

# Assignment 1

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## Ping

Ping command is used to check if the source computer can reach a specified computer/website. Ping stands for Packet INternet Groper. Ping command sends an ICMP (Internet Control Message Protocol) request to check the network connectivity. It is an improved version of ifconfig command.

**Syntax:** ping <destination>

## Output-

```
hitesh@hitesh-IdeaPad-Gaming3-15ARH05D:~$ ping geeksforgeeks.org
PING geeksforgeeks.org(ec2-34-218-62-116.us-west-2.compute.amazonaws.com (64:ff9b::22da:3e74)) 56 data byte
S
^C
--- geeksforgeeks.org ping statistics ---
127 packets transmitted, 0 received, 100% packet loss, time 129076ms
```

## Host

Host command is used for DNS Lookup operations that is it is used to find the IP address associated with a domain and vice versa. Host command outputs both IPv4 and IPv6 addresses along with mx (mail exchanger) record. (used for redirection of email sent to a domain).

**Syntax:** host <domain-address>

## Output

```
hitesh@hitesh-IdeaPad-Gaming3-15ARH05D:~$ host google.com
google.com has address 142.250.182.206
google.com has IPv6 address 2404:6800:4009:826::200e
google.com mail is handled by 10 smtp.google.com.
```

## Iwconfig

Iwconfig is used to view information about connected networks such as SSID, frequency, bit rate, etc. It is like ifconfig but dedicated for wireless networks only.

**Syntax:** iwconfig [INTERFACE] [OPTIONS]

## Output:

```
hitesh@hitesh-IdeaPad-Gaming3-15ARH05D:~$ iwconfig
lo          no wireless extensions.

eno1        no wireless extensions.

wlp4s0      IEEE 802.11  ESSID:"OnePlus Nord CE 2"
Mode:Managed  Frequency:2.462 GHz  Access Point: 1A:2B:B6:79:79:21
Bit Rate=72.2 Mb/s   Tx-Power=20 dBm
Retry short limit:7   RTS thr:off   Fragment thr:off
Power Management:on
Link Quality=59/70   Signal level=-51 dBm
Rx invalid nwid:0    Rx invalid crypt:0 Rx invalid frag:0
Tx excessive retries:0 Invalid misc:563 Missed beacon:0

virbr0      no wireless extensions.

docker0     no wireless extensions.

br-b6f7802d966d no wireless extensions.
```

## Wget

Wget command is used to download a file from a url using CLI. It saves the content to a file instead of outputting it in console.

**Syntax:** wget [fileLink]

## Output:

```
hitesh@hitesh-IdeaPad-Gaming3-15ARH05D:~$ wget google.com/doodles/new-years-day-2024
--2024-01-09 15:32:28-- http://google.com/doodles/new-years-day-2024
Resolving google.com (google.com)... 2404:6800:4009:81e::200e, 142.250.183.206
Connecting to google.com (google.com)|2404:6800:4009:81e::200e|:80... connected.
HTTP request sent, awaiting response... 301 Moved Permanently
Location: https://www.google.com/doodles/new-years-day-2024 [following]
--2024-01-09 15:32:29-- https://www.google.com/doodles/new-years-day-2024
Resolving www.google.com (www.google.com)... 2404:6800:4009:81f::2004, 142.250.183.100
Connecting to www.google.com (www.google.com)|2404:6800:4009:81f::2004|:443... connected.
HTTP request sent, awaiting response... 302 Found
Location: https://doodles.google/doodle/new-years-day-2024/ [following]
--2024-01-09 15:32:30-- https://doodles.google/doodle/new-years-day-2024/
Resolving doodles.google (doodles.google)... 2404:6800:4009:82f::2011, 142.250.192.17
Connecting to doodles.google (doodles.google)|2404:6800:4009:82f::2011|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 96812 (95k) [text/html]
Saving to: 'new-years-day-2024'

new-years-day-2024      100%[=====] 94.54K  64.5KB/s   in 1.5s
2024-01-09 15:32:32 (64.5 KB/s) - 'new-years-day-2024' saved [96812/96812]
```

## Ip monitor

This command is used state of network devices. It displays the IPv6 address along with 3 possible outputs [PROBE, REACHABLE, STALE]. PROBE – indicates that the network device is being actively tested (test packets are being sent) and response is awaited. REACHABLE – indicates that the network device has been tested (test packets have been sent and response has been received) and it is responsive. STALE – indicates that packets from the device are outdated and status is unavailable based on current data.

**Syntax:** ip [options]

**Output:**

```
hitesh@hitesh-IdeaPad-Gaming3-15ARH05D:~$ ip monitor
2409:40c2:1037:e09d::99 dev wlp4s0 lladdr b6:1e:06:37:08:1a router PROBE
2409:40c2:1037:e09d::99 dev wlp4s0 lladdr b6:1e:06:37:08:1a router REACHABLE
192.168.169.159 dev wlp4s0 lladdr b6:1e:06:37:08:1a PROBE
192.168.169.159 dev wlp4s0 lladdr b6:1e:06:37:08:1a REACHABLE
2409:40c2:1037:e09d::99 dev wlp4s0 lladdr b6:1e:06:37:08:1a router STALE
192.168.169.159 dev wlp4s0 lladdr b6:1e:06:37:08:1a STALE
2409:40c2:1037:e09d::99 dev wlp4s0 lladdr b6:1e:06:37:08:1a router PROBE
2409:40c2:1037:e09d::99 dev wlp4s0 lladdr b6:1e:06:37:08:1a router REACHABLE
2409:40c2:1037:e09d::99 dev wlp4s0 lladdr b6:1e:06:37:08:1a router STALE
2409:40c2:1037:e09d::99 dev wlp4s0 lladdr b6:1e:06:37:08:1a router PROBE
2409:40c2:1037:e09d::99 dev wlp4s0 lladdr b6:1e:06:37:08:1a router REACHABLE
2409:40c2:1037:e09d::99 dev wlp4s0 lladdr b6:1e:06:37:08:1a router STALE
```

## Speedtest-cli

This command is used to test the network speed. It outputs the server ip address, upload speed, download speed and latency. Additionally, ip address of sever, server's location, distance and ISP is also retrieved.

**Syntax:** - speedtest-cli

**Output:**

```
hitesh@hitesh-IdeaPad-Gaming3-15ARH05D:~$ speedtest-cli
Retrieving speedtest.net configuration...
Testing from Jio (152.58.17.35)...
Retrieving speedtest.net server list...
Selecting best server based on ping...
Hosted by Jio (Mumbai) [453.22 km]: 204.646 ms
Testing download speed.....
Download: 27.36 Mbit/s
Testing upload speed.....
Upload: 1.52 Mbit/s
```

## Hostname

It retrieves the name of assigned to host on a computer network and can also set the hostname if option -b is specified. It can also write hostname to a file.

**Syntax:** hostname - [option] [file].

**Output:**

```
hitesh@hitesh-IdeaPad-Gaming3-15ARH05D:~$ hostname
hitesh-IdeaPad-Gaming3-15ARH05D
```

## Ifplugstatus

This command is used to check if a network cable is plugged in and is being detected by the system or not. It outputs link beat detected if the cable is detected or simply unplugged if it is not detected.

**Syntax:** ifplugstatus

**Output:**

```
hitesh@hitesh-IdeaPad-Gaming3-15ARH05D:~$ ifplugstatus
lo: link beat detected
eno1: unplugged
wlp4s0: link beat detected
virbr0: unplugged
docker0: unplugged
br-b6f7802d966d: unplugged
```

## Tracepath

This command is used to detect network delays (latencies) . It traces the route to the destinations and identifies each hop. It also recognizes the point where network is weak.

**Syntax:** tracepath <destination>

**Output:**

```
hitesh@hitesh-IdeaPad-Gaming3-15ARH05D:~$ tracepath mindmajix.com
 17: [LOCALHOST] 0.019ms pmtu 1400
 1: 2409:40c2:1037:e09d::99 2.999ms
 1: 2409:40c2:1037:e09d::99 2.726ms
 2: 2405:200:5205:20:3924:0:3:63 188.546ms
 3: 2405:200:5205:20:3925::ff08 218.330ms asymm 4
 4: 2405:200:837:3632:61::9 196.070ms asymm 5
 5: 64:ff9b::c0a8:e342 119.076ms asymm 6
 6: 64:ff9b::c0a8:5ca6 203.433ms asymm 7
 7: no reply
 8: no reply
 9: no reply
10: no reply
11: no reply
12: no reply
13: no reply
14: no reply
15: no reply
16: no reply
17: no reply
18: no reply
19: no reply
20: no reply
21: no reply
22: no reply
23: no reply
24: no reply
25: no reply
26: no reply
27: no reply
28: no reply
29: no reply
30: no reply
    Too many hops: pmtu 1400
    Resume: pmtu 1400
```

## Curl

The curl command is used to transfer information from a server. To write it to a file use the `-O` option.

**Syntax:** curl [options] [file\_name] [url]

### Output:

```
hitesh@hitesh-IdeaPad-Gaming3-15ARH05D:~$ curl -o test.html https://www.geeksforgeeks.org
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left     Speed
100 284k    0 284k    0     0  147k      0  --:--:--  0:00:01 --:--:-- 147k
```