

New terms and their definitions: Course 2 Week 4

Domain Name System (DNS): A global and highly distributed network service that resolves strings of letters, such as a website name, into an IP address.

DNS zones: A portion of space in the Domain Name System (DNS) that is controlled by an authoritative name server.

Fixed allocation: Requires a manually specified list of MAC addresses and the corresponding IPs.

Network Address Translation (NAT): A migration tool that lets organizations use one public IP address and many private IP addresses within the network.

Port preservation: A technique where the source port chosen by a client, is the same port used by the router

Proxy service: A server that acts on behalf of a client in order to access another service

Quad A (AAAA) record: It is very similar to an A record except that it returns an IPv6 address instead of an IPv4 address

Fixed of authorities: A declaration of the name and the name of the name, name that is authorization for a

Two-factor authentication: A technique where more than just a username and password are required to authenticate. Usually, a short-lived numerical token is generated by the user through a specialized piece of hardware or software.

TEXT records: stands for text and was originally intended to be used only for associating some descriptive text with a domain.

Zone Files: Simple configuration files that describe all resource records for a particular zone

Address Resolution Protocol (ARP): A protocol used to discover the hardware address of a node with a certain IP.

AS4: Autonomous System Number is a number assigned to an individual autonomous system

Cable categories: Groups of cables that are made with the same material. Most network cables used today can be split into two categories, copper and fiber

CLOSE_WAIT: A connection state that indicates that the connection has been closed at the TCP layer, but that the application that opened the socket hasn't released its hold on the socket yet.

Connectionless protocols: A data transmission protocol that allows data to be exchanged without an established connection at the transport layer. The most common of these is known as UDP, or User Datagram Protocol.

Cyclical Redundancy Check (CRC) is a mathematical transformation that uses polynomial division to create a number that represents a larger set of data. It is an important concept for data integrity and is used all over computing, not just network transmissions.

Demarcation: To set the boundaries of something

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destination port: The port on the service the TCP packet is intended for

ESTABLISHED: Status indicating that the TCP connection is in working order, and both sides are free to send each other data

Filter cable: Fibre optic cables consist of individual optical fibres which are very thin, made of glass about the width of a

Firewall: It is a device that blocks or allows traffic based on established rules.

Fragmentation: The process of taking a single IP diagram and splitting it up into several smaller diagrams

Half duplex: It means that, while communication is possible in each direction, only one device can be communicating at a time.

Handshake: A way for two devices to ensure that they're speaking the same protocol and will be able to understand each other.

Rule: It is a physical layer device that broadcasts data to everything computer connected to it

interface: For a router, the port where a router connects to a network. A router gives and receives data through its interfaces. These are also used as part of the routing table.

interior gateway: Interior gateway protocols are used by routers to share information within a single autonomous system.

if `datagram`: A highly structured series of fields that are strictly defined

if `options` field: An optional field and is used to set special characteristics for datagrams primarily used for testing

MAC (Media Access Control) Address: A globally unique identifier attached to an individual network interface. It's a 48-bit hexadecimal number, often represented as six pairs of two hex digits separated by colons (e.g., 08:00:27:12:34:56).

Multicasting: It means that nodes on the network have the ability to direct traffic toward many different receiving stations.

Network port: The physical connector is able to connect a device to the network. This may be attached directly to a device on a computer network, or could also be located in a wall or on a patch panel.

Node: any device connected to a network. On most networks, each node will typically act as a server or a client

Non-routable address space: They are ranges of IP's set aside for use by anyone that cannot be routed to

OSI model a model used to define how network devices communicate. This model has seven layers that stack on top of each other: Physical, Data Link, Network, Transport, Session, Presentation, and Application

Physical layer: It represents the physical devices that interconnect computers

PSH flag: One of the TCP control flags. PSH is short for push. This flag means that the transmitting device wants the receiving device to push currently buffered data to the application as the receiving end as soon as possible.

Sequence number: A 32-bit number that's used to keep track of where in a sequence of TCP segments this one is.

Session layer: The network layer responsible for facilitating the communication between actual applications and the transport layer

MAC IP address: An IP address that must be manually configured on a node

SYN_RECEIVED: A TCP socket state that means that a socket previously in a `LISTEN` state, has received a synchronization request and sent a `SYN_ACK` back.

Time To Live Field (TTL): Is 8-bit field that indicates how many router hops a datagram can traverse before it's discarded.

Transmission Control Protocol (TCP): The data transfer protocol most commonly used in the fourth layer. This protocol requires an established connection between the client and server.

Transport layer: The network layer that sorts out which client and server programs are supposed to get the data.

URG flag: One of the TCP control flags, URG is short for urgent. A value of one here indicates that the segment is considered urgent and that the urgent pointer field has more data about this.

Virtual LAN (VLAN): is a technique that lets you have multiple logical LANs operating on the same physical equipment

VLAN header: a piece of data that indicates what the frame itself is, in a data packet it is followed by the EtherType

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