5-1 Hard Drive Technologies and Interface Standards

Core 1 Objectives

- 1.1

  Given a scenario, install and configure laptop hardware and components.
- 3.1

  Explain basic cable types and their connectors, features, and purposes.
- 3.3

  Given a scenario, select and install storage devices.

A hard disk drive (HDD), most often called a hard drive, is rated by its physical size, capacity, speed, technologies used inside the drive, and interface standards. First, we look at the features of a hard drive, and then we turn to how the drive interfaces with the computer.

Note 1

In technical documentation, you might see a hard drive abbreviated as HDD (hard disk drive). However, this module uses the term “hard drive”.

5-1a Technologies and Form Factors of Hard Drives

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  Given a scenario, select and install storage devices.

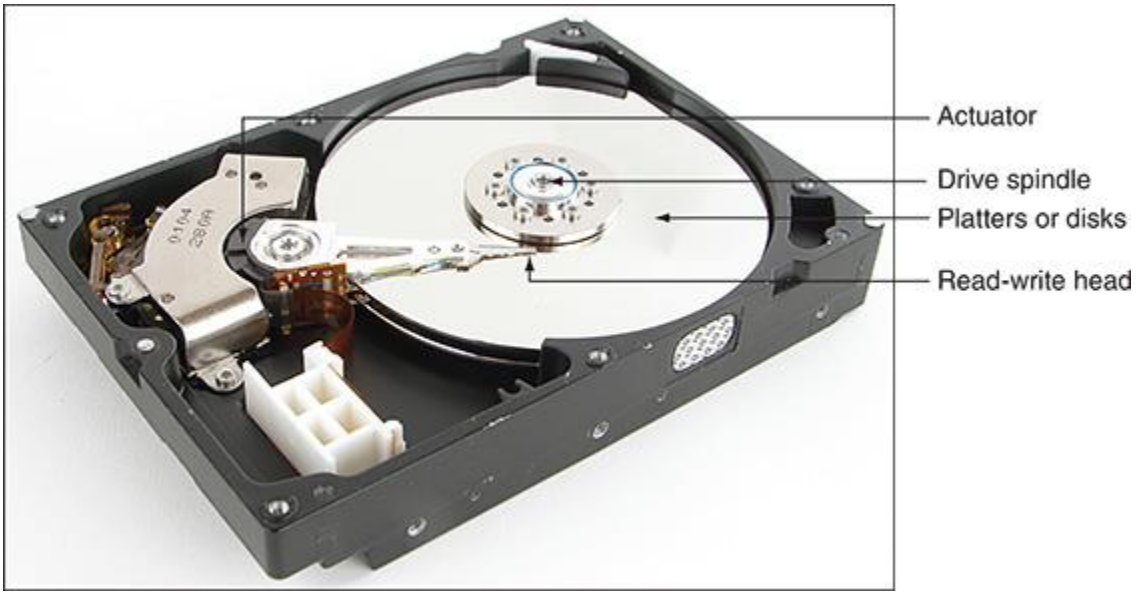
The two types of hardware technologies used inside the drive are magnetic and solid-state. Each hard drive technology uses several form factors, all discussed in this section of the module.

Magnetic Hard Drives

A **magnetic hard drive** has one, two, or more platters, or disks, that stack together and spin in unison inside a sealed metal housing that contains firmware to control reading and writing data to the drive and to communicate with the motherboard. The top and bottom of each disk have a **read/write head** that moves across the disk surface as all the disks rotate on a spindle (see Figure 5-1). All the read/write heads are controlled by an actuator, which moves the read/write heads across the disk surfaces in unison. The disk surfaces are covered with a magnetic medium that can hold data as magnetized spots. The spindle rotates at 5400, 7200, 10,000, or 15,000 RPM (revolutions per minute). The faster the spindle, the better the drive performs. Most consumer hard drives are rated at 5400 or 7200 RPM.

Figure 5-1

Inside a magnetic hard drive



Data is organized on a magnetic hard drive in concentric circles called tracks (see Figure 5-2). Each track is divided into segments called sectors (also called records). Older hard drives used sectors that contained 512 bytes. Most current hard drives use 4096-byte sectors.

Figure 5-2

A hard drive is divided into tracks and sectors