

Microsoft | Hyper-V Cloud

HYPER-V CLOUD DEPLOYMENT GUIDES

MODULE 2: DEPLOYMENT

The Hyper-V Cloud Deployment Guides from Microsoft can help IT Pros by:

- *Accelerating deployment by providing best practices for planning and delivering a Private Cloud solution based on Microsoft Virtualization technologies.*
- *Reducing training costs by providing methodologies for delivering Server Virtualization scenarios.*
- *Lowering risk by providing real-world examples of problems and solutions encountered by Microsoft architects and consultants.*

INTRODUCTION

The Hyper-V Cloud Deployment Guides outline the installation and configuration considerations that must be taken into account when implementing a private cloud infrastructure. For each component there will be references to additional resources for installing and configuring the products discussed.

This guide outlines the primary components of the infrastructure, provides the steps for installation and offers guidance on the initial configuration of the components, including **Microsoft Windows Server® 2008 R2 operating system with Hyper-V™ virtualization technologies, System Center Virtual Machine Manager 2008 R2 and System Center Virtual Machine Manager Self Service Portal 2.0.**

This Deployment Guide is one of five modules that are a part of the Hyper-V Cloud Deployment Guides that are based on the framework that Microsoft Consulting Services has leveraged to deliver Server Virtualization for several years in over 82 countries.

CONTENTS

Microsoft Windows Server ® 2008 R2 with Hyper-V™	5
System Center Virtual Machine Manager 2008 R2	5
SCVMM 2008 R2 Self-Service Portal 2.0	6
Assumptions	8
HOSTS AND HOST GROUPS	8
Adding Hosts	8
Add Windows Domain-Joined Hosts	9
Adding Host Groups	16
Creating Host Groups	16
TEMPLATES AND CLONES	19
Virtual Machine Templates	19
Create a Template from a Source Virtual Disk	20
Create a Template from a Source Virtual Machine	25
Virtual Machine Clones	30
MANAGING HOSTS AND VIRTUAL MACHINES	34
Managing Hyper-V Hosts	35
Creating a Virtual Machine on a Hyper-V Host	37
Create a New Virtual Machine from an Existing Template	37
Create a New Virtual Machine from a New Blank VHD	40
SERVER CONSOLIDATION	41
Physical-to-Virtual (P2V) Conversions	41
Online Conversion	41
Offline Conversion	42
Scenario Topology	43
Requirements on the Source Machine	44

Requirements for the Destination Host Server	47	
Converting a Server to a Virtual Machine	48	
CAPACITY PLANNING		62
Intelligent Placement of Virtual Machines	62	
Automatic Placement	62	
DELEGATED ADMINISTRATION (Role-Based Security)		63
Delegated Administrator Role	64	
Self-Service v1.0 User Role	66	
SYSTEM CENTER VIRTUAL MACHINE MANAGER 2008 LIBRARY		68
Types of Library Resources	68	
Configuring and Managing the Library	71	
PowerShell Scripts and the Library	73	
Stored Virtual Machines	74	
SCVMM 2008 R2 SELF-SERVICE PORTAL v2.0		76
Hardware Requirements	76	
Software Requirements	77	
Installing the Self Service Portal	78	
Configuring the Self Service Portal	82	
Self Service Portal v2.0 Dashboard	88	
ADDITIONAL RESOURCES		92
Microsoft Solution Accelerators	93	
Microsoft.com	94	

OVERVIEW OF COMPONENTS

Microsoft Windows Server® 2008 R2 with Hyper-V™

The host servers are one of the critical components of a dynamic, virtual infrastructure. The host servers, running Windows Server® 2008 R2 with Hyper-V™ technology, provide the foundation for running virtual machine guests and also provide the management interface between the guests and Microsoft® System Center Virtual Machine Manager.

For detailed guidance on how to get started installing and configuring Microsoft Windows Server 2008 R2 Hyper-V please go to:

[http://technet.microsoft.com/en-us/library/cc732470\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/cc732470(WS.10).aspx)

System Center Virtual Machine Manager 2008 R2

The primary tool for managing the virtual infrastructure will be System Center Virtual Machine Manager. System Center Virtual Machine Manager can scale across a wide range of virtual environments, ranging from a single server for smaller environments to a fully distributed enterprise environment that manages hundreds of hosts running thousands of virtual machines

Virtual Machine Manager delivers the following key features:

- Designed for managing virtual machines running on Windows Server® 2008 Hyper-V™ and Microsoft Hyper-V Server.
- Virtualization support for virtual machines running on Microsoft Virtual Server and VMware ESX.
- End-to-end support for consolidating physical servers onto a virtual infrastructure.
- Performance and Resource Optimization (PRO) for dynamic and responsive management of virtual infrastructure (requires System Center Operations Manager).
- Intelligent Placement of virtual workloads on the best-suited physical host servers.
- A complete library to centrally manage all the building blocks of the virtual data center.

For detailed guidance on how to get started installing and configuring System Center Virtual Machine Manager 2008 R2 please go to:

<http://technet.microsoft.com/en-us/systemcenter/vmm/default.aspx>

SCVMM 2008 R2 Self-Service Portal 2.0

Using the Microsoft System Center Virtual Machine Manager Self-Service Portal 2.0, enterprise datacenters can provide infrastructure-as-a-Service to business units within the enterprise. The self-service portal provides a way for groups within an organization to manage their own IT needs while the centralized infrastructure organization manages a pool of physical resources (servers, networks, and related hardware).

The self-service portal has four components:

- **VMSSP website.** A Web-based component that provides a user interface to the self-service portal. Through the VMMSSP website, infrastructure administrators can perform various tasks such as pooling infrastructure assets in the self-service portal, extending virtual machine actions, creating business unit and infrastructure requests, validating and approving requests, and provisioning virtual machines (using the self-service virtual machine provisioning feature). Administrators can also use the VMMSSP website to view information related to these tasks.
- **VMMSSP database.** A SQL Server database that stores information about configured assets, information related to business units and requests, and information about what has been provisioned to various business units. The database also stores the XML that encodes default and customized virtual machine actions and other information related to the configuration of the self-service portal.
- **VMMSSP server.** A Windows service that runs default and customized virtual machine actions that the user requests through the VMMSSP website.
- **VMMSSP Reporting Dashboard.** The Dashboard uses Windows SharePoint Services 3.0 SP2 web parts to provide both 'out-of-box' and custom reports.

Business units that enroll in the self-service portal system can use the portal to do the following:

- **Use standardized forms to request new infrastructures or changes to infrastructure components.** Each business unit can submit

requests to the infrastructure administrator. The standardized forms ensure that the infrastructure administrator has all of the information needed to fulfill the requests without needing to repeatedly contact the business unit for details.

- **Create and manage virtual machines.** The VMMSSP website includes self-service provisioning forms that business units can use to create virtual machines. When a business unit submits a request to create virtual machines, the self-service portal starts an automated provisioning process that creates the virtual machines more quickly and efficiently than a manual process.
- **Delegate the details of virtual machine management.** Each business unit can designate its own administrators, advanced operators, and users.

Infrastructure administrators can use the self-service portal to do the following:

- **Extend the default virtual machine actions to fit your datacenter.** You can work with technology partners and hardware vendors to modify the standard “actions” that the self-service portal uses to create and manage virtual machines. In this way, you can extend the self-service portal to use specific storage area networks (SANs), load balancers, and so forth.
- **Simplify the process of enrolling business units and defining their needs.** The self-service portal collects information about a business unit and about the resources they want to set up.
- **Simplify the process of validating and provisioning resources for business units.** Datacenter administrators can use the self-service portal to assign resources based on business unit requests.
- **Control the change process for these resources.** Changes to resources follow a request-and-approve life cycle, and the requests remain on record in the database.
- **Use the Dashboard to view reports.** The Administrator can view ‘out-of-box’ reports to gauge relative resource consumption within the SSP environment. The Administrator is also able to create custom dashboards using the SharePoint Server Dashboard Configuration web part.

Assumptions

System Center Virtual Machine Manager 2008 R2 makes a number of features and functionality possible. However, this document is scoped to only include using System Center Virtual Machine Manager 2008 R2 with stand-alone Hyper-V hosts as a basis for managing the automated provisioning of the virtual machines on these hosts with the Self-Service Portal v2.0. The document further includes server consolidation using physical-to-virtual and virtual-to-virtual methods.

Microsoft System Center Virtual Machine Manager is designed to take advantage of the latest features and benefits found in the Windows® Server and Microsoft® System Center Family. With this in mind System Center Virtual Machine Manager will only install on Windows Server® 2008 or Windows Server® 2008 R2 and will be installed using Microsoft® SQL Server® 2008 to accommodate the SSP 2.0 requirements.

HOSTS AND HOST GROUPS

Adding Hosts

You can use the Add Hosts Wizard in the Microsoft System Center Virtual Machine Manager 2008 Administrator Console to add one or more of the following types of virtual machine hosts to Virtual Machine Manager Virtual Machine Manager:

- Windows-based hosts that are located in an Active Directory® Domain Services (Active Directory) domain
- Windows-based hosts that are located on a perimeter network
- VMware ESX Server (requires VMware Virtual Center)

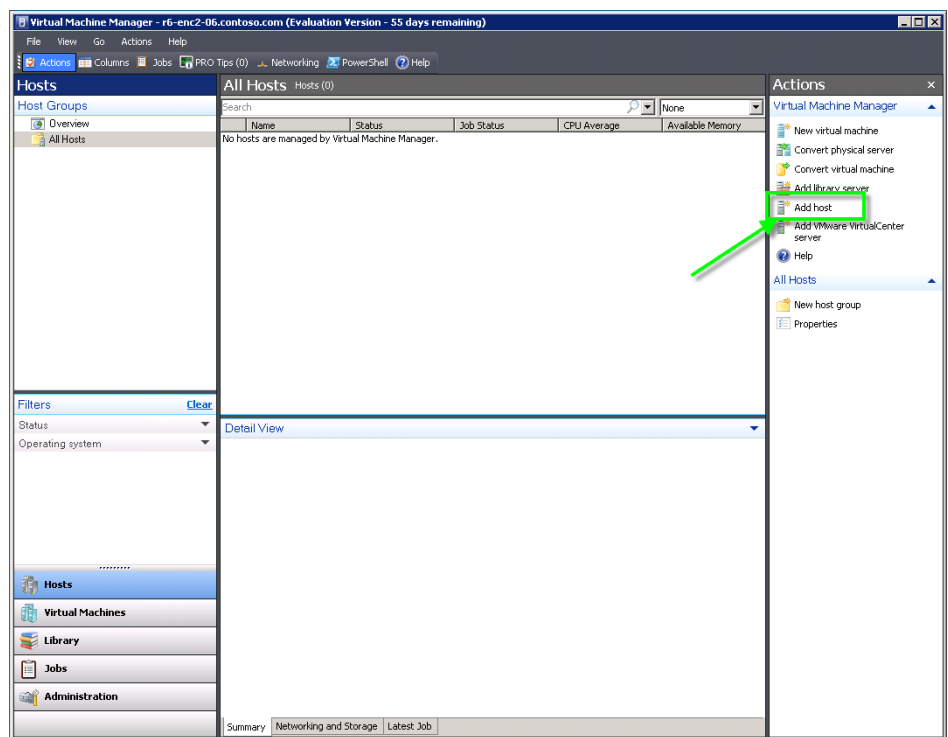
NOTE: For the purposes of this document, only Windows-based, domain-joined hosts will be addressed.

Add Windows Domain-Joined Hosts

Use the following procedure to add one or more virtual machine hosts in an Active Directory® Domain Services domain. The domain can be either a trusted domain or a non-trusted domain.

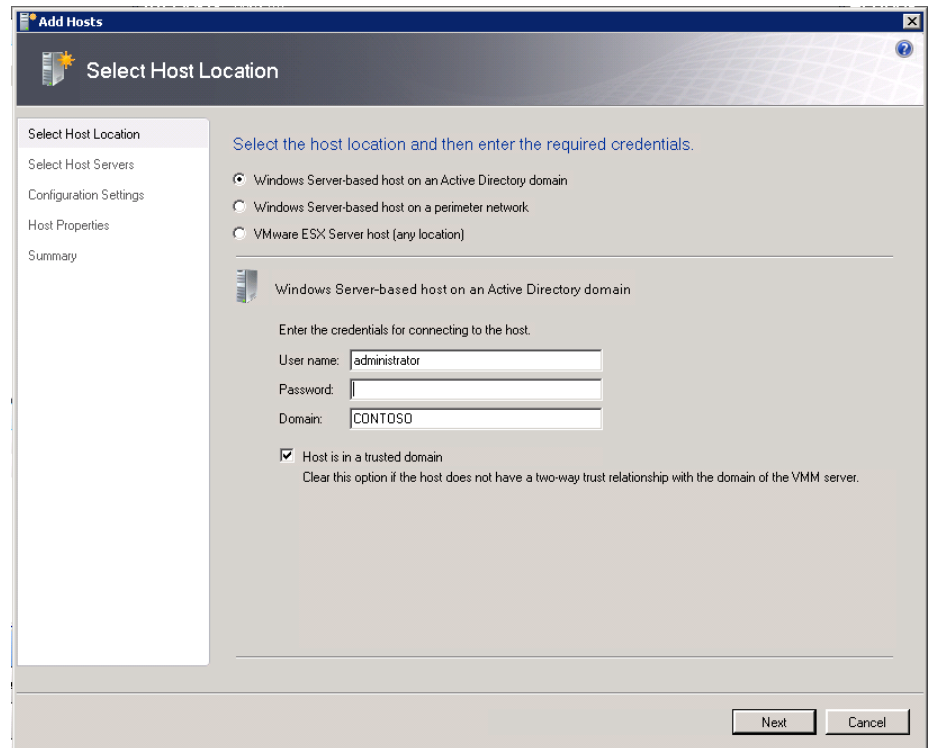
To add virtual machine hosts in a domain:

1. In the Virtual Machine Manager Administrator Console, on the **Actions** pane, click **Add host** to open the Add Hosts Wizard.

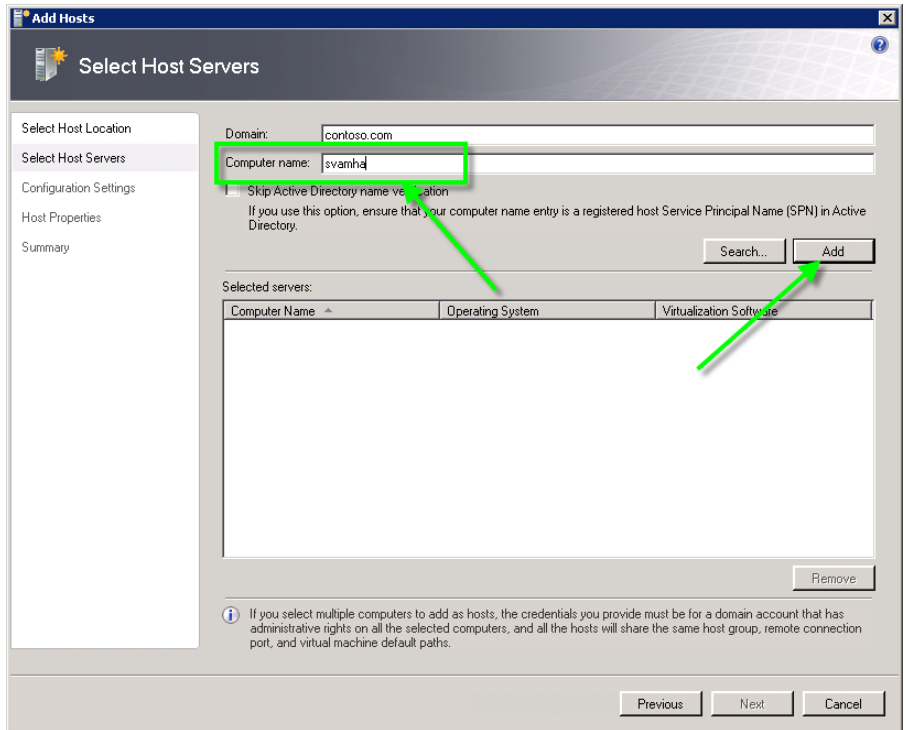


2. On the Select Host Location page, click **Windows Server-based host on an Active Directory domain**, enter the credentials for a domain account with administrative rights on the host, and then click **Next**.

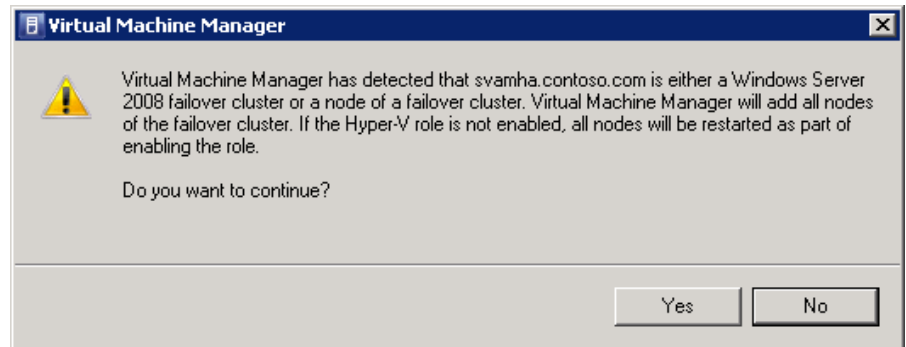
Note: To add multiple hosts at one time, the credentials you provide must be for a domain account that has administrative rights on all the selected hosts.



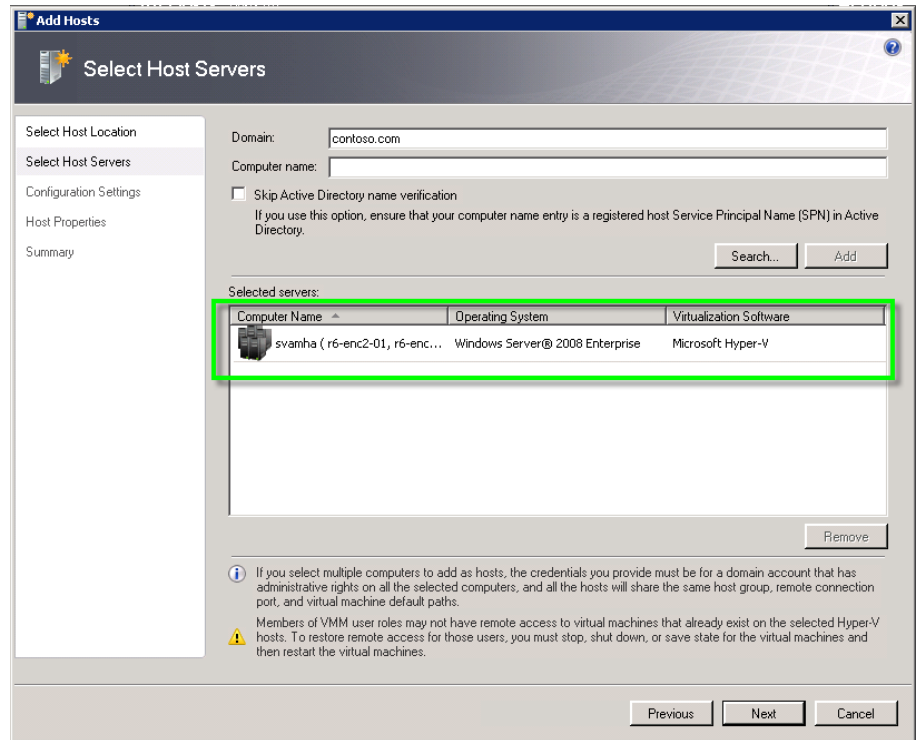
3. On the Select Host Servers page, in the **Host server domain** box, type the fully qualified domain name, and then do one of the following:
 - In the **Host server name** box, type the computer name of a host in the specified domain that you want to add to Virtual Machine Manager, and then click **Add**.
 - Click the **Search** button to open the **Host Computer Search** dialog box and search for hosts. For more information, see How to Search for Hosts in the Help file.
- Note:** If you add multiple hosts at one time, the hosts share the same host group, VMRC access configuration (for hosts running Windows Virtual Server), and virtual machine default paths. After adding the hosts, you can change the properties for individual hosts by modifying the host properties for each. For more information, see How to Modify the Properties of a Host Group in the Help file.



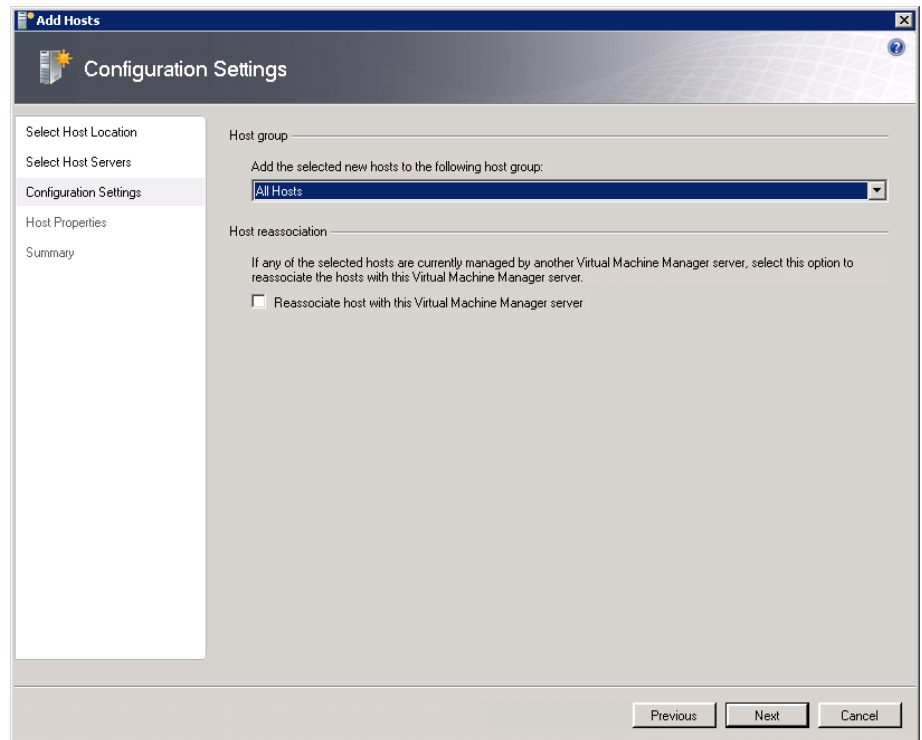
4. On the Virtual Machine Manager cluster detection alert click **Yes**



5. Host clusters added using the cluster name will show up as a single host with all of the nodes listed in brackets.



- On the Configuration Settings page, do the following:
 - In the Host group list, select a host group to contain the hosts or accept the default host group, All Hosts, which is the parent host group of all hosts and host groups.
 - The host group determines host reserves.
 - If one or more of the computers you are adding is a host or a library server that is currently being managed by another Virtual Machine Manager server, select the **Re-associate agent with Virtual Machine Manager Server** check box to associate the Virtual Machine Manager agents on those computers with the current Virtual Machine Manager server.

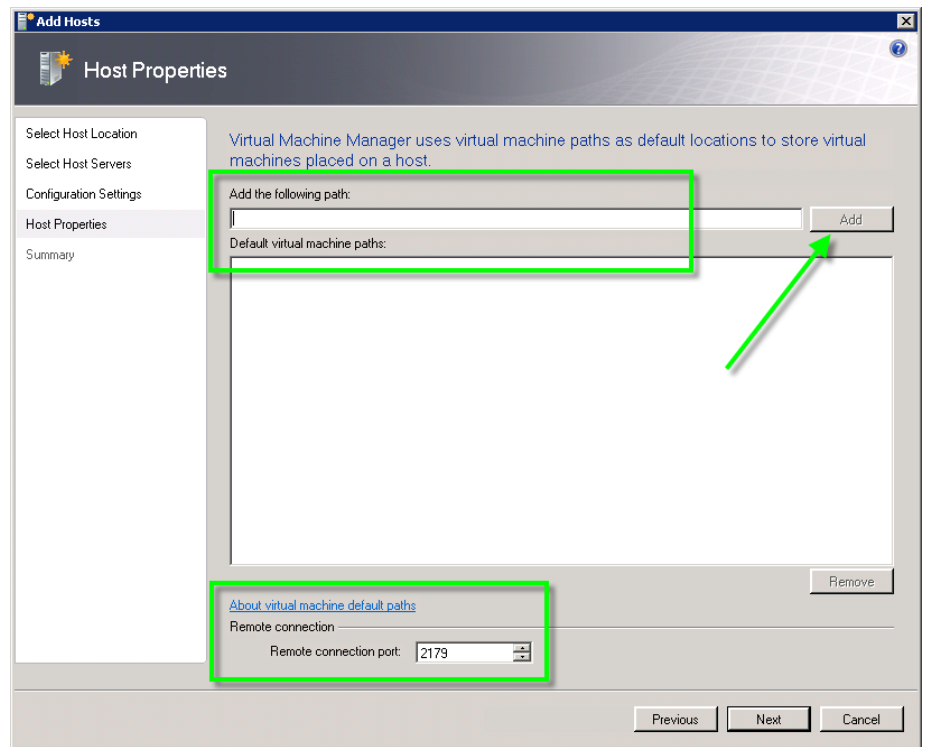


7. On the Host Properties page, do the following:

- In the Default path area, specify one or more virtual machine default paths for storing virtual machines deployed on the hosts.
Note: The Add Host Wizard does not automatically create folders on the hosts for the default paths that you specify. You must manually create the folders before you can store virtual machines on the host using the default path.
- In the **Remote connection** area, ensure the **Enable remote connections to virtual machines on these hosts** check box is enabled and uses port 2179 by default. If you would like to disable remote connections, clear the check box. If you would like to use a different port, in the **Remote connection port** box, enter any value from 1–65535. These settings apply only to hosts running Virtual Server.

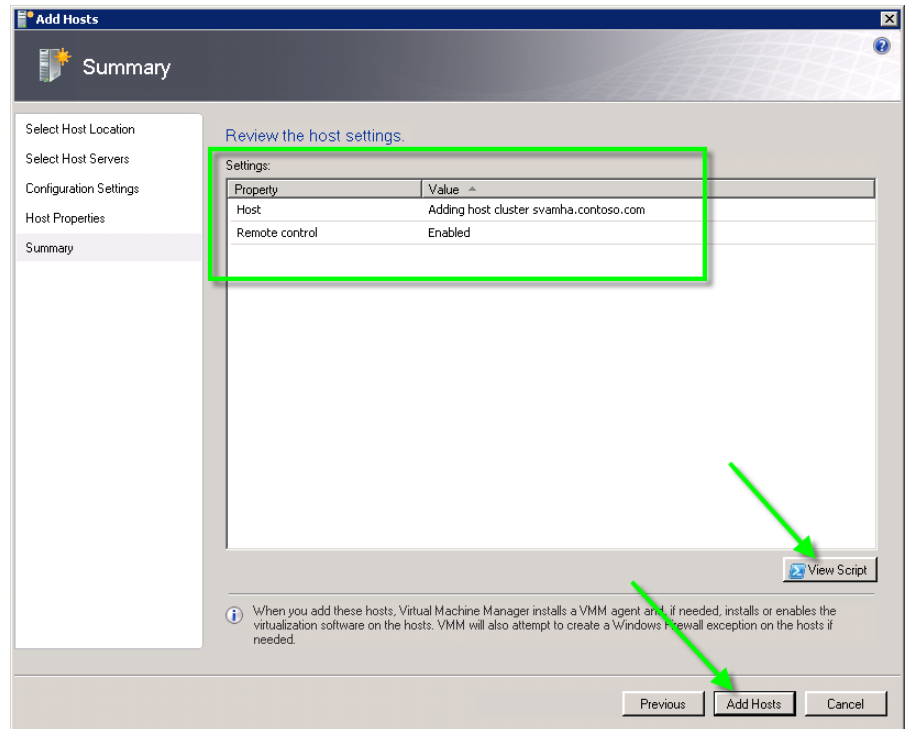
Important: You cannot enable security for remote connections from within the Add Hosts Wizard. You can enable security only by modifying the host properties in the Virtual Machine Manager

Administrator Console after the host has been added. For more information about enabling security for remote connections, see [How to Configure Remote Access to Virtual Machines Hosted by Virtual Server](#).

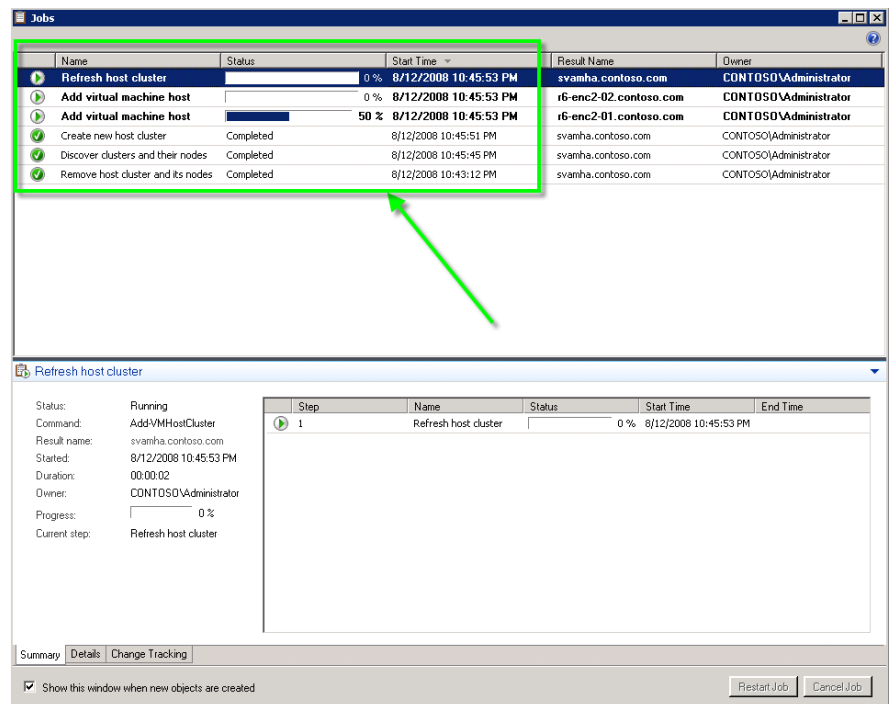


8. On the Summary page, click **Add Hosts**. (You may also view and save the PowerShell script that is generated for the process by clicking **View Script**).

Note: When you add a Windows-based host, Virtual Machine Manager automatically installs or upgrades the appropriate version of Virtual Server or Hyper-V virtualization software.



9. The status of each job related to adding the host or hosts is listed in the Jobs section of System Center Virtual Machine Manager.



Adding Host Groups

You can create custom groups of virtual machine hosts, known as host groups, for ease of monitoring and management of hosts and virtual machines. Host groups are represented by folders in the navigation pane of Hosts view and Virtual Machines view. Host groups are created by using the *New host group* action in both of those views.

Host Group Functions

The most basic function of a host group is as a container for grouping hosts and the virtual machines on those hosts in a meaningful way in Hosts view and Virtual Machines view. You can also use host groups to set aside resources on the hosts for the use of the host operating system and to enable automatic placement of virtual machines on the best host in a group of hosts.

Host Group Hierarchy

Host groups are hierarchical. You can create a child host group of an existing host group for general management purposes, to override host reserves inherited from a parent host group, or to amend or add to the virtual machine permissions inherited from the self-service policies of a parent host group.

Host Group Inheritance

Child host groups can inherit host reserve settings from their parent host groups. When you change the host reserves for a parent host group, you can choose whether or not to cascade the host reserve settings to hosts in all of its child host groups. If you choose to cascade the host reserve settings, all of the host reserve settings for the parent host group overwrite all previous settings for all hosts in all of the child host groups of the parent host group.

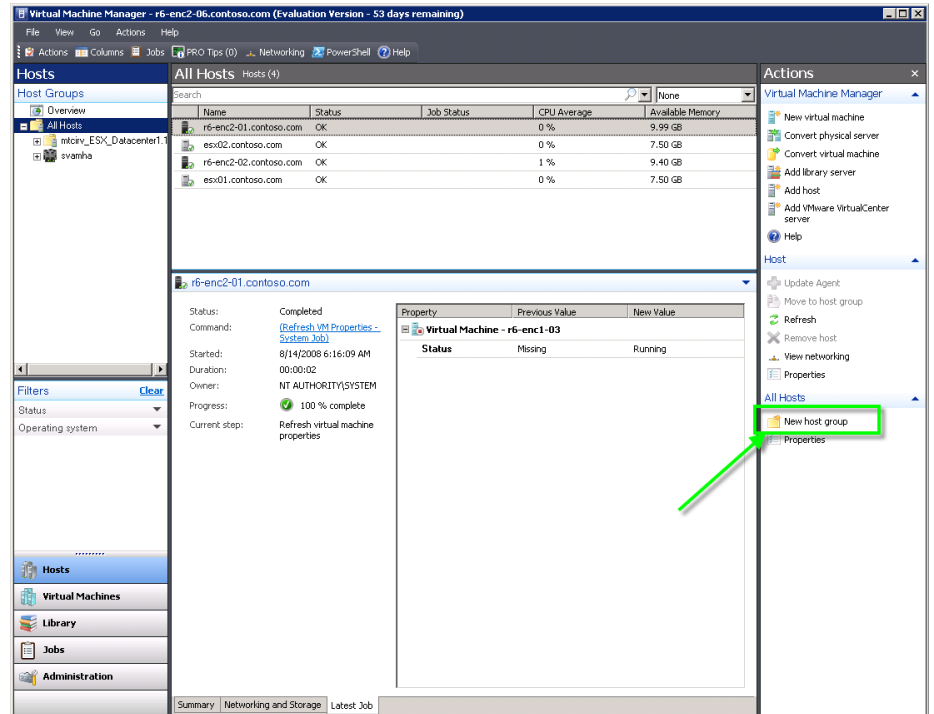
Creating Host Groups

To create a host group:

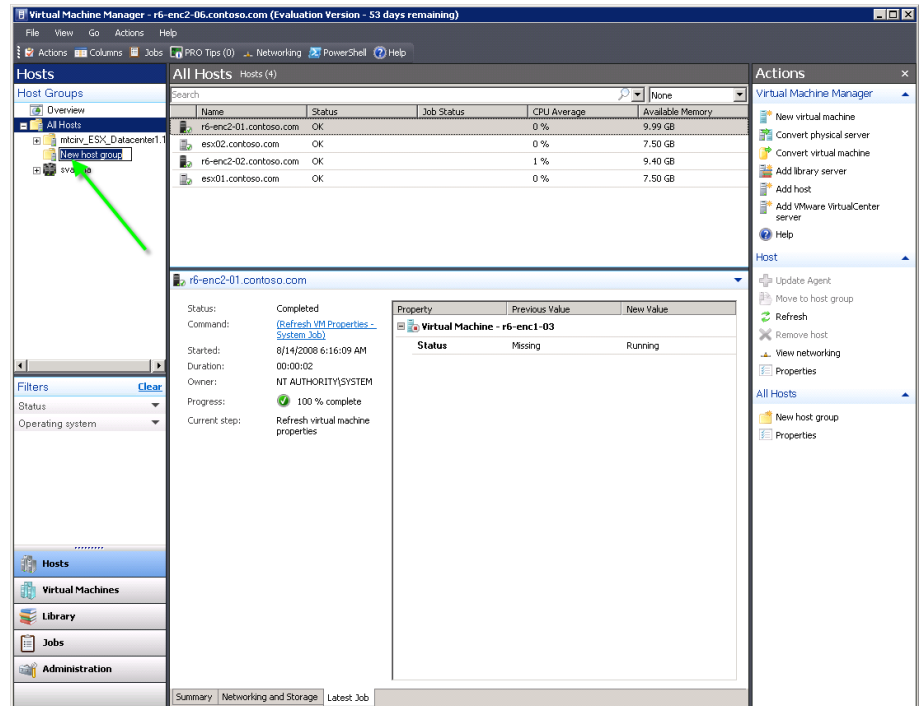
1. In Hosts view, navigate to the host group that will be the parent of

the new host group in the navigation pane. To add the host group as a child host group of the root host group, click **All Hosts**.

2. In the Actions pane, with the parent host group selected, click **New Host Group**.

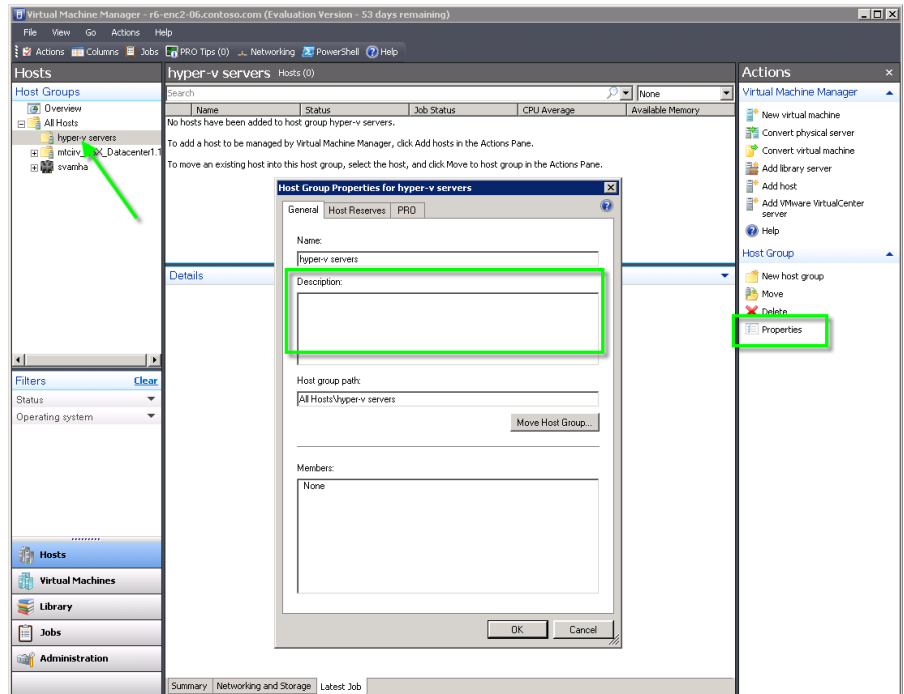


3. A new folder, called **New host group**, is added to the navigation pane. The folder name is selected so you can rename the host group.
4. To name the host group, type the new name at the selection, and press **ENTER**.



Note: Host group names have a 64-character maximum and cannot contain the following characters: \ / : * ? " < > \. "

- To enter a description of the host group or to modify the resources reserved for the host operating system, click the new host group, and then under All Hosts, click **Properties**. For more information, see How to Modify the Properties of a Host Group in the Help file.



- To add hosts to the host group, drag and drop the hosts to the host group in the main console or use the Move host group action.

NOTE: Host groups can be used as a technique for reserving RAM amounts when used in connection with the Self Service Portal v2.0.

TEMPLATES AND CLONES

Virtual Machine Templates

A virtual machine template is a library resource consisting of a guest operating system profile, a hardware profile, and one or more disks (VHDs for Virtual Server, VHDs or pass-through for Hyper-V, or VMDKs or pass-through (RDM) for VMware ESX). You can use templates to create new virtual machines repeatedly with standardized hardware and software settings. Self-service users must use assigned templates to create their virtual machines.

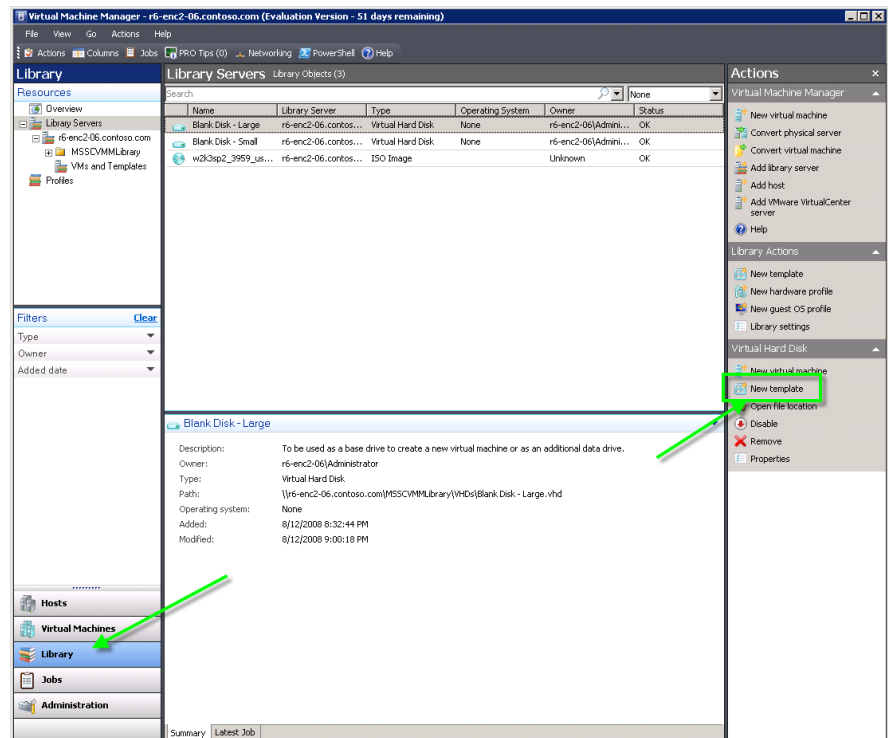
A template can be created from a source virtual disk or a source virtual

machine

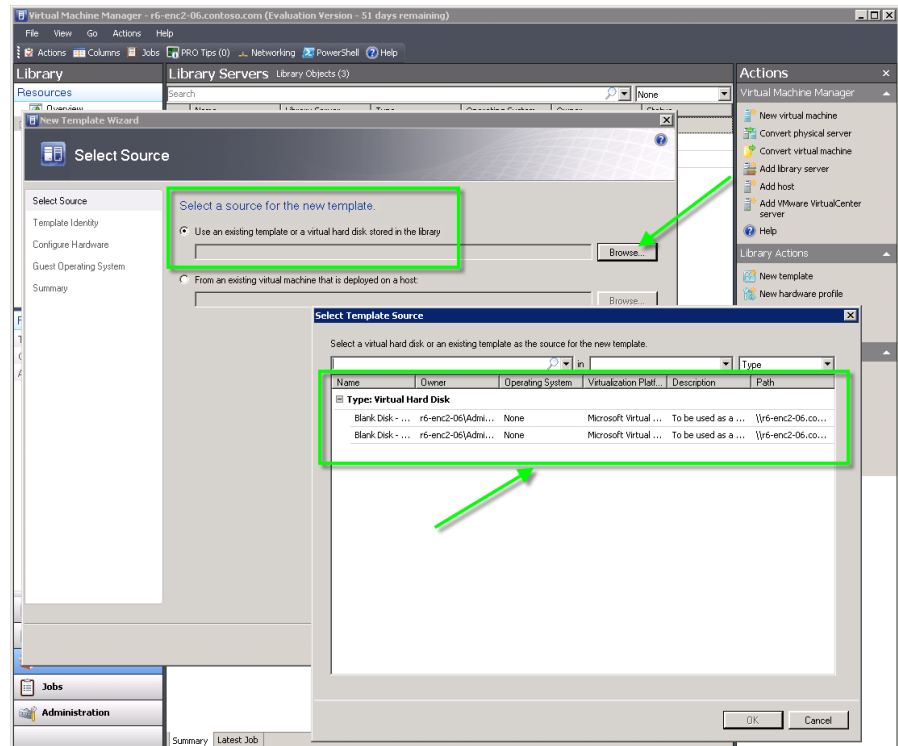
Create a Template from a Source Virtual Disk

The following procedure describes how to create a virtual machine template from an existing virtual disk:

1. Prepare the source virtual disk, which has the operating system installed, for duplication by running Sysprep on the .vhd file to remove computer identity information from the disk.
2. Add the source .vhd file to the library. For more information on adding files to the library, see "The Library" topic of this document or refer to the System Center Virtual Machine Manager help files.
3. In Library view, in the Actions pane, click **New Template**.

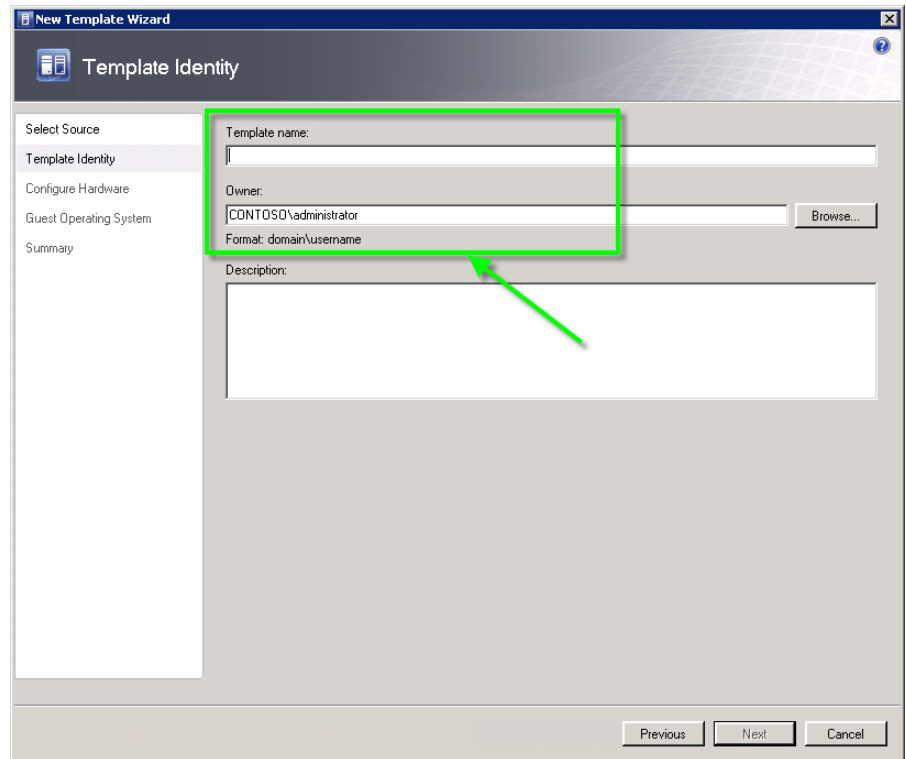


4. Click **Use an existing template or virtual hard disk stored in the library**, and then click **Select**.
5. In the **Select Template Source** dialog box, select the VHD that **you want** to use, click **OK**, and then click **Next** back on the Select Source screen.



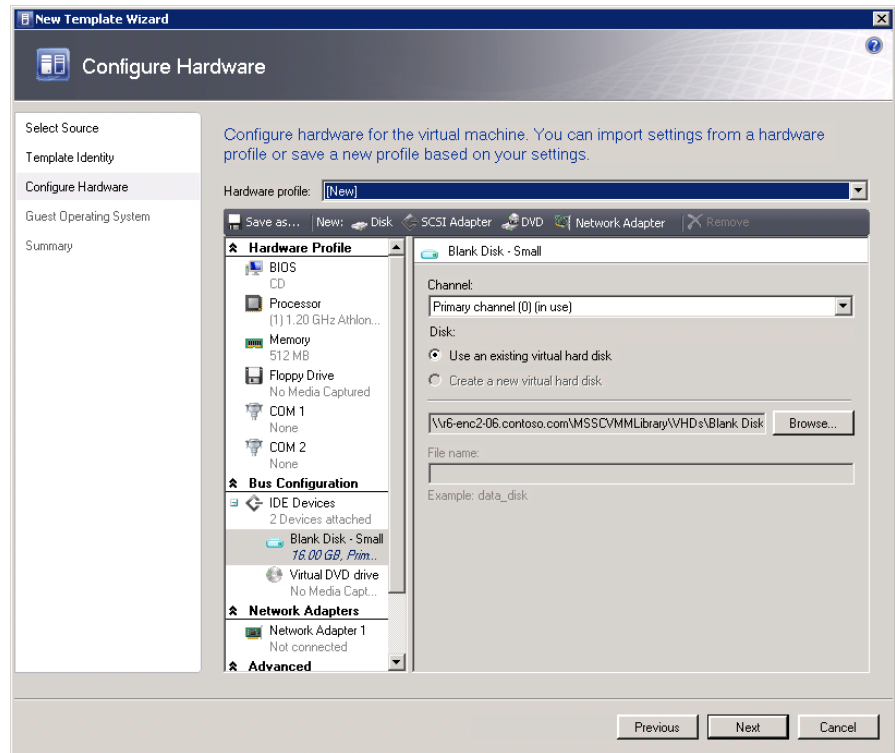
6. Enter a template name and description, and specify the owner of the template. The template owner must have an Active Directory domain account. All Virtual Machine Manager Administrators will be able to use the template.

Note: If you were to use the template in virtual machine self-service, you would need to specify an owner. Only the template owner -- whether an individual self-service user or a group assigned to the self-service policy -- would be able to create, see, and manage virtual machines created with the template.



7. Customize the following hardware settings as needed, and then click **Next**:
 - a. Specify the BIOS boot order for the VM (applicable to Hyper-V hosted guests only).
 - b. Specify the processor requirements of a virtual machine on a new host.
 - c. Specify the amount of memory to allocate on a host for a new virtual machine.
 - d. Configure the virtual floppy drive to read a physical floppy disk on the host or to read a virtual floppy disk file stored in the library.
 - e. Add a virtual DVD or CD drive to an IDE bus.
 - f. Add a virtual hard disk to an IDE device or a SCSI adapter.
 - g. Configure one or more virtual network adapters for a virtual machine.
 - h. Configure how CPU resources are allocated and whether virtual machines are highly available.
 - i. Specify if the virtual machines created from this template

will be highly available (if left blank you can still make new VMs from this template highly available by selecting a clustered host as the destination).



8. Configure identity information, administrative credentials, and user access to computers based on the template.

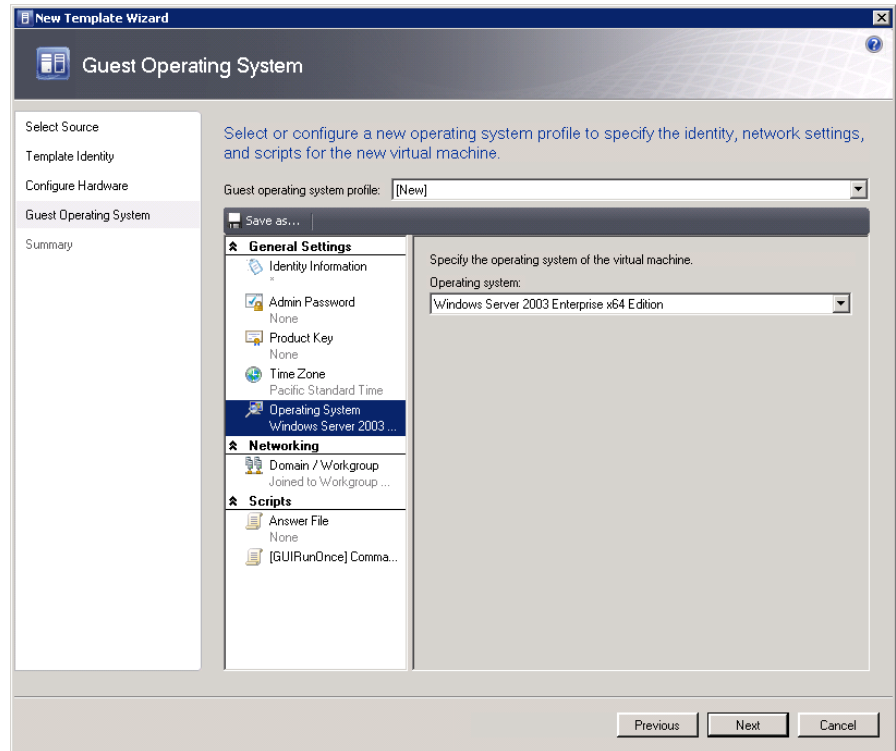
I. General Settings: Enter the following settings:

- i. Identity information - Specify a computer name. To randomly generate a computer name for virtual machines based on the template, enter an asterisk in the Computer name field.
- ii. Admin Password - Specify the local Administrator password for the virtual machine. If virtual machines created with this template will not be in a domain, users must use this password to gain access to the local computer.

Note: To prompt for a password when the user creates a virtual machine with the template, enter an

asterisk (*) in the Admin Password field. If you leave the field blank, virtual machine creation will fail.

- iii. Product key - If you want the template to provide a product key for virtual machines, enter a product key in the Product key field. To require users to provide their own product key when they create a virtual machine, leave the field blank.
 - iv. Time Zone – Specify the default time zone of the virtual machine.
 - v. Operating System – Select the default operating system of the virtual machine.
- II. Networking: Configure settings to determine network access for virtual machines:
- i. If you want virtual machines that are created from this template to be in a domain, click **Domain**. Then specify a user account that will be used to add the computer to the domain at first logon. (This option is only available if you configured at least one virtual network on the Configure Hardware page.)
 - ii. If the virtual machines that are created from this template will not be in a domain, click **Workgroup**, and then enter the name of the workgroup.
- III. Scripts: Use the options under Scripts to provide additional settings for Sysprep:
- i. To add settings to those that the wizard will pass to Sysprep, in the Answer file field, specify the Sysprep file to run. The settings in the Sysprep file will be appended to those that the wizard passes.
 - ii. To automate mini-Setup, in the [GUIRunOnce] Commands field, enter the commands to run at first logon.



9. Review your settings in the Summary, and then click **Create**.

Create a Template from a Source Virtual Machine

This section describes how to create a template from an existing virtual machine.

Note: Creating a template can destroy the virtual machine that is used as the template's source because Sysprep strips the virtual machine of its computer identity. If you want to continue to use the source virtual machine after creating the template, you must clone the virtual machine before you start. For more information see the section "Clone a Virtual Machine" in this document.

To convert to a template, the virtual machine must meet the following requirements. Confirm the following before creating a template:

- The virtual machine must be managed by Virtual Machine Manager.
- The virtual machine must be deployed on a host. This is required because the wizard runs Sysprep.exe on the running virtual machine, and Virtual Server must be present to run the virtual machine.
- The system partition must be the same as the Windows partition.
- The Administrator password on the virtual hard disk should be blank as part of the Sysprep process. However, the Administrator password for the guest operating system profile does not have to be blank.
- The supported capabilities for some hardware components depend on the virtualization platform.

The following procedure describes how to create a virtual machine template from an existing virtual hard disk and from a virtual machine:

1. In Library view, in the Actions pane, click **New Template**.
2. Click **From an existing virtual machine currently located on a host**, and then click **Browse**.
3. In the Select Library Resource dialog box, select the virtual machine that you want to use, click **OK**, and then back in the Select Source dialog box click **Next**.
4. Enter a template name and description, and specify the owner of the template. The template owner must have an Active Directory domain account. All Virtual Machine Manager Administrators will be able to use the template.
 - a. **Note:** If you were to use the template in virtual machine self-service, you would need to specify an owner. Only the template owner -- whether an individual self-service user or a group assigned to the self-service policy -- would be able to create, see, and manage virtual machines created with the template.
5. Customize the following hardware settings as needed, and then click **Next**:
 - a. Specify the BIOS boot order for the VM (applicable to Hyper-

- V hosted guests only).
- b. Specify the processor requirements of a virtual machine on a new host.
 - c. Specify the amount of memory to allocate on a host for a new virtual machine.
 - d. Configure the virtual floppy drive to read a physical floppy disk on the host or to read a virtual floppy disk file stored in the library.
 - e. Add a virtual DVD or CD drive to an IDE bus.
 - f. Add a virtual hard disk to an IDE device or a SCSI adapter.
 - g. Configure one or more virtual network adapters for a virtual machine.
 - h. Configure how CPU resources are allocated and whether virtual machines are highly available. Specify if the virtual machines created from this template will be highly available (if left blank you can still make new VMs from this template highly available by selected a clustered host as the destination).
6. Configure identity information, administrative credentials, and user access to computers based on the template.
- I. General Settings: Enter the following settings:
 - i. Identity information - Specify a computer name. To randomly generate a computer name for virtual machines based on the template, enter an asterisk in the Computer name field.
 - ii. Admin Password - Specify the local Administrator password for the virtual machine. If virtual machines created with this template will not be in a domain, users must use this password to gain access to the local computer.

Note: To prompt for a password when the user creates a virtual machine with the template, enter an asterisk (*) in the Admin Password field. If you leave the field blank, virtual machine creation will fail.
 - iii. Product key - If you want the template to provide

a product key for virtual machines, enter a product key in the Product key field. To require users to provide their own product key when they create a virtual machine, leave the field blank.

- iv. Time Zone – Specify the default time zone of the virtual machine.
- v. Operating System – Select the default operating system of the virtual machine.

II. Networking: Configure settings to determine network access for virtual machines:

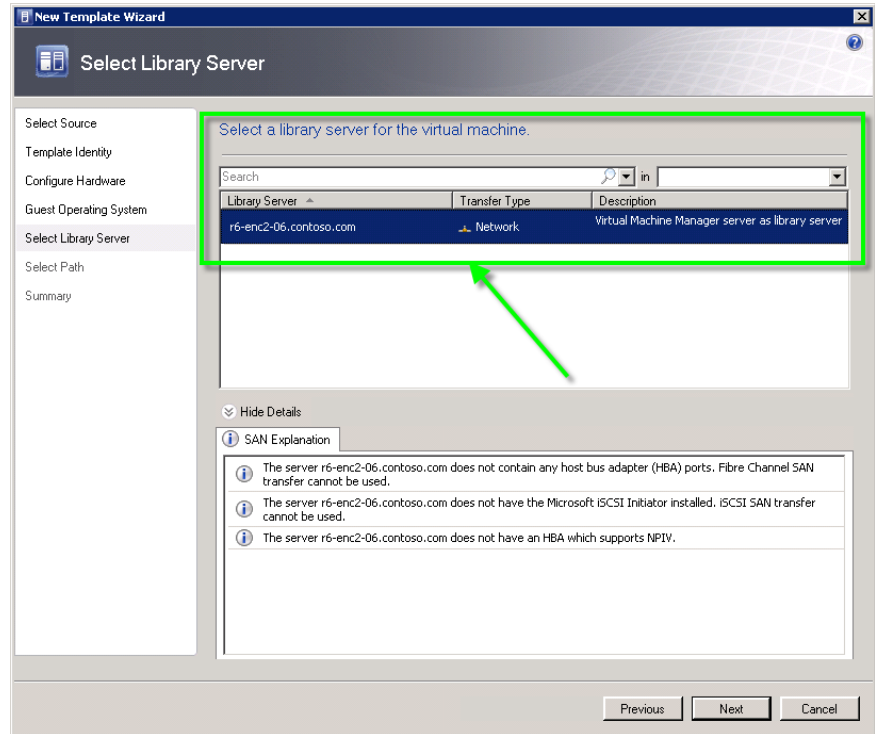
- i. If you want virtual machines that are created from this template to be in a domain, click **Domain**. Then specify a user account that will be used to add the computer to the domain at first logon. (This option is only available if you configured at least one virtual network on the Configure Hardware page.)
- ii. If the virtual machines that are created from this template will not be in a domain, click **Workgroup**, and then enter the name of the workgroup.

III. Scripts: Use the options under Scripts to provide additional settings for Sysprep:

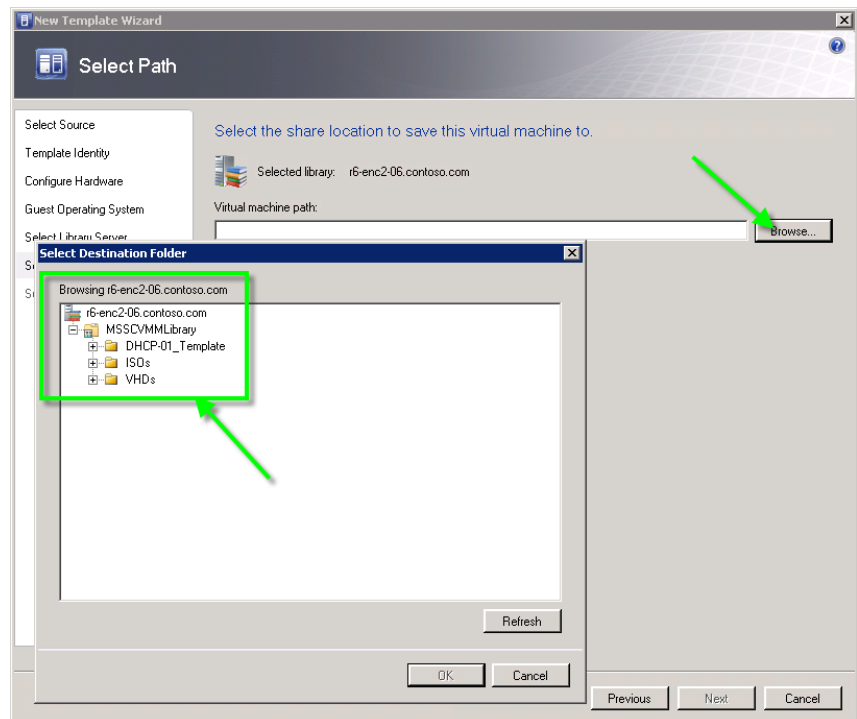
- i. To add settings to those that the wizard will pass to Sysprep, in the Answer file field, specify the Sysprep file to run. The settings in the Sysprep file will be appended to those that the wizard passes.
- ii. To automate mini-Setup, in the [GUIRunOnce] Commands field, enter the commands to run at first logon.

Note: When used in connection with the Self-Service Portal 2.0, GUIRunOnce commands supplied from the SCVMM template are overwritten. To add GUIRunOnce commands in SSP 2.0, the ActionXML 'CreateVM' script must be modified.

7. Select the appropriate Library server, and then click **Next**



8. Select the **Browse** button for the Save Path, select the destination folder for the new template, click **OK**, and then click **Next** back on the Select Path dialog box.



9. Review the Summary, and then click **Create**.

Virtual Machine Clones

This topic describes how to create a new virtual machine that is based on an existing virtual machine. Cloning allows you to create new virtual machines and backups of existing virtual machines. You can clone a virtual machine that is stored in the library or a deployed virtual machine that is stopped.

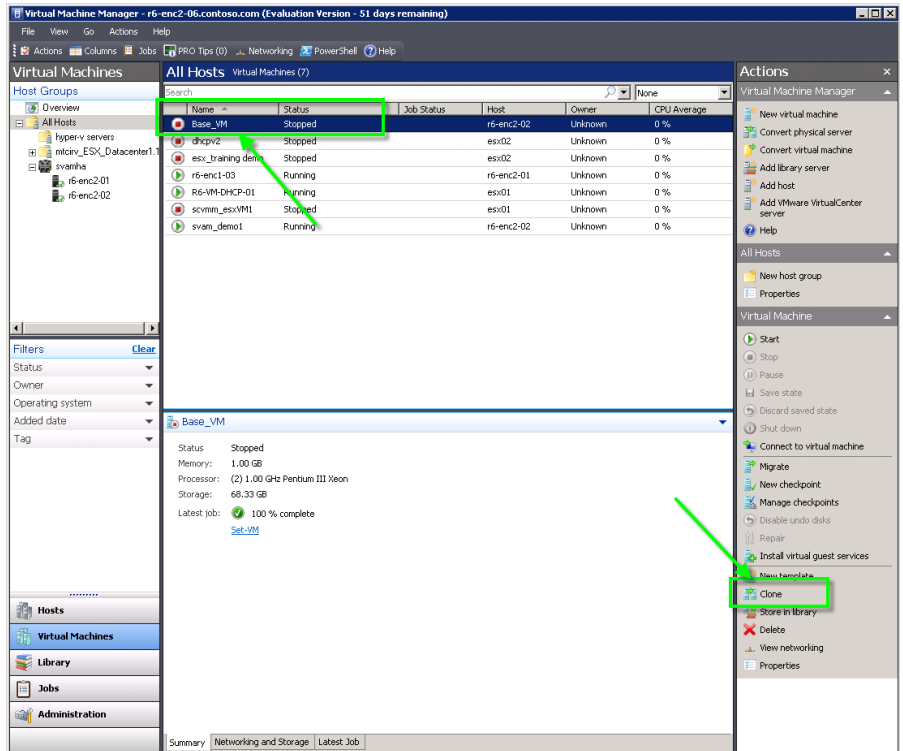
When you clone a virtual machine:

- You cannot make changes to the operating system settings, but you can make changes to the hardware settings (Except for VMware® ESX virtual machines).
- You can clone a virtual machine and store it in the library or deploy the virtual machine to a host.
- The cloned virtual machine has the same computer name as the source virtual machine.

Clone a Virtual Machine to a Host

To clone a virtual machine:

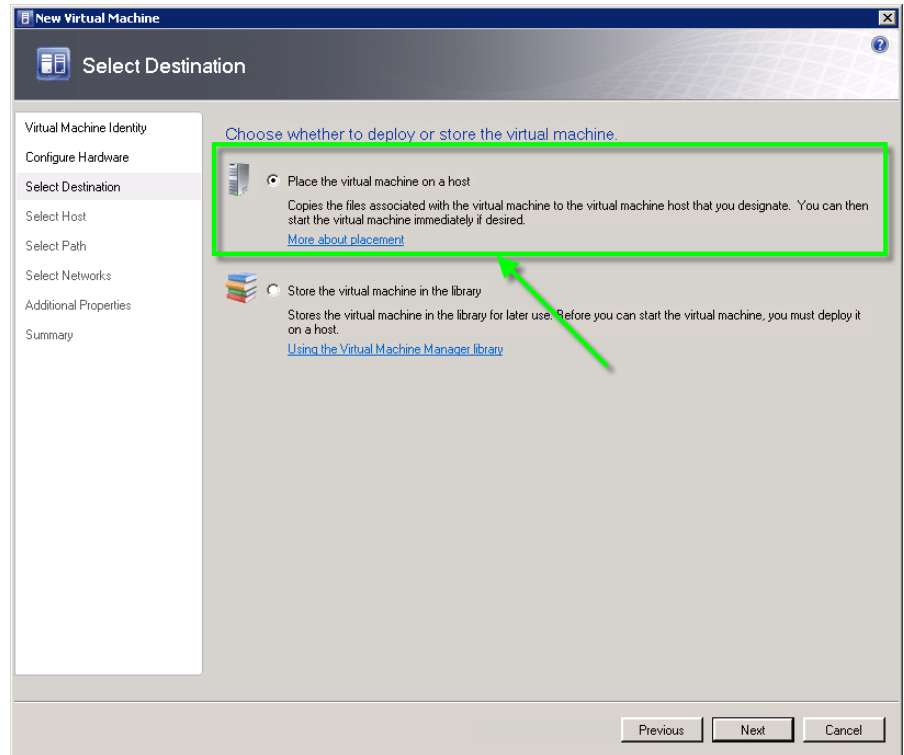
1. Select the virtual machine to be cloned. On the Actions pane in the Virtual Machine Manager Administrator Console, click **Clone** a virtual machine.



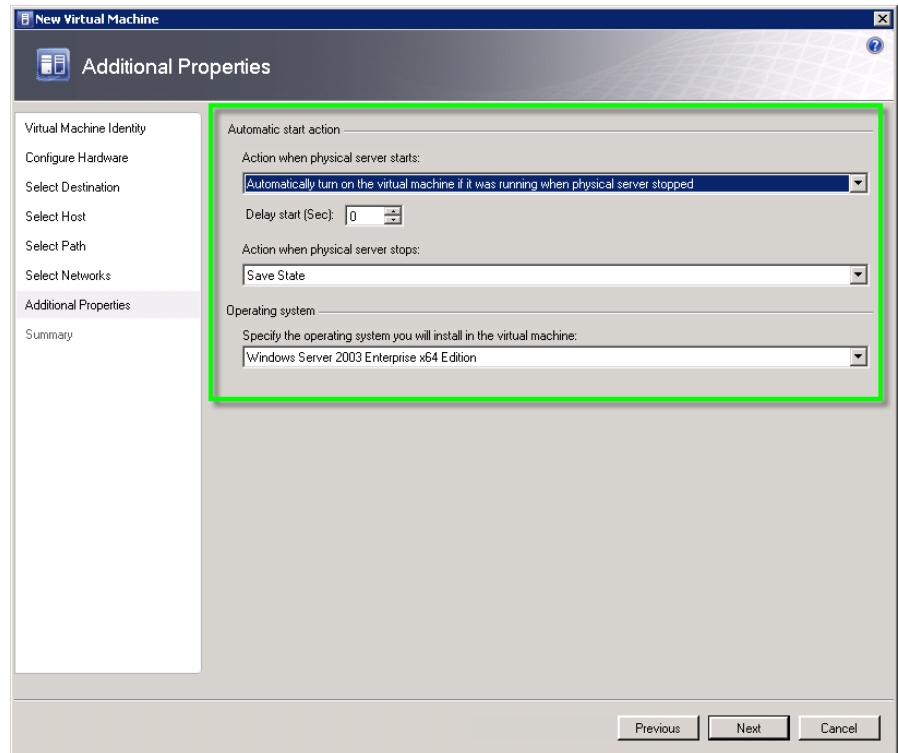
2. Enter a template name and description, and specify the owner of the template. The template owner must have an Active Directory domain account. All Virtual Machine Manager Administrators will be able to use the template.

Note: If you were to use the template in virtual machine self-service, you would need to specify an owner. Only the template owner -- whether an individual self-service user or a group assigned to the self-service policy -- would be able to create, see, and manage virtual machines created with the template.

3. Customize the hardware settings as needed, and then click **Next**.
4. Select **Place the virtual machine on a host**, and then click **Next**.



5. Select the virtual machine host using the intelligent placement suggestion or select another host, and then click **Next**.
6. Select the Save path for the virtual machine files, and then click **Next**.
7. Select the virtual network that the virtual machine will connect to and then click **Next**.
8. Configure Additional Properties for the virtual machine, and then click **Next**.
 - I. Automatic Start Action – Select what action System Center Virtual Machine Manager should take on the virtual machine when the host server starts. If applicable select how long to wait before starting the virtual machine.
 - II. Automatic Stop Action – Select what action System Center Virtual Machine Manager should take when the host server stops.
 - III. Operating System – Select the operating system of the new virtual machine.



9. Review the Summary, and then click **Next**.

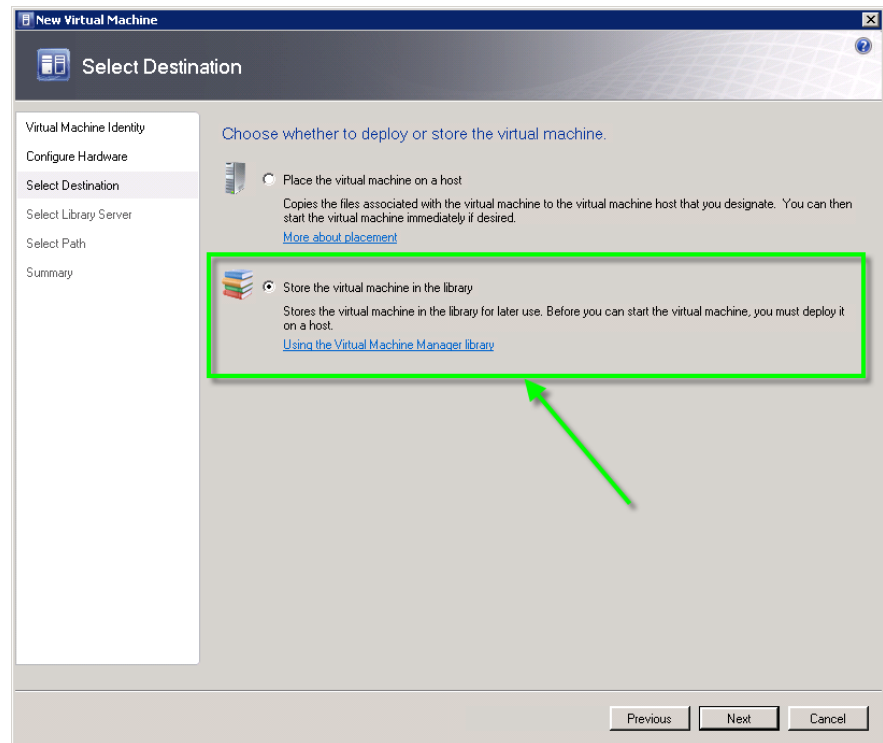
Clone a Virtual Machine to the Library

To clone a virtual machine:

1. Select the virtual machine to be cloned. On the Actions pane in the Virtual Machine Manager Administrator Console, click **Clone a virtual machine**.
2. Enter a template name and description, and specify the owner of the template. The template owner must have an Active Directory domain account. All Virtual Machine Manager Administrators will be able to use the template.

Note: If you were to use the template in virtual machine self-service, you would need to specify an owner. Only the template owner -- whether an individual self-service user or a group assigned to the self-service policy -- would be able to create, see, and manage virtual machines created with the template.

3. Customize the following hardware settings (covered previously in section 4.1) as needed, and then click **Next**:
4. Select **Store the virtual machine in the library**, and then click **Next**



5. Select the library server that will host the cloned virtual machine, and then click **Next**.
6. Select the Browse button for the Save Path, select the destination folder for the new template, click **OK**, and then click **Next** back on the Select Path dialog box.
7. Review the Summary, and then click **Create**.

MANAGING HOSTS AND VIRTUAL MACHINES

After hosts are added to Virtual Machine Manager, you can manage the hosts and the virtual machines that are on the hosts. Virtual machines placed on new hosts appear in the Virtual Machine Manager Administrator

Console soon after they are created.

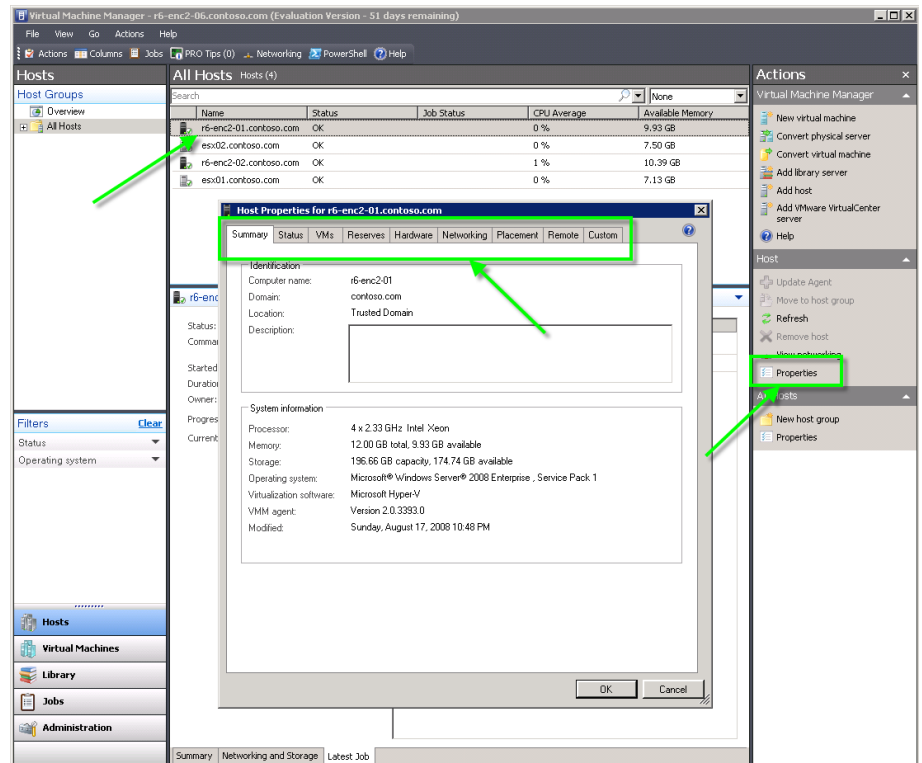
Managing Hyper-V Hosts

You can use the following procedure in Virtual Machine Manager to view the following host properties:

- Summary
- Status
- Virtual Machines
- Reserves
- Hardware
- Networking
- Placement
- Remote
- Custom

To view properties of a host:

1. In Hosts view, navigate to the host group that contains the host, and then, in the results pane, double-click the host or select **Properties** from the **Actions** pane.
2. To view information about each property listed, select the appropriate tab; detailed information about the selected property is displayed.



Note: All host properties on the Hardware tab are view-only, with the exception of virtual networks, which you can add, configure, or remove by using the Hardware tab.

The following list is an overview of the details found on each properties tab:

- **Summary** – Contains an Identification section with the Computer name, Domain Network Location and Description of the Host and a System Information section with CPU, Memory, Storage, Operating System, Hypervisor, Virtual Machine Manager agent and last modified information.
- **Status** – Contains information about the overall status of the host, Connection Status, Agent Version, Virtualization service status, Virtualization service version, Clustering service and the status of the Host maintenance mode.
- **Virtual Machines** – Contains a list of all VMs on the host and a section for registering existing VMs with the host.

- Reserves – Contains information and adjustment controls for reserves for CPU, Memory, Disk space, disk I/O and Network.
- Hardware – Contains detailed information on processor, memory, storage, floppy drives, network adapters, and DVD/CD-ROM drives.
- Networking – Contains details and configuration controls for virtual switches.
- Placement – Contains virtual machine paths information and controls.
- Remote – Sets remote access to VMs and the access port.
- Custom – An area to add as many as 10 customer properties to a host.

Creating a Virtual Machine on a Hyper-V Host

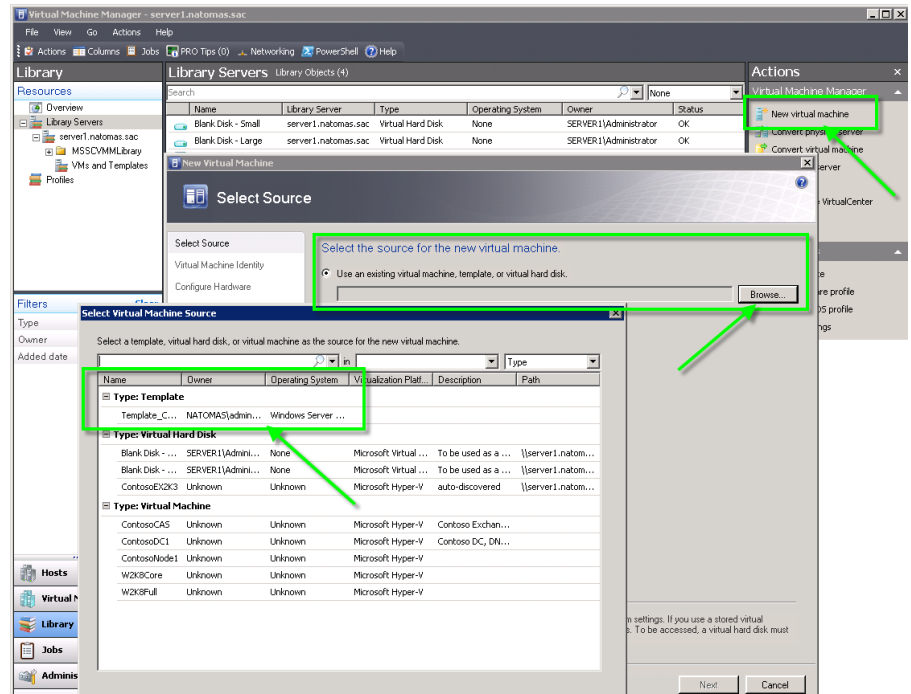
You can create a new virtual machine from four sources:

1. An existing virtual machine (this is the same as cloning and will not be covered in this section).
2. An existing template stored in the library.
3. An existing virtual disk stored in the library (this is nearly the same process as using an existing template and will not be covered in this section).
4. A new blank virtual disk.

Create a New Virtual Machine from an Existing Template

To create a new VM from an existing template:

1. From anywhere in the Virtual Machines section, select the **New virtual machine** action.
2. Select **Use an existing virtual machine or a template**, and then select **Browse**.
3. Select the source template from the Select Library Resource dialog box, click **OK**, and then click **Next** back on the Select Source dialog box.



4. Enter a VM name and description, and specify the owner of the template. The template owner must have an Active Directory domain account. All Virtual Machine Manager Administrators will be able to use the template.
5. Customize the hardware settings as needed, and then click **Next**.
6. Configure identity information, administrative credentials, and other guest operating system information for the new VM.
 - I. General Settings: Enter the following settings:
 - i. Identity information - Specify a computer name. To randomly generate a computer name for virtual machines based on the template, enter an asterisk in the Computer name field.
 - ii. Admin Password - Specify the local Administrator password for the virtual machine. If virtual machines created with this template will not be in a domain, users must use this password to gain access to the local computer.
 - iii. Product key – To provide a *product key for the virtual machine*; enter a product key in the Product key field.

- iv. *Time Zone* – Specify the default time zone of the virtual machine.
 - v. *Operating System* – Select the default operating system of the virtual machine.
 - II. Networking: Configure settings to determine network access for virtual machines:
 - i. If you want this virtual machine to be in a domain, click **Domain** and then specify a user account that will be used to add the computer to the domain at first logon. (This option is only available if you configured at least one virtual network on the Configure Hardware page.)
 - ii. If the virtual machine that is created from this template will not be in a domain, click **Workgroup**, and then enter the name of the workgroup.
 - III. Scripts: Use the options under Scripts to provide additional settings for Sysprep:
 - i. To add settings to those that the wizard will pass to Sysprep, in the Answer file field, specify the Sysprep file to run. The settings in the Sysprep file will be appended to those that the wizard passes.
 - ii. To automate mini-Setup, in the [GUIRunOnce] Commands field, enter the commands to run at first logon.
- 7. Select **Place the virtual machine on a host**, and then click **Next**.
- 8. Select the virtual machine host using the intelligent placement suggestion or select another host, and then click **Next**.
- 9. Select the Save path for the virtual machine files, and then click **Next**.
- 10. Select the virtual network that the virtual machine will connect to and then click **Next**.
- 11. Configure Additional Properties for the virtual machine, and then click **Next**.
 - I. Automatic Start Action – Select what action System Center Virtual Machine Manager should take on the virtual machine when the host server starts. If applicable select how long to wait before starting the virtual machine.
 - II. Automatic Stop Action – Select what action System Center

Virtual Machine Manager should take when the host server stops.

- III. Operating System – Select the operating system of the new virtual machine.
12. Review the Summary, and then click **Create**.
- 13.

Create a New Virtual Machine from a New Blank VHD

To create a new VM from a new blank VHD:

1. From anywhere in the Virtual Machines section, select the **New virtual machine** action.
2. Select **Create the new virtual machine with a blank virtual hard disk**.
3. Enter a VM name and description, and specify the owner of the virtual machine. The owner must have an Active Directory domain account. All Virtual Machine Manager Administrators will be able to administer the VM.
4. Customize the hardware settings as needed, and then click **Next**.
5. Select **Place the virtual machine on a host**, and then click **Next**.
6. Select the virtual machine host using the intelligent placement suggestion or select another host, and then click **Next**.
7. Select the Save path for the virtual machine files, and then click **Next**.
8. Select the virtual network that the virtual machine will connect to and then click **Next**.
9. Configure Additional Properties for the virtual machine, and then click **Next**.
 - I. Automatic Start Action – Select what action System Center Virtual Machine Manager should take on the virtual machine when the host server starts. If applicable select how long to wait before starting the virtual machine.
 - II. Automatic Stop Action – Select what action System Center Virtual Machine Manager should take when the host server stops.
 - III. Operating System – Select the operating system of the new virtual machine.
10. Review the Summary, and then click **Create**.

SERVER CONSOLIDATION

Physical-to-Virtual (P2V) Conversions

The P2V conversion process captures an image of the source disk and modifies the operating system and drivers to make them compatible with the Hyper-V or Microsoft Virtual Server emulated hardware. Online and offline P2V conversions use two distinct processes:

Online Conversion

Online conversion does not require a restart of the source computer. Virtual Machine Manager uses the Volume Shadow Copy Service (VSS) to create an image of the source machine that is consistent on the application level and then creates an analogous virtual machine. The online conversion process consists of five steps:

- Installing the agent on the source computer
 - Retrieving hardware configuration
 - Imaging
 - Fixing up
 - Creating the virtual machine
1. Virtual Machine Manager installs the P2V agent on the source computer to gather the hardware and software configuration. After the conversion is complete, the agent is removed.
 2. Virtual Machine Manager gathers the source computer's hardware and software configuration, as follows:
 - a. The Virtual Machine Manager agent gathers information about hardware, software, services, hotfixes, and the disk layout (file system, volume type). The Virtual Machine Manager agent exports this information to the Virtual Machine Manager database as a machine configuration file in XML format.

- b. Virtual Machine Manager determines whether the source machine can be virtualized. Virtual Machine Manager confirms that the operating system is supported and that the physical configuration can be made compatible with the destination virtualization software. Virtual Machine Manager verifies that the required files are present in the patch cache and downloads any missing patches to the Patch Import directory on the Virtual Machine Manager server.
3. Imaging phase:
 - a. A Volume Shadow Copy Service (VSS) image is captured for each selected volume that is consistent on the application level. If a dynamic destination VHD format is selected, this process captures data only, not empty space.
 - b. Data is streamed directly from the source computer to the Virtual Machine Manager host using Background Intelligent Transfer Service (BITS).
 - c. Each physical volume becomes a separate virtual hard disk.
4. Fix-Up phase. Virtual Machine Manager prepares the operating system and the virtual hard disks for virtual machine creation.
5. Create Virtual Machine phase:
 - a. Virtual Machine Manager creates the virtual machine.
 - b. Virtual Machine Manager attaches virtual hard disks, network adapters, CD-ROM, and memory.

Offline Conversion

Offline P2V is the most reliable way to ensure data consistency because it creates an exact copy of the source computer while it is not in use. Also, offline P2V is the only option for converting Windows® 2000 Server, domain controllers, and non-NTFS volumes. Unlike online conversions, the user must provide any missing drivers if Windows Pre-installation Environment (Windows PE) does not support the source computer. The offline conversion consists of four steps:

- Agent installation. Virtual Machine Manager installs the Virtual

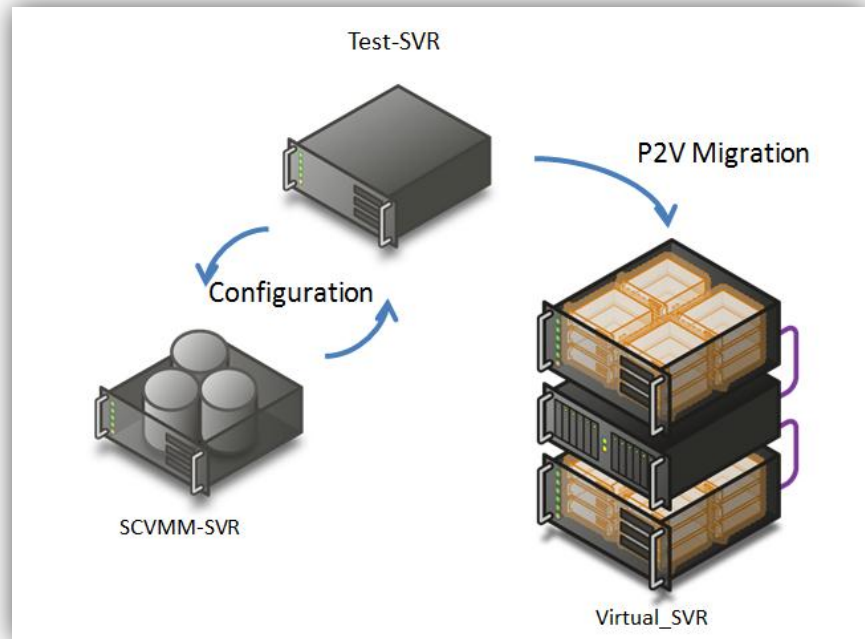
- Machine Manager agent on the source computer.
- The Virtual Machine Manager agent installs a Windows PE image on the source computer, modifies the boot record, and restarts in Windows PE instead of the base operating system.
 - Virtual Machine Manager begins streaming physical disks. There are no snapshots in this process.
 - The remainder of the process is similar to the Fix-Up phase and Create Virtual Machine Phase in an online P2V.

Scenario Topology

In the course of going through this scenario, you use Virtual Machine Manager on the physical server named **SCVMM_SVR**, which acts as the Virtual Machine Manager host. You use Virtual Machine Manager to migrate the physical server named **Test_SVR** to a virtual machine that is hosted on **Virtual_SVR**. The following figure shows the scenario topology.

Note

When you perform the P2V conversion, the size of the virtual machine that you create can be equal to the size (if fixed disk is used for VHD) of the physical machine that you started with. You must therefore ensure that the host computer has enough space to accommodate the virtual machine.



Requirements on the Source Machine

To perform a P2V conversion, your source computer:

- Must have at least 512 MB of RAM.
- Cannot have any volumes larger than 2040 GB.
- Must have an Advanced Configuration and Power Interface (ACPI) BIOS – The Vista® version of Windows PE will not install on a non-ACPI BIOS.
- Must be accessible by Virtual Machine Manager and by the host computer.
- Cannot be in a perimeter network. A perimeter network, which is also known as a screened subnet, is a collection of devices and subnets placed between an intranet and the Internet to help protect the intranet from unauthorized Internet users. The source computer for a P2V conversion can be in any other network topology in which the Virtual Machine Manager server can connect to the source machine to temporarily install an agent and can make Windows Management Instrumentation (WMI) calls to the source computer.

The following table lists the Windows operating systems for which P2V

conversions are supported in Virtual Machine Manager 2008 and in Virtual Machine Manager 2008 R2.

Table 1: Supported Operating Systems for P2V Conversions in Virtual Machine Manager 2008 R2

Operating System	Virtual Machine Manager 2008	Virtual Machine Manager 2008 R2
Microsoft Windows 2000 Server with Service Pack 4 (SP4) or later (offline P2V only)	Yes	Yes
Microsoft Windows 2000 Advanced Server SP4 or later (offline P2V only)	Yes	Yes
Windows XP Professional with Service Pack 2 (SP2) or later	Yes	Yes
Windows XP 64-Bit Edition SP2 or later	Yes	Yes
Windows Server 2003 Standard Edition (32-bit x86)	Yes (Requires SP1 or later.)	Yes (Requires SP2 or later.)
Windows Server 2003 Enterprise Edition (32-bit x86)	Yes (Requires SP1 or later.)	Yes (Requires SP2 or later.)
Windows Server 2003 Datacenter Edition (32-bit x86)	Yes (Requires SP1 or later.)	Yes (Requires SP2 or later.)

Windows Server 2003 x64 Standard Edition	Yes (Requires SP1 or later.)	Yes (Requires SP2 or later.)
Windows Server 2003 Enterprise x64 Edition	Yes (Requires SP1 or later.)	Yes (Requires SP2 or later.)
Windows Server 2003 Datacenter x64 Edition	Yes (Requires SP1 or later.)	Yes (Requires SP2 or later.)
Windows Server 2003 Web Edition	Yes	Yes
Windows Small Business Server 2003	Yes	Yes
Windows Vista with Service Pack 1 (SP1)	Yes	Yes
64-bit edition of Windows Vista with Service Pack 1 (SP1)	Yes	Yes
Windows Server 2008 Standard 32-Bit	Yes	Yes
Windows Server 2008 Enterprise 32-Bit	Yes	Yes
Windows Server 2008 Datacenter 32-Bit	Yes	Yes
64-bit edition of Windows Server 2008 Standard	Yes	Yes
64-bit edition of Windows Server 2008 Enterprise	Yes	Yes

64-bit edition of Windows Server 2008 Datacenter	Yes	Yes
Windows Web Server 2008	Yes	Yes
Windows 7	No	Yes
64-bit edition of Windows 7	No	Yes
64-bit edition of Windows Server 2008 R2 Standard	No	Yes
64-bit edition of Windows Server 2008 R2 Enterprise	No	Yes
64-bit edition of Windows Server 2008 R2 Datacenter	No	Yes
Windows Web Server 2008 R2	No	Yes

The following restrictions apply to P2V operation system support:

- Virtual Machine Manager does not support P2V conversion for computers with Itanium architecture-based operating systems.
- Virtual Machine Manager does not support P2V on source computers running Windows NT Server 4.0. However, you can use the Microsoft Virtual Server 2005 Migration Toolkit (VSMT) or third-party solutions for converting computers running Windows NT Server 4.0.

Requirements for the Destination Host Server

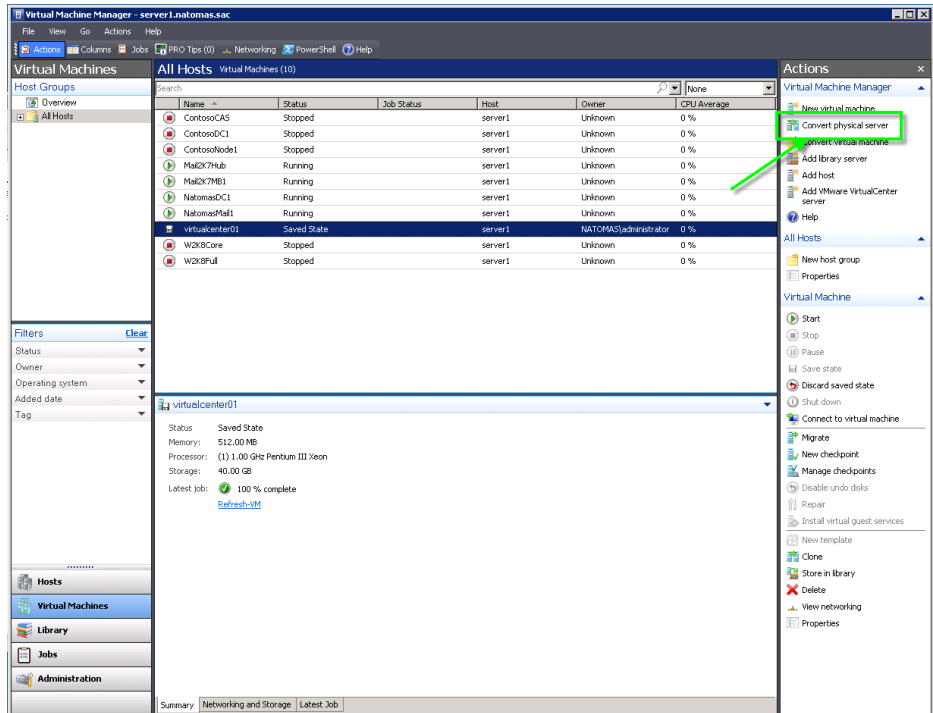
In Virtual Machine Manager, a host is a physical computer on which you can deploy one or more virtual machines. To run P2V, you need a host on which to place the image of the source computer.

Requirements for the host server include:

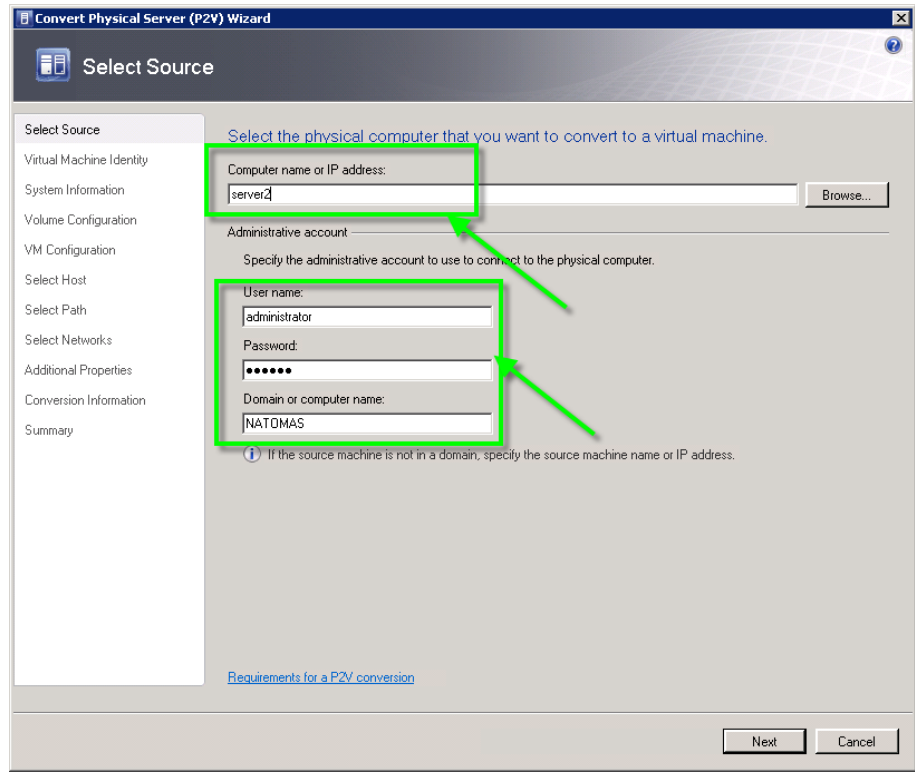
- The destination host during a P2V conversion can be running Windows Server 2008 with Hyper-V, Windows Server 2008 R2 with Hyper-V, or Virtual Server R2 SP1 (or later).
- The destination host cannot be in a perimeter network.
- As in any virtual machine creation or migration, the destination host for a P2V conversion must have sufficient memory for the virtual machine in addition to memory reserved for the host operating system. By default, the amount of memory reserved for the host operating system is 256 MB in Virtual Machine Manager 2008 or 512 MB in Virtual Machine Manager 2008 R2. If the host does not have enough memory for the virtual machine in addition to the memory reserved for the host, you will get a placement error in the Convert Physical Server Wizard.

Converting a Server to a Virtual Machine

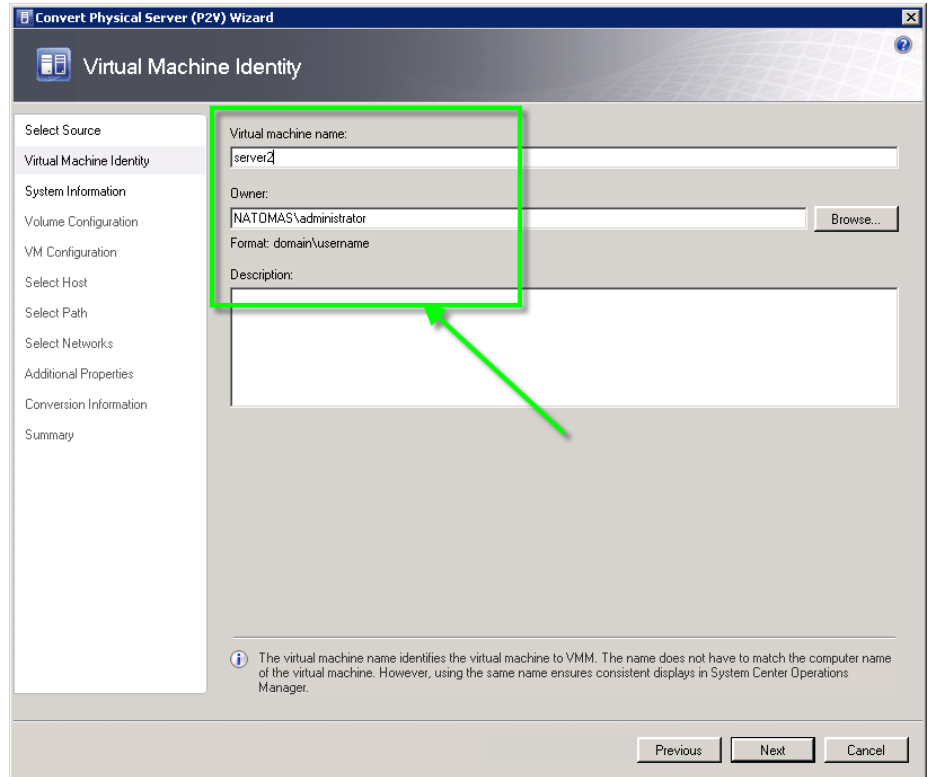
1. On the Virtual Machine Manager server, open the Virtual Machine Manager Administrator Console.
2. From anywhere in the Hosts or Virtual Machines view select **Convert physical server** from the Virtual Machine Manager section of the Actions menu. What server you have selected does not matter in this step as the destination host is selected later.



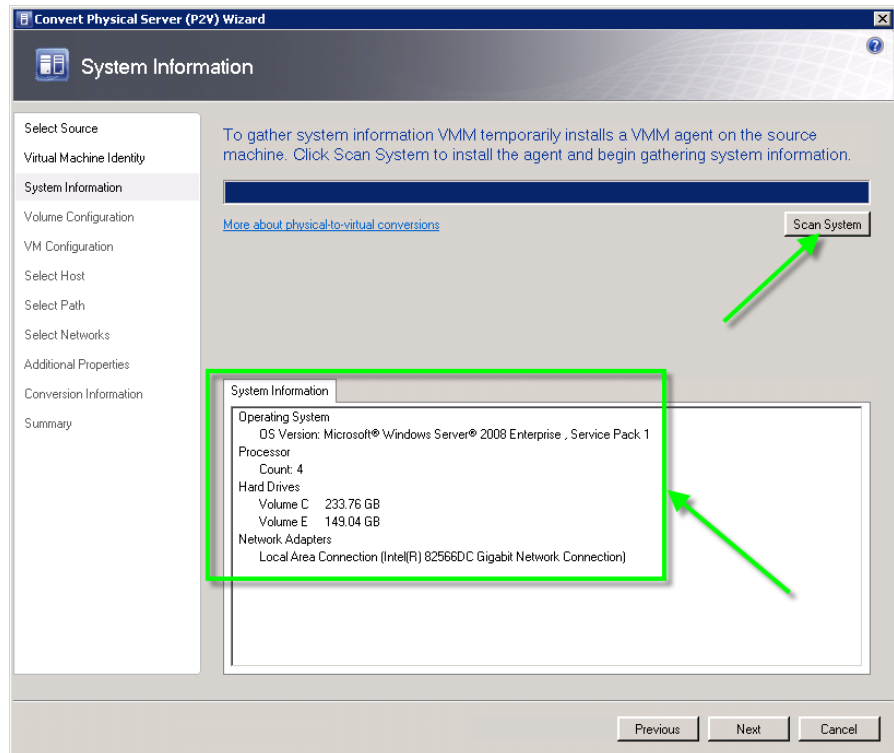
3. Input the name of the source server you want to convert in the Computer name field, supply credentials for local administrator access on the source server in the Administrative account section and then click **Next**



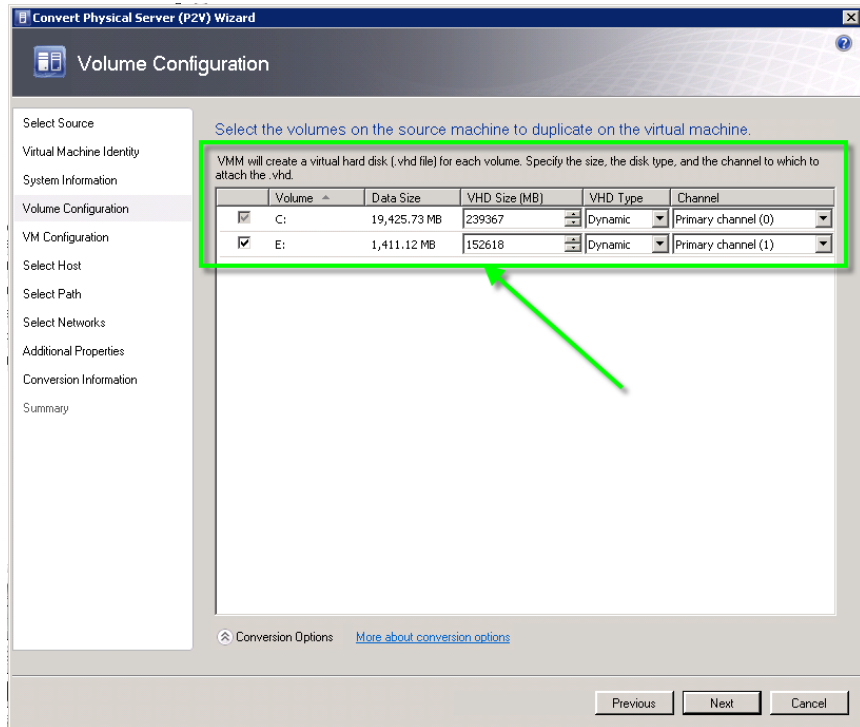
4. Input the name that the virtual machine will have (this does not affect the Computer account name though it is best practices for them to match) in the Virtual Machine name field, provide a description of the server in the Description field and then click **Next**



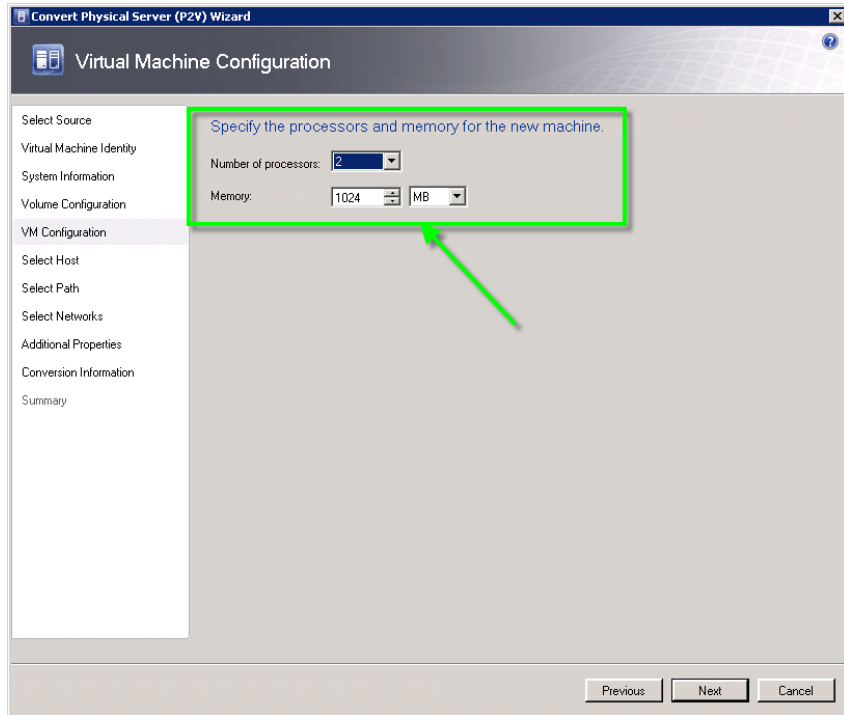
5. Click **Gather System Information** and wait for the process to complete



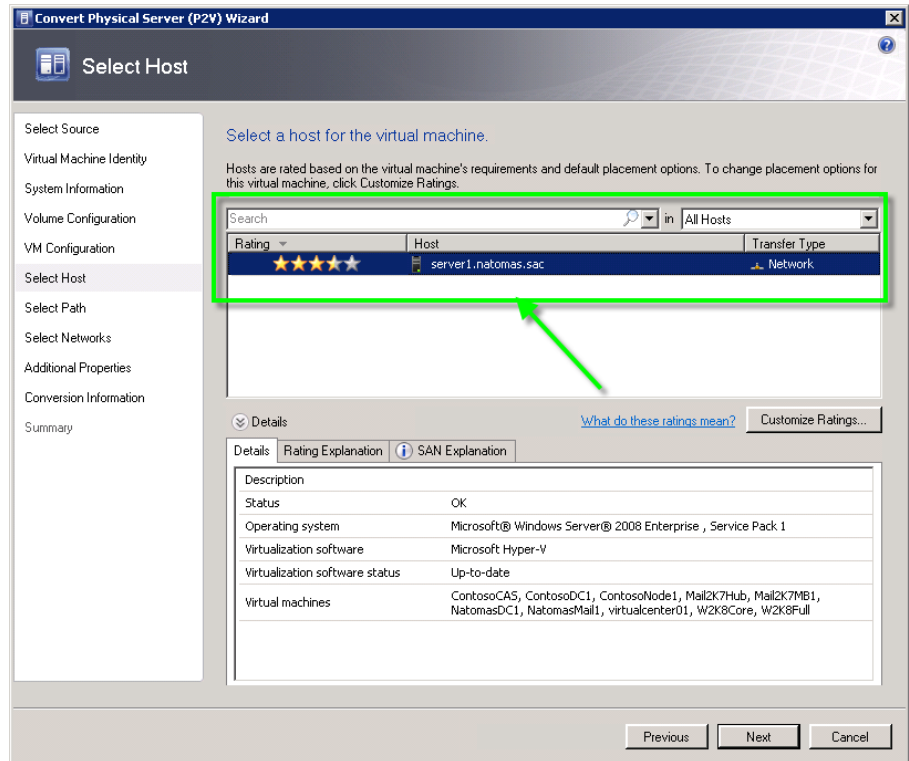
6. Review the information displayed in the **System Information** field for accuracy and click **Next**
7. Adjust the VHD size as desired but note that this value can only be increased or left at the default size. If you would like to minimize the disk space required on the destination host for the new VHD file you can select the **Dynamic** type from the drop down list in the **VHD Type** field. This will cause the migration process to create a VHD file just large enough to contain the data currently on the physical source server partition. As the data size on the new virtualized server increases over time the VHD file will grow accordingly. Be aware that even if the new dynamic VHD file is substantially smaller than the VHD size value assigned the virtual disk could grow to the full capacity of the VHD file. This is important to consider when selecting target host disks with less space available than the maximum size of a dynamic VHD file. Clicking the **Conversion Options** chevron will display choices for Online or Offline conversion. Online conversion is the default selection. When the appropriate values have been assigned click **Next**



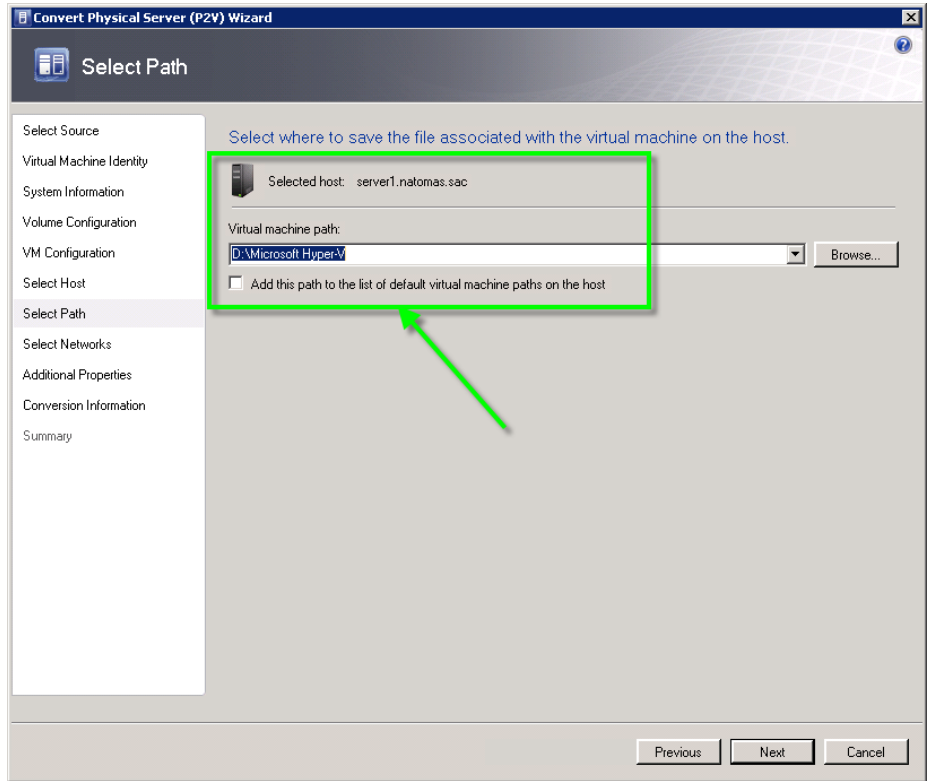
8. Set the number of processors and memory and click **Next**. Note that no more CPU or Memory resources than are necessary for adequate server performance should be assigned to a virtual machine. This information should be collected by evaluating the current performance requirements of the source physical server before performing a migration.



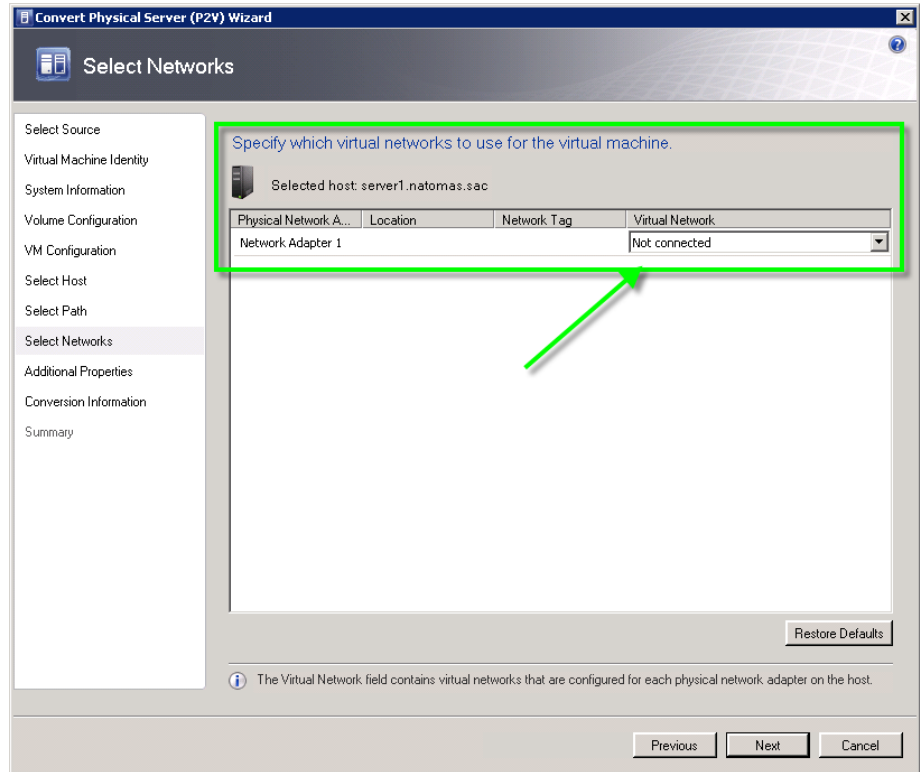
9. Use the recommended host as the target or override the recommendation by selecting the host of your choice from the available hosts list and click **Next**. Note that certain target hosts may not be available for selection if they do not meet the CPU or Memory requirements of the new virtual machine.



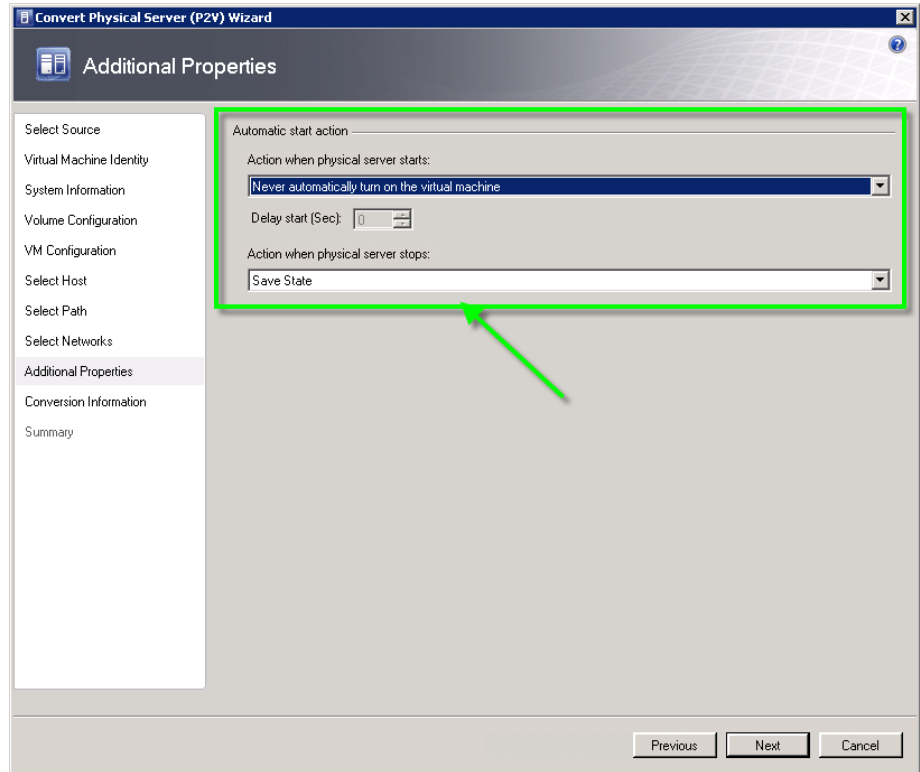
10. If the target host is part of a Hyper-V cluster you will receive a warning message indicating that the virtual machine will be made highly available. If you click yes the new virtual machine will automatically be made highly available and placed on the cluster. If you select no you will have to go back and choose a non-clustered Hyper-V host.
11. Select the appropriate disk location to store the virtual machine files and click **Next**



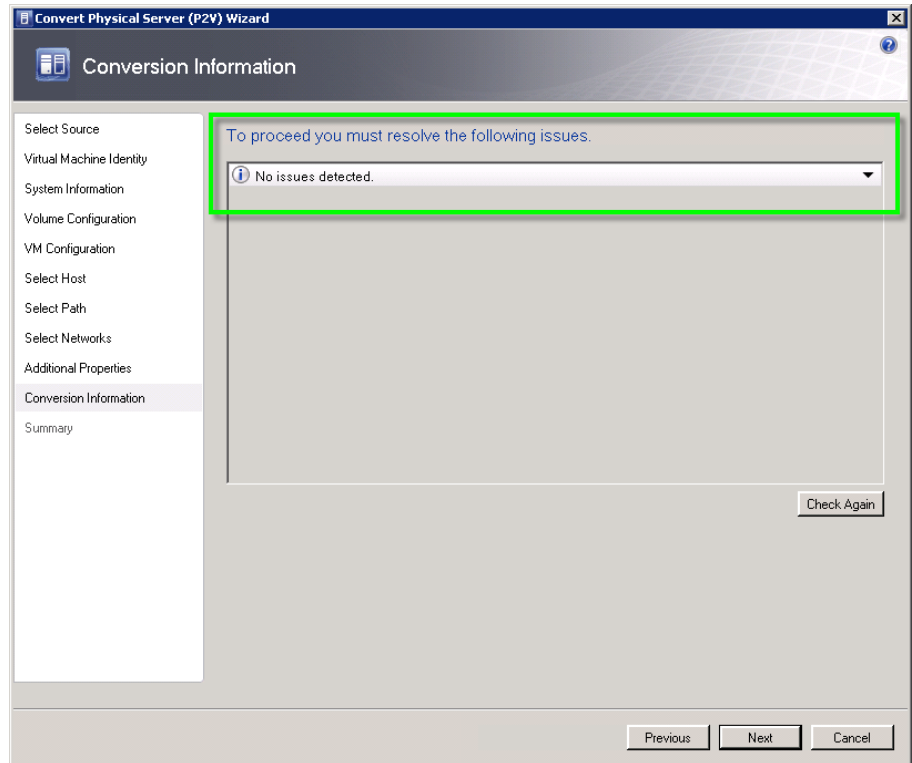
12. Set the appropriate value for **Virtual Network** and click **Next**



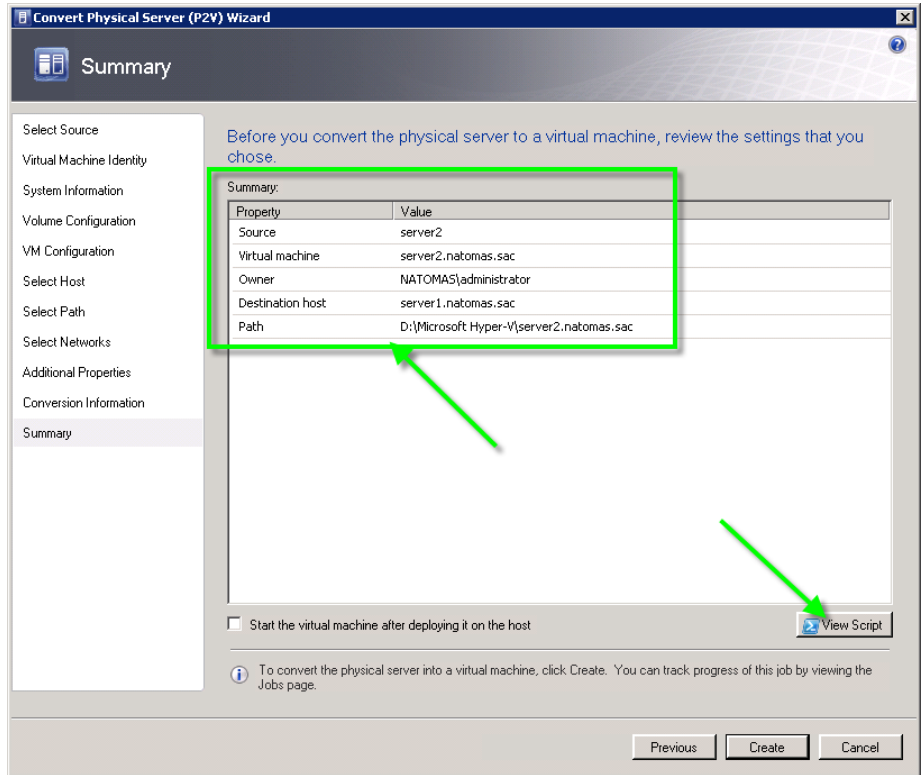
13. Select the values in the **Automatic Start Action** and **Automatic Stop Action** sections and click **Next**



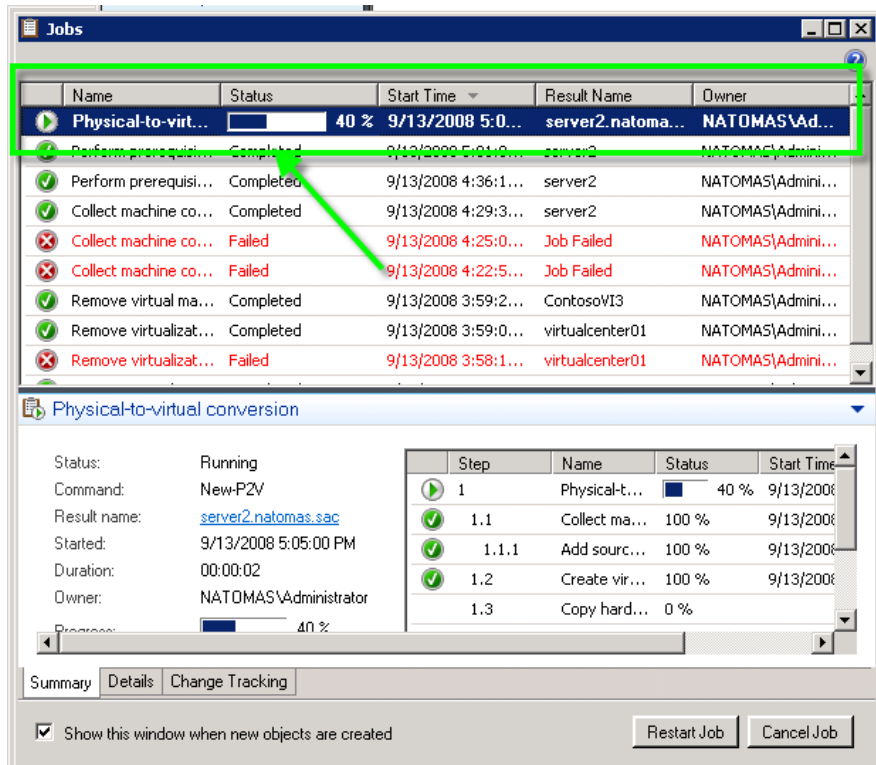
14. Review the Conversion Information page for any issues detected. If any issues are detected simply follow the procedures recommended for resolution and then use the **Check Again** button to confirm the issues are resolved. When the **No issues detected** message is displayed click **Next**



15. Review the Summary screen and click **Next**. Note that you can review the script created by the wizard if you click **View Script** and you can choose to start the virtual machine as soon as the migration completes by selecting the **Start the virtual machine immediately...** selection box.



16. Select **Jobs** from the navigation section to view the P2V process status



17. When the P2V process is completed you will have a new virtual machine that is a clone of your physical source machine. It is highly recommended that the source machine is shut off immediately following a successful conversion and the new virtual machine is brought online as soon as possible.

Performing P2V from the Command Line

You can perform a P2V conversion from Windows PowerShell™ by using the New-P2V cmdlet. To get a base script that you can customize, run the Convert Virtual Machine Wizard from the Virtual Machine Manager Administrator Console and click the **View Script** button.

For more information about using the New-P2V cmdlet type **Get-Help New-P2V** in the Windows PowerShell – Virtual Machine Manager command shell.

This phase is focused on providing assistance with pilot preparation and

deployment of the overall solution developed in previous phases. During this portion of the project, the server-virtualization platform will be installed, configured, and tested, and all documentation will be finalized for a pilot deployment of the solution. Many service engagements that require many existing applications and processes to migrate over time will end prior to the completion of the full server-virtualization deployment, with the customer executing on the plan created in previous phases.

CAPACITY PLANNING

Intelligent Placement of Virtual Machines

When a virtual machine is deployed on a host, the process of selecting the most suitable host for the virtual machine is known as virtual machine placement, or simply placement. During placement, hosts are rated based on the virtual machine's hardware and resource requirements, the anticipated usage of resources, and capabilities resulting from the specific virtualization platform. Host ratings also take into consideration the placement goal: resource maximization on individual hosts, load balancing among hosts, or whether the virtual machine is highly available. The administrator selects a host for the virtual machine based on the host ratings.

Automatic Placement

In the following cases, a virtual machine is automatically placed on the most suitable host in a host group, in a process known as automatic placement:

- In virtual machine self-service, users' virtual machines are automatically placed on the most suitable host in the host group that is used for self-service.
- Automatic placement also occurs when the drag-and-drop method is used to migrate a virtual machine to a host group in Virtual Machines view.

During automatic placement, the configuration files for the virtual machine are moved to the volume judged most suitable on the selected host. For automatic placement to succeed, a virtual machine path must be

configured on the recommended volume.

Note: If you configured a virtual machine with the hardware configuration *Make this VM highly available*, only clustered Hyper-V hosts will be rated highly.

Customizing Host Ratings

The metrics for rating hosts can be customized for Virtual Machine Manager. For information, see [How to Set Placement Defaults for Virtual Machines](#). Host ratings also can be customized for individual virtual machines during deployment or migration. For more information, see [How to Customize Host Ratings for a Virtual Machine](#).

Removing a Host from Placement

You might want to use some hosts only for maintenance tasks such as creating and patching virtual machines. To aid in this, you can designate a host a maintenance host or you can remove the host from placement. This is done by updating the properties of the host.

DELEGATED ADMINISTRATION (Role-Based Security)

With Microsoft® System Center Virtual Machine Manager 2008, you manage the administrative permissions your users have by creating user roles. The profile of the user role determines what actions a user can perform. The scope of the user role determines which objects the users are able to manage. There are three user roles:

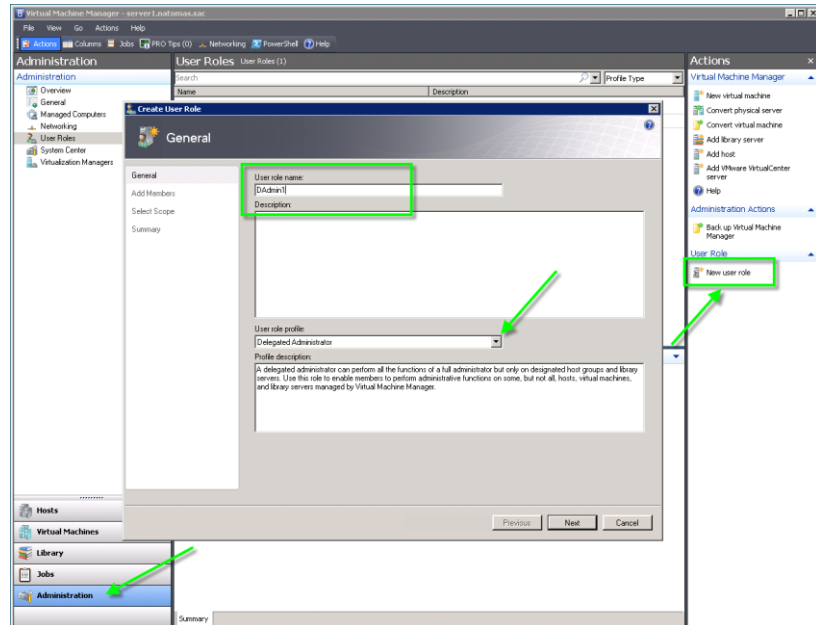
User Role	Permissions
Administrator	<p>Able to perform all actions in the Virtual Machine Manager Administrator Console. Members of this user role can create new Delegated Administrator and Self-Service user roles. Only members of the Administrator user role can add additional members.</p> <p>Note: The Administrator user role is created when you install Virtual Machine Manager. By default, the user who performs the Virtual Machine Manager installation is added to the Administrator user role.</p>
Delegated Administrator	<p>Able to perform all actions in the Virtual Machine Manager Administrator Console, but only within the scope defined in the role. Members of this user role can create new Delegated Administrator and Self-Service user roles.</p>
Self-Service	<p>Able to use the Self-Service console to perform tasks on their virtual machines as defined in the user role. Members of this user role cannot create new user roles.</p>

Delegated Administrator Role

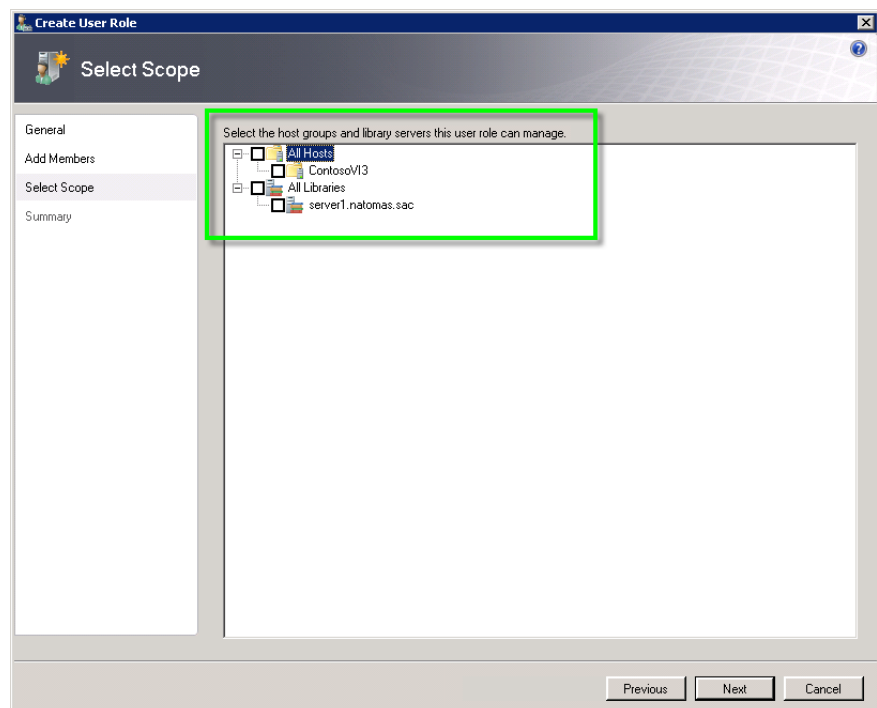
To create a delegated administrator user role:

1. In the Virtual Machine Manager Administrator Console, in User Roles view, click **New User Role** in the Actions pane.
2. Type a User role name and Description, select Delegated Administrator in the Profile list, and then click **Next**.

Note: If you are a Delegated Administrator creating a new user role, select a Parent Role from the list.



3. Click **Add** and then type the names of the users or groups you want to add to this role, click **OK**, and then click **Next**.
4. Select the objects that you want to enable members of the user role to monitor.



5. Review the User Role settings. To change settings, click **Previous**. To create the User Role, click **Create**.

Note: Use the **View Script** button to display the Windows PowerShell - Virtual Machine Manager cmdlets that will perform the operation. All administrative tasks in Virtual Machine Manager can be performed at the command line or scripted.

Self-Service v1.0 User Role

The self-service user role in System Center Virtual Machine Manager 2008 R2 grants users permissions to create, operate, manage, store, create checkpoints for, and connect to their own virtual machines through the Virtual Machine Manager Self-Service Portal.

NOTE: In this context, we are referring to the Self Service Role that is built into System Center Virtual Machine Manager 2008, rather than the Self-Service Portal v2.0. *This self-service role is needed so that the ConnectVM virtual machine action will work.*

To create a self-service user role:

1. From the User Roles view in the Virtual Machine Manager Administrator Console, click **New User Role** in the Actions pane.
2. Type a User role name and Description, select **Self Service User** in the Profile list, and then click **Next**.
Note: If you are a Delegated Administrator creating a new user role, choose a Parent Role from the list.
3. Click **Add** and then type the names of the users or groups you want to add to this role, click **OK**, and then click **Next**.
4. Select the objects that you want to enable members of the user role to monitor.

5. Select the tasks that you want the members of this group to perform on virtual machines. You can select All tasks, or grant a set of tasks by selecting one or more of the following:
 - a. Start – Allows the user to start VMs.
 - b. Stop – Allows the user to stop VMs.
 - c. Pause and Resume – Allows the user to Pause and Resume VMs.
 - d. Checkpoint - Allows the user to create and merge checkpoints and to restore their virtual machines to a previous checkpoint.
 - e. Remove - Allows the user to remove virtual machines, deleting the configuration files.
 - f. Local Administrator - Allows the user to set the local administrator password when creating a virtual machine so that the user has administrator rights and permissions on the virtual machine.
 - g. VMRC Access - Allows the user to open a session on the virtual machine through Virtual Machine Remote Control (VMRC).
6. You can allow the members of the self-service user group to create virtual machines, assign virtual machine templates for the self-service users to use, and optionally set a virtual machine quota to limit the number of virtual machines the users can deploy at one time.
 - a. If you select Allow users to create new virtual machines, you can specify a template that users will use to create their virtual machine. To add templates:
 - i. Click **Add**.
 - ii. The Select a Template dialog box displays the templates that are available in the Virtual Machine Manager library.
 - iii. To add a template, select the template, and then click **OK**.
 - b. Set quota for deployed virtual machines:
 - i. Select **Set quota for deployed virtual machines**.
 - ii. In Maximum quota points allowed, specify how many quota points the users in this role will be allowed.

Note: The virtual machine template determines the number of quota points assigned to each virtual machine that is created from it.

7. You can grant members of the self-service user group access to a library share. If you allow the self-service users to store their virtual machines on a library share, the stored virtual machines do not count against any virtual machine quota that you set when allowing self-service users to create a virtual machine.
 - The virtual machines are stored on the path that you specify on an existing library share. The self-service users do not know the physical location of their stored virtual machines.
 - If you select Allow users to store virtual machines in a library, you need to specify where to store the virtual machines:
 - a. Select the library server and share from the Select the Library server and share for users to store their virtual machines list.
 - b. To specify a path for the virtual machines on the selected library server, click **Browse by the Library path field**, and then navigate to the folder where you want to store the virtual machines.
8. Review the User Role settings. To change settings, click **Previous**. To create the User Role, click **Create**.

SYSTEM CENTER VIRTUAL MACHINE MANAGER 2008 LIBRARY

The Virtual Machine Manager library is a catalog of resources used to create and configure virtual machines in Virtual Machine Manager. The library contains files stored on library shares, and it contains operating system, hardware, and template configurations stored in the Virtual Machine Manager database. Library resources are added, created, used, and managed in library view.

Types of Library Resources

The library can store the following types of resources:

1. File-based resources such as virtual hard disks, virtual floppy disks, ISO images, and scripts. To be used in Virtual Machine Manager, a file must be added to the library. This requires storing the file on a library server on a designated library share.
2. Virtual machine templates, hardware profiles, and guest operating system profiles, which are configured in Library view for use in creating standard virtual machines. These configurations are stored in the Virtual Machine Manager database but are not represented by physical configuration files.
3. Virtual machines that are not in use. The virtual machines are displayed in Library view. However, the files for a stored virtual machine are not indexed in the library because the files cannot be used to create or configure new virtual machines.

Distributing Resources among Multiple Library Servers

The Virtual Machine Manager library initially contains a single library share, which is created on the Virtual Machine Manager server during Setup. To distribute your file-based resources among multiple servers, you can add library servers and library shares.

Refreshing the Library

The files on library shares are indexed in Virtual Machine Manager during library refreshes. After copying files to a share in the library, you can either refresh that library share manually, to immediately make the new resources available, or wait until the next periodic library refresh. By default, library refreshes are performed once every hour; you can change the refresh rate or disable automatic library refreshes by updating Library Settings in Administration view.

Viewing Resources in Library View

For ease of managing library resources, you can organize your library servers into custom library groups. The library group is a property of the library server. For each value that you enter, a folder is created in the navigation pane. You can use library groups to organize library servers in whatever way meets your needs. If you do not specify a library group for a library server, the server is added to Library Server, the root node in Library view.

In Library view, some adjustments were made to the standard navigation pane to display all types of resources that the library makes available, including files indexed on library shares and database objects. For ease of managing large sets of resources, filters also are provided.

Navigating the Tree

The navigation pane in Library view includes two types of node. The tree displays library servers and library shares hierarchically. To view file-based resources, you can navigate to the folder on the library share that contains the resource.

The tree also contains special nodes for resources that are not associated with physical files indexed in the library. These resources include guest operating system profiles, hardware profiles, and templates, which are database objects, and virtual machines, whose virtual disks and virtual machine configuration file are not indexed in the library.

The following table describes where to find each type of resource in the tree:

Resource Type	Navigation Pane Location
Virtual hard disks, virtual floppy disks, ISO images, and scripts	Library share that stores the file.
Virtual machine templates	Virtual Machines and Templates folder for the library server on which the base .vhd for the template is stored.
Stored virtual machines	Virtual Machines and Templates folder for the library server on which the virtual machine is stored. The physical files for the virtual machine are not indexed in the library because you cannot use them in

	virtual machine configuration and creation.
Guest operating system profiles and hardware profiles	Profiles node at the bottom of the navigation pane.

Filtering Results

After selecting a node in the navigation pane, you can use the following procedure to apply filters to limit the results based on resource type, resource owner, and the date when the resources were added to Virtual Machine Manager.

To filter the items in the results pane:

1. In the navigation pane, take one of the following actions:
 - a. Navigate to the node that contains the resources you want to work with.
 - b. To view all resources in the library except profiles, click the **Library Server** node.
2. Under Filters, click the arrow at the right end of each filter category (Type, Owner, and Added Date) that you want to use. Clicking a category displays the filters in the category.
3. To select a filter, click its check box.

You can apply filters from different categories at the same time. For example, you can filter to see all virtual machines and templates that a certain administrator created yesterday.

Configuring and Managing the Library

In this section two common library configuration tasks will be reviewed; How to Add Files to the Library and How to Add Library Shares.

Add Library Shares

Virtual Machine Manager indexes only files stored on designated library shares. If, after adding a library server, you want to add or remove library shares on the server from the library, you can use the Add library share action.

Note: When you add a library share, the resources on the share are immediately indexed in Virtual Machine Manager. However, if you later add files to a library share outside Virtual Machine Manager, the new files are not indexed in Virtual Machine Manager until the next library refresh. To index the files immediately, you can refresh the library share manually. For more information, see [How to Refresh a Library Share](#) or [Library Server](#).

To add library shares to a library server:

1. On the library server, share the folders that you want to add as library shares.
2. In Library view in the Virtual Machine Manager Administrator Console, expand Library Servers in the navigation pane, and then navigate to the library server that contains the shares you want to add to the library.
3. With the server selected, in the Actions pane, under Library Server, click **Add library share**.
4. On the Enter Credentials page, specify a domain account that has administrator credentials on the local library server.
5. The Add Library Shares page displays each folder that has been shared on the library server. The folders that have already been designated library shares are selected. On the Add Library Shares page, select each share that you want to add as a library share, and then click **Next**.
6. On the Summary page, review your choices, and then click **Add Library Shares**.

Add Files to the Library

To be used in Virtual Machine Manager (VMM), files must be added to the Virtual Machine Manager library. This is done by copying the files to a library share on a library server, and then refreshing the library share.

When you add a library share to a library server, the files on the share are immediately indexed in Virtual Machine Manager and are added to Library view. However, when you copy files to an existing library share, the files are not added to the library until the next library refresh. You can wait until the next periodic library refresh, or you can index the files immediately by refreshing the library share manually.

Note: Where you store the scripts, virtual hard disks, virtual floppy disks, and ISO images that you use with virtual machines can greatly affect the performance of the servers involved and network traffic during virtual machine creation.

The following procedure tells how to add files to an existing library share and then refresh the library share manually to add the files to the library:

1. On the library server, copy the files to the library share where you want to store them.
2. In the Virtual Machine Manager Administrator Console, display Library view.
3. In the navigation pane, expand Library Server, and then navigate to the library share that you copied the files to.
4. With the library share selected, in the Actions pane, under Library Share, click **Refresh**.
5. All files on the share are immediately indexed in Virtual Machine Manager and are added to Library view.

PowerShell Scripts and the Library

If you store your Windows PowerShell scripts in the Virtual Machine Manager library, you can view, edit, and run the scripts in Library view.

To be able to run a script from the Virtual Machine Manager Administrator Console, you must enable scripting in Windows PowerShell on the local computer. By default, scripting is not allowed in Windows PowerShell. For more information, in Windows PowerShell, type the following to view Help: Get-Help about_Signing.

To view or edit a Windows PowerShell script from the Virtual Machine Manager library:

1. In Library view, select the script that you want to view.
2. In the Actions pane, under Script, click **View PowerShell** script.
 - This opens a copy of the script in Notepad for viewing or editing. If you use Save As to save a new script on the same share, the script will be added to the library during the next library refresh.
 - By default, a library refresh occurs once per hour. If you don't want to wait, you can manually refresh the share by using the Refresh share action.

To run a Windows PowerShell script from the Virtual Machine Manager library:

1. In Library view, select the script that you want to run.
2. In the Actions pane, under Script, click **Run PowerShell** script.
 - This opens a Windows PowerShell window and runs the script.

Stored Virtual Machines

You can clone, deploy, repair, or remove a virtual machine that is stored in the library. In Library view, you also can convert a VMware virtual machine to a Virtual Machine Manager virtual machine after adding the VMware virtual machine's configuration files to the library.

Viewing Virtual Machines in the Library

When you store a virtual machine in the library, the virtual machine is

displayed in Library view. However, the configuration file and virtual hard disks for the virtual machine are not added to the library.

To view virtual machines stored in the library:

- To view virtual machines on a specific library server. In the navigation pane, expand Library Server, expand the library server that stores the virtual machines, and then click **VMs and Templates**.
- To view all virtual machines. In the navigation pane, click **Library Server** to display all resources in the library. To limit the display to virtual machines, under Filters, expand Type, and then click **Virtual Machine**.

Virtual Machine Actions

You can perform the following actions on virtual machines that are stored in the library:

- Convert Virtual Machine - To convert a VMware virtual machine to a Virtual Machine Manager virtual machine, you must first add the VMware configuration file to the library. The conversion is performed in library view.
- Clone - Use this action to create a new virtual machine based on an existing virtual machine. You can clone a virtual machine that is stored in the library or a deployed virtual machine that is stopped. The cloned virtual machine has the same computer name as the source virtual machine, and you cannot make changes to the operating system settings.
- Deploy - Use this action to deploy a virtual machine on a host.
- Repair - You can repair a virtual machine by returning it to its state before the last action was performed on it, retrying the action, or, if you resolved an issue such as a missing file outside Virtual Machine Manager, by refreshing the metadata for the virtual machine to update its status.
- Remove - Use this action to remove a virtual machine and delete its files from the library server.

SCVMM 2008 R2 SELF-SERVICE PORTAL v2.0

Using the Microsoft System Center Virtual Machine Manager Self-Service Portal 2.0, enterprise datacenters can provide IT as a service to business units within the enterprise. The self-service portal provides a way for groups within an organization to manage their own IT needs while the organization manages a centralized pool of physical resources (servers, networks, and related hardware).

Like the self-service portal that is currently available as part of Virtual Machine Manager 2008 R2, the new self-service portal offers a web-based user interface for managing virtual machines, but it also differs from the existing self-service portal in many ways. One of the most important differences is that the virtual machine actions are extensible, so datacenter administrators work with hardware vendors and partners to customize the actions to match their own capabilities or requirements. Another difference is that this self-service portal provides standardized workflows that gather data using web-based forms and support both manual and automated steps. This approach reduces the time needed to provision infrastructures and their components, and helps ensure consistency in the resulting infrastructures.

Important: *VMMSSP is not an upgrade to the existing VMM 2008 R2 self-service portal. You can choose to deploy and use one or both self-service portals depending on your requirements.*

Hardware Requirements

The following table provides the minimum and recommended hardware requirements for a single-machine deployment.

Table 2: Required Hardware for a Single-Machine Deployment Scenario

Hardware Component	Minimum	Recommended
RAM	2 GB	4 GB

Available hard disk space	50 GB	50 GB
---------------------------	-------	-------

Software Requirements

Before you install the Self Service Portal components, install and configure the following software on the computer.

Table 3: Required Software for a Single-Machine Deployment Scenario

Software	Comments
Operating System: Windows Server® 2008 R2	Windows Server 2008 R2 Enterprise Edition and Windows Server 2008 R2 Datacenter Edition are supported.
Windows Server Internet Information Services (IIS) 7.0	<p>You must add the Web server role (IIS) and then install the following role services:</p> <ul style="list-style-type: none"> • IIS 6 Metabase Compatibility • Static Content • Default Document • ASP.NET • .NET Extensibility • ISAPI Extensions • ISAPI Filters • Request Filtering <p>Use Integrated Windows authentication (NTLM or Kerberos). Turn off Anonymous authentication. For more information, see Configure Windows Authentication in the IIS documentation.</p> <p>Use IIS v6.0 compatibility mode.</p>
Microsoft .NET Framework 3.5 SP1	
Windows PowerShell™ 2.0	<p>Important If your extensibility scripts require specific Windows PowerShell snap-ins, install them when you install the toolkit server component.</p> <p>Note If the Windows PowerShell execution policy is set to Restricted, the Setup wizard changes it to AllSigned.</p>

Microsoft Message Queuing	The following components must be installed: <ul style="list-style-type: none"> • Message Queuing Service • Directory Service integration
VMM 2008 R2 Administrator Console	
SQL Server 2008	SQL Server 2008 Enterprise (64-bit) and SQL Server 2008 Standard (64-bit) versions are supported.
Windows SharePoint Services 3.0 SP2	Only required if installing the reporting dashboard

Installing the Self Service Portal

The Self Service Portal Setup wizard installs all three of the toolkit components.

Important: You must have administrator permissions on the computers on which you intend to install the Self Service Portal components. You also must be a member of the local Administrators group on the computer running SQL Server and have sysadmin rights to the SQL instance where the database will be installed.

Installing the Self Service Portal on a Single Machine

You can install all three components together on a single physical computer or virtual machine by running the Setup wizard once. You can also install the VMMSSP website component and the server component separately on individual computers or virtual machines. When you install the VMMSSP server component, the VMMSSP database is created automatically.

When you install the VMMSSP website component, it connects to that database. You can distribute the self-service portal components across three physical computers or virtual machines by running the Setup wizard twice: once on the computer that will run the server component, and once on the computer that will run the VMMSSP website component. Before installing any component, ensure that the computer meets the minimum hardware requirements and that all prerequisite software is installed. When you install the toolkit server component, the toolkit database component installs

automatically. When you install the toolkit portal component, it connects to that database.

Setup the required Service Account

Create a standard user account in the domain that will act as the service account for the VMMSSP. The user account must have the following password attributes set:

- Password Never Expires
- User Cannot Change Password

Record the password and store in a secure place.

To install the toolkit components on a single computer

1. Log onto the Singer Server with an account that has Local Administration rights.
2. To begin the installation process, run the *SetupVMMSSP.exe* file.
 - a. On the **Start** menu, point to **Programs**, point to **Accessories**, right-click **Command Prompt**, and then click **Run as administrator**.
 - b. When prompted, click **Continue**.
 - c. At the command prompt, change the current directory to the location of the extracted files, type **setupVMMSSP.exe** and then press ENTER.
3. On the **Welcome** page, click **Install**.
4. Review and accept the license agreement, and then click **Next**.
5. Check the boxes for **VMMSSP server component** and **VMMSSP Website component** and then click **Next**.
6. On the **Check Prerequisites** page, wait for the wizard to complete the prerequisite checks, and then review the results. If any of the prerequisites are missing, follow the instructions provided. When all of the prerequisites are met, click **Next**.
7. Accept or change the default installation location, and then click **Next**.
8. Use the following steps to configure the toolkit database.
 - a. In **Database server**, type the name of the database server that will host the new toolkit database (or that hosts an existing toolkit database), or click on 'Get Instances' to enumerate existing SQL instances.

- b. In **SQL Server instance**, type the name of the SQL Server instance that manages the new (or existing) toolkit database.
 - o **NOTE:** It is possible that you will get an error at this point related to establishing a connection to the SQL Server. If so, use the Windows Advanced Firewall on the SQL server to create a program exception which will allow inbound SQL connections as described here: [http://technet.microsoft.com/en-us/library/cc771477\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/cc771477(WS.10).aspx)
 - c. In **Port**, type the port number that the SQL Server instance uses for incoming and outgoing communication. If you leave the Port value blank, the Setup wizard sets the value to the default port 1433.
 - d. Under **Credentials**, click the type of authentication that the database will use for incoming connections (**Windows authentication** or **SQL Server authentication**).
 - e. If you clicked **SQL Server authentication**, type the user name and password of a SQL Server account to use for accessing the database.
 - f. If you want the toolkit to create a new database (for example, if you are running the Setup wizard for the first time), click **Create a new database**.
 - o **Important:** If you are installing the toolkit for the first time you must select the option to create a new database.
 - o **Note:** The toolkit database name is DITSC, and cannot be changed.
 - g. If you want the toolkit to use an existing database, click **Connect to an existing database**. The DITSC database is selected, and cannot be changed.
 - h. When you finish configuring the toolkit database, click **Next**.
9. Type the user name, password, and domain of the VMMSSP domain service account. Click **Test account** to make sure that this account functions. When finished, click **Next**.
 10. In the **Connect the VMMSSP server to the VMMSSP portal** window, enter the settings that the toolkit portal component uses

to communicate with the server component. These settings include:

- a. The name of the computer that runs the server component
- b. The port number of the TCP endpoint (8000 by default)

When finished, click **Next**.

- The toolkit server component uses the TCP endpoint port to listen for client requests. The WCF service uses the HTTP endpoint port for publishing the toolkit service metadata. The metadata will be available using HTTP protocol with a GET request. For more information about WCF endpoints, see the [Fundamental Windows Communication Foundation Concepts](#) topic in the MSDN Library.

11. In the **Datacenter administrators** box, type the user names of the accounts that you want to be able to administer the toolkit. In the toolkit portal. The users specified here will be members of the DCIT Admin role and will have full administrative permissions to the toolkit.

- Do not use carriage returns to separate multiple accounts; they must be comma separated.

click **Next**.

12. Use the following steps to configure the IIS Web site for the toolkit portal.

- a. In **Web site name**, type the name that IIS will use for the toolkit portal Web site.
- b. In **Port number**, type the port number that IIS will use for the toolkit portal Web site.
- c. In **Application pool name**, type the name of the application pool that you have configured for the toolkit portal component to use.

Enter the **User Name, Password and Domain** of the VMMSSP domain service account and click on **Next**

13. On the **Install the components** page, review the settings that you selected, and then click **Install**. When prompted for confirmation Click **Yes**.

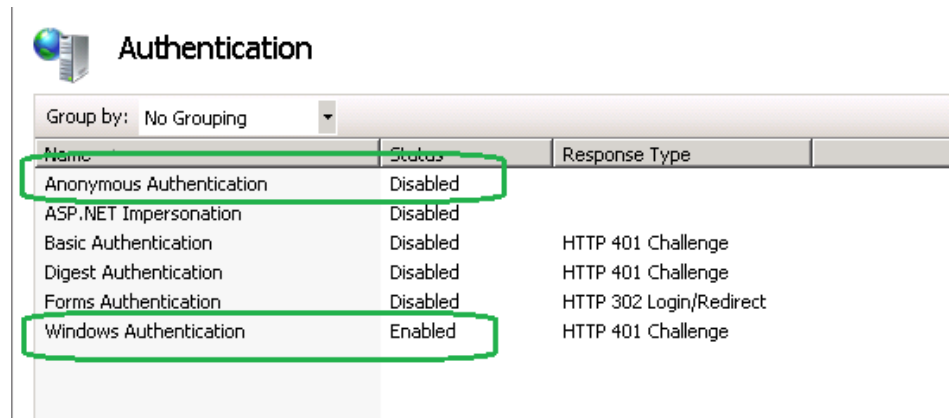
14. When the installation finishes, click **Close**.

15. Next, you will need to open up the port number specified in step 12(b) using the Windows Advanced Firewall MMC on the Self

Service Portal Server to allow connections to the SSP website from remote computers. For instructions on how to create port rules, see this article: [http://technet.microsoft.com/en-us/library/cc771477\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/cc771477(WS.10).aspx)

Complete the IIS Configuration

1. Launch IIS Manager
2. Navigate to Authentication
3. Disable Anonymous Authentication and Enable Windows Authentication



Prepare SCVMM for Portal integration

1. Add the VMMSSP Service account to the SCVMM Administrator Role. Refer to the Role Based Security section of this guide for more information on SCVMM User Roles.
2. Remove the Virtual NICs from the hardware profile of any templates that will be used by the VMMSSP. The VMMSSP will create all required NICs and add them on the fly. Refer to SCVMM Templates section of this guide for more information on SCVMM templates.

Configuring the Self Service Portal

1. Go to the **Settings** tab and click on **Configure Datacenter Resources**.
2. In **VMM Server**, type the fully qualified domain name of your Microsoft System Center Virtual Machine Manager (VMM) server. The self-service portal contacts the VMM server to carry out virtual machine operations, and to obtain lists of host groups, library

servers, library shares, and virtual machine templates.

Caution: After you have started to provision infrastructures, avoid changing the VMM server configuration. If you want to make such a change, ensure that you have a recovery plan in place for VMM. This change requires you to restart the DDTK service, which interrupts the self-service portal's ability to process requests and jobs.

3. In the **Devices** section, build a list of the non-server equipment in the datacenter (currently, SANs and load balancers are supported as devices). The devices listed here will be available to select when you configure services and service roles. For more information on configuration of non-server devices, refer to the next section.

4. In the **Networks** section, build a list of the networks that are available to business unit infrastructures.

Important You must configure these networks in the datacenter before you list them in the self-service portal.

5. In the **Active Directory** section, in **Domain Names**, type the fully qualified domain names of the domains that are available for business unit infrastructures. Separate names with commas (for example: **africa.woodgrove.com, asia.woodgrove.com**).

Important You must configure these domains in Active Directory Domain Services before you list them in the self-service portal.

6. If you want to configure costs for reserved memory resources, in the **Quota Costs** section, in **Memory Cost**, type the rate to charge per GB per day.

This is the default rate that business units will be charged for datacenter memory resources that they have been allocated, but are not using. When a business unit creates virtual machines, the self-service portal deducts the memory consumed by each virtual machine from the service memory quota. The cost you set in this step is then applied to the remaining unused memory in the quota.

7. If you want to configure costs for reserved storage resources, in the **Quota Costs** section, in **Storage Cost**, type the rate to charge per GB per day.

This is the default rate that business units will be charged for datacenter storage resources that they have been allocated, but are not using. When a business unit creates virtual machines, the self-service portal deducts the storage consumed by each virtual machine from the service storage quota. The cost you set in this step is then applied to the remaining unused storage in the quota.

8. In the **Environment** section, build a list of the environment types that are available to business unit infrastructures.

Provisioning a service includes associating that service with an environment. You can use the environments to help classify services according to usage. For example, you can define environments such as Development, Test, and Production, and then use these environments to help determine the resources to use for the service. For example, you may designate different host groups or network configurations for different environments, and you may charge different reserved costs based on the environment.

9. When finished, click **Save and Close** to save your information and return to the **Settings** tab.


Configure the Portal to Use a Device (SAN or Load Balancer)

1. In the **Devices** section of the **Settings: Datacenter Management** form, click **Add Device**, or next to an existing device listing, click the **Edit** icon ().
2. In the **Add a new device** dialog box, in **Device Name**, type a name that identifies the device.
3. In **Connection String**, type a string that the self-service portal can use to identify the device and communicate with it. Refer to the VMSSP integration guide supplied by the equipment vendor if available.
4. Click the **Device Type** list to select the type of device (**SAN** or **Load Balancer**).

5. When finished, click **Done** to save your information and return to the **Settings: Datacenter Management** form.


Configure Networking in the Portal

To add or edit a network that uses static IP addresses


1. To open the **Add/Edit a network** dialog box, do one of the following.
 - In the **Network** section of the **Settings: Datacenter Management** form, click **Add Network** (or next to an existing network listing, click the **Edit** icon []).
 - In the **Service Networks** section of the **Edit Service: servicename** form, click **Add Network** (or next to a requested network listing, click **Edit**). This option is only available to DC administrators.
2. In **Network Name**, type a name for the new network.
3. In **Hyper-V Network Name**, type the name used by the Hyper-V to identify the virtual switch this network will connect to.
4. If you wish Virtual Machines attached to this network to join an Active Directory Domain, Click **Connected to the corporate network**.
5. If connection to the network requires a VLAN, click **Connect to Virtual LAN**, and then in the **VLAN ID** box, type the unique ID for this network.
6. Under **IP Address**, click **Static IP**.
7. In **Start IP Address**, type the starting value of the IP address range that this network will use.
8. In **End IP Address**, type the ending value of the IP address range that this network will use.
9. In **Subnet Mask**, type the values to use for the subnet mask for this network.
10. In **Default Gateway**, type the IP address of the gateway server for this network.
11. In **DNS Server**, type the IP address of the DNS server for this network.
12. When finished, click **Done** to save your information and return to the **Settings: Datacenter Management** form or, if you are

provisioning a service, the **Edit Service: *servicename*** form.

To add or edit a network that uses dynamic IP addresses

1. To open the **Add/Edit a network** dialog box, do one of the following.
 - In the **Network** section of the **Settings: Datacenter Management** form, click **Add Network** (or next to an existing network listing, click the **Edit** icon []).
 - In the **Service Networks** section of the **Edit Service: *servicename*** form, click **Add Network** (or next to a requested network listing, click **Edit**). This option is only available to DC administrators.
2. In **Network Name**, type a name for the new network. This name must match the name configured for the network on the Hyper-V host.
3. If the network can connect to Active Directory, click **Domain-joined**.
4. If the network is a VLAN, click **Enable virtual LAN identification**, and then in the **VLAN ID** box, type the unique ID for this network.
5. Under **Address type**, click **Dynamic**.
6. When finished, click **Done** to save your information and return to the **Settings: Datacenter Management** form or, if you are provisioning a service, the **Edit Service: *servicename*** form.

Add or Edit an Environment Using the Portal

1. In the **Environment** section of the **Settings: Datacenter Management** form, click **Add Environment** (or next to an existing environment listing, click the **Edit** icon []).
2. In the **Add Environment** dialog box, in **Name**, type the name of the new environment.
3. When finished, click **Save** to save your information and return to the **Settings: Datacenter Management** form.

Environment names are presented to users when requesting infrastructures and services. Environment names are also supplied as runtime variables to the extensibility engine.

Configure Templates for Use in the Self-Service Portal

Use the procedures in this section to configure the self-service portal to work with your virtual machine templates and configure the virtual machine templates to support your charge-back model.

Important: Before you can use this procedure, the virtual machine templates must already be configured in System Center Virtual Machine Manager (VMM).

1. To navigate to the **Settings: Virtual Machine Templates** page, on the **Settings** tab, click **Virtual Machine Templates**.
2. Modify the inventory of virtual machine templates as needed. For example:
 - To import templates from VMM, click **Add Templates**. For more information, see section - **Importing Virtual Machine Templates from VMM**.
 - To remove a template from the self-service portal, click the template and then click **Remove**.
 - To edit the charge-back cost of a template, click the **Cost** field of the template you want to edit, delete the current cost, and then type a new cost.
3. When finished, click **Save and Close** to save your information and return to the **Settings** tab.

Importing Virtual Machine Templates from VMM

1. In the right pane of the Settings: Virtual Machine Templates page, click **Import Template**.
2. On the **Import Virtual Machine Templates** page, in the **Select Library Server** list, click a library server. In the **Select Library Share** list, click a library share from the list of shares associated with the selected library server.
3. Click **Search**.
 - a. **NOTE:** The self-service portal queries the selected server and share for all of the templates on that share.
4. In the **Virtual Machine Template Results** list, select the templates you want to import.
5. To import the selected templates into the self-service portal, click **Add Selected**.
6. After you have imported the templates, use the Settings:

Virtual Machine Templates page to configure the template costs as described in section 9.4.4 **Configuring Templates for Use in the Self-Service Portal**.

Self Service Portal v2.0 Dashboard

The Microsoft® System Center Virtual Machine Manager Self-Service Portal (VMMSSP) Dashboard is a Windows® SharePoint® Services–based application that provides a view of multiple sets of self-service portal statistics on a single Web page. Users can view data in the form of pie charts, graphs, or Dundas gauges.

The VMMSSP Dashboard supplements the Virtual Machine Manager 2008 R2 Self-Service Portal 2.0 by providing a centralized view of infrastructures, resources, virtual machines, and charge-back data. For each of these areas, the Dashboard also provides detailed status information. The VMMSSP Dashboard provides the information that IT Managers need to make decisions, to reduce the costs of services, and to improve the overall productivity of the datacenter.

Because the Dashboard is built on Windows SharePoint Services, users can access it without using the self-service portal.

Requirements for Self Service Portal v2.0 Dashboard

The following table lists software requirements for the VMMSSP Dashboard

Table 4: VMMSSP Dashboard Software Requirements

Infrastructure	Resource
Operating System	<ul style="list-style-type: none">See requirements for Microsoft System Center Virtual Machine Manager Self-Service Portal 2.0

Software	<ul style="list-style-type: none"> • Microsoft System Center Virtual Machine Manager Self-Service Portal 2.0 • Windows SharePoint Services 3.0 SP2 or Microsoft Office SharePoint Server 2007 SP2 <p>Note Microsoft Office SharePoint Server 2007 SP2 is supported as an alternative to Windows SharePoint Services 3.0. Microsoft Office SharePoint Server 2010 is not supported</p> <ul style="list-style-type: none"> • Microsoft SQL Server® 2008 <p>Note You can also use SQL 2005. However we recommend that you use SQL Server 2008 to take advantage of the improved performance.</p> <p>Important Use a full installation of SQL Server, rather than SQL Server Embedded Edition (the default database for Windows SharePoint Services and Microsoft Office SharePoint Server installations). SQL Server Embedded Edition does not support the functionality that the SharePoint content database needs to store VMMSSP Dashboard session database.</p> <ul style="list-style-type: none"> • Microsoft .NET Framework 3.5
Browser	<ul style="list-style-type: none"> • Microsoft Internet Explorer® 7.0 or later

Installing the Self Service Portal v2.0 Dashboard

Install the VMMSSP Dashboard on servers that run Windows SharePoint Services 3.0 SP2 or Microsoft Office SharePoint Server 2007 SP2. Remember that you need to have administrative privileges on the servers on which the application will be installed.

Note: The setup wizard automatically detects whether you are installing the VMMSSP Dashboard in a single-server environment or a multiple-server environment, and installs the Dashboard appropriately.

To install the VMMSSP Dashboard

1. Download the .zip file **SetupVMMSSPDashboard.zip** to your computer.

2. Copy the **SetupVMMSSPDashboard_x86.msi** or **SetupVMMSSPDashboard_x64.msi** (whichever one is appropriate for your system) file from the location you specified during the download to a Windows SharePoint Services server that has Windows SharePoint Services 3.0 Central Administration installed.
3. To begin the installation process, verify the logged on user who is running the installation has the following permissions:
 - a. Member of the Domain Administrators Group
 - b. SQL DBO on the SQL Server Database Server because you will create a new Session Database
 - c. SharePoint Farm Administrator

Note: Use the same user you logged on for the Site Owner Login.

4. Run the .msi file
 - a. On the **Start** menu of the Windows SharePoint Services server, point to **Programs**, point to **Accessories**, right-click **Command Prompt**, and then click **Run as administrator**.
 - b. When prompted, click **Continue**.
 - c. At the command prompt, change the current directory to the location of the msi file you want to install, and then type the following command:

```
Msiexec /I SetupVMMSSPDashboard.msi /L*V setup.log
```

5. Follow the steps in the setup wizard, which will prompt for the following information:

Table 5: Information Needed by Self-Service Portalv2 Setup Wizard

User Input Parameter	Description	Format
Application Pool Identity	Domain user account to be used for the following: <ul style="list-style-type: none"> • Application pool identity to use with Internet Information Services (IIS). • User credentials to use with the VMMSSP database. 	<i>Domain\UserName</i>

Password	Password that corresponds to the VMMSSP Dashboard user name.	
VMMSSP Database Server Name	Server that runs the VMMSSP database	<i>Server name\InstanceName</i> If the database is attached to the default instance of SQL Server, specify only the Server Name for this property
VMMSSP Database Name	Name of the VMMSSP database (by default, DITSC)	<i>DITSC</i>
Site Owner Logon	User account for the SharePoint site owner	<i>Domain\UserName</i>
Site Owner E-mail Address	E-mail address for the SharePoint site owner	<i>email@contoso.com</i>
SharePoint Database Server Name	Server that runs the SharePoint databases	<i>Server name\Instance Name</i> If the database is attached to the default instance of SQL Server, specify only the Server Name for this property
Session Database Name	Name of the SharePoint content database	<i>Database Name</i>

<p>VMMSSP Dashboard URL</p>	<p>The URL for the default Dashboard page that the installation wizard will create.</p> <p>Do not use localhost for the server name. Instead use the actual name of the server IP address. If you use localhost, users may not be able to access the Dashboard from other computers by browsing to <code>http://<ServerName>:<PortNumber></code>. Instead they will have to use <code>http://<ServerName>:<PortNumber>/Default.aspx</code>.</p>	<p><i>http://<server name>:<port number></i></p> <p>Example: http://servername:12345</p>
------------------------------------	---	--

- When you receive a message that indicates the installation process is complete, click **Finish**

ADDITIONAL RESOURCES

Below are several other resources available to accelerate a successful Server Virtualization deployment.

Microsoft Solution Accelerators

Microsoft provides tools and guidance to help you solve your deployment, planning, and operational IT problems. They are free and fully supported.

Microsoft Assessment and Planning (MAP) Toolkit

Download this network-wide inventory and assessment tool to determine the virtualization candidates for Windows Server 2008 R2 Hyper-V and Application Virtualization. If your customer is currently running VMware, the toolkit now includes a VMware discovery feature that identifies already-virtualized servers running under VMware that can be managed with System Center Virtual Machine Manager or which can be migrated to Hyper-V.

Learn more at: http://technet.microsoft.com/en-us/solutionaccelerators/dd537570.aspx?SA_CE=VIRT-MAP-WEB-SAT-2009-07-13

Offline Virtual Machine Servicing Tool 2.1

The Offline Virtual Machine Servicing Tool 2.1 has free, tested guidance and automated tools to help keep offline virtualized machines updated, without introducing vulnerabilities into your IT infrastructure. The tool combines the Windows Workflow programming model with the Windows PowerShell™ interface to automatically bring groups of virtual machines online, service them with the latest security updates, and return them to an offline state.

Learn more at: http://technet.microsoft.com/en-us/library/cc501231.aspx?SA_CE=OVMST21-Release-VIRTPROD-2009-12-07

Infrastructure Planning and Design Guides for Virtualization

Streamline your virtualization-infrastructure design processes with planning guidance from Infrastructure Planning and Design Guides for Virtualization. Each guide addresses a unique virtualization-infrastructure technology or scenario, provides critical architectural decisions to be addressed with available options, and supplies the means to validate design decisions to ensure that solutions meet the requirements of both business and IT stakeholders.

Learn more at: <http://technet.microsoft.com/en-us/solutionaccelerators/ee395429.aspx>

Microsoft.com

In addition to the resources above, please visit <http://www.microsoft.com> to find resources for delivering Microsoft Server Virtualization technologies.

© 2010 Microsoft Corporation. All rights reserved. The information contained in this document represents the current view of Microsoft Corporation on the issues discussed as of the date of publication and is subject to change at any time without notice to you. This document and its contents are provided AS IS without warranty of any kind, and should not be interpreted as an offer or commitment on the part of Microsoft, and Microsoft cannot guarantee the accuracy of any information presented. The information in this document represents the current view of Microsoft on the content. MICROSOFT MAKES NO WARRANTIES, EXPRESS, IMPLIED, OR STATUTORY, AS TO THE INFORMATION IN THIS DOCUMENT.

The descriptions of other companies' products in this document, if any, are provided only as a convenience to you. Any such references should not be considered an endorsement or support by Microsoft. Microsoft cannot guarantee their accuracy, and the products may change over time. Also, the descriptions are intended as brief highlights to aid understanding, rather than as thorough coverage. For authoritative descriptions of these products, please consult their respective manufacturers.