Lab 6

Setting up the router network.
Working with network tools.

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The software that will be used is **Cisco Packet Tracer.**

Introduction

In this laboratory we will setup our network lab from scratch.

1.1. Start with a blank packet tracer.
1.2. Select three 1841 routers and place them.
1.3. Select three 2960 switches and place them.
1.4. Select 2 PCs and place them.
1.5. Select 1 server and place it.
1.6. We now need to connect the devices.
1.7. Select the correct connection types and connect PC0 to port 1 of Switch 0
1.8. Connect port 24 of switch 0 to interface 0/0 if Router 0.
1.9. Now connect PC1 to Switch 1 and Switch 1 to Router 1 using the same port numbers as in steps 1.7 and 1.8.
1.10. Now connect the Server to Switch 2 and Switch 2 to Router 2 using the same port numbers as in steps 1.7 and 1.8.
1.11. Install the WIC-2T module in Slot 0 on each of the three routers.
1.12. We will now connect the routers.
1.13. Use the Serial DCE connection type for the connections, which is the one with the clock picture. This cable will connect to the module we just plugged into the router in 1.11.
1.14. Connect R0 serial interface 0/0/0 to R1 serial interface 0/0/1.
1.15. Connect R1 serial interface 0/0/0 to R2 serial interface 0/0/1.

We have our network topology now, but we still need to configure the IP addresses.

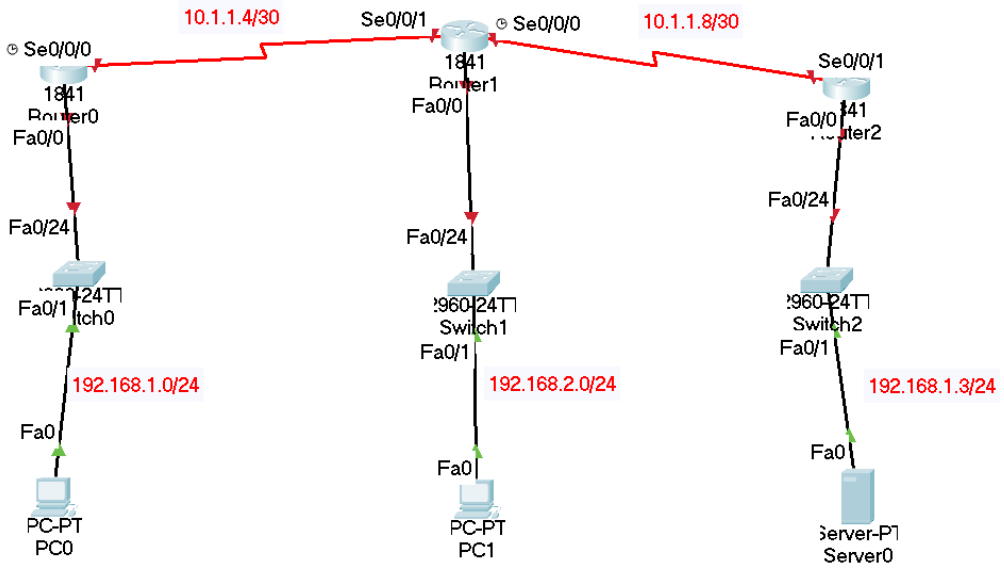


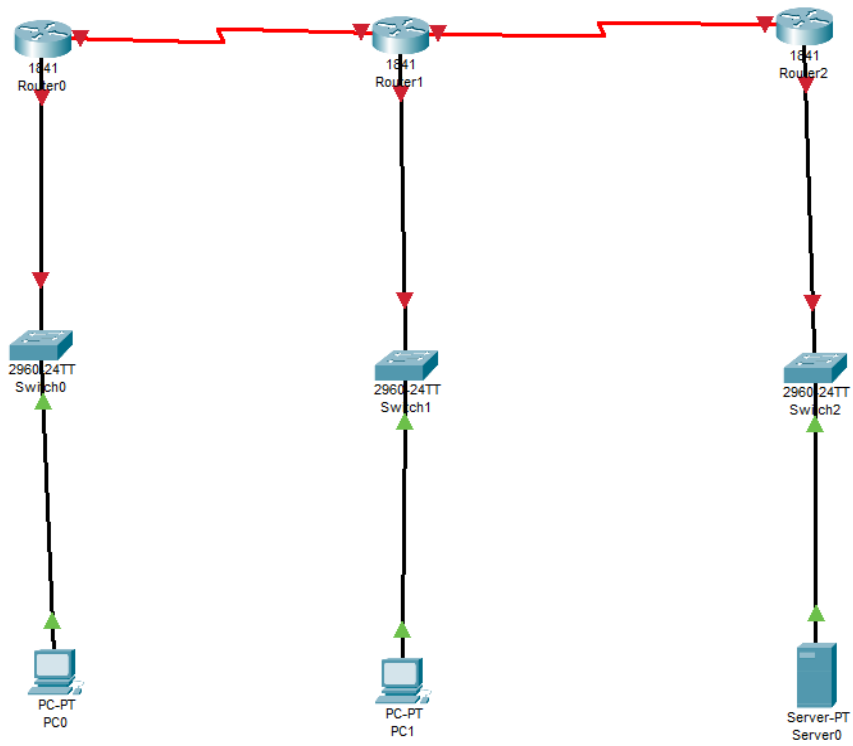
Figure 1: Network Laboratory Topology

Some thoughts.

It is essential to look at the module installed in the router and then choose the appropriate connection type.

How to submit

2.2. Print the logical topology to the file, then paste the image here.



2.3. Paste the output of ***sh run*** for Router 1 here.

```
Router#show running-config
Building configuration...

Current configuration : 715 bytes
!
version 12.4
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname Router
!
!
!
!
!
!
!
!
no ip cef
```

```
no ipv6 cef
!
!
!
!
!
!
!
!
!
!
!
spanning-tree mode pvst
!
!
!
!
!
!
interface FastEthernet0/0
ip address 192.168.2.1 255.255.255.0
duplex auto
speed auto
!
interface FastEthernet0/1
no ip address
duplex auto
speed auto
shutdown
!
interface Serial0/0/0
ip address 10.10.20.1 255.255.255.252
!
interface Serial0/0/1
ip address 10.10.10.2 255.255.255.252
clock rate 2000000
!
interface Vlan1
no ip address
shutdown
!
ip classless
!
ip flow-export version 9
!
!
!
!
!
!
!
!
line con 0
```

```
        !
        line aux 0
        !
        line vty 0 4
        login
        !
        !
        !
End
```

Tools:

Self-learning:

Work through the document titled "Wireshark Getting Started" and take Wireshark for a test run by following the document instructions. Once you are familiar with the basics of Wireshark, continue to the next step.

nslookup:

nslookup is a network administration command-line tool available on many computer operating systems. It is used to query the domain name system (DNS) to obtain domain name, IP address mapping, or other DNS records. It helps you find the IP address associated with a domain name or the domain name associated with an IP address. Example nslookup example.com, or nslookup 192.0.2.1.

Paste the output of your DNS lookup for any URL of your choice:

```
C:\Users\G>nslookup www.chelsea.com
Server:  IleliUSG
Address:  192.168.8.1

Non-authoritative answer:
Name:    cname.vercel-dns.com
Addresses:  66.33.60.66
          76.76.21.142
Aliases:  www.chelsea.com
```

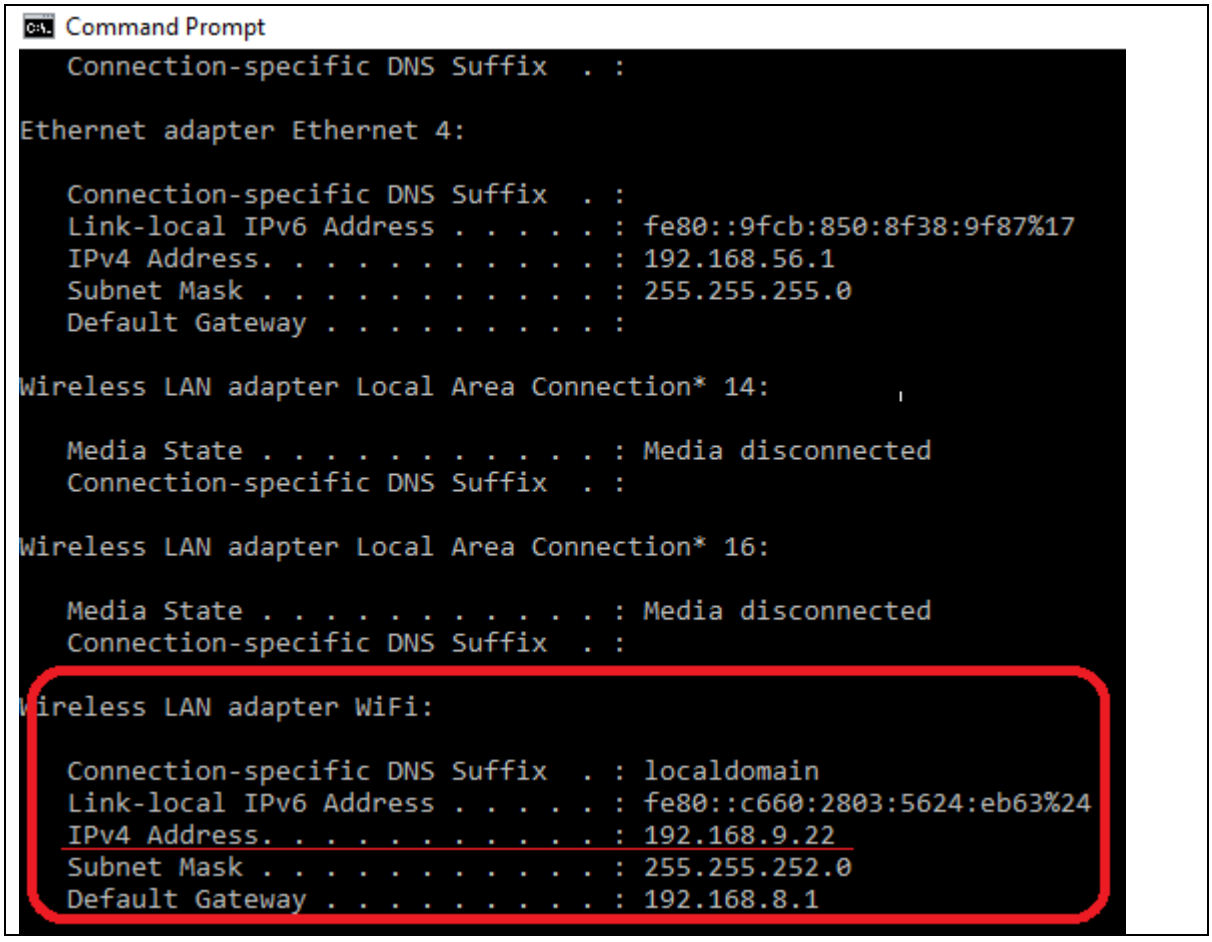
No.	Time	Source	Destination	Protocol	Lengtl	Info
179	6.814510	192.168.9.22	192.168.8.1	DNS	77	Standard query 0x1993 A www.chelseafc.com

Ipconfig:

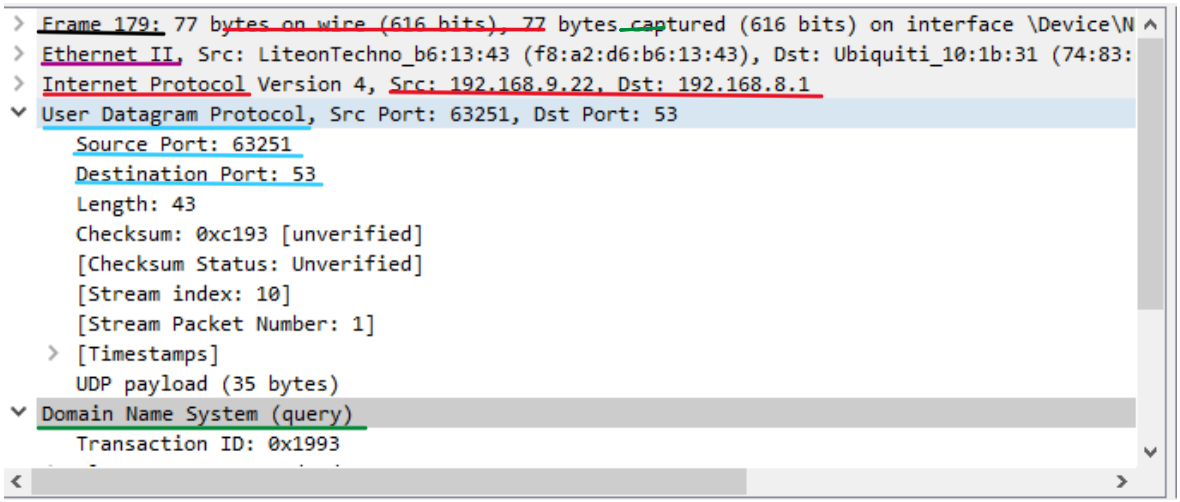
ipconfig is a command-line tool used on Windows operating systems to display the current network configuration, especially the IP address, subnet mask, and default gateway for all adapters. **ipconfig** can also refresh the DHCP configuration and DNS client resolver cache. The basic command to display the full configuration is ipconfig /all,

Check your host IP address by running the ipconfig command in your command window. Several IP addresses might be displayed. Figure out which IP address will be used to access the internet.

Take a screenshot of the output of the ipconfig command. Figure out which IP address is the relevant one. Circle the relevant IP address and paste the edited image here.



Lab exercise:
Viewing the OSI Layer on Wireshark
Work through the "Viewing the OSI layer document". Screenshot the Wireshark out and identify each layer of the OSI stack in your image. Paste your edited output image of the OSI stack here after indicating each layer in the stack.



Green underline – Application Layer (DNS)
Blue underline – Transport Layer (UDP)
Red underline – Network Layer (IP)

Purple underline – Link (Ethernet II)
Black underline – Frame

tracert:
tracert (or **traceroute** on Unix/Linux systems): This command determines the route packets take across an IP network to reach a specific destination. It lists all the routers it passes through until it reaches its destination or fails to and is discarded. This can be useful for diagnosing network issues and determining the path of network traffic. For example, **tracert example.com** will show the path packets have taken from your computer to the **example.com** server.

Paste your tracert output for a domain name of your choice here.

```
C:\Users\G>tracert www.chelsea.com

Tracing route to cname.vercel-dns.com [66.33.60.66]
over a maximum of 30 hops:

  1     2 ms     2 ms     2 ms  IleliUSG [192.168.8.1]
  2     9 ms     2 ms     2 ms  105.233.32.173
  3    16 ms     8 ms     5 ms  105.233.32.180
  4     9 ms     4 ms     8 ms  105.233.17.14
  5     4 ms     4 ms     4 ms  105.233.17.182
  6    14 ms     4 ms     9 ms  196.10.140.105
  7    47 ms     5 ms     5 ms  52.93.57.120
  8     *        *        *     Request timed out.
  9     4 ms    85 ms    10 ms  150.222.208.19
 10     5 ms     4 ms     3 ms  52.93.57.39
 11     *        *        *     Request timed out.
 12     4 ms     4 ms     5 ms  150.222.95.8
 13     6 ms     4 ms     6 ms  66.33.60.66

Trace complete.
```

END