What is a Network?

It's the connection of two or more devices to share resources..

What is a Network Protocol?

It's the language used by devices to communicate with each other.

Default Gateway

It's the bridge in a modem that allows communication with other networks.

Types of Networks

They are categorized based on size, number of users, or service types. LAN (Local Area Network) connects devices within a single area like an office or home. WAN (Wide Area Network) connects LANs. WLAN (Wireless Local Area Network) allows wireless communication among devices in a specified area.

Topology

It determines how devices are placed, connected, and how data transmission occurs.

Server

It provides data, resources, or services to other devices.

Client

Devices that receive services from a server.

Router

Hardware that directs the connection between two or more devices.

Switch

Facilitates communication between connected computers and creates a faster network.

Access Point

Converts wired internet connection to wireless, enabling devices like tablets and phones to connect wirelessly.

Bit

Data used by computers, represented as 0s and 1s.

Byte

Formed by 8 bits. E.g., A = 010011001

ASCII

Text represented in binary.

Data Transmission

Data is transmitted as electromagnetic waves, electrical signals, or optical signals.

OSI Reference Model

Defines communication layers: Application, Presentation, Session, Transport, Network, Data Link, Physical.

Physical Layer

Defines how data is transmitted via cables, fiber, etc.

Data Link Layer

Handles the transmission of data.

MAC Address

Device identifier assigned by the manufacturer and used in communication within the same network.

ARP Protocol

Maps IP addresses to MAC addresses.

Network Layer

Handles addressing and routing.

IP Address

Identifies devices for communication.

IP Address Format

Network and Host portions.

Subnet Mask

Determines which part of an IP address is the network and which is the host.

Default Gateway

Main gateway for accessing other networks.

Dynamic and Static IP Addresses

Static addresses remain constant, while dynamic ones change.

Transport Layer

Responsible for data transmission.

TCP

Reliable, connection-oriented transmission protocol.

UDP

Faster but unreliable, connectionless protocol.

Session Layer

Manages connections between computers.

Presentation Layer

Translates data for compatibility.

Application Layer

Provides an interface between computer applications and the network.

VPN

Creates secure connections over the internet.

HTTP and HTTPS

Protocols for transmitting data over networks, HTTPS is secure.

DHCP and DNS

Assigns IP addresses automatically and translates domain names to IP addresses.

FTP and SSH

Protocols for file transfer and secure remote management.

Port

Data transmission entry-exit points.

Communication Types

Unicast, Multicast, and Broadcast.

Cisco IOS

Operating system for networking devices.