Activity #3: Network Challenge

Purpose:

Create a functioning network.

Activity:

Using the provided network topology, create different networks so all hosts and routers can communicate with each other. Fill out the tables accordingly, answer questions at the bottom.

Submission Instructions:

- ✓ Submit a report (PDF) via Blackboard

Grade Weight: 42 marks [4% of Final Grade]

NETWORK A = 192.168.10.0/28
Default gateway is **first host**
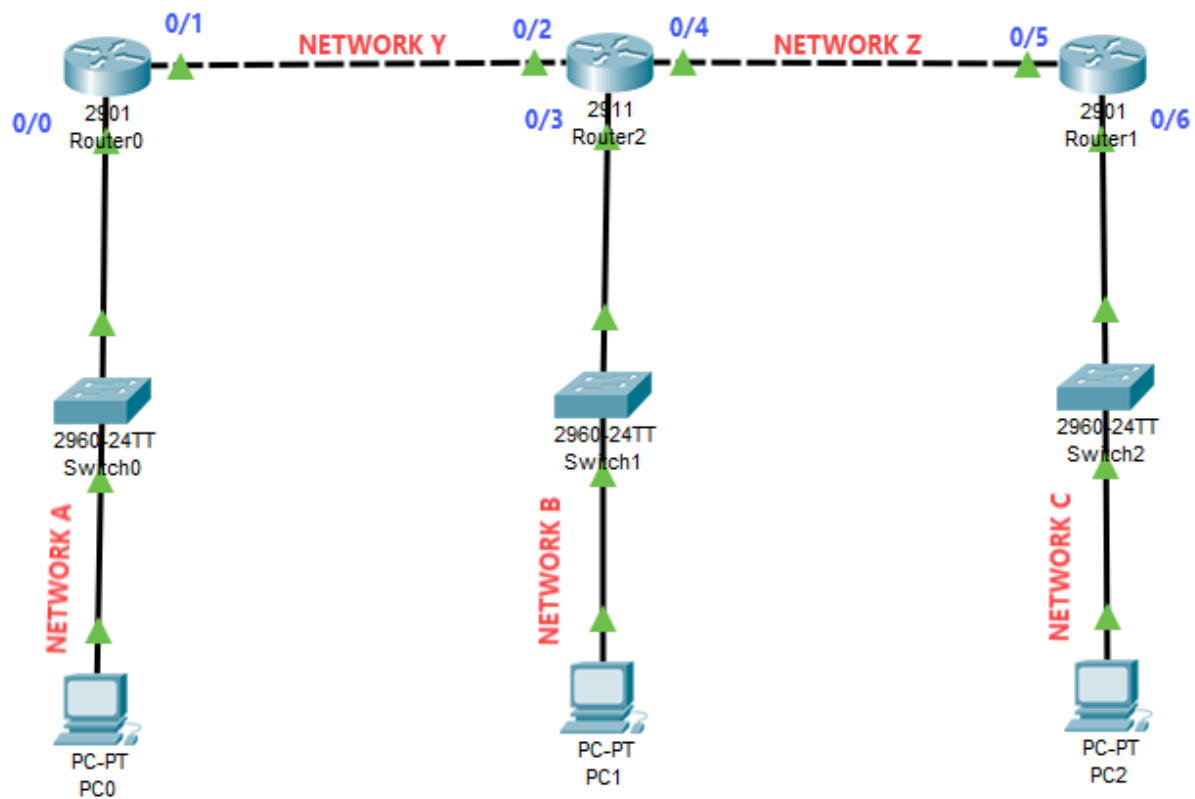

NETWORK B = 192.168.20.48/28
Default gateway is **last host**

NETWORK C = 192.168.30.80/28
Default gateway is **first host**

NETWORK Y = 50.40.30.12/30

NETWORK Z = 20.10.0.40/30

CLIENT CONFIGURATIONS [9 marks]

DEVICE / PORT	IP ADDRESS	SUBNET MASK	DEFAULT GATEWAY
PC0	192.168.10.5	255.255.255.240	192.168.10.1
PC1	192.168.20.50	255.255.255.240	192.168.20.62
PC2	192.168.30.85	255.255.255.240	192.168.30.81

ROUTER CONFIGURATIONS [14 marks]

DEVICE / PORT	IP ADDRESS	SUBNET MASK
ROUTER0 – 0/0	192.168.10.1	255.255.255.240
ROUTER0 – 0/1	50.40.30.13	255.255.255.252
ROUTER2 – 0/2	50.40.30.14	255.255.255.252
ROUTER2 – 0/3	192.168.20.62	255.255.255.240
ROUTER2 – 0/4	20.10.0.41	255.255.255.252
ROUTER1 – 0/5	20.10.0.42	255.255.255.252
ROUTER1 – 0/6	192.168.30.81	255.255.255.240

STATIC ROUTE CONFIGURATIONS [12 marks]

DEVICE	NETWORK / CIDR	NEXT HOP
ROUTER0	192.168.20.48 /28	50.40.30.14
ROUTER0	192.168.30.80 /28	50.40.30.14
ROUTER2	192.168.10.0 /28	50.40.30.13
ROUTER2	192.168.30.80 /28	20.10.0.42
ROUTER1	192.168.10.0 /28	20.10.0.41
ROUTER1	192.168.20.48 /28	20.10.0.41

1. What type of network topology is provided? Explain **[2 marks]**

Extended Star or **Star-Bus**

2. How many hosts can network A support now? **[1 mark]**

14

3. What is the valid range of IP addresses for network A? **[1 mark]**

192.168.10.1-14 /28

4. What subnet mask is needed for network A to support 30 hosts? **[1 mark]**

255.255.255.252

5. What would the new valid range of IP addresses for network A be for the new subnet mask? **[2 marks]**

192.168.10.1-2 /30