Computer Networks
2nd Year, 1st Semester

Tutorial 7 – VLAN – Sample Answers

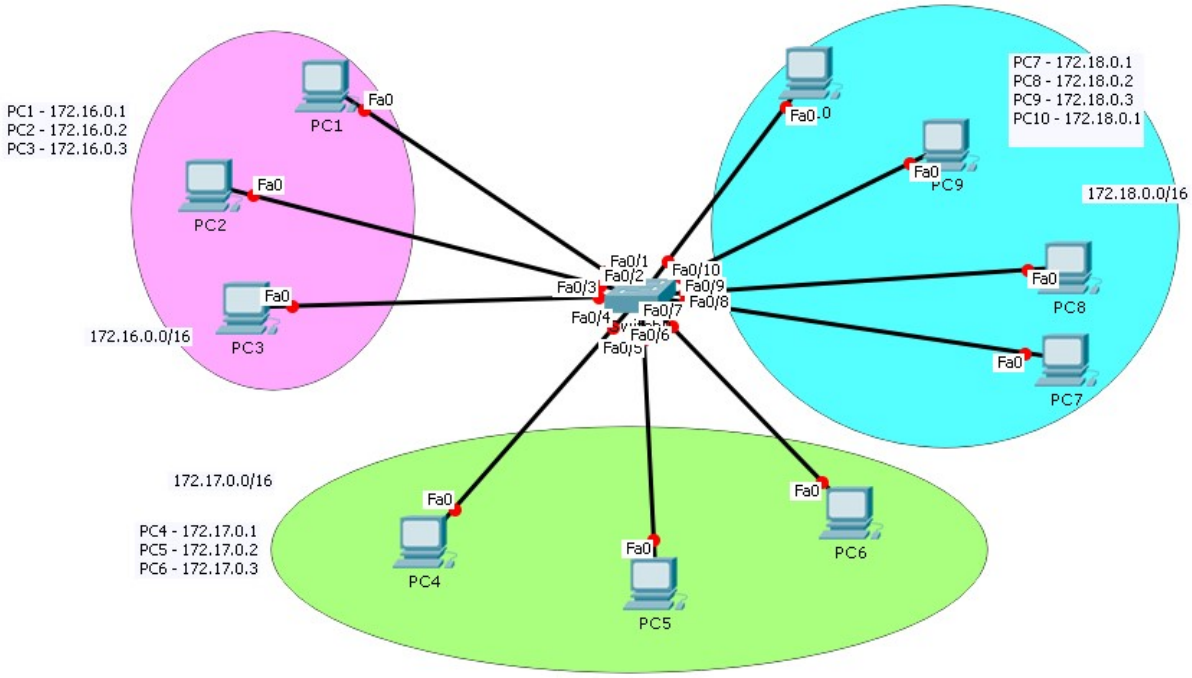
1. If six computers are connected by a switch, how many collision domains and broadcast domain are there?

   6 collision domains
   1 broadcast domain

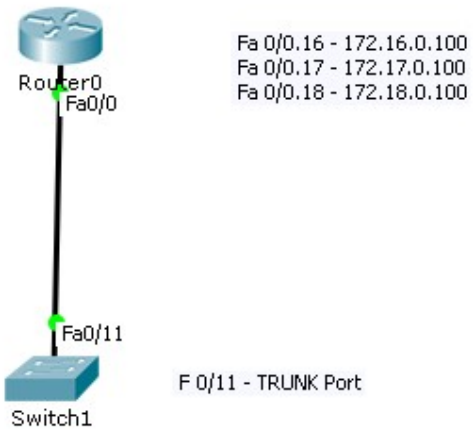
2. If a switch has 12 ports and 10 of them are in VLAN 12, VLAN 13 and VLAN 14, how many broadcast domains are there?

   3 broadcast domains

3. Following the previous question, draw how 10 computers are connected to the 10 switch ports. Give them proper IP addresses.



4. Fix a router to enable inter VLAN communication using one router interface. Show how you assign gateways for each VLAN using sub interfaces.



5. According to the diagram drawn in question 2, write down the switch commands to assign those ports to relevant VLANs. (One example for each VLAN is adequate)

S1(config)#interface range fa 0/1-3
S1(config-if-range)#switchport mode access
S1(config-if-range)#switchport access vlan 16

S1(config)#interface range fa 0/4-6
S1(config-if-range)#switchport mode access
S1(config-if-range)#switchport access vlan 17

S1(config)#interface range fa 0/7-10
S1(config-if-range)#switchport mode access
S1(config-if-range)#switchport access vlan 18

6. What do you understand by trunk port and access port?

Access ports

An access port is a connection on a switch that transmits data to and from a specific VLAN. Because an access port is only assigned to a single VLAN, it sends and receives frames that aren't tagged and only have the access VLAN value. This doesn't cause signal issues because the frames remain within the same VLAN. If it does happen to receive a tagged packet, it will simply avoid it. This is a simpler configuration, but not the most efficient choice if the network is even moderately complex.

Trunk ports

Unlike an access port, a trunk port can transmit data from multiple VLANs. If you have a dozen VLANs on a particular switch, you don't need additional cables or switches for each VLAN—just that single link. A trunk port allows you to send all those signals for each switch or router across a single trunk link. In contrast to an access port, a trunk port must use tagging in order to allow signals to get to the correct endpoint. Trunk ports typically offer higher bandwidth and lower latency than access ports.