Types of Networking Commands

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1 PING Command

Ping is a basic Internet program that allows a user to verify that a particular IP address exists and can accept requests.
Ping is used diagnostically to ensure that a host computer the user is trying to reach is actually operating. Ping works by sending an Internet Control Message Protocol (ICMP) Echo Request to a specified interface on the network and waiting for a reply. Ping can be used for troubleshooting to test connectivity and determine response time.
Examples:

```
student@iiitv:~$ ping google.com
PING google.com (216.58.220.14) 56(84) bytes of data.
64 bytes from bom05s05-in-f14.1e100.net (216.58.220.14): icmp_seq=1 ttl=55 time=13.9 ms
```

```
student@iiitv:~$ ping google.co.in
PING google.co.in (172.217.163.99) 56(84) bytes of data.
64 bytes from maa05s03-in-f3.1e100.net (172.217.163.99): icmp_seq=1 ttl=54 time=110 ms
```

```
student@iiitv:~$ ping iitd.ac.in
PING iitd.ac.in (103.27.9.20) 56(84) bytes of data.
64 bytes from 103.27.9.20: icmp_seq=1 ttl=53 time=37.6 ms
```

```
student@iiitv:~$ ping iiitvadodara.ac.in
PING iiitvadodara.ac.in (208.91.198.210) 56(84) bytes of data.
64 bytes from plesk-web10.webhostbox.net (208.91.198.210): icmp_seq=1 ttl=109 time=1008 ms
```

2 IFCONFIG Command

ifconfig (interface configurator) command is use to initialize an interface, assign IP Address to interface and enable or disable interface on demand. With this command you can view IP Address and Hardware / MAC address assign to

interface and also MTU (Maximum transmission unit) size.
Example:

```
student@iiitv:~$ ifconfig
eth1      Link encap:Ethernet  HWaddr 6c:0b:84:45:6c:91
          UP BROADCAST MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)
          Interrupt:20 Memory:f7d00000-f7d20000

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:65536  Metric:1
          RX packets:1008 errors:0 dropped:0 overruns:0 frame:0
          TX packets:1008 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:144097 (144.0 KB)  TX bytes:144097 (144.0 KB)

wlan1     Link encap:Ethernet  HWaddr 04:8d:38:a8:29:b8
          inet addr:10.100.109.98  Bcast:10.100.255.255  Mask:255.255.0.0
          inet6 addr: fe80::68d:38ff:fea8:29b8/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:37898 errors:0 dropped:0 overruns:0 frame:0
          TX packets:12878 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:15446586 (15.4 MB)  TX bytes:1950942 (1.9 MB)
```

3 NETSTAT Command

Netstat (Network Statistic) command display connection info, routing table information etc.
Example:

```
student@iiitv:~$ netstat -r
Kernel IP routing table
Destination     Gateway         Genmask         Flags   MSS Window  irtt Iface
default         10.100.1.1      0.0.0.0         UG        0 0          0 wlan1
10.100.0.0      *               255.255.0.0     U         0 0          0 wlan1
```

4 TRACEPATH Command

```
student@iiitv:~$ tracepath google.com
 1?: [LOCALHOST]                                         pmtu 1500
 1:  10.100.1.1                                          211.681ms
 1:  10.100.1.1                                           46.369ms
 2:  10.100.1.1                                           17.273ms pmtu 1492
 2:  192.168.1.1                                          32.285ms
 3:  172.24.211.146                                       22.196ms
 4:  218.248.235.197                                      36.362ms
 5:  218.248.235.198                                      16.098ms
 6:  no reply
 7:  no reply
```

```
student@iiitv:~$ tracepath iitd.ac.in
 1?: [LOCALHOST]                                         pmtu 1500
 1:  10.100.1.1                                            8.270ms
 1:  10.100.1.1                                           12.988ms
 2:  10.100.1.1                                            9.429ms pmtu 1492
 2:  192.168.1.1                                           4.411ms
 3:  172.24.211.146                                       12.078ms
 4:  218.248.235.197                                      18.355ms
 5:  no reply
 6:  no reply
```

```
student@iiitv:~$ tracepath iiitvadodara.ac.in
 1?: [LOCALHOST]                                         pmtu 1500
 1:  10.100.1.1                                            4.416ms
 1:  10.100.1.1                                           62.753ms
 2:  10.100.1.1                                            3.463ms pmtu 1492
 2:  192.168.1.1                                           4.568ms
 3:  172.24.211.146                                       16.305ms
 4:  no reply
 5:  no reply
```

5 DIG Command

Dig (domain information groper) query DNS related information like A Record, CNAME, MX Record etc. This command mainly use to troubleshoot DNS related query.

```
student@iiitv:~$ dig www.google.com

; <<>> DiG 9.9.5-3-Ubuntu <<>> www.google.com
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 6009
;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 512
;; QUESTION SECTION:
;www.google.com.                        IN      A

;; ANSWER SECTION:
www.google.com.         102     IN      A       216.58.220.4

;; Query time: 20 msec
;; SERVER: 127.0.1.1#53(127.0.1.1)
;; WHEN: Mon Aug 27 11:54:05 IST 2018
;; MSG SIZE  rcvd: 59
```

```
student@iiitv:~$ dig www.iiitvadodara.ac.in

; <<>> DiG 9.9.5-3-Ubuntu <<>> www.iiitvadodara.ac.in
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 45284
;; flags: qr rd ra; QUERY: 1, ANSWER: 2, AUTHORITY: 2, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 4096
;; QUESTION SECTION:
;www.iiitvadodara.ac.in.                IN      A

;; ANSWER SECTION:
www.iiitvadodara.ac.in. 0       IN      CNAME   iiitvadodara.ac.in.
iiitvadodara.ac.in.     74789   IN      A       208.91.198.210

;; AUTHORITY SECTION:
iiitvadodara.ac.in.     74789   IN      NS      ns2.plesk-web10.webhostbox.net.
iiitvadodara.ac.in.     74789   IN      NS      ns1.plesk-web10.webhostbox.net.

;; Query time: 45 msec
;; SERVER: 127.0.1.1#53(127.0.1.1)
;; WHEN: Mon Aug 27 11:54:37 IST 2018
;; MSG SIZE  rcvd: 143
```