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**Test:** 200-301 CCNA v1.1

This is a list of questions that I created by myself to fully understand and memorise the content for the CCNA. All of these questions are based on the summary I created, which can be viewed on the link below, which is based on JITL. Feel free to drop me an email at [farisyazid1702@gmail.com](mailto:farisyazid1702@gmail.com) if you have any comments.

I hope this is beneficial for those of you studying for the CCNA.

Summary: <https://docs.google.com/document/d/1dK7hsFXH6ssvBVurgYYDfh0tFi3Sc5L5hMrp5SIxj-k/edit?usp=sharing>

## For the last few chapters, I got lazy to write questions so there are missing topics at the end

PDU

* What is PDU?
* Layer 5-7 (What is the PDU called)
* Layer 4
* Layer 3
* Layer 2
* Layer 1

OSI/ TCP/IP

* What is OSI?
* What is TCP/IP
* What are the 7 OSI layers
* What are the 4 TCP/IP layers
* Match OSI with TCP/IP
* Which OSI layer provide node-to-node
* Which OSI layer provide host-to-host
* Which OSI layer provide process-to-process

Ethernet

* Draw Ethernet Header
* List all properties
* ARP meaning and the 2 messages
* ICMP 2 messages
* What is the max size with payload
* Difference btw ARP and unknown unicast flooding

CSMA/CD

* What is the full name
* Explain how it works (what happens after collision)

Interface errors

* List all 6 errors

IP Header

* Draw the header and list the functions
* Draw the IP class table

VLAN

* List the 5 default VLANs
* Difference btw access port and trunk port
* Where is the 802.1q tag located
* Draw the 802.1q tag format
* State the VLAN ranges (e.g standard, extended, reserved, ISL)
* Which protocol support native VLAN
* Explain how native VLAN works
* What is used for a switch to act as a router
* What is used to auto create a trunk port
* What are the 2 modes
* What is VTP
* What are the 3 modes

STP

* What are the 2 things that STP is preventing
* What are the 3 states that ports have
* Explain how STP works (what routers are selected, what do they become)
* What is BPDU
* Give the ranking for root bridge selection, root port, designated port
* Draw the format of bridge ID
* Give the root cost
* Give the STP states table
* Give the STP timing table
* Ethernet destination MAC address for PVST+ and standard STP
* If the router is set to primary and secondary, what are the priority?

STP Optional feature

* Name the 5 features and how they work (what ports does it work on, what happens if receive BDPU)
* If enabled globally, what ports does it apply on

RSTP

* Root cost table
* STP port state table
* Name the 4 port roles, and explain (why they chosen for the role, backup for what role)
* What happen if interface with STP and another with RSTP merge
* Max age
* Name the 3 link types
* Name the 3 STP optional features included in RSTP

EtherChannel

* What is LAG
* What are the 3 modes
* Max number of interfaces for Etherchannel
* What are the states for each mode
* What must the same for the members?
* Must the EtherChannel number be the same

Dynamic Routing

* What are the 2 types (divided into 3)
* Name each protocol for the 3 dynamic routing protocols
* Explain how the protocols work and their metric (except BGP)
* List our the AD
* Explain RIP (versions, max hop count, msg type, multicast addr for which versions, timer)
* Explain EIGRP (multicast addr, metric, 4 terminology and condition, must the group number be same)

OSPF

* What is OSPF
* What is LSA and LSDB
* LSA default timer, what does it do
* 3 step process of sharing LSAs and finding best route
* Name the 4 types of router
* What are the 3 rules for an area
* Router ID priority
* What is the default reference bandwidth
* Min cost
* Default hello timer
* Hello message multicasts address
* IP header protocol number
* Name and describe the 7 neighbour states
* Name and describe the 5 messages
* Name and describe the 3 network types (how neighbour discovered, multicast addr, default timers)
* Name the 6 OSPF neighbour requirements and the 2 things that will allow neighbourship but not exchange LSAs
* Name the 3 LSA types

FHRP

* What is FHRP
* What is the problem
* How it works
* Name and describe the 3 types of FHRP

TCP/UDP

* Function of layer 4
* Name the 3 port ranges
* 3-way handshake
* 4 way handshake
* What is used for flow control in TCP
* 4 points TCP vs UDP
* What is TCP and UDP used for
* Port numbers

IPv6

* What is EUI-64
* How to get EUI-64
* Name the 7 types of addresses and describe them (Range, which part of the address represent what)
* What are the multicast addresses
* What are the 5 address scopes
* Draw the IPv6 header
* How to get solicited-node multicast address
* What is NDP
* What are the 2 NDP messages (and type)
* What is another function of NDP
* What are the 2 messages (multicast address and type)
* What is SLAAC and how to get interface ID
* What is DAD and the 2 messages

ACL

* What is ACL
* What are they made up of
* What do ACL have at the end of every list
* Name the 2 types of ACL
* What are the numbered ACL ranges for both types
* Protocols number

Layer 2 discovery

* What does it do
* What are the 2 types
* Describe them (default up, multicast addr, timers)
* Can run both simultaneously

NTP

* What is the 2 clocks a cisco device has
* What is NTP
* What is the accuracy over LAN and WAN/Internet
* What protocol and port number
* What is the top of the hierarchy
* What are the 3 NTP modes
* What is the max stratum
* What are the 2 server types
* What is the default stratum number if you set a router as a server

DNS

* What is DNS
* What does it do
* What protocol auto find DNS server
* When is UDP and TCP used for DNS
* A and AAAA record
* Port number for DNS
* For DNS to work, what to config

DHCP

* What is DHCP
* What does it do
* Which devices is DHCP applied
* What are the 4 messages
* What is used to determine whether broadcast/unicast
* Is the release unicast or broadcast, and from who
* Port numbers
* Explain DHCP relay

SNMP

* What is SNMP
* What are the 2 main devices
* What are the components in the devices
* What are the 3 main operations
* What is used to identify the variables in the MIB
* Name the 3 versions
* Draw the message table (message type, description, messages)
* Port numbers

Syslog

* What is it used for
* Give the format
* Give the severity table
* What are the logging locations
* Which one are logging sent to by default

SSH

* What is SSH
* What is telnet
* For telnet, what format is data sent in
* How many version of SSH
* If support SSH, what will be in the IOS image
* What IOS image used for devices with no encryption support
* What is used to generate RSA key
* What must be configured before generating RSA key

FTP/TFTP

* What is the full name
* When is TFTP preferred over FTP
* What can TFTP do
* What port is TFTP
* What does TFTP have that UDP don't
* Explain briefly the feature
* What are the 3 phases of file transfer
* Is the same port number used throughout
* What are the 2 FTP ports
* What does it have that TFTP don't have
* For greater security, use what
* What are the additional features
* What are the 2 connection types
* What are the 2 modes, who initiate the connection for which connection type
* What reason for the 2nd type

NAT

* What are the 3 range of private IP
* What does NAT means
* For static, map what to what
* For dynamic, what is used to determine which address to translate
* If not in the range, what happen
* What if the range is fully used
* What is PAT
* What is it also known as
* What does it do/overcome

QoS

* What is PSTN and POTS
* What is VoIP
* IP phone have how many internal ports, and to where
* How is phone call traffic separated from normal traffic
* How will the phone be informed to tag its traffic

* What is PoE
* What is PSE and PD
* What cable do they use
* Normally what device provide power, what does it do with the source power before providing to other devices
* What is used to prevent sending too much power to PD

* Basically, what does QoS do
* What are the 4 things it manages
* What are the 3 values for acceptable interactive audio quality

* What is classification
* Give 3 examples
* What is PCP also known as
* Name the 4 main PCP values
* Which is the lowest priority
* What values are used for IP phone
* Where can PCP be found in

* What is TOS
* What is the old one and new one called
* What is the old one main markings
* What is the 4 markings in the new one
* Give the explanation, format and DSCP value
* What are the markings for voice, interactive video, streaming video, high priority data, best effort

* If traffic being send out slower than receiving, what happens to the remaining traffic
* What happens if queue is full
* Why is it bad
* What are the 2 solutions
* Can there be multiple queues
* Who decides which queue can send traffic
* What are the 2 methods to select the queue
* Explain them and what is bad about them

* What is shaping and policing
* Which for outgoing and incoming
* What is PHB
* What is it

Security Fundamental

* What is the CIA triad
* Explain DoS and what is another type
* Explain spoofing
* Explain reflection attack, and a worse version
* Explain man-in-the-middle
* Explain reconnaissance
* What is malware, give 3 examples
* What is social engineering, 3 examples
* What is the attack that compromise commonly visited sites
* What are the 3 things in MFA
* What is used to ensure a website is legitimate
* What is AAA
* What are the 2 protocols

Port Security

* What does it control
* What must the port access mode be
* What can it protect against
* What are the 3 violation mode, explain
* What is a secure MAC address
* By default, do they age
* What are the 2 aging types
* Do secure static MAC address age
* What is sticky secure MAC address

DHCP Snooping

* What does it do
* What is the default for all ports
* What does it protect against
* What are the types of DHCP messages
* Which ports should set as trusted/untrusted
* What happens if receive on trusted ports
* What happens if receive on untrusted ports
* What happens when a client leases a new IP address
* What happens to interface if higher than set limit
* What are the 2 methods to reset
* What is Option 82
* What are the defaults related to it

Dynamic ARP Inspection

* What does it do
* What is the default for all ports
* What does it protect against
* What happens if receive on trusted ports
* What happens if receive on untrusted ports
* What is another method to config
* What happens if over rate limit
* What are the reset methods
* What is the benefit of rate-limiting
* What are the 3 optional check, explain

LAN Architecture

* What are the 2 campus LAN design
* What are the 3 layers
* Explain the 3 layers
* Draw an example of 2-tier and 3-tier designs
* What is the architecture used in data centres
* What are the 4 rules
* What is the architecture for homes/small offices

WAN Architecture

* What is it used for
* What are the 3 types of connections
* What topology used for the first type
* Explain leased lines
* What is MPLS
* What are the 3 routers
* What does MPLS create and how
* How does layer 2 and 3 MPLS work
* What type of connections can be used over the MPLS network
* What are 3 common methods to connect to Internet
* Explain DSL and CATV
* What are the 4 types of redundant internet connections
* What are 2 types of private WAN, are they secure
* How to secure connections over Internet
* What are the 2 types
* Explain how the 1st type works
* Another word for encryption key
* Limitations and solutions
* Explain the 2 solutions
* Explain how the 2nd type works
* Does it encrypt data
* Give 3 differences btw the 2 types of VPN

Virtualization

* Explain a server relation to number of OS before and after virtualization
* What is 1 OS instance called
* What is used to manage the OS instances
* What is it also called
* What is type 1 hypervisor also called (2 names)
* Draw type 1 hypervisor
* What is type 2 hypervisor called
* Where is type 2 usually run on
* Draw type 2 hypervisor
* What are 4 benefits of virtualization
* How are VMs connected to each other
* Explain 2 points
* What are the 3 main features of cloud
* Explain all of them briefly
* Give some benefits of cloud
* What are the 3 ways you can connect to cloud resources
* What are containers
* Draw
* What is term for a software that automates managing containers
* VM vs Container (boot up time, space, resources, portability, reliability)
* What is VRF
* What does it do
* What is it actually called, what does the actual VRF has extra
* Can IPs overlap

Wireless

* What is used to facilitate half-duplex communication in wireless network
* What are the 2 bands normally used in wireless networks
* Draw the 802.11 table
* What are the 3 types of service set and the 4 types
* Explain the 4 types
* What is a distribution system
* Can 1 AP have multiple BSS
* What are the 3 AP operation mode, explain

* Draw the 802.11 frame
* What are the 3 connection states
* What are the 2 ways device scan for BSS
* What are the 3 message types
* What are the 3 wireless AP deployments, explain
* Explain deployment types: local, flexconnect, sniffer, monitor, rogue detector, SE-connect, bridge/mesh, flex plus bridge
* What are the 4 deployment methods for split-MAC architecture

* What are the 3 main concepts in wireless security
* What are the 2 basic authentication methods, explain
* What is the new authentication framework
* What are the 3 entities in 802.1X, explain how it works
* What are their different types
* What are the 3 encryption/integrity methods
* What is WPA
* What are the 2 authentication modes
* Explain the protocols supported for each WPA version

* What is the difference btw WLC ports and interfaces
* What are the 4 types of ports
* What are the 5 types of interface
* What are the 4 QoS in Cisco WLC

Automation

* What are the 3 logical planes
* What is ASIC and TCAM
* When to use CPU and ASIC
* What is SDN
* What plane does it affect
* Draw the diagram

* What is API
* How is it used in Automation
* Draw the CRUD table
* Explain the HTTP Request
* List the 5 Http response
* What is REST
* What are the 6 rules

* What are the 4 API authentication types, explain