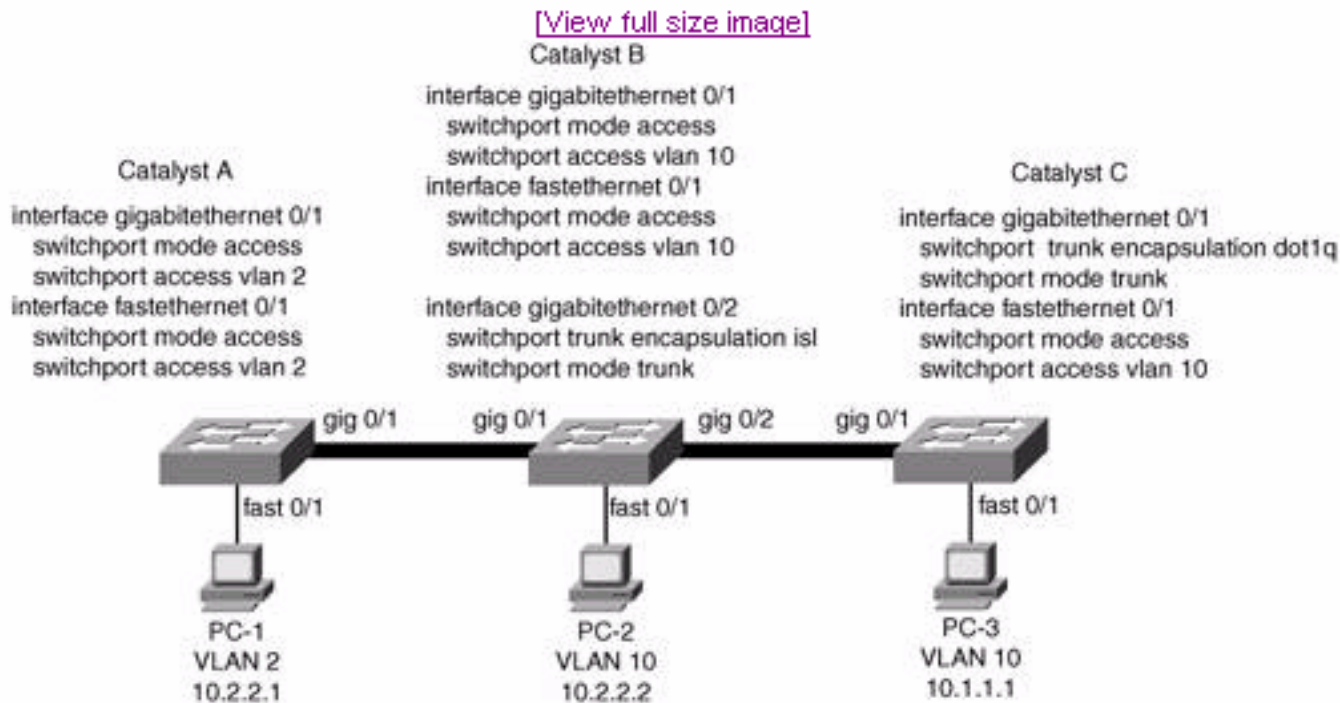


## Scenario 2: VLANs, Trunking, and VTP

This scenario is designed to stir your thinking about VLAN and trunking connectivity. You also need to examine switch configurations and apply them to a network diagram. See the diagram shown in [Figure 19-2](#) and answer the questions that follow. Portions of the configurations of the three Catalyst switches are shown above them.

Figure 19-2. Diagram for Scenario 2



1. PC-1 and PC-2 both are configured with IP addresses on the same subnet. Notice that each PC connects to a different VLAN number. Given the switch configurations shown, can PC-1 ping PC-2?
2. PC-2 and PC-3 are assigned to the same IP subnet (using subnet mask 255.0.0.0) and the same VLAN. Can PC-2 and PC-3 ping each other?
3. Will the trunk link between Catalyst B and Catalyst C come up successfully?
4. Suppose that the trunk between Catalyst B and Catalyst C is configured properly. Where will VLAN1 be pruned? Why?
5. Suppose that Catalyst A is a VTP server, Catalyst C is a VTP client, and Catalyst B is configured for VTP transparent mode. All switches are in the Bermuda management domain. If VLAN 14 is created on Catalyst A, which switches also will create VLAN 14 using VTP?
6. If VLAN 15 is created on Catalyst B, what other switches also will create VLAN 15 through VTP?

7. If VLAN 16 is created on Catalyst C, what will happen?

## Scenario 2 Answers

1. Yes. PC-1 and PC-2 are connected to access VLAN switch ports, VLAN 2 and VLAN 10, respectively. Normally, if these were assigned to different VLANs, they could not ping each other unless a Layer 3 device were present to route between the Layer 2 VLANs. In this case, however, the link between Catalyst A and B is the key. On one switch, the link is an access VLAN port on VLAN 2; on the other end, it is an access VLAN port on VLAN 10. These are physically connected, and each switch has no knowledge of what VLAN the other has assigned to the link. Therefore, data can pass across the link freely, connecting the two VLANs.

2. No. Again, the key is the link between Catalyst B and C. Catalyst B has the link configured as an ISL trunk, whereas Catalyst C has it configured as an 802.1Q trunk. Because the trunk encapsulations are different, no data will pass between them.

3. Yes, the trunk link on each switch will come up successfully, even though the trunk will not work end to end because of the encapsulation mismatch. This is because DTP packets will be exchanged, but both ends of the link are configured to trunk unconditionally.

As a side note, DTP and CDP packets will be exchanged between the switches. Both of these protocols are sent over VLAN 1 in ISL encapsulation and over the native VLAN (VLAN 1, by default) in dot1Q encapsulation. Because the trunk encapsulation is different on each end of the link, each switch will tag VLAN 1 differently. Therefore, VLAN 1 will not be contiguous across the link, and these protocols will not pass successfully.

4. VLAN 1 will not be pruned. Although VLAN 1 is present on all switches, it is not pruned because VLAN 1 is ineligible for pruning by definition.

5. Only Catalyst C creates VLAN 14 in response to VTP advertisements. Catalyst B in transparent mode relays only the VTP information, without interpreting the information.

6. Only Catalyst B creates VLAN 15. Because it is in transparent mode, no VLAN activity will be advertised to other neighboring switches. However, Catalyst B is allowed to create, delete, and rename VLANs freely. These VLANs are significant only to the local switch.

7. Catalyst C will not allow any VLANs to be created unless they are learned from a VTP server in the bermuda domain. Because it is in VTP client mode, no VLAN changes can be performed from the console.