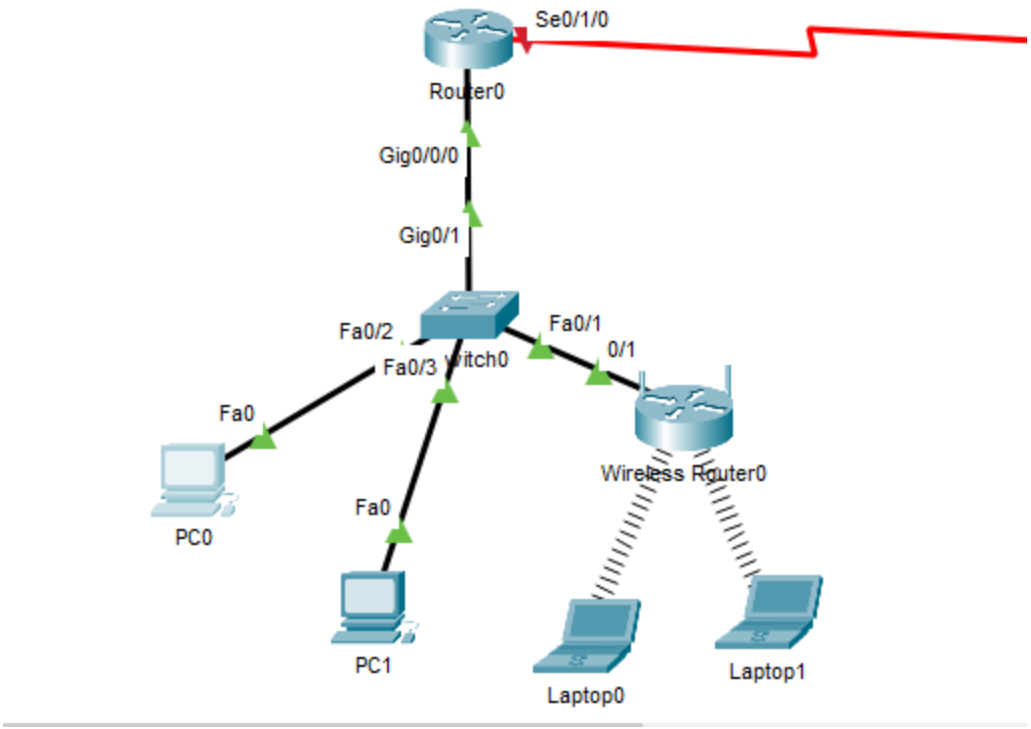
Setting DHCP Server for Local Network:



In this simple network, Router0 is the DHCP Server for the local network. To set it up as DHCP server, go to router's privilege mode and,

1. Create a pool (ip dhcp pool home)
2. Assign the network (network 192.168.0.0 255.255.255.0)
3. Assign default gateway (default router 192.168.0.1)
4. Assign DNS (dns-server 8.8.8.8)

```
Router(config)#ip dhcp pool home
Router(dhcp-config)#ne
Router(dhcp-config)#network 192.168.0.0 255.255.255.0
Router(dhcp-config)#de
Router(dhcp-config)#default-router 192.168.0.1
Router(dhcp-config)#dns
Router(dhcp-config)#dns-server 8.8.8.8
Router(dhcp-config)#exit
Router(config)#
Router(config)#ip dhcp
Router(config)#ip dhcp ex
Router(config)#ip dhcp excluded-address 192.168.0.100 192.168.0.110
Router(config)#
```

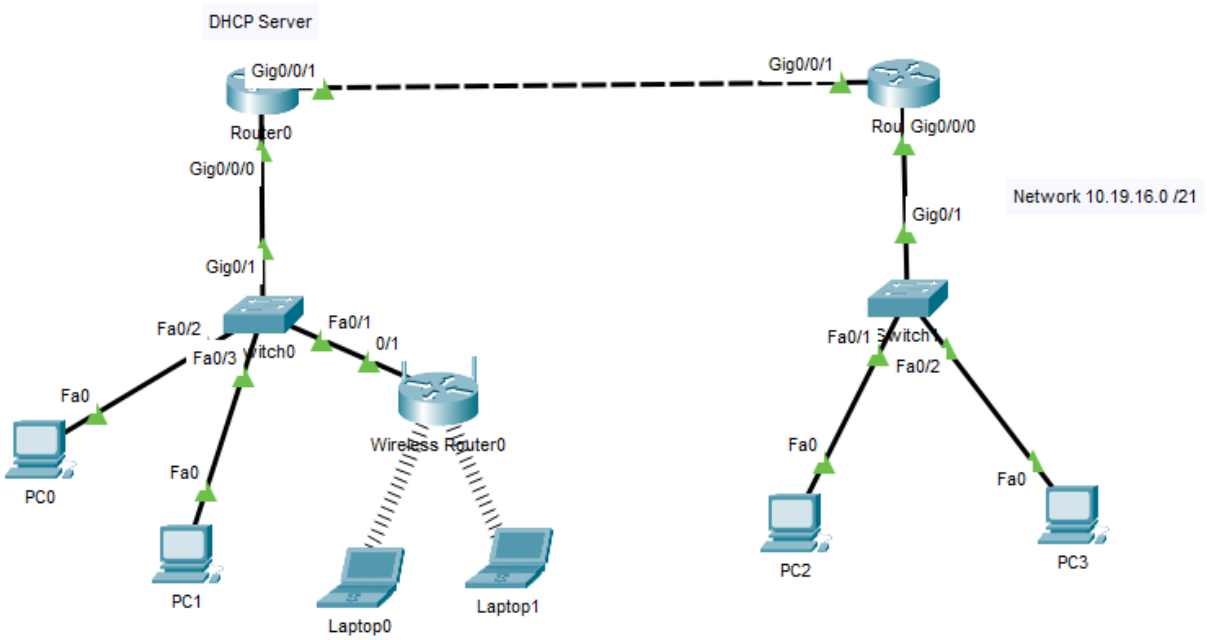
Here I set up, a pool named 'home' then assign the network 192.168.0.0/24. The first usable IP will be the default gateway which is 192.168.0.1 and 8.8.8.8 is the google DNS.

To exclude address if needed:

I excluded addresses from 192.168.0.100 to 192.168.0.110 which was optional but sometimes it is necessary. In the router's privilege mode, run

ip dhcp excluded-address $range$

Setting DHCP Server for Different Network:



In this network, I want to set up router0 as DHCP Server for network 10.19.16.0/21 which is a different network.

Like previous method, we must create a pool in router0 and exclude address if needed.

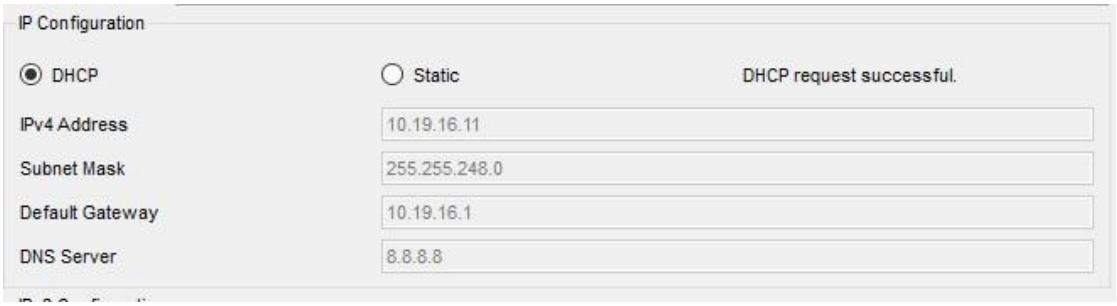
```
Router(config)#ip dhcp pool away
Router(dhcp-config)#ne
Router(dhcp-config)#network 10.19.16.0 255.255.248.0
Router(dhcp-config)#def
Router(dhcp-config)#default-router 10.19.16.1
Router(dhcp-config)#dn
Router(dhcp-config)#dns-server 8.8.8.8
Router(dhcp-config)#exit
Router(config)#ip dh
Router(config)#ip dhcp ex
Router(config)#ip dhcp excluded-address 10.19.16.1 10.19.16.10
Router(config)#
```

Now we have to tell router1, if its client broadcast a DHCP Discover packet, it must send it to router0 which is our DHCP server.

For that, in the interface GigabitEthernet 0/0/0, we assign router0 IP address as IP helper address.

```
Router(config)#interface GigabitEthernet 0/0/0
Router(config-if)#ip hel
Router(config-if)#ip help
Router(config-if)#ip helper-address 10.10.0.1
Router(config-if)#exit
Router(config)#
```

To check if the setup is ok, go to a computer in the network 10.19.16.0/21 and assign IP from DHCP.



So, its working. The DHCP Server assigns IP address 10.19.16.11/21 to the computer. Remember we excluded 10.19.16.1 to 10.19.16.10, that's why it does not assign one of those.