

# VMware Stage Manager Installation Guide

Stage Manager 1.0



VMware Stage Manager Installation Guide

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# About This Book

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The *VMware Stage Manager Installation Guide* covers installation and configuration tasks for VMware® Stage Manager.

## Intended Audience

The guide is intended for IT administrators. This administrator might be a VMware Infrastructure administrator.

This document assumes the user has some familiarity with these topics:

- Virtual machine technology
- Basic concepts of distributed, multitiered systems
- Current IT lifecycle practices
- Windows and Linux operating systems

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[http://www.vmware.com/support/phone\\_support.html](http://www.vmware.com/support/phone_support.html)

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# Introducing Stage Manager and the Installation Process

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# 1

Stage Manager organizes systems in the enterprise software lifecycle into services. These services represent the deliverables of IT and are broken into stages that span development and testing to production. Stage Manager increases IT service availability, accelerates response to configuration changes, promotes compliance with regulatory or workflow processes, and promotes efficient use of storage. See the *VMware Stage Manager User's Guide* for a full overview of the product and the service lifecycle.

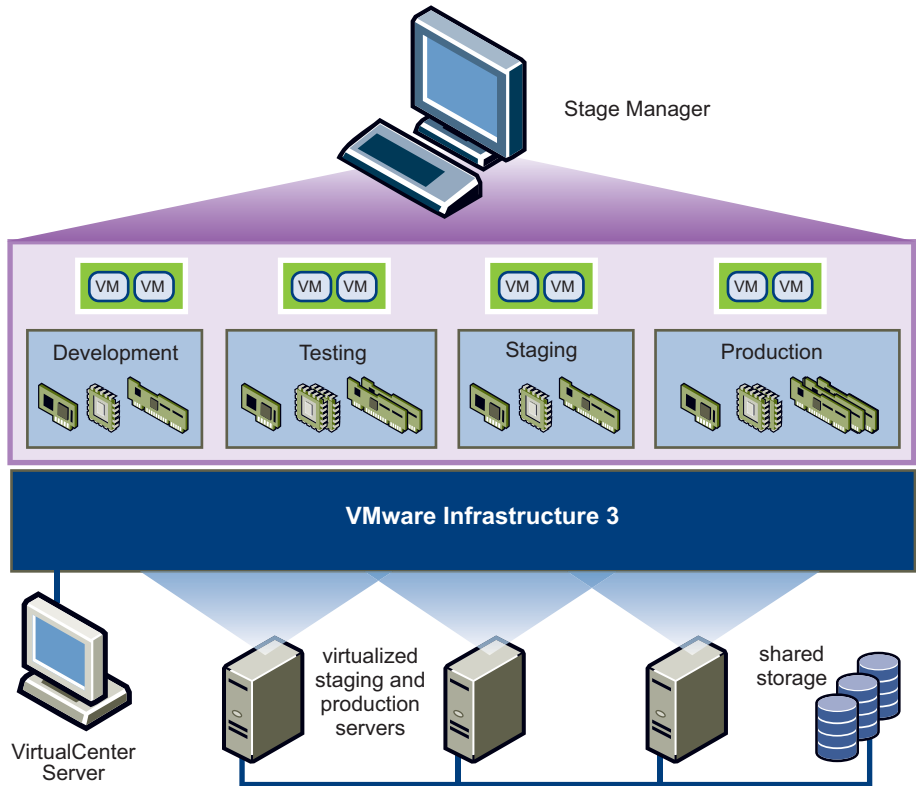
This chapter includes these topics:

- [“Understanding Stage Manager in the VMware Infrastructure Environment”](#) on page 8
- [“Guidelines for Installing VirtualCenter Server and Stage Manager Server Software”](#) on page 10

## Understanding Stage Manager in the VMware Infrastructure Environment

Stage Manager is an application that resides on and leverages the VMware Infrastructure product. See [Figure 1-1](#) for a view of Stage Manager in the larger VMware environment.

**Figure 1-1.** Stage Manager in the VMware Infrastructure Environment



The Stage Manager Server system provides centralized deployment and management of service configurations against a collection of resource pools provided by the VirtualCenter Server.

VMware ESX Server provides resources to run the virtual machines. The icons that appear in the blue lifecycle stages of the figure represent resource pools. See [“Using Clusters, Hosts, Resource Pools, and Datastores”](#) on page 9. Stage Manager manages the ESX Server hosts through the VirtualCenter Server and Stage Manager agent installed on those hosts.

VMware VirtualCenter Server is a control point for the datacenter and provides datacenter services such as access control, performance monitoring, and configuration. VirtualCenter also provides advanced VMware Infrastructure capabilities described in [“Leveraging VMware Infrastructure Capabilities”](#) on page 10. ESX Server hosts continue to function even if the VirtualCenter Server becomes unreachable (for example, the network connection is severed).

## Using Clusters, Hosts, Resource Pools, and Datastores

In VirtualCenter Server, you can view, configure, and manage these key elements:

- Computing and memory resources called hosts, clusters, and resource pools
- Storage resources called datastores
- Networks
- Virtual machines

See VMware Infrastructure 3 documentation at

[http://www.vmware.com/support/pubs/vi\\_pages/vi\\_pubs\\_35.html](http://www.vmware.com/support/pubs/vi_pages/vi_pubs_35.html).

In Stage Manager, you can assign resource pools to services and individual stages to partition available CPU and memory resources. Hosts, clusters, and resource pools provide flexible ways to organize the aggregated computing and memory resources in the virtual environment and link them back to the underlying physical resources.

Review these definitions:

- A host represents the aggregate computing and memory resources of a physical x86 server.
- A cluster acts and can be managed much like a host. It represents the aggregate computing and memory resources of a group of physical x86 servers sharing the same network and storage arrays.
- Resource pools are partitions of computing and memory resources from a single host or a cluster. With VMware Distributed Resource Scheduler, these pools can be hierarchical and nested.

In addition to assigning resource pools to a service or stage, use Stage Manager to monitor resource consumption at the service and stage level and change disk types based on stage requirements.

## Leveraging VMware Infrastructure Capabilities

Stage Manager leverages VMware Infrastructure capabilities such as VMware vMotion™, VMware DRS, and VMware High Availability. These are distributed services that enable efficient and automated resource management and high virtual machine availability.

Stage Manager works with virtual machines registered with VirtualCenter and VMware Infrastructure admission controls. For more information about VirtualCenter, see VMware Infrastructure 3 documentation at [http://www.vmware.com/support/pubs/vi\\_pages/vi\\_pubs\\_35.html](http://www.vmware.com/support/pubs/vi_pages/vi_pubs_35.html).

## Guidelines for Installing VirtualCenter Server and Stage Manager Server Software

To take advantage of VMware HA, VMware DRS, or vMotion, review these guidelines:

- Use clusters with the same hardware to derive benefits from VMware HA, VMware DRS, and vMotion.
- Install Stage Manager Server software on a virtual machine.
- VMware recommends shared storage. A larger number of hosts with shared storage means more ability to take advantage of VMware Infrastructure capabilities.
- Install VirtualCenter Server software on a virtual machine. Refer to the technical white paper, *Running VirtualCenter in a Virtual Machine*, in the Technical Resources section of the VMware Web site.
- Do not install the Stage Manager Server software on a physical or virtual machine that contains VirtualCenter Server software. If you have Stage Manager Server and VirtualCenter Server software installed in separate virtual machines, these virtual machines can reside on the same ESX Server host.

- If the Stage Manager Server system runs in a virtual machine on an ESX Server host under Stage Manager control, certain operations affect all virtual machines, such as **Undeploy all VMs** and **Redeploy all VMs**. These operations do not affect virtual machines on the same ESX Server host that are outside of Stage Manager control.

For information about these operations, see the *VMware Stage Manager User's Guide*.



**WARNING** VirtualCenter users must not manipulate portgroups created by Stage Manager because of potential consequences on fenced configurations. If Stage Manager portgroup changes occur in the VirtualCenter Server, a fenced configuration could leak traffic onto a public network. Stage Manager undeploys all virtual machines associated with that network to mitigate the damage.

For information about network fencing, configurations, and undeploy operations, see the *VMware Stage Manager User's Guide*.

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# Preparing to Install Stage Manager

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# 2

Review the overall installation process, requirements, and recommendations for your Stage Manager components and network. This chapter includes these topics:

- [“High-Level View of the Installation Process”](#) on page 14
- [“High-Level Checklist”](#) on page 14
- [“VMware Infrastructure Requirements and Recommendations”](#) on page 16
- [“Stage Manager Server Requirements”](#) on page 17
- [“Installing IIS and .NET Framework on Stage Manager Server”](#) on page 19
- [“Web Console Access Requirements”](#) on page 20
- [“Datastore Requirements”](#) on page 21
- [“Network Requirements”](#) on page 22
- [“Security Recommendations and Requirements”](#) on page 26

## High-Level View of the Installation Process

The installation process takes about 20 minutes and involves the high-level tasks described in [Table 2-1](#).

**Table 2-1.** Installation Tasks

Tasks	Details
Setting up VMware Infrastructure 3	Set up ESX 3.5 and VirtualCenter 2.5. You must set up at least two ESX Server hosts before setting up the Stage Manager Server system.
Preparing to install Stage Manager	Prepare your target system and make sure it meets all software and hardware requirements.
Creating the Stage Manager Server system	Install the Stage Manager Server software.
Initializing and configuring Stage Manager	Configure resources, networking, and other areas in the Web Initialization wizard.
Backing up the password encryption key	Back up the key that affects passwords for the VirtualCenter Server, ESX Server hosts, and SMTP server.

## High-Level Checklist

Review this high-level checklist to make sure you have everything you need for the Stage Manager environment.

### High-Level VMware ESX 3.5 and VMware VirtualCenter 2.5 Requirements

- Two or more servers from the ESX Server hardware compatibility guides.
- One VirtualCenter system.

See [“Guidelines for Installing VirtualCenter Server and Stage Manager Server Software”](#) on page 10 and [“VMware Infrastructure Requirements and Recommendations”](#) on page 16.

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**NOTE** Stage Manager supports VMware Infrastructure 3 Standard and VMware Infrastructure 3 Enterprise. ESX Server 3.5 Update 1 and VirtualCenter 2.5 Update 1 patches are required for using maintenance mode in VirtualCenter.

Stage Manager does not work with VMware Infrastructure 3 Foundation nor VMware ESXi 3.5.

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## High-Level Stage Manager Requirements

- Microsoft Windows Server 2003 32-bit Enterprise Edition (Service Pack 1 or higher) or Standard Edition (Service Pack 1 or higher). See [“Stage Manager Server Requirements”](#) on page 17.

You can install Stage Manager software in a virtual machine. See [“Guidelines for Installing VirtualCenter Server and Stage Manager Server Software”](#) on page 10.

- Stage Manager license key for a Stage Manager Server system.
- VMware–stagemanager–server–1.0.0–<build\_number>.exe to install the Stage Manager software.

## High-Level Client Browser Requirements

- Support for both Internet Explorer and Firefox. See [“Web Console Access Requirements”](#) on page 20.

Review Web browser and client operating system support in the appendix section of the *VMware Stage Manager User’s Guide*.

## High-Level Datastore Requirements

- VMware recommends shared storage (NFS, iSCSI, or Fiber Channel).
- NFS datastores for media files.
- VMware Virtual Machine File System (VMFS) or NFS datastores for virtual machines

## High-Level Networking Requirements

Requirements depend on whether you use a static IP pool or DHCP networking. For more information about IP allocation, routing, firewall settings, and more, see [“Network Requirements”](#) on page 22.

- Pool of unused IP addresses
- Gateway
- Subnet mask
- Primary DNS server
- (Optional) Secondary DNS server

## High-Level Guest Operating System Requirements

See the appendix section of the *VMware Stage Manager User's Guide*.

## VMware Infrastructure Requirements and Recommendations

Stage Manager supports VMware Infrastructure 3 Standard and VMware Infrastructure 3 Enterprise. ESX 3.5 Update 1 and VirtualCenter 2.5 Update 1 patches are required for using maintenance mode in VirtualCenter.

Stage Manager does not work with VMware Infrastructure 3 Foundation nor VMware ESXi 3.5.

For all VMware Infrastructure requirements, see the VMware Infrastructure documentation set and ESX Server hardware compatibility guides at [http://www.vmware.com/support/pubs/vi\\_pages/vi\\_pubs\\_35.html](http://www.vmware.com/support/pubs/vi_pages/vi_pubs_35.html).

Review these tips and requirements for using ESX Server hosts in a Stage Manager environment:

- For guidelines on areas such as memory use, read the *Performance Tuning Best Practices for ESX Server 3* technical white paper on the VMware Web site.
- (Recommended) The host CPU is the same across all hosts in the Stage Manager environment.
- (Recommended) To take advantage of the ability to migrate virtual machines, VMware recommends that all hosts have more CPUs than the number of virtual CPUs on a typical virtual machine in Stage Manager.

CPU homogeneity makes virtual machines more mobile for Stage Manager deployment and increases the ability to derive benefits from features such as VMotion, VMware DRS, and VMware HA.

If you do not have a homogenous CPU setup across hosts, ESX Server prevents you from deploying “suspended” virtual machines on one host to another host that is not compatible with the virtual machine CPU. (To resolve the issue, discard the suspended state.) For information about virtual machines in a suspended state, see the *VMware Stage Manager User's Guide*.

- (Recommended) Use SAN storage.

The minimum requirement is a local SCSI drive with a supported SCSI adapter, but this hardware setup does not allow you to share virtual machines across systems.

- Have a minimum of 500MB available in the `/var` partition.
- Have a minimum of 120MB available in the `/usr` partition.
- (Recommended) Multiple physical NICs grouped together.

This allows the NIC team to increase performance by distributing the traffic across those physical network adapters and provide passive failover in the event of hardware failure or network outage.

For best performance and security, use different virtual switches for the ESX Server service console and virtual machine portgroups.

- (Recommended) VMware recommends allocating at least 1GB of RAM to the VirtualCenter Server. Stage Manager generates more activity within the VirtualCenter Server than the daily interaction between the VirtualCenter Server and the VI Client.
- Set up the VMkernel network for NFS virtual machine and media datastores, and for using VMotion and DRS. See VMware Infrastructure 3 documentation at [http://www.vmware.com/support/pubs/vi\\_pages/vi\\_pubs\\_35.html](http://www.vmware.com/support/pubs/vi_pages/vi_pubs_35.html).

For best performance, use different virtual switches for the VMkernel portgroup and virtual machine portgroups.

## Stage Manager Server Requirements

Review the system requirements for the Stage Manager Server system.

Do not install the Stage Manager Server software on a physical or virtual machine that contains VirtualCenter Server software. If you have the Stage Manager Server and VirtualCenter Server software installed in separate virtual machines, these virtual machines can reside on the same ESX Server host.

For more information about Stage Manager and VirtualCenter, see “[Guidelines for Installing VirtualCenter Server and Stage Manager Server Software](#)” on page 10.

## Operating System and Framework

- Microsoft Windows Server 2003 32-bit Enterprise Edition (Service Pack 1 or higher) or Standard Edition (Service Pack 1 or higher)

Stage Manager only supports English (United States) regional settings.

- Internet Information Services (IIS) 6.0

See [“Installing IIS and .NET Framework on Stage Manager Server”](#) on page 19.

- Microsoft .NET Framework 2.0 (Service Pack 1 or higher)

You must install IIS prior to installing .NET Framework.

## CPU Speed

- 550MHz minimum
- (Recommended) 1GHz or faster

## Processor

Pentium III, Pentium 4, Xeon, Opteron, or Athlon processor

## Hard Disk

- 40GB minimum
- (Recommended) RAID 0 or RAID 5 for performance benefits

## Memory

- 512MB minimum
- (Recommended) 1GB or more

## Network

- At least one (unbound) Ethernet card:
  - NIC with static IP address
  - Physically connected NIC (no wireless cards)
- (Recommended) Gigabit Ethernet
- Machine cannot run on a Windows domain controller

- Fully qualified domain name (FQDN)

Certain features of Stage Manager require an FQDN. This requirement does not mean that the Stage Manager Server system resides in a domain.

An FQDN starts with the computer name followed by the DNS suffix (for example, `computer_name.mydomain.com`). VMware recommends avoiding the use of an IP address because complications might arise at a later time if you need to change that address. For example, changing the IP address requires regenerating the certificate because the certificate depends on this FQDN.

## CD/DVD Drive

For the Stage Manager Server system, you might need a CD or DVD drive if you need to put the Windows Server 2003 CD-ROM into the drive while configuring IIS and Microsoft .NET Framework. See [“Installing IIS and .NET Framework on Stage Manager Server”](#) on page 19.

## System Clock

Ensure that the system clocks are in sync with the clocks on all machines involved in the Stage Manager deployment (Stage Manager Server system, VirtualCenter system, ESX Server hosts, client machines accessing the Web console, files servers, and so on). This synchronization allows support staff to quickly pinpoint issues in logs.

See [“Installing and Configuring NTP on VMware ESX Server”](#) in the VMware knowledge base.

# Installing IIS and .NET Framework on Stage Manager Server

You must have IIS installed and enabled on the Stage Manager Server system. (See [“Operating System and Framework”](#) on page 18.) Install IIS before installing Microsoft .NET Framework 2.0 (Service Pack 1 or higher).

During the installation procedure, you might need to insert the Windows Server 2003 boot disk into the CD or DVD drive of the server.

### To install Internet Information Server (IIS)

- 1 Choose **Start > Settings > Control Panel > Add or Remove Programs**.
- 2 In the left pane of the Add or Remove Programs dialog box, click the **Add/Remove Windows Components** icon.

The Windows Components wizard starts.

- 3 Select the **Application Server** component.
- 4 Click **Details**.
- 5 Select the **Internet Information Services (IIS)** options.
- 6 Click **OK** and **Next** to install the components.

#### **To install the .NET Framework**

- 1 Open the Microsoft Web site.
- 2 In the **Search** field, enter:  
**.NET 2.0 SP1 download x86**  
This assumes you are searching for the Service Pack 1 download.
- 3 Download and install .NET Framework.

## **Verifying the Version of an Existing .NET Framework Installation**

If you already have .NET Framework installed prior to setting up Stage Manager, verify the version.

#### **To verify the version of an existing .NET Framework installation**

- 1 Choose **Start > Control Panel > Add or Remove Programs**.
- 2 Click the **Microsoft .NET Framework 2.0 Service Pack 1** program and click the link for support information.  
This assumes you installed version 2.0 Service Pack 1.
- 3 If you do not see version 2.1.21022 listed for the .NET Framework, install it.

## **Web Console Access Requirements**

Review these requirements for machines where a client opens a browser to access the Stage Manager Web console:

- The machines must have routable access to the Stage Manager Server system and ESX Server hosts.
- Use a 1024 x 768 or higher resolution monitor.
- These browser options must be enabled in Internet Explorer:
  - **Download signed ActiveX controls**
  - **Run ActiveX controls and plug-ins**

- **Allow META REFRESH**
- **Active scripting**
- **Allow paste operations via script**

To access these options, choose **Internet Options** in the **Tools** menu and click **Custom Level** in the **Security** tab.

- The **Play animations in web pages** option in Internet Explorer must be enabled. To access this option, choose **Internet Options** in the **Tools** menu and click the **Advanced** tab.
- The **Enhanced Internet Explorer Security Configuration** option must be disabled for Windows 2003. To access this option, open the Control Panel, click **Add or Remove Programs**, and click **Add/Remove Windows Components**.

For information about Web browser (Internet Explorer and Firefox) and client operating system support, see the appendix section of the *VMware Stage Manager User's Guide*.

## Datastore Requirements

Virtual machines can reside on VMFS and NFS datastores. Media files can reside on NFS datastores. For information about datastores and media stores (directories for media files), see the *VMware Stage Manager User's Guide*.

VMware recommends using a small number of large SAN VMFS partitions rather than a large number of small partitions.

Review these VMFS datastore requirements:

- The datastore must have enough space for the “chain” of delta disks generated from virtual machine operations. The chain cannot span multiple datastores.

For various changes, Stage Manager freezes the original delta disk and creates a new one. The chain length indicates how scattered the virtual machine image is across the directories of a datastore.

For information about chains and delta disks, see the *VMware Stage Manager User's Guide*.

- A VMFS datastore must be configured in the ESX Server system.

You must set up VMFS partitions outside of Stage Manager through VirtualCenter. See VMware Infrastructure 3 documentation at

[http://www.vmware.com/support/pubs/vi\\_pages/vi\\_pubs\\_35.html](http://www.vmware.com/support/pubs/vi_pages/vi_pubs_35.html).

Review these NFS datastore requirements:

- The NFS server must be accessible in read-write mode by all ESX Server hosts.
- The NFS server must allow read-write access for the root system account.

NFS datastores for virtual machines or media require configuration. You must use different exported shares for media and virtual machine storage, but these shares can reside on the same NFS server.

To configure and enable NFS datastores and media stores, see the administration section of the *VMware Stage Manager User's Guide*.

## Network Requirements

Review information on configuring routing, domains, and firewall settings.

### Configuring Routing

Review these network connectivity requirements:

- Stage Manager client machines accessing the Web console must have routable access to the Stage Manager Server system and ESX Server hosts. If these servers are behind a firewall and not directly accessible, you can use a virtual private network (VPN). See [“Configuring Firewall Settings”](#) on page 23.
- The connection from Stage Manager to VirtualCenter must be a direct HTTP connection without a proxy server.
- Do not use a Network Address Translation (NAT) device between the Stage Manager Server system and ESX Server hosts. The device breaks the communication between the Stage Manager Server system and the agent Stage Manager installs on each ESX Server host.
- The Stage Manager Server system does not need to reside on the same subnet as the ESX Server hosts.
- The Stage Manager Server system requires a static IP address.
- All ESX Server hosts must reside on the same subnet.
- The Stage Manager Server system and ESX Server hosts need access to the media (NFS) storage but do not need to reside on the same subnet.
- ESX Server hosts need access to NFS virtual machine storage.

## Configuring Domains and Permissions

Because the Stage Manager Server system and ESX Server hosts must mount shares for virtual machine import and export operations, these systems require matching DNS and DNS suffix information.

## Configuring Firewall Settings

Stage Manager communicates between its servers and clients through network ports. ESX Server software sets up default ports. See VMware Infrastructure 3 documentation at [http://www.vmware.com/support/pubs/vi\\_pages/vi\\_pubs\\_35.html](http://www.vmware.com/support/pubs/vi_pages/vi_pubs_35.html).

Review these firewall configuration requirements:

- **Client browser to access Stage Manager Server system** – TCP port 443.
- **Client browser to access ESX Server hosts** – TCP ports 902 and 903.
- **Stage Manager Server system and ESX Server hosts to access SMB share (import and export operations only)** – TCP ports 139 and 445, UDP ports 137 and 138.

These ports are for importing and exporting virtual machines to and from SMB storage.

- **ESX Server hosts to access NFS media datastores or NFS virtual machine datastores** – TCP port 2049 (optional).
- **Stage Manager Server system to access Stage Manager agent on ESX Server hosts** – TCP port 5212.
- **Stage Manager Server system to access ESX Server host agent on ESX Server hosts** – TCP port 443.
- **Stage Manager Server system to access VirtualCenter system** – TCP port 443.

You can configure and change this port in the Web Initialization Wizard. See “[Initializing and Configuring Stage Manager](#)” on page 30.

- **VirtualCenter system to access ESX Server hosts** – For information about configuring communication between VirtualCenter components, see the VMware Infrastructure 3 *Quick Start Guide*.

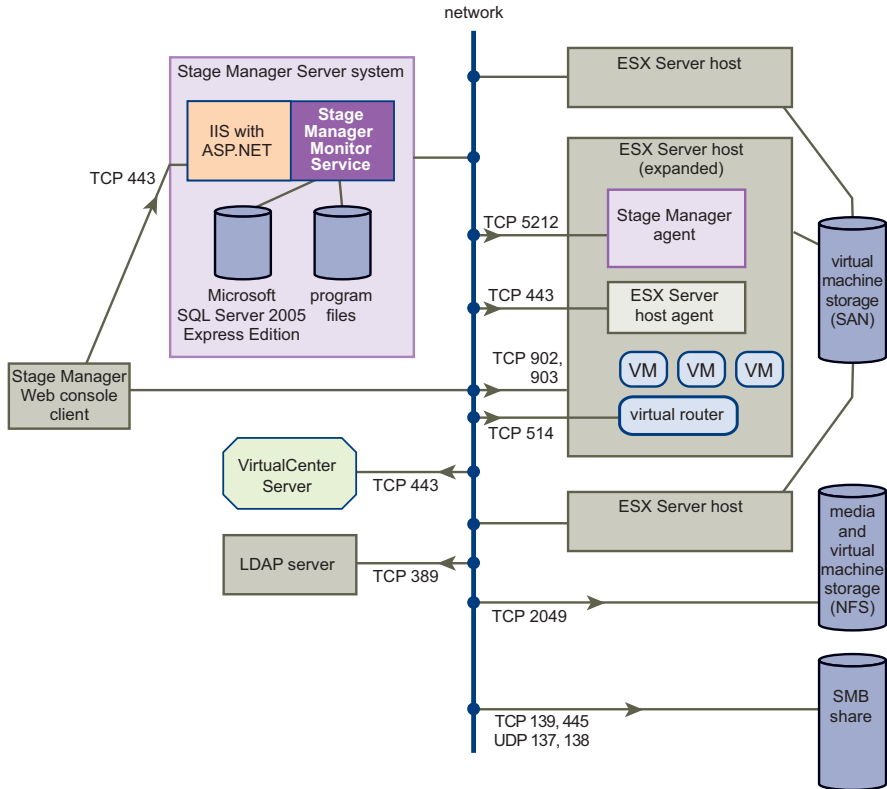
- **Stage Manager Server system to communicate with virtual router on some ESX Server hosts – TCP port 514.**

Stage Manager uses this port to deploy and undeploy virtual machines with network fencing. For information about fencing, see the *VMware Stage Manager User's Guide*.

- **Stage Manager Server system to access LDAP Server – TCP port 389 (optional).**

See [Figure 2-1](#) for an illustration of Stage Manager ports.

**Figure 2-1.** Detailed View of Stage Manager Components and Ports



During the installation process, ensure that port conflicts do not exist. To determine ports in use, run the `netstat -b` command from the command line to determine the program executable.

## Gathering Network Information for Installation

Before you begin the installation, gather the following information about your network if you do not plan on using DHCP networking:

- Block of IP addresses the Stage Manager Server system uses for virtual machines
- IP addresses for the primary and secondary DNS servers in the network
- Subnet mask for the network
- IP address for the network gateway
- Stage Manager Server DNS suffix

For information about static and DHCP IP allocation, see [“Initializing and Configuring Stage Manager”](#) on page 30.

### IP Addresses for Virtual Machines

Reserve a range of IP addresses for virtual machines. This range is in addition to the IP addresses required for each Stage Manager Server system and ESX Server hosts. IP addresses for virtual machines are allocated from the pool of IP addresses you reserve. The number of virtual machines running and requiring IP addresses varies with the number and complexity of configurations deployed at any one time.

The maximum number of IP addresses you can add at one time is 1024. No limit exists on the number of total addresses you can use.

For a minimum environment, you need at least 100 IP addresses. (You can add blocks of addresses later.) For a large installation, VMware recommends allocating at least 200 IP addresses. You need one or two IP addresses for each deployed virtual machine. Base your estimate on current and future needs.

[Table 2-2](#) describes the network information needed for a static IP pool.

**Table 2-2.** Static IP Pool Information

IP and Network Component	Example
IP address block for virtual machines	10.6.1.10 — 10.6.1.199
Subnet mask for virtual machines	255.255.255.0
Gateway for virtual machines	10.6.1.1
DNS server 1	10.6.1.200
DNS server 2 (optional)	10.6.1.201
DNS suffix	vmware.com

## Security Recommendations and Requirements

Review the recommendation for installing SSL certificates and requirement for certain policies in a high-security environment.

VMware recommends using an SSL certificate on the Stage Manager Server system.

### Installing or Customizing the SSL Certificate

VMware recommends installing an SSL certificate from a trusted certification authority that validates the server identity. Generate the SSL certificate with the domain name or IP address for accessing Stage Manager.

If you do not install the SSL certificate, VMware automatically generates one but SSL security warnings appear in the browser. See Chapter 2 in the *VMware Stage Manager User's Guide*.

You can use OpenSSL to generate a custom SSL certificate with a different name than the one generated by VMware. VMware recommends generating the custom certificate on the Stage Manager Server system.

#### To generate a custom SSL certificate using OpenSSL

- 1 Download and install OpenSSL on the Stage Manager Server system.
- 2 Create a file named `OpenSSLVMware.cfg` in a working directory.

Review this sample file:

```
# Conf file that vpx uses to generate SSL certificates.
[ req ]
default_bits          = 1024
default_keyfile       = rui.key
distinguished_name    = req_distinguished_name

#Don't encrypt the key
encrypt_key           = no
prompt                = no

string_mask = nombstr

[ req_distinguished_name ]
countryName           = US
stateOrProvinceName  = CA
localityName          = CA
0.organizationName    = VMware, Inc.
organizationalUnitName = VMware, Inc.
commonName             = machine1
emailAddress           = support@vmware.com
```

- 3 Store `openssl.exe`, `libeay32.dll`, and `ssleay32.dll` in the working directory.
- 4 From the working directory, change the `commonName` entry in `OpenSSLVMware.cfg` to the machine host name.
- 5 From the command prompt in the working directory, run this command:
 

```
openssl req -new -x509 -keyout "OpenSSLVMware.key" -out
           "OpenSSLVMware.crt" -days 730 -config "<working
           directory>\OpenSSLVMware.cfg"
openssl pkcs12 -export -out "OpenSSLVMware.pfx" -in "OpenSSLVMware.crt"
           -inkey "OpenSSLVMware.key" -name OpenSSLVMware -passout
           pass:<password>
```

This generates a `.pfx` file.
- 6 Remove any outdated certificates from IIS and import the new `.pfx` file into IIS. Microsoft IIS documentation offers instructions on removing and importing certificates.

## Required Windows Security Policies

The default security policy settings for the Stage Manager Server operating system support Stage Manager operations. If you manipulated security policies to support a high-security environment, you must modify the policy settings to support Stage Manager.

### To modify security policy settings to support Stage Manager

- 1 On the desktop of the target Stage Manager Server system, choose **Start > All Programs > Administrative Tools > Local Security Policy**.
- 2 In the left pane, navigate to **Security Options** under **Local Policies**.
- 3 In the right pane, double-click **Microsoft network server: Digitally sign communications (always)**.
- 4 Select **Disabled** and click **OK**.
- 5 In the right pane, double-click **Microsoft network server: Digitally sign communications (if client agrees)**.
- 6 Select **Disabled** and click **OK**.

- 7 In the right pane, double-click **Network Security: Lan Manager authentication level**.
- 8 Select **Send NTLM response only**.
- 9 Click **OK**.

# Installing Stage Manager

---

Installing Stage Manager involves installing the Stage Manager Server software, performing initialization tasks, and logging in to the Stage Manager Web console. This chapter includes these topics:

- [“Installing the Stage Manager Server Software”](#) on page 29
- [“Initializing and Configuring Stage Manager”](#) on page 30
- [“Backing Up the Password Encryption Key”](#) on page 35
- [“Uninstalling Stage Manager”](#) on page 35

## Installing the Stage Manager Server Software

Default and custom options are available for the Stage Manager Server installation.

The software installs an instance of Microsoft SQL Server 2005 Express Edition for use with Stage Manager.

### To install the Stage Manager Server software

- 1 On the target Stage Manager Server system, run `VMware-stagemanager-server-1.0.0-<build_number>.exe`.
- 2 If the software cannot detect an FQDN, enter one when prompted.  
For information about FQDN, see [“Network”](#) on page 18.
- 3 Specify whether you want a **Typical** or **Custom** installation.  
Use a custom installation to change the program files directory.

- 4 Select the IP address for Stage Manager traffic.

This information appears only if you have more than one active NIC with static IP addresses.

- 5 Click **Install**.
- 6 Click **Finish**.

## Initializing and Configuring Stage Manager

You can perform this task on the Stage Manager Server system or any system with access to the Stage Manager Server system.

### To initialize and configure Stage Manager

- 1 From any machine with network access to the Stage Manager Server system, open a browser and navigate to `http://<Stage_Manager_Server_IP_address_or_name>`.

The Web Initialization Wizard starts. If you receive SSL warnings, see the *VMware Stage Manager User's Guide*.

- 2 Accept the license agreement.
- 3 Enter the server and capacity license keys.
- 4 Enter the following VirtualCenter information:

- VirtualCenter IP address or host name
- (Optional) Port number
- User name and password.

See [“Credential Requirements for Connecting Stage Manager to the VirtualCenter Server”](#) on page 32.

- System name for this Stage Manager installation

If you have multiple installations of Stage Manager, make sure each installation has a unique system name up to 25 characters.

You cannot change this name at a later time. See [“Choosing a Stage Manager System Name”](#) on page 34.

- 5 Specify the IP address allocation options that appear in the Stage Manager Web console:
  - a Select the **DHCP** (dynamic allocation) option, **Static IP Pool** option, or both options.

Stage Manager will allow you to use a different option for each virtual machine.

These allocation choices can be altered after this wizard. See [“Static IP and DHCP Networking”](#) on page 34.
  - b Select the default IP setting for a new virtual machine.
  - c If other installations of Stage Manager exist on your network, make sure the installation ID does not conflict with the ID of another installation.

The installation ID affects the unique MAC addresses required to deploy virtual machines. See the *VMware Stage Manager User’s Guide*.
- 6 Enter the resource pool information:
  - a Select the resource pool for Stage Manager.

This can be a host or cluster. See [“Resource Pools”](#) on page 35.
  - b (Optional) Enter a different name for the resource pool in the Stage Manager environment.
- 7 Prepare the ESX Server hosts that provide compute power to the selected resource pool:
  - a Select or clear the check box that specifies whether to use the same user name and password for all hosts.
  - b If you use the same user name and password for all hosts, enter the user name and password.
  - c Select the check boxes for hosts you want to prepare and enter individual user names and passwords if necessary.
- 8 From the list of networks, select a virtual switch for each host.

Stage Manager virtual machines on that host will use that switch. You can change a switch in the Stage Manager Web console.
- 9 Select the check boxes for datastores you want to enable for virtual machine use.

- 10 Create the first Stage Manager administrator account with a user name, password, full name, and email address.

After the wizard displays information on configuration tasks that occur in the Stage Manager Web console, the login page appears.

- 11 Enter the user name and password of the Stage Manager administrator account.

## Credential Requirements for Connecting Stage Manager to the VirtualCenter Server

To set up a connection with the VirtualCenter Server, Stage Manager requires a user who is part of a role in VirtualCenter with at least the privileges listed in [Table 3-1](#). As with other roles in VirtualCenter, you can assign Windows users or VirtualCenter users to this role.

If the connection to the VirtualCenter Server is set up with VirtualCenter administrator credentials, the user already has the proper credentials to make this connection.

Stage Manager requires the user to have certain permissions on objects. Any change in the role of this user to another VirtualCenter role with fewer privileges hinders Stage Manager operations. For example, assigning the user to the **No Access** role in VirtualCenter for an object, such as a resource pool, blocks the visibility of this object in a Stage Manager environment. For information about roles and setting object permissions, see VMware Infrastructure 3 documentation at [http://www.vmware.com/support/pubs/vi\\_pages/vi\\_pubs\\_35.html](http://www.vmware.com/support/pubs/vi_pages/vi_pubs_35.html).

The privileges in [Table 3-1](#) appear in the **Edit Role** dialog box of the VI Client:

**Table 3-1.** Required Privileges for Connecting to the VirtualCenter Server

VI Client Privilege Category	Required Privileges
Global	<ul style="list-style-type: none"> <li>■ Enable Methods</li> <li>■ Disable Methods</li> </ul>
Folder	<ul style="list-style-type: none"> <li>■ Create Folder</li> <li>■ Delete Folder</li> <li>■ Rename Folder</li> <li>■ Move Folder</li> </ul>
Datstore	<ul style="list-style-type: none"> <li>■ Browse Datstore</li> <li>■ File Management</li> </ul>
Network	<ul style="list-style-type: none"> <li>■ Remove</li> </ul>

**Table 3-1.** Required Privileges for Connecting to the VirtualCenter Server (Continued)

VI Client Privilege Category	Required Privileges
Host	<ul style="list-style-type: none"> <li>■ Inventory               <ul style="list-style-type: none"> <li>■ Modify Cluster</li> </ul> </li> <li>■ Configuration               <ul style="list-style-type: none"> <li>■ System Management</li> <li>■ Network Configuration</li> </ul> </li> <li>■ Local Operations               <ul style="list-style-type: none"> <li>■ Add host to VirtualCenter</li> </ul> </li> </ul>
Virtual Machine	<ul style="list-style-type: none"> <li>■ Inventory               <ul style="list-style-type: none"> <li>■ Create</li> <li>■ Move</li> <li>■ Remove</li> </ul> </li> <li>■ Interaction               <p>Select all options. For example, select Power On, Power Off, and all other options.</p> </li> <li>■ Configuration               <p>Select all options. For example, select Rename, Add Existing Disk, and all other options.</p> </li> <li>■ Provisioning               <ul style="list-style-type: none"> <li>■ Clone</li> <li>■ Deploy Template</li> <li>■ Clone Template</li> <li>■ Read Customization Specifications</li> <li>■ Modify Customization Specification</li> <li>■ Allow Disk Access</li> <li>■ Allow Read-only Disk Access</li> <li>■ Allow Virtual MACHine Download</li> <li>■ Allow Virtual Machine Files Upload</li> </ul> </li> </ul>
Resource	<ul style="list-style-type: none"> <li>■ Assign Virtual Machine To Resource Pool</li> <li>■ Apply Recommendation</li> <li>■ Migrate</li> <li>■ Relocate</li> <li>■ Query VMotion</li> </ul>

## Choosing a Stage Manager System Name

If you have multiple installations of Stage Manager, make sure each installation has a unique system name. This name impacts these actions:

- Creating virtual switches and portgroups.
- Creating the directory to store all virtual machines on each datastore.
- Identifying ESX Server hosts under Stage Manager control.
- Creating a folder in the **Virtual Machines & Templates** view of VirtualCenter.

## Static IP and DHCP Networking

You can use static IP or DHCP networking in Stage Manager on a per-virtual machine basis.

To avoid setting up an IP range, use DHCP to pull IP addresses from a DHCP server. DHCP does not work with network fencing, a feature that allows multiple users to work with live instances of the same virtual machine configuration on the same network. For more information about fencing, see the appendix section of the *VMware Stage Manager User's Guide*.

To use a static IP address, you can enter an IP address manually or use the static IP pool. The pool requires you to specify an IP range, DNS suffix, gateway, netmask, and DNS information. Stage Manager allows you to add a maximum of 1024 IP addresses at a time. You can add an unlimited total number of IP addresses. The static IP pool works with network fencing.

When you create a virtual machine from a template, and you select a static IP allocation method, Stage Manager allocates an IP address from the IP pool to the virtual machine. This IP address stays with the virtual machine through the various operations in Stage Manager. When you delete all instances of the virtual machine with this IP address, Stage Manager releases the IP address to the IP pool.

If you deploy a configuration in fenced mode, Stage Manager allocates an additional IP address from the IP pool and assigns it as the external IP address for each virtual machine in the configuration. You can use the external IP address to access the virtual machine from outside the fenced configuration (for example, from your desktop). When you undeploy this configuration, Stage Manager releases the IP address to the IP pool.

See the *VMware Stage Manager User's Guide*.

## Resource Pools

A resource pool is a logical structure that enables delegation of control over the resources of a host. Resource pools compartmentalize all resources in a cluster. You can create multiple resource pools as direct children of a host or cluster and configure them. You can then delegate control over them to other individuals or organizations. The managed resources are CPU and memory from a host or cluster. Virtual machines execute in, and draw their resources from, resource pools.

See VMware Infrastructure 3 documentation at [http://www.vmware.com/support/pubs/vi\\_pages/vi\\_pubs\\_35.html](http://www.vmware.com/support/pubs/vi_pages/vi_pubs_35.html) and the administration chapter of the *VMware Stage Manager User's Guide*.

## Backing Up the Password Encryption Key

Stage Manager creates the `system-infos.bin` file during the installation for password encryption. This file is a key that affects passwords for the VirtualCenter Server, ESX Server hosts, and SMTP server. To ensure you do not lose passwords, back up this file located in the directory where you installed the Stage Manager Server software.

## Uninstalling Stage Manager

Uninstalling Stage Manager involves detaching resource pools, unpreparing the ESX Server hosts, and removing the Stage Manager Server software.

The uninstall process still leaves some entries for the instance of SQL Server 2005 Express Edition installed with the Stage Manager Server software. You can remove these entries if necessary.

### To uninstall Stage Manager

- 1 Log in to the Stage Manager Web console.
- 2 Unprepare the ESX Server hosts from the **Hosts** tab.

See the administration section of the *VMware Stage Manager User's Guide*.

The unprepare process removes all the necessary hosts from Stage Manager use and uninstalls the Stage Manager agent on the hosts.

- 3 Detach the resource pools from Stage Manager.

See the administration section of the *VMware Stage Manager User's Guide*.

- 4 Log out of the Stage Manager Web console.

- 5 From the **Start** menu on the desktop, choose **Add or Remove Programs** in the Control Panel.
- 6 Select the **VMware Stage Manager** program and click the **Change/Remove** button.
- 7 Specify the extent of the uninstallation:
  - Select **Remove program files only** in a partial uninstallation or upgrade process. Proceed to [Step 10](#).
  - Select **Remove everything** in a full uninstallation.
- 8 Click **Yes** to remove all the Stage Manager software.
- 9 Click **Yes** to reset Stage Manager Services and IIS.
- 10 Click **Finish**.

**To remove SQL Server 2005 Express Edition entries installed with the Stage Manager Server software**

- 1 From the **Start** menu on the desktop, choose **Add or Remove Programs** in the Control Panel.
- 2 Click the **Remove** button for these entries:
  - **Microsoft SQL Server 2005** (including the VSM instance if prompted)
  - **Microsoft SQL Server Native Client**
  - **Microsoft SQL Server Setup Support Files (English)**
  - **Microsoft SQL Server VSS Writer**

When you remove the SQL Server components, error messages, such as **Registry enumeration failed**, might appear. These messages do not affect the removal process.

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