Demystifying networking
Department of Computer Science and Engineering
Indian Institute of Technology, Bombay

Lecture - 94
Troubleshooting Challenge 1

Now, that we have seen how to troubleshoot different layers, it's time to try it out I have created those packet tracer simulations for you there are some bugs in it, why do not you try to troubleshoot?

That is that looks like a nice idea let us try it out. Welcome back to CISCO packet tracer and the topic of troubleshooting. So, what Kavya has done is she has given us a CISCO packet tracer file and there are some issues that are there in the networks that have been configured in that file, it's the same file that we have been using till now. Here what we will try to do is, try to look at how we can go ahead and find those errors or whatever the challenges are. So, she has said that she has given us three challenges and as and when we complete one challenge we will be going to the next one.

So, what we will try to do we will try to take the approach that we have been seen for troubleshooting. So, we will start with the physical layer and then start going above. So, let us get into it and look at what is our first challenge.

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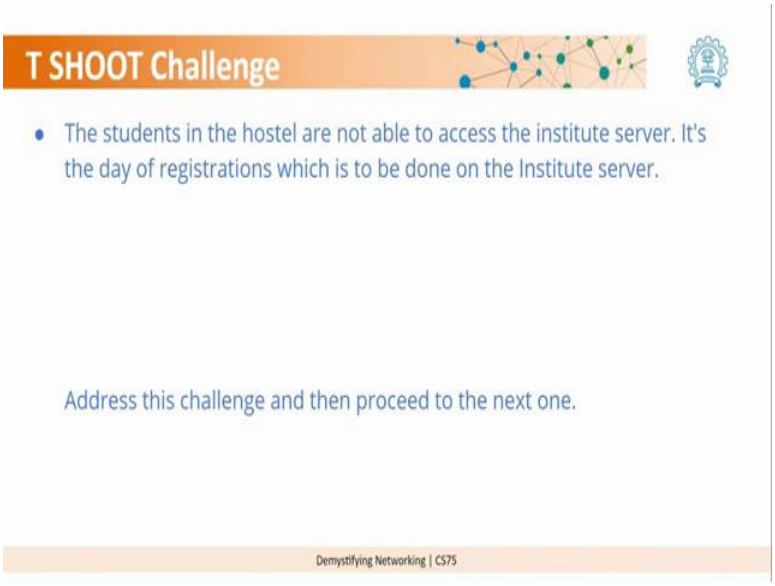

So, our first challenge is that, the students in the hostel are not able to access the institute server. It is the day of the registration which is to be done on the institute server. This is the first challenge that we have, let us go to our CISCO packet tracer topology. So, right now it looks like they are in the physical topology mode and we see hostel floor here, there is a Wi-Fi router, there is a PC which is connected by a LAN and there is a phone and the laptop.

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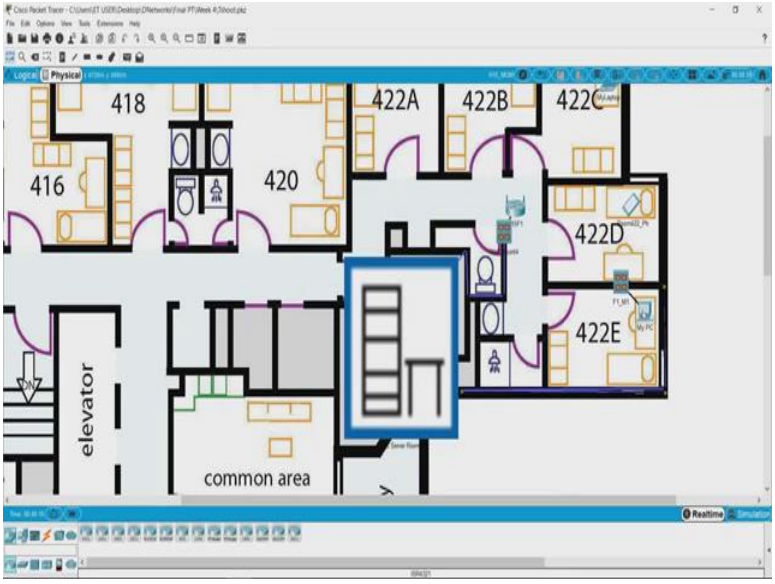

So, physically this is how you will see the network and though in CISCO packet tracer you can also see it logically.

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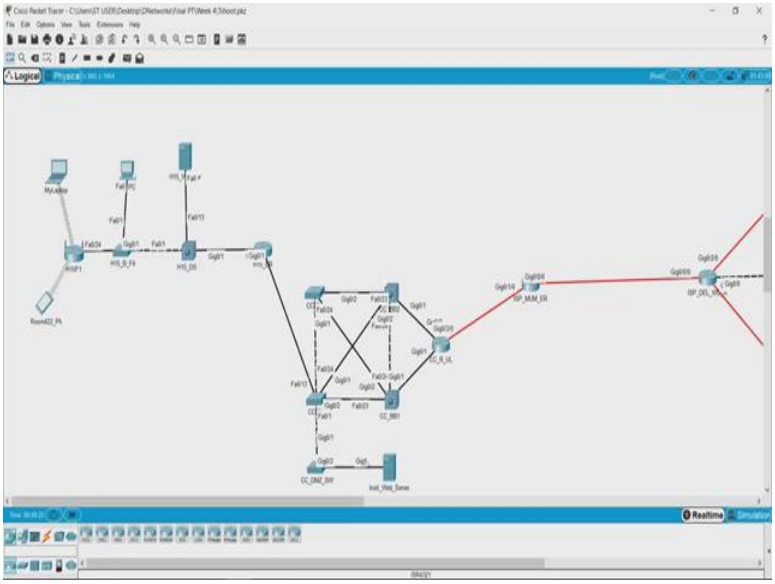

But in the actual scenario, this will just be a diagram and you will not be able to you know like here you see these lines and the Wi-Fi is connected, you will actually you have to go on the laptop and check.

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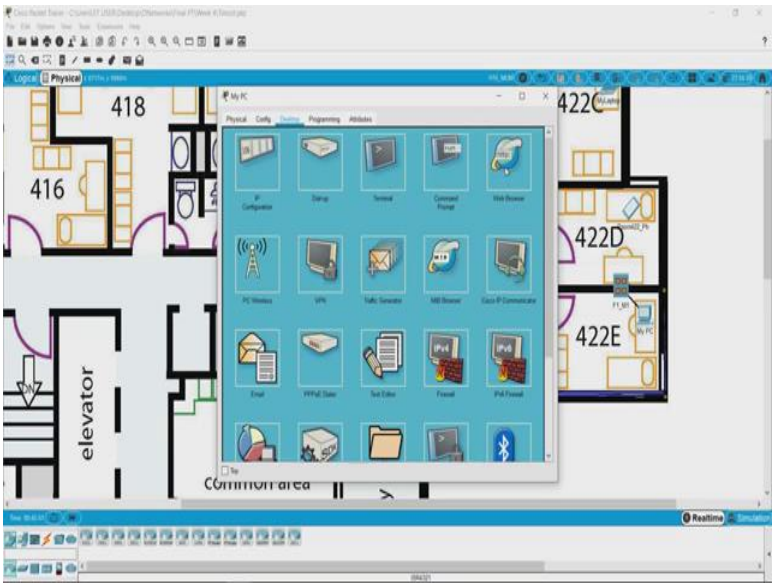

So, let us go to the physical scenario and maybe let us try with this PC. So, we know that the address of the institute web server is 10.10.10.10.

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And if you open the browser and try to open the web page using 10.10.10.10 it says server reset connection ok. So, the first thing that we can do is check the physical connectivity of the system ok. So, if we can see the PC is connected here, we can see this wire here. This is connected to this port and this port is in turn connected to the server room and similarly this Wi-Fi is connected to the server room.

So, one of the ways of checking this connectivity I mean since it will not be feasible for you to trace the entire wire, so, it becomes difficult to you know check all the wires and you know go run around the wire and see if its connected or not. So, one of the ways you could also check this is using the ping command I mean if you are able to successfully ping the system or in this case the gateway, if the computer is connected to the gateway, that means, the connection is fine. So, in case if that does not happen in that case maybe we will have to go back and start looking at the wire.

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So, let us first try to look at the gateway. So, the gateway for this computer here is 172.16.0.1. So, let us go back to the desktop and try to ping. Oh sorry not the terminal, you need the command prompt.

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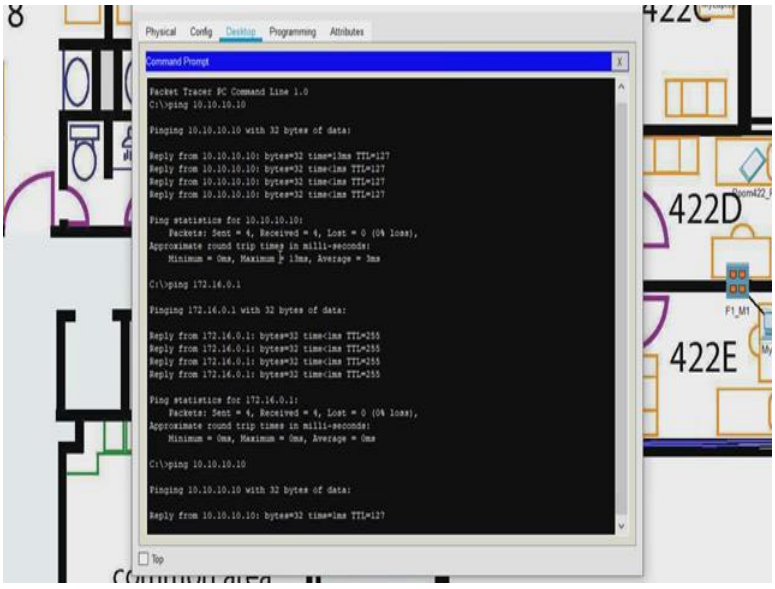

So, we what we have to type is ping 172.16.0.1 and we see our pings are successful; that means, our PC is successfully connected to the gateway. So, till the gateway there is no problem. So, why not just go ahead and try to see, if we can connect to the server, at least you have a connectivity with the server.

So, again what we will do is, we will use ping, but this time we will use the IP address of the server which is 10.10.10.10.

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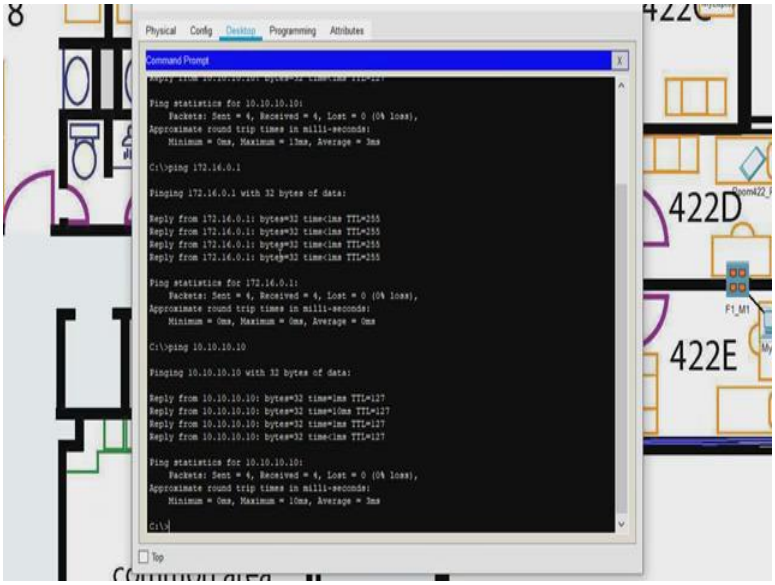

And yes the server is connected with us; that means, add till the network layer we do not have any issues. So, we are able to successfully ping the server and it is replying back that leaves us that the issues could be on the higher layers. So, the issues are on the higher layer which is the application layer. So, how can we check the application layer? So, one of the things with the web server is, at the application is the server running.

In the sense, there is a particular program or a process which runs on the machine which tells us that the web server, the service of the web server is running on the server ok. So, one of the things that we can do is go and check on the web server. So, let us close this and we will go back to the logical one, it is easier to get to the server now. So, this is the hostel server and this here is the web server.

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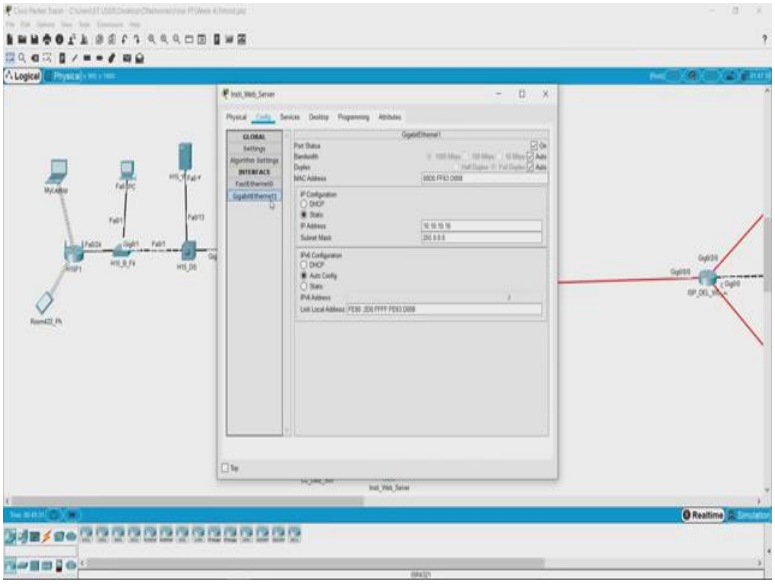

So, if we just want to confirm, see the IP address is 10 dot 10 dot 10 dot 10. So, this is the server that we are trying to reach and it is connected to the PC is connected to the server the connectivity is fine, but the problem is that the that particular service that is the web service is not running ok.

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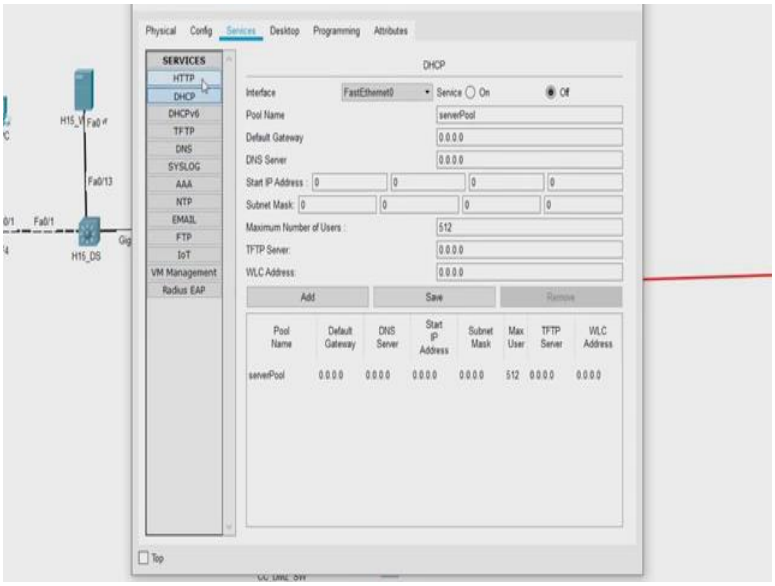

So, let us go to services and so, we have different services here.

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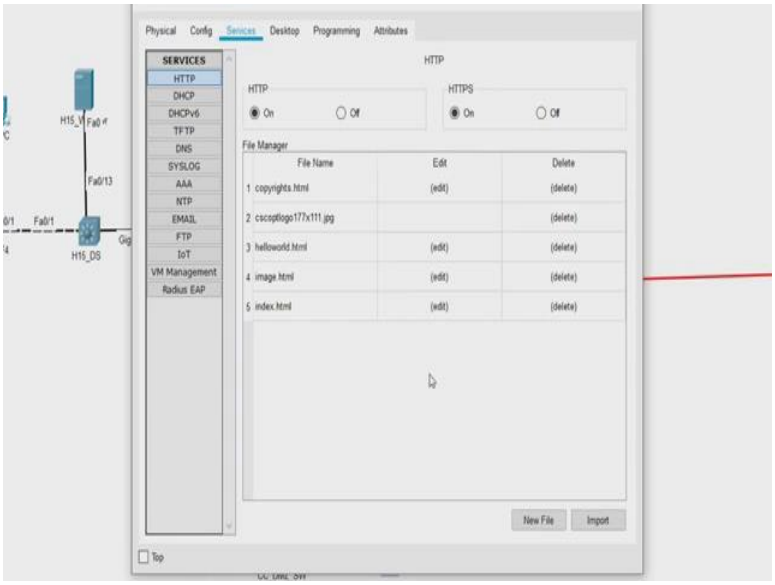

And let us see HTTP. So, what we see here is HTTPs is on, but HTTP is off so; that means, that this particular web service or the program that provides the website is not running this particular service is not on. So, let us switch it on and see if it works. So, we have switched this on and we will go back this was the PC that we were working with.

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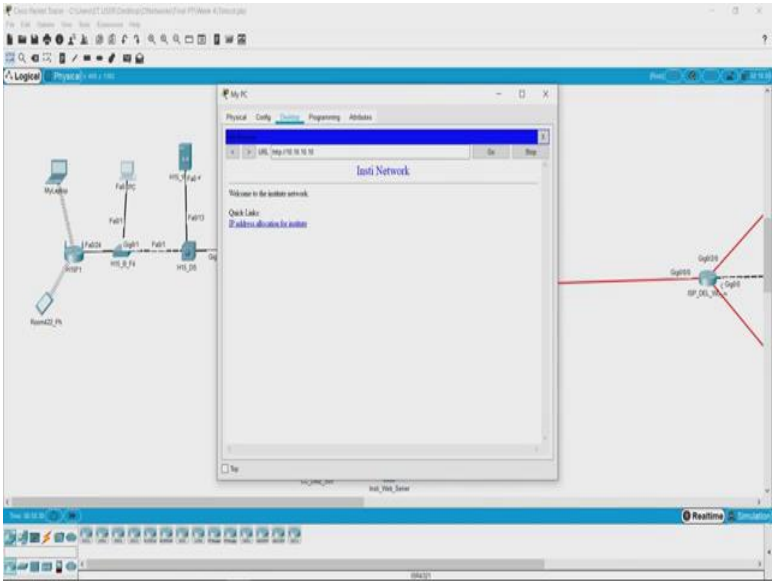

And let us go back to the web browser and try to open the web page dot 10 dot 10 yes. So, now, what we can see is the institute site is opening from the PC. So, we have solved the first challenge. So, what we did? We first try to confirm the connectivity. So, instead

of checking the physical connectivity directly. So, we wanted to check the physical connectivity, but a shortcut to do that is check it via ping.

So, if the ping works you know that the physical then the network and transport layers are working fine, the error was on the application layer. So, on the application layer we check the web server and the service was off. So, we have successfully started the web server. So, now, what we can do is, we can go back and look at what is the next challenge that we have.