CSE3003 : Computer Networks

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Ex No : 1 Basic Networking Commands
Date : 27-01-2021

1. ipconfig :

Displays **current TCP/IP** network configuration values.

```
Administrator: Compruter Networks - 19BCE7048

GVP - 19BCE7048 >ipconfig

Windows IP Configuration


Wireless LAN adapter Local Area Connection* 9:

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

Wireless LAN adapter Local Area Connection* 10:

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

Ethernet adapter Ethernet:

   Connection-specific DNS Suffix  . : domain.name
   Link-local IPv6 Address . . . . . : fe80::292e:21ee:a6e8:7753%18
   IPv4 Address. . . . . . . . . . . : 192.168.100.9
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . : fe80::8226:89ff:fe0b:9622%18
                                       192.168.100.1

Wireless LAN adapter Wi-Fi:

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

Ethernet adapter Bluetooth Network Connection:

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

2. ipconfig /all :

Display the **full TCP/IP** configuration information for all network adapters.

```
Administrator: Computer Networks - 19BCE7048

GVP - 19BCE7048 >ipconfig /all

Windows IP Configuration

   Host Name . . . . . . . . . . . . : GVP
   Primary Dns Suffix . . . . . . . :
   Node Type . . . . . . . . . . . . : Hybrid
   IP Routing Enabled. . . . . . . . : No
   WINS Proxy Enabled. . . . . . . . : No
   DNS Suffix Search List. . . . . . : domain.name

Wireless LAN adapter Local Area Connection* 9:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :
   Description . . . . . . . . . . . : Microsoft Wi-Fi Direct Virtual Adapter
   Physical Address. . . . . . . . . : C2-B5-D7-3B-FA-A1
   DHCP Enabled. . . . . . . . . . . : Yes
   Autoconfiguration Enabled . . . . : Yes

Wireless LAN adapter Local Area Connection* 10:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :
   Description . . . . . . . . . . . : Microsoft Wi-Fi Direct Virtual Adapter #2
   Physical Address. . . . . . . . . : E2-B5-D7-3B-FA-A1
   DHCP Enabled. . . . . . . . . . . : No
   Autoconfiguration Enabled . . . . : Yes

Ethernet adapter Ethernet:

   Connection-specific DNS Suffix  . : domain.name
   Description . . . . . . . . . . . : Realtek PCIe GbE Family Controller
   Physical Address. . . . . . . . . : 80-E8-2C-23-3D-BD
   DHCP Enabled. . . . . . . . . . . : Yes
   Autoconfiguration Enabled . . . . : Yes
   Link-local IPv6 Address . . . . . : fe80::292e:21ee:a6e8:7753%18(Preferred)
   IPv4 Address. . . . . . . . . . . : 192.168.100.9(Preferred)
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Lease Obtained. . . . . . . . . . : 24 February 2021 08:56:14
   Lease Expires . . . . . . . . . . : 25 February 2021 01:29:18
   Default Gateway . . . . . . . . . : fe80::8226:89ff:fe0b:9622%18
                                       192.168.100.1
   DHCP Server . . . . . . . . . . . : 192.168.100.1
   DHCPv6 IAID . . . . . . . . . . . : 226551852
   DHCPv6 Client DUID. . . . . . . . : 00-01-00-01-24-A3-97-48-80-E8-2C-23-3D-BD
   DNS Servers . . . . . . . . . . . : 103.57.132.236
                                       103.57.132.246
   NetBIOS over Tcpip. . . . . . . . : Enabled

Wireless LAN adapter Wi-Fi:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :
   Description . . . . . . . . . . . : Realtek RTL8822BE 802.11ac PCIe Adapter
   Physical Address. . . . . . . . . : C0-B5-D7-3B-FA-A1
   DHCP Enabled. . . . . . . . . . . : Yes
   Autoconfiguration Enabled . . . . : Yes

Ethernet adapter Bluetooth Network Connection:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :
   Description . . . . . . . . . . . : Bluetooth Device (Personal Area Network)
   Physical Address. . . . . . . . . : C0-B5-D7-3B-FA-A2
```

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3. ping www.youtube.com :

Ping is a basic Internet program that allows a user to verify that a particular IP address exists and can accept requests. Ping can be used for troubleshooting to test connectivity and determine response time.

```
Administrator: Computer Networks - 19BCE7048

GVP - 19BCE7048 >ping www.youtube.com

Pinging youtube-ui.l.google.com [172.217.163.174] with 32 bytes of data:
Reply from 172.217.163.174: bytes=32 time=20ms TTL=119
Reply from 172.217.163.174: bytes=32 time=19ms TTL=119
Reply from 172.217.163.174: bytes=32 time=20ms TTL=119
Reply from 172.217.163.174: bytes=32 time=20ms TTL=119

Ping statistics for 172.217.163.174:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 19ms, Maximum = 20ms, Average = 19ms
```

4. ping 192.168.100.9 :

A quick **ping by IP address** will confirm that the system is on, that there is a connection, and that the two machines can talk to each other.

```
Administrator: Computer Networks - 19BCE7048

GVP - 19BCE7048 >ping 192.168.100.9

Pinging 192.168.100.9 with 32 bytes of data:
Reply from 192.168.100.9: bytes=32 time<1ms TTL=128
Reply from 192.168.100.9: bytes=32 time<1ms TTL=128
Reply from 192.168.100.9: bytes=32 time<1ms TTL=128
Reply from 192.168.100.9: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.100.9:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

5. ping www.19bce7048computer.com :

pinging an unknown website results in failure of ping request.

```
Administrator: Computer Networks - 19BCE7048

GVP - 19BCE7048 >ping www.19bce7048computer.com
Ping request could not find host www.19bce7048computer.com. Please check the name and try again.
```

6. tracert www.vitap.ac.in :

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It determines the route to a destination by sending ICMP packets to the destination. The command will return output indicating the hops discovered and time (in milliseconds) for each hop. Each entry, or hop, is a location that the packet passes through to reach its final destination.

```
Administrator: Computer Networks - 19BCE7048

GVP - 19BCE7048 >tracert www.vitap.ac.in

Tracing route to vitap.ac.in [67.222.140.114]
over a maximum of 30 hops:

  1    <1 ms    <1 ms    <1 ms  192.168.100.1
  2     1 ms     1 ms     1 ms  10.208.132.1
  3     4 ms     2 ms     2 ms  33.133.57.103-in-addr.arpa-hireachdns.com [103.57.133.33]
  4    20 ms    20 ms    19 ms  125.21.49.157
  5   223 ms   223 ms   223 ms  116.119.52.163
  6   222 ms   240 ms   223 ms  nyiix1.voxel.net [198.32.160.128]
  7   218 ms   218 ms   218 ms  bbr2.ae7.nym007.pnap.net [64.95.158.74]
  8   251 ms   251 ms   252 ms  bbr1.ae102.dal.pnap.net [64.95.158.173]
  9   250 ms   250 ms   249 ms  bbr2.ae7.dal006.pnap.net [64.95.158.202]
 10   245 ms   245 ms   245 ms  core2.be-5.inapvox-26.dal006.pnap.net [64.95.158.241]
 11   251 ms   250 ms   251 ms  border5.ae2-bbnet1.dal006.pnap.net [216.52.191.109]
 12   254 ms   254 ms   254 ms  dalinf-3.edge1.ext1.dal.pnap.net [64.95.182.142]
 13   256 ms   264 ms   254 ms  170.75.240.26
 14   251 ms       *     252 ms  ailsh2.auroinfotech.com [67.222.140.114]

Trace complete.
```

7. tracert 192.168.100.9 :

Traceroute is a network diagnostic tool used to track in real-time the pathway taken by a packet on an IP network from source to destination.

```
Administrator: Computer Networks - 19BCE7048

GVP - 19BCE7048 >tracert 192.168.100.9

Tracing route to GVP.domain.name [192.168.100.9]
over a maximum of 30 hops:

  1    <1 ms     <1 ms     <1 ms   GVP.domain.name [192.168.100.9]

Trace complete.
```

8. nslookup :

nslookup (stands for "Name Server Lookup") is a useful command for getting information from DNS server. It is a network administration tool for querying the Domain Name System (DNS) to obtain domain name or IP address mapping or any other specific DNS record. It is also used to troubleshoot DNS related problems.

```
Administrator: Computer Networks - 19BCE7048 - nslookup

GVP - 19BCE7048 >nslookup
Default Server:  236.132.57.103-in-addr.arpa-hireachdns.com
Address:  103.57.132.236

> www.youtube.com
Server:  236.132.57.103-in-addr.arpa-hireachdns.com
Address:  103.57.132.236

Non-authoritative answer:
Name:     youtube-ui.l.google.com
Addresses:  2404:6800:4007:813::200e
            2404:6800:4007:80a::200e
            2404:6800:4007:812::200e
            2404:6800:4007:806::200e
            172.217.163.78
            142.250.71.46
            142.250.76.78
            216.58.196.174
            172.217.160.142
            172.217.166.110
            172.217.31.206
            172.217.26.206
            142.250.67.78
            216.58.197.46
            142.250.71.14
            172.217.163.142
            172.217.163.206
            172.217.163.174
            142.250.67.46
Aliases:  www.youtube.com

> wwww.19bce7048computer.com
Server:  236.132.57.103-in-addr.arpa-hireachdns.com
Address:  103.57.132.236

DNS request timed out.
    timeout was 2 seconds.
*** 236.132.57.103-in-addr.arpa-hireachdns.com can't find wwww.19bce7048computer.com: Non-existent domain
>
```

9. netstat -a :

netstat command is used to show network status. Displays all connections and listening ports.


```
Administrator: Computer Networks - 19BCE7048

GVP - 19BCE7048 >netstat -a

Active Connections

  Proto  Local Address          Foreign Address        State
  TCP    0.0.0.0:135            GVP:0                  LISTENING
  TCP    0.0.0.0:445            GVP:0                  LISTENING
  TCP    0.0.0.0:1521           GVP:0                  LISTENING
  TCP    0.0.0.0:2869           GVP:0                  LISTENING
  TCP    0.0.0.0:5040           GVP:0                  LISTENING
  TCP    0.0.0.0:5357           GVP:0                  LISTENING
  TCP    0.0.0.0:7680           GVP:0                  LISTENING
  TCP    0.0.0.0:8080           GVP:0                  LISTENING
  TCP    0.0.0.0:8733           GVP:0                  LISTENING
  TCP    0.0.0.0:35777          GVP:0                  LISTENING
  TCP    0.0.0.0:49664          GVP:0                  LISTENING
  TCP    0.0.0.0:49665          GVP:0                  LISTENING
  TCP    0.0.0.0:49666          GVP:0                  LISTENING
  TCP    0.0.0.0:49667          GVP:0                  LISTENING
  TCP    0.0.0.0:49704          GVP:0                  LISTENING
  TCP    0.0.0.0:49721          GVP:0                  LISTENING
  TCP    0.0.0.0:49753          GVP:0                  LISTENING
  TCP    127.0.0.1:15681        GVP:50942              ESTABLISHED
  TCP    127.0.0.1:49728        GVP:0                  LISTENING
  TCP    127.0.0.1:49893        GVP:0                  LISTENING
  TCP    127.0.0.1:49932        GVP:0                  LISTENING
  TCP    127.0.0.1:50936        GVP:0                  LISTENING
  TCP    127.0.0.1:50942        GVP:15681              ESTABLISHED
  TCP    127.0.0.1:52137        GVP:65001              ESTABLISHED
  TCP    127.0.0.1:65001        GVP:0                  LISTENING
  TCP    127.0.0.1:65001        GVP:52137              ESTABLISHED
  TCP    192.168.100.9:139      GVP:0                  LISTENING
  TCP    192.168.100.9:50558    a23-218-88-10:http     CLOSE_WAIT
  TCP    192.168.100.9:52010    whatsapp-cdn-shv-01-maa2:https  ESTABLISHED
  TCP    192.168.100.9:52109    13.107.5.88:https      CLOSE_WAIT
  TCP    192.168.100.9:52439    52.139.250.253:https   ESTABLISHED
  TCP    192.168.100.9:52618    20.140.48.71:https     CLOSE_WAIT
  TCP    192.168.100.9:52621    20.140.48.71:https     CLOSE_WAIT
  TCP    192.168.100.9:52622    a-0001:https           CLOSE_WAIT
  TCP    192.168.100.9:52623    204.79.197.222:https   CLOSE_WAIT
  TCP    192.168.100.9:52625    13.107.18.11:https     CLOSE_WAIT
```

Submitted by Gudi Varaprasad – 19BCE7048

10. netstat -r :

Displays the routing table.

```
Administrator: Computer Networks - 19BCE7048

GVP - 19BCE7048 >netstat -r
===========================================================================
Interface List
  7...c2 b5 d7 3b fa a1 ......Microsoft Wi-Fi Direct Virtual Adapter
  6...e2 b5 d7 3b fa a1 ......Microsoft Wi-Fi Direct Virtual Adapter #2
 18...80 e8 2c 23 3d bd ......Realtek PCIe GbE Family Controller
 10...c0 b5 d7 3b fa a1 ......Realtek RTL8822BE 802.11ac PCIe Adapter
 12...c0 b5 d7 3b fa a2 ......Bluetooth Device (Personal Area Network)
  1...........................Software Loopback Interface 1
===========================================================================

IPv4 Route Table
===========================================================================
Active Routes:
Network Destination        Netmask          Gateway       Interface  Metric
          0.0.0.0          0.0.0.0    192.168.100.1    192.168.100.9     35
        127.0.0.0        255.0.0.0         On-link         127.0.0.1    331
        127.0.0.1  255.255.255.255         On-link         127.0.0.1    331
  127.255.255.255  255.255.255.255         On-link         127.0.0.1    331
    192.168.100.0    255.255.255.0         On-link     192.168.100.9    291
    192.168.100.9  255.255.255.255         On-link     192.168.100.9    291
  192.168.100.255  255.255.255.255         On-link     192.168.100.9    291
        224.0.0.0        240.0.0.0         On-link         127.0.0.1    331
        224.0.0.0        240.0.0.0         On-link     192.168.100.9    291
  255.255.255.255  255.255.255.255         On-link         127.0.0.1    331
  255.255.255.255  255.255.255.255         On-link     192.168.100.9    291
===========================================================================
Persistent Routes:
  None

IPv6 Route Table
===========================================================================
Active Routes:
 If Metric Network Destination      Gateway
 18    291 ::/0                      fe80::8226:89ff:fe0b:9622
  1    331 ::1/128                   On-link
 18    291 fe80::/64                 On-link
 18    291 fe80::292e:21ee:a6e8:7753/128
                                     On-link
  1    331 ff00::/8                  On-link
 18    291 ff00::/8                  On-link
===========================================================================
Persistent Routes:
  None
```

11. hostname :

hostname command is used to view or change a system's domain and hostname

```
Administrator: Computer Networks - 19BCE7048

GVP - 19BCE7048 >hostname
GVP
```

12. arp :

arp displays and modifies entries in the Address Resolution Protocol (ARP) cache.
Displays current ARP entries by interrogating the current protocol data.

```
Administrator: Computer Networks - 19BCE7048

GVP - 19BCE7048 >arp -a

Interface: 192.168.100.9 --- 0x12
  Internet Address      Physical Address      Type
  192.168.100.1         80-26-89-0b-96-22     dynamic
  192.168.100.255       ff-ff-ff-ff-ff-ff     static
  224.0.0.2             01-00-5e-00-00-02     static
  224.0.0.22            01-00-5e-00-00-16     static
  224.0.0.251           01-00-5e-00-00-fb     static
  224.0.0.252           01-00-5e-00-00-fc     static
  239.192.152.143       01-00-5e-40-98-8f     static
  239.255.255.250       01-00-5e-7f-ff-fa     static
  255.255.255.255       ff-ff-ff-ff-ff-ff     static
```