

# Lab

(Cisco packet tracer)

**Subject: Computer Networks.**

## Scope:

After performing this lab, Set IP addresses and subnet mask to a and use basic utilities used for IP addressing.

## Useful Concept:

Each Network Interface Card (NIC or Network card) in a PC is assigned one Network address called an IP address [or Network address]. The network administrator assigns this IP address. No two PCs can have the same IP address. A burned-in address on the NIC is called a Physical Address [or MAC address or Hardware address]. The MAC address of a network card indicates the vendor of that card and a unique serial number.

## **Rules of IPv4 addressing**

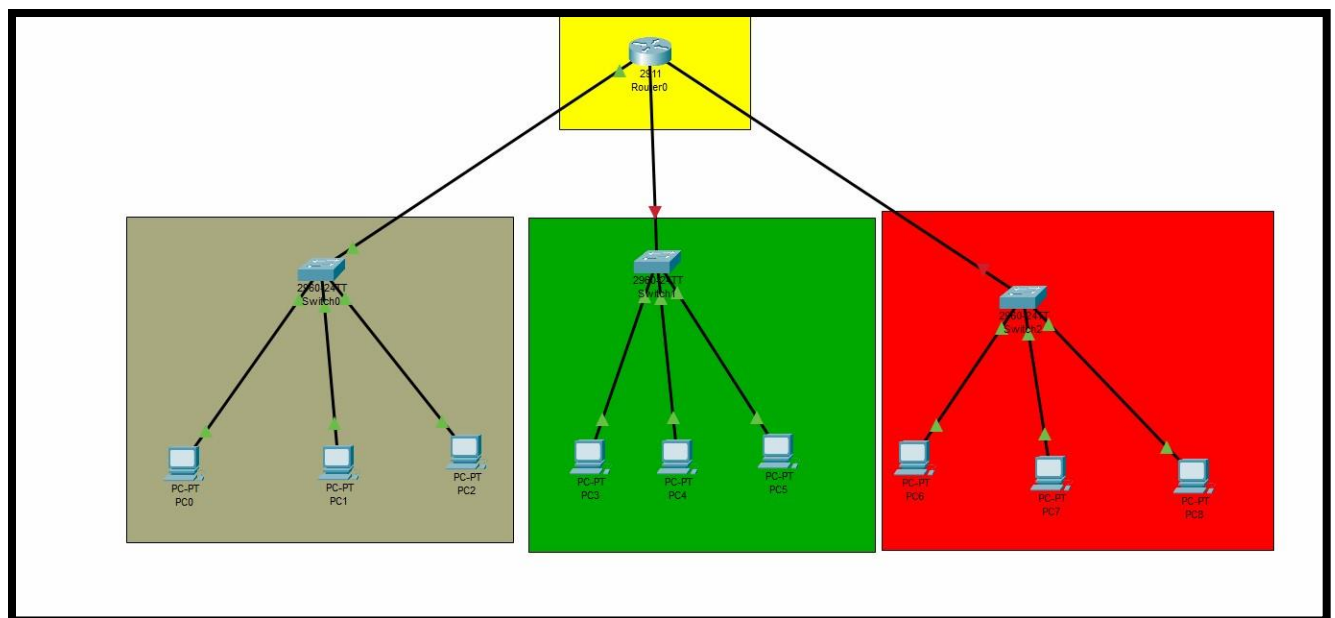
1. Format of IP address
2. IPv4 is made up of four parts, in the pattern as w.x.y.z. Each part has 8 binary bits and the values in decimal can range from 0 to 255.

### 3. IP address classes

4. IP addresses are divided into different classes. These classes determine the maximum

number of hosts per network ID. Only three classes are actually used for network connectivity. The following table lists all of the address classes.

### SNAP SHOT#01



## SNAP SHOT#02

The screenshot shows the configuration window for Router0, specifically the 'Config' tab for the 'GigabitEthernet0/0' interface. The left sidebar contains a tree view with categories: GLOBAL (Settings, Algorithm Settings), ROUTING (Static, RIP), SWITCHING (VLAN Database), and INTERFACE (GigabitEthernet0/0, GigabitEthernet0/1, GigabitEthernet0/2). The main area displays the configuration for GigabitEthernet0/0. The 'Port Status' is checked 'On'. 'Bandwidth' is set to 100 Mbps (radio buttons for 1000, 100, 10 Mbps). 'Duplex' is set to Full Duplex (radio buttons for Half, Full Duplex). 'MAC Address' is 00D0.BCDC.E601. Under 'IP Configuration', the 'IPv4 Address' is 192.168.1.4 and the 'Subnet Mask' is 255.255.255.0. The 'Tx Ring Limit' is set to 10. At the bottom, there is a section for 'Equivalent IOS Commands' showing a sequence of commands to configure the interface. A 'Top' button is located at the bottom left of the window.

Router0

Physical **Config** CLI Attributes

**GLOBAL**

- Settings
- Algorithm Settings

**ROUTING**

- Static
- RIP

**SWITCHING**

- VLAN Database

**INTERFACE**

- GigabitEthernet0/0
- GigabitEthernet0/1
- GigabitEthernet0/2

**GigabitEthernet0/0**

Port Status ☒ On

Bandwidth ☐ 1000 Mbps ☒ 100 Mbps ☐ 10 Mbps ☒ Auto

Duplex ☐ Half Duplex ☒ Full Duplex ☒ Auto

MAC Address 00D0.BCDC.E601

IP Configuration

IPv4 Address 192.168.1.4

Subnet Mask 255.255.255.0

Tx Ring Limit 10

Equivalent IOS Commands

```
Router(config)#interface GigabitEthernet0/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/2
Router(config-if)#
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/2
Router(config-if)#
Router(config-if)#
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/0
Router(config-if)#
```

☐ Top

## SNAP SHOT#03

The screenshot shows a configuration window for a PC named 'PC1'. The window has four tabs: 'Physical', 'Config', 'Desktop', and 'Attributes'. The 'Config' tab is active, and within it, the 'Desktop' sub-tab is selected. The main configuration area is titled 'IP Configuration' and has a close button 'X' in the top right corner. Below the title bar, there is a dropdown menu for 'Interface' set to 'FastEthernet0'. The configuration is divided into three sections: 'IP Configuration', 'IPv6 Configuration', and '802.1X'. In the 'IP Configuration' section, the 'Static' radio button is selected, and the fields are filled with: IPv4 Address: 192.168.1.2, Subnet Mask: 255.255.255.0, Default Gateway: 192.168.1.4, and DNS Server: 0.0.0.0. In the 'IPv6 Configuration' section, the 'Static' radio button is selected, and the fields are filled with: IPv6 Address: (empty), Link Local Address: FE80::260:3EFF:FE8A:4982, Default Gateway: (empty), and DNS Server: (empty). In the '802.1X' section, the 'Use 802.1X Security' checkbox is unchecked, and the 'Authentication' dropdown is set to 'MD5'. The 'Username' and 'Password' fields are empty. At the bottom left of the window, there is a 'Top' button.

PC1

Physical Config Desktop Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 192.168.1.2

Subnet Mask 255.255.255.0

Default Gateway 192.168.1.4

DNS Server 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::260:3EFF:FE8A:4982

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

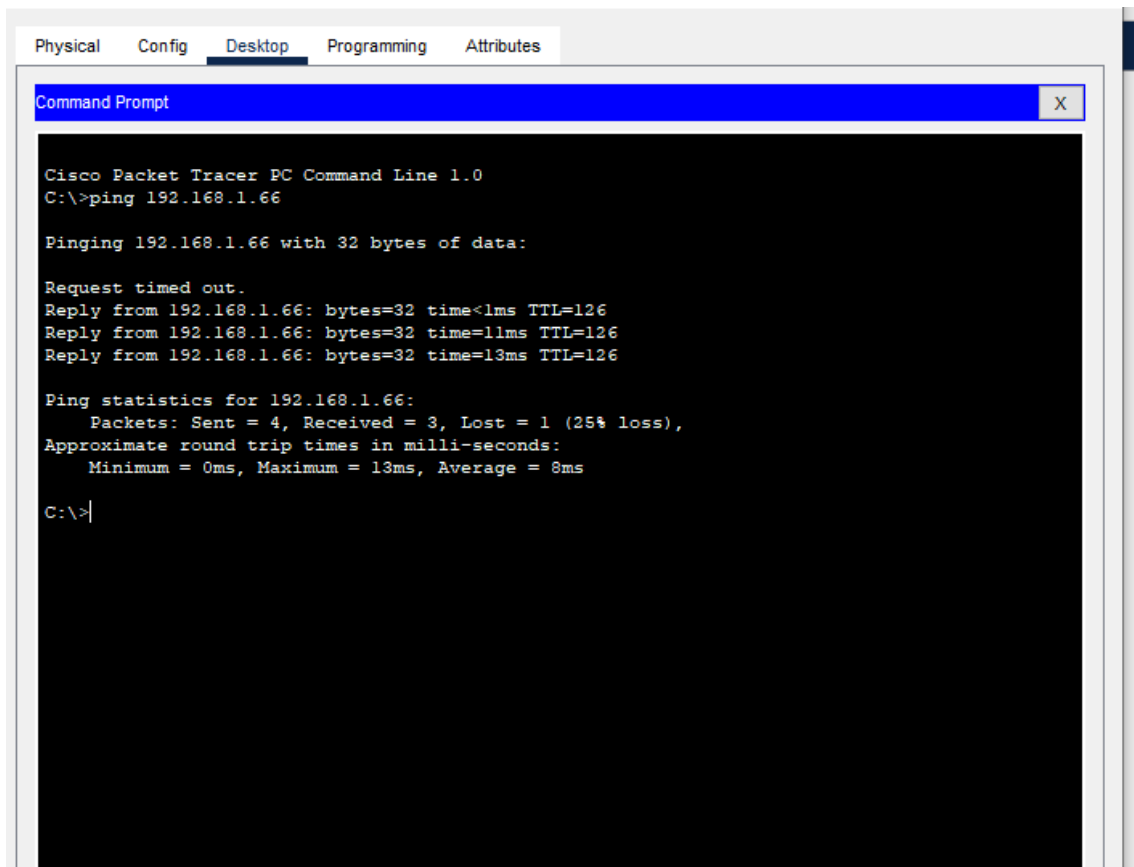
Authentication MD5

Username

Password

☐ Top

## SNAP SHOT#04



The screenshot shows a Cisco Packet Tracer PC Command Line window. The window has a title bar with 'Command Prompt' and a close button. The main area is black with white text. The text shows the command 'C:\>ping 192.168.1.66' being entered. The output shows 'Pinging 192.168.1.66 with 32 bytes of data:' followed by 'Request timed out.' and three successful replies from 192.168.1.66 with varying times and TTL values. The ping statistics show 4 packets sent, 3 received, and 1 lost (25% loss), with round trip times of 0ms, 13ms, and 8ms respectively.

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.1.66

Pinging 192.168.1.66 with 32 bytes of data:

Request timed out.
Reply from 192.168.1.66: bytes=32 time<1ms TTL=126
Reply from 192.168.1.66: bytes=32 time=11ms TTL=126
Reply from 192.168.1.66: bytes=32 time=13ms TTL=126

Ping statistics for 192.168.1.66:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 13ms, Average = 8ms

C:\>|
```