Microsoft

Configuring Windows® 7

Orin Thomas

Rapid Review

MCTS EXAM

70-680

Rapid Review 70-680

Assess your readiness for MCTS Exam 70-680—and quickly identify where you need to focus and practice. This practical, streamlined guide walks you through each exam objective, providing "need to know" checklists, review questions, tips, and links to further study—all designed to help bolster your preparation.

Reinforce your exam prep with a *Rapid Review* of these objectives:

- Installing, Upgrading, and Migrating to Windows 7
- Deploying Windows 7
- Configuring Hardware and Applications
- Configuring Network Connectivity
- Configuring Access to Resources
- Configuring Mobile Computing
- Monitoring and Maintaining Systems That Run Windows 7
- Configuring Backup and Recovery Options

This book is an ideal complement to the in-depth training of the Microsoft Press® *Training Kit* and other exam-prep resources for Exam 70-680.

Configuring Windows® 7

AUTHOR AND SERIES EDITOR

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Configuring Windows 7

Orin Thomas

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Introduction

This *Rapid Review* is designed to help you assess—and complete—your readiness for MCTS Exam 70-680: Windows 7, Configuring. The *Rapid Review* series is intended for exam candidates who already have a solid grasp on the exam objectives through a combination of experience, skills, and study and could use a concise review guide to help with the final stages of preparation.

The 70-680 exam is aimed at professionals who have at least one year of experience supporting desktop operating systems in organizational environments. Although this experience focuses on the Windows 7 operating system, you might have real-world experience with other Windows client operating systems, such as Windows Vista and Windows XP that you can build on and apply. Most candidates who take this exam work in an environment where Windows 7 either has been deployed or is about to be deployed. It is important to note that you should have real world experience with Windows 7 prior to taking the 70-680 exam and that having practical knowledge is a key component to achieving a passing mark.

This book will review every concept described in the following exam objective domains:

- Installing, Upgrading, and Migrating to Windows 7
- Deploying Windows 7
- Configuring Hardware and Applications
- Configuring Network Connectivity
- Configuring Access to Resources
- Configuring Mobile Computing
- Monitoring and Maintaining Systems that Run Windows 7
- Configuring Backup and Recovery Options

This is a Rapid Review and not a comprehensive exam prep or skills training resource such as the Microsoft Press *Self-Paced Training Kit*. The book covers every exam objective for the 70-680 exam as presented in the objective domain. The exam team does not give anyone access to the exam questions and regularly adds new questions to the exam, which makes complete coverage a real challenge. The coverage in this book is as complete as possible based on the information available. This book should be an excellent supplement to your existing independent study and real-world experience with the product.

If you encounter a topic in this book that you do not feel completely comfortable with, you can visit the links described in the text, in addition to researching the topic further using Microsoft TechNet, as well as consulting support forums. If you review a topic and find that you don't understand it, you should consider consulting books such as the *Windows® 7 Resource Kit* and the *MCTS Self-Paced Training Kit (Exam 70-680): Configuring Windows® 7* from Microsoft Press. You can also purchase practice tests, or use the one available with the Training Kit, to determine if you need further study on particular topics.

NOTE **The *MCTS Self-Paced Training Kit (Exam 70-680): Configuring Windows® 7* provides comprehensive coverage of each 70-680 exam objective, along with exercises, review questions, and practice tests. The Training Kit also includes a discount voucher for the exam.**

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MORE INFO **For a full list of Microsoft certifications, go to *www.microsoft.com/learning/mcp/default.asp*.**

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I'd also like to thank you, the reader, for picking up this book. If you have any questions about anything and you want to get in touch with me, you can find me on Twitter: *http://twitter.com/OrinThomas*.

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CHAPTER 1

Installing, Upgrading, and Migrating to Windows 7

Approximately 14 percent of the 70-680 exam focuses on the topic of installing, upgrading, and migrating to Microsoft Windows 7. That means that you need to have a good grasp of how to perform a clean installation, how to upgrade to Windows 7 from previous editions of the Windows client operating system, and how to migrate user profiles and data to Windows 7 from previous versions of Windows.

This chapter covers the following objectives:

- Objective 1.1: Perform a clean installation
- Objective 1.2: Upgrade to Windows 7 from previous versions of Windows
- Objective 1.3: Migrate user profiles

Objective 1.1: Perform a clean installation

This objective requires you to demonstrate that you know how to determine whether a particular hardware profile is appropriate for the Windows 7 operating system, how to perform a traditional and dual-boot installation, the different methods that you can use to deploy Windows 7, and the steps that you should take to prepare each installation source.

Exam need to know

- Identifying hardware requirements

  For example: How to determine whether computer hardware meets the minimum requirement for the deployment of Windows 7.
- Setting up as the sole operating system

  For example: How to deploy Windows 7 as the only operating system on a computer.

- Setting up as dual boot

  For example: How to configure Windows 7 to dual boot with Windows Vista.
- Installation methods

  For example: Choose when to use a PXE-based or media-based installation.
- Boot from the source of installation

  For example: How to determine when to use bootable media to install Windows 7.
- Preparing the installation source USB, CD, Network share, WDS

  For example: How to configure a USB installation source.

Identifying hardware requirements

You need to know the minimum hardware requirements for the 32-bit and 64-bit versions of Windows 7.

True or False? The minimum amount of disk space required for Windows 7 Enterprise edition (x64) is 16 GB**.**

Answer*: False*. The hardware requirements for the 32-bit (x86) editions of Windows 7 differ from the hardware requirements of the 64-bit (x64) edition of Windows 7. Windows 7 has the following hardware requirements:

- 1 GHz or faster 32-bit or 64-bit processor, depending on whether you are installing the x86 or x64 version of an edition.
- 1 GB RAM (for 32-bit editions) or 2 GB RAM (for 64-bit editions). The 32-bit editions do not support more than 4 GB of RAM.
- 16 GB available hard disk space (32-bit) or 20 GB (64-bit)
- Device that supports DirectX9 Graphics with a WDDM 1.0 or higher compatible graphics adapter.

Although these are the listed minimum hardware requirements, in some cases it might be possible to actually install Windows 7 on computers that don't reach these specifications.

> ***EXAM TIP*** **When considering answering an exam question, use an answer based on the published documentation rather than what you might have been able to accomplish shoehorning Windows 7 onto a computer in the real world.**

True or False? Windows 7 Home Premium edition will support a system configuration where there are two separate physical processors, each with eight cores**.**

Answer*: False*. The number of processors supported by Windows 7 depends on the edition of Windows 7. For example:

- Windows 7 Professional, Enterprise, and Ultimate allow for two physical processors.
- Windows Starter, Home Basic, and Home Premium recognize only a single processor.

A single processor can have multiple cores with dual-core, quad-core, and 8-core processors common on desktop and mobile configurations. Windows 7 SP1 supports the following:

- The 32-bit versions of Windows 7 can support up to 32 processor cores.
- The 64-bit versions of Windows 7 Enterprise and Ultimate edition support up to 256 processor cores.

MORE INFO **To learn more about the hardware requirements of Windows 7, consult the following webpage: *http://windows.microsoft.com/en-US/windows7/products/system-requirements*.**

EXAM TIP **Understand the difference between processors and cores.**

Setting up as the sole operating system

You need to know what steps to take to perform a fresh installation of Windows 7 as the sole operating system on a computer.

True or False? You can install a bootable version of the Windows 7 operating system on a removable USB disk drive.

Answer*: False*. You can install Windows 7 on a local hard disk drive as long as there is enough space on the volume. You can't install the Windows 7 operating system on a removable USB disk drive. When setting up Windows 7 as the sole operating system on a computer that has no existing operating system, you have several options:

- Install Windows 7 on a computer that does not have an operating system installed.
- Upgrade a previous version of Windows to Windows 7. This topic is covered later in the chapter.
- Install Windows 7 in a multiboot configuration. This topic is also covered later in this chapter.

Installing Windows 7 on a computer that does not have an existing operating system requires some form of bootable media. You can use a DVD-ROM with the Windows 7 installation media installed, a specially prepared USB storage device, or a PXE boot to deploy Windows 7.

EXAM TIP **You can also use the WinPE environment in advanced deployment scenarios.**

To install Windows 7, perform the following steps:

1. Power on the computer. The computer boots to the Install Windows screen.
2. On the Please Read The License Terms page, review the license terms and choose I Accept The License Terms. Click Next.
3. On the Which Type Of Installation Do You Want? page, click Custom. You use Custom for all installations except upgrades.

4. On the Where Do You Want To Install Windows? page, you can choose an existing partition that has unallocated space. You can also choose to partition and format a disk by clicking New or Drive Options (Advanced) if there is an existing partition scheme. You don't need to choose to format and partition the hard disk and can allow the Windows 7 installation routine to perform this task for you by choosing an existing partition with unallocated space as long as it meets the minimum size requirements. If a computer has a special type of disk drive that is not recognized, you can click Load Driver to load the hard disk drive's driver. This process is necessary only if the hard disk drive is not recognized by the installation routine.
5. Once you have selected the location, installation begins. The computer reboots, and you need to specify a user name and a computer name. The specified user name will be the default administrative account for the computer. You are asked to provide a password for this default administrative account and to provide a password hint.
6. With a traditional installation, you are given the option to provide a product key and to automatically activate Windows 7 when an Internet connection is detected. It is possible to click Skip to bypass entering the product key and activation.
7. You choose what the update settings the computer will use. You learn more about updates in Chapter 7, "Monitoring and Maintaining Systems that Run Windows 7."
8. You choose the time and date settings.
9. You choose the computer's current network location. You learn more about network locations in Chapter 4, "Configuring Network Connectivity."

MORE INFO **To learn more about installing Windows 7 as the sole operating system on a computer, consult the following webpage: *http://windows.microsoft.com/en-US/windows7/Installing-and-reinstalling-Windows-7*.**

EXAM TIP **Remember that if a computer has an existing operating system, you have the option of upgrading the existing installation or installing in a dual-boot configuration. Both these options are covered later in this chapter.**

True or False? Windows 7 Professional edition supports VHD boot.

Answer*: False*. It is possible to install Windows 7 on a Virtual Hard Disk (VHD) file stored on an NTFS-formatted volume if the VHD is configured with an appropriate amount of free space. This type of deployment is known as native VHD boot. Windows 7 Enterprise and Windows 7 Ultimate support native VHD boot. Native VHD boot involves configuring a VHD file as a boot volume and installing all the operating system volume files within the VHD, as opposed to on the formatted hard disk drive, which is the case with traditional single operating system deployments. You learn more about native VHD boot in Chapter 2, "Deploying Windows 7."

MORE INFO **To learn more about VHD native boot, consult the following webpage: *http://technet.microsoft.com/en-us/library/gg318048(WS.10).aspx*.**

Setting up as dual boot

You need to know the conditions under which you can configure Windows 7 to dual boot, also known as multiboot, with one or more operating systems.

True or False? You need to have more than one partition if you are going to dual boot Windows 7 Home Premium edition with Windows XP.

Answer*: True*. It is possible to configure a computer dual boot as long as you have enough free disk space to create an appropriately sized second partition or if such a partition already exists. You can also install Windows 7 in dual-boot configuration by installing Windows 7 on a separate disk drive. You usually configure Windows 7 to dual boot by installing Windows 7 on a separate partition (although it's possible to use a single partition with VHD boot, an advanced scenario you learn about in Chapter 2). When configuring Windows 7 to dual boot with Windows XP or Windows Vista, you must ensure that the older operating system is installed prior to the installation of Windows 7. You can't use the built-in operating system tools to install Windows 7 first and then install Windows XP in a dual-boot configuration.

EXAM TIP **Unless a VHD boot is mentioned, dual boot means multiple partitions.**

True or False? You must choose the Custom installation type when installing Windows 7 in dual-boot configuration.

Answer*: True*. To install Windows 7 in dual-boot configuration, perform the following general steps:

1. Ensure that the original operating system is completely backed up.
2. Insert the Windows 7 installation media. Setup either launches automatically or you can run setup.exe to trigger installation. In most cases, you do not boot from the installation media when configuring a dual-boot installation. An exception to this rule is when you are configuring multiboot with VHD files.
3. On the Install Windows menu, click Install Now.
4. On the Get Important Updates For Installation page, choose to retrieve updates. On the Please Read The License Terms page, accept the license terms.
5. On the What Type Of Installation Do You Want? page, choose Custom.
6. On the Where Do You Want To Install Windows? page, choose a partition or disk different from the one on which the original operating system is present.

You can configure Windows 7 to dual boot with another installation of Windows 7. When dual booting between installations of Windows 7, it doesn't matter which Windows 7 edition or version you install first.

MORE INFO **To learn more about booting Windows 7 in multiboot configurations, consult the following webpage: *http://windows.microsoft.com/en-US/windows7/Install-more-than-one-operating-system-multiboot*.**

EXAM TIP **Remember that older versions of Windows must be installed before you install Windows 7.**

Installation methods

You need to know different ways to deploy the Windows 7 operating system when performing a clean installation.

True or False? You can install Windows 7 using a CD-ROM as an installation source.

Answer*: False*. You can perform a fresh install of Windows 7 when one of the following locations is configured to host the Windows 7 installation files:

- **DVD-ROM** This can be a DVD-ROM manufactured by Microsoft or a DVD-ROM that you create from a disk image file in ISO format.
- **USB Installation Media** A specially prepared bootable USB disk that holds the Windows 7 installation files.
- **Network Share** A network share can hold the Windows 7 installation files. You can connect to this network share when booted from Windows PE.
- **PXE Boot** In this scenario you perform a PXE boot using a wired network card. You can't PXE boot using a wireless network adapter. In PXE boot scenarios, the Windows 7 installation image is deployed from a machine running Windows Server 2008, Windows Server 2008 R2, Windows Server 2003 with Service Pack 2, or Windows Server 2003 R2 with Windows Deployment Services (WDS) installed. System Center Configuration Manager 2012 leverages WDS for operating system deployment.

You can't directly install Windows 7 from CD-ROM as a single CD-ROM does not have the capacity to hold the Windows 7 installation files. You can boot from a CD-ROM that is configured with WinPE and then connect to an installation source. You can install Windows 7 from an ISO image if you are installing Windows 7 as a virtual machine hosted on Hyper-V, but this scenario is not directly addressed by the 70-680 exam. You can also buy a copy of Windows 7 from Microsoft online and perform an installation after downloading an installer file to your computer, but this is an upgrade scenario addressed later in this chapter.

EXAM TIP **When considering the best deployment method, take into account the computer hardware.**

Boot from the source of installation

You need to know which deployment methods allow you to boot from the installation media and which require you to be running an existing operating system.

True or False? You can install Windows 7 directly from an external USB CD-ROM drive**.**

Answer*: False*. You can perform a clean installation of Windows 7 by booting off the installation media and installing the operating system. You can install Windows 7 in the following ways using this technique:

- **Boot from DVD-ROM** Requires the computer to have a DVD-ROM drive or an external DVD-ROM drive attached. The installation files are on the DVD, which can be a retail copy of Windows 7 or a DVD created from a Windows 7 ISO file. You can boot from an externally attached DVD-ROM drive that is connected from a USB port to install Windows 7. You can also boot from a DVD-ROM or CD-ROM that is configured as a WinPE disk, but you can't perform a direct installation in this manner and have to make a remote connection to the installation files.
- **Boot from USB flash drive** Requires the computer to have a USB port and an appropriate USB flash device prepared with the Windows 7 installation files. It is also possible to boot from a USB drive configured as a WinPE disk.
- **PXE** Requires a PXE boot server to be present on the network. You must use a wired network connection to PXE boot a computer; it is not possible to PXE boot off a wireless network using Windows Deployment Services.

To boot from the installation source might require you to modify the computer's BIOS. Not all computer BIOSs are configured to boot the computer off USBs, DVDs, or network adapters. You might need to restart your computer for the new BIOS settings to take effect.

MORE INFO **To learn more about booting Windows 7 from the installation media, consult the following document:** ***http://windows.microsoft.com/en-US/windows7/Start-your-computer-from-a-Windows-7-installation-disc-or-USB-flash-drive.***

EXAM TIP **A PXE boot requires a PXE-compliant network adapter.**

Preparing the installation source: USB, CD, network share, WDS

You need to know what steps to take to prepare certain installation source types so that they can be used to deploy the Windows 7 operating system. Even though the objective mentions CD, you can't directly install Windows 7 using CD-ROMs—only DVD-ROMs.

True or False? You can use third-party, DVD-authoring software to burn Windows 7 installation images to DVD-ROM**.**

Answer*: True*. Windows 7 installation media is commercially available on DVD-ROM. This media requires no preparation and can be used immediately. If your organization has a volume licensing agreement with Microsoft or if you have an MSDN or TechNet subscription, you can obtain disk image files in ISO format that you can burn to DVD-ROM by using the Burn Disc Image option in Windows 7 and Windows Server 2008 R2 or a third-party DVD-authoring utility.

EXAM TIP **You can also use custom images with DVD-ROM, though these are usually deployed using other methods.**

True or False? When preparing a USB storage device to function as Windows 7 installation media, you format it using the NTFS file system.

Answer*: False*. A USB storage device needs to be approximately 4 GB in size or larger to function as installation media for Windows 7. Preparing the USB storage device will wipe all data from that device. To prepare a USB storage device to function as Windows 7 installation media, perform the following steps:

1. Connect a USB storage device to a computer running Windows 7, Windows Vista, Windows Server 2008, or Windows Server 2008 R2.
2. Open an elevated command prompt and type **diskpart**.
3. At the DISKPART> prompt, type **list disk**. Identify the number that represents the USB storage device. Type **select disk X** to select this storage device (X is the device number)
4. Type the following commands:

```
clean
create partition primary
format fs=fat32 quick
active
exit
```

5. Copy all the files located on the Windows 7 installation media across to the USB storage device.

True or False? You must boot using a WinPE disk or USB storage device to perform a clean installation of Windows 7 on a computer that does not have an existing operating system.

Answer*: True*. Preparing a network share to host the installation files is a matter of copying the contents of the Windows 7 installation media to a share that will be accessible to the computers on which you want to install Windows 7. If you are upgrading a computer to Windows 7 or configuring a multiboot deployment, you access this network location from within Windows. If you are performing a clean installation, you boot using a WinPE disk or USB storage device and then map a network drive. The installation media includes the Win PE environment. The account that you use to map the network drive must have read access to the shared folder that hosts the Windows 7 installation files.

EXAM TIP **Remember when you need to use a WinPE disk or USB storage device.**

True or False? You can install the WDS role on computers running Windows 7 Enterprise edition.

Answer*: False*. WDS is a role that you can install on computers running the Windows Server 2008, Windows Server 2008 R2, Windows Server 2003 Service Pack 2, and Windows Server 2003 R2 operating systems. You can configure WDS to deploy

Windows 7 through PXE boot. This requires that the computer has a PXE-capable network adapter that can connect to a wired network. If the computer's wired network adapter is not PXE-compliant, it might be possible to boot off of a WDS discover image, a special form of bootable image that contains extra network drivers and allows for the detection of WDS servers.

To prepare the WDS server, you must install the WDS role and then populate the WDS server with Windows image files. Windows image files are stored in .WIM format. The Windows 7 installation media contains the file install.wim. You can use this file with WDS to deploy Windows 7. An advantage of using WDS on Windows Server 2008 and Windows Server 2008 R2 to deploy Windows 7 is that it uses multicast transmissions to deploy the operating system, meaning that one WDS server can be used to simultaneously deploy many copies of Windows 7. You learn more about managing .WIM files in Chapter 2.

MORE INFO **To learn more about WDS, consult the following webpage: *http://technet.microsoft.com/en-us/library/dd744343(WS.10).aspx*.**

EXAM TIP **Remember that to use WDS you need to be able to perform a PXE boot or boot off a discover image.**

Can you answer these questions?

You can find the answers to these questions at the end of the chapter.

1. What is the maximum number of physical processors supported by Windows 7 Enterprise (x64)?
2. What steps must you take to prepare a computer running Windows XP so it can be configured to dual boot with the Windows 7 operating system?
3. You have placed the Windows 7 installation files on a network share. You want to boot a computer that doesn't have an existing operating system and use the files on the network share to install Windows 7. What method should you use to boot the computer?
4. In what format are the Windows image files that you use to populate WDS with Windows 7 installation images?

Objective 1.2: Upgrade to Windows 7 from previous versions of Windows

This objective requires you to demonstrate that you know the conditions under which it is possible to upgrade from Windows Vista to Windows 7, from Windows XP to Windows 7, and when it is possible to upgrade one edition of Windows 7 to another edition.

Exam need to know

- Upgrading from Windows Vista

  For example: How to know which versions of Windows 7 you can upgrade to on a computer running the x86 version of Windows Vista Business edition.
- Migrating from Windows XP

  For example: How to know which steps to take to migrate from Windows XP to Windows 7.
- Upgrading from one edition of Windows 7 to another edition of Windows 7

  For example: How to know how to use Windows Anytime Upgrade to upgrade from one edition of Windows 7 to another.

Upgrading from Windows Vista

You need to know the conditions under which you can upgrade a computer running Windows Vista to Windows 7.

True or False? You can upgrade from Windows Vista Business (x64) to Windows 7 Enterprise (x64)**.**

Answer*: True*. It is only possible to perform upgrades from specific editions of Windows Vista to specific editions of Windows 7. You can upgrade Windows Vista to Windows 7 under the following conditions:

- You can only upgrade to a version of Windows 7 that has the same processor. You can upgrade from an x86 version of Windows Vista to an x86 version of Windows 7 and from an x64 version of Windows Vista to an x64 version of Windows 7. You can't upgrade from an x86 version of Windows Vista to an x64 version of Windows 7 or from an x64 version of Windows Vista to an x86 version of Windows 7.
- You can't upgrade from one language version to another (for example, from a Russian version of Windows Vista to an English version of Windows 7).
- You can upgrade from Windows Vista Home Basic to the Home Basic, Home Premium, and Ultimate editions of Windows 7.
- You can upgrade from Windows Vista Home Premium to the Home Premium and Ultimate editions of Windows 7.
- You can upgrade from Windows Vista Business to the Professional, Enterprise, and Ultimate editions of Windows 7.
- You can upgrade from Windows Vista Enterprise to the Enterprise edition of Windows 7.
- You can upgrade from Windows Vista Ultimate to the Ultimate edition of Windows 7.

MORE INFO **To learn more about supported upgrade paths, consult the following TechNet document: *http://technet.microsoft.com/en-us/library/dd772579(WS.10).aspx*.**

EXAM TIP **Remember to not only keep track of edition but also architecture when answering upgrade questions.**

True or False? Upgrading from Windows Vista to Windows 7 will retain applications and data.

Answer*: True*. Upgrading from Windows Vista to Windows 7 has the benefit of retaining applications and data without having to perform a complex migration process using a tool such as the User State Migration Tool (USMT). Prior to upgrading, you should run the Windows 7 Upgrade Advisor. This is an application you can download from Microsoft's website that can check to determine whether there are any known compatibility issues with applications or hardware. A similar check is performed when you run the actual upgrade to Windows 7.

> ***MORE INFO*** **To learn more about the Windows 7 Upgrade Advisor, consult the following document: *http://windows.microsoft.com/en-US/windows/downloads/upgrade-advisor*.**

True or False? You choose Custom on the What Type Of Installation Do You Want? page when upgrading a computer from Windows Vista to Windows 7.

Answer*: False*. You launch an upgrade to Windows 7 from Windows Vista by running setup.exe from the location in which the installation files are present. You need to be a member of the local Administrators group on the computer running Windows Vista to successfully perform an upgrade. Inserting the DVD installation media into the DVD-ROM drive or connecting the USB installation media will also launch a screen from which you can begin the upgrade. When performing an upgrade to Windows 7, ensure that you choose the Upgrade installation option rather than the Custom installation option. You choose the Custom installation option only in dual-boot scenarios. Prior to starting the upgrade, ensure that the following conditions are met:

- You have upgraded Windows Vista to Service Pack 1 or later.
- The volume on which Windows Vista is installed has at least 10 GB of free disk space.

You can roll back a failed upgrade at any point in the process up until you perform a successful logon to the Windows 7 operating system.

> ***MORE INFO*** **To learn more about Windows 7 upgrade paths, consult the following webpage: *http://technet.microsoft.com/en-us/library/dd772579(WS.10).aspx*.**

> ***EXAM TIP*** **Remember that Windows Vista needs at least Service Pack 1 to be upgraded to Windows 7.**

Migrating from Windows XP

You need to know which steps to take to configure a computer running Windows XP so that Windows 7 is the sole operating system.

True or False? You can directly upgrade a computer running Windows XP to Windows 7.

Answer*: False*. It is not possible to upgrade directly from Windows XP to Windows 7. You can perform a migration in which you replace the Windows XP operating system with the Windows 7 operating system. If you have an extra disk or can create a separate partition with an appropriate amount of disk space, you can configure the computer to dual boot.

> ***EXAM TIP*** **You can upgrade directly from Windows XP to Windows Vista and then from Windows Vista to Windows 7.**

Prior to beginning the migration process, make a complete backup of the computer running Windows XP. Use the Windows 7 Upgrade Advisor to determine whether existing devices and applications will function with Windows 7. Even though you'll be installing a separate operating system, the migration process assumes that you will be reinstalling the same applications that were running on the computer running Windows XP on the computer running Windows 7. Use Windows Easy Transfer to save important files and settings if performing a small number of migrations. Use the USMT if you need to perform a large number of migrations. You'll learn more about migrating data later in this chapter.

True or False? You choose Upgrade on the What Type Of Installation Do You Want? page when migrating a computer from Windows XP to Windows 7.

Answer*: False*. To transition a computer running Windows XP as its sole operating system to Windows 7 as its sole operating system, perform the following steps:

1. If you are migrating to an x86 version of Windows 7, log on to Windows XP with an account that has local administrative rights and perform one of the following steps:
   - If you have purchased Windows 7 from Microsoft's online store and downloaded the installation file, double-click that file to trigger Windows 7 Setup.
   - If you have a specially prepared USB storage device that hosts the Windows 7 installation files, connect this device to the computer. This should trigger Windows 7 Setup. If it does not, open setup.exe directly from the device.
   - If you have a Windows 7 installation DVD-ROM, place it in the DVD-ROM drive. This should trigger Windows 7 Setup. If it does not, open setup.exe directly from the device.
2. On the Install Windows page, click Install Now.
3. Proceed through the Get Important Updates For Installation page and the Please Read The License Terms page.
4. On the Which Type Of Installation Do You Want? page, choose Custom.
5. Choose the disk partition that hosts the Windows XP installation.
6. In the Windows.old dialog box, click OK.
7. Continue the installation as normal.

If you want to install the x64 version of Windows 7, boot from the installation media and then follow steps 2 to 7.

MORE INFO **To learn more about migrating from Windows XP to Windows 7, consult the following webpage: *http://windows.microsoft.com/en-US/windows7/help/upgrading-from-windows-xp-to-windows-7*.**

EXAM TIP **Remember that you can't directly upgrade from Windows XP to Windows 7.**

Upgrading from one edition of Windows 7 to another edition of Windows 7

You need to know the possible upgrade paths available using Windows Anytime Upgrade.

True or False? You can use Windows Anytime Upgrade to upgrade from Windows 7 Professional to Windows 7 Enterprise.

Answer*: False*. You can use Windows Anytime Upgrade to upgrade from certain editions of Windows 7 to editions with more features. Windows Anytime Upgrade involves running the application and entering the new edition's license key if you have one available or going online to purchase a key. You can't use Windows Anytime Upgrade to do the following:

- Upgrade from an x86 edition to an x64 edition.
- Upgrade from an x64 edition to an x86 edition.
- Upgrade to or from Windows 7 Enterprise.

You can use Windows Anytime Upgrade to perform the following edition upgrades:

- Windows 7 Home Basic to Home Premium, Professional, and Ultimate editions
- Windows 7 Home Premium to Professional and Ultimate editions
- Windows 7 Professional to Ultimate editions
- Starter to Home Premium, Professional, and Ultimate editions

MORE INFO **To learn more about Windows 7 upgrade paths, consult the following webpage: *http://technet.microsoft.com/en-us/library/dd772579(WS.10).aspx*.**

EXAM TIP **Remember which editions of Windows 7 it is possible to upgrade to and from using Windows Anytime Upgrade.**

Can you answer these questions?

You can find the answers to these questions at the end of the chapter.

1. You want to upgrade your organization's computers from Windows Vista to Windows 7. What prerequisites should the computers running Windows Vista meet before you attempt the upgrade?

2. Your organization has Windows Vista Enterprise (x64) deployed. To which versions and editions of Windows 7 can you upgrade?
3. You have a computer running the x64 version of Windows 7 Home Premium. Which editions of Windows 7 can you upgrade to using Windows Anytime Upgrade?
4. Which tool should you use to determine whether any hardware or applications installed on a computer running Windows Vista have compatibility problems with Windows 7?

Objective 1.3: Migrate user profiles

This objective requires you to demonstrate that you know which tools to use to migrate user profile data from one computer to another from a previous version of Windows to Windows 7, and the situations in which you would perform a side-by-side versus wipe-and-load migration.

Exam need to know

- Side-by-side vs. wipe and load
  For example: How to determine when it is appropriate to use a side-by-side or wipe-and-load migration.
- Migrating from one machine to another
  For example: How to migrate from Windows 7 on one computer to Windows 7 on another.
- Migrating from previous versions of Windows
  For example: How to migrate profile data from Windows XP to Windows 7.

Side-by-side vs. wipe and load

You need to know the difference between these two migration types, and what factors dictate that you use one migration type over another.

True or False? A side-by-side migration is appropriate if your organization's computers had 512 MB of RAM and 10 GB hard disk drives and could not be upgraded.

Answer*: True*. When replacing a user's computer and the original computer has profile data locally stored, you need to perform a side-by-side migration. A side-by-side migration involves shifting user profile data from one computer to another computer. Side-by-side migrations can use removable storage or a network location to host exported profile data. You use side-by-side migrations in desktop replacement scenarios. Desktop replacement scenarios are common when an organization is transitioning to Windows 7 and its current hardware does not support the operating system.

EXAM TIP **When considering whether desktop replacement is necessary, look at the hardware specifications listed in the question.**

True or False? A wipe-and-load migration is appropriate in your organization if you currently have desktop computers that have the 64-bit version of Windows XP installed, 100 GB of free space on the hard disk drives, and 8 GB of RAM**.**

Answer*: True*. A wipe-and-load migration involves removing the current operating system and replacing it with Windows 7. Wipe-and-load migrations can use removable storage, a network location, or a locally fixed disk if a hard-link migration store is used with USMT. Wipe-and-load migrations are suitable when your organization's computers can run Windows 7 current hardware. Wipe-and-load migrations require that you have a location to store profile data, either on an external drive, a network share, or using a hard-link migration. You might choose to perform a wipe-and-load migration rather than an upgrade when Windows Vista is the original operating system if you want to migrate from an x86 version of Windows Vista to an x64 version of Windows 7.

MORE INFO **To learn more about Windows 7 upgrade and migration, consult the following webpage:** ***http://technet.microsoft.com/en-us/library/dd446674(WS.10).aspx*****.**

Migrating from one machine to another

You need to know how to perform a side-by-side migration and can choose the appropriate tool to perform this migration given a specific set of conditions.

True or False? You can use Windows Easy Transfer to migrate data from computers running Windows XP (x64) to Windows 7 (x64).

Answer*: True*. Windows Easy Transfer is a tool included with Windows 7. You can download Windows Easy Transfer for computers running the 32-bit or 64-bit versions of Windows XP and Windows Vista. You use Windows Easy Transfer on the source computer in a side-by-side migration to collect all migrated data. You use Windows Easy Transfer on the destination computer to restore that data. You can use Windows Easy Transfer to transfer local user accounts, documents, music, pictures, email, bookmarks, and digital certificates from the source computer to the destination computer. When using Windows Easy Transfer for side-by-side migration, you can leverage the following methods of transferring profile data:

- **Easy Transfer Cable** A special cable that has USB connectors. Connect one end to the source computer, and the other end to the destination. Both computers are powered on during migration.
- **Network** You run Windows Easy Transfer on both computers connected to the same LAN. Profile data is transferred across the network from one computer to the other.
- **External Hard Disk or USB Flash Drive** You can also specify an internal hard disk drive or a network location with this method. Migration data is stored in the specified location, and you import it using Windows Easy Transfer on the destination computer. This is the only Windows Easy Transfer method that you can use to perform a wipe-and-load migration.

You can't use Windows Easy Transfer to transfer files from a 64-bit version of Windows to a 32-bit version of Windows.

MORE INFO **To learn more about Windows Easy Transfer, consult the following TechNet document: *http://windows.microsoft.com/en-us/windows7/Transfer-files-and-settings-from-another-computer*.**

True or False? You can use the hard-link migration store when migrating profile data from one machine to another.

Answer*: False*. When using USMT to transfer data from one computer to another, you create a migration store that stores the migrated data. You can use a network share or a locally attached storage device when using USMT. You can't use the hard-link migration store when migrating from one computer to another. The hard-link migration store stores data on a fixed hard drive in wipe-and-load migrations.

EXAM TIP **If you have a choice of migration stores, determine why one of the choices is inappropriate given the scenario.**

True or False? When using USMT in side-by-side migrations, you run the ScanState tool on the destination computer.

Answer*: False*. USMT consists of two tools: ScanState and LoadState. ScanState is run on the source computer, and LoadState is run on the destination computer. USMT allows you to automate the process of migrating user profile data from one computer to another. USMT uses migration rules, stored in XML format, to specify which of the following are migrated:

- User accounts
- User files
- Operating-system settings
- Application settings

You can use USMT with WDS and System Center Configuration Manager 2012 to fully automate the process of migrating user profiles.

USMT 4.0 ships with the following sample scripts:

- **MigApp.XML** Contains sample rules to migrate application settings.
- **MigDocs.XML** Used with the MigXMLHelper.GenerateDocPatterns helper function. User documents can be automatically located without the necessity of authoring complex migration .XML files.
- **MigUser.XML** Sample rules that gather everything in a user's profile and scan local fixed drives for files with commonly extensions. The properties of this sample script are covered in more detail later in the chapter.

MORE INFO **To learn more about USMT and the items it can migrate, consult the following webpage: *http://technet.microsoft.com/en-us/library/dd560792(WS.10).aspx*.**

True or False? You must have local administrator privileges on the source computer to run the ScanState tool.

Answer*: True.* You must run the ScanState tool on the source computer using local administrator privileges. If you boot the source computer using the WinPE environment, you have local administrator access to the source computer.

A migration report provides you with information about what USMT will migrate prior to performing the actual migration. For example, to create a migration report, named genMig.xml, in the c:\Migration folder, run the following command:

```
Scanstate.exe /genmigxml:"C:\Migration\genMig.xml"
```

By default, the ScanState tool will create a compressed migration store. To use ScanState with the migdocs.xml and migapp.xml files to create a migration store on the file server \\Migration\\mystore using a detailed log file named scan.log, use the following command:

```
Scanstate.exe \\migration\mystore /i:migdocs.xml /i:migapp.xml /v:13
/l:scan.log
```

To use a hard-link migration store named c:\HD-LNK, use this command:

```
Scanstate.exe /hardlink /nocompress c:\HD-LINK /i:migdocs.xml /i:migapp.xml
/v:13 /l:scan.log
```

EXAM TIP **Hard-link migration stores are the most efficient way of using disk space.**

If you are using a network share or if you are concerned about the security of the migration store, you can encrypt the migration store data using the /encrypt /key:"mykey" switch with the ScanState tool. When using the encryption option, you must use the /decrypt /key:"mykey" options with the LoadState tool.

MORE INFO **To learn more about scanstate.exe, consult the following TechNet document: *http://technet.microsoft.com/en-us/library/dd560781(WS.10).aspx*.**

True or False? You should install all applications that you exported data from on the source computer on the destination computer prior to running the LoadState tool.

Answer*: True.* You use LoadState to restore data exported using the ScanState tool. You run the LoadState with local administrator permissions on the destination computer. For example, to restore all data from the \\migration\mystore network store when you used the migapp.xml and miguser.xml configuration files, execute the following command:

```
loadstate \\migration\mystore /i:migapp.xml /i:miguser.xml
```

MORE INFO **To learn more about loadstate.exe, consult the following TechNet document: *http://technet.microsoft.com/en-us/library/dd560804(WS.10).aspx*.**

True or False? You can boot into the WinPE environment and use ScanState to capture profile data without booting into the original operating system.

Answer*: True.* Offline migration allows you to use the ScanState component of USMT when booted from the WinPE environment to gather settings and files from a Windows XP, Windows Vista, or Windows 7 installation. You can also use offline migration to gather files and settings from the Windows.old directory created during an upgrade from a previous version of Windows if you are booted into Windows 7. You must use ScanState with the /offline option to extract data when not booted in to the source operating system.

MORE INFO **To learn more about offline migration, consult the following TechNet document: *http://technet.microsoft.com/en-us/library/dd560758(WS.10).aspx*.**

Migrating from previous versions of Windows

You need to know what steps to take when migrating from Windows XP or Windows Vista to Windows 7.

True or False? You can use a hard-link migration store with Windows Easy Transfer**.**

Answer*: False*. You should consider the following strategies when migrating data from previous versions of Windows to Windows 7:

- If you need to perform a side-by-side migration of a small number of computers, you should consider Windows Easy Transfer when both computers are connected to the same LAN.
- You should use Windows Easy Transfer and an external hard disk drive or network location if you need to perform a wipe-and-load migration of a small number of computers. You can't use hard-link migration stores with Windows Easy Transfer.
- You should use USMT when performing side-by-side or wipe-and-load migrations of large numbers of computers because you can automate the migration process.
- You should use hard-link migration store in wipe-and-load scenarios when you want to minimize the amount of storage used to host migrated data.
- You should use ScanState to encrypt migrated data when stored on accessible network locations.

MORE INFO **To learn more about migrating from previous versions of Windows, consult the following webpage: *http://technet.microsoft.com/en-us/library/dd446674(WS.10).aspx*.**

EXAM TIP **Spend time investigating and remembering the ScanState and LoadState syntax. If possible, perform a hard-link migration using the following Step-By-Step guide: *http://technet.microsoft.com/en-us/library/dd883247(WS.10).aspx***

Can you answer these questions?

You can find the answers to these questions at the end of the chapter.

1. What three methods can you use to migrate profile data using Windows Easy Transfer?
2. You need to migrate local user profile data from two computers running Windows Vista to two new computers running Windows 7. You don't have local administrator access on the computers running Windows Vista. What steps can you take to accomplish this task?
3. You have 50 computers that have Windows Vista Enterprise (x86) installed, on which you want to deploy Windows 7 Enterprise (x64). You do not want to use removable storage or a network folder to store migration data. What migration store option should you choose?
4. You have five computers running Windows XP Professional (x64) that you want to replace with Netbook computers running Windows 7 Professional (x86). Which tools can you use to migrate profile data with a minimum of effort?

Answers

This section contains the answers to the "Can you answer these questions?" sections in this chapter.

Objective 1.1: Perform a clean installation

1. Windows 7 Enterprise edition supports a maximum of two physical processors.
2. You need to create a partition or add an extra disk that has enough space to host the Windows 7 operating system. You need to run setup from within Windows rather than running it when booted off the Windows installation media.
3. You need to boot off a WinPE disk, which includes the Windows 7 installation media, or a USB storage device. You then can make a connection to the network share and can then install Windows 7.
4. Images are in .WIM format.

Objective 1.2: Upgrade to Windows 7 from previous versions of Windows

1. You should ensure that the computers running Windows Vista have at least Windows Vista Service Pack 1 installed and have at least 10 GB of free space on the operating system volume.
2. You can only upgrade from Windows Vista Enterprise (x64) to Windows 7 Enterprise (x64).

3. You can use Windows Anytime Upgrade to upgrade to the x64 versions of Professional and Ultimate.
4. You can use the Windows 7 Upgrade Advisor to determine whether there are known hardware-, driver-, or application-compatibility issues.

Objective 1.3: Migrate user profiles

1. You can use the Windows Easy Transfer Cable, Network, or External Hard Disk/USB Flash Drive method of transferring profile data using Windows Easy Transfer.
2. Boot using WinPE and use ScanState to perform an offline migration.
3. You should use a hard-link migration store with USMT to support this migration.
4. You can use USMT to migrate profile data. You can't use Windows Easy Transfer to transfer profile data from a 64-bit version of Windows to a 32-bit version of Windows.

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