Achievable

CCNA DUMP SHEET

Network management and QoS

CDP vs LLDP

	CDP: Cisco proprietary, on by default	LLDP: IEEE 802.1AB, vendor-neutral, off by default
Timers	60 s send, 180 s hold: `cdp timer 30`, `cdp holdtime 240`	30 s send, 120 s hold: `lldp timer 15`, `lldp holdtime 180`
Global	`cdp run`, `no cdp run`	`lldp run`, `no lldp run`
Interface	`cdp enable`, `no cdp enable`	`lldp transmit`, `lldp receive`: `no` stops one direction
Verify	`show cdp neighbors`, `show cdp`, `show cdp interface`	`show lldp neighbors`, `show lldp`, `show lldp interface`

- **Both:** Layer 2, no IP needed, directly connected neighbors only
- **Detail output:** adds the neighbor's IP and software version
- **Switch code:** `S` in CDP, `B` (bridge) in LLDP. Router: `R`
- **Voice VLAN:** phones learn it by CDP or LLDP-MED

Syslog severity

#	Keyword	#	Keyword
0	`emergencies`	4	`warnings`
1	`alerts`	5	`notifications`
2	`critical`	6	`informational`
3	`errors`	7	`debugging`

- *Every Awesome Cisco Engineer Will Need Icecream Daily*
- **A level:** includes all lower numbers. Lower is more severe
- **Format:** time `%FACILITY-SEVERITY-MNEMONIC:` text
- **Example:** `%LINEPROTO-5-UPDOWN:` facility `LINEPROTO`, severity 5

SNMP

- **Manager (NMS):** polls. **Agent:** on each managed device
- **MIB:** the agent's variables in a tree, each with an **OID**

Message	Does
Get, GetNext, GetBulk	NMS reads variables. GetBulk: v2 on
Set	NMS writes a variable
Trap	Agent alerts. No ack, not resent
Inform	Agent alerts. Acked, resent. v2 on

- **Ports:** UDP 161 to the agent, UDP 162 to the NMS
- **v1, v2c:** community strings in clear text
- **v3:** authentication, integrity, optional encryption. Use this

Where messages go

Command	What it does
`logging console 4`	Console: levels 0-4
`logging monitor 6`	VTY sessions: levels 0-6
`terminal monitor`	Each session, in privileged EXEC
`logging buffered 6`	RAM: lost on restart
`logging host 10.1.1.100`	Syslog server, UDP 514
`logging trap 6`	Levels sent to that server
`show logging`	Settings, buffered messages

TFTP vs FTP

- **TFTP:** UDP 69, simple, no login
- **FTP:** TCP 20, 21, username and password
- **Both:** move IOS images and configs to and from a device

Command	What it does
`copy running-config tftp:`	Backs up the config to a server
`copy tftp: flash:`	Loads an IOS image from a server
`ip ftp username admin`	With `ip ftp password`: login

QoS per-hop behaviors (PHB)

PHB	What each router does
Classification	Sorts packets by IP address, protocol, or port, often with an ACL
Marking	DSCP at Layer 3, end to end. CoS at Layer 2, in the 802.1Q tag, lost at a router. Typically access switches
Queuing	*Only during congestion.* LLQ first (strict priority, VoIP), weighted queues (CBWFQ), best effort last
Congestion avoidance	WRED drops at random before queues fill, low priority first, so TCP senders slow down
Policing	Caps the rate by *dropping* or re-marking the excess. Inbound or outbound
Shaping	Caps the rate by *buffering* the excess to send later. *Outbound only*

- **DSCP:** first 6 bits of the 1-byte ToS field. The last 2 are ECN
- **EF:** DSCP 46, binary 101110, VoIP, highest priority
- **Default:** FIFO, best effort, no traffic favored
- **Need it:** a fast core feeds a slower WAN link: output drops