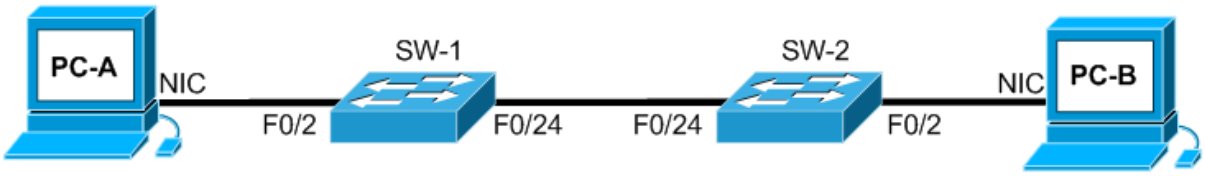
Lab 01 - Introduction

Topology



Note:

1) The switches are a **2960** Layer 2
2) For the In-House students, you will work in pairs. In your groups of 2, decide which of you is PC-A and which is PC-B
3) For the On-Line students, you will have to build the lab in Packet Tracer. You can follow along with the lab fairly closely. You can even connect a serial cable from the PCs RS232 port in Packet Traces (PT for short) to the switch console port and open terminal window in PT's PC

IPV4 Addressing Table

Device	interface	IP Address	Subnet Mask	Default Gateway
SW-1	Vlan 1	10.10.10.110	/24	N/A
SW-2	Vlan 1	10.10.10.120	/24	N/A
PC-A	NIC	10.10.10.10	/24	N/A
PC-B	NIC	10.10.10.20	/24	N/A

Objectives

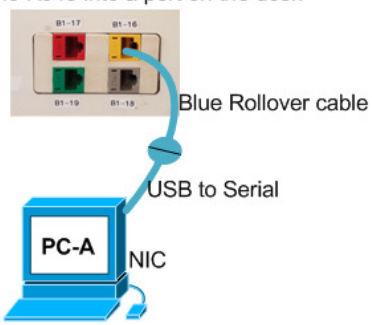
- This lab has been written for both the in-house student (in a lab classroom at Fanshawe College) and for the student taking this course on-line. Please read the sections carefully as you progress through the lab so that you can figure out which part are for you to take to task and complete.
- There will be portions of this lab (Lab-01) that you will be expected to do in later labs with out the explicit instruction detailed in todays lab.
    - For example, todays lab in the Initial Setup section there are a list of out comes (things to be configured in the switches for today), called the **Basic system config** for today I will go through the detailed steps on how to accomplish this task. BUT next week lab I may not go through the steps in detail, I will just ask you to do the **Basic system config**.
- There will be the following sections for todays lab
    - Class Room Setup (in-house students)
    - Packet Tracer Setup (on-line students)
    - Initial Setup
    - Assigning IPaddresses
    - Testing
- Throughout the sections and configuration, you may come across a label like: ***(PowerPoint – Capture x)***, what are these you might ask? Well these are points in the process of doing the lab that I want you to stop and answer a question or two or maybe three.
    - When you find one of these (*PowerPoint – Capture x*) please retrieve from FOL the "lab x - Questions.pptx" file, this file contains any questions to be answered.
    - Please do these as requested!
    - If you wait to the end of the lab and go back to fill in the question… you may find you in a situation where you might be asked the same question a few times in a row, each with a slit change to the configuration between the question and you have now missed the changes to the out comes and can not answer the question correctly, (you won't be able to see what changed).

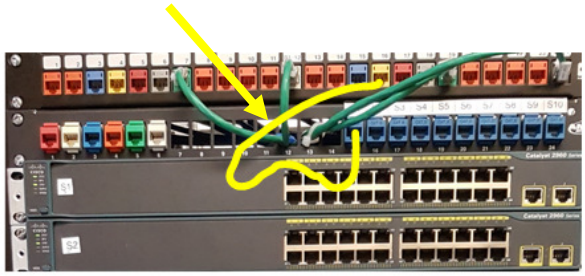
Class Room Setup

Use the command line interface to configure the switch

To start this process:

Connect your USB to serial connector to your PC, connect the blue rollover cable to the other end of the USB to serial, and the RJ45 into a port on the desk





Back in the equipment room connect cable from the whatever cable number you used at your desk to the blue console port of the switch you have chosen to use

DO NOT use a Cross-Over cable for this!

On your PC start-up the tool you like for serial communications (Putty, Tera Term, Secure CRT,….)

Once you have your Serial cable connected to a console port on the switch:

a) Press the enter key a couple of times.
   a. If you don't get a prompt….
      i. Check you cables (make sure that the cable in the equipment room for the console connection **is not a cross-over cable**)
      ii. Check your communication settings,
         1. Bps(Bits per second) → 9600
         2. Data Bits → 8
         3. Parity → None
         4. Stop Bits → 1
         5. Flow Control → on or off

         These should be the defaults for any of the tools that I talked about above

b) You should see a **Switch>** Prompt

   If you see the following question after the IOS has been loaded:

   "Would you like to enter the initial configuration dialog? [yes/no]:"

   "**no**" (always answer no) If you answer yes you will enter setup mode,

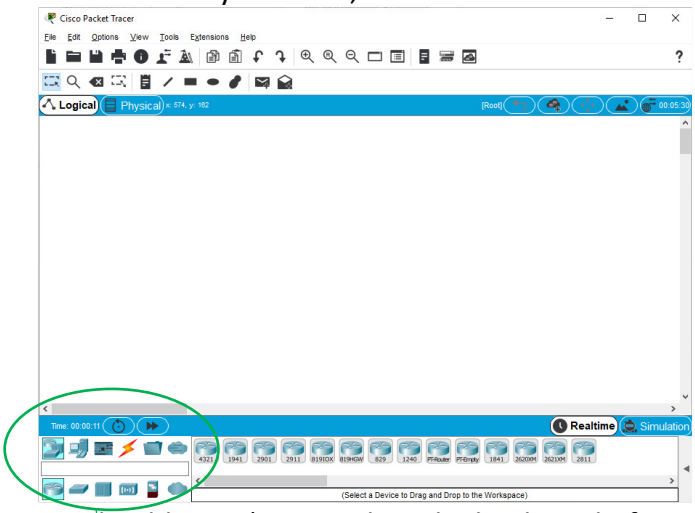
   If you do get into setup mode, you should be able to press Ctrl-C at any time to terminate the process, if Ctrl-C does not work you may have to reset the switch manually.

Then, connect the ethernet cables….as shown in the Topology section of the lab

Then proceed o the Initial Setup section of the lab

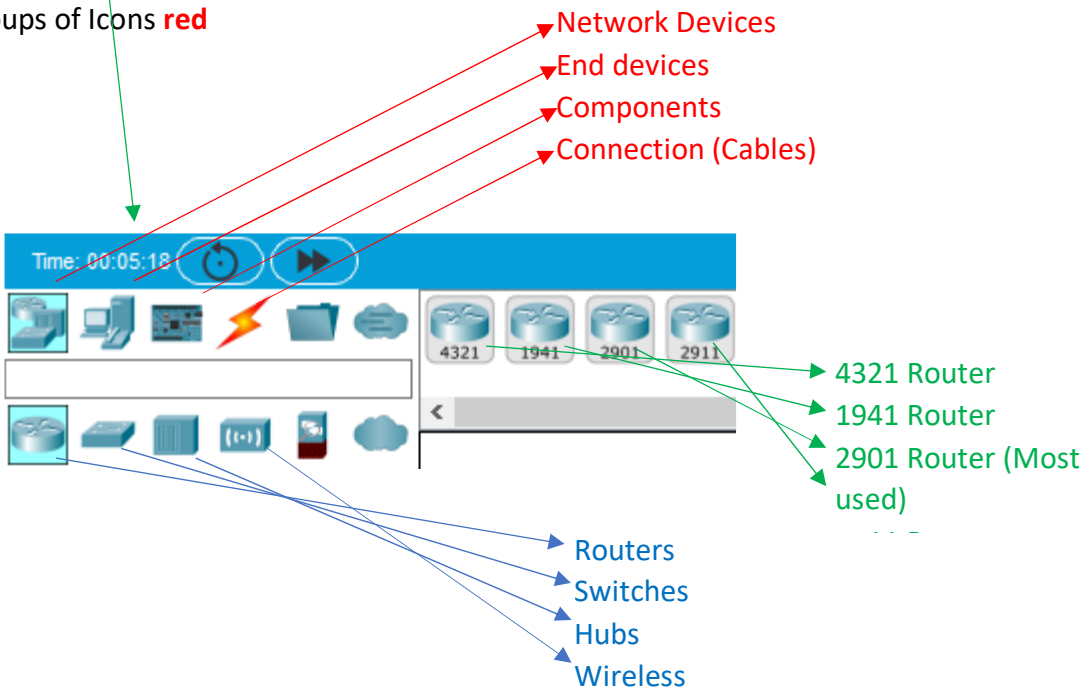
Packet Tracer Setup

To start this process:
Startup Packet Tracer, also known as “PT”.
(PT can be found on the Net Academy web site, also known as “NetAcad”or “My NetAcad”)



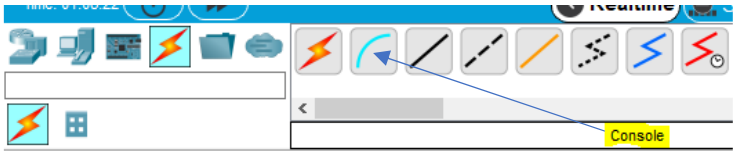
This is the first screen you should see…(you maybe asked to login before you get to this point)

By selecting the groups of Icons **red**



Then selecting the type of device **blue**
And finally dragging the device you need onto the work space **green**

You can build and interconnect devices into a working network with-in the PT environment.
You can even select the type of cable you want to use:



As in a “blue rollover console cable” and attach it to the serial connection of a PC and the console connection of a switch or router.

There is a free course on the NetAcad web site on the use of PT, as well as great tutorials in the help section of the PT tool.

Once you have dragged the appropriate devices on the PT work area, look at the Topology section of this lab for what cable to use and connect to what ports in you virtual network

Initial Setup

I would like to see each router and switch with the following:

Basic system config:

a) The time set on your devices (both the clock and the time zone).
b) Set the hostname
c) Set the enable password to “class”.
d) Encrypt all passwords.
e) Disable domain name lookup.
f) Setup a banner.
g) Set the console and vty password to “cisco”.
h) Setup synchronous logging on the console port.
i) Enable telnet and ssh on the vty ports

You will find over the next few weeks, I will ask much of the same for the basic setup each lab…….
Yes, your right you don’t know how to do the steps “a” through “I” above YET! This lab will lead you through this process, and more

Now on with the LAB!

a) You should have two PC’s and two 2906 layer 2 switches on to the PT work space or have the equipment setup in the lab classroom with your laptops for the 2 PC’s and 2 2960 switches.
b) You should have connected the devices as in the Topology view at the beginning of this document, (mind the ports being used, not so important in this lab but will be in the future).
    a. Use regular ethernet cables between the PC’s and the switches
    b. Use a cross-over cable between the two switches
    c. Finally, from the PC to the switch lets use a console cable and a terminal session to do the initial configuration. (Yes, in PT there is an easier way, but for this first lab please connect you pc’s to the switches with the blue rollover cable and use the built in terminal tool on the pc’s to start the configuration process)
        i. Pressing enter on the keyboard you should see a **Switch>** Prompt

            If you see the following question after the IOS has been loaded: “Would you like to enter the initial configuration dialog? [yes/no]:”

            “**no**” (always answer no) If you answer yes you will enter setup mode,

            If you do get into setup mode, you should be able to press Ctrl-C at any time to terminate the process, if Ctrl-C does not work you may have to reset the switch manually.
    d. Follow the steps below “c)” through “o)” to configure and then start testing your first connections/configurations

The following will lead you through the **Basic System Config:** of the switch:

NOTE:

- in the following: **Black is description**, **Blue is the prompt**, **Red is the command**
- watch the prompts as you work through this lab see how it changes
- if the prompt at this point in time says anything other that "**Switch >**" please follow the instructions in "**Appendix A**" to clean out your devices

c) The prompt should look like the following:

Switch>

d) To enter Privileged (enable) mode type

Switch> enable

Notice the prompt changed

Switch#

Note:
The prompt change

e) "a" part 1 of **Basic system config**:

To set the time and date

Switch# clock set 12:10:00 12 Jan 2021 (Adjust this to fit your date and time)

f) To configure the switch must enter configuration mode (global config)

Switch# configure terminal (or **conf t** for short)

Notice the prompt change

Switch(config)#

Note:
The prompt change

g) "a" part 2 of **Basic system config**:

There are 2 commands to get the date and time set correctly, this is the second part.

Switch(config)# clock timezone EST -5

h) "b" of **Basic system config**:

Set the hostname for this device remember this could be **SW-2** if you're the second switch and PC-B…

Switch(config)# hostname SW-1

Notice the prompt

i) "c" of **Basic system config**:

Set the enable password to "class"

SW-1(config)# enable secret class

j) "d" of **Basic system config**:

To encrypt all passwords

SW-1(config)# service password-encryption

k) "e" of **Basic system config**:

To disable domain name lookups

SW-1(config)# no ip domain-lookup

l) "f" of **Basic system config**:

Setup the banner

You must do a "Enter" on you keyboard … this command spans 2 or more lines.

```
SW-1(config)# banner motd #
Unauthorized access is strictly prohibited. #
```

m) "g & h" of **Basic system config**:

Set the console password to cisco

```
SW-1(config)# line con 0
SW-1 (config-line)# password cisco
SW-1 (config-line)# logging synchronous
SW-1 (config-line)# login
SW-1 (config-line)#exit
```

Note:
The prompt change

n) "g & i" of **Basic system config**:

Set the telnet passwords to cisco

```
SW-1 (config)# line vty 0 15
SW-1 (config-line)# password cisco
SW-1 (config-line)# login
SW-1(config-line)# transport input all
SW-1 (config-line)# exit
```

o) Exit the session

```
SW-1(config)#exit
SW-1#exit
```

Note:
The prompt changes

At this point the **Basic system config**, is complete, hear is a neat trick….

- Each week I will be asking you to use the same basic configuration on each device
- Can we save this some how so we don't have to type this in each week multiple times?
- **Yes We Can**!
- Save all the little **red** bits starting back at sections "c" each on there own line in a text file
- Save that text file as "Basic config.txt"
- Now next week you just have to open the file and copy it, then paste it in to the device.

Assigning IPaddresses

Now we need to give the switch its IP address so that we can communicate with it through telnet.

Back to the console port on the switch (PC-A and SW-1 or PC-B and SW-2)

(PowerPoint – Capture 1)

Now that we are in "Global config mode", we need to set address on the default vlan 1.

p) Set the default VLANs ip address

```
SW-1(config)# interface vlan 1
Notice the prompt change
SW-1(config-if)# ip address 10.10.10.110 255.255.255.0
SW-1(config-if)# no shut
SW-1(config-if)# exit
SW-1(config)# exit
```

Remember if you are SW-2 then the IP address is different, check the addressing tale back on page one.

Still connected by the console cable to the switch:

(PowerPoint – Capture 2)

(PowerPoint – Capture 3)

Testing

If all is well you should be able to ping your partners PC, and the addresses of the switches.
If you can't ping the other PC or switch….

- Make sure your partner is as far as you in the lab and ready for this
- Make sure all the cabling is correct
- On your switch run one of my favorite commands
    - **show cdp neighbors**
    - this command should show an out put with "F0/24" in it 2 times if not
        - check you cabling
- check the laptops for firewalls being enabled
- check the laptops for anti-virus being enabled

Both firewalls and some Anti-Virus software can stop the ping protocol

If you can ping and see all the devices:
Then there are 5 more Power point captures to be done….

(PowerPoint – Capture 4)

(PowerPoint – Capture 5)

(PowerPoint – Capture 6)

(PowerPoint – Capture 7)

(PowerPoint – Capture 8)

This is and introductory… you will be doing much the same next week so if you don't get this working that is OK, but keep trying! You will be doing this most every week of this term.

Once you do get things working… here are a few other commands you can use on the switches and routers to check your work.

show inter trunk	**show flash**	**show clock**	**show ip inter brief**
show inter vlan 1	**show running**	**show hosts**	**sh cdp neighbors**

That's it for today.

- If you were in class please Clean out the configurations on the switches and routers you used this week.
- If you are working in PT please save your file to an appropriate place for later use.
- Don't forget to collect your cables.
- Then cleanup your workstations
- Finally do the quiz for this week it is worth 3% of your final grade.in most cases it is due Saturday at 23:59 EST

follow the instruction in "Appendix A"

Appendix A: Erase & Reload a Router or a Switch

For the labs it is necessary to start switches and routers with no configuration, so at the end of every lab the configuration will be cleared and the switches and routers reloaded.

To erase the current configuration

SW-1# erase startup-config
The response from the switch will be
Erasing the nvram file system will remove all files! Continue [confirm]
Press enter to confirm

SW-1# delete vlan.dat
Delete filename [vlan.dat]?
Delete flash:/vlan.dat? [confirm]
Press the enter key for both the prompts above
You may get an error message if there was no vlan.dat file found, this is OK

SW-1# reload
If the response says: "System configuration has been modified. Save?[yes/no]:"
Enter "no"

This is just telling you that the configuration has changed since that last time it was saved. It is making sure that you really want to delete the current configuration. If you enter "yes", the configuration file will be saved and will be back when your reload of the switch or router is finished.

The switch or router will respond with: Proceed with reload? [confirm]
Press enter to confirm

Once this process starts you can move on to the next device if there are more than one device in your configuration.