

NETWORKING TERMS

2.4 GHz Frequency Band - A frequency band used for wireless communication in Wi-Fi networks, providing wider coverage but potentially slower speeds due to greater susceptibility to interference.

5 GHz Frequency Band - A frequency band used for wireless communication in Wi-Fi networks, offering faster speeds and less interference compared to the 2.4 GHz band, but with shorter range.

802.11a - A wireless networking standard that operates in the 5 GHz frequency band, offering data rates up to 54 Mbps.

802.11ac (Wi-Fi 5) - A wireless networking standard that operates in the 5 GHz frequency band, providing faster data rates up to 867 Mbps per stream, and supports 8 x DL MU-MIMO.

802.11ax (Wi-Fi 6) - A wireless networking standard that improves upon previous standards by increasing efficiency, capacity, and performance in high-density environments by supporting 8 x DL and UL MU-MIMO, operating in both the 2.4 GHz and 5.4 GHz frequency bands, and data rates up to 1201 Mbps per stream.

802.11b - A wireless networking standard operating in the 2.4 GHz frequency band, offering data rates up to 11 Mbps.

802.11g - A wireless networking standard operating in the 2.4 GHz frequency band, offering data rates up to 54 Mbps.

802.11n (Wi-Fi 4) - A wireless networking standard operating in both the 2.4 GHz and 5 GHz frequency bands, offering data transfer rates up to 150 Mbps per stream, and 4 x MIMO.

8P8C Connector - Commonly known as an RJ-45 connector, it is used to terminate twisted pair cables in Ethernet networks.

Access Point (AP) - A networking device that allows wireless devices to connect to a wired network, acting as a central hub for communication.

Address Resolution Protocol (ARP) - A network protocol used to map IP addresses to MAC addresses, enabling devices to communicate on a local network by resolving the hardware address of a device based on its IP address.

Attenuation - The loss of signal strength as it travels through a medium, such as a cable or fiber optic, resulting in weaker signals over distance.

Bandwidth - The maximum data transfer rate of a network or internet connection, typically measured in bits per second (bps), kilobits per second (kbps), megabits per second (Mbps), or gigabits per second (Gbps).

Biometric Authentication - A security measure that uses unique biological characteristics, such as fingerprints or facial recognition, to verify a user's identity.

Blocklisting - A security technique used to prevent access to specific websites, IP addresses, or services deemed harmful or undesirable.

Bluetooth - A wireless technology standard for exchanging data over short distances between devices, commonly used for connecting peripherals like keyboards, mice, and headphones.

Cable Tester - A tool used to verify the integrity and connectivity of network cables by testing for continuity, shorts, and miswires.

Cat 5 Cable - A type of twisted pair cable commonly used in Ethernet networks, supporting data rates up to 100 Mbps.

Cat 5e Cable - An enhanced version of Cat 5 cable with improved performance and reduced crosstalk, supporting data rates up to 1 Gbps.

Cat 6 Cable - A type of twisted pair cable designed for high-speed Ethernet networks, supporting data rates up to 10 Gbps.

Cat 6a Cable - An augmented version of Cat 6 cable with improved performance and bandwidth, supporting data rates up to 10 Gbps over longer distances.

Channels - Frequencies within the designated frequency bands used for wireless communication, allowing multiple devices to operate simultaneously without interference.

Client - A device or software application that requests services or resources from a server on a network.

Cloud Computing - The delivery of computing services over the internet, including storage, processing power, and software, allowing users to access resources remotely on demand.

Coaxial Cable - A type of cable consisting of a central conductor surrounded by a dielectric insulator and a metallic shield, commonly used for cable television and broadband internet connections.

Computer Networking - The practice of connecting computers and other devices to share resources and communicate with each other, enabling data exchange and collaboration.

Data Center - A facility used to house computer systems and associated components, such as servers, storage systems, and networking equipment, for storing, processing, and distributing data.

Domain Name System (DNS) - A hierarchical decentralized naming system for computers, services, or any resource connected to the internet or a private network, translating.

Dynamic Host Configuration Protocol (DHCP) - A network management protocol that dynamically assigns IP addresses and other network configuration parameters to devices on a network, simplifying network administration and reducing configuration errors.

Dynamic Frequency Selection (DFS) - A mechanism used in Wi-Fi networks to dynamically select and switch channels to avoid interference from radar systems operating in the same frequency band.

Encryption - The process of converting data into a form that is unreadable to unauthorized users, typically done to protect sensitive information during transmission or storage.

F-Type Connector - A coaxial connector used for terminating coaxial cables, commonly found in cable television and satellite television installations.

Fiber Optic Cable - A high-speed transmission medium consisting of thin strands of glass or plastic fibers that transmit data using light signals, offering advantages such as high bandwidth, low latency, and resistance to electromagnetic interference.

Firewall - A network security device or software that monitors and controls incoming and outgoing network traffic based on predetermined security rules, protecting against unauthorized access and malicious activities.

Frequency Band - A range of frequencies allocated for wireless communication, such as the 2.4 GHz and 5 GHz bands used in Wi-Fi networks.

Gateway - A networking device or software that serves as an entry point between different networks, facilitating communication and translation between different protocols or network architectures.

Host - A computer or device on a network that sends or receives data, typically identified by an IP address.

Hub - A networking device that connects multiple devices in a network, allowing them to communicate with each other by forwarding data to all connected devices.

IEEE 802.11 Standard - A set of standards developed by the Institute of Electrical and Electronics Engineers (IEEE) for wireless LANs, specifying protocols for communication between devices in Wi-Fi networks.

Infrastructure as a Service (IaaS) - A cloud computing model where virtualized computing resources, such as servers, storage, and networking, are provided over the internet as a service.

Infrastructure Mode - A mode of operation for wireless networks where devices communicate through an access point, enabling connectivity to a wired network and internet access.

Internet Assigned Numbers Authority (IANA) - The organization responsible for overseeing the global coordination of IP address allocation, domain name system management, and protocol parameter assignment.

Internet of Things (IoT) - The network of interconnected devices embedded with sensors, software, and connectivity, enabling them to collect and exchange data, automate tasks, and communicate with each other.

IP Address - A numerical label assigned to each device connected to a computer network that uses the Internet Protocol for communication, identifying its location in the network.

IPv4 Address - A 32-bit numerical address used to identify devices on a network using the Internet Protocol version 4, expressed as four decimal numbers separated by periods.

IPv6 Address - A 128-bit numerical address used to identify devices on a network using the Internet Protocol version 6, designed to address the limitations of IPv4 and accommodate the growing number of internet-connected devices.

Latency - The time delay between the sending and receiving of data packets in a network, often measured in milliseconds (ms), influencing the responsiveness and performance of networked applications and services.

Linux - A popular open-source operating system kernel used in a wide range of computing devices, including servers, desktops, and embedded systems.

Load Balancer - A networking device or software that distributes incoming network traffic across multiple servers or resources to ensure high availability, reliability, and scalability of applications and services.

Local Area Network (LAN) - A network that connects devices within a limited area, such as a home, office, or campus, allowing them to share resources and communicate with each other directly.

Loopback Plug - A connector used to test network interfaces by looping transmitted signals back to the source for verification.

Lucent Connector (LC) - A fiber optic connector commonly used in networking equipment and fiber optic cabling, featuring a small form factor and high performance.

MAC Address (Media Access Control Address) - A unique identifier assigned to network interfaces for communications on the physical network segment, typically represented as a series of hexadecimal digits.

Managed Switch - A networking switch with advanced features and capabilities, such as VLAN support, Quality of Service (QoS) management, and port mirroring, configurable through a management interface.

Metropolitan Area Network (MAN) - A network that spans a geographic area larger than a LAN but smaller than a WAN, connecting multiple buildings or sites within a city or metropolitan area.

MIMO (Multiple Input Multiple Output) - A technology used in wireless communication systems to improve performance and throughput by transmitting and receiving multiple data streams simultaneously using multiple antennas.

Modem - A device that modulates and demodulates analog signals to encode and decode digital information for transmission over telephone lines, cable systems, or wireless networks, enabling internet connectivity for computers and other devices.

MU-MIMO (Multi-User Multiple Input Multiple Output) - An extension of MIMO technology that enables a wireless access point to communicate with multiple clients simultaneously, increasing network efficiency and capacity.

Near-field Communication (NFC) - A short-range wireless communication technology that enables devices to establish communication by bringing them into close proximity, commonly used for contactless payments, access control, and data transfer.

Network Address Translation (NAT) - A technique used in routers or firewalls to modify network address information in data packet headers while in transit, enabling multiple devices within a private network to share a single public IP address for internet access.

Network Administrator - A professional responsible for managing and maintaining computer networks, including tasks such as installation, configuration, troubleshooting, and security management.

Network Interface Card (NIC) - A hardware component that enables a computer or device to connect to a network, providing a physical interface for transmitting and receiving data.

Network Segmentation - The practice of dividing a computer network into smaller subnetworks to improve performance, security, and manageability by controlling the flow of traffic between segments.

Next-generation Firewalls (NGFWs) - Advanced network security appliances that incorporate traditional firewall features with additional capabilities, such as intrusion detection and prevention, application awareness, and advanced threat protection.

Operating System - Software that manages computer hardware and provides services for computer programs, including tasks such as memory management, process scheduling, and user interface.

Orthogonal Frequency Division Multiple Access (OFDMA) - A technology used in Wi-Fi 6 networks to improve efficiency and capacity by dividing the available spectrum into smaller subchannels and allowing multiple devices to transmit data simultaneously.

Packet - A unit of data transmitted over a network, consisting of a header containing control information and a payload containing the actual data being transmitted.

Passive Optical Network (PON) - A telecommunications technology that uses fiber-optic cables to deliver data, voice, and video services to subscribers without the need for active electronics in the network.

Patch Panel - A panel with multiple ports used to organize and manage network connections, typically used to terminate and interconnect twisted pair cables in a structured cabling system.

Personal Area Network (PAN) - A network that spans a small area, typically within the range of an individual's personal devices, such as smartphones, tablets, and wearable devices.

Platform as a Service (PaaS) - A cloud computing model where a provider delivers a platform allowing customers to develop, run, and manage applications without the complexity of building and maintaining the underlying infrastructure.

Plenum - A type of cable jacketing material that meets fire safety and smoke emission standards, commonly used in air handling spaces such as plenum ceilings.

Power over Ethernet (PoE) - A technology that allows electrical power to be transmitted over Ethernet cables along with data, enabling devices such as IP cameras, wireless access points, and VoIP phones to be powered over the same cable used for network connectivity.

Powered Device (PD) - A device that receives power from a Power over Ethernet (PoE) switch or injector, such as IP phones, wireless access points, and network cameras.

Power Injector - A device used to inject electrical power into Ethernet cables for powering Powered Devices (PDs) in Power over Ethernet (PoE) networks.

Proxy Server - An intermediary server that acts as a gateway between a user's device and the internet, intercepting requests and forwarding them on behalf of the user, often used for security, privacy, and performance optimization.

Radio Frequency Identification (RFID) - A technology that uses electromagnetic fields to automatically identify and track tags attached to objects, commonly used for inventory management, access control, and contactless payment systems.

RJ-45 Connector - A type of connector commonly used for Ethernet connections, featuring eight pins and used with twisted pair cables terminated with 8P8C connectors.

Router - A networking device that forwards data packets between computer networks, typically using routing tables to determine the best path for transmission.

Server - A computer or software application that provides services or resources to other computers or devices on a network, such as file storage, email, web hosting, and database management.

Shielded Twisted Pair (STP) - A type of twisted pair cable that includes additional shielding to reduce electromagnetic interference (EMI) and crosstalk, commonly used in environments with high levels of electrical noise.

Small Office Home Office (SOHO) - A term used to describe a small-scale business or home-based office setup, typically with fewer than 10 employees and minimal IT infrastructure.

Software as a Service (SaaS) - A cloud computing model where software applications are hosted by a provider and made available to customers over the internet on a subscription basis, eliminating the need for installation and maintenance on local devices.

Storage Area Network (SAN) - A specialized high-speed network that provides access to consolidated, block-level data storage, allowing multiple servers to access shared storage devices such as disk arrays and tape libraries.

Subscriber Connect (SC) - A type of fiber optic connector commonly used in telecommunications and networking equipment, featuring a push-pull coupling mechanism for easy connection and disconnection.

Subnet Mask - A numeric identifier used in IPv4 addressing to divide an IP address into network and host sections, determining the network size and allowing for efficient routing.

Switch - A networking device that connects devices within a local area network (LAN) and forwards data packets to their intended destination based on MAC addresses.

Systems Administrator - A professional responsible for managing and maintaining the hardware, software, and networks within an organization, including tasks such as installation, configuration, troubleshooting, and security management.

T568A/T568B - Two wiring schemes used for terminating Ethernet cables with RJ-45 connectors, specifying the arrangement of wire pairs and pin assignments for compatibility with different networking standards.

TCP (Transmission Control Protocol) - A connection-oriented protocol used in the internet protocol suite for reliable and ordered delivery of data packets between devices on a network.

Threat Detection - The process of identifying and analyzing potential security threats or breaches within a computer network, enabling proactive responses to mitigate risks and protect assets.

TIA/EIA Standard - Standards developed by the Telecommunications Industry Association (TIA) and Electronic Industries Alliance (EIA) to define specifications and requirements for telecommunications and networking equipment and cabling.

Tone Generator - A tool used in network testing and troubleshooting to generate an audio tone that can be traced along a cable, helping to identify and locate cable runs and faults.

Troubleshooting - The systematic process of identifying, diagnosing, and resolving problems within a computer system or network to restore functionality and prevent future issues.

Unmanaged Switch - A networking switch with basic functionality and no configuration options, allowing devices to connect and communicate with each other without the need for manual setup or management.

Unshielded Twisted Pair (UTP) - A type of twisted pair cable commonly used in Ethernet networks, consisting of pairs of insulated copper wires twisted together to reduce electromagnetic interference (EMI), without additional shielding.

User Datagram Protocol (UDP) - A connectionless protocol used in the internet protocol suite for fast and lightweight transmission of data packets between devices on a network, often used for real-time communication and multimedia streaming.

Virtual Local Area Network (VLAN) - A logical grouping of devices within a LAN, allowing for segmentation and isolation of network traffic based on criteria such as department, function, or security requirements.

Virtual Private Network (VPN) - A secure network connection that allows users to access and transmit data over a public network, such as the internet, as if they were directly connected to a private network, ensuring privacy and security.

Virtualization - The technology that enables the creation of virtual versions of computing resources, such as servers, storage, and networks, allowing multiple virtual instances to run on a single physical machine.

Wide Area Network (WAN) - A network that spans a large geographical area, connecting multiple local area networks (LANs) and other types of networks to enable long-distance communication and data exchange.

Wireless Local Area Network (WLAN) - A type of local area network that uses wireless communication technologies, such as Wi-Fi, to connect devices within a limited geographical area, typically using access points to provide connectivity.