
Introduction to Networks: Lab 1

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Cisco Career Certifications

- CCENT: Cisco Certified Entry Network Technician, Serves as a starting point for individuals interested in starting a career as a network professional.
 - CCNA: Cisco Certified Network Associate, CCNA Routing and Switching validates the ability to install, configure, operate, and troubleshoot medium-size routed and switched networks.
 - CCNP: Cisco Certified Network Professional, CCNP Routing and Switching certification validates the ability to plan, implement, verify and troubleshoot local and wide-area enterprise networks and work collaboratively with specialists on advanced security, voice, wireless and video solutions
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Cisco Career Certifications

- CCIE: Cisco Certified Internetwork Expert, CCIE certification is accepted worldwide as the most prestigious networking certification in the industry. Network Engineers holding an active Cisco CCIE certification are recognized for their expert network engineering skills and mastery of Cisco products and solutions.








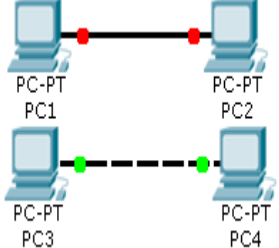
This semester, our aim is to cover most parts of the CCNA material, to give you a head start. adding some personal effort from your side after this course, should give you the ability to pass the CCNA examination.

Lab Content

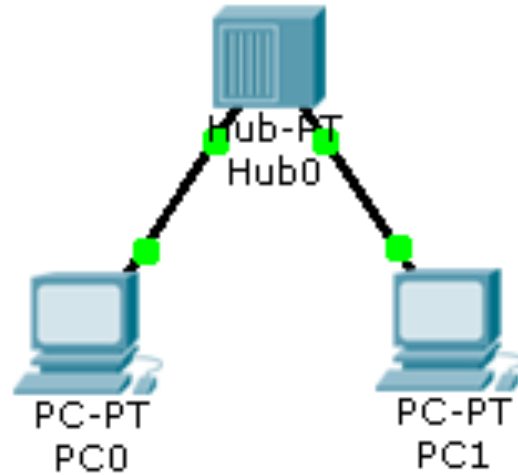
This lab, we will be doing two basic experiments that will show you how to create a simple network and configure it using a tool called '*Packet Tracer*'.

Network Components

First, we would like to introduce you to a few network components.

Host (End Users)	Server	Router	Switch & Hub	Connections
 PDA-PT Pda0  PC-PT PC0  Laptop-PT Laptop0	 Server-PT Server0	 1841 Router0	 2950-24 Switch0  Hub-PT Hub0	 PC-PT PC1 PC-PT PC2 PC-PT PC3 PC-PT PC4

Experiment 1

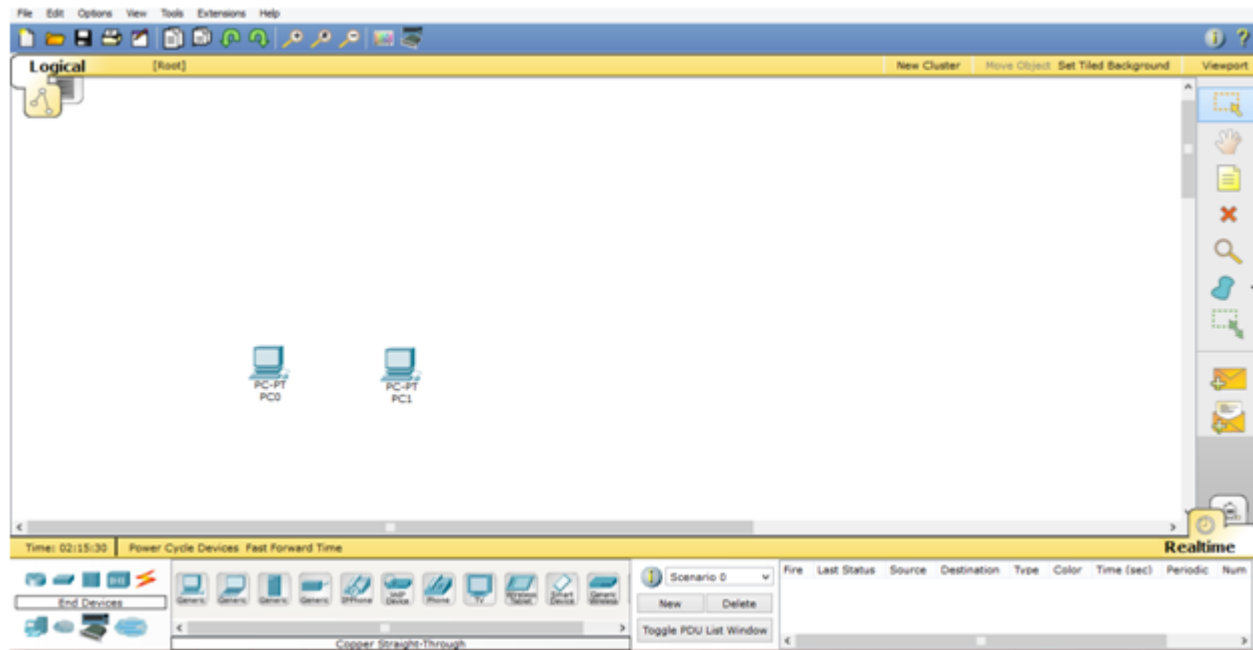


Experiment 1

In this experiment, we will be creating a logical network diagram with two PCs and a Hub.

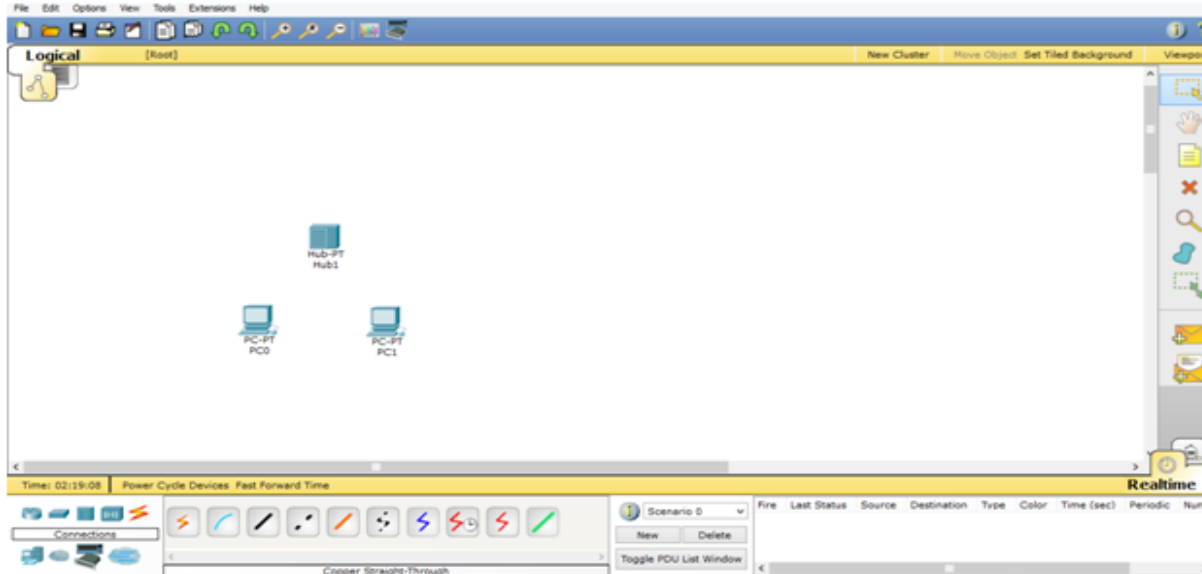
- 1) The bottom left-hand corner in the screen displays eight icons that represent device categories or groups, such as Routers, Switches, or End Devices.
 - 2) Select End Devices. Drag and drop two generic PCs onto your design area.
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Experiment 1



Experiment 1

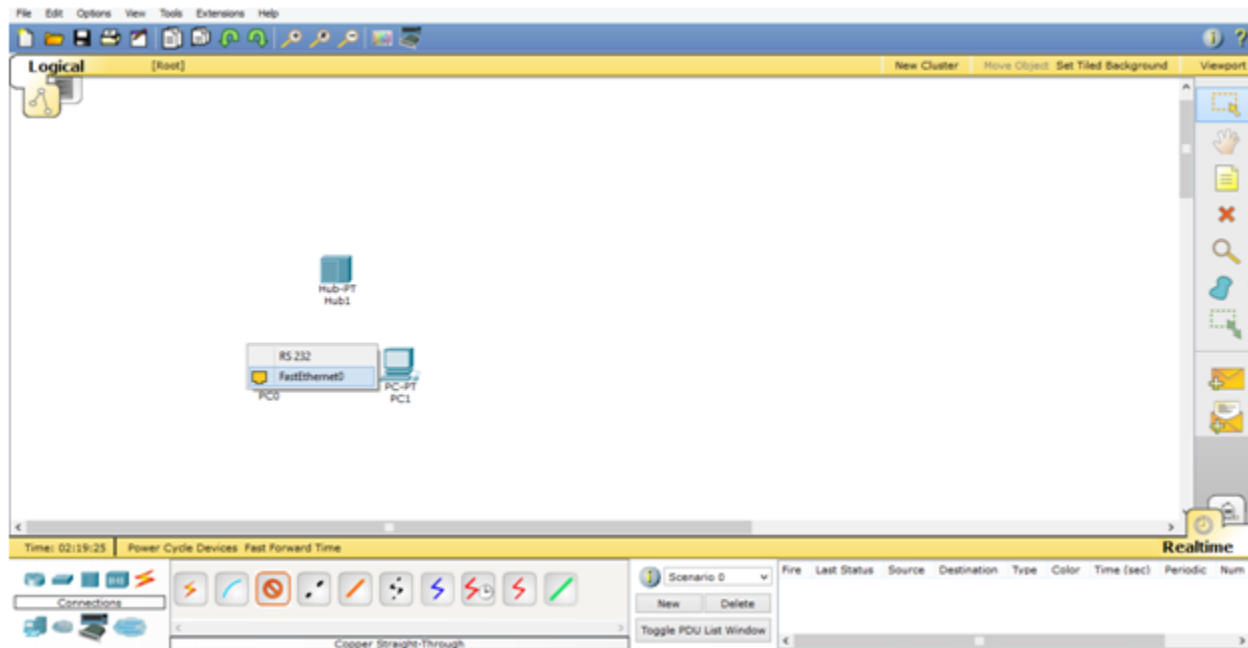
3) Select Hubs from the options in the bottom left-hand corner. Add a hub to the prototype network.



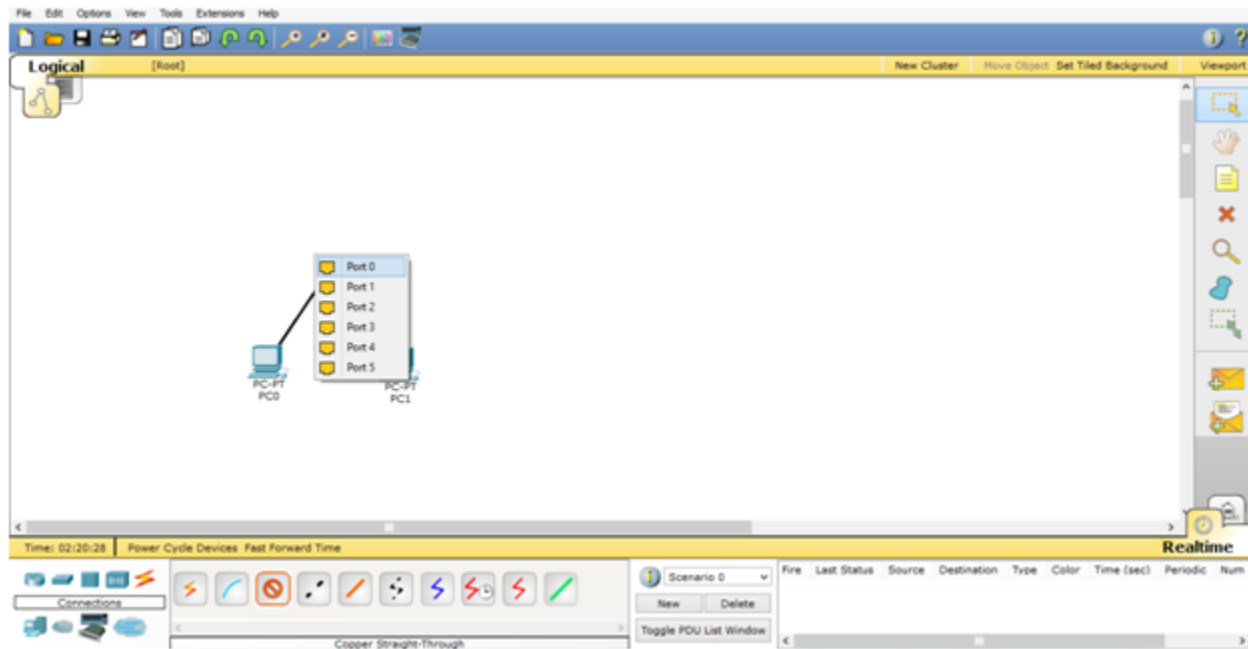
Experiment 1

4) Select Connections. Choose a copper Straight-through cable type. Click the first host, PC0, and assign the cable to the FastEthernet connector. Click the hub, Hub0, and select a connection port, Port 0, to connect to PC0.

Experiment 1



Experiment 1



Experiment 1

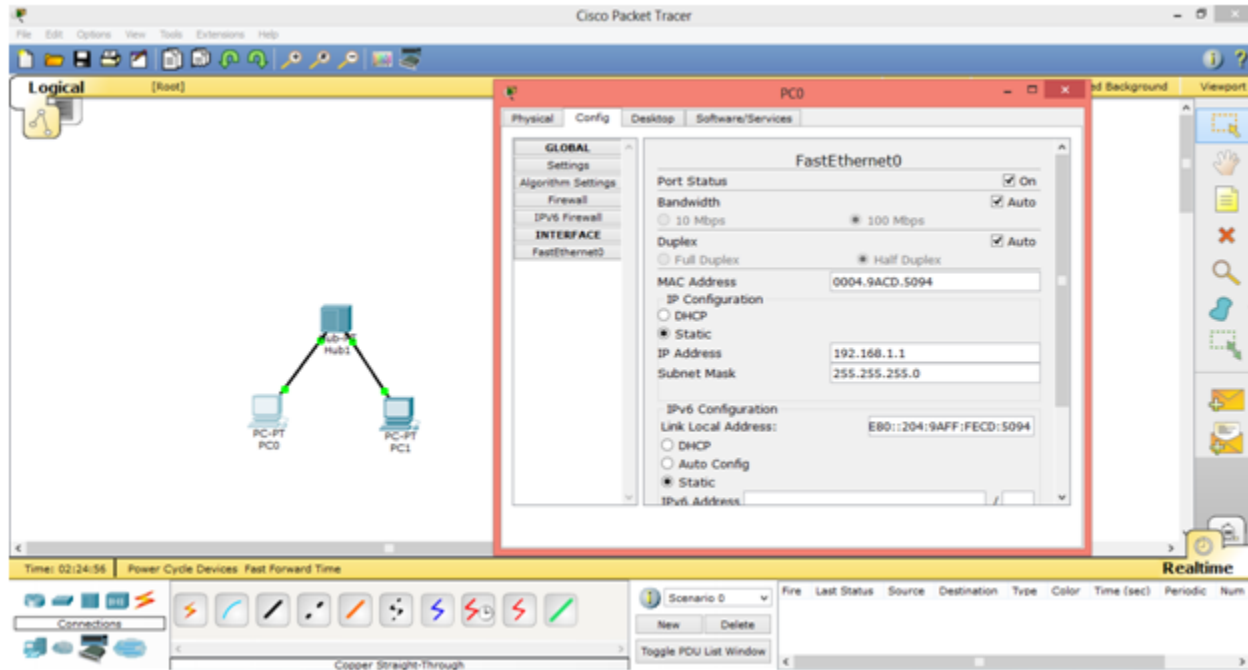
5) Repeat the connection steps for PC1.

In order to configure hostnames and IP addresses on the PCs:

6) Click PC0. PC0 window will appear. Select the Config tab. Change the PC Display name to PC-A.

7) Select the FastEthernet tab on the left and add the IP Address of 192.168.1.1 and subnet mask of 255.255.255.0. Close the window.

Experiment 1



Experiment 1

8) Apply the same for PC1 change to PC-B with IP Address 192.168.1.2 and subnet mask 255.255.255.0.

Experiment 1

Now that our little network is ready, we can try and test its connection with one of the most power tools used for network testing called 'Ping'.

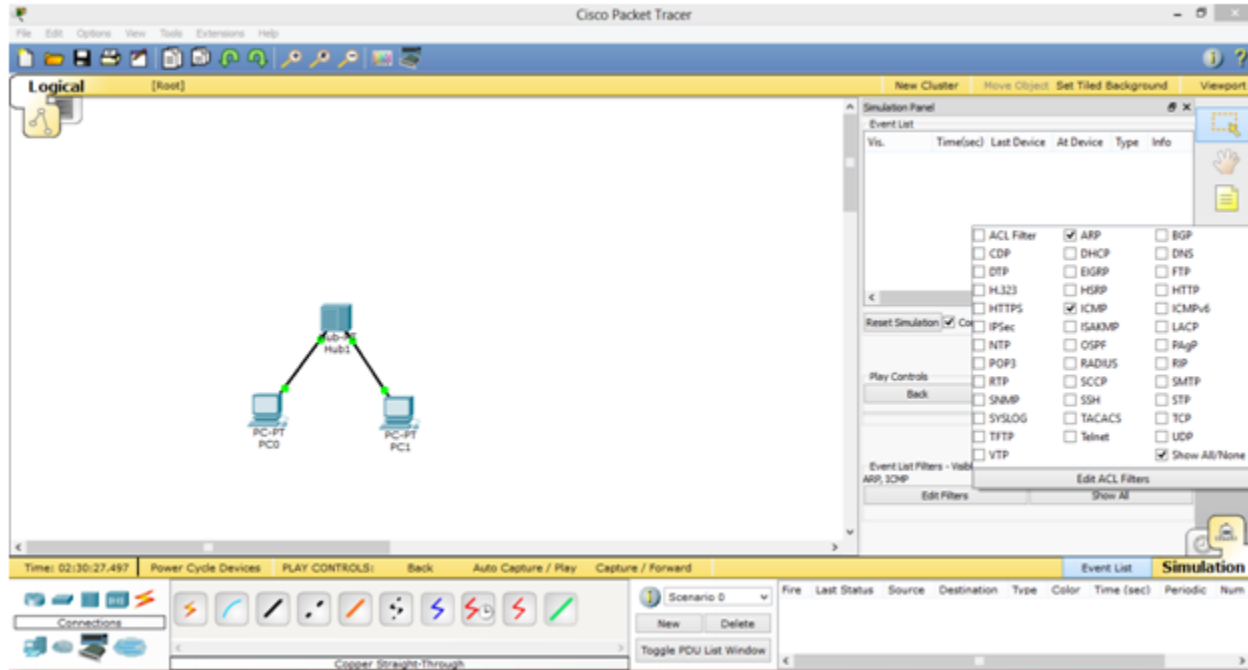
Ping uses the ICMP protocol to send an Echo Request and receive an Echo Response. We highly recommend you read further about the tool.

Experiment 1

Now, let's try a simple network simulation to see how packets flow in a network.

- 1) In the bottom right of your screen, make sure you're on the 'Simulation' tab.
 - 2) Click the Edit Filters in the Edit List Filters area, select only ARP and ICMP filters.
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Experiment 1



Experiment 1

3) Select a Simple PDU by clicking the closed envelope on the right vertical toolbar. Move your cursor to the display area of your screen. Click PC-A to establish the source. Move your cursor to PC-B and click to establish the destination.

4) Select Auto Capture/Play to see an animation of the flow of packets.

Experiment 1

The screenshot displays the Cisco Packet Tracer interface. The main workspace shows a network topology with a central Hub-PT (Hub0) connected to two PC-PT devices (PC0 and PC1). The interface includes a menu bar (File, Edit, Options, View, Tools, Extensions, Help), a toolbar, and a status bar.

The **Simulation Panel** is open, showing the **Event List** table. The table has columns: Vis., Time(sec), Last Device, At Device, Type, and Info. The events listed are:

Vis.	Time(sec)	Last Device	At Device	Type	Info
...	0.000	--	PC0	ARP	
...	0.001	PC0	Hub0	ARP	
...	0.002	Hub0	PC1	ARP	
...	0.003	PC1	Hub0	ARP	
...	0.004	Hub0	PC0	ARP	
...	0.004	--	PC0	ICMP	
...	0.005	PC0	Hub0	ICMP	
...	0.006	Hub0	PC1	ICMP	
...	0.007	PC1	Hub0	ICMP	
...	0.008	Hub0	PC0	ICMP	

Below the event list, there are controls for **Reset Simulation** (checked), **Constant Delay**, and **Play Controls** (Back, Auto Capture / Play, Capture / Forward). The status bar shows the time as 16:32:40.8 and the current device as Hub0.

The **Simulation** panel at the bottom right shows the **Event List** and **Simulation** tabs. The **Simulation** tab is active, showing a table with columns: Fire, Last Status, Source, and Destination. The table contains one entry:

Fire	Last Status	Source	Destination
Successful		PC0	PC1

Experiment 1

The flow and order of the packets sent through the network in the Pinging process is seen on the Event List on the right. More details about the packet can be seen if you click on each event. Details such as the packet type, contents and structure...

Experiment 2

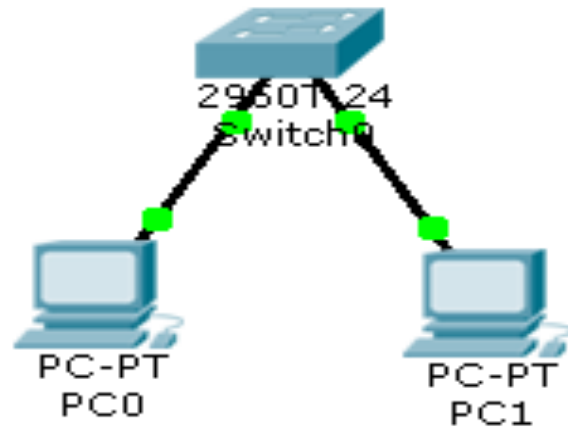
In this experiment, instead of a hub we will now use a Switch, and see what a real time Ping looks like.

Use the exact same steps used previously to create a network with two hosts and a 2950T switch.

Set the IP address of PC0 to 192.168.10.10 with subnet mask 255.255.255.0.

Set the IP address of PC1 to 192.168.10.11 with subnet mask 255.255.255.0.

Experiment 2



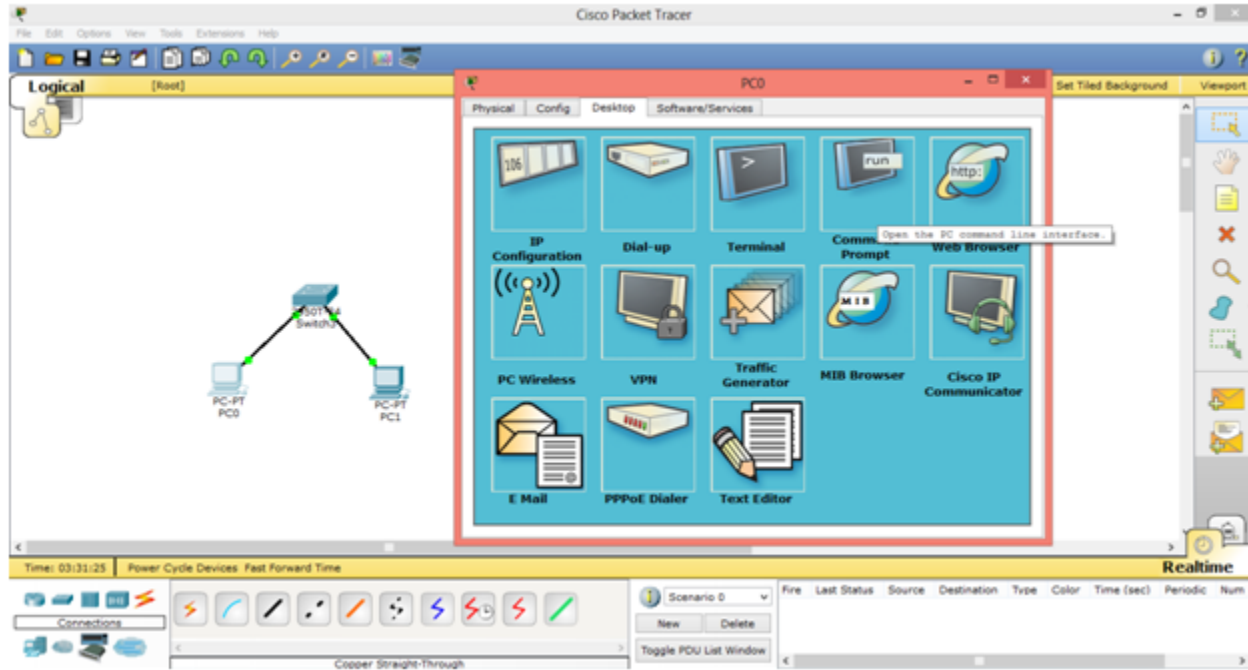
Experiment 2

This time we will test the connectivity in this network using a Real time ping test.

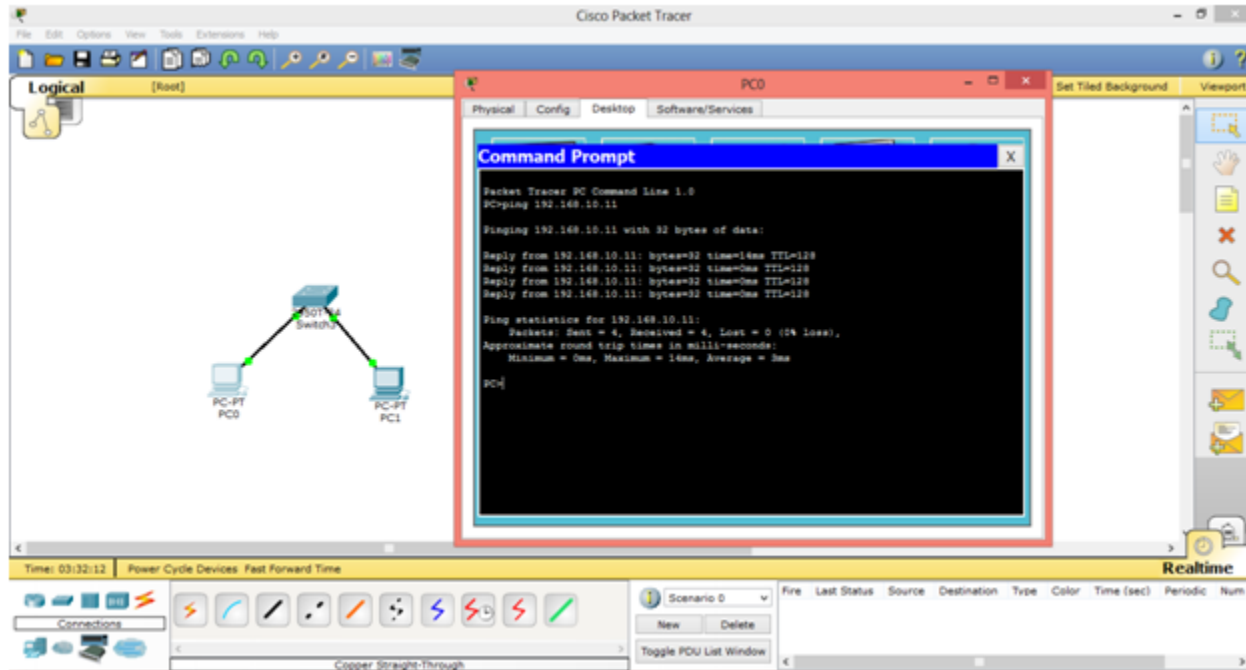
- 1) Switch to 'Real Time' tab.
- 2) Click on PC0 > Desktop > Command Prompt.
- 3) Type 'ping 192.168.10.11'.

A successful Ping indicates that the network has been configured correctly.

Experiment 2



Experiment 2



This was all for today.
Thank you!
