

CASE STUDY BASE QUESTION ON NETWORK DEVICES

Q1.A small business is experiencing slow network performance. What could be the issue, and how might a switch help?

Answer: The issue may be caused by network congestion. A switch can help by creating multiple collision domains, improving network performance by reducing collisions.

Q2.A company wants to segment its network into separate VLANs. How can a managed switch assist in achieving this, and why is it important?

Answer: A managed switch allows for VLAN configuration, which can isolate broadcast domains and enhance network security by controlling communication between different departments or functions.

Q3. What is the main difference between a hub and a switch in terms of how they handle network traffic?

Answer: Hubs broadcast data to all connected devices, creating a shared collision domain, while switches direct data only to the intended recipient, creating separate collision domains.

Q4.A user connects multiple devices to a hub but experiences network congestion. Explain why this might happen with a hub.

Answer: Hubs operate in a shared collision domain, causing network congestion when multiple devices try to transmit simultaneously.

Q5. A user complains of slow internet speed, and you suspect a faulty RJ45 connector. What steps can you take to diagnose and fix the issue?

Answer: Check for physical damage, re-crimp the connector, and ensure it's securely connected. Replace the cable if necessary.

Q6.A small office wants to connect its local network to the internet. How does a gateway device facilitate this, and what additional functions might it provide?

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Answer: A gateway acts as the connection point to the internet and performs tasks like network address translation (NAT) and firewall functions to enhance security.

Q7. Why is a gateway device often essential in networks with multiple subnets or different types of network technologies?

Answer- A gateway can bridge the communication between different subnets or network types, translating data and routing it appropriately.

Q8. A network administrator is trying to connect two separate LANs in a large office building. How can a bridge assist in connecting these LANs?

Answer- A bridge can connect LANs by filtering and forwarding data based on MAC addresses, creating a single logical network.

Q9- Explain the role of a bridge in segmenting a network and preventing unnecessary traffic from passing between segments.

Answer A bridge filters traffic based on MAC addresses, only allowing data to cross segments if the destination MAC address is on the other side, reducing network congestion.

Q10. A student is setting up a small home network and is confused between using a hub and a switch. Explain why a hub is not a suitable choice for this purpose.

Answer: Hubs broadcast data to all connected devices, causing network congestion, whereas switches direct data only to the intended recipient, improving network efficiency.

Q11. An office network is experiencing slow performance due to an outdated hub. Suggest a network upgrade strategy that includes replacing the hub with a more suitable device.

Answer: Replace the hub with a switch to reduce network congestion, or consider a router for better network management and security.

