Networking Device Facts

Depending on the implementation, the following hardware devices are used on a network:

Component	Description
Media	The networking *medium* provides the path for signals to pass between two devices. • Copper cables use electrical signals. • Fiber optic cables use light pulses. • Wireless networks use radio waves with the air being the transmission medium.
Network adapter	A *network adapter* creates the signals that are sent along the networking medium. • The term network interface card (NIC) typically describes an adapter that uses a cable medium (such as copper or fiber optic cables). • A modem (modulator/de-modulator) converts binary data to an analog signal. • A wireless network adapter sends radio waves.
Hub	A *hub* provides a central connection for multiple media segments on the same subnet. The hub repeats a signal received on one port out all other ports. Hubs operate in *half-duplex* mode because the path between devices is shared, meaning that devices can only send when no other devices are sending data.
Switch	A *switch* provides a central connection for multiple media segments on the same subnet. The switch receives a signal on one port, and forwards that signal only to the port where the destination device is connected. • Switches use the MAC address to send frames to the destination device. • Switches can operate in *full duplex* mode where a device uses a different channel for sending and receiving, and where the transmission paths are dedicated to only the communicating devices. • When possible, use switches instead of hubs.
Router	A *router* connects two network segments that have a different subnet address. • A router has multiple network connections, with each connection being on a different subnet. • Routers use the IP address within a packet to move packets between networks. • Routers maintain a list of known networks and the next router in the path to reach the destination network.
Bridge	A *bridge* connects two segments within the same subnet that use different media types. For example, use a bridge to connect wireless clients to wired clients on the same network.