

1. Introduction to Cisco Packet Tracer- Cisco Systems' Packet Tracer is an application that allows users to develop network topologies and emulate current computer networks. Using a simulated command line interface, users can replicate the configuration of Cisco routers and switches. The program is primarily aimed at students as a teaching tool to assist them in learning key networking principles.

### Installing Packet Tracer on Windows

Step 1: Login or create an account on **Netacad** website.

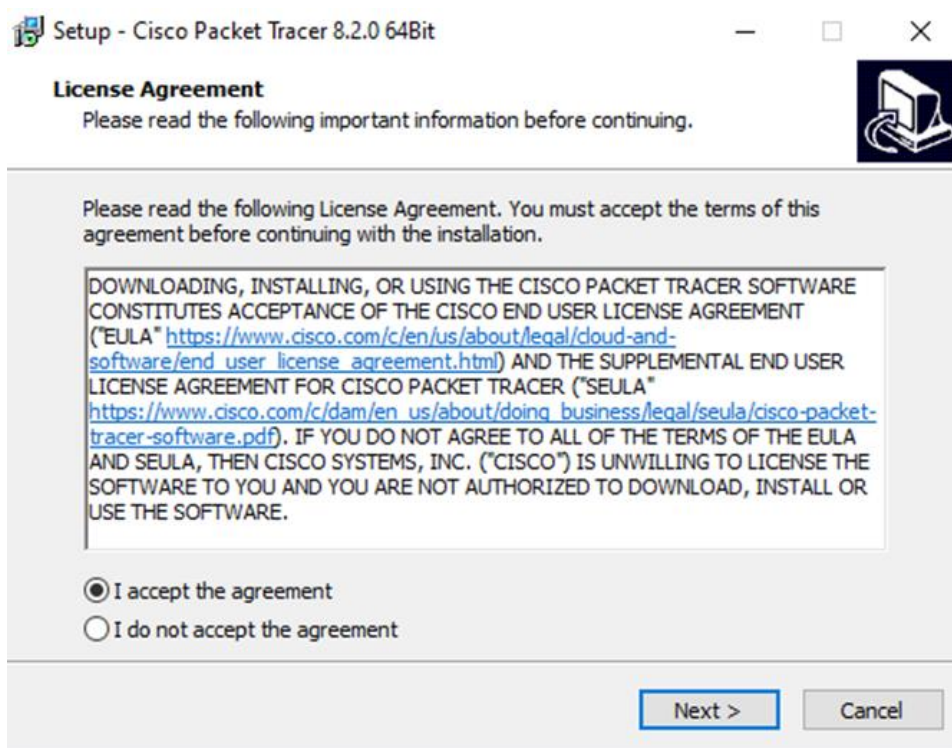
<https://netacad.com>

Step 2: After logging in click on the “**Resources**” drop down menu located on the top ribbon of the screen. Select “**Download Packet Tracer**” option.

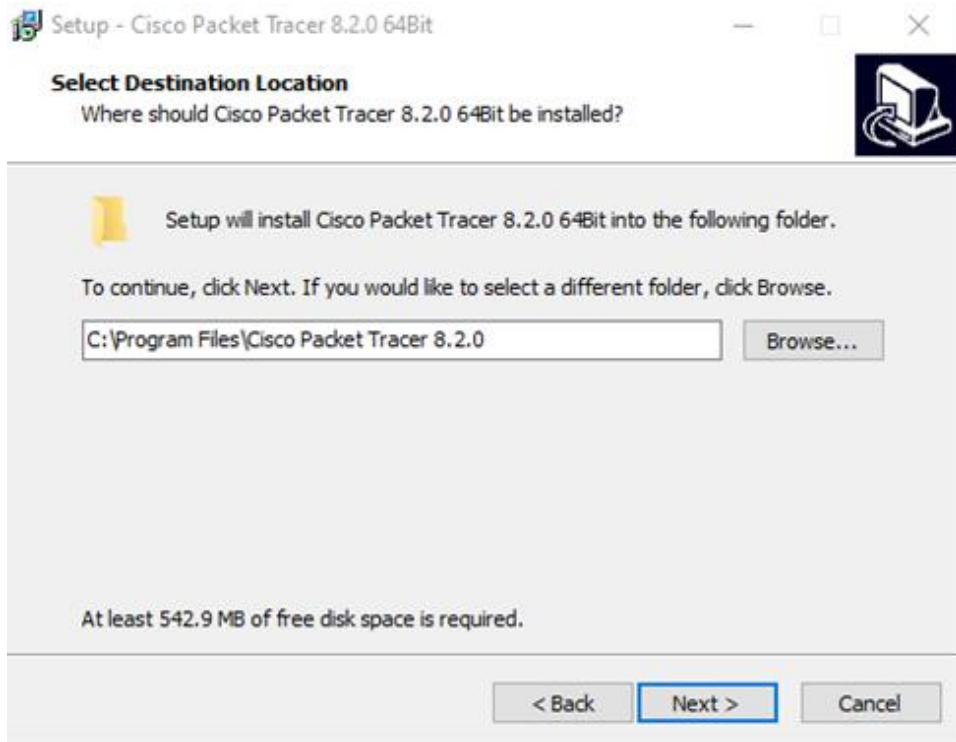
Step 3: Download Packet Tracer page will appear. Choose the operating system to download the packet tracer. After clicking, downloading will start automatically.

Step 4: Open the downloaded file.

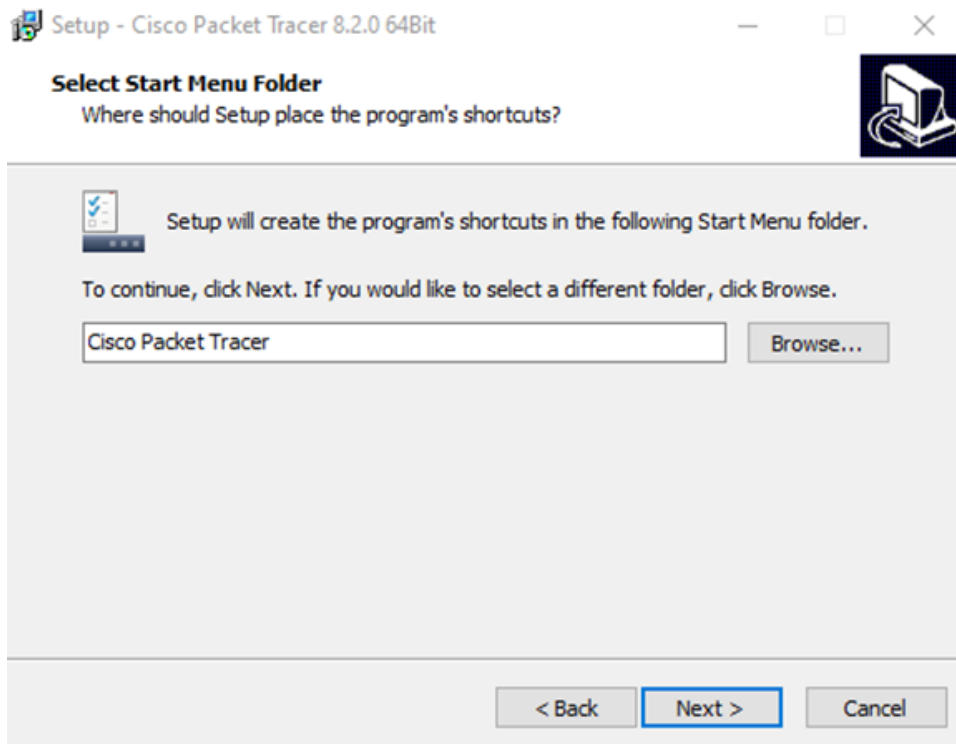
Step 5: License Agreement screen will appear. Click “**I accept the agreement**” and hit “**next>**” button.



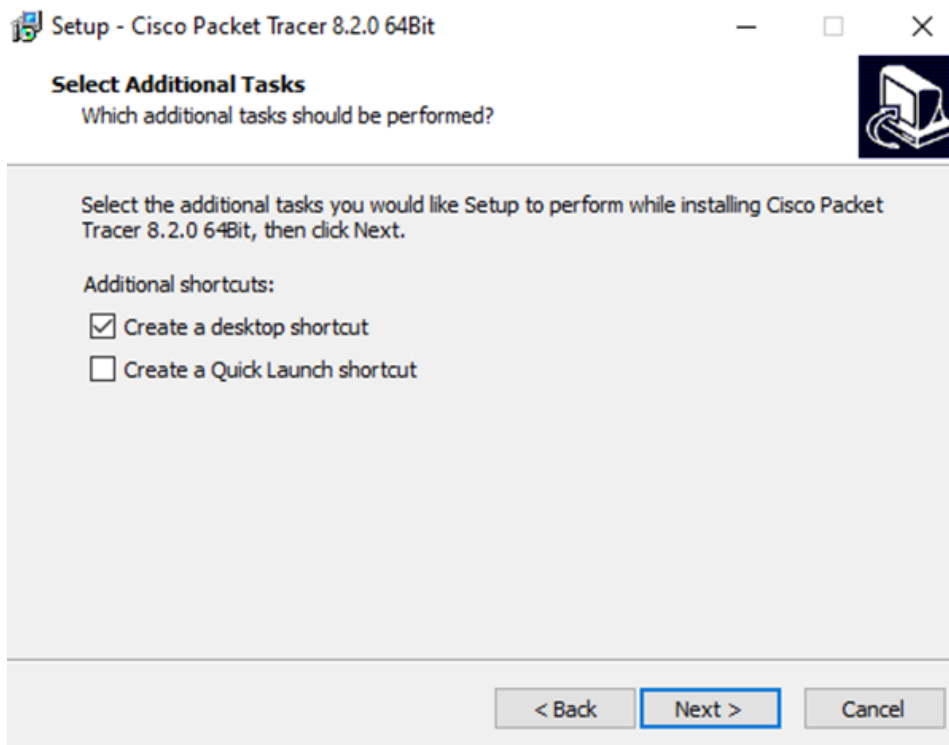
Step 6: Please choose the installation location. To continue click “**Next**” button.



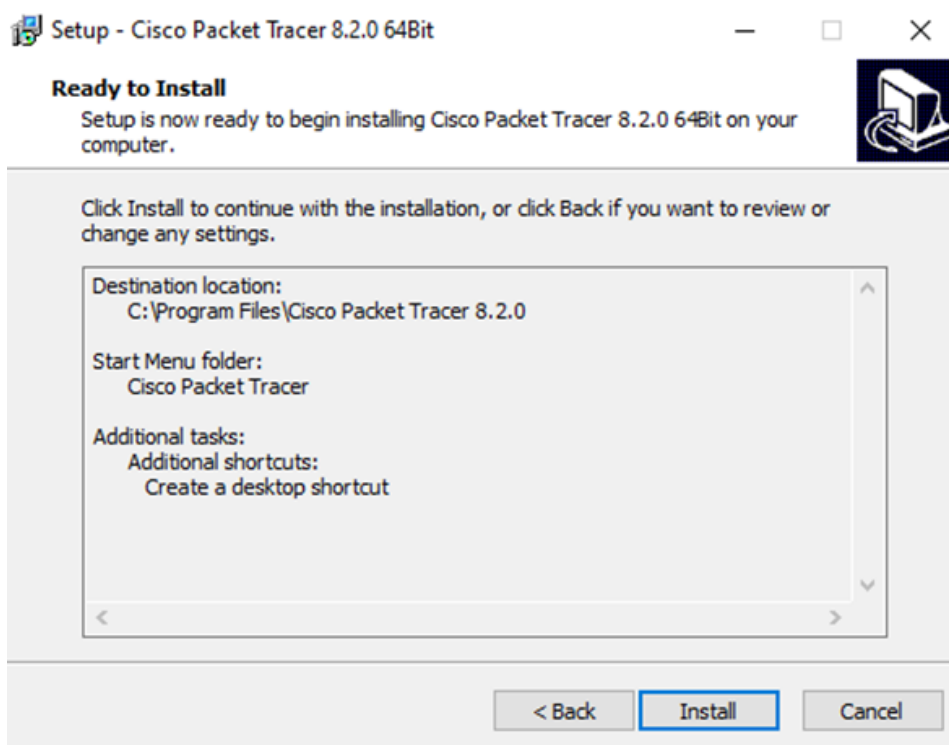
Step 7: Select the start menu folder and click the “**Next**” button.



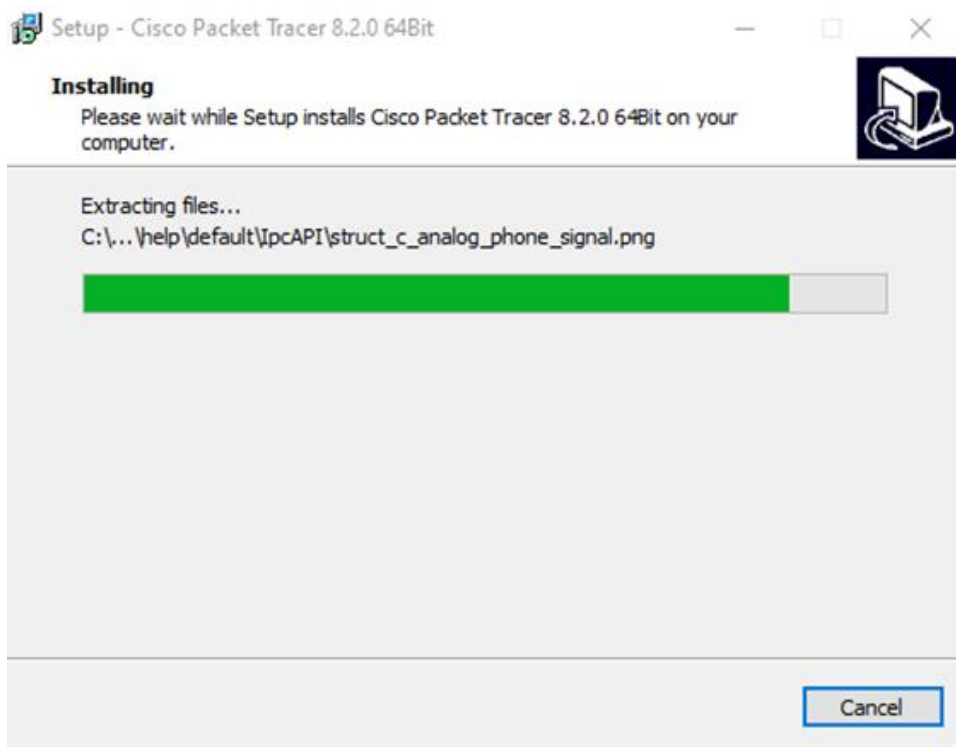
Step 8: Check the box for creating a desktop icon and click on the “Next” button.



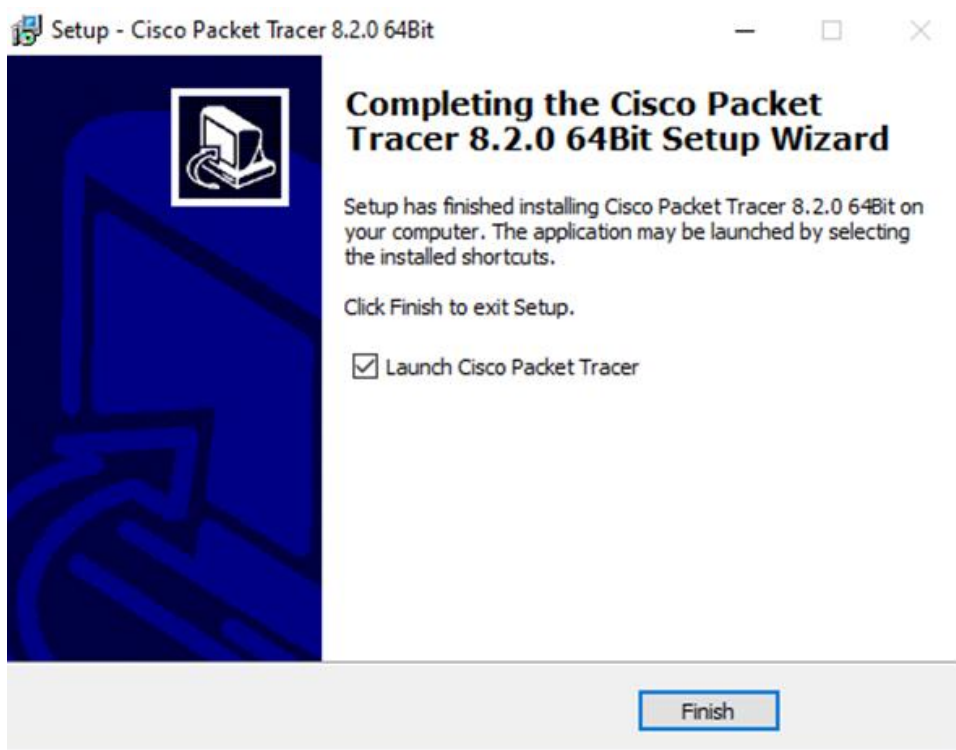
Step 9: Now packet tracer is ready to install so click on the “Install” button.



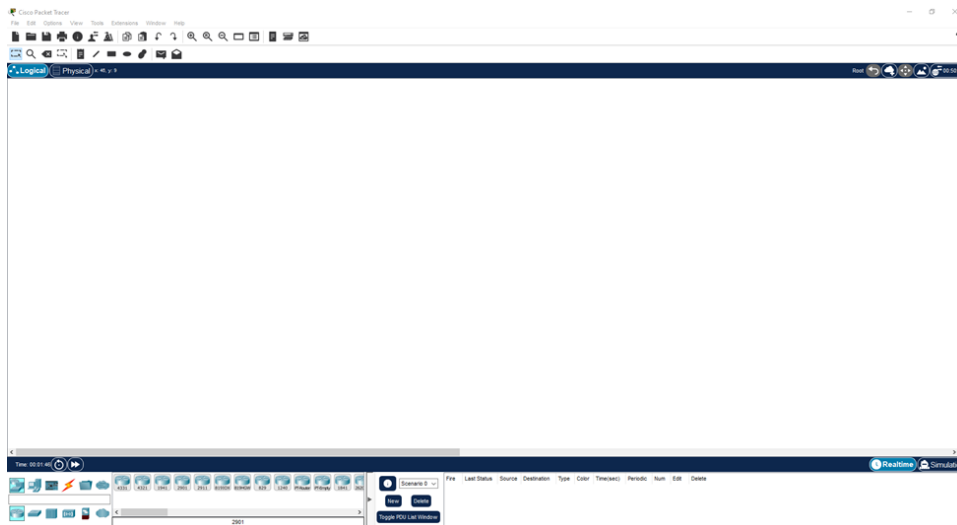
Step 10: The installation process will start.



Step 11: Click on the “**Finish**” button to complete the installation.



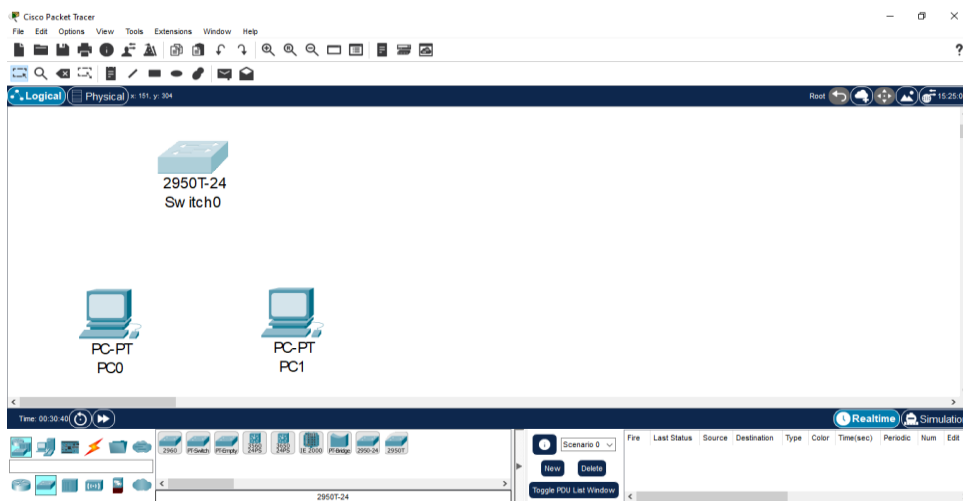
Step 12: Now Packet Tracer software is ready to use.



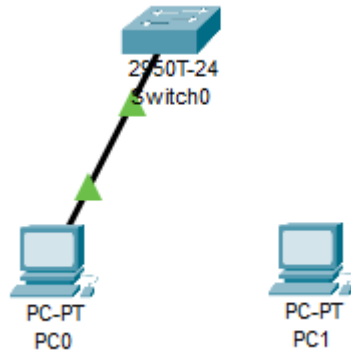
**Version:** This lab is based on Packet Tracer 8.2.0.0162

### Cisco Packet Tracer 8.2 Overview video

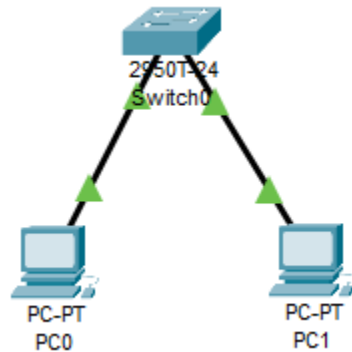
- a. **Adding nodes to Packet Tracer** - Open the Packet Tracer. Drag and drop two **end devices** (PC from the options such PC, Laptop, Server, Meraki Server, Printer etc) one by one on the screen. Click on **Network Devices** to drag and drop 2950T- 24 Switch on the screen.



- b. **Connecting nodes** - Next is to set up a connection between nodes. Select **Copper Straight-through** cable from the **connections** option. Click on the **Copper Straight-through** cable, then click on PC0. Choose **FastEthernet0**. Drag the cursor to 2950T-24 Switch and click on it to choose **FastEthernet0/1**. A connection is established between PC0 and Switch0.



Select **Copper Straight- through** cable from the **connections** option. Click on the **Copper Straight- through** cable, then click on PC1. Choose **FastEthernet0**. Drag the cursor to 2950T-24 Switch0 and click on it to choose **FastEthernet0/2**. A connection is established between PC1 and Switch0.



- c. **Cisco CLI modes** - The main interface via which the users will interact with Cisco IOS devices is the Cisco Command Line Interface (CLI). CLI can be accessed locally via console cable or remotely via Telnet/SSH (methods). The users can perform actions like check device status or change configuration from here. Cisco's command-line interface (CLI) is divided into numerous modes that is user EXEC mode, privileged EXEC mode, and global configuration mode. Because each mode has its own set of commands, further will elaborate Cisco IOS Command Line Modes.
  - i. user exec
    - This command allows the user to access only basic monitoring commands.
    - The users are automatically logged-in in user EXEC command mode.
    - To view all the list of commands in user EXEC mode type "Switch> ?" in CLI

```
Switch>?
Exec commands:
  connect      Open a terminal connection
  disable      Turn off privileged commands
  disconnect   Disconnect an existing network connection
  enable       Turn on privileged commands
  exit         Exit from the EXEC
  logout       Exit from the EXEC
  ping         Send echo messages
  resume       Resume an active network connection
  show         Show running system information
  telnet       Open a telnet connection
  terminal     Set terminal line parameters
  traceroute   Trace route to destination
• Switch>
•
```

## ii. privileged exec

- This command allows the user to access all the commands (includes those commands contained in user EXEC mode).
- To access the privileged EXEC mode, enter “Switch> **enable**” from user EXEC mode.
- Switch>enable  
Switch>enable  
Switch#
- ---
- To view all the list of commands in privileged EXEC mode type “Switch# ?” in CLI

```
Switch#?
Exec commands:
  clear        Reset functions
  clock        Manage the system clock
  configure    Enter configuration mode
  connect      Open a terminal connection
  copy         Copy from one file to another
  debug        Debugging functions (see also 'undebug')
  delete       Delete a file
  dir          List files on a filesystem
  disable      Turn off privileged commands
  disconnect   Disconnect an existing network connection
  enable       Turn on privileged commands
  erase        Erase a filesystem
  exit         Exit from the EXEC
  logout       Exit from the EXEC
  more         Display the contents of a file
  no           Disable debugging informations
  ping         Send echo messages
  reload       Halt and perform a cold restart
  resume       Resume an active network connection
  setup        Run the SETUP command facility
  show         Show running system information
• --More--
```

- ---

To turn off privilege EXEC mode type “Switch# **disable**”.

## iii. Configure

- Users can edit the running system configuration in Global Configuration mode.
  - To access the Configure mode, enter “**configure**” from privileged EXEC mode.
  - ```
Switch#configure
Switch#configure
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#
```
  - To view all the list of commands in Configure mode type “Switch (config) # ?” in CLI
- ```
Switch(config)#?
Configure commands:
aaa                Authentication, Authorization and Accounting.
access-list        Add an access list entry
banner             Define a login banner
boot               Boot Commands
cdp                Global CDP configuration subcommands
clock              Configure time-of-day clock
crypto             Encryption module
default            Set a command to its defaults
do-exec            To run exec commands in config mode
dot1x              IEEE 802.1X Global Configuration Commands
enable             Modify enable password parameters
end                Exit from configure mode
exit               Exit from configure mode
hostname           Set system's network name
interface          Select an interface to configure
ip                 Global IP configuration subcommands
line               Configure a terminal line
lldp               Global LLDP configuration subcommands
logging            Modify message logging facilities
mac                MAC configuration
mls                mls global commands
--More-- |
```
- To exist the Configure mode type “**exit** or **end** or **Ctrl Z**”.

#### iv. interface config

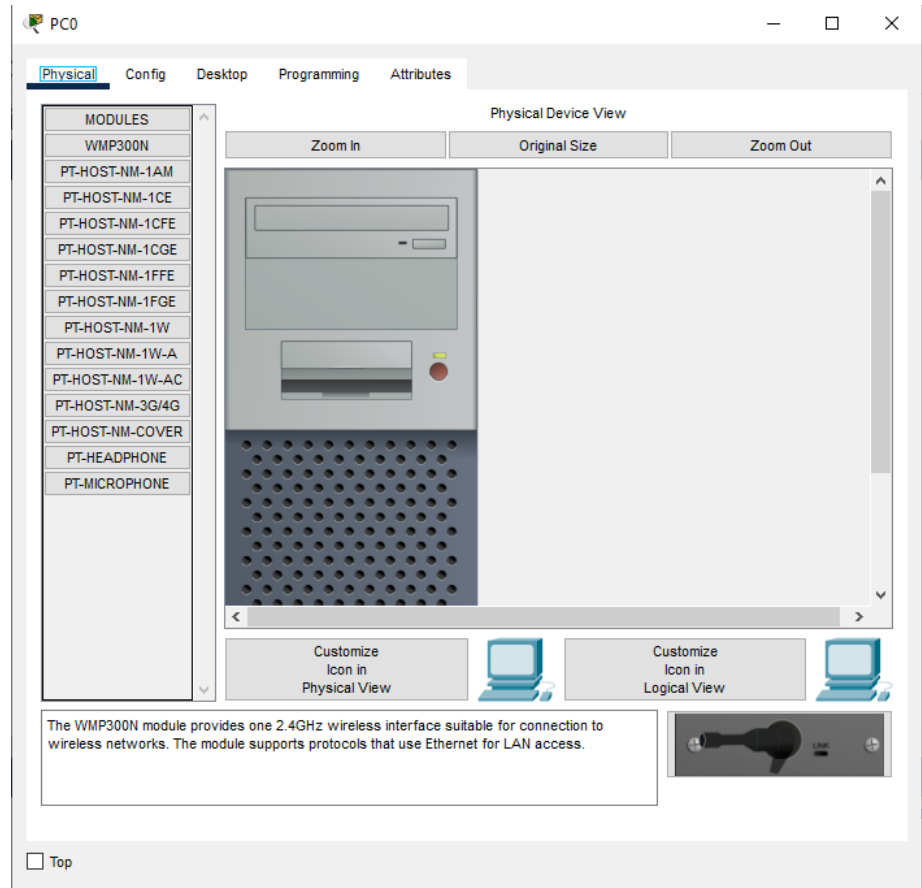
- Interface Configuration mode is to configure interface, that includes assigning IP addresses.
- To access the interface Configure mode, enter “**interface**” from privileged EXEC mode followed by interface identification.
- A new prompt will appear in interface configuration mode
- ```
Switch(config-if)#
```
- Type “**exist**” to enter into configuration mode
- Type “**end**” to enter in privileged EXEC mode.
- 

#### d. virtual PC config -

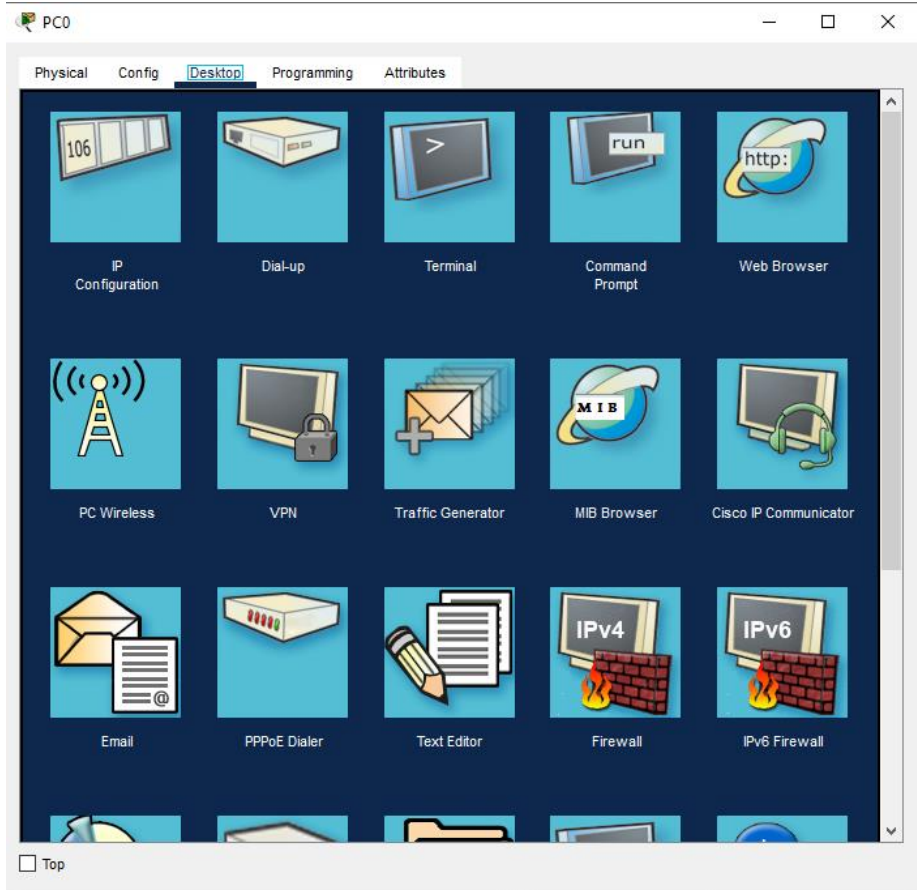
##### i. adding IP addresses

- Click on PC0 icon
-

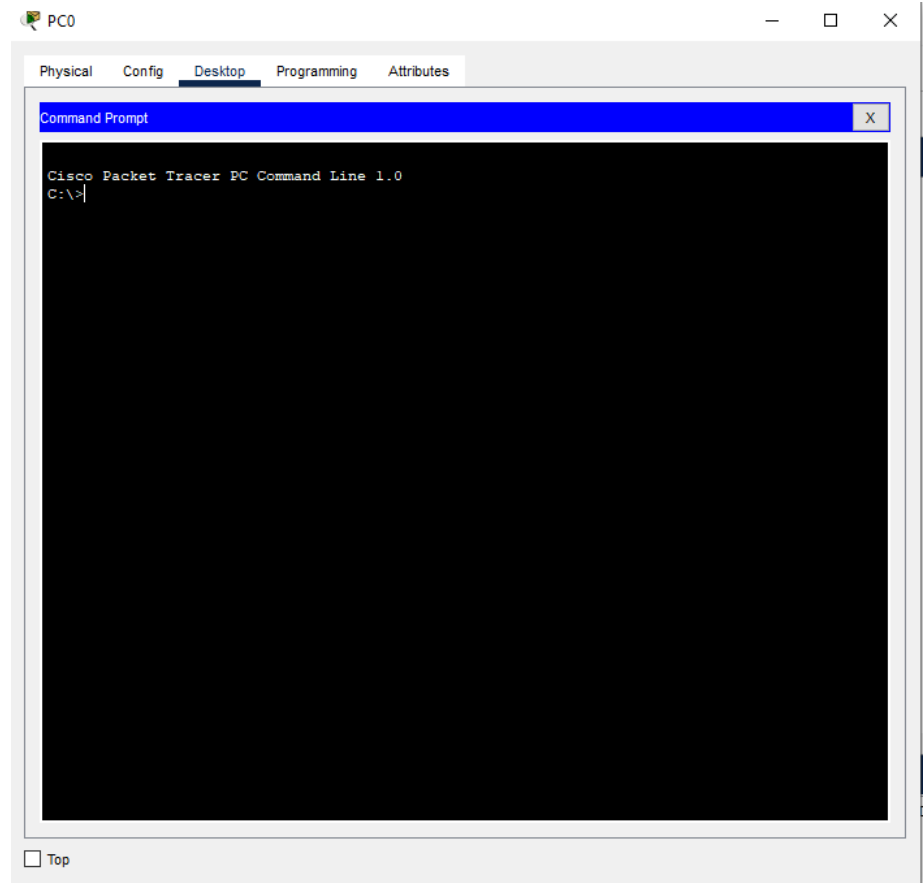




- 
- Click on the **Desktop** tab and select **IP configuration** icon.



- 
- **IP configuration** window will open. Enter **IP Address** 10.1.20.5 and **Subnet Mask** 255.0.0.0 .
- Repeat the same process to assign **IP addresses** to PC1.
- Enter **IP Address** 10.1.20.6 and **Subnet Mask** 255.0.0.0 for PC1.
- From the **Desktop** window, click **Command Prompt** to ping the PC.



- 
- Type **“ping 10.1.20.5”** to ping PC0. Type **“ping 10.1.20.6”** to ping PC1.

```

C:\>ping 10.1.20.5

Pinging 10.1.20.5 with 32 bytes of data:

Reply from 10.1.20.5: bytes=32 time=6ms TTL=128
Reply from 10.1.20.5: bytes=32 time<1ms TTL=128
Reply from 10.1.20.5: bytes=32 time=1ms TTL=128
Reply from 10.1.20.5: bytes=32 time=11ms TTL=128

Ping statistics for 10.1.20.5:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 11ms, Average = 4ms

C:\>ping 10.1.20.6

Pinging 10.1.20.6 with 32 bytes of data:

Reply from 10.1.20.6: bytes=32 time<1ms TTL=128
Reply from 10.1.20.6: bytes=32 time<1ms TTL=128
Reply from 10.1.20.6: bytes=32 time<1ms TTL=128
Reply from 10.1.20.6: bytes=32 time<1ms TTL=128

Ping statistics for 10.1.20.6:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>|

```

- - Successfully ping test verify that IP address of PC0 and PC1 exists and can accepts requests in the network.
- ii. basic networking commands
- IPCONFIG- Used to displays a PC IP address, subnet mask, and the default gateway
  - HOSTNAME- Used to change the hostname of device.
  - PING- Used to check if the host is up and running.
  - IPCONFIG /ALL - Used to display information about mac address, using DHCP or static IP address, IP address, default gateway, DNS servers, IPv6 address, and date/time device received IP address.
  - IP ADDRESS- Used to set up the IP address and subnet mask.
  - PASSWORD- Used to specific unique password.
  - Login- Enables password verification at the terminal login session.