

IEWB-RS-VOL3 Lab 1

Lab Overview:

The following scenario is a practice lab exam designed to help you develop your speed and accuracy at configuring Cisco networking devices. Specifically, this scenario is designed to assist you in your preparation for Cisco Systems' CCIE Routing and Switching Lab exam. The goal of this scenario is to configure and verify complete layer 2 and layer 3 reachability as quickly as possible while minimizing the usage of Cisco's documentation or the context sensitive help. Ensure to track your time as you progress through each section and compare your results with the specified target time.

Lab Instructions:

Prior to starting, ensure that the initial configuration scripts for this lab have been applied. For a current copy of these scripts, see the Internetwork Expert members site at <http://members.internetworkexpert.com>.

Refer to the attached diagrams for interface and protocol assignments. Any reference to X in an address refers to your rack number, while any reference to Y in an address refers to your router number.

Upon completion, all devices should have full IP reachability to all networks in the routing domain, including any networks generated by the backbone routers unless explicitly specified.

Lab Do's and Don'ts:

- Do not change any interface encapsulations unless otherwise specified
- Do not change the console, AUX, and VTY passwords or access methods unless otherwise specified
- Do not use any static routes, default routes, default networks, or policy routing unless otherwise specified
- If any additional IP addresses are needed use IP unnumbered
- Save your configurations often

Point Values & Target Times:

The point values and target times for each section are as follows:

Section	Point Value	Target Time
Troubleshooting	2	10 min
Bridging and Switching	10	40 min
WAN Technologies	5	20 min
Interior Gateway Routing	24	1 hr 15 min
Exterior Gateway Routing	8	35 min

GOOD LUCK!

1. Troubleshooting - (10 Minutes)

1.1. Faults

- There are 2 faults with the initial configurations that need to be resolved.
- Each fault is worth 1 point
- All information (IP addressing, interface numbering, etc) in the diagrams is correct.

2. Bridging and Switching - (40 Minutes)

2.1. VLAN Assignments

- Configure VTP between SW1, SW2, SW3, and SW4 using the domain name CORE.
- SW1 should be the VTP server while the remaining switches should be VTP clients.
- Create the VLANs as per the table below:

VLAN Number	VLAN Name
8	VLAN_E
14	VLAN_A
28	VLAN_B
33	VLAN_BB3
57	VLAN_C
82	VLAN_BB2
356	VLAN_D

- Configure the VLAN assignments per the table below:

Switch	Interface	VLAN
SW1	Fa0/1	VLAN_A
SW1	Fa0/3	VLAN_D
SW1	Fa0/5	VLAN_D
SW2	Fa0/2	VLAN_B
SW2	Fa0/4	VLAN_A
SW2	Fa0/6	VLAN_D
SW2	Fa0/24	VLAN_BB2
SW3	Fa0/3	VLAN_BB3
SW3	Fa0/5	VLAN_C
SW3	Fa0/24	VLAN_BB3
SW4	Fa0/15	VLAN_C

3 Points
15 Minutes

2.2. EtherChannel

- Configure interfaces FastEthernet0/13 through FastEthernet0/15 on both SW1 and SW2 to be bonded as a single logical 802.1q trunk link.
- Use the default native VLAN for this connection.

2 Points
10 Minutes

2.3. Trunking

- Configure an 802.1q trunk between SW2's interface FastEthernet0/16 and SW3's interface FastEthernet0/16.
- Configure two 802.1q trunks between SW2's interface FastEthernet0/19 & FastEthernet0/21 and SW4's interface FastEthernet0/16 & FastEthernet0/18.

2 Points
5 Minutes

2.4. EtherChannel

- Create two logical layer 3 connections between SW2 & SW3 and SW3 & SW4 using all remaining directly connected inter-switch links.
- Use PAgP to negotiate these connections.
- Use the IP addressing and PortChannel numbering from the diagram.

3 Points
10 Minutes

3. WAN Technologies – (20 Minutes)

3.1. Hub and Spoke

- Configure a Frame Relay hub-and-spoke network between R2, R4, and R5 with R5 as the hub.
- Use only physical interfaces for this configuration.
- Use only the DLCIs specified in the diagram.
- Do not use Frame Relay Inverse-ARP.
- Ensure that all routers can ping each other on this segment.

2 Points
10 Minutes

3.2. Point-to-Point

- Configure a Frame Relay connection between R6 and BB1 using DLCI 100.
- Use a subinterface numbered .1 on R6 for this connection.
- Do not use or disable Frame Relay Inverse-ARP

1 Point
5 Minutes

3.3. PPP Authentication

- Configure the Serial connection between R4 and R5 using PPP encapsulation.
- Configure PPP CHAP authentication over the Serial connection between R4 and R5.
- Both routers should use their hostname along with the password CCIE for authentication.

2 Points
5 Minutes

4. Interior Gateway Routing – (1 Hour 15 Minutes)

4.1. OSPF over NBMA

- Configure OSPF area 0 over the Frame Relay circuit between R2, R4, and R5.
- Use the default OSPF network type for this link.
- Ensure that R5 is always elected the Designated Router for this segment.

3 Points
10 Minutes

4.2. OSPF

- Configure OSPF area 2 on VLAN_D between R3, R5, and R6.
- Configure OSPF area 4 on VLAN_B between R2 and SW2.
- Configure OSPF area 4 on the two EtherChannel links between SW2 & SW3 and SW3 & SW4.

2 Points
10 Minutes

4.3. OSPF Stub Area

- Configure OSPF area 3 between R5 and SW1.
- This area should be configured as an OSPF stub area.

2 Points
5 Minutes

4.4. OSPF

- Advertise the Loopback0 networks of R4 into OSPF area 0.
- Advertise the Loopback0 networks of R3 and R6 into OSPF area 2.
- Advertise the Loopback0 networks of R5 and SW1 into OSPF area 3.
- Advertise the Loopback0 networks of R2, SW2, SW3, and SW4 into OSPF area 4.
- All of these networks should appear with a subnet mask of /24 in all routing tables.

3 Points
10 Minutes

4.5. RIP

- Configure RIPv2 on R1, R4, R5, and SW1.
- Enable RIP between R1 and R4.
- Enable RIP on the Serial connection between R4 and R5.
- Enable RIP on VLAN_BB2 of SW2.
- Authenticate RIP updates coming from and being sent to BB2 using key 1 with the MD5 password CISCO.

3 Points
10 Minutes

4.6. RIP

- Advertise R1's Loopback0 interface into RIP.
- Do not use the **network** command to accomplish this task.
- R1's Loopback0 network should appear with a metric of 10 in R4's routing table.

3 Points
5 Minutes

4.7. Redistribution

- Redistribute the VLAN_BB3 network into OSPF on R3.
- Redistribute the Frame Relay link network into OSPF on R6.
- These prefixes should be seen with a cumulative metric throughout the OSPF domain.

3 Points
10 Minutes

4.8. Advanced Redistribution

- Mutually redistribute between OSPF and RIPv2 on R4, R5, and SW2.
- Routers in the OSPF domain should see the RIP routes learned from R4 with a metric of 400 and the RIP routes learned from R5 with a metric of 500.

3 Points
10 Minutes

4.9. Advanced Redistribution

- Ensure that reachability to R1's Loopback0 interface is maintained.

2 Points
5 Minutes