Demystifying networking
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Lecture - 90
Troubleshooting Network Layer

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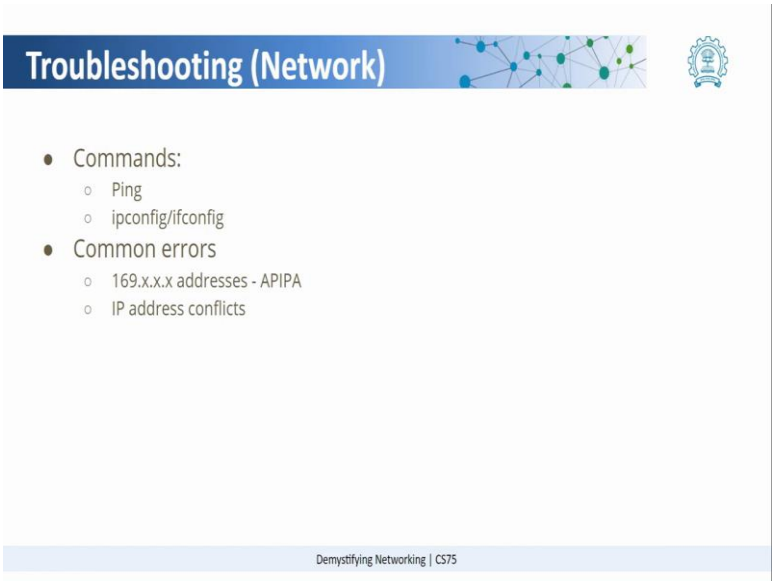

In network layer, let us see some common useful commands and common errors that occur.

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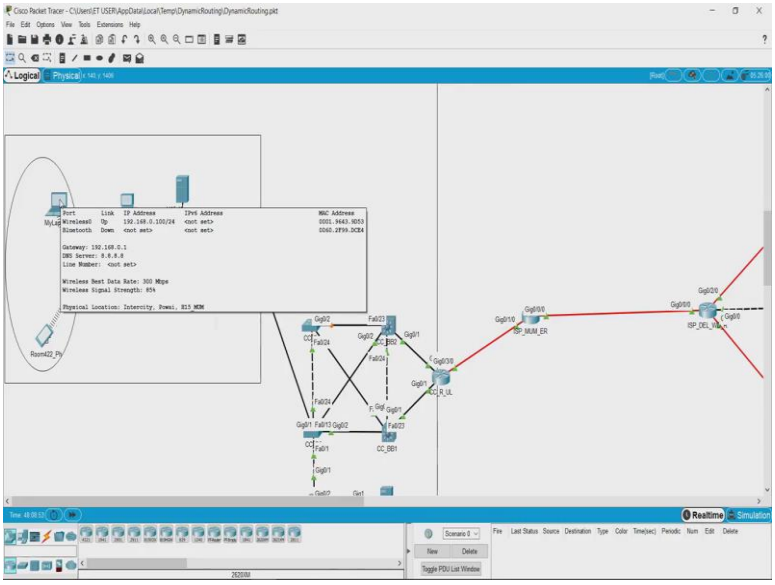

I am working with the same network that you are familiar with. One of the useful command is the ping command where you can ping any logical address or any IP address and see that whether the device with that address is reachable from your system or not.

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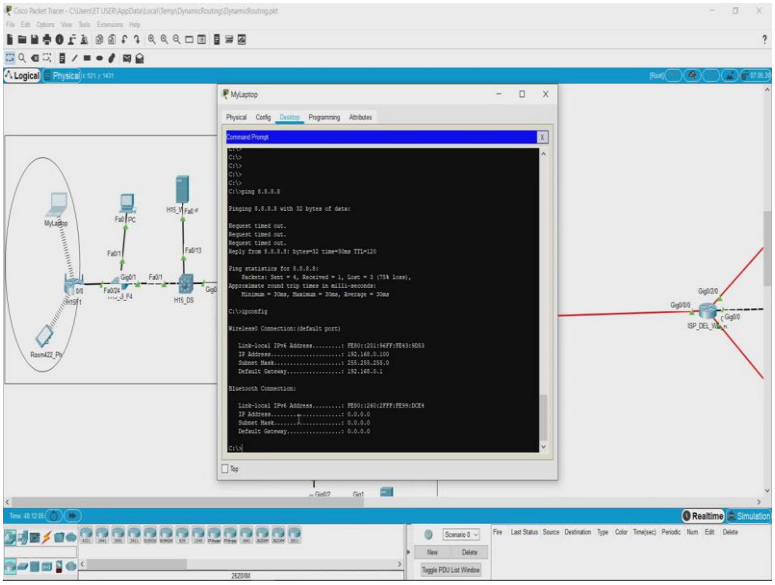

Initially, in packet tracer, it is common to see request timed out as the response because the devices are still starting up. But you can see that we got a response from the destination the fourth time reply from 8.8.8 was received in 30 milliseconds; that means, that the device having the IP address 8.8.8.8 is reachable from my laptop.

Sometimes, when ping fails, it does not mean that the device is not reachable because it is possible to block ping requests. So, if your destination device has blocked ping request it means that other type of packets such as HTTP requests or DNS requests can still reach that device, but not ping requests. So, you should check for such settings in your destination devices also.

The next command is IP config in packet tracer or ifconfig if you are using a windows system, what this gives is a detailed configuration information about all interfaces of this system. It shows what IP address has been assigned, what is the default gateway that has been setup for all the interfaces.

Now, let us see a couple of common errors that occur at network layer. One of them is when 169 series address has being assigned to your devices. The 169 series are called

APIPA address; that means, that the device having APIPA address is not able to reach the DHCP server. So, it has not been assigned any IP address. So, it has assigned itself an IP address belonging to 169 series.

In such cases what you can do is try to turn off the internet connectivity in the device and then restart or restart the router. Another common error occurs because of IP address conflicts.

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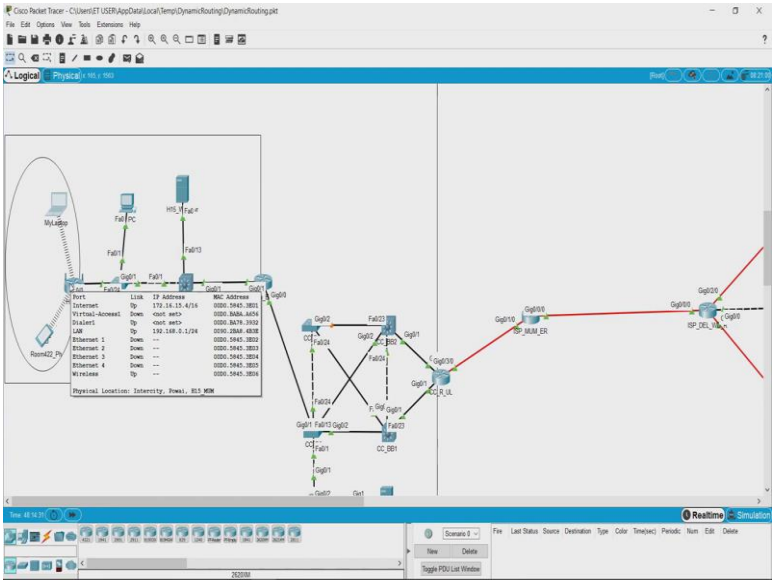

If you look at this router, it has 192 series address for the LAN network and both of these devices should have IP addresses belonging to, IP address belonging to 192 series. If you are statically assigning IP address,

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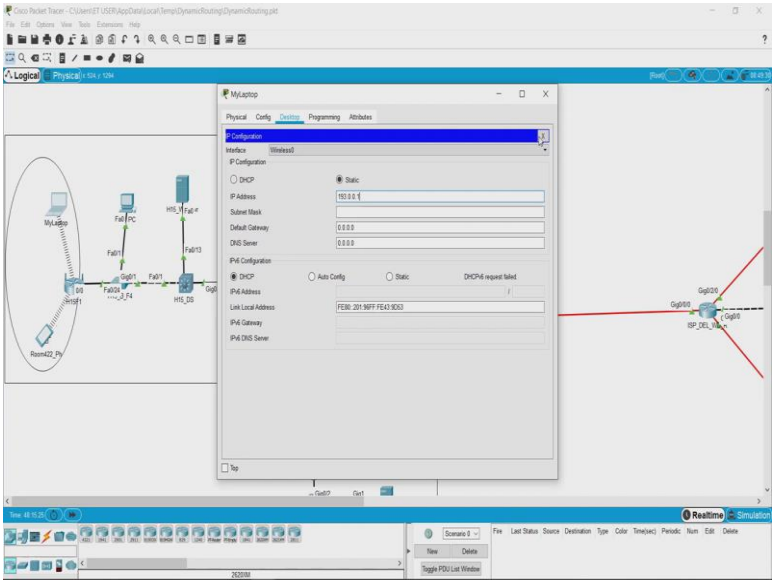

and if you fail to assign 192 series, then the connectivity between laptop and the router is disrupted. Now, let us try to see you, can see that the laptop failed to reach the router. in such cases ensure that the devices in each sub networks have IP addresses belonging to that network.

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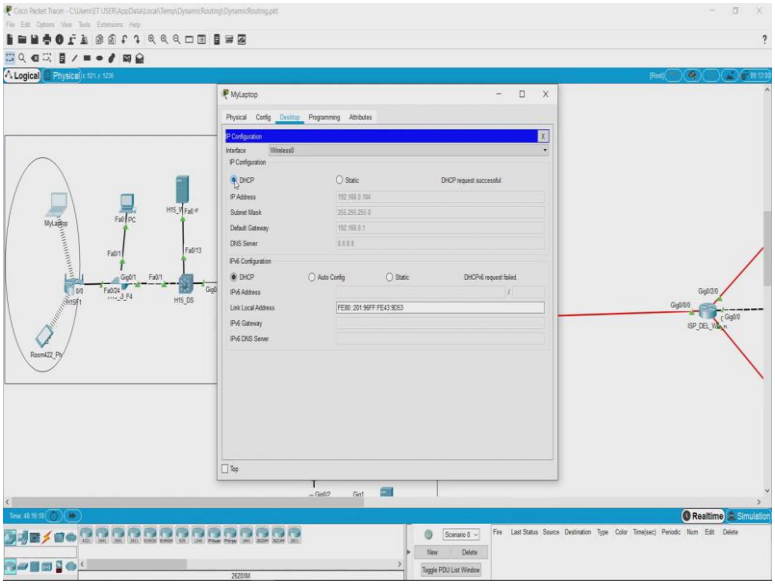

Now, that it has been assigned an IP address in the same network, we can see that the laptop is successfully reaching the router.