CNT4703C – LAB 6

Configuration of Static Routes

Objective:

In this lab several of the concepts that were previously covered will be combined to configure static routes between a group of networks. In this scenario multiple routers will be configured so that network connectivity is established between workstations across a serial connection. You will use the experience gained in the previous lab assignments to configure workstations, routers, switches, and a physical medium. A requirement for this assignment will be to configure the IP addresses for the appropriate router interfaces and VLANs, including the necessary trunk interfaces for the VLANs. On both networks, gateways of last resort will be used to define network perimeters.

The TA will be available to assist you.

Supporting concepts for Lab 6:

*Lab 1 – Cisco Packet Tracer Training
*Lab 2 – Build Cat5e Patch-Cable / T568B Pinout
*Lab 3 – Connecting to Equipment utilizing Console Interface (Putty/xTerm)
*Lab 4 – Configuring a Switch / Introduction to VLANs
*Lab 5 – Multiple VLANs & Router Sub-Interfaces

Credit for this assignment will require:

1) Cisco Packet Tracer file (*attempt to complete prior to Lab*)
2) Screen Shots of Workstation(s)
    a. IPv4 Configurations
3) Screenshots of Switch A/B
    a. #show vlan
    b. #show ip interface
    c. Front of Switch w/Cables Connected

4) Screenshots of Router A/B
    a. Router 1 & 2: Running Configuration
        i. [host]#show run
        ii. [host]#show ip int brief
        iii. [host]#show ip route

LAB 6 questions:

1. What does TCP/IP stand for?
2. What does UDP stand for?
3. How does TCP differ from UDP?
    a. How are these protocols similar?
    b. List some characteristics of both.
4. Explain the use of 0.0.0.0 in setting the static routes in this assignment. (*use complete sentences*)
5. What does the statement "Gateway of last resort is not set" mean?
    a. Why would this matter when sending packets outside a network?

FIGURE 1.0 – Installation of Serial Module on CISCO router in Packet Tracer

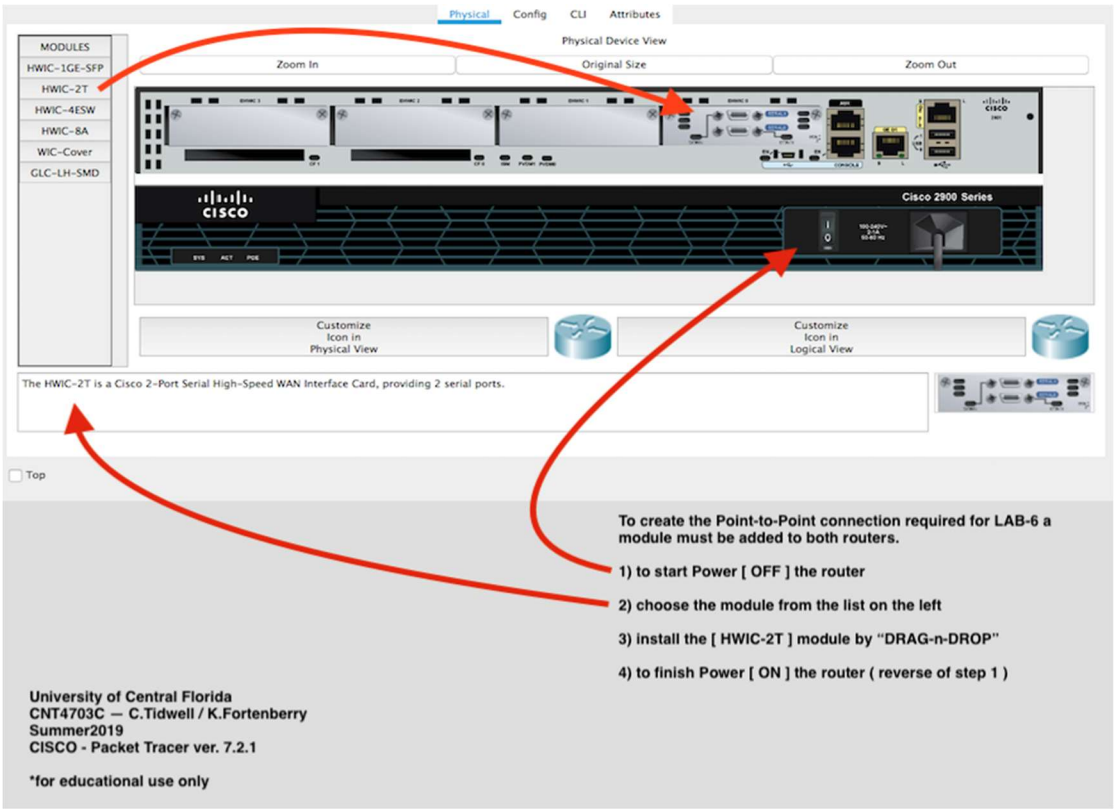

FIGURE 1.1 – CISCO Packet Tracer / Logical Topography

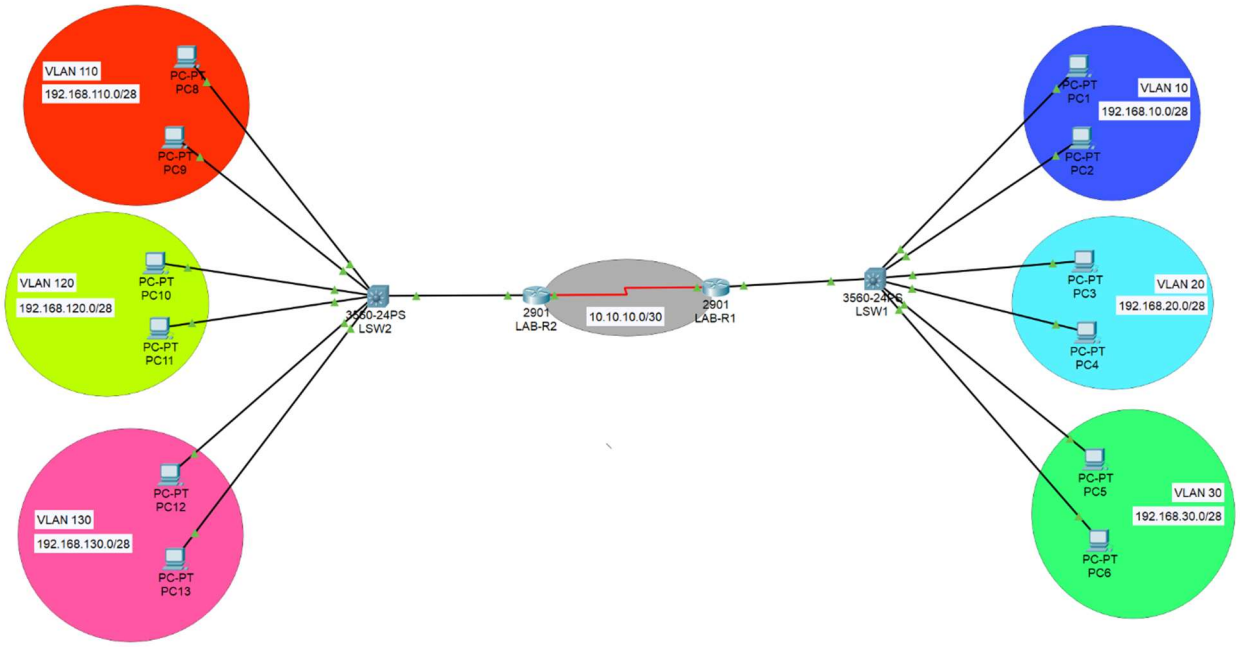

FIGURE 1.2 – Equipment and Interface Reference Chart

Router / LAB-R1 / Interface	IPv4 – Address / Subnet	VLAN	VLAN - Name	Encapsulation Mode
Serial 0/0/0	10.10.10.1/30	n/a	n/a	n/a
Gi 0/1	172.168.1.1/24	n/a	n/a	
Gi0/1.1	192.168.100.1/24	vlan 1	default	IEEE 802.1Q
Gi0/1.10	192.168.10.1/28	vlan10	zone10	IEEE 802.1Q
Gi0/1.20	192.168.20.1/28	vlan20	zone20	IEEE 802.1Q
Gi0/1.30	192.168.30.1/28	vlan30	zone30	IEEE 802.1Q

Router / LAB-R2 / Interface	IPv4 – Address / Subnet	VLAN	VLAN - Name	Encapsulation Mode
Serial 0/0/0	10.10.10.2/30	n/a	n/a	n/a
Gi 0/1	172.168.2.1/24	n/a	n/a	
Gi0/1.1	192.168.200.1/24	vlan 1	default	IEEE 802.1Q
Gi0/1.110	192.168.110.1/28	vlan110	zone110	IEEE 802.1Q
Gi0/1.120	192.168.120.1/28	vlan120	zone120	IEEE 802.1Q
Gi0/1.130	192.168.130.1/28	vlan130	zone130	IEEE 802.1Q

FIGURE 1.3 – Example of Switchport VLAN Assignment

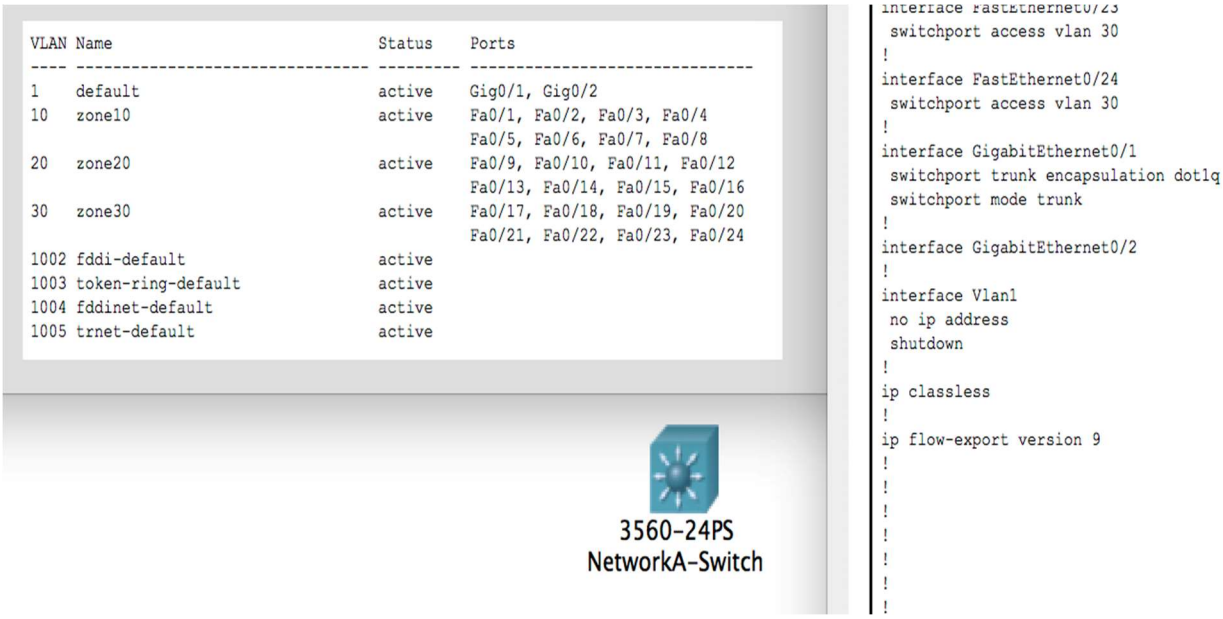

FIGURE 1.4 – Configuration of PC Ethernet Interface (PC2 – VLAN 10)

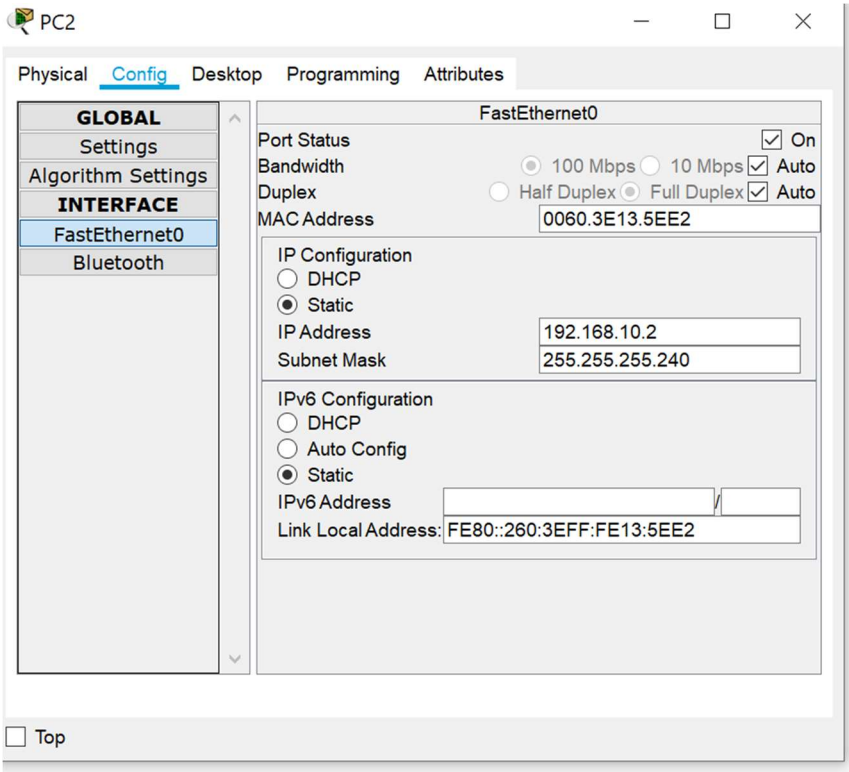

FIGURE 2.0 - Procedure for creation of Packet Tracer network simulation

1. Download and open file <CNT4703C-LAB6-PT-Template>
2. Save file and Rename <CNT4703C-LAB6-PT-[**your full name**]>
3. Select and create required connections between devices in NETWORK A.
    a. PC to Switch (Ethernet)
    b. Switch to Router (Ethernet)
    c. Router to Router (Serial)
        i. Serial adapter will have to be added to both routers.
        ii. See FIGURE 1.3
    d. Configure router(s) interfaces.
        i. See FIGURE 1.1
        ii. FIGURE 2.1
    e. Configure switch(s) VLANs and assign interfaces.
        i. See FIGURE 1.2
        ii. See FIGURE 2.0
    f. Configure switch trunk port and default vlan.
        i. See FIGURE 2.0
    g. Configure PC(s) interfaces for each VLAN.
        i. See FIGURE 1.4
    h. Test network connectivity between devices within each VLAN.
        i. PC to PC
        ii. PC to Router
        iii. Router to PC
4. Repeat Step 3 for required connections between devices in NETWORK B.
5. Set IP route for all unknown traffic on Router(s) to exit Serial interface(s)
    a. Router 1: Command
        i. [host](config)#ip route 0.0.0.0 0.0.0.0 10.10.10.2
    b. Router 2: Command
        i. [host](config)#ip route 0.0.0.0 0.0.0.0 10.10.10.1
6. Test connectivity between Networks
    a. Ping from Router on Network A to Router on Network B
    b. Ping from PC on Network A to PC on Network B