

## **Chapter 6 Understanding and Assessing Hardware: Evaluating Your System**

### **Chapter Objectives**

1. What kind of computer is best for me?
2. What does the CPU do, and how can I evaluate its performance?
3. How does memory work in my computer?
4. How do I evaluate how much memory I need?
5. What are the computer's storage devices?
6. How do I evaluate my storage devices?
7. What components affect the quality of video on my computer?
8. How do I know if I need better video performance?
9. What components affect my computer's sound quality?
10. How can I improve the reliability of my system?

### **Chapter 6 Vocabulary**

3-D sound card- an expansion card that enables a computer to produce omnidirectional or three-dimensional sounds.

Access time- the time it takes a storage device to locate its stored data

Audio MIDI interface- interface technology that allows a user to connect guitars and microphones to their computer

Cache memory- small blocks of memory, located directly on and next to the central processing unit (CPU) chip, that act as holding places for recently or frequently used instructions or data that the CPU accesses the most. When these instructions or data are stored in the cache memory, the CPU can more quickly retrieve them than if it had to access the instructions or data from random access memory (RAM)

Clock speed- the steady and constant pace at which a computer goes through machine cycles, measured in hertz (Hz)

Core- a complete processing section from a central processing unit, embedded into one physical chip

CPU benchmarks- measurements used to compare performance between processors.

CPU usage- the percentage of time the central processing unit (CPU) is working

CPU usage graph- records your central processing unit (CPU) usage for the past several seconds

ExpressCard- laptops are often equipped with an ExpressCard slot. The ExpressCard can add a solid-state drive (SSD), new kinds of ports, and other capabilities to a system.

Graphics double data rate 5 (GDDR5) - a standard of video memory

Graphics processing unit (GPU) - a specialized logic chip that's dedicated to quickly displaying and calculating visual data such as shadows, textures, and luminosity.

Head crash- impact of the read/write head against the magnetic platter of the hard drive; often results in data loss

Hyperthreading- a technology that permits quicker processing of information by enabling a new set of instructions to start executing before the previous set has finished.

Latency (rotational delay)- the process that occurs after the read/write head of the hard drive locates the correct track and then waits for the correct sector to spin to the read/write head

Machine cycle- the series of steps a central processing unit goes through when it performs a program instruction

Memory module (memory card) - a small circuit board that holds a series of random access memory (RAM) chips

Moore's law- a prediction, named after Gordon Moore, the co-founder of Intel; states that the number of transistors on a central processing unit chip will double every two years.

Nonvolatile storage- permanent storage, as in read-only memory (ROM)

Optical media- portable storage devices, such as CDs, DVDs, and Blu-ray discs, that uses a laser to read and write data

Overclocking- running the central processing unit at a speed faster than the manufacturer recommends

Physical memory- the amount of random access memory (RAM) that's installed in a computer

Platter- a thin, round, metallic storage plate stacked onto the hard drive spindle.

Read/write head- the mechanism that retrieves (reads) and records (writes) the magnetic data to and from a data disk.

RAID 0- the strategy of running two hard drives in one system, cutting in half the time it takes to write a file

RAID 1- the strategy of mirroring all the data written on one hard drive to a second hard drive, providing an instant backup of all data

Sector- a section of a hard drive platter, wedge-shaped from the center of the platter to the edge

Seek time- the time it takes for the hard drive's read/write heads to move over the surface of the disk to the correct track.

Solid-state drive (SSD)- a storage device that uses the same kind of memory that flash drives use but can reach data in only a tenth of the time a flash drive requires

Sound card- an expansion card that attaches to the motherboard inside the system unit and that enables the computer to produce sounds by providing a connection for the speakers and microphone

SuperFetch- a memory-management technique used by Windows 7. Monitors the applications you use the most and preloads them into your system memory so that they'll be ready to go

Surround sound- a type of audio processing that makes the listener experience sounds as if it were coming from all directions.

System evaluation- the process of looking at a computer's subsystems, what they do, and how they perform to determine whether the computer system has the right hardware components to do what the user ultimately wants it to do

Track- a concentric circle that serves as a storage area on a hard drive platter

Video memory- random access memory that's included as part of a video card

Volatile storage- temporary storage, such as in random access memory. When the power is off, the data in volatile storage is cleared out.

## **Chapter 6 Summary**

1. What kind of computer is best for me?
  - a. Review the types of computer devices available and consider what your needs are for weight, screen size, and processing power.
  - b. Evaluate your computer system so you have clear data on what you currently have. Then you can compare it with what is on the market and make a decision to upgrade or purchase a new device.
2. What does the CPU do, and how can I evaluate its performance?
  - a. You can find out what processor you have using the System Properties window.