

**MAWLANA BHASHANI SCIENCE AND TECHNOLOGY UNIVERSITY**

**Santosh, Tangail – 1902**



**Course Title: Computer Networks**

**Lab report name: Linux networking tools.**

**Date of submission: 09 – 01 – 2021**

**Submitted by,**

**Name: Pritom Saha**

**ID: IT – 17010**

**Session: 2016 – 17**

**Dept. of ICT, MBSTU**

**Submitted to,**

**Nazrul Islam**

**Assistant Professor**

**Dept. of ICT, MBSTU**

**Ping**: this command is used in checking whether the remote system is running or not. Ping command is used to detect a system is connected to system or not. If network firework don't grant the access then ping command will not work. Ping command sends an ICMP ECHO\_REQUEST packet to the target host and waits to see if it replies. Ping runs in an infinite loop.

```
pritom@pritom-VirtualBox: ~  
64 bytes from maa05s04-in-f14.1e100.net (172.217.163.142): icmp_seq=14 ttl=108 time=112 ms  
64 bytes from maa05s04-in-f14.1e100.net (172.217.163.142): icmp_seq=16 ttl=108 time=130 ms  
64 bytes from maa05s04-in-f14.1e100.net (172.217.163.142): icmp_seq=17 ttl=108 time=110 ms  
64 bytes from maa05s04-in-f14.1e100.net (172.217.163.142): icmp_seq=18 ttl=108 time=110 ms  
64 bytes from maa05s04-in-f14.1e100.net (172.217.163.142): icmp_seq=19 ttl=108 time=117 ms  
64 bytes from maa05s04-in-f14.1e100.net (172.217.163.142): icmp_seq=20 ttl=108 time=108 ms  
64 bytes from maa05s04-in-f14.1e100.net (172.217.163.142): icmp_seq=21 ttl=108 time=106 ms  
64 bytes from maa05s04-in-f14.1e100.net (172.217.163.142): icmp_seq=22 ttl=108 time=110 ms  
64 bytes from maa05s04-in-f14.1e100.net (172.217.163.142): icmp_seq=23 ttl=108 time=109 ms  
64 bytes from maa05s04-in-f14.1e100.net (172.217.163.142): icmp_seq=24 ttl=108 time=108 ms  
64 bytes from maa05s04-in-f14.1e100.net (172.217.163.142): icmp_seq=25 ttl=108 time=109 ms  
64 bytes from maa05s04-in-f14.1e100.net (172.217.163.142): icmp_seq=26 ttl=108 time=108 ms  
64 bytes from maa05s04-in-f14.1e100.net (172.217.163.142): icmp_seq=27 ttl=108 time=232 ms  
64 bytes from maa05s04-in-f14.1e100.net (172.217.163.142): icmp_seq=28 ttl=108 time=112 ms  
64 bytes from maa05s04-in-f14.1e100.net (172.217.163.142): icmp_seq=29 ttl=108 time=128 ms  
64 bytes from maa05s04-in-f14.1e100.net (172.217.163.142): icmp_seq=30 ttl=108 time=111 ms  
64 bytes from maa05s04-in-f14.1e100.net (172.217.163.142): icmp_seq=31 ttl=108 time=112 ms  
64 bytes from maa05s04-in-f14.1e100.net (172.217.163.142): icmp_seq=32 ttl=108 time=131 ms  
64 bytes from maa05s04-in-f14.1e100.net (172.217.163.142): icmp_seq=33 ttl=108 time=110 ms  
64 bytes from maa05s04-in-f14.1e100.net (172.217.163.142): icmp_seq=34 ttl=108 time=108 ms  
64 bytes from maa05s04-in-f14.1e100.net (172.217.163.142): icmp_seq=35 ttl=108 time=109 ms  
64 bytes from maa05s04-in-f14.1e100.net (172.217.163.142): icmp_seq=36 ttl=108 time=156 ms  
64 bytes from maa05s04-in-f14.1e100.net (172.217.163.142): icmp_seq=37 ttl=108 time=105 ms  
64 bytes from maa05s04-in-f14.1e100.net (172.217.163.142): icmp_seq=38 ttl=108 time=107 ms  
64 bytes from maa05s04-in-f14.1e100.net (172.217.163.142): icmp_seq=39 ttl=108 time=111 ms  
64 bytes from maa05s04-in-f14.1e100.net (172.217.163.142): icmp_seq=40 ttl=108 time=109 ms  
64 bytes from maa05s04-in-f14.1e100.net (172.217.163.142): icmp_seq=41 ttl=108 time=108 ms  
64 bytes from maa05s04-in-f14.1e100.net (172.217.163.142): icmp_seq=42 ttl=108 time=107 ms  
64 bytes from maa05s04-in-f14.1e100.net (172.217.163.142): icmp_seq=43 ttl=108 time=108 ms  
64 bytes from maa05s04-in-f14.1e100.net (172.217.163.142): icmp_seq=44 ttl=108 time=165 ms  
64 bytes from maa05s04-in-f14.1e100.net (172.217.163.142): icmp_seq=46 ttl=108 time=137 ms
```

Activate  
Go to Setti

**wget**: It is a free utility which is used in non – interactive download from the world wide web. It supports HTTP, HTTPS, FTP protocols etc.

```
pritom@pritom-VirtualBox: ~  
pritom@pritom-VirtualBox:~$ wget google.com  
--2021-01-09 00:17:46-- http://google.com/  
Resolving google.com (google.com)... 142.250.71.46, 2404:6800:4007:813::200e  
Connecting to google.com (google.com)|142.250.71.46|:80... connected.  
HTTP request sent, awaiting response... 301 Moved Permanently  
Location: http://www.google.com/ [following]  
--2021-01-09 00:17:47-- http://www.google.com/  
Resolving www.google.com (www.google.com)... 216.58.197.68, 2404:6800:4007:800::2004  
Connecting to www.google.com (www.google.com)|216.58.197.68|:80... connected.  
HTTP request sent, awaiting response... 200 OK  
Length: unspecified [text/html]  
Saving to: 'index.html.1'  
  
index.html.1 [ <=>  
  
2021-01-09 00:17:47 (367 KB/s) - 'index.html.1' saved [14715]  
  
pritom@pritom-VirtualBox:~$
```

**host:** host command is used in getting address about system connected the network. It contains IP address, domain name address etc.

```
pritom@pritom-VirtualBox: ~  
pritom@pritom-VirtualBox:~$ host  
Usage: host [-aCdilrTvVw] [-c class] [-N ndots] [-t type] [-W time]  
          [-R number] [-m flag] hostname [server]  
  -a is equivalent to -v -t ANY  
  -A is like -a but omits RRSIG, NSEC, NSEC3  
  -c specifies query class for non-IN data  
  -C compares SOA records on authoritative nameservers  
  -d is equivalent to -v  
  -l lists all hosts in a domain, using AXFR  
  -m set memory debugging flag (trace|record|usage)  
  -N changes the number of dots allowed before root lookup is done  
  -r disables recursive processing  
  -R specifies number of retries for UDP packets  
  -s a SERVFAIL response should stop query  
  -t specifies the query type  
  -T enables TCP/IP mode  
  -U enables UDP mode  
  -v enables verbose output  
  -V print version number and exit  
  -w specifies to wait forever for a reply  
  -W specifies how long to wait for a reply  
  -4 use IPv4 query transport only  
  -6 use IPv6 query transport only  
pritom@pritom-VirtualBox:~$
```

**tc:** tc is used to figure out traffic control in linux kernel.

```
pritom@pritom-VirtualBox: ~  
pritom@pritom-VirtualBox:~$ tc  
Usage: tc [ OPTIONS ] OBJECT { COMMAND | help }  
       tc [-force] -batch filename  
where  OBJECT := { qdisc | class | filter | chain |  
                  action | monitor | exec }  
       OPTIONS := { -V[ersion] | -s[tatistics] | -d[etails] | -r[aw] |  
                   -o[neline] | -j[son] | -p[retty] | -c[olor]  
                   -b[atch] [filename] | -n[etns] name | -N[umeric] |  
                   -nm | -nam[es] | { -cf | -conf } path }  
pritom@pritom-VirtualBox:~$
```

**hostname**: this command is used to see the hostname of the computer. Host name is changeable but after changing the host we have to reboot the computer.

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

**dig**: Domain Information Groper or dig is a query DNS related information like a record, mx record etc. it is used to troubleshoot DNS related query.

```
pritom@pritom-VirtualBox: ~  
pritom@pritom-VirtualBox:~$ dig  
  
;<<>> DiG 9.16.1-Ubuntu <<>>  
;; global options: +cmd  
;; Got answer:  
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 4278  
;; flags: qr rd ra; QUERY: 1, ANSWER: 13, AUTHORITY: 0, ADDITIONAL: 1  
  
;; OPT PSEUDOSECTION:  
; EDNS: version: 0, flags:; udp: 65494  
;; QUESTION SECTION:  
;.                               IN      NS  
  
;; ANSWER SECTION:  
.          168206 IN      NS      a.root-servers.net.  
.          168206 IN      NS      j.root-servers.net.  
.          168206 IN      NS      k.root-servers.net.  
.          168206 IN      NS      f.root-servers.net.  
.          168206 IN      NS      d.root-servers.net.  
.          168206 IN      NS      m.root-servers.net.  
.          168206 IN      NS      g.root-servers.net.  
.          168206 IN      NS      e.root-servers.net.  
.          168206 IN      NS      i.root-servers.net.  
.          168206 IN      NS      c.root-servers.net.  
.          168206 IN      NS      h.root-servers.net.  
.          168206 IN      NS      b.root-servers.net.  
.          168206 IN      NS      l.root-servers.net.  
  
;; Query time: 288 msec  
;; SERVER: 127.0.0.53#53(127.0.0.53)  
;; WHEN: শনি জাম্বু 09 20:51:58 +06 2021  
;; MSG SIZE rcvd: 239
```

**ip:** The ip command is a powerful tool for configuring network interfaces that any Linux system administrator should know. It is used to bring interfaces up or down, assign and remove addresses and routes, manage ARP cache etc.

```
pritom@pritom-VirtualBox: ~  
pritom@pritom-VirtualBox:~$ ip  
Usage: ip [ OPTIONS ] OBJECT { COMMAND | help }  
       ip [ -force ] -batch filename  
where  OBJECT := { link | address | addrlabel | route | rule | neigh | ntable |  
                  tunnel | tuntap | maddress | mroute | mrule | monitor | xfrm |  
                  netns | l2tp | fou | macsec | tcp_metrics | token | netconf | ila |  
                  vrf | sr | nexthop }  
      OPTIONS := { -V[ersion] | -s[tatistics] | -d[etails] | -r[esolve] |  
                  -h[uman-readable] | -iec | -j[son] | -p[retty] |  
                  -f[amily] { inet | inet6 | mpls | bridge | link } |  
                  -4 | -6 | -I | -D | -M | -B | -0 |  
                  -l[oops] { maximum-addr-flush-attempts } | -br[ief] |  
                  -o[neline] | -t[imestamp] | -ts[hort] | -b[atch] [filename] |  
                  -rc[vbuf] [size] | -n[etns] name | -N[umeric] | -a[ll] |  
                  -c[olor]}
```

**nslookup:** nslookup command is used to find out DNS related query or testing and troubleshooting DNS server.

```
pritom@pritom-VirtualBox: ~  
pritom@pritom-VirtualBox:~$ nslookup google.com  
Server:      127.0.0.53  
Address:     127.0.0.53#53  
  
Non-authoritative answer:  
Name:   google.com  
Address: 216.58.196.174  
Name:   google.com  
Address: 2404:6800:4007:812::200e  
  
pritom@pritom-VirtualBox:~$
```

**ssh**: ssh or Secure Socket Shell command is used to connect with a remote computer or server by using text base interface. When we have to manage a computer remotely then ssh command is used frequently.

```
pritom@pritom-VirtualBox: ~  
pritom@pritom-VirtualBox:~$ ssh  
usage: ssh [-46AaCfGgKkMnqsTtVvXxYy] [-B bind_interface]  
          [-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]] destination [command]  
pritom@pritom-VirtualBox:~$
```

**rsync**: this command is used for synchronizing files and directories between two locations over a remote shell. It provides fast incremental file transfer by transferring only the differences between the source and the destination.



pritom@pritom-VirtualBox: ~

```
pritom@pritom-VirtualBox:~$ rsync
rsync version 3.1.3 protocol version 31
Copyright (C) 1996-2018 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.
```