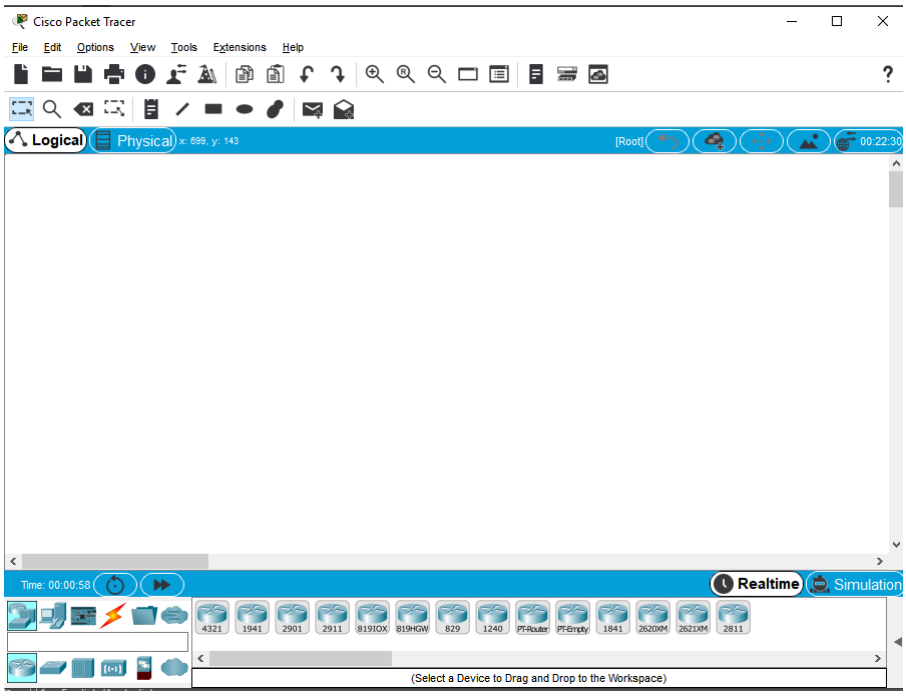
CSG1105 Workshop Nine

1 Introduction

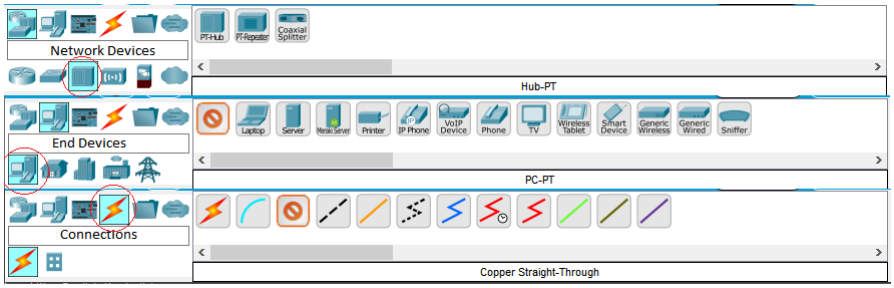
This week we are going to start building a network in Packet Tracer (PT). In previous workshops, we have used existing models in PT to demonstrate networking concepts, now you are going to learn to build your own.

2 Building a network in Packet Tracer

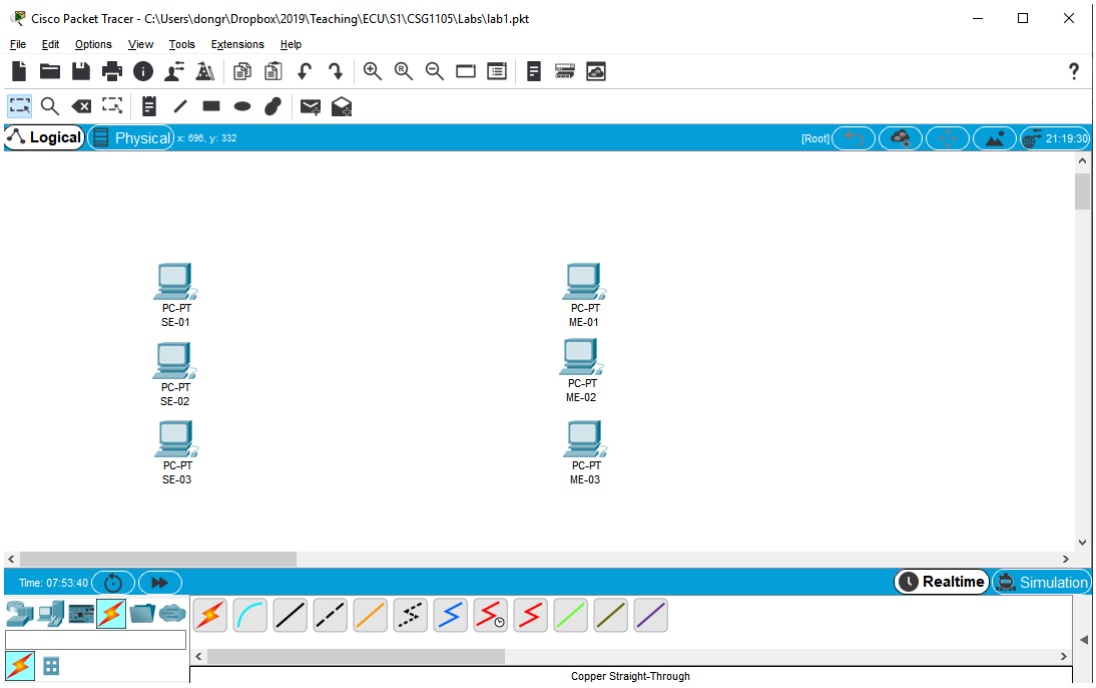
1. Open Packet Tracer and familiarise yourself with the interface.



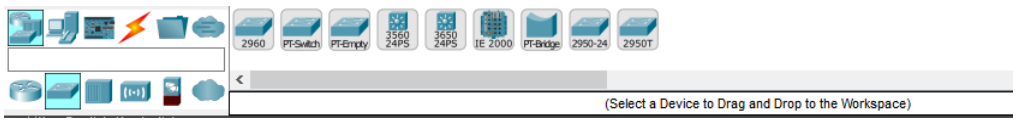
2. The large white space is our working area, it's called the Logical Space; keep it organised as this can get very busy later on.
3. The bottom left is where you can find all the hardware we need, categorised in an easy to follow format. For the time being, we only want to focus on the three listed below:



4. In the **End Devices**, select a PC and place it on the Logical Space
5. PT will automatically name the device "PC0". Click on this and rename it "SE-01" (for Software Engineering PC 1).
6. Repeat this process to create "SE-02" and "SE-03" on the left and "ME-01","ME-02" and "ME-03" on the right (Mechanical Engineering).



7. We'll be making use of the Switches in this week's tutorial, you can find them in the Switches tray on the bottom left. We'll only use the 'Generic' one (located second from the left).

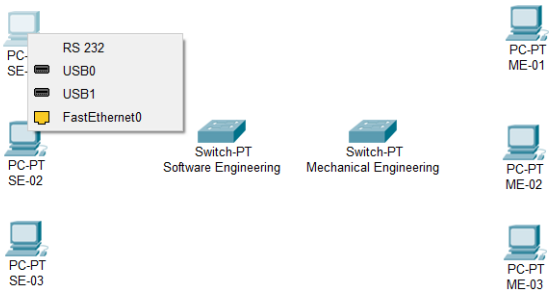


8. Drag two of these onto the logical space and give them their appropriate names of 'Software Engineering' and 'Mechanical Engineering'.
9. Next we need to connect our devices to the network. If you click on the Connections tool tray, you'll see there are a lot of different kinds of connections. For the time being, we only want to focus on Straight-Through and Crossover cables.


Cable: A straight-through cable has the same connections on both ends. These cables are used to connect End Devices (Computers) to Network Devices (Switches).

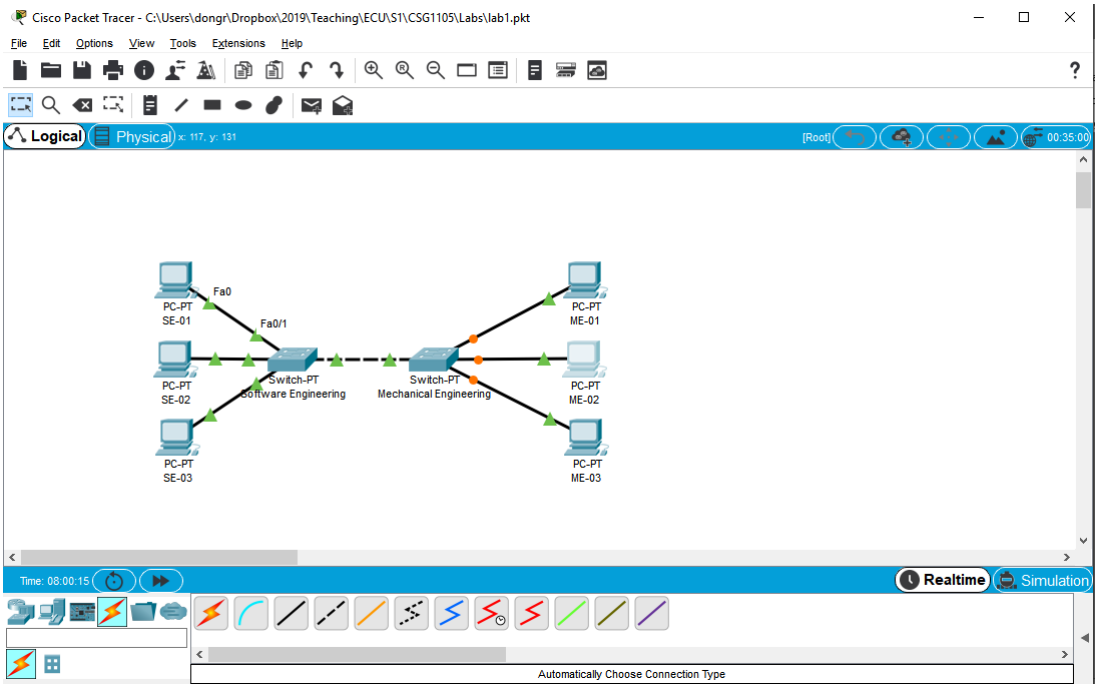

Cable: A crossover cable has the pins on one end of the cable crossed over, so that the transmit end of the cable, meets up with the receiver end on the other end. These are used to connect two of the same device together (Computer to Computer, or Switch to Switch).

10. To connect the devices, click on the kind of cable you wish to use (Straight-Through) and click on your first end device. You'll notice it now shows you a prompt for where to plug it into like below, here you want to choose FastEthernet0, this is the name of the ethernet port on the computer:

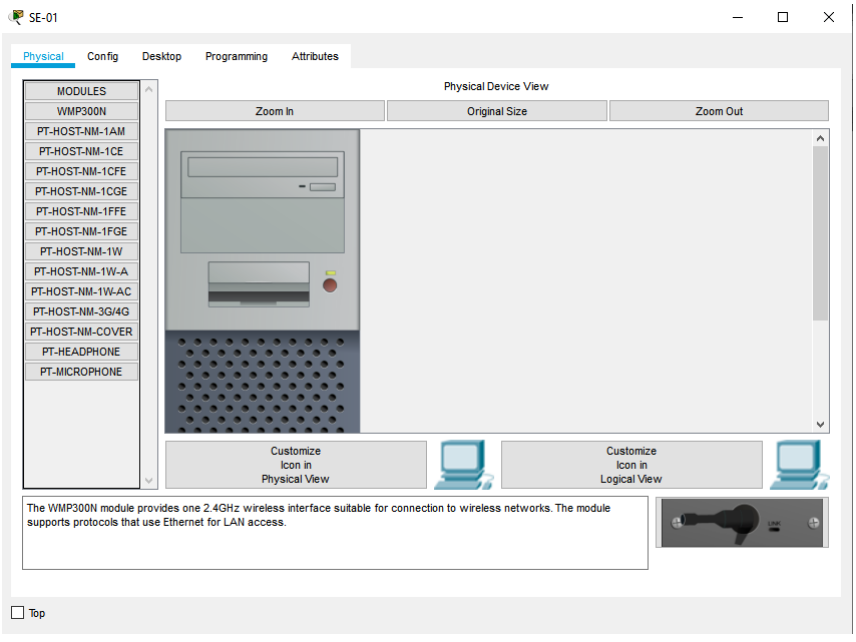


11. Now choose where the other end of the cable should go - the relevant switch. It will also ask you to choose where to connect it - the ports in use don't matter, but for cleanliness try to go from the first one onwards. Congratulations! Your first networked piece of hardware. Now, go and connect the rest of the computers to their relevant switches.

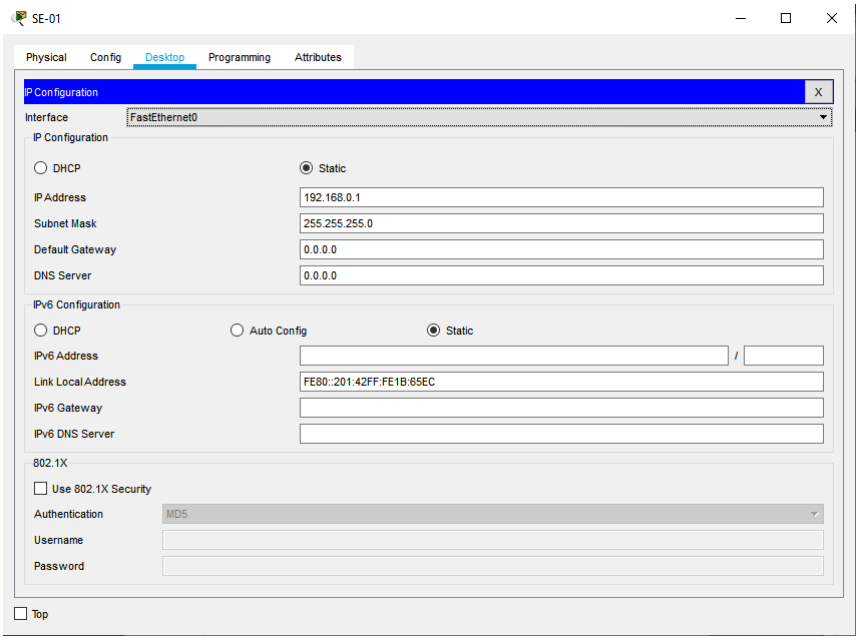
12. Note: You may notice the status lights as orange. This is normal as the switch will still be booting up or learning what hosts are connected to it.



13. Now we need to give our computers an IP Address each. To assign an IP Address click on your first computer and it will open a new window with all of the information for that computer, like below:



14. We are going to ignore most of these screens for the time being, and instead click into the tab along the top called “Desktop”. This is a simulated software environment that will allow us to change settings on the computer. We are going to open the “IP Configuration” options, like on the next page:
15. Assign the IP Addresses in the table below to your six computers, leave all the other fields as they are (your computer names may differ to the ones below):



Computer Name	IP Address	Subnet Mask
Software 1	192.168.0.1	255.255.255.0
Software 2	192.168.0.2	255.255.255.0
Software 3	192.168.0.3	255.255.255.0
Mechanical 1	192.168.0.4	255.255.255.0
Mechanical 2	192.168.0.5	255.255.255.0
Mechanical 3	192.168.0.6	255.255.255.0

16. Now we need to start configuring our switches. For the most part this is very simple, our network should just work right now. You can test this out using a Simple PDU just like in previous weeks; it should travel across your network normally.
17. Looking at the type in the Simulation window you'll see a lot of activity going on called 'STP' and 'DTP', this is the switches ensuring they know exactly who is connected and when. This will be covered in much more depth later in the semester.
18. We're going to set up some 'house-keeping' measures on our switches. This is a good thing to do as you can set up Message of the Day Banners and much more. Today, we'll learn how to do both. Go to the next page to learn this.
19. At any time, you can always type a '?' character and press TAB to learn and complete your commands correctly. Make use of this extensively as it teaches you exactly what you need to type
20. Click on one of your new switches, in its configuration window click on the 'CLI' tab, this means 'command line interface' and it will be where we will be setting up all our network devices.
21. To get started, press the Enter (Return) key and you should see the below prompt:
    `Switch>`

22. To start using commands at an admin level, type in the command `enable` and then press

enter. Then we need to configure the terminal, so type in `configure terminal` You should see the below on your CLI:

```
Switch>enable
Switch#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)
```

23. Note: the # means we are in admin level, the (config) means we are in configuration mode.
24. Let's give the switch a name first so it doesn't just say 'Switch#'. To do so put in the following:

```
Switch(config)# hostname NAME
```

25. Simply replace NAME with whatever you wish to name your switch, I named mine 'SESwitch' as there can't be any spaces in the name. You'll now notice that the lines change to say

```
SESwitch(config)#
```

26. Next most important thing to do is to setup the time, we need to make sure it's correct for accurate logging. Type in the following:

```
SESwitch(config)# clock timezone AWST 8 0
```

27. This means timezone <name> +8 hours +0 minutes from GMT.
28. Now let's add a Message of the Day. Enter the following:

```
SESwitch(config)# banner motd }
```

29. You should see it say:

```
Enter TEXT message.  End with the character '}'.
```

30. This can be multiple lines, and it knows you're finished when you enter the character you chose to delimit the message, here, we have used the "}" character as our finishing symbol. I'll make my message be:

```
Welcome to the Software Engineering Switch.

this-is-the-switch-for-the-software-engineering-star-network.  }
```

31. Now, let's exit right out of the system and have a look at our banner. Do this by typing exit and pressing enter, then exit again and press enter. This should take us back to the original screen saying,

```
'Press RETURN to get started.'
```

32. Press the :"return/enter" key and you'll see your Message of the Day.
33. Congratulations You've configured a switch at a basic level Now do the same for the other switch, naming and giving the message as appropriate.

3 SUMMARY

In this workshop, we have had a brief introduction to building network models in Packet Tracer. Over the next few workshops, we will build more complex models that will enable you to complete the second assignment.