

Packet Tracer – Skills Integration Challenge - EIGRP

Note: This activity and the similar **Packet Tracer - Skills Integration Challenge - OSPF** activity are meant as resources for you to determine what skills you may not have yet mastered from the previous courses. Refer to your notes and previous content if you need assistance. But it may be fun initially to see just how much you retained.

Addressing Table

Device	Interface	IP Address	Subnet Mask	Default Gateway
		IPv6 Address/Prefix		
Branch0	S0/0/0	192.168.3.241	255.255.255.252	N/A
	S0/0/1	192.168.3.254	255.255.255.252	N/A
Branch1	G0/0	DHCP Assigned	DHCP Assigned	N/A
	S0/0/0	192.168.3.245	255.255.255.252	N/A
	S0/0/1	192.168.3.253	255.255.255.252	N/A
Branch2	G0/0	192.168.2.1	255.255.255.0	N/A
	S0/0/0	192.168.3.246	255.255.255.252	N/A
	S0/0/1	192.168.3.249	255.255.255.252	N/A
Branch3	G0/0.10			N/A
	G0/0.20			N/A
	G0/0.30	192.168.1.193	255.255.255.224	N/A
	G0/0.88	192.168.1.225	255.255.255.240	N/A
	G0/0.99	192.168.1.241	255.255.255.252	N/A
	G0/1	192.168.0.1	255.255.255.0	N/A
	S0/0/0	192.168.3.250	255.255.255.252	N/A
	S0/0/1	192.168.3.242	255.255.255.252	N/A
Branch4	S0/0/0	2001:DB8:4::4/64		N/A
	S0/0/1	2001:DB8:3::4/64		N/A
	S0/1/0	2001:DB8:5::4/64		N/A
	Router ID	4.4.4.4		N/A
Branch5	S0/0/0	2001:DB8:1::5/64		N/A
	S0/0/1	2001:DB8:3::5/64		N/A
	Link-local	FE80::5		N/A
	Router ID	5.5.5.5		N/A
Branch6	S0/0/0	2001:DB8:4::6/64		N/A
	S0/0/1	2001:DB8:2::6/64		N/A
	Link-local	FE80::6		N/A

	Router ID	6.6.6.6		N/A
Branch7	G0/0	2001:DB8:7:A::1/64		N/A
	G0/1	2001:DB8:7:B::1/64		N/A
	S0/0/0	2001:DB8:1::7/64		N/A
	S0/0/1	2001:DB8:2::7/64		N/A
	Link-Local	FE80::7		N/A
	Router ID	7.7.7.7		N/A
ISP	G0/0	209.165.202.129	255.255.255.224	N/A
S1	VLAN 88	192.168.1.226	255.255.255.240	192.168.1.225
S2	VLAN 88	192.168.1.227	255.255.255.240	192.168.1.225
S3	VLAN 88	192.168.1.228	255.255.255.240	192.168.1.225
Host-A	NIC	DHCP assigned	DHCP assigned	DHCP assigned
Host-B	NIC			
Host-C	NIC	192.168.1.194	255.255.255.224	192.168.1.193
PC-A	NIC	2001:DB8:7:A::A/64		FE80::7
PC-B	NIC	2001:DB8:7:B::B/64		FE80::7

VLAN and Port Assignments Table

VLAN	Name	Interface
10	Students	F0/5-11
20	Faculty/Staff	F0/12-17, G0/1-2
30	Guest(Default)	F0/18-24
88	Management	N/A
99	Native	F0/1-4

Scenario

You are a network technician new to a company that has lost its last technician in the middle of a system upgrade. You are tasked with completing upgrades to the network infrastructure that has two locations. Half of the enterprise network uses IPv4 addressing and the other half uses IPv6 addressing. The requirements also include a variety of routing and switching technologies.

Requirements

You have console access to **Branch3**, **Branch7**, and **S3**. You can remotely access other devices with the username **admin** and password **adminpass**. The password for accessing privileged EXEC mode is **class**.

IPv4 Addressing

- Finish designing the IPv4 addressing scheme. Subnets already assigned are using the 192.168.1.0/24 address space. Use the remaining space to meet the following criteria:
 - 120 hosts for the **Student** VLAN attached to the **Branch3** G0/0.10 interface.
 - 60 hosts for the **Faculty/Staff** VLAN attached to the **Branch3** G0/0.20 interface.
- Configure inter-VLAN routing and assign the first available address from each subnet to subinterfaces on the **Branch3** router.
- Assign the second available address in the Faculty/Staff VLAN to Host-B.

IPv4 Routing

- Configure EIGRP for IPv4 on **Branch3**.
 - Enable EIGRP 22.
 - Advertise each of the directly connected networks and disable automatic summarization.
 - Prevent routing updates from being sent out the LAN interfaces.
 - Configure a summary route for the **Branch3** LANs and advertise the route to **Branch1** and **Branch2**.
- Configure a directly connected default route on **Branch1** pointing to the ISP and propagate it within the EIGRP updates.

DHCP

- Configure **Branch3** to act as a DHCP server for VLAN 10 on **S3**.
 - The case-sensitive pool name is **Students**.
 - The DNS server is 209.165.201.14.
 - Exclude the first 10 addresses from the pool.
- Configure **Branch1** to receive an IPv4 address from the **ISP**.

IPv6 Routing

- Configure EIGRP for IPv6 on **Branch7**.
 - Enable IPv6 routing and EIGRP for IPv6 using ASN 222.
 - Assign router ID 7.7.7.7.
 - Advertise directly connected networks.
 - Configure IPv6 summary routes for the LANs and advertise them to directly connected routers.
- Configure a fully specified default route on **Branch4** pointing to the ISP and propagate it within the EIGRP updates.

Basic Switch Security

- Configure **S3** with the following security settings.
 - Banner MOTD that includes the word **warning**.
 - Console port login and password of **cisco**.
 - Encrypted enable password of **class**.
 - Encrypt plain text passwords.
 - Shut down all unused ports.
- Enable port security on **S3** on the interfaces that the PCs are connected to.
 - Configure as access ports.
 - Only allow 1 host per port.
 - Enable dynamic learning that stores the MAC address in the running configuration.
 - Ensure that port violations disable ports.
 - Configure PortFast and BPDU Guard.

VLAN

- Create and name the VLANs on **S3** based on the **VLAN Table**.

- Assign the switch ports on **S3** to VLANs according to the **VLAN Table**.
- Configure the connection between **Branch3** and **S1** as a trunk and assign it to VLAN 99.

Spanning Tree

- Configure **S3** to use RSTP as the STP mode.
- Assign **S3** as the root bridge and **S1** as the backup root bridge for VLANs 10 and 20.
- Assign **S1** as the root bridge and **S3** as the backup root bridge for VLANs 30.

Trunking and EtherChannel

- Set **S3** interfaces connected to **S1** and **S2** as trunks and assign the native VLAN.
- Configure EtherChannel on **S3** as desirable.
 - Use channel group 2 for trunks to **S2**.
 - Use channel group 3 for trunks to **S1**.
 - Assign the native VLAN.

Connectivity

- All inside devices should be able to ping the outside host.