



Computer Network (01CE0410)

Lab Manual (2024-25)

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Practical 3: Demonstrate basic networking commands and Network configuration commands.

1. ipconfig – Displays basic IP configuration details of the system's network adapters.

```
cmd Command Prompt
Microsoft Windows [Version 10.0.19045.4598]
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Z:\>ipconfig

Windows IP Configuration

Ethernet adapter Ethernet 2:

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

Ethernet adapter Ethernet:

    Connection-specific DNS Suffix  . :
    Link-local IPv6 Address . . . . . : fe80::78d6:53f4:8389:46ee%14
    IPv4 Address. . . . . : 172.21.31.130
    Subnet Mask . . . . . : 255.255.254.0
    Default Gateway . . . . . : 192.168.16.3

Ethernet adapter VMware Network Adapter VMnet1:

    Connection-specific DNS Suffix  . :
    Link-local IPv6 Address . . . . . : fe80::3161:aa1c:18f:4bd7%16
    IPv4 Address. . . . . : 192.168.209.1
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . :

Ethernet adapter VMware Network Adapter VMnet8:

    Connection-specific DNS Suffix  . :
    Link-local IPv6 Address . . . . . : fe80::2602:103:6ce5:ef9e%13
    IPv4 Address. . . . . : 192.168.223.1
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . :

Z:\>_
```

2. **ipconfig /all** – Shows detailed information about all network interfaces, including MAC addresses and DNS servers.

```
Z:\>ipconfig/all

Windows IP Configuration

    Host Name . . . . . : MC221-CL130
    Primary Dns Suffix . . . . . : mefgi.com
    Node Type . . . . . : Hybrid
    IP Routing Enabled. . . . . : No
    WINS Proxy Enabled. . . . . : No
    DNS Suffix Search List. . . . . : mefgi.com

Ethernet adapter Ethernet 2:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix . :
    Description . . . . . : Sophos TAP Adapter
    Physical Address. . . . . : 00-FF-5F-73-0D-0C
    DHCP Enabled. . . . . : Yes
    Autoconfiguration Enabled . . . . : Yes

Ethernet adapter Ethernet:

    Connection-specific DNS Suffix . :
    Description . . . . . : Realtek PCIe GbE Family Controller
    Physical Address. . . . . : 8C-EC-4B-96-88-2A
    DHCP Enabled. . . . . : No
    Autoconfiguration Enabled . . . . : Yes
    Link-local IPv6 Address . . . . . : fe80::78d6:53f4:8389:46ee%14(Preferred)
    IPv4 Address. . . . . : 172.21.31.130(Preferred)
    Subnet Mask . . . . . : 255.255.254.0
    Default Gateway . . . . . : 192.168.16.3
    DHCPv6 IAID . . . . . : 227339339
    DHCPv6 Client DUID. . . . . : 00-01-00-01-2E-14-0A-66-8C-EC-4B-96-88-2A
    DNS Servers . . . . . : 192.168.12.101
                           192.168.12.201
                           192.168.12.203
                           119.160.192.2
                           119.160.192.3
    NetBIOS over Tcpip. . . . . : Enabled

Ethernet adapter VMware Network Adapter VMnet1:
```

3. **hostname** – Displays the computer's hostname (system name) on the network.

```
Z:\>hostname
MC221-CL130

Z:\>
```



4. getmac – Displays the MAC address of the network interfaces on the system.

```
Z:\>getmac

Physical Address      Transport Name
=====
8C-EC-4B-96-88-2A     \Device\Tcpip_{AE6BAFD8-BF3F-407C-BC8F-959957514E44}
00-50-56-C0-00-01     \Device\Tcpip_{E630B2C5-8531-4353-9D41-18D3C063D040}
00-50-56-C0-00-08     \Device\Tcpip_{AC00086E-422C-451D-9EFD-9755656FF548}
00-FF-5F-73-0D-0C     Media disconnected

Z:\>_
```

5.systeminfo – Provides detailed information about the system configuration, including OS, memory, and network adapter info.

```
Z:\>systeminfo

Host Name:                MC221-CL130
OS Name:                  Microsoft Windows 10 Pro
OS Version:               10.0.19045 N/A Build 19045
OS Manufacturer:         Microsoft Corporation
OS Configuration:        Member Workstation
OS Build Type:             Multiprocessor Free
Registered Owner:         admin
Registered Organization:
Product ID:                00330-80000-00000-AA535
Original Install Date:     18-06-2024, 15:06:22
System Boot Time:          27-01-2025, 11:06:07
System Manufacturer:       Dell Inc.
System Model:              OptiPlex 3060
System Type:               x64-based PC
Processor(s):               1 Processor(s) Installed.
                           [01]: Intel64 Family 6 Model 158 Stepping 10 GenuineIntel ~3000 Mhz
BIOS Version:              Dell Inc. 1.30.0, 29-03-2024
Windows Directory:         C:\Windows
System Directory:          C:\Windows\system32
Boot Device:               \Device\HarddiskVolume3
System Locale:              4009
Input Locale:              00004009
Time Zone:                 (UTC+05:30) Chennai, Kolkata, Mumbai, New Delhi
Total Physical Memory:      16,207 MB
Available Physical Memory:  11,797 MB
Virtual Memory: Max Size:  18,639 MB
Virtual Memory: Available: 14,049 MB
Virtual Memory: In Use:     4,590 MB
Page File Location(s):     C:\pagefile.sys
Domain:                    mefgi.com
Logon Server:              \\ADS-203
Hotfix(s):                  8 Hotfix(s) Installed.
                           [01]: KB5039865
                           [02]: KB5037592
                           [03]: KB5011048
                           [04]: KB5015684
                           [05]: KB5039299
                           [06]: KB5037995
                           [07]: KB5039336
                           [08]: KB5034441
Network Card(s):           4 NIC(s) Installed.
                           [01]: Realtek PCIe GbE Family Controller
                               Connection Name: Ethernet
                               DHCP Enabled:    No
                               IP address(es)
                                   [01]: 172.21.31.130
                                   [02]: fe80::78d6:53f4:8389:46ee
                           [02]: VMware Virtual Ethernet Adapter for VMnet1
                               Connection Name: VMware Network Adapter VMnet1
                               DHCP Enabled:    Yes
                               DHCP Server:     192.168.209.254
                               IP address(es)
                                   [01]: 192.168.209.1
                                   [02]: fe80::3161:aa1c:18f:4bd7
                           [03]: VMware Virtual Ethernet Adapter for VMnet8
                               Connection Name: VMware Network Adapter VMnet8
                               DHCP Enabled:    Yes
                               DHCP Server:     192.168.223.254
```

```
C:\Windows\system32\cmd.exe
Available Physical Memory: 12,585 MB
Virtual Memory: Max Size: 18,639 MB
Virtual Memory: Available: 15,153 MB
Virtual Memory: In Use: 3,486 MB
Page File Location(s): C:\pagefile.sys
Domain: mefgl.com
Logon Server: \\ADS-203
Hotfix(s):
8 Hotfix(s) Installed.
[01]: KB5039865
[02]: KB5037592
[03]: KB5011040
[04]: KB5015684
[05]: KB5039299
[06]: KB5037995
[07]: KB5039336
[08]: KB5034441
Network Card(s):
4 NIC(s) Installed.
[01]: Realtek PCIe GbE Family Controller
Connection Name: Ethernet
DHCP Enabled: No
IP address(es)
[01]: 172.21.31.141
[02]: fe80::5649:3dcc:cfa6:9a23
[02]: VMware Virtual Ethernet Adapter for VMnet1
Connection Name: VMware Network Adapter VMnet1
DHCP Enabled: Yes
DHCP Server: 192.168.209.254
IP address(es)
[01]: 192.168.209.1
[02]: fe80::3161:aa1c:18f:4bd7
[03]: VMware Virtual Ethernet Adapter for VMnet8
Connection Name: VMware Network Adapter VMnet8
DHCP Enabled: Yes
DHCP Server: 192.168.223.254
IP address(es)
[01]: 192.168.223.1
[02]: fe80::2602:103:6ce5:ef9e
[04]: Sophos TAP Adapter
Connection Name: Ethernet 2
Status: Media disconnected
Hyper-V Requirements:
VM Monitor Mode Extensions: Yes
Virtualization Enabled In Firmware: Yes
Second Level Address Translation: Yes
Data Execution Prevention Available: Yes
C:\Users\student>
```

6.ping – Sends an ICMP echo request to check connectivity to a remote host.

```
Z:\>ping www.google.com

Pinging www.google.com [142.250.192.4] with 32 bytes of data:
Reply from 142.250.192.4: bytes=32 time=16ms TTL=58
Reply from 142.250.192.4: bytes=32 time=15ms TTL=58
Reply from 142.250.192.4: bytes=32 time=16ms TTL=58
Reply from 142.250.192.4: bytes=32 time=15ms TTL=58

Ping statistics for 142.250.192.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 15ms, Maximum = 16ms, Average = 15ms
```

7. ping {ip addr} – Pings a specific IP address to test connectivity to that address.

```
Z:\>ping 142.250.192.4

Pinging 142.250.192.4 with 32 bytes of data:
Reply from 142.250.192.4: bytes=32 time=16ms TTL=58
Reply from 142.250.192.4: bytes=32 time=16ms TTL=58
Reply from 142.250.192.4: bytes=32 time=15ms TTL=58
Reply from 142.250.192.4: bytes=32 time=15ms TTL=58

Ping statistics for 142.250.192.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 15ms, Maximum = 16ms, Average = 15ms
```

8. tracert – Traces the route packets take to reach a destination, showing the hops along the way.

```
Z:\>tracert www.google.com

Tracing route to www.google.com [142.250.192.4]
over a maximum of 30 hops:

  1  12 ms    3 ms     4 ms    172.21.30.1
  2  <1 ms    <1 ms    <1 ms    192.168.15.91
  3   1 ms    <1 ms    <1 ms    119.160.199.81
  4   2 ms     2 ms     2 ms    10.50.79.1
  5   *       15 ms    15 ms    10.250.10.205
  6  26 ms    16 ms    16 ms    72.14.202.41
  7  15 ms    15 ms    16 ms    74.125.37.7
  8  15 ms    15 ms    15 ms    108.170.231.79
  9  15 ms    15 ms    15 ms    bom12s14-in-f4.1e100.net [142.250.192.4]

Trace complete.
```

9. route print – Displays the routing table, showing routes and associated network interfaces.

```

Z:\>route print
=====
Interface List
=====
 8...00 ff 5f 73 0d 0c .....Sophos TAP Adapter
14...8c ec 4b 96 88 2a .....Realtek PCIe GbE Family Controller
16...00 50 56 c0 00 01 .....VMware Virtual Ethernet Adapter for VMnet1
13...00 50 56 c0 00 08 .....VMware Virtual Ethernet Adapter for VMnet8
1.....Software Loopback Interface 1
=====

IPv4 Route Table
=====
Active Routes:
Network Destination        Netmask          Gateway          Interface        Metric
0.0.0.0                    0.0.0.0          192.168.16.3     172.21.31.130    281
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
172.21.30.0                255.255.254.0    On-link          172.21.31.130    281
172.21.31.130              255.255.255.255  On-link          172.21.31.130    281
172.21.31.255              255.255.255.255  On-link          172.21.31.130    281
192.168.209.0              255.255.255.0    On-link          192.168.209.1    291
192.168.209.1              255.255.255.255  On-link          192.168.209.1    291
192.168.209.255            255.255.255.255  On-link          192.168.209.1    291
192.168.223.0              255.255.255.0    On-link          192.168.223.1    291
192.168.223.1              255.255.255.255  On-link          192.168.223.1    291
192.168.223.255            255.255.255.255  On-link          192.168.223.1    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          192.168.209.1    291
224.0.0.0                  240.0.0.0        On-link          192.168.223.1    291
224.0.0.0                  240.0.0.0        On-link          172.21.31.130    281
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          192.168.209.1    291
255.255.255.255            255.255.255.255  On-link          192.168.223.1    291
255.255.255.255            255.255.255.255  On-link          172.21.31.130    281
=====
Persistent Routes:
Network Address            Netmask          Gateway Address  Metric
0.0.0.0                    0.0.0.0          192.168.16.3     Default
=====

IPv6 Route Table
=====
Active Routes:
If Metric Network Destination      Gateway
1    331 ::1/128                      On-link
16   291 fe80::/64                    On-link
13   291 fe80::/64                    On-link
14   281 fe80::/64                    On-link

```




10. pathping – Combines the functionality of ping and tracert, providing packet loss and latency information at each hop.

```
Z:\>pathping www.google.com
```

```
Tracing route to www.google.com [142.250.192.4]  
over a maximum of 30 hops:
```

```
 0  MC221-CL130.mefgi.com [172.21.31.130]  
 1  172.21.30.1  
 2  192.168.15.91  
 3  119.160.199.81  
 4  10.50.79.1  
 5  10.250.10.205  
 6  72.14.202.41  
 7  74.125.37.7  
 8  108.170.231.79  
 9  bom12s14-in-f4.1e100.net [142.250.192.4]
```

```
Computing statistics for 225 seconds...
```

Hop	RTT	Source to Here Lost/Sent = Pct	This Node/Link Lost/Sent = Pct	Address
0				MC221-CL130.mefgi.com [172.21.31.130]
1	8ms	0/ 100 = 0%	0/ 100 = 0%	172.21.30.1
2	0ms	0/ 100 = 0%	0/ 100 = 0%	192.168.15.91
3	1ms	0/ 100 = 0%	0/ 100 = 0%	119.160.199.81
4	1ms	0/ 100 = 0%	0/ 100 = 0%	10.50.79.1
5	14ms	0/ 100 = 0%	0/ 100 = 0%	10.250.10.205
6	21ms	0/ 100 = 0%	0/ 100 = 0%	72.14.202.41
7	15ms	0/ 100 = 0%	0/ 100 = 0%	74.125.37.7
8	15ms	0/ 100 = 0%	0/ 100 = 0%	108.170.231.79
9	14ms	0/ 100 = 0%	0/ 100 = 0%	bom12s14-in-f4.1e100.net [142.250.192.4]

```
Trace complete.
```

11. arp -a – Displays the current ARP (Address Resolution Protocol) table, mapping IP addresses to MAC addresses.

```
Z:\>arp -a

Interface: 192.168.223.1 --- 0xd
  Internet Address      Physical Address      Type
  192.168.223.254      00-50-56-e5-0e-00    dynamic
  192.168.223.255      ff-ff-ff-ff-ff-ff    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
  255.255.255.255      ff-ff-ff-ff-ff-ff    static

Interface: 172.21.31.130 --- 0xe
  Internet Address      Physical Address      Type
  172.21.30.1          00-19-e8-f8-26-4f    dynamic
  172.21.31.69         44-37-e6-e2-81-25    dynamic
  172.21.31.194        8c-ec-4b-96-60-15    dynamic
  172.21.31.199        8c-ec-4b-96-01-aa    dynamic
  172.21.31.204        8c-ec-4b-96-62-3b    dynamic
  172.21.31.255        ff-ff-ff-ff-ff-ff    static
  192.168.16.3         00-19-e8-f8-26-4f    dynamic
  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

Interface: 192.168.209.1 --- 0x10
  Internet Address      Physical Address      Type
  192.168.209.254      00-50-56-e7-4a-9d    dynamic
  192.168.209.255      ff-ff-ff-ff-ff-ff    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
  255.255.255.255      ff-ff-ff-ff-ff-ff    static
```

12. nslookup – Queries DNS servers to obtain domain name or IP address information.

```
Z:\>nslookup www.google.com
Server:  ADS-PRIMARY101.mefgi.com
Address:  192.168.12.101

Non-authoritative answer:
Name:      www.google.com
Addresses:  2404:6800:4009:827::2004
           142.250.192.4
```

13. netstat – Displays active network connections, listening ports, and routing table.

```
Z:\>netstat

Active Connections

Proto Local Address           Foreign Address         State
TCP    127.0.0.1:49671         MC221-CL130:49672      ESTABLISHED
TCP    127.0.0.1:49672         MC221-CL130:49671      ESTABLISHED
TCP    127.0.0.1:53195         MC221-CL130:53196      ESTABLISHED
TCP    127.0.0.1:53196         MC221-CL130:53195      ESTABLISHED
TCP    172.21.31.130:7680      172.21.16.93:51091     TIME_WAIT
TCP    172.21.31.130:7680      172.21.33.111:58371     ESTABLISHED
TCP    172.21.31.130:7680      172.21.33.114:58198     ESTABLISHED
TCP    172.21.31.130:7680      172.21.33.118:65424     ESTABLISHED
TCP    172.21.31.130:7680      172.21.33.129:49167     ESTABLISHED
TCP    172.21.31.130:7680      172.21.33.246:50389     ESTABLISHED
TCP    172.21.31.130:7680      172.21.33.251:51804     ESTABLISHED
TCP    172.21.31.130:53060     ADS-PRIMARY101:microsoft-ds ESTABLISHED
TCP    172.21.31.130:57788     208.71.185.241:https    CLOSE_WAIT
TCP    172.21.31.130:57909     a184-29-24-167:https    CLOSE_WAIT
TCP    172.21.31.130:57922     a23-203-37-111:https    CLOSE_WAIT
TCP    172.21.31.130:57930     a23-203-37-111:https    CLOSE_WAIT
TCP    172.21.31.130:57935     a23-203-37-111:https    CLOSE_WAIT
TCP    172.21.31.130:57949     a23-38-59-250:http      CLOSE_WAIT
TCP    172.21.31.130:57951     a23-203-38-65:https     CLOSE_WAIT
TCP    172.21.31.130:57952     42.106.164.137:https    CLOSE_WAIT
TCP    172.21.31.130:57953     a23-203-37-111:https    CLOSE_WAIT
TCP    172.21.31.130:57954     a23-203-37-111:https    CLOSE_WAIT
TCP    172.21.31.130:57955     a23-203-38-65:https     CLOSE_WAIT
TCP    172.21.31.130:57956     a23-203-38-65:https     CLOSE_WAIT
TCP    172.21.31.130:57957     a23-203-37-111:https    CLOSE_WAIT
TCP    172.21.31.130:57958     a23-203-37-111:https    CLOSE_WAIT
TCP    172.21.31.130:57959     a23-203-38-65:https     CLOSE_WAIT
TCP    172.21.31.130:57960     a23-203-38-65:https     CLOSE_WAIT
TCP    172.21.31.130:57961     a23-203-38-65:https     CLOSE_WAIT
TCP    172.21.31.130:57962     a104-94-19-83:https     CLOSE_WAIT
TCP    172.21.31.130:57974     208.71.185.246:https    CLOSE_WAIT
TCP    172.21.31.130:57977     208.71.185.241:https    CLOSE_WAIT
TCP    172.21.31.130:57983     13.107.246.48:https     CLOSE_WAIT
TCP    172.21.31.130:58053     150.171.84.254:https    CLOSE_WAIT
TCP    172.21.31.130:58315     a23-58-95-138:http      TIME_WAIT
TCP    172.21.31.130:58317     52.123.128.254:https    ESTABLISHED
TCP    172.21.31.130:58318     42.106.164.138:https    ESTABLISHED
TCP    172.21.31.130:58320     ADS-203:epmap           TIME_WAIT
TCP    172.21.31.130:58321     ADS-203:49675           TIME_WAIT
```

14. netstat -a – Shows all active connections and listening ports.

```
Z:\>netstat -a
```

Active Connections

Proto	Local Address	Foreign Address	State
TCP	0.0.0.0:80	MC221-CL130:0	LISTENING
TCP	0.0.0.0:135	MC221-CL130:0	LISTENING
TCP	0.0.0.0:445	MC221-CL130:0	LISTENING
TCP	0.0.0.0:902	MC221-CL130:0	LISTENING
TCP	0.0.0.0:912	MC221-CL130:0	LISTENING
TCP	0.0.0.0:3389	MC221-CL130:0	LISTENING
TCP	0.0.0.0:5040	MC221-CL130:0	LISTENING
TCP	0.0.0.0:5560	MC221-CL130:0	LISTENING
TCP	0.0.0.0:5580	MC221-CL130:0	LISTENING
TCP	0.0.0.0:5800	MC221-CL130:0	LISTENING
TCP	0.0.0.0:5900	MC221-CL130:0	LISTENING
TCP	0.0.0.0:7680	MC221-CL130:0	LISTENING
TCP	0.0.0.0:39000	MC221-CL130:0	LISTENING
TCP	0.0.0.0:49664	MC221-CL130:0	LISTENING
TCP	0.0.0.0:49665	MC221-CL130:0	LISTENING
TCP	0.0.0.0:49666	MC221-CL130:0	LISTENING
TCP	0.0.0.0:49667	MC221-CL130:0	LISTENING
TCP	0.0.0.0:49668	MC221-CL130:0	LISTENING
TCP	0.0.0.0:49669	MC221-CL130:0	LISTENING
TCP	0.0.0.0:49670	MC221-CL130:0	LISTENING
TCP	0.0.0.0:49673	MC221-CL130:0	LISTENING
TCP	0.0.0.0:49674	MC221-CL130:0	LISTENING
TCP	127.0.0.1:4502	MC221-CL130:0	LISTENING
TCP	127.0.0.1:49671	MC221-CL130:49672	ESTABLISHED
TCP	127.0.0.1:49672	MC221-CL130:49671	ESTABLISHED
TCP	127.0.0.1:53195	MC221-CL130:53196	ESTABLISHED
TCP	127.0.0.1:53196	MC221-CL130:53195	ESTABLISHED
TCP	127.0.0.1:60110	MC221-CL130:0	LISTENING
TCP	172.21.31.130:139	MC221-CL130:0	LISTENING
TCP	172.21.31.130:7680	172.21.33.114:58198	ESTABLISHED
TCP	172.21.31.130:7680	172.21.33.118:65424	ESTABLISHED
TCP	172.21.31.130:7680	172.21.33.129:49167	ESTABLISHED
TCP	172.21.31.130:7680	172.21.33.246:50389	ESTABLISHED
TCP	172.21.31.130:7680	172.21.33.251:51804	ESTABLISHED
TCP	172.21.31.130:53060	ADS-PRIMARY101:microsoft-ds	ESTABLISHED
TCP	172.21.31.130:57788	20.198.119.84:https	ESTABLISHED
TCP	172.21.31.130:57909	208.71.185.241:https	CLOSE_WAIT
TCP	172.21.31.130:57922	a184-29-24-167:https	CLOSE_WAIT
TCP	172.21.31.130:57930	a23-203-37-111:https	CLOSE_WAIT
TCP	172.21.31.130:57935	a23-203-37-111:https	CLOSE_WAIT
TCP	172.21.31.130:57949	a23-38-59-250:http	CLOSE_WAIT
TCP	172.21.31.130:57951	a23-203-38-65:https	CLOSE_WAIT
TCP	172.21.31.130:57952	42.106.164.137:https	CLOSE_WAIT



15. netstat -e – Displays Ethernet statistics, such as the number of bytes and packets sent/received.

```
Z:\>netstat -e
Interface Statistics

              Received              Sent
Bytes          280696852          267354800
Unicast packets    259352          251260
Non-unicast packets 1058975          11140
Discards           0              0
Errors             0              0
Unknown protocols  0
```

Z:\>

16. ipconfig /flushdns – Clears the DNS resolver cache to force fresh DNS lookups.

```
Z:\>ipconfig/flushdns

Windows IP Configuration

Successfully flushed the DNS Resolver Cache.
```

17. nbtstat -r – Displays NetBIOS over TCP/IP statistics, including the resolution of names from the NetBIOS name cache.

```
Z:\>nbtstat -r

NetBIOS Names Resolution and Registration Statistics
-----

Resolved By Broadcast      = 0
Resolved By Name Server    = 0

Registered By Broadcast    = 9
Registered By Name Server  = 0
```