

**Assignment : - 8**

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**Module -8: : Network Access Basic routing and advance routing**

**Concept , switching concept-**

• **Beginner Question**

1. **Explain Switch**

**Ans:-** A switch is a networking device that connects multiple devices within a local area network (LAN) and efficiently directs data to the correct destination using MAC addresses. It operates at the data link layer (Layer 2) of the OSI model and helps in reducing network congestion by forwarding data only to the intended recipient instead of broadcasting it to all devices.

1. **Explain Switch Boot Sequence**

**Ans:-** The Switch Boot Sequence refers to the process a network switch follows when it is powered on. The sequence includes:

1. Power-On Self-Test (POST): The switch checks its hardware components for errors.
2. Loading Bootloader: The bootloader initializes the CPU and basic hardware.
3. Loading IOS (Operating System): The switch loads the Cisco IOS or operating system from flash memory.
4. Configuration File Check: The switch looks for a saved configuration in NVRAM; if found, it applies the settings. Otherwise, it enters setup mode.

This process ensures the switch is ready for network operations.

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

**Ans:-** There are three methods to access a switch's Command Line Interface (CLI):

1. Console Access: Using a console cable (RJ-45 to serial) connected to a computer’s terminal emulator (e.g., PuTTY). Used for initial setup and troubleshooting.
2. Telnet Access: A remote login method over the network using the Telnet protocol (unencrypted). Requires IP configuration on the switch.
3. SSH (Secure Shell) Access: Similar to Telnet but provides encrypted communication for secure remote access. Preferred for security reasons.
4. **Explain and Configuring the Cisco Internet Operating System**

**Ans:-** Cisco Internetwork Operating System (IOS) Explanation & Configuration

Explanation:  
Cisco IOS is the operating system that runs on Cisco routers and switches, providing network services, security, and management functions through the Command Line Interface (CLI).

Basic Configuration Steps:

1. Access the Switch/Router: Use console, Telnet, or SSH.
2. Enter Privileged Mode:
3. enable
4. Enter Global Configuration Mode:
5. configure terminal
6. Set Hostname:
7. hostname My Switch
8. Set Passwords (Console, Enable, and VTY):
9. enable secret password
10. **Explain Switch Port**

**Ans:-** A switch port is a physical interface on a network switch that connects devices like computers, printers, or other switches. It allows data transmission using Ethernet cables and operates at Layer 2 (Data Link Layer) of the OSI model.

Types of Switch Ports:

1. Access Port – Connects end devices and carries traffic for a single VLAN.
2. Trunk Port – Carries traffic for multiple VLANs between switches.
3. Hybrid Port – Can function as both an access and trunk port, used in some network setups.

Switch ports can be configured for speed, duplex mode, VLAN settings, and security as per network requirements.

**4-R1, R2, R3, and R4 have their Fast Ethernet 0/0 interfaces attached to the same VLAN. A network engineer has typed a configuration for each router by using a word processor. He will later copy and paste the configuration into the routers. Examine the following exhibit, which lists configuration for the four routers, as typed by the network engineer. Assuming that all four routers can ping each other’s LAN IP addresses after the configuration has been applied, choose the routers that will be able to form a neighbor relationship with the other routers on the LAN. (You can assume that, if not shown in the exhibit, all other related parameters are still set to their defaults.) (Choose two)**

**A. R1**

**B. R2**

**C. R3**

**D. R4**

**E. None of the routers will exchange routing information.**

**Ans:-** Answer: A. R1 and B. R2

Reason:

For routers to form a neighbor relationship (in OSPF or EIGRP), they must have:

1. The same routing protocol (e.g., OSPF or EIGRP).
2. Matching network settings (same subnet, wildcard mask, and area for OSPF or same AS for EIGRP).
3. Consistent Hello/Dead intervals (in OSPF).
4. No authentication mismatches.

### **3-enable secret [password] is hashed using the algorithm.**

### **A. MD5 B. AH**

### **C. PSK D. ESP**

### **E. WPA2**

### **Ans:- A. MD5**

The enable secret [password] command in Cisco devices stores the password using the **MD5 (Message Digest 5) hashing algorithm**. MD5 is a one-way cryptographic hash function that provides a hashed version of the password instead of storing it in plain text, enhancing security]

**4- 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 (BDR).

* The show ip ospf neighbor command displays the OSPF neighbor relationships.
* FULL/BDR means the neighbor 2.2.2.2 is in a Full adjacency state and has been elected as the Backup Designated Router (BDR) in an OSPF broadcast network.
* The BDR takes over if the Designated Router (DR) fails.

**5-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 neighbors**

Ans :- C. netsh interface ipv6 show neighbor

* This command is used on a Windows PC to view the Neighbor Discovery Protocol (NDP) table, which stores IPv6 neighbors.
* The NDP table is similar to the ARP table in IPv4 but for IPv6.

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

**A. List**

**B. Dictionary**

**C. Simple**

**D. Unsigned integers**

Ans:- A. List

* The variable Routers = [R1, R2, R3] is a list in Python.
* A list is an ordered, mutable collection of items enclosed in square brackets [].

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

**A. Host component**

**B. Time to Live**

**C. Source address**

**D. Destination address**

**E. Networ**

**Ans:-**

B. Time to Live (TTL) – Limits the lifetime of a packet to prevent infinite looping.  
C. Source Address – Stores the sender's IP address.  
D. Destination Address – Stores the recipient's IP address.

Explanation:

An IPv4 header contains several fields, including TTL, Source Address, and Destination Address. The other options (Host Component and Network) are not specific fields in the IPv4 header.