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BIT3 | Advance Networking

A.

1. What is Cisco IOS, and why is it important in configuring Cisco devices?

- Cisco IOS is a proprietary operating system of Cisco that provides administration, operation, and network management devices in Cisco, such as routers, PCs, switches and other devices. Through the CLI (Command Line-interface) Cisco network devices where administrators can perform commands to configure and manage. Configuration of Cisco devices is important since it allows every device to have respective IP addresses, implement security settings, firewall capabilities, and manage user authentication so that network traffic is reduced, and it helps the performance of the network to be faster and more reliable.

2. Discuss the different modes in Cisco IOS and how they impact the configuration process.

- User EXEC mode – After logging into the router, a user can enter User Mode first. The > prompt that appears after the router name indicates

the user mode. Only the most basic instructions, like those that display the status of the system, such as viewing system status and connectivity, can be executed in this mode. In this mode, the router cannot be rebooted or configured, and it does not allow any configuration changes or access to private system information.

- Privileged EXEC mode - This mode is often referred to as “enable” mode that grants enhanced administrator privileges. You may change device settings and get comprehensive system information by using it to run different configuration and monitoring commands. And by entering “enable” in the CLI in user EXEC mode to switch to this privileged EXEC mode.
- Global Configuration mode - In privileged EXEC mode, you will enter the “configure terminal” command to enter this global configuration mode, which enable you to configure settings like hostnames, routing protocols, and access control lists (ACLs) that are applied globally and impact the entire device.

3. Explain the following show commands in Cisco IOS in verifying and monitoring the network:

- show ip interface brief - You can command this in the User EXEC and Privileged EXEC and allows us to see the description of interface's

status, protocol and IP addresses and for rapid diagnostics during troubleshooting sessions. The output of this command has columns for IP-Address, interface, and OK? Protocol, Method, and Status. With the use of this command, network administrators can quickly determine each interface's operational health and spot anomalies like administratively downed or protocol-problem interfaces.

- show running-config - The device current configuration, including interface settings, routing protocols, and access control lists (ACLs), is shown in real time via the show running-config command. This is essential for confirming device setup and resolving configuration errors. The output reflects any changes made since the last save. This command is usually performed in Privileged EXEC mode to safeguard unauthorized private information.
- show version - The show version command offers comprehensive details about the hardware and software condition of a device, including the model, RAM statistics, uptime, and current IOS version. Network administrators must confirm compatibility, resolve problems and assess if a device satisfies application requirements or requires an upgrade.

4. How can you access privileged EXEC mode, and what command is used to exit this mode in Cisco IOS?

- To access the Privileged EXEC mode you will start from User EXEC mode by entering “enable”. After you enter, you will be required to enter a password if the system administrator sets a password. Once you successfully entered, you will see a prompt that ends with “#” that indicates you are now in Privileged EXEC mode. And for you to exit and return to User EXEC mode you will enter “disable”.

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