INFORMATION SHEET No. 2.2

Installers Preparations and OS Installation Procedures

Learning Objectives: After reading this information sheet, the learner is expected to:

1. Explain the operating systems function.
2. Understand the function of an operating system.
3. Demonstrate understanding on how to create and prepare an OS.

An operating system is the most important software that runs on a computer. It manages the computer's memory and processes, as well as all of its software and hardware. It also allows you to communicate with the computer without knowing how to speak the computer's language. Without an operating system, a computer is useless.

Computer Operating System is a computer program or software that is needed by the computer to function properly. OS also provides a graphical user interface (GUI) to the user so it can easily be used to operate. Operating System also requests the task to the hardware to do whatever the user instructs to the machine such as printing etc.

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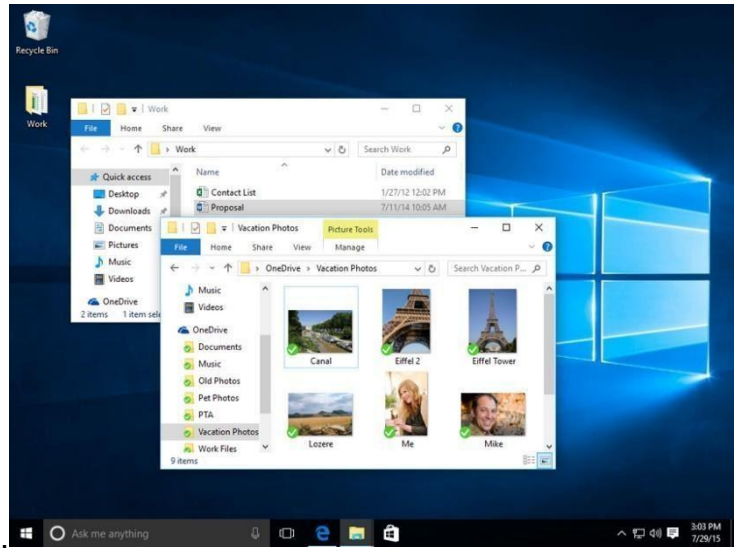
The Operating System's Job

Your computer's operating system (OS) manages all the software and hardware on the computer. Most of the time, there are several different computer programs running at the same time, and they all need to access your computer's central processing unit (CPU), memory, and storage. The operating system coordinates all of this to make sure each program gets what it needs.

Types Of Operating Systems

Operating systems usually come pre-loaded on any computer you buy. Most people use the operating system that comes with their computer, but it's possible to upgrade or even change operating systems. The three most common operating systems for personal computers are Microsoft Windows, macOS, and Linux.



Modern operating systems use a graphical user interface, or GUI (pronounced gooey). A GUI lets you use your mouse to click icons, buttons, and menus, and everything is clearly displayed on the screen using a combination of graphics and text.

Each operating system's GUI has a different look and feel, so if you switch to a different operating system it may seem unfamiliar at first. However, modern operating systems are designed to be easy to use, and most of the basic principles are the same.

Microsoft Windows

Microsoft created the Windows operating system in the mid-1980s. There have been many different versions of Windows, but the most recent ones are Windows 10 (released in 2015), Windows 8 (2012), Windows 7 (2009), and Windows Vista (2007). Windows comes preloaded on most new PCs, which helps to make it the most popular operating system in the world

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macOS

macOS (previously called **OS X**) is a line of operating systems created by Apple. It comes preloaded on all Macintosh computers, or Macs. Some of the specific versions include **Mojave** (released in 2018), **High Sierra** (2017), and **Sierra** (2016).

According to **StatCounter Global Stats**, macOS users account for less than **10%** of global operating systems—much lower than the percentage of Windows users (more than **80%**). One reason for this is that Apple computers tend to be more expensive. However, many people do prefer the look and feel of macOS over

Windows.

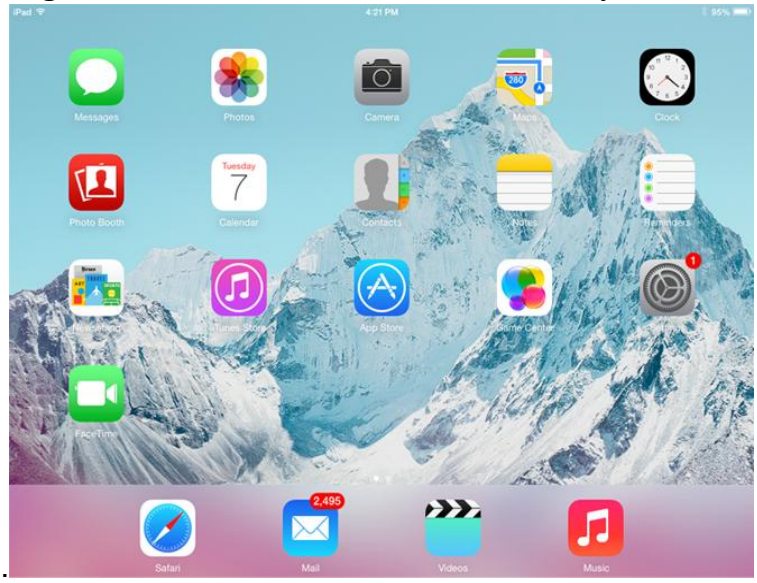
Linux

Linux (pronounced **LINN-ux**) is a family of **open-source** operating systems, which means they can be modified and distributed by anyone around the world. This is different from **proprietary software** like Windows, which can only be modified by the company that owns it. The advantages of Linux are that it is **free**, and there are many different **distributions**—or versions—you can choose from.

According to **StatCounter Global Stats**, Linux users account for less than **2%** of global operating systems. However, most **servers** run Linux because it's relatively easy to customize.

Operating Systems For Mobile Devices

The operating systems we've been talking about so far were designed to run on **desktop** and **laptop** computers. **Mobile devices** such as **phones**, **tablet computers**, and **MP3 players** are different from desktop and laptop computers, so they run operating systems that are designed specifically for mobile devices. Examples of mobile operating systems include **Apple iOS** and **Google Android**. In the screenshot below, you can see iOS running on an iPad.



Operating systems for mobile devices generally aren't as fully featured as those made for desktop and laptop computers, and they aren't able to run all of the same software. However, you can still do a lot of things with them, like watch movies, browse the Web, manage your calendar, and play games.

How to Prepare your Installer and Program

1.

Check your system requirements

2.

-

Confirm that your computer meets the minimum system requirements for that product.

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Note: If you are running Windows, make sure to download/install the version that matches your operating system (32-bit or 64-bit).

2. **Make sure about the legitimacy**

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In some operating systems activation is usually automatic. However, if you are prompted for your serial number and product key before you can run the product, you can find the information you need in your CD case or package.

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Note: Product key and serial number is important so make sure that you keep it.

Computer Preparation Procedures

How to prepare a computer prior to operating system installation?

Step 1: Check the computer if all physical connections are intact.

Step 2: Make sure that the computer is properly connected to the power source.

Step 3: Make sure every personal files in the computer is backed-up using backup software or my simply copying all the personal files to a USB flash drive / USB external drive, network drive or to another partition of a computer.

Step 4: After backing up, create a bootable CD / DVD / USB operating system installer.

How to Install an Operating System?

The steps for installing an operating system, like Linux or Microsoft Windows, depends on the operating system version you are installing. Each version has different steps and options that are unique to that operating system.

General Steps and Guidelines for Installing an Operating System on Your Computer.

Purchase the operating system

First, you need to purchase the operating system that you want to install on the computer. The best place to purchase the operating system from is a retail store, like Best Buy, or through an online store, like Amazon or Newegg. The operating system may come on multiple CD or DVD discs, or it may even come on a USB flash drive.

Downloading a copy of the operating system is usually the most convenient way to obtain it. However, be sure you obtain the operating system from the publisher, like Microsoft. Downloading it from another source may result in an unusable or illegal copy of the software.

Install the operating system

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To install the operating system on the computer **using a CD or DVD**, you need to configure your computer to boot from the CD/DVD drive. You can change the boot sequence by accessing the computer BIOS and setting the CD/DVD drive to be the first boot device. Some computers may also allow you to access the boot sequence directly at computer start up, without entering the BIOS, by pressing a specific key on the keyboard. The key to press differs for each computer but is often either the Delete key or one of the function keys at the top.

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If the operating system software came on a USB flash drive, you need to configure the computer to boot to a USB device as the first boot device.

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Once the computer is configured to boot to the proper device, the computer should load the operating system installation program and guide you through the install process. You will be asked questions along the way for configuration of basic settings, like date and time, user account name, and if you want to enable automatic operating system updates. Go through the installation steps, answering questions and selecting the preferred options.

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***Note**: If you are installing a newer version of an operating system that is already on your computer, the installation process should ask if you want to upgrade. If you do not want to install the operating system as an upgrade, you can choose the option to erase the current operating system start fresh.*

Running the operating system

After the operating system has been installed, the computer should load into the operating system. You may then proceed with installing software programs that you want on the computer and updating any settings you want.

INFORMATION SHEET No. 1.5

Basic Computer Configuration Set-Up

Learning Objectives: After reading this information sheet, the learner is expected to:

1. Determine how to configure BIOS
2. Demonstrate Power on self-test

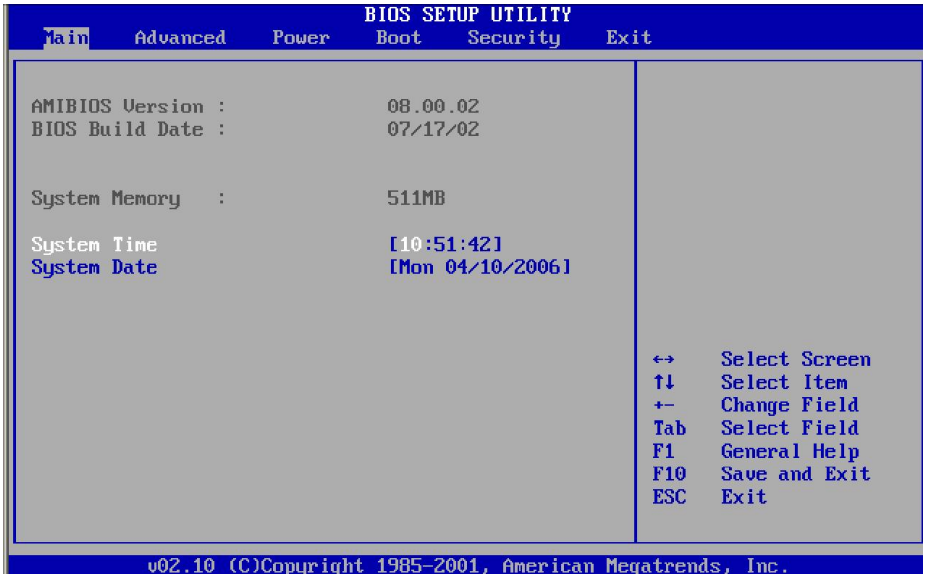
3. Integrate self-discipline and patience in doing the configuration and self-test

Configuration is the way a system is set up, or the assortment of components that make up the system. Configuration can refer to either hardware or software, or the combination of both.

Basic Input / Output System (BIOS)

The Basic Input Output System, usually referred to as BIOS, is software stored on a small memory chip on the motherboard.

BIOS instruct the computer on how to perform a number of basic functions such as booting and keyboard control. BIO is also used to identify and configure the hardware in a computer such as the hard drive, optical drive, CPU, memory, etc.



The BIOS is accessed and configured through the BIOS Setup Utility. The BIOS Setup Utility is, for all reasonable purposes, the BIOS itself. All available options in BIOS are configurable via the BIOS Setup Utility. The BIOS Setup Utility is accessed in various ways depending on your computer or motherboard make and model.

BIOS access and configuration on PC systems is independent of any operating system because the BIOS is part of the motherboard hardware. It doesn't matter if a computer is running Windows 7, Windows Vista, Windows XP, Linux, UNIX, or no operating system at all - BIOS functions outside of the operating system environment and is no way dependent upon it.

BIOS contain a number of hardware configuration options that can be changed through the setup utility. Saving these changes and restarting the computer

applies the changes to the BIOS and alters the way BIOS instructs the hardware to function. The following list shows the things you can do in most BIOS systems:

Change the Boot Order	Enable or Disable the Computer Logo
Load BIOS Setup Defaults	Enable or Disable the Quick Power On Self Test (POST)
Remove a BIOS Password	Enable or Disable the CPU Internal Cache
Create a BIOS Password	Enable or Disable the Caching of BIOS
Change the Date and Time	Change CPU Settings
Change Floppy Drive Settings	Change Memory Settings
Change Hard Drive Settings	Change System Voltages
Change CD/DVD/BD Drive Settings	
View Amount of Memory Installed	
Change the Boot Up NumLock Status	

TESTING INSTALLED EQUIPMENT / DEVICES (COMPONENTS)

You need to adhere to health and safety regulations as they will help to protect you and others and will avoid any unnecessary legal action for reckless and unsafe working practices. If you identify any health and safety problems, you should tell your line manager or the health and safety representative immediately.

The most basic test is to switch the system on to check it starts without errors. ICT professionals are also likely to use tools and utilities to check that all is well with the system after an installation.

The Use of Diagnostic Tools in testing installed hardware components and other peripherals

Diagnostic tools are used to test and diagnose equipment. Diagnostic tools include the following:

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Digital multimeter

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-

Loopback adapter

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-

Toner probe

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Software Tools

Like hardware tools, there are a variety of software tools that can be used to help technicians pinpoint and troubleshoot problems. Many of these tools are free and several come with the Windows operating system.

Disk Management Tools

Software tools help diagnose computer and network problems and determine which computer device is not functioning correctly. A technician must be able to use a range of software tools to diagnose problems, maintain hardware, and protect the data stored on a computer.

You must be able to identify which software to use in different situations. Disk management tools help detect and correct disk errors, prepare a disk for data storage, and remove unwanted files.

The following are some disk management tools:

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FDISK: A command-line tool that creates and deletes partitions on a hard drive. The FDISK tool is not available in Windows XP, Vista, or 7. It has been replaced with the Disk Management tool.

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Disk Management Tool: Initializes disks, creates partitions, and formats partitions.

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Format: Prepares a hard drive to store information.

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ScanDisk or CHKDSK: Checks the integrity of files and folders on a hard drive by scanning the file system. These tools might also check the disk surface for physical errors.

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-

Defrag: Optimizes space on a hard drive to allow faster access to programs and data.

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-

Disk Cleanup: Clears space on a hard drive by searching for files that can be safely deleted.

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-

System File Checker (SFC): A command-line tool that scans the operating system critical files and replaces files that are corrupted.

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Use the Windows 7 boot disk for troubleshooting and repairing corrupted files. The Windows 7 boot disk repairs Windows system files, restores damaged or lost files, and reinstalls the operating system.

Learning Objectives: After reading this information sheet, the trainee is expected to:

1.

Identify the possible sources for the driver.

2.
3.

Recognize what device driver is.

4.
5.

Appreciate the importance of understanding the driver installation process.

6.

-

Configuration is the way a system is set up, or the assortment of components that make up the system.

-
-

Drivers are small software programs that help the operating system use or “drive” the device.

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Device Drivers

A **device driver** is a computer program that controls a particular **device** that is connected to your computer. The main purpose of **device drivers** is to provide abstraction by acting as a translator between a **hardware device** and the applications or operating systems that use it.

When the operating system is successfully installed, you’ll need to configure the devices such as Video Cards, Network Interface Cards, Sound Cards, etc. by installing the device drivers of each. In many cases, if Windows recognizes the device, drivers will be installed automatically. In some cases, generic drivers are installed so that the devices will work properly.

The procedures listed below describe how to obtain and install drivers for hardware devices on a Microsoft Windows 2000-based computer.

OPERATION SHEET 3. 4 Obtaining and Installing Drivers for Hardware Devices Step 1: Determine the Hardware Manufacturer

If you do not know the manufacturer of the device for which you want to install the driver, follow these steps to determine the manufacturer:

1.

On the desktop, rightclick **My Computer**, and then click **Manage**.

2.

1.

Under **System**

2.

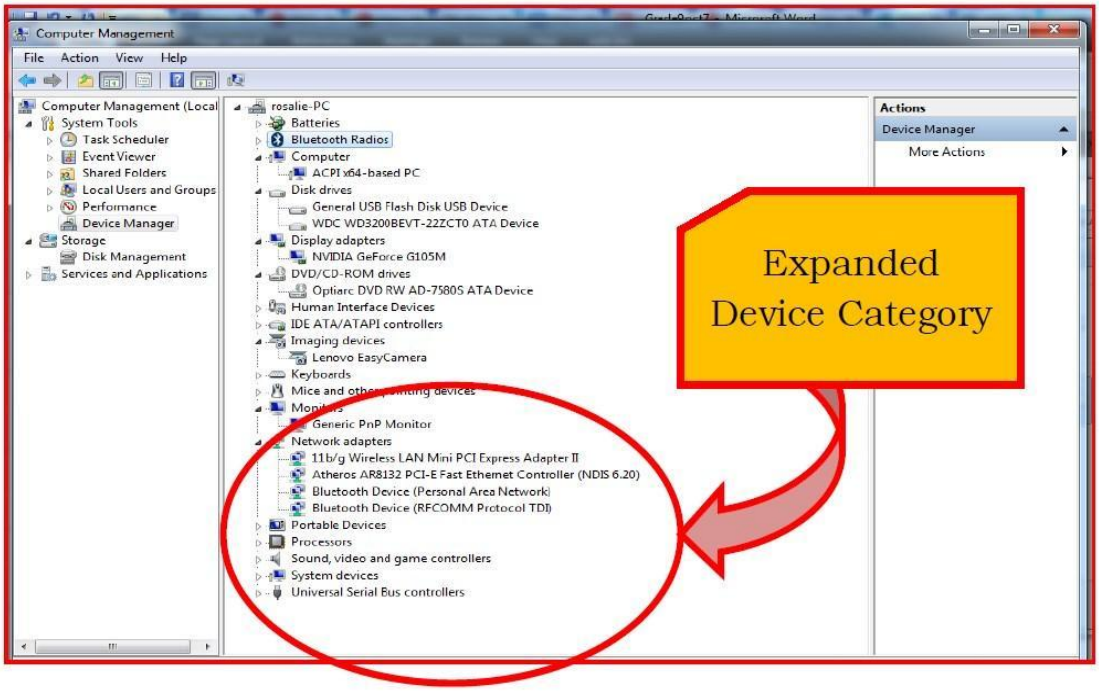
Tools, click **Device**

Manager. The devices that are installed on the computer is listed in the right pane.

1.

In the right pane, expand the category of the device that you want to configure. For example, expand **Display adapters**.

2.

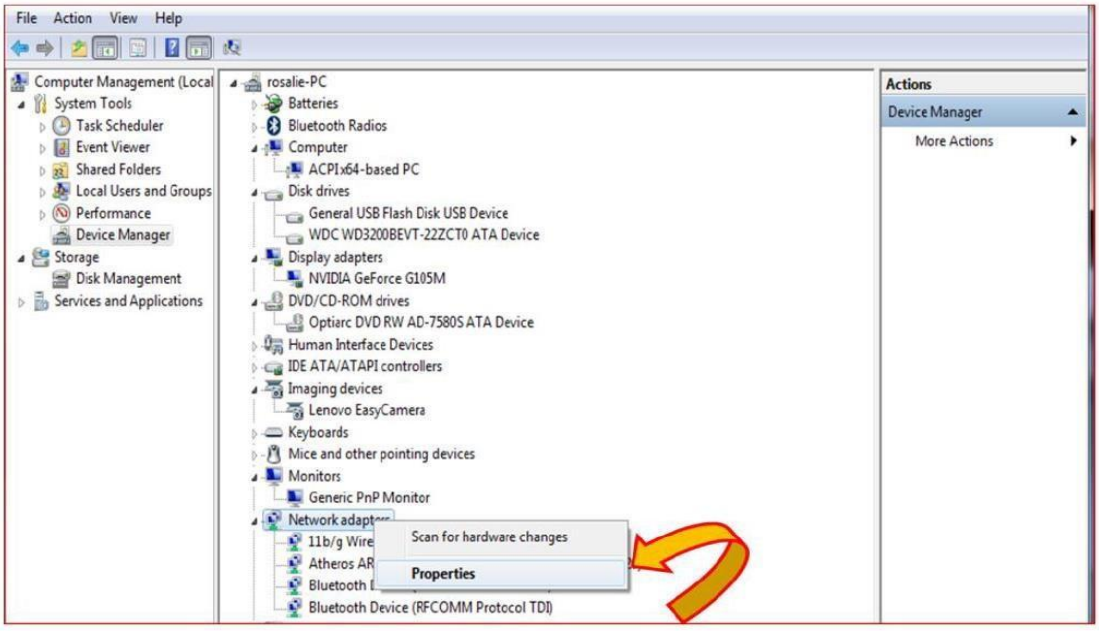


1.

Right-click the device for which you want to install the driver, and then click **Properties**.

2.

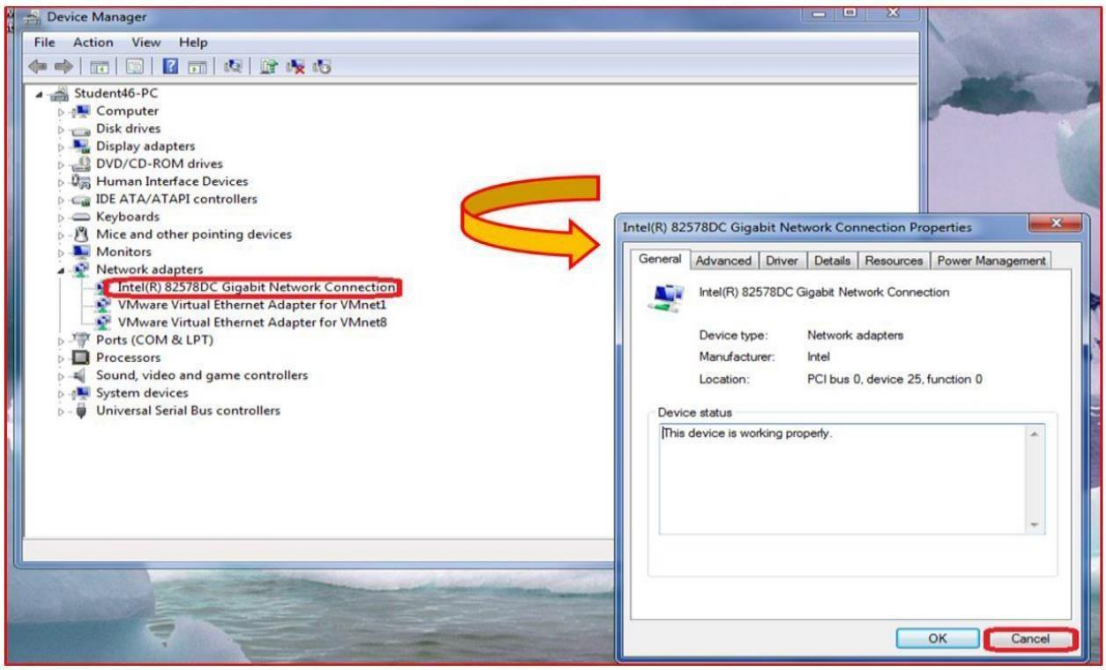
***NOTE**: The device may appear as **Unknown device** or as a generic device.*



1.

Click the **General** tab. Make a note of the manufacturer and model of the device.

2.



1.

Click **Cancel**, and then quit Computer Management.

2.

***NOTE**: If the device is not displayed in Device Manager, or the device is listed as an "Unknown device," contact the computer or device manufacturer to obtain more information about the device.*

Step 2: Obtain the Driver

To obtain the latest driver, use the following list of possible sources for the driver, in the order in which they are presented.

-

Original Computer Manufacturer

-

If the device was installed by your computer manufacturer, contact the manufacturer of your computer to find out how to obtain, download, and install the latest drivers for the device.

-

Device Manufacturer

-

Contact the manufacturer of the device to inquire about how to obtain, download, and install the latest drivers for the device.

-

Chipset Manufacturer

-

Contact the chipset manufacturer of the device to find out how to obtain, download, and install the latest drivers for the device. It is best to first contact the manufacturer of the device for the drivers before you contact the chipset manufacturer.

For example, if your display adapter uses a NVIDIA chipset, first contact the manufacturer of the display adapter. If you cannot contact the display adapter manufacturer or if the manufacturer does not have a driver, contact NVIDIA.

Some examples of chipset manufacturers (and their Web sites) include:

- NVIDIA (display adapters)
- PCTEL, Inc. (modems)

- **Installation CD or Floppy Disks**

- If you have the original driver CD or floppy disks that were included with the computer or device, and if no other source for the drivers is available, use the original driver that is included with the computer or device.

***NOTE**: Whenever possible, try to first contact the Original Equipment Manufacturer (OEM), device manufacturer, or chipset manufacturer to obtain the latest version of the driver.*

Step 3: Install the Driver

- The driver files that you download from the OEM, device manufacturer, or chipset manufacturer differ depending on how the driver is packaged by the manufacturer.

-
-

If the file is an executable program, run the program to extract the files. If the file is in .zip format, you can use a third-party utility such as WinZip to extract the files. For more information about how to extract the driver files, see the instructions that are provided by the manufacturer of the driver.

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-

The driver may use a setup program. The driver package may contain raw driver files, or it may contain only raw driver files. Some examples include .inf files, and .sys files. To install the driver, use one of the following methods as appropriate to your situation.

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-

Driver with a Setup or Installation Program

-

If the driver uses a setup or installation program, run the program to install the driver. For more information about how to do this, see the documentation or contact the driver manufacturer.

-

Device Is Displayed in Device Manager

-

1.

On the desktop, right-click My Computer, and then click Manage.

2.
3.

Under System Tools, click Device Manager. The devices that are installed on the computer are listed in the right pane.

4.
5.

Expand the category of the device that you want to configure. For example, expand Modems. ***NOTE****: The device may be listed under other devices.*

6.
7.

Right-click the device for which you want to install the driver, and then click Properties. ***NOTE****: The device may be displayed as Unknown device, or as a generic device.*

8.
9.

Click the Driver tab, and then click Update Driver. The Upgrade Device Driver wizard starts.

10.
11.

Click **Next**.

12.
13.

Do one of the following:

14.

o Click **Search for a suitable driver for my device (recommended)**, and then click Next. -or- o Click **Display a list of the known devices for this device so that I can choose a specific driver**, and then click Next. Click Have Disk, click **Browse**, locate the **.inf files** that you downloaded in Step 2:
Obtain the Driver, click an .inf file, and then click Open.

1.

Follow the wizard instructions to install the driver.

2.
3.

Restart the computer.

4.

-

Device Is Not Displayed in Device Manager

-

Use the Add New Hardware wizard in Control Panel to install drivers for non-Plug and Play devices.

You may have to use this method to install certain modems, serial ports, or printer ports.

1.

Click **Start**, point to **Settings**, and then click **Control Panel**.

2.
3.

Double-click **Add/Remove Hardware**.

4.
5.

Click **Next**.

6.
7.

Click **Add/Troubleshoot a device**, and then click **Next**.

8.

9.

Do one of the following:

10.

o Click **Yes, search for new hardware**, and then click **Next**. -or- o Click **No, I want to select the hardware from a list**, and then click **Next**.

1.

Follow the wizard instructions to install the driver.

2.
3.

Restart the computer.

4.
5.