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Prelab Tasks

- Build the lab topology per Figure 1-1 and Figure 1-2.
- Configure your Frame Relay switch router to provide the necessary data-link connection identifiers (DLCI) per Figure 1-3.
- Configure the IP addresses on each router as shown in Figure 1-4 and add the loopback addresses. Alternatively, you can load the initial configuration files supplied in Appendix A if your router is compatible with those used to create this exercise. R1 requires a secondary IP address on its GigabitEthernet 0/1 interface for this lab. Details can be found on the accompanying initial configuration for R1 in Appendix A.

General Guidelines

- Please read the whole lab before you start.
- Do not configure any static/default routes unless otherwise specified.
- Use only the DLCIs provided in the appropriate figures.
- Ensure full IP visibility between routers for ping testing/Telnet access to your devices, with the exception of the switch loopback addresses. These are not visible to the majority of your network because of the configuration tasks.
- If you find yourself running out of time, choose questions that you are confident you can answer. Failing this, choose questions with a higher point rating to maximize your potential score.
- Get into a comfortable and quiet environment where you can focus for the next 8 hours.
- Take a 30-minute break midway through the exercise.
- Have a Cisco Documentation CD-ROM available, or access the latest documentation online from the following URL:
www.cisco.com/univercd/home/home.htm

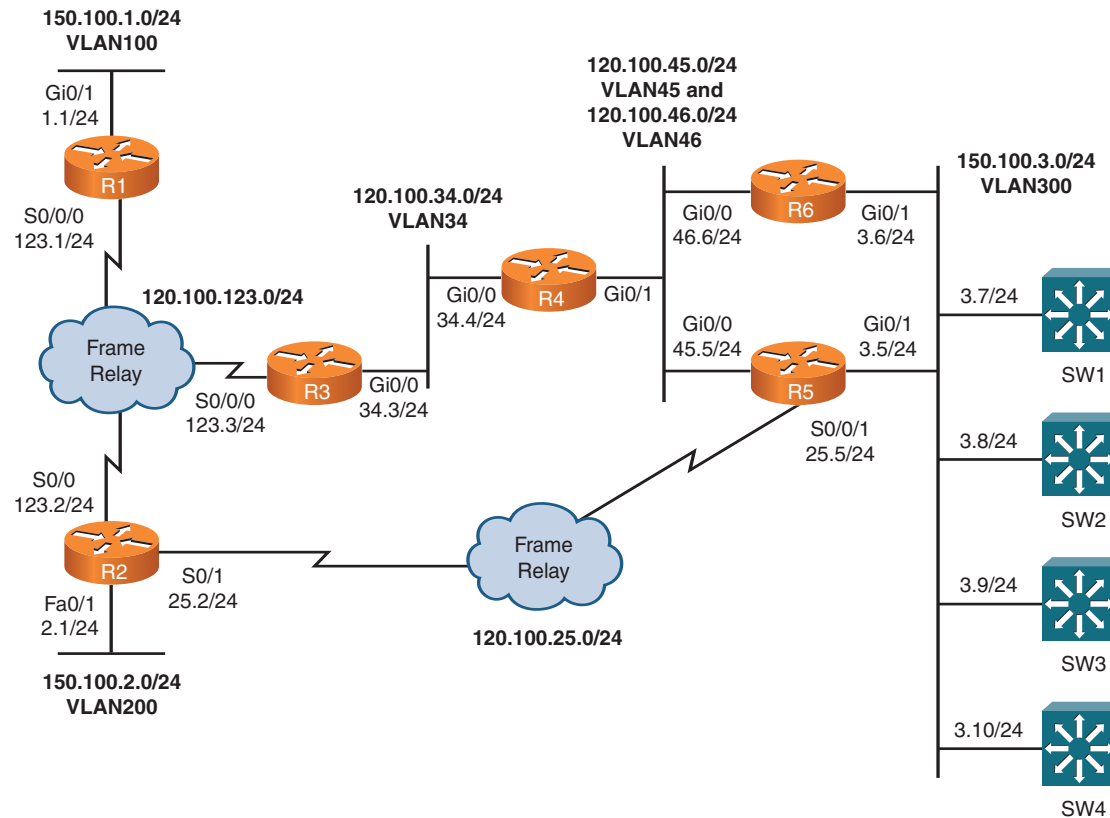
NOTE

Access only the preceding URL, not the whole Cisco.com website because if you are permitted to use documentation during your CCIE lab exam it will be restricted. Consider opening several windows with the pages you are likely to look at to save time during your lab.

Practice Lab 1

You will now be answering questions in relation to the network topology as shown in Figure 1-5.

FIGURE 1-5
Lab Topology
Diagram



Section 1: LAN Switching and Frame Relay (28 Points)

- Configure your switches as a collapsed backbone network with switches 1 and 2 performing core and distribution functionality and switches 3 and 4 as access switches in your topology. Switches 3 and 4 should connect only to the core switches. (2 points)
- Switches 1 and 2 should run spanning tree in 802.1w mode; switches 3 and 4 should operate in their default spanning-tree mode. (2 points)
- Configure switch 1 to be the root bridge and switch 2 to be the secondary root bridge for VLANs 1 and 300. (2 points)
- Ensure that you fully utilize the available bandwidth between switches by grouping your Inter-Switch Links (ISL) as trunks. Ensure that only dot1q and EtherChannel are supported. (3 points)
- Ensure that traffic is distributed on individual Ethernet trunks between switches based on the destination MAC address of individual flows. (2 points)
- Ensure that user interfaces are shut down dynamically by all switches if they toggle excessively. If they remain stable for 35 seconds, they should be re-enabled. (3 points)
- Fast Ethernet ports 0/11–17 will be used for future connectivity on each switch. Configure these ports as access ports for VLAN300, which should begin forwarding traffic immediately on connection. Devices connected to these ports will dynamically receive IP addresses from a DHCP server, which is due to be connected to port 0/18 on sw1 in the future. For security purposes, this is the only port on the network where DHCP addresses should be allocated from. Ensure that the switches intercept the DHCP requests and add the ingress port, VLAN, and switch MAC address prior to sending on to the DHCP server. Limit DHCP requests to 600 packets per minute per user port. (6 points)
- For additional security, ensure that the user ports on switches 1–4 (Fast Ethernet ports 0/11-17) can only communicate with the network with IP addresses gained from the DHCP feature configured previously. Use a dynamic feature to ensure that the only information forwarded upon connection is DHCP request packets and then any traffic that matches the DHCP IP information received from the DHCP binding for additional security. (3 points)

CHAPTER 1

Practice Lab

- R5 and R6 have been preconfigured with IP addresses on their Ethernet interfaces. Configure R4 and its associated switch port accordingly without using secondary addressing to communicate with R5 and R6. Configure R4 with an IP address of 120.100.45.4/24 to communicate with R5, and configure R4 with an IP address of 120.100.46.4/24 to communicate with R6. Configure R4 Gi0/1 and switch 2 FE0/4 only. (3 points)
- Your initial Frame Relay configuration has been supplied for the R1-R2-R3 connectivity and R2-R5. Configure each device per Figure 1-6 to ensure that each device is reachable over the Frame Relay network. Use only the indicated DLCIs. (2 points)

FIGURE 1-6
Frame Relay
Connectivity

