

Ping: Ping is a command-line utility, available on virtually any operating system with network connectivity, that acts as a test to see if a networked device is reachable.

```
arif@arif-HP-ProBook-6570b: ~  
File Edit View Search Terminal Help  
arif@arif-HP-ProBook-6570b:~$ 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  
arif@arif-HP-ProBook-6570b:~$
```

Sudo apt upgrade: You run sudo-apt upgrade to install available upgrades of all packages currently installed on the system from the sources configured via sources. list file. New packages will be installed if required to satisfy dependencies, but existing packages will never be removed.

```
arif@arif-HP-ProBook-6570b: ~  
File Edit View Search Terminal Help  
arif@arif-HP-ProBook-6570b:~$ sudo apt upgrade  
[sudo] password for arif:  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done  
Calculating upgrade... Done  
The following packages were automatically installed and are no longer required:  
  efibootmgr gir1.2-geocodeglib-1.0 libegl1-mesa libfwup1 libllvm8  
  libwayland-egl1-mesa ubuntu-web-launchers  
Use 'sudo apt autoremove' to remove them.  
The following NEW packages will be installed:  
  fwupd-signed libllvm10 libnetplan0 libxmlb1 linux-headers-5.4.0-56-generic  
  linux-hwe-5.4-headers-5.4.0-56 linux-image-5.4.0-56-generic  
  linux-modules-5.4.0-56-generic linux-modules-extra-5.4.0-56-generic  
The following packages will be upgraded:  
  accountsservice amd64-microcode apport apport-gtk apt apt-utils aptdaemon  
  aptdaemon-data aspell base-files bind9-host binutils binutils-common  
  binutils-x86-64-linux-gnu bluez bluez-cups bluez-obexd bsduutils  
  busybox-initramfs busybox-static ca-certificates cpio cups cups-bsd  
  cups-client cups-common cups-core-drivers cups-daemon cups-ipp-utils  
  cups-ppdc cups-server-common dbus dbus-user-session dbus-x11 dirmngr  
  distro-info-data dmidecode dmsetup dnsutils dpkg e2fsprogs  
  evolution-data-server evolution-data-server-common fdisk file file-roller  
  firefox firefox-locale-en fonts-opensymbol fwupd fwupdate fwupdate-signed  
  gcc-8-base gcc-8-base:i386 gdb gdbserver gdm3 ghostscript ghostscript-x  
  gir1.2-accountsservice-1.0 gir1.2-gdm-1.0 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-rsvg-2.0 gir1.2-snapd-1  
  gir1.2-soup-2.4 gir1.2-webkit2-4.0 glib-networking glib-networking-common  
  glib-networking-services gnome-control-center gnome-control-center-data
```

Curl-version: To check whether the Curl package is installed on your system, open up your console, type curl and press enter. If you have curl installed, the system will print curl: try 'curl --help' or 'curl -manual' for more information . Otherwise, you will see something like curl command not found.

```
arif@arif-HP-ProBook-6570b: ~  
File Edit View Search Terminal Help  
arif@arif-HP-ProBook-6570b:~$ curl -version  
curl: no URL specified!  
curl: try 'curl --help' or 'curl --manual' for more information  
arif@arif-HP-ProBook-6570b:~$
```

wget: wget is a free utility for non-interactive download of files from the web. It supports HTTP, HTTPS, and FTP protocols.

```
arif@arif-HP-ProBook-6570b: ~  
File Edit View Search Terminal Help  
arif@arif-HP-ProBook-6570b:~$ wget https://classroom.google.com/u/0/c/MTg0Mzg5MDQ4Njc0  
--2020-12-08 18:16:52-- https://classroom.google.com/u/0/c/MTg0Mzg5MDQ4Njc0  
Resolving classroom.google.com (classroom.google.com)... 172.217.163.46, 2404:6800:4007:80b::200e  
Connecting to classroom.google.com (classroom.google.com)|172.217.163.46|:443... connected.  
HTTP request sent, awaiting response... 302 Moved Temporarily  
Location: https://accounts.google.com/ServiceLogin?service=classroom&passive=1209600&continue=https://classro  
om.google.com/u/0/c/MTg0Mzg5MDQ4Njc0&followup=https://classroom.google.com/u/0/c/MTg0Mzg5MDQ4Njc0 [following]  
--2020-12-08 18:16:53-- https://accounts.google.com/ServiceLogin?service=classroom&passive=1209600&continue=  
https://classroom.google.com/u/0/c/MTg0Mzg5MDQ4Njc0&followup=https://classroom.google.com/u/0/c/MTg0Mzg5MDQ4N  
jc0  
Resolving accounts.google.com (accounts.google.com)... 142.250.71.45, 2404:6800:4007:813::200d  
Connecting to accounts.google.com (accounts.google.com)|142.250.71.45|:443... connected.  
HTTP request sent, awaiting response... 200 OK  
Length: unspecified [text/html]  
Saving to: 'MTg0Mzg5MDQ4Njc0.1'  
  
MTg0Mzg5MDQ4Njc0.1      [  <=>      ] 60.52K  46.1KB/s   in 1.3s  
  
2020-12-08 18:16:56 (46.1 KB/s) - 'MTg0Mzg5MDQ4Njc0.1' saved [61972]  
arif@arif-HP-ProBook-6570b:~$
```

Tc: Tc is used to configure Traffic Control in the Linux kernel. Traffic Control consists of the following: SHAPING When traffic is shaped, its rate of transmission is under control.

```
arif@arif-HP-ProBook-6570b: ~  
File Edit View Search Terminal Help  
arif@arif-HP-ProBook-6570b:~$ tc  
Usage: tc [ OPTIONS ] OBJECT { COMMAND | help }  
       tc [-force] -batch filename  
where  OBJECT := { qdisc | class | filter | action | monitor | exec }  
       OPTIONS := { -s[tatistics] | -d[etails] | -r[aw] | -p[retty] | -b[atch] [filename] | -n[etns] name |  
                   -nm | -nam[es] | { -cf | -conf } path } | -j[son]  
arif@arif-HP-ProBook-6570b:~$
```

Whois: In Linux, the whois command line utility is a WHOIS client for communicating with the WHOIS server (or database host) which listen to requests on the well-known port number 43, which stores and delivers database content in a human-readable format.

```
arif@arif-HP-ProBook-6570b: ~  
File Edit View Search Terminal Help  
arif@arif-HP-ProBook-6570b:~$ whois  
Usage: whois [OPTION]... OBJECT...  
  
-h HOST, --host HOST    connect to server HOST  
-p PORT, --port PORT    connect to PORT  
-H                      hide legal disclaimers  
    --verbose           explain what is being done  
    --help              display this help and exit  
    --version            output version information and exit  
  
These flags are supported by whois.ripe.net and some RIPE-like servers:  
-l                      find the one level less specific match  
-L                      find all levels less specific matches  
-m                      find all one level more specific matches  
-M                      find all levels of more specific matches  
-c                      find the smallest match containing a mnt-irt attribute  
-x                      exact match  
-b                      return brief IP address ranges with abuse contact  
-B                      turn off object filtering (show email addresses)  
-G                      turn off grouping of associated objects  
-d                      return DNS reverse delegation objects too  
-i ATTR[,ATTR]...      do an inverse look-up for specified ATTRibutes  
-T TYPE[,TYPE]...      only look for objects of TYPE  
-K                      only primary keys are returned  
-r                      turn off recursive look-ups for contact information  
-R                      force to show local copy of the domain object even  
                        if it contains referral  
-a                      also search all the mirrored databases  
-s SOURCE[,SOURCE]...  search the database mirrored from SOURCE  
-g SOURCE:FIRST-LAST    find updates from SOURCE from serial FIRST to LAST  
-t TYPE                 request template for object of TYPE  
-v TYPE                 request verbose template for object of TYPE  
-q [version|sources|types] query specified server info  
arif@arif-HP-ProBook-6570b:~$
```

ssh: ssh Command in linux- the ssh command provides a secure encrypted connection between two hosts over an insecure network. This connection can also be used for terminal access, file transfer, and for tunneling other applications. Graphical X11 applications can also be run securely over SSH from a remote location.

```
arif@arif-HP-ProBook-6570b: ~  
File Edit View Search Terminal Help  
arif@arif-HP-ProBook-6570b:~$ 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]  
arif@arif-HP-ProBook-6570b:~$
```

Rsync: **rsync** is a utility for efficiently transferring and synchronizing files between a computer and an external hard drive and across network computers by comparing the modification times and sizes of files.

```
arif@arif-HP-ProBook-6570b: ~
File Edit View Search Terminal Help
arif@arif-HP-ProBook-6570b:~$ rsync
rsync version 3.1.2 protocol version 31
Copyright (C) 1996-2015 by Andrew Tridgell, Wayne Davison, and others.
Web site: http://rsync.samba.org/
Capabilities:
  64-bit files, 64-bit inums, 64-bit timestamps, 64-bit long ints,
  socketpairs, hardlinks, symlinks, IPv6, batchfiles, inplace,
  append, ACLs, xattrs, iconv, symtimes, prealloc

rsync comes with ABSOLUTELY NO WARRANTY. This is free software, and you
are welcome to redistribute it under certain conditions. See the GNU
General Public Licence for details.

rsync is a file transfer program capable of efficient remote update
via a fast differencing algorithm.

Usage: rsync [OPTION]... SRC [SRC]... DEST
or rsync [OPTION]... SRC [SRC]... [USER@]HOST:DEST
or rsync [OPTION]... SRC [SRC]... [USER@]HOST::DEST
or rsync [OPTION]... SRC [SRC]... rsync://[USER@]HOST[:PORT]/DEST
or rsync [OPTION]... [USER@]HOST:SRC [DEST]
or rsync [OPTION]... [USER@]HOST::SRC [DEST]
or rsync [OPTION]... rsync://[USER@]HOST[:PORT]/SRC [DEST]
The ':' usages connect via remote shell, while '::' & 'rsync://' usages connect
to an rsync daemon, and require SRC or DEST to start with a module name.

Options
-v, --verbose           increase verbosity
--info=FLAGS           fine-grained informational verbosity
--debug=FLAGS          fine-grained debug verbosity
--msgs2stderr          special output handling for debugging
-q, --quiet            suppress non-error messages
--no-motd              suppress daemon-mode MOTD (see manpage caveat)
-c, --checksum         skip based on checksum, not mod-time & size
-a, --archive          archive mode; equals -rlptgoD (no -H,-A,-X)
--no-OPTION            turn off an implied OPTION (e.g. --no-D)
-r, --recursive        recurse into directories

-s, --protect-args     no space-splitting; only wildcard special-chars
--address=ADDRESS      bind address for outgoing socket to daemon
--port=PORT            specify double-colon alternate port number
--socketopts=OPTIONS   specify custom TCP options
--blocking-io          use blocking I/O for the remote shell
--stats               give some file-transfer stats
--8-bit-output         leave high-bit chars unescaped in output
-h, --human-readable   output numbers in a human-readable format
--progress             show progress during transfer
-p                    same as --partial --progress
-i, --itemize-changes  output a change-summary for all updates
--out-format=FORMAT    output updates using the specified FORMAT
--log-file=FILE        log what we're doing to the specified FILE
--log-file-format=FMT  log updates using the specified FMT
--password-file=FILE   read daemon-access password from FILE
--list-only            list the files instead of copying them
--bwlimit=RATE         limit socket I/O bandwidth
--stop-at=y-m-dTh:M   Stop rsync at year-month-dayThour:minute
--time-limit=MINS      Stop rsync after MINS minutes have elapsed
--outbuf=N|L|B        set output buffering to None, Line, or Block
--write-batch=FILE     write a batched update to FILE
--only-write-batch=FILE like --write-batch but w/o updating destination
--read-batch=FILE      read a batched update from FILE
--protocol=NUM         force an older protocol version to be used
--iconv=CONVERT_SPEC  request charset conversion of filenames
--checksum-seed=NUM    set block/file checksum seed (advanced)
--noatime              do not alter atime when opening source files
-4, --ipv4             prefer IPv4
-6, --ipv6             prefer IPv6
--version              print version number
(-h) --help            show this help (-h is --help only if used alone)

Use "rsync --daemon --help" to see the daemon-mode command-line options.
Please see the rsync(1) and rsyncd.conf(5) man pages for full documentation.
See http://rsync.samba.org/ for updates, bug reports, and answers
rsync error: syntax or usage error (code 1) at main.c(1569) [client=3.1.2]
arif@arif-HP-ProBook-6570b:~$
```


Ngrep: Ngrep (network grep) is a simple yet powerful network packet analyzer. It allows you to specify an extended regular or hexadecimal expression to match against data payloads (the actual information or message in transmitted data, but not auto-generated metadata) of packets.

```
arif@arif-HP-ProBook-6570b: ~  
File Edit View Search Terminal Help  
arif@arif-HP-ProBook-6570b:~$ ngrep  
wlo1: You don't have permission to capture on that device (socket: Operation not  
permitted): Operation not permitted  
exit  
0 received, 0 matched  
arif@arif-HP-ProBook-6570b:~$
```

update: The `sudo apt-get update` command is used to download package information from all configured sources. The sources often defined in `/etc/apt/sources.list` file and other files located in `/etc/apt/sources`.

```
arif@arif-HP-ProBook-6570b: ~  
File Edit View Search Terminal Help  
exit  
0 received, 0 matched  
arif@arif-HP-ProBook-6570b:~$ sudo apt update  
[sudo] password for arif:  
Get:1 http://security.ubuntu.com/ubuntu bionic-security InRelease [88.7 kB]  
Hit:2 http://bd.archive.ubuntu.com/ubuntu bionic InRelease  
Get:3 http://bd.archive.ubuntu.com/ubuntu bionic-updates InRelease [88.7 kB]  
Get:4 http://security.ubuntu.com/ubuntu bionic-security/main amd64 DEP-11 Metadata [49.0 kB]  
Get:5 http://bd.archive.ubuntu.com/ubuntu bionic-backports InRelease [74.6 kB]  
Get:6 http://security.ubuntu.com/ubuntu bionic-security/universe amd64 DEP-11 Metadata [59.5 kB]  
Get:7 http://security.ubuntu.com/ubuntu bionic-security/multiverse amd64 DEP-11 Metadata [2,460 B]  
Get:8 https://packages.microsoft.com/repos/vscode stable InRelease [3,958 B]  
Get:9 http://bd.archive.ubuntu.com/ubuntu bionic-updates/main amd64 DEP-11 Metadata [295 kB]  
Get:10 https://packages.microsoft.com/repos/vscode stable/main amd64 Packages [215 kB]  
Get:11 http://bd.archive.ubuntu.com/ubuntu bionic-updates/universe amd64 DEP-11 Metadata [288 kB]  
0% [11 Components-amd64 154 kB/288 kB 54%] [Waiting for headers] 43  
.1 0% [11 Components-amd64 154 kB/288 kB 54%] [Waiting for headers] 43.1 kB/  
Get:12 http://bd.archive.ubuntu.com/ubuntu bionic-updates/universe DEP-11 64x64 Icons [488 kB]  
Ign:13 http://ppa.launchpad.net/shutter/ppa/ubuntu bionic InRelease  
Ign:14 http://ppa.launchpad.net/webupd8team/sublime-text-3/ubuntu bionic InRelease  
Err:15 http://ppa.launchpad.net/shutter/ppa/ubuntu bionic Release  
404 Not Found [IP: 91.189.95.83 80]  
Err:16 http://ppa.launchpad.net/webupd8team/sublime-text-3/ubuntu bionic Release  
404 Not Found [IP: 91.189.95.83 80]
```

ifconfig : stands for "interface configuration." It is used to view and change the configuration of the network interfaces on your system.

```
arif@arif-HP-ProBook-6570b: ~  
File Edit View Search Terminal Help  
arif@arif-HP-ProBook-6570b:~$ ifconfig  
enp0s25: flags=4099<UP,BROADCAST,MULTICAST> mtu 1500  
    ether d8:9d:67:c8:dc:9e txqueuelen 1000 (Ethernet)  
    RX packets 0 bytes 0 (0.0 B)  
    RX errors 0 dropped 0 overruns 0 frame 0  
    TX packets 0 bytes 0 (0.0 B)  
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0  
    device interrupt 17 memory 0xd4700000-d4720000  
  
lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536  
    inet 127.0.0.1 netmask 255.0.0.0  
    inet6 ::1 prefixlen 128 scopeid 0x10<host>  
    loop txqueuelen 1000 (Local Loopback)  
    RX packets 31743 bytes 2845024 (2.8 MB)  
    RX errors 0 dropped 0 overruns 0 frame 0  
    TX packets 31743 bytes 2845024 (2.8 MB)  
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0  
  
wlo1: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500  
    inet 192.168.43.142 netmask 255.255.255.0 broadcast 192.168.43.255  
    inet6 fe80::3a4e:49c7:1211:577d prefixlen 64 scopeid 0x20<link>  
    ether 20:16:d8:bd:75:4d txqueuelen 1000 (Ethernet)  
    RX packets 155329 bytes 122568818 (122.5 MB)  
    RX errors 0 dropped 0 overruns 0 frame 0  
    TX packets 127139 bytes 28393933 (28.3 MB)  
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0  
  
arif@arif-HP-ProBook-6570b:~$
```

Route: route command in Linux is used when you want to work with the IP/kernel routing table.

```
arif@arif-HP-ProBook-6570b: ~  
File Edit View Search Terminal Help  
arif@arif-HP-ProBook-6570b:~$ route  
Kernel IP routing table  
Destination      Gateway          Genmask          Flags Metric Ref    Use Iface  
default          _gateway        0.0.0.0          UG    20600 0      0 wlo1  
link-local       0.0.0.0         255.255.0.0      U     1000  0      0 wlo1  
192.168.43.0     0.0.0.0         255.255.255.0    U      600  0      0 wlo1  
arif@arif-HP-ProBook-6570b:~$
```