



# Citrix XenServer® 6.1.0 Quick Start Guide

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Citrix XenServer ® 6.1.0 Quick Start Guide

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# Chapter 1. Welcome

The XenServer Quick Start Guide steps through the installation and configuration essentials to get XenServer and its graphical, Windows-based user interface, XenCenter, up and running. After installation, it takes you through the process of creating Windows virtual machines (VMs) and then making customized virtual machine templates from which you can quickly create multiple, similar VMs. Finally, this guide demonstrates how to create a pool of hosts, which provides the foundation to migrate running VMs between hosts using XenMotion.

Focusing on the most basic deployment scenarios, this guide aims to get you set up quickly.

This guide is primarily intended for new users of XenServer and XenCenter. It is intended for those who wish to administer XenServer using XenCenter. For information on how to administer XenServer using the Linux-based `xe` commands through the XenServer Command Line Interface (CLI), please refer to the *XenServer Administrator's Guide*.

This guide will take you through:

- **Installing XenServer and XenCenter**
  - Installing XenServer on a physical host
  - Installing XenCenter
  - Connecting XenCenter to the XenServer host
  - Activating XenServer
- **Creating Virtual Machines**
  - Creating a Windows VM
  - Making VM templates: from an existing VM and from a VM snapshot
  - Creating VMs from VM templates
- **Creating a Pool of XenServer Hosts**
  - Creating a pool of hosts
  - Setting up shared storage for the pool
  - Copying VMs to shared storage
  - Migrating running VMs between hosts in a pool (XenMotion)

## Terminology and Abbreviations

- *Host* — a physical computer that runs XenServer
- *Virtual Machine (VM)* — a computer composed entirely of software that can run its own operating system and applications as if it were a physical computer; a VM behaves exactly like a physical computer and contains its own virtual (software-based) CPU, RAM, hard disk and network interface card (NIC)
- *Pool* — a single managed entity that binds together multiple XenServer hosts and their VMs
- *Storage Repository (SR)* — a storage container in which virtual disks are stored

## XenServer Major Components

**XenServer** is a complete server virtualization platform, optimized for both Windows and Linux virtual servers, with all the capabilities required to create and manage a virtual infrastructure.

XenServer runs directly on server hardware without requiring an underlying operating system, which results in an efficient and scalable system. XenServer works by abstracting elements from the physical machine (such as hard drives, resources and ports) and allocating them to the virtual machines (VMs) running on it.



XenServer lets you create VMs, take VM disk snapshots and manage VM workloads.

**XenCenter** is a graphical, Windows-based user interface. XenCenter allows you to manage XenServer hosts, pools and shared storage, and to deploy, manage and monitor VMs from your Windows desktop machine.

The XenCenter *Help* is also a great resource for getting started with XenCenter.

# Chapter 2. Installing XenServer and XenCenter

This chapter steps through installing XenServer on a single physical host, installing XenCenter on a Windows computer, and connecting them to form the infrastructure for creating and running virtual machines (VMs).

To get started, you need at least two separate physical computers: one to be the XenServer host and the other to run the XenCenter application. The XenServer host computer is dedicated entirely to the task of running XenServer — hosting VMs — and is **not** used for other applications. The computer that runs XenCenter can be any general-purpose Windows computer that satisfies the hardware requirements and can be used to run other applications too. For a detailed description of the system requirements, see [Appendix A, System Requirements](#).

You will also need the main XenServer installation CD, which contains the basic packages required to set up XenServer on your host and install XenCenter on your Windows computer. If you do not have the installation CD, you can download a digital copy and burn it to a CD. To download the installer, visit [www.citrix.com/xenserver](http://www.citrix.com/xenserver).

In this chapter, you will:

- **Install the XenServer host**
- **Install XenCenter**
- **Connect XenCenter to the XenServer host**
- **Activate XenServer**

## 2.1. Installing the XenServer Host

All hosts have at least one IP address associated with them. If you want to configure a static IP address for the host (instead of using DHCP), it is helpful to have the static IP address on hand before beginning this procedure.

### To install the XenServer host

1. Insert the main installation CD into the DVD drive of the host computer.

**Warning:**

Installing XenServer will overwrite data on any hard drives that you select to use for the installation. Back up any data that you wish to preserve before proceeding.

2. Restart the host computer.
3. Boot from the DVD drive (if necessary, see your hardware vendor documentation for information on changing the boot order).
4. Following the initial boot messages and the **Welcome to XenServer** screen, select your keyboard layout for the installation.

**Tip:**

Throughout the installation, quickly advance to the next screen by pressing **F12**. For general help, press **F1**.

5. When the **Welcome to XenServer Setup** screen is displayed, select **Ok**.
6. Read and accept the XenServer End User License Agreement (EULA).

**Note:**

If you now see a **System Hardware** warning screen and suspect that hardware virtualization assist support is available on your system, check the support site of your hardware manufacturer for BIOS upgrades.



7. Select **Ok** to perform a clean installation.

**Note:**

If this is an upgrade, see the *XenServer Installation Guide* for details.

8. If you have multiple hard disks, choose a Primary Disk for the installation. Select **Ok**.

Choose which disk(s) you would like to use for virtual machine storage. Choose **Ok**.

9. Select **Local media** as your installation source.

**Note:**

For information on using HTTP, FTP, or NFS as your installation source, see the *XenServer Installation Guide*.

10. When prompted about if you would like to install any supplemental packs, choose **No** to continue.
11. Select **Skip Verification**, and then choose **Ok**.

**Note:**

If you encounter problems during installation, it is recommended that you verify the installation source.

12. Set and confirm a root password, which the XenCenter application will use to connect to the XenServer host.
13. Set up the management interface that will be used to connect to XenCenter.

If your computer has multiple network interface cards (NICs), select the NIC which you want to use for management traffic (typically the first NIC). A network port that is not tagged as a VLAN is required for the management interface.

14. Configure the Management NIC IP address with a static IP address or to use DHCP.
15. Specify the hostname and the DNS configuration, manually or automatically via DHCP.

If manually configuring the DNS, enter the IP addresses of your primary (required), secondary (optional), and tertiary (optional) DNS servers in the fields provided.

16. Select your time zone — the geographical area and then city.
17. Specify how you would like the server to determine local time: using NTP or manual time entry. Choose **Ok**.

If using NTP, you can then specify if the DHCP sets the time server, or enter at least one NTP server name or IP address in the fields below.

18. Select **Install XenServer**.
19. If you elected to set the date and time manually, you are prompted to do so.
20. From the **Installation Complete** screen, eject the installation CD from the drive, and then select **Ok** to reboot the server.

After the server reboots, XenServer displays **xsconsole**, a system configuration console.

**Note:**

Make note of the IP address displayed. You will use this when you connect XenCenter to the host.



## 2.2. Installing XenCenter

XenCenter is typically installed on your local workstation or laptop.

### To install XenCenter

1. Insert the main installation CD into the DVD drive of the computer which you want to run XenCenter.
2. Open the `client_install` folder on the CD. Double-click `XenCenter.msi` to begin the installation.
3. Follow the Setup wizard, which allows you to modify the default destination folder and then to install XenCenter.

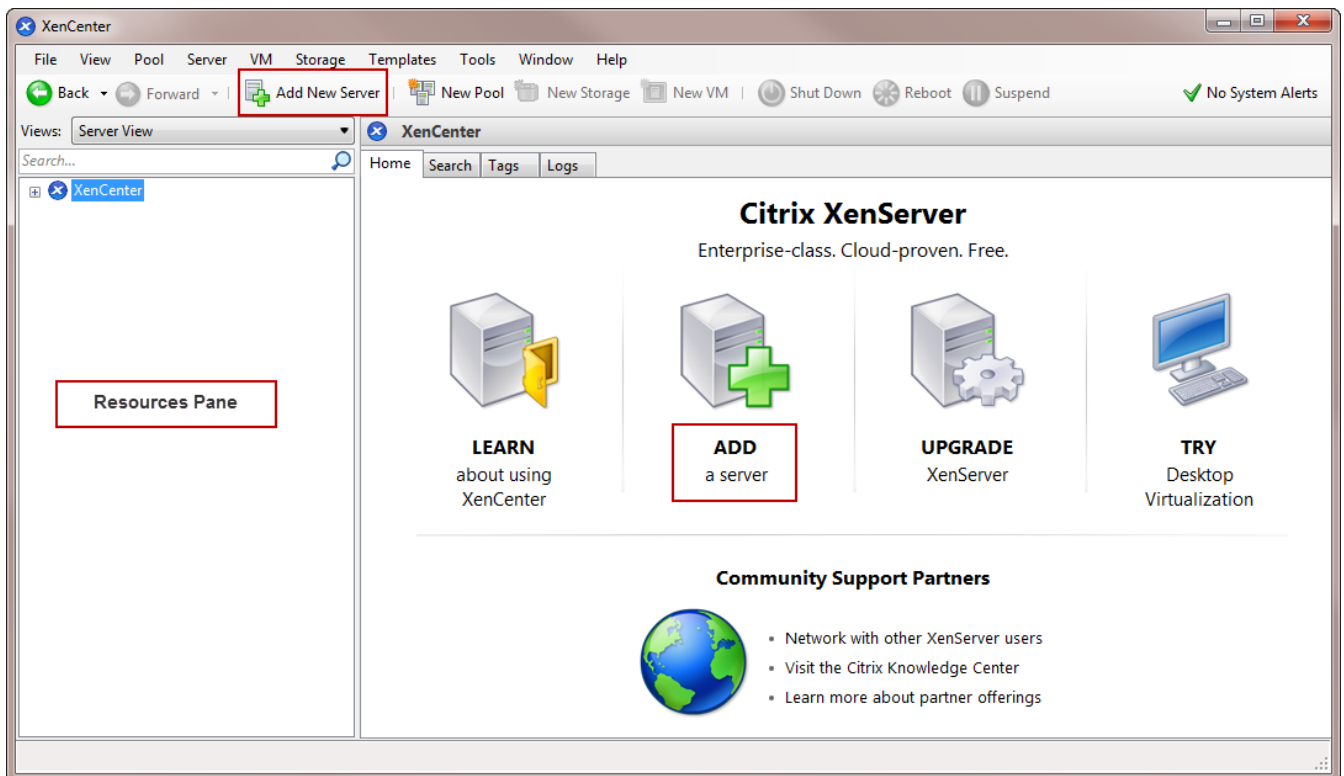
## 2.3. Connecting XenCenter to the XenServer Host

This procedure lets you add a host to XenCenter.

### To connect XenCenter to the XenServer host

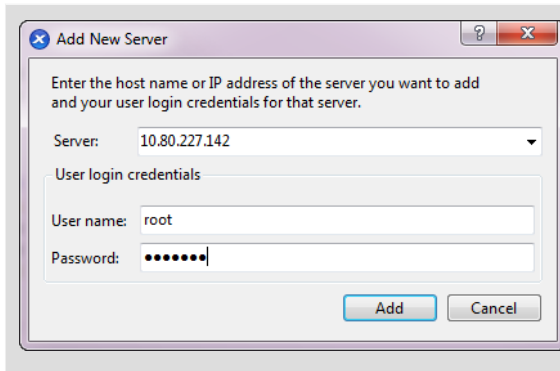
1. Launch XenCenter.

The program opens to the **Home** tab.



2. Click the **ADD a server** icon to open the **Add New Server** dialog box.





In the **Server** field, enter the IP address of the host.

Enter the root username and password that you set during XenServer installation.

Choose **Add**.

**Note:**

The first time you add a new host, the **Save and Restore Connection State** dialog box appears. This enables you to set your preferences for storing your host connection information and automatically restoring server connections.

### 2.3.1. Licensing XenServer

Before XenServer can run, it must be licensed. Depending on your edition, you license XenServer in one of two ways:

- **Advanced, Enterprise, Platinum.** To license XenServer, you must download a license file from Citrix.com and install one of the following Citrix license servers:
  - The Citrix License Server Virtual Appliance. This is a Linux-based virtual machine that you can import into your XenServer environment. If you choose this license server, you do not have to run installation or require a Windows license to host the license server.
  - Citrix License Server. You can install a Windows-based Citrix license server. Directions for this method are found in Citrix eDocs.

Both license servers are available from the XenServer Downloads page.

After adding the license file to the license server, use **XenCenter > Tools > License Manager** to associate a license with a host.

- **Free.** A basic edition of XenServer is available for free production use with no restrictions or time limits — all you need to do is activate the product within 30 days of first installing it to register your intent to use it with Citrix. Activation only takes a few minutes. After activation, you will be issued with an activation key which you can install on the host using XenCenter. To request an activation key, go to the **Tools** menu, and select **License Manager**.

Free XenServer lacks many advanced management features that can simplify administration. Examples of features in the Advanced, Enterprise, and Platinum editions include High Availability, Dynamic Memory Control, Workload Balancing, and the vSwitch Controller (compatible with OpenFlow). For more examples of features and details on upgrading to XenServer Advanced Edition and higher, see the *XenCenter Help* or the *XenServer Installation Guide*.

# Chapter 3. Creating a Pool of XenServer Hosts

A resource pool is composed of multiple XenServer host installations, bound together as a single managed entity.

Resource pools let you view multiple servers and their connected shared storage as a single unified resource, enabling flexible deployment of virtual machines based on their resource needs and business priorities. A pool may contain up to 16 servers running the same version of XenServer software, at the same patch level, and with broadly compatible hardware.

One server in the pool is designated as the *pool master*, and provides a single point of contact for all of the servers in the pool, routing communication to other members of the pool as necessary. Every member of a resource pool contains all the information necessary to take over the role of master if required. The pool master is the first host listed for the pool in the XenCenter resource pane. You can find the pool master's IP address by selecting the pool master and clicking the **Search** tab.

When combined with shared storage, a pool enables VMs to be started on *any* XenServer host in the pool that has sufficient memory, and then dynamically moved between hosts while running (XenMotion), and with minimal downtime. If an individual XenServer host suffers a hardware failure, you can restart the failed VM(s) on another host in the same pool.

If the High Availability (HA) feature (only available to XenServer Advanced Edition or higher) is enabled, protected VMs are *automatically* moved in the event of a host failure. On an HA-enabled pool, a new pool master is automatically nominated if the master is shut down.

**Note:**

*Heterogeneous* pool creation is available to XenServer Advanced Edition or higher. For a description of heterogeneous pool technology, see [Section A.2, “Pool Requirements”](#).

After you create a pool, this chapter then steps you through setting up shared storage. While XenServer accommodates many storage solutions, this chapter focuses on two common types — NFS and iSCSI — to get you up and running quickly.

In this chapter, you will:

- **Create a pool of hosts**
- **Set up shared storage for the pool**
- **Copy VMs to shared storage**

## 3.1. Creating a Pool

To create a pool, you first need to install XenServer on a second host, typically with similar processor type, and then connect XenCenter to the new host. For information about installing XenServer and XenCenter, see [Chapter 2, Installing XenServer and XenCenter](#). To get you started quickly, this section focuses on creating *homogeneous* pools. Within a homogeneous pool, all hosts must have compatible processors and be running the same version of XenServer, under the same type of XenServer product license. For a full list of homogeneous pool requirements, see [Section A.2, “Pool Requirements”](#).

### To create a pool

1. On the toolbar, click the **New Pool** button.

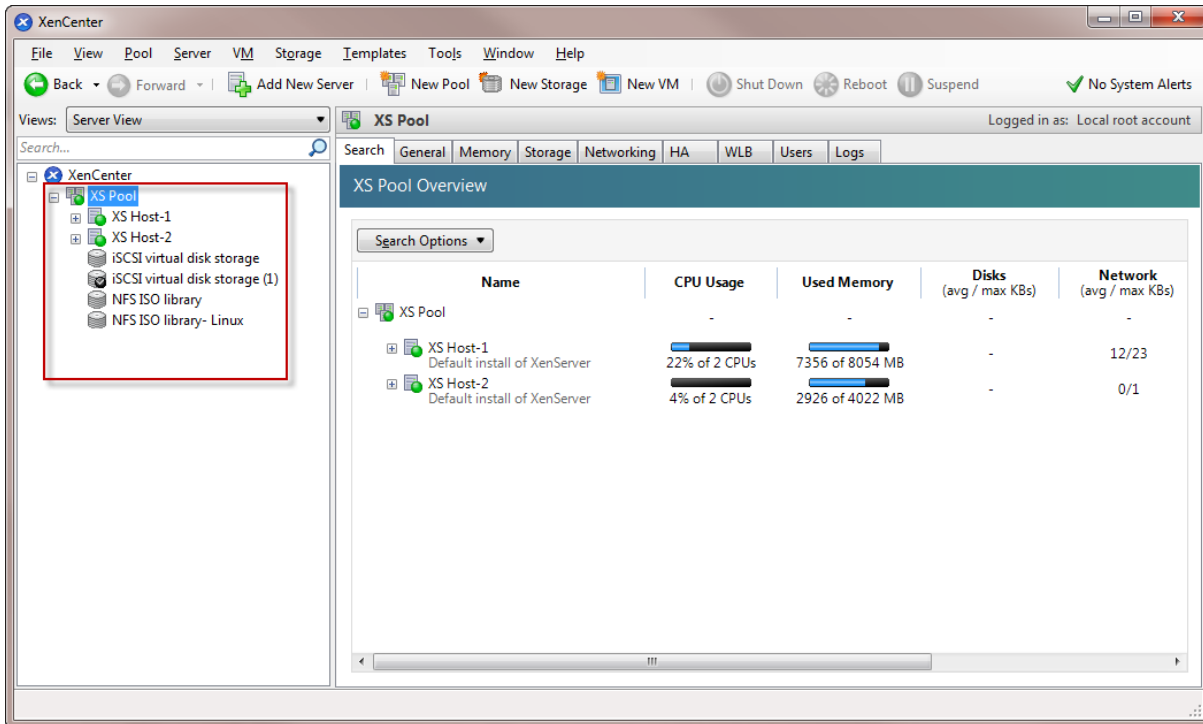


2. Enter a name for and optional description of the new pool.
3. Nominate the pool master by selecting a host from the **Master** list.

The default host should be adequate for getting started.

4. Select the second host to place in the new pool from the **Additional members** list.
5. Click **Create Pool**.

The new pool appears in the **Resources** pane.



### 3.2. Setting Up Networks for the Pool

When you install XenServer, you create a network connection#typically on the first NIC in the pool where you specified an IP address (during Setup).

However, you may need to connect your pool to VLANs and other physical networks. To do so, you must add these networks to the pool. You can configure XenServer to connect each NIC to one physical network and numerous VLANs.

Before creating networks, note that the cabling must match on each host in the pool. That is, the NICs on each host must be plugged in to the same physical networks as the corresponding NICs on the other hosts in the pool.

**Note:**

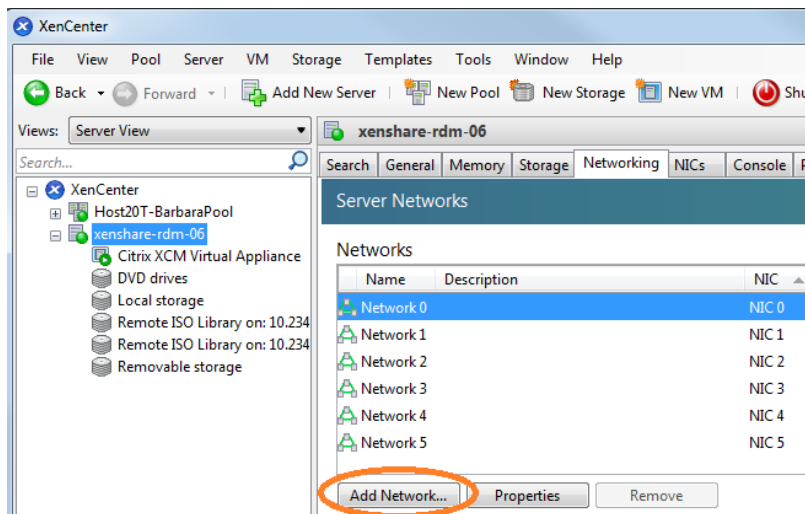
If the NICs were not plugged in to the NICs on the host when you installed XenServer, plug them in and rescan them by selecting **<your host>** > **NICs** tab and clicking **Rescan** for them to appear.

For additional information about configuring XenServer networking, see *Designing XenServer 6.1 Network Configurations*, the *XenCenter Help* and the *XenServer Administrator's Guide*.

**To add a network to XenServer**

1. In the **Resource** pane in XenCenter, select the pool.

2. Click the **Networking** tab.
3. Click **Add Network**.



4. On the **Select Type** page, select **External Network**, and click **Next**.
5. On the **Details** page, enter a meaningful name for the network and description.
6. On the **Interface** page, specify the following:
  - **NIC.** Select the NIC that you want XenServer to use to send and receive data from the network.
  - **VLAN.** If the network is a VLAN, enter the VLAN ID (or "tag").
  - **MTU.** If the network uses jumbo frames, enter a value for the Maximum Transmission Unit (MTU) between 1500 to 9216. Otherwise, leave the MTU box at its default value of 1500.

If you will be configuring many virtual machines to use this network, you may want to select the **Automatically add this network to new virtual machines** check box so the network is added by default.

7. Click **Finish**. When you add a network or change networking using XenCenter, the same networks and settings are automatically configured on all the other hosts in the pool.

### 3.2.1. Bonding NICs

*NIC bonding*, also known as *NIC teaming*, can improve server resiliency by using two or more physical NICs as if they were a single, high-performing channel. This section only provides a very brief overview of bonding. Before configuring bonds for use in a production environment, Citrix recommends reading more in-depth information about bonding, such as that in the *Designing XenServer Network Configurations* guide.

XenServer supports three bond modes: Active/active, active/passive (active/backup), and LACP. Active/active provides load balancing and redundancy for VM-based traffic. For other types of traffic (storage and management), active/active cannot load balance traffic. As a result, LACP or multipathing are better choice for storage traffic. For information about multipathing, see the *Configuring iSCSI Multipathing Support for XenServer* guide or the *XenServer Administrator's Guide*. For more information about bonding, see the *Designing XenServer Network Configurations* guide.

LACP options are not visible or available unless you configure the vSwitch as the network stack, as described in the *XenServer Administrator's Guide*. Likewise, your switches must support the IEEE 802.3ad standard. The switch must contain a separate LAG group configured for each LACP bond on the host. For more details about creating LAG groups, see *XenServer Administrator's Guide*.

#### To bond NICs

1. Ensure that the NICs you want to bind together (the bond slaves) are not in use: you must shut down any VMs with virtual network interfaces using the bond slaves prior to creating the bond. After you have created the bond, you will need to reconnect the virtual network interfaces to an appropriate network.

2. Select the server in the **Resources** pane then click on the **NICs** tab and click **Create Bond**.
3. Select the NICs you want to bond together. To select a NIC, select its check box in the list. Up to four NICs may be selected in this list. Clear the check box to deselect a NIC. To maintain a flexible and secure network, you can bond either two, three, or four NICs when vSwitch is the network stack, whereas you can only bond two NICs when Linux bridge is the network stack.
4. Under **Bond mode**, choose the type of bond:
  - Select **Active-active** to configure an active-active bond, where traffic is balanced between the bonded NICs and if one NIC within the bond fails, the host server's network traffic automatically routes over the second NIC.
  - Select **Active-passive** to configure an active-passive bond, where traffic passes over only one of the bonded NICs. In this mode, the second NIC will only become active if the active NIC fails, for example, if it loses network connectivity.
  - Select **LACP with load balancing based on source MAC address** to configure a LACP bond, where the outgoing NIC is selected based on MAC address of the VM from which the traffic originated. Use this option to balance traffic in an environment where you have several VMs on the same host. This option is not suitable if there are fewer virtual interfaces (VIFs) than NICs: as load balancing is not optimal because the traffic cannot be split across NICs.
  - Select **LACP with load balancing based on IP and port of source and destination** to configure a LACP bond, where the source IP address, source port number, destination IP address, and destination port number are used to allocate the traffic across the NICs. Use this option to balance traffic from VMs in an environment where the number of NICs exceeds the number of VIFs.

**Note:**

LACP bonding is only available for the vSwitch, whereas active-active and active-passive bonding modes are available for both the vSwitch and Linux bridge. For information about networking stacks, see the **XenServer Administrator's Guide**.

5. To use jumbo frames, set the Maximum Transmission Unit (MTU) to a value between 1500 to 9216.
6. To have the new bonded network automatically added to any new VMs created using the New VM wizard, select the check box.
7. Click **Create** to create the NIC bond and close the dialog box.

XenCenter will automatically move management and secondary interfaces from bond slaves to the bond master when the new bond is created. Note that a server with its management interface on a bond will not be permitted to join a pool. You will need to reconfigure the server's management interface and move it back on to a physical NIC before it can join a pool.

Note that a server with its management interface on a bond will not be permitted to join a pool. You will need to reconfigure the server's management interface and move it back on to a physical NIC before it can join a pool.

### 3.3. Setting Up Shared Storage for the Pool

To connect the hosts in a pool to a remote storage array, create a XenServer Storage Repository (SR), which is the storage container in which virtual disks are stored. SRs are persistent, on-disk objects that exist independently of XenServer. SRs can exist on different types of physical storage devices, both internal and external, including local disk devices and shared network storage.

You can configure a XenServer SR for a number of different types of storage, including:

- NFS VHD
- Software iSCSI
- Hardware HBA
- Fibre Channel

- Fibre Channel over Ethernet (FCOE)

This section steps through setting up two types of shared SRs for a pool of hosts: NFS and iSCSI. Before you create a new SR, you need to configure your NFS or iSCSI storage array. Setup differs depending on the type of storage solution that you use, so it is best to refer to your vendor documentation for details. Generally, before you begin, if you are creating an:

- **iSCSI SR.** You must have created a volume and a LUN on the storage array.
- **NFS VHD.** You must have created the volume on the storage device.

If you are creating an SR for IP-based storage (iSCSI or NFS), you can configure one of the following as the storage network: the NIC that handles the management traffic or a new NIC for the storage traffic. If you want to configure a different a NIC for storage traffic, you must assign an IP address to a NIC by creating a *management interface*.

When you create a new management interface, you must assign it an IP address that (a) is on the same subnet as the storage controller, if applicable, (b) is on a different subnet than the IP address you specified when you installed XenServer, and (c) is not on the same subnet as any other management interfaces.

### To assign an IP address to a NIC

1. Ensure that the NIC is on a separate subnet, or routing is configured to suit your network topology in order to force the desired traffic over the selected NIC.
2. In the **Resource** pane of XenCenter, click on the pool (or standalone server). Click the **Network** tab, and then click the **Configure** button.
3. In the **Configure IP Address** dialog, in the left pane, click **Add IP address**.
4. Give the new interface a meaningful name (for example, *yourstoragearray\_network*) and select the **Network** associated with the NIC you will use for storage traffic.
5. Select **Use these network settings**, and enter a static IP address you want to configure on the NIC, the subnet mask, and gateway, and click **OK**. The IP address must be on the same subnet as the storage controller the NIC is connected to.

#### Note:

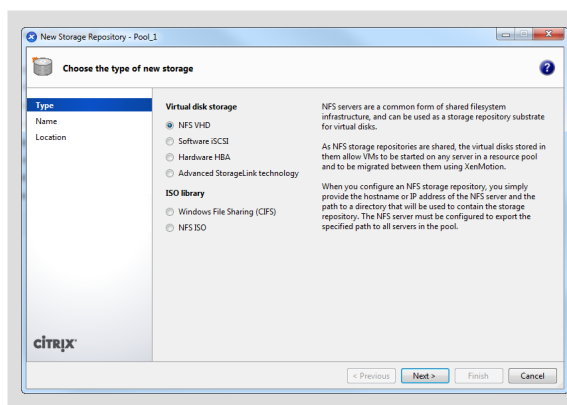
Whenever you assign a NIC an IP address, it must be on a different subnet than any other NICs with IP addresses in the pool, including the primary management interface.

### To create a new shared NFS or iSCSI storage repository

1. On the **Resources** pane, select the pool. On the toolbar, click the **New Storage** button.



The **New Storage Repository** wizard opens.



Under **Virtual disk storage**, choose NFS VHD or Software iSCSI as the storage type.

Choose **Next** to continue.

2. If you choose NFS:
  - a. Enter a name for the new SR and the name of the share where it is located. Click **Scan** to have the wizard scan for existing NFS SRs in the specified location.

**Note:**

The NFS server must be configured to export the specified path to all XenServer hosts in the pool.

- b. Click **Finish**.

The new SR appears in the **Resources** pane, within the pool.
3. If you choose iSCSI:

- a. Enter a name for the new SR and then the IP address or DNS name of the iSCSI target.

**Note:**

The iSCSI storage target must be configured to enable every XenServer host in the pool to have access to one or more LUN(s).

- b. If you have configured the iSCSI target to use CHAP authentication, enter the User and Password.
  - c. Click the **Discover IQNs** button, and then choose the iSCSI target IQN from the Target IQN list.

**Warning:**

The iSCSI target and all servers in the pool must have *unique* IQNs.

- d. Click the **Discover LUNs** button, and then choose the LUN on which to create the SR from the Target LUN list.

**Warning:**

Each individual iSCSI storage repository must be contained entirely on a single LUN, and may not span more than one LUN. Any data present on the chosen LUN will be destroyed.

- e. Click **Finish**.

The new SR appears in the **Resources** pane, within the pool.

The new shared SR now becomes the default SR for the pool.

## Chapter 4. Creating Virtual Machines

Through XenCenter, you can create virtual machines in a number of ways, according to your deployment needs. Whether you need to deploy individual VMs with distinct configurations and features or groups of multiple, similar VMs, XenCenter can get you up and running in a just a few steps.

XenServer also provides an easy way to convert batches of virtual machines from VMware. For information, see the *Citrix Conversion Manager Quick Start* and the *Citrix Conversion Manager Administrator's Guide*.

This chapter focuses on a few methods by which to create Windows VMs. To get you started quickly, the procedures use the simplest setup of XenServer: a single XenServer host with local storage (after you connect XenCenter to the XenServer host, storage is automatically configured on the local disk of the host).

This chapter also demonstrates how to use XenMotion to live migrate VMs between hosts in the pool.

After explaining how to create and customize your new VM, this chapter demonstrates how to convert that existing VM into a VM template. A VM template preserves your customizations so that you can always use it to create new VMs to the same (or to similar) specifications. It also simplifies and hastens the process of creating multiple VMs at a time.

You can also create a VM template from a snapshot of an existing VM. A snapshot is a record of a running VM at a point in time. It saves the storage, configuration and networking information of the original VM, which makes it useful for backup purposes. Snapshots provide a fast way to make VM templates, and without replacing the original, existing VM. This chapter demonstrates how to take a snapshot of an existing VM and then how to convert that snapshot into a VM template.

Finally, this chapter describes how to create new VMs from a VM template.

In this chapter, you will:

- **Create a Windows VM**
- **Use XenMotion for live migration of VMs between hosts**
- **Make a VM template from:**
  - **An existing VM**
  - **A VM snapshot**
- **Create VMs from a VM template**

### 4.1. Creating a Windows 7 (32-bit) VM

#### Note:

The following procedure provides an example of creating Windows 7 (32-bit) VM. The default values may vary depending on the operating system that you choose.

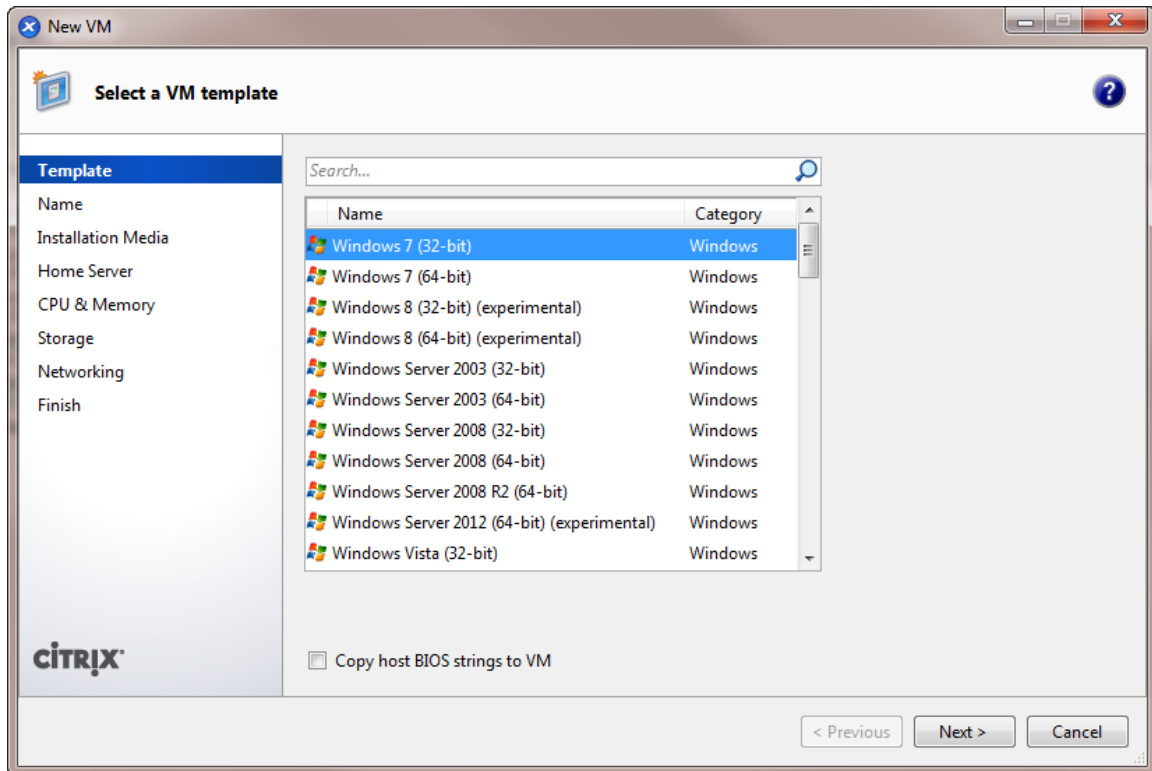
#### To create a Windows VM:

1. On the toolbar, click the **New VM** button to open the New VM wizard.



The New VM wizard allows you to configure the new VM, adjusting various parameters for CPU, storage and networking resources.





2. Select a VM template and click **Next**.

Each template contains the setup information needed to create a new VM with a specific guest operating system (OS), and with optimum storage. This list reflects the templates that XenServer currently supports.

**Note:**

If the OS that you intend to install on your new VM is compatible only with the original hardware (for example, an OS installation CD that was packaged with a specific computer), check the **Copy host BIOS strings to VM** box.

3. Enter a name for and optional description of the new VM.
4. Choose the source of the OS media to install on the new VM.

Installing from a CD/DVD is the simplest option for getting started. To do so, choose the default installation source option (DVD drive), insert the disk into the DVD drive of the XenServer host, and choose **Next** to proceed.

XenServer also allows you to pull OS installation media from a range of sources, including a pre-existing ISO library. An ISO image is a file that contains all the information that an optical disc (CD, DVD, and so on) would contain. In this case, an ISO image would contain the same OS data as a Windows installation CD.

To attach a pre-existing ISO library, click **New ISO library** and indicate the location and type of ISO library. You can then choose the specific operating system ISO media from the drop-down list.

5. The VM will run on the installed host. Choose **Next** to proceed.
6. Allocate processor and memory resources.

For a Windows 7 VM, the default is 1 virtual CPU and 2048 MB of RAM. You may also choose to modify the defaults. Select **Next** to continue.

**Note:**

Each OS will have different configuration requirements which will be reflected in the templates.

7. Configure storage for the new VM.

Click **Next** to select the default allocation (24 GB) and configuration, or you may wish to:

- a. Change the name, description or size of your virtual disk by clicking **Properties**.
- b. Add a new virtual disk by selecting **Add**.

**Note:**

When you create a pool of XenServer hosts, as you do in the next chapter, you can configure shared storage at this point if creating a new VM.

8. Configure networking on the new VM.

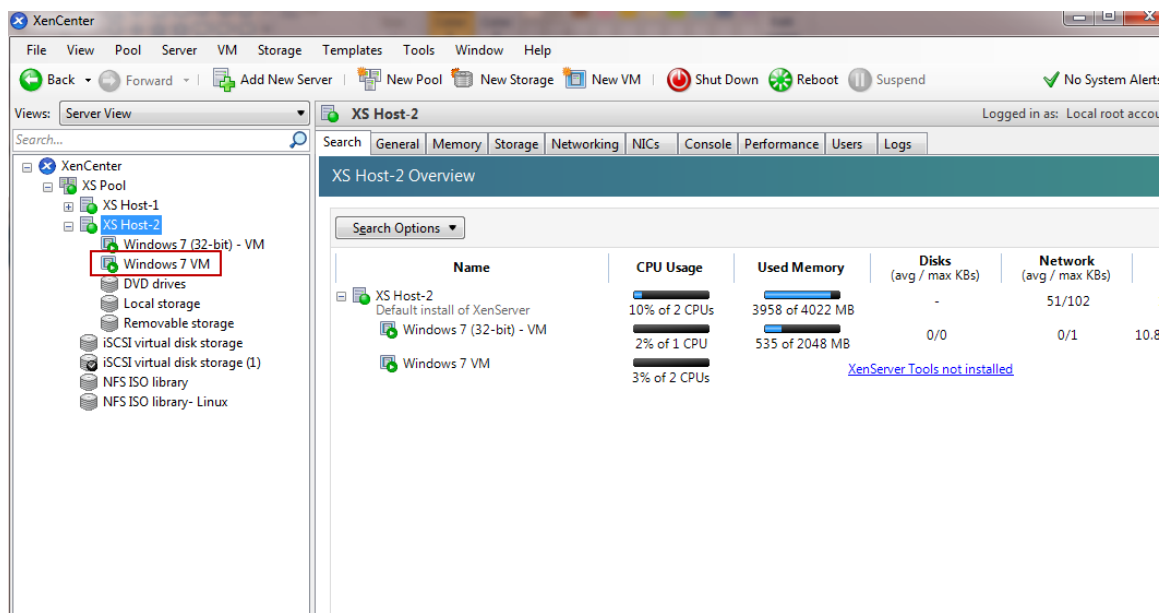
Click **Next** to select the default network interface card (NIC) and configurations, including an automatically-created unique MAC address for each NIC, or you may want to:

- a. Change the physical network, MAC address or quality-of-service (QoS) priority of the virtual disk by clicking **Properties**.
- b. Add a new virtual network interface by selecting **Add**.

XenServer uses the virtual network interface to connect to the physical network on the host. Be sure to select the network that corresponds with the network the virtual machine requires. To add a physical network, see [Section 3.2, “Setting Up Networks for the Pool”](#)

9. Review settings, and then click **Finish** to create the new VM and return to the **Search** tab.

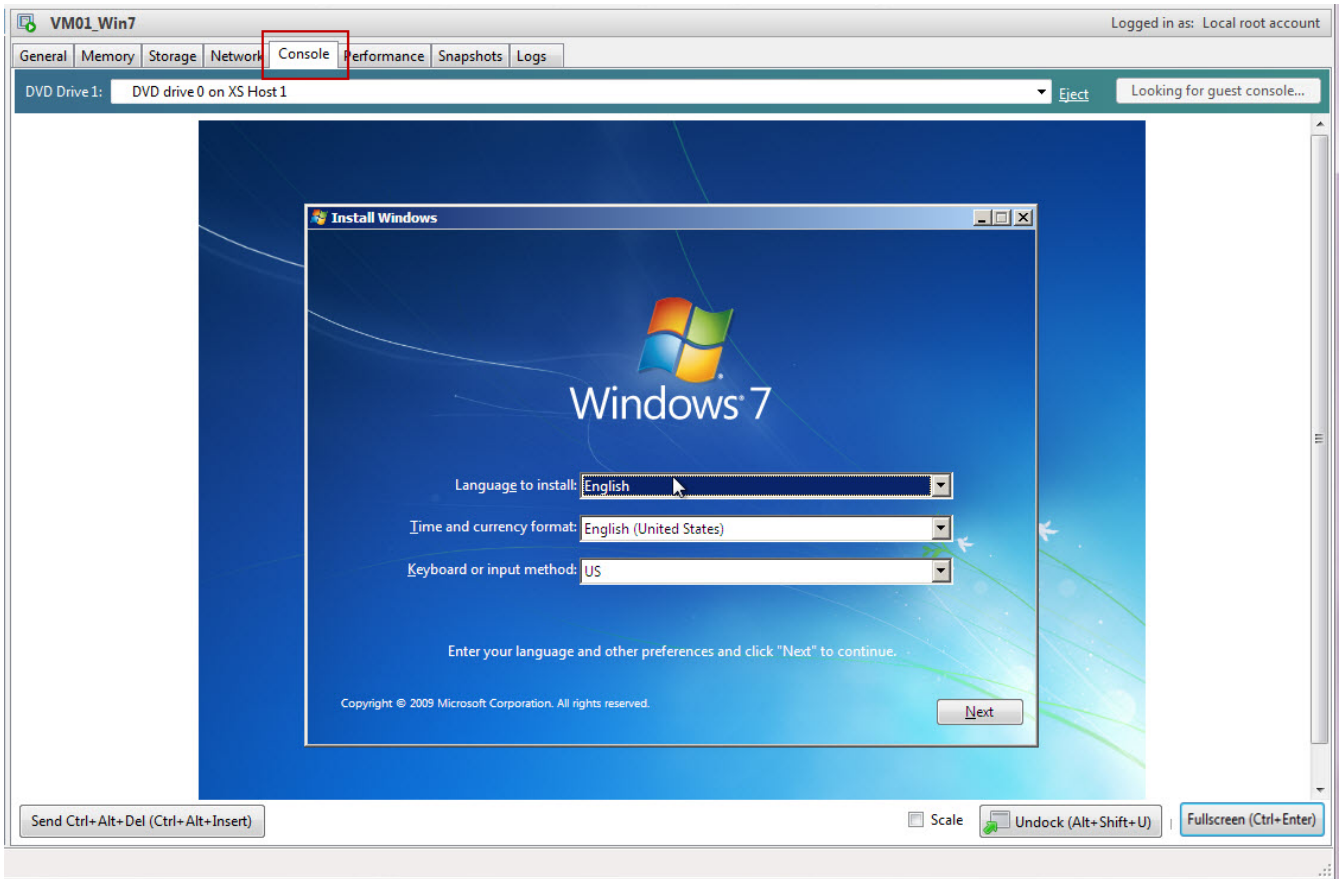
An icon for your new VM appears under the host in the **Resources** pane.



On the **Resources** pane, select the VM, and then click the **Console** tab to see the VM console.

10. Follow the OS installation screens and make your selections.

The following shows a sample a Windows 7 (32-bit) installation from DVD/CD.



11. Once the OS installation completes and the VM reboots, install the XenServer Tools.

XenServer Tools provide high-speed I/O for enhanced disk and network performance. XenServer Tools must be installed on each VM in order for the VM to have a fully-supported configuration. A VM will function without them, but performance will be significantly hampered. XenServer Tools also enable certain functions and features, including cleanly shutting down, rebooting, suspending and live migrating VMs.

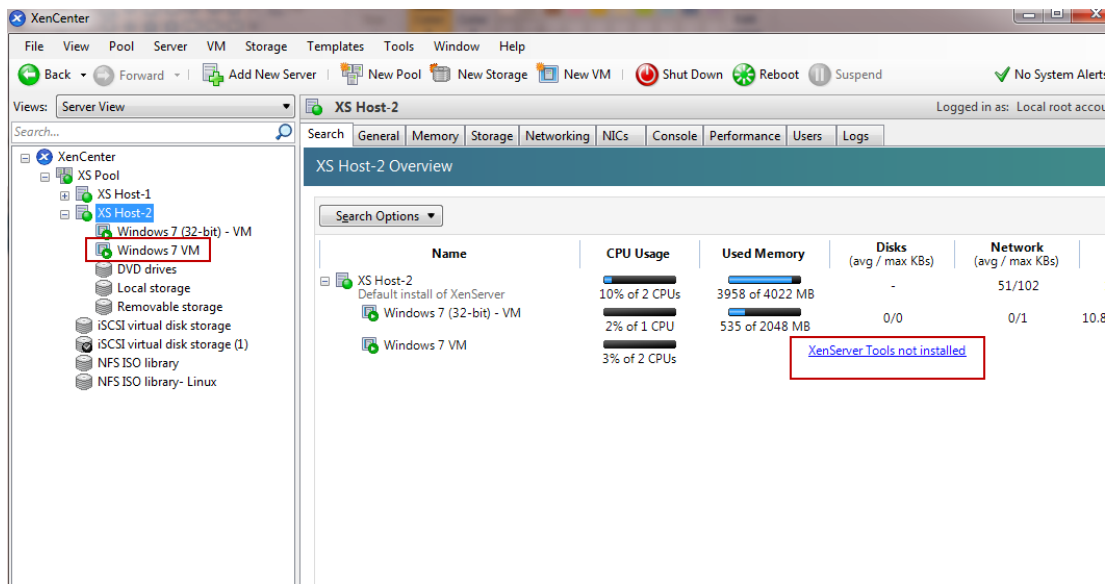
**Warning:**

You must install XenServer Tools for each Windows VM. Running Windows VMs without XenServer Tools is *not* supported.

To install XenServer Tools:

- a. On the **Resources** pane, select the XenServer host and then the **Search** tab.

The **XenServer Tools not installed** blue status text appears next to the new VM.



- b. Click the text to open the XenServer Tools setup wizard on the VM console.
- c. Click the **Install XenServer Tools** button, and then **Run Xensetup.exe**.
- d. When prompted, click **Yes** to allow the program to make changes to the computer.
- e. Accept the License Agreement, and click **Next** to continue.
- f. Choose a destination folder and click **Install Tools**.
- g. Select **Restart Now**, and then **Done** to complete the installation.

Once you have installed the XenServer Tools, you can go ahead and customize your VM by installing applications and performing any other configurations. If you would like to create multiple VMs with similar specifications, you can do so quickly by making a template from the existing VM and then creating new VMs from that template. The next section describes how to make VM templates.

## 4.2. Migrating Running VMs between Hosts in a Pool

Using XenMotion (live migration), you can move a running VM from one host to another in the same pool, and with virtually no service interruption. Where you decide to migrate a VM to depends on how you configure the VM and pool.

### Note:

When the XenServer Workload Balancing component is installed, you can use it to select the best host on which to run a Workload. For more information, see the *Workload Balancing Quick Start* and the *Workload Balancing Administrator's Guide*.

### To migrate a running VM

1. On the **Resources** pane, select the VM that you want to move.

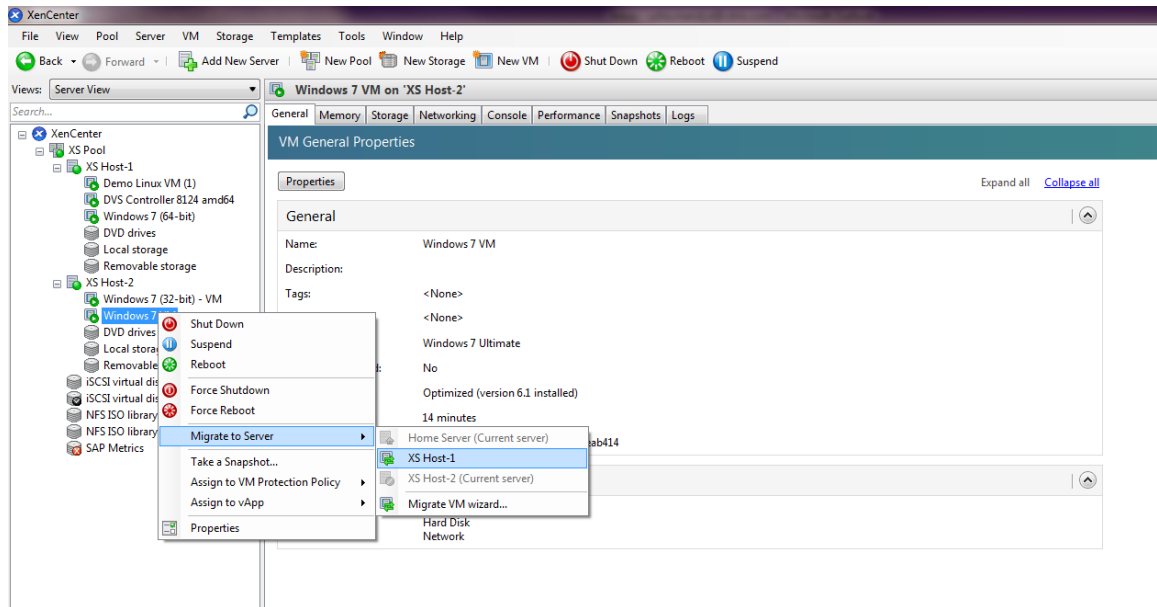
### Note:

Make sure that the VM you migrate does not have local storage.

2. Right-click the VM icon, point to **Migrate to Server**, and then select the new VM host.

### Tip:

You can also drag and drop the VM onto the target server.



3. The migrated VM displays under the new host in the **Resources** pane.

### 4.3. Making VM Templates

There are a number of ways to make a VM template from an existing Windows VM, each with its individual benefits. This section focuses on two methods: converting an existing VM into a template, and creating a template from a snapshot of a VM. In both cases, the VM template preserves the customized configuration of the original VM or VM snapshot and can then be used to quickly create new, similar VMs. This section demonstrates how to make new VMs from these templates.

Before you create a template from an existing VM or VM snapshot, Citrix recommends that you run the Windows utility *Sysprep* on the original VM. In general, running *Sysprep* prepares an operating system for disk cloning and restoration. Windows OS installations include many unique elements per installation (including, Security Identifiers and computer names), and these elements must stay unique and not be copied to new VMs. If copied, confusion and problems are likely to arise. Running *Sysprep* avoids these problems by allowing the generation of new, unique elements for the new VMs.

**Note:**

Running *Sysprep* may not be as necessary for basic deployments or test environments as it is for production environments.

For more information about *Sysprep*, see your Windows documentation. It is also best to refer to your product documentation for a detailed procedure of running this utility, as it will differ depending on the version of Windows installed.

To give a general idea of the procedure:

1. On the VM Primary Disk (C :), create a new folder called *Sysprep*.
2. Navigate to the *sysprep.exe* file. In Windows Server 2008, the *sysprep.exe* file may be stored in C:\Windows\System32\sysprep. From the VM console, browse to the \Support\Tools folder. Copy the contents of the *Deploy.cab* file to the newly-created \Sysprep folder on the VM.

**Note:**

In operating systems prior to Windows Server 2008, it may be necessary to insert the Windows operating system DVD/CD into the DVD drive of the XenServer host to obtain *sysprep.exe*.

3. Open a command prompt, and enter `cd Sysprep` to change to the *Sysprep* folder.

4. Enter `Sysprep`. This runs the Sysprep tool. The VM will shut down when it completes.

### 4.3.1. Creating a VM Template from an Existing VM

To create a VM template from an existing VM:

**Warning:**

When you create a new template from an existing VM, the original VM will be *replaced* by the new template. The VM will no longer exist.

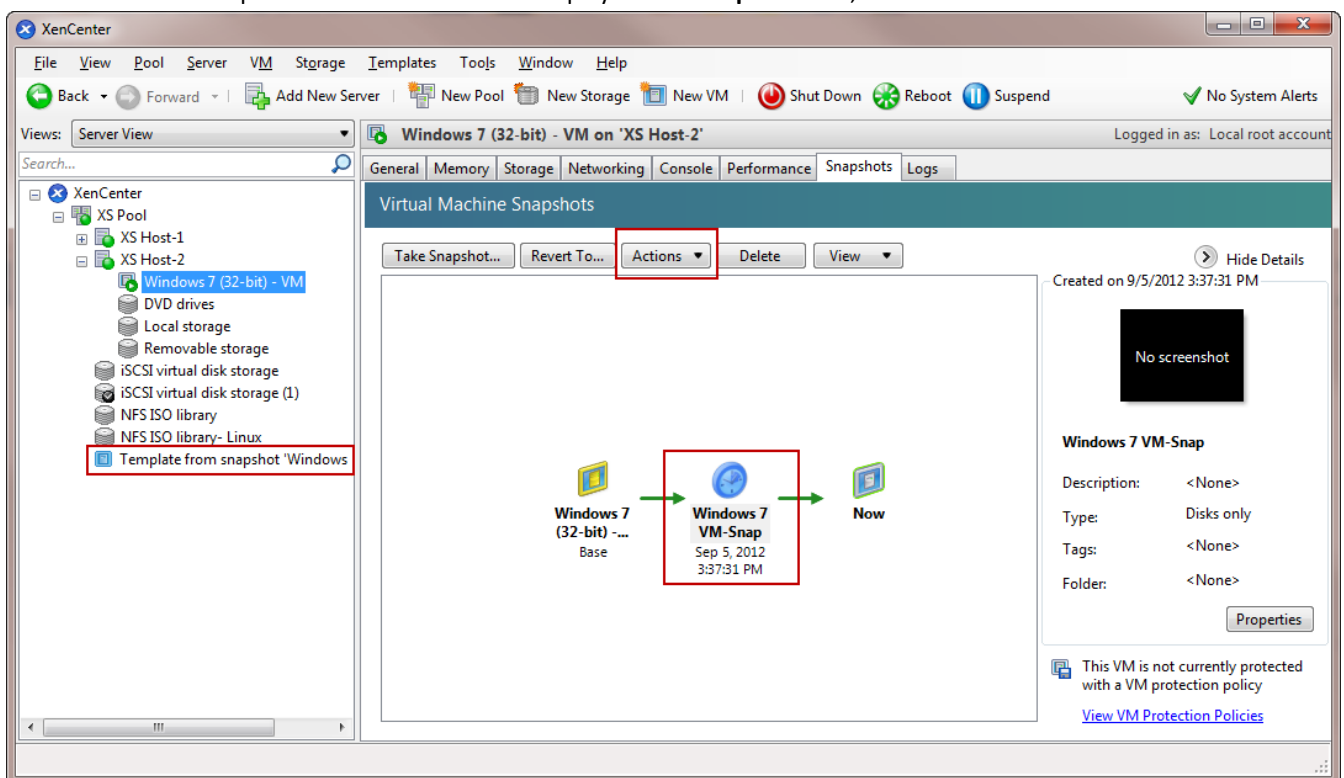
1. Shut down the VM that you wish to convert.
2. On the **Resources** pane, right-click the VM, and select **Convert to Template**.
3. Click **Convert** to confirm.

Once you create the template, the new VM template appears in the **Resources** pane, replacing the existing VM.

### 4.3.2. Creating a VM Template from a VM Snapshot

To create a template from a snapshot of a VM:

1. On the **Resources** pane, select the VM. Click the **Snapshots** tab, and then **Take Snapshot**.
2. Enter a name for and optional description of the new snapshot. Click **Take Snapshot**.
3. Once the snapshot finishes and the icon displays in the **Snapshots** tab, select the icon.



4. On the **Actions** drop-down list, choose **Save as a Template**.
5. Enter the name of the template, and then click **Create**.

## 4.4. Creating VMs from a VM Template

To create a new VM from a customized VM template:

1. In the **Resources** pane, right-click the template, and select **New VM wizard**.



The New VM wizard opens.

2. Follow the New VM wizard to create a VM from the selected template.

**Note:**

When the wizard prompts you for an OS installation media source, select the default and continue.

The new VM will appear in the **Resources** pane.

If you are using a template created from an existing VM, you also have the option to select **Quick Create**. This option does not take you through the New VM wizard, but rather instantly creates and provisions a new VM using all the configuration settings specified in your template.

# Appendix A. System Requirements

## A.1. System Requirements

XenServer requires at least two separate physical x86 computers: one to be the XenServer host and the other to run the XenCenter application. The XenServer host computer is dedicated entirely to the task of running XenServer — hosting VMs — and is **not** used for other applications.

**Warning:**

The installation of any third party software directly on the XenServer host (i.e. into the dom0 control domain) is not supported, except where it is supplied as a supplemental pack and is explicitly endorsed by Citrix.

The computer that runs XenCenter can be any general-purpose Windows computer that satisfies the hardware requirements and can be used to run other applications.

### A.1.1. XenServer Host System Requirements

While XenServer will generally be deployed on server-class hardware, XenServer is also compatible with many models of workstations and laptops. For a comprehensive XenServer hardware compatibility list, see <http://www.citrix.com/xenserver/hcl>. The following describes the recommended XenServer hardware specifications.

The XenServer host should be a 64-bit x86 server-class machine devoted to hosting VMs. This machine should run an optimized and hardened Linux partition with a Xen-enabled kernel which controls the interaction between the virtualized devices seen by VMs and the physical hardware.

XenServer can make use of:

- up to 1 TB of RAM
- up to 16 NICs
- up to 160 logical processors per host (Note: The maximum number of logical processors supported differs by CPU. Consult the [XenServer Hardware Compatibility List \(HCL\)](#) for more details.

The system requirements for the XenServer host are:

<p>CPU(s)</p>	<p>One or more 64-bit x86 CPU(s), 1.5 GHz minimum, 2 GHz or faster multicore CPU recommended</p> <p>To support VMs running Windows, an Intel VT or AMD-V 64-bit x86-based system with one or more CPU(s) is required.</p> <p><b>Note:</b></p> <p>To run Windows VMs, hardware support for virtualization must be enabled on the XenServer host. This is an option in the BIOS. It is possible your BIOS might have virtualization support disabled. Consult your BIOS documentation for more details.</p> <p>To support VMs running supported paravirtualized Linux, a standard 64-bit x86-based system with one or more CPU(s) is required.</p>
<p>RAM</p>	<p>2 GB minimum, 4 GB or more recommended</p>



Disk Space	Locally attached storage (PATA, SATA, SCSI) with 16 GB of disk space minimum, 60 GB of disk space recommended, or SAN via HBA (not via software) if installing with multipath boot from SAN (see <a href="http://hcl.vmd.citrix.com">http://hcl.vmd.citrix.com</a> for a detailed list of compatible storage solutions).  Product installation creates two 4 GB partitions for the XenServer host control domain.
Network	100 Mbit/s or faster NIC. One or more gigabit NIC(s) is recommended for faster P2V and export/import data transfers and VM live migration.  For redundancy, multiple NICs are recommended. The configuration of NICs will differ depending on the storage type. See vendor documentation for details.

**Note:**

In some support cases, serial console access is required for debug purposes. Therefore, when setting up a XenServer configuration, it is recommended that serial console access is configured. For hosts that do not have physical serial port (such as a Blade server) or where suitable physical infrastructure is not available, customers should investigate if an embedded management device, such as Dell DRAC or HP iLO can be configured. For more information on setting up serial console access, see CTX121442 , [How to Set Up a Serial Cable for Troubleshooting on XenServer](#).

### A.1.2. XenCenter System Requirements

The system requirements for XenCenter are:

Operating System	Windows 7, Windows XP, Windows Vista, Windows Server 2003, Windows Server 2008, Windows Server 2008 R2 (all editions and versions)
.NET Framework	Version 3.5
CPU Speed	750 MHz minimum, 1 GHz or faster recommended
RAM	1 GB minimum, 2 GB or more recommended
Disk Space	100 MB minimum
Network	100Mb or faster NIC
Screen Resolution	1024x768 pixels, minimum

### A.1.3. Supported Guest Operating Systems

For a list of supported VM operating systems, see the *XenServer Virtual Machine User's Guide*.

## A.2. Pool Requirements

This guide assumes that you are creating a homogeneous pool of XenServer hosts. A homogeneous pool requires that:

- The CPUs on all hosts in the pool be the same, in terms of vendor and model (except for stepping numbers)
- All CPU features that are exposed to the software be the same
- All CPUs have virtualization enabled (for running Windows VMs) or all CPUs have virtualization disabled (must be consistent across hosts in the pool)



- All hosts in the pool run the same version of XenServer software, at the same patch level
- All hosts in the pool have the same type of XenServer product license
- All hosts in the pool be configured with the same supplemental packs

Before a XenServer host joins a pool, it must also:

- Not be a member of an existing pool
- Have no shared storage configured
- Have no running or suspended VMs, or active operations on any VMs in progress (for example, shutting down)
- Have a static IP address or be DNS addressable (IP addresses can be assigned via DHCP, but it is not advisable with shared storage)
- Have a system clock synchronized with that of the pool master (for example, via NTP)
- Not have a bonded management interface (you can configure this once the host has successfully joined the pool)

XenServer hosts in resource pools may contain different numbers of physical network interfaces and have local storage repositories of varying size. In practice, it is often difficult to obtain multiple servers with the exact same CPUs, and so minor variations are permitted. If you are sure that it is acceptable in your environment for hosts with varying CPUs to be part of the same resource pool, then you can force join a pool together using the CLI. For information on forcing the joining operation, see the *XenServer Administrator's Guide*.

**Note:**

Servers providing shared NFS or iSCSI storage for the pool must have a static IP address or be DNS addressable.

## Heterogeneous Pools

Heterogeneous pool creation is made possible by leveraging technologies in recent Intel (FlexMigration) and AMD (Extended Migration) CPUs that provide CPU "masking" or "leveling". These features allow a CPU to be configured to *appear* as providing a different make, model, or functionality than it actually does. This enables you to create pools of hosts with disparate CPUs but still safely support live migrations.

Heterogeneous pool creation is only available to XenServer Advanced Edition and above. For details on creating heterogeneous pools, see the *XenServer Administrator's Guide*.