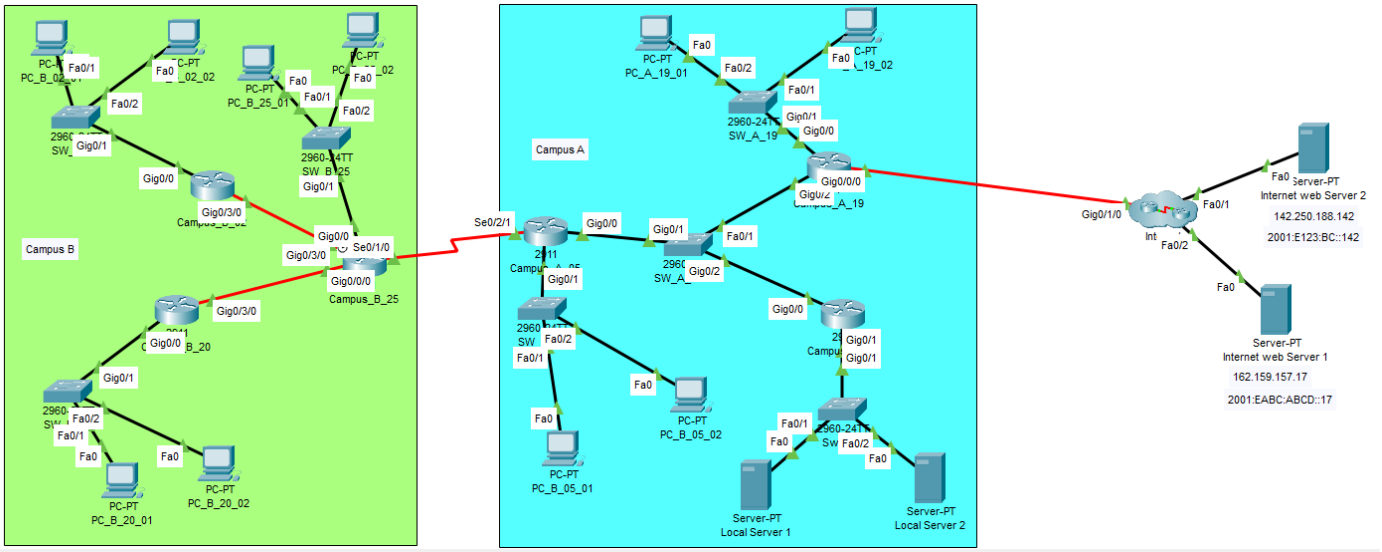
Final Activity: Connecting Two Networks with Multiple Protocols

Topology



Addressing Table – IPv4

Device	Interface	IP Address	Default Gateway
Campus_B_02	G0/0	10.0.0.193/28	N/A
	G0/3/0	10.0.0.210/30	N/A
Campus_B_20	G0/0	10.0.0.1/25	N/A
	G0/3/0	10.0.0.214/30	N/A
Campus_B_25	G0/0	10.0.0.129/26	N/A
	G0/0/0	10.0.0.213/30	N/A
	G0/3/0	10.0.0.209/30	N/A
	S0/1/0 (DCE)	82.194.32.2/30	N/A
Campus_A_05	G0/0	172.20.4.1/29	N/A
	G0/1	172.20.3.1/24	N/A
	S0/2/1	82.194.32.1/30	N/A
Campus_A_19	G0/0	172.20.0.1/23	N/A
	G0/2	172.20.4.3/29	N/A
	G0/0/0	82.194.32.1/30	N/A
Campus_A_36	G0/0	172.20.4.2/29	N/A
	G0/1	172.20.2.1/24	N/A
PC_B_02_01	NIC	10.0.0.194/28	10.0.0.193
PC_B_02_02	NIC	10.0.0.195/28	10.0.0.193
PC_B_20_01	NIC	10.0.0.2/25	10.0.0.1
PC_B_20_02	NIC	10.0.0.3/25	10.0.0.1
PC_B_25_01	NIC	10.0.0.130/26	10.0.0.129
PC_B_25_02	NIC	10.0.0.131/26	10.0.0.129
PC_A_05_01	NIC	172.20.3.2/24	172.20.3.1
PC_A_05_02	NIC	172.20.3.3/24	172.20.3.1
PC_A_19_01	NIC	172.20.0.2/23	172.20.0.1
PC_A_19_02	NIC	172.20.0.3/23	172.20.0.1
Local Server 1	NIC	172.20.2.2/24	172.20.2.1
Local Server 2	NIC	172.20.2.3/24	172.20.2.1

Addressing Table – IPv6

Device	Interface	IPv6 Address	Default Gateway
Campus_B_20	G0/0	2001:B20:B::1/64	N/A
	G0/3/0	2001:B20:B25::1/64	N/A
Campus_B_25	G0/0	2001:B25:B::1/64	N/A
	G0/0/0	2001:B20:B25::2/64	N/A
	S0/1/0 (DCE)	2001:B2A:BA::1/64	N/A
Campus_A_05	G0/0	2001:A36:519::1/64	N/A
	G0/1	2001:A5:A::1/64	N/A
	S0/2/1	2001:B2A:BA::2/64	N/A
Campus_A_19	G0/2	2001:A36:519::2/64	N/A
	G0/0/0	2001:82:BB::1/64	N/A
Campus_A_36	G0/0	2001:A36:519::3/64	N/A
	G0/1	2001:A36:A::1/64	N/A
PC_B_20_01	NIC	2001:B20:B::2/64	2001:B20:B::1
PC_B_20_02	NIC	2001:B20:B::3/64	2001:B20:B::1
PC_B_25_01	NIC	2001:B25:B::2/64	2001:B25:B::1
PC_B_25_02	NIC	2001:B25:B::3/64	2001:B25:B::1
PC_A_05_01	NIC	2001:A5:A::2/64	2001:A5:A::1
PC_A_05_02	NIC	2001:A5:A::3/64	2001:A5:A::1
Local Server 1	NIC	2001:A36:A::2/64	2001:A36:A::1
Local Server 2	NIC	2001:A36:A::3/64	2001:A36:A::1

Objectives

Part 1: Configure Basic Device Settings.

Part 2: Configure IPv4 & IPv6 addressing.

Part 3: Configure and Verify OSPF and EIGRP for IPv4 and IPv6 Routing.

Part 4: Configure and Verify IPv4 and IPv6 static routing.

Part 5: Configure Passive Interfaces for IPv4 and IPv6

Part 6: Test and Troubleshoot IPv4 and IPv6 connectivity.

Background / Scenario

Bahrain Training Institute is merged with Bahrain Polytechnic in August 2023. One of the challenges for ICT department is how to connect the two campuses temporarily during this academic year, then plan for future is going to be set for full migration. The challenge is Campus B uses different IP range and routing protocols.

You are assigned the task of planning, implementing, and testing the plan in Packet Tracer before the real implementation, to avoid any problem. Follow the following task to ensure that all devices are fully connected based on the given IP addressing tables.

Part 1: Basic Configuration

- Disable DNS lookup in all routers.
- Configure device name as shown in the topology/Tables.
- Assign “enpa$$12” as the privileged EXEC password.
- Assign “vtypa$$12” as the vty password.
- Assign “conpa$$12” as the console password.
- Configure a MOTD banner to warn users that “unauthorized access is prohibited”.
- Encrypt plain text passwords.
- Configure clock rate “128000” for DCE interface.
- Configure the bandwidth of the interface “S0/1/0” of router Campus_B_25 to 64 kbps using Bandwidth command.
- Modify the OSPF cost in the interface S0/2/1 of router Campus_A_05 using the command “ip ospf cost” if the bandwidth is 64kbps (which may be used for future.
- Copy the running configuration to the startup configuration.

Part 2: IPv4 configuration

- Configure all routers interfaces using IPv4 addressing table.
- Test and troubleshoot the configuration using ping between all directly connected devices.

Part 3: IPv6 configuration

- Configure all routers’ interfaces using IPv6 addressing table.
- Test and troubleshoot the configuration using ping between all directly connected devices using IPv6 addressing table.

Part 4: IPv4 routing configuration

- Configure **EIGRP** with AS **66** for routers **Campus_B_02**, **Campus_B_20** and **Campus_B_25** using IPv4 addressing table (including wildcard mask). Don't include S0/1/0 of router Campus_B_25 in the routing updates.
- Configure **OSPF** with process ID **2** (area 0) for router **Campus_A_05**, **Campus_A_19** and **Campus_A_36** using IPv4 addressing table. Don't include S0/2/1 of router Campus_A_05 and G0//0/0 of router Campus_A_19 in the routing updates.
- Configure a default route in router Campus_B_25 using Next Hop IP address to forward the packets to router Campus_A_05.
- Propagate the default route to other EIGRP routers.
- Configure Passive Interfaces in the interfaces with no EIGRP neighbor required.
- Configure a static router in router Campus_A_05 to forward the summary "10.0.0.0/24" to router Campus_B_25 using Next Hop IP address.
- Propagate the static route to other OSPF routers.
- Configure a default route in router Campus_A_19 using Exit Interface to forward the packets to internet.
- Propagate the default route to other OSPF routers.
- Configure Passive Interfaces in the interfaces with no OSPF neighbor required.
- Test the connectivity between devices based on IPv4 addressing table (all IPv4 devices can ping all IPs in IPv4 addressing table including the Internet Web servers).

Part 5: IPv6 routing configuration

- Configure **OSPF** with Process ID **1** (area 20) for routers **Campus_B_20** (router id 1.1.1.1) and **Campus_B_25** (router id 2.2.2.2) using IPv6 addressing table. Don't include S0/1/0 of router Campus_B_25 in the routing updates.
- Configure **EIGRP** with AS **77** for router **Campus_A_05** (Router id 11.11.11.11), **Campus_A_19** (Router id 22.22.22.22) and **Campus_A_36** (Router id 33.33.33.33) using IPv6 addressing table. Don't include S0/2/1 of router Campus_A_05 and G0//0/0 of router Campus_A_19 in the routing updates.
- Configure a default route in router Campus_B_25 using Next Hop IP address to forward the packets to router Campus_A_05.
- Propagate the default route to other OSPF routers.
- Configure Passive Interfaces in the interfaces with no EIGRP neighbor required.
- Configure a static router in router Campus_A_05 to forward the summary "2001:B20::/28" to router Campus_B_25 using exit interface.
- Propagate the static route to other EIGRP routers.
- Configure a default route in router Campus_A_19 using Next Hop IP address (2001:82:BB::2) to forward the packets to internet.
- Propagate the default route to other OSPF routers.
- Configure Passive Interface in all interfaces with no EIGRP neighbor required.
- Test the connectivity between devices based on IPv6 addressing table (all IPv6 devices can ping all IPs in IPv6 addressing table including the Internet Web servers).
- Copy the running configuration to the startup configuration.