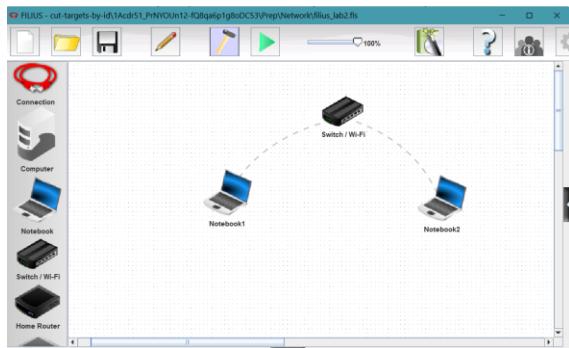


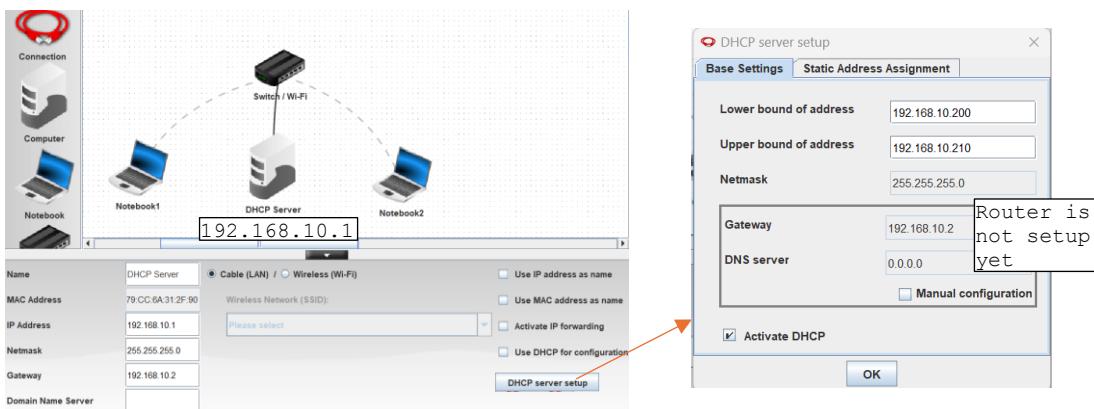
Network Lab 2

Lab Pre-requisites: Completed Network Lab 1.



Task 1

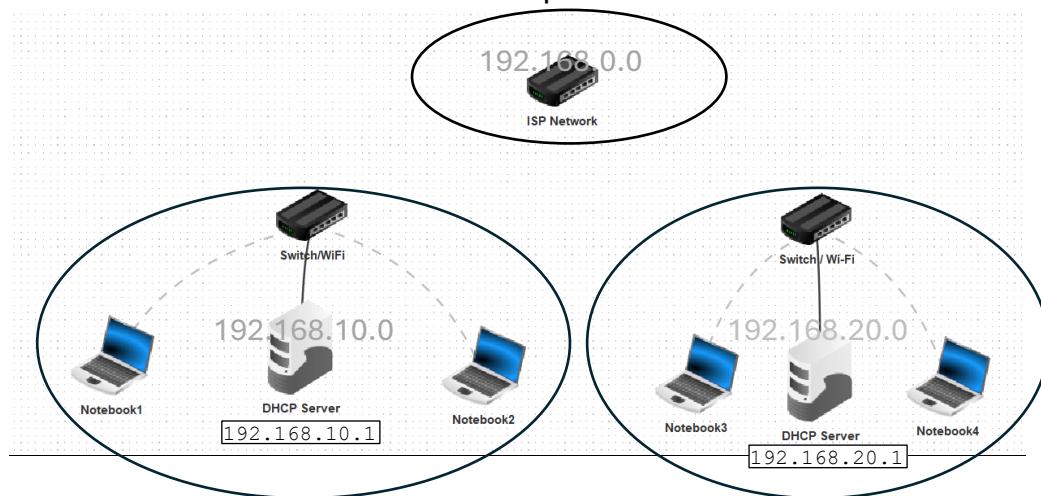
1. Open the network lab file that you saved from Network Lab 1 , `filius_lab1.flx` . If you do not have the lab file, you have to re-do Lab 1.
2. Using the filius network simulator in design mode , add a DHCP Server to the network with these configurations:
 - IP address: 192.168.10.1
 - Subnet mask: 255.255.255
 - Gateway: 192.168.10.2
3. Set up the DHCP Server to issue out IP Addresses from **192.168.10.200** to **192.168.10.210**.



4. Configure **dynamic IP address** i.e. Use DHCP for configuration for Notebook1 and Notebook2.
 - Run the simulator.
 - Verify that their IP addresses were issued from the DHCP server.
 - Verify that the two notebook computers can communicate using the command line and ping utility.
5. You have created a LAN with network id **192.168.10.0/255.255.255.0**

Task 2

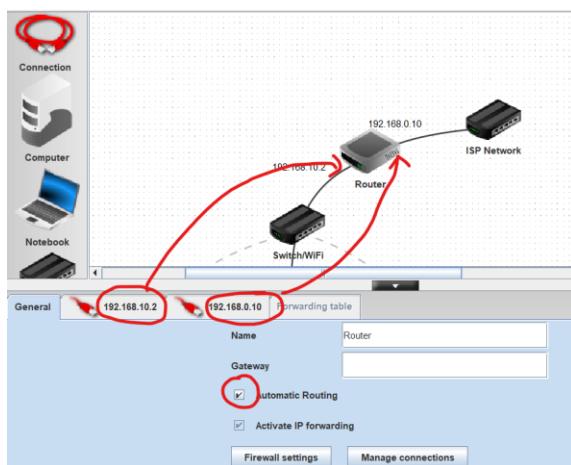
1. Create a similar network with a switch/WIFI, a DHCP Server and two notebook computers, Notebook3 and Notebook4. This network will have a network id of **192.168.20.0/255.255.255.0**
2. The DHCP Server for network 192.168.20.0 will be configured to have a static IP address of **192.168.20.1/255.255.255.0** and Gateway address: **192.168.20.2** and issue out addresses from **192.168.20.200** to **192.168.20.210**
3. Verify the Notebook3 and Notebook4 IP addresses and connectivity.
4. Create the ISP network with a switch/WIFI, rename the switch/WIFI to ISP Network. You should now have **3 independent and disconnected networks**.



The logical network ids of the 3 networks are 192.168.10.0, 192.168.20.0 and 192.168.0.0 (ISP Network). The ISP Network does not have any computers connected to it.

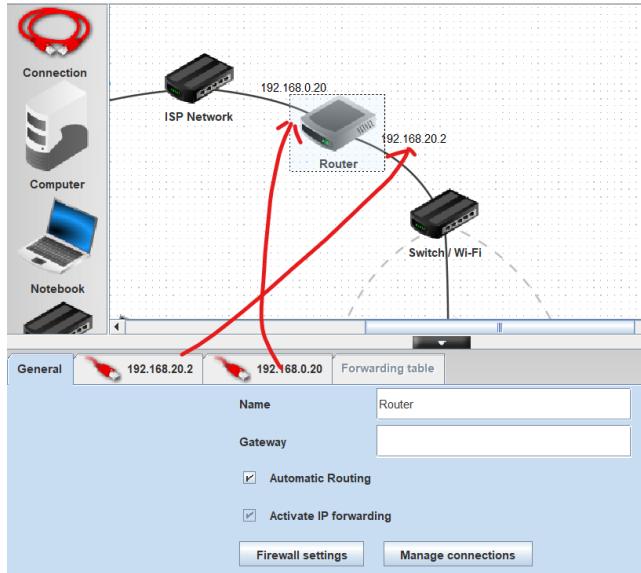
Task 3

1. We will now add a Router (NOT Home Router) to interconnect each of the two LAN (192.168.10.0 and 192.168.20.0) to the ISP Network.
2. For LAN 192.168.10.0, the router should be configured as follows:



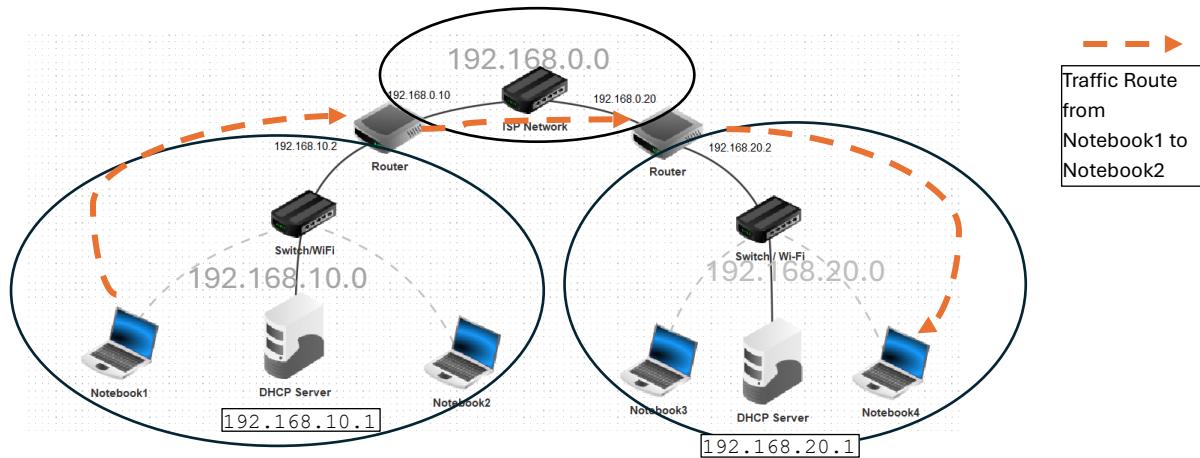
A router has 2 network interfaces, make sure the correct IP addresses are configured on the right interfaces. i.e. 192.168.10.2 should be connected to the LAN while 192.168.0.10 should be connected to the ISP. Turn on Automatic Routing.

- For LAN 192.168.20.0, the router should be configured as:



Task 4

The completed interconnected network should be as follows:



- To test internetwork connectivity, Notebook1 should be able to use the ping utility to get responses from Notebook3, Notebook4. If there are no response the trouble shooting steps are:

Can Notebook1 ping

- o Notebook2, if failed check local DHCP server configuration
- o The gateway, 192.168.10.2, if failed check local router configuration and gateway addresses
- o ISP network, 192.168.0.20, if failed check remote router configuration

- The remote gateway, 192.168.20.2, if failed check remote DHCP configuration.
2. View the data traffic on the ISP network, what protocol is used by the ping command ?

Command Line

```

S&S~SP S&S S&S      S&S S&S      S&S 'S&S
S&S     S&S S&S      S&S S&S      S&S 'S*S
S*b     S*S S*b      S*S S*b      d*S   1*S
S*S     S*S S*S.     S*S S*S.     .S*S   .S*P
S*S     S*S SSbs     S*S SSbs_sdSSS sSS*S
S*S     S*S YSSP     S*S YSSP-YSSY YSS'
SP      SP          SP
Y       Y           Y
=====
Use command 'help' to show list of available commands
or 'help <command>' for further information on the command.
=====

/> ping 192.168.20.200
PING 192.168.20.200 (192.168.20.200)
From 192.168.20.200: icmp_seq=1 ttl=62 time=1396ms
From 192.168.20.200: icmp_seq=2 ttl=62 time=692ms
From 192.168.20.200: icmp_seq=3 ttl=62 time=694ms
From 192.168.20.200: icmp_seq=4 ttl=62 time=694ms
--- 192.168.20.200 packet statistics ---
4 packet(s) transmitted, 4 packet(s) received, 0% packet loss

```

Router - 192.168.0.20 X

No.	Time	Source	Destination	Protocol	Layer	Comment / Details
7	10:13:21.6	192.168.0.10...	255.255.255...	RIP	Application	192.168.0.10 192.168.10.2 16 75000 192...
8	10:13:24.2	192.168.0.20...	255.255.255...	RIP	Application	192.168.0.20 192.168.20.2 16 75000 192...
9	10:13:31.5	192.168.0.10	192.168.0.20	ARP	Internet	Search for MAC 192.168.0.20 [op=REQUEST...]
10	10:13:31.5	192.168.0.20	192.168.0.10	ARP	Internet	MAC is 54:4D:53:58:FE:BF [op=REPLY, sen...
11	10:13:31.7	192.168.10.200	192.168.20.200	ICMP	Internet	ICMP Echo Request (ping), TTL: 63, Seq...
12	10:13:32.2	192.168.20.200	192.168.10.200	ICMP	Internet	ICMP Echo Reply (pong), TTL: 63, Seq.-N...
13	10:13:32.7	192.168.10.200	192.168.20.200	ICMP	Internet	ICMP Echo Request (ping), TTL: 63, Seq...
14	10:13:32.9	192.168.20.200	192.168.10.200	ICMP	Internet	ICMP Echo Reply (pong), TTL: 63, Seq.-N...
15	10:13:33.7	192.168.10.200	192.168.20.200	ICMP	Internet	ICMP Echo Request (ping), TTL: 63, Seq...
16	10:13:33.9	192.168.20.200	192.168.10.200	ICMP	Internet	ICMP Echo Reply (pong), TTL: 63, Seq.-N...
17	10:13:34.7	192.168.10.200	192.168.20.200	ICMP	Internet	ICMP Echo Request (ping), TTL: 63, Seq...
18	10:13:34.9	192.168.20.200	192.168.10.200	ICMP	Internet	ICMP Echo Reply (pong), TTL: 63, Seq.-N...
19	10:13:52.1	192.168.0.20...	255.255.255...	RIP	Application	192.168.0.20 192.168.20.2 16 75000 192...
20	10:13:52.8	192.168.0.10...	255.255.255...	RIP	Application	192.168.0.10 192.168.10.2 16 75000 192...
21	10:14:22.9	192.168.0.20...	255.255.255...	RIP	Application	192.168.0.20 192.168.20.2 16 75000 192...
22	10:14:25.6	192.168.0.10...	255.255.255...	RIP	Application	192.168.0.10 192.168.10.2 16 75000 192...