

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.

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

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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.

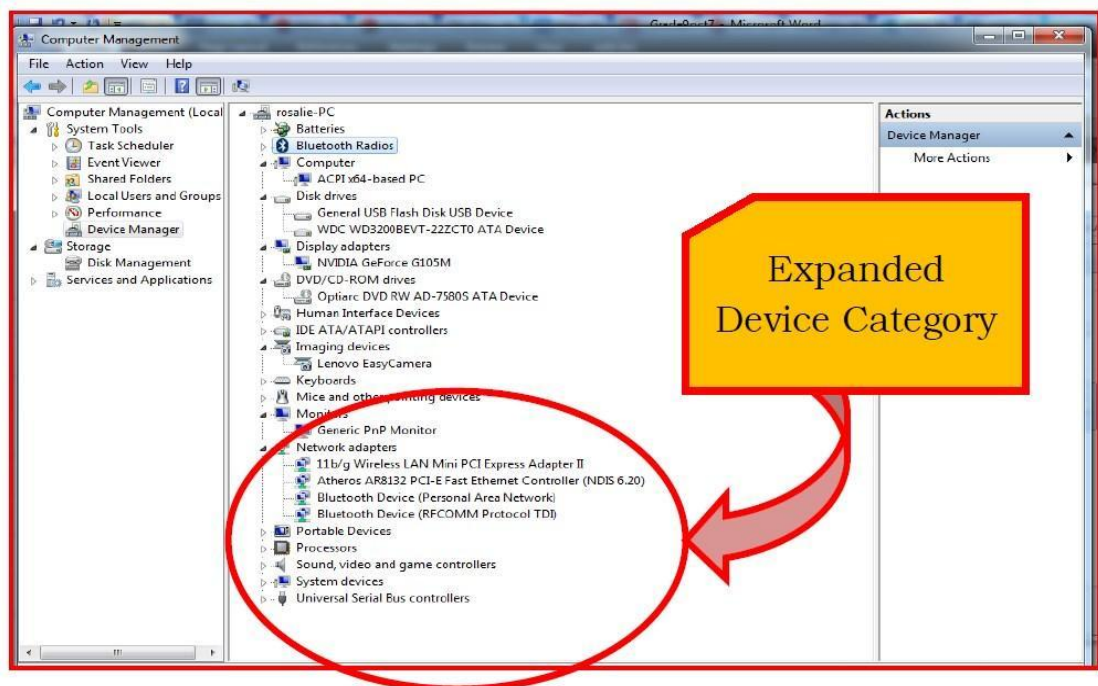
Tools, click **Device**

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.

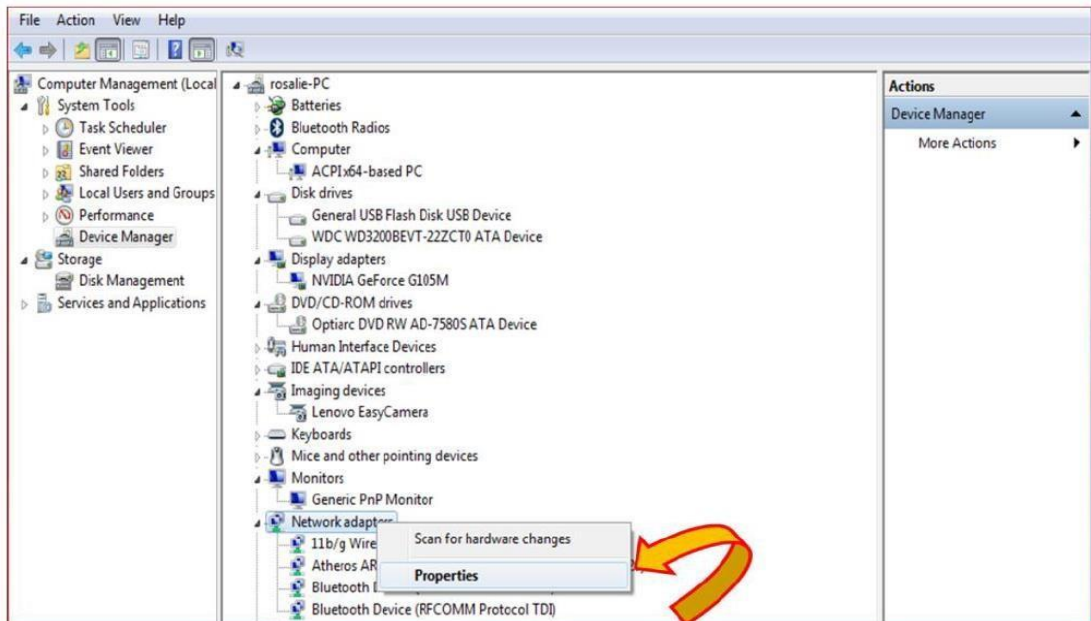


1.

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

2.

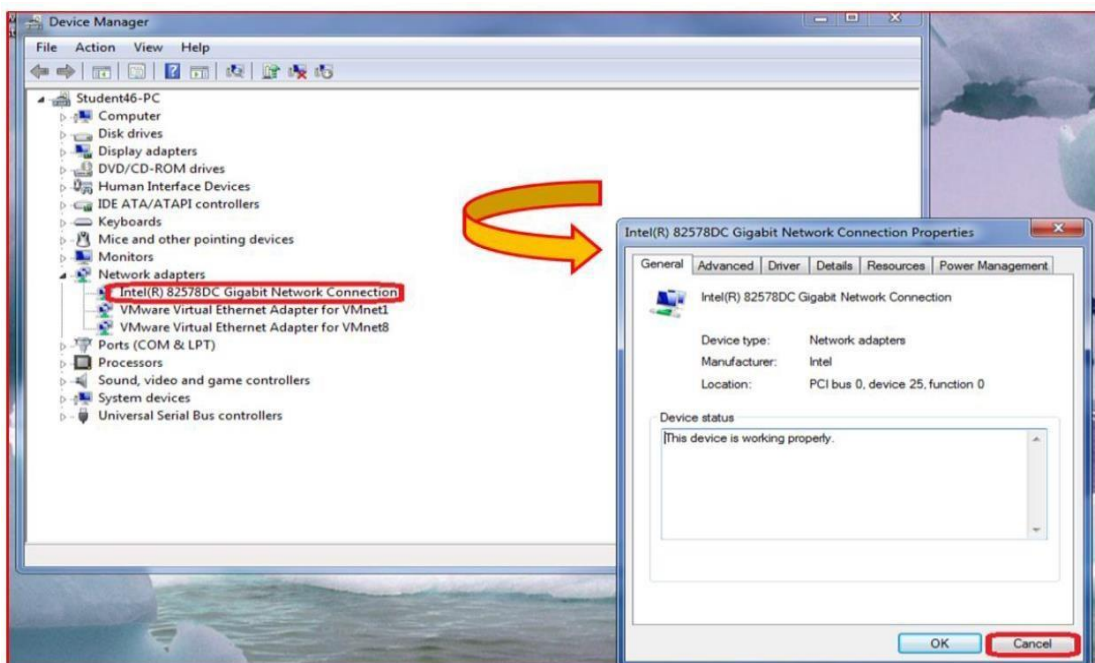
NOTE: The device may appear as **Unknown device** or as a generic device.



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.

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Original Computer Manufacturer

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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.

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Device Manufacturer

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

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Chipset Manufacturer

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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:

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NVIDIA (display adapters)

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-

PCTEL, Inc. (modems)

-

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Installation CD or Floppy Disks

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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

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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.

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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

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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.

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Device Is Displayed in Device Manager

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- 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.

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Device Is Not Displayed in Device Manager

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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.

Quality Check of Installed OS and Driver

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

1.

Identify the different Disk Management Tools.

2.

3.

Recognize the different ways of determining device driver.

4.

5.

Appreciate the importance of following OHS policies and procedures in conducting tests

6.

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Device Manager is a Control Panel applet in Microsoft Windows operating systems. It allows users to view and control the hardware attached to the computer.

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PowerShell - is the shell framework developed by Microsoft for administration tasks such as configuration management and automation of repetitive jobs. (stackify.com)

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Testing Installed Equipment / Devices (Components)

It is important to have a good understanding of the health and safety regulations from early on in your career, so that you understand the good practices demanded by law. You need to:

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report any accidents

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take reasonable care of your own health and safety when moving heavy components

-

-

not cause any electrical hazards

-

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make sure that workstations meet safety requirements.

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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.

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.

Test Procedures

A **test procedure** is a set of steps to guide you through what needs to be done to thoroughly test the installation. It is designed to help you work more effectively and to make sure you test everything that needs testing.

Test procedures are created in-house and could include these steps:

1.

Gathering test information. The first step is to run the tests required by the procedure and find out what happens. You should record all the results of your tests in a log so that you know which pass, and which fail, thereby requiring further action.

2.

1.

Validating the test information. The next step is to check the data you gathered from the tests to make sure it is correct. This is usually done by running the tests again.

2.

1.

Responding to test information. This step is important because you need to be able to recognize when a test shows problem or is successful. For example, if ping is used to test a network connection then 'Request timed out' shows the test was not successful.

2.

1.

Checking specification. The final step is an important end to testing. You need to check the specification for the installation to make sure that it has been met. For example, if a user requested an upgrade to make their display run at 1920 x 1200, then the ICT professional should check that the graphics card and screen can do this.

2.

Determining Drivers version using Device Manager

You can have Windows automatically download recommended drivers and detailed information for your hardware and devices. This is a good way to make sure all your hardware and devices work properly.

Drivers and information

Windows can find and download two kinds of updates for devices connected to your computer:

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Drivers. A driver is software that allows your computer to communicate with hardware devices. Without drivers, the devices you connect to your computer—for example, a mouse or external hard drive—won't work properly. Windows can automatically check if there are drivers available for new devices that you connect to your computer.

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For hardware that you've connected to your computer in the past, updated drivers might become available at a later date; but those drivers aren't installed automatically. To install these optional updates, go to Windows Update in Control Panel, check for updates, and then view and install driver updates that are available for your computer.

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Information. Windows can download high-resolution icons for many hardware devices that you connect to your computer, along with detailed information about them, such as product name, manufacturer, and model number—even detailed information about the sync capabilities of a device. These details can make it easier for you to distinguish between similar devices that are connected to your computer, such as different mobile phones.

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OPERATION SHEET 3.5 Determining Driver Version

To determine the driver version for a piece of hardware with Device Manager, use these steps:

- 1.

Open **Start**.

- 2.

- 3.

Search for **Device Manager** and click the top result to open the experience.

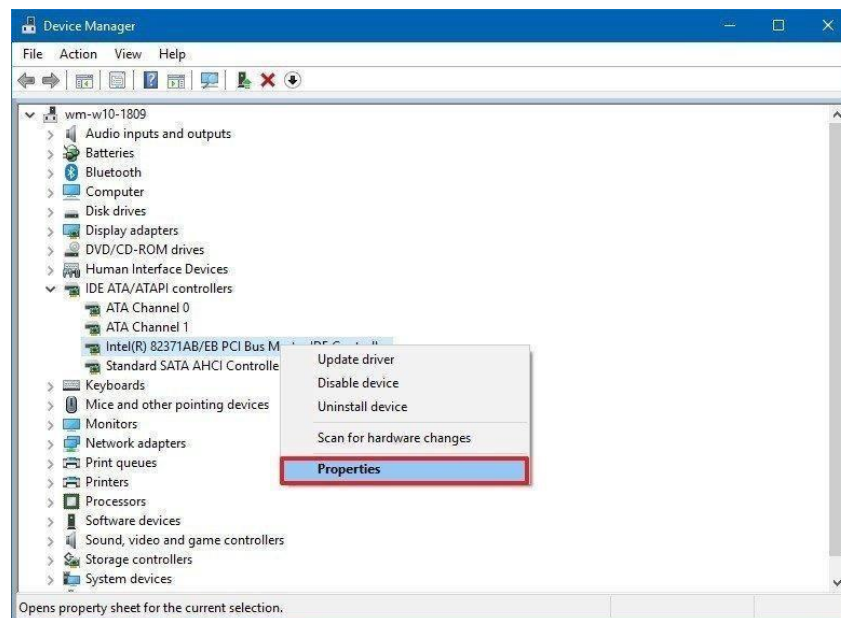
- 4.
- 5.

Expand the branch for the device that you want to check the driver version.

- 6.
- 7.

Right-click the device and select the **Properties** option.

- 8.



Source: Windows Central

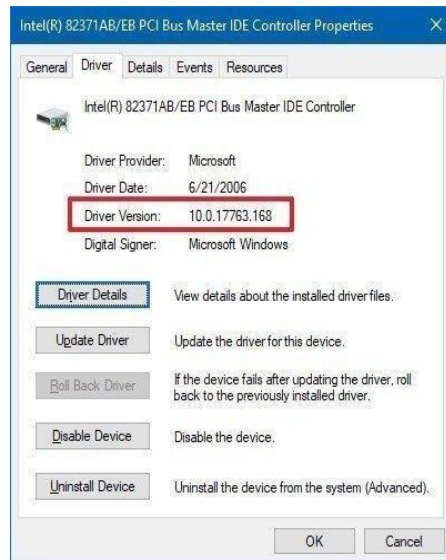
- 1.

Click the **Driver** tab.

- 2.
- 3.

Check the installed driver version of the device.

- 4.



Once you complete these steps, you'll know the current driver version, which you can check against the version number available on your manufacturer support website to determine if Windows 10 is using the most up-to-date release.

Alongside the driver version, using the "Driver" tab, you can also find out other useful information, such as the date when the current version of the driver was installed, and if the driver has been properly signed.

OPERATION SHEET 3.5.a: How to determine driver version using PowerShell

If you want to check the driver version for one or more devices, you can also use this PowerShell command:

1.

Open **Start**.

2.

3.

Search for **PowerShell**, right-click the top result, and select **Run as administrator**.

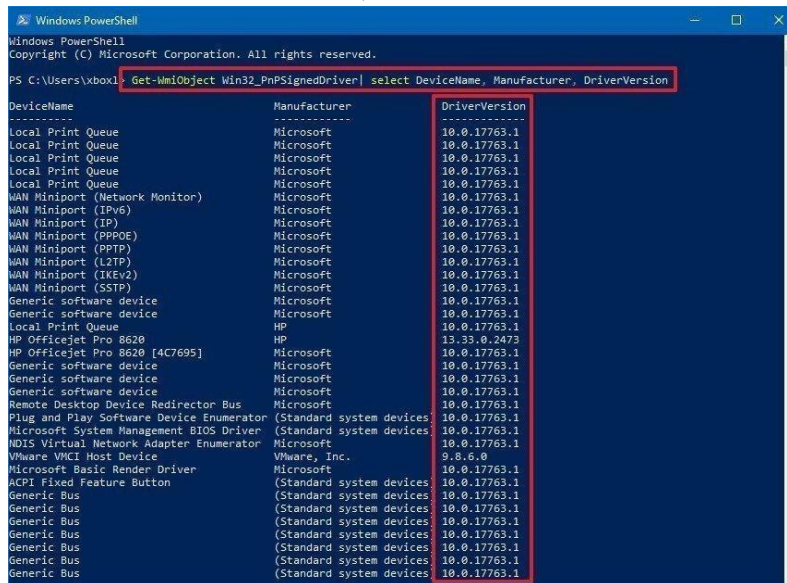
4.

5.

Type the following command to list the drivers installed on your computer and press **Enter**:

6.

Get-WmiObject Win32_PnPSignedDriver| select Device Name,
Manufacturer, Driver Version



```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

PS C:\Users\xboxi> Get-WmiObject Win32_PnPSignedDriver | select DeviceName, Manufacturer, DriverVersion

DeviceName                Manufacturer              DriverVersion
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Local Print Queue          Microsoft                 10.0.17763.1
Local Print Queue          Microsoft                 10.0.17763.1
Local Print Queue          Microsoft                 10.0.17763.1
Local Print Queue          Microsoft                 10.0.17763.1
WAN Miniport (Network Monitor) Microsoft                 10.0.17763.1
WAN Miniport (IPv6)        Microsoft                 10.0.17763.1
WAN Miniport (IP)          Microsoft                 10.0.17763.1
WAN Miniport (PPPOE)       Microsoft                 10.0.17763.1
WAN Miniport (PPTP)        Microsoft                 10.0.17763.1
WAN Miniport (L2TP)        Microsoft                 10.0.17763.1
WAN Miniport (IKEv2)       Microsoft                 10.0.17763.1
WAN Miniport (SSTP)        Microsoft                 10.0.17763.1
Generic software device    Microsoft                 10.0.17763.1
Generic software device    Microsoft                 10.0.17763.1
Local Print Queue          HP                        10.0.17763.1
HP Officejet Pro 8620       HP                        13.33.0.2473
HP Officejet Pro 8620 [4C7695] Microsoft                 10.0.17763.1
Generic software device    Microsoft                 10.0.17763.1
Generic software device    Microsoft                 10.0.17763.1
Generic software device    Microsoft                 10.0.17763.1
Remote Desktop Device Redirector Bus Microsoft                 10.0.17763.1
Plug and Play Software Device Enumerator (Standard system devices) 10.0.17763.1
Microsoft System Management BIOS Driver (Standard system devices) 10.0.17763.1
NDIS Virtual Network Adapter Enumerator Microsoft                 10.0.17763.1
VMware VMCI Host Device    VMware, Inc.              9.8.6.0
Microsoft Basic Render Driver Microsoft                 10.0.17763.1
ACPI Fixed Feature Button  (Standard system devices) 10.0.17763.1
Generic Bus                (Standard system devices) 10.0.17763.1
Generic Bus                (Standard system devices) 10.0.17763.1
Generic Bus                (Standard system devices) 10.0.17763.1
Generic Bus                (Standard system devices) 10.0.17763.1
Generic Bus                (Standard system devices) 10.0.17763.1
Generic Bus                (Standard system devices) 10.0.17763.1
Generic Bus                (Standard system devices) 10.0.17763.1
```

Source: Windows Central

1.

The version of the drivers will be displayed in third column on the right.

2.

After completing the steps, the command will display all the device drivers currently installed on your system alphabetically with their manufacturer names and versions.