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# Week: L2 - L3

**Define following terms:**

- **Maximum transmission unit (MTU)**

TCP uses the MTU to determine the maximum size of each packet in any transmission

- **IEEE 802.1q**

Dot1q, Networking standard that supports Vlan

- **L3 switch**

Also referred to as a multilayer switch -- combines the duties of a switch and a router.

- **One-armed routing**

Single physical or logical connection to a network. Often used to forward traffic between locally attached hosts on separate logical routing domains.

- **Ethernet switching mode: Cut-through**

Switch starts forwarding a frame (or packet) before the whole frame has been received, normally as soon as the destination address is processed.

- **Ethernet Switching mode: Store-and-forward**

Forwards a frame after receiving the whole frame

**Why IPv6 MTU is problematic in sensor networks?**

**What are the ISM bands?**

Radio(frequency) bands reserved for industrial, scientific and medical devices

**List common EU area ISM bands**

LPD433, PMR446, Bluetooth 2450 MHz, HIPERLAN 5800 MHz, IEEE 802.11/Wi-Fi 2450 MHz and 5800 MHz.

**List commonly used and completely isolated, non-overlapping 2.4GHz wifi channels.**

Ch 1(2412MHz), Ch 6(2437MHz), Ch 11(2462MHz), Ch 14(2484)

**List some VLAN advantages.**

Easier administration, confinement of broadcast domains, reduced broadcast traffic, and enforcement of security policies. Enables logical grouping of end-stations that are physically dispersed on a network, reduces the need to have routers deployed on a network to contain broadcast traffic

**What is private VLAN and when/why/who uses it?**

Contains switch ports that can only communicate with a given uplink and can’t “see” other ports/devices in the same network. Used in a hotel or Ethernet to the home network where each room or apartment has a port for Internet access.

**Why significant packet loss is so critical problem for TCP connections?**

TCP can recover from packet loss, but retransmitting missing packets causes the throughput to decrease. Missing packets are re-sent along with every packet that had been sent after it.

**Why jitter matters for network application performance and during transmission problem situations?**

It is a transmission error

**List things which may slow Wide Area Network (WAN) performance.**

Network route(are there one or several routes the data can travel), Connection technology(dial-up or fiber for example)

# Week: L3 - Subnetting

Question 1: Nnnn

Answer 1: Nnnnn

Question 2: Nnnn

Answer 2: Nnnnn

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# Week: L3 – RFCs, fundamentals of IP routing

Question 1: Nnnn

Answer 1: Nnnnn

Question 2: Nnnn

Answer 2: Nnnnn

…

…

# Week: IP routing

Question 1: Nnnn

Answer 1: Nnnnn

Question 2: Nnnn

Answer 2: Nnnnn

…

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# Week: TCP AND UDP

Question 1: Nnnn

Answer 1: Nnnnn

Question 2: Nnnn

Answer 2: Nnnnn

…

…

# Week: L5 – L7 applications

**What is DNS authoritative server? DNS resolving server? DNS forwarding server?**

An authoritative name server gets you the actual ip-addresses to you queries, Resolving server gets you the name(can get the ip with a new request), Forwarder forwards external dns name queries to dns servers outside of its network.

**What are DNS records: A, AAAA, MX, NS, CNAME, TXT and PTR?**

Records for: Address, ipv6 address, mail exchange, canonical name, Text, pointer.

**What is DNS round robin?**

Gives a new ip-address with each query on a rotating basis to balance the load of geographically distributed Web servers.

**What is the purpose of SNI? (RFC6066)**

Server Name Indication

**Why DNS logs must be very secure?**

DNS logs contains information on what hosts have made specific requests and domains they are trying to resolve.

**Why successful DNS spoofing/hijacking and "Evilgrade" or similar attacks are so critical?**

Can result in traffic being diverted to the attackers computer or somewhere it was not meant to go. Can be used for phishing or by the dns service provider to block access to selected domains. attempts to inject fake upgrades to

**Think reasons why would someone want to run their own DNS resolver server(s)? (instead of using ISP's or open DNS resolvers like 8.8.8.8 or 1.1.1.1)**

They cache the results and thus improving dns response time and reduces network load. To learn.

<https://howdns.works/ep1/> 🡨 recommend

**List some new top level domains (TLD)**

New: .charity .bmw . barclays .xyz

Older: .com .fi .org .edu, etc.

**Some IP and networking applications**

Telnet, FTP, TFTP, SMTP, SSH, HTTP,

**What is WoL (Wake-on-LAN)?**

Ethernet standard that allows a computer to be turned on or awakened by a network message

**List some parameters which can be supplied with DHCP.**

Dynamically assign ip addresses, can also share DNS and Default gateway ip to “customer”

**Why would someone use Cisco "IP helper" or similar router features with DHCP?**

Used to forward broadcast network traffic from a client machine on one subnet to a server in another subnet.

**What is rogue DHCP server?**

Modem or a router that is not under administrative control of the network staff. A user may have connected it to the network being unaware of the security risk this brings

**Why DHCPv6 is not that common in IPv6 networks?**

Relatively new thing. Not necessary to most hosts.

**What is SNMP MIB?**

Simple Network Management Protocol, Management Information Base. collection of information organized hierarchically. MIBs are collections of definitions which define the properties of the managed object within the device to be managed. MIB Example: The typical objects to monitor on a printer are the different cartridge states and maybe the number of printed files, and on a switch the typical objects of interest are the incoming and outgoing traffic as well as the rate of package loss or the number of packets addressed to a broadcast address.

**What is SNMP trap?**

Asynchronous notification from agent to manager. SNMP traps enable an agent to notify the management station of significant events by way of an unsolicited SNMP message.

**List some devices which often use SNMP.**

Cable modems, routers, switches, servers, workstations, printers

**What is LDAP? And LDAP authentication?**

Lightweight Directory Access Protocol is an open, vendor-neutral, industry standard application protocol for accessing and maintaining distributed directory information services over an Internet Protocol (IP) network.

A common use of LDAP is to provide a central place to store usernames and passwords. This allows many different applications and services to connect to the LDAP server to validate users.

**What is Radius?**

Remote Authentication Dial-In User Service. Provides centralized Authentication, Authorization, and Accounting (AAA or Triple A) management for users who connect and use a network service. Often used by ISPs and enterprises to manage access to the Internet or internal networks, wireless networks, and integrated e-mail services.