

Tasks

- 1) Find the IP address of the computer you are currently using.

Command: `ipconfig`

IP Address: 192.168.56.1



```
Command Prompt
Microsoft Windows [Version 10.0.19043.1526]
(c) Microsoft Corporation. All rights reserved.
C:\Users\Hp>ipconfig

Windows IP Configuration

Ethernet adapter Ethernet:

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

Ethernet adapter VirtualBox Host-Only Network:

    Connection-specific DNS Suffix  . :
    Link-local IPv6 Address . . . . . : fe80::68f7:d69c:b6ca:62b9%13
    IPv4 Address. . . . . : 192.168.56.1
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . :

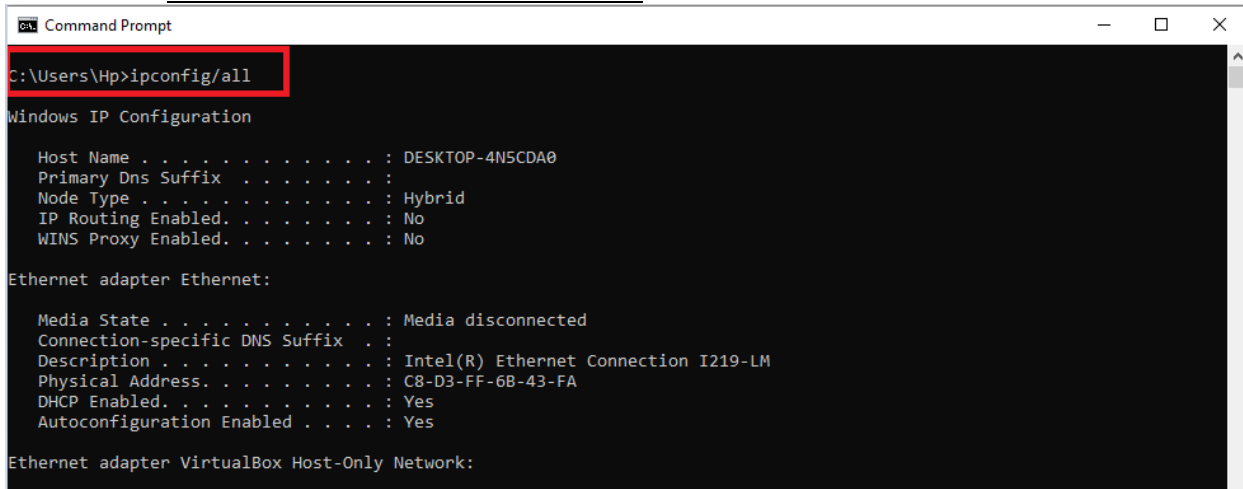
Wireless LAN adapter Local Area Connection* 1:

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

Wireless LAN adapter Local Area Connection* 2:
```

- 2) Find the IP address of the computer you are currently using, plus MAC address, the gateway, plus whether DHCP is turned on.

Command: `ipconfig /all`



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

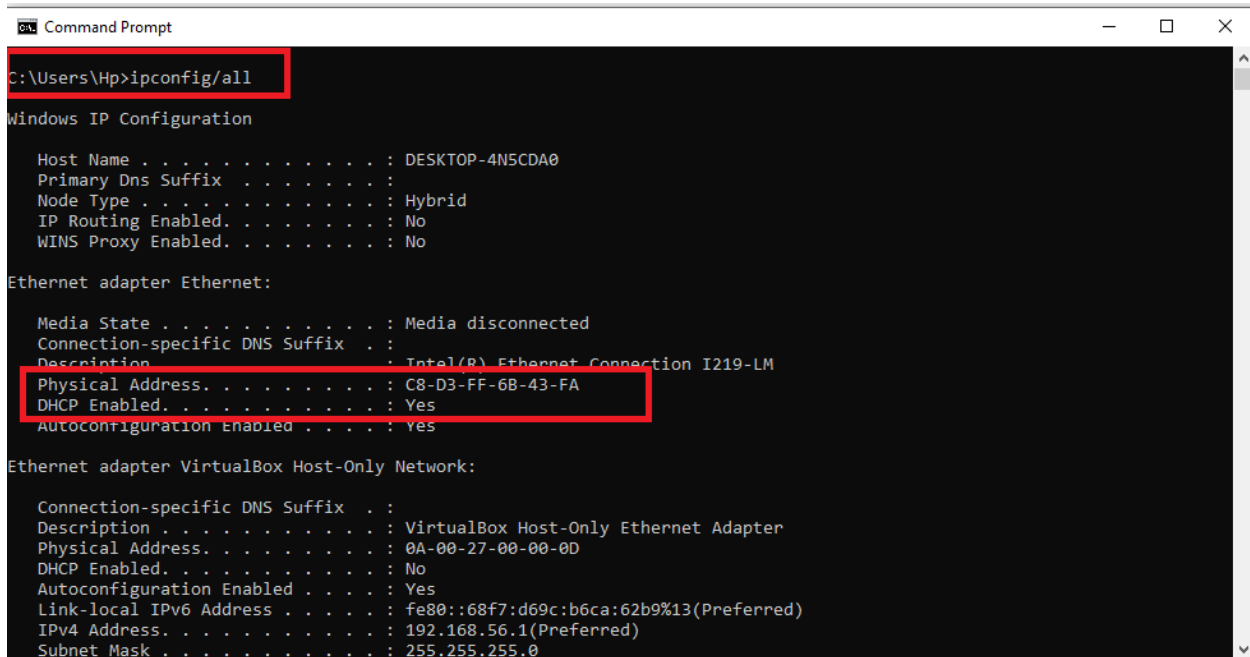
Windows IP Configuration

    Host Name . . . . . : DESKTOP-4N5CDA0
    Primary Dns Suffix . . . . . :
    Node Type . . . . . : Hybrid
    IP Routing Enabled. . . . . : No
    WINS Proxy Enabled. . . . . : No

Ethernet adapter Ethernet:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :
    Description . . . . . : Intel(R) Ethernet Connection I219-LM
    Physical Address. . . . . : C8-D3-FF-6B-43-FA
    DHCP Enabled. . . . . : Yes
    Autoconfiguration Enabled . . . . : Yes

Ethernet adapter VirtualBox Host-Only Network:
```

Answer:

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

Windows IP Configuration

Host Name . . . . . : DESKTOP-4N5CDA0
Primary Dns Suffix . . . . . :
Node Type . . . . . : Hybrid
IP Routing Enabled. . . . . : No
WINS Proxy Enabled. . . . . : No

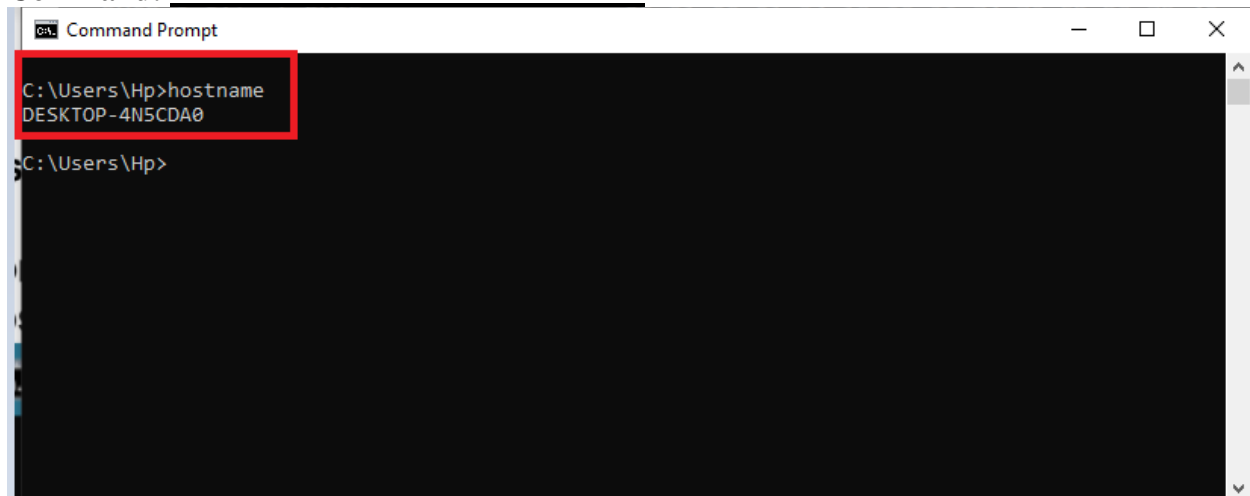
Ethernet adapter Ethernet:

Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . :
Description . . . . . : Intel(R) Ethernet Connection I219-LM
Physical Address. . . . . : C8-D3-FF-6B-43-FA
DHCP Enabled. . . . . : Yes
Autoconfiguration Enabled . . . . : Yes

Ethernet adapter VirtualBox Host-Only Network:

Connection-specific DNS Suffix . :
Description . . . . . : VirtualBox Host-Only Ethernet Adapter
Physical Address. . . . . : 0A-00-27-00-00-00
DHCP Enabled. . . . . : No
Autoconfiguration Enabled . . . . : Yes
Link-local IPv6 Address . . . . : fe80::68f7:d69c:b6ca:62b9%13(Preferred)
IPv4 Address. . . . . : 192.168.56.1(Preferred)
Subnet Mask . . . . . : 255.255.255.0
```

- 3) Display the host name of the computer.

Command:

```
Command Prompt
C:\Users\Hp>hostname
DESKTOP-4N5CDA0
C:\Users\Hp>
```

- 4) Check for basic IP connectivity between two computers by name and IP address. How can basic IP connectivity be checked? What are the reasons why there is no connectivity?

Command: ping <hostname or ip address>

Reasons of no-connectivity: If the ping is not working or ping request time out. Reasons for request time out or destination host unreachable:

- When Firewall incoming connections are blocked.
- When Windows firewall does not allow File and Printer Sharing app.
- When Echo is disabled
- When IP address of host or destination is not found.

```

C:\Users\Hp>ping facebook.com

Pinging facebook.com [157.240.227.35] with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 157.240.227.35:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\Users\Hp>

```

- 5) Find out which ports on your host are connected to applications. Connect the browser to some external web page before running the appropriate command.

Command:

```

C:\Users\Hp>netstat

Active Connections

Proto Local Address           Foreign Address         State
TCP    127.0.0.1:49671         DESKTOP-4N5CDA0:49672  ESTABLISHED
TCP    127.0.0.1:49672         DESKTOP-4N5CDA0:49671  ESTABLISHED
TCP    192.168.1.106:1025      relay-058f44e1:http     ESTABLISHED
TCP    192.168.1.106:1036      8.2.111.71:https        FIN_WAIT_1
TCP    192.168.1.106:1037      8.2.111.71:https        FIN_WAIT_1
TCP    192.168.1.106:1335      fjr02s03-in-f5:https    ESTABLISHED
TCP    192.168.1.106:1337      aeab55d76dd13c9bb:https ESTABLISHED
TCP    192.168.1.106:1342      199.232.47.9:https      ESTABLISHED
TCP    192.168.1.106:1345      server-143-204-109-176:https ESTABLISHED
TCP    192.168.1.106:1347      whatsapp-cdn-shv-01-mct1:https ESTABLISHED

```

Answer:

```

C:\Users\Hp>netstat

Active Connections

Proto Local Address           Foreign Address         State
TCP    127.0.0.1:49671         DESKTOP-4N5CDA0:49672  ESTABLISHED
TCP    127.0.0.1:49672         DESKTOP-4N5CDA0:49671  ESTABLISHED
TCP    192.168.1.106:1025      relay-058f44e1:http     ESTABLISHED
TCP    192.168.1.106:1036      8.2.111.71:https        FIN_WAIT_1
TCP    192.168.1.106:1037      8.2.111.71:https        FIN_WAIT_1
TCP    192.168.1.106:1335      fjr02s03-in-f5:https    ESTABLISHED
TCP    192.168.1.106:1337      aeab55d76dd13c9bb:https ESTABLISHED
TCP    192.168.1.106:1342      199.232.47.9:https      ESTABLISHED
TCP    192.168.1.106:1345      server-143-204-109-176:https ESTABLISHED
TCP    192.168.1.106:1347      whatsapp-cdn-shv-01-mct1:https ESTABLISHED
TCP    192.168.1.106:1350      20.44.229.112:https      ESTABLISHED
TCP    192.168.1.106:1351      a23-44-1-109:http        TIME_WAIT
TCP    192.168.1.106:1356      162.159.130.234:https    ESTABLISHED
TCP    192.168.1.106:14052     20.197.71.89:https       ESTABLISHED
TCP    192.168.1.106:14073     ws-in-f188:5228          ESTABLISHED
TCP    192.168.1.106:14075     server-143-204-111-16:https ESTABLISHED
TCP    [fe80::68f7:d69c:b6ca:62b9%13]:1521 DESKTOP-4N5CDA0:49685  ESTABLISHED
TCP    [fe80::68f7:d69c:b6ca:62b9%13]:49685 DESKTOP-4N5CDA0:1521  ESTABLISHED

C:\Users\Hp>

```

- 6) Find the path of routers to www.google.com. What is its IP address? How many hops involved in the path?

Command:

```
C:\Users\worka>tracert google.com
```

```
Tracing route to google.com [2a00:1450:4018:807::200e]
over a maximum of 30 hops:
```

1	2 ms	3 ms	2 ms	2400:adc1:0:973d:2cc6:f661:14ad:f180
2	8 ms	8 ms	5 ms	2001:4538:a001:f008:c8ad:dce0:49df:c608
3	8 ms	6 ms	5 ms	2001:4538:a001:8::1
4	11 ms	19 ms	25 ms	2001:4538:a001:d8::1
5	6 ms	5 ms	6 ms	2001:4538:a001:ee::1
6	26 ms	27 ms	26 ms	2001:4538:bb:1::2
7	107 ms	107 ms	107 ms	2400:adcf:ac::b
8	107 ms	106 ms	109 ms	2a00:1450:809d::1
9	117 ms	117 ms	116 ms	2001:4860:0:1::7d9c
10	116 ms	116 ms	116 ms	2001:4860:0:1::637
11	113 ms	109 ms	109 ms	mct01s21-in-x0e.1e100.net [2a00:1450:4018:807::200e]

Trace complete.

Answer:

```
C:\Users\worka>tracert google.com
```

```
Tracing route to google.com [2a00:1450:4018:807::200e]
over a maximum of 30 hops:
```

1	2 ms	3 ms	2 ms	2400:adc1:0:973d:2cc6:f661:14ad:f180
2	8 ms	8 ms	5 ms	2001:4538:a001:f008:c8ad:dce0:49df:c608
3	8 ms	6 ms	5 ms	2001:4538:a001:8::1
4	11 ms	19 ms	25 ms	2001:4538:a001:d8::1
5	6 ms	5 ms	6 ms	2001:4538:a001:ee::1
6	26 ms	27 ms	26 ms	2001:4538:bb:1::2
7	107 ms	107 ms	107 ms	2400:adcf:ac::b
8	107 ms	106 ms	109 ms	2a00:1450:809d::1
9	117 ms	117 ms	116 ms	2001:4860:0:1::7d9c
10	116 ms	116 ms	116 ms	2001:4860:0:1::637
11	113 ms	109 ms	109 ms	mct01s21-in-x0e.1e100.net [2a00:1450:4018:807::200e]

Trace complete.

- 7) A ping to 192.168.0.2 works but a ping to the machine's name "blue machine" fails. What could be wrong?

Reason:

It's because the system's DNS record doesn't have any Type A mapping for machine "blue_machine" or the DNS server may not be functioning.

- 8) Which type of cable will you use to connect in a normal home installation?

Answer:

The most commonly used cable in home installation is UTP (Unshielded Twisted Pair) that consists 4 twisted pairs of wires. Standard connector for UTP cabling is an RJ-45 connector. They are most commonly used because they are least expensive compared to Fiber Optics etc. They are copper based-medium wire.

- 9) Can you connect a Switch to another Switch or a router to a PC using a straight- through cable? Explain your answer.

Answer:

To connect different devices, we can use straight through cable is used in local networks so a router can be connected to switch using straight through wire but a switch to switch cannot be connected.

- 10) Write a brief report on your home network or any organizational network including topology, 1 page max).

Answer:

At my home, we've a Wi-Fi network and that's the access network we use to access the internet with different end points on the network making it a star like structure and it is provided to us by our local ISP (StormFibre) which then connects to another ISP's and make network of networks. Wi-Fi devices use a multi-layer switch that combines 2, 3, 4 switching technologies and provides a high-speed scalability with low latency.

WIFI network works on STAR topology and that's also one of the most common topology that is used in business networks and home networks. Its popularity is because of its connectivity with the Ethernet which is again quite popular which is kind of a communication protocol Token Ring like other than the fact that the Ethernet operates on cable networks using a star topology.

One another major reason for using WIFI instead of cable LANs is because LAN has a limitation of 4 switch ports (depending upon the brands) and any topology where all devices in the networks are connected to a central hub can be considered as Star Network Topology.
