                            |                           |                         |
| Folder Format:       Variables         Repository Properties       Image: Comparison of the second | File Format:                         |                            |                           | Variables               |
| Name     Value     Required       Host     192.168.122.184     Image: Communic       Port     69       Communic     ssh       Communic     ssh       Additional Properties       Name     Value       Add       Remove       Domain Association   | Folder Format:<br>Repository Propert | ies                        |                           | Variables               |
| Host 192.168.122.184  | Name                                 | Value                      | R                         | equired                 |
| Port       69       Image: Communic       ssh       Image: Communic       ssh       Image: Communic       I   | Host                                 | 192.168.122.184            |                           | E                       |
| Communic     ssh       Additional Properties       Name       Value       Add       Remove       Domain Association   | Port                                 | 69                         | $\checkmark$              |                         |
| Additional Properties           Name         Value         Add           Domain Association         Add         Remove  | Communic                             | ssh                        |                           |                         |
| Domain Association  | Name                                 | Value                      |                           | Add                     |
|   | Domain Associatio                    | on 🔺                       |                           |                         |
| Name Element Type   | ✓ Name                               |                            | Element Type              |                         |
| Note: Associated domain will be used to save the repository elements in 'Save As' operation.  | Note: Accepted d                     | lomain will be used to sav | e the repository elements | in 'Save As' operation. |

# Figure 56. Update TFTP for PXE Boot

- 5. Update the Host attribute value with the IP address of the Active System Manager appliance.
- 6. The Username and Password are configured with default appliance username and password. These needs to be updated if the default username/password is updated.
- 7. Click Next to display the list of repository files.
- 8. Click Finish.

## Note:

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

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

This will list the discovered element in the repository.

# Figure 57. List of Repository Files

| Software Repository             |                         |                       |              |             |
|---------------------------------|-------------------------|-----------------------|--------------|-------------|
| Repository Elements Dis         | scovery and Asso        | ciation               |              | 2           |
| Click 'Discover' to discover ne | ew elements or view the | existing associated e | lements.     | 1.0         |
|                                 |                         |                       | -{>          | ♠ 🔺 🔫       |
| Name                            | Path                    | Туре                  | Base         | Associati   |
| 🔲 🗇 esxi5.1_dell_ISOBoot        |                         | Image File            | $\checkmark$ | [[ Dell ,Bl |
| dell_ISOBoot                    |                         | Image File            | $\checkmark$ |             |
|                                 |                         |                       |              |             |
|                                 |                         |                       |              |             |
|                                 |                         |                       |              |             |
|                                 |                         |                       |              |             |
|                                 |                         |                       |              |             |
|                                 |                         |                       |              |             |
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|                                 |                         |                       |              |             |
|                                 |                         |                       |              |             |
|                                 |                         |                       |              |             |
|                                 |                         |                       |              |             |
| 4                               |                         |                       |              |             |
|                                 |                         |                       |              |             |
| Select All Deselect A           | All Discover A          | sociate Bulk Assoc    | iate Dis     | associate   |
|                                 |                         |                       |              |             |
|                                 |                         |                       |              |             |
|                                 |                         |                       |              |             |
|                                 |                         |                       |              |             |
|                                 |                         |                       |              |             |
|                                 |                         |                       |              |             |

10. Right-click the selected discovered elements and update the Type to Image File, and click Finish.

# Figure 58. Updating Discovered Elements Type to Image File

| Repository Elements Dis<br>Click 'Discover' to discover ne  | scovery and Associa<br>w elements or view the exi | t <b>ion</b><br>sting a | ssociated e | lements.     | 1.0     |
|---|---|-------------------------|-------------|--------------|---------|
| Name  | Path  | Ту                      | pe          | kase         | 🕭 🚽     |
| Solution State St |   | I                       | Fil-        |              | II D-II |
| ·   | Set Type  | •                       | Eleme       | ent          |         |
|   | Set as Base                                       |                         | Image       | e File       |         |
|   | Delete conflicting                                |                         | Confi       | guration Fil | e       |

| Figure 59.   | Repository | <b>Properties</b> |
|--------------|------------|-------------------|
| 1 1941 0 271 | Repository | i i oper cies     |

| Description: ToR Switch Configurations and Images |                  |                 |              |          |               |  |
|---|------------------|-----------------|--------------|----------|---------------|--|
| Loca  | ation Pattern    | -               | -            |          |               |  |
| File F  | Format:          |                 |              |          | Variables     |  |
| Fold  | er Format:       |                 |              |          | Variables     |  |
| Repo  | ository Properti | ies             |              |          |               |  |
| Na  | me               | Value           |              | Required |               |  |
|   | Port             | 192.108.120.128 |              |          |               |  |
|   | Communic         | ssh             |              |          |               |  |
| Add   | itional Properti | es              |              |          |               |  |
| Na  | me               | Value           |              |          | Add<br>Remove |  |
| Dom   | nain Associatio  | n               |              |          |               |  |
| ~   | Name             | *               | Element Type |          |               |  |
|   | System           |                 | Image File   |          |               |  |
|   |                  |                 |              |          |               |  |

- 11. Update the Host attribute with the IP address of the VM appliance.
- 12. Click Next to display the list of repository files.
- 13. Click Finish.

# Note:

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

| Software Repository                            |                                |               | ×            |
|--|--------------------------------|---------------|--------------|
| Repository Elements Discovery and              | Association                    | -             | 2            |
| Click 'Discover' to discover new elements or v | view the existing associated e | elements.     |              |
|  | -                              |               | 1.0          |
|  |                                |               |              |
|  |                                |               |              |
| Name   | Path                           | Туре          | Base         |
| FTOS-SE-8.3.12.1.bin                           | Dell/Force10                   | Image File    |              |
| S4810_bottom_switch_conf_final.cfg             | configurationFiles/Dell/       | Configuration |              |
| S4810_top_switch_conf_final.cfg                | configurationFiles/Dell/       | Configuration | $\checkmark$ |
|  |                                |               |              |
|  |                                |               |              |
|  |                                |               |              |
|  |                                |               |              |
|  |                                |               |              |
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|  |                                |               |              |
|  |                                |               |              |
| <ul> <li>III</li> </ul>                        |                                |               | ۱.           |
|  | - Assasista Dulla Assas        | inte Dinessi  | -            |
| Select All Deselect All Discover               | Associate Bulk Assoc           | Disassocia    |              |
|  |                                |               |              |
|  |                                |               |              |
|  |                                |               |              |
|  |                                |               | _            |
| (?) < <u>B</u> ack                             | <u>N</u> ext > <u>F</u> inish  | Cance         |              |
|  |                                |               |              |

## Figure 60. Discovering New Elements

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

The list of discovered elements in the repository displays.

Figure 61. List of Repository Files

| ( | Custom Repository   |  |                    |     |
|---|---|--|--------------------|-----|
|   | Repository Elements Discovery and<br>Click 'Discover' to discover new elements or | d Association<br>view the existing associated        | elements.          | 1.0 |
|   | Name  | Path   | -{)⊳<br>Type       |     |
|   | AS800_Bottom_Switch.config  | configurationFiles/Dell/<br>configurationFiles/Dell/ | Element<br>Element |     |
|   | AS800_Top_Switch.config AS800_Top_Switch_GPOC.config                              | configurationFiles/Dell/<br>configurationFiles/Dell/ | Element            |     |

15. Right-click the selected discovered elements, update the Type to **Configuration File**, and click **Finish**.

Delete conflicting

ш

< Back

Select All Deselect All Discover

Software Repository **Repository Elements Discovery and Association** Click 'Discover' to discover new elements or view the existing associated elements. 1.0 🖘 🛧 🚽 Name Path Туре Base ETOS-SE-8.3.12.1.bin Dell/Force10 Image File  $\checkmark$ % \$4810\_bottom\_switch\_conf\_final.cfg configurationFiles/Dell/... Configuration ... ~ S4810\_top\_switch\_conf\_final\_cfa configurationFiles/Dell/ Configuration  $\checkmark$ Set Type ₽ Element Set as Base Image File

 $\underline{N}ext >$ 

Figure 62. Updating Discovered Elements Type to Configuration File

16. Click **Associate** to associate the selected element with the **Dell Force10** resource type and click **Finish**.

**Configuration File** 

Bulk Associate...

<u>F</u>inish

Þ

Disassociate...

Cancel

Figure 63. Associating Resource Types

•

0

| ()) Software Repository                        |                             |                  |
|--|-----------------------------|------------------|
| Repository Elements Discovery and              | Association                 |                  |
| Click 'Discover' to discover new elements or v | iew the existing associated | elements.        |
|  |                             | 1.0              |
|  |                             |                  |
|  |                             |                  |
| Name   | Path                        | Type Base        |
| □ <\> FTOS-SE-8.3.12.1.bin                     | Dell/Force10                | Image File 🗹     |
| S4810_bottom_switch_conf_final.cfg             | configurationFiles/Dell/    | Configuration 🗹  |
| S4810_top_switch_conf_final.cfg                | configurationFiles/Dell/    | Configuration 🗹  |
|  |                             |                  |
|  |                             |                  |
|  |                             |                  |
| ٠ III  |                             | •                |
|  | - Anne inter                | ista Disconstata |
| Select All Deselect All Discover               |                             | Disassociate     |
|  | Resource Types              |                  |
|  | Resource Instances          |                  |
|  |                             |                  |
| (2) K Back                                     | Next > Finish               | Cancel           |
|  |                             | Cancel           |

# 3.3.5 Updating Repository Elements for VMware Baseline Images

This repository contains VMware baseline images for creating VM clones.

To update the repository elements for VMware baseline images, perform the following steps:

1. Open the **Software Repositories** view in the Setup perspective.

|            | 😤 Software Repositories   |      |              |  |
|------------|---|------|--------------|--|
| <u> </u>   | (No Filtering)  |      | 🐳 🗄 🔻 🗙      |  |
| DashBoard  | Name  | Path |              |  |
|            | <ul> <li>EqualLogic Firmware</li> <li>EqualLogic Resource</li> </ul>      |      | New Element  |  |
| Setup      | b > ISO Bootable Images   | Ø    | Repositories |  |
|            | <ul> <li>De PAE Bootable Image</li> <li>De ToR Switch Configur</li> </ul> | Đ    | Expand All   |  |
| Inventory  | VMware Baseline Im-   |      | Collapse All |  |
|            |   |      | Import       |  |
| Operations |   |      | Export       |  |
|            |   |      | Refresh      |  |

Figure 64. Software Repositories View

2. Right-click the view and select **Repositories**.

The Custom Repository-Select Repository Type dialog box displays.

Figure 65. Selecting VMware Baseline Images Repository

| Software Rep | ository                      |  |
|--------------|------------------------------|--|
| New          | Dell ASM Template            |  |
| Existing:    | VMware Baseline Images 🗸 🗸 🗸 |  |
|              |                              |  |

- 3. Click the Software Repository > Existing radio buttons.
- Using the drop-down menu, select VMware Baseline Images, and click Next. The Repository Properties dialog box displays.

# Figure 66. Repository Properties

| details of the rep | Vare vCenter Inventory pro<br>pository.<br>Iware Baseline Images | visioning properties.Pre | ess Next to get th | e <u>1.0</u>  |
|--------------------|--|--------------------------|--------------------|---------------|
| Description: VM    | lware Baseline Images  |                          |                    |               |
| Location Patter    | n  |                          |                    |               |
| File Format:       |  |                          |                    | Variables     |
| Folder Format:     |  |                          |                    | Variables     |
| Repository Prop    | perties  |                          |                    |               |
| Name               | Value  |                          | Required           |               |
| Host               | 192.168.120.125  |                          | $\checkmark$       |               |
| Username           | administrator  |                          | $\checkmark$       |               |
| Password           | ****   |                          | $\checkmark$       |               |
| Name               | Value  |                          |                    | Add<br>Remove |
| Domain Associa     | ation  |                          |                    |               |
| ✓ Name             | *  | Element Type             |                    |               |
| System             |  | Image File               |                    |               |
|                    |  |                          |                    |               |
| Note: Associate    | d domain will be used to s                                       | ave the repository elem  | ents in 'Save As'  | operation.    |

- 5. Update the VMware vCenter host (IP address), username, and password.
- 6. Click **Next** to display the list of repository files.
- 7. Click **Discover** to initiate the discovery of the repository files.

The list of VMs managed by the vCenter displays.

## Figure 67. List of Repository Files

| Software Reposite                               | ory   |            |                | - • •              |  |  |  |
|---|---|------------|----------------|--------------------|--|--|--|
| Repository Elements Discovery and Association 💦 |   |            |                |                    |  |  |  |
| Click 'Discover' to                             | Click 'Discover' to discover new elements or view the existing associated elements. |            |                |                    |  |  |  |
|   |   |            |                | - 💠 🛧 🚽            |  |  |  |
| Name  | Path  | Туре       | Base           | Association        |  |  |  |
| Active-S  | Active-System-Manage  | Element    | $\checkmark$   |                    |  |  |  |
| C  TestVM                                       | TestVM  | Image File |                |                    |  |  |  |
| VCenter   | vCenter-Harrier   | Element    | ~              |                    |  |  |  |
|   |   |            |                |                    |  |  |  |
|   |   |            |                |                    |  |  |  |
| •   |   | 1          |                | •                  |  |  |  |
| Select All                                      | Deselect All Discover   |            | ulk Assoc      | iate) Disassociate |  |  |  |
|   |   |            |                |                    |  |  |  |
| 0   | < <u>B</u> ack  | Next >     | <u>F</u> inish | Cancel             |  |  |  |

8. Right-click the selected discovered element, select **Set Type** > **Image File**, and click **Finish**.

# Figure 68. Updating Discovered Elements Type to Image File

| Custom Repository  |                                   |     |      | -                 |                    |       |
|--|-----------------------------------|-----|------|-------------------|--------------------|-------|
| Repository Elements Discovery and Association<br>Click 'Discover' to discover new elements or view the existing associated elements. |                                   |     |      |                   |                    |       |
| Name   | Path                              | Тур | De   |                   | ≼⊳<br>Base         | 💠 🛦 🔜 |
| 🔲 🚸 New Virtual Machine  | New Virtual Machine               | Ele | ment |                   | ~                  |       |
| 📃 🚸 New Virtual Machine  | New Virtual Machine               | Fle | ment |                   | $\checkmark$       |       |
| •vCenter-Harrier   | Set Type                          | •   |      | Elemen            | t                  |       |
|  | Set as Base<br>Delete conflicting |     |      | Image l<br>Config | File<br>uration Fi | le    |

9. Click Associate to associate the selected element with the VMware VM resource type and click Finish.



|                         |                         |            |                         |                 | 🗇 💠 🔺 📑      |
|-------------------------|-------------------------|------------|-------------------------|-----------------|--------------|
| Name                    | Path                    | Туре       | Base                    | Association     | Siz 🔺        |
| 📝 🚸 New Virtual Machine | New Virtual Machine     | Element    |                         |                 |              |
| 🔽 🚸 New Virtual Machine | New Virtual Machine     | Image File | $\checkmark$            |                 |              |
| QA_Gold_VM              | QA_Gold_VM              | Element    | $\checkmark$            |                 |              |
| Cold VM 1001 244        | rsharma OA Gold VM      | Flement    |                         |                 |              |
|                         | Select All Deselect All | Discover   | Associate<br>Resource 1 | Bulk Associate) | Disassociate |
|                         |                         | _          | Resource I              | nstances        |              |

# 4 Physical Templates and Orchestration

# 4.1 Multiple Blade Server for Cluster Provisioning

Template 'Cluster - VMware ESXi 5.1 Hypervisor deployment ISO boot' and 'Cluster - VMware ESXi 5.1 Hypervisor deployment PXE boot' can be used for installing ESXi 5.1 on an SD card/hard disk, respectively, using PXE / ISO Boot. You can specify one or more blade servers using this template for creating a cluster.

## Figure 70. Multiple Blade Server for Cluster Provisioning



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. 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. IOA Configuration
  - a. The VLAN IDs provided for Network1, Network2, Network4, and VLAN component in the physical template are created on the IOA server facing interfaces as Tagged VLANs.
  - b. The Native VLAN ID provided for Network1 is added as Un-Tagged VLAN on the server facing interface.
  - c. The Native VLAN ID is mandatory for PXE boot scenario.
- 3. NIC Partitioning
  - a. NIC Partitioning is enabled on the CAN.
  - b. NIC Partitioning is only supported Broadcom CNA.
- 4. Set NIC Attributes
  - a. Configure the Min and Max Bandwidth
  - b. Enable / Disable iSCSI Offload on the NIC Partitions
  - c. Enable LAN Mode
  - d. Enable the Legacy boot protocol for PXE Boot scenario

- 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. Configure the vSwitch configuration
  - a. Create the vSwitch and port-groups based on Active System 800 deployment specification
  - b. Tag the port-groups with appropriate VLANs as specified in the template
  - c. Create iSCSI Port-groups and install / configure the MEM VIBs
- 8. Create a volume of the EqualLogic Storage Array
  - a. The new volume is created per physical session based on the size specified in the Orchestration input.
  - b. The authentication of the new volume is configured based on the Chap username and secret key specified in the inventory database of the servers.
- 9. Create vCenter Cluster / Datacenter (if not already exists) on the specified vCenter. The cluster is created with default settings (DRS On, HA On, EVC Disabled).

## Note: The cluster name passed as an argument must not be the Management cluster.

- 10. Add hosts to the vCenter cluster.
- 11. 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.
- 12. Installs EqualLogic MEM modules. The MEM package is transferred to the volume created in the above step to enable the installation.
- 13. Registers base VMs to the vCenter for logical template provisioning.

# Note:

You should update the template for necessary inputs before scheduling this template for cluster provisioning. For details, see the

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4.5 Updating Physical Templates section.

# 4.2 Single Blade Server for Standalone ESX Host Provisioning

Template 'Standalone-VMware ESXi 5.1 Hypervisor deployment with SD Card with vSwitch' and 'Standalone - VMware ESXi 5.1 Hypervisor deployment with HDD with vSwitch' can be used for installing ESXi 5.1 on an SD card/hard disk, respectively, using PXE / ISO Boot. User could specify one or more blade servers for standalone ESXi host provisioning.





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. If the VLAN reserved in the session is not already configured on the ToR switches then the VLAN are created and tagged to appropriate port-channels.
- 2. IOA Configuration
  - a. The VLAN IDs provided for Network1, Network2, Network4 and VLAN component in the physical template are created on the IOA server facing interfaces as Tagged VLANs.
  - b. The Native VLAN ID provided for Network1 is added as Un-Tagged VLAN on the server facing interface.
  - c. The Native VLAN ID is mandatory for PXE boot scenario.
- 3. NIC Partitioning
  - a. NIC Partitioning is enabled on the CAN.
  - b. NIC Partitioning is only supported Broadcom CNA.
- 4. Set NIC Attributes
  - a. Configure the Min and Max Bandwidth
  - b. Enable / Disable iSCSI Offload on the NIC Partitions
  - c. Enable LAN Mode
  - d. Enable the Legacy boot protocol for PXE Boot scenario
- 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. Configure the vSwitch configuration
  - a. Create the vSwitch and port-groups based on Active System 800 deployment specification
  - b. Tag the port-groups with appropriate VLANs as specified in the template
  - c. Create iSCSI Port-groups and install / configure the MEM VIBs
- 8. Create a volume of the EqualLogic Storage Array
  - a. The new volume is created per physical session based on the size specified in the Orchestration input.
  - b. The authentication of the new volume is configured based on the Chap username and secret key specified in the inventory database of the servers.
- 9. Add hosts to the vCenter at datacenter level.
- 10. 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.
- 11. Installs EqualLogic MEM modules. The MEM package is transferred to the volume created in the above step to enable the installation.
- 12. Registers base VMs to the vCenter for logical template provisioning.

# 4.3 Associated Orchestrations with Cluster and Standalone Host Templates

Each physical template has three orchestrations associated with it:

## Figure 72. Orchestrations



 On-demand—VMFS Datastore Provision TBD Per Jerry Ness, need more detail around the missing task that a VMFS datastore LUN for the GOLD images must be initially created on the storage before the logical templates can be run.

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

2. Setup-Configures the ESXi Servers using PXE Boot

This orchestration executes when template provisioning starts and the session is in the Setting Up state.

3. Teardown-Cleanup-Orchestration

This orchestration executes when template provisioning start and session is in Setting-up state.

# 4.4 Additional Storage for Cluster or Host

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

For executing the on demand orchestration, open the session by double-clicking it. On the session, right click and select the VMFS Datastore Provisioning orchestration for execution.



When executed, orchestration performs the following sequence of operations:-

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

# 4.5 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.)

Figure 74. Updating Template for Blade Server

| 🔁 Dell              | LAN and ISCSI Traffic — | VLAN Auto | —— iSCSI Traffic — | Dell EquallogicStoragePool_1 |
|---------------------|-------------------------|-----------|--------------------|------------------------------|
| Template Link       |                         |           |                    |                              |
| Properties          |                         |           |                    |                              |
|                     |                         |           |                    |                              |
|                     | Property                |           | Value              |                              |
| Resource            | News                    |           | Dell Creve Device  |                              |
| Provisioning        | Name                    |           | Dell ServerDeploy  | ment                         |
| Inventory           | Manufacturer            |           | Dell               |                              |
| Configuration films | Model                   |           | ServerDeploymer    | nt                           |
| Configuration Files | Description             |           |                    |                              |
| Image Files         | Virtual Object Count    |           | 1                  |                              |
|                     |                         |           |                    |                              |

- 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.

| Figure 75. Updating Template for VLANs |  |
|--|--|
|--|--|

| Properties          |           |       |                     |
|---------------------|-----------|-------|---------------------|
|                     |           |       |                     |
| Resource            | Name      | Value | Scheduling Permissi |
| Provisioning        | ISL       |       | Hide                |
| Inventory           | VLANCount | ⊽ 5   | Hide                |
| Configuration Files | VLANIO    |       | Hide                |
| Image Files         |           |       |                     |

- 4. Select the VLAN Component, click the Inventory tab, and update the VLANCount with the number of VLANs to be provisioned.
- 5. Update the VLAN ID range, as applicable, and update the VLANId parameter.

#### Figure 76. Updating VLAN ID Range and Parameter

| TOVISIONING         |           |                | · · · |
|---------------------|-----------|----------------|-------|
| Inventory           | VLANCount |                | Hide  |
| inventory           | VLANIA    | (100, 104) 106 | Hide  |
| Configuration Films | VLANU     | (100.104),100  | Thue  |
| Configuration Files |           |                |       |

- 6. Save the template.
- 7. Provide input to the orchestration using one of two methods.

# Figure 77. Orchestration Input

| Orchastration View                   |                     |               |             |                |              |
|--------------------------------------|---------------------|---------------|-------------|----------------|--------------|
|                                      | 🖶 Add Step          | 🐴 Remove Step | 🕂 Insert St | ep 률 Remove    | 📠 Add Script |
| Quanting                             | • • • • • • • • • • |               | Et.         |                | Description  |
| Operation                            |                     |               | Execute     | Abort On Error | Descriptio   |
| 🔺 🗁 Step 1:- Orchestration Input     |                     |               | <b>~</b>    | $\checkmark$   |              |
| 👳 [Dell Servers] Orchestration Input |                     |               |             |                | Orchestrat   |

- a. Double-click the Configure ESXi Server using PXE Boot orchestration to open it.
- b. Double-click the Orchestration Input method to provide other inputs to orchestration.

# Figure 78. Orchestration Input

| irameters            |                        |           |      | Possible Values   |                       |  |
|----------------------|------------------------|-----------|------|-------------------|-----------------------|--|
| Vame                 | Value                  | Data Type | Unit | Primary Source:   | Software Repositories |  |
|                      | san://ISO Bootable Ima | string    |      | Secondary Source: | ISO Bootable Images   |  |
| P StorageGroupIP     | 192.168.50.11          | string    |      |                   | iso bootable integes  |  |
| ESXServerLicenseKey  |                        | string    |      | 🛛 🖒 🔲 🧁 İmage I   | File                  |  |
| • vCenterIPAddress   | 192.168.120.125        | string    |      |                   |                       |  |
| vCenterClusterName   | HarrierCluster         | string    |      |                   |                       |  |
| VCenterDatacenter    | Gale                   | string    |      |                   |                       |  |
| GoldDatastoreVolum   | GoldVolume             | string    |      |                   |                       |  |
| PatastoreVolumeSize  | 100g                   | string    |      |                   |                       |  |
| PodName              | GalePod                | string    |      |                   |                       |  |
| BootProtocol         | static                 | string    |      |                   |                       |  |
| vCenterFolderName    | AS800                  | string    |      |                   |                       |  |
| InstallationDiskType | SD                     | string    |      |                   |                       |  |

Table 6 lists and defines the available Orchestration Input parameters.

# Table 6. Orchestration Input Parameters

| Parameter           | Description   |
|---------------------|---|
| ImageName           | Selects the ESXi image from the repository. The orchestration is already mapped with an existing ESXi image available on the appliance. |
| ESXServerLicenseKey | License key for the VMware ESXi hosts that will be provisioned by the orchestration.  |
| vCenterIPAddress    | vCenter IP Address as provided in the Discovery Setup configuration.  |
| vCenterClusterName  | vCenter cluster name that will be provisioned by the orchestration.   |
|                     | Note: The cluster name passed as an argument must not be the Management cluster.  |

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| Parameter               | Description   |
|-------------------------|---|
| vCenterDatacenter       | vCenter data center to be used for provisioning.  |
| GoldDatastoreVolumeName | Volume name consisting of baseline VM images that will be used for cloning new VMs.   |
| DatastoreVolumeSize     | Size in GB of the datastore to be provisioned on servers or a cluster.  |
| StoragePoolName         | Name of the pool on which the volume should be<br>created for provisioning the datastore. This input<br>should be provided from the EqualLogic Resource Pool<br>repository. |
| BootProtocol            | DHCP/Static. Default is static. If the IP address of the server is expected to come from DHCP server.   |
| vCenterFolderName       | (optional) The vCenter folder where the ESXi hosts needs to be provisioned during the orchestration   |
| InstallationDisk        | <b>SD</b> (the default)   <b>HDD</b> . If the installation must be performed on the server HDD, then value needs to be updated.   |
|                         | Note: The BIOS boot order needs to be updated manually  |

# Figure 79. vCenter\_1 System Properties



# 5 Workload Provisioning Using Logical Templates

# 5.1 Two VMs with a VLAN

The *Two virtual machine with a VLAN* Logical 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 80.           | Two VMs Connected to a VLAN  |
|----------------------|--|
| ⊱ Logical Template W | ith Two VMs Connected to a VLAN 🛛  |
|                      | Sample VM workload template having two VMs and VLAN component<br>- Clones VM based on associated base image<br>- Create Port-Groups corresponding to VLAN component on vSwitch |
|                      | RHEL_1 Traffic Link_2  |
| Template Link        |  |

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

- Clones and powers on two VMware VMs based on the Gold VM Image associated in the template.
- Creates port-groups corresponding to VLAN component on vSwitch, as can also be seen in the annotation in the template screenshot below.
- 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



## Figure 81. Applications > Microsoft RDC

# 5.2 Single Virtual Machine with VLAN

The Single virtual machine with a VLAN Logical 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 82. Single VM Connected to a VLAN

| Sample VM w<br>- Clones VM b<br>- Create Port | orkload template hav<br>ased on associated b<br>-Groups correspondin | ing two VMs and<br>ase image<br>ig to VLAN compo | VLAN componer<br>nent on vSwitcl |
|---|--|--|----------------------------------|
| R RHI   | Traffic Lin  | ık_1   | IN Auto                          |
|   |  |  |                                  |

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

- Clones and powers on a single VMware VMs based on the Gold VM image associated in the template.
- Creates port-groups corresponding to a VLAN component on the vSwitch (see Figure 55).
- Once the VMs are provisioned, you can also launch custom applications using custom methods from the Active System Manager Windows client.

# 5.3 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.



|                     | Sample VM workloa<br>- Clones VM based<br>- Create Port-Grou | d template havin<br>on associated ba<br>ps corresponding | ig two VMs and VL<br>se image<br>to VLAN compone | AN component |     |        |
|---------------------|--|--|--|--------------|-----|--------|
|                     | VirtualMachine_1   | Link_1 -   | VLAV   | )<br>Auto    |     |        |
|                     |  |  |  |              |     |        |
| Template Link       |  |  |  |              |     |        |
| Properties          |  |  |  |              |     |        |
| Resource            | Name   | Path   | Repository                                       | Version      | Tag | Add    |
| Provisioning        | 🗟 New Virtual Machine  | New Virtual M  | VMware Baseli                                    |              |     | Remove |
| Inventory           |  |  |  |              |     | llo    |
| Configuration Files |  |  |  |              |     | - Sp   |
| Image Files         |  |  |  |              |     | Down   |

2. Select the already associated image file and click **Remove** to remove the existing association.
#### Figure 84. Remove the Association

|                     | A        | VirtualMachine_1 | Link_1        | VLAN Aut | )<br>:0 |        |
|---------------------|----------|------------------|---------------|----------|---------|--------|
| Template Link       |          |                  |               |          |         |        |
| Properties          |          |                  |               |          |         |        |
|                     |          |                  |               |          |         |        |
| Resource            | Name     | Path             | Repository    | Version  | Tag     | Add    |
| Provisioning        | 😭 TestVM | TestVM           | VMware Baseli |          |         | Remove |
| Inventory           |          |                  |               |          |         |        |
| Configuration Files |          |                  |               |          |         | Up     |
| Image Files         |          |                  |               |          |         | Down   |

3. Click Add and select the gold VM image to be associated with the VM object.

#### - - -Elements Select Image Files (1) Resource 'VirtualMachine\_1' does not have any Image Files associated inventory, check 'Show All Image Files' to list all the files 1.0 Filter1 다. 같은 18: Select All Name Path Repositor 🔺 📝 🗁 VMware Baseline Deselect All 🔽 😭 TestVM TestVM VMware E • .... Show All Image Files 0 ОК Cancel

#### Figure 85. Select Gold VM Image File

# 6 Operation Center View-Administrative Operations

### 6.1 Managing Blades

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

- Power On Server–Used to power on the blade server using server iDRAC.
- Power Off Server-User to power off the blade server using server iDRAC. The migration of the VMs running on the server will be taken care by the VMware vMotion capability.

| 🔄 Operation Center                   | Resource Information                     |                       |
|--------------------------------------|--|-----------------------|
| (No Filtering)                       | <ul> <li>Resource Details</li> </ul>     |                       |
| Name                                 | St                                       |                       |
| 🔺 🕋 System [Domain]                  | 📄 Properties 👘 Sessions 🖶 Templates 📓    | Monitoring            |
| ⊿ 🔜 GalePod [AS800]                  |  |                       |
| 🔺 📰 CGJFQV1 [Chassis]                | Name                                     | Value                 |
| IOA [IO Module Overview]             | BIOSVersion                              | 1.4.9                 |
| Switch-1 [IOA]                       | CMCIPAddress                             | 192.168.120.49        |
| Switch-2 [IOA]                       | CPU                                      | 2                     |
| Servers [Server Overview]            | DNSName                                  | idrac-GDRBQV1         |
| a 📄 1 [Slot Number]                  | DRACIPAddress                            | 192.168.120.106       |
| server7.gale.gpoc.com [Blade Server] | Health                                   | OK                    |
| b 13 [Slot Number]                   | HostName                                 | server7.gale.gpoc.com |
| b 2 [Slot Number]                    | Memory                                   | 32768                 |
| b ] 3 [Slot Number]                  | Model                                    | DowerEdge M620        |
| b 4 [Slot Number]                    |  |                       |
| b 6 [Slot Number]                    | <ul> <li>Supported Operations</li> </ul> |                       |
| b [Slot Number]                      | The supported operations                 |                       |
| b 📄 7d [Slot Number]                 | Den art - Denver Off Server              |                       |
| b 👘 Dell_Storage [DellEqualLogic]    | Power Off Server Power Off Server        |                       |
| 192.168.120.90 [Force10Switch]       | Power On Server Power On Server          |                       |
| 192.168.120.91 [Force10Switch]       |  |                       |

#### Figure 86. Supported Operations

## 6.2 Managing vCenter Objects

This section describes the following VMware vCenter managed objects:

- 6.2.1 Clusters and Hosts
- 6.2.2 VMware vSwitches
- 6.2.3 VMware Datastores

Specifically, this section describes how these managed objects can be directed through Active System Manager—Operation Center view. The vCenter discovery can be initiated using the Active System Manager Discovery facility, which populates the Operation Center view of the Active System Manager.

#### Figure 87. Operation Center View

| Name                                 | Status | :  |
|--------------------------------------|--------|----|
| ⊿ 🚰 System [Domain]                  |        | ŀ  |
| A S800_1 [AS800]                     |        |    |
| a 🔚 CGJFQV1 [Chassis]                |        | 1  |
| IOA [IO Module Overview]             |        | F  |
| Servers [Server Overview]            |        |    |
| I [Slot Number]                      |        | Ľ  |
| b 📄 13 [Slot Number]                 |        |    |
| b 📄 2 [Slot Number]                  |        | i  |
| b 📄 3 [Slot Number]                  |        | i. |
| b 📄 4 [Slot Number]                  |        | 1  |
| اه 📄 б [Slot Number]                 |        | 1  |
| > 📄 7b [Slot Number]                 |        | :  |
| > D 7d [Slot Number]                 |        | ¢  |
| b (7) PS6110Storage [DellEqualLogic] |        | 1  |
| 192.168.120.90 [Force10Switch]       |        | :  |
| 192.168.120.91 [Force10Switch]       |        |    |
| ManagedEquipment                     |        | 1  |
| MatrixSwitch                         |        | 1  |
| ⊿ SvCenter_1 [vCenter]               |        | 1  |
| I192.168.120.125 [vCenter]           |        |    |
|                                      |        | 11 |

To initiate the discovery of a VMware vCenter, various discovery elements and their corresponding attributes can be provided as shown below in the Discovery Configuration Setup wizard; steps for configuring the Discovery setup for a vCenter are detailed in the Discovery Configuration Setup section.

| 💖 Discovery Configuration 🛛  |  |                  |                                     |   |  |  |
|--|--|------------------|-------------------------------------|---|--|--|
|  |  |                  |                                     |   |  |  |
| Discovery Configuration Setup  |  |                  |                                     |   |  |  |
| Use this UI to discover one or more Dell Active Systems with as  | sociated chassis, serv                                       | ers, IO modules, | storage arrays and switches (TOR)   | . Before you begin, it is recommended to: |  |  |
| Gather IP addresses and access credentials associated with the chassis / blade infrastructure elements, storage arrays and switch (TOR). |  |                  |                                     |   |  |  |
| Make sure all system elements have network connectivity, a   | and the associated el  | ement managen    | nent interfaces are accessible from | the ASM GaleForce system.                 |  |  |
| Refer the ASM GaleForce Solution Guide for more details.   |  |                  |                                     |   |  |  |
| ASM GaleForce Active System Configuration  | ASM GaleForce Active System Configuration Element Properties |                  |                                     |   |  |  |
| Select elements to view/update details   |  | Specify element  | details. Assettag and IP Address a  | re mandatory.                             |  |  |
| 🔺 🗁 System   | Add System   | Manufacturer:    | VMware                              |   |  |  |
| ▶  |  | Model            | Host                                |   |  |  |
| A UCenter_1  | dd vCenter   | Assettan         | vCenter-Harrier                     |   |  |  |
|  | Add Element  |                  |                                     |   |  |  |
|  |  | Username:        | Administrator                       |   |  |  |
|  | Remove   | Password:        | •••••                               |   |  |  |
|  |  | IP Address:      | 192 . 168 . 122 . 208               |   |  |  |
|  |  | Discovery Att    | ributes                             |   |  |  |
|  |  | Name             | A                                   | Value                                     |  |  |
|  |  |                  |                                     |   |  |  |
|  |  |                  |                                     |   |  |  |
|  |  |                  |                                     |   |  |  |
|  |  |                  |                                     |   |  |  |
|  |  |                  |                                     |   |  |  |
|  |  |                  |                                     |   |  |  |
|  |  |                  |                                     |   |  |  |

### 6.2.1 Clusters and Hosts

Clusters and hosts, along with their attributes, are discovered and populated in the Active System Manager Operation Center view. This view enables methods to be executed on clusters and hosts for on demand provisioning, as required. Figure 88. Clusters and Hosts (Example 1)

| 🖷 Resource Center  |                                | Resource Information  |  |  |  |
|--|--------------------------------|---|--|--|--|
| (No Filtering) 🗸 🗸   |                                | ◆ Resource Details  |  |  |  |
| Name Status ^  |                                |   |  |  |  |
| Name  ManagedEquipment  Manage | Status ^<br>Connect<br>Powerec | Properties Sessions ( Name assettag bastore version  Supported Operatio  Add DataStore To Cluster | Templates Monitoring Value Harrier datastore1 (1),InfraDS,NFSShare 1  Add datastore to an existing cluster. List datastore to an existing cluster. |  |  |
| dvSwitchTest16 [DVSwitch]     Sumit1 [DVSwitch]  |                                | List Cluster Datastore <u>List Cluster Datastore</u>  | Move a host, present in dataceneter level, to the existing cluster.  |  |  |





### 6.2.2 VMware vSwitches

Hosts vSwitches are also discovered and populated in the Operation Center view as part of the vCenter Discovery process.



### 6.2.3 VMware Datastores

Datastores are one of the most important components of the VMware-based virtualized infrastructure. The Active System Manager supports the discovery of datastores managed by the vCenter. The various attributes of a datastores are also discovered and populated in the Operation Center view.

#### Figure 91. VMware Datastores

| ⊿ 🐻 vCenter_1 [vCenter]             |          | Capacity                                 | 409600 MB  |
|-------------------------------------|----------|--|------------|
| I92.168.120.125 [vCenter]           |          | Disk                                     | Remote     |
| b 💣 ddddd [DataCenter]              |          | Free Space                               | 327766.359 |
| a 🧊 Gale [DataCenter]               |          | MultipleHostAccess                       | 0          |
| 💑 Cluster-56 [Cluster]              |          | ProvisionedVMList                        | vCenter-Ha |
| B Harrier [Cluster]                 |          | Status                                   | active     |
| 🔏 HarrierDevelopment_Dell [Cluster] |          | Type                                     | NES        |
| B HarrierDevelopment [Cluster]      |          |  |            |
| 🔏 HarrierDevelopment-HDD [Cluster   | ]        |  |            |
| 器 HD-test [Cluster]                 |          |  |            |
| 🔏 HD-test1 [Cluster]                |          |  |            |
| dvSwitch [DVSwitch]                 |          |  |            |
| dvSwitch2 [DVSwitch]                |          |  |            |
| dvSwitch3 [DVSwitch]                |          | <ul> <li>Supported Operations</li> </ul> |            |
| dvSwitchTest [DVSwitch]             |          | T other of the second                    |            |
| dvSwitchTest15 [DVSwitch]           |          | Remove Datastore     Remove datastore.   |            |
| dvSwitchTest16 [DVSwitch]           |          | Nemove Datastore                         |            |
| Sumit1 [DVSwitch]                   |          |  |            |
| 👂 datastore1 (1) [DataStore]        | Active   |  |            |
| 6 DellVolume-101 [DataStore]        | Inactive |  |            |
| DellVolume-102 [DataStore]          | Inactive |  |            |
| 👂 InfraDS [DataStore]               | Active   |  |            |
| iSCSIBootVol-01 [DataStore]         | Inactive |  |            |
| 🗐 LocalDatastore (1) [DataStore]    | Inactive |  |            |

## 6.3 Managing EqualLogic Storage

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

| 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.     |

#### Table 7. EqualLogic Group Members

| 🔄 Resource Center   |   | Resource Information  |  |
|---|---|---|--|
| (No Filtering)  |   | 👷 Resource Details  |  |
| Name  | Status                                    |   |  |
| <ul> <li>▲ ☐ System [Domain]</li> <li>▲ ☐ System [Domain]</li> <li>▲ ☐ AS800_1 [AS800]</li> <li>▷ ∰ AS800_1 [ASM]</li> <li>▲ ⑦ EqualLogicGroup [DellEqualLogic]</li> <li>▲ ⑦ Gale [Group]</li> <li>④ abc [Pool]</li> <li>☑ abc1 [Pool]</li> </ul> |   | <ul> <li>Supported Ope</li> <li>DcBsetDefaultVlan</li> <li>DcBsetState</li> <li>PoolCreate</li> </ul> | rations<br>Set the default VLAN ID for the Data Center Bridging.<br>Enable/Disable Data Center Bridging.<br>Creates a Pool on Group. |
| <ul> <li>▲ Image: default [Pool]</li> <li>GaleArray01-Test [Member]</li> <li>B GaleArray04-4 [Volume]</li> <li>D EllVolume [Volume]</li> <li>D EllVolume-101 [Volume]</li> <li>D EllVolume-102 [Volume]</li> </ul>                                | online<br>offline<br>online<br>online<br> |   |  |

| 🔄 Resource Center   |                                       | Resource Information  |   |  |
|---|---------------------------------------|---|---|--|
| (No Filtering)  |                                       | <ul> <li>Resource Details</li> </ul>  |   |  |
| Name  | Status                                |   |   |  |
| <ul> <li>Gale Group</li> /ul> | online<br>offline<br>online<br>online | <ul> <li>Supported Op</li> <li>PoolAddMember</li> <li>PoolDelete</li> <li>PoolRename</li> </ul> | Add members(storage) to a pool.<br>This operation deletes a Pool.<br>This operation Renames a Pool. |  |

# 6.4 Managing Volume

Table 8 lists and defines the operations provided in the Active System Manager EqualLogic Storage Operation Center view. The figure displays an example of EqualLogic group members.

#### 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   |

#### Figure 93. EqualLogic Group Members

| 🔄 Resource Center  |   | Resource Information   |   |
|--|---|--|---|
| (No Filtering)   | • | 🔹 Resource Details   |   |
| Name Status  |   | <ul> <li>Supported Operations</li> </ul>   |   |
| <ul> <li>LSS ASSOULT [ASSOU]</li> <li>ASM0001 [ASM]</li> <li>CE qualLogicGroup [DellEqualLogic]</li> <li>Celle Group]</li> </ul> |   | Image: Weight of the second secon | This Operation sets a Volume State Offline.<br>This operations sets a Volume State Online<br>Increase or decrease the size of a Volume. |
| GaleArray01-Test [Member] online<br>Clone-4-4 [Volume] offline<br>DellVolume [Volume] online<br>DellVolume-101 [Volume] online   |   |  |   |

### 6.5 Setting Up 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

#### Figure 94. Storage Group-Level Supported Operations



#### Table 9. Storage Group-Level Supported Operations

| Operation         | Description  | Input Parameter                          |
|-------------------|--|--|
| DCBSetDefaultVlan | Sets a default VLAN ID for Data Center<br>Bridging (DCB) on an EqualLogic Storage<br>Array | <i>vLanId</i> —Default vLanId for<br>dcb |
| DCBSetState       | Enables or disables DCB on an EqualLogic<br>Storage Array.                                 | <pre>dcbState {enable   disable}</pre>   |
| PoolCreate        | Creates a new storage pool in the storage group.   | <i>poolName</i> —Storage pool<br>name    |

#### Figure 95. Storage Member-Level Supported Operations

| Resource Center (No Filtering)   | •                           | Resource Information     Resource Details   |
|--|-----------------------------|---|
| Name  System [Domain]  System [Domain]  System [Domain]  System [Domain]  System [Domain]  System [As800] [AS800]  System [Group]  System [Gro | Status<br>offline<br>online | Properties Sessions Templates Monitoring     Supported Operations     ConfigureRAIDPolicy     Configures RAID type to one of the following: raid5,raid6, raid10,     UpgradeFirmware     Upgrade/Downgrade a firmware version on a storage. |

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

#### Table 10. Storage Member-Level Supported Operations

# 7 Dashboard Reports

### 7.1 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. The figure displays an example of a Resource Allocation by Sessions report.



#### Figure 96. Resource Allocation by Sessions Report

### 7.2 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. The figure displays an example of a Resource Allocation by Hosts report.





# 7.3 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. The figure displays an example of a Resource Allocation by Groups report.





## 7.4 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.

The figure displays an example of a Top Ten Resource Allocation report.





# 7.5 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

The figure displays an example of a Top Ten Resource Utilization report.







# 7.6 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. The figure displays an example of a VM Utilization by Session Report.



#### Figure 101. VM Utilization by Session Report

# 7.7 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. The figure displays an example of a Host Utilization (Consolidated) report.





# 7.8 Cluster Utilization (Consolidated) Report

This report is similar to the Host Utilization (Consolidated) report, except that it works for clusters. The figure displays an example of a Cluster Utilization (Consolidated) report.



#### Figure 103. Cluster Utilization (Consolidated) Report

## 7.9 Storage Utilization (Consolidated) Report

This report provides storage utilization as a percentage of allocated storage for clusters. The figure displays an example of a Storage Utilization (Consolidated) Report.



#### Figure 104. Storage Utilization (Consolidated) Report

## 7.10 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). The figure displays an example of a CPU and Memory Utilization Showback report.



Figure 105. 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 rest the time interval to default by clicking **Reset Zoom**.

#### Figure 106. Reset Zoom



# A Appendix A–Deployment Activities

### A.1 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.
- 2. Run the following script to display the current status of all services, including the Oracle database status:

```
cd asm-galeforce/gf/sbin
./gfstatus.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
```

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## B Appendix B-Build of Materials

Table 11 displays a list of build of materials, grouped by Resource Adapters.

#### Table 11. Build of Material-Resource Adapters

| Vendor   | Model                 | Description  |
|----------|-----------------------|--|
| Dell     | Chassis               | Dell Chassis resource adapter using WSMAN and RACADM CLI used for discovery operations     |
| Dell     | Servers               | Dell Servers resource adapter using WSMAN and RACADM CLI used for provisioning the servers |
| Dell     | ΙΟΑ                   | Management of IO Aggregator  |
| Dell     | EqualLogicPS6110      | Management of EqualLogic storage   |
| Dell     | EqualLogicStoragePool | Management of EqualLogic storage pool  |
| Dell     | Force10-S4810         | Management of ToR switches   |
| Template | VMwareLib             | VMware Host Provisioning on Blades   |
| VMware   | Host                  | VMware vCenter Management  |
| VMware   | Virtual Machine       | VMware Virtual Machine Instance Management   |

Table 12 displays a list of build of materials, grouped by templates.

#### Table 12. Build of Material-Templates

| ID         | Description  | Workflows   |
|------------|--|---|
| 1—Physical | Cluster - VMware ESXi 5.1<br>Hypervisor deployment ISO boot    | Configure ESXi Servers using ISO Boot,<br>Cleanup-Orchestration, and VMFS<br>Datastore Provision. |
| 2—Physical | Cluster - VMware ESXi 5.1<br>Hypervisor deployment PXE boot    | Configure ESXi servers using PXE Boot,<br>Cleanup-Orchestration, and VMFS<br>Datastore Provision. |
| 3-Physical | Standalone - VMware ESXi 5.1<br>Hypervisor deployment PXE boot | Configure ESXi servers using PXE Boot,<br>Cleanup-Orchestration, and VMFS<br>Datastore Provision. |
| 4-Physical | Standalone - VMware ESXi 5.1<br>Hypervisor deployment ISO boot | Configure ESXi servers using ISO Boot,<br>Cleanup-Orchestration, and VMFS<br>Datastore Provision. |
| 5—Logical  | Logical template with one VM connected to a VLAN               | Built-in orchestration.   |

| ID        | Description                                       | Workflows               |
|-----------|---|-------------------------|
| 6—Logical | Logical template with two VMs connected to a VLAN | Built-in orchestration. |

# C Appendix C-Firmware and Software Base Lineup

Table 13 displays a list of firmware and software base lineups, grouped by Hypervisor blades.

| Table 13. | Firmware and | Software Base | e Lineup–Hyperviso | r Blades |
|-----------|--------------|---------------|--------------------|----------|
|-----------|--------------|---------------|--------------------|----------|

| Resource                       | Active System Manager 7.0 |
|--------------------------------|---------------------------|
| BIOS                           | 1.6.0                     |
| CPLD                           | 1.0.5                     |
| iDRAC7 Enterprise              | 1.35.35                   |
| LCC (Life Cycle Controller) 2  | 1.1.1.18                  |
| Network Controller Broadcom FW | 7.4.8                     |
| EqualLogic MEM                 | 1.1.1                     |
| VMware ESXi                    | 5.1(799733) A02           |
| Microsoft Hyper-V              | NA                        |

Table 14 displays a list of firmware and software base lineups, grouped by management blades.

 Table 14.
 Firmware and Software Base Lineup

| Resource                       | Active System Manager 7.0 |
|--------------------------------|---------------------------|
| BIOS                           | 1.5.0                     |
| iDRAC7 Enterprise              | 1.35.35                   |
| LCC (Life Cycle Controller) 2  | 1.1.1.18                  |
| Network Controller Broadcom FW | 7.2.20                    |
| EqualLogic MEM                 | 1.1.1                     |
| VMware ESXi                    | 5.1(799733) A02           |

Table 15 displays a list of firmware and software base lineups, grouped by chassis, storage, and switches.

| Table 15. | Firmware and | Software I | Base Lineup— | Chassis, | Storage, | <b>Switches</b> |
|-----------|--------------|------------|--------------|----------|----------|-----------------|
|           |              |            |              |          |          |                 |

| Resource                               | Active System Manager 7.0 |
|--|---------------------------|
| СМС                                    | 4.31                      |
| PowerEdge M I/O Aggregator<br>8.3.17.2 | 8.3.17.3                  |
| Force10 S4810 (LAN)                    | 8.3.12.1                  |
| Force10 S55 (OOB)                      | 8.3.5.3                   |
| EqualLogic PS Arrays                   | 6.0.2 (R305616)           |

Table 16 displays a list of firmware and software base lineups, grouped by management VMs and software.

| Table 16. | Firmware | and Software | Base | Lineup |
|-----------|----------|--------------|------|--------|
|-----------|----------|--------------|------|--------|

| Resource                               | Active System Manager 7.0 |
|--|---------------------------|
| СМС                                    | NA                        |
| PowerEdge M I/O Aggregator<br>8.3.17.2 | NA                        |
| Force10 S4810 (LAN)                    | 8.3.12.1                  |
| Force10 S55 (OOB)                      | 8.3.5.3                   |
| EqualLogic PS Arrays                   | 6.0.2 (R305616)           |

Table 17 displays a list of firmware and software base lineups, grouped by management VMs and software.

Table 17. Firmware and Software Base Lineup–Management VMs and Software

| Resource   | Active System Manager 7.0 |
|--|---------------------------|
| Windows Server 2008 R2 Standard                  | N/A                       |
| VMware vCenter Server                            | 5.1.0 (799731)            |
| Dell EqualLogic Virtual Storage<br>Manager (VSM) | 3.5 EPA                   |

| Resource                               | Active System Manager 7.0 |
|--|---------------------------|
| Dell OpenManage Plug-in for<br>vCenter | 1.6.0.33                  |
| Dell SAN HQ                            | 2.5 EPA                   |
| VMware vCloud Connector                | 1.5                       |
| Dell OpenManage Essentials             | 1.1                       |
| Dell OpenManage Repository<br>Manager  | 1.4.113                   |

# D Appendix D-Adding New ESXi PXE Images

This appendix describes the following topics related to adding new ESXi images:

- Preparing the VMware ESXi 5.x Installation Media
- Modifying the ESXi boot.cfg Configuration File
- Configuring the HTTP ServerCreating a Kickstart Configuration File

# D.1 Preparing the VMware ESXi 5.x Installation Media

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

- 1. Log in to <u>www.dell.com.</u>
- Open the support and driver page (<u>http://www.dell.com/support/drivers/us/en/04/ProductSelector/Select?rquery=fkey-e-Drivers\_PS</u>)
- 3. Select Server > Storage & Networking.
- 4. Select PowerEdge.
- 5. Select PowerEdge M620.
- 6. Select VMware ESXi 5.1.

The image will be listed in the "Drivers for OS Deployment" section

#### Figure 107. Downloading the ISO Image

| Refine your results: (42 files)        |              |              |                   |       | See More Filtering Options |
|--|--------------|--------------|-------------------|-------|----------------------------|
| Operating System:                      | Category:    | Releas       | e Date:           |       | Importance:                |
| VMWare ESXi 5.1                        | All          | ▼ All        |                   | •     | All                        |
| xpand All Categories   Collapse All Ca | tegories     |              |                   |       |                            |
| BIOS (1)                               |              |              |                   |       |                            |
| ✓ Chassis System Management (1)        |              |              |                   |       |                            |
| <ul> <li>Diagnostics (1)</li> </ul>    |              |              |                   |       |                            |
| Orivers for OS Deployment (1)          |              |              |                   |       |                            |
| File Title                             | Importance   | Release Date | Version           | Actio | ins                        |
| Enterprise : 4Q2012 - Q4 B             | ock Optional | 12/4/2012    | 7.2.0.7, A00      |       | Download File              |
| (OM 7.2), Version 2<br>Other Formats   |              |              | Previous Versions | ÷     | Add to My Download List    |
| Description                            |              |              |                   |       |                            |

7. On your Trivial File Transfer Protocol (TFTP) server, simply extract the contents of the installation ISO into a new directory using the following commands (as the **root** user):

```
# mkdir /tmp/dellISO
# mkdir /tftpboot/esxi5.1_dell
# mount -o loop VMware-VMvisor-Installer-5.1.0-799733.x86_64-
Dell_Customized_RecoveryCD_A00.iso tmp/dellISO
# cp -fr /tmp/dellISO/* /var/lib/tftpboot/esxi5.1_dell/
# chmod +w /tftpboot/esxi5.1_dell/*
```

### D.2 Modifying the ESXi boot.cfg Configuration File

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

- 1. Remove all slashes (/) from the **boot.cfg** file so that relative paths are used (vi :%s#/##g).
- 2. Add a "prefix" directive to the **boot.cfg** file to specify the proper subdirectory, from the perspective of the TFTP root:

```
# cat boot.cfg
bootstate=0
title=Loading ESXi installer
kernel=tboot.b00
kernelopt=ks=http://xx.xx.xx/esxi5.1 dell/ks.cfg
modules=b.b00 --- useropts.gz --- k.b00 --- chardevs.b00 --- a.b00 --- user.b00
--- s.v00 --- misc cni.v00 --- net bnx2.v00 --- net bnx2.v01 --- net cnic.v00 -
-- net tq3.v00 --- scsi bnx.v00 --- scsi bnx.v01 --- net bna.v00 ---
scsi bfa.v00 --- ima_be2i.v00 --- scsi_be2.v00 --- net_igb.v00 --- scsi_mpt.v00
--- ima qla4.v00 --- net qlcn.v00 --- scsi qla.v00 --- ata pata.v00 ---
ata pata.v01 --- ata pata.v02 --- ata pata.v03 --- ata pata.v04 ---
ata_pata.v05 --- ata_pata.v06 --- ata_pata.v07 --- block_cc.v00 ---
ehci_ehc.v00 --- weaselin.t00 --- esx_dvfi.v00 --- xlibs.v00 --- ipmi_ipm.v00 -
-- ipmi ipm.v01 --- ipmi ipm.v02 --- misc dri.v00 --- net be2n.v00 ---
net e100.v00 --- net e100.v01 --- net enic.v00 --- net forc.v00 ---
net ixgb.v00 --- net nx n.v00 --- net qlge.v00 --- net r816.v00 ---
net r816.v01 --- net s2io.v00 --- net sky2.v00 --- net vmxn.v00 ---
ohci_usb.v00 --- sata_ahc.v00 --- sata_ata.v00 --- sata_sat.v00 ---
sata sat.v01 --- sata sat.v02 --- sata sat.v03 --- sata sat.v04 ---
```

```
scsi_aac.v00 --- scsi_adp.v00 --- scsi_aic.v00 --- scsi_fni.v00 ---
scsi_hps.v00 --- scsi_ips.v00 --- scsi_lpf.v00 --- scsi_meg.v00 ---
scsi_meg.v01 --- scsi_meg.v02 --- scsi_mpt.v01 --- scsi_mpt.v02 ---
scsi_rst.v00 --- uhci_usb.v00 --- tools.t00 --- scsi_qla.v01 --- dell_con.v00 -
-- xorg.v00 --- imgdb.tgz --- imgpayld.tgz
build=
updated=0
# chmod +w /var/lib/tftpboot/esxi5.1_dell/*
```

# D.3 Adding a PXE Menu Entry

Create a file named "pxe.cfg" inside the image directory on the TFTP server. The content of the file displays as follows:

```
DEFAULT menu.c32

MENU TITLE ESXi-5.1 Boot Menu

NOHALT 1

PROMPT 0

TIMEOUT 80

LABEL install

KERNEL esxi5.1_dell/mboot.c32

APPEND -c /esxi5.1_dell/boot.cfg ks=http://KSFILEPATH +++

MENU LABEL ESXi-5.1 ^Installer

LABEL hddboot

LOCALBOOT 0x80

MENU LABEL ^Boot from local disk
```

### Note:

The value of **KSFILEPATH** will be replaced dynamically by the Resource Adapter with the TFTP IP address value defined for the "PXE Repo" repository (assuming the TFTP server and the web server are running on the same machine). If dynamic replacement is not required, place the of the IP address (or hostname) value of the web server where the ks.cfg file is located.

## D.4 Configuring the HTTP Server

HTTP services are enabled, by default, on the appliance.

## D.5 Creating a Kickstart Configuration File

To create a kickstart configuration file, perform the following steps:

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

```
# cd /var/www/html
# mkdir esxi5.1 dell
```

#### Note:

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

2. Create a file named "ks\_template.cfg" inside the image directory on the HTTP server.

The content of the file will as shown below:

```
# Sample scripted installation file
# Accept the VMware End User License Agreement
vmaccepteula
# Set the root password for the DCUI and ESXi Shell
rootpw <PASSWORD>
clearpart --firstdisk=<FIRSTDISK> --overwritevmfs
# Install on the first local disk available on machine
install --firstdisk=<FIRSTDISK> --overwritevmfs
# Set the network to DHCP on the first network adapater, use the specified
hostname and do not create a portgroup for the VMs
<NETWORKCONTENT>
# reboots the host after the scripted installation is completed
reboot
%firstboot --interpreter=busybox
<FIRSTBOOTDATA>
```

#### Notes:

- The value of <PASSWORD> will be replaced with the password string defined in the Resource Adapter configuration file. The default value is **iforgot**.
- The value of <FIRSTDISK> will be replaced by local/usb, depending on the boot sequence defined in the deployment template.
- The value of <NETWORKCONTENT> will be replaced for the DHCP or static IP address configuration. The default configuration is **dhcp**. If the value of the IP address, subnet mask, and name-server is provided in the inventory, then the static IP address configuration will be applied on the server.
- The value of <FIRSTBOOT> will be replaced by the network configuration template file, available inside the Resource Adapter package. The configuration is based on the specifications for the Active System 800VMware Deployment document.
- The <FIRSTBOOT> configuration also includes:
  - o iSCSI initiator configuration
  - ESXi license Key. The value is added if the license key information is available in the resource adapter configuration file.
  - $\circ$  Name of the Local datastore

### D.6 Adding the New Image to the Software Repositories

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

If the new image is added with a new name/directory then the "PXE Bootable Image" repository must be updated, as described in 3.3.3 Updating Repository Elements for PXE Bootable Images section. Active System Manager Solution Guide-Active System 800 (AS800)

### E Appendix E–Adding New ESXi ISO Images

This appendix describes the following topics related to adding new ESXi images:

- Preparing the VMware ESXi 5.x Installation Media
- Modifying the ESXi boot.cfg Configuration File
- Configuring the HTTP ServerCreating a Kickstart Configuration File

### E.1 Preparing the VMware ESXi 5.x Installation Media

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

- 3. Log in to <u>www.dell.com.</u>
- Open the support and driver page (<u>http://www.dell.com/support/drivers/us/en/04/ProductSelector/Select?rquery=fkey-e-Drivers\_PS</u>)
- 5. Select Server > Storage & Networking.
- 6. Select PowerEdge.
- 7. Select PowerEdge M620.
- 8. Select VMware ESXi 5.1.

The image will be listed in the "Drivers for OS Deployment" section.

#### Figure 108. Drivers for OS Deployment

| ✓ Refine your results: (42 files)        |             |              |                   |       | See More Filtering Options |
|--|-------------|--------------|-------------------|-------|----------------------------|
| Operating System:                        | Category:   | Releas       | e Date:           |       | Importance:                |
| VMWare ESXi 5.1                          | All         | ▼ All        |                   | •     | All                        |
| xpand All Categories   Collapse All Cate | egories     |              |                   |       |                            |
| ✓ BIOS (1)                               |             |              |                   |       |                            |
| ✓ Chassis System Management (1)          |             |              |                   |       |                            |
| <ul> <li>Diagnostics (1)</li> </ul>      |             |              |                   |       |                            |
| Orivers for OS Deployment (1)            |             |              |                   |       |                            |
| File Title                               | Importance  | Release Date | Version           | Actio | ins                        |
| Enterprise: 4Q2012 - Q4 Bloo             | ck Optional | 12/4/2012    | 7.2.0.7, A00      | •     | Download File              |
| (OM 7.2), Version 2<br>Other Formats     |             |              | Previous Versions | Đ     | Add to My Download List    |
| Description                              |             |              |                   |       |                            |

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

| <pre># mkdir /tmp/dellISO</pre>  |          |
|--|----------|
| <pre># mkdir /home/delladmin/ISOBootImages/esxi5.1_dell_ISOBoot_New</pre>        |          |
|  |          |
| <pre># mount -o loop VMware-VMvisor-Installer-5.1.0-799733.x86_64-</pre>         |          |
| Dell_Customized_RecoveryCD_A00.iso /tmp/dellISO                                  |          |
| <pre># cp -fr /tmp/dellISO /home/delladmin/ISOBootImages/esxi5.1 dell ISOB</pre> | 3oot New |

# chmod +w /home/delladmin/ISOBootImages/esxi5.1\_dell\_ISOBoot\_New/\*

#### Note:

If the newly added image need to replace the existing image, then execute following commands:

```
mv /home/delladmin/ISOBootImages/esxi5.1_dell_ISOBoot_New
/home/delladmin/ISOBootImages/esxi5.1 dell ISOBoot
```

### E.2 Modifying the ESXi boot.cfg Configuration File

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

1. Update the kernelopt parameter to point the kickstart file to the CD-ROM:

```
# cat boot.cfg
bootstate=0
title=Loading ESXi installer
kernel=/tboot.b00
kernelopt=ks=cdrom:/KS.CFG
modules=/b.b00 --- /useropts.gz --- /k.b00 --- /chardevs.b00 --- /a.b00 ---
/user.b00 --- /s.v00 --- /misc cni.v00 --- /net bnx2.v00 --- /net bnx2.v01 ---
/net cnic.v00 --- /net tq3.v00 --- /scsi bnx.v00 --- /scsi bnx.v01 ---
/net bna.v00 --- /scsi bfa.v00 --- /ima be2i.v00 --- /scsi be2.v00 ---
/net igb.v00 --- /scsi mpt.v00 --- /ima qla4.v00 --- /net qlcn.v00 ---
/scsi_qla.v00 --- /ata_pata.v00 --- /ata_pata.v01 --- /ata_pata.v02 ---
/ata pata.v03 --- /ata pata.v04 --- /ata pata.v05 --- /ata pata.v06 ---
/ata pata.v07 --- /block cc.v00 --- /ehci ehc.v00 --- /weaselin.t00 ---
/esx dvfi.v00 --- /xlibs.v00 --- /ipmi ipm.v00 --- /ipmi ipm.v01 ---
/ipmi ipm.v02 --- /misc dri.v00 --- /net be2n.v00 --- /net e100.v00 ---
/net e100.v01 --- /net enic.v00 --- /net_forc.v00 --- /net_ixgb.v00 ---
/net nx n.v00 --- /net glge.v00 --- /net r816.v00 --- /net r816.v01 ---
/net s2io.v00 --- /net sky2.v00 --- /net vmxn.v00 --- /ohci usb.v00 ---
/sata_ahc.v00 --- /sata_ata.v00 --- /sata_sat.v00 --- /sata_sat.v01 ---
/sata sat.v02 --- /sata sat.v03 --- /sata sat.v04 --- /scsi aac.v00 ---
/scsi adp.v00 --- /scsi aic.v00 --- /scsi fni.v00 --- /scsi hps.v00 ---
/scsi ips.v00 --- /scsi lpf.v00 --- /scsi meq.v00 --- /scsi meq.v01 ---
/scsi_meg.v02 --- /scsi_mpt.v01 --- /scsi mpt.v02 --- /scsi rst.v00 ---
/uhci usb.v00 --- /tools.t00 --- /scsi qla.v01 --- /dell con.v00 --- /xorg.v00
--- /imgdb.tgz --- /imgpayld.tgz
build=
updated=0
# chmod +w /home/delladmin/ISOBootImages/esxi5.1 dell ISOBoot New/*
```

### E.3 Creating a Kickstart Configuration File

To create a kickstart configuration file, perform the following steps:

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

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

#### Note:

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

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

The content of the file will as shown below:

```
# Sample scripted installation file
# Accept the VMware End User License Agreement
vmaccepteula
# Set the root password for the DCUI and ESXi Shell
rootpw <PASSWORD>
clearpart --firstdisk=<FIRSTDISK> --overwritevmfs
# Install on the first local disk available on machine
install --firstdisk=<FIRSTDISK> --overwritevmfs
# Set the network to DHCP on the first network adapter, use the specified
hostname and do not create a portgroup for the VMs
<NETWORKCONTENT>
# reboots the host after the scripted installation is completed
reboot
%firstboot --interpreter=busybox
<FIRSTBOOTDATA>
```

#### Notes:

- The value of <PASSWORD> will be replaced with the password string defined in the Resource Adapter configuration file. The default value is **iforgot**.
- The value of <FIRSTDISK> will be replaced by local/usb, depending on the boot
  sequence defined in the deployment template.
- The value of <NETWORKCONTENT> will be replaced for the DHCP or static IP address configuration. The default configuration is **dhcp**. If the value of the IP address, subnet mask, and name-server is provided in the inventory, then the static IP address configuration will be applied on the server.
- The value of <FIRSTBOOT> will be replaced by the network configuration template file, available inside the Resource Adapter package. The configuration is based on the specifications for the Active System 800VMware Deployment document.
- The <FIRSTBOOT> configuration also includes:
  - o iSCSI initiator configuration

 $\circ~$  ESXi license Key. The value is added if the license key information is available in the resource adapter configuration file.

Name of the Local datastore

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

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

If the existing image directory is replaced, skip the above commands and execute the following:

```
mkdir -p /var/www/html/esxi5.1_dell_ISOBoot
cp /home/delladmin/ISOBootImages/esxi5.1 dell ISOBoot/ks.cfg
```

/var/www/html/esxi5.1\_dell\_ISOBoot/ks.cfg

4. Update the file permission on the newly added image:

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

### E.4 Adding the New Image to the Software Repositories

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

If the new image is added with a new name/directory then "ISO Bootable Image" repository must be updated, as described in 3.3.4 Updating Repository Elements for ISO Bootable Images section.

# F Appendix F– Planning Worksheet

| Equipment  | IP Address | Subnet Mask | Gateway | Username | Password |
|--|------------|-------------|---------|----------|----------|
| Chassis 1 CMC                                      |            |             |         |          |          |
| Chassis 2 CMC                                      |            |             |         |          |          |
| iDRAC for all M620                                 |            |             |         |          |          |
| Force10 S4810 Switch1                              |            |             |         |          |          |
| Force10 S4810 Switch2                              |            |             |         |          |          |
| EqualLogic Storage Array<br>Group Management       |            |             |         |          |          |
| EqualLogic Storage Array<br>Group on iSCSI Network |            |             |         |          |          |
| Active System Manager<br>Appliance                 |            |             |         |          |          |
| vCenter  |            |             |         |          |          |

#### Table 18. Out of Band Management IP Address Configuration

### F.1 ESXI Server IP Configuration

The following parameters for each server are required:

- ISCSIvNICIPAddresses—Space-separated list of IP addresses to be assigned to iSCSI virtual network interface cards (vNICs). For example, for updating information for "vmnic6 vmnic7" using the Update Port Group with iSCSI VLAN operation, the value will be in the 192.168.120.xx 192.168.120.yr format. The IP Addresses needs to be separated by a space ""
- ISCSINetmask iSCSI subnet mask of the iSCSI virtual network interface cards (vNICs)
- iSCSIChapUsername iSCSI Chap username used to access volume of EqualLogic Storage Array
- iSCSIChapSecret iSCSI Chap secret corresponding to iSCSI Chap username.
- ServerHostname-Hostname to be assigned to the ESXi server.
- ServerDomainName Domain name to be assigned to the ESXi server.
- ServerNameServer Name server to be assigned to the ESXi server.
- ServerGateway–Gateway for the ESX server.
- ServerNetmask–Netmask for the ESX server.
- ServerIPAddress—IP address that must be assigned to the ESX server. If the hypervisor must retrieve an IP address from the DHCP server, leave this parameter blank.
- ServerPassword Server password to be assigned during unattended installation.

# F.2 VLAN for IOA Configuration

Traffic Type

VLAN

| Management     |  |
|----------------|--|
| vMotion        |  |
| VM Workload(s) |  |

iSCSI Management / Traffic

### VMware 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

### Note:

The base line VMs needs to have VMware Tools installed.

# G Appendix G–PXE Setup Requirements

Considerations before creating the DHCP Server:

- The PXE Network must be separate from the Management Network.
- Active System Manager must have a network interface with same subnet as the TFTP Server. Appliance uses ARP entries for identifying the IP Address assigned to the ESXi Servers by the DHCP Server.
- The Active System Manager VM appliance has pre-defined templates for installing ESXi 5.1 on the Dell blade servers using PXE boot. For enabling the Preboot Execution Environment (PXE) boot, the following additional services are configured on the appliance:

# G.1 TFTP Server

TFTP services are enabled and deployed at **/var/lib/tftpboot** on the appliance. The ESXi Dell customized image is embedded within the appliance.

## G.2 HTTP Server

HTTP services are enabled on the appliance.

# G.3 DHCP Server

DHCP services are disabled on the appliance to avoid any issue with an existing DHCP server that may already be running on the same customer network. For the PXE setup requirement, the DHCP services should be running on the same network as the PXE. The DHCP server is configured to use Eth1 on the appliance

The VM appliance is created with one vNIC. The vNIC needs to be in the Hypervisor Management Network.

### G.4 Configuring PXE Setup with Embedded DHCP Server

The DHCP Services needs to be enabled on separate network interface on the appliance. Before configuring the DHCP Services, add a new Virtual NIC on the appliance using the VMware vSphere client and restart the appliance.

### G.4.1 Configuring the DHCP Server

To configure the DHCP server, perform the following steps:

- 1. Connect to the VM appliance console using the **root** user credentials through either the VMware vSphere Client VM console or the Hyper-V VM console.
- 2. Assign a static IP address on the eth1 interface. This IP Address must belong to the hypervisor Management subnet.
- 3. Edit file /etc/sysconfig/dhcpd and add following content to the file.

```
# Command line options here
DHCPDARGS="eth1"
```

- 4. Edit the /etc/dhcp/dhcpd.conf file.
- 5. Update the values of the IP address ranges and subnets per the customer environment.
- 6. Update the value of the next server with the VM appliance IP address on the same subnet as the DHCP server (eth0 IP address). The "next-server" represents the TFTP Server where the image is hosted.

```
# DHCP Server for Hypervisor management network
# Uncomment following lines with appropriate IP Address range
```

```
" oncommon of for the stand of the stand of the standard of th
```

```
subnet 192.168.122.0 netmask 255.255.255.0 {
```

```
range 192.168.122.102 192.168.122.230;
allow booting;
allow bootp;
filename "pxelinux.0";
next-server 192.168.122.101;
# --- default gateway
option routers 192.168.122.1;
option subnet-mask 255.255.255.0;
option domain-name-servers 192.168.122.1;
option netbios-node-type 2;
default-lease-time 28800;
max-lease-time 28800;
```

### G.4.2 Configuring the TFTP Server

}

The ESXi 5.1 customized image is embedded inside the appliance at

/var/lib/tftpboot/esxi51.\_dell. The image is configured to create a kickstart file dynamically based on the IP address provided in the Active System Manager inventory.

If the ESXi host is configured to learn the IP address through DHCP (configured through orchestration), and then there is no need to update the Server IP Address information in the Active System Manager inventory. The IP Address configured on the hosts by the DHCP server will be updated automatically during the server installation.

If a new image is required to be added to the appliance, follow the steps available in Appendix C-Firmware and Software Base Lineup.

To start the DHCP services, execute the /etc/init.d/dhcpd restart command.

### G.5 Configuring the PXE Setup with the Existing DHCP Server

If the DHCP server already exists on the Hypervisor Management Network, perform the following steps:

- 1. Update the appliance's DHCP settings to support the Bootstrap Protocol (BOOTP).
- 2. Edit the /etc/dhcpd/dhcpd.conf file.
- 3. Update the next-server to point to the Active System Manager appliance IP address; the images are hosted on the appliance.

```
allow booting;
allow bootp;
filename "pxelinux.0";
next-server 192.168.122.101;
```

# H Appendix H–FAQs

- Q1 Volumes on EqualLogic Array are not removed for cancelled sessions. This wastes storage space and consumes iSCSI connections.
- A1 User should manually cleanup the unused volumes on the EqualLogic storage array and iSCSI connections after session is canceled.
- Q2 The orchestrations assume that Port Channel 2 is configured on the switches. If not, you get a failure indicated by red links on the session.
- A2 The list of port-channels are configurable, based on the environment this list could be controlled by updating the "portChannelList" in the "ssi.properties" file under "\$HOME/asm-galeforce/gf/common/integrations/Dell/Force10-S4810"
- Q3 Where is the VM created? Is there way to specify which Datastore gets created?
- A3 User can specify on which datastore the VM will be created by providing the value of "TargetDatastore" provisioning parameter of the VM in the template as shown in the screenshot below. If there is no value provided for "TargetDatastore", the RA chooses the best available datastore for VM creation.

#### Figure 109. Provisioning Properties

|                     | Link                            | _1(        |
|---------------------|---------------------------------|------------|
| Template Link       |                                 |            |
| Properties          |                                 |            |
|                     |                                 |            |
|                     | DiskFormat                      | Thin       |
| Resource            | GuestCustomizationRequired      | false      |
| Provisioning        | GuestDNSDomain                  |            |
| Inventory           | GuestHostName                   |            |
| Configuration Files | GuestType                       | Windows    |
| Image Files         | GuestWindowsDomain              |            |
| inagernes           | GuestWindowsDomainAdministrator |            |
|                     | LinuxTimeZone                   |            |
|                     | ManagementNetwork               |            |
|                     | MonitoringFrequency             | 1          |
|                     | MonitoringRequired              | true       |
|                     | ProductId                       |            |
|                     | ResourcePool                    |            |
|                     | TargetDatastore                 | Datastore2 |
|                     | VMDisplayName                   |            |

- Q4 Is there a way to revert a template or import the original template?
- A4 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 it back as needed.
- Q5 What is the difference between synchronize and discovery

#### A5 TBD.

- Q6 SSI properties will be overwritten when upgrading the RA.
- A6 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>
- Q7 How Gold Volumes on EqualLogic storage array are secured?
- A7 Gold volume is secured by creating the access rights for the chap users.

Steps to create the Gold Volume -

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

- **Q8** What about images and firmwares released after this release of Active System Manager 7.0?
- A8 Images and firmware versions that are released after Active System Manager 7.0 should work but this should be validated with the solution.
- Q9 What is base level configuration and what is consists of for Dell Force10 switches?
- A9 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.
- Q10 Is it required to create pools on Dell EqualLogic storage array?
- A10 Creating pool is optional. If there are no user-defined pools on the EqualLogic Storage array, then a newly created volume becomes part of the default storage pool. Pools can be created by executing the **PoolCreate** method on the EqualLogic group object in the Operation Center View.
- Q11 Is HTTPS supported for connecting to Active System Manager?
- A11 Yes, HTTPS is supported on Active System Manager.
- Q12 Is terminal server connectivity required for Dell Force10 switches?
- A12 Terminal server connectivity to Dell Force10 switches is optional.
- Q13 Does the default password of the Active System Manager appliance get updated?
- A13 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.
- Q14 How would a user know what's the optional parameters in an orchestration step method?
- A14 Parameters with the \* sign suffixed in front of them are mandatory and the ones without \* sign are optional. See figure for exampls.

#### Figure 110. Parameters

| Name                  | Value                  | Data Type | Unit | - |
|-----------------------|------------------------|-----------|------|---|
| ImageName             | san://ISO Bootable Ima | string    |      |   |
| ESXServerLicenseKey   |                        | string    |      |   |
| ■vCenterIPAddress     | 192.168.120.125        | string    |      |   |
| vCenterClusterName    | AS800Cluster           | string    |      |   |
| 🖁 vCenterDatacenter   | Gale                   | string    |      | Ξ |
| 📄 GoldDatastoreVolum  | GoldVolume             | string    |      |   |
| 📱 DatastoreVolumeSize | 100g                   | string    |      |   |
| BootProtocol          | static                 | string    |      |   |
| 📄 vCenterFolderName   | AS800Folder            | string    |      |   |
| InstallationDiskType  | HDD                    | string    |      |   |
| StoragePoolName       | default                | string    |      | - |

Q15 When do I add new images and firmware versions in the appliance?

A15 TBD

- Q16 If a customer is not going to use PXE deployments, are they still required to configure this?
- A16 PXE setup is optional if a customer is not going to use PXE deployment. They can use ISO boot solution of Active System Manager 7.0
- Q17 Do you want to show Hyper-V? These are all only VMware specific.

- A17 Active System Manager 7.0 supports VMware ESXi server imaging and workload provisioning for VMware VM. Microsoft Hyper-V is not supported with Active System Manager 7.0.
- Q18 How to change the hostname of the Active System Manager Server?
- A18 Steps to change hostname of the Active System Manager server
  - a. Log in to the Active System Manager as the root user.
  - b. Open the **/etc/sysconfig/network** file and update the "HOSTNAME" field value with the new hostname.
  - c. Also update the hostname in the /etc/hosts file.
  - d. Reboot the server by executing the **reboot** command.
  - e. Once the server is up and running, log in to the server as the **delladmin** user.
  - f. Verify that the hostname is updated to the new hostname by executing the **hostname** command.
  - g. Ensure that all Active System Manager services are stopped first:

#### cd \$HOME/asm-galeforce/gf/sbin

- h. Execute the **./updateHostName.sh** file and follow the instructions to update the hostname in the Active System Manager installation.
- i. Start the Active System Manager Services. Details on how to start the services are provided in this guide.