CHAP 4: OPERATING SYSTEM OVERVIEW

4.1. OS System overview

The operating system (OS) is the software that controls functionality and provides lower-level routines for application programs. Most operating systems provide functions to read and write data to files. An operating system translates requests for operations on files into operations that the disk controller can carry out. The operating system helps the computer perform four basic operations, which include input-process-output-storage

- The input operation recognizes input from the keyboard or mouse.
- The processing operation manipulates data according to the user's instructions.
- The output operation sends output to the video screen or printer.
- The storage operation keeps track of files for use later. Examples of storage devices include Flash disks and hard drives.

The most common way to **input data** into a computer is from the keyboard ,Opening a web page, an e-mail file, or a file that came from a network server are also ways to input data. After the data has been input, the computer can process or crunch the data. While a file is open and the text is being reformatted, the computer is processing data.

Processing data usually results in some kind of output, such as a word processor file or a spreadsheet. The most common way to output data is to send it to the computer monitor, or to a printer. Today, most computers have a connection to the Internet, making it common to output the data to the Internet via e-mail or as a web page.

Data storage is probably the most important of the four basic computer functions. The most common way to store a file is to save it to a hard drive. Hard drives can be thought of as very large file cabinets. An operating system will find a place on the hard drive, save the file, and remember its location.

4.2 Components of operating system

An operating system is a software program that controls thousands of operations, provides an interface between the user and the computer, and runs applications. Basically, the operating system is in charge of running the computer.

Today, most computer systems are sold with an operating system already installed. Computers that are designed for individual users (called Personal Computers or PCs) have operating systems that are designed for individuals running small jobs. An operating system is designed to control the operations of programs such as Web browsers, word processors, and e-mail programs.

There are three basic elements that make up the major design components of any operating system. These components are described as modular because each has a distinct function and can be developed separately:

- **User interface** – A user interacts with the operating system through the user interface. Simply put, the user interface is the part of the operating system that can be used to issue commands by either typing them at a command prompt or pointing and clicking the mouse at the screen of a graphical user interface (GUI).
- **Kernel** – This is the core of the operating system. The kernel is responsible loading and running programs or processes and managing input and output.
- **File management system** – The file management system is what the operating system uses to organize and manage files. A file is a collection of data given a single logical name called a "filename". Virtually all of the information that a computer stores is in the form of a file. There are many types of files, including program files, data files, text files, and so on. The way an operating system organizes information into files is called the file system. Most operating systems use a hierarchical file system in which files are organized into directories under a tree structure. The beginning of the directory system is referred to as the root directory.

4.3 Operating system functions

Regardless of the size or complexity of the computer or its operating system, all operating systems perform the same basic functions:

- **File and folder management** – An operating system creates a file structure on the computer hard drive where the user data can be stored and retrieved. When a file is saved, the operating system saves it, attaches to it a name, and remembers where it put the file for future use.
- **Management of applications** – When a user requests a program, the operating system locates the application and loads it into the primary memory or RAM of the computer. As more programs are loaded, it is the job of the operating system to allocate the resources of the computer.
- **Support for built-in utility programs** – Utility programs are programs that the operating system uses to maintain and repair itself. These programs help identify problems, locate lost files, repair damaged files, and backup data.
- **Control to the computer hardware** – The operating system sits between the programs and the Basic Input Output System (BIOS). The BIOS was explained in previous chapters and more will be provided later in this chapter. The BIOS does the actual hardware control. All programs that need hardware resources must first go through the operating system. The operating system in turn can either access the hardware through the BIOS or through the device drivers. The Windows 2000 NOS bypasses the system BIOS and controls the hardware directly.

4.4 Operating system types

.The following is a list of some of the most popular operating systems.

- **Microsoft Windows 95, 98, ME** – Windows is one of the most popular operating systems today. Windows is designed to run on PCs and to use an Intel-compatible CPU. Windows-based PCs use a GUI as the interface between the computer and the user.
- **Microsoft Windows NT/2000/XP/vista/7** – Also from Microsoft, Windows NT, 2000, XP,Vista and Windows 7 are operating systems that were designed to support multiple (concurrent) users and to run applications simultaneously.
- **The Macintosh Operating System** – The first Macintosh computers became available in January of 1984 and were designed to be very user-friendly compared to the existing DOS computers.
- **UNIX** – UNIX, which has been around since the late 1960s, is one of the oldest operating systems. UNIX has always been popular with computer professionals whose responsibility is to run and maintain computer networks. UNIX-based computers from IBM, Hewlett-Packard (HP), and SUN Microsystems have helped run the Internet from the beginning. There are many different versions of UNIX today. One of the most recent is the extremely popular Linux.

4.5 MOBILE OPERATING SYSTEM:

A **mobile operating system**, also referred to as **mobile OS**, is an operating system that operates a smartphone, tablet, PDA, or other mobile device. Modern mobile operating systems combine the features of a personal computer operating system with other features, including a touchscreen, cellular, Bluetooth, Wi-Fi, GPS mobile navigation, camera, video camera, speech recognition, voice recorder, music player, near field communication and infrared blaster.Android

Android is an operating system based on the Linux kernel with a user interface based on direct manipulation, designed primarily for touchscreen mobile devices such as smartphones and tablet computers,

Android is from Google Inc. Most of Android is free and open source, but a large amount of software on Android devices (such as such as **Play Store**, Google Search, Google Play Services,

Google Music, and so on.. are proprietary and licensed. Android's releases prior to 2.0 (1.0, 1.5, 1.6) were used exclusively on mobile phones.

Android 2.x releases where mostly used for mobile phones but also some tablets. Android 3.0 was a tablet-oriented release and does not officially run on mobile phones. The current Android version is 4.4.

Android's releases are nicknamed after sweets or dessert items like Cupcake (1.5), Donut (1.6), Eclair (2.0), Frozen Yogurt ("Froyo") (2.2), Ginger Bread (2.3), Honeycomb (3.0), Ice Cream Sandwich (4.0), Jelly Bean (4.1), (4.2), (4.3) and Kit Kat (4.4). Most major mobile service providers carry an Android device

Blackberry

BlackBerry OS is a proprietary mobile operating system developed by BlackBerry Ltd for its BlackBerry line of smartphone handheld devices. The operating system provides multitasking and supports specialized input devices that have been adopted by BlackBerry Ltd. for use in its handhelds, particularly the trackwheel, trackball, and most recently, the trackpad and touchscreen. blackberry apps are available on **Blackberry store**

iOS

iOS (previously **iPhone OS**) is a mobile operating system developed by **Apple Inc**. and distributed exclusively for Apple hardware. It is the operating system that powers iPhone, iPad, iPod Touch, and Apple TV.

Originally unveiled in 2007 for the iPhone, it has been extended to support other Apple devices such as the ***iPod Touch*** (September 2007), ***iPad*** (January 2010), ***iPad Mini*** (November 2012) and second-generation ***Apple TV*** onward (September 2010). As of October 2013, Apple's ***App Store*** contained more than 1 million iOS applications, 500,000 of which were optimized for iPad

Windows Phone

Windows Phone (abbreviated as **WP**) is a proprietary smartphone operating system developed by Microsoft. It is the successor to *Windows Mobile*, although it is incompatible with the earlier platform. With Windows Phone, Microsoft created a new user interface, featuring a design language named "Modern" (which was formerly known as "Metro").Unlike its predecessor, it is primarily aimed at the consumer market rather than the enterprise market. It was first launched in October 2010 with Windows Phone 7.

Other software platforms

Firefox OS

Firefox OS is from non-profit organization Mozilla Foundation. It is open source and uses Mozilla Public License.

Sailfish OS

The Sailfish OS and the Sailfish is based on the Linux kernel and Mer. Sailfish OS also includes a proprietary multi-tasking user interface programmed by Jolla. Sailfish OS is intended to offer a competitive advantage against devices that run Google's Android or Apple's iOS.

Symbian

Symbian platform is from Nokia for certain models of their current entry level smartphones. It is proprietary software. Runs Symbian S60 or S40. The Operating System is found running on Nokia's Asha devices

Tizen

Ubuntu Touch OS

LiMo 4

Maemo

Meego

Palm OS

webOS

Windows Mobile

1.4 File System Introduction

File System

A file system is used to organize and store data and information on a storage device. The file system and the operating system work together to ensure data availability, integrity, and accessibility.

A file system can be thought of as an index or database containing the physical location of every piece of data on a hard drive.

A file system is setup on a drive during a format. The Microsoft Windows operating systems have always supported, and still do support, various versions of the ***File Allocation Table (FAT)*** file system. In addition to FAT, all Microsoft Windows operating systems since Windows NT support a newer file system called ***New Technology File System (NTFS).***

All modern versions of Windows also support **FAT**, a file system designed for flash drives.

Some other operating systems also take advantage of FAT and NTFS but many different kinds of file systems exist.

- **File Allocation Table (FAT)**

Definition: File Allocation Table (FAT) is a file system that was created by Microsoft in 1977. FAT is still in use today as the preferred file system for floppy drive media and portable, high capacity storage devices like flash drives.

FAT was the primary file system used in all of Microsoft's consumer operating systems from MS-DOS through Windows ME. NTFS is the primary file system on Microsoft's newer operating systems but FAT is still a supported option.

The File Allocation Table file system has seen advancements over time primarily due to the need to support larger hard disk drives and larger file sizes.

Below is more information on the versions of the FAT file system:

- ✓ **FAT12** - The initial version of the FAT file system, FAT12 was introduced in 1977, even before MS-DOS, and was the primary file system for Microsoft operating systems up to MS-DOS 4.0. FAT12 supports drive sizes up to 32MB.

- ✓ **FAT16** - The second implementation of FAT was FAT16, introduced in 1988. FAT16 was the primary file system for MS-DOS 4.0 up to Windows 95. FAT16 supports drive sizes up to 2GB.

- ✓ **FAT32** - FAT32 is the latest version of the FAT file system. It was introduced in 1996 for Windows 95 OSR2 users and was the primary file system for consumer Windows versions through Windows ME. FAT32 supports drive sizes up to 8TB.

exFAT is another files system supported by Windows and other devices and is intended for use primarily on flash drives.

- ## New Technology File System (NTFS)

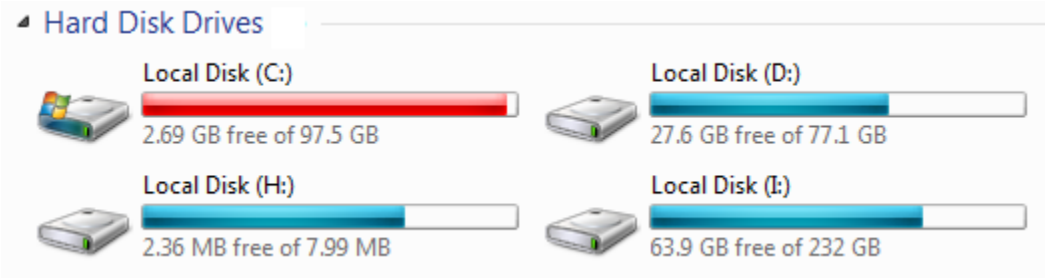
Definition:

New Technology File System (NTFS) is a file system that was introduced by Microsoft in 1993 with Windows NT 3.1. NTFS supports hard drive sizes up to 256TB.

NTFS is the primary file system used in Microsoft's Windows 7, Windows Vista, Windows XP, Windows 2000 and Windows NT operating systems. The Windows Server line of operating systems also primarily use NTFS.

Partition

When we buy new a new hard drive and attach it to our computer, typically the entire hard drive will be unallocated. The first step is to define one or more partitions on the drive. A partition is a logical division of the disk. It carves out a portion of the disk and prepares it for saving data. We can have a partition that takes the entire hard disk, or we can create multiple partitions on a single hard disk. In case of multiple partitions a drive letter is assigned to represent each partition. From that we can conclude that multiple letters do not always mean that there are multiple devices, just multiple partitions. Any space not assigned to a partition is labeled as unallocated space.



Drive Letter

When we define partitions and volumes, we also have to assign them a drive letter. This is done within the operating system, typically in Disk Management console. Typical drive letters are C:, D:, E:, etcetera. Drive letters help us keep track of different volumes that have been assigned within the operating system.

CHAP 5. OPERATING SYSTEM INSTALLATIONS AND UPGRADES

5.1 System requirements

To be used efficiently, all computer software needs certain hardware components or other software resources to be present on a computer. These prerequisites are known as (computer) **system requirements** and are often used as a guideline as opposed to an absolute rule. Most software defines two sets of system requirements: minimum and recommended. With increasing demand for higher processing power and resources in newer versions of software, system requirements tend to increase over time. Industry analysts suggest that this trend plays a bigger part in driving upgrades to existing computer systems than technological advancements.

Example of OS system requirements

- ✓ **WIN XP**

The minimum hardware requirements for Windows XP Home Edition are:

- Pentium 233-megahertz (MHz) processor or faster (300 MHz is recommended)
- At least 64 megabytes (MB) of RAM (128 MB is recommended)
- At least 1.5 gigabytes (GB) of available space on the hard disk
- CD-ROM or DVD-ROM drive
- Keyboard and a Microsoft Mouse or some other compatible pointing device
- Video adapter and monitor with Super VGA (800 x 600)or higher resolution
- Sound card
- Speakers or headphones

Additional requirement:-

- Internet access.

- For some Windows Media Center functionality a TV tuner and extra hardware may be necessary.
- Windows Touch and Tablet computers need specific hardware.
- Home Group requires a network and computer running Windows 7.
- DVD/CD authoring requires a compatible optical drive.
- Depending on resolution, video playback may require additional memory and advanced graphics hardware.
- Some games and programs might require a graphics card compatible with DirectX 10 or higher for optimal performance.
- Windows XP Mode requires an extra 1 gigabyte of RAM and 15 gigabyte of available hard disk space.
- Music and sound require audio output.

✓ **WIN 7**

- 1 gigahertz (GHz) or faster 32-bit (x86) or 64-bit (x64) processor
- 1 gigabyte (GB) RAM (32-bit) or 2 GB RAM (64-bit)
- 16 GB available hard disk space (32-bit) or 20 GB (64-bit)
- DirectX 9 graphics device with WDDM 1.0 or higher driver

Additional requirements to use certain features:

- Internet access (fees may apply)
- Depending on resolution, video playback may require additional memory and advanced graphics hardware
- Some games and programs might require a graphics card compatible with DirectX 10 or higher for optimal performance
- For some Windows Media Center functionality a TV tuner and additional hardware may be required

- Windows Touch and Tablet PCs require specific hardware
- HomeGroup requires a network and PCs running Windows 7
- DVD/CD authoring requires a compatible optical drive
- BitLocker requires Trusted Platform Module (TPM) 1.2
- BitLocker To Go requires a USB flash drive
- Windows XP Mode requires an additional 1 GB of RAM and an additional 15 GB of available hard disk space.
- Music and sound require audio output

32-bit and 64-bit Windows environments

The terms 32-bit and 64-bit refer to the way a computer's processor (also called a CPU), handles information. The 64-bit version of Windows handles large amounts of random access memory (RAM) more effectively than a 32-bit system. 32-bit and 64-bit personal computers the XX-bit format refers to the width of the *CPU's register***.**

The *register* is a small amount of storage used by the CPU, where the CPU keeps the data it needs to access the quickest in order for optimum computer performance. The bit designation refers to the width of the register, thus a 64-bit register can hold more data than a 32-bit register which in turn holds more than 16-bit and 8-bit registers.
32-bit hardware and software is often referred to as x86. 64-bit hardware and software is often referred to as x64

32-bit systems utilize data in 32-bit pieces while 64-bit systems utilize data in 64-bit pieces. In general, the more data that can be processed at once, the faster the system can operate. There are several other advantages to a 64-bit system as well, most practically the ability to use significantly greater amounts of physical memory.

The more ample the space in the CPU's register system the more it can handle, especially in terms of utilizing system memory. **A CPU with a 32-bit register**, for example, has a ceiling of 2^{32} addresses within the register and is thus limited to accessing 4GB of RAM. This may have

seemed like an enormous volume of RAM when they were hashing out register sizes 40 years ago but it's a rather inconvenient limit for modern computers.

5.2 INSTALLING WINDOWS

5.2.1 Windows XP

Prepare Your Computer

Turn off your power supply and monitor. Unplug the power supply. Now unplug everything from the back of the computer. Take the left side (as you look at the front) of the computer case off. On some cases the top and sides are one piece, if so remove the whole thing. Vacuum the inside of the computer, especially around the fans. It may be necessary to remove the front cover to adequately clean in front of the front fan. A can of compressed air helps tremendously with this.

This is a great time to add any hardware!

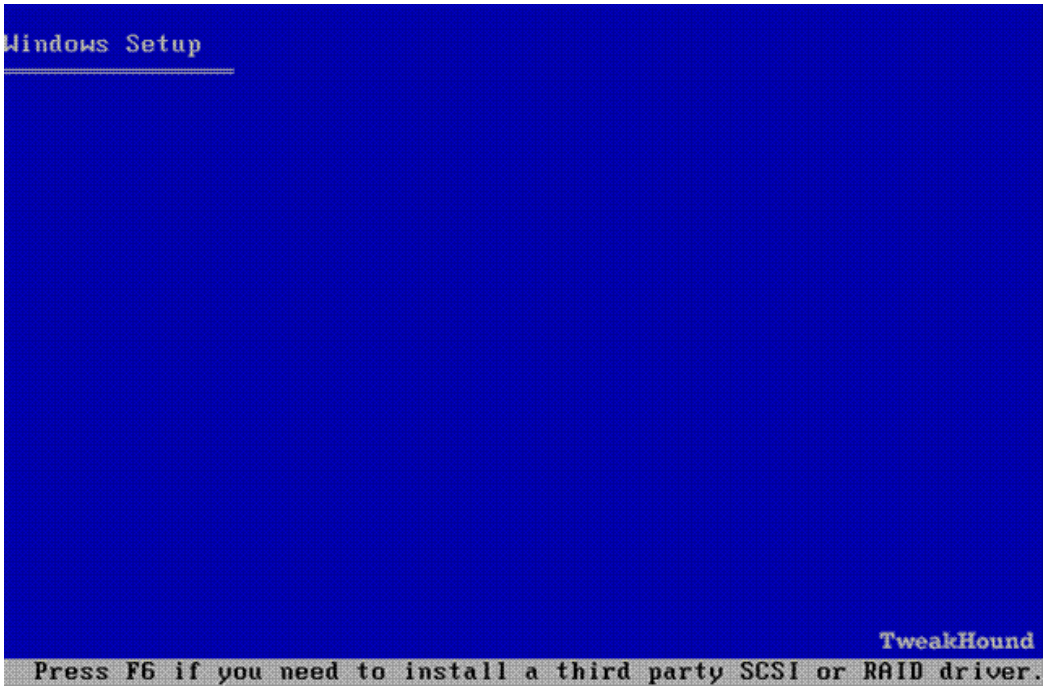
Put it all back together. Plug everything back in. Turn on your power supply. Start up the computer and make sure everything works. Shut it off again.

Installation

Start your computer and insert the XP disk. If your computer supports booting from a CD you may need to change the bios startup options. The key you press to access the bios may differ depending on the make of your computer. Most use the DELETE key, if not then it will be one of the FUNCTION keys (F1, F2, etc.) Save changes and exit. If your computer does not support booting from CD then insert the first Windows XP floppy disk.

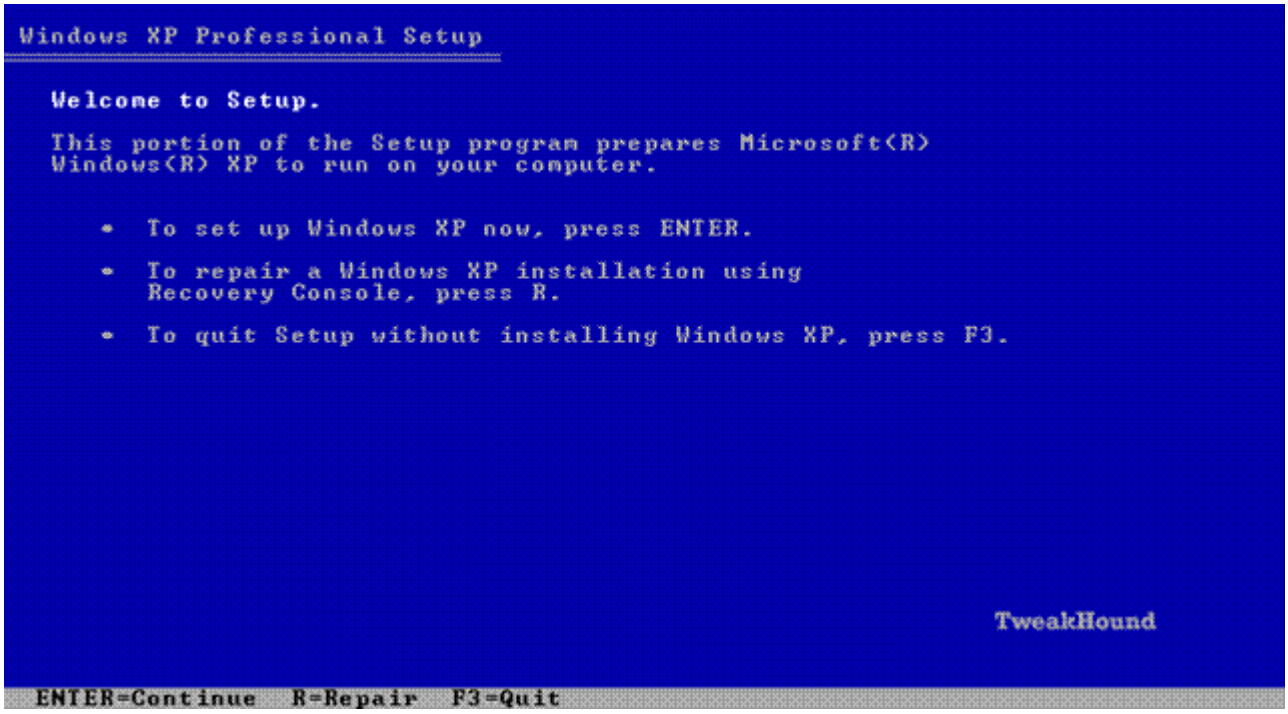
As the system boots you will see a message at the bottom of the screen:

"Press F6 if you need to install a 3rd party SCSI or RAID driver." If you do, follow the instructions.

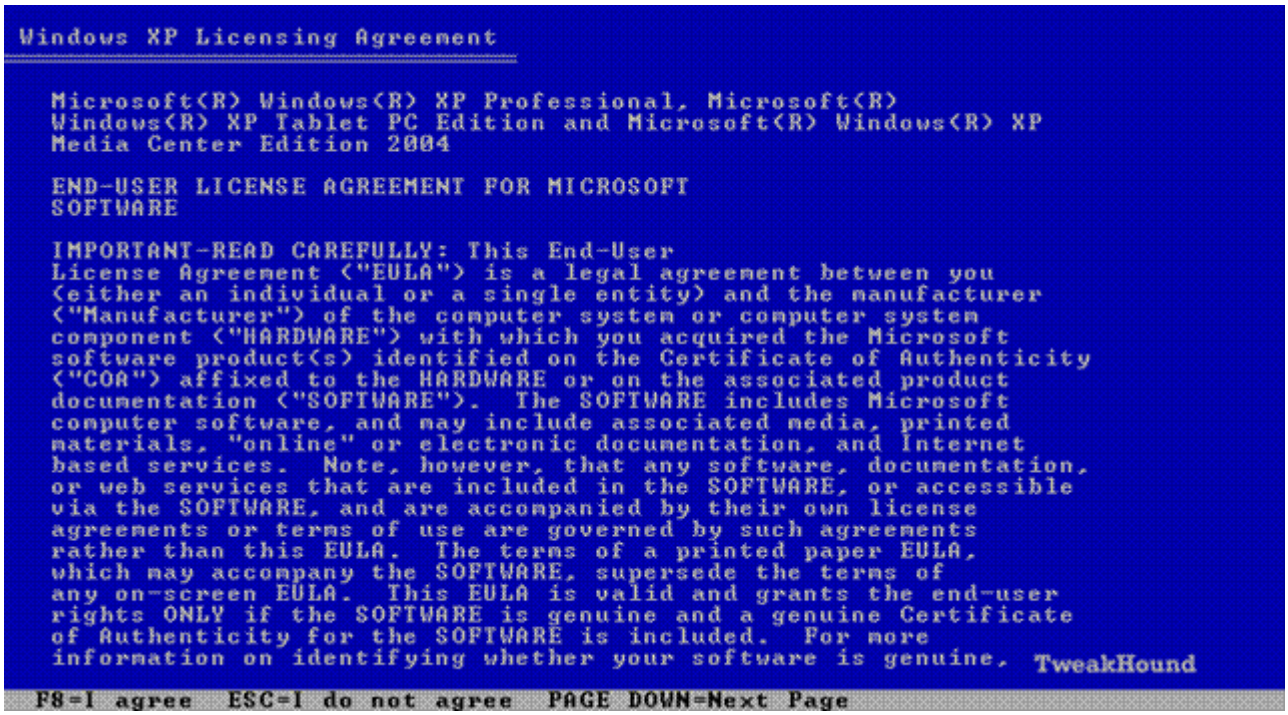


Now setup begins. If you had another Operating System on your computer you will be asked what type of installation you want to perform. NEVER, EVER UPGRADE AN OPERATING SYSTEM!!! You will perform new installation.

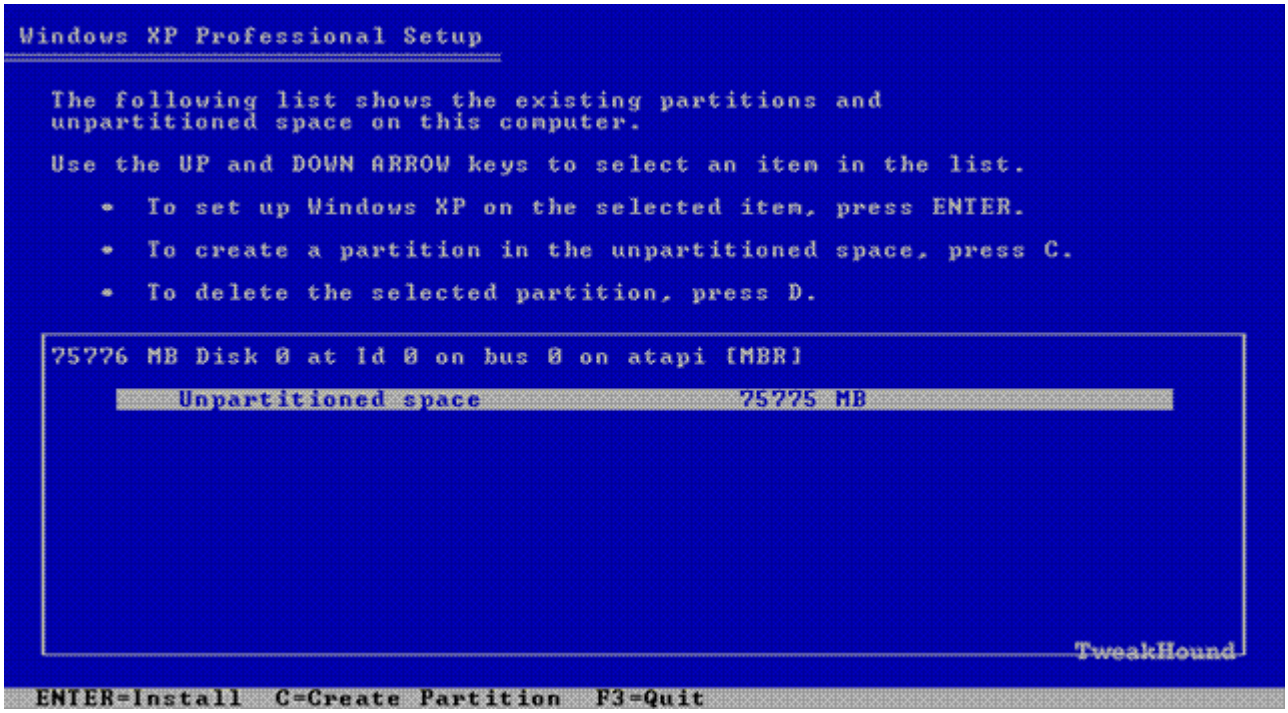
There are many reasons to do a clean installation rather than an upgrade. They all boil down to 2 important ones. Less chance of errors and performance. The following is the statement from Microsoft :



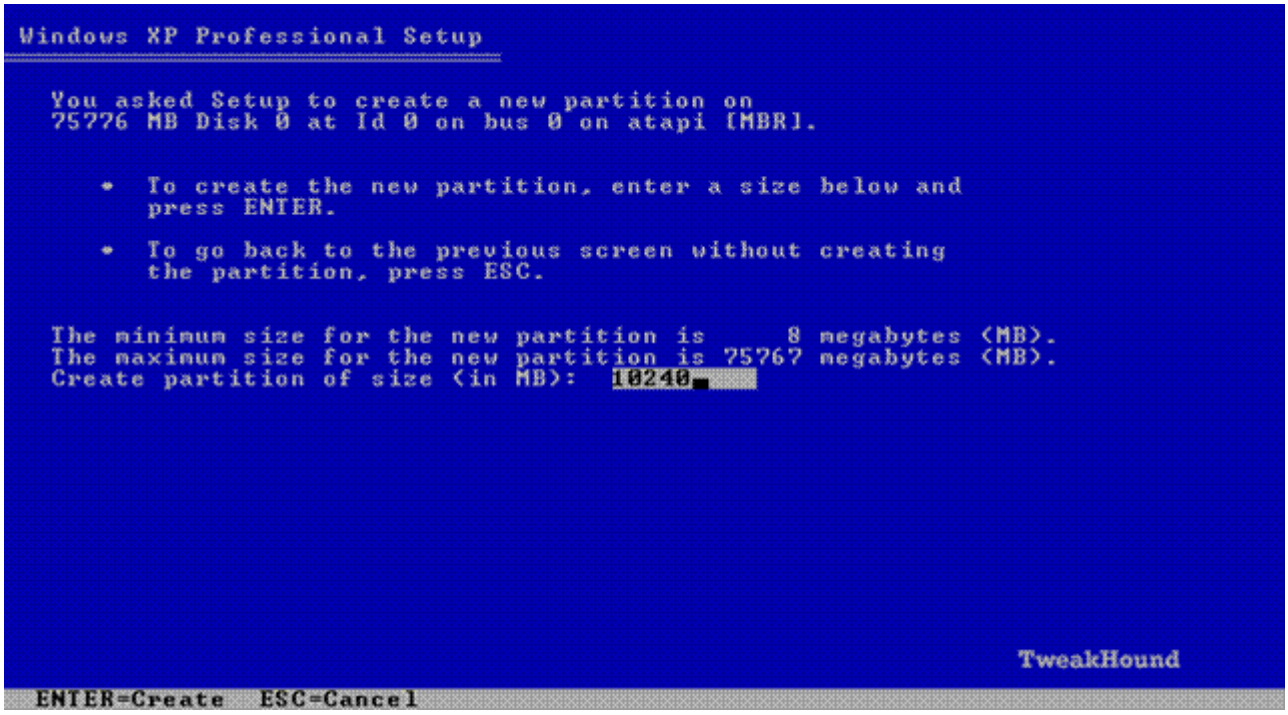
Next comes the ever popular EULA, press F8 and move on.



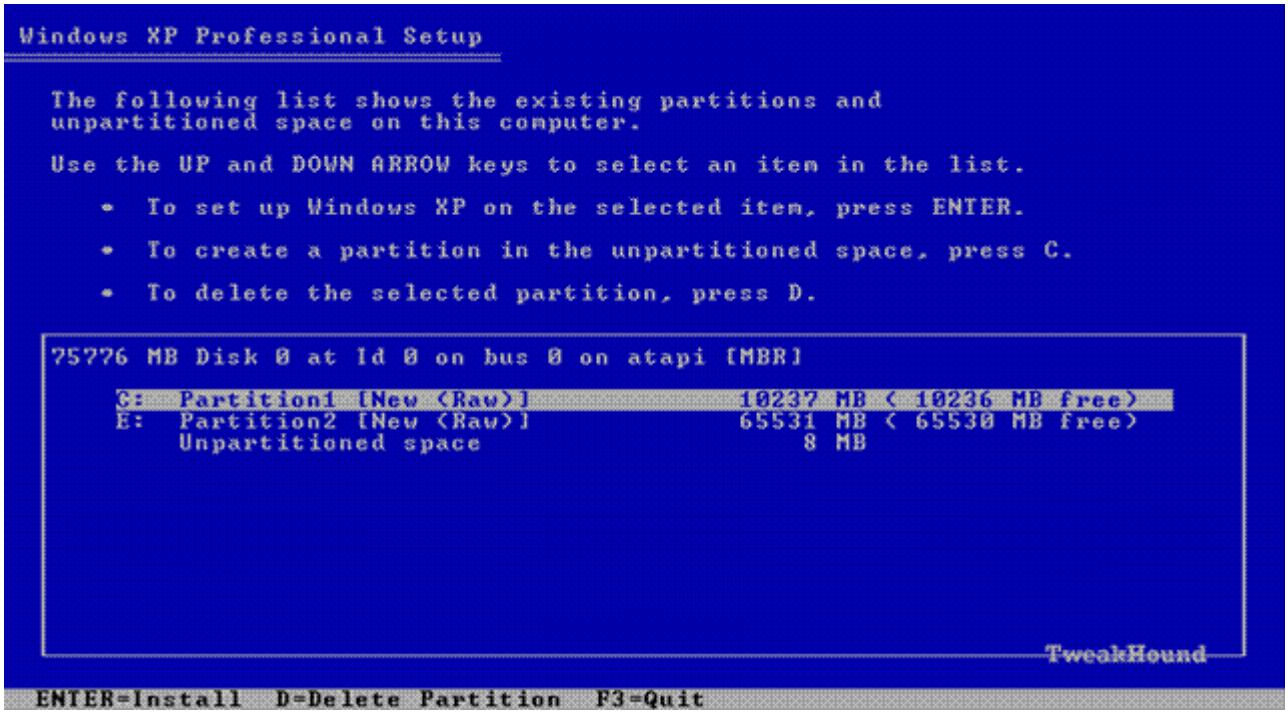
If there are partitions on your drive press D to delete them. Then press C to create a new partition.



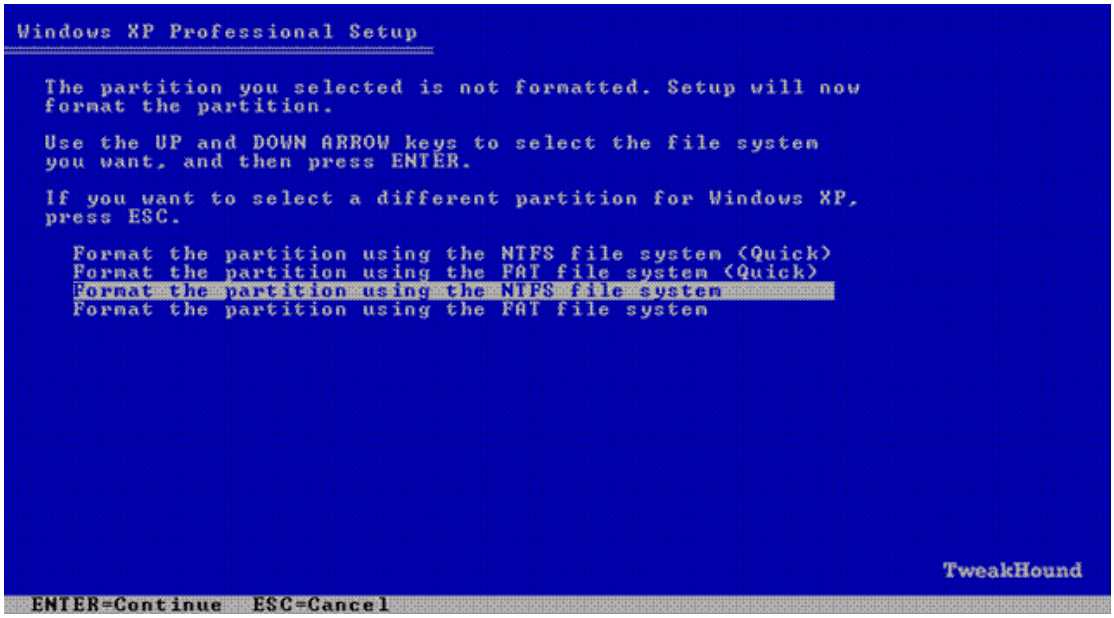
If you create or resize partitions BE CAREFUL, you will destroy data on other partitions if you do this. On a computer with a single hard drive I usually use a partition of around 10gb for Windows XP. I install the applications on the same drive and I use a backup program. It makes things easier. If you desire the utmost speed and efficiency, put Windows XP and the applications on a drive by itself with no other partitions. Given the size of hard drives these days this may be expensive and/or impractical. After pressing C the following screen will appear. Type in a size for your partition and press the Enter key.



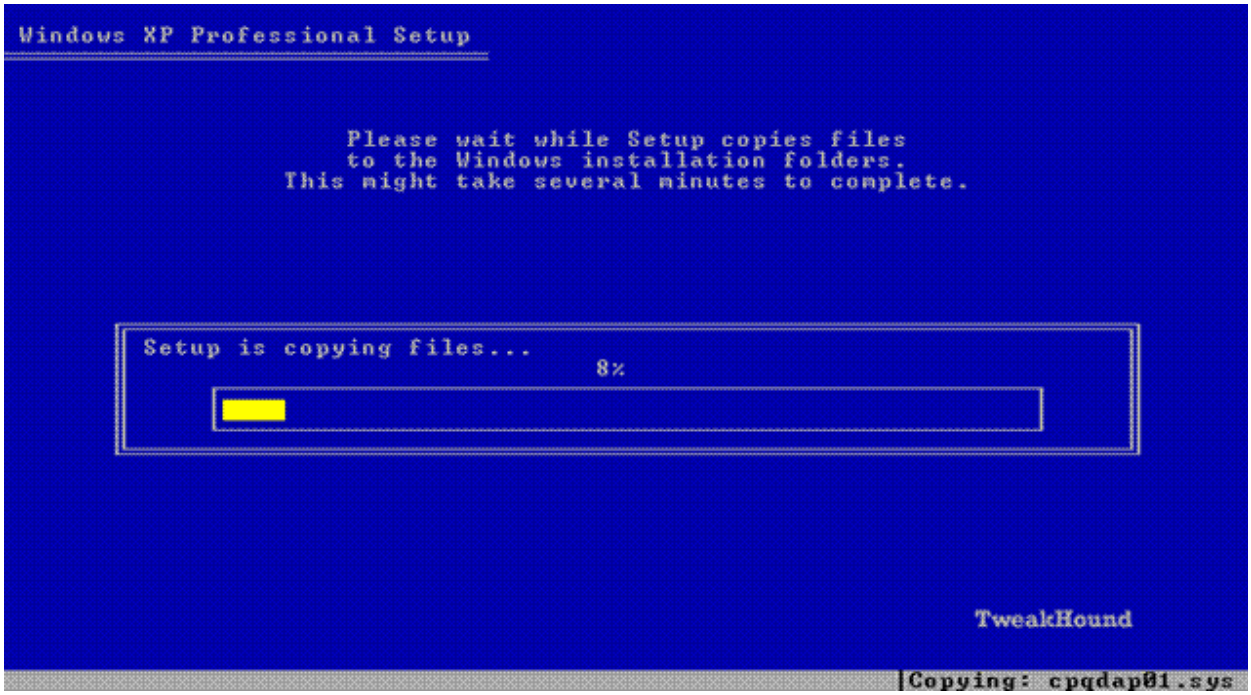
If everything looks right, use the arrow key to highlight the correct partition (should be C:) and press the Enter key.

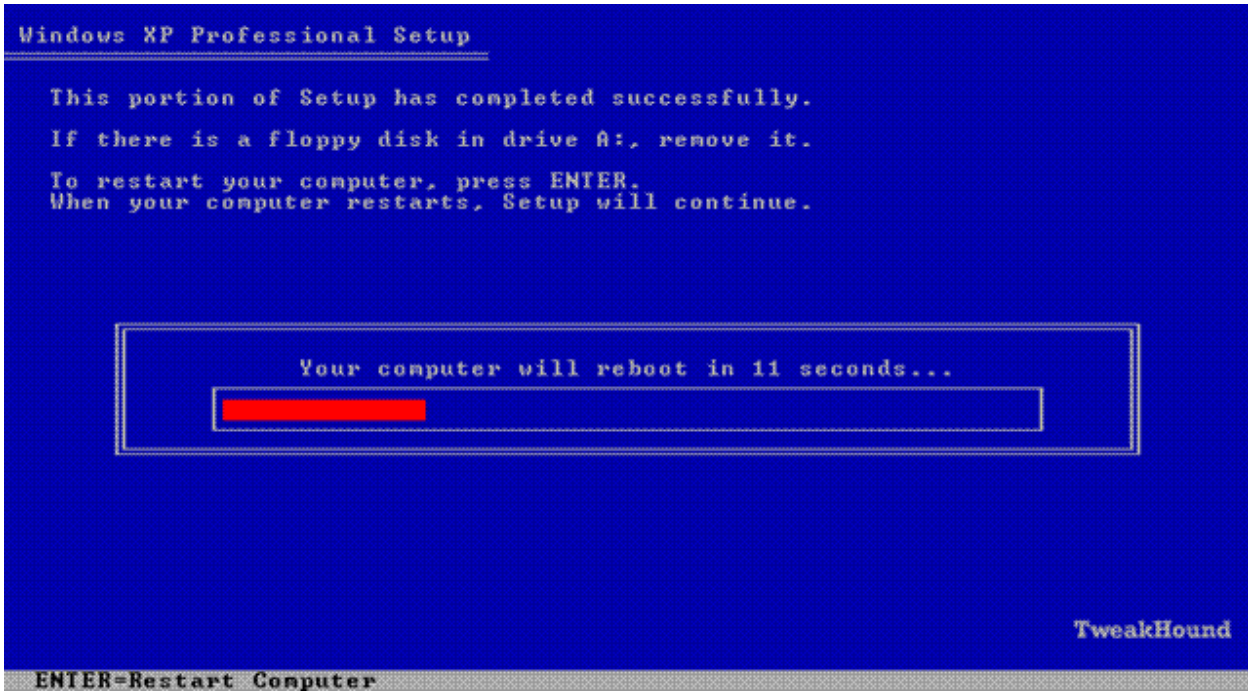


Format this partition using NTFS. *Personally I think it's best not to use the "Quick" option. Using the standard option checks the disk for bad sectors. This will take a while. Some people have asked "I've heard that FAT32 is faster, why use NTFS?" First NTFS is only about 1-2% slower than FAT32 and only on drives/volumes 32GB in size or smaller. It is faster because of the overhead created by the security of NTFS. Second, you can eliminate the majority of that overhead by following my tweak guide. Third, the aforementioned security is exactly why you should use NTFS!*



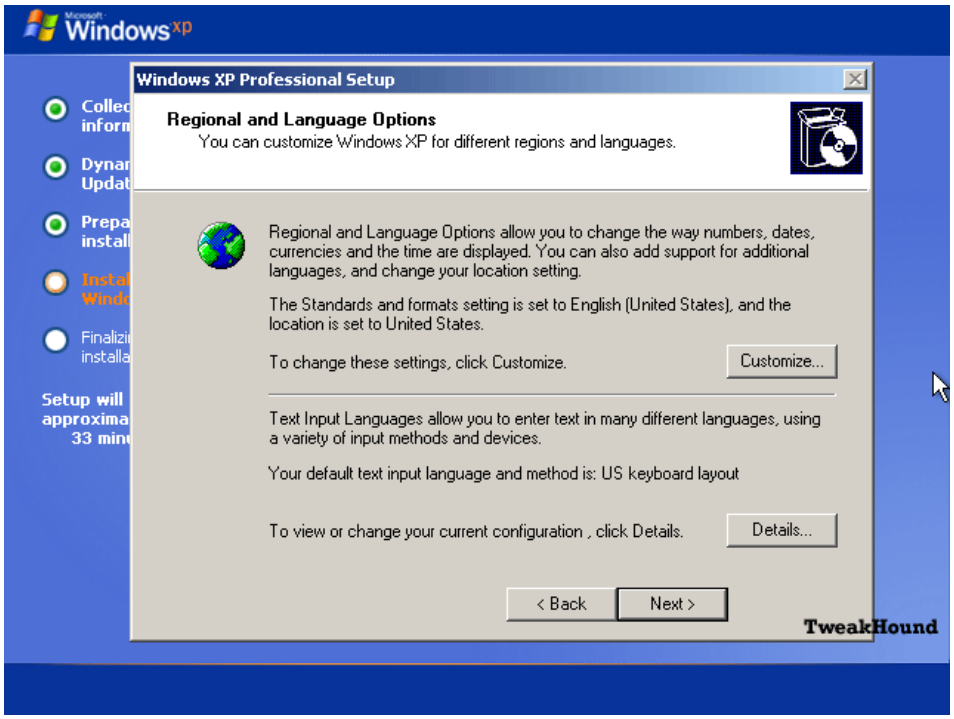
After formatting the setup files will be loaded and the system will reboot. At this point if you had a floppy in the drive then remove it.



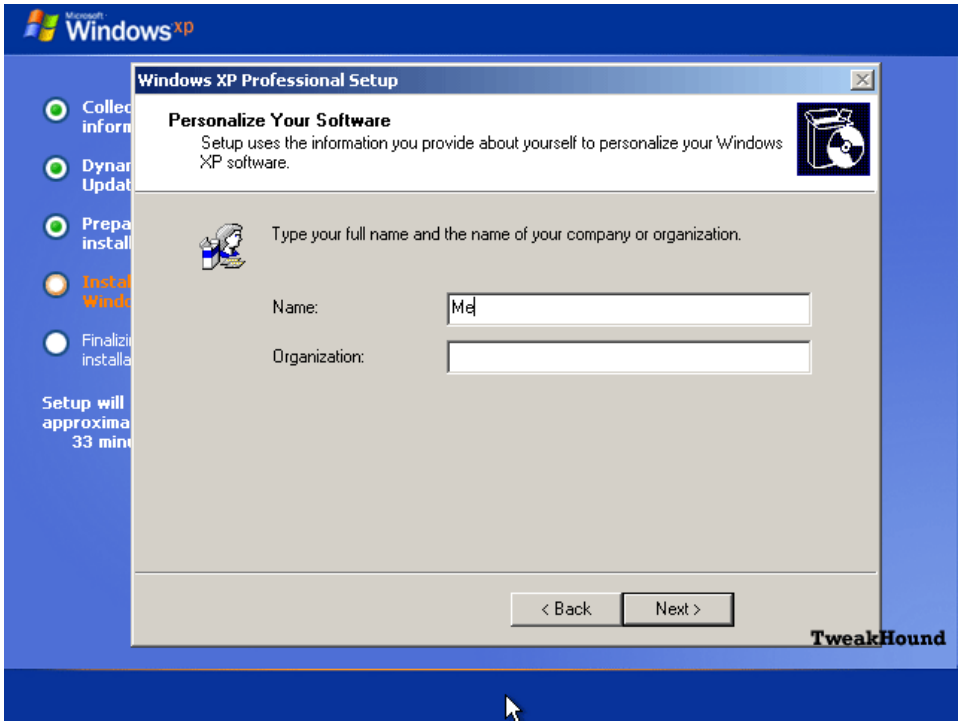


As setup begins you'll be asked to fill in some info. Most are self-explanatory. Click on the Thumbnails for larger views if you desire.

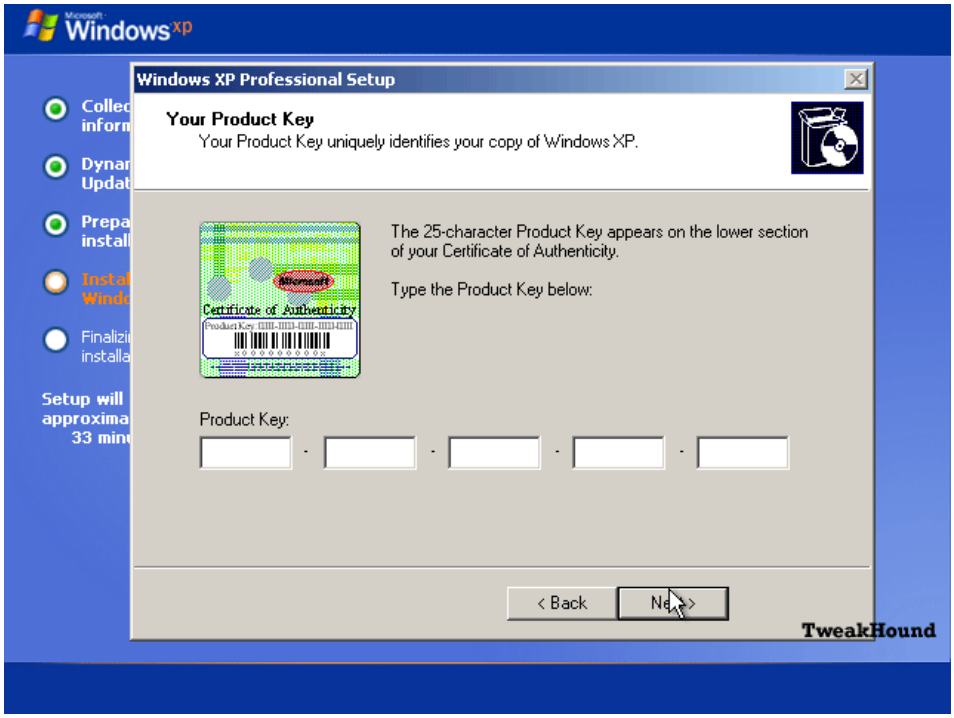
Windows will ask for Region and Language (the default is U.S., English)



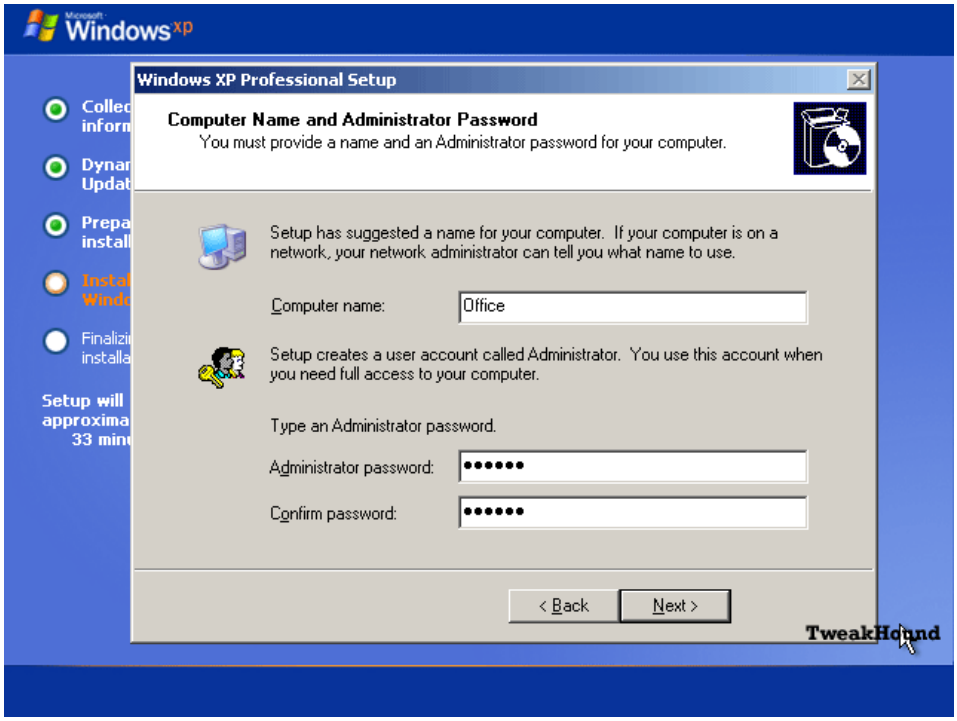
Your Name. First name will do.



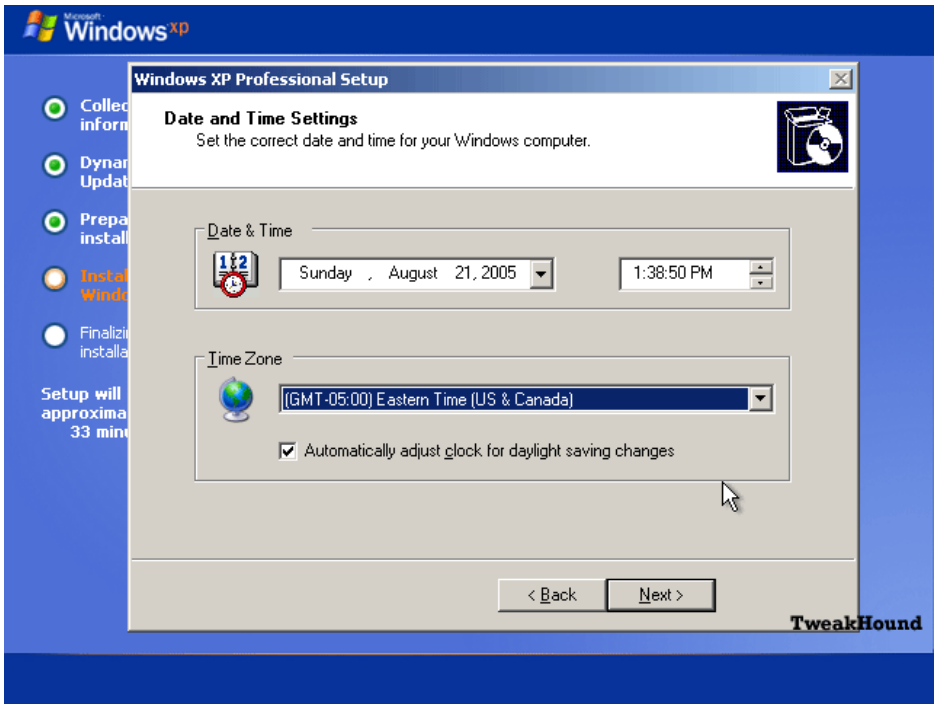
Your CD shipped with a Product Key. Enter it now.fa



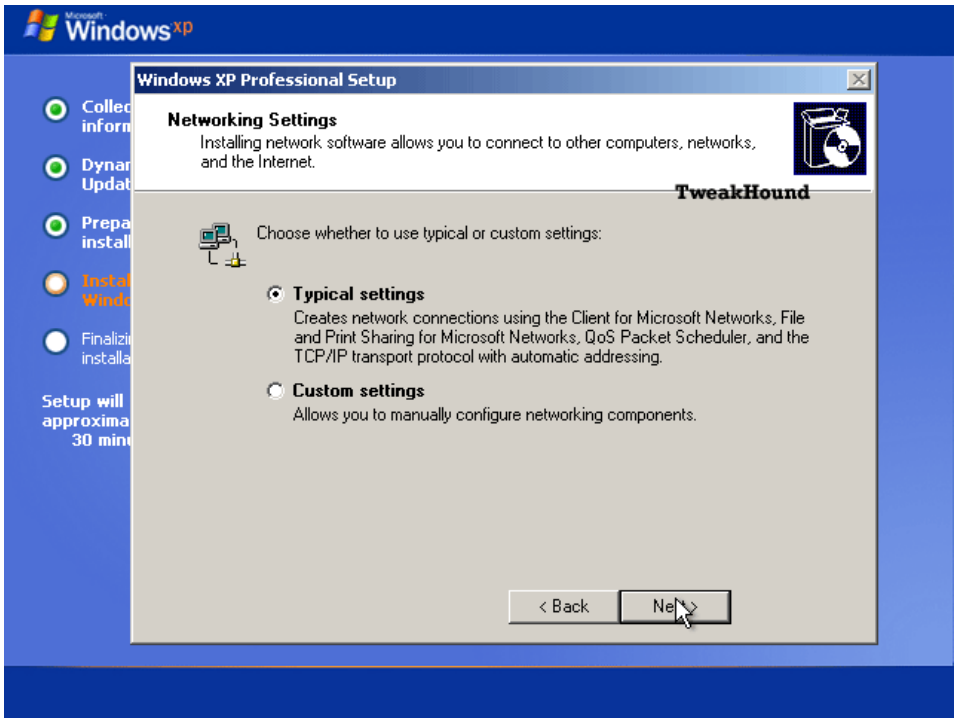
Computer Name and Administrator Password



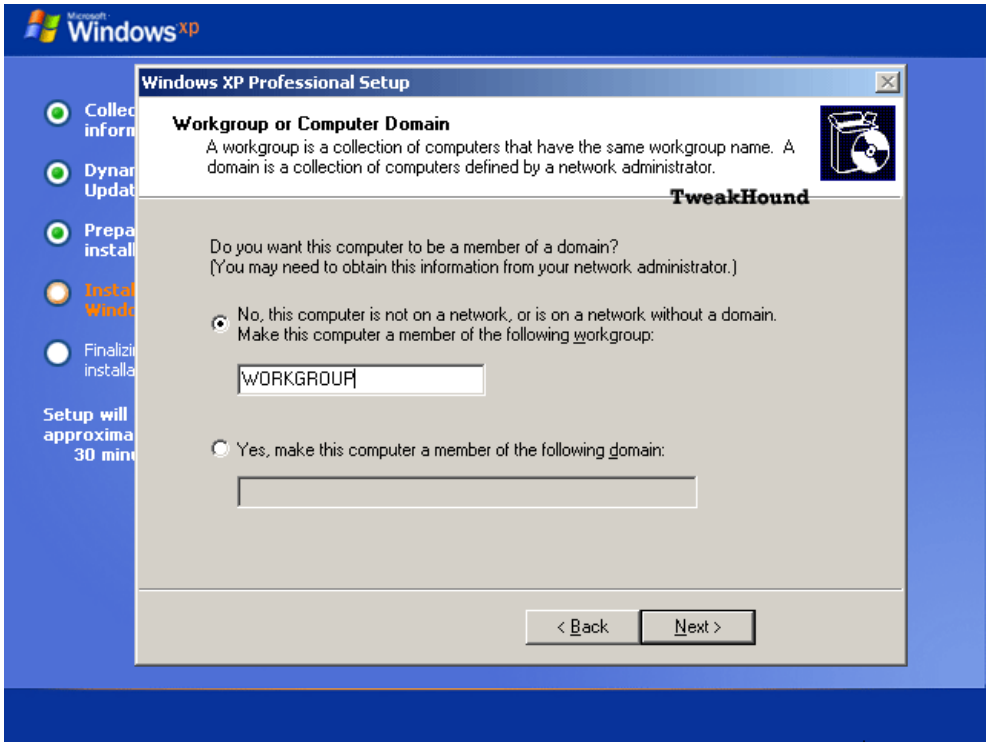
Time Zone, Date & Time



Network Settings. Leave it as is.



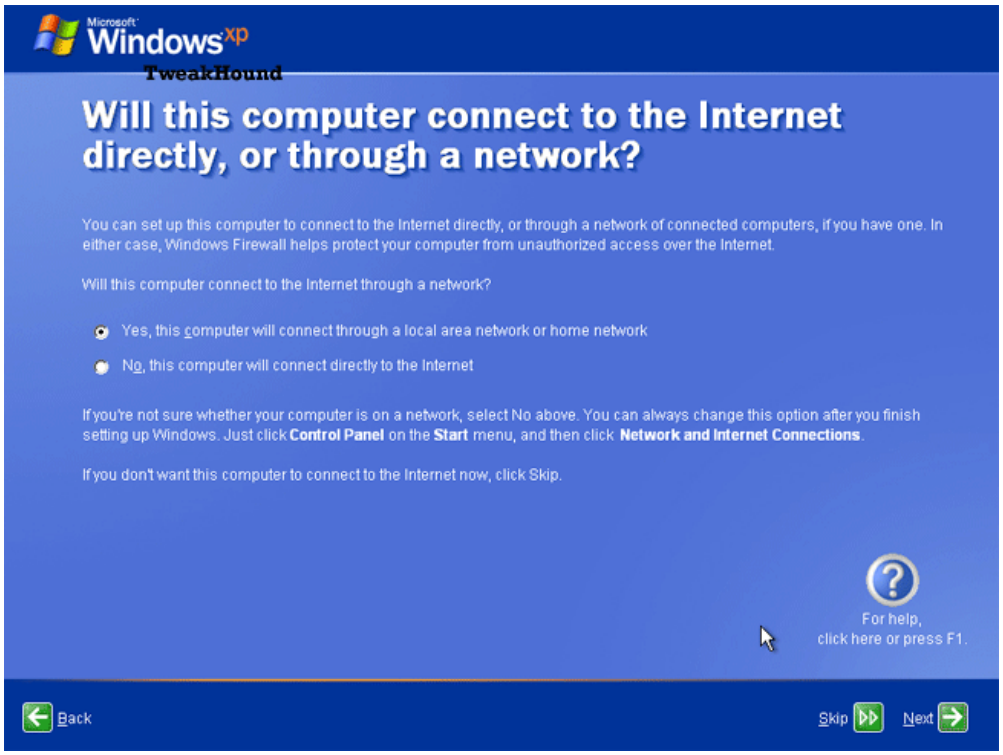
Type in your workgroup name or leave as is if you don't have one.



When the basic install is finished you'll see this screen. Click Next.

Choose your poison and click Next.

Choose your poison and click Next.

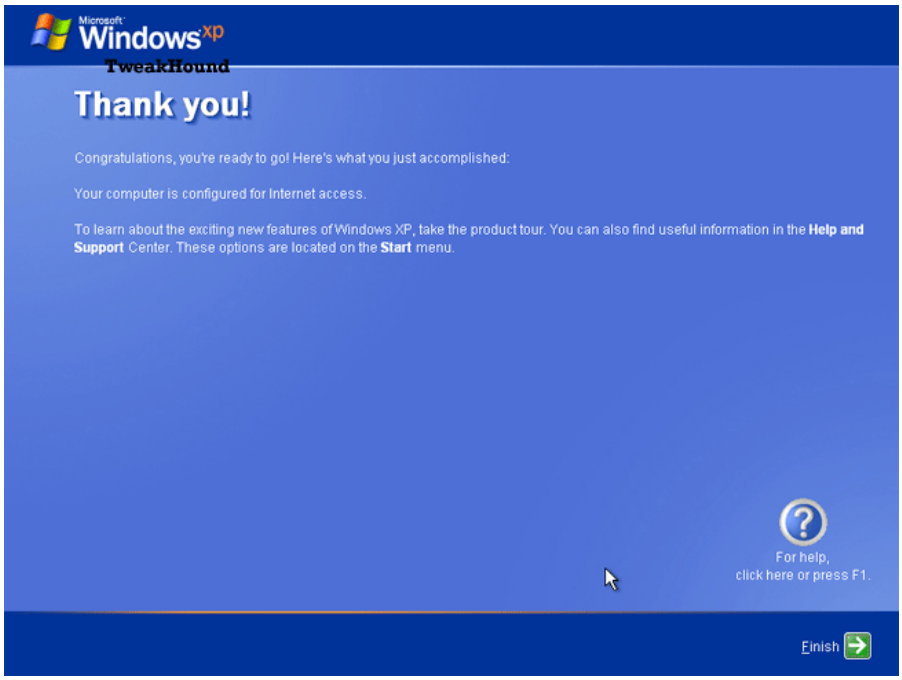


Absolutely DO NOT Activate yet! Click Next.

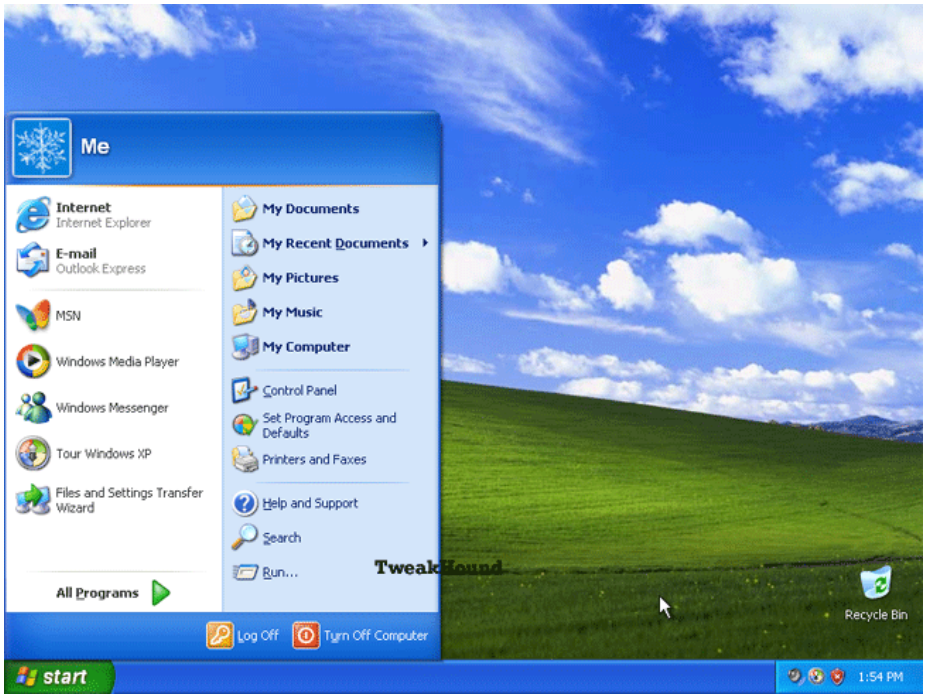
Fill in the appropriate info and click Next.


Microsoft Windows xp
TweakHound
Who will use this computer?
Type the name of each person who will use this computer. Windows will create a separate user account for each person so you can personalize the way you want Windows to organize and display information, protect your files and computer settings, and customize the desktop.
Your name:
Me
2nd User:
3rd User:
4th User:
5th User:
These names will appear on the Welcome screen in alphabetical order. When you start Windows, simply click your name on the Welcome screen to begin. If you want to set passwords and limit permissions for each user, or add more user accounts after you finish setting up Windows, just click Control Panel on the Start menu, and then click User Accounts.
For help, click here or press F1.
Back
Next

Finished!


Microsoft Windows xp
TweakHound
Thank you!
Congratulations, you're ready to go! Here's what you just accomplished:
Your computer is configured for Internet access.
To learn about the exciting new features of Windows XP, take the product tour. You can also find useful information in the Help and Support Center. These options are located on the Start menu.
For help, click here or press F1.
Finish

What the first screen looks like:



5.2.2 Windows 7

The **Windows 7** is finally here. It's released for beta testers a few days ago and I am here with a small step by step picture guided tour through the installation process. I downloaded the x86 version of the M3 build (build No: 6801) from Microsoft Connect site, which is 2.72 GB ISO. The x64 version is around 3.2 GB in size.

The installation process was just like vista setup and to my surprise completed in just around 20 minutes in my low end Virtual hardware. This surely indicates the performance improvements Microsoft has put on this windows vista replacement.

Setting up your Computer & BIOS changes (If required)

Now reboot your computer after popping in the all new Windows 7 DVD you just created in to the DVD Drive. In most cases if you do this you'll automatically boot in to the Windows 7 Installation DVD. But in some cases if the Boot device order is changed in the BIOS it may boot in to your older OS, instead of our DVD. In that case you'll need to change the BIOS settings to gt it done (More details in a different tutorial).

Booting Up and First Installation Steps

Steps from here are pretty straight forward. Read the descriptions in each pages before clicking the **Next** button to avoid any disasters. IF there is options to choose in these steps you may find them with each image.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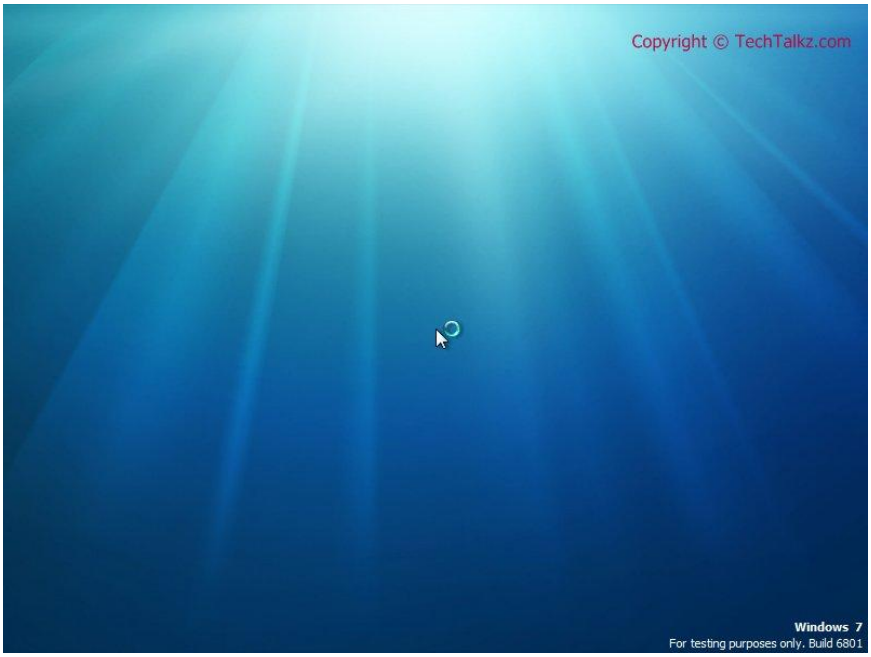
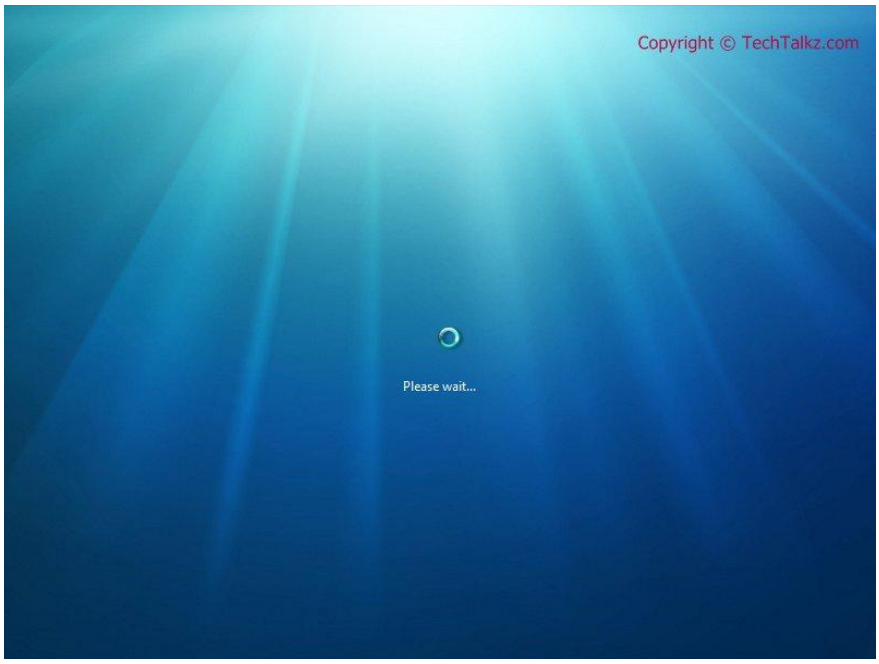
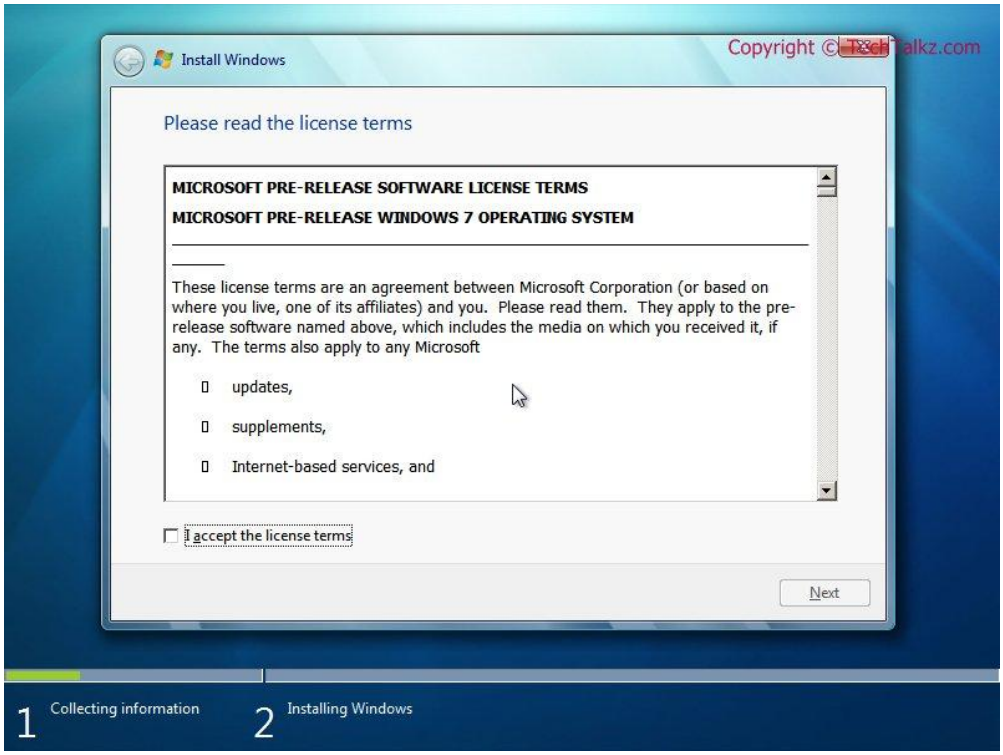

Copyright © TechTalkz.com
Windows 7
For testing purposes only. Build 6801

You may choose your Language options by selecting the dropdowns 'Language to install', 'Time and Currency format' and 'Keyboard or input method' here. I decided to leave everything to 'US' but it would be better for selecting the correct settings here for non-english users.

This screen is where the installation wizard begins. The install now options will leads to the

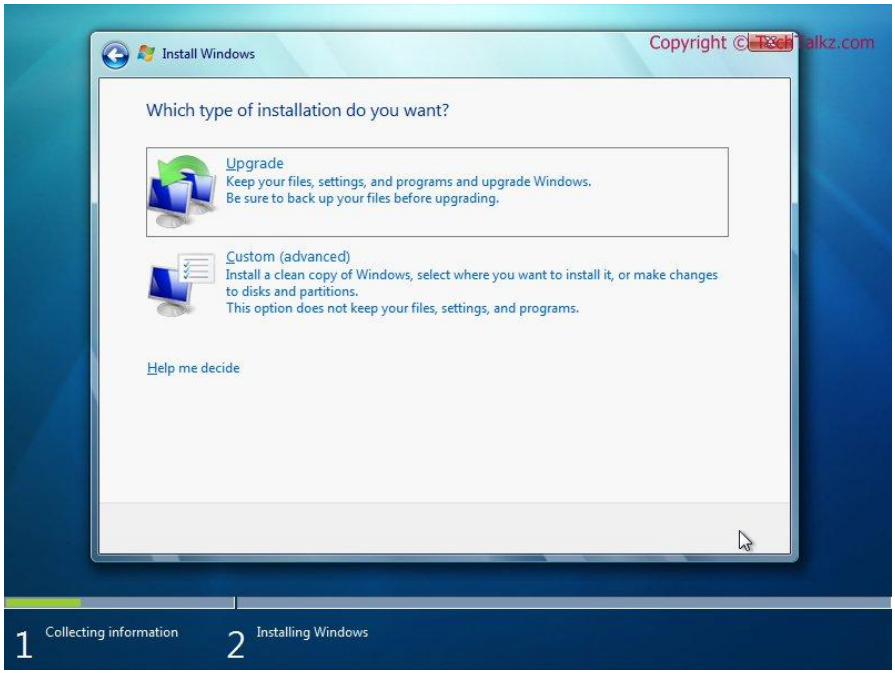
advanced install options. For repairing a corrupt installation the 'Repair your computer' button located at the bottom-left can be used. For fresh installs just click the **Install now** button.





Tick the 'I accept the license terms' checkbox and click 'Next' to proceed.

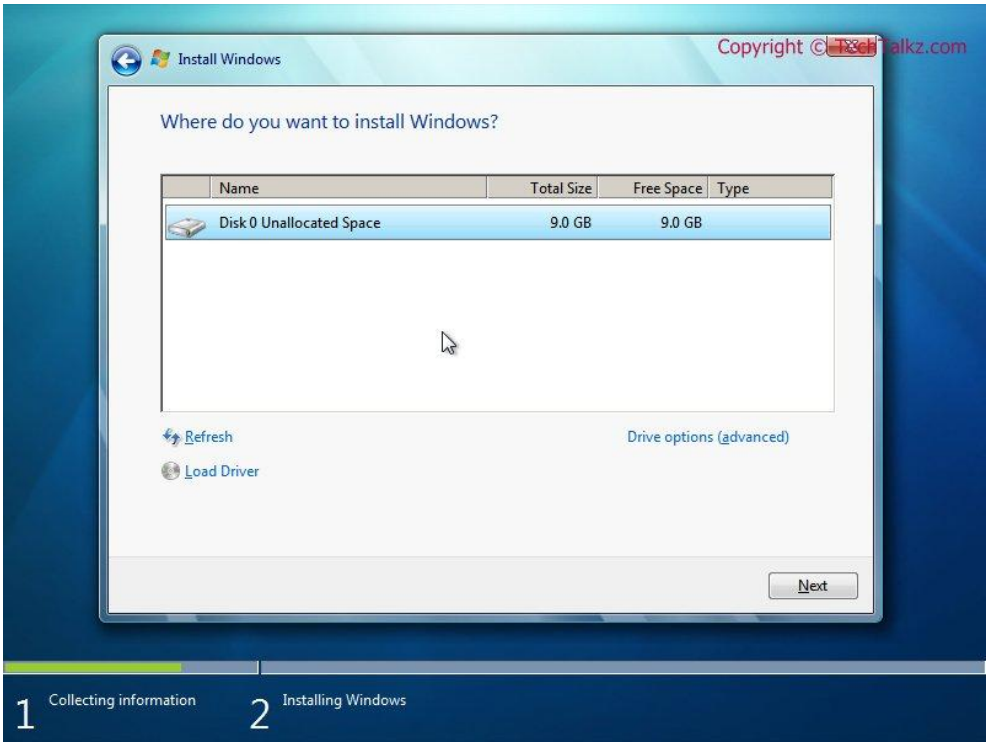
Which type of installation do you want?



This screen provides two options, **Upgrade** and **Custom (advanced)**. The upgrade option is for those who wish to upgrade an existing installation of older version of Windows to Windows 7. It is confirmed that Windows Vista can be upgraded to Windows 7 with out any issues, but Windows XP is still a problem.

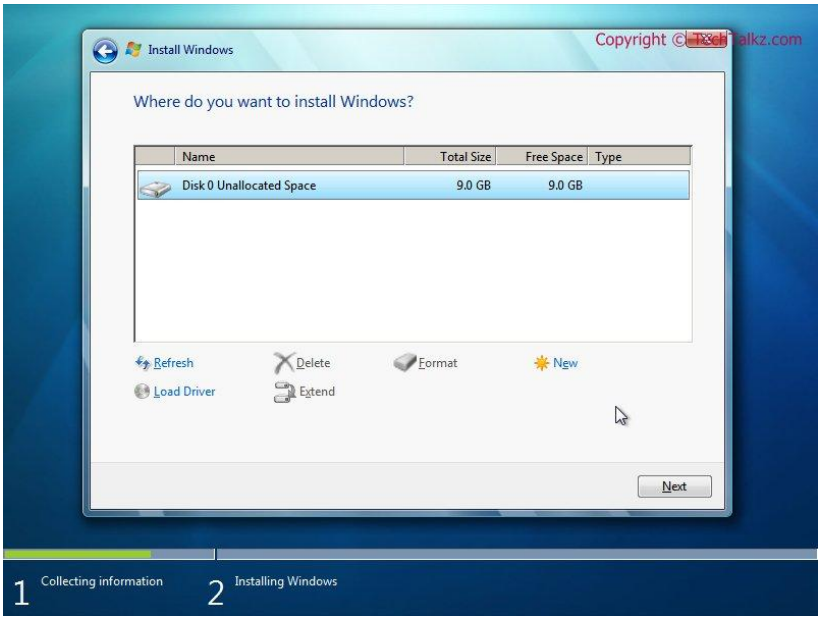
We will opt for the second option here, the **Custom** install.

Where do you want to install Windows?

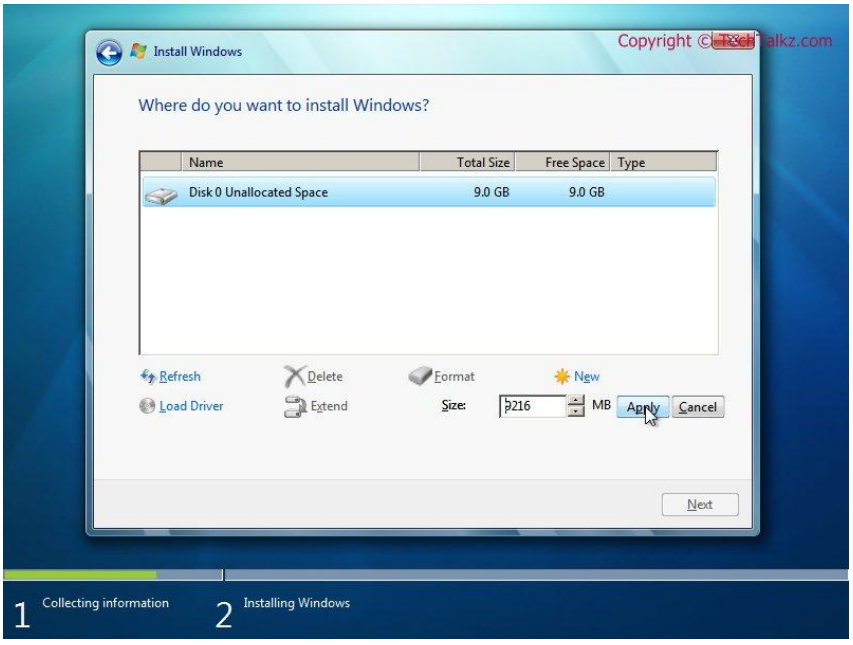


Clicking on the 'Custom' button brings the install location selection screen. In the test machine we have an un-partitioned empty disk. But in the case of a normal installation all your hard drive partitions (e.g. C:\ , D:\ etc.) will be listed here. Choose the drive as you like (a 15 GB size is recommended). Make sure the drive doesn't have any important data or the Windows 7 installation will wipe-out the contents of that partition. You can back up the data to another partition (e.g. for installing in D:\ drive move important files from there to say E:\ drive or to an external USB drive) for safe keeping.

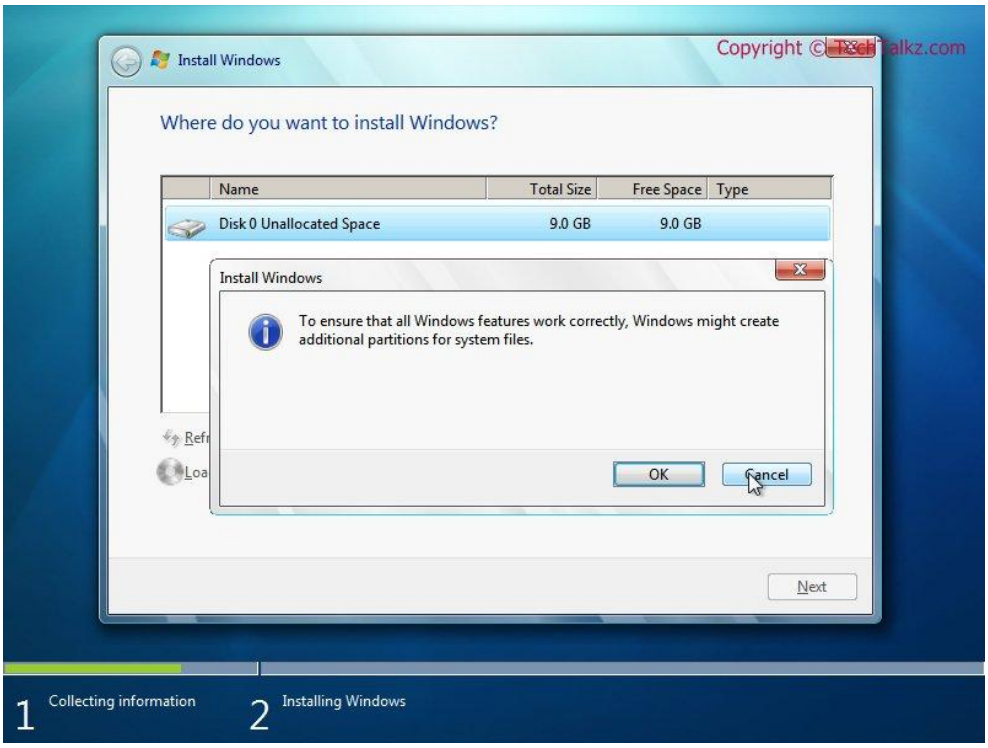
Partitioning /Creating or Modifying Partitions



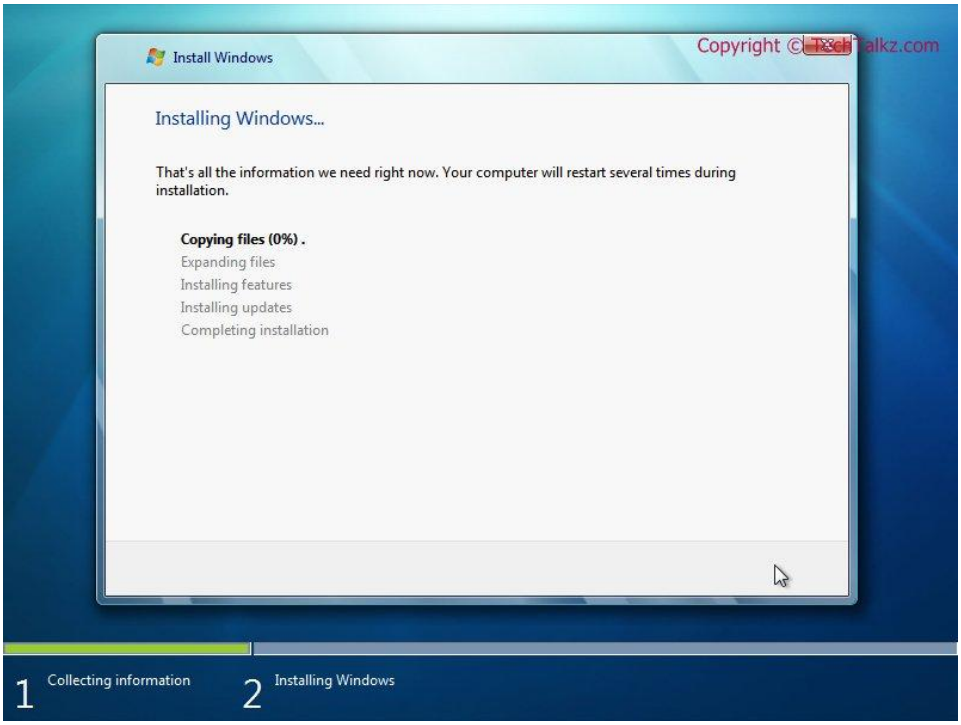
Click the Drive options (advanced) for advanced partition management options like 'Delete', 'Format', 'New' and 'Extend'. To create a new partition click the New button. But if you have list of partitions in the previous screen, choose the one where you are planning to install windows 7 and click Format. Then click 'Next' to proceed.



The 'New' option provides a text box to enter the size of the partition you wish to create in MBs. A 15 GB (15*1024 = 15360 MB) is recommended. In this case I opted for the full size of my virtual drive, i.e. 9216 MB. Click the Apply button to continue. You may be greeted with a message To ensure that all Windows features work correctly, windows might create additional partitions for system files. . This is a new feature in Windows 7 to have a small boot partition for system files. Click Okto continue.



So here we are, A new primary partition of 8.8 GB is created along with a System type partition of 200 MB. Select the partition you just created and click Next to continue.



5.2.3 installing device drivers

In computing, a **device driver** (commonly referred to as simply a **driver**) is a computer program that operates or controls a particular type of device that is attached to a computer. A driver provides a software interface to hardware devices, enabling operating systems and other computer programs to access hardware functions without needing to know precise details of the hardware being used.

A driver typically communicates with the device through the computer bus or communications subsystem to which the hardware connects.

Below are some general insights to help prevent any additional frustration that may be encountered while installing drivers.

Materials Needed:
- Computer
- Internet connection
- Optical drive
- Removable storage

Step 1

There are various ways how to install a device driver. To download from a website, proceed to the next step. To install from an optical media, go to step 4. To use other removable storage types, jump to step 6.
Step 2
Launch your web browser and go to the website of the manufacturer of your hardware or use any search engine like Google or Yahoo! to search for the appropriate device driver.
Step 3
Save the file to a folder in your hard drive. Upon completion of the download process simply run the device driver to install it.
Step 4
To install a device driver from the accompanying CD media, simply insert it into the CD or DVD drive of your machine.
Step 5
An installation program will be launched which will initiate the process. Simply follow the prompts that will appear on the screen to complete the setting up of the appropriate device driver. The installation program will also terminate automatically once the process is completed.
Step 6
Device drivers may also be distributed using removable storage like flash drives. These types usually represent driver updates to take advantage of functions in newer Operating System platforms. Insert the flash drive in the appropriate port.
Step 7
Wait for the Operating System to recognize the removable storage media. The process may start immediately the installation process.
Step 8
If the installation does not begin automatically, simply open the explorer program and navigate to the appropriate drive. Locate the executable file which will launch the device driver application.
Step 9
Make sure to choose the correct version which corresponds to your Operating System. Follow the onscreen prompts until the process is completed.
Step 10
In all device driver installation procedures, make sure to scan the files with your protection software before beginning the process. Once the device driver has been successfully installed into the system, reboot the machine to ensure all changes are reflected in the

and double-click the Add hardware icon to run the hardware detection wizard. During the steps you have the option to tell Windows you have a disk containing the drivers for your new hardware device, at this point Windows to the directory containing the drivers for your device.

Once drivers have been installed reboot.

Upgrading drivers for pre-existing device

1. Open Windows Device Manager.
2. In the Device Manager locate the device you want to update.

3. Right-click the device and click Properties.
4. In the Properties window click the Driver tab.
5. Click the Update Driver button.
6. In the Hardware Update Wizard point Windows to the location of the updated drivers on your hard drive

Once drivers have been installed reboot.

Install through the .inf file

Finally, if the above recommendations do not work the installation instructions for drivers and hardware devices are always contained in a .inf file that is located within the drivers.

Locate the .inf for your version of Windows, right-click that file and choose the option for install. Note this is a very raw form of installing a drivers and it is important that you make sure you are installing the correct .inf file and not a .inf file for another device or for a different version of Windows.

Once you have right-clicked and installed the driver, reboot the computer.

One of the above three recommendations should have installed or updated the drivers successfully onto the computer. If you are still having difficulties getting the device to install it's possible you are not encountering a hardware issue and not an issue with the drivers. Refer to the troubleshooting steps for your hardware device for additional help and information.