CCNA - VLANs and Inter-VLANs Routing

1. What is a VLAN and why is it used?

A VLAN (Virtual Local Area Network) is a logical grouping of devices within a network, regardless of their physical location. VLANs are used to segment networks, improve security, reduce broadcast domains, and enhance network management.

2. How does VLAN improve network performance?

VLANs reduce the size of broadcast domains, which decreases network congestion and improves overall performance by limiting unnecessary traffic to specific segments.

3. What is the difference between an access port and a trunk port?

An access port is used to connect a device to a specific VLAN and carries traffic for one VLAN only. A trunk port carries traffic for multiple VLANs and is typically used between switches or between a switch and a router.

4. What is Inter-VLAN routing and why is it necessary?

Inter-VLAN routing is the process of forwarding traffic between different VLANs. It is necessary because VLANs are isolated at Layer 2, and to enable communication between them, routing at Layer 3 is required.

5. Describe two methods for implementing Inter-VLAN routing.

1. Router-on-a-Stick: A single router interface is configured with multiple subinterfaces, each associated with a VLAN.
2. Layer 3 Switch: The switch itself performs routing between VLANs using switched virtual interfaces (SVIs).

6. What is a Switched Virtual Interface (SVI)?

An SVI is a virtual interface on a Layer 3 switch used to route traffic between VLANs. Each SVI is associated with a VLAN and has an IP address assigned for that VLAN.

7. How do you configure a trunk port on a Cisco switch?

Use the following commands:
interface [interface-id]
switchport mode trunk
switchport trunk allowed vlan [vlan-list]

8. What are the advantages of using a Layer 3 switch for Inter-VLAN routing?

Layer 3 switches offer faster routing performance compared to routers, reduce the number of devices needed, and provide integrated switching and routing capabilities in one platform.

9. How can you verify VLAN configuration on a Cisco switch?

Use commands like 'show vlan brief', 'show interfaces switchport', and 'show running-config' to verify VLAN settings and port assignments.

10. What is the native VLAN and what is its significance in VLAN tagging?

The native VLAN is the VLAN that is not tagged on an 802.1Q trunk. It is used for backward compatibility and ensures that untagged traffic is correctly handled. Both ends of a trunk link must have the same native VLAN to prevent miscommunication.