Lab 4-1: Small Enterprise Class Lab

NET-330

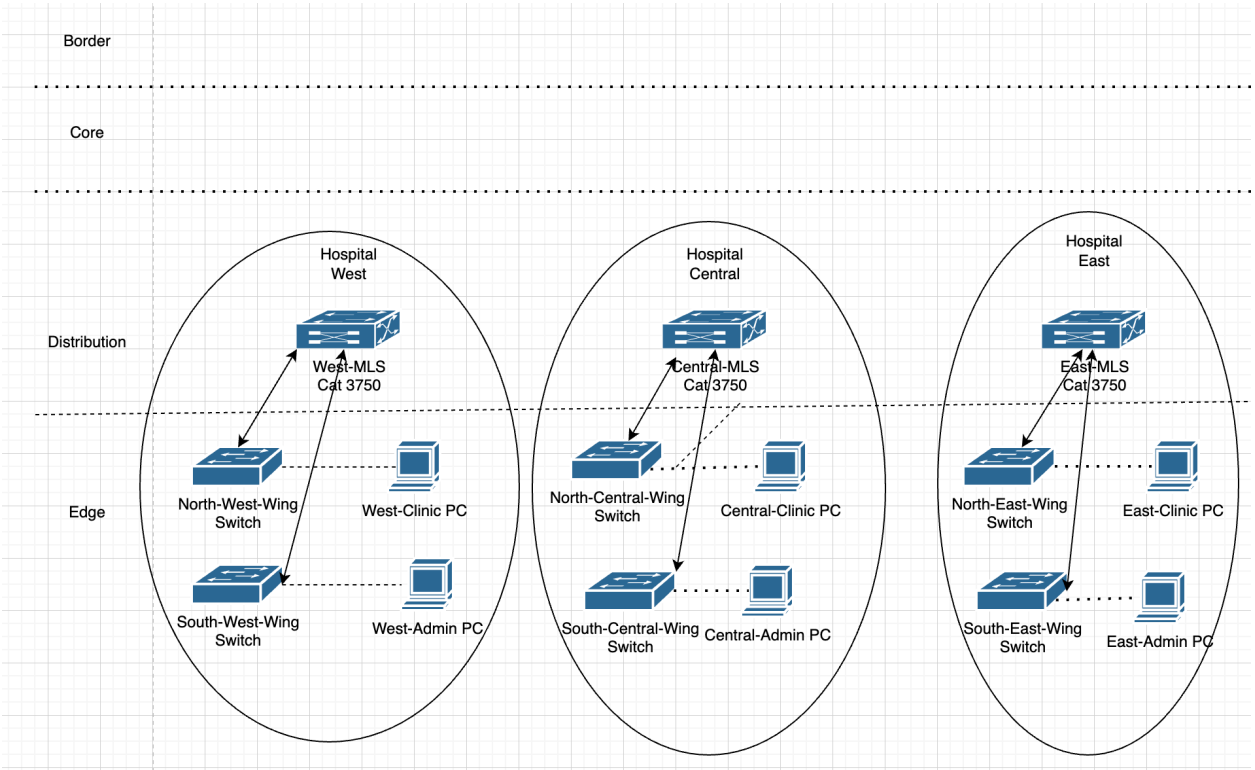
Lab Prep

For this lab, we will work in 4 groups - West, Central, Yonder, and East
Each group will need:

- 3 Cisco Switches (3750's
    - 3 Power Cables
    - 1 Console Cable
- 4 Ethernet Cables
- 3 Foster Workstations
    - 1 to Console into switches and have Canvas/Lab materials
    - 2 to boot to kali with USB tokens - they will be your Clinic and Admin PCs
- **Each student** - something to take notes with. You will need to submit your own brief write up on the lab

Lab Goals

Build the following with each group responsible for a Distribution Area (West, Central, East)



VLAN Assignments

VLAN Name	VLAN #	Net/Mask	Default Gateway
West Clinic	100	192.168.10.0/24	192.168.10.1
West Admin	110	192.168.11.0/24	192.168.11.1
Central Clinic	200	192.168.20.0/24	192.168.20.1
Central Admin	210	192.168.21.0/24	192.168.21.1
East Clinic	300	192.168.30.0/24	192.168.30.1
East Admin	310	192.168.31.0/24	192.168.31.1
Yonder Clinic	400	192.168.40.0/24	192.168.40.1
Yonder Admin	410	192.168.41.0/24	192.168.41.1
Backbone (future)	50	192.168.50.0/24	

Major Steps

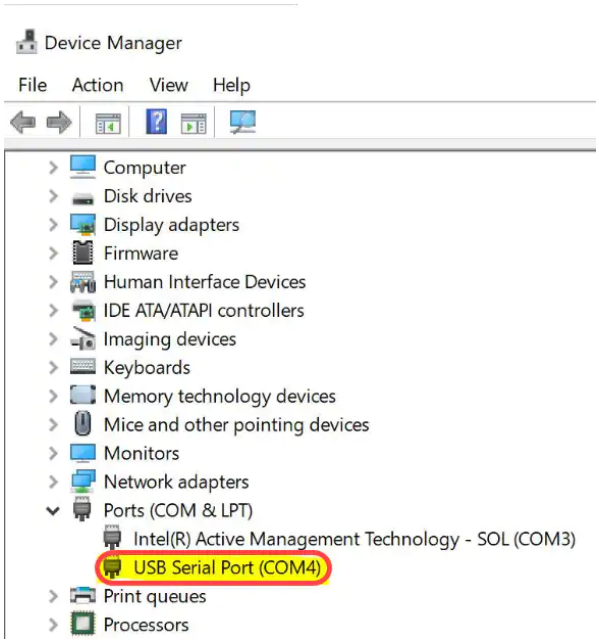
1. **Take your own notes throughout - these will be submitted and can be copied to your Tech Journal later**
2. Configure your group's MLS (MultiLayer Switch)
    a. Set hostname to proper name (e.g. "hostname West-MLS")
    b. Needs layer 3 (ip routing)
    c. Define appropriate VLANs (no GUI - so need to do from CLI)
    d. Create appropriate VLAN interfaces to act as the default gateway for the Distribution Area VLANs
    e. Configure trunk ports to the edge switches
        i. Before setting switchport trunk mode, you need to configure the "encapsulation"
        ii. On each trunk port, "switchport trunk encapsulation dot1q"
            1. This defines how the packets are "tagged"
    f. Save Configuration
3. Configure North and South edge switches
    a. Set hostname to proper name (e.g. "hostname North-West-Wing-SW")
    b. Define appropriate VLANs
    c. Assign access ports so that there are interfaces for both VLANs on switch
    d. Configure Trunk Ports
    e. Save Configuration
4. Attach PC's to edge switches

    a. Use Foster workstations booted to Kali
    b. Set the proper IP and Subnet Mask
5. **Deliverable - Clinic PC on North can ping Admin PC on South**
    a. **Screenshot/Photo**
6. **Deliverable - Notes**
    a. **How to Console into Switch**
    b. **Any new Cisco configuration commands you learned (e.g. hostname, trunking, adding vlans…)**
    c. **Any troubleshooting/issues you ran into and how they resolved**
    d. **Can add to Tech Journal**

How-To's:

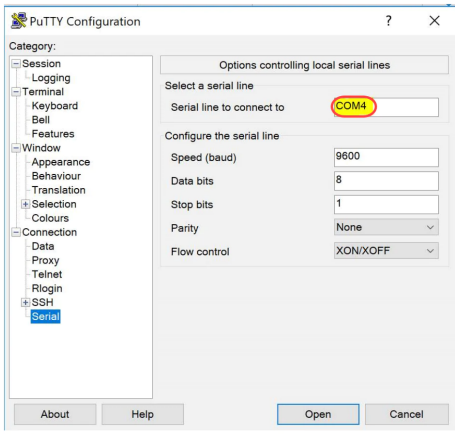
Console into Catalyst Switch using Putty

1. Plug serial console cable (light blue) into USB port on Workstation
2. Open Device Manager to see what COM port it is using:



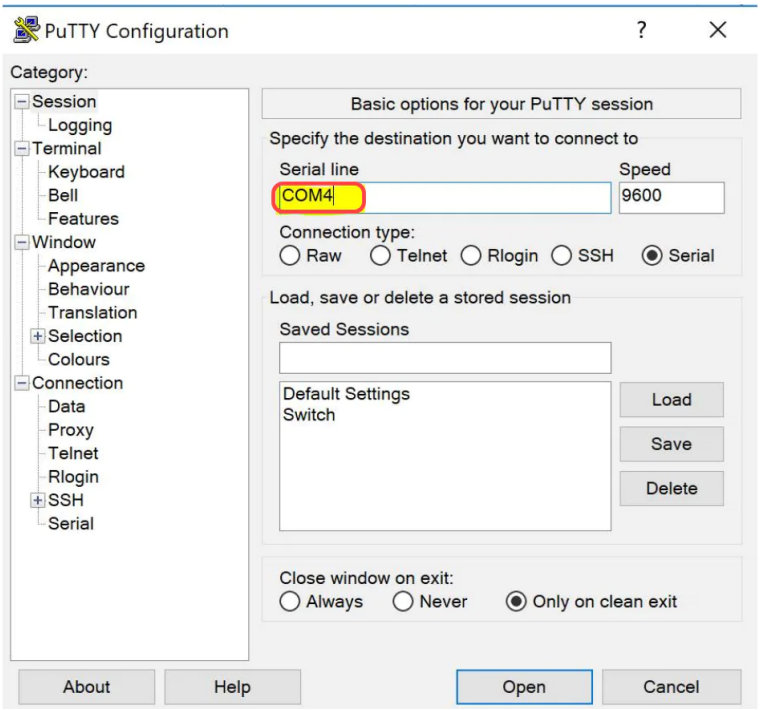
3. Connect cable to console port on switch
4. Power on switch (plug it in if not already running)
5. Open Putty on Workstation
6. Under Connection - Go to Serial and enter the following
    a. Serial Line to Connect: *COM port from Step 2*
    b. Bits per sec : 9600
    c. Data bits : 8
    d. Parity : none
    e. Stop bits : 1

f. Flow control : none



g.

7. Under Session - Select Serial and change the COM port to the # from Step 2:



8. Click Open - Hit Enter and you should have access!

Cisco- Save Configuration

Configuration changes take effect immediately on Cisco - but they are not saved! If you reboot without saving, the config will be lost.

To save the current configuration, the command is:

copy running-configuration startup-configuration or

copy run start

Cisco Config Tips

- “show run” will show your entire configuration
    - If in configuration mode, “do show run” will do the same thing
- To delete a configuration setting/line: just add “no” in front and retype the line

Booting to Live Kali

Live Kali in Foster 202 - Get USB Thumbdrive from Instructor

1. Plug USB into PC - make sure orange light is on

2. Reboot and hit F10 at the Intel NUC Screen

3. Select "VendorProductCode..." UEFI (Partition 2)

4. Select Kali

5. Select Live kali AMD64

(Optional) If your switch has a configuration/password - here are the steps to Reset

1. Hold the "mode" button and power on the switch (plug it in)

2. After about 15 seconds you should see output similar to:

```
The system has been interrupted prior to initializing the
flash filesystem.  The following commands will initialize
the flash filesystem, and finish loading the operating
system software:
flash_init
load_helper
boot
switch:
```

3. You are now in recovery mode. You will need to mount "flash" so you can work with the config files

- type the command "flash_init" - this will initialize (aka mount) the flash file system

4. Once initialized, you should be able to use "dir flash:" to see the contents of flash

5. From here, you can delete the configuration (config.text) and the vlan database (vlan.dat) using the following commands:

- del flash:config.text
- del flash:vlan.dat
- NOTE: on Catalyst Switches, these are synched with the configuration files in NVRAM - deleting them here will cause the switch to boot without a startup-config. So it will boot to the factory-fresh default config

6. Type "boot" and the switch will boot to it's factory fresh state! Type "N" for entering setup