1. Getting to Know Your Computer

Why are computers so different from one another? Some seem better suited for heavy duty applications while others are good at 3D gaming or video editing. Even if two computers use exactly the same processor, they may be more suited for different kinds of programs. The difference is determined by the number of components inside the computer. In this chapter you will learn more about the inner workings of your computer. You will discover which components make up your computer, and how fast these components can perform. Based on this information you can find out whether your computer is suitable for the programs you want to use and what sort of problems may arise.

If necessary, you may want to modify your computer, for example by adding internal memory, changing the graphics card or installing a faster hard disk, also called a hard disk drive or hard drive. You can even install a speedier processor. If you do this, however, bear in mind that some of the other components of your computer may not be able to keep up with a faster processor.

You will also learn how to check your computer’s performance score and discover that the overall speed of your computer is determined by its slowest component.

In this chapter you will learn how to:

- view basic information about your computer system;
- find out what the System and Task Manager windows are all about;
- check which programs, processes and services are running on your computer;
- get information about the network usage of your computer;
- check the performance of your computer’s processor and memory;
- use the reliability and performance monitor;
- find out your computer’s performance score;
- use the performance score to decide whether your computer is suitable for the tasks you want to perform;
- find out how the processor allocates its time;
- find out how large the paging file is.

Please note:
The screen shots have been made on a computer using Windows Vista Home Premium. If you are using a different edition of Vista, the windows that appear on your own computer may be slightly different.
1.1 Basic Information about Your Computer System

Your computer's performance is determined by several different elements. The processor and the computer's *internal memory* or *RAM* (*Random Access Memory*) are very important components. This is how you can view these components:

- **Click**
- **Right-click**
  - *Computer*
- **Click** *Properties*
Here you see the make and model of your computer:

This is the speed score:

Read more about this in paragraph 1.6 The Performance Index.

The make and model of the processor:

The processor is the heart of your computer. Every task you perform on your computer is routed through the processor. State-of-the-art processors today are capable of enormous speeds: millions of actions per second can be performed. This speed is measured in megahertz (MHz) or gigahertz (GHz). The higher the number, the faster the processor is, and so the computer.

The RAM memory:

The RAM memory of the computer is the internal memory, also called the system memory. While you are using Windows Vista, the programs you use and the documents you work with are stored in this RAM memory. This memory is much faster than your hard disk. Before you switch off or restart your computer, you need to save your work first, because the RAM memory only stores data while the computer is switched on. The size of the RAM memory is measured in megabytes (MB) or gigabytes (GB).

💡 Tip

**Work faster with a larger RAM memory**

If you have a larger RAM memory, the computer will not have to retrieve data from the hard disk as often. Your computer will perform its tasks faster. Enlarging the RAM memory is a simple and inexpensive way of enhancing your computer’s performance.
In **Windows Vista** you will see a 32-bit or a 64-bit operating system:

In the **Background Information** at the end of this chapter you can read more about the different operating systems.

Here you see the name of your computer:

In the **Tips** at the end of this chapter you will learn how to change this name.

Under **Computer description** you can see the name of your computer in a network or workgroup:

**Please note:**

A **Windows Vista Home Basic** computer cannot be a member of a workgroup.

**Drag the scroll bar down**

Here you can see whether your copy of **Windows Vista** has been activated by **Microsoft**:

A copy that has not yet been activated can only be used for a short period of time.

**Close the window**

**Please note:**

Never change the product ID number yourself. A different product ID number will have to be activated all over again and if you do not have the correct activation code **Windows Vista** will no longer function properly.
1.2 System Information

A computer is comprised of a large number of different components. In the System Information window you can find all the relevant information about your computer system. In this section you will just take a look at the information. In the following chapters you will learn how to change several settings. This is how you open the System Information window:

Click

Type: system

Click System Information

Please note:

In the following screen shots you will see several windows which contain a lot of technical information. Most of it will be very clear and understandable to technicians, but the average computer user will have some difficulty with it. That is not a problem. Just take a look at the information, you do not need to understand everything. But if you are ever in the situation where you need to explain your computer problems to someone, for example, a help desk technician, it will be useful to know where to find this information.

Here you see a lot of information about your computer:

You already viewed some of this information in the previous section.

Click next to Hardware Resources
The System Information window contains detailed information about your hardware configuration, your computer components, software programs and the operating system.

In the left pane of the window you see the different categories and in the right pane you see the details of each category. The categories are:

- **System Summary**: general information about the computer and its operating system, such as the name and manufacturer of the computer, the BIOS type (Basic Input/Output System) and the amount of memory installed.
- **Hardware Resources**: advanced details about the computer hardware. This information is important to IT professionals.
- **Components**: information about disk drives, sound devices, modems and other components installed on your computer.
- **Software Environment**: information on operating systems, network connections and other details about the software.

If you are looking for specific information in the System Information window, you can type a keyword in the Find what Search box at the bottom of the window. For example, if you are looking for the IP address (Internet Protocol) of your computer, you type **IP address** in the box next to **Find what:** and then click **Find**.

Source: Windows Help and Support

For example, let us take a look at the IRQs (Interrupt Request). These are the alarm sounds a device uses when it needs attention from the processor. This could be a printer that has run out of paper, for example. It is important that two similar devices do not use the same IRQ, because then the processor will not be able to tell which device needs its attention. This may lead to devices malfunctioning. This is how you view the IRQs:

Click **IRQs**

You will see all the IRQs and the devices that use them:

Usually, IRQs are set up during the installation of the hardware devices. Do not change an IRQ, unless the device does not work properly.
Here you see all the different components of your computer:

**Tip**

Troubleshooting

Are you having problems with a particular device? Then click **Problem Devices** in the Components section. You will be able to see if the device has a problem with Windows Vista, or if you should look elsewhere for a solution.

Now you will see which hard disk drives, CD or DVD drives and card readers are installed:
For each storage device you can see the type of device, the designated drive letter and the file system for which it was formatted. You can read more about file systems in this chapter’s Background Information. In the Tips at the end of this chapter you can read how to change the name of a drive.

In this window you will see information about the software installed on your computer:

- Drag the scroll bar down
- Click next to Software Environment
- Click Startup Programs

Now you will see the list of programs that start up each time you turn your computer on.

You may not recognize several of these programs. There may be programs that execute background tasks, such as operating a mouse or a webcam. If you recognize any well-known programs, you can decide to exclude these programs from the automatic startup list. This is one of the ways to get your computer to start up a bit faster. In Chapter 2 Speeding Up Vista you will learn how to do this. In this window you also see some very important programs, such as your antivirus program and your firewall. It is best not to disable these programs.
Please note:
If you click Windows Error Reporting, you will get a summary of Windows Vista system errors, or errors from other programs you use. It may take a while to generate the list and the information in the list may not seem relevant to you. Meanwhile you will see the text Refreshing System Information...

An example of the Windows Error Report:

Close the System Information window

1.3 Windows Task Manager

Along with the programs that you start up yourself, additional processes and sometimes even other programs are executed in the background. Normally you do not notice this because you will not see this on your screen. The Windows Task Manager gives you a better picture of what is actually going on.

Tip
Close all programs
If you really want to see which background tasks your computer is executing, then close all programs before continuing.

Click

Type: paint

Click Paint
On your desktop you will see the *Paint* window:

The size of the *Paint* window may be different on your screen.

1. **Right-click the taskbar**,  
2. **Click** *Task Manager*

Now you will see the programs that you have opened:

1. **If necessary, click the** *Applications* **tab**,  
2. **Click** *Untitled - Paint*,  
3. **Click** *End Task*

Now *Paint* will be closed.

You can also see the processor (CPU) usage:

- CPU Usage: 4%

When all programs are closed, the CPU usage will be low. But still you will notice that the CPU usage changes every now and then. This is due to background processes or caused by movements you make with your mouse or use of the keyboard.
Tip

Viewing the processor usage
When you have minimized the Windows Task Manager window, you will see a small green square on the taskbar:

If you point the mouse arrow to the green square, you will see the actual CPU usage. If you double-click the square, the Windows Task Manager window will open again.

Paint has now been closed and there are no more active applications.

Click the Processes tab

You will see all the programs and processes your computer is executing at this moment:

Your own screen will show different processes.

If other users have logged on to your computer as well, you can view all processes by clicking Show processes from all users.
HELP! What are processes?

Processes are small computer programs that run in the background. Regular programs run in a window, but processes do not have their own window. You cannot see a process on your desktop or on the taskbar. That is why they are called background processes. Usually several processes are started at the same time you open a program.

In the Windows Task Manager window you can also close programs or processes. For example, you can close the Windows Sidebar on the right side of your desktop.

Please note:
Do not close processes unless you are sure no harm can be done. Do not close processes that do not have a user name.
The `sidebar.exe` process has been removed from this list and the **Windows Sidebar** has been removed from your desktop:

**Please note:**

Normally, you will not use the *Task Manager* to close a program or process. The program may not close properly or data may be lost if you close applications in this manner. This is why you should always close your programs the normal way. You should only try the *Task Manager* if you cannot close a program in the regular way.

Now you can open the *Windows Sidebar* again. This is how you do that:

1. Click
2. Type: `side`
3. Click **Windows Sidebar**
The Windows Sidebar is back on your desktop and is back in the list of processes.

Like processes, services also run in the background. Services do not operate on their own. They are used to support other programs.

Your screen goes dark and you will need to give permission to continue the program:
The Services window will be opened behind the Task Manager window. You can minimize the Task Manager window for the moment.

Click

Drag the scroll bar down a bit

Click Print Spooler

Now you will see a description of this service:

You can also look at the other descriptions:

Close the window

On the taskbar:

Click

You see once again the Task Manager window on your desktop:

Click the Networking tab

In the next section you will take a look at the Performance tab.
If your computer is connected to a network, or to the Internet, you can see if this connection is in use, and check the intensity of the usage.

Here you will see a graph of the Internet connection via a local area connection (LAN):

Please note:

Do you see a large amount of Internet traffic (wireless or via your LAN), even when you are not using your computer? This could indicate that your computer is being used for sending spam.

If there are more users logged on to your computer, you will see all the active users.

In this example there is only one active user.

Tip

Log off the users who are not active

Every user who is logged on will take up memory space and increase processor usage. Make sure that users who do not want to use the computer are logged off.
1.4 CPU Usage and Use of Resources

The speed of your computer is determined by various components. If one of these components is too busy, the other components will not be able to work at full speed and the computer will slow down. The Windows Task Manager monitors the use of a number of important components.

You will see the CPU usage in percentages and in a graph:

Here you will see two graphs indicating the CPU usage, because this computer has a dual-core processor. This means that the processor consists of two cores, which divide the work between them. You can read more about processors in the Background Information at the end of this chapter.

You will also see the memory (RAM) usage:

In the Resource Monitor window you can get even more detailed information:
Your screen goes dark and you will need to give permission to continue:

> Click Continue

**Minimize the Windows Task Manager window**

Here you see the activity of the various components of your network connection:

> Click CPU

Here you will see the tasks the CPU is currently performing:

> Click CPU

The summary will be closed.
Now you will see all the disk activity:

In the same way you can view the network activity and the memory usage. This data may not make much sense to you right now. But you can use this monitor to check whether one or more of the components are showing higher usage. This may indicate that you should modify and expand your computer with new components. You might want to add for example, extra memory, or a faster network connection or even a faster hard disk.

If you hardly touch your computer and the monitor still shows a lot of activity, then this could be caused by a computer virus.