

PRACTICAL – 1

Execute Basic TCP/IP utilities and commands. (eg: ping, ipconfig, tracert, arp, tcpdump, whois, host, netsat, nslookup, ftp, telnet etc...)

Ping:

- The ping command is used to test the ability of the source computer to reach a specified destination computer.
- The ping command is usually used as a simple way verify that a computer can communicate over the network with another computer or network device.
- The ping command operates by sending Internet Control Message Protocol (ICMP) Echo Request messages to the destination computer and waiting for a response.
- For example: ping 10.9.39.60 (It will check that our system is communicate with the system which has IP address 10.9.39.60).

```
C:\Users\Vivek Kakoo>ping google.com

Pinging google.com [216.58.196.110] with 32 bytes of data:
Reply from 216.58.196.110: bytes=32 time=190ms TTL=107
Reply from 216.58.196.110: bytes=32 time=123ms TTL=107
Reply from 216.58.196.110: bytes=32 time=149ms TTL=107
Reply from 216.58.196.110: bytes=32 time=178ms TTL=107

Ping statistics for 216.58.196.110:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 123ms, Maximum = 190ms, Average = 160ms
```

Ipconfig:

- ipconfig is a MS-DOS utility that can be used from MS-DOS and a MS-DOS shell to display the network settings currently assigned and given by a network. This command can be utilized to verify a network connection as well as to verify your network settings.

```
Ethernet adapter Ethernet:  
  
Media State . . . . . : Media disconnected  
Connection-specific DNS Suffix . :  
  
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::b59a:930a:d4ac:f850%8  
IPv4 Address. . . . . : 100.96.170.24  
Subnet Mask . . . . . : 255.255.224.0  
Default Gateway . . . . . : 100.96.191.254  
  
Ethernet adapter Bluetooth Network Connection:  
  
Media State . . . . . : Media disconnected  
Connection-specific DNS Suffix . :
```

Tracert:

- A tracert is the tracking of a packet sent to a server. During its route, this packet goes through several network devices (routers, firewalls etc.) and then goes finally at the server.
- With the tracert, you can see the IP as well as the response time between each barrier (router, firewall...). We use then the tracert to check the problem between your computer and the server. We can see quickly where the problem is and fix it.

```
C:\Users\hh>netstat
```

Active Connections

Proto	Local Address	Foreign Address	State
TCP	192.168.7.27:1037	a23-34-252-10:https	CLOSE_WAIT
TCP	192.168.7.27:1042	104.18.24.243:http	CLOSE_WAIT
TCP	192.168.7.27:17405	13.107.5.88:https	CLOSE_WAIT
TCP	192.168.7.27:17407	117.18.237.29:http	CLOSE_WAIT
TCP	192.168.7.27:17423	20.198.162.78:https	ESTABLISHED
TCP	192.168.7.27:17424	5.62.54.29:https	ESTABLISHED
TCP	192.168.7.27:17427	104.22.0.235:https	ESTABLISHED
TCP	192.168.7.27:17428	117.18.237.29:http	ESTABLISHED
TCP	192.168.7.27:17429	a23-15-155-27:http	ESTABLISHED
TCP	192.168.7.27:17430	a23-15-155-27:http	ESTABLISHED
TCP	192.168.7.27:17431	117.18.237.29:http	ESTABLISHED
TCP	192.168.7.27:17432	a-0001:https	ESTABLISHED
TCP	192.168.7.27:17433	a-0001:https	ESTABLISHED
TCP	192.168.7.27:17434	fra02-008:http	ESTABLISHED
TCP	192.168.7.27:17436	204.79.197.222:https	ESTABLISHED
TCP	192.168.7.27:17437	13.107.4.254:https	ESTABLISHED
TCP	192.168.7.27:17438	13.107.246.58:https	ESTABLISHED
TCP	192.168.7.27:17439	117.18.232.200:https	ESTABLISHED
TCP	192.168.7.27:17440	a23-65-111-20:http	ESTABLISHED
TCP	192.168.7.27:17441	104.18.31.182:http	ESTABLISHED
TCP	192.168.7.27:17442	104.18.31.182:http	ESTABLISHED
TCP	192.168.7.27:17443	104.18.31.182:http	ESTABLISHED
TCP	192.168.7.27:17444	104.18.31.182:http	ESTABLISHED
TCP	192.168.7.27:17445	104.18.31.182:http	ESTABLISHED
TCP	192.168.7.27:17448	a23-15-155-27:http	ESTABLISHED
TCP	192.168.7.27:17449	a23-15-155-27:http	ESTABLISHED
TCP	192.168.7.27:17450	117.18.237.29:http	ESTABLISHED
TCP	192.168.7.27:17451	a23-15-155-27:http	ESTABLISHED
TCP	192.168.7.27:17452	a23-15-155-27:http	ESTABLISHED
TCP	192.168.7.27:17458	5.62.40.178:https	TIME_WAIT
TCP	192.168.7.27:17459	143.166.199.30:https	ESTABLISHED
TCP	192.168.7.27:25117	192.168.2.1:8090	ESTABLISHED
TCP	[::1]:1748	DESKTOP-FP51MKA:1750	ESTABLISHED
TCP	[::1]:1750	DESKTOP-FP51MKA:1748	ESTABLISHED

Arp:

- Display or manipulate the ARP information on a network device or computer.
- The Physical Address or MAC address as shown is the unique manufacturer identification number. This number should always be an unique address.

```
C:\Users\Vivek Kakoo>arp -a
```

```
Interface: 100.96.170.24 --- 0x8
```

Internet Address	Physical Address	Type
100.96.176.62	88-53-2e-5d-03-2c	dynamic
100.96.179.163	dc-fb-48-39-ab-43	dynamic
100.96.181.79	d4-6a-6a-d9-67-89	dynamic
100.96.191.253	00-a6-ca-f6-61-7f	dynamic
100.96.191.254	00-00-5e-00-01-a0	dynamic
100.96.191.255	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

Whois:

- The whois command available in Unix and Linux variants helps allow a user to identify a domain name.
- This command provides information about a domain name. Whois searches for an object in a WHOIS database.
- WHOIS is a query and response protocol that is widely used for querying databases that store the registered users of an Internet resource, such as a domain name or an IP address block.
- Example: whois google.com (It performs a whois query for the domain name google.com.)

The screenshot shows the Whois website interface. The browser address bar displays "whois.com/whois/cteguj.in". The website header includes the "Whois" logo and a search bar. A navigation menu lists various services: DOMAINS, WEBSITE, CLOUD, HOSTING, SERVERS, EMAIL, SECURITY, WHOIS, SUPPORT, LOGIN, and a shopping cart icon. The main content area displays the domain "cteguj.in" with a timestamp "Updated 17 hours ago".

Domain Information

Domain:	cteguj.in
Registrar:	GoDaddy.com, LLC
Registered On:	2015-10-28
Expires On:	2022-10-28
Updated On:	2021-10-25
Status:	OK
Name Servers:	ns78.domaincontrol.com ns77.domaincontrol.com

Registrant Contact

Organization:	Commissionerate of Technical Education
State:	Gujarat
Country:	IN
Email:	Please contact the Registrar listed above

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\$24.99 **\$0.88**

Hostname:

- The hostname command displays the host name of the windows computer currently logged into.
- Examples: hostname (Running the command would display the hostname for the computer.)

```
C:\Users\Vivek Kakoo>hostname  
DESKTOP-2FMPJPK
```

Netstat:

- Abbreviation of network statistics, the netstat command is a command found in almost all command line environments that allow you to view the statistics of the network.
- The netstat command is used to display the TCP/IP network protocol statistics and information.

```
Active Connections

Proto Local Address      Foreign Address    State
TCP    127.0.0.1:49696     DESKTOP-BB9SHP7:49697 ESTABLISHED
TCP    127.0.0.1:49697     DESKTOP-BB9SHP7:49696 ESTABLISHED
TCP    127.0.0.1:49698     DESKTOP-BB9SHP7:49699 ESTABLISHED
TCP    127.0.0.1:49699     DESKTOP-BB9SHP7:49698 ESTABLISHED
TCP    192.168.0.117:53606  whatsapp-cdn-shv-02-bom1:https ESTABLISHED
TCP    192.168.0.117:55613  bom12s19-in-f10:https ESTABLISHED
TCP    192.168.0.117:56100  117.18.232.200:https CLOSE_WAIT
TCP    192.168.0.117:56139  117.18.232.200:https CLOSE_WAIT
TCP    192.168.0.117:56163  bom07s26-in-f13:https CLOSE_WAIT
TCP    192.168.0.117:56164  bom05s12-in-f10:https CLOSE_WAIT
TCP    192.168.0.117:56241  40.100.140.242:https TIME_WAIT
TCP    192.168.0.117:56242  40.100.140.242:https TIME_WAIT
TCP    192.168.0.117:56243  40.91.80.89:https ESTABLISHED
TCP    192.168.0.117:61605  20.197.71.89:https ESTABLISHED
TCP    192.168.0.117:61681  a96-17-182-41:https CLOSE_WAIT
TCP    192.168.0.117:61682  server-13-227-166-30:https CLOSE_WAIT
TCP    192.168.0.117:61684  server-13-227-178-38:http CLOSE_WAIT
TCP    192.168.0.117:61686  a23-15-34-35:https CLOSE_WAIT
TCP    192.168.0.117:61687  a23-15-34-35:https CLOSE_WAIT
TCP    192.168.0.117:61688  a23-15-34-35:https CLOSE_WAIT
TCP    192.168.0.117:61689  a23-15-34-35:https CLOSE_WAIT
TCP    192.168.0.117:61690  a23-15-34-35:https CLOSE_WAIT
TCP    192.168.0.117:61691  a23-15-34-35:https CLOSE_WAIT
TCP    192.168.0.117:61704  20.197.71.89:https ESTABLISHED
TCP    192.168.0.117:61817  20.198.162.78:https ESTABLISHED
```

Nslookup:

- nslookup is a command line tool included with most operating systems that allows a user to look up a network name server, as well as return IP addresses and domain names for a network server.

```
C:\Users\hh>nslookup
Default Server: UnKnown
Address: 192.168.2.1
>
```