

9.1.3 Laptop Facts

Notebooks and other portable devices differ from desktop systems in three major ways:

- Portable devices are built to be lighter and easier to carry. The smaller form causes components to be placed in closer proximity, which has historically caused technical development to lag behind that of desktops.
- Portable devices often run on battery power. Individual components are engineered to minimize the power consumption in order to maximize battery life.
- Because the devices are built to be carried around, they also must withstand more wear and tear.

This lesson covers the following topics:

- Portable devices
- Laptop components

Portable Devices

Be aware of the following classifications for portable devices:

- A *laptop* (or *notebook*) is a portable version of a desktop system. It often has similar hardware and runs similar software.
- A Tablet PC is a notebook that includes a touchscreen to allow input by tapping the screen, dragging objects, or through handwriting recognition. A stylus is a special pen designed to be used by these touchscreens for input. Tablet PCs might run special versions of the operating system to enable touchscreen input.
- A PDA (Personal Digital Assistant) is a hand-held device, typically with a small touchscreen. A PDA uses special hardware and software that provides basic productivity applications (email, word processing, spreadsheets).
- A *smart phone* is a phone that includes functions of a PDA. As functions are added to smart phones, the line between smart phones and PDAs is disappearing.
- A *netbook* is a notebook computer with a smaller form factor (10-11 inch screen or smaller) and custom hardware designed to maximize battery life (from 6-11 hours on a single charge). Originally, netbooks used a special operating system that often did not support all of the features of a normal desktop operating system. Increasingly, netbooks can run a regular version of the operating system, although the reduced hardware might still limit their usefulness to email, word processing, and multimedia. Netbooks typically do not have integrated CD/DVD drives.

Laptop Components

The following table describes various components in a laptop system:

Component	Description
Processor	Processors built especially for laptop computers have lower power consumption requirements and produce less heat than desktop processors. <ul style="list-style-type: none"> ▪ On most systems, you can configure the processor to use a lower bus speed when running from battery power, thereby conserving battery life. ▪ Many mobile processors are capable of automatic throttling to turn off extra cores or reduce the speed to conserve energy. ▪ Processors do not have the large heat sink and fan combinations to dissipate heat. Rather, heat is controlled by minimizing power consumption and small fans that draw away heat.
Memory	Laptop memory uses SODIMM and UniDIMM packages with SDRAM and DDR/DDR2/DDR3/DDR4 memory. These modules are sometimes called MicroDIMMs. Many notebooks come with a base amount of memory built onto the motherboard and one or two additional slots. When replacing notebook memory, make sure the size of modules you purchase are supported by the system.
Keyboard	Notebook keyboards are smaller than standard keyboards. Keys are often a bit smaller and closer together. Keys such as the number pad and some function keys might be left off, but are accessible by pressing a special Fn key to provide alternate functions for regular keys. <p>You can use a USB port to connect an external keyboard; some laptops include a PS/2 port.</p>
Pointing Devices	Instead of a mouse, notebooks use one (or more) of the following devices: <ul style="list-style-type: none"> ▪ Pointing sticks are small knobs in the center of the keyboard. Pushing on this knob moves the cursor. ▪ The touchpad is located below the keyboard. Moving your finger across the pad moves the mouse. You can also tap the touchpad to click the mouse. ▪ Buttons below the keyboard replace mouse buttons for clicks, double-clicks, and right-clicks. ▪ A digitizer pad is used in laptop and PDA systems to receive input. Input is written onto the pad with a stylus pen and then those motions are transferred into data that is processed by the system. ▪ You can also use the PS/2 connector or a USB connector to connect an external mouse.

	Touchpads are more common than pointing sticks. Notebooks with a pointing stick often come with a touchpad as well.
Video	<p>Be aware of the following facts about screens and video cards:</p> <ul style="list-style-type: none"> ▪ XGA screens have the normal 4:3 aspect ratio. WXGA screens use a widescreen aspect ratio. ▪ Some screens promise brighter display for crisper viewing or better viewing outdoors. ▪ The video controller is either integrated onto the motherboard or it might be a separate board that can be replaced. ▪ Video memory typically shares a portion of the system memory, although some notebooks have dedicated video memory. ▪ Most notebooks have an external video port that you can use to display the screen on a projector or a monitor. To show the display on the external monitor, change the display settings in the operating system or use the Fn keyboard combination. ▪ Some notebooks have special touchscreens that can rotate 180 degrees, allowing the notebook to close and the screen to still be visible. ▪ Some notebooks allow you to detach or remove the screen from the keyboard. This turns the notebook into a tablet. ▪ Some laptops have multiple display screens. You can always connect a second monitor to a laptop if you need dual display functionality.
Networking	<p>Most notebooks include built-in networking devices such as an Ethernet port, a modem port, wireless, Bluetooth, and/or infrared.</p> <ul style="list-style-type: none"> ▪ Wireless networking capabilities are often provided by a small card that plugs into an internal mini-PCI slot (located under the keyboard or accessible through the back). The wireless antennae might be a wire that extends around the screen. ▪ You can use USB or ExpressCards to add missing or malfunctioning networking features.
Internal hard disks	Internal hard disks are typically 2.5" or 3.5" and very thin compared to desktop hard disks. SATA, solid state drives, and Flash drives are used in portable devices.
Port Replicator / Docking Station	A port replicator or docking station attaches to a laptop computer and allows you to connect multiple devices such as a mouse, keyboard, printer, network connection, or additional monitors.

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