9.1 Device Drivers

As you study this section, answer the following questions:

- How are device drivers implemented on a Linux system?
- Why are some device drivers not compiled into the kernel?
- Which directories contain information about the hardware that is installed on the computer?
- How would you use the **hwinfo** utility to display information about all the hardware in the computer?
- Which extension identifies a kernel module?
- What type of information is stored in **/proc/cmdline**?
- Which utility will display information about the PCI devices on the system?

In this section, you will learn to:

- View hardware information by viewing the contents of the /proc and /sys directories.
- View hardware information using the **lsusb**, **hwinfo** and **lspci** utilities.

Key terms for this section include the following:

Term	Definition
Device driver	A software component that allows a hardware device to communicate with the operating system of a computer.
Bluetooth	A short-range wireless communication technology that is able to operate without needing a direct line of sight between devices.
Wireless Fidelity (WiFi)	A technology that uses radio waves to provide network connectivity.
Universal Serial Bus (USB)	A plug-and-play interface that allows a computer to communicate with peripheral and other devices.
General Purpose Input Output (GPIO)	A type of pin found on an integrated circuit that does not have a specific function.
Network adapters	A network adapter (also called a network interface card or NIC) that connects a host to the network medium.
Peripheral Component	A standard for connecting computers and their peripherals; any piece of computer hardware that plugs directly into a PCI slot on a computer's motherboard.

Interconnect (PCI)	
Host bus adapter (HBA)	A hardware device, such as a circuit board or integrated circuit adapter, that provides I/O processing and physical connectivity between a host system, such as a server, and a storage device.
Serial ATA (SATA)	A computer bus interface that connects host bus adapters to mass storage devices such as hard disk drives, optical drives, and solid-state drives.
Small Computer System Interface (SCSI)	A set of standards for physically connecting and transferring data between computers and peripheral devices.
Printers	A peripheral device that accepts text and graphic output from a computer and transfers it onto a piece of paper.

This section helps you prepare for the following certification exam objectives:

Exam	Objective

CompTIA Linux+	1.2 Given a scenario, install, configure, and monitor kernel modules.
	• Locations
	  ◦ /usr/lib/modules/[kernelversion]
	  ◦ /usr/lib/modules
	2.7 Explain the use and operation of Linux devices.
	• Types of devices
	  ◦ Client devices
	  ◦ Bluetooth
	  ◦ WiFi
	  ◦ USB
	  ◦ Monitors
	  ◦ GPIO
	  ◦ Network adapters
	  ◦ PCI
	  ◦ HBA
	  ◦ SATA
	  ◦ SCSI
	  ◦ Printers
	  ◦ Video
	  ◦ Audio
	• Monitoring and configuration tools
	  ◦ lsdev
	  ◦ lsusb
	  ◦ lspci

	• File locations
	  ◦ /proc
	  ◦ /sys
	
	4.1 Given a scenario, analyze system properties and remediate accordingly.
	
	• CPU monitoring and configuration
	  ◦ /proc/cpuinfo