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**Assignment Module -9: Network Access Basic routing and Advance routing concept, switching concept**

1. **Explain Switch**

**Ans:** A switch is a smart connection between multiple devices within a network. It is in effect more or less a traffic controller for data it knows exactly where the information needs to be sent so that only the desired devices unique address, so data moves fast and efficiently. Simple switches are available for small setups and advanced ones that can handle control and organization of bigger networks. Button line, a switch keeps everything running smoothly and securely in your network and Is perfect for easy expansion as needed.

**2- Explain Switch Boot Sequence**

**Ans:** Switch Boot Sequence is basically the process a network switch follows upon its device being powered on.

Power-on self test(POST): the switch checks to be sure that all hardware is functioning properly. The boot sequence ends here if anything critical has failed.

Load Boot Loader: In that case, the flash boot memory holds a low-coverage program called boot loader. If at any time, he reboots, the bootloader bootstraps the larger full-fledged OS responsible for the switch.

Load OS (Operating System): During flashing, the switch load form its flash memory in flash memory its OS containing every function needed to have switch manage and handle different pieces of network traffic according to set configurations.

It then loads its configuration file with the OS running, where all settings and instructions about how to operate in the network are stored (including VLAN configurations, IP addresses, etc.)

Network Activation: the switch the interfaces of its network and then starts applying the settings that are present in the configuration file to begin forwarding the network traffic.

Once all these steps have been completed, the switch is fully operational and can be use to manage data traffic on the network.

**3. Explain Three Methods to access Switch Command Line Interface**

**Ans:** Three methods are possible in accessing a switch’s CLI:

1. Console Access: Plug in a designated cable between your computer and the switch. You would use a program called PuTTY to enter commands directly. It is relatively used for the first configuration of the switch or when physically accessing a network.
2. telnet access: with telnet, you can access the switch from another device by typing in commands. The problem in that telnet isn’t that telnet is not secure because everything, including passwords, is sent in plain text.
3. SSH access: SSH acts like telnet but is much more secure, encrypting your data so passwords and commands are protected; it’s the best choice for remote access to a switch when it is security conscious.

**4. Explain and Configuring the Cisco Internet Operating System**

**Ans:** The Cisco ISO is the core software that run on Cisco routers and switches, allowing you to set up manage your network.

1. Access CLI: connect via console, telnet, or ssh.
2. Enable privileged mode: to type (enable) (en) command.
3. Global configuration: to type (config t) configure terminal
4. Set Hostname: hostname (device name).
5. Assign IP: configure an IP address on an interface.

: - Interface gigabitEthernet0/0

: - Ip address [ip address] [subnet mask]

: -No shutdown

: - Exit

1. Enable SSH for Secure Remote Access

: -Ip domain-name [domain name]

: -Crypto key generate rsa

: -Line vty 0 4

: -Transport input ssh

: -Login local

1. Save the configuration

: - Copy running-config startup-config

**5. Explain Switch Port**

**Ans:** A switch port is the connection point for your device, like computers or other network equipment, to a network switch so that they can communicate with each other.

Access ports: these connect to single devices, such as a computer, and are assigned to only one part of the network, a VLAN.

Trunk ports: These can connect other network devices-again, switches and would carry multiple VLANs from your network. They allow one area of your network to have a talk with another section.

Basic setups:

Access port: connects to one device and one VLAN

Command: interface fastEthernet0/1

Switchport mode access

Switchport access vlan 10

Trunk port: connects to another switch, carrying data for multiple VLANs.

Command: interface fastEthernet0/1

Switchport mode trunk

Switchport trunk allowed vlan 10,20,30

**6. enable secret [password] is hashed using the algorithm.**

**A. MD5**

**B. AH**

**C. PSK**

**D. ESP**

**E. WPA**

**Ans:** a) MD5

Explain: when you enter the enable secret (password) command on cisco IOS, it hashes the password using the MD5 algorithm. The hashed password is then kept on the devices configuration in a manner that nobody will ever be able to view this in plain text.

**7. - An engineer connects to Router R1 and issues a show ip ospf neighbor command. The status of neighbor 2.2.2.2 lists FULL/BDR. What does the BDR mean?**

**A. R1 is an Area Border Router.**

**B. R1 is a backup designated router.**

**C. Router 2.2.2.2 is an Area Border Router.**

**D. Router 2.2.2.2 is a backup designated router.**

**Ans: d)** router 2.2.2.2 is a backup designated router.

**Explain:** In the OSPF (open shortest path first) the BDR stands for backup designated router. The status FULL/BDR indicates that router 2.2.2.2 is fully adjacent with R1 and has been selected as the Backup Designated router on the network segment.

**8. Which command is used to view the neighbor discovery table on a PC?**

**A. show ipv6 neighbor**

**B. show ipv6 neighbors**

**C. netsh interface ipv6 show neighbor**

**D. netsh interface ipv6 show neighbor**

**Ans: c)** netsh interface ipv6 show neighbor

**9. What type of variable is being shown? Routers = [R1,R2,R3]**

**A. List**

**B. Dictionary**

**C. Simple**

**D. Unsigned integer**

**Ans:** a) List

**10. Identify the fields in an IPv4 header. (Choose three)**

**A. Host component**

**B. Time to Live**

**C. Source address**

**D. Destination address**

**Ans: B.** time to live

**C.** Source address

**D.** Destination address