CSCI 460
Networks and Communications
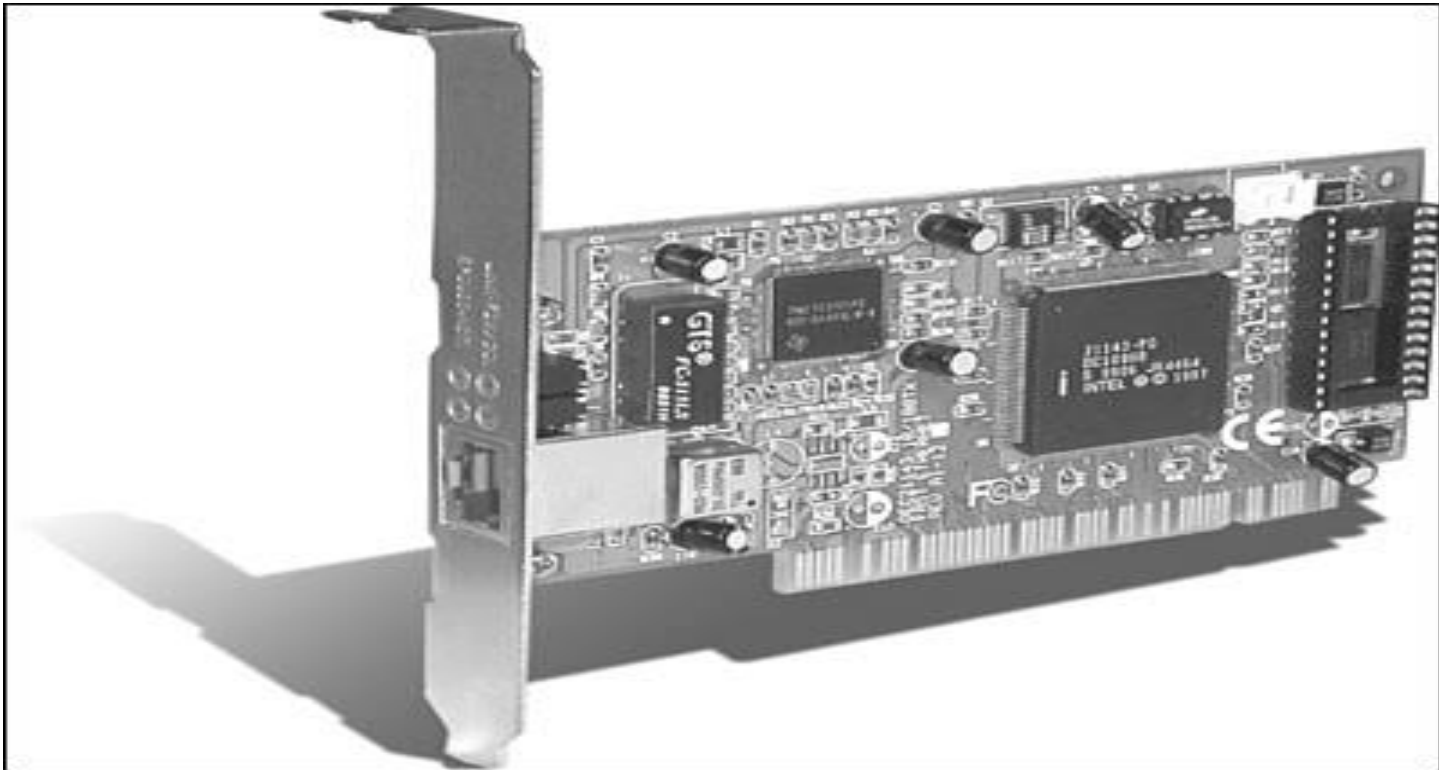
Network Devices

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Network Components Outline

- Network Interface Card (NIC)
- Hub
- Bridge
- Switch
- Wireless Access Point (WAP)
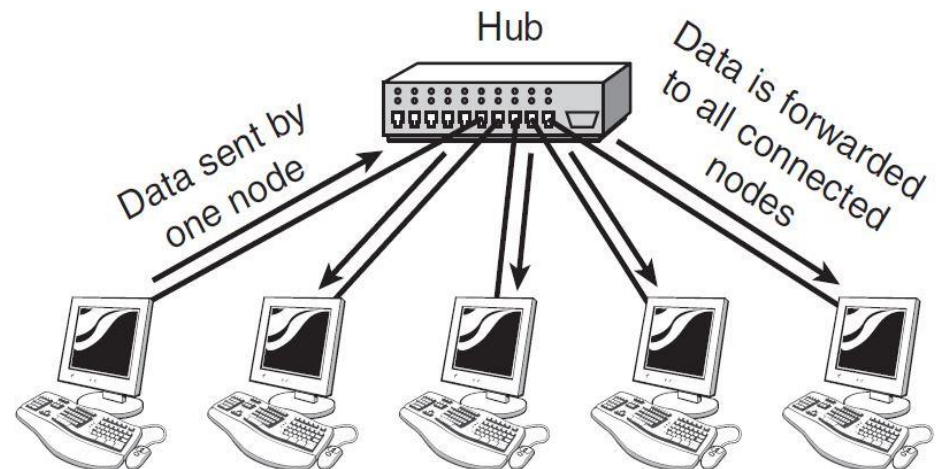- Router
- Firewall
- Modem

Network Interface Card (NIC)

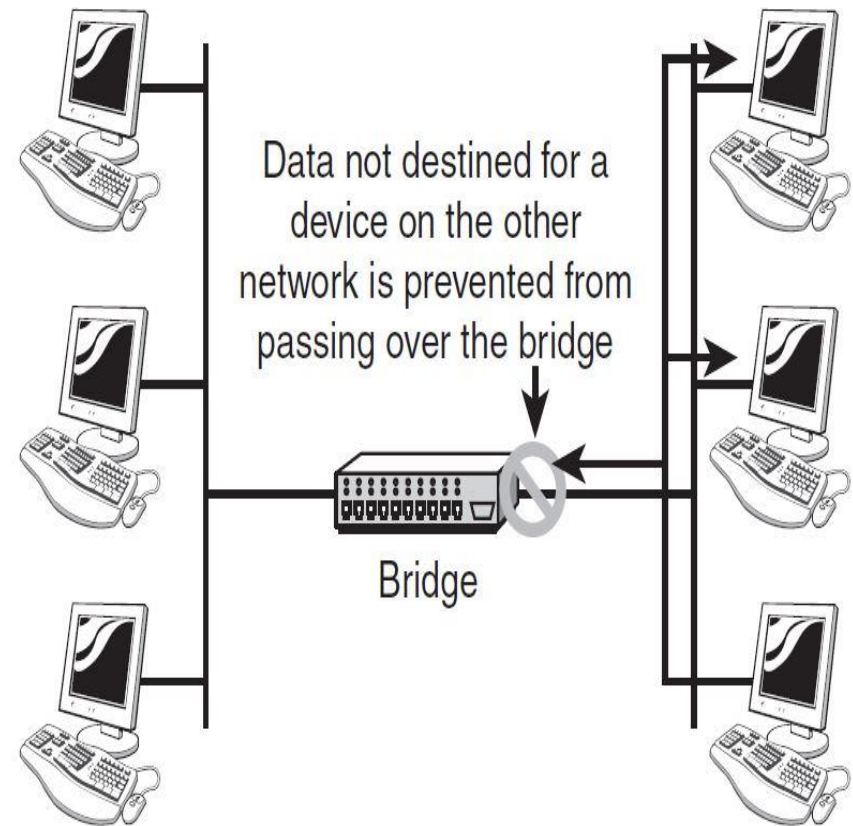It is the hardware through which a Computer connects to a Network

HUB

- Most simple and inexpensive network device to build a network.

- Broadcasts data frame to every nodes in the network.

Bridge

- Connects two network segments
- Either forwards or blocks data frame based on the destination address.
- Network switches have replaced the bridges.

Data not destined for a device on the other network is prevented from passing over the bridge

Bridge

Switch

- Looks like a hub but performs better than a hub. Does not broadcast.
- Switches or forwards data frame only to the destination node.
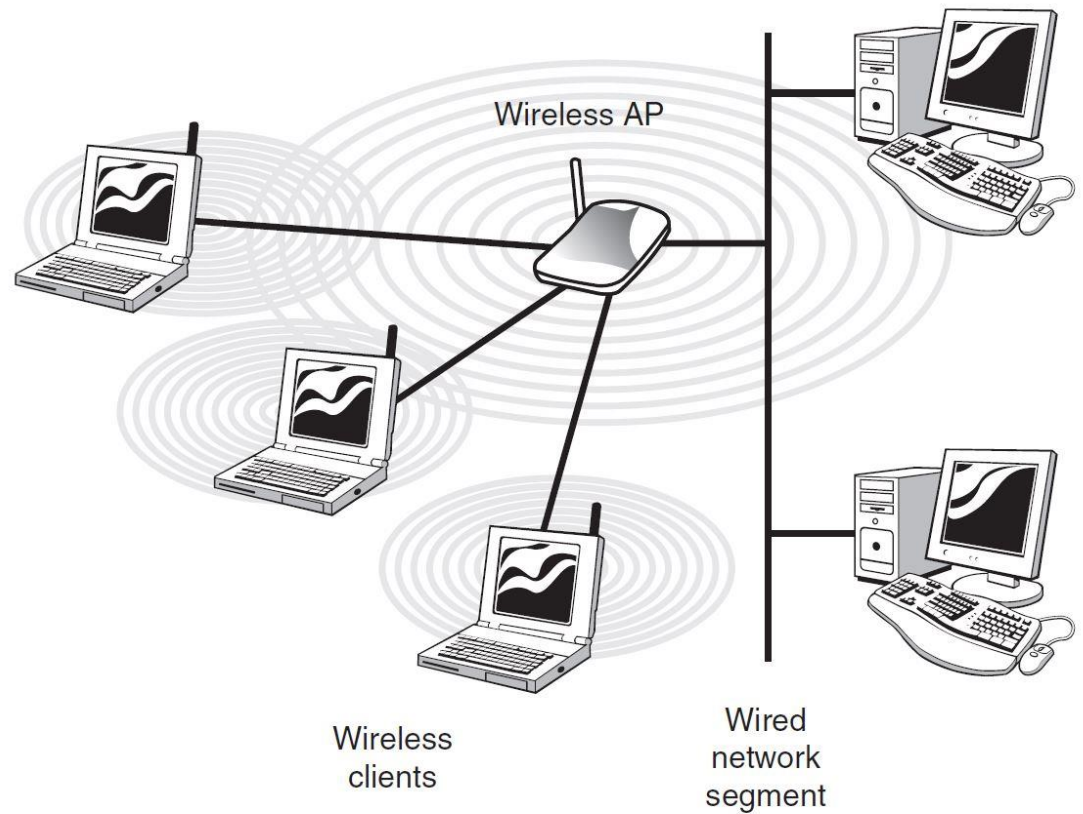- Uses a switching table to perform switching from source to destination.
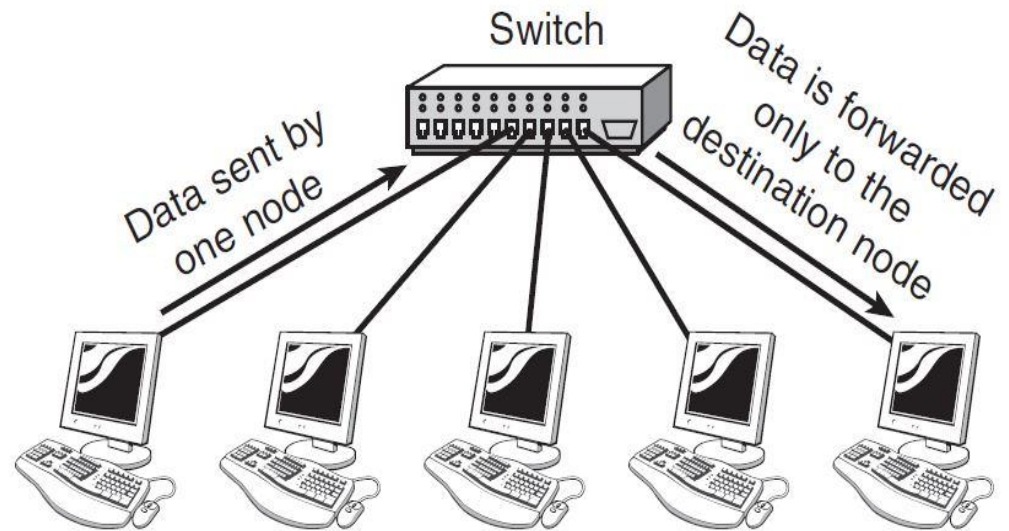
Wireless Access Point

Network device to build a local area network wirelessly

Wireless Access Point

Wireless AP

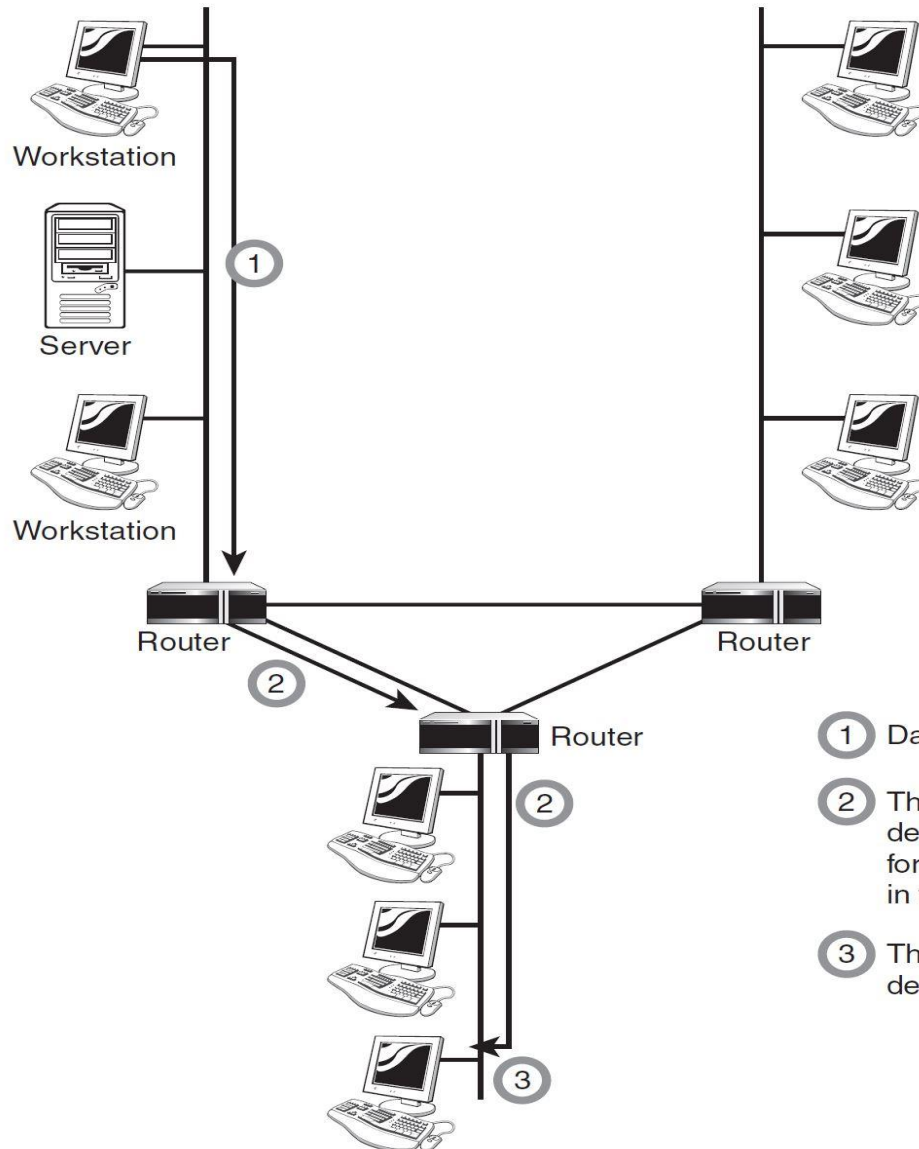Wireless clients

Wired network segment

Router

- Connects different networks
- Routes data packet based on destination network address
- Uses routing table to route data packets.

# Router

Workstation

Server

Workstation

Router

Router

Router

1. Data is sent to the router.

2. The router determines the destination address and forwards it to the next step in the journey.

3. The data reaches its destination.

Firewall

- A network security system that monitors and controls incoming and outgoing network traffic based on predetermined security rules.

- Network firewalls filter traffic between two or more networks and run on network hardware.

- Host-based firewalls run on host computers and control network traffic in and out of those machines
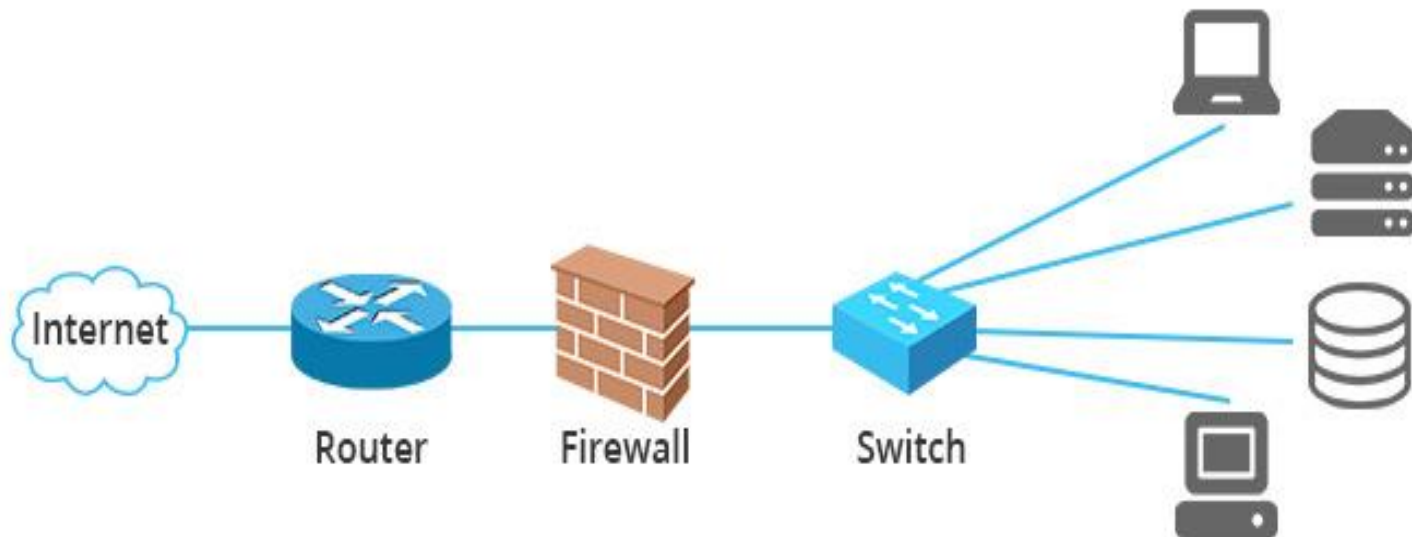
Modem

Modulates one or more carrier wave signals to encode digital information for transmission and demodulates signals to decode the transmitted information.

RS-232 Serial
Port Modem

DSL Modem

Cable Modem