Ex.No: 1	
Date :	**Networking Basic Commands**

Objectives:

To analyze the network basic commands.

Introduction:

In networking there are various commands that can be used to check the connectivity of the networking devices and it is also required at time of troubleshooting of devices. We will be discussing few of the networking commands such as color help, ipconfig ,ipconfig/all ,nslookup ,tracert commands.

Requirements:

1. End Device (Command Prompt)
2. Ethernet & Internet Services
3. Commands

Commands Execution:

1. ipconfig /all:

```
C:\Users\caleb>ipconfig /all

Windows IP Configuration

   Host Name . . . . . . . . . . . . : CalebGunalan
   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 . . . . . . . . . . . : Realtek PCIe FE Family Controller
   Physical Address. . . . . . . . . : 8C-DC-D4-8B-1B-98
   DHCP Enabled. . . . . . . . . . . : Yes
   Autoconfiguration Enabled . . . . : Yes

Ethernet adapter vEthernet (Default Switch):

   Connection-specific DNS Suffix  . :
   Description . . . . . . . . . . . : Hyper-V Virtual Ethernet Adapter
   Physical Address. . . . . . . . . : 00-15-5D-ED-64-1A
   DHCP Enabled. . . . . . . . . . . : No
   Autoconfiguration Enabled . . . . : Yes
   Link-local IPv6 Address . . . . . : fe80::9c43:58a6:9dbf:6e43%57(Preferred)
   IPv4 Address. . . . . . . . . . . : 192.168.144.1(Preferred)
   Subnet Mask . . . . . . . . . . . : 255.255.240.0
   Default Gateway . . . . . . . . . :
   DHCPv6 IAID . . . . . . . . . . . : 956306781
```

2. ping:

```
C:\Users\caleb>ping google.com

Pinging google.com [142.250.67.206] with 32 bytes of data:
Reply from 142.250.67.206: bytes=32 time=59ms TTL=118
Reply from 142.250.67.206: bytes=32 time=141ms TTL=118
Reply from 142.250.67.206: bytes=32 time=61ms TTL=118

Ping statistics for 142.250.67.206:
    Packets: Sent = 3, Received = 3, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 59ms, Maximum = 141ms, Average = 87ms
```

3. tracert:

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

Tracing route to google.com [142.250.67.206]
over a maximum of 30 hops:

  1     7 ms     2 ms     6 ms  10.10.0.1
  2    19 ms    17 ms    30 ms  103.238.230.129
  3    24 ms    22 ms    22 ms  202.191.1.129
  4    27 ms    23 ms    27 ms  72.14.204.100
  5    18 ms    22 ms    28 ms  142.251.227.217
  6    29 ms    25 ms    23 ms  142.251.230.90
  7    88 ms    46 ms    43 ms  142.250.238.182
  8    45 ms    36 ms    43 ms  192.178.110.209
  9    39 ms    43 ms    67 ms  142.250.235.9
 10    57 ms    55 ms   243 ms  bom12s08-in-f14.1e100.net [142.250.67.206]

Trace complete.
```

4. nsloopup:

```
C:\Users\caleb>nslookup google.com
Server:  b.resolvers.level3.net
Address:  4.2.2.2


Non-authoritative answer:
Name:    google.com
Addresses:  2404:6800:4009:805::200e
            142.250.199.174
```

5. netstat -an:

```
C:\Users\caleb>netstat -an

Active Connections

  Proto  Local Address          Foreign Address        State
  TCP    0.0.0.0:7              0.0.0.0:0              LISTENING
  TCP    0.0.0.0:9              0.0.0.0:0              LISTENING
  TCP    0.0.0.0:13             0.0.0.0:0              LISTENING
  TCP    0.0.0.0:17             0.0.0.0:0              LISTENING
  TCP    0.0.0.0:19             0.0.0.0:0              LISTENING
  TCP    0.0.0.0:22             0.0.0.0:0              LISTENING
  TCP    0.0.0.0:80             0.0.0.0:0              LISTENING
  TCP    0.0.0.0:135            0.0.0.0:0              LISTENING
  TCP    0.0.0.0:445            0.0.0.0:0              LISTENING
  TCP    0.0.0.0:515            0.0.0.0:0              LISTENING
  TCP    0.0.0.0:902            0.0.0.0:0              LISTENING
  TCP    0.0.0.0:912            0.0.0.0:0              LISTENING
  TCP    0.0.0.0:1801           0.0.0.0:0              LISTENING
  TCP    0.0.0.0:2103           0.0.0.0:0              LISTENING
  TCP    0.0.0.0:2105           0.0.0.0:0              LISTENING
  TCP    0.0.0.0:2107           0.0.0.0:0              LISTENING
```

6. route print:

```
C:\Users\caleb>route print
===========================================================================
Interface List
 21...8c dc d4 8b 1b 98 ......Realtek PCIe FE Family Controller
 57...00 15 5d ed 64 1a ......Hyper-V Virtual Ethernet Adapter
 69...00 15 5d a9 71 b7 ......Hyper-V Virtual Ethernet Adapter #2
 13...0a 00 27 00 00 0d ......VirtualBox Host-Only Ethernet Adapter
 15...00 ff 89 13 38 3e ......TAP-Windows Adapter V9
 19...........................OpenVPN Data Channel Offload
 27...3a b1 db e5 56 83 ......Microsoft Wi-Fi Direct Virtual Adapter
 14...3a b1 db e5 5e 83 ......Microsoft Wi-Fi Direct Virtual Adapter #2
  9...00 50 56 c0 00 01 ......VMware Virtual Ethernet Adapter for VMnet1
 25...00 50 56 c0 00 08 ......VMware Virtual Ethernet Adapter for VMnet8
 18...38 b1 db e5 56 83 ......Broadcom BCM43142 802.11 bgn Wi-Fi Adapter
  1...........................Software Loopback Interface 1
===========================================================================
```

7. arp -a:

```
C:\Users\caleb>arp -a

Interface: 192.168.206.1 --- 0x9
  Internet Address      Physical Address      Type
  192.168.206.255       ff-ff-ff-ff-ff-ff     static
  224.0.0.9             01-00-5e-00-00-09     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
  239.255.255.250       01-00-5e-7f-ff-fa     static
```

8. getmac:

```
C:\Users\caleb>getmac

Physical Address      Transport Name

==================    =======================================================
38-B1-DB-E5-56-83     \Device\Tcpip_{8E8E95EF-83CE-43AE-8364-0336F5782AD7}
8C-DC-D4-8B-1B-98     Media disconnected

00-50-56-C0-00-01     \Device\Tcpip_{59CDD1E5-5DAB-485B-97FD-3DB9091F4B1E}
00-50-56-C0-00-08     \Device\Tcpip_{E3C22C55-FFE5-485E-AC23-B340E4745837}
0A-00-27-00-00-0D     \Device\Tcpip_{6D62742A-197F-440E-A4B4-A925394BDBEB}
00-FF-89-13-38-3E     Media disconnected

N/A                   Media disconnected

00-15-5D-ED-64-1A     \Device\Tcpip_{FC757030-FA9B-4E80-8276-EDA7F5486F3F}
00-15-5D-A9-71-B7     \Device\Tcpip_{8FAEB228-B698-44CD-ACE5-BB4ADE47D0B8}
```

9. nbtstat -n:

```
C:\Users\caleb>nbtstat –n

Ethernet 2:
Node IpAddress: [192.168.56.1] Scope Id: []

              NetBIOS Local Name Table

       Name                  Type          Status
    ---------------------------------------------------
       CALEBGUNALAN    <20>  UNIQUE      Registered
       CALEBGUNALAN    <00>  UNIQUE      Registered
       WORKGROUP       <00>  GROUP       Registered
       WORKGROUP       <1E>  GROUP       Registered
```

10. netsh interface ip show config:

```
C:\Users\caleb>netsh interface ip show config

Configuration for interface "Ethernet"
    DHCP enabled:                        Yes
    InterfaceMetric:                     5
    DNS servers configured through DHCP: 192.168.1.1
    Register with which suffix:          Primary only
    WINS servers configured through DHCP: 192.168.1.1
                                         192.168.1.1
```

11. pathping:

```
C:\Users\caleb>pathping google.com

Tracing route to google.com [142.250.199.174]
over a maximum of 30 hops:
  0  CalebGunalan [10.10.27.211]
  1  10.10.0.1
  2  103.238.230.129
  3  202.191.1.129
  4  72.14.204.100
  5  142.251.227.217
  6  142.251.230.70
  7  142.250.212.0
  8  192.178.111.61
  9  108.170.234.157
 10  bom07s37-in-f14.1e100.net [142.250.199.174]

Computing statistics for 250 seconds...
             Source to Here   This Node/Link
Hop  RTT    Lost/Sent = Pct  Lost/Sent = Pct  Address
  0                                            CalebGunalan [10.10.27.211]
                              0/ 100 =  0%   |
  1   43ms     0/ 100 =  0%   0/ 100 =  0%   10.10.0.1
                              0/ 100 =  0%   |
  2   60ms     0/ 100 =  0%   0/ 100 =  0%   103.238.230.129
                              0/ 100 =  0%   |
  3   56ms     1/ 100 =  1%   1/ 100 =  1%   202.191.1.129
```

12. systeminfo:

```
C:\Users\caleb>systeminfo

Host Name:                 CALEBGUNALAN
OS Name:                   Microsoft Windows 10 Home Single Language
OS Version:                10.0.19045 N/A Build 19045
OS Manufacturer:           Microsoft Corporation
OS Configuration:          Standalone Workstation
OS Build Type:             Multiprocessor Free
Registered Owner:          calebgunalan2005@gmail.com
Registered Organization:
Product ID:                00327-30000-00000-AAOEM
Original Install Date:     25-10-2023, 02:08:02 PM
System Boot Time:          07-12-2024, 01:43:17 PM
System Manufacturer:       Hewlett-Packard
System Model:              HP Pavilion 15 Notebook PC
System Type:               x64-based PC
Processor(s):              1 Processor(s) Installed.
                           [01]: Intel64 Family 6 Model 69 Stepping 1 GenuineIntel ~2000 Mhz
BIOS Version:              Insyde F.36, 02-02-2015
```

13.sc query dhcp:

```
C:\Users\caleb>sc query dhcp

SERVICE_NAME: dhcp
        TYPE               : 30  WIN32
        STATE              : 4   RUNNING
                                 (STOPPABLE, NOT_PAUSABLE, ACCEPTS_SHUTDOWN)
        WIN32_EXIT_CODE    : 0   (0x0)
        SERVICE_EXIT_CODE  : 0   (0x0)
        CHECKPOINT         : 0x0
        WAIT_HINT          : 0x0
```

14. powercfg /energy:

```
C:\Windows\system32>powercfg /energy
Enabling tracing for 60 seconds...
Observing system behavior...
Analyzing trace data...
Analysis complete.

Energy efficiency problems were found.

6 Errors
18 Warnings
28 Informational


See C:\Windows\system32\energy-report.html for more details.
```

15. net share:

```
C:\Users\caleb>net share

Share name     Resource                              Remark

-------------------------------------------------------------------------------
C$             C:\                                   Default share

IPC$                                                 Remote IPC

D$             D:\                                   Default share

ADMIN$         C:\Windows                            Remote Admin

D              D:\
DevelopmentFiles
               C:\ProgramData\DeveloperTools  SMB Share For DevelopmentFiles ...
Users          C:\Users
The command completed successfully.
```