CN Tutorial 4

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Virtual LAN (VLAN):

A Virtual LAN (VLAN) is a network segmentation technique that divides a physical network into isolated virtual networks. It helps improve security, manage network traffic, and allows devices to communicate as if they were on the same physical network, regardless of their actual location.

1. What are the advantages of VLAN

Network Segmentation: VLANs enable logical division of a physical network, enhancing security and traffic management.

Isolation and Security: They isolate broadcast domains, reducing the potential for unauthorized access and attacks.

Flexibility: VLANs allow virtual grouping of devices regardless of their physical location, aiding in scalability and reconfiguration.

Resource Optimization: Efficiently allocate network resources by directing traffic within specific VLANs, optimizing network performance.

Cost Savings: Reduce the need for separate physical networks by utilizing VLANs, leading to lower infrastructure costs and easier network management.

2. What is the disadvantages of VLAN

Complex Configuration: Setting up and maintaining VLANs can be complex, requiring careful planning and expertise.

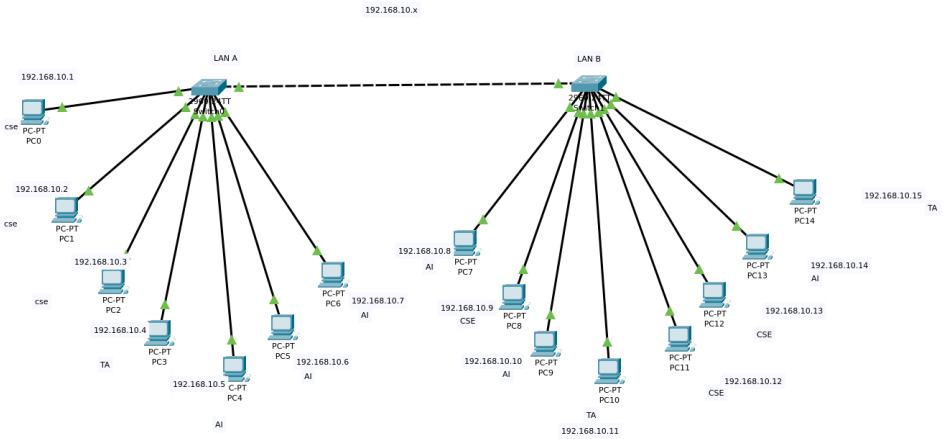
Network Congestion: Improperly configured VLANs can lead to increased network congestion and reduced performance due to incorrect traffic routing.

Security Misconfigurations: Incorrect VLAN configurations can result in security vulnerabilities, allowing unauthorized access between VLANs.

Limited Broadcast Domain: While isolation is an advantage, it can also limit communication between devices on different VLANs, requiring inter-VLAN routing.

Equipment Costs: Implementing VLANs may necessitate switches with VLAN support, potentially increasing infrastructure costs compared to a non-segmented network.

Implementation:



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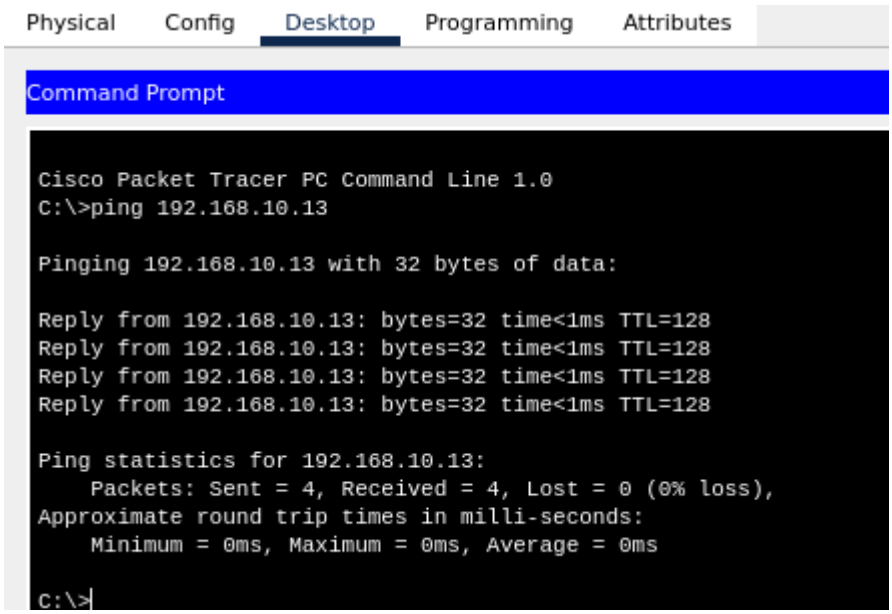

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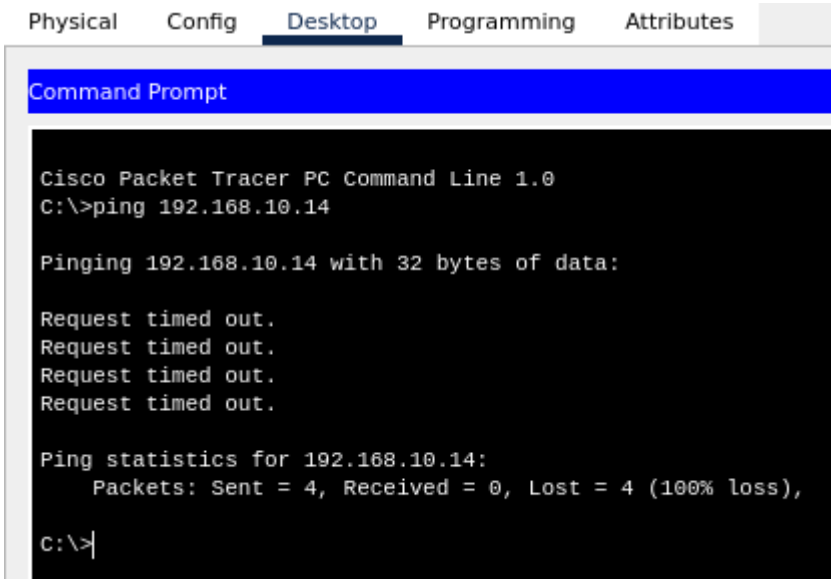

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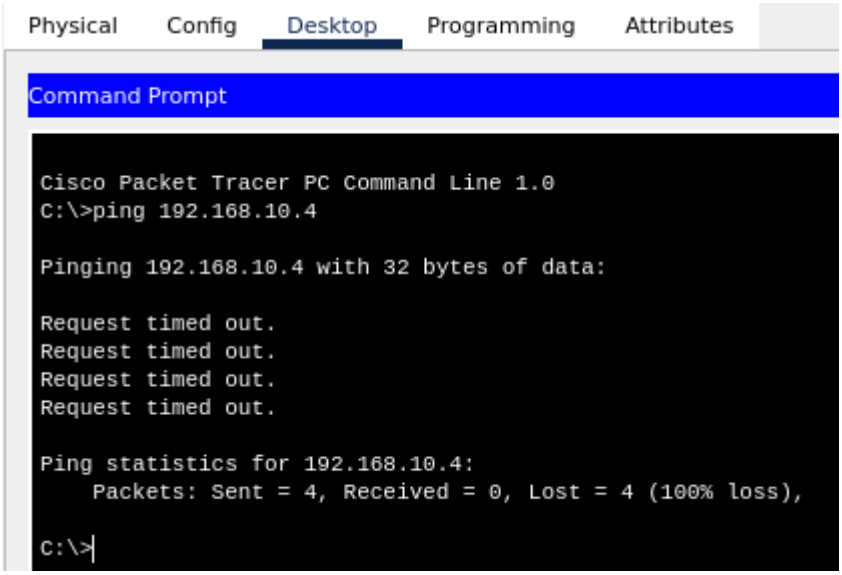

3) How inter VLAN communication happen.

Inter-VLAN communication is achieved through routing. VLANs (Virtual Local Area Networks) are logical segments created within a physical network to enhance network organization and security. When devices from different VLANs need to communicate, they send data to a router or a Layer 3 switch. The router examines the destination IP address, determines the appropriate VLAN, and forwards the data between VLANs. This process allows VLANs to maintain their isolation while enabling controlled communication. VLAN tagging on the network devices and configuration of routing rules on the router/switch are essential for successful inter-VLAN communication.