

## 8. nslookup

**Aim:** Command does reverse DNS-lookup by providing the IP address

```
< You enjoy the company of other people. >
-----
 \ ^ ^
 \ (oo)\-----
 (__) \|/\ \
    ||----w |
    ||    ||
emperor-kautilya@pop-os:~$ nslookup 8.8.8.8
8.8.8.8.in-addr.arpa      name = dns.google.

Authoritative answers can be found from:

emperor-kautilya@pop-os:~$ █
```

**Conclusion:** Display the name servers which are associated with the given IP 8.8.8.8

## 9. nslookup -debug

**Aim:** Command Debug mode provides important and detailed information both for the question and for the received answer

```
||  ||
emperor-kautilya@pop-os:~$ nslookup -debug iiitt.ac.in
Server:      127.0.0.53
Address:     127.0.0.53#53

-----
QUESTIONS:
  iiitt.ac.in, type = A, class = IN
ANSWERS:
->  iiitt.ac.in
    internet address = 122.252.228.28
    ttl = 101
AUTHORITY RECORDS:
ADDITIONAL RECORDS:
-----
Non-authoritative answer:
Name:  iiitt.ac.in
Address: 122.252.228.28
-----
QUESTIONS:
  iiitt.ac.in, type = AAAA, class = IN
ANSWERS:
AUTHORITY RECORDS:
->  iiitt.ac.in
    origin = garrett.ns.cloudflare.com
    mail addr = dns.cloudflare.com
    serial = 2299880558
    refresh = 10000
    retry = 2400
    expire = 604800
    minimum = 3600
    ttl = 1800
ADDITIONAL RECORDS:
-----
emperor-kautilya@pop-os:~$ 
```

**Conclusion:** Display the all detailed information for a given domain iiitt.ac.in

## D. Traceroute

### 1. traceroute -w <timeout>

**Aim:** Command is used to determine the route to a destination by sending ICMP packets to destination by setting wait timeout for each reply.

```
/ You will be awarded a medal for \
\ disregarding safety in saving someone. /
-----
 \ ^__^
  \  (oo)\_____
    (__)\       )\/\
     ||----w |
      ||     ||

emperor-kautilya@pop-os:~$ traceroute -w 2 google.com
traceroute to google.com (142.250.182.46), 30 hops max, 60 byte packets
1  _gateway (192.168.1.1)  1.361 ms  1.488 ms  1.604 ms
2  * _gateway (10.0.0.2)  0.985 ms *
3  * * *
4  172.31.200.218 (172.31.200.218)  5.595 ms * *
5  172.31.200.122 (172.31.200.122)  6.696 ms * *
6  ws135-195-133-112.rcil.gov.in (112.133.192.135)  8.334 ms * *
7  * * *
8  142.250.228.82 (142.250.228.82)  9.598 ms 142.251.55.240 (142.251.55.240)  7.462 ms 142.250.236.156 (14
2.250.236.156)  6.611 ms
9  142.251.55.237 (142.251.55.237)  6.858 ms 142.251.55.239 (142.251.55.239)  6.902 ms 108.170.253.119 (10
8.170.253.119)  6.692 ms
10 74.125.242.145 (74.125.242.145)  6.560 ms maa05s19-in-f14.1e100.net (142.250.182.46)  6.443 ms  7.427 m
s
emperor-kautilya@pop-os:~$ 
```

**Conclusion:** It will trace the network path from your computer to the domain "google.com" and set a timeout of 2 seconds for each hop in the path. If a response is not received from a hop within 2 seconds, the next hop in the path will be tried.

## 2. traceroute -m <max> <ttl>

**Aim:** Command is used to determine the route to a destination by sending ICMP packets to destination by setting the maximum number of hops for the packets to reach the destination.

```
< Your ignorance cramps my conversation. >
-----\^__^
      \  (oo)\_____
        (__)\       )\/\
          ||----w |
          ||     ||

emperor-kautilya@pop-os:~$ traceroute -m 5 google.com
traceroute to google.com (142.250.195.78), 5 hops max, 60 byte packets
1 _gateway (192.168.1.1) 1.370 ms 1.337 ms 1.518 ms
2 _gateway (10.0.0.2) 1.087 ms * *
3 * * ws25-228-252-122.rcil.gov.in (122.252.228.25) 2.308 ms
4 * 172.31.200.218 (172.31.200.218) 6.616 ms *
5 * * *

emperor-kautilya@pop-os:~$ traceroute -m 15 google.com
traceroute to google.com (142.250.195.78), 15 hops max, 60 byte packets
1 _gateway (192.168.1.1) 1.670 ms 1.806 ms 1.796 ms
2 * _gateway (10.0.0.2) 1.224 ms *
3 * * *
4 * 172.31.200.218 (172.31.200.218) 5.596 ms *
5 * * 172.31.200.122 (172.31.200.122) 6.696 ms
6 ws135-195-133-112.rcil.gov.in (112.133.192.135) 8.454 ms 8.170 ms 7.460 ms
7 * * *
8 142.251.55.64 (142.251.55.64) 6.015 ms 74.125.242.129 (74.125.242.129) 8.524 ms *
9 * * 142.251.55.73 (142.251.55.73) 7.352 ms
10 * maa03s38-in-f14.1e100.net (142.250.195.78) 6.453 ms *

emperor-kautilya@pop-os:~$ traceroute -m 1 10.0.9.249
traceroute to 10.0.9.249 (10.0.9.249), 1 hops max, 60 byte packets
1 pop-os (10.0.9.249) 0.095 ms 0.054 ms 0.040 ms

emperor-kautilya@pop-os:~$
```

**Conclusion:** It will trace the network path from your computer to the domain "google.com" and set a maximum number of hops to 5 in the path. Since server is not reached not reached it ended abruptly so we went for 15 hop max which was enough as it reached in 10 hops. I also tries tracing my phone IP connected to same access point with one max hop and it reached.

### 3. raceroute -q <n>

**Aim:** Command is used to determine the route to a destination by sending ICMP packets to destination by setting the number of probes per each hop.

```
/ Q: What do little WASPs want to be when \
| they grow up? A: The very best person   |
\ they can possibly be. /  

      \ ^__^
       \  (oo)\_____
          (__)\       )\/\
            ||----w |
            ||     ||  

emperor-kautilya@pop-os:~$ traceroute -q 5 iiitt.ac.in
traceroute to iiitt.ac.in (122.252.228.28), 30 hops max, 60 byte packets
1 _gateway (192.168.1.1)  1.473 ms  1.445 ms  1.433 ms  1.641 ms  1.628 ms
2 _gateway (10.0.0.2)  1.813 ms * * * *
3 * * * * *
4 * * * * *
5 * * * * *
6 * * * * *
7 * * * * *
8 * * * * *
9 * * * * *
10 * * * * *
11 * * * * *
12 * * * * *
13 * * * * *
14 * * * * *
15 * * * * *
16 * * * * *
17 * * * * *
18 * * * * *
19 * * * * *
20 * * * * *
21 * * * * *
22 * * * * *
23 * * * * *
24 * * * * *
25 * * * * *
26 * * * * *
27 * * * * *
28 * * * * *
29 * * * * *
30 * * * * *
emperor-kautilya@pop-os:~$
```

**Conclusion:** Inconsistent result.

## 4. traceroute -V

**Aim:** Command is used to display the version and exit.

```
emperor-kautilya@pop-os:~$ source ~/.bashrc
< Your step will soil many countries. >
-----
\ ^ ^
 \ (oo)\_____
  (_)\ )\/\
   ||----w |
   ||    ||
emperor-kautilya@pop-os:~$ traceroute -V
Modern traceroute for Linux, version 2.1.0
Copyright (c) 2016 Dmitry Butskoy, License: GPL v2 or any later
emperor-kautilya@pop-os:~$ 
```

**Conclusion:** Display the version and exit.

## 5. traceroute -F

**Aim:** Command is used to determine the route to a destination by sending ICMP packets to destination by not fragmenting packet.

```
/ You learn to write as if to someone \
| else because NEXT YEAR YOU WILL BE |
\ "SOMEONE ELSE." /
-----
\ ^ ^
 \ (oo)\_____
  (_)\ )\/\
   ||----w |
   ||    ||
emperor-kautilya@pop-os:~$ traceroute -F google.com
traceroute to google.com (142.250.182.46), 30 hops max, 60 byte packets
1 _gateway (192.168.1.1)  1.352 ms  1.322 ms  1.488 ms
2 * * _gateway (10.0.0.2)  0.907 ms
3 * ws25-228-252-122.rcil.gov.in (122.252.228.25)  2.100 ms *
4 * 172.31.200.218 (172.31.200.218)  6.169 ms *
5 * *
6 ws135-195-133-112.rcil.gov.in (112.133.192.135)  7.734 ms  8.114 ms  7.749 ms
7 * *
8 * 216.239.54.196 (216.239.54.196)  9.669 ms *
9 * * 108.170.253.122 (108.170.253.122)  6.856 ms
10 74.125.242.129 (74.125.242.129)  8.055 ms maa05s19-in-f14.1e100.net (142.250.182.46)  6.558 ms *
emperor-kautilya@pop-os:~$ 
```

**Conclusion:** It will trace the network path from your computer to the domain "google.com" without fragmenting packet.

## 6. traceroute --help

Aim: Command shows the manual about traceroute commands.

```
emperor-kautilyaapp-os:~$ traceroute --help
Usage:
traceroute [ -AddIThereAOV ] [ -f first_ttl ] [ -g gate,... ] [ -i device ] [ -m max_ttl ] [ -N squeries ] [ -p port ] [ -t tos ] [ -l flow_label ] [ -w MAX_HERE,NEAR ] [ -q nqueries ] [ -s src_addr ] [ -z sendwait ] [ --fmark=num ] host [ packets ] Options:
-a Use IPv4
-b Use IPv6
-d --debug Enable socket level debugging
-e --no-fragment Do not fragment packets
-f first_ttl [-f first-first_ttl] Start from the first_ttl hop (instead from 1)
-g gate,... --gateway-gate,... Route packets through the specified gateway
(numeric or symbolic IPv4 or domain name for IPv6)
-i ... --tcp Use TCP SYN for tracerouting
-t ... --tcp Use TCP SYN for tracerouting (default port is 80)
-i device --interface=device Specify a network interface to operate with
-m max_ttl --max-hops=max Set the max number of hops (max TTL to be reached). Default is 30
-N squeries --sim-queries=squeries Set the number of probes to be tried simultaneously (default is 10)
-o Do not resolve the addresses of their domain names
-p port --port=port Set the destination port to use. It is either initial up port value for "default" method (incremented by 1 every probe, default is 33434), or initial seq for "icmp" (incremented as well, default is 1), or initial seq for "tcp" (incremented as well, default is 1), or initial seq for "udp" (incremented as well, default is 60 for "tcp", 53 for "udp", etc.)
-r tos --tos=tos Set the type of service (TOS) or traffic class for outgoing packets
-l flow_label --flowlabel=flowlabel Use specified flow_label for IPv6 packets
-w MAX_HERE,NEAR --wait=MAX_HERE,NEAR Wait for a probe no more than HERE (default 3) times longer than a response from the same hop, or no more than NEAR (default 10) times than some next hop. Max (default 5.0) seconds (float point values allowed too)
-q nqueries --queries=nqueries Set the number of probes per each hop. Default is 1
-s src_addr --source=src_addr Use source src_addr for outgoing packets
-z sendwait --sendwait=sendwait Set initial time interval between probes (default 0). If the value is more than 10, then it specifies a number in milliseconds, else it's a number of seconds (e.g. -z 10000 means 10 seconds)
-A --as-path=lookups Show ICMP extensions (if present), including MPLS extensions, and print AS numbers of routers and print results directly after the corresponding addresses
-M name --module=name Use specified module (either builtin or external) for traceroute operations. Most methods have their shortcuts ('-l' means '-W icmp' etc.)
-O OPTS,... --options=OPTS,... Use module-specific option OPTS for the traceroute operation. OPTS can be multiple separated by comma. If OPTS is 'Help', print info about available options
--sport=num Use source port num for outgoing packets. Implies -M 1
-U --fmark=num Set fmark mask for outgoing packets
-U --hop Use UDP to particular port for tracerouting (instead of increasing the port per each probe), default is 33434
-U --UL Use UDPITE for tracerouting (default dest port is 33)
-D --dcpr Use ICMP Request for tracerouting (default port is 33434)
-p prot --protocol=prot Use specific socket of protocol prot for tracerouting
-nmt Discover MTU along the path being traced. Implies -r -n 1
--back Guess the number of hops in the backward path and print if it differs
-V --version Print version information
--help Read this help and exit
Arguments:
host The host to traceroute to
packets The full packet length (default is the length of an IP header plus 8). Can be ignored or increased to a minimal allowed value
emperor-kautilyaapp-os:~$ traceroute -m 1
```

Conclusion: Displayed the manual about traceroute commands.

## 7. traceroute -g <gateway>

Aim: Command routes the path through gate.

```
/ Excellent day for putting Slinkies on \
\ an escalator. \
-----^
 \ ^ \
  (oo)\_____
   (_)\ )/\ \
    ||----W |
    ||      ||
emperor-kautilyaapp-os:~$ traceroute -g 10.0.9.249 google.com
traceroute to google.com (142.250.195.78), 30 hops max, 72 byte packets
1 * * *
2 * * *
3 * * *
4 * * *
5 * * *
6 * * *
7 * * *
8 * * *
9 * * *
10 * * *
```

Conclusion: It will trace the network path from your computer to the domain "google.com" through gateway specified.

## E. hostname

### 1. hostname -a

**Aim:** Command to get the alias name of the host system.

```
/ You display the wonderful traits of \
\ charm and courtesy.               /
-----  
 \  ^__^
  \  (oo)\----_
    (__)\       )\/\
     ||----w |
     ||     ||  
emperor-kautilya@pop-os:~$ hostname -a
pop-os
emperor-kautilya@pop-os:~$ █
```

**Conclusion:** Displays the alias name of the host system.

### 2. hostname -b

**Aim:** Command to set always a hostname, otherwise default will be shown.

```
/ Don't relax! It's only your tension \
\ that's holding you together.          /
-----  
 \  ^__^
  \  (oo)\----_
    (__)\       )\/\
     ||----w |
     ||     ||  
emperor-kautilya@pop-os:~$ hostname -a
pop-os
emperor-kautilya@pop-os:~$ hostname -b
pop-os
emperor-kautilya@pop-os:~$ █
```

**Conclusion:** Displays the alias name of the host system.

### 3. hostname -d

**Aim:** Command to get domain IP local domains are set.

```
/ Too much is just enough. \
| |
\-- Mark Twain, on whiskey /
-----
\  ^ ^
 \ (oo)\_____
  (_)\ \     )\/\
    ||----w |
    ||     ||
emperor-kautilya@pop-os:~$ hostname -d
localdomain
emperor-kautilya@pop-os:~$ 
```

**Conclusion:** Displays the domain IP local domains.

### 4. hostname -f

**Aim:** Command to get the FDQN. Contains short hostname & DNS domain name.

```
/ A is for Apple. \
| |
\-- Hester Pryne /
-----
\  ^ ^
 \ (oo)\_____
  (_)\ \     )\/\
    ||----w |
    ||     ||
emperor-kautilya@pop-os:~$ hostname -f
pop-os.localdomain
emperor-kautilya@pop-os:~$ 
```

**Conclusion:** Displays the FDQN.

## 5. hostname -I

**Aim:** Command to get all IP addresses.

```
/ Q: What's the difference between a duck \
| and an elephant? A: You can't get down |
\ off an elephant.                                /  
-----  
 \  ^__^  
  \  (oo)\_____  
   (__)\       )\/\  
    ||----w |  
    ||     ||  
emperor-kautilya@pop-os:~$ hostname -I  
192.168.1.43 10.0.9.249  
emperor-kautilya@pop-os:~$ 
```

**Conclusion:** Displays the Private IP and Public IP.

## 6. hostname -i

**Aim:** Command to get IP addresses.

```
/ You recoil from the crude; you tend \
\ naturally toward the exquisite.      /  
-----  
 \  ^__^  
  \  (oo)\_____  
   (__)\       )\/\  
    ||----w |  
    ||     ||  
emperor-kautilya@pop-os:~$ hostname -i  
127.0.1.1  
emperor-kautilya@pop-os:~$ 
```

**Conclusion:** Displays the loopback IP.

## 7. hostname -s

**Aim:** Command to get the hostname in short.

```
/ Try to relax and enjoy the crisis. \
|  
\ -- Ashleigh Brilliant          /  
-----  
 \  ^__^  
  \  (oo)\_____  
   (__)\       )\/\  
    ||----w |  
    ||     ||  
emperor-kautilya@pop-os:~$ hostname -s  
pop-os  
emperor-kautilya@pop-os:~$ 
```

**Conclusion:** Displays the IP.

## F. Route

### 1. Route -n

**Aim:** Command to displays the routing table in full numeric form.

```
/ Keep emotionally active. Cater to your \
\ favorite neurosis. \
----- \
  \  ^__^
   \  (oo)\_____
    (__)\       )\/\
     ||----w |
      ||     ||

emperor-kautilya@pop-os:~$ route -n
Kernel IP routing table
Destination     Gateway         Genmask        Flags Metric Ref  Use Iface
0.0.0.0         192.168.1.1   0.0.0.0       UG    100    0    0 enp4s0
0.0.0.0         10.0.0.2      0.0.0.0       UG    600    0    0 wlp0s20f3
10.0.0.0        0.0.0.0      255.255.240.0  U     600    0    0 wlp0s20f3
169.254.0.0     0.0.0.0      255.255.0.0   U     1000   0    0 wlp0s20f3
192.168.1.0     0.0.0.0      255.255.255.0  U     100    0    0 enp4s0
```

**Conclusion:** Displays the routing table in full numeric form.

### 2. ip route

**Aim:** Command to displays the details of the kernel/IP routing table.

```
/ FORTUNE PROVIDES QUESTIONS FOR THE      \
| GREAT ANSWERS: #5 A: The Halls of      |
| Montezuma and the Shores of Tripoli. Q: |
| Name two families whose kids won't join |
\ the Marines.                          /

----- \
  \  ^__^
   \  (oo)\_____
    (__)\       )\/\
     ||----w |
      ||     ||

emperor-kautilya@pop-os:~$ ip route
default via 192.168.1.1 dev enp4s0 proto dhcp metric 100
default via 10.0.0.2 dev wlp0s20f3 proto dhcp metric 600
10.0.0.0/20 dev wlp0s20f3 proto kernel scope link src 10.0.9.249 metric 600
169.254.0.0/16 dev wlp0s20f3 scope link metric 1000
192.168.1.0/24 dev enp4s0 proto kernel scope link src 192.168.1.43 metric 100
```

**Conclusion:** Displays details of the kernel/IP routing table.

### 3. ip -6 route

**Aim:** Command to get the OUTPUT related to IPv6.

```
/ FORTUNE PROVIDES QUESTIONS FOR THE \
| GREAT ANSWERS: #21 A: Dr. Livingston I. |
| Presume. Q: What's Dr. Presume's full |
\ name? |

\ ^ ^
\ (oo)\_-
(--) \ )\/
    ||----w |
    ||    ||
emperor-kautilya@pop-os:~$ ip -6 route
::1 dev lo proto kernel metric 256 pref medium
fe80::/64 dev enp4s0 proto kernel metric 1024 pref medium
fe80::/64 dev wlp0s20f3 proto kernel metric 1024 pref medium
default proto ra metric 20100 pref medium
    nexthop via fe80::ee94:d500:35:51c2 dev enp4s0 weight 1
    nexthop via fe80::ee94:d500:77:7568 dev enp4s0 weight 1
    nexthop via fe80::ee94:d500:2e:9f41 dev enp4s0 weight 1
    nexthop via fe80::ee94:d500:77:6129 dev enp4s0 weight 1
    nexthop via fe80::ee94:d500:35:5b23 dev enp4s0 weight 1
    nexthop via fe80::ee94:d500:77:8c38 dev enp4s0 weight 1
    nexthop via fe80::ee94:d500:2e:a40a dev enp4s0 weight 1
    nexthop via fe80::ee94:d500:35:5255 dev enp4s0 weight 1
    nexthop via fe80::ee94:d500:77:77b0 dev enp4s0 weight 1
    nexthop via fe80::ee94:d500:2e:be74 dev enp4s0 weight 1
    nexthop via fe80::ee94:d500:2e:a4ce dev enp4s0 weight 1
    nexthop via fe80::ee94:d500:77:81ab dev enp4s0 weight 1
    nexthop via fe80::ee94:d500:2e:b5a6 dev enp4s0 weight 1
    nexthop via fe80::ee94:d500:77:5454 dev enp4s0 weight 1
    nexthop via fe80::ee94:d500:2e:9e4c dev enp4s0 weight 1
    nexthop via fe80::ee94:d500:77:81f4 dev enp4s0 weight 1
    nexthop via fe80::ee94:d500:2e:a15c dev enp4s0 weight 1
    nexthop via fe80::ee94:d500:35:4582 dev enp4s0 weight 1
    nexthop via fe80::ee94:d500:77:5ae3 dev enp4s0 weight 1
    nexthop via fe80::ee94:d500:77:7a8a dev enp4s0 weight 1
    nexthop via fe80::ee94:d500:2e:abe3 dev enp4s0 weight 1
    nexthop via fe80::ee94:d500:2e:a2e4 dev enp4s0 weight 1
    nexthop via fe80::ee94:d500:35:5224 dev enp4s0 weight 1
    nexthop via fe80::ee94:d500:35:3c52 dev enp4s0 weight 1
```

**Conclusion:** Displays details to get the OUTPUT related to IPv6

## 4. ip -4 route

**Aim:** Command to get the OUTPUT related to IPv4.

```
/ Q: What do they call the alphabet in \
\ Arkansas? A: The impossible dream. /
-----
\ ^ ^
\ (oo)\_-----
\_) \----- )\/
| |----w |
| | |
emperor-kautilya@pop-os:~$ ip -4 route
default via 192.168.1.1 dev enp4s0 proto dhcp metric 100
default via 10.0.0.2 dev wlp0s20f3 proto dhcp metric 600
10.0.0.0/20 dev wlp0s20f3 proto kernel scope link src 10.0.9.249 metric 600
169.254.0.0/16 dev wlp0s20f3 scope link metric 1000
192.168.1.0/24 dev enp4s0 proto kernel scope link src 192.168.1.43 metric 100
emperor-kautilya@pop-os:~$ 
```

**Conclusion:** Displays details of the kernel/IP routing table.

## 5. route -e

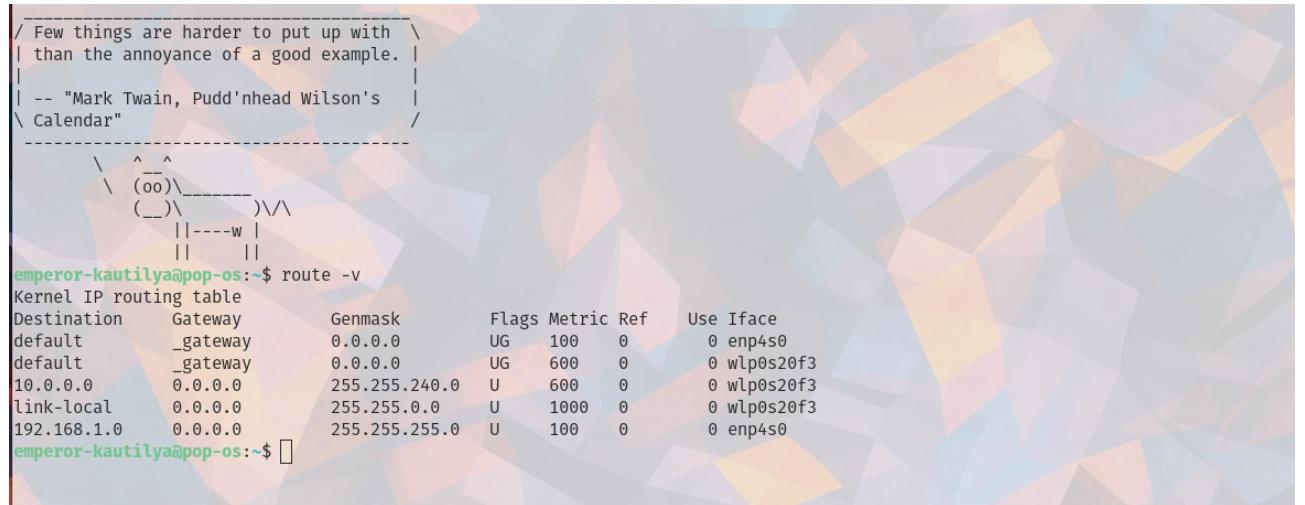
**Aim:** Command to display more information about routing table.

```
/ You never hesitate to tackle the most \
\ difficult problems. /
-----
\ ^ ^
\ (oo)\_-----
\_) \----- )\/
| |----w |
| | |
emperor-kautilya@pop-os:~$ route -e
Kernel IP routing table
Destination     Gateway         Genmask        Flags   MSS Window irtt Iface
default         _gateway       0.0.0.0       UG      0 0          0 enp4s0
default         _gateway       0.0.0.0       UG      0 0          0 wlp0s20f3
10.0.0.0        0.0.0.0       255.255.240.0 U        0 0          0 wlp0s20f3
link-local      0.0.0.0       255.255.0.0   U        0 0          0 wlp0s20f3
192.168.1.0    0.0.0.0       255.255.255.0 U        0 0          0 enp4s0
emperor-kautilya@pop-os:~$ 
```

**Conclusion:** Displays detailed information about routing table.

## 6. route -v

**Aim:** Command to enables verbose OUTPUT.



```
/ Few things are harder to put up with \
| than the annoyance of a good example. |
|
| -- "Mark Twain, Pudd'nhead Wilson's |
\ Calendar"
-----
 \ ^ ^
  \ (oo)\_____
   (_)\ \ )\ \ \
    ||----w |
    ||    ||
emperor-kautilya@pop-os:~$ route -v
Kernel IP routing table
Destination     Gateway         Genmask        Flags Metric Ref  Use Iface
default         _gateway       0.0.0.0        UG    100    0    0 enp4s0
default         _gateway       0.0.0.0        UG    600    0    0 wlp0s20f3
10.0.0.0        0.0.0.0        255.255.240.0  U     600    0    0 wlp0s20f3
link-local      0.0.0.0        255.255.0.0    U     1000   0    0 wlp0s20f3
192.168.1.0    0.0.0.0        255.255.255.0  U     100    0    0 enp4s0
emperor-kautilya@pop-os:~$ 
```

**Conclusion:** Displays detailed information about routing table.

## G. Host

### 1. host -t ns

**Aim:** Command is used to query the NS (name server) records of a domain.

```
/ Repartee is something we think of \
| twenty-four hours too late. |
\-- Mark Twain

\   ^ ^
 \ (oo)\_____
  (_)\ )\/\
   ||----w |
   ||     ||
emperor-kautilya@pop-os:~$ host -t ns geeksforgeeks.org
geeksforgeeks.org name server ns-869.awsdns-44.net.
geeksforgeeks.org name server ns-245.awsdns-30.com.
geeksforgeeks.org name server ns-1520.awsdns-62.org.
geeksforgeeks.org name server ns-1569.awsdns-04.co.uk.
emperor-kautilya@pop-os:~$ 
```

**Conclusion:** Command is used to query the NS (name server) records of a domain. The -t ns option specifies that you want to query the name server records.

### 2. host -R 3

**Aim:** Command is used to query the NS (name server) records of a domain by specifying the no. of retries

```
/ It's lucky you're going so slowly, \
| because you're going in the wrong |
\ direction.

\   ^ ^
 \ (oo)\_____
  (_)\ )\/\
   ||----w |
   ||     ||
emperor-kautilya@pop-os:~$ host -R 3 geeksforgeeks.org
geeksforgeeks.org has address 34.218.62.116
geeksforgeeks.org mail is handled by 1 aspmx.l.google.com.
geeksforgeeks.org mail is handled by 10 alt3.aspmx.l.google.com.
geeksforgeeks.org mail is handled by 10 alt4.aspmx.l.google.com.
geeksforgeeks.org mail is handled by 5 alt1.aspmx.l.google.com.
geeksforgeeks.org mail is handled by 5 alt2.aspmx.l.google.com.
emperor-kautilya@pop-os:~$ 
```

**Conclusion:** Command is used to query the DNS (Domain Name System) for information about a domain. The -R option is used to specify the number of retries that the host command should make if it does not receive a response from the first query. This can be useful if you are experiencing network issues or if the server you are querying is temporarily unavailable.

### 3. host -C

**Aim:** Command to displays the SOA records on authoritative Nameserver.

```
/ It is by the fortune of God that, in \
| this country, we have three benefits: |
| freedom of speech, freedom of thought, |
| and the wisdom never to use either. |
|
\-- Mark Twain
-----
 \ ^ ^
  (oo)\_____
   (__)\       )\/\
    ||----w |
    ||     ||

emperor-kautilya@pop-os:~$ host -C geeksforgeeks.org
Nameserver 205.251.198.33:
  geeksforgeeks.org has SOA record ns-869.awsdns-44.net. awsdns-hostmaster.amazon.com. 1 7200 900 1209600 86400
Nameserver 205.251.192.245:
  geeksforgeeks.org has SOA record ns-869.awsdns-44.net. awsdns-hostmaster.amazon.com. 1 7200 900 1209600 86400
Nameserver 205.251.197.240:
  geeksforgeeks.org has SOA record ns-869.awsdns-44.net. awsdns-hostmaster.amazon.com. 1 7200 900 1209600 86400
Nameserver 205.251.195.101:
  geeksforgeeks.org has SOA record ns-869.awsdns-44.net. awsdns-hostmaster.amazon.com. 1 7200 900 1209600 86400
netmgr/netmgr.c:1703: REQUIRE(((handle) != ((void *)0) && ((const isc_magic_t *)(handle))>magic == (((('N') << 24 | ('M') << 16 | ('H') << 8 | ('D')))) && __extension__ ({ __auto_type __atomic_load_ptr = (&(handle)->references); __typeof__ ((void)0, * __atomic_load_ptr) __atomic_load_tmp; __atomic_load (__atomic_load_ptr, &__atomic_load_tmp, (5)); __atomic_load_tmp; }) > 0)) failed, backtrace
/lib/x86_64-linux-gnu/libisc-9.18.1-1ubuntu1.3-Ubuntu.so(+0x32073)[0x7f315fc32073]
/lib/x86_64-linux-gnu/libisc-9.18.1-1ubuntu1.3-Ubuntu.so(isc_assertion_failed+0x10)[0x7f315fc31560]
/lib/x86_64-linux-gnu/libisc-9.18.1-1ubuntu1.3-Ubuntu.so(isc_nmhandle_attach+0x67)[0x7f315fc1b697]
host(+0xe9c2)[0x55eb482d89c2]
host(+0xee25)[0x55eb482d8e25]
host(+0xf25e)[0x55eb482d925e]
/lib/x86_64-linux-gnu/libisc-9.18.1-1ubuntu1.3-Ubuntu.so(isc_nm_async_sendcb+0x99)[0x7f315fc20eb9]
/lib/x86_64-linux-gnu/libisc-9.18.1-1ubuntu1.3-Ubuntu.so(isc_nm_sendcb+0xe5)[0x7f315fc21035]
/lib/x86_64-linux-gnu/libuv.so.1(+0x217cf)[0x7f31602fb7cf]
/lib/x86_64-linux-gnu/libuv.so.1(uv_run+0x158)[0x7f31602e8768]
/lib/x86_64-linux-gnu/libisc-9.18.1-1ubuntu1.3-Ubuntu.so(+0x25e9e)[0x7f315fc25e9e]
/lib/x86_64-linux-gnu/libisc-9.18.1-1ubuntu1.3-Ubuntu.so(isc_trampoline_run+0x1a)[0x7f315fc5586a]
/lib/x86_64-linux-gnu/libc.so.6(+0x94b43)[0x7f315f494b43]
/lib/x86_64-linux-gnu/libc.so.6(+0x126a00)[0x7f315f526a00]
Aborted (core dumped)
```

**Conclusion:** The host -C command is a utility used to query information about a domain name or IP address using the DNS (Domain Name System). The -C option is used to specify that the host command should perform a reverse DNS lookup. This means that it will take an IP address as input and return the corresponding hostname or domain name.