

EXPERIMENT 1

Aim: Execute and analyze basic networking commands

LO 1: Execute and evaluate network administration commands and demonstrate their use in different network scenarios

Theory: A computer network is defined as a group of 2 or more computers that are connected and can electronically communicate with each other. The computers are identified using their hostnames, IP, and mac addresses. A simple home or office network is referred to as a LAN, short for Local Area Network. A LAN covers a small area such as a home, office, or restaurant network. In contrast, a WAN (Wide Area Network) spans a large geographical region. Some Basic Networking commands are:

1. ifconfig Command:

The ifconfig command lists the network interfaces attached to the PC along with other statistics such as the IP addresses associated with each interface, subnet mask, and MTU to mention just a few.

2. ping Command:

Short for packet internet groper, the ping command is used to check connectivity between 2 systems or servers. It sends out an ICMP echo request to a remote host and waits for a reply. If the host is up, the echo request bounces off the remote host and is sent back to the source informing the user that the host is up or available.

3. traceroute Command:

The traceroute command displays the route that an ICMP ping packet takes from your device to the destination host or server. It displays the IP addresses of devices that the packet hops through before getting to the remote destination. Traceroute command is a cool diagnostic command that you can use to troubleshoot the network where the ping command gives you failed results. It shows the device at which the packets are being dropped.

4. nslookup Command:

The nslookup utility is yet another command-line tool that is used for making DNS lookups in a bid to retrieve domain names and A records.

5. netstat Command:

The netstat command prints out the network interface statistics. It can display the routing table, ports that various services are listening on, TCP and UDP connections, PID, and UID.

6. dig Command:

The dig utility (short for Domain Information Groper) is a command-line tool for probing DNS nameservers. It takes a domain name as the argument and displays information such as the host address, A record, MX (mail exchanges) record, nameservers, etc.

Output:

```
ipconfig
ping
ping 142.250.77.68
ping
ping -c 142.250.77.68
netstat -tl
netstat -ntl
netstat -nul
netstat -nulp
netstat -ntlp
netstat -a
netstat -tl
netstat -r
netstat -rn
nslookup
doskey /history

281 ifconfig
282 ping 172.20.208.144
283 ping 172.20.208.146
284 ping 172.20.208.146
285 ping 172.20.208.144
286 ping 192.168.163.128
287 sudi ifconfig
288 sudo ifconfig
289 nslookup www.google.com
290 netstat
291 netstat -ntl
292 netstat -ttl
293 netstat -nulp
294 netstat -ntlp
295 netstat -a
296 netstat -tl
297 netstat -nul
298 netstat -r
299 netstat -rn
300 nslookup
301 history
```

Conclusion: From this experiment we have learned some of the basic commands for networking in Windows and LINUX.