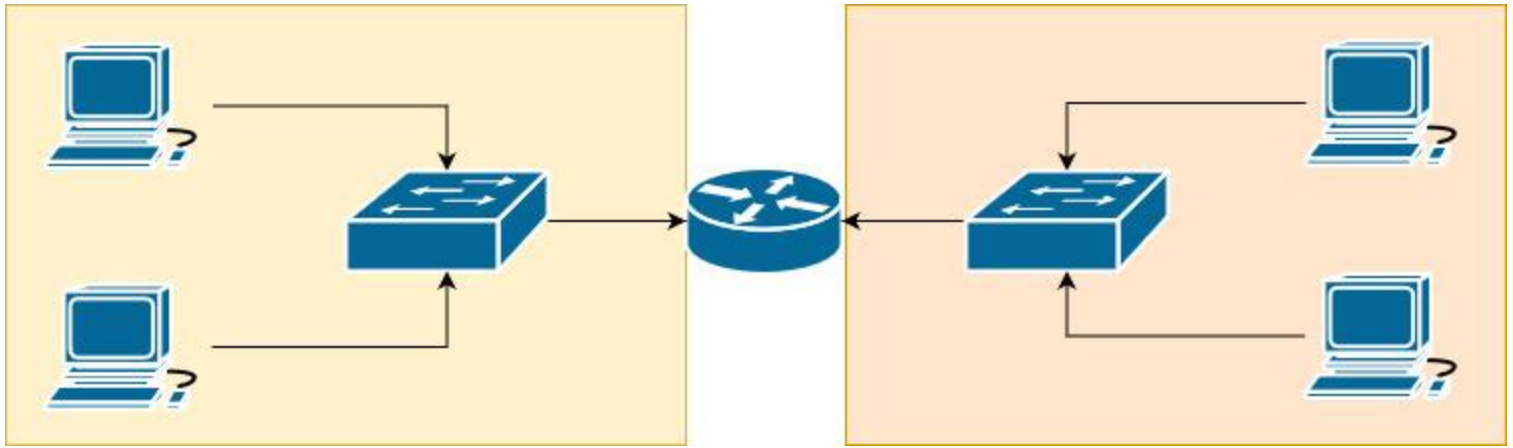
Network

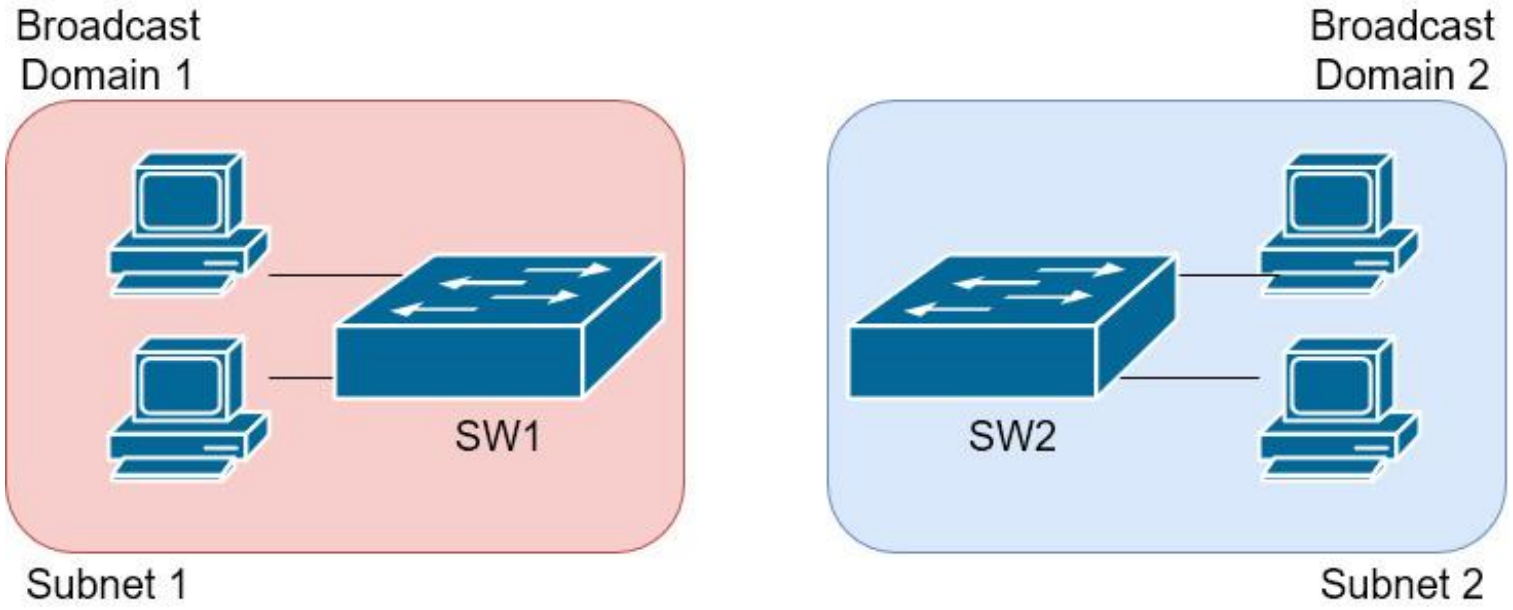
VLANs

Broadcast domains

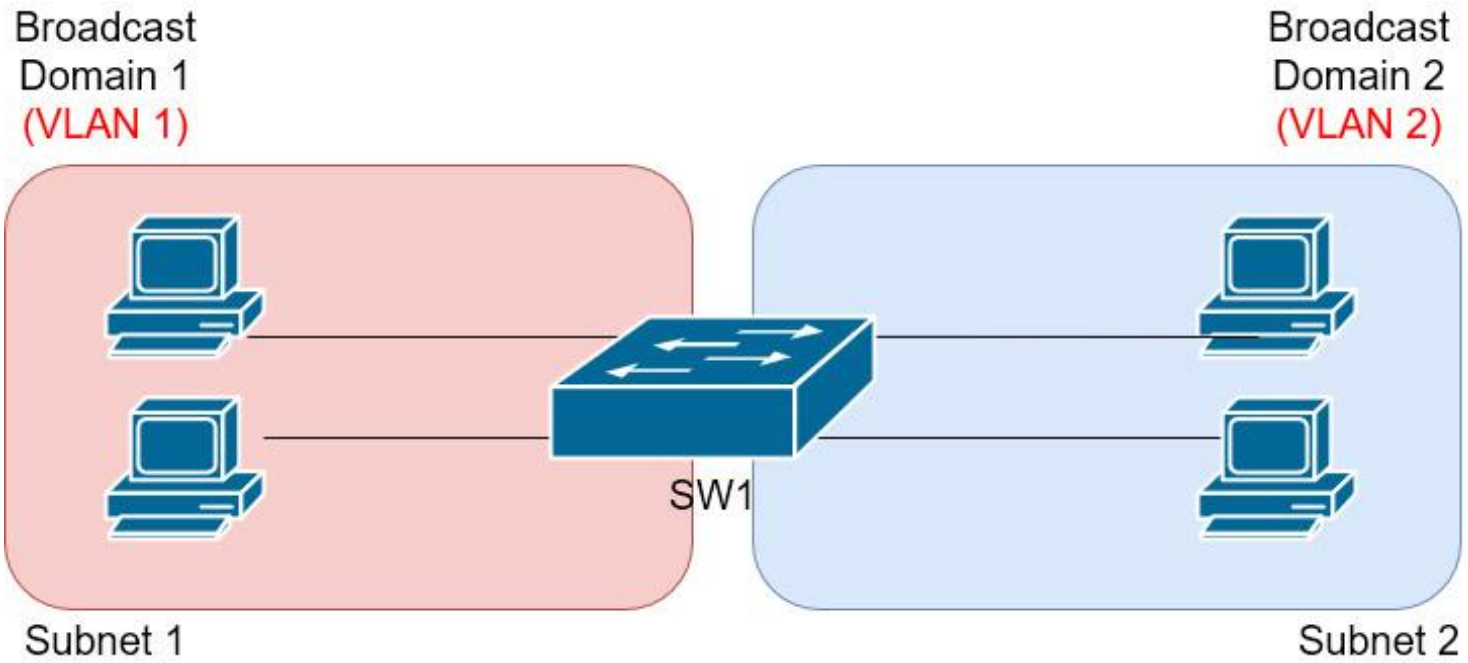
What is a broadcast (FF:FF:FF:FF:FF:FF)?
What is a broadcast domain?



Creating Two Broadcast Domains with Two Physical Switches and No VLANs

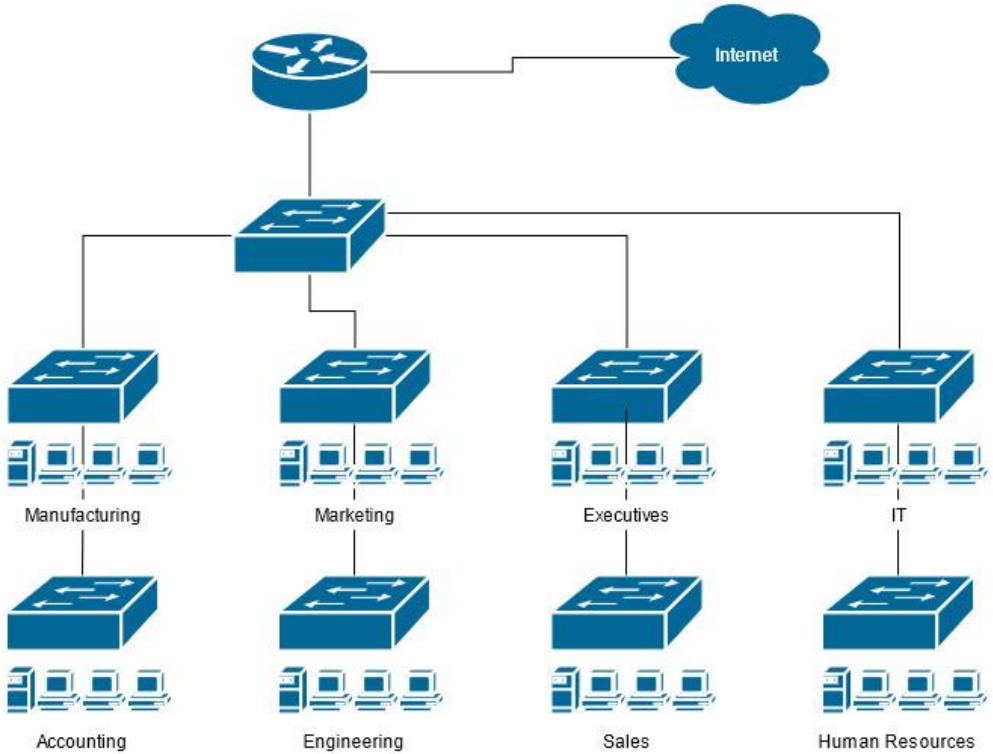


Creating Two Broadcast Domains Using One Switch and VLANs

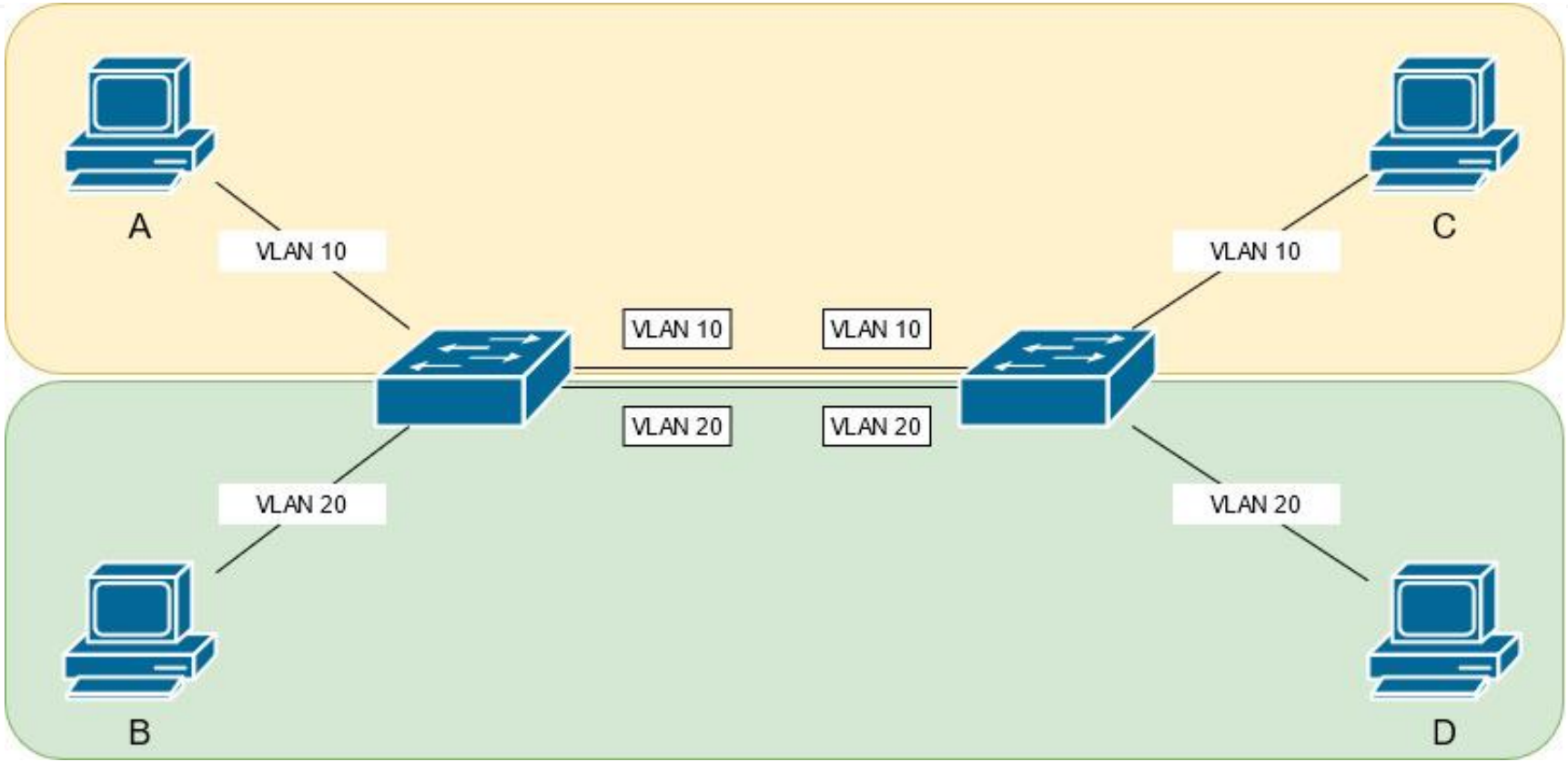


Issues in a Poorly Designed Network

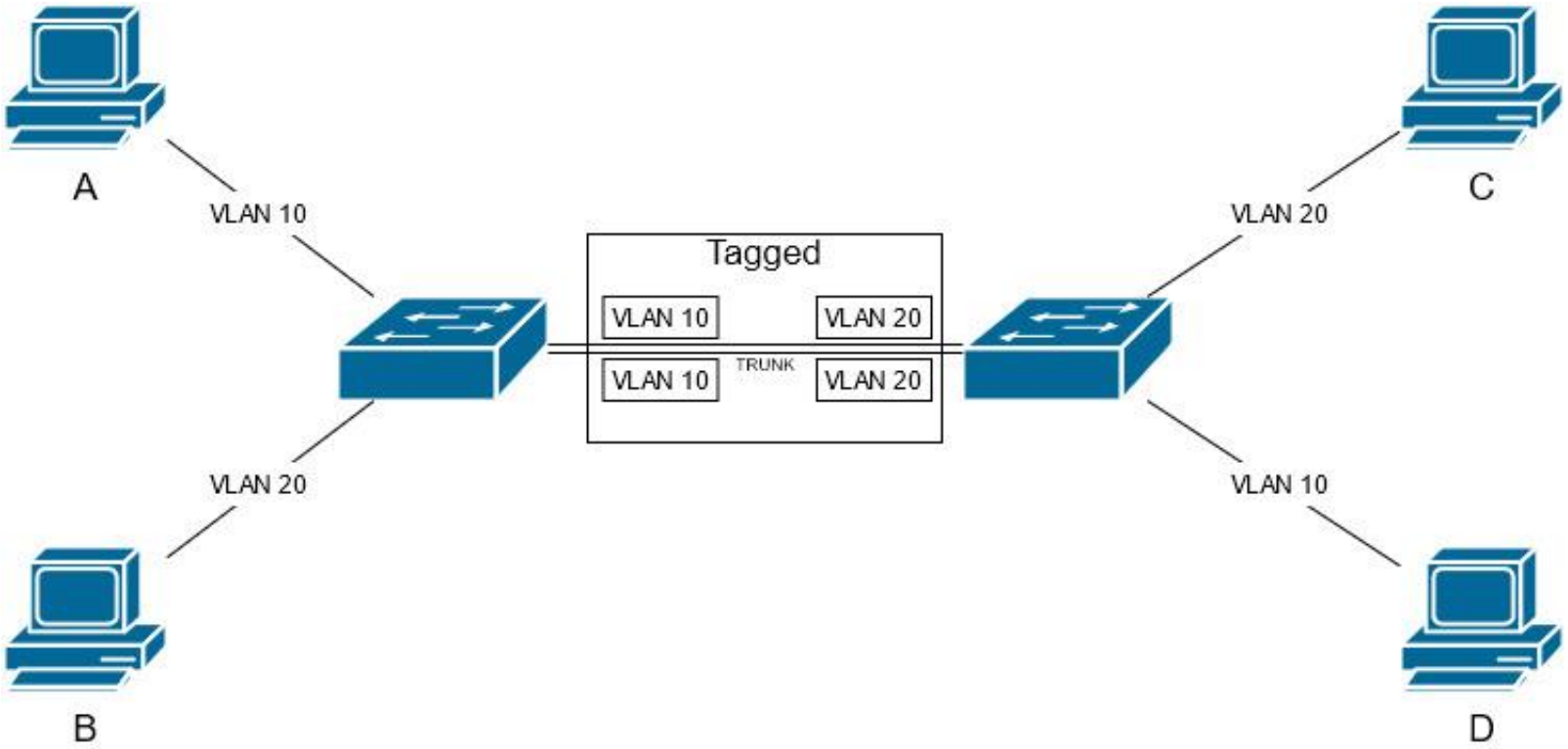
- Unbounded failure domains
- Large broadcast domains
- Large amount of unknown MAC unicast traffic
- Unbounded multicast traffic
- Management and support challenges
- Possible security vulnerabilities



VLAN Example



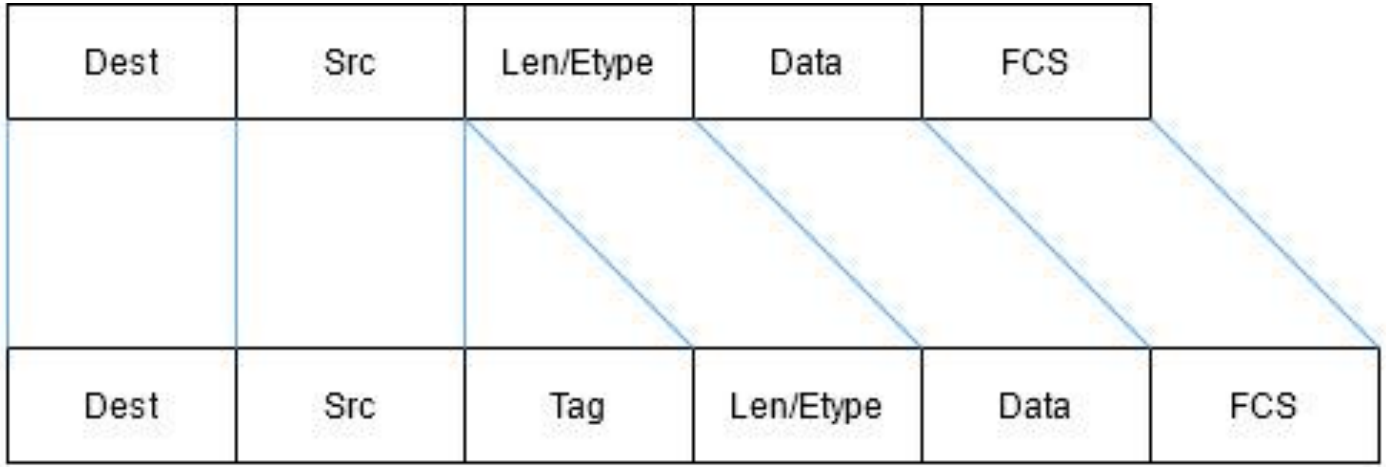
Trunk


A
VLAN 10
Tagged
VLAN 10
VLAN 20
TRUNK
VLAN 10
VLAN 20
C
VLAN 20
VLAN 20
B
VLAN 10
D

Encapsulation

802.1Q

- Ethernet trunks carry the traffic of multiple VLANs over a single link and allow you to extend VLANs across an entire network

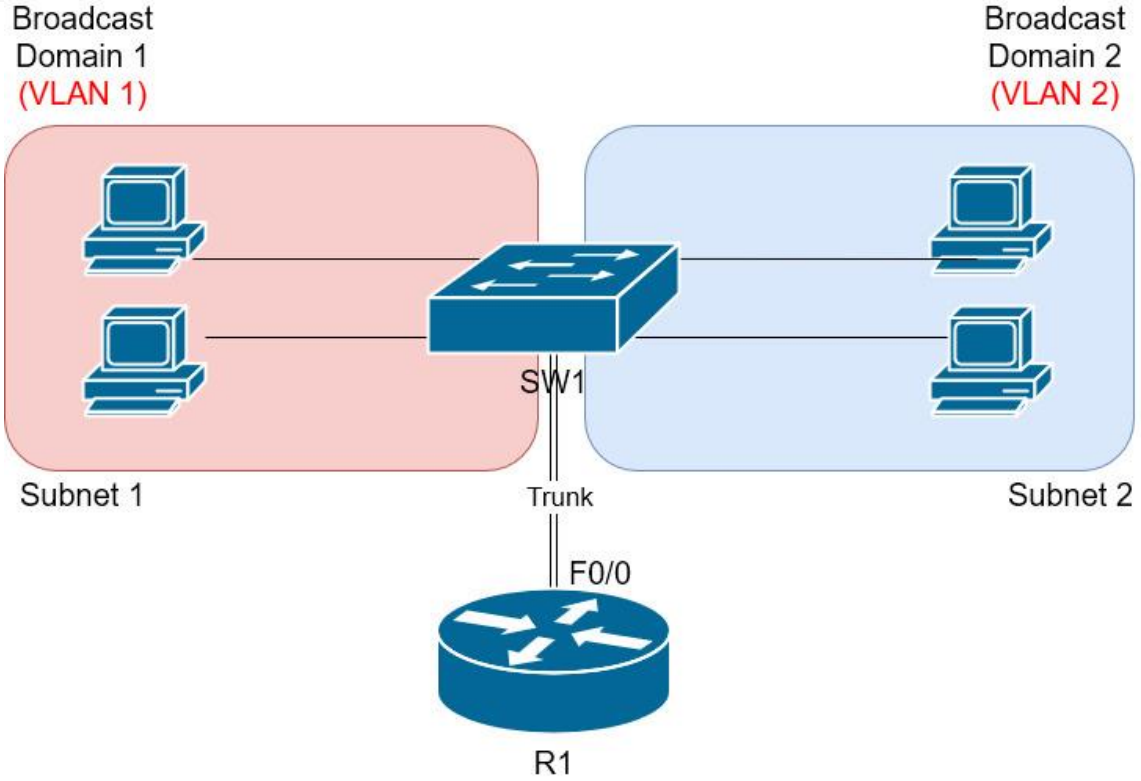


VLANs

GENERAL INFORMATION

- The maximum number of VLANs is switch-dependent (1-4094)
- VLAN 1 is the factory default Ethernet VLAN

Routing between VLANs



Network Traffic Types

TRAFFIC TYPES TO CONSIDER WHEN DESIGNATING VLANS:

- Network management
- IP telephony
- IP Multicast
- Normal Data
- Guest Internet access
- Demilitarized zone (DMZ)

Quiz

1. In a LAN, which of the following terms best equates to the term VLAN?
   A. Collision domain
   B. Broadcast domain
   C. Subnet
   D. Single switch
   E. Trunk

2. Imagine a switch with three configured VLANs. How many IP subnets are required, assuming that all hosts in all VLANs want to use TCP/IP?
   A. 0
   B. 1
   C. 2
   D. 3
   E. You can't tell from the information provided.

3. Switch SW1 sends a frame to switch SW2 using 802.1Q trunking. Which of the answers describes how SW1 changes or adds to the Ethernet frame before forwarding the frame to SW2?
   A. Inserts a 4-byte header and does change the MAC addresses
   B. Inserts a 4-byte header and does not change the MAC addresses
   C. Encapsulates the original frame behind an entirely-new Ethernet header
   D. None of the other answers are correct

THANK YOU