Active System Manager for VMware Boot from SAN

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Introduction

Active System Manager Version 7.1 is designed to enable a stateless server environment where servers are hot-swappable element in the VMware compute cluster/cloud. Active System Manager includes server profile templates and IO identities that support the seamless migration of servers from the running cluster.

Active System 1000 converged infrastructure

The Active System (AS) 1000 solution is an enterprise infrastructure solution that has been designed and validated by Dell™ Engineering. It is available to be racked, cabled, and delivered to your site, to speed deployment. Dell Services will deploy and configure the solution tailored for business needs and ready to be integrated into your datacenter. AS1000 is offered in configurations with either VMware® vSphere® (vStart 1000v) or Microsoft® Windows Server® 2012 with Hyper-V® role enabled (AS1000m) Hypervisors.

AS1000v includes Dell PowerEdge™ M1000e blade chassis, Dell PowerEdge M620 blades, Dell Compellent™ Storage, Dell Force10™ network switches, Brocade Fibre Channel switches, and VMware vSphere. The solution also includes Dell PowerEdge R620 servers as management servers. VMware vCenter Server, Compellent Enterprise Manager, and OpenManage™ Essentials are also included with the solution.

Active System 800 converged infrastructure

The Active System 800 solution is an enterprise infrastructure solution that is designed and validated by Dell™ Engineering. Active System 800 is offered in configurations with either VMware® vSphere® (Active System 800v) or Microsoft® Windows Server® 2012 with Hyper-V® role enabled (Active System 800m) Hypervisors.

Active System 200 converged infrastructure

The Active System 200 solution is a virtualization infrastructure solution that has been designed and validated by Dell Engineering. It is delivered racked, cabled, and ready to be integrated into your datacenter.

The configurations include Dell PowerEdge R720 servers running VMware ESXi 5.1, Dell EqualLogic PS6100X iSCSI storage, Dell PowerConnect 7048 or 6248 switches, and a Dell PowerEdge R620 server that manages the solution by hosting Dell management tools.

Terminology

The following terms define concepts or components used by Active System Manager.

Boot from SAN

Boot from SAN is the technique of installing and booting an ESXi server which is installed on a remote iSCSI or Fibre Channel media. This enables movement of the boot media from one server to another.

Server Template/Profile

Server Template/Profiles are reusable hardware configuration definitions of the server configuration which includes the network, storage, BIOS and, management of IO identities. The following IO Identities are managed in Active System Manager:

- MAC Address
- IQN Number
- IP Addresses

Prerequisites

- DHCP Server needs to be running in the iSCSI network
- Network configuration for iSCSI network in ASM need to have gateway value "0.0.0.0"

Boot from SAN

The following sections describe how to configure Active Systems to Boot from SAN. For AS1000, Active System Manager supports installation of ESXi on the remote FC volume.

NOTE: Hyper-V installation on remote volume is currently not supported.

For AS800 and AS200, Active System Manager supports installation of ESXi on the remote EqualLogic iSCSI volume.

AS 1000 Current Limitation and Assumptions

The server profile is not managing/provisioning the FC WWNN and WWPN on QLogic Fibre Channel (FC) Mezzanine.

Creating a Server Template

Default Server Profile Templates having support for FC boot (AS1000), iSCSI boot (AS800), and are not included in the Active System Manager appliance. In the following procedure, if a value is not mentioned, leave the default value.

1. In the Active System Manager client, click **Operations** in the left-hand pane.

Figure 1.   Operations

2.   In the **Operation Center**, click the **Server Templates and Profiles** tab.

3.   Right-click **AS1000_VMware_template** and select **Clone Template**.

Figure 2.   Clone Template
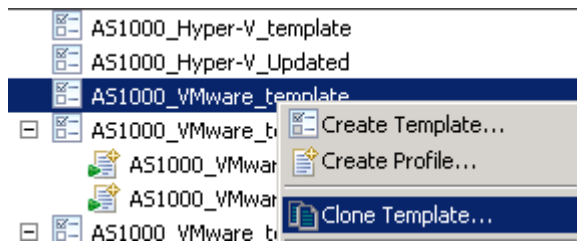
4.   In the **Clone Server Template** window, enter a unique **Name**
     (AS1000_VMware_template_FCBoot, AS800_VMware_template_iSCSIBoot, or
     AS200_VMware_template_iSCSIBoot) and **Description** for the template, and click **OK**.

Figure 3.   Clone Server Template
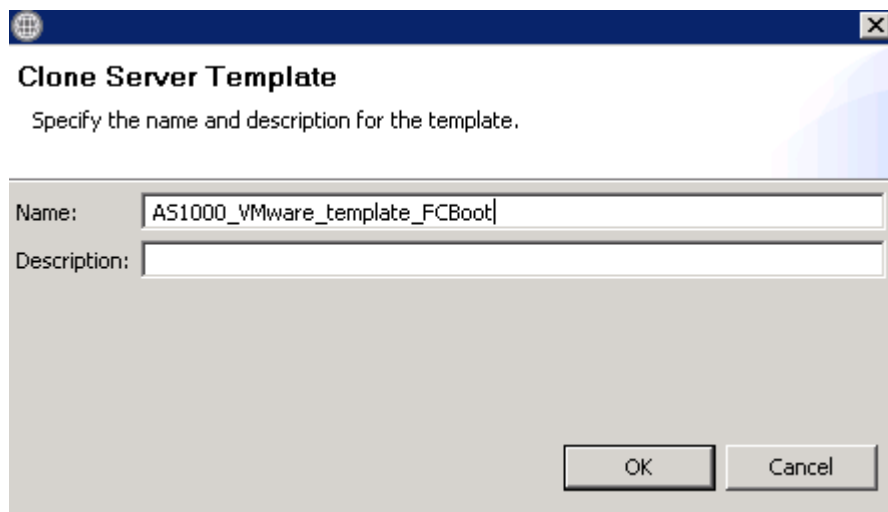
5. Double-click on the template just created.

6. In the **Edit Server Profile Template** wizard, on the **Server Template Settings** page, click **Next**.

7. On the **BIOS Settings** page, click **Next**.

8. On the **RAID Settings** page, click **Next**.

9. On the **Firmware Settings** page, click **Next**.

10. On the **Network Settings** page:

   - For AS1000, click **Next**.

   - For AS800 and AS200, add four new network configurations (iSCSI, vMotion, Workload, and Hypervisor Management):

      i. Select all existing networks and click **Remove**.

      ii. Click **Add**.

      iii. In the **Add vNIC Configuration** dialog box, update the following information:

         - Name – iSCSI

         - Connection Type – SAN iSCSI

         - Native VLAN – iSCSI SAN VLAN

         - Maximum Bandwidth - 10

      iv. In the **Select network associated with this configuration** area, select the appropriate iSCSI network.

      v. Click **OK**.

      vi. In the **Network Settings** page, click **Add**.

      vii. In the **Add vNIC Configuration** dialog box, update the following information:

         - Name – vMotion

         - Maximum Bandwidth - 10

      viii. In the **Select network associated with this configuration** area, select the appropriate vMotion network.

      ix. Click **OK**.

      x. In the **Network Settings** page, click **Add**.

      xi. In the **Add vNIC Configuration** dialog box, update the following information:

         - Name – Workload

         - Maximum Bandwidth - 10

      xii. In the **Select network associated with this configuration** area, select all appropriate workload networks.

      xiii. Click **OK**.

      xiv. In the **Network Settings** page, click **Add**.

xv. In the **Add vNIC Configuration** dialog box, update the following information:

- Name – Hypervisor Management

- Maximum Bandwidth - 10

xvi. In the **Select network associated with this configuration** area, select the appropriate hypervisor management network.

xvii. Click **OK**.

Figure 4.   AS800 and AS200 Network Settings page
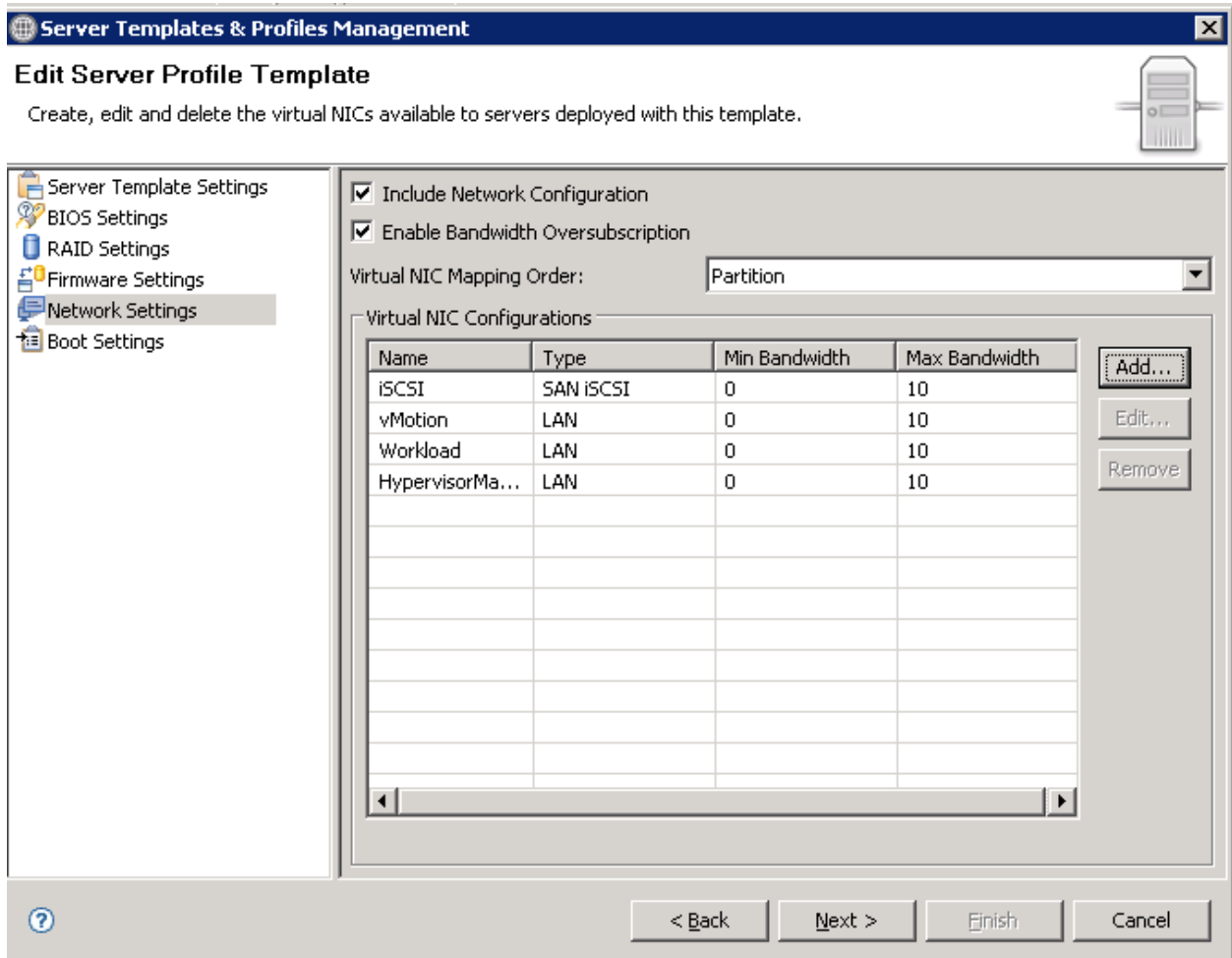
11. On the **Boot Settings** page:

- For AS1000, select **FC** for the **OS Boot Type** and click **Finish**.

- For AS800 and AS200, select **SAN(iSCSI)** for the **OS Boot Type**, **iSCSI** for the **Virtual Boot NIC**, and click **Finish**.

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Active System Manager for VMware Boot from SAN

Update the Boot from SAN template

Boot from SAN orchestration templates are not included in the version 7.1 appliance. Go to your Download Locker to download the latest supplement. Import the orchestration from the supplement and update the value of the global parameters according to the environment.

All global parameters are the same as the **AS1000/AS800/AS200 Cluster ISO Template**. For more information about the cluster ISO template, see the "Physical Templates and Orchestration" chapter of the appropriate *Active System Manager Solution Guide*. See the Technical Documentation section for a list of all supporting documentation.

Two new parameters have been added for server profile migration as described in a later section.

Figure 5.   Global Parameters

Name	Value	Description
Properties		
☐ 📁 Compute		
ImageName	san://ISO Bootable Images/esxi5.1_...	ISO Image path in repository.
ESXServerLicenseKey		License key of ESX server.
ServerProfileTemplate	AS1000_VMware_template_BFS	Server Profile Template Name.
WorkloadBurstSize	1024000	Burst size for Workload Network.
WorkloadAverageBangwidth	1024000	Average Bandwidth for Workload Net...
WorkloadPeakBandwidth	1024000	Peak Bandwidth for Workload Network.
BootType	ISO	Boot Media ISO or PXE.
ASMServerIPAddress	172.28.10.171	ASM Appliance IP Address.
☐ 📁 ServerMigration		
SourceServerServiceTag		Service Tag of the source server
TargetServerServiceTag		Service tag of target server
☐ 📁 Storage		
GoldDatastoreVolumeName		Gold volume where Baseline images a...
DatastoreVolumeSize	1024	Volume size in GB
BottomDataStoreName	Datastore1	Second datastore to be created in Cl...
TopDataStoreName	Datastore2	fdfdfFirst datastore to be created in ...
☐ 📁 vCenter		
vCenterFolderName		Folder name where ESX host to be ad...
vCenterDatacenter	AS1000Test	Datacenter name where ESX host to ...
vCenterIPAddress	172.28.10.6	vCenter IP Address.
vCenterClusterName	AS1000ClusterTest	Cluster name where ESX host to be a...

(Left panel tabs: Template, **Global Parameters**, Provisioning, Attachments, History)

NOTE: Update the **ServerProfileTemplate** name in the global parameter list with the template name specified in the earlier step.

Scheduling the template

Before scheduling the AS1000/AS800/AS200 ESXi boot from SAN template, update the server object count based on the requirements. The server object count determines how many servers will be deployed in the cluster. The server object count should always be two or greater.

Setting the server object count

1. Open the AS1000/AS800/AS200 ESXi boot from SAN template.

2. In the **Resource** tab, update the **Object Count** to the required value (should be two or greater).

3. Save the template.

Updating environment variable artifacts in the global parameters

The following global parameters should have their values updated to correspond to the correct IP addresses, and unique VCenter Cluster and VCenter Data Center names for the customer's environment:

- ASM Server IP Address

- VCenter IP Address

- VCenter Cluster Name

- VCenter DataCenter

The orchestration embedded within the template creates the boot LUN for each server and maps it before initiating the ESXi installation.

Server migration using Active System Manager

With the existing limitation of server profile/template where the FC Identities (WWPN and WWNN) are not configured on the QLogic FC cards, the following procedure needs to be used for server replacement:

1. Add a new Dell Server resource type to the Running session.

Figure 6. Add a Dell Server
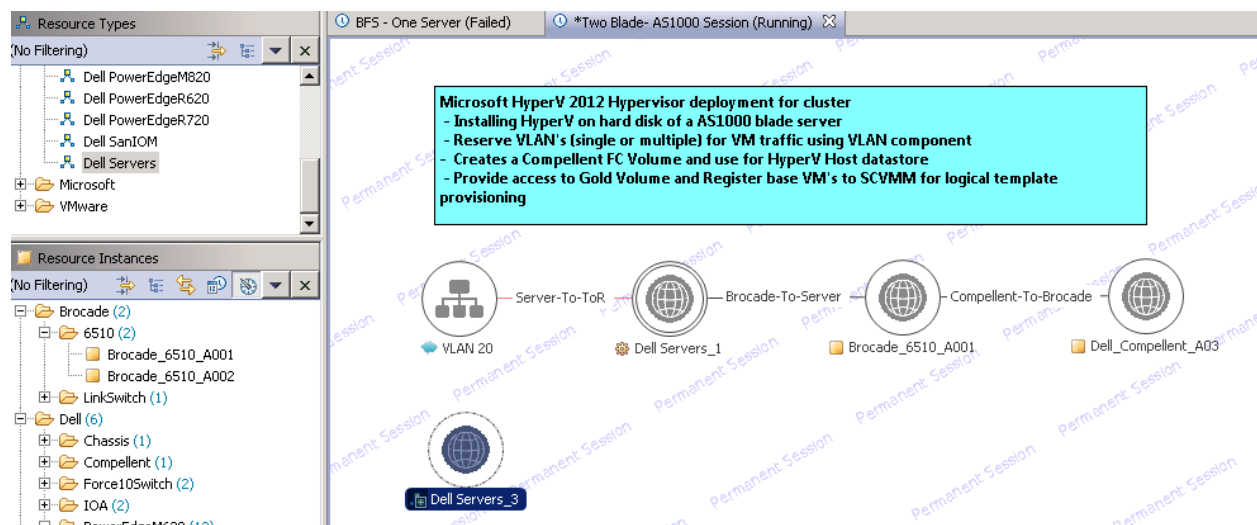
2. Provide Property based scheduling (PBS) in case a specific server is required for the replacement. To providing the PBS values:

   a. Select the server.

b. Go to **Properties** → **Inventory** tab.

c. Select the **assettag** and in the value section select [CTL+SPACE] and select the appropriate server.

If PBS is not provided, then Active System Manager will select any available server from the free pool.

Figure 7.   Inventory
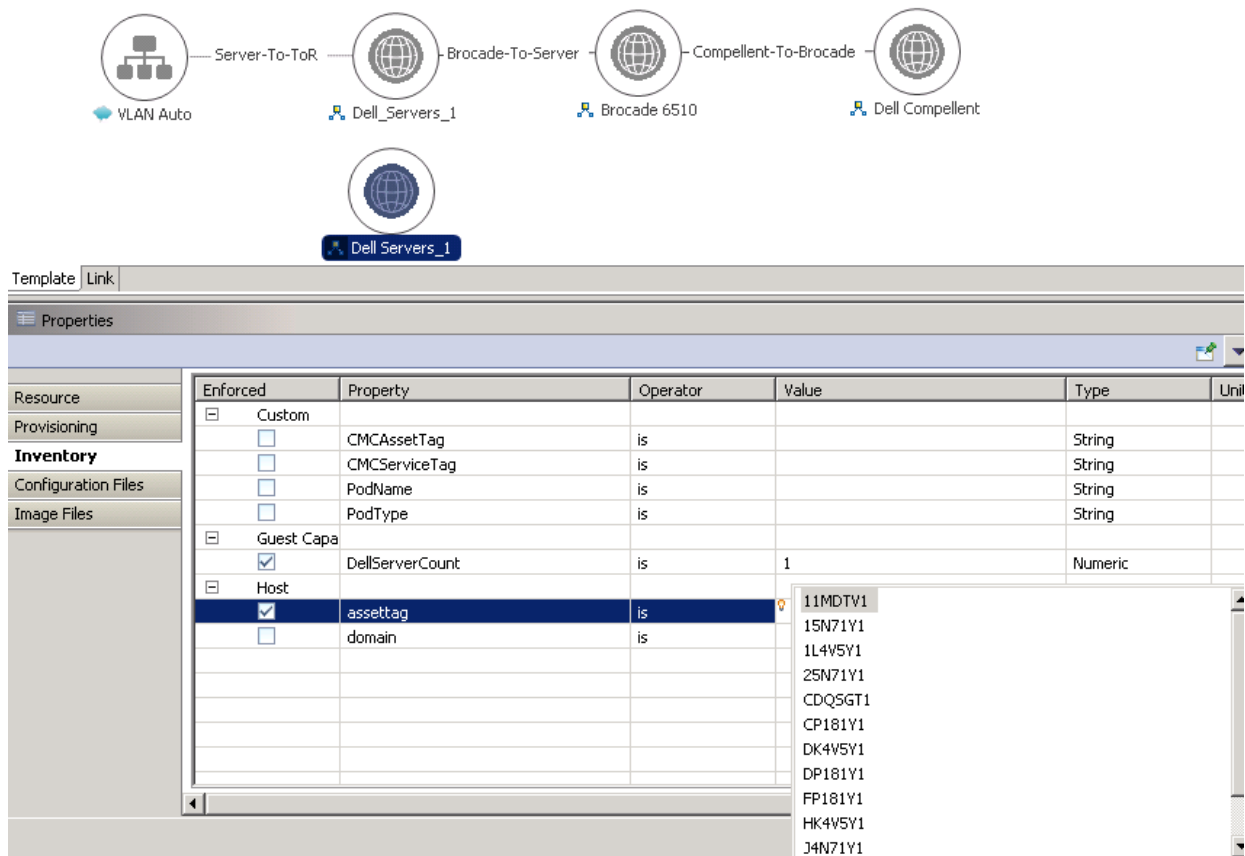
3. Update the value of the two new global parameters:

- **SourceServerServiceTag** – Service Tag of the server that needs to be replaced/removed.

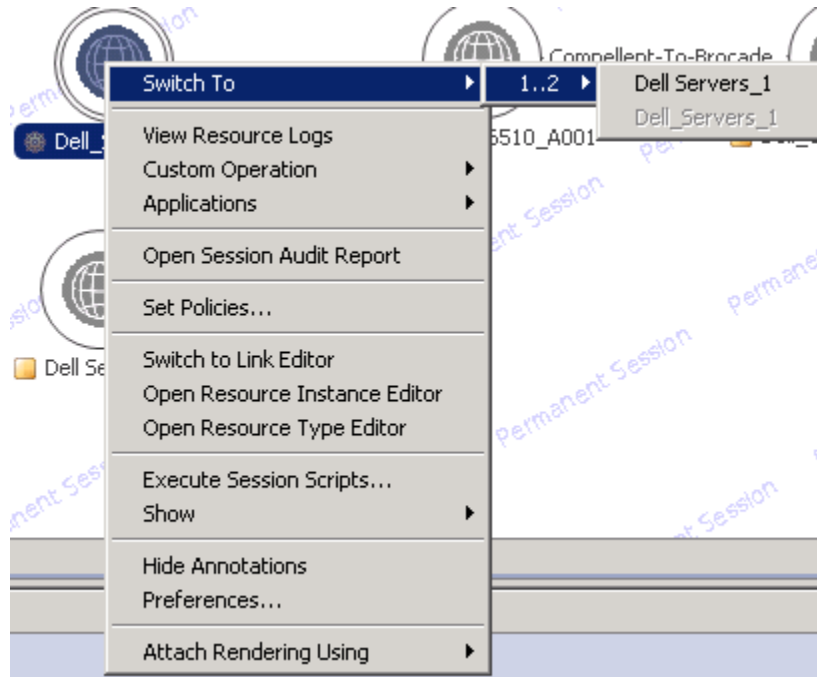- **TargetServerServiceTag** – Service Tag of the server that is newly added to the session.

Figure 8.   Added global parameters

Note: The value of the source and target service tag needs to be provided correctly in the session global parameters before executing the orchestration. The values must be from the same session otherwise it may impact other sessions and infrastructures too.
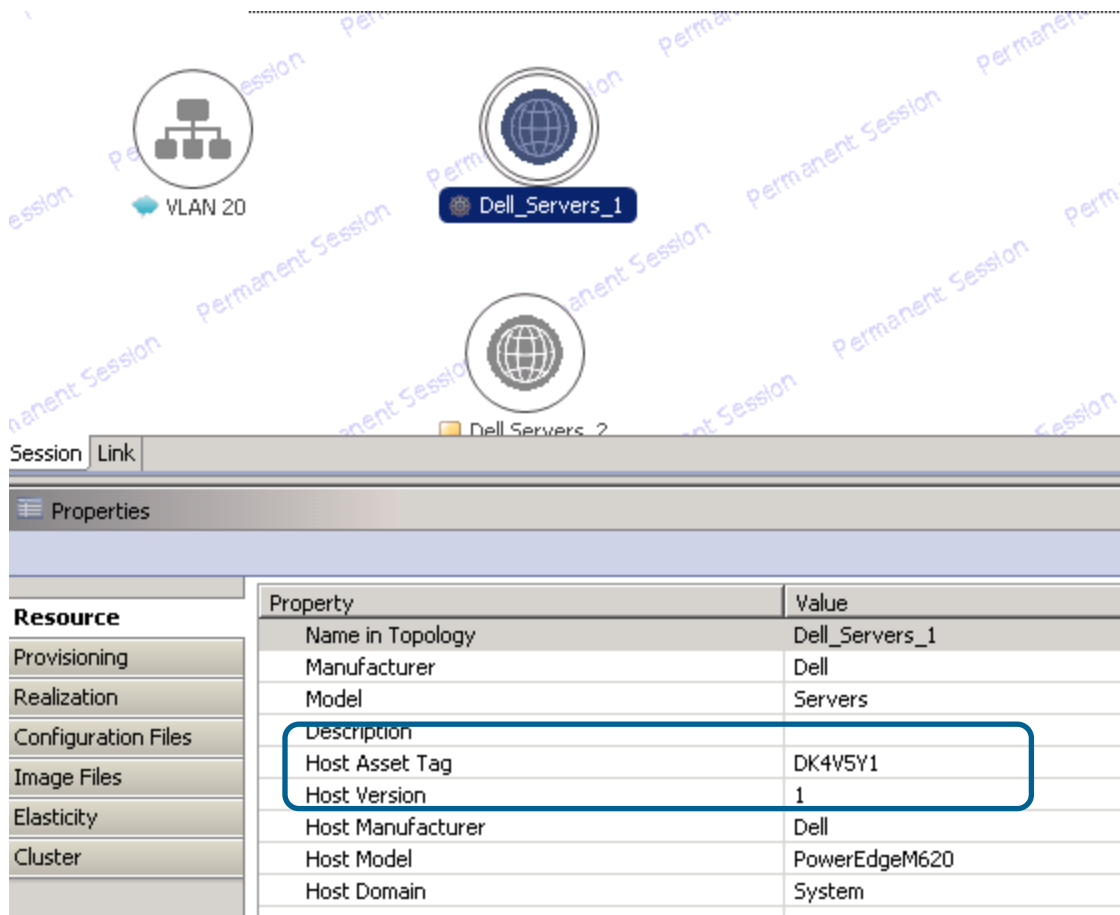
a. To get the value of the source server's service tag, in the session, select the server that needs to be replaced.

Figure 9.   Switch to source server

b. Select the server and get value of the service tag from the **Host Asset Tag** section in the **Properties** view.

Figure 10.   Source server Properties view

4. To get the value of the target server's service tag, select the server and get value of the service tag from the **Host Asset Tag** section in the **Properties** view.

Figure 11.   Target server Properties view
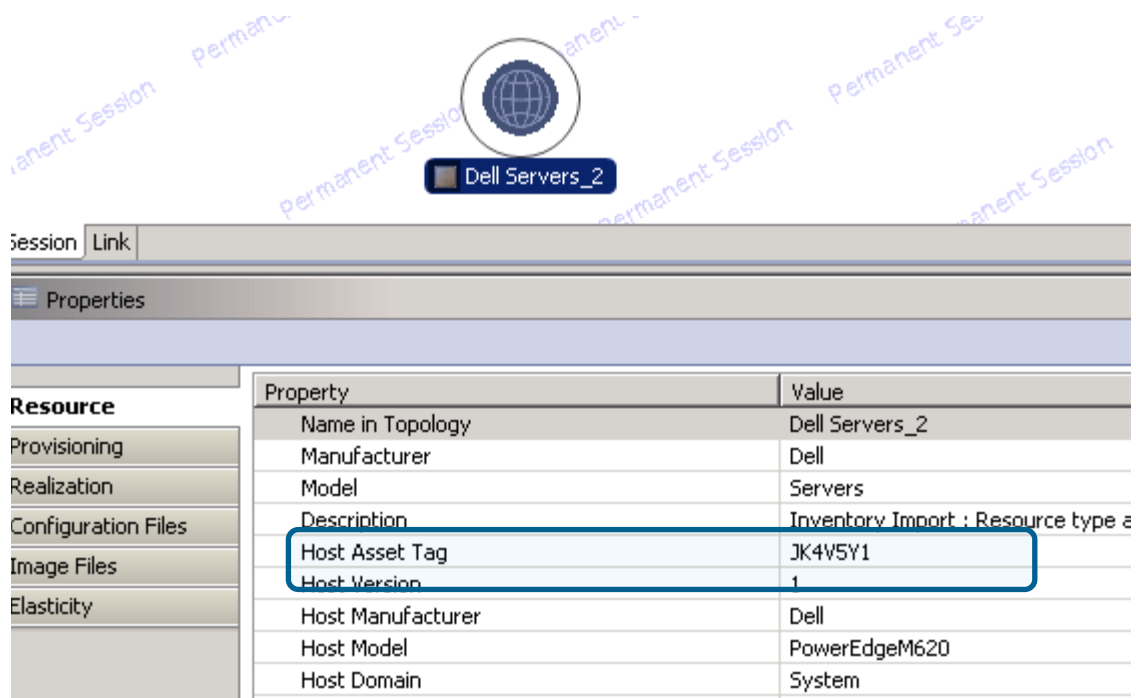
5.   Save the session and execute the orchestration **Server Migration**.

This orchestration will detach the profile from the source server and apply it to the target server. All required configuration values on the Brocade switch and Compellent storage will also be moved.

Technical Documentation

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

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

- Active System Manager 7.1 User Guide
- Active System Manager 7.1 Web Interface User Guide
- Active System Manager Solution Guide Active System 1000 for VMware
- Active System 1000 Spec Sheet
- Active System 1000 VMware ESX 5.x Reference Architecture
- Active System Manager Solution Guide Active System 800 for VMware
- Active System 800 Spec Sheet
- Active System 800 VMware ESX 5.x Reference Architecture
- Active System Manager Solution Guide Active System 200 for VMware
- Active System 200 Spec Sheet
- Active System 200 VMware ESX 5.x Reference Architecture

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

1. Navigate to www.dell.com/support/manuals, click Choose from a list of all Dell products and click Continue.

2. Click **Software and Security → Enterprise System Management → Active System Manager → Dell Active System Manager Version 7.1**.