

Experiment No:1

Aim: study linux commands

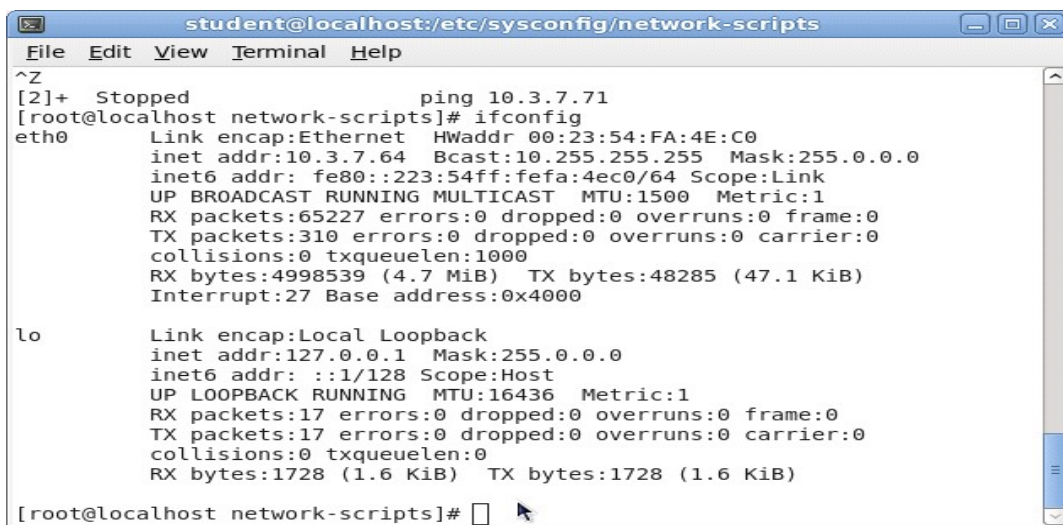
Theory:

ifconfig

ifconfig is used to configure the system's kernel-resident network interfaces. It is used at boot time to set up interfaces as necessary. After that, it is usually only needed when debugging or when system tuning is needed. If no arguments are given, ifconfig displays the status of the system's active interfaces. If a single interface argument is given, it displays the status of the given interface only.

Eg: ifconfig

Running ifconfig with no options will display the configuration of all active interfaces.

A screenshot of a terminal window titled 'student@localhost:/etc/sysconfig/network-scripts'. The terminal shows the execution of the 'ifconfig' command. The output displays the configuration for two interfaces: 'eth0' and 'lo'. For 'eth0', it shows Ethernet details including MAC address (00:23:54:FA:4E:C0), IP address (10.3.7.64), broadcast address (10.255.255.255), and various statistics like RX/TX packets, errors, and bytes. For 'lo', it shows Local Loopback details with IP address 127.0.0.1 and similar statistics. The prompt at the bottom is '[root@localhost network-scripts]#'.

```
student@localhost:/etc/sysconfig/network-scripts
File Edit View Terminal Help
^Z
[2]+  Stopped                  ping 10.3.7.71
[root@localhost network-scripts]# ifconfig
eth0      Link encap:Ethernet  HWaddr 00:23:54:FA:4E:C0
          inet addr:10.3.7.64  Bcast:10.255.255.255  Mask:255.0.0.0
          inet6 addr: fe80::223:54ff:fe4a:4ec0/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:65227 errors:0 dropped:0 overruns:0 frame:0
          TX packets:310 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:4998539 (4.7 MiB)  TX bytes:48285 (47.1 KiB)
          Interrupt:27 Base address:0x4000

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:16436  Metric:1
          RX packets:17 errors:0 dropped:0 overruns:0 frame:0
          TX packets:17 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:1728 (1.6 KiB)  TX bytes:1728 (1.6 KiB)

[root@localhost network-scripts]#
```

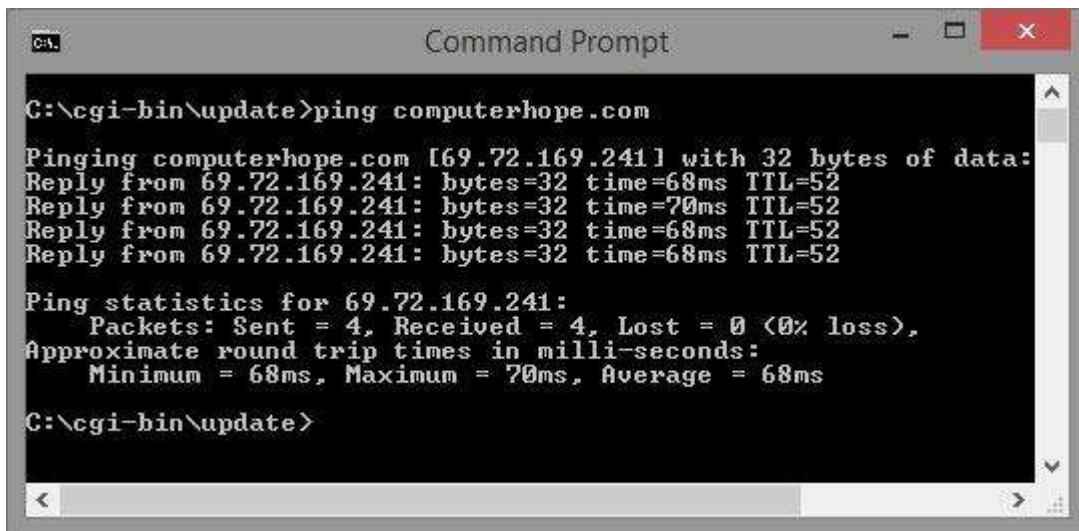
Figure 1: ifconfig Command

ping

ping is a simple way to send network data to, and receive network data from, another computer on a network. It is frequently used to test, at the most basic level, whether another system is reachable over a network, and if so, how much time it takes for that data to be exchanged.

Eg: ping google.com

Ping the host google.com to see if it is alive.



```
C:\cgi-bin\update>ping computerhope.com

Pinging computerhope.com [69.72.169.241] with 32 bytes of data:
Reply from 69.72.169.241: bytes=32 time=68ms TTL=52
Reply from 69.72.169.241: bytes=32 time=70ms TTL=52
Reply from 69.72.169.241: bytes=32 time=68ms TTL=52
Reply from 69.72.169.241: bytes=32 time=68ms TTL=52

Ping statistics for 69.72.169.241:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 68ms, Maximum = 70ms, Average = 68ms

C:\cgi-bin\update>
```

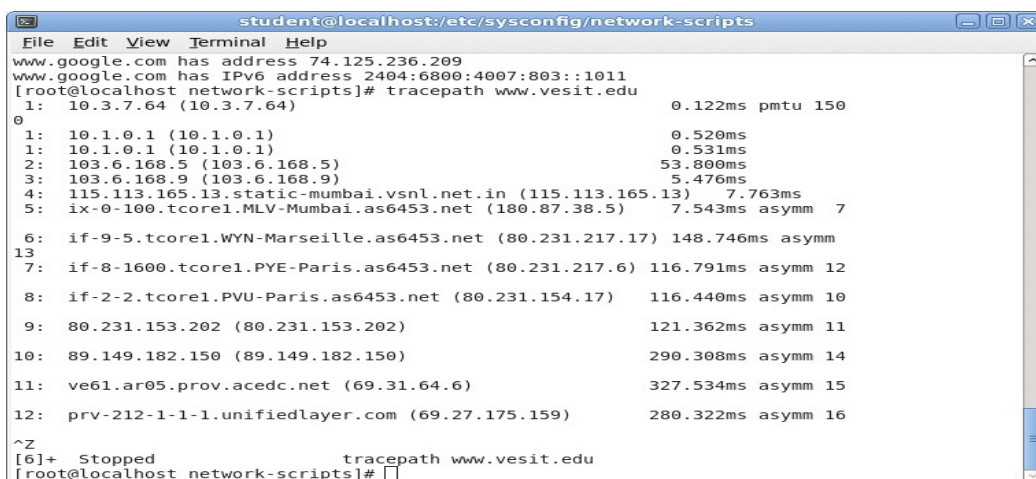
Figure 2: ping Command

3. tracepath

www.vesit.edu : It traces the complete path to a networking host discovering the MTU along the path.

It uses UDP port or some random port. It is similar to traceroute, only it does not require superuser privileges and has no fancy options.

Syntax: tracepath destination [port]



```
student@localhost:/etc/sysconfig/network-scripts
File Edit View Terminal Help
www.google.com has address 74.125.236.209
www.google.com has IPv6 address 2404:6800:4007:803::1011
[root@localhost network-scripts]# tracepath www.vesit.edu
1: 10.3.7.64 (10.3.7.64) 0.122ms pmtu 150
0
1: 10.1.0.1 (10.1.0.1) 0.520ms
1: 10.1.0.1 (10.1.0.1) 0.531ms
2: 103.6.168.5 (103.6.168.5) 53.800ms
3: 103.6.168.9 (103.6.168.9) 5.476ms
4: 115.113.165.13.static-mumbai.vsnl.net.in (115.113.165.13) 7.763ms
5: ix-0-100.tcore1.MLV-Mumbai.as6453.net (180.87.38.5) 7.543ms asymm 7
6: if-9-5.tcore1.WYN-Marseille.as6453.net (80.231.217.17) 148.746ms asymm
13
7: if-8-1600.tcore1.PYE-Paris.as6453.net (80.231.217.6) 116.791ms asymm 12
8: if-2-2.tcore1.PVU-Paris.as6453.net (80.231.154.17) 116.440ms asymm 10
9: 80.231.153.202 (80.231.153.202) 121.362ms asymm 11
10: 89.149.182.150 (89.149.182.150) 290.308ms asymm 14
11: ve61.ar05.prov.acedc.net (69.31.64.6) 327.534ms asymm 15
12: prv-212-1-1-1.unifiedlayer.com (69.27.175.159) 280.322ms asymm 16
^Z
[6]+ Stopped tracepath www.vesit.edu
[root@localhost network-scripts]#
```

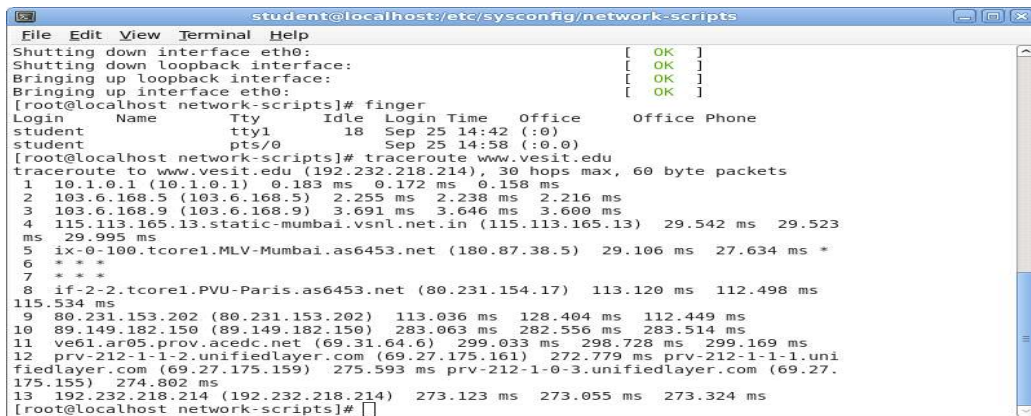
Figure 3: tracepath Command

4. traceroute

www.vesit.edu: traceroute prints the route that packets take to a network host. It is used to find network path from machine to server.

The server name above is destination name or IP address.

Syntax: traceroute <server name>



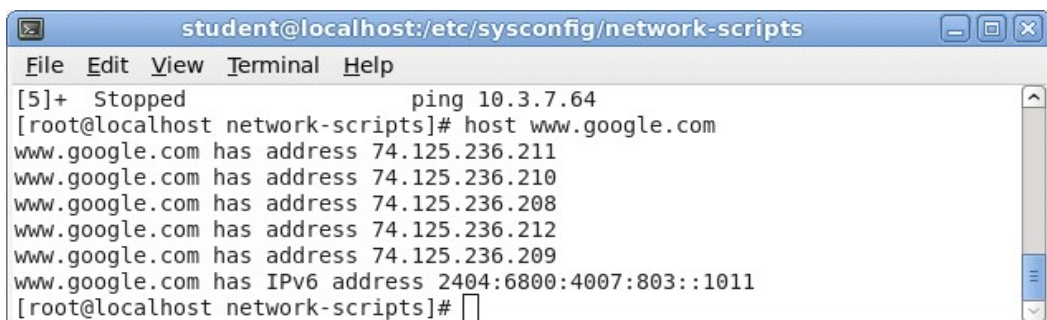
```
student@localhost:/etc/sysconfig/network-scripts
File Edit View Terminal Help
Shutting down interface eth0: [ OK ]
Shutting down loopback interface: [ OK ]
Bringing up loopback interface: [ OK ]
Bringing up interface eth0: [ OK ]
[root@localhost network-scripts]# finger
Login      Name      Tty      Idle      Login Time      Office      Office Phone
student    tty1      18       Sep 25 14:42 (:0)
student    pts/0     Sep 25 14:58 (:0.0)
[root@localhost network-scripts]# traceroute www.vesit.edu
traceroute to www.vesit.edu (192.232.218.214), 30 hops max, 60 byte packets
 1  10.1.0.1 (10.1.0.1)  0.183 ms  0.172 ms  0.158 ms
 2  103.6.168.5 (103.6.168.5)  2.255 ms  2.238 ms  2.216 ms
 3  103.6.168.9 (103.6.168.9)  3.691 ms  3.646 ms  3.600 ms
 4  115.113.165.13.static-mumbai.vsnl.net.in (115.113.165.13)  29.542 ms  29.523 ms  29.995 ms
 5  ix-0-100.tcore1.MLV-Mumbai.as6453.net (180.87.38.5)  29.106 ms  27.634 ms *
 6  * * *
 7  * * *
 8  if-2-2.tcore1.PVU-Paris.as6453.net (80.231.154.17)  113.120 ms  112.498 ms  115.534 ms
 9  80.231.153.202 (80.231.153.202)  113.036 ms  128.404 ms  112.449 ms
10  89.149.182.150 (89.149.182.150)  283.063 ms  282.556 ms  283.514 ms
11  ve61.ar05.prov.acedc.net (69.31.64.6)  299.033 ms  298.728 ms  299.169 ms
12  prv-212-1-1-2.unifiedlayer.com (69.27.175.161)  272.779 ms  prv-212-1-1-1.unifiedlayer.com (69.27.175.159)  275.593 ms  prv-212-1-0-3.unifiedlayer.com (69.27.175.155)  274.802 ms
13  192.232.218.214 (192.232.218.214)  273.123 ms  273.055 ms  273.324 ms
[root@localhost network-scripts]#
```

Figure 4: traceroute Command

5. host

www.google.com host is a simple utility for performing DNS lookups.

It is normally used to convert names to IP addresses and vice versa. When no arguments or options are given, host prints a short summary of its command line arguments and options.



```
student@localhost:/etc/sysconfig/network-scripts
File Edit View Terminal Help
[5]+ Stopped ping 10.3.7.64
[root@localhost network-scripts]# host www.google.com
www.google.com has address 74.125.236.211
www.google.com has address 74.125.236.210
www.google.com has address 74.125.236.208
www.google.com has address 74.125.236.212
www.google.com has address 74.125.236.209
www.google.com has IPv6 address 2404:6800:4007:803::1011
[root@localhost network-scripts]#
```

Figure 5: host Command

6. Service Network Restart

Service runs a System V init script or upstart job in as predictable an environment as possible, removing most environment variables and with current working directory set to "/.

```

student@localhost:/etc/sysconfig/network-scripts
File Edit View Terminal Help
-rwxr-xr-x. 1 root root 11011 2009-10-28 01:41 ifup-eth
-rwxr-xr-x. 1 root root 11971 2009-10-28 01:41 ifup-ipp
-rwxr-xr-x. 1 root root 8373 2009-10-28 01:41 ifup-ipsec
-rwxr-xr-x. 1 root root 10679 2009-10-28 01:41 ifup-ipv6
-rwxr-xr-x. 1 root root 822 2009-10-28 01:41 ifup-ix
lrwxrwxrwx. 1 root root 9 2014-01-15 20:42 ifup-isdn -> ifup-ipp
-rwxr-xr-x. 1 root root 727 2009-10-28 01:41 ifup-plip
-rwxr-xr-x. 1 root root 954 2009-10-28 01:41 ifup-plusb
-rwxr-xr-x. 1 root root 2364 2009-10-28 01:41 ifup-post
-rwxr-xr-x. 1 root root 4194 2009-10-28 01:41 ifup-ppp
-rwxr-xr-x. 1 root root 1712 2009-10-28 01:41 ifup-routes
-rwxr-xr-x. 1 root root 3490 2009-10-28 01:41 ifup-sit
-rwxr-xr-x. 1 root root 2482 2009-10-28 01:41 ifup-tunnel
-rwxr-xr-x. 1 root root 3770 2009-10-28 01:41 ifup-wireless
-rwxr-xr-x. 1 root root 4508 2009-10-28 01:41 init.ipv6-global
-rwxr-xr-x. 1 root root 1125 2009-10-28 01:41 net.hotplug
-rw-r--r--. 1 root root 9141 2009-10-28 01:41 network-functions
-rw-r--r--. 1 root root 29835 2009-10-28 01:41 network-functions-ipv6
[root@localhost network-scripts]# vi ifcfg-eth0
[root@localhost network-scripts]# service network restart
Shutting down interface eth0: [ OK ]
Shutting down loopback interface: [ OK ]
Bringing up loopback interface: [ OK ]
Bringing up interface eth0: [ ]

```

Figure 6: Service Network Restart Command

7. finger

Finger looks up and displays information about system users.

Syntax: finger [-lmsp] [user...] [userhost...]

Eg: finger -p ch

Displays information about the user ch

```

student@localhost:/etc/sysconfig/network-scripts
File Edit View Terminal Help
lrwxrwxrwx. 1 root root 9 2014-01-15 20:42 ifup-isdn -> ifup-ipp
-rwxr-xr-x. 1 root root 727 2009-10-28 01:41 ifup-plip
-rwxr-xr-x. 1 root root 954 2009-10-28 01:41 ifup-plusb
-rwxr-xr-x. 1 root root 2364 2009-10-28 01:41 ifup-post
-rwxr-xr-x. 1 root root 4194 2009-10-28 01:41 ifup-ppp
-rwxr-xr-x. 1 root root 1712 2009-10-28 01:41 ifup-routes
-rwxr-xr-x. 1 root root 3490 2009-10-28 01:41 ifup-sit
-rwxr-xr-x. 1 root root 2482 2009-10-28 01:41 ifup-tunnel
-rwxr-xr-x. 1 root root 3770 2009-10-28 01:41 ifup-wireless
-rwxr-xr-x. 1 root root 4508 2009-10-28 01:41 init.ipv6-global
-rwxr-xr-x. 1 root root 1125 2009-10-28 01:41 net.hotplug
-rw-r--r--. 1 root root 9141 2009-10-28 01:41 network-functions
-rw-r--r--. 1 root root 29835 2009-10-28 01:41 network-functions-ipv6
[root@localhost network-scripts]# vi ifcfg-eth0
[root@localhost network-scripts]# service network restart
Shutting down interface eth0: [ OK ]
Shutting down loopback interface: [ OK ]
Bringing up loopback interface: [ OK ]
Bringing up interface eth0: [ OK ]
[root@localhost network-scripts]# finger
Login      Name      Tty      Idle   Login Time   Office      Office Phone
student    tty1      18       Sep 25 14:42 (:0)
student    pts/0     Sep 25 14:58 (:0.0)
[root@localhost network-scripts]#

```

Figure 7: finger Command

8. netstat

The netstat command is used to print network connections, routing tables, interface statistics, masquerade connections, and multicast memberships. It is used for finding problems in the network and to determine the amount of traffic on the network as a performance measurement.

Eg: netstat -an

Shows information about all active connections to the server, including the source and destination IP addresses and ports, if you have proper permissions.

```
student@localhost:/etc/sysconfig/network-scripts
File Edit View Terminal Help
11 ve61.ar05.prov.acedc.net (69.31.64.6) 299.033 ms 298.728 ms 299.169 ms
12 prv-212-1-1-2.unifiedlayer.com (69.27.175.161) 272.779 ms prv-212-1-1-1.uni
fiedlayer.com (69.27.175.159) 275.593 ms prv-212-1-0-3.unifiedlayer.com (69.27.
175.155) 274.802 ms
13 192.232.218.214 (192.232.218.214) 273.123 ms 273.055 ms 273.324 ms
[root@localhost network-scripts]# netstat -anct
Active Internet connections (servers and established)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
tcp        0      0 0.0.0.0:49798          0.0.0.0:*              LISTEN
tcp        0      0 0.0.0.0:111           0.0.0.0:*              LISTEN
tcp        0      0 0.0.0.0:21            0.0.0.0:*              LISTEN
tcp        0      0 0.0.0.0:22            0.0.0.0:*              LISTEN
tcp        0      0 0.0.0.0:631           0.0.0.0:*              LISTEN
tcp        0      0 0.0.0.0:1:25          0.0.0.0:*              LISTEN
tcp        0      0 10.3.7.64:55677        10.1.0.1:8080          SYN_SENT
tcp        1      0 10.3.7.72:55601        115.112.0.23:80        CLOSE_WAIT
tcp        0      0 :::111                :::*                    LISTEN
tcp        0      0 :::22                  :::*                    LISTEN
tcp        0      0 :::1:631               :::*                    LISTEN
Active Internet connections (servers and established)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
tcp        0      0 0.0.0.0:49798          0.0.0.0:*              LISTEN
tcp        0      0 0.0.0.0:111           0.0.0.0:*              LISTEN
tcp        0      0 0.0.0.0:21            0.0.0.0:*              LISTEN
tcp        0      0 0.0.0.0:22            0.0.0.0:*              LISTEN
tcp        0      0 0.0.0.0:631           0.0.0.0:*              LISTEN
tcp        0      0 0.0.0.0:1:25          0.0.0.0:*              LISTEN
tcp        0      0 10.3.7.64:55677        10.1.0.1:8080          SYN_SENT
tcp        1      0 10.3.7.72:55601        115.112.0.23:80        CLOSE_WAIT
tcp        0      0 :::111                :::*                    LISTEN
tcp        0      0 :::22                  :::*                    LISTEN
tcp        0      0 :::1:631               :::*                    LISTEN
^Z
[1]+  Stopped                  netstat -anct
[root@localhost network-scripts]#
```

Figure 8: netstat Command

Conclusion: Hence successfully studied the commands of linux.

Date:

Sign:

Grade: