

# Data Communication and Computer Network

## Lab5: Familiarization of Basic network command and Network configuration

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### Aim:

Study of basic network command and Network configuration commands.

### Apparatus (Software):

Command Prompt

### Theory:

Cisco Packet Tracer is a network simulation program that allows students to experiment with network behaviour and ask "what if" questions. As an integral part of the Networking Academy comprehensive learning experience, Packet Tracer provides simulation, visualization, authoring, assessment, and collaboration capabilities and facilitates the teaching and learning of complex technology concepts.

### Procedure:

#### Basic Networking Commands and Configuration Commands

**1. ipconfig:** Displays all current TCP/IP network configuration values and refreshes Dynamic Host Configuration Protocol (DHCP) and Domain Name System (DNS) settings. Used without parameters, **ipconfig** displays Internet Protocol version 4 (IPv4) and IPv6 addresses, subnet mask, and default gateway for all adapters.

```
C:\Users\himan>ipconfig

Windows IP Configuration

Ethernet adapter Ethernet:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . : ddn.upes.ac.in

Wireless LAN adapter Local Area Connection* 1:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :

Wireless LAN adapter Local Area Connection* 2:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :

Wireless LAN adapter Wi-Fi:

    Connection-specific DNS Suffix  . :
    Link-local IPv6 Address . . . . . : fe80::b0cc:4e72:1e4d:4455%2
    IPv4 Address. . . . . : 192.168.1.105
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 192.168.1.1

Ethernet adapter Bluetooth Network Connection:
```

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**2. ipconfig/all:** Displays the full TCP/IP configuration for all adapters. Adapters can represent physical interfaces, such as installed network adapters, or logical interfaces, such as dial-up connections.

```
Command Prompt
C:\Users\himan>ipconfig/all

Windows IP Configuration

Host Name . . . . . : LAPTOP-UG3U2BAG
Primary Dns Suffix . . . . . :
Node Type . . . . . : Mixed
IP Routing Enabled. . . . . : No
WINS Proxy Enabled. . . . . : No


Ethernet adapter Ethernet:

Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . : ddn.upes.ac.in
Description . . . . . : Realtek Gaming GbE Family Controller
Physical Address. . . . . : 48-9E-BD-49-08-E0
DHCP Enabled. . . . . : Yes
Autoconfiguration Enabled . . . . : Yes


Wireless LAN adapter Local Area Connection* 1:

Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . :
Description . . . . . : Microsoft Wi-Fi Direct Virtual Adapter
Physical Address. . . . . : CE-6B-1E-77-42-C1
DHCP Enabled. . . . . : Yes
Autoconfiguration Enabled . . . . : Yes


Wireless LAN adapter Local Area Connection* 2:

Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . :
Description . . . . . : Microsoft Wi-Fi Direct Virtual Adapter #2
Physical Address. . . . . : EE-6B-1E-77-42-C1
DHCP Enabled. . . . . : No
Autoconfiguration Enabled . . . . : Yes


Wireless LAN adapter Local Area Connection* 2:

Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . :
Description . . . . . : Microsoft Wi-Fi Direct Virtual Adapter #2
Physical Address. . . . . : EE-6B-1E-77-42-C1
DHCP Enabled. . . . . : No
Autoconfiguration Enabled . . . . : Yes


Wireless LAN adapter Wi-Fi:

Connection-specific DNS Suffix . :
Description . . . . . : Realtek RTL8852AE WiFi 6 802.11ax PCIe Adapter
Physical Address. . . . . : CC-6B-1E-77-42-C1
DHCP Enabled. . . . . : Yes
Autoconfiguration Enabled . . . . : Yes
Link-local IPv6 Address . . . . . : fe80::b0cc:4e72:1e4d:4455%2(Preferred)
IPv4 Address. . . . . : 192.168.1.105(Preferred)
Subnet Mask . . . . . : 255.255.255.0
Lease Obtained. . . . . : Friday, February 17, 2023 8:53:07 PM
Lease Expires . . . . . : Friday, February 17, 2023 10:53:08 PM
Default Gateway . . . . . : 192.168.1.1
DHCP Server . . . . . : 192.168.1.1
DHCPv6 IAID . . . . . : 46951198
DHCPv6 Client DUID. . . . . : 00-01-00-01-28-86-01-A3-48-9E-BD-49-08-E0
DNS Servers . . . . . : 8.8.8.8
                        8.8.4.4
NetBIOS over Tcpip. . . . . : Enabled


Ethernet adapter Bluetooth Network Connection:

Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . :
Description . . . . . : Bluetooth Device (Personal Area Network)
Physical Address. . . . . : CC-6B-1E-77-42-C2
DHCP Enabled. . . . . : Yes
Autoconfiguration Enabled . . . . : Yes
```

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**3. nslookup:** nslookup is an abbreviation of name server lookup and **allows you to query your DNS service**. The tool is typically used to obtain a domain name via your command line interface (CLI), receive IP address mapping details, and lookup DNS records.

```
Command Prompt
C:\Users\himan>nslookup www.amazon.com
Server:  dns.google
Address:  8.8.8.8

Non-authoritative answer:
Name:     d3ag4hukkh62yn.cloudfront.net
Addresses: 2600:9000:213c:b600:7:49a5:5fd2:8621
           2600:9000:213c:ae00:7:49a5:5fd2:8621
           2600:9000:213c:e200:7:49a5:5fd2:8621
           2600:9000:213c:4600:7:49a5:5fd2:8621
           2600:9000:213c:c000:7:49a5:5fd2:8621
           2600:9000:213c:dc00:7:49a5:5fd2:8621
           2600:9000:213c:5200:7:49a5:5fd2:8621
           2600:9000:213c:b800:7:49a5:5fd2:8621
           99.86.25.184
Aliases:  www.amazon.com
           tp.47cf2c8c9-frontier.amazon.com
```

**4. ping:** ping is the primary TCP/IP command used to troubleshoot connectivity, reachability, and name resolution. Used without parameters, this command displays Help content. You can also use this command to test both the computer name and the IP address of the computer.

```
Command Prompt
C:\Users\himan>ping 104.244.42.129

Pinging 104.244.42.129 with 32 bytes of data:
Reply from 104.244.42.129: bytes=32 time=359ms TTL=48
Reply from 104.244.42.129: bytes=32 time=376ms TTL=48
Reply from 104.244.42.129: bytes=32 time=419ms TTL=48
Reply from 104.244.42.129: bytes=32 time=347ms TTL=48

Ping statistics for 104.244.42.129:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 347ms, Maximum = 419ms, Average = 375ms
```

**5. tracert:** TRACERT (Trace Route), a command-line utility that you can use to trace the path that an Internet Protocol (IP) packet takes to its destination.

```
C:\Users\himan>tracert 104.244.42.129

Tracing route to 104.244.42.129 over a maximum of 30 hops

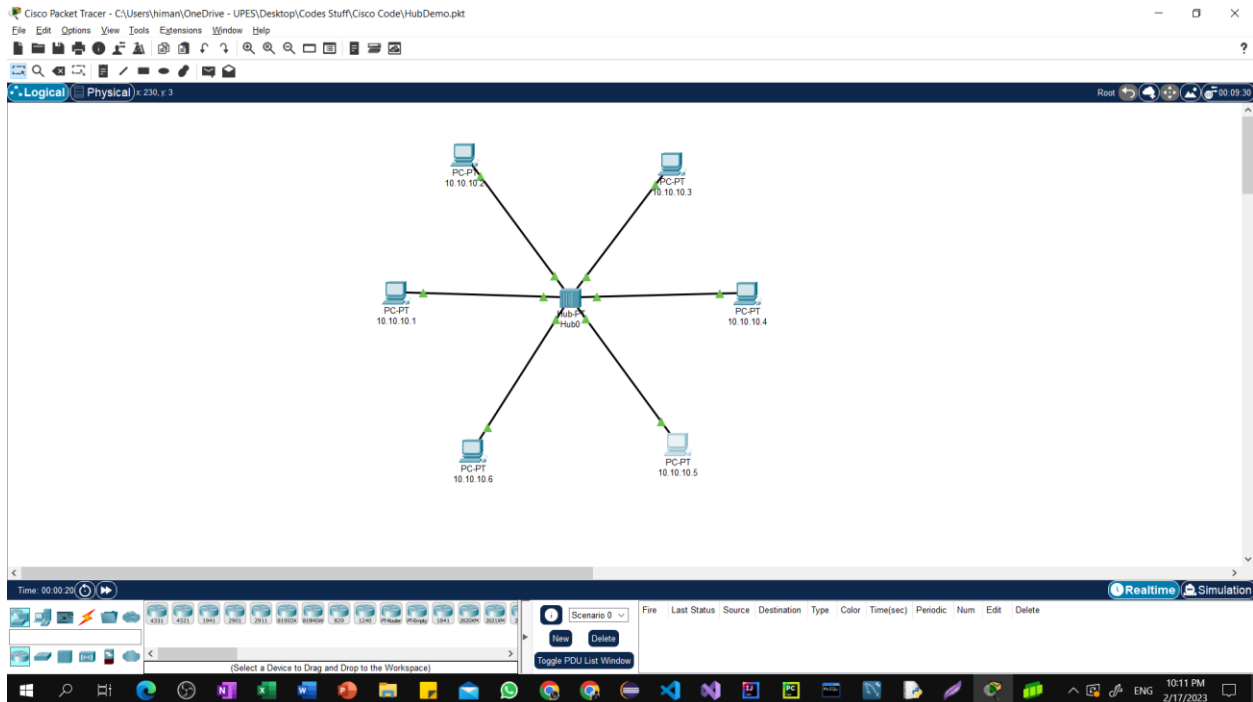
  1  95 ms  2 ms  1 ms  192.168.1.1
  2  24 ms  9 ms 154 ms 117.221.200.1
  3  *      35 ms  3 ms  static.ill.218.248.57.106/24.bsnl.in [218.248.57.106]
  4  *      *      *      Request timed out.
  5  *      *      *      Request timed out.
  6  207 ms  *      *      ns-g-corporate-105.89.186.122.airtel.in [122.186.89.105]
  7  230 ms  *      *      116.119.57.156
  8  *      191 ms 133 ms 116.51.31.53
  9  130 ms  *      150 ms ae-2.r22.sngpsi07.sg.bb.gin.ntt.net [129.250.2.148]
 10 187 ms 139 ms 221 ms ae-0.a01.sngpsi07.sg.bb.gin.ntt.net [129.250.2.122]
 11 588 ms 417 ms 634 ms 116.51.31.10
 12 605 ms 646 ms 975 ms 104.244.42.129

Trace complete.
```

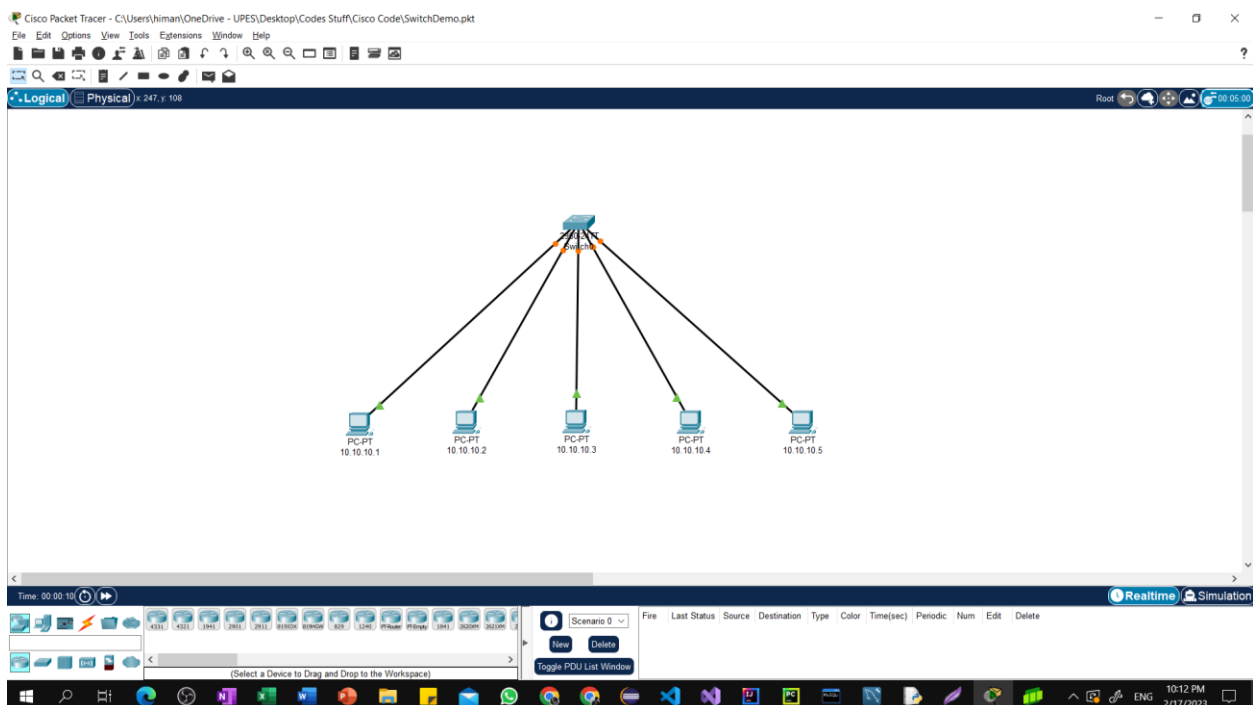
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## Lab5: Familiarization of Basic network command and Network configuration

### Basic Hub Setup in CPT



### Basic Switch Setup in CPT



### Conclusion:

Gain the knowledge about the network commands and network configure commands.