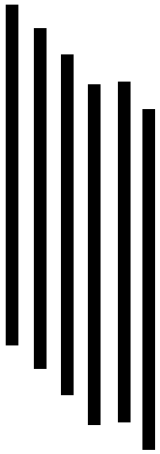
International College

Lab Report on

Computer Network

(Networking Commands)



BSc (CSIT) 4th Semester

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Lab Report 4

2) Practice on basic Networking commands (ifconfig/ipconfig, tcpdump, netstat, dnsip, hostname, route)

- **Introduction**

  The operating system consists of various built-in, command-line networking utilities that are used for network troubleshooting. We will see various networking commands which are most essentials for every network administrator.

- **Objective**

  Help to study the physical addresses of devices and packet transmission, connection between devices.

- **Procedure**

• **ping:** ping is used to testing a network host capacity to interact with another host. Just enter the command Ping, followed by the target host's name or IP address.

```
aayuspudasaini@cloudshell:~ (13mon-316812)$ ping 172.18.0.1
PING 172.18.0.1 (172.18.0.1) 56(84) bytes of data.
64 bytes from 172.18.0.1: icmp_seq=1 ttl=64 time=0.040 ms
64 bytes from 172.18.0.1: icmp_seq=2 ttl=64 time=0.060 ms
64 bytes from 172.18.0.1: icmp_seq=3 ttl=64 time=0.046 ms
64 bytes from 172.18.0.1: icmp_seq=4 ttl=64 time=0.051 ms
64 bytes from 172.18.0.1: icmp_seq=5 ttl=64 time=0.047 ms
64 bytes from 172.18.0.1: icmp_seq=6 ttl=64 time=0.048 ms
64 bytes from 172.18.0.1: icmp_seq=7 ttl=64 time=0.053 ms
^C
--- 172.18.0.1 ping statistics ---
7 packets transmitted, 7 received, 0% packet loss, time 158ms
rtt min/avg/max/mdev = 0.040/0.049/0.060/0.007 ms
```

Fig: ping

• **ifconfig/ipconfig**

The command IP config will display basic details about the device's IP address configuration. Just type IP config in the Windows prompt and the IP, subnet mask and default gateway that the current device will be presented.

```
aayuspudasaini@cloudshell:~ (13mon-316812)$ ifconfig
docker0: flags=4099<UP,BROADCAST,MULTICAST>  mtu 1500
        inet 172.18.0.1  netmask 255.255.0.0  broadcast 172.18.255.255
        ether 02:42:18:75:1d:02  txqueuelen 0  (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

eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 172.17.0.4  netmask 255.255.0.0  broadcast 172.17.255.255
        ether 02:42:ac:11:00:04  txqueuelen 0  (Ethernet)
        RX packets 547  bytes 71906 (70.2 KiB)
```

Fig: ifconfig

• **tcpdump:**

tcpdump is a command line utility that allows you to capture and analyze

network traffic going through your system. It is often used to help troubleshoot network issues, as well as a security tool.

```
aayuspudasaini@cloudshell:~ (13mon-316812)$ sudo tcpdump -D
1.eth0 [Up, Running]
2.any (Pseudo-device that captures on all interfaces) [Up, Running]
3.lo [Up, Running, Loopback]
4.docker0 [Up]
5.nflog (Linux netfilter log (NFLOG) interface)
6.nfqueue (Linux netfilter queue (NFQUEUE) interface)
```

Fig: tcpdump

- **Netstat**

Netstat is a Common TCP – IP networking command-line method present in most Windows, Linux, UNIX, and other operating systems. The netstat provides the statistics and information in the use of the current TCP-IP Connection network about the protocol.

```
aayuspudasaini@cloudshell:~ (13mon-316812)$ netstat -a
Active Internet connections (servers and established)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
tcp        0      0 localhost:8998          0.0.0.0:*               LISTEN
tcp        0      0 0.0.0.0:65001           0.0.0.0:*               LISTEN
tcp        0      0 0.0.0.0:http            0.0.0.0:*               LISTEN
tcp        0      0 0.0.0.0:ssh             0.0.0.0:*               LISTEN
tcp        0      0 localhost:38843         0.0.0.0:*               LISTEN
tcp        0      0 localhost:ssh           localhost:38682         ESTABLISHED
tcp        0      0 cs-83483379655-de:46058 th-in-f139.1e100.:https ESTABLISHED
tcp        0      0 localhost:ssh           localhost:38684         ESTABLISHED
tcp        0      0 localhost:38684         localhost:ssh           ESTABLISHED
tcp        0      0 localhost:38690         localhost:ssh           ESTABLISHED
tcp        0      0 localhost:ssh           localhost:38750         TIME_WAIT
tcp        0      0 localhost:38682         localhost:ssh           ESTABLISHED
```

Fig: netstat

- **Hostname**

To communicate with each and other, the computer needs a unique address. A hostname can be alphabetic or alphanumeric and contain specific symbols used specifically to define a specific node or device in the network.

```
aayuspudasaini@cloudshell:~ (13mon-316812)$ hostname
cs-83483379655-default-default-2596c
aayuspudasaini@cloudshell:~ (13mon-316812)$
```

Fig: hostname

- **Route**

In IP networks, routing tables are used to direct packets from one subnet to another. The Route command provides the device's routing tables. To get this result, just type route print.

```
aayuspudasaini@cloudshell:~ (13mon-316812)$ route
Kernel IP routing table
Destination     Gateway         Genmask         Flags Metric Ref    Use Iface
default         172.17.0.1      0.0.0.0         UG    0      0        0 eth0
172.17.0.0      0.0.0.0         255.255.0.0     U     0      0        0 eth0
172.18.0.0      0.0.0.0         255.255.0.0     U     0      0        0 docker0
aayuspudasaini@cloudshell:~ (13mon-316812)$
```

Fig: route

- **Dnsip**

  Dnsip serves the sole task of resolving a given domain-name to it's IPv4 address.

- **Conclusion**

  We learned about few commands which helps to study the devices data and other information