

## Ping:

Ping is another most commonly used to check connectivity between two network nodes. It is used to measure the average response.

```
kallol@kallol-VirtualBox:~$ ping
Usage: ping [-aAbBdDfhLnOqrRUvV64] [-c count] [-i interval] [-I interface]
          [-m mark] [-M pmtudisc_option] [-l preload] [-p pattern] [-Q tos]
          [-s packetsize] [-S sndbuf] [-t ttl] [-T timestamp_option]
          [-w deadline] [-W timeout] [hop1 ...] destination
Usage: ping -6 [-aAbBdDfhLnOqrRUvV] [-c count] [-i interval] [-I interface]
          [-l preload] [-m mark] [-M pmtudisc_option]
          [-N nodeinfo_option] [-p pattern] [-Q tclass] [-s packetsize]
          [-S sndbuf] [-t ttl] [-T timestamp_option] [-w deadline]
          [-W timeout] destination
```

## Sudo apt Update:

```
Reading state information... Done
Calculating upgrade... Done
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
kallol@kallol-VirtualBox:~$ sudo apt update
Get:1 http://us.archive.ubuntu.com/ubuntu bionic InRelease [242 kB]
Get:2 http://us.archive.ubuntu.com/ubuntu bionic-updates InRelease [88.7 kB]
Get:3 http://us.archive.ubuntu.com/ubuntu bionic-backports InRelease [74.6 kB]
Get:4 http://us.archive.ubuntu.com/ubuntu bionic/main amd64 Packages [1,019 kB]
Get:5 http://us.archive.ubuntu.com/ubuntu bionic/main i386 Packages [1,007 kB]
Err:6 http://security.ubuntu.com/ubuntu bionic-security InRelease
      Could not resolve 'security.ubuntu.com'
Get:7 http://us.archive.ubuntu.com/ubuntu bionic/main Translation-en [516 kB]
Get:8 http://us.archive.ubuntu.com/ubuntu bionic/main amd64 DEP-11 Metadata [47
7 kB]
Get:9 http://us.archive.ubuntu.com/ubuntu bionic/main DEP-11 48x48 Icons [118 k
B]
Get:10 http://us.archive.ubuntu.com/ubuntu bionic/main DEP-11 64x64 Icons [245
kB]
Get:11 http://us.archive.ubuntu.com/ubuntu bionic/restricted i386 Packages [9,1
56 B]
Get:12 http://us.archive.ubuntu.com/ubuntu bionic/restricted amd64 Packages [9,
184 B]
Get:13 http://us.archive.ubuntu.com/ubuntu bionic/restricted Translation-en [3,
584 B]
Get:14 http://us.archive.ubuntu.com/ubuntu bionic/universe i386 Packages [8,531
kB]
Get:15 http://us.archive.ubuntu.com/ubuntu bionic/universe amd64 Packages [8,57
0 kB]
```

```
Get:16 http://us.archive.ubuntu.com/ubuntu bionic/universe Translation-en [1,511 kB]
Get:17 http://us.archive.ubuntu.com/ubuntu bionic/universe amd64 DEP-11 Metadata [3,287 kB]
Get:18 http://us.archive.ubuntu.com/ubuntu bionic/universe DEP-11 48x48 Icons [2,151 kB]
Get:19 http://us.archive.ubuntu.com/ubuntu bionic/universe DEP-11 64x64 Icons [8,420 kB]
Get:20 http://us.archive.ubuntu.com/ubuntu bionic/multiverse amd64 Packages [151 kB]
Get:21 http://us.archive.ubuntu.com/ubuntu bionic/multiverse i386 Packages [144 kB]
Get:22 http://us.archive.ubuntu.com/ubuntu bionic/multiverse Translation-en [108 kB]
Get:23 http://us.archive.ubuntu.com/ubuntu bionic/multiverse amd64 DEP-11 Metadata [49.7 kB]
Get:24 http://us.archive.ubuntu.com/ubuntu bionic/multiverse DEP-11 48x48 Icons [8,931 B]
Get:25 http://us.archive.ubuntu.com/ubuntu bionic/multiverse DEP-11 64x64 Icons [225 kB]
Get:26 http://us.archive.ubuntu.com/ubuntu bionic-updates/main amd64 Packages [1,761 kB]
Get:27 http://us.archive.ubuntu.com/ubuntu bionic-updates/main i386 Packages [1,162 kB]
Get:28 http://us.archive.ubuntu.com/ubuntu bionic-updates/main Translation-en [373 kB]
Get:29 http://us.archive.ubuntu.com/ubuntu bionic-updates/main amd64 DEP-11 Metadata [295 kB]
Get:30 http://us.archive.ubuntu.com/ubuntu bionic-updates/main DEP-11 48x48 Icons [501.0 kB]
```

File Edit View Search Terminal Help

```
Get:34 http://us.archive.ubuntu.com/ubuntu bionic-updates/restricted Translation-en [26.3 kB]
Get:35 http://us.archive.ubuntu.com/ubuntu bionic-updates/universe amd64 Packages [1,692 kB]
Get:36 http://us.archive.ubuntu.com/ubuntu bionic-updates/universe i386 Packages [1,547 kB]
Get:37 http://us.archive.ubuntu.com/ubuntu bionic-updates/universe Translation-en [356 kB]
Get:38 http://us.archive.ubuntu.com/ubuntu bionic-updates/universe amd64 DEP-11 Metadata [288 kB]
Get:39 http://us.archive.ubuntu.com/ubuntu bionic-updates/universe DEP-11 48x48 Icons [214 kB]
Get:40 http://us.archive.ubuntu.com/ubuntu bionic-updates/universe DEP-11 64x64 Icons [488 kB]
Get:41 http://us.archive.ubuntu.com/ubuntu bionic-updates/multiverse i386 Packages [14.4 kB]
Get:42 http://us.archive.ubuntu.com/ubuntu bionic-updates/multiverse amd64 Packages [36.1 kB]
Get:43 http://us.archive.ubuntu.com/ubuntu bionic-updates/multiverse Translation-en [7,308 B]
Get:44 http://us.archive.ubuntu.com/ubuntu bionic-updates/multiverse amd64 DEP-11 Metadata [2,468 B]
Get:45 http://us.archive.ubuntu.com/ubuntu bionic-updates/multiverse DEP-11 48x48 Icons [29 B]
Get:46 http://us.archive.ubuntu.com/ubuntu bionic-updates/multiverse DEP-11 64x64 Icons [2,638 B]
Get:47 http://us.archive.ubuntu.com/ubuntu bionic-backports/main i386 Packages [10.0 kB]
```

## Sudo apt Upgrade:

```
kallol@kallol-VirtualBox:~$ sudo apt upgrade
Reading package lists... Done
Building dependency tree
Reading state information... Done
Calculating upgrade... Done
The following NEW packages will be installed:
  bubblewrap fwupd-signed gstreamer1.0-gtk3 libbrotli1 libllvm10 libnetplan0
  libwayland-egl1 libwoff1 libxmlb1 linux-headers-4.15.0-124
  linux-headers-4.15.0-124-generic linux-image-4.15.0-124-generic
  linux-modules-4.15.0-124-generic linux-modules-extra-4.15.0-124-generic
  python3-dateutil python3-netifaces xdg-desktop-portal
  xdg-desktop-portal-gtk
The following packages will be upgraded:
  accountsservice amd64-microcode apparmor appport appport-gtk appstream apt
  apt-config-icons apt-utils aptdaemon aptdaemon-data apturl apturl-common
  aspell avahi-autoipd avahi-daemon avahi-utils base-files bash bind9-host
  binutils binutils-common binutils-x86-64-linux-gnu bluez bluez-cups
  bluez-obexd bolt brltty bsduutils busybox-initramfs busybox-static bzip2
  ca-certificates console-setup console-setup-linux cpio cpp cpp-7 cups
  cups-browsed cups-bsd cups-client cups-common cups-core-drivers cups-daemon
  cups-filters cups-filters-core-drivers cups-ipp-utils cups-ppdc
  cups-server-common dbus dbus-user-session dbus-x11 debconf debconf-i18n
  deja-dup desktop-file-utils dirmngr distro-info-data dmidecode dmsetup
  dnsutils dpkg e2fsprogs evince evince-common evolution-data-server
  evolution-data-server-common fdisk file file-roller firefox
  firefox-locale-en fonts-liberation fonts-liberation2 fonts-noto-cjk
  fonts-noto-color-emoji fonts-opensymbol friendly-recovery fwupd fwupdate
  fwupdate-signed gcc-7-base gcc-8-base gdb gdbserver gdm3 gedit gedit-common
```

```
Get:62 http://us.archive.ubuntu.com/ubuntu bionic-updates/main amd64 libcairo-g
object2 amd64 1.15.10-2ubuntu0.1 [17.1 kB]
Get:63 http://us.archive.ubuntu.com/ubuntu bionic-updates/main amd64 python3-gi
-cairo amd64 3.26.1-2ubuntu1 [6,652 B]
Get:64 http://us.archive.ubuntu.com/ubuntu bionic-updates/main amd64 libgtk-3-c
ommon all 3.22.30-1ubuntu4 [229 kB]
Get:65 http://us.archive.ubuntu.com/ubuntu bionic-updates/main amd64 libpango-1
.0-0 amd64 1.40.14-1ubuntu0.1 [153 kB]
Get:66 http://us.archive.ubuntu.com/ubuntu bionic-updates/main amd64 libpangoft
2-1.0-0 amd64 1.40.14-1ubuntu0.1 [33.2 kB]
Get:67 http://us.archive.ubuntu.com/ubuntu bionic-updates/main amd64 libpangoca
iro-1.0-0 amd64 1.40.14-1ubuntu0.1 [20.8 kB]
Get:68 http://us.archive.ubuntu.com/ubuntu bionic-updates/main amd64 libpangoxf
t-1.0-0 amd64 1.40.14-1ubuntu0.1 [15.0 kB]
Get:69 http://us.archive.ubuntu.com/ubuntu bionic-updates/main amd64 gir1.2-pa
ngo-1.0 amd64 1.40.14-1ubuntu0.1 [21.6 kB]
Get:70 http://us.archive.ubuntu.com/ubuntu bionic-updates/main amd64 libgl1 amd
64 1.0.0-2ubuntu2.3 [86.2 kB]
Get:71 http://us.archive.ubuntu.com/ubuntu bionic-updates/main amd64 libglx-mes
sa0 amd64 20.0.8-0ubuntu1~18.04.1 [139 kB]
Get:72 http://us.archive.ubuntu.com/ubuntu bionic-updates/main amd64 libglapi-m
esa amd64 20.0.8-0ubuntu1~18.04.1 [26.6 kB]
Get:73 http://us.archive.ubuntu.com/ubuntu bionic-updates/main amd64 libdrm-com
mon all 2.4.101-2~18.04.1 [5,560 B]
Get:74 http://us.archive.ubuntu.com/ubuntu bionic-updates/main amd64 libdrm2 am
d64 2.4.101-2~18.04.1 [32.3 kB]
Get:75 http://us.archive.ubuntu.com/ubuntu bionic-updates/main amd64 libx11-xcb
1 amd64 2:1.6.4-3ubuntu0.3 [9,628 B]
```



```
gir1.2-gmenu-3.0 gir1.2-gnomebluetooth-1.0 gir1.2-gnomedesktop-3.0
gir1.2-gst-plugins-base-1.0 gir1.2-gstreamer-1.0 gir1.2-gtk-3.0
gir1.2-gweather-3.0 gir1.2-ibus-1.0 gir1.2-javascriptcoregtk-4.0
gir1.2-json-1.0 gir1.2-mutter-2 gir1.2-nm-1.0 gir1.2-nma-1.0
gir1.2-packagekitglib-1.0 gir1.2-pango-1.0 gir1.2-polkit-1.0
gir1.2-rsvg-2.0 gir1.2-snapd-1 gir1.2-soup-2.4 gir1.2-totem-1.0
gir1.2-udisks-2.0 gir1.2-upowerglib-1.0 gir1.2-vte-2.91 gir1.2-webkit2-4.0
gjs gkbd-caplet glib-networking glib-networking-common
glib-networking-services gnome-bluetooth gnome-control-center
gnome-control-center-data gnome-control-center-faces gnome-desktop3-data
gnome-initial-setup gnome-menus gnome-mines gnome-settings-daemon
gnome-settings-daemon-schemas gnome-shell gnome-shell-common
gnome-shell-extension-ubuntu-dock gnome-software gnome-software-common
gnome-software-plugin-snap gnupg gnupg-l10n gnupg-utils gpg gpg-agent
gpg-wks-client gpg-wks-server gpgconf gpgsm gpgv grep grub-common grub-pc
grub-pc-bin grub2-common gstreamer1.0-alsa gstreamer1.0-gl
gstreamer1.0-packagekit gstreamer1.0-plugins-base
gstreamer1.0-plugins-base-apps gstreamer1.0-plugins-good
gstreamer1.0-pulseaudio gstreamer1.0-tools gstreamer1.0-x
gtk-update-icon-cache guile-2.0-libs gvfs gvfs-backends gvfs-bin
gvfs-common gvfs-daemons gvfs-fuse gvfs-libs ibus ibus-gtk ibus-gtk3
im-config imagemagick imagemagick-6-common imagemagick-6.q16
initramfs-tools initramfs-tools-bin initramfs-tools-core intel-microcode
iproute2 iputils-arping iputils-ping iputils-tracepath irqbalance
isc-dhcp-client isc-dhcp-common keyboard-configuration kmod krb5-locales
language-pack-en language-pack-gnome-en language-selector-common
language-selector-gnome libaccountsservice0 libapparmor1 libappstream4
libapt-inst2.0 libapt-pkg5.0 libarchive13 libasound2 libasound2-data
```

## Dig:

Dig is used to investigate DNS. It is an updated version of nslookup. It performs a DNS Lookup query and displays the response returned from name servers.

```

kallol@kallol-VirtualBox:~$ dig google.com

; <<>> DiG 9.11.3-1ubuntu1.1-Ubuntu <<>> google.com
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 21403
;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 65494
;; QUESTION SECTION:
;google.com.                IN      A

;; ANSWER SECTION:
google.com.                20      IN      A      216.58.196.14

;; Query time: 2 msec
;; SERVER: 127.0.0.53#53(127.0.0.53)
;; WHEN: Sun Nov 22 07:07:15 EST 2020
;; MSG SIZE rcvd: 55

```

## Ip address:

Ip command is the latest version of ifconfig. It is more powerful than ifconfig command as it can perform several other tasks like configuring default or static routing, showing IP addresses and its properties, setting up IP addresses, and routes for network interfaces.

```

kallol@kallol-VirtualBox:~$ ip address
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 08:00:27:b7:da:6e brd ff:ff:ff:ff:ff:ff
    inet 10.0.2.15/24 brd 10.0.2.255 scope global dynamic noprefixroute enp0s3
        valid_lft 84319sec preferred_lft 84319sec
    inet6 fe80::b9fa:f84d:d482:1ef6/64 scope link noprefixroute
        valid_lft forever preferred_lft forever

```

## Traceroute:

Traceroute command is used to troubleshoot the network. It finds out the delay and pathway to your destination.

```
kallol@kallol-VirtualBox:~$ sudo apt-get install inetutils-traceroute
[sudo] password for kallol:
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following NEW packages will be installed:
  inetutils-traceroute
0 upgraded, 1 newly installed, 0 to remove and 666 not upgraded.
Need to get 41.0 kB of archives.
After this operation, 261 kB of additional disk space will be used.
Err:1 http://us.archive.ubuntu.com/ubuntu bionic/universe amd64 inetutils-trace
route amd64 2:1.9.4-3
  Could not resolve 'us.archive.ubuntu.com'
E: Failed to fetch http://us.archive.ubuntu.com/ubuntu/pool/universe/i/inetutil
s/inetutils-traceroute_1.9.4-3_amd64.deb  Could not resolve 'us.archive.ubuntu.
com'
E: Unable to fetch some archives, maybe run apt-get update or try with --fix-mi
ssing?
kallol@kallol-VirtualBox:~$ ^C
kallol@kallol-VirtualBox:~$ traceroute google.com

Command 'traceroute' not found, but can be installed with:

sudo apt install inetutils-traceroute
sudo apt install traceroute
```

## Tracepath:

Tracepath is just like a 'traceroute' command to detect network delay but does not need root privileges. It is pre-installed on Ubuntu.



```
kallol@kallol-VirtualBox:~$ tracepath google.com
1?: [LOCALHOST] pmtu 1500
1: _gateway 0.776ms
1: _gateway 0.721ms
2: no reply
3: no reply
4: no reply
5: no reply
6: no reply
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
```

## Hostname:

Hostname is used to obtain the DNS name and set the system's hostname or NIS(Network Information System) domain name.

```
kallol@kallol-VirtualBox:~$ hostname
kallol-VirtualBox
```

## Ssh:

Ssh stands for “Secure Shell”. It is used to securely connect to a remote server/system.

```
kallol@kallol-VirtualBox:~$ ssh
usage: ssh [-46AaCfGgKkMMNnqsTtVvXxYy] [-b bind_address] [-c cipher_spec]
          [-D [bind_address:]port] [-E log_file] [-e escape_char]
          [-F configfile] [-I pkcs11] [-i identity_file]
          [-J [user@]host[:port]] [-L address] [-l login_name] [-m mac_spec]
          [-O ctl_cmd] [-o option] [-p port] [-Q query_option] [-R address]
          [-S ctl_path] [-W host:port] [-w local_tun[:remote_tun]]
          [user@]hostname [command]
```

## Iwconfig:

Iwconfig command is used to configure the WLAN interface. It can view or set up basic wireless network interface properties like SSID and encryption type.

```
kallol@kallol-VirtualBox:~$ iwconfig
enp0s3      no wireless extensions.

lo          no wireless extensions.
```

## Netstat:

Netstat is used to review each network connection and open sockets on the Linux device.

```
kallol@kallol-VirtualBox:~$ sudo apt install net-tools
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following NEW packages will be installed:
  net-tools
0 upgraded, 1 newly installed, 0 to remove and 666 not upgraded.
Need to get 194 kB of archives.
After this operation, 803 kB of additional disk space will be used.
Err:1 http://us.archive.ubuntu.com/ubuntu bionic/main amd64 net-tools amd64 1.6
0+git20161116.90da8a0-1ubuntu1
  Could not resolve 'us.archive.ubuntu.com'
E: Failed to fetch http://us.archive.ubuntu.com/ubuntu/pool/main/n/net-tools/ne
t-tools_1.60+git20161116.90da8a0-1ubuntu1_amd64.deb  Could not resolve 'us.arch
ive.ubuntu.com'
E: Unable to fetch some archives, maybe run apt-get update or try with --fix-mi
ssing?
kallol@kallol-VirtualBox:~$ netstat

Command 'netstat' not found, but can be installed with:
```

## Nslookup:

Nslookup (Name Server Lookup) command used to query DNS to get a domain name, IP address mapping, or DNS records.

```
kallol@kallol-VirtualBox:~$ nslookup google.com
Server:      127.0.0.53
Address:     127.0.0.53#53

Non-authoritative answer:
Name:   google.com
Address: 216.58.196.14
Name:   google.com
Address: 2404:6800:4001:806::200e
```

## W:

W command is used to get a list of currently logged in users on a system. It also provides valuable information like host, login time, idle time, JCPU.

```
kallol@kallol-VirtualBox:~$ w
 08:53:48 up 8 min,  1 user,  load average: 0.13, 0.59, 0.46
USER      TTY      FROM            LOGIN@   IDLE   JCPU   PCPU WHAT
kallol    :0        :0              21:44   ?xdm?  48.46s  0.03s /usr/lib/gdm3/
kallol@kallol-VirtualBox:~$ mail
```

## Wget:

Wget is also a pre-installed package. It is used to download files using HTTP, HTTPS, FTP Protocols.

```
kallol@kallol-VirtualBox:~$ wget https://www.google.com
--2020-11-23 09:03:11-- https://www.google.com/
Resolving www.google.com (www.google.com)... 216.58.196.4, 2404:6800:4001:806::
2004
Connecting to www.google.com (www.google.com)|216.58.196.4|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: unspecified [text/html]
Saving to: 'index.html'

index.html          [  <=>          ] 14.62K  10.8KB/s   in 1.4s

2020-11-23 09:03:17 (10.8 KB/s) - 'index.html' saved [14976]
```

## Whois:

Whois command is used to get all the information about a website. You can get all registration and ownership details using it. You need to install the whois package before using it.

```
kallol@kallol-VirtualBox:~$ sudo apt install whois
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following NEW packages will be installed:
  whois
0 upgraded, 1 newly installed, 0 to remove and 666 not upgraded.
Need to get 43.7 kB of archives.
After this operation, 262 kB of additional disk space will be used.
Get:1 http://us.archive.ubuntu.com/ubuntu bionic/main amd64 whois amd64 5.3.0 [
43.7 kB]
Fetched 43.7 kB in 10s (4,247 B/s)
Selecting previously unselected package whois.
(Reading database ... 125727 files and directories currently installed.)
Preparing to unpack .../archives/whois_5.3.0_amd64.deb ...
Unpacking whois (5.3.0) ...
Setting up whois (5.3.0) ...
Processing triggers for man-db (2.8.3-2) ...
kallol@kallol-VirtualBox:~$ whois google.com
getaddrinfo(whois.verisign-grs.com): Name or service not known
```