# Netlab 4: Interconnection Technologies

Purpose: In this Lab exercise, you will build a simple Wide Area Network (WAN) topology to discover two of the most used interconnection technologies.

Procedure:

You will build the depicted topology. Note that the topology has a combination of Ethernet and Serial links. You need to setup IP addresses for all interfaces. There are 4 VLANs, two in LA and two in NY. Refer to the IOS commands reference sheet to see the procedure to setup IP addresses in serial interfaces. Ethernet interfaces you already know how to setup Ips on.
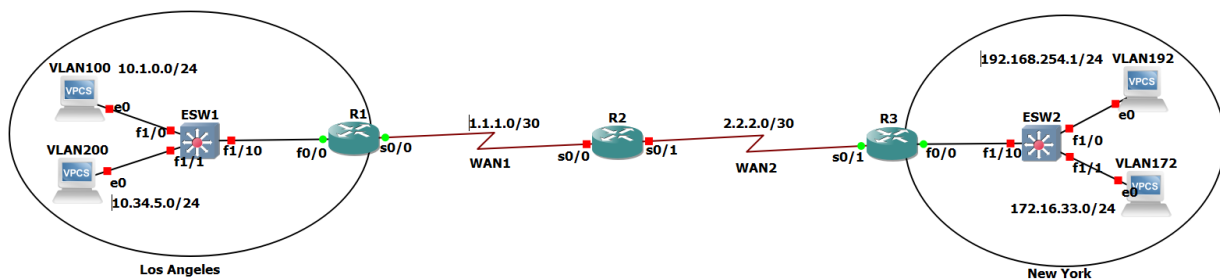
R1 and R3 need to be setup as router-on-a-stick and have **DHCP servers** set up to provide IPs to each VLAN. You also need to setup static routes in the routers to be able to communicate between LA and NY. A working topology is achieved when you can ping between all the VLANs.

You will capture traffic on the WAN 1 link (please note this is an PPP link, so select the option accordingly when starting the capture). Start on more capture between R1 and ESW1. And one last capture on any of the VPCs links. Capture pings between all VPCs.

Answer the following questions:

1. What differences do you notice in Layer 2 of each capture?

2. What is the L2 header overhead in the packets captured in the WAN 1 link?

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3. What is the L2 header overhead in the packets captured in the R1-ESW1 link?

4. What is the L2 header overhead in the packets captured in the VPC link?

5. Is the traffic tagged in the WAN1 link? Is traffic tagged in R1-ESW1 link? Is traffic tagged in the VPC link? For every capture, explain why traffic is or is not tagged

Now, try another Ping but this time with the switch -l 2000. Note: in Wireshark filter the traffic by the source IP address of the ping. Answer the following questions.

6. What is the Total frame size?

7. Does the frame size make sense? Explain what is happening after applying the switches "**-c 1 -l 2000**" at the end of the ping command; for example:

ping 192.168.1.100 -c 1 -l 2000

8. What are the protocols identified by Wireshark when the -l switch is applied?