Department of ICT

Faculty of Technology

University of Ruhuna

Computer Networks – ICT1253 **Level 1 - Semester - 2**

Lab Sheet 03 **| 2022**

==========

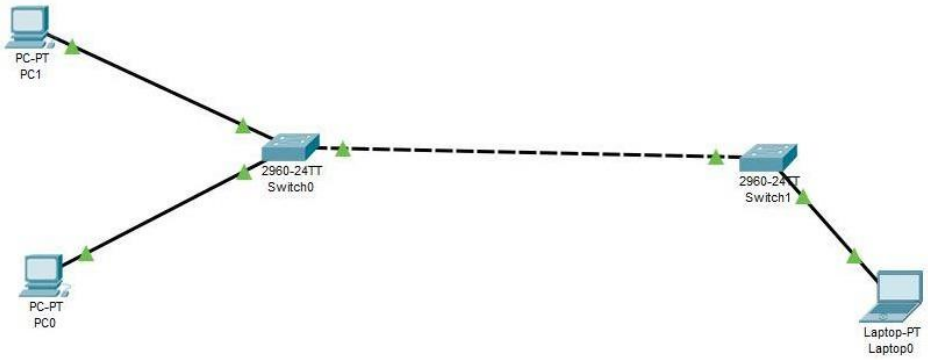
Goals:

Understand wired media and wireless media using Cisco Packet Tracer.

Exercise 1:

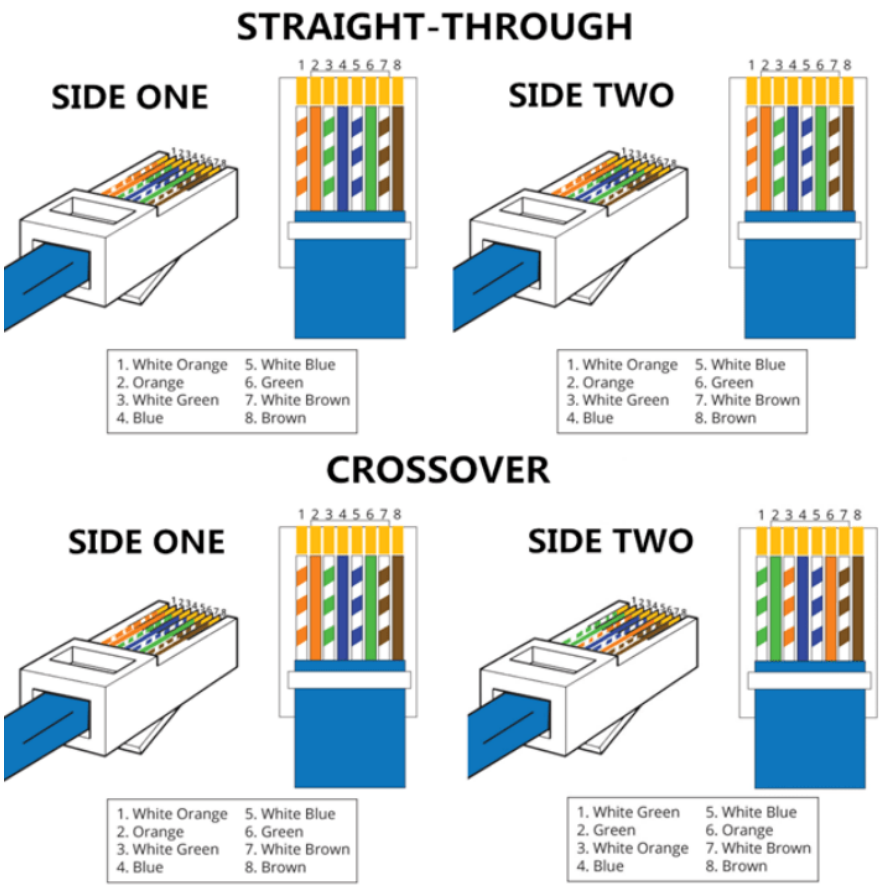
1. Open Cisco Packet Tracer software.
2. Select Switches from Network Devices component box. Then drag two 2960 switches.
3. Select End Devices from End Devices component box. Then drag two PCs and a laptop.

4. Select Connections from Connections component box. Click on automatically chosen connection type.
5. Click on PC0, then click on Switch0. You will see straight black line between them.
6. Do the same thing on connections between,
    - PC1 – Switch0
    - Laptop0 – Switch1
    - Switch0 – Switch1
7. You will see a stripped line between Switch0 and Switch1.



NOTE:-

- There are mainly two types of network devices. Those are called IP based devices (PCs, Routers, Servers and etc.) and MAC based/Non IP based devices. (Switches, Hubs and etc.)
- Black straight lines are called copper straight-through cables. They are used for connecting different type of devices. (MAC to IP devices)
- Black stripped lines are called copper cross-over cables. They are used for connecting same type of devices. (MAC to MAC / IP to IP)
- Most of the modern devices comes with the AutoMDX technology. They will identify what is the cable connected and will change the mode.



8. Delete all the wires from the workspace.

9. Connect the components using Copper Straight-Trough cables and Copper Cross-Over cables.

10. Double click on PC0 and go to the Desktop tab.

11. Click on IP configuration. Fill the settings as follows.

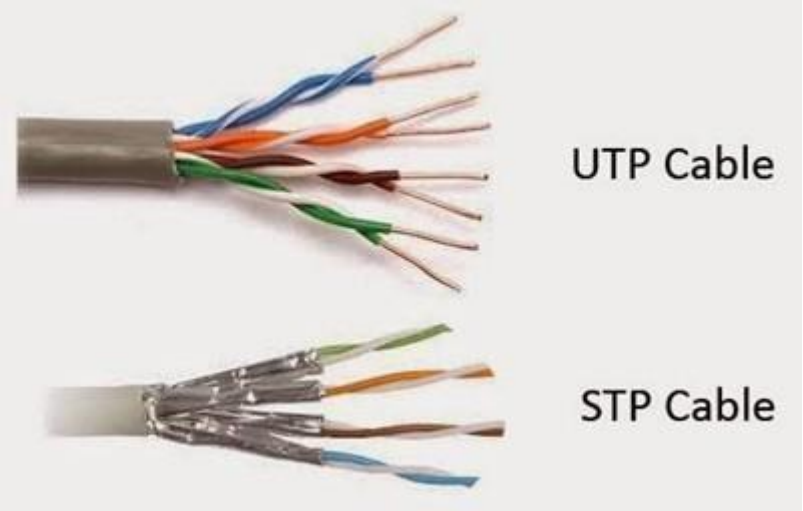
    - Static
    - IP Address - 1.2.3.4
    - Subnet Mask - 255.255.255.0
    - No need to fill Default Gateway and DNS address

12. Do the same thing by changing IP address on PC1 and Laptop0

    - PC1 - 1.2.3.5
    - Laptop0 - 1.2.3.6

13. Do a ping from command prompt or adding a simple PDU. Try PC0 to PC1, PC0 to Laptop0, and PC1 to Laptop0.

14. Save the workspace.



Exercise 2:

1. Open a new workspace.

2. Add a switch and a PC.

3. Connect them with a console cable. (Console port on the switch and RS232 port on the PC)

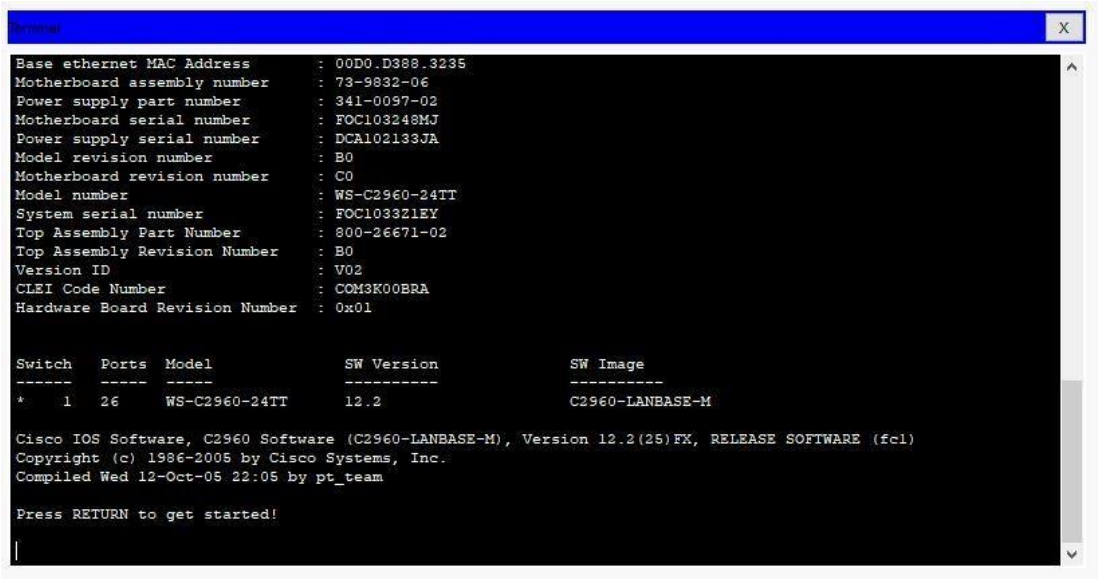
A serial port complying with the RS-232 standard was once a standard feature of many types of computers, which is a form of data transmission (serial communication). Personal computers used them for connections not only to modems, but also to printers, computer mice, data storage, uninterruptible power supplies, and other peripheral devices.

Ethernet is much faster than RS-232 but RS-232 gives you a guaranteed speed, where Ethernet provides a best effort speed depending on the current network traffic.

4. Double click on the PC and go to the desktop tab.

5. Go to the terminal and click ok without changing any parameter.

6. You will get a terminal window with logged into the switch.



7. Save the workspace.

The Console Cable is used for the serial connection between your computer's serial port and the console port on your TP-Link switch or router to access the CLI (Command Line Interface) of the device

Exercise 3:

1. Open a new workspace.

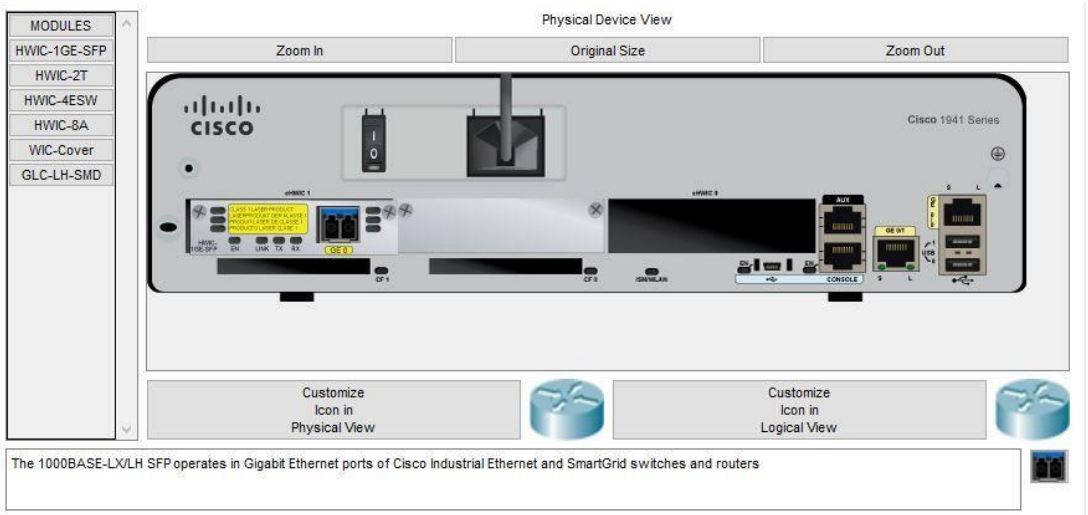
2. Add two 1941 routers to the workspace.

3. Double click on the Router0. Then switch off the router using the power button.

4. Drag the HWIC-1GE-SFP module from the modules section to an empty space on the router.

> The Cisco Gigabit Ethernet High-Speed WAN Interface Card (HWIC) brings Gigabit Ethernet connectivity to Cisco Integrated Services Routers routers to accelerate applications such as Metro Ethernet access, inter-VLAN routing, and high-speed connectivity to LAN switches.

5. Drag the GLC-LH-SMD module to the HWIC-1GE-SFP module on the router.



6. Turn on the router. Do the same for Router1.

7. Connect those routers with fiber cable.

8. Connection will still be disconnected. Double click the router and go to the config tab.

9. Click the interface GigabitEthernet0/1/0.

10. Check the port status on the checkbox. Then fill the IP address and subnet mask using the following settings.
    - IP address - 1.2.3.4
    - Subnet mask - 255.255.255.0

11. Do this for the other router. Use the IP address 1.2.3.5.

12. The link will be connected.

13. Save the workspace.

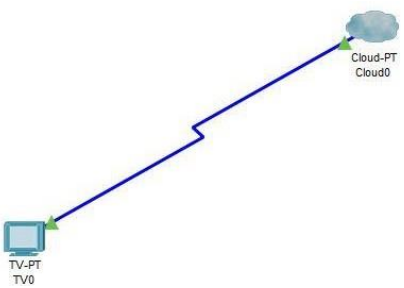
Exercise 4:

1. Open a new workspace.

2. Try to make new connections like below.

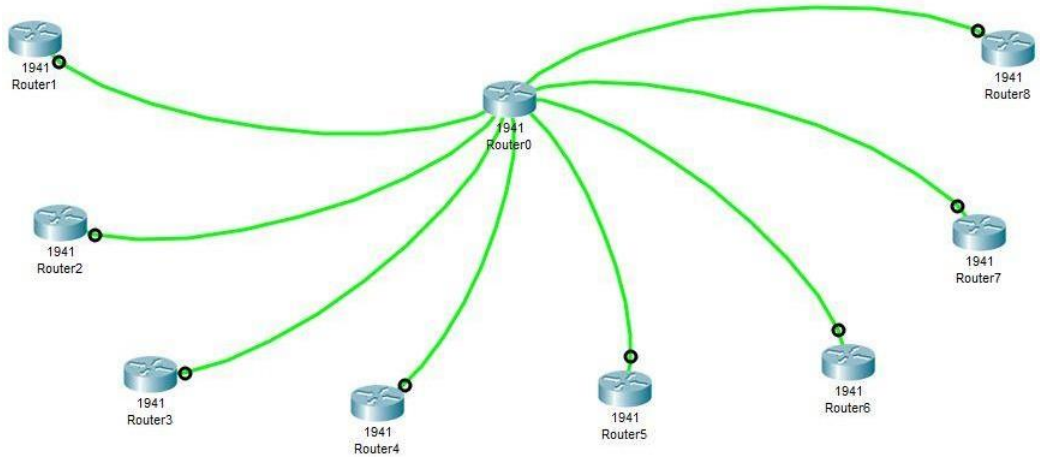
- **Telephone network**

- **Television network**

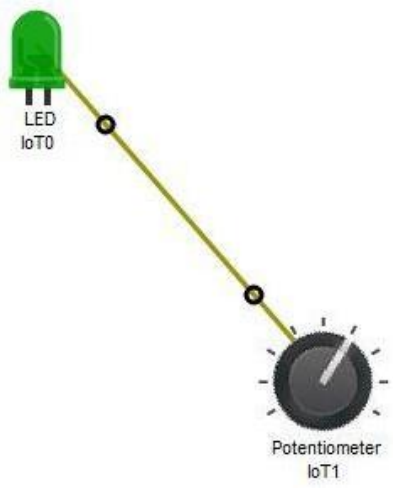


- **Serial DCE and DTE connection (NM-2T module)**

- **Octal Terminal/Access server (HWIC-8A module)**



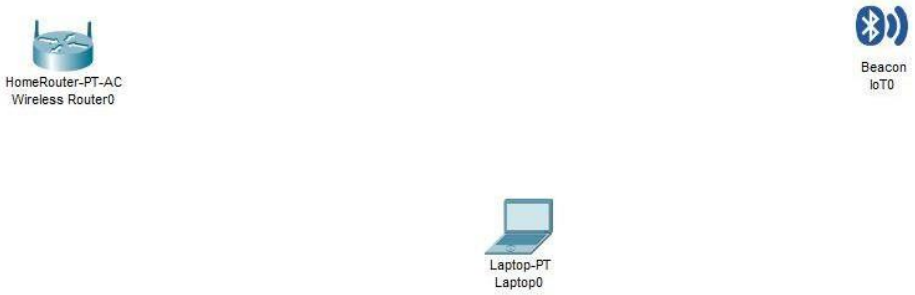
- **IoT custom cable**



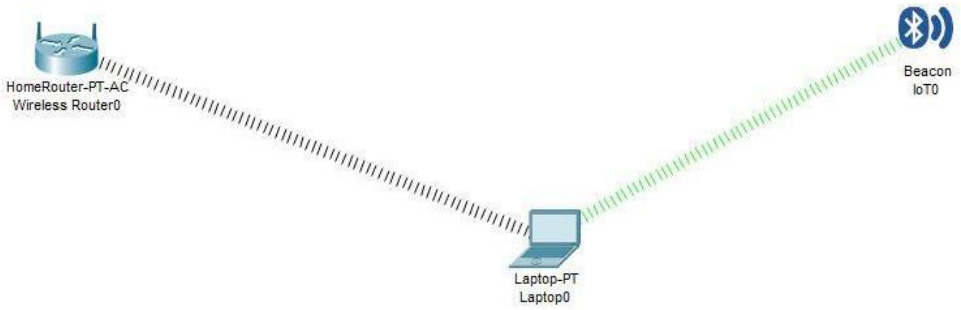
- **USB console**

Exercise 5:

1. Open a new workspace.
2. Add a Home Router, laptop, and a Bluetooth beacon.



3. On the laptop's desktop tab click on Bluetooth.
4. Set the port status to on and click on discover.
5. When IoT is found pair with it.
6. On the laptop's physical view unmount PT-LAPTOP-NM-1CFE module and mount a WPC300N module.
7. Go to the desktop tab and check the PC wireless.



8. Save the workspace.