Lab - Multi-boot Windows XP, Vista and Windows 7

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After completing this lab activity, you will be able to:

- Install and configure a multiboot system supporting Windows XP, Vista and Windows 7 operating systems.
- Explain the multi-boot requirement for separate partitions/volumes
- Create multiple partitions during the operating system installation.
- Format partitions as FAT and NTFS.
- Identify minimum requirements for Windows XP, Windows Vista and Windows 7.
- Explain activation requirements for Windows operating systems.

In this lab activity, you will configure a computer as a multi-boot operating system. A multi-boot system allows you to select from two or more operating systems during the boot process. For example, when you are finished with this lab activity, you will be able to start the computer and then make a choice of Windows XP, or Windows Vista, or Windows 7 operating system.
Note: A dual boot system consists of two operating systems where as a multi-boot is two or more. Often the two terms dual-boot and multi-boot are used for a two system installation.

A dual-boot system is often used during the transition period of one operating system to another. For example, it is used when a user or company wants to gradually convert to the newest operating system while still maintaining their present operating system and software applications. Often when a new operating system is released, many versions of existing software applications will not function properly on the new operating system. A dual-boot system allows a user to run either operating system from the same computer until the software application manufacturer develops a version of software that is compatible with the new operating system.

A multi-boot system is often used for studying multiple operating systems when there is limited number of computers available that have limited computer resources such as limited memory and limited processor speed. Multiple operating systems can be installed on a single computer when using virtual software applications which would allow two or more operating system to run on a single machine simultaneously. One example of virtual software application is Windows XP mode which allows the user to run both Windows 7 and Windows XP on the same computer simultaneously.

A virtual software application requires a machine with better hardware resources, such as a CPU and RAM. The virtual system uses CPU/RAM for all operating systems simultaneously. For example, if one operating system requires 1GB RAM, and the other requires 2GB RAM, then the virtual machine needs 3 GB of RAM to operate the two operating systems, simultaneously.

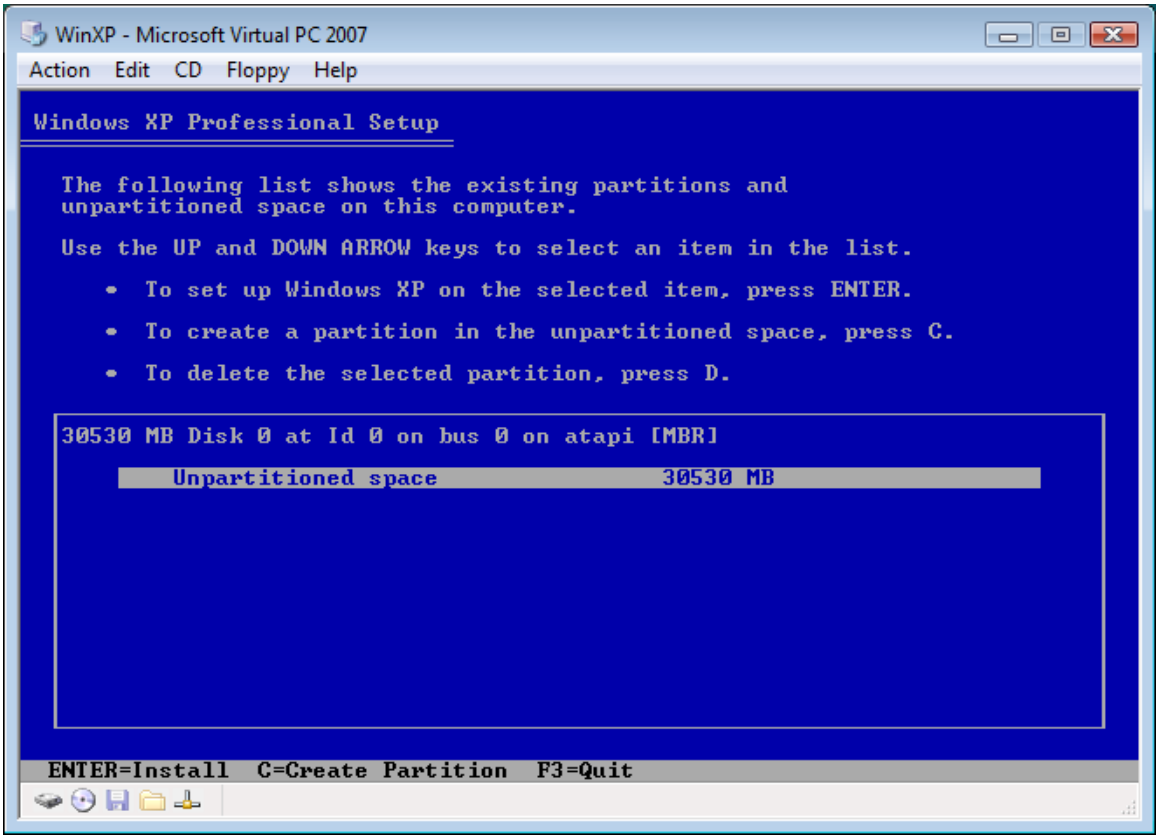
In the first two parts of this laboratory activity, you will install a dual-boot system with Windows XP and then Windows Vista. In the third part of the laboratory activity, you will install Windows 7 completing the multi-boot operating system.

Normally, when installing an operating system a single partition/volume is created using the entire hard disk drive. When you create a dual boot system you must use two separate partitions/volumes, one partition/volume for each operating system. If you were going to create a multi-boot system using three different operating systems you would need three separate partitions/volumes.

In the first half of this lab, you will install Window XP on a partition while leaving room for a second and third partition(s) on the same physical drive. If you have already installed Windows XP on a hard disk drive and have used the entire hard drive as one large partition you cannot install Vista on the same partition. In the case of using the entire hard drive as one partition for Windows XP you will be forced to install a second hard disk drive.

The second hard disk drive can be used to accommodate Vista and Windows 7 thus creating a multi-boot system. This lab activity will be presented as a clean install of windows XP leaving room for a 2 more partitions that will contain Vista and Windows 7.

Look at the screen capture below to see the critical step in the Windows XP installation that requires using only a portion of the entire hard disk drive for the Windows XP operating system installation.



Step 3

This is the critical step of the dual boot installation process. You are presented with three choices here. First, you could press the “ENTER” key which would result in installing Windows XP using the entire hard disk drive area as one large partition/volume. There would be no room to install Vista and Windows 7, and you would be forced to install a second hard disk drive to create a multi-boot system using XP, Vista and Windows 7.

Your second choice is press “C” which would create a partition using only a portion of the hard disk drive area and leaving sufficient space for the installation of Vista and Windows 7 on the same hard disk drive. This will be your choice during the installation process.

Your third choice is to delete the existing partition(s) by pressing “D”. Since you will likely be using equipment in a computer lab that other students have used, it is not unusual to have a hard disk drive with existing partitions on it. If this is the case, you can use the delete partition option to remove unwanted existing partitions from the hard disk drive.

There are some unique problems you may encounter when using a training-lab computer and lab hard disk drives. In training labs, the hard disk drives are used many times by different students with different classes for many different purposes. Some students may not follow their instructor’s instructions and do not remove all existing files, partitions/volumes when they are finished using the hard disk drive. Operating system partitions/volumes can be found on the disk drive after it is returned to the instructor. Problems can arise from using a hard disk drive that contained previous versions of operating systems, especially Linux operating systems.

Linux uses a partition/volume format known as “ext” file system or one of its versions. Windows operating systems do not recognize the “ext” file format. If a disk has been used in a previous class for installing a Linux operating system, then you will most likely encounter a problem and not be able to successfully boot into the Windows operating system even though no problem occurred during the install process of the dual boot system. Often, the symptom encountered resembles that if the new operating system is corrupt or has failed to successfully install.

When this occurs, you must re-format the entire hard disk drive. If you are familiar with Linux, you can start the Linux installation procedure, and then delete all partitions form the hard disk drive, and lastly abort the Linux installation procedure.

Another option is to download a utility to perform a low level format of the hard disk drive from the disk drive manufacturer’s web site. You may also find a number of different tools located at the disk manufacturer web site that will identify the existing Linux partitions/volumes and provide a means to remove the partitions. After the Linux type partitions have been removed, and then you can install the Windows operating system in a dual boot configuration.

Part I - XP

Materials Required

- Windows XP installation CD/DVD
- 128 MB RAM recommended 64 MB Minimum
- 5 GB partition, in some instances 2 GB is required
- Processor 300 MHz recommended or higher, 233 MHz is minimum
- Windows Vista installation DVD

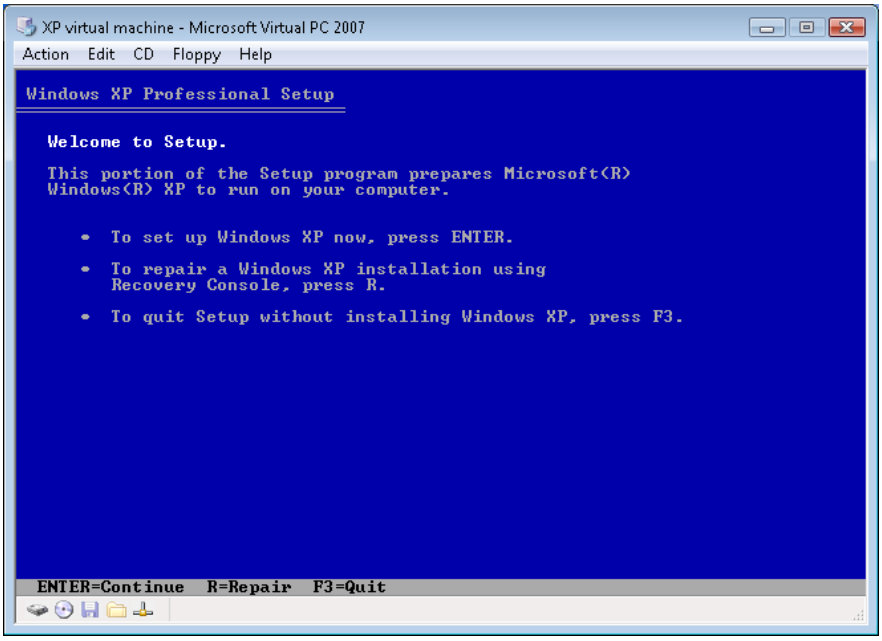
Complete User Name _____
Organization _____
User Name _____
Password _____
XP 26 character Product Key _____ - _____ - _____ - _____ - _____
Computer Name _____
Administrative Password _____
Work Group Name _____ or Domain Name _____

Check the Vista and Windows 7 system requirements in **Part II-Vista and Part III-Windows7**, before continuing the lab activity. If the system will not support Vista and Windows 7, then a multi-boot Windows XP and Vista system is not possible.

1. ___ Report to you assigned workstation. The workstation may or may not have an operating system presently installed. If the workstation does have an operating system already installed, you can still install Windows XP.

2. ___ Place the Windows XP installation disk into the disc drive and then reboot the computer. The Windows XP disc should automatically begin the installation process. If the computer fails to start the Windows XP installation process you will need to reconfigure the system BIOS. The system BIOS boot device sequence needs to be changed so that the first boot deice is the CD/DVD drive. If you need assistance reconfiguring the BIOS, ask your instructor for assistance.

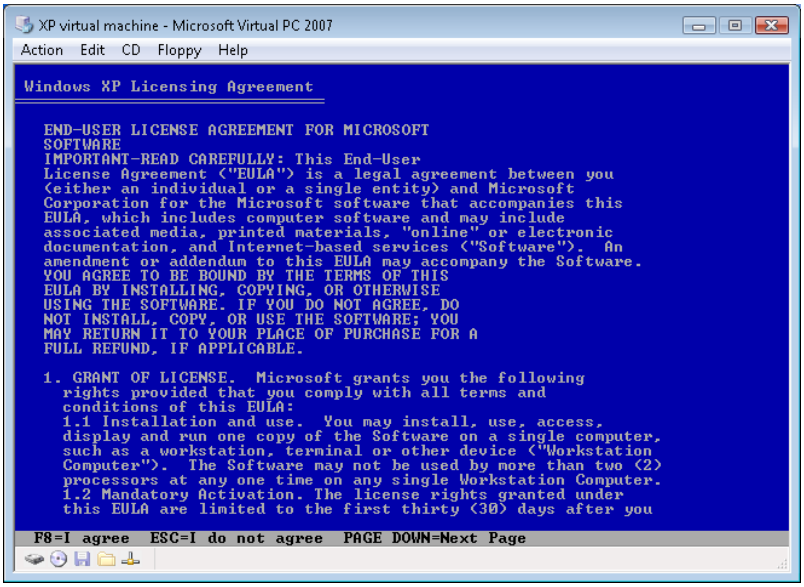
3. ___ After the Windows XP installation CD starts; you should see the Windows XP Setup window similar to the one in the screen capture below.



Welcome to Setup XP Screen 2

You are presented with three choices, “To setup Windows XP now press ENTER”, “To repair a Windows XP installation using Recovery Console, press R.” and “To quit Setup without installing Windows XP, press F3”. You will select the setup option by pressing the ENTER key now.

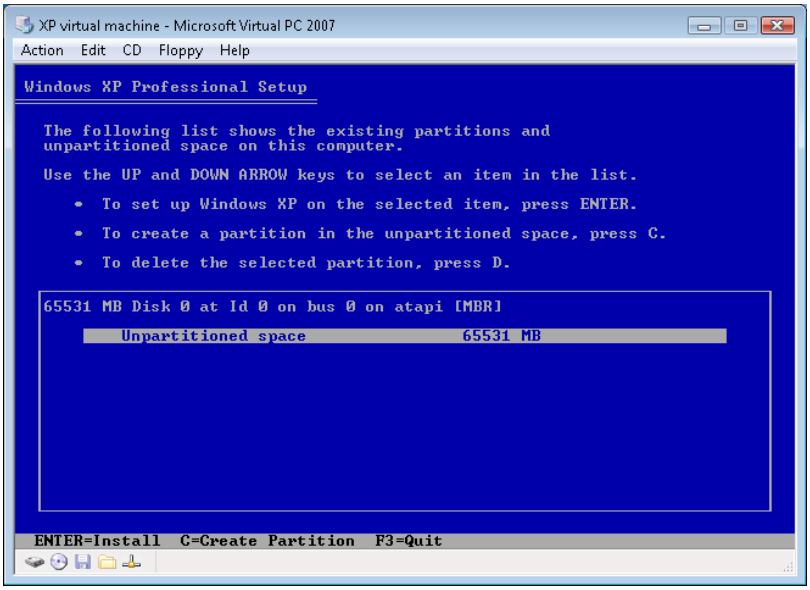
4. ___ Next, the Microsoft Windows XP license agreement will appear similar to the one below.



Windows XP License Agreement XP screen 3

Simply press the F8 function key to accept the license agreement.

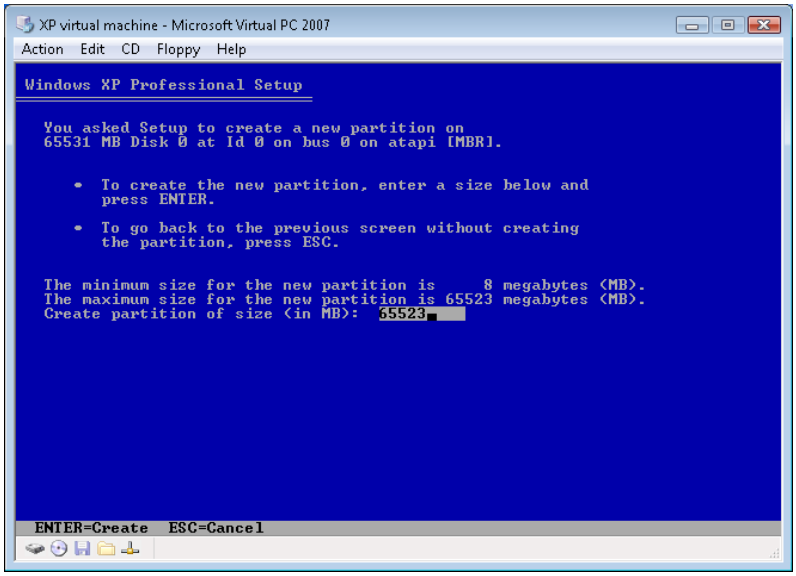
5. ___ Now, the most important screen of the dual boot process will appear. The Create a partition XP screen 4



Create a partition XP Screen 4

You have three options at this time. Pressing ENTER will install Windows XP using the entire disk as one large partition. Pressing “C” will create a partition on the hard disk drive. This is the choice you need to make so that you can make a partition for Windows XP, and still leave ample room on the hard disk drive to create a separate partition for Windows Vista.

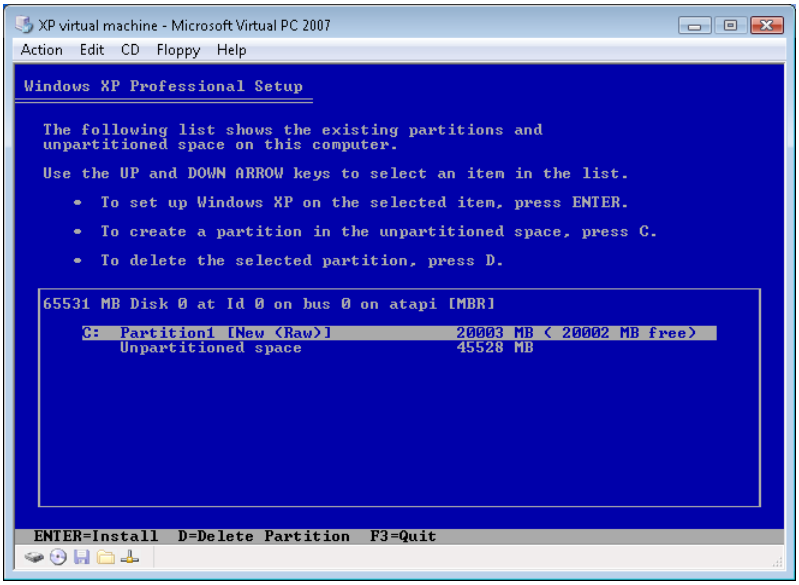
6. ___ The next screen to appear will prompt you to choose the size of partition you will create.



Partition Size XP Screen 5

Create a partition of 20,000 MB for the Windows XP operating system. This should still leave adequate space for the other operating system.

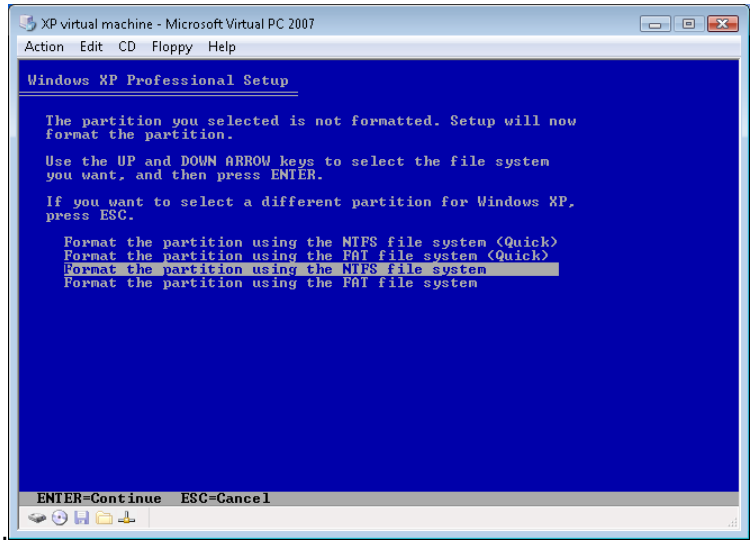
7. ____ The next screen will prompt you to verify the creation of the new partition and will look similar to the one in the screen capture below.



Verify Partition XP screen 6

Now you will press the “ENTER” key to install Windows XP on the selected partition.

8. ____ The next screen will provide you with four file format options, NTFS (Quick), FAT (Quick), NTFS and Fat. The difference between performing a regular format and a quick format is the fact that a quick format does not check for bad sectors. Also a quick format can only be performed on a previously formatted partition.

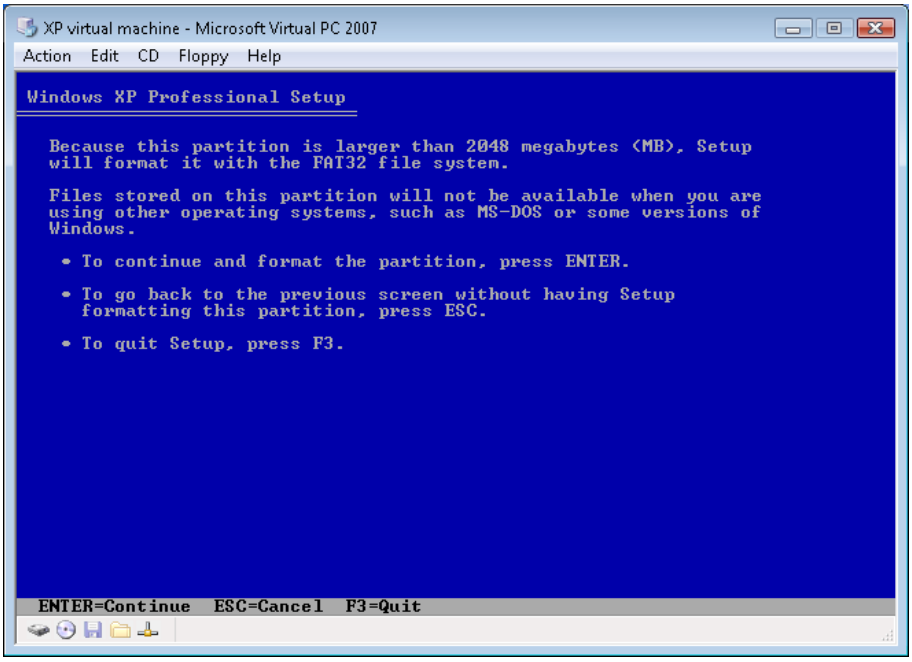


Format Select Screen 7

The Windows default choice is NTFS file system. But for this lab activity, you will select the FAT file system, not the FAT (Quick) option. Use the bottom choice which will do a complete format using FAT32. Choosing FAT32 for Windows XP, and later choosing NTFS for the Vista and Windows 7

installation, will provide you with an opportunity to compare each file format. You will be able to compare security features and user permissions. You will also be able to perform a file conversion from FAT32 to NTFS.

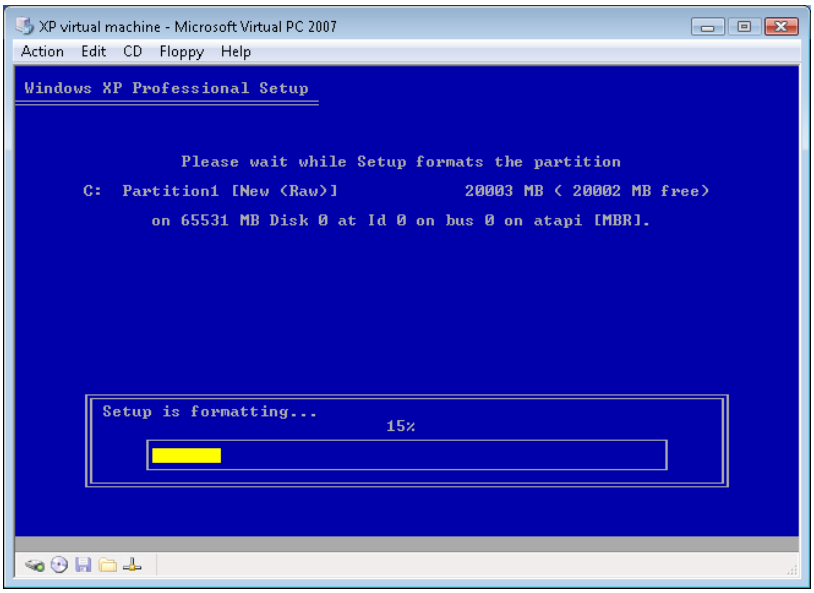
9. ___ The next screen to appear will verify your choice of FAT file format.



Verify FAT XP Screen 8

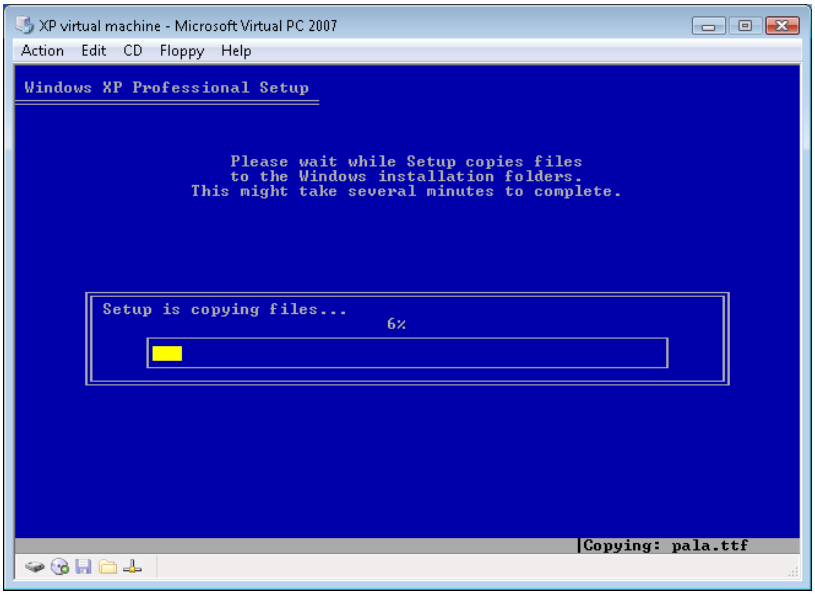
Notice the message that appears informing you that the partition is larger than 2048 megabytes (MB); setup will format it with the FAT32 file system. This is because the largest FAT16 partition is 2 MB, anything larger requires FAT32.

Press the “Enter” key to verify your choice of FAT32 for the Windows XP partition. You will see the format process being displayed similar to the screen capture below.



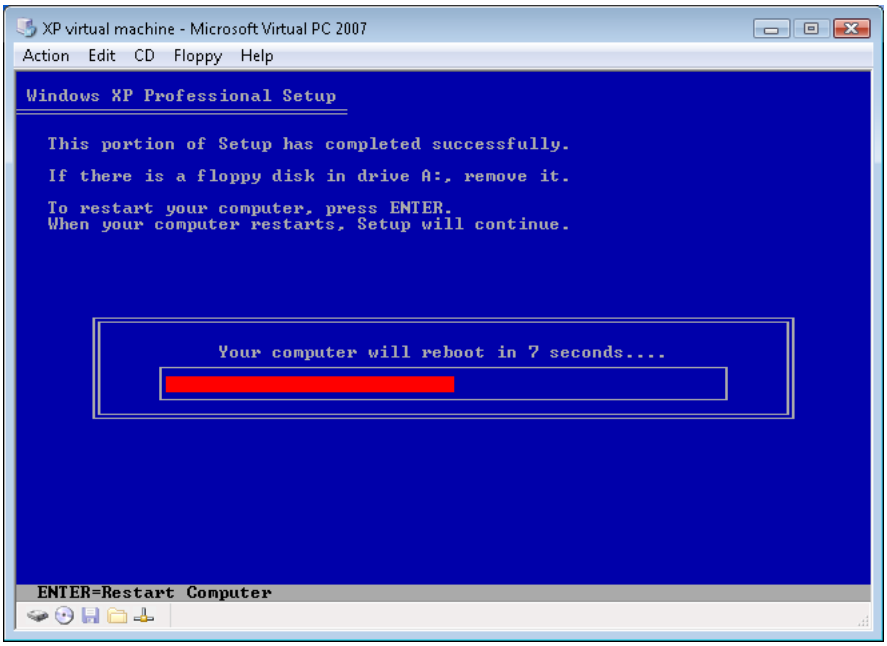
XP screen 9

As you can see, the format progress is displayed as a bar graph and percentage. The larger the partition, the longer the format process will take. After the format process is complete, the next screen to appear notifies you that the installation files are being copied from the installation CD. See a sample screen display below.



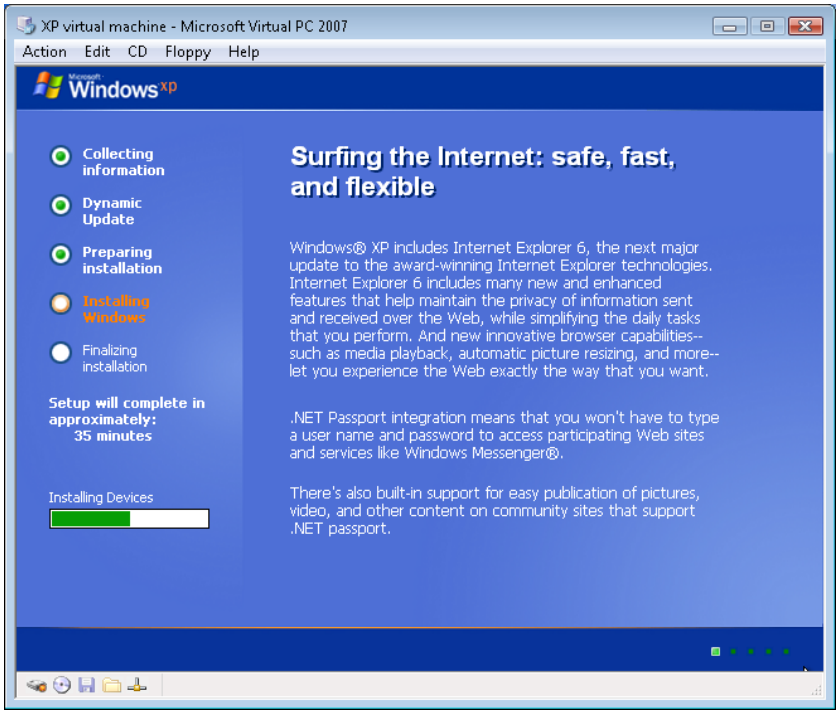
XP Screen 10

The next screen to appear will warn you that the computer is about to reboot and to remove any floppy disk from drive A. You also have the option to reboot the computer without the delay by pressing the ENTER key.



XP Screen 11

After the computer reboots, the text command line input portion of the installation ends and the graphical user input portion begins. Look at the screen capture below of the start of the graphical user installation portion beginning.

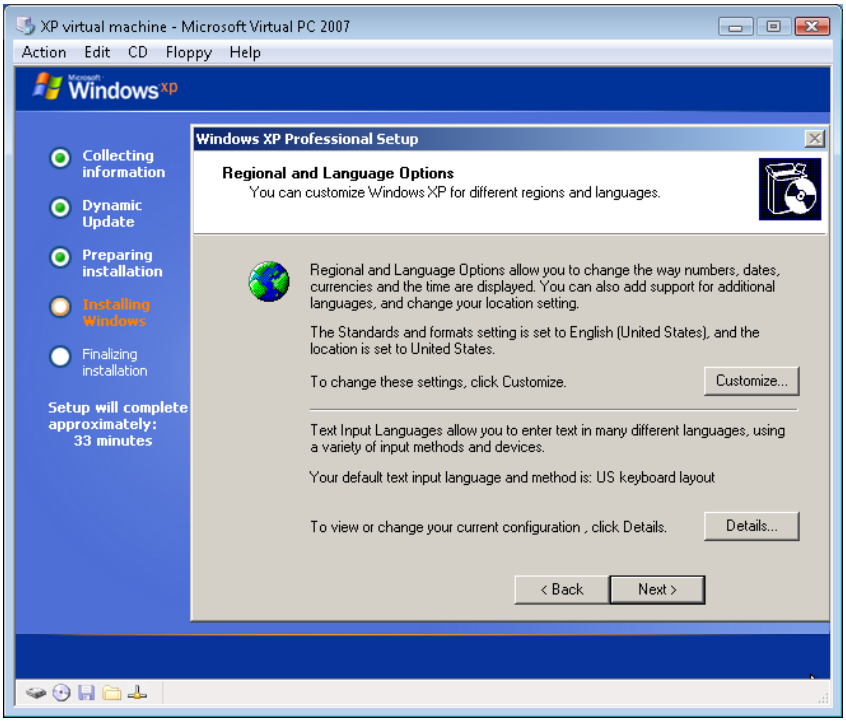


XP screen 12

You can view the progress of the installation by viewing the progress bar and or watching the major installation portion indicated by the radial buttons on the left. Right now, the “Preparing installation” portion has ended and the “Installing Windows” has begun.

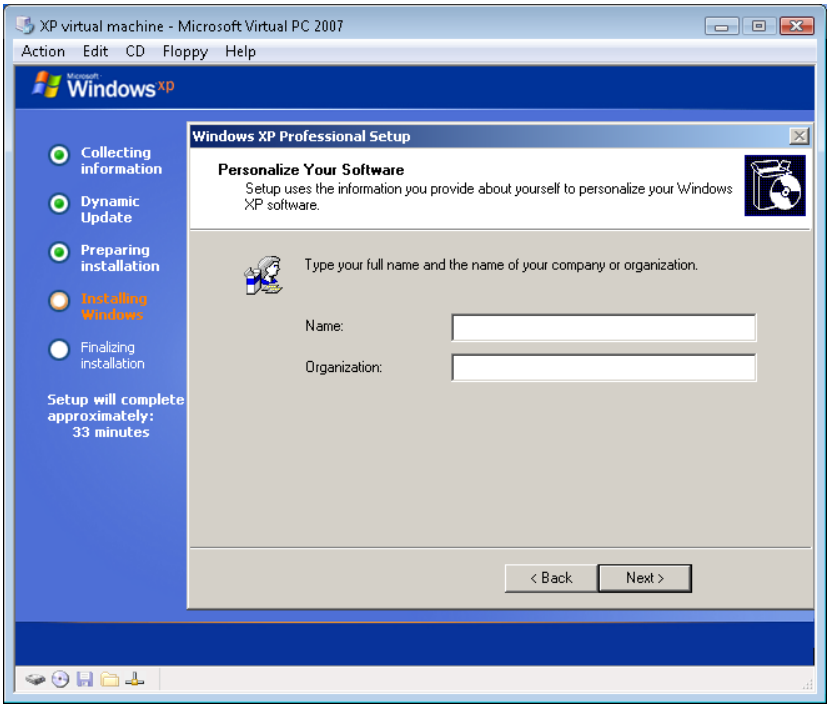
The next series of dialog boxes to appear will request user information to complete the installation process. You may also experience a system reboot several times during this portion of the installation process.

10. ____ The next dialog box informs you of the default region and language selection. You can choose different languages and regional settings at this point if you desire. In most instances, you will simply select the default English (United States) configuration.



XP screen 13

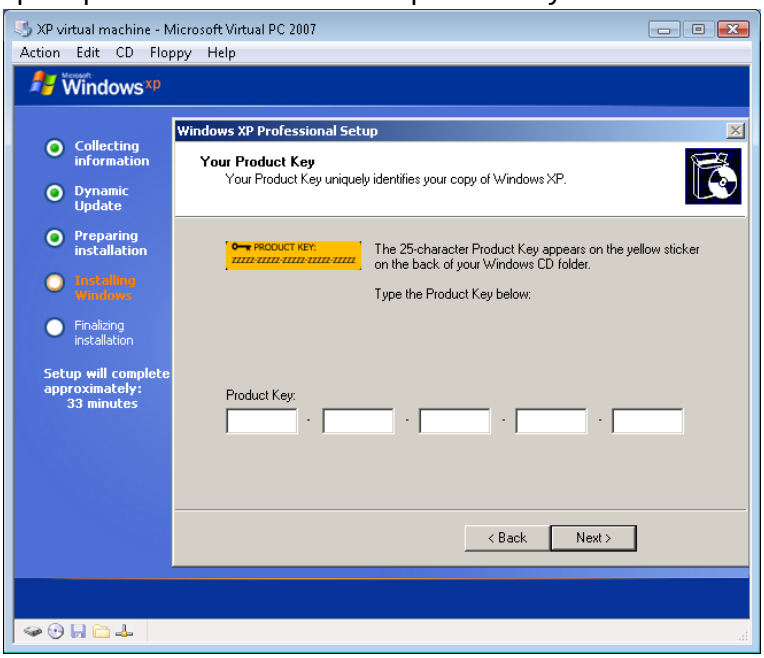
11. ____ Next, you are prompted for your full user name and organization. These are actually optional but filling them in will provide information used in many Microsoft Windows software applications such as Microsoft Office.



XP Screen 14

Input the user name and organization provided in the required materials section.

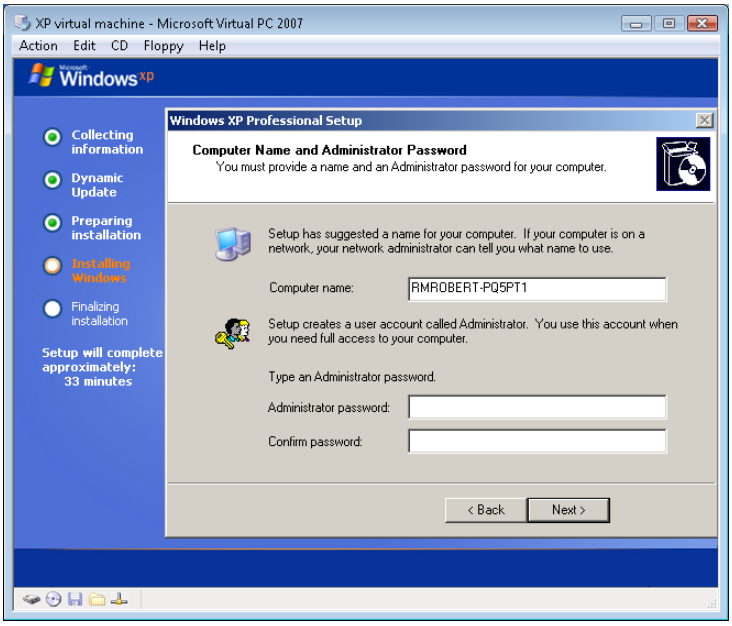
12. ____ Next you are prompted for the 25 character product key.



XP Screen 15

As stated in the dialog box, the product key is typically on the back of the Windows CD case. You may also receive the product CD key from your instructor. Enter the product key now.

13. ____ The next dialog box to appear prompts you for the computer name and administrative password.

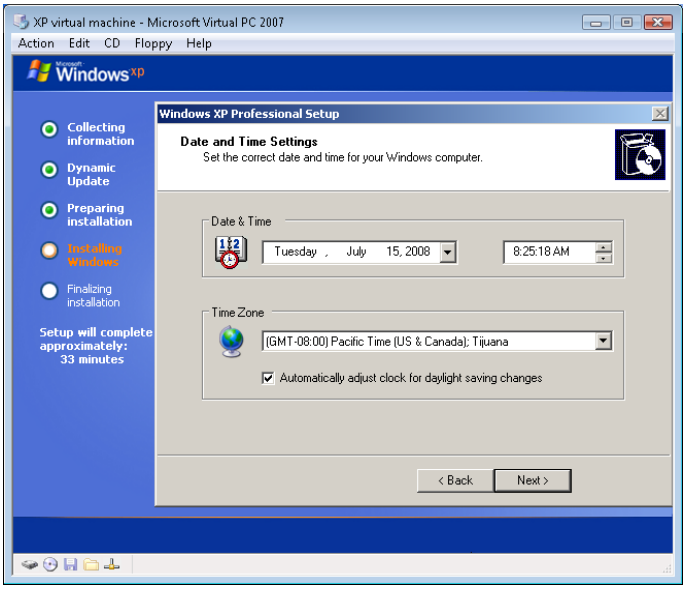


XP Screen 16

As you can see in the screen capture, Windows XP will automatically generate a suggested computer name based on previously input information and a randomly generated set of characters. Each computer name should be unique to ensure proper networking communication and workstation identification. Computers identified with the same name will prove to be confusing.

The administrator password is entered twice to insure that when the first password is entered that it does not contain a typo. Use the administrator password provided by your instructor in the Required Materials list.

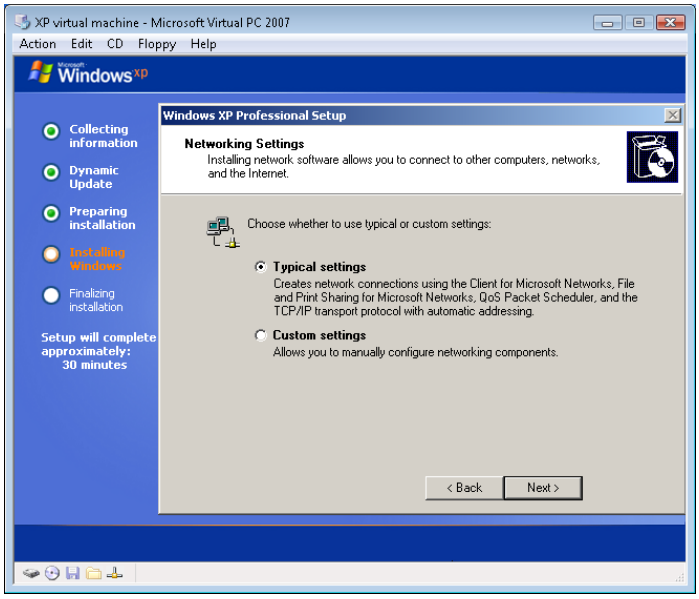
14. ____ The next dialog box to appear prompts you for the date and time, as well as the time zone.



XP Screen 17

The correct time is typically already entered based on the system BIOS. You will most likely need to identify the correct Time Zone.

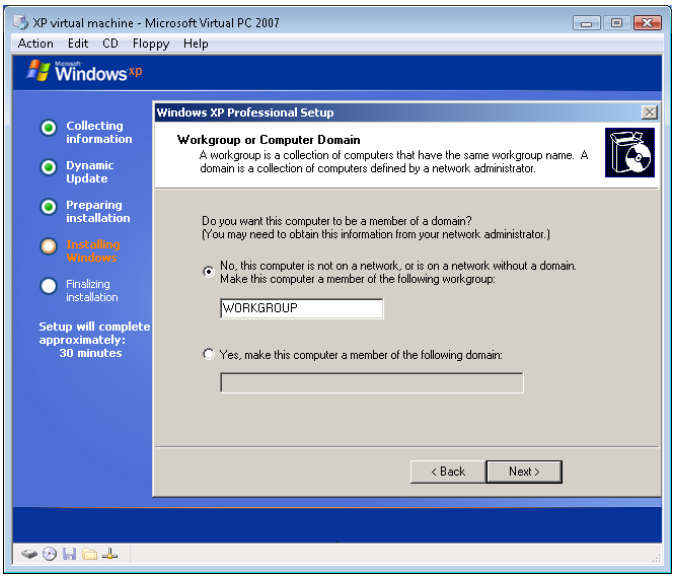
15. ____ The next dialog box to appear prompts you for the network settings.



XP Screen 18

In most instances, you will accept the default “Typical settings”. The “Custom settings” allows you to configure the network settings manually. For example you can assign a static IP address for the computer rather than accept the default DHCP setting which means that the computer will receive an IP address automatically from a network server or service provider.
Simply accept the typical settings now.

16. ____ The next dialog box to appear is another question concerning network configuration.

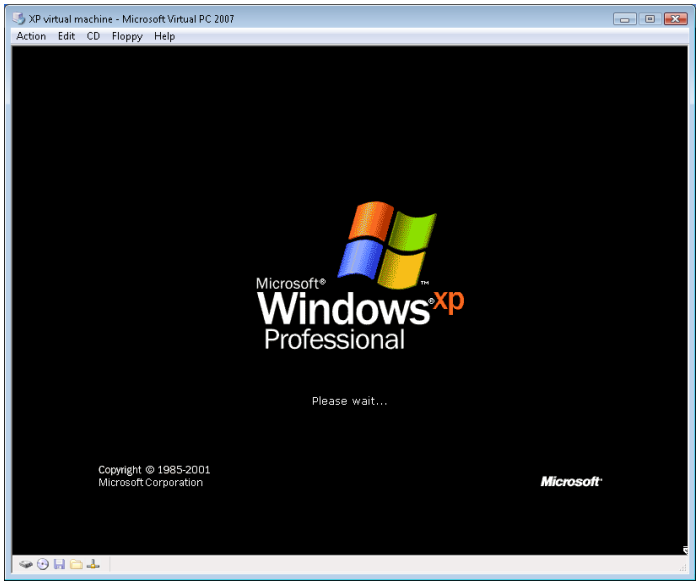


XP Screen 19

Here you can leave the default selection identifying the computer as part of a network not controlled by a domain administrator and server. The default name is “workgroup” and should be left as is for this lab unless otherwise instructed by your instructor. If you are going to make this computer part of a

domain you must look back to the required material list to see the domain name issued by the instructor.

17. ____ The next screen to appear automatically is the Widows XP splash screen similar to the one in the screen capture below.



XP Screen 20

18. ___ After a few seconds the “Welcome to Microsoft Windows” will appear. Select the “Next button to proceed.

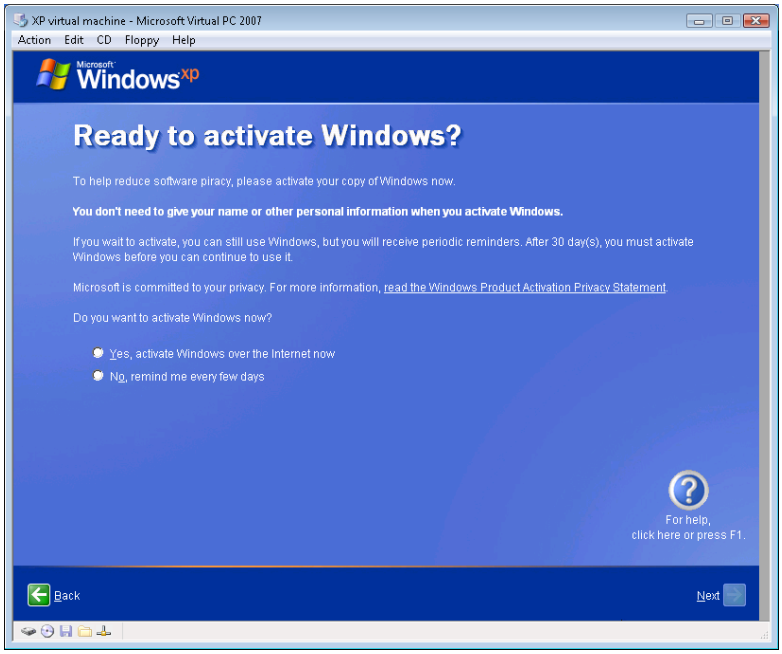
XP Screen 21

19. ___ The next screen to appear will ask if the computer will connect to the Internet.

XP Screen 22

You can select the “No” option at this time. Windows XP can be configured to connect to the Internet at a later time.

20. ___ Now, you will be prompted to activate Windows XP. You do not need to activate Windows XP at this time. You have 30 days to activate Windows XP.



XP Screen 23

You can activate Windows XP at some future date, but not during this lab activity.

21. ___ You will be prompted to register with Microsoft at this time.

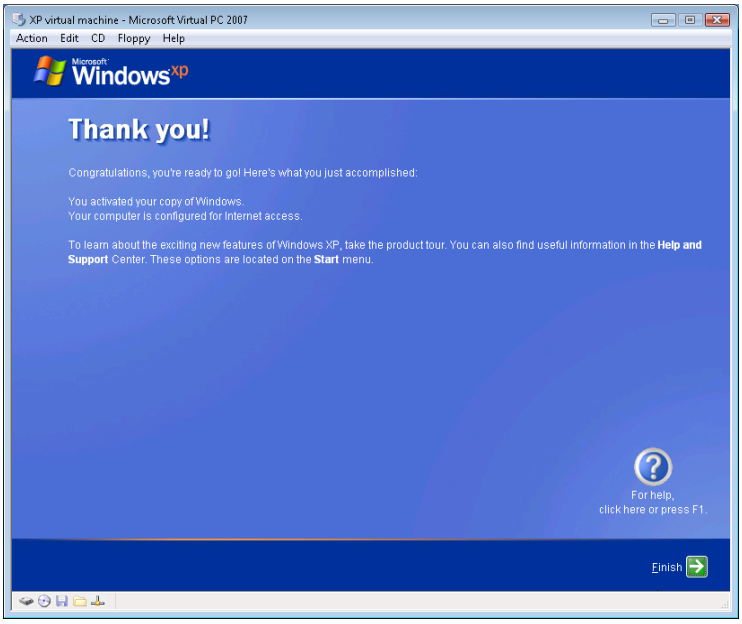
XP Screen 24

Select the “No” option at this time. Do not register with Microsoft.

22. ___ Now, you will be prompted to add additional user who will use the computer.

XP Screen 25

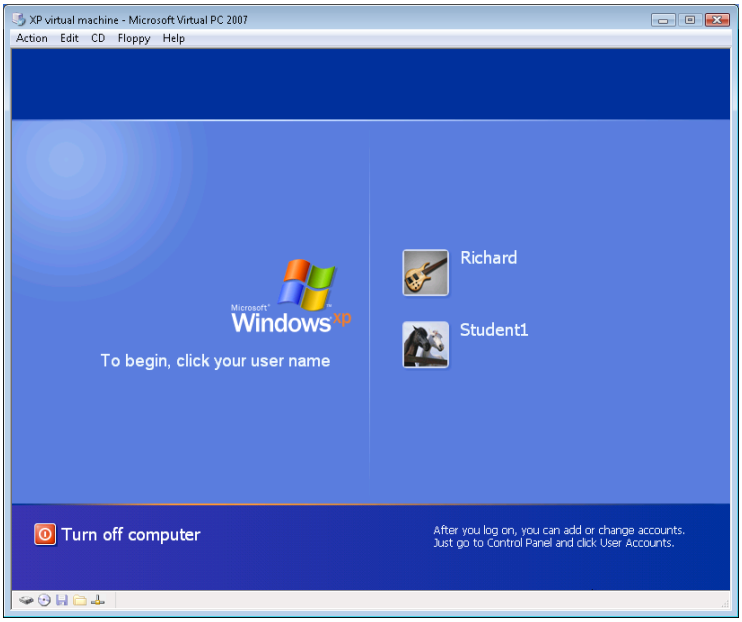
Do not add any additional users at this time. The next screen will appear automatically.



XP Screen 26

Simply select the “Next” button to continue the finalization of the setup.

23. ____ The system logon screen will appear next similar to the one below.



XP Screen 27

Logon and verify that Windows XP has been successfully installed and is running properly.

24. ___ Shut down the computer and then boot the computer once more to verify the Windows XP system is working.

25. ___ Have your instructor inspect your computer now.

Part II - Vista

In the second part of this lab activity, you will install Windows Vista in a separate partition. The hardware requirements are listed below.

- **Windows Vista Home Basic**
- 800-megahertz (MHz) 32-bit (x86) processor or 800-MHz 64-bit (x64) processor
- 512 megabytes (MB) of system memory

Note: On system configurations that use system memory as graphics memory, at least 448 MB of system memory must be available to the operating system after some memory is allocated for graphics.

- DirectX 9-class graphics card
- 32 MB of graphics memory
- 20-gigabyte (GB) hard disk that has 15 GB of free hard disk space
- **Windows Vista Home Premium, Windows Vista Business, Windows Vista Enterprise, and Windows Vista Ultimate**
- 1-gigahertz (GHz) 32-bit (x86) processor or 1-GHz 64-bit (x64) processor
-
- 1 GB of system memory
- Windows Aero-capable graphics card

Note: This includes a DirectX 9-class graphics card that supports the following:

- A WDDM driver
- Pixel Shader 2.0 in hardware
- 32 bits per pixel
- 128 MB of graphics memory (minimum)
- 40-GB hard disk that has 15 GB of free hard disk space (the 15GB of free space provides room for temporary file storage during the install or upgrade.)

Note A Windows Aero-capable graphics card is a graphics card that meets the following requirements:

- Supports a Windows Display Driver Model (WDDM) driver
- Has a DirectX 9-class graphics processor unit (GPU) that supports Pixel Shader 2.0
- Supports 32 bits per pixel
- Passes the Windows Aero acceptance test in the Windows Driver Kit (WDK)

You can download Windows Vista Upgrade Advisor from the Microsoft website to determine if the hardware system will support Vista.

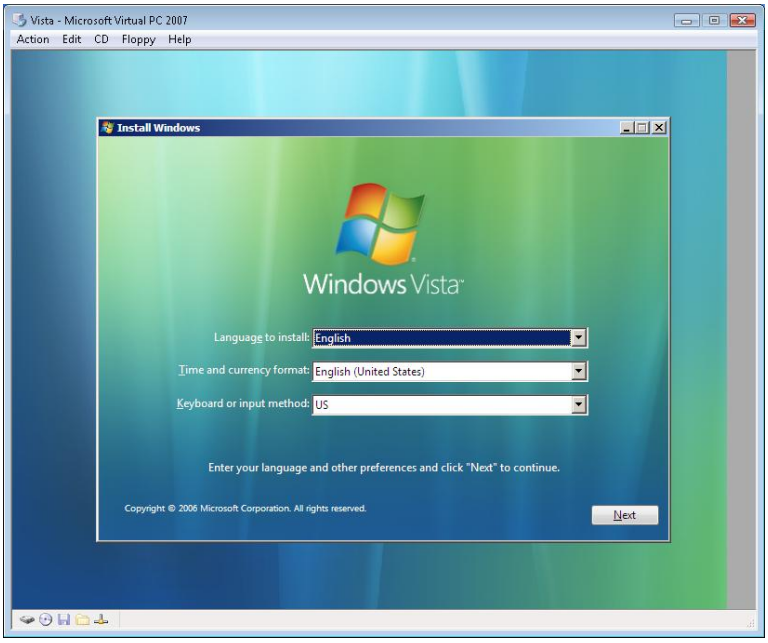
You will be performing a clean install, not an upgrade. If you are presented with an upgrade option, then you are most likely installing the Vista operating system in the same partition as the Windows XP operating system. You **do not want** to install Vista in the same partition as the Windows XP system. The Vista must be installed in its own separate partition. Vista will detect the presence of another operating system such as Windows XP, and it will ask if you want to install an upgrade version over

the existing Windows XP operating system. You will select not to install over the existing system. If there is ample space on the hard disk drive, you will be automatically directed to use the unused disk space. You may need to install a second hard disk drive to have an area in which to install Windows Vista.

Information you will need to complete the Vista installation.
User Name _____
Password _____
Product ID _____ - _____ - _____ - _____ - _____
Computer Name _____
Location type Public, Private or Work. _____

1. ____ Boot the work station, insert Vista installation DVD and then restart the system. When the system boots, it will automatically start the Vista Installation DVD.

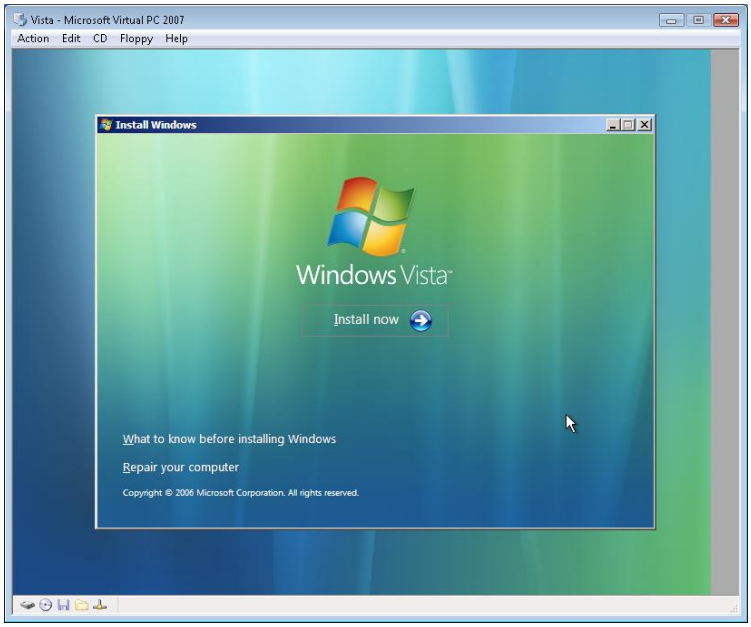
2. ___ The first screen to appear is similar to the screen capture below.



Dual Boot Vista 1

Vista is set for the default English language as well as the time and currency formats. You will accept the defaults in most cases.

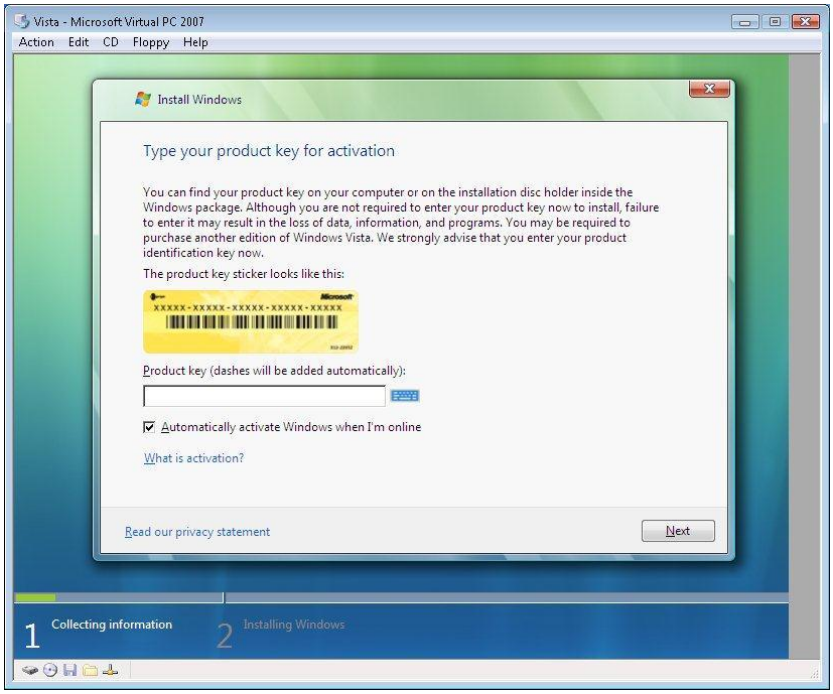
3. ____ The next dialog box to appear prompts you to either install or repair an existing system.



Dual Boot Vista 2

You also have an option to view material about what you should know before installing Windows. Simply select “Install now” option.

4. ___ The next dialog prompts you for the 25 character product key.

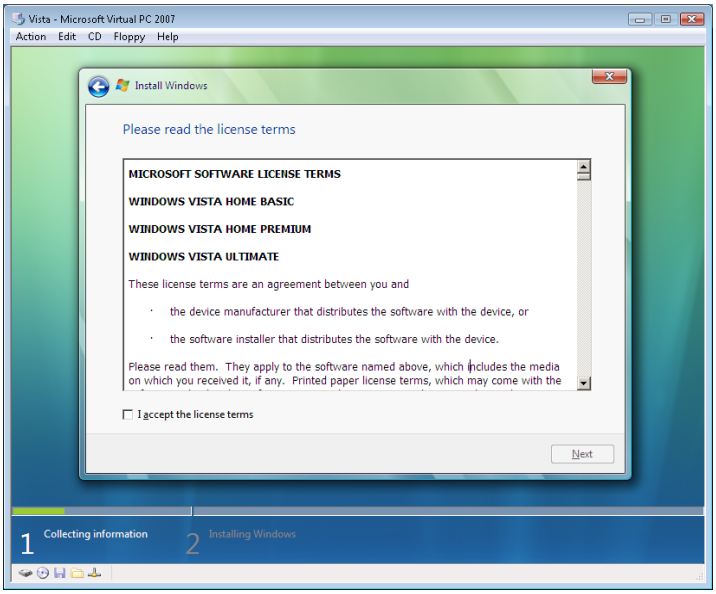


Dual Boot Vista 3

Uncheck the default, “Automatically activate Windows when I’m online.” You can activate Vista anytime in the next 30 days. The reason you should not activate at this time is the possibility that you

may experience a problem. And then must reinstall after changing some hardware device. If you do activate Vista, it typically waits three days before performing the actual activation.
Enter the product key carefully. Some characters are often incorrectly read such as the upper case letter B and number 8, the upper case letter Q and upper case letter O, and so forth.

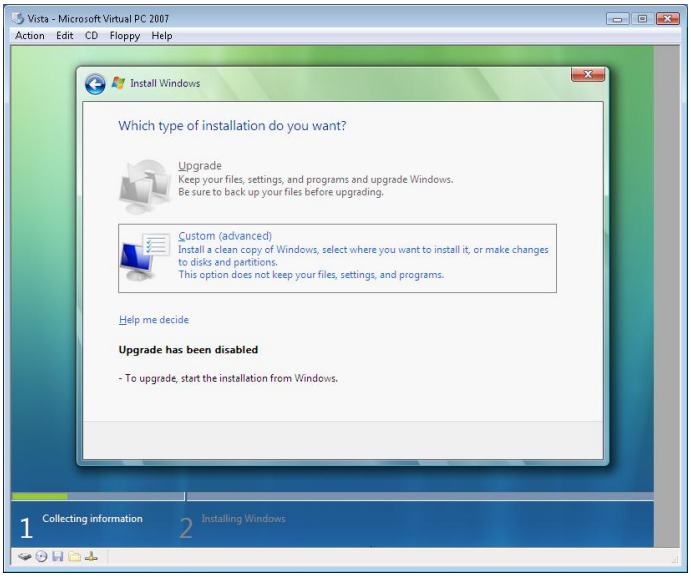
5. ____ Next, you are prompted to accept the license agreement.



Dual Boot Vista 4

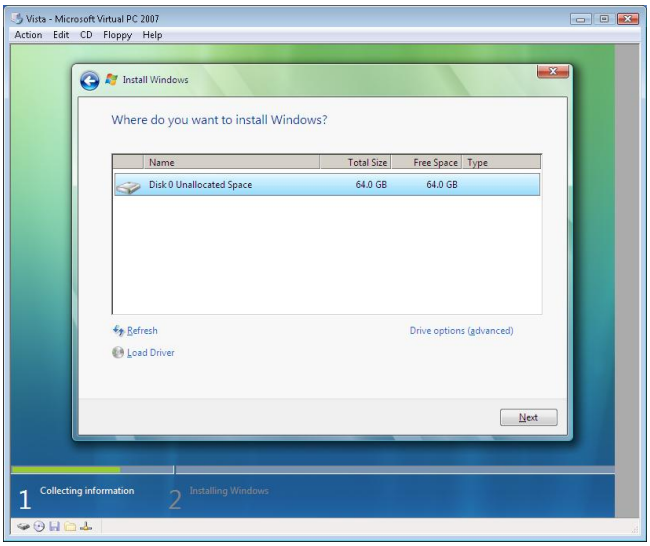
Select “I accept the license terms” and then select “Next”.

6. ___ Next select the option to perform a clean installation.



Dual Boot Vista 5

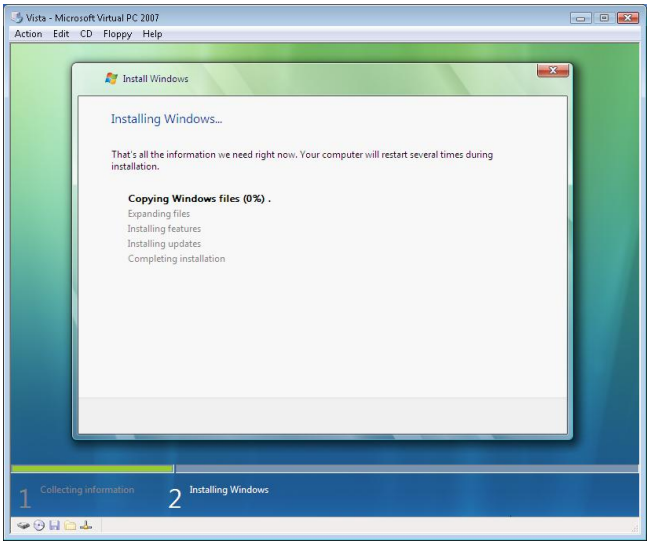
7. ___ The next dialog box to appear will present the layout of any existing partitions and unused disk space. The screen capture below was taken from a Virtual Pc system and does not reflect a true screen capture of what you might see in a real dual boot scenario.



Dual Boot Vista 6

Your view should show the previously installed Windows XP partition, as well as the unused portion of the hard disk drive. Selecting the “Drive options (advanced)” will provide you with the tools necessary to create a partition in the unused space of the hard disk drive. You will install Vista in the unused section of the hard disk drive. You will also limit the size for the Vista partition to 40 GB. A large partition will take significantly longer to format. Your lab time is most likely very limited and formatting a very large drive could take hours.

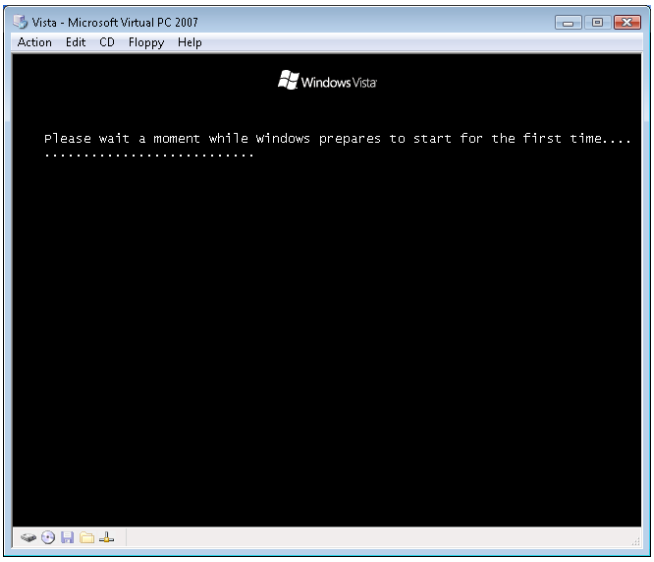
8. ___ The next dialog box will present the progress of the installation.



Dual Boot Vista 7

The series starts with the “Copying files…” through the “Completing installation”. You may see the computer reboot during this section of the install process.

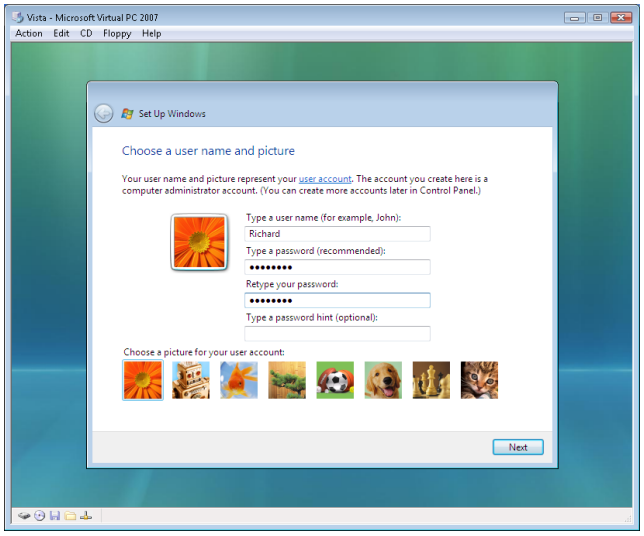
Then screen displays “please wait a moment while Windows prepares to start for the first time.” Now the same progress screen appears showing the last step “**Completing installation**.”



Please Wait 2

At the end of the series of screen presenting the progress you will see a black screen with the notice “Please wait a moment while windows prepares to start for the first time…..” . This portion can take quite a while, much more than a few moments. Please be patient.

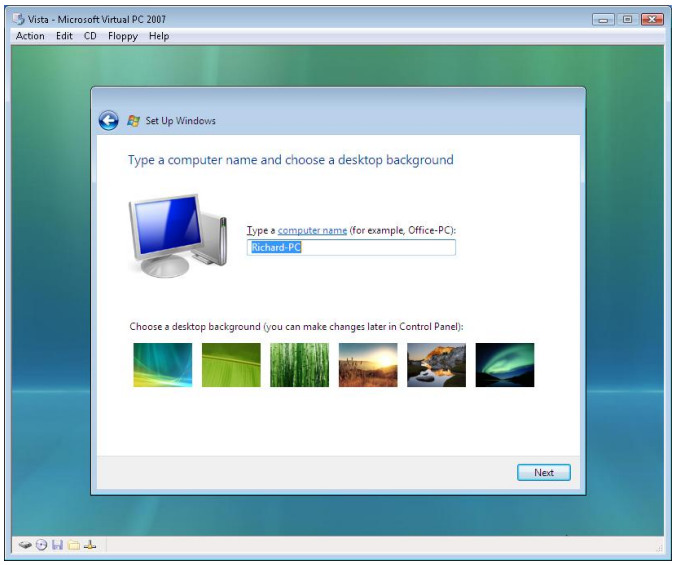
9. ____ The next dialog box to appear after Windows Vista starts for the first time will prompt you for a user name and password.



Dual Boot vista 12

You will need to enter the password twice. The option to enter a password hint is optional and generally not used. You may also pick an icon for the user account at this time.

10. ___ Next, you are prompted to choose a computer name and a desktop image.

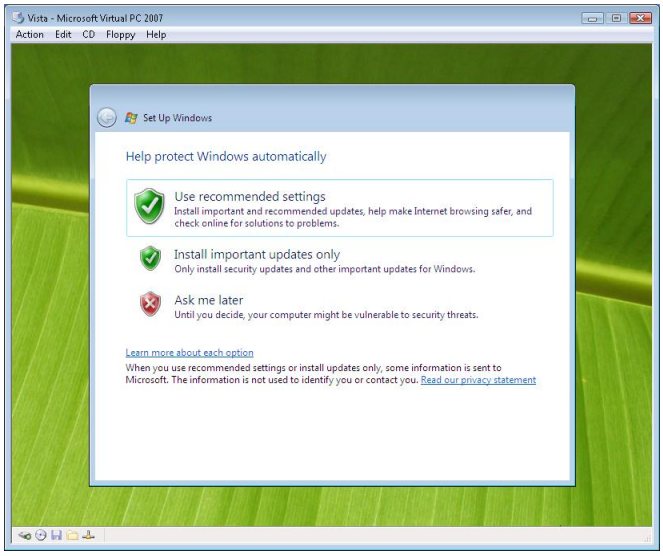


Dual Boot Vista 13

When choosing a computer name, you should use a name that does not match the previous Windows XP name. Using the same name for the same computer (in a multi-boot scenario) can cause some security problems. The security system detects the same name used for two different operating systems and may interpret this as an attempt to hack into a network. We have seen many times that a computer has a difficult time connecting to a network share when the same computer name is used for both dual boot operating system.

In the case of Vista, you will notice that it does not generate a random set of characters the way Windows XP did. Accepting the default name should be alright for this lab activity. You should use the computer name issued by your instructor for the lab.

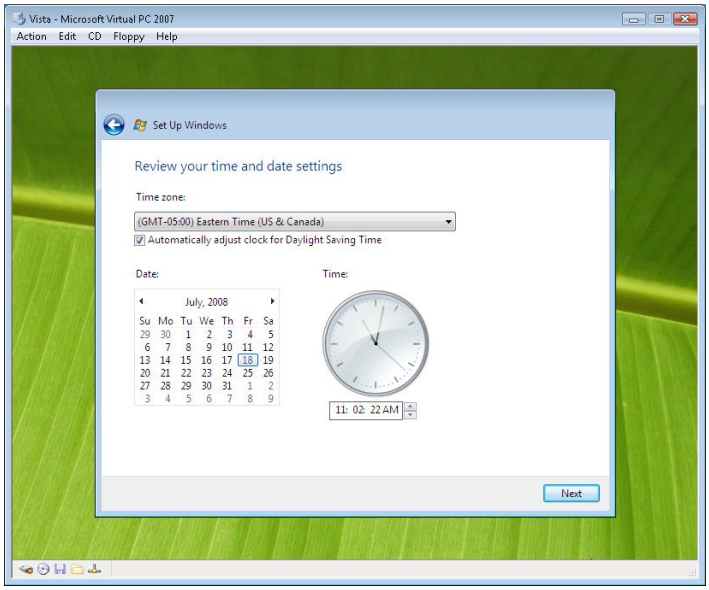
11. ____ The next dialog box prompts you for information about automatic updates.



Dual Boot Vista 14

Simply select “Ask me later” to save lab time. You can always install updates later.

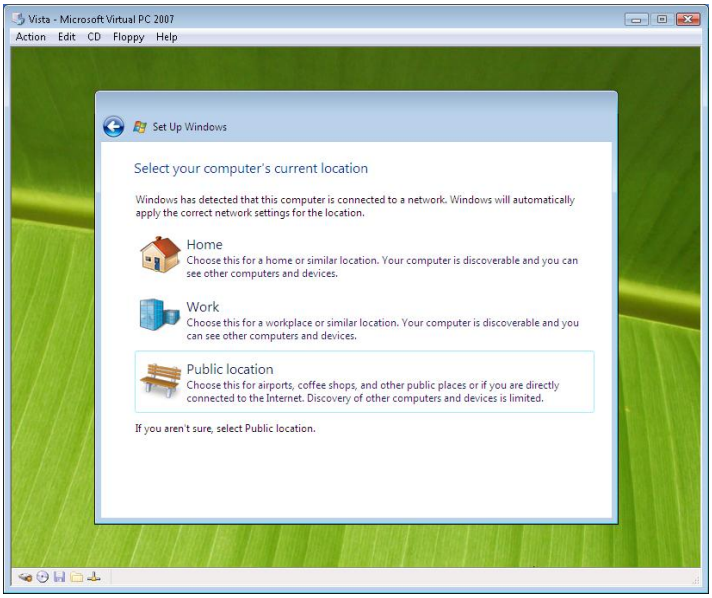
12. ____ The next dialog box prompts you for information concerning the date, time and time zone.



Dual Boot Vista 15

Complete or verify the information to match your setting.

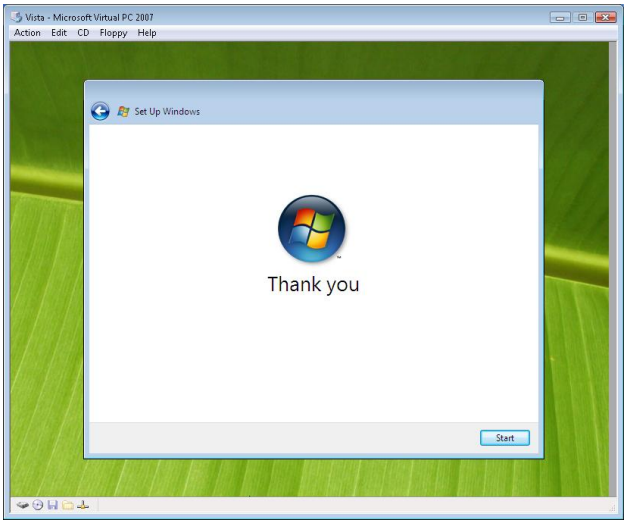
13. _____ Now you must select the type of setting your computer is used in.



Dual Boot Vista 16

The three choices will determine how to configure network discovery and the Microsoft firewall. For this lab activity simply select “Public Location” unless otherwise indicated by your instructor.

14. ____ Next, the Vista thank you will appear followed by the logon screen.

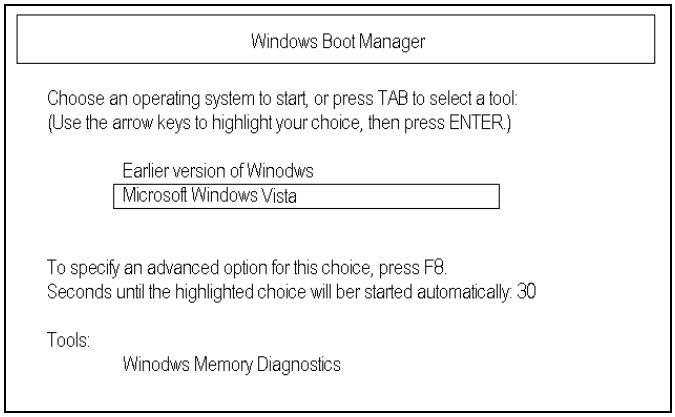


Dual Boot Vista 17

Dual Boot Vista 18

That's it, you're done!

When you restart the computer you will see the Windows boot manager a screen similar to the one below.



Vista Boot Manager

The boot manager refers to the Windows XP operating system as “Earlier version of Windows”.

You will have 30 seconds maximum time to make a choice otherwise the boot manager will automatically select the Vista operating system.

That’s it. You have completed the first two parts of the lab activity and you have created a dual boot system.

Part III - Windows 7

In part three, you will install Windows 7 as the third operating system in the multi-boot. Read all procedure steps carefully. The general hardware requirements are listed below followed by related information to assist you with the installation.

- **Windows Basic**
- CPU 800 MHz
- RAM 512 MB
- Graphics Processor that supports Directx9.
- **Windows 7 Premium or better**
- CPU 1 GHz, 32-bit (x86) or 64-bit (x64).
- RAM 1 GB for 32-bit or 2 GB for 64-bit
- Graphics Processor that supports Directx9, 128 MB graphics memory, pixel shader 2.0 and 32 bits per pixel, Windows Display Driver Model (WDDM) driver support. Many games and applications require Directx10 even though Windows 7 does not.
- Minimum Hard Drive space is 16 GB for 32-bit or 20 GB for 64-bit. Recommended hard drive 40 GB minimum with 20 GB of free space. Note the difference between recommended and minimum. The minimum space will work but performance will be limited.
- DVDROM drive

Note: The minimum hardware requirements for Windows Home and Ultimate are similar.

Select type of installation location.

There are three choices of network location, Home, Public and Work. The network location selected will determine your firewall settings and network discovery options are configured. The firewall and Discovery configuration directly relates to your computer security as related to the network. There will be much more about the firewall and Discovery configurations later in more advanced laboratories.

- **Home** – Used for computers in a home environment where the other devices in the local area network are trusted.
- **Public** – This setting is used for public locations such as airports, coffee shops, or anywhere were public access to the Internet is provided.
- **Work** – This location is a typical small office or home location and is very similar to the Home location. The main difference is you cannot create or join a HomeGroup. The HomeGroup is new in Windows 7 and is a simple convenient way to share computer resources such as picture and music files. Document sharing is not configured by default in HomeGroup.

Note: You can join a HomeGroup in any edition of Windows 7, but you can only create one in Home Premium, Professional, or Ultimate editions. There will be much more about HomeGroup, sharing, the firewall, and network discovery in later laboratory activities.

Windows 7 - Product Activation

During the installation process you will be presented with a default option to perform the **Windows 7 Product Activation** (**WPA**). Once activated, the Windows 7 product will be identified by Microsoft and you will not be able to install the product on another computer.

You should not activate the Windows 7 operating system unless told to do so by your instructor. Microsoft also recommends that you not activate the product during the installation, but rather wait until you are sure the operating system is working correctly and is completely compatible with all hardware devices and software applications that you install to complete the system. Microsoft products have a 30 day grace period. You can use the operating system for 30 days without activation. To avoid activation simply choose not to install the product identification key. You also have an option to extend the 30 day activation to a total of 120 days by using the slmgr.vbs rearm command from the command prompt.
Windows Product Activation is composed of three product identifiers, Hardware ID, Product ID and Installation ID.

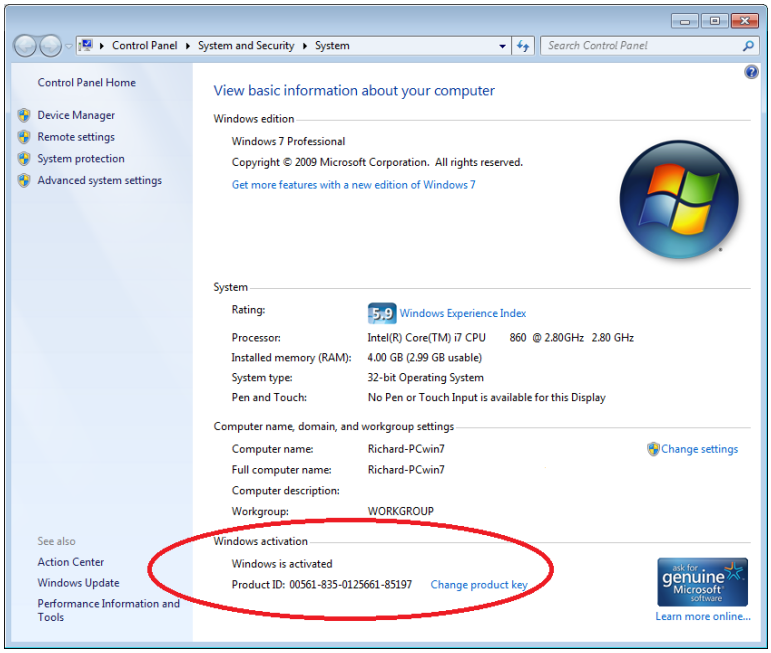
The Product key is the 25-character key typically supplied with the retail version of the software.

The Hardware ID is a unique 20 character key generated during the installation process and is based on the hardware configuration. The hardware ID will change if there are significant changes in the hardware configuration, such as replacing the mother board, the hard disk drive, the CPU and such. A significant change in the hardware configuration appears to the operating system that the Microsoft operating system has been installed on a second computer system in violation of the licensing agreement. A message is generally generated informing the user that the operating system requires

to be activated. The system will only operate for an additional 30 days unless the system is reactivated. If the system is not reactivated, the operating system will no longer be considered legal, and the system will fail to complete the boot operation. Many times, the reactivation will fail and cause the user to call Microsoft and explain the hardware changes so that they can reactivate the operating system.

The installation ID is based upon the Hardware ID and the Product ID. The installation ID is forwarded automatically through the Internet to Microsoft when you activate the system. The system will operate for 30 days by default, if you choose not to activate during the installation process. If there is no Internet connection or a problem arises you can activate the system by telephone.

You can view the Product ID by right-clicking on Computer located on the Start menu and then selecting Properties from the drop down menu list of options.



Windows Activation Product ID Labeled

The unique Product ID consists of 20 characters arranged in the following format **XXXXX-XXX-XXXXXXX-XXXXX.**

You also have the option available to change the current Product Key. This option is used to perform an upgrade of the local system.

Materials and information required.

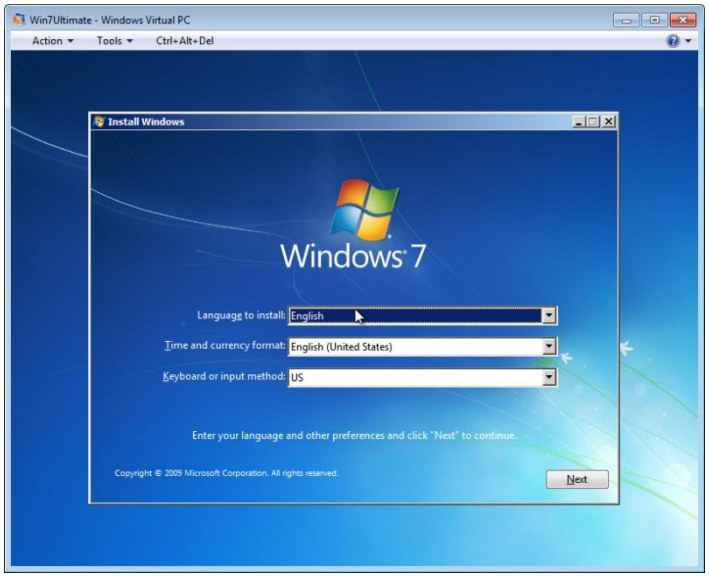
- 1 workstation which meets or exceeds the minimum hardware requirements.
- 1 Windows 7 installation DVD edition type to be determined by your instructor.
- Internet connection desired but not required.
- Hard Drive Partition/Volume size _____ (40 GB or to be determined by the instructor)
- Product Key _____ Note: you can still perform the Windows installation without the product key. You will have 30 days to enter the product key before the operating system times out.
- User Account Name _____
- Computer Name _____
- Network Location _____ (Home, Work, Public.)

Note: Some screens may appear that do not match the laboratory activity because many of the Windows that do not require installer action have been eliminated.
The screen captures used for the laboratory activity were taken while installing Windows 7- Ultimate on a Windows Virtual PC machine. Your sequence may not exactly match the laboratory sequence but will provide all necessary information and examples that will allow you to successfully perform a new Windows 7 install using any of the Windows 7 editions.

This part of the laboratory activity is not the full detailed version of Windows 7 installation.

1. ____ Gather required materials and report to your assigned workstation.

2. ___ Boot the workstation and place the Windows 7 installation DVD into the DVD-drive. Reboot the workstation to start the installation process.
Note: If the installation fails to start from the Windows 7 installation DVD, check the BIOS setup to see if the first boot device is the DVD-drive. You may need to change the boot sequence.

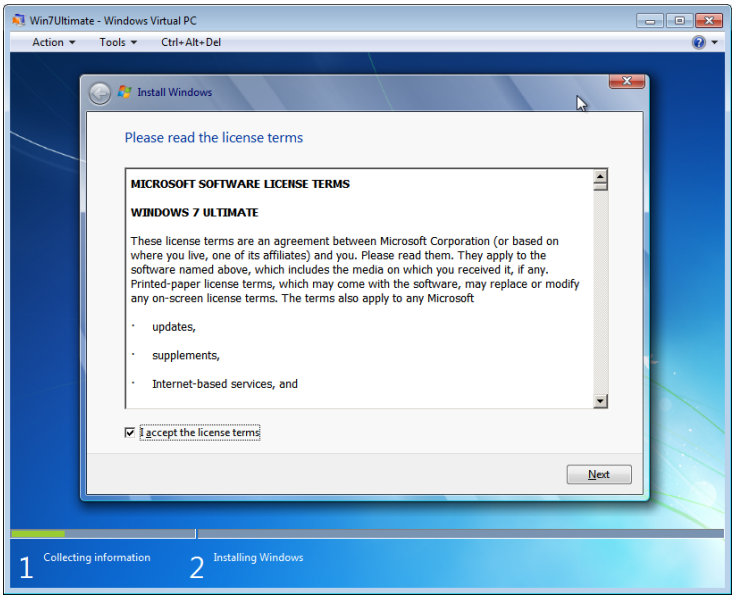


After a black screen appears, a message stating that, “the first dialog box to appear will prompt you for information concerning the default Language to use, as well as the time and currency and the type of keyboard.” You should accept the default configuration by selecting the “Next” button.

3. ___ The next dialog box presents you with three choices. “**Install now; What to know before installing Windows;** and **Repair your computer.**”

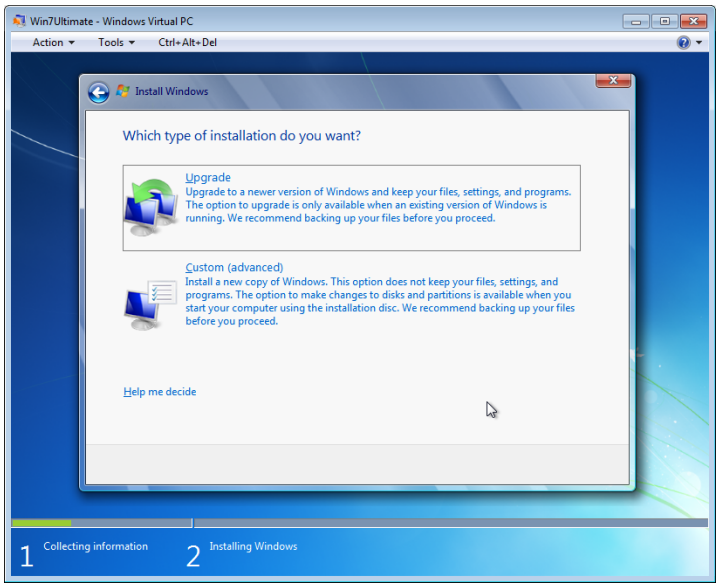
Select the Install now option.

4. ___ The next dialog box presents you with the Microsoft License Terms.



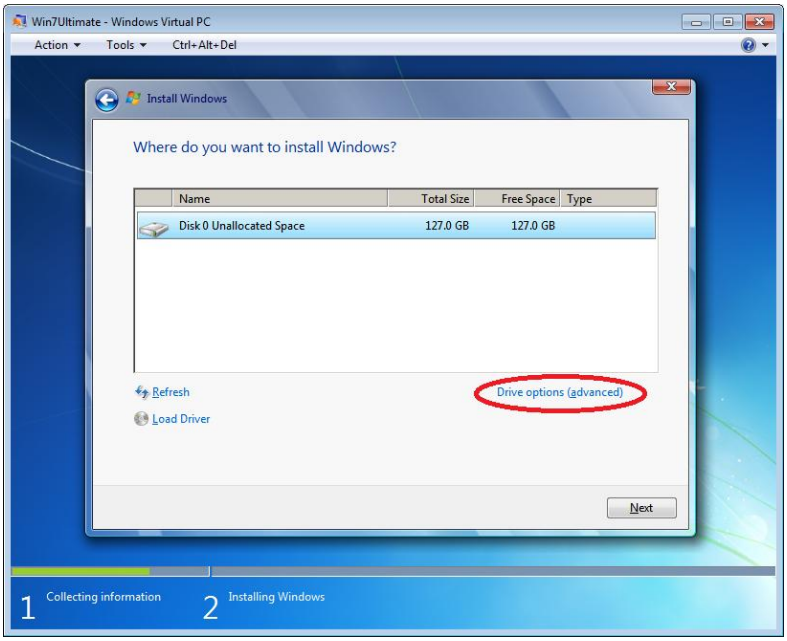
You must accept the license term,s and then select the “Next” button.

5. ___ The next dialog box to appear will prompt you to select either an Upgrade or Custom (advanced) type of installation.



You will select the “Custom (advanced)” option for this laboratory activity.

6. ____ After selecting the Custom (advanced) option a dialog box showing the existing hard disk drive partition(s) or volume(s) as they appear for your workstation.

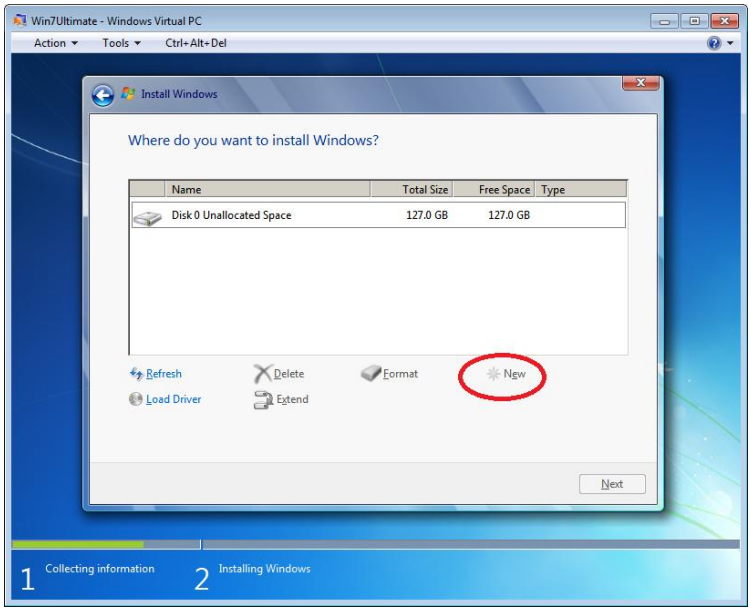


Your disk configuration most likely will not exactly match the one in the screen capture. This is especially true for teaching classroom laboratory equipment. You could have several partitions left on the workstation computer or none at all.

Pay particular attention to the "**Load Driver**" and "**Drive options (advanced)**" optional links. The Load Driver option provides an opportunity to load a device driver to support the particular hard disk drive. Typically, you will not have a problem but when the hard disk drive fails to appear then you most likely have a driver problem.

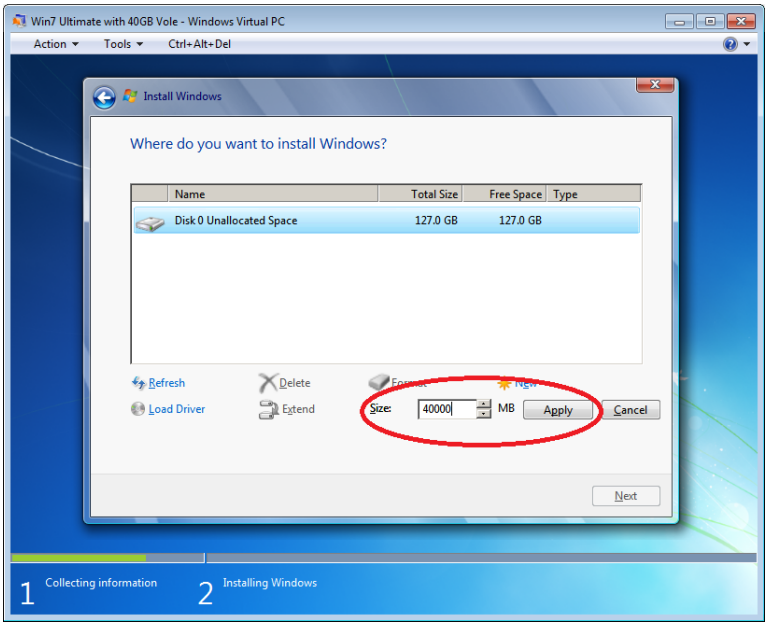
You also have an optional link Drive options (advanced) which provides a means of changing the default hard drive configuration. Typically the entire disk drive is selected by default. In a laboratory environment you may want to use a small partition/volume for your installation. This is especially true when using a very large hard disk drive. A large new hard disk drive can take a long time to partition and format. Choosing a minimal size partition can greatly reduce the time needed to perform the laboratory activity. Select the Drive options (advanced) link option.

7. ___ After selecting the Drive options (advanced) link, a dialog box similar to the one below will appear.

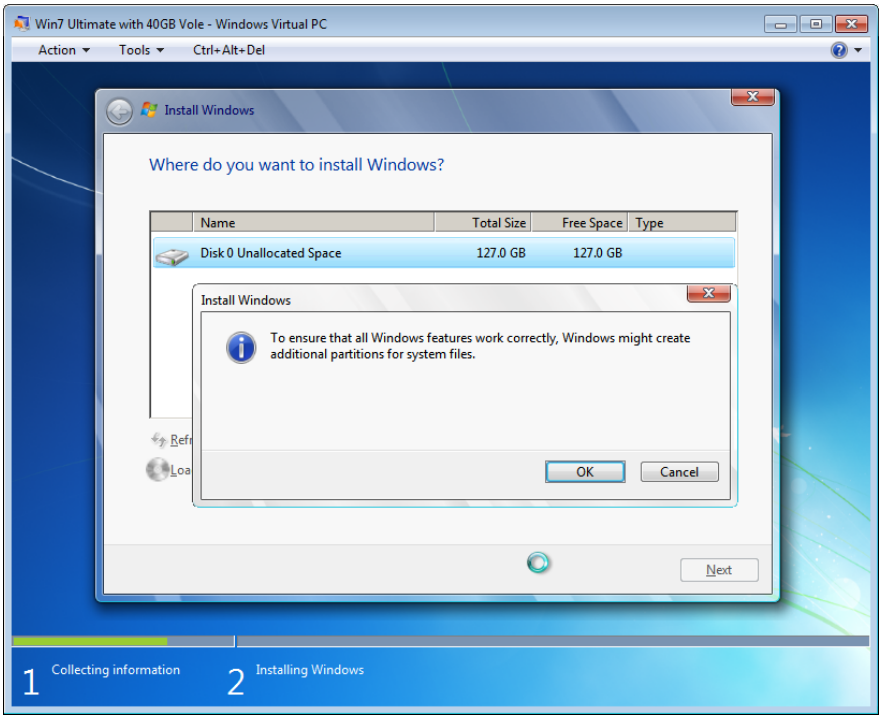


You now will be presented with partition configuration options such as **Delete, Extend, Format, and New**. For this laboratory activity, you will create a new partition in addition to the two already created for Window, XP and Vista, rather than use the entire drive. Select the **New** option now.

8. ____ After selecting "New" option, you will see a dialog box prompting you for the size of the new partition.



Enter the size partition you desire and then select the “Apply” button.
A warning similar to the one in the screen capture below will appear.

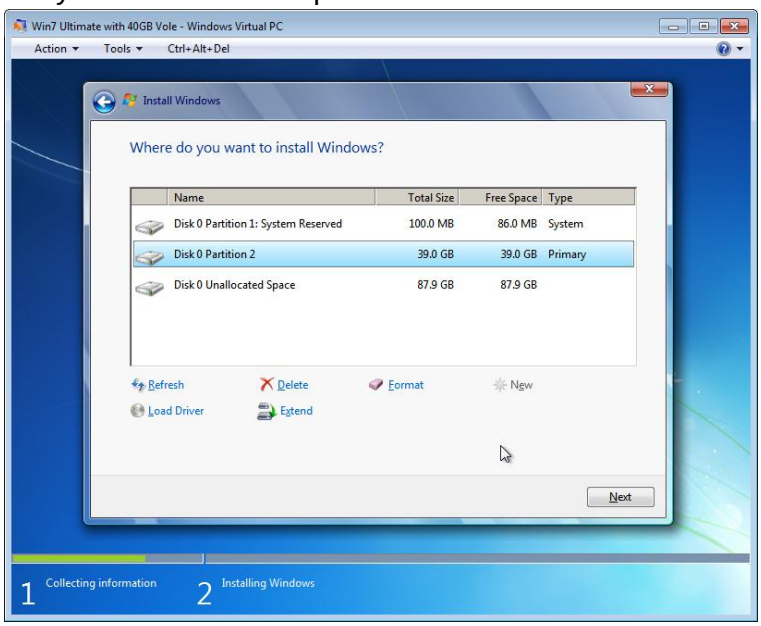


Notice that Windows 7 states that additional partitions might be created for system files. This is a reference to the additional 100 MB partition used for system files such as Windows boot loader. This option will not appear on all hardware systems.

After selecting the “OK” button, you will see a dialog box confirming the creation of the new partition. The intended 40 GB partition is actually 39 GB. This is a result of the calculation based upon the

number of sectors created on the actual physical disk platter. A 40 GB partition/volume is the minimum size recommended by Microsoft for a typical installation. Selecting the entire hard disk drive as one big partition, and then formatting the partition**, could require a time period longer than your laboratory period.**

Your instructor will inform you as to what size partition/volume to use.



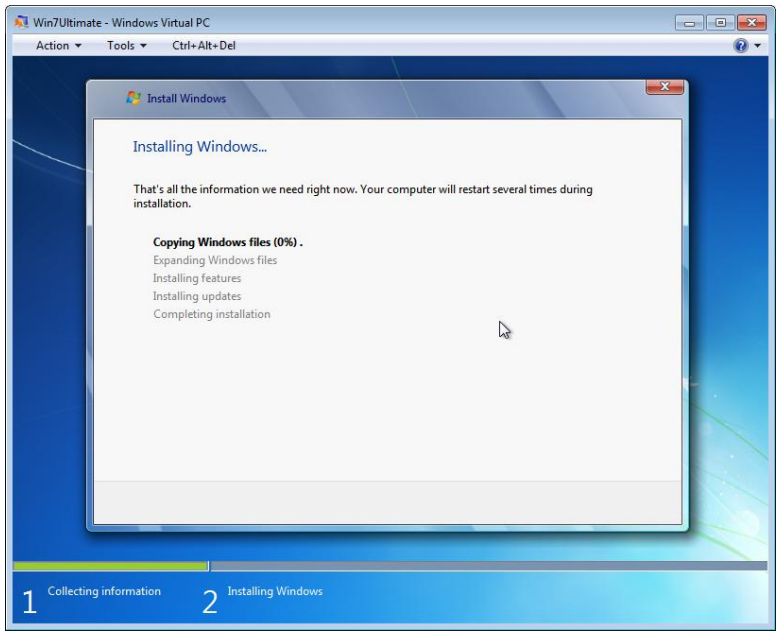
In the screen capture, you can see multiple volumes created. The Disk 0 Partition 2 is 39.0 GB and will be used to host the Windows 7 installation. The intended size was 40 GB, but because of the disk physical storage sector size and locations, the actual size is 39 GB. Disk 0 Unallocated Space is as stated, space not partitioned or formatted.

Notice Disk 0 Partition1: System Reserve is an additional partition created in Windows 7 and is by default when performing a clean install. This is normally a hidden partition and was first introduced and used in Windows Vista and Server 2008 to support the Bitlocker option.

Today, Windows 7 uses the System Reserve to store the Windows boot loader file. The System Reserve partition is only created on disk drives that do not contain existing partitions such as when performing a system upgrade on a machine that has partitions already created.
For now, simply accept the configuration and ignore the System Reserve partition. There will be more about the system reserve in later lab activities and the textbook. Have your instructor inspect your partitions before proceeding.

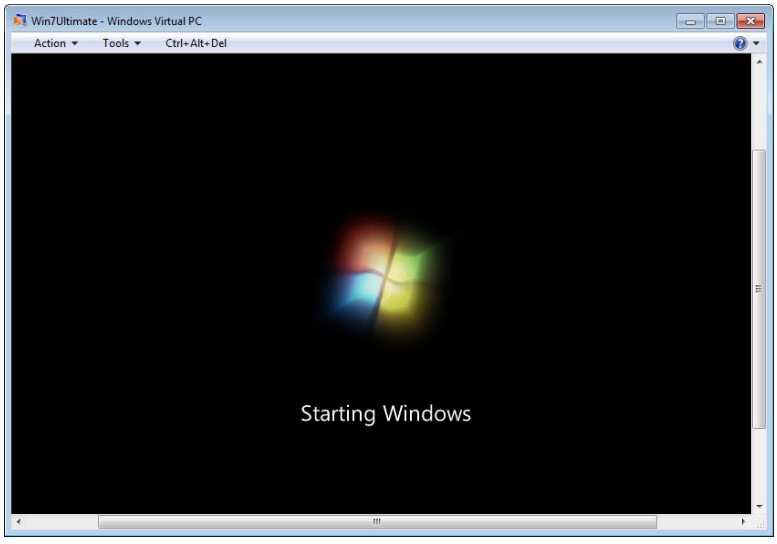
After your instructor approval of partitions you may proceed by selecting the “Next” button.

9. ___ A dialog box will appear showing the progress of the installation process.

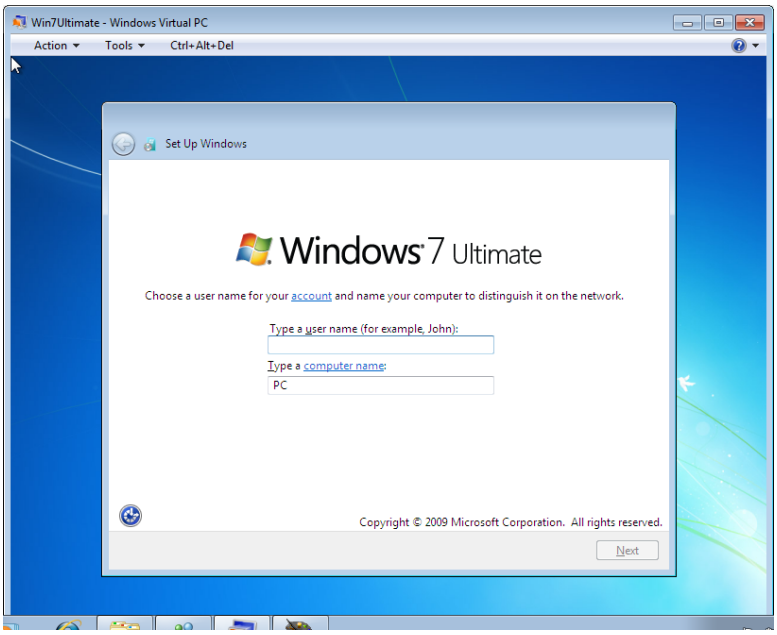


The amount of time required to complete the installation process will vary according to the size of the partition and the performance factors of the machine based upon the amount of RAM and CPU speed.

After the undetermined amount of time, you will see a window similar to the one in the screen capture telling you that the operating system is Starting Windows.

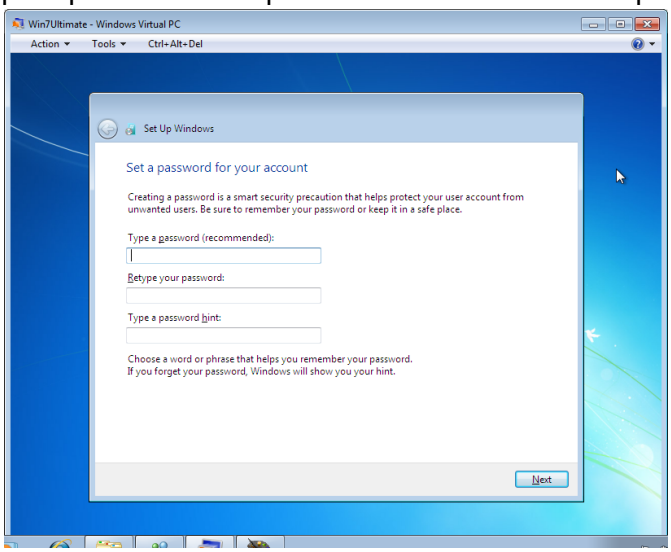


10. ____ The next major step in the installation is the dialog box prompting you for a user account name. Use the user account name and computer name provided by your instructor.



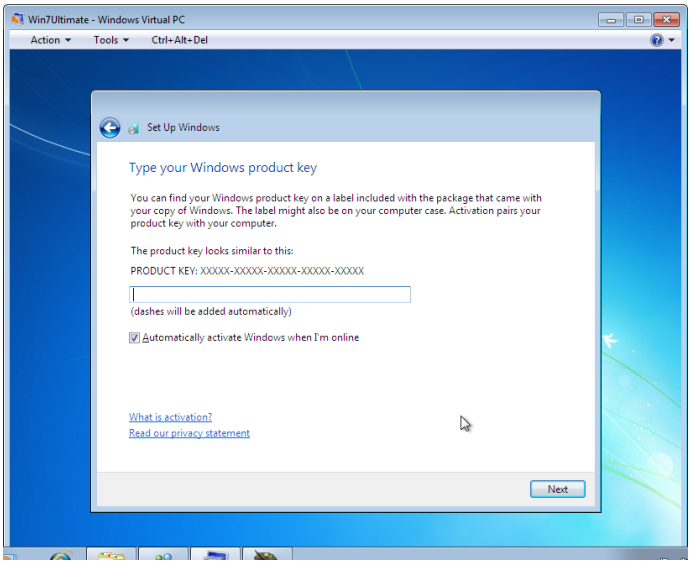
After entering the user name, a computer name will be automatically created based upon the user name. You can change the computer name if you like rather than use the automatically generated computer name. Change the computer name to match the one approved by your instructor.

11. ___ Next, you will be prompted to enter a password twice as well as a password hint.



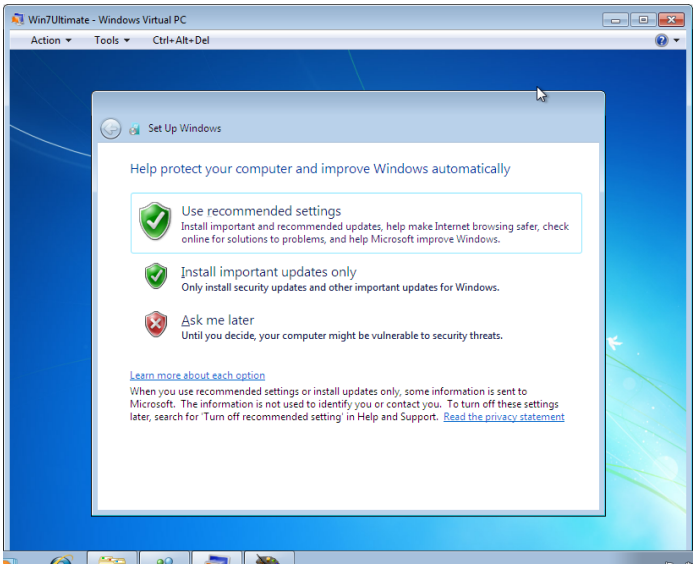
The password hint is optional.

12. ___ The next dialog box prompts you for the Windows product key.



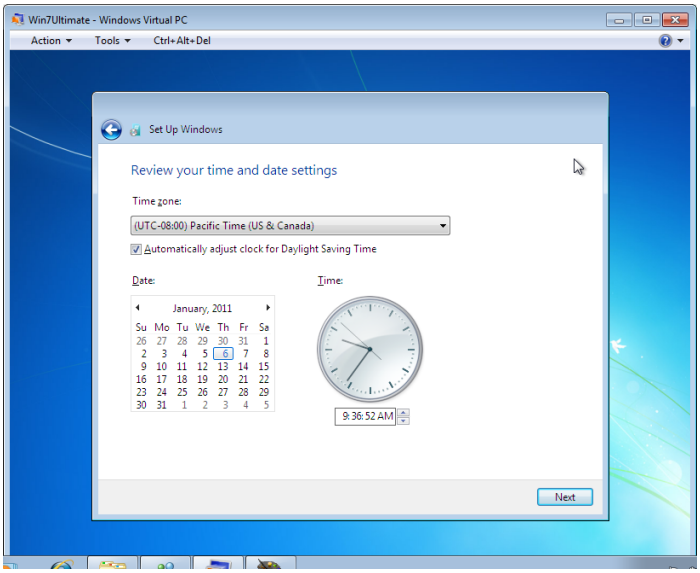
It is not necessary to enter a product key at this time. Also remove the check mark from the "Automatically activate Windows when I'm online." If you provide the product key and allow the computer to be activated on line, then this particular installation DVD cannot legally be used on another computer. You can always provide the product key and activate the software at a later date up to 30 days later.

13. ___ Next you are prompted to select how to handle Windows automatic updates.



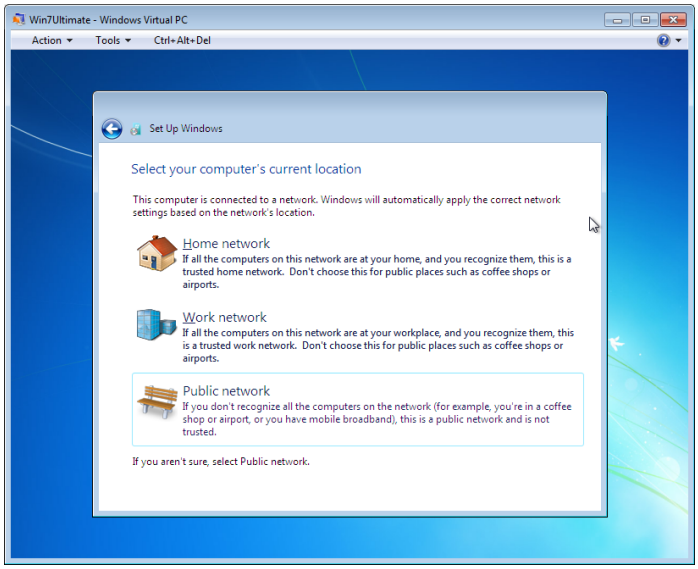
To save time in this laboratory activity, select the "Ask me later" option to save laboratory time. You can install important updates at a later time.

14. ___ Now, you are prompted to verify the correct time zone, time and date.



Make appropriate time zone selection and the date and time will most likely be correct.

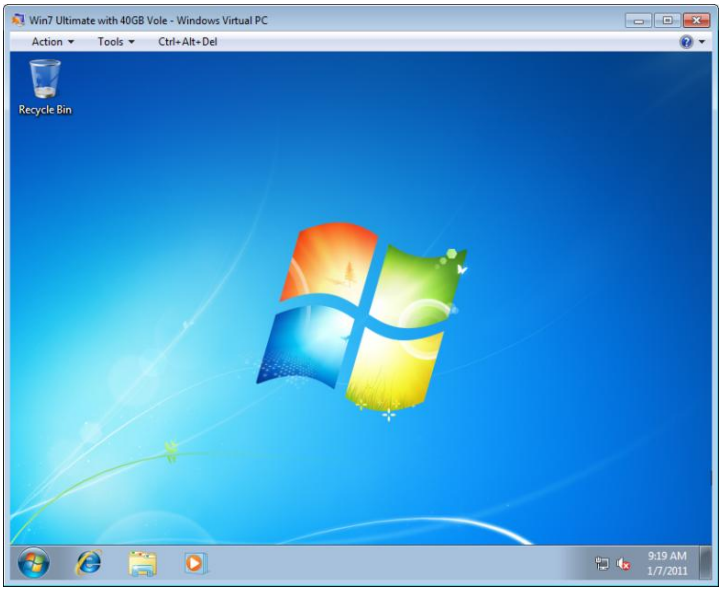
15. ___ Next, you just select a type of computer network location for the installation. Select the network location type as indicated by your instructor.



Your three choices of computer network locations are Home network, Work network and Public network. Once selected, the computer will be automatically configured with default network security configuration to match the network location.

16. ___ The next major dialog box will be the Windows 7 logon screen. You may see several other dialog boxes before the actual logon screen appears. The number and various dialog boxes will be determined by the type of network location, and type of Windows automatic update you selected as well as the availability of an Internet connection.

Now enter you user account password and the Windows 7 desktop should appear similar to the one in the screen capture below.



Call your instructor to inspect your laboratory activity.

17. ___ Answer the review questions.

Review Questions

1. How many partitions are required for a dual boot operating system installation?
2. What is the largest FAT16 partition?
3. What is the default partition format for Windows XP?
4. What is the default partition format for Windows Vista?
5. What is the default partition format for Windows 7?
5. How long do you have before you must activate Vista or Windows 7?
6. What is the recommended and minimal partition size for Vista?
7. What is the recommended and minimal RAM for Vista?
8. What is the recommended minimal hard disk drive space for Windows XP?
9. What is the minimal RAM and recommended amount of RAM for Windows XP?
10. What is the name of the program that controls which operating system is selected during the boot operation?
11. What are the CPU requirements for Windows Home Basic?
12. What is the recommended minimum RAM size for Windows Home Basic?
13. What are the recommended minimum graphics requirements for Windows Home Basic?.
14. What is the recommended minimum CPU requirement for Windows 7 Premium (both 32 and 64 bit)?
15. What is the recommended minimum amount of RAM for Windows 32-bit and 64-bit Premium?
16. What are the recommended minimum graphics requirements for Windows Premium?.
17. What is the recommended minimum hard disk drive size for the overall physical drive and the amount of free space required?
18. Must you enter the Windows 7 product key at the time of installation?.
19. How long before you must enter the Windows 7 product key and activate Windows 7?
20. What are the three Windows 7 network locations?
21. What is the purpose of choosing one of the three network locations during the install process?
22. What is another name for a clean install?
23. What is the difference between the Product Key and the Installation ID?
24. What might cause the operating system to require to be reactivated?
25. Where can you view the Windows 7 Activation Product ID?
26. What is the Change Product Key option used for?
27. What is another name for a partition?
28. What does Microsoft recommend about the product activation for Windows 7?

Review Questions Answers

1. How many partitions are required for a dual boot operating system installation? Two.
2. What is the largest FAT16 partition? 2MB.
3. What is the default partition format for Windows XP? NTFS
4. What is the default partition format for Windows Vista? NTFS
5. What is the default partition format for Windows 7? NTFS
5. How long do you have before you must activate Vista or Windows 7? 30 days.
6. What is the recommended and minimal partition size for Vista? 40-GB hard disk that has 15 GB of free hard disk space.
7. What is the recommended and minimal RAM for Vista? 1 GB RAM, (512 GB minimum)
8. What is the recommended minimal hard disk drive space for Windows XP? 1.5 GB
9. What is the minimal RAM and recommended amount of RAM for Windows XP? 64 MB minimum, 128 MB recommended.
10. What is the name of the program that controls which operating system is selected during the boot operation? Boot manager.
11. What are the CPU requirements for Windows Home Basic? CPU 800 MHz.
12. What is the recommended minimum RAM size for Windows Home Basic? RAM 512 MB.
13. What are the recommended minimum graphics requirements for Windows Home Basic? Graphics Processor that supports Directx9.
14. What is the recommended minimum CPU requirement for Windows 7 Premium (both 32 and 64 bit)? CPU 1 GHz, 32-bit (x86) or 64-bit (x64).
15. What is the recommended minimum amount of RAM for Windows 32-bit and 64-bit Premium? 32 Bit 1 GB, 64-bit 2 GB RAM.
16. What are the recommended minimum graphics requirements for Windows Premium? Graphics Processor that supports Directx9, 128 MB graphics memory, pixel shader 2.0 and 32 bits per pixel, Windows Display Driver Model (WDDM) driver support.
17. What is the recommended minimum hard disk drive size for the overall physical drive and the amount of free space required? Recommended hard drive 40 GB minimum with 20 GB of free space. Minimum Hard Drive space is 16 GB for 32-bit or 20 GB for 64-bit.
18. Must you enter the Windows 7 product key at the time of installation? No.
19. How long before you must enter the Windows 7 product key and activate Windows 7? 30 days.
20. What are the three Windows 7 network locations? Home, Work, and Public.
21. What is the purpose of choosing one of the three network locations during the install process? The computer is automatically configured with default network security configuration to match the network location.
22. What is another name for a clean install? A new installation.
23. What is the difference between the Product Key and the Installation ID? The Product key is the 25 character key that accompanies the installation DVD. The Installation ID is generated during the installation process and is based upon the Product Key and the Hardware ID.
24. What might cause the operating system to require to be reactivated? A significant change to the hardware system.
25. Where can you view the Windows 7 Activation Product ID? In the Computer Properties dialog box.

26. What is the Change Product Key option used for? To upgrade the version of windows operating system.
27. What is another name for a partition? Volume.
28. What does Microsoft recommend about the product activation for Windows 7? Microsoft also recommends that you not activate the product during the installation but rather wait until you are sure the operating system is working correctly and is completely compatible with all hardware devices and software applications that you install to complete the system.

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