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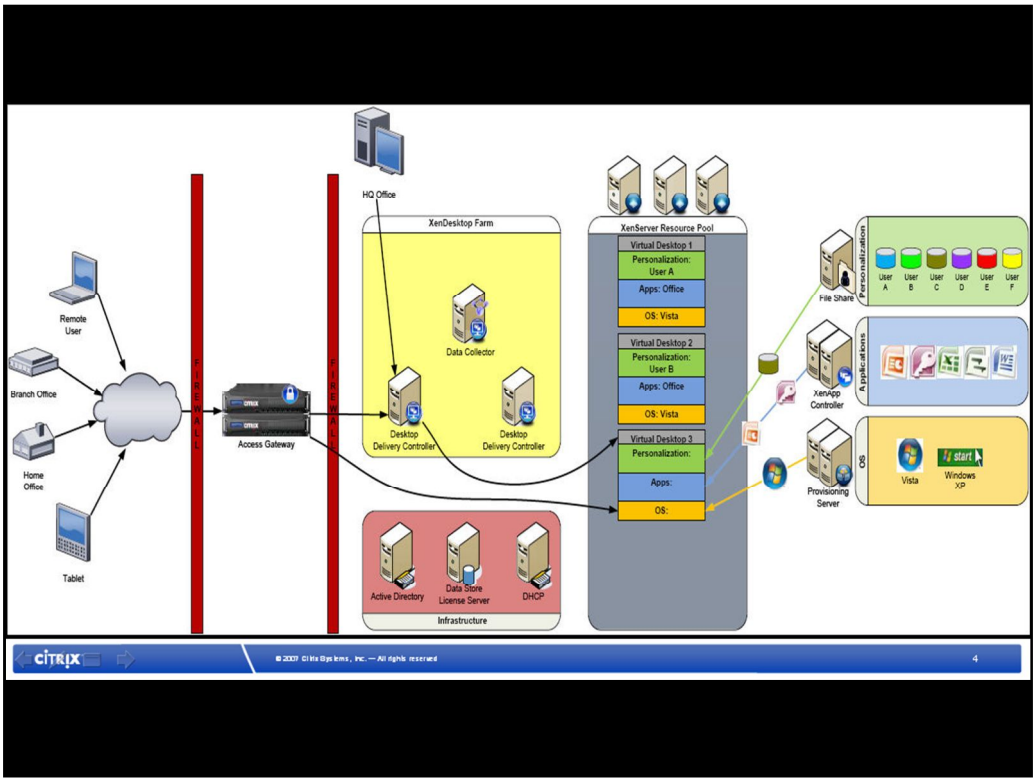
Citrix XenDesktop Pilot Implementation Guide

Step One – Virtual Desktop Delivery



The architecture can be broken down into six core components:

1. Virtualization Infrastructure: The virtualization infrastructure allows for the dividing of a single physical server into multiple virtual servers all sharing resources. The virtualization infrastructure for this pilot architecture is based on XenServer as it is included as part of the XenDesktop overall solution. The virtualization infrastructure could also leverage Microsoft Hyper-V or VMware ESX.

2. Virtual Desktop Delivery Controller: The virtual desktop delivery controller is responsible for the registration of new virtual desktops and directing requests for virtual desktops to available systems. Users interact indirectly with the controller via the integrated Web Interface component. Through a web-based site, or through a locally installed receiver, users will be delivered their virtual desktop.

3. Virtual Desktop Provisioning: The provisioning server aspect of the XenDesktop solution delivers an operating system image to the virtual desktop instance on the virtualization infrastructure. A base operating system image is created that contains all operating system-level configurations as dictated by the organization's policies. The base image, however, does not contain applications. As each virtual desktop boots, the operating system is streamed over the network to the virtual desktop. The power of this solution is identified when updates are

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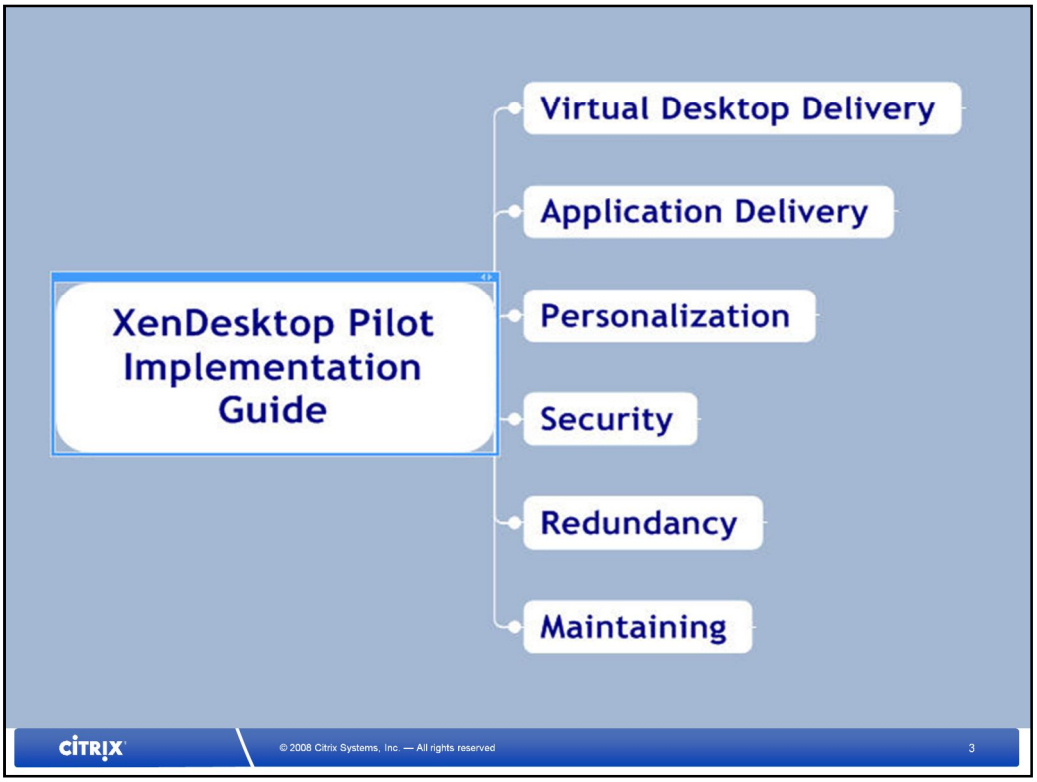
required as only the base image requires updating and all virtual desktops will utilize the latest image upon next reboot. By stripping out the applications, a single


XenDesktop Pilot Implementation Guide
Virtual Desktop Delivery
Application Delivery
Personalization
Security
Redundancy
Maintaining
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Virtual Desktop Delivery

XenDesktop Pilot Implementation Guide

- Personalization
- Security
- Redundancy
- Maintaining

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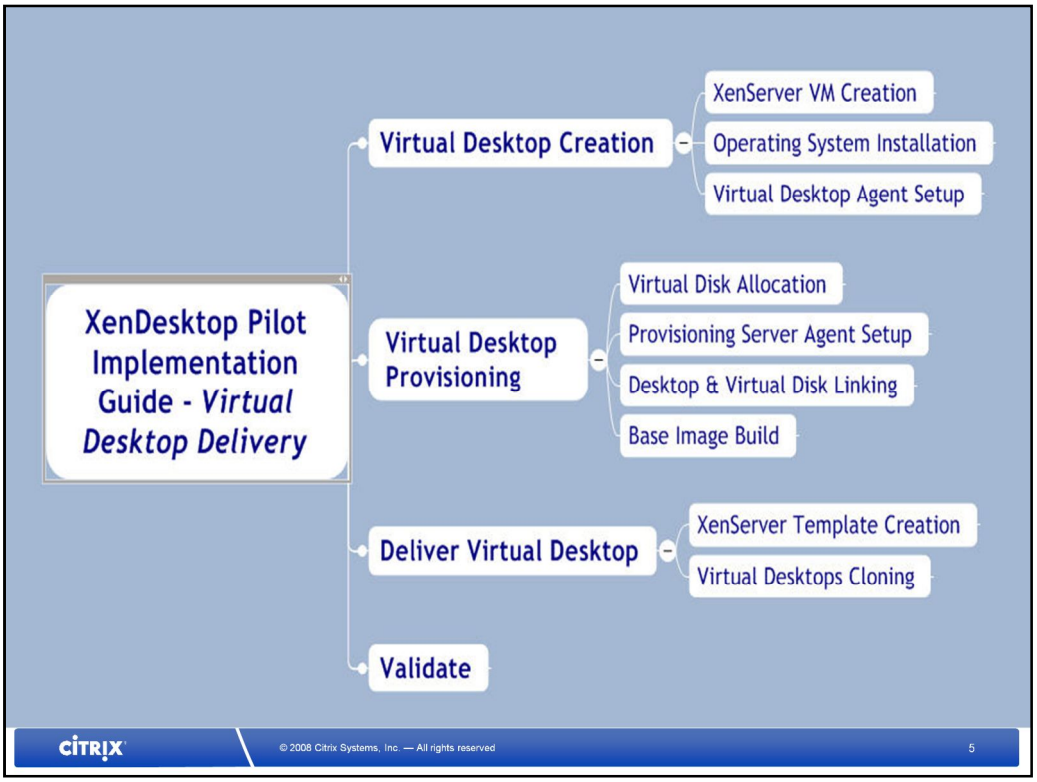
XenDesktop Pilot Implementation Guide - *Virtual Desktop Delivery*
Virtual Desktop Creation
XenServer VM Creation
Operating System Installation
Virtual Desktop Agent Setup
Virtual Desktop Provisioning
Virtual Disk Allocation
Provisioning Server Agent Setup
Desktop & Virtual Disk Linking
Base Image Build
Deliver Virtual Desktop
XenServer Template Creation
Virtual Desktops Cloning
Validate
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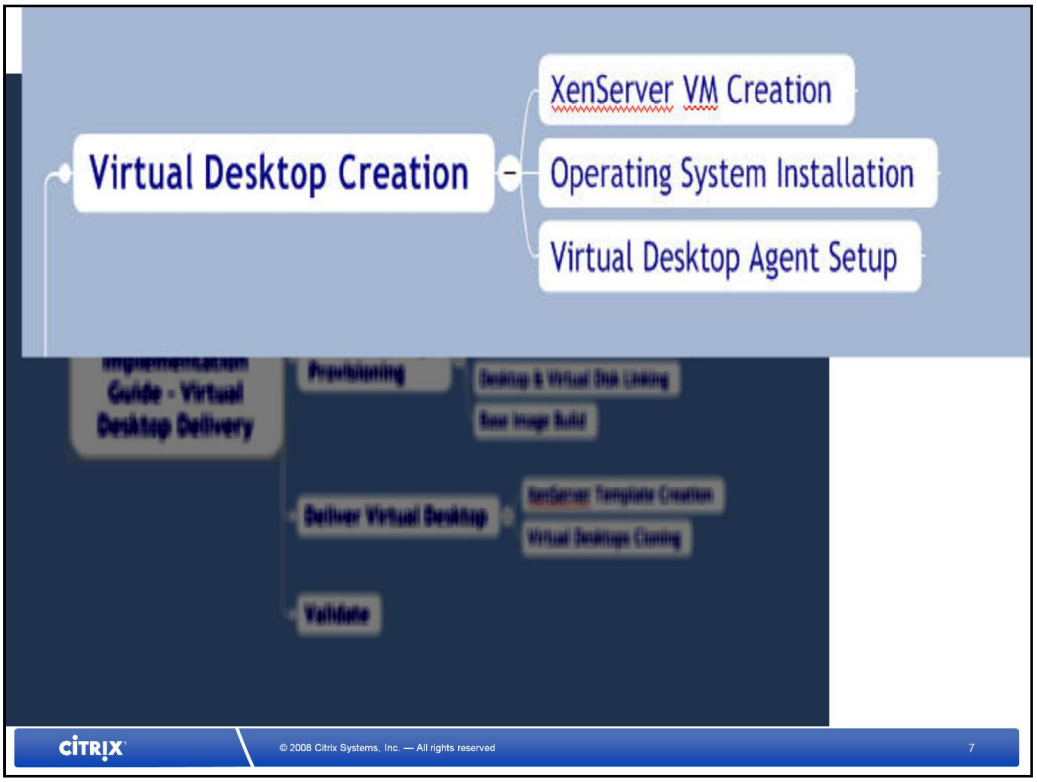
Virtual Desktop Creation

At the core, the XenDesktop solution is based on a core operating system image to be delivered to thousands of endpoints. To simplify and reduce the number unique virtual desktops, the base image should only contain the minimal set of options. The following sub-sections will show how to build either a Windows XP or Windows Vista base image for a XenDesktop Pilot. This step is broken down into the following components:

- XenServer Virtual Machine Creation
- Operating System Installation
- Citrix Virtual Desktop Agent Setup



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XenServer VM Creation

XenServer Virtual Machine Creation

	Screenshot	Description
1		• From XenCenter, select the correct resource pool, right-click and select **New VM**

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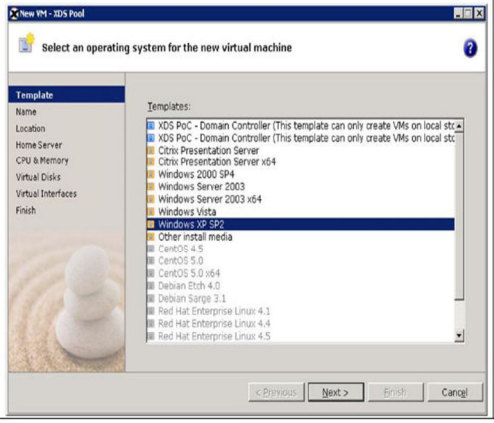
XenServer Virtual Machine Creation

The first step in the building of the pilot environment for a XenDesktop infrastructure is to build the golden desktop image. This starts with the allocation of a virtual machine within the virtualization infrastructure. The following section explains how this is accomplished with Citrix XenServer.

XenServer VM Creation

XenServer Virtual Machine Creation

	Screenshot	Description
2		**Windows XP SP2** • Select **Windows XP SP2** and select **Next** **Windows Vista** • Select **Windows Vista** and select **Next**

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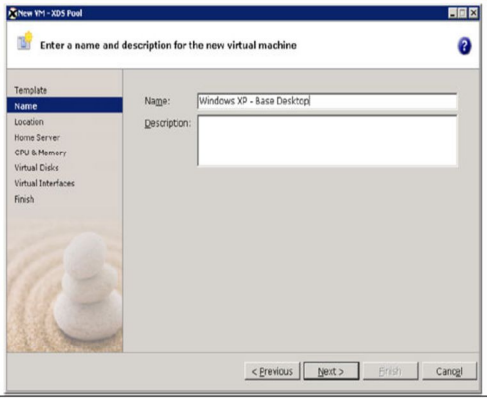
XenServer Virtual Machine Creation

	Screenshot	Description
3		• Enter a **Name** and **Description** and select **Next**

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XenServer Virtual Machine Creation

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XenServer Virtual Machine Creation

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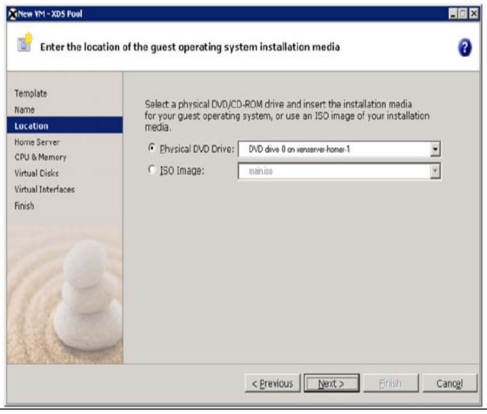
4		• Select the location of the installation files for the operating system and select **Next** *If an ISO store has been created, the Windows XP or Windows Vista ISO image can be selected instead of using a physical DVD.*

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XenServer Virtual Machine Creation

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XenServer Virtual Machine Creation

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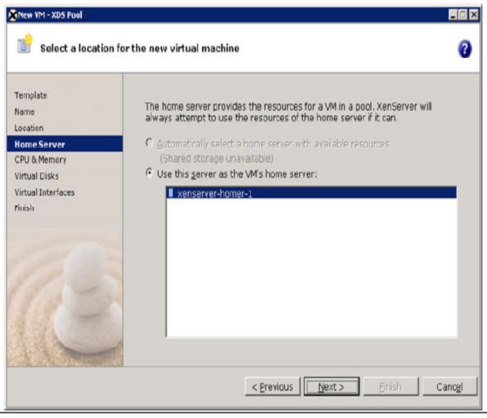
5		• Select the XenServer used to host the new virtual machine and select **Next**

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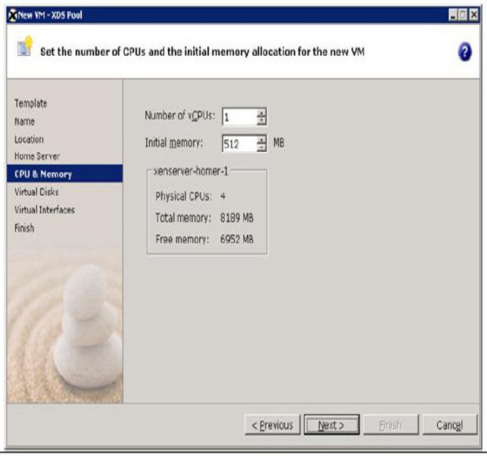
XenServer Virtual Machine Creation

	Screenshot	Description
6		• Select the number of virtual CPUs and the amount of memory the image should use and select **Next** • **Windows XP**: 1 vCPU and 512MB RAM • **Windows Vista**: 1 vCPU and 1024MB RAM *These are recommended settings and can be changed as needed.*

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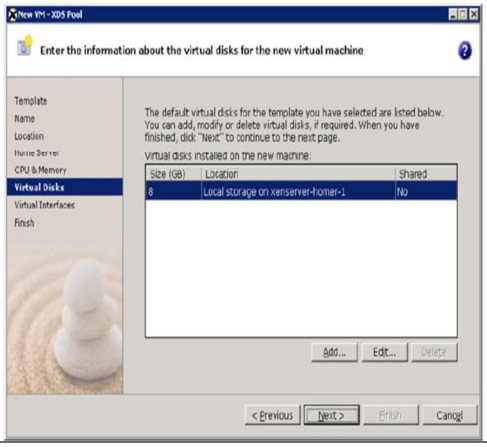
7		• Select the storage for the virtual image and select **Next** • **Windows XP**: 8GB • **Windows Vista**: 16GB *These are recommended settings and can be changed as needed.*

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XenServer Virtual Machine Creation

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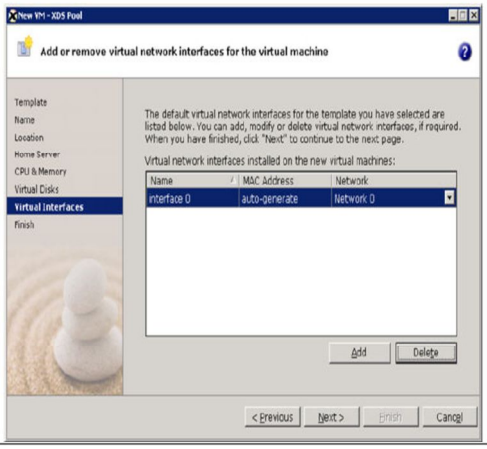
XenServer Virtual Machine Creation

	Screenshot	Description
8		• Select the network interface for the virtual machine and select Next

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XenServer Virtual Machine Creation

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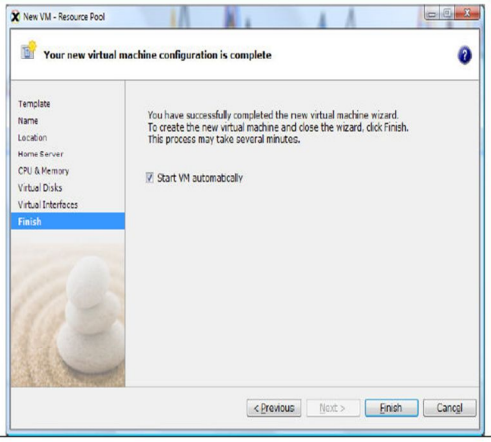
XenServer VM Creation

XenServer Virtual Machine Creation

	Screenshot	Description
9		• Verify **Start VM automatically** is selected • Select **Finish**

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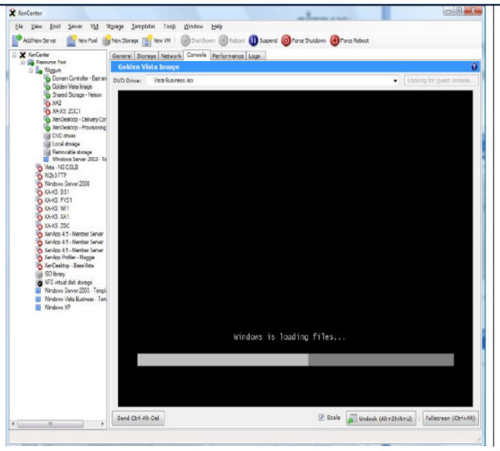
XenServer Virtual Machine Creation

The first step in the building of the pilot environment for a XenDesktop infrastructure is to build the golden desktop image. This starts with the allocation of a virtual machine within the virtualization infrastructure. The following section explains how this is accomplished with Citrix XenServer.

VM OS Install

OS Install

Operating System Installation

	Screenshot	Description
1		• When the virtual machine is created, it will automatically start and the operating system will be installed. • Run through the entire operating system installation following the organization's configuration standards.

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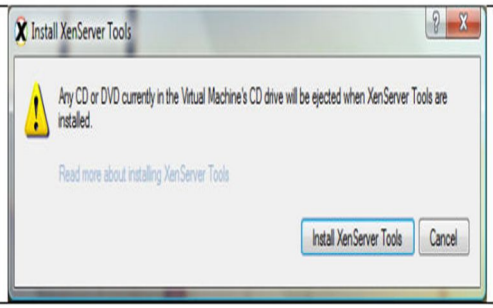
Operating System Installation

The preferred operating system should be installed within the newly allocated virtual machine. The configuration of the operating system should follow the organization's standards. Before moving onto the next phase, it is advisable to install the XenServer Tools into the image to allow for the best possible performance and functionality.

OS Install

Operating System Installation

Screenshot	Description
	• Within the XenCenter console, install XenServer Tools by selecting **VM -> Install XenServer Tools** • Select **Install XenServer Tools** on the information message

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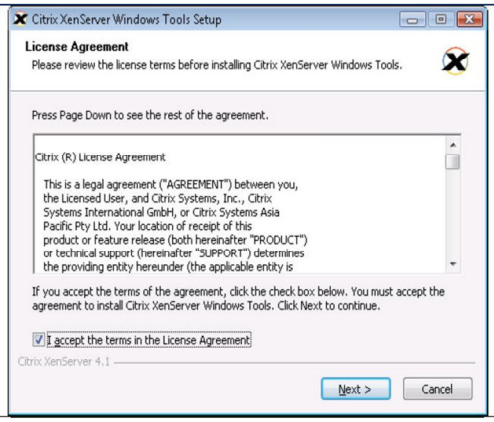
Screenshot	Description
	• Select I accept the terms in the License Agreement • Select Next

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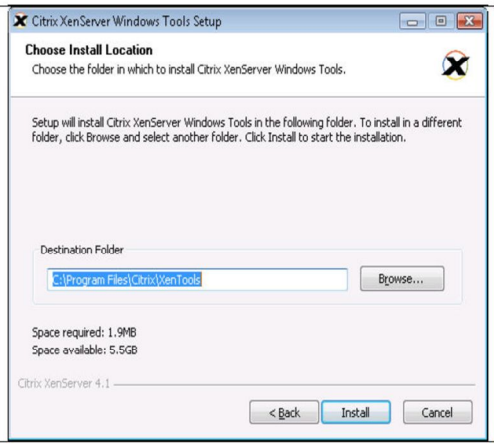
Operating System Installation

The preferred operating system should be installed within the newly allocated virtual machine. The configuration of the operating system should follow the organization's standards. Before moving onto the next phase, it is advisable to install the XenServer Tools into the image to allow for the best possible performance and functionality.

OS Install

Operating System Installation

Screenshot	Description
	• Leave the default destination folder and select **Install** • When installation of XenServer Tools is complete, reboot the virtual machine

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Operating System Installation

The preferred operating system should be installed within the newly allocated virtual machine. The configuration of the operating system should follow the organization's standards. Before moving onto the next phase, it is advisable to install the XenServer Tools into the image to allow for the best possible performance and functionality.

OS Install

Operating System Installation	
Screenshot	Description
	• When the virtual machine is started, log in and add the Windows workstation to Active Directory Domain • Reboot

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Operating System Installation

The preferred operating system should be installed within the newly allocated virtual machine. The configuration of the operating system should follow the organization's standards. Before moving onto the next phase, it is advisable to install the XenServer Tools into the image to allow for the best possible performance and functionality.

Virtual Desktop Agent Setup

Virtual Desktop Agent Setup

Citrix Virtual Desktop Agent Setup

	Screenshot	Description
1		• On the Base Desktop (XP or Vista), insert the XenDesktop CD • Select **Install Workstation Components**

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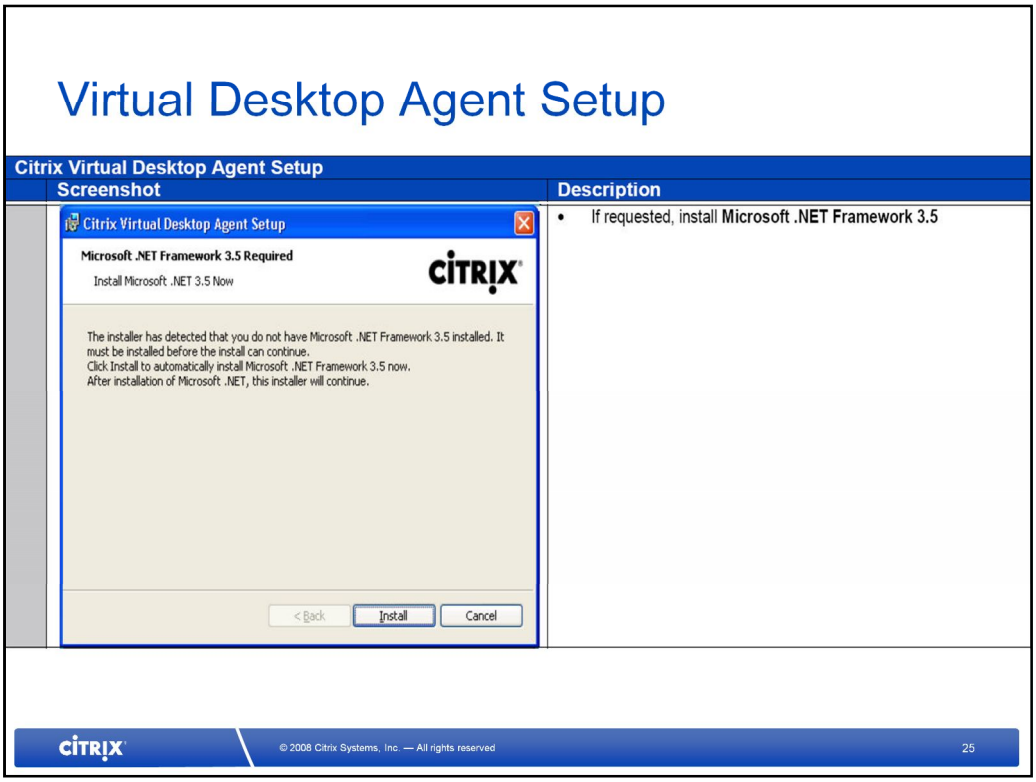
Citrix Virtual Desktop Agent Setup

The Citrix Virtual Desktop Agent is part of the virtualized desktop. It is responsible for maintaining the connection between the physical endpoint to the virtual desktop over the Citrix ICA protocol.



Citrix Virtual Desktop Agent Setup

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Virtual Desktop Agent Setup

Citrix Virtual Desktop Agent Setup

Screenshot	Description
	• The **Virtual Desktop Agent** will start. • Select **Next**

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Citrix Virtual Desktop Agent Setup

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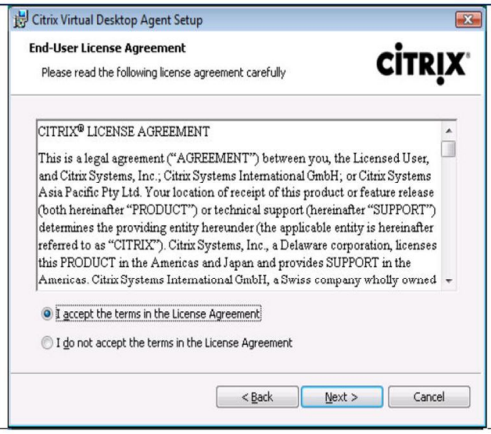
Virtual Desktop Agent Setup

Citrix Virtual Desktop Agent Setup

Screenshot	Description
	• Select I accept the terms in the License Agreement • Select Next

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Citrix Virtual Desktop Agent Setup

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Virtual Desktop Agent Setup

Citrix Virtual Desktop Agent Setup

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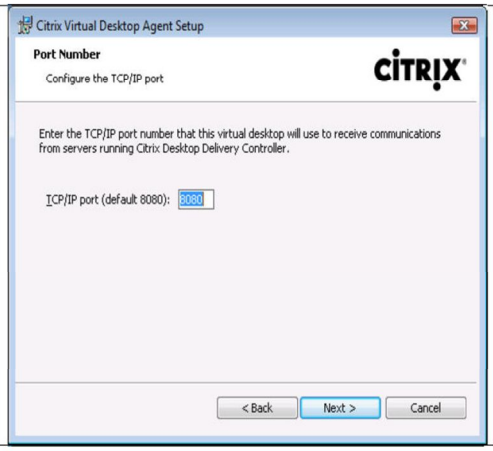	• Leave the default TCP port of **8080** • Select **Next**

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Citrix Virtual Desktop Agent Setup

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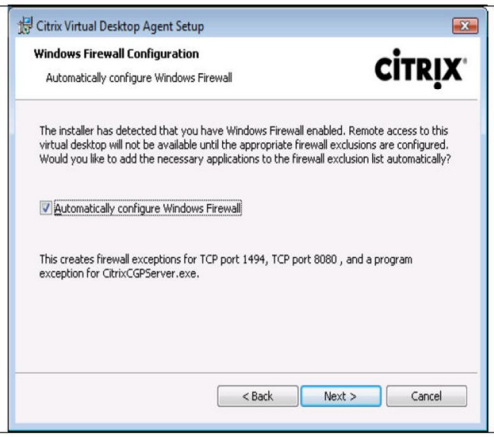
Virtual Desktop Agent Setup

Citrix Virtual Desktop Agent Setup

Screenshot	Description
	• Select **Automatically configure Windows Firewall** • Select **Next**

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Citrix Virtual Desktop Agent Setup

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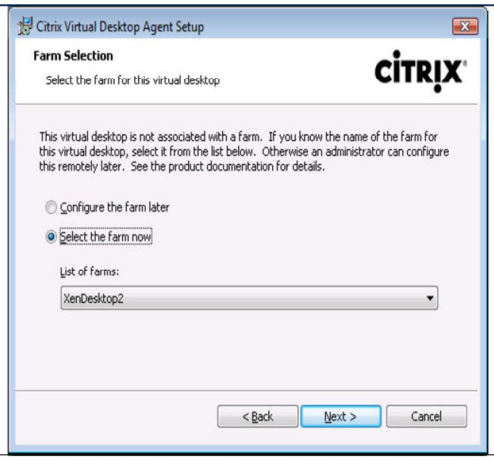
Virtual Desktop Agent Setup

Citrix Virtual Desktop Agent Setup

Screenshot	Description
	• Select the **Selete the farm now** option and pick the correct XenDesktop farm in the drop-down list. ***Note:*** *If this screen is grayed out, the workstation has not been added to the domain yet or the XenDesktop Delivery Controller has not been added to Active Directory.*

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Citrix Virtual Desktop Agent Setup

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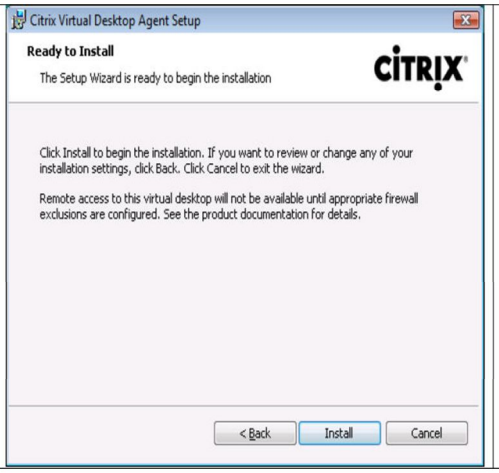
Virtual Desktop Agent Setup

Citrix Virtual Desktop Agent Setup

Screenshot	Description
	• On the **Ready to Install** screen, select **Install** • If requested to install new hardware, Citrix Drivers, select **Continue Anyway** • Installation will now progress • When installation is complete, reboot the workstation

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Citrix Virtual Desktop Agent Setup

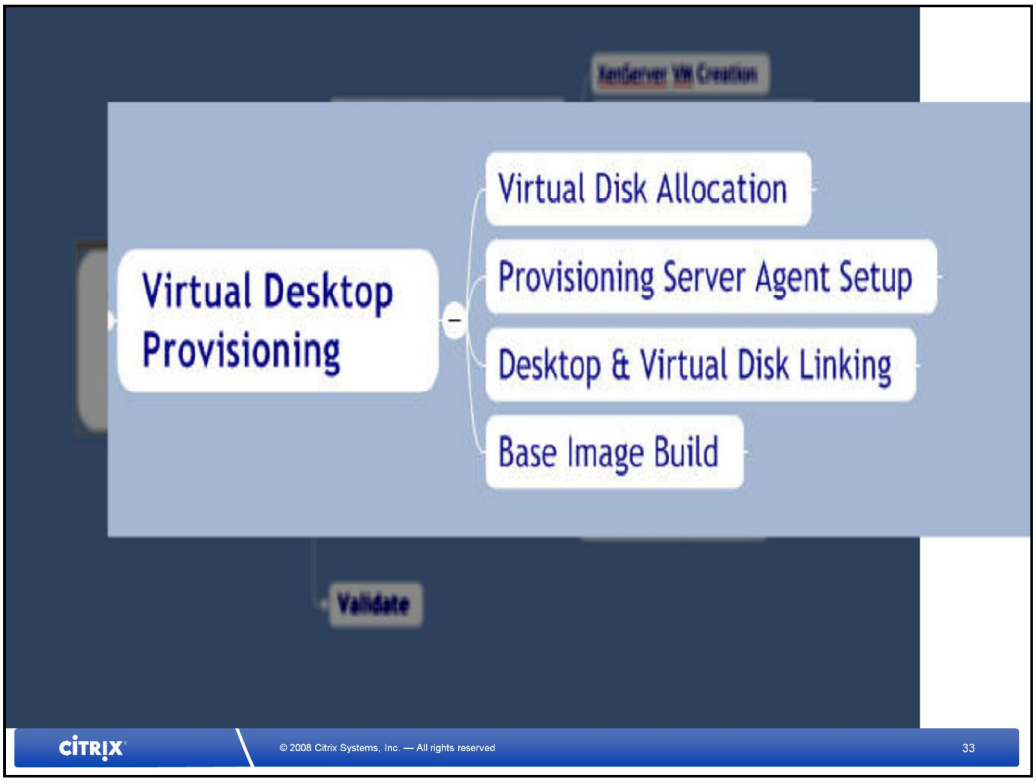
The Citrix Virtual Desktop Agent is part of the virtualized desktop. It is responsible for maintaining the connection between the physical endpoint to the virtual desktop over the Citrix ICA protocol.

Virtual Desktop Provisioning

Once the golden base image has been created, it has to be delivered to the potentially thousands of users in an efficient manner, which is with provisioning. The following subsections will demonstrate how to setup the infrastructure to provision the base desktop image:

- Virtual Disk Allocation
- Provisioning Server Agent Setup
- Desktop and Virtual Disk Linking
- Base Image Build

Assumption: To provide redundancy, two Provisioning Servers are setup and configured. The storage location (F:\) is a Network Attached Storage share.


Virtual Desktop Provisioning
Virtual Disk Allocation
Provisioning Server Agent Setup
Desktop & Virtual Disk Linking
Base Image Build
Validate
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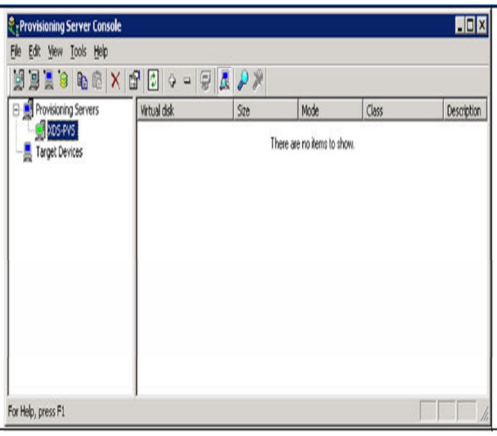
Virtual Disk Allocation

Virtual Disk Allocation

	Screenshot	Description
1		• Launch Provisioning Server Console by clicking **Start – All Programs – Citrix Provisioning Server – Provisioning Server Console** • Right-click the server under **Provisioning Servers** section and select **New Virtual Disk...**

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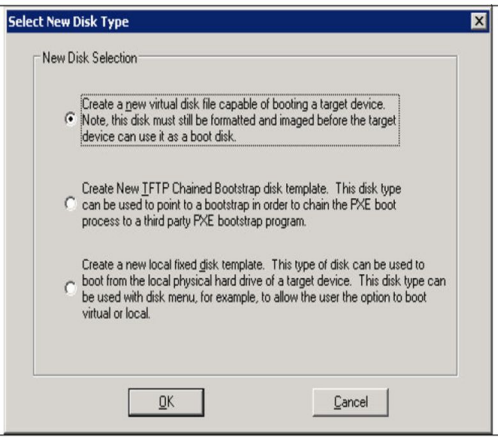
Virtual Disk Allocation

Provisioning Server stores an entire desktop image into a single file. Before the desktop and file can be synchronized, an appropriate amount of drive space must be allocated, which is accomplished in the following steps.

Virtual Disk Allocation

Virtual Disk Allocation

Screenshot	Description
	• On **Select New Disk Type** page accept the default option **create a new virtual disk file capable of booting a target device...**, click **OK**.

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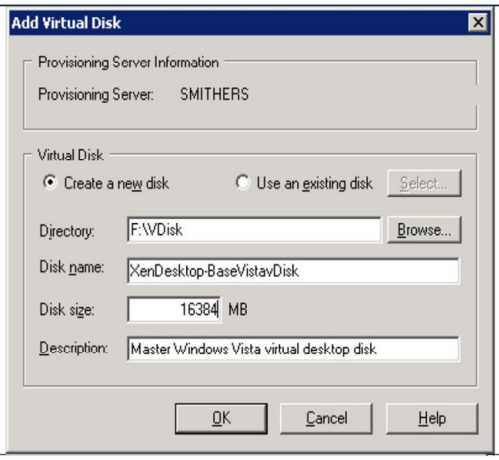	On the **Add Virtual Disk** page, type the following specifications: **Windows Vista** • **Disk name**: XenDesktop-BaseVistavDisk • **Disk size**: 16384MB • **Description**: Master Windows Vista virtual desktop disk **Windows XP** • **Disk name**: XenDesktop-BaseXPvDisk • **Disk size**: 8192MB • **Description**: Master Windows XP virtual desktop disk Click **OK**

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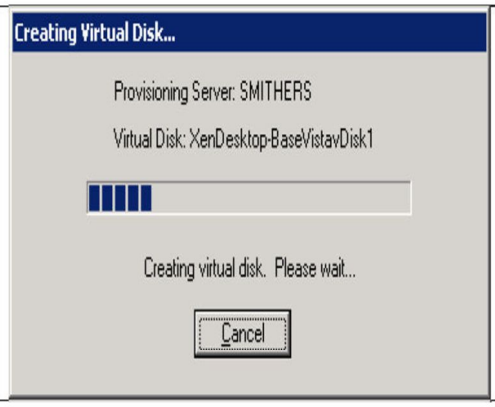	The **Creating Virtual Disk...** screen will appear showing the progress for the virtual disk allocation on the file system. Depending on the size of the disk being allocated, this process could take a few minutes.

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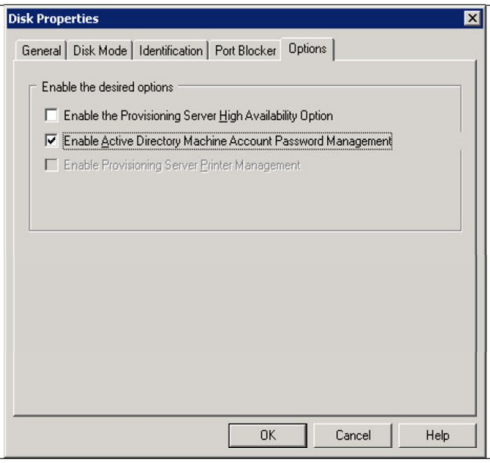	• After the disk is created, right-click **XenDesktop-BaseVistavDisk** or **XenDesktop-BaseXPvDisk**, select **Properties** • Select the **Options** tab • Select **Enable Active Directory Machine Account Password Management**, click **OK**.

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PVS Agent Setup

Provisioning Server Agent Setup

	Screenshot	Description
1		• Insert the disk containing the ISO image of Provisioning Server on the BaseDesktop system • Click **Install Target Device for x86 Platform**. If splash screen does not appear run **ProvSrv45_DeviceInstall32.exe**. • On **Welcome to the Installation Wizard for Provisioning Server Target Device** page click **Next**.

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Provisioning Server Agent Setup

After disk allocation, a link must be created between the desktop and the virtual disk. This link is built with the Provisioning Server Agent. Configuring the agent is accomplished with the following steps:

PVS Agent Setup

Provisioning Server Agent Setup

Screenshot	Description
	• Read and accept the End User License Agreement, click **Next**.

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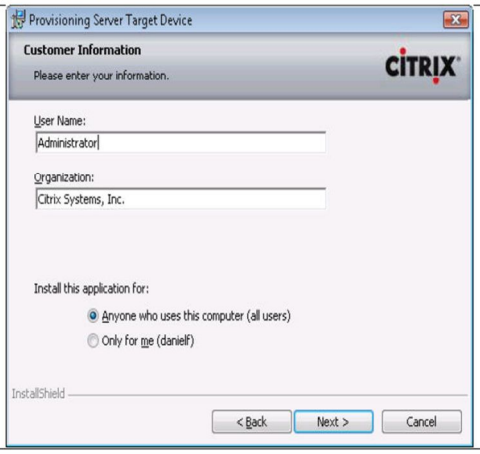
Provisioning Server Agent Setup

After disk allocation, a link must be created between the desktop and the virtual disk. This link is built with the Provisioning Server Agent. Configuring the agent is accomplished with the following steps:

PVS Agent Setup

Provisioning Server Agent Setup

Screenshot	Description
	• On **Customer Information** page enter your customer information, accept the default radio button selection **Anyone who uses this computer (all users)**, click **Next**.

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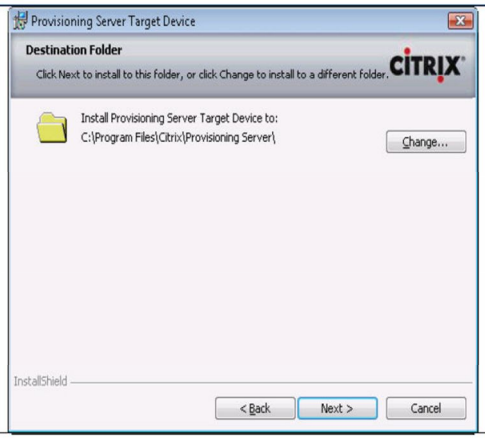
Provisioning Server Agent Setup

After disk allocation, a link must be created between the desktop and the virtual disk. This link is built with the Provisioning Server Agent. Configuring the agent is accomplished with the following steps:

PVS Agent Setup

Provisioning Server Agent Setup

Screenshot	Description
	• Leave the Destination Folder as is and select **Next**

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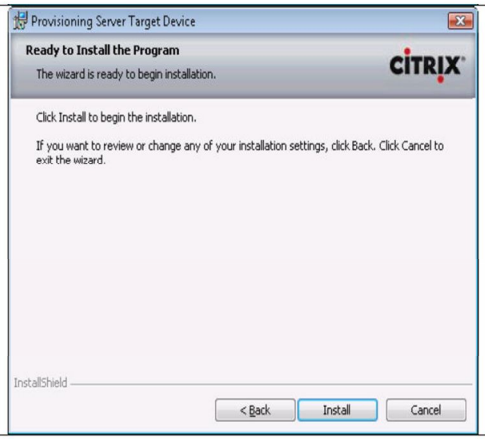
Provisioning Server Agent Setup

After disk allocation, a link must be created between the desktop and the virtual disk. This link is built with the Provisioning Server Agent. Configuring the agent is accomplished with the following steps:

PVS Agent Setup

Provisioning Server Agent Setup

Screenshot	Description
	• On Ready to install the program page, click **Install**. • On Installation Wizard completed page, click **Finish**. • Restart the desktop.

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Provisioning Server Agent Setup

After disk allocation, a link must be created between the desktop and the virtual disk. This link is built with the Provisioning Server Agent. Configuring the agent is accomplished with the following steps:

Virtual Desktop Provisioning

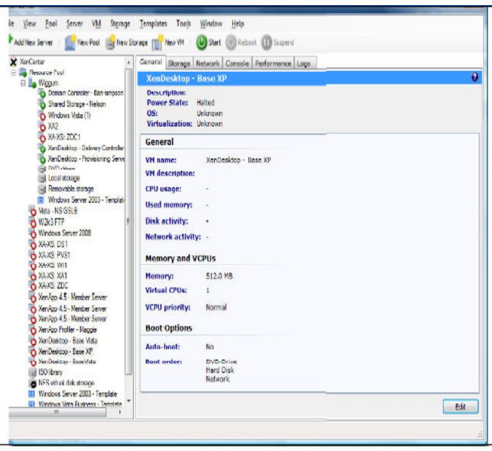
Once the golden base image has been created, it has to be delivered to the potentially thousands of users in an efficient manner, which is with provisioning. The following subsections will demonstrate how to setup the infrastructure to provision the base desktop image:

- Virtual Disk Allocation
- Provisioning Server Agent Setup
- Desktop and Virtual Disk Linking
- Base Image Build

Assumption: To provide redundancy, two Provisioning Servers are setup and configured. The storage location (F:\) is a Network Attached Storage share.

Desktop & Virtual Disk Linking

Desktop and Virtual Disk Linking

	Screenshot	Description
1		• Within the XenCenter Console, select the appropriate virtual machine for the master desktop image. • With the **General** tab selected, select the **Edit** button

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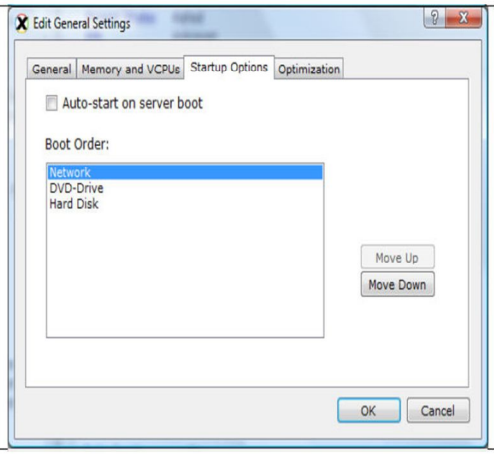
Desktop and Virtual Disk Linking

With the virtual disk and agent allocated and configured, the link can be created. This step requires the workstation to use a PXE boot up sequence in order to find the Provisioning Server. In order for this to be accomplished, DHCP must be set correctly by configuring DHCP options 66 and 67 appropriately. This should have been completed as part of the infrastructure build. Verify that the options have been set before continuing. ***Assumption: DHCP options 66 and 67 have been configured appropriately.***

Desktop & Virtual Disk Linking

Desktop and Virtual Disk Linking

Screenshot	Description
	• Select the **Startup Options** tab • Reorder the list so **Network** appears first. This step ensures the workstation will use a PXE boot to get the IP and BootP information.

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Desktop and Virtual Disk Linking

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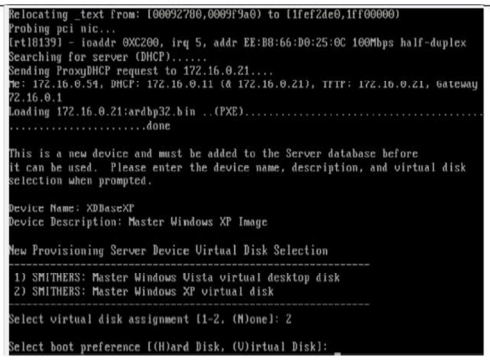
Desktop & Virtual Disk Linking

Desktop and Virtual Disk Linking

Screenshot	Description
	During boot up, the workstation will make a connection to the Provisioning Server for Virtual Desktops based on DHCP options 66 and 67. Enter in the following information when requested to add the desktops into the Provisioning Server database: **Windows XP** • Device Name: **XDBaseXP** • Device Description: **Master Windows XP image** • Select virtual disk assignment type: **Select the option appropriate for the XP image** • Type **H** to select Hard Disk as the desired boot preference **Windows Vista** • Device Name: **XDBaseVista** • Device Description: **Master Windows Vista image** • Select virtual disk assignment type: **Select the option appropriate for the Vista image** • Type **H** to select Hard Disk as the desired boot preference Press any key to restart

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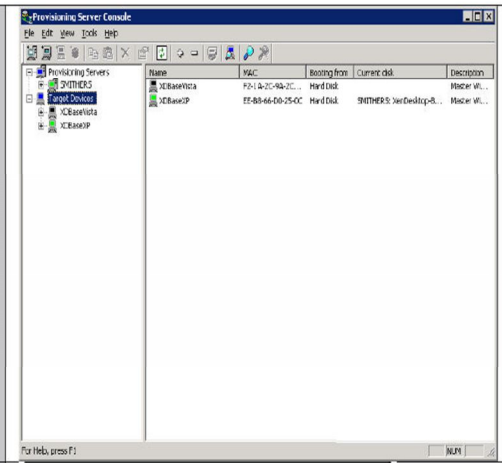
Desktop and Virtual Disk Linking

With the virtual disk and agent allocated and configured, the link can be created. This step requires the workstation to use a PXE boot up sequence in order to find the Provisioning Server. In order for this to be accomplished, DHCP must be set correctly by configuring DHCP options 66 and 67 appropriately. This should have been completed as part of the infrastructure build. Verify that the options have been set before continuing. ***Assumption: DHCP options 66 and 67 have been configured appropriately.***

Desktop & Virtual Disk Linking

Desktop and Virtual Disk Linking

Screenshot	Description
	The workstation should boot normally and after logon, a Provisioning Server icon will appear in the system tray indicating communication with the Provisioning Server. Double-click on the vDisk icon to display the status of the vDisk. The status should be Active. Also, verify the desktop was added into the Target Device list within the Provisioning Server Console.

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Desktop and Virtual Disk Linking

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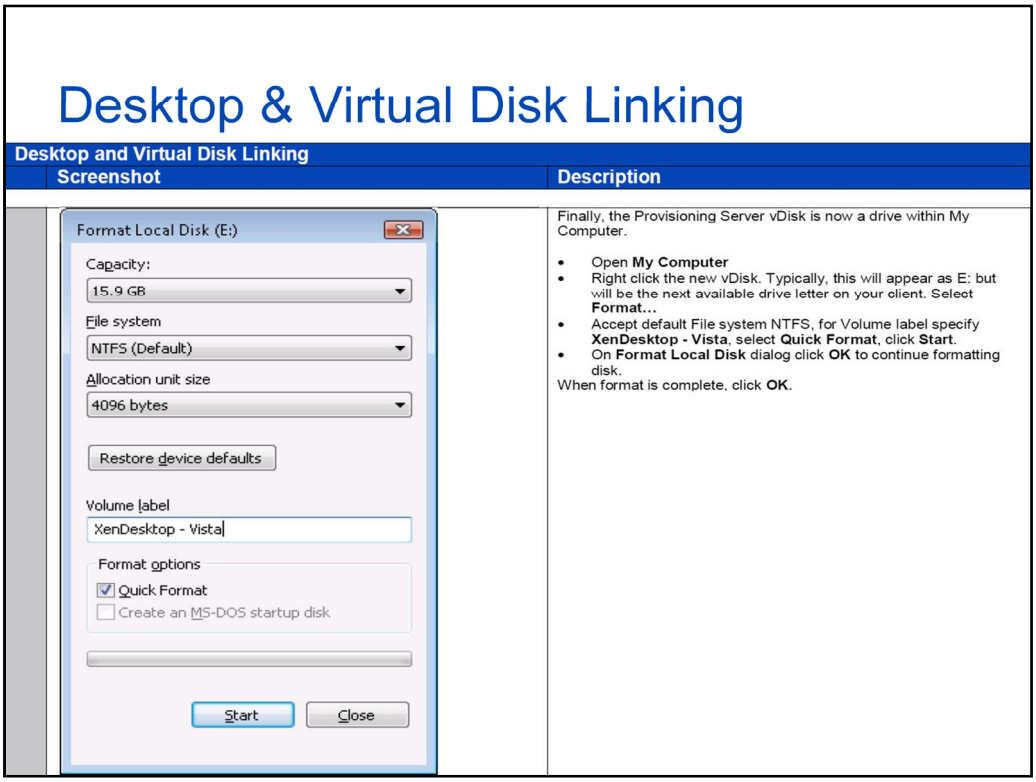

Desktop and Virtual Disk Linking

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- Desktop and Virtual Disk Linking
- Base Image Build

Assumption: To provide redundancy, two Provisioning Servers are setup and configured. The storage location (F:\) is a Network Attached Storage share.

Base Image Build

Base Image Build		
	Screenshot	**Description**
1		• Launch **Provisioning Server Image Builder** (**Start – All Programs –Citrix Provisioning Server-Provisioning Server Image Builder**.) • On **Device Image Builder** page click **Optimize**. The **Provisioning Server Device Optimization Tool** will launch.

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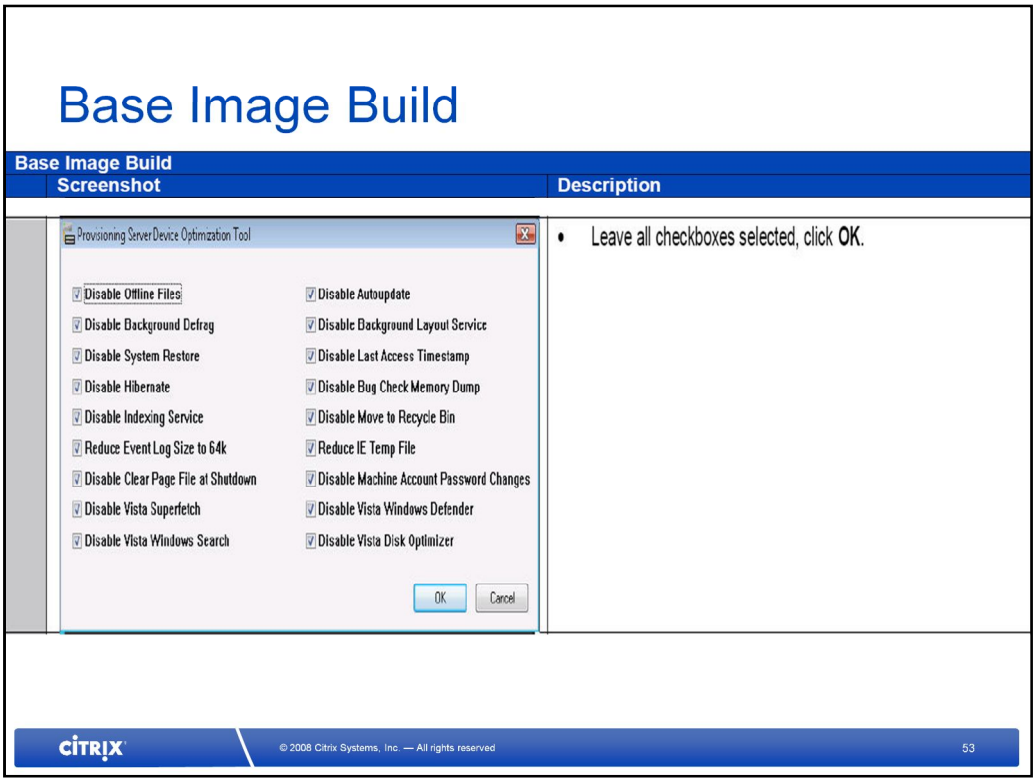
Base Image Build

Once the desktop is in a pristine condition, it is time to build the virtual disk image. This image will be delivered to the thousands of virtualized desktops moving forward. Updating this one image will subsequently update the desktops that rely upon this image.



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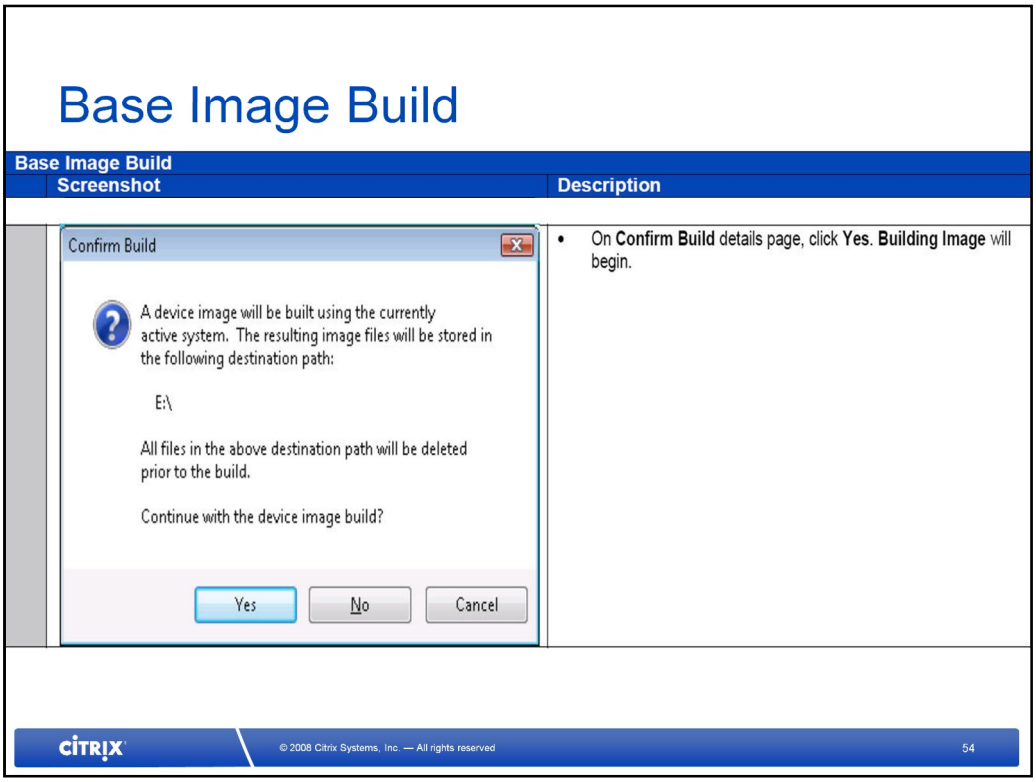

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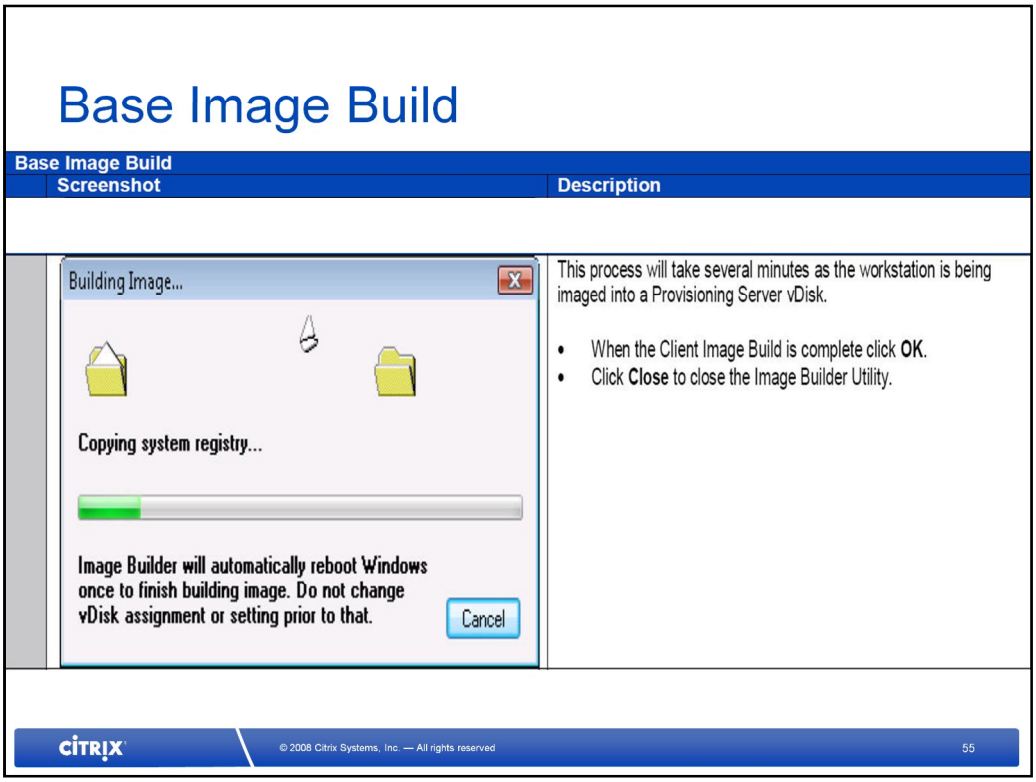

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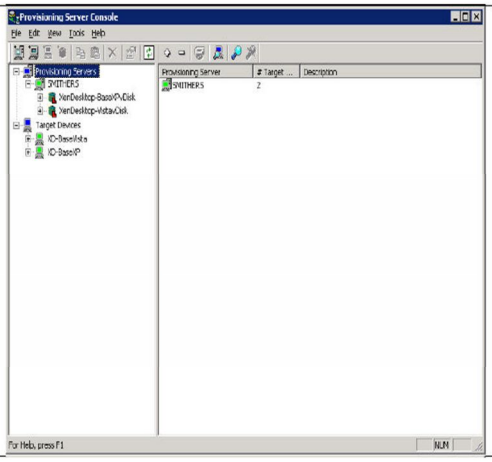
Base Image Build

Base Image Build

Screenshot	Description
	• Launch **Provisioning Server Console** by clicking **Start – All Programs – Citrix Provisioning Server – Provisioning Server Console**. • Highlight **Target Devices**, right-click **BaseDesktop1** and select **Properties**.

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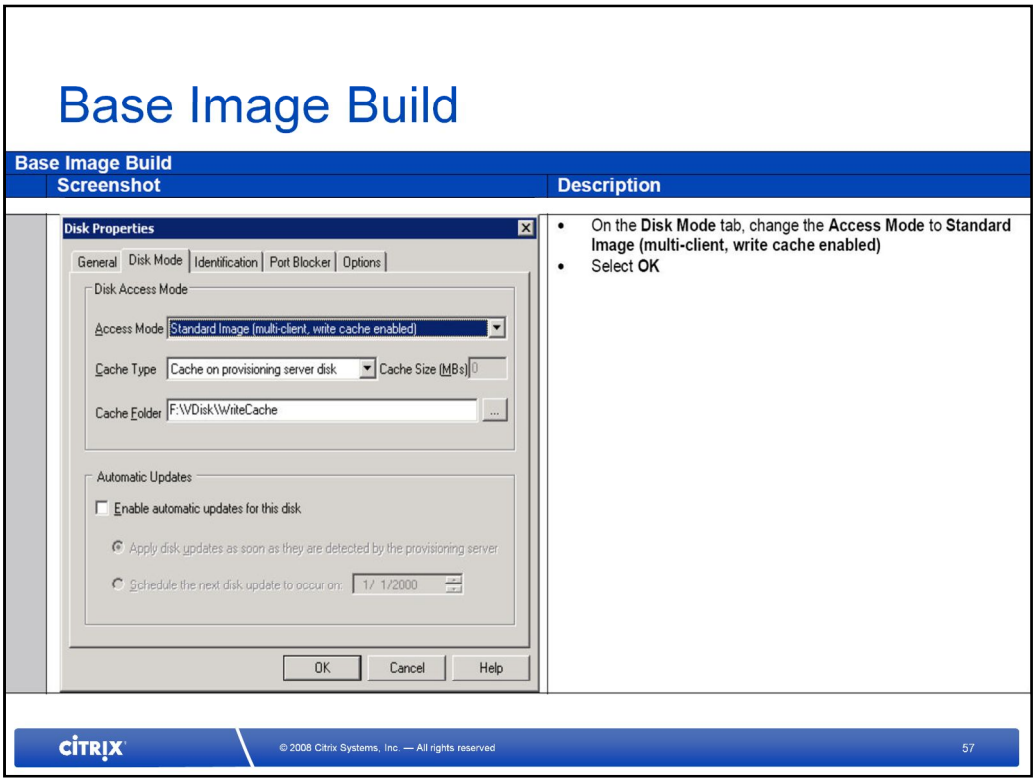

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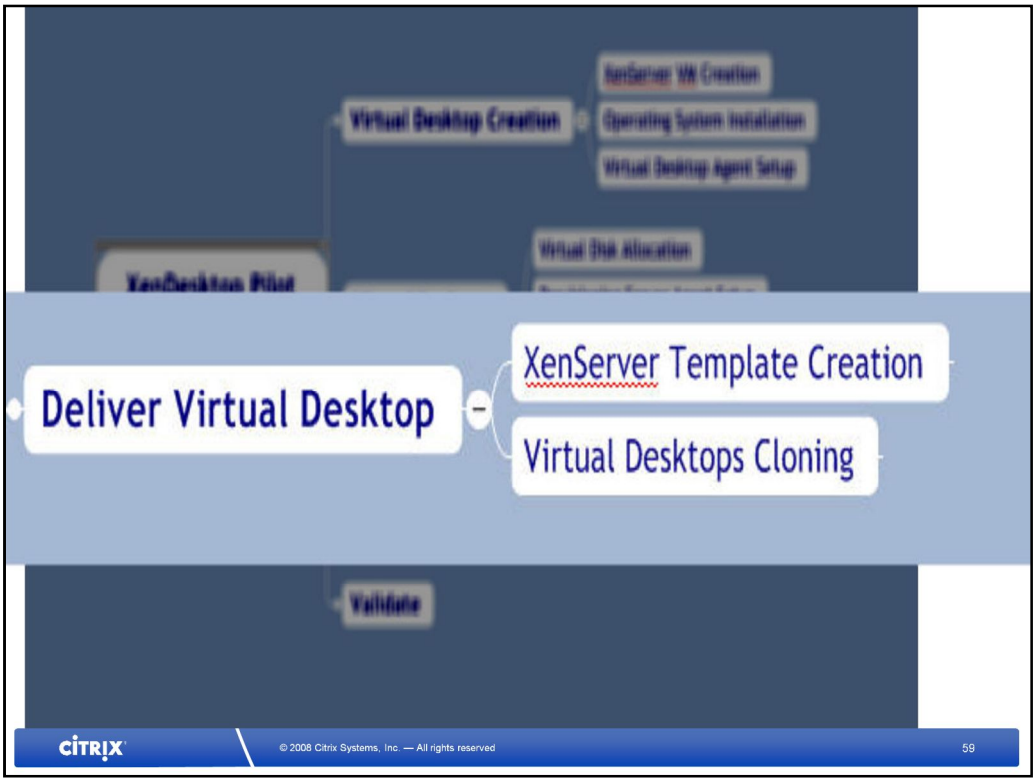


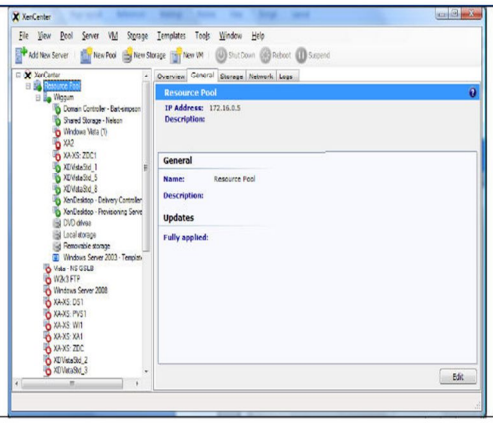
Deliver Virtual Desktop

The final process for virtual desktop delivery is to configure the XenDesktop infrastructure to provisioning the golden image to the defined virtual workstations based on a user's login identification. This is accomplished with the following sections:

- XenServer Template Creation

- Virtual Disk Cloning

XenServer Template Creation

XenServer Template Creation	
Screenshot	Description
	• Within the XenCenter Console, select the **Resource Pool** • Select **VM -> New** in the menu bar

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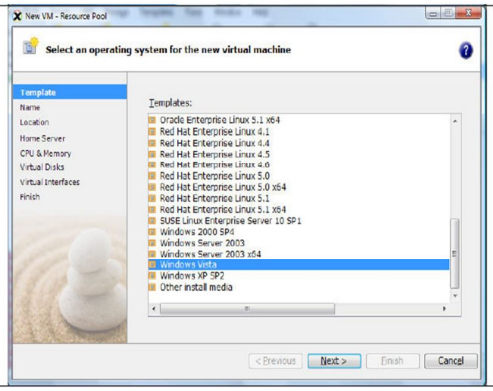
XenServer Template Creation

To simplify the upcoming cloning process, a XenServer Template is required. This template will provide a guide as to how the virtual machine instances should be allocated (RAM, CPU, optimization settings, etc).

XenServer Template Creation

XenServer Template Creation

Screenshot	Description
	• Select the **Windows Vista** template • Select **Next**

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XenServer Template Creation

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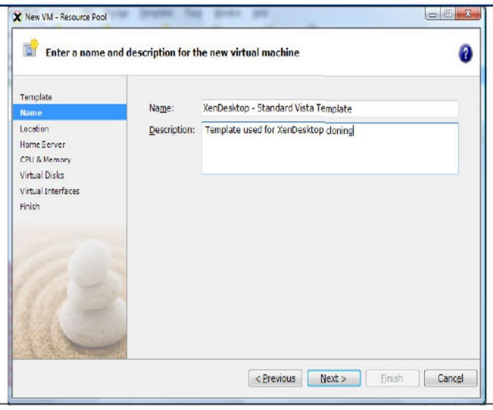
XenServer Template Creation

XenServer Template Creation	
Screenshot	**Description**
	• Enter in the following: ○ **Name:** XenDesktop – Standard Vista Template ○ **Description:** Template used for XenDesktop cloning • Select **Next**

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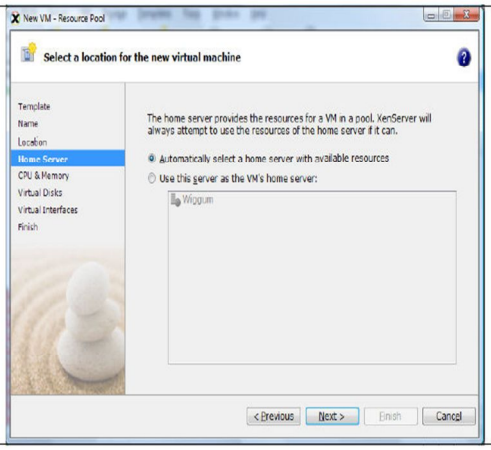
XenServer Template Creation

XenServer Template Creation

Screenshot	Description
	• Verify **Automatically select a home server with available resources** is selected • Select **Next**

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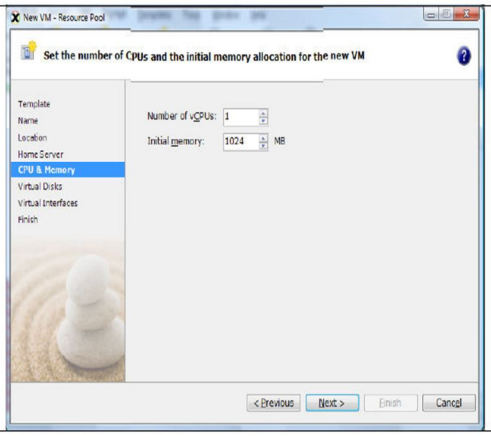
XenServer Template Creation

To simplify the upcoming cloning process, a XenServer Template is required. This template will provide a guide as to how the virtual machine instances should be allocated (RAM, CPU, optimization settings, etc).

XenServer Template Creation

XenServer Template Creation

Screenshot	Description
	Enter in the following: **Windows Vista** ○ **Number of vCPUs:** 1 to 2 is recommended ○ **Initial Memory:** 512MB to 2048MB **Windows XP** ○ **Number of vCPUs:** 1 ○ **Initial Memory:** 512MB to 1024MB Select **Next** ***Note:*** *These values are only recommendations. They should be based on the requirements of the business.*

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XenServer Template Creation

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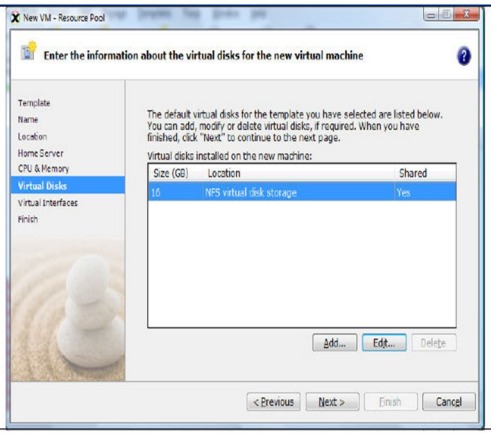
XenServer Template Creation

XenServer Template Creation	
Screenshot	Description
	• Leave the **Virtual Disk** screen as a default • Select **Next**

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XenServer Template Creation

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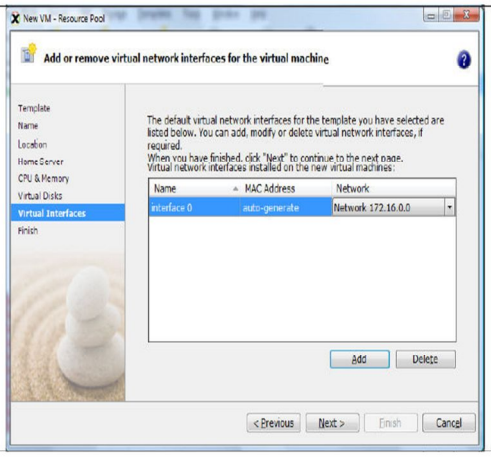
XenServer Template Creation

XenServer Template Creation

Screenshot	Description
	• Leave the **Virtual Interfaces** screen as default • Select **Next**

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XenServer Template Creation

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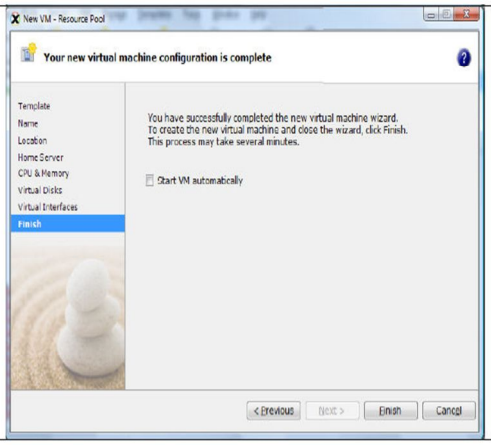
XenServer Template Creation

XenServer Template Creation

Screenshot	Description
	• Deselect **Start VM automatically** • Select **Finish**

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XenServer Template Creation

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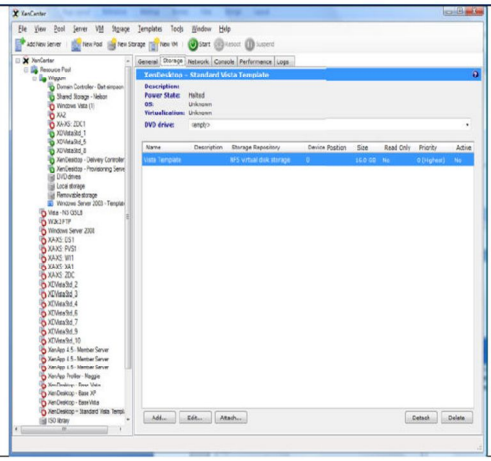
XenServer Template Creation

XenServer Template Creation

Screenshot	Description
	• Select the newly created virtual machine and select the **Storage** tab • Select **Delete** to remove the storage from the virtual machine • From the menu bar, select **VM – Convert to Template** When the process completes, this virtual machine will become a new XenServer template to be used during the XenDesktop virtual machine cloning.

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XenServer Template Creation

To simplify the upcoming cloning process, a XenServer Template is required. This template will provide a guide as to how the virtual machine instances should be allocated (RAM, CPU, optimization settings, etc).

Virtual Desktop Cloning

Virtual Desktops Cloning

Virtual Desktops Cloning

Screenshot	Description
	• Open the XenDesktop Setup Tool console located in **Start – All Programs – Citrix – Management Consoles – XenDesktop Setup Tool**, from the Provisioning Server for Virtual Desktops server. • Select **Next**

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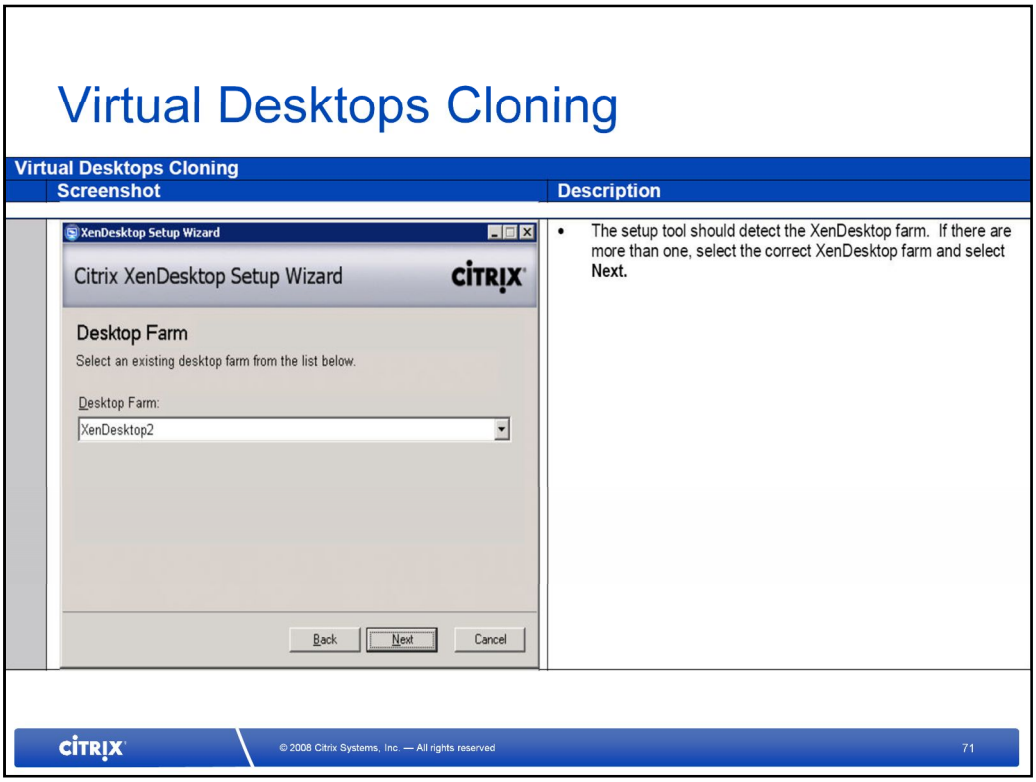
Virtual Desktops Cloning

With a single tool, the final steps in the infrastructure are configured. Based on the responses given within the tool, any number of virtual machines will be created and linked to a provisioning server virtual disk available to a certain user group.



Virtual Desktops Cloning

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Virtual Desktops Cloning

Virtual Desktops Cloning

Screenshot	Description
	• Select the correct hosting infrastructure. If Citrix XenServer is used, enter in the correct address: **http://172.16.0.5**

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Virtual Desktops Cloning

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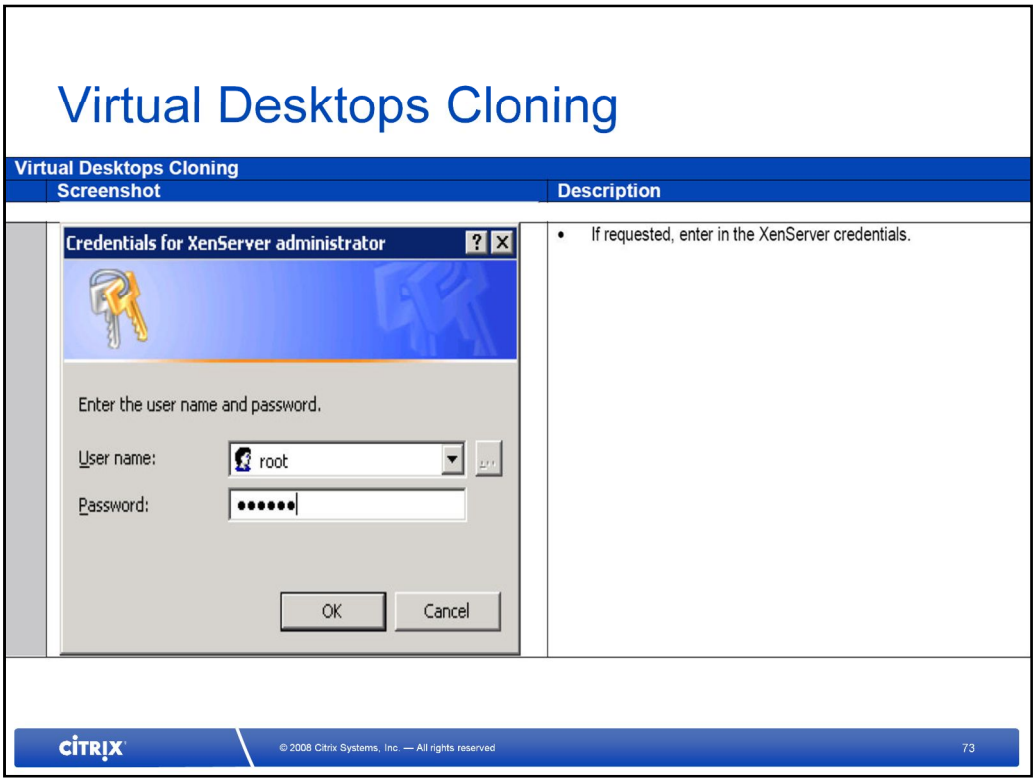

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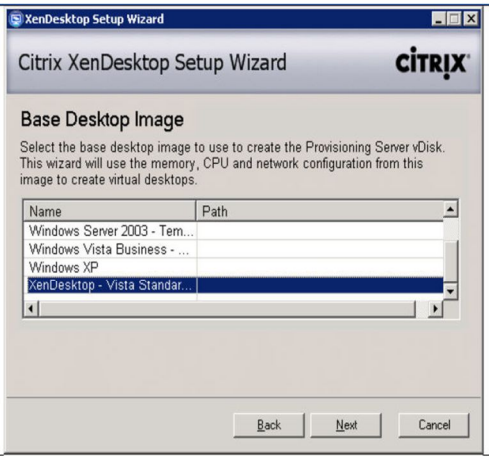
Screenshot	Description
	• All XenServer virtual machine image configurations are based on a XenServer template. Select the appropriate template from the list and select **Next.**

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Virtual Desktops Cloning

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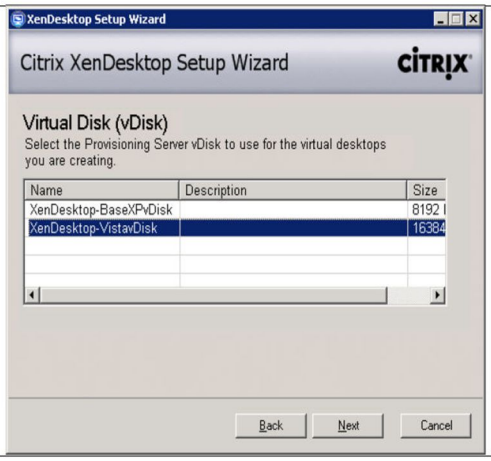
Virtual Desktops Cloning

Virtual Desktops Cloning

Screenshot	Description
	• Select the correct Provisioning Server virtual disk to use for the desktop streaming and select **Next.**

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Virtual Desktops Cloning

With a single tool, the final steps in the infrastructure are configured. Based on the responses given within the tool, any number of virtual machines will be created and linked to a provisioning server virtual disk available to a certain user group.

Virtual Desktops Cloning

Virtual Desktops Cloning

Screenshot	Description
	• The new virtual desktops can be located in any Organizational Unit within Active Directory. By default, the new virtual desktops will be created in the Computers OU. If a different OU is recommended, select the **Browse** button and select the OU. • When finished, select **Next.**

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Virtual Desktops Cloning

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Virtual Desktops Cloning

Virtual Desktops Cloning

Screenshot	Description
	• Each virtual desktop will be defined by a base hostname appended by a number. • Insert a logical name • Insert the total number of desktops to create • Insert the starting index number

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Virtual Desktops Cloning

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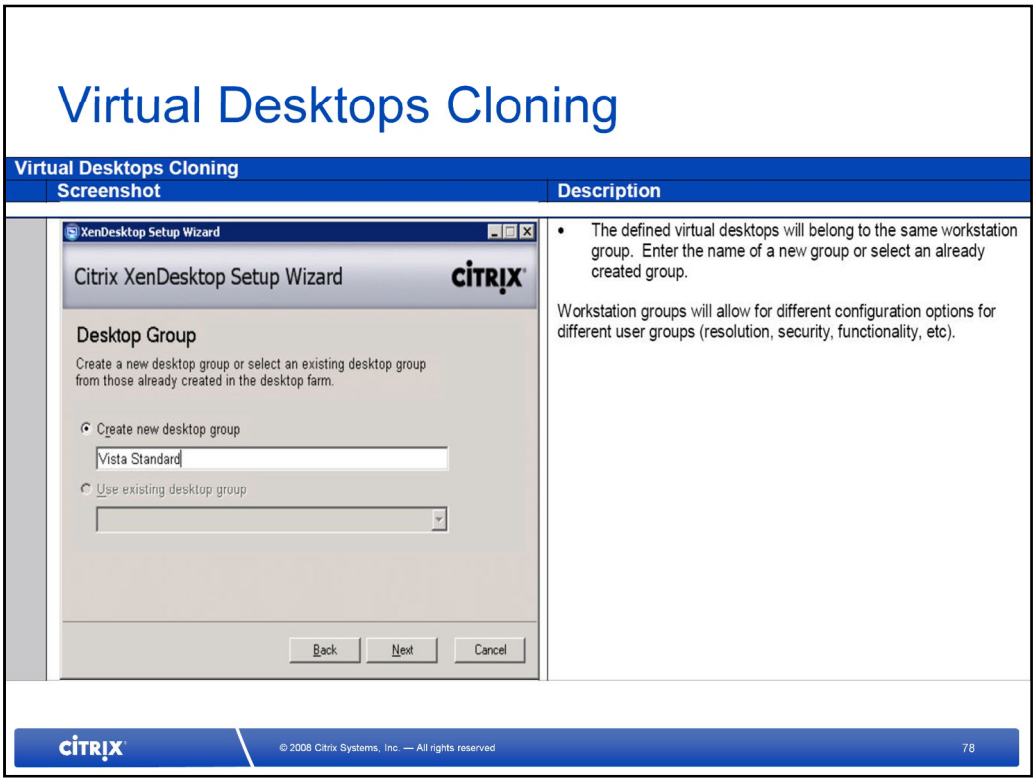

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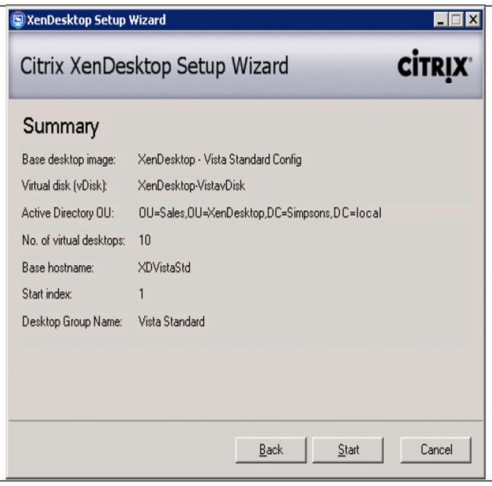
Virtual Desktops Cloning

Screenshot	Description
	• Verify the information within the **Summary** window is correct and select **Next.**

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Virtual Desktops Cloning

With a single tool, the final steps in the infrastructure are configured. Based on the responses given within the tool, any number of virtual machines will be created and linked to a provisioning server virtual disk available to a certain user group.

Virtual Desktops Cloning

Virtual Desktops Cloning

Screenshot	Description
	• When configuration is complete, select **Finish**

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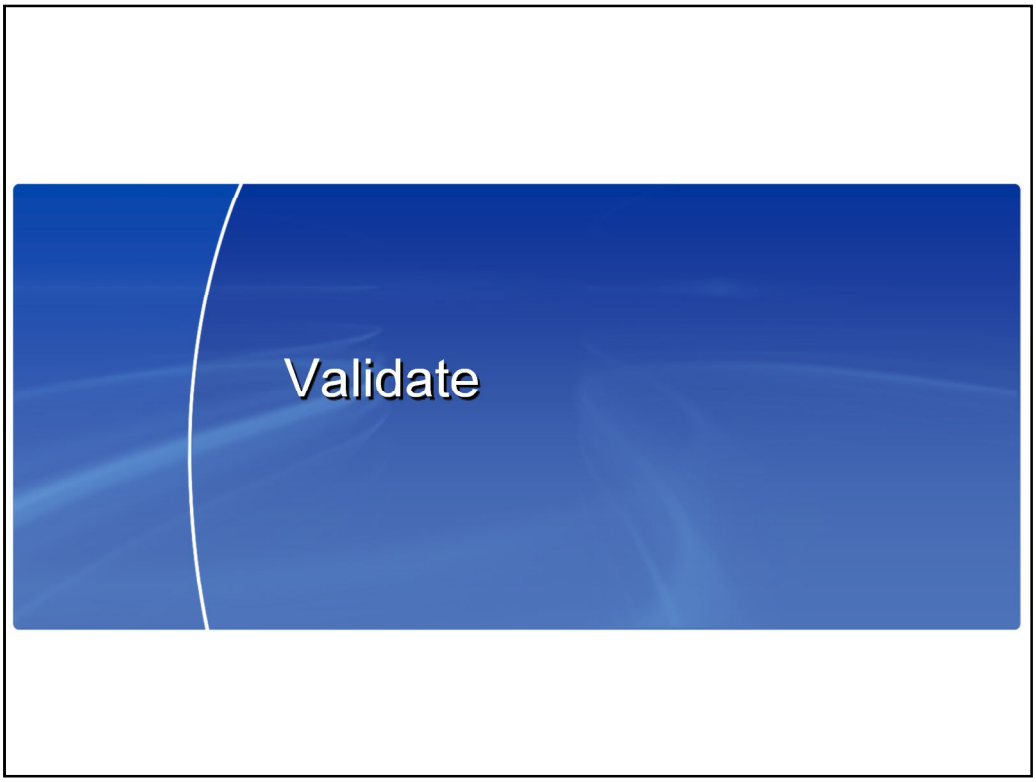
Virtual Desktops Cloning

With a single tool, the final steps in the infrastructure are configured. Based on the responses given within the tool, any number of virtual machines will be created and linked to a provisioning server virtual disk available to a certain user group.



Virtual Desktop Provisioning

Once the golden base image has been created, it has to be delivered to the potentially thousands of users in an efficient manner, which is with provisioning. The following subsections will demonstrate how to setup the infrastructure to provision the base desktop image:

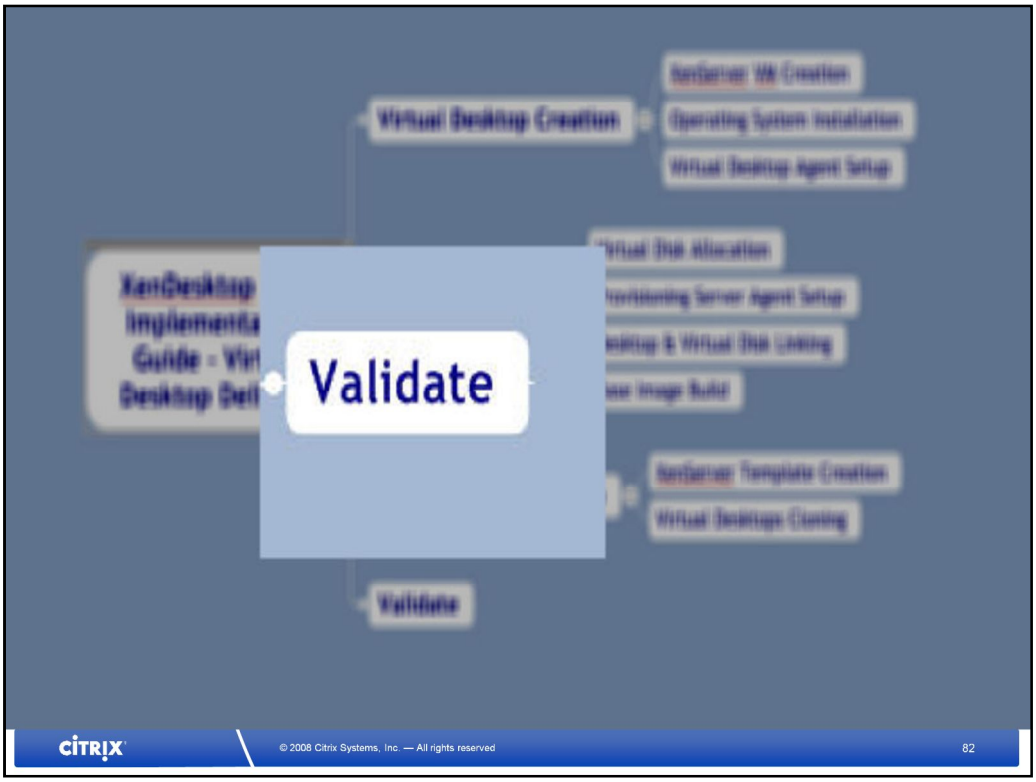
- Virtual Disk Allocation

- Provisioning Server Agent Setup

- Desktop and Virtual Disk Linking

- Base Image Build

Assumption: To provide redundancy, two Provisioning Servers are setup and configured. The storage location (F:\) is a Network Attached Storage share.



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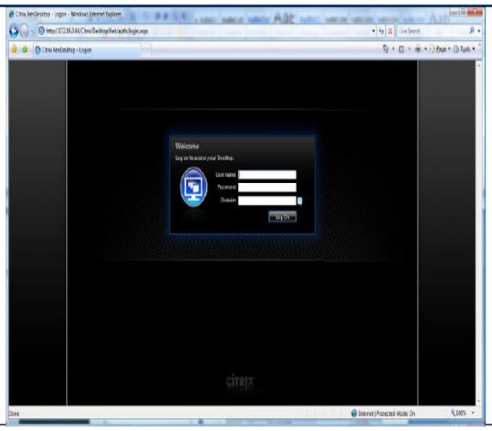
Validate & Test

Test	Screenshot	Description
1		• From the client, launch the a browser to http://XenDesktopCeliveryControllerAddress • Authenticate with a valid user name, password and domain •

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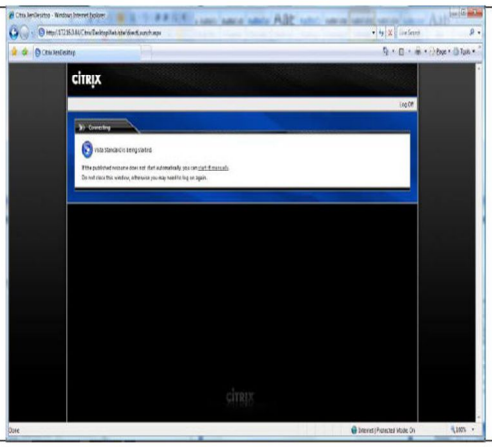
Validate

With the process completed, it is time to test the environment to make sure a user is able to launch a virtual desktop. ***Assumption: The user's endpoint device has already installed the Desktop Receiver appropriately.***

Validate & Test

Test	Screenshot	Description
2		• The XenDesktop published virtual desktop should appear and auto-launch

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Validate

With the process completed, it is time to test the environment to make sure a user is able to launch a virtual desktop. ***Assumption: The user's endpoint device has already installed the Desktop Receiver appropriately.***

Validate & Test

Test		
	Screenshot	Description
3		• The new virtual desktop should be launched and the user should be automatically signed in.

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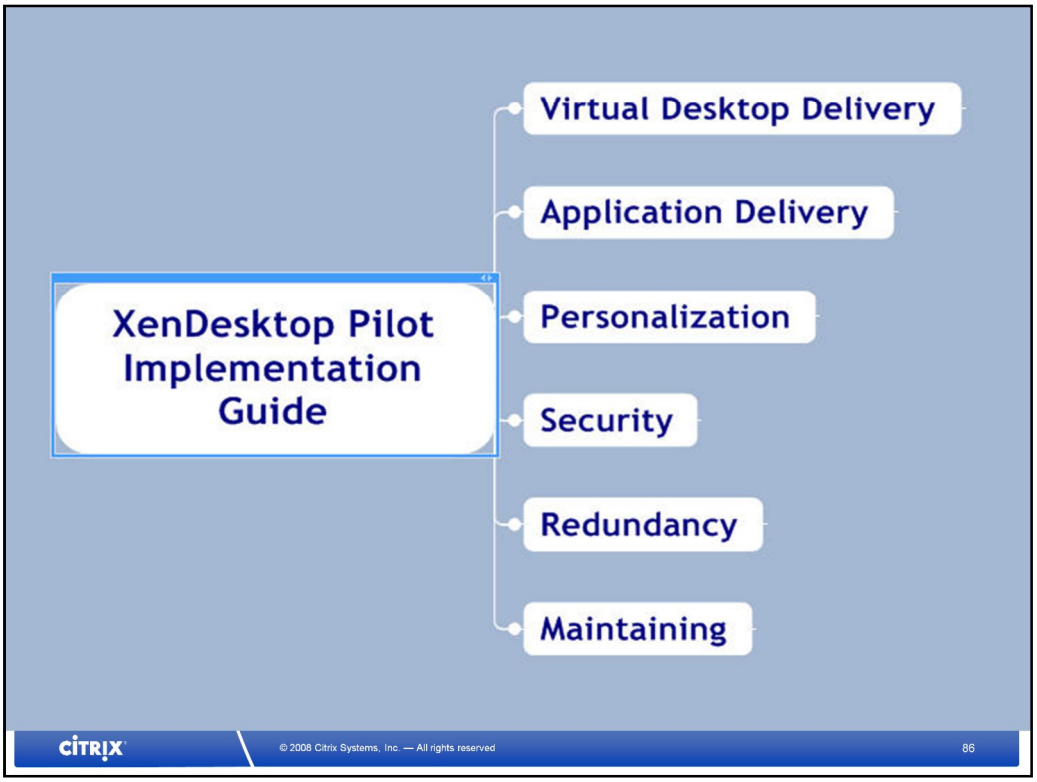
Validate

With the process completed, it is time to test the environment to make sure a user is able to launch a virtual desktop. ***Assumption: The user's endpoint device has already installed the Desktop Receiver appropriately.***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Virtual Desktop Delivery
Application Delivery
Personalization
Security
Redundancy
Maintaining
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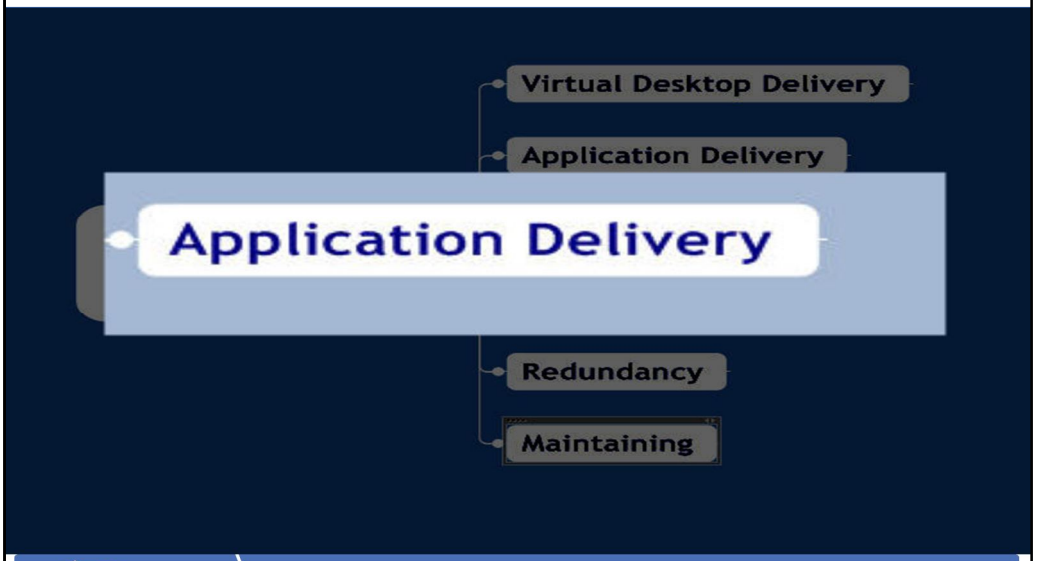
Next Post Will Cover



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