EXPERIMENT NO. 1

SEMESTER: V **DATE OF PERFORMANCE: 11/07/22**

SUBJECT: CN Lab **DATE OF SUBMISSION:06/08/22**

NAME OF THE STUDENT: Shrikrishna umbare **ROLL NO.: 57**

AIM	Study of Linux Networking Commands.
LEARNING OBJECTIVE	The student will understand the basic Linux networking commands.
LEARNING OUTCOME	● The student will experiment and explain the basic Linux networking commands. ● The student will be able to find out IP/MAC addresses, IP packet status, link status, network statistics, port scanning etc.
LAB OUTCOME	CSL502.2: The student will illustrate the use of basic networking commands.
PROGRAM OUTCOME	PO1: The student will be able to apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems. PO5: The student will be able to create, select and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
BLOOM'S TAXONOMY LEVEL	Knowledge ,Understand
THEORY	**1. 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. ● In the command prompt, type ifconfig. Running ifconfig with no options will display the configuration of all active interfaces. ● Find the difference between ifconfig/all and ifconfig command? ● Attach output. **2. ping:** Ping is a basic Internet program that lets you verify that a particular Internet address exists and can accept requests. The verb ping means the act of using the ping utility or command.

Ping is used diagnostically to ensure that a host computer you arr trying to reach is actually operating. If, for example, a user cannot ping a host, then the user will be unable to use the File Transfer Protocol (FTP) to send files to that host. Ping can also be used with a host that is operating to see how long it takes to get a response back. Using ping, you can learn the number form of the IP address from the symbolic domain name Loosely, ping means "to get the attention of" or "to check for the presence of" another party online". Ping operates by sending a packet to a designated address and waiting for a response.

- Ask your friend to give his/her IP address.
- Now try a simple ping to their machine using e.g. **ping** your friend's IP address.
- Attach output.
- Try the option ping -n 2 IP ADDRESS, then try ping -n 7 IP ADDRESS. What differences do you notice?
- Attach output.

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

- In the command prompt type trace route www.dbit.in (Take website of your choice instead of www.dbit.com)
- Attach output of both website.

4. tracepath:
tracepath 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 super user privileges and has no fancy options.

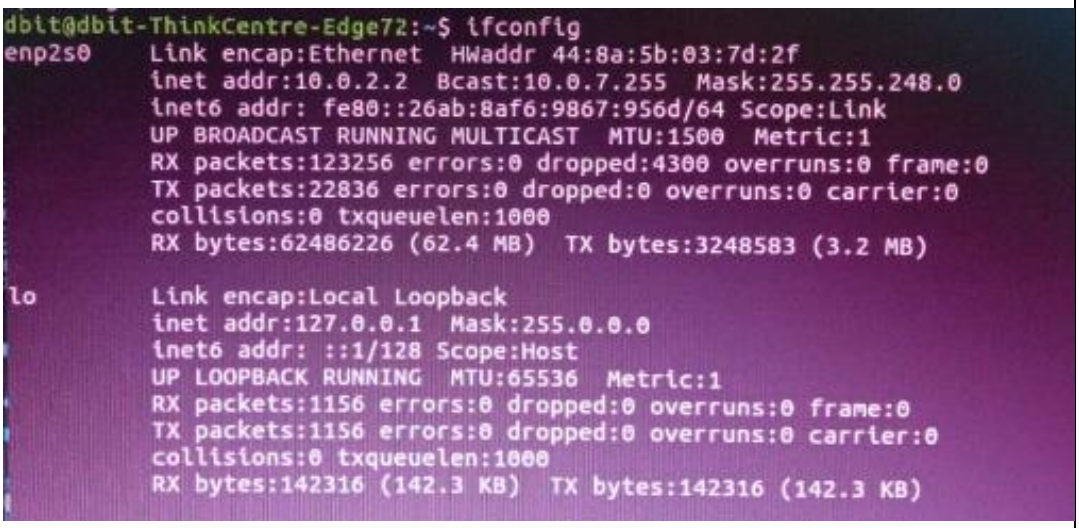
- In the command prompt type tracepath www.dbit.in (Take website of your choice instead of www.dbit.com)
- Attach output of both website.
- What difference do you see between traceroute and tracepath command?

5. nslookup:
nslookup is a network administration command-line tool available for many computer operating systems for querying the Domain Name System (DNS) to obtain domain name or IP address mapping or for any other specific DNS record.

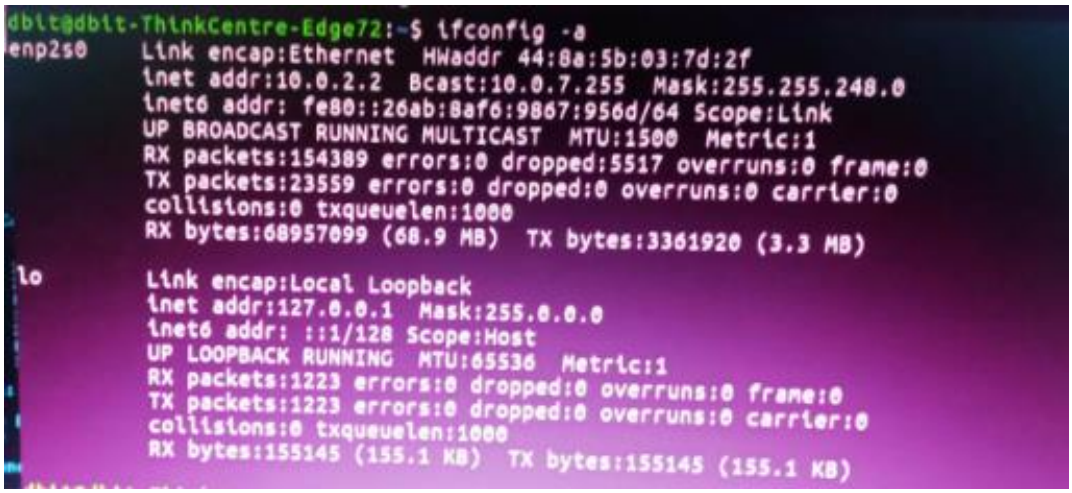
- In the command prompt Type nslookup www.yahoo.com (Take website of your choice instead of www.yahoo.com)
- Note that this command gives you the actual name of the server, as per the hosting company's naming conventions; its IP address; and any aliases under which that server operates.
- Attach output.

6. Netstat:
Netstat allows you to display statistics about your Ethernet interface. If any errors are

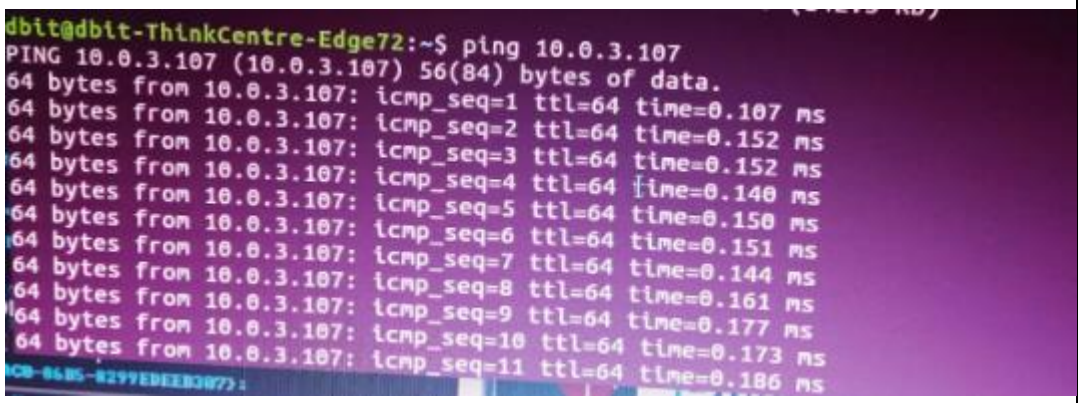
	indicated in the display, you might have problems with your network connection that are slowing the network down. If the error packets approach 1% of the total number of packets, something is probably wrong with your NIC or physical interface. ● In the command prompt, type in netstat to list all current network connections, not just inbound but outbound as well. ● Attach output. **7. ARP:** ARP command is used to view and then delete the ARP cache, and you use the ping command to generate ARP cache entries. Address Resolution Protocol (ARP) is a telecommunications protocol used for resolution of network layer addresses into link layer addresses, a critical function in multiple-access networks. ARP was defined by RFC 826 and is also the name of the program for manipulating these addresses in most operating systems. In the command prompt, type arp -a. Remember, that previously the computer discovered the MAC address of your computer by using address resolution protocol (ARP). You have now resolved the globally unique MAC address of your device. ● In the command prompt, type in ARP. ● Attach output. **8.ip addr show:** ip addr show command is used to view ip addresses. ● In the command prompt, type ip addr show. ● Attach output. **9.dig:** Using dig command you can query DNS name server for your DNS lookup related tasks. ● In the command prompt type dig dbit.in (Take website of your choice instead of www.dbit.com) ● The dig command result will have header, question section, answer section, authority section and additional section. ● Attach output of both website. **10.route:** route command will display the routing table entries. ● In the command prompt type route. This will display the routing table entries. ● Find an alternative command for the same task. ● Attach output for both the commands executed. **11.curl:** curl is a tool for transferring data from or to a server. It supports various protocols. The command is designed to work without user interaction. curl offers a busload of useful tricks like proxy support, user authentication, FTP upload,

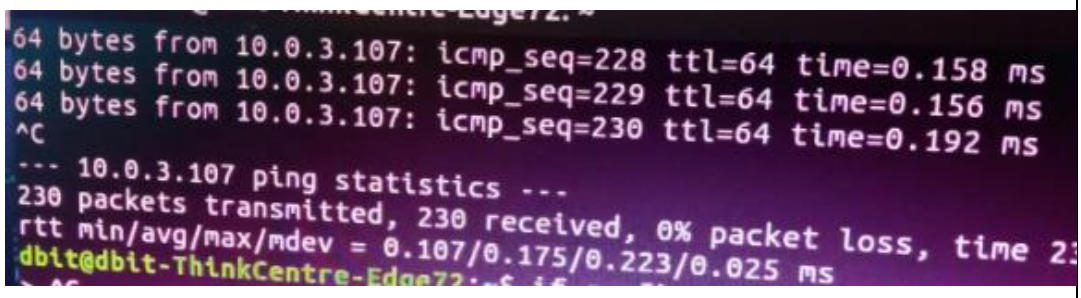
	HTTP post, SSL connections, cookies, file transfer resume and more. **12.wget:** Wget is a free utility for non-interactive download of files from the Web. It supports HTTP, HTTPS, and FTP protocols, as well as retrieval through HTTP proxies. Wget is non-interactive, meaning that it can work in the background, while the user is not logged on. By contrast, most of the Web browsers require constant user's presence, which can be a great hindrance when transferring a lot of data. Wget can follow links in HTML, XHTML, and CSS pages, to create local versions of remote web sites, fully recreating the directory structure of the original site. Wget can be instructed to convert the links in downloaded files to point at the local files, for offline viewing. **13.ssh:** ssh (SSH client) is a program for logging into a remote machine and for executing commands on a remote machine. It is intended to provide secure encrypted communications between two untrusted hosts over an insecure network. ssh connects and logs into the specified destination, which may be specified as either [user@]hostname or a URI of the form ssh://[user@]hostname[:port].
LAB EXERCISE	• **Ifconfig** 

ifconfig -a:

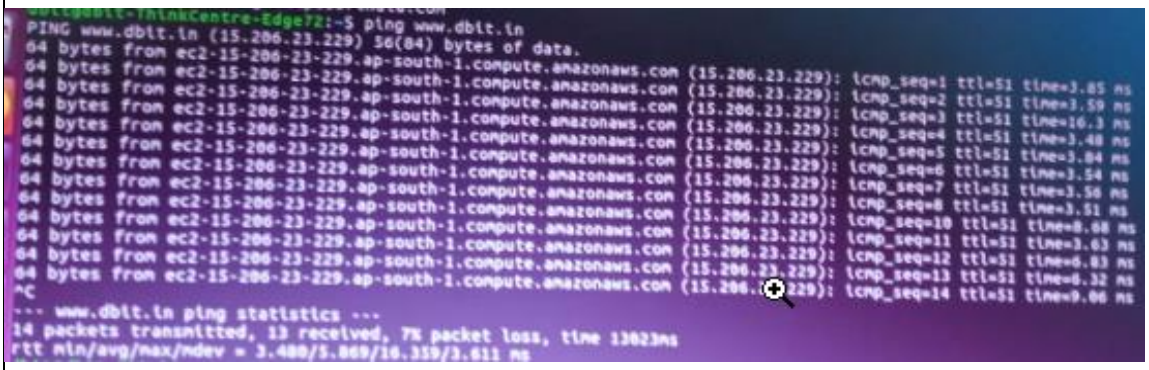


- **ping**





ping www.dbit.in



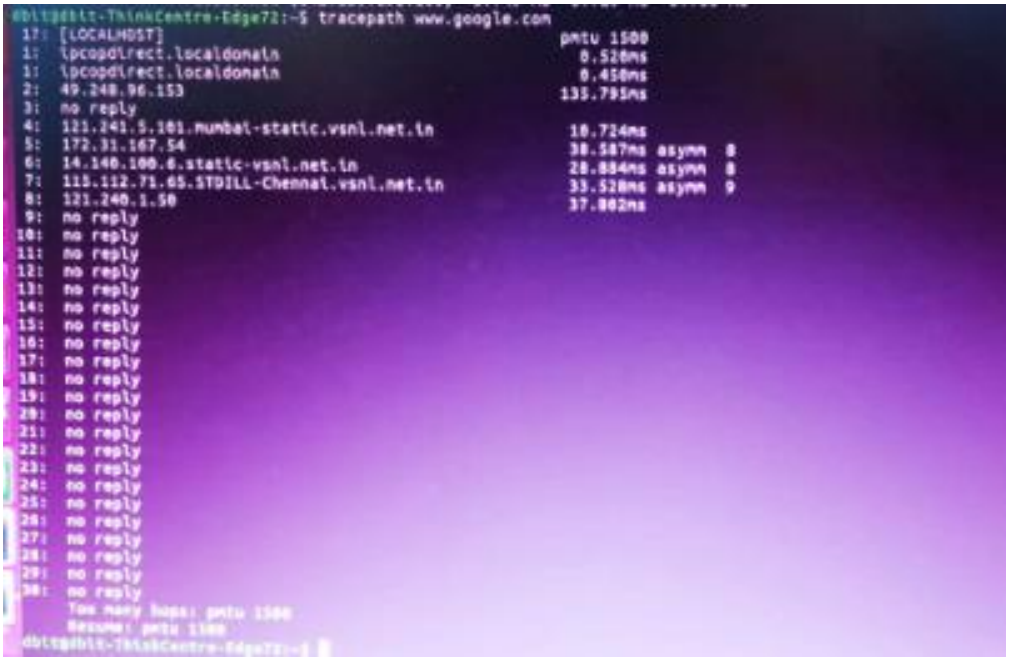
ping invalid address

- **traceroute**

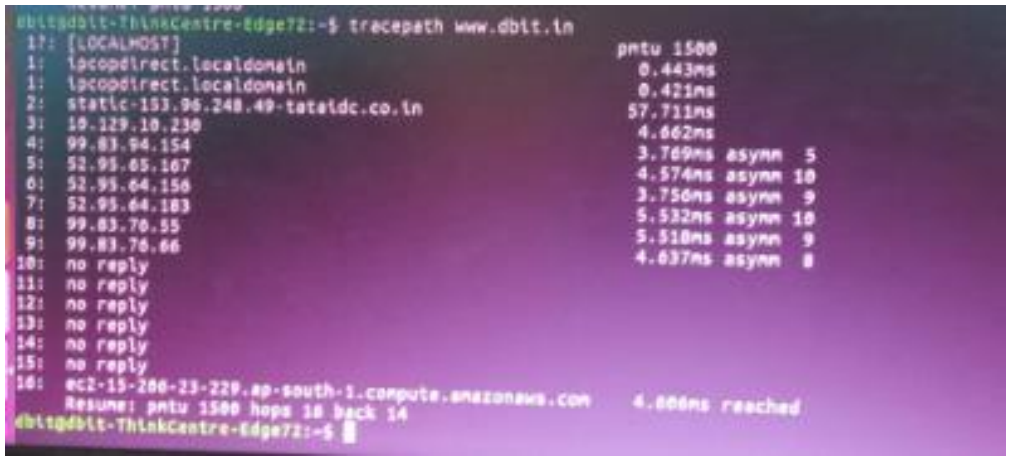
  traceroute www.dbit.in

- **tracepath**

tracepath www.google.com

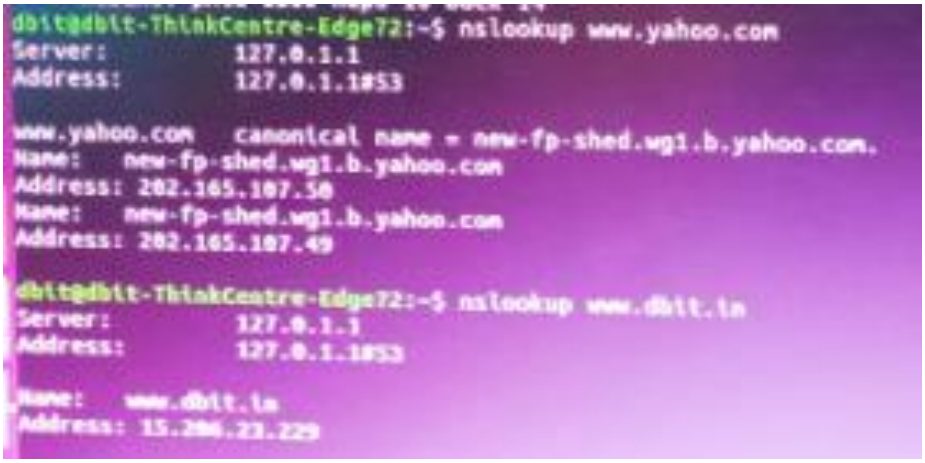


Tracepath www.dbit.in

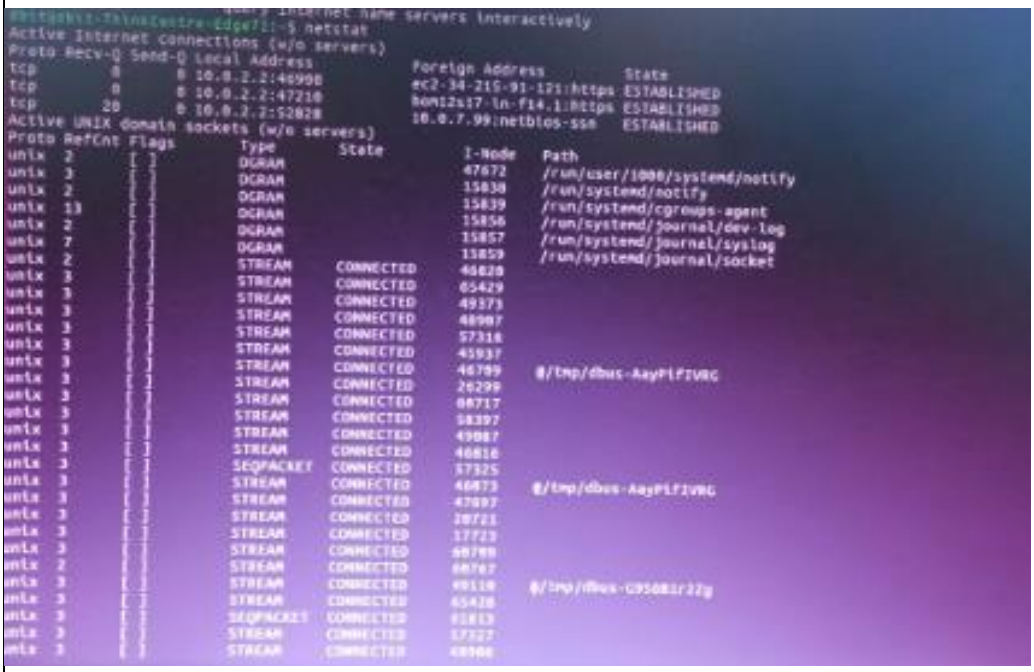


- **nslookup**

  nslookup www.yahoo.com
  nslookup www.dbit.in



- **netstat**



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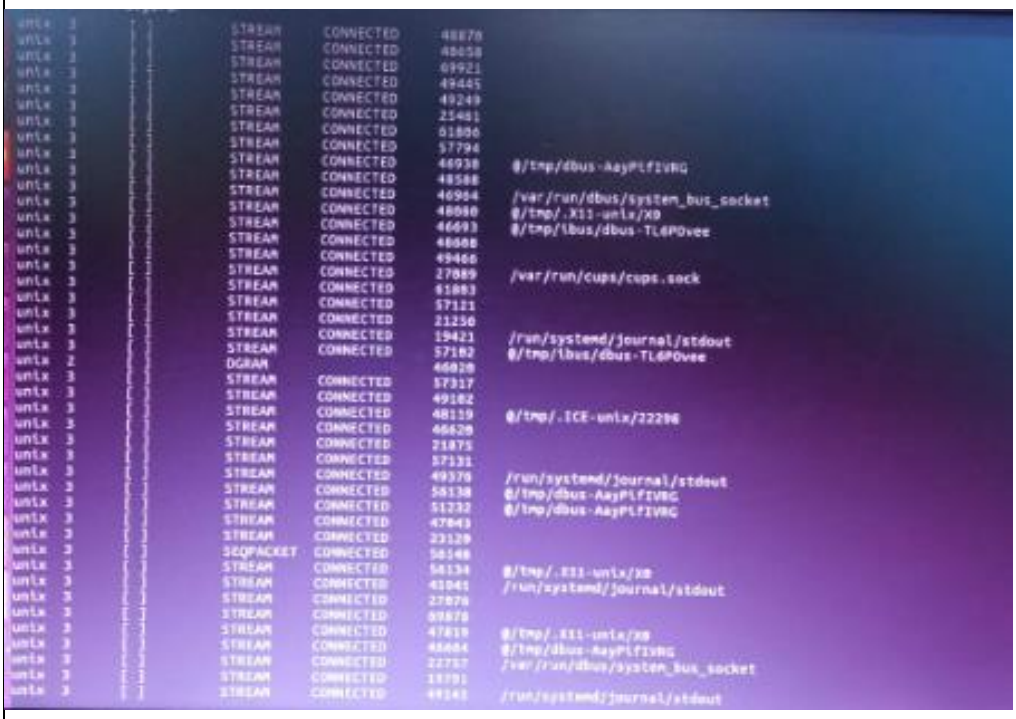
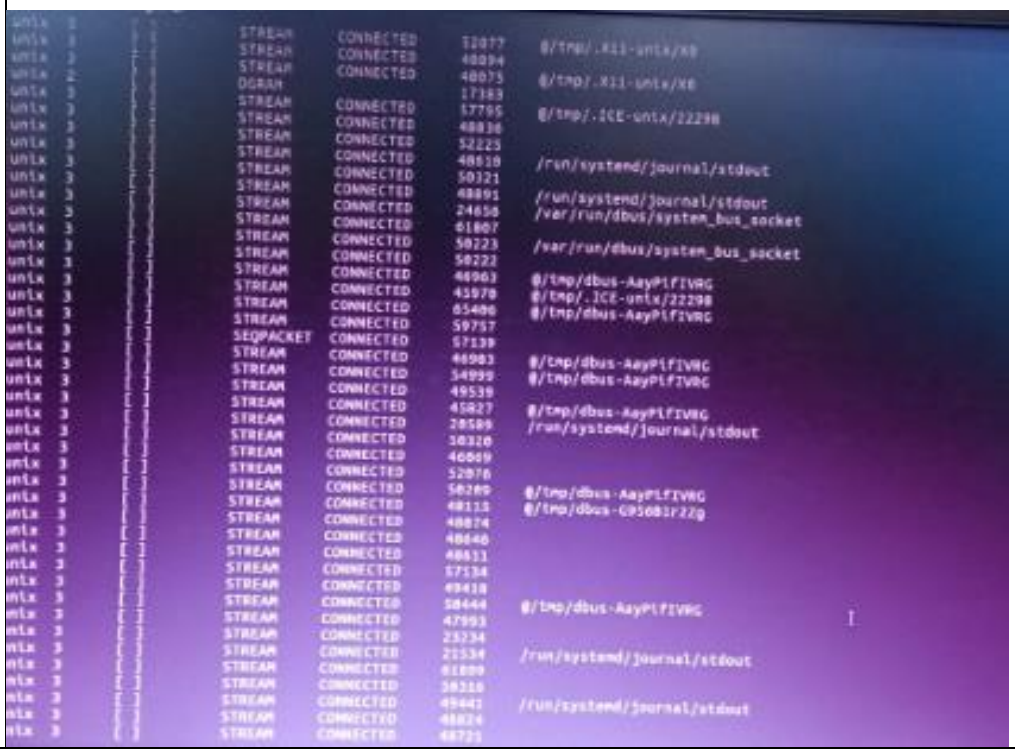
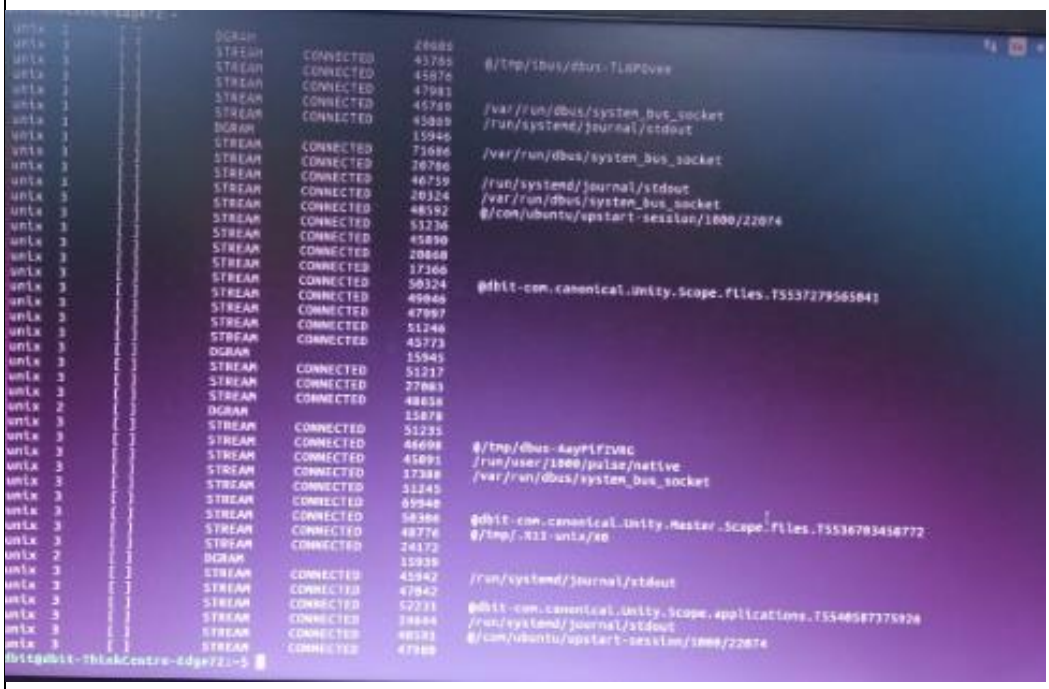


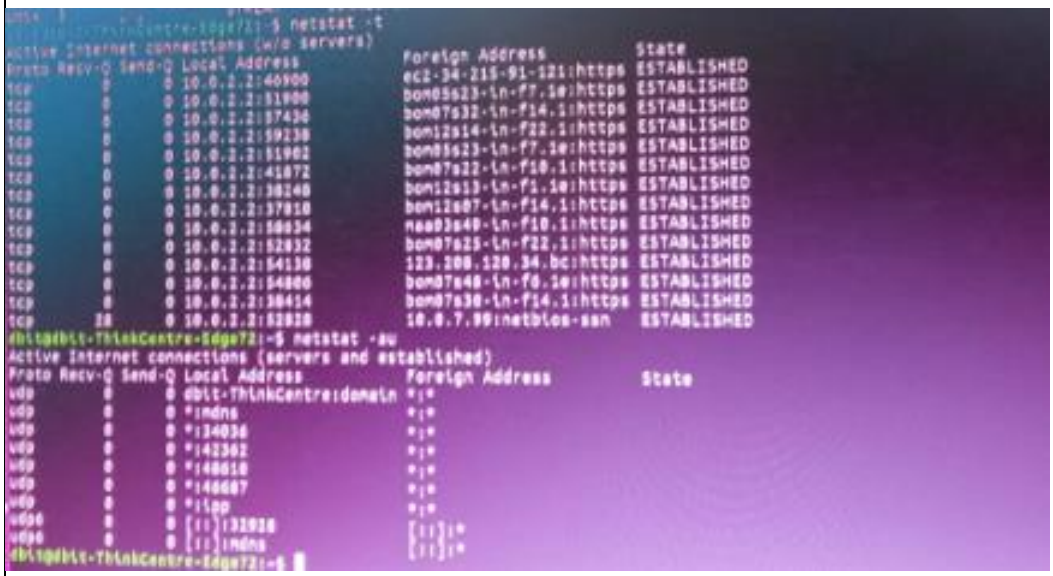


Class: T.E Comps (Sem V) **Lecturer: Sejal M Chopra**

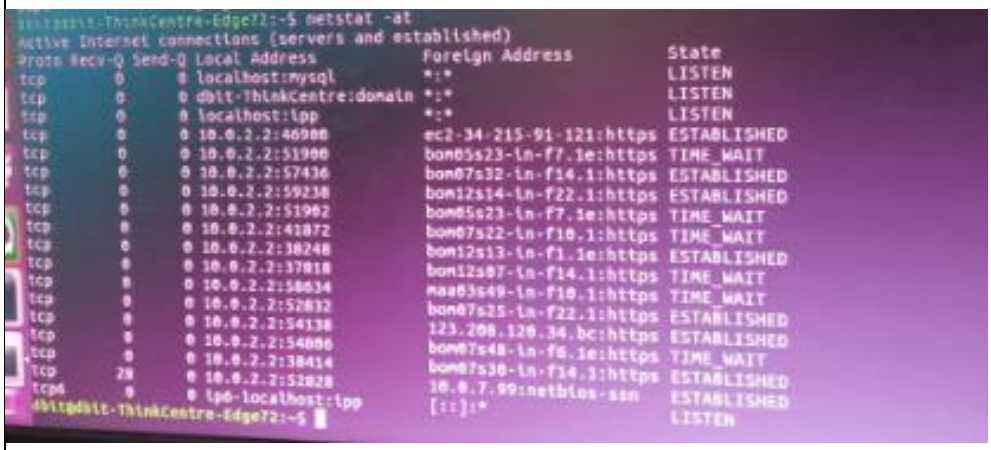
Subject: CN Lab



netstat -t:
netstat -au:

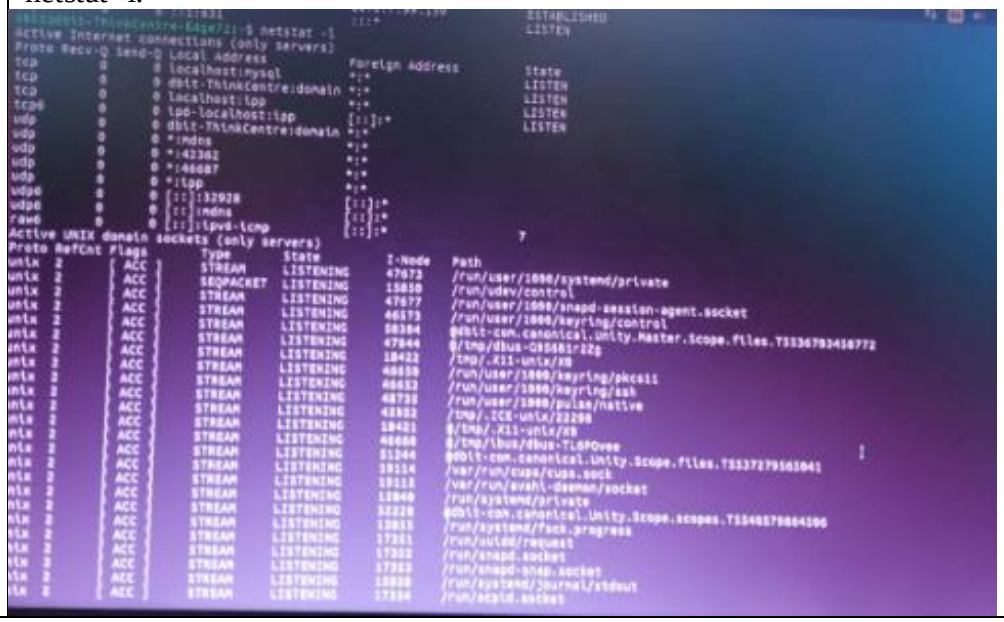


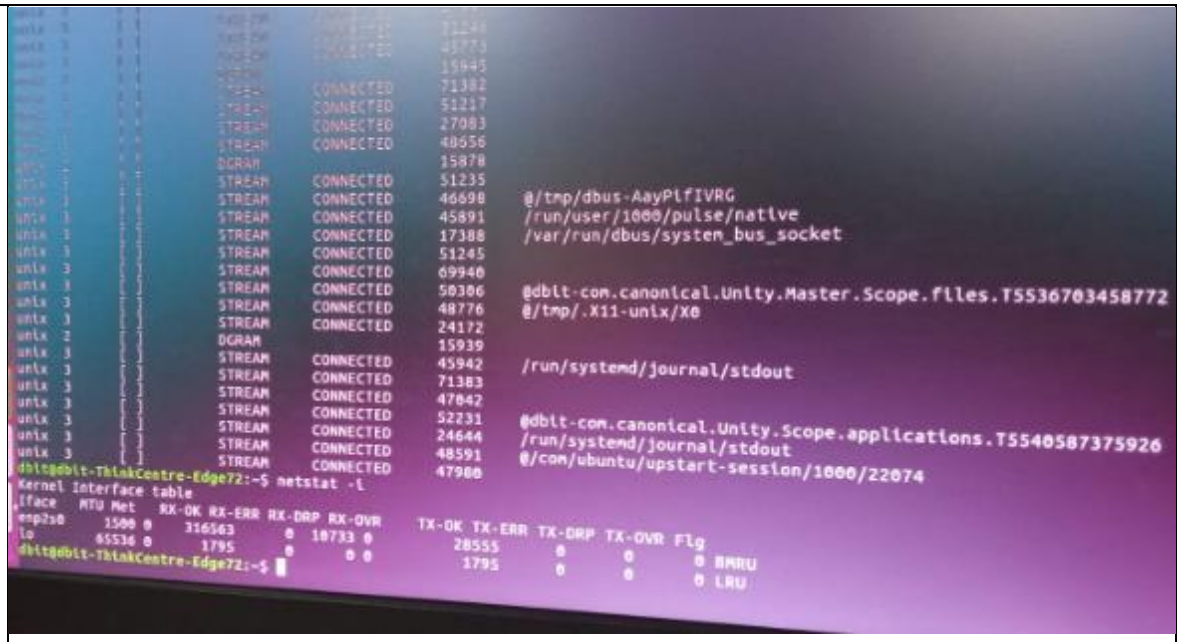
netstat -at:



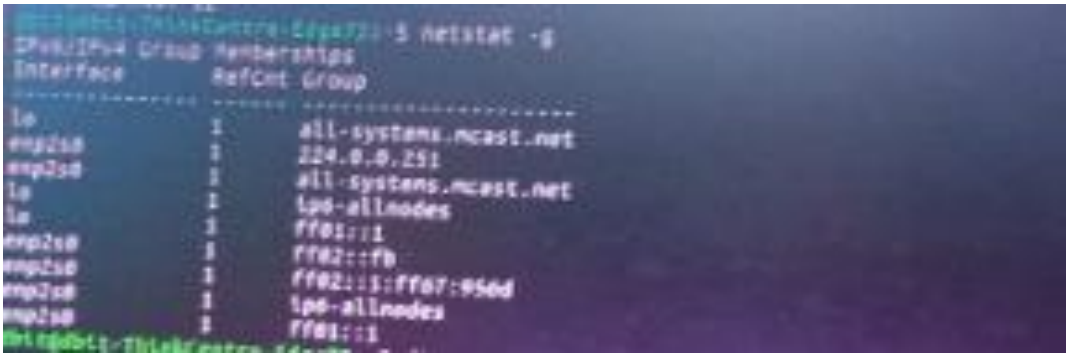
netstat -l:

netstat -i:



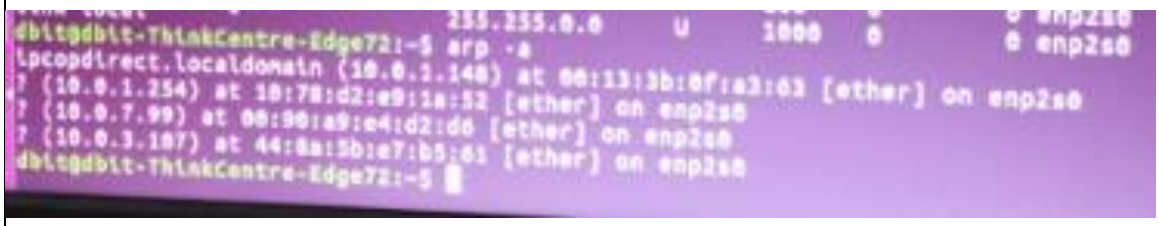


netstat -g: Display multicast group membership information for IPv4 and IPv6.



- **ARP**

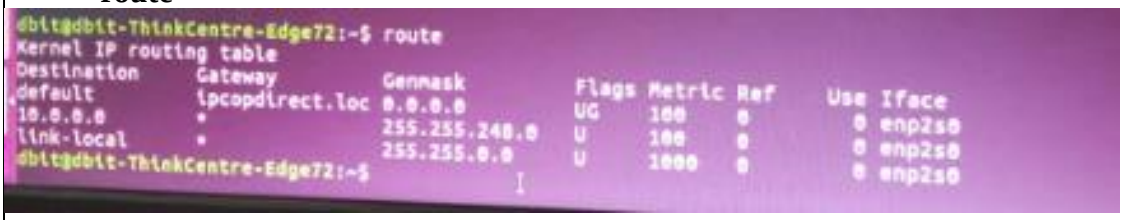
  arp -a:



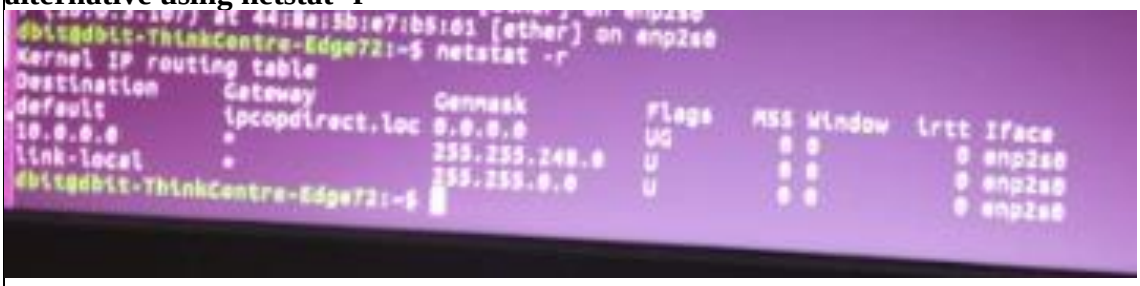
- **ip addr show**

- **dig**

- **route**



alternative using netstat -r

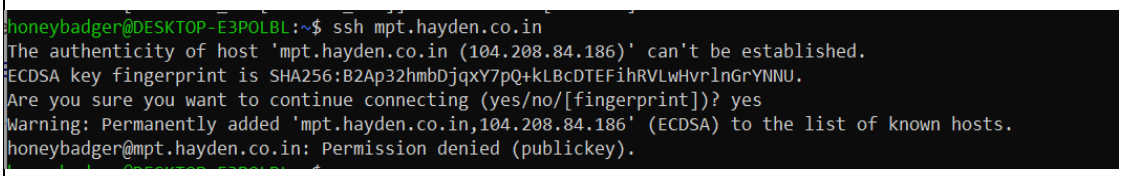


- **curl**

```
honeybadger@DESKTOP-E3POLBL:~$ curl mpt.hayden.co.in

<!doctype html>
<html lang="en">

<head>
  <meta charset="utf-8">
  <meta name="viewport" content="width=device-width, initial-scale=1">
  <meta name="description" content="">
  <title>MPT Sign-in</title>

  <!-- Bootstrap cdn-->
  <link href="https://cdn.jsdelivr.net/npm/bootstrap@5.1.3/dist/css/bootstrap.min.css" rel="stylesheet" integrity="sha384-1BmE4kWBq78iYhFldvKuhfTAU6auU8tT94WrHftjDbrCEXSU1oBoqyl2QvZ6jIW3" crossorigin="anonymou
s">

  <!-- Local Stylesheet -->
  <link href="/static/vendor/bootstrap/bootstrap.min.css" rel="stylesheet" integrity="sha384-1BmE4kWBq78iYhFldvKuhfTAU6auU8tT94WrHftjDbrCEXSU1oBoqyl2QvZ6jIW3" crossorigin="anonymous">
  <link href="/static/css/login.css" rel="stylesheet">

</head>

<body class="">

  <div class="logo">
    <a class="" href="#">
      <img style="border-radius: 5px; box-shadow: 0 0 5px 1px rgba(0, 0, 0, 0.5);" src="/static/content/logo.png" width="60" height="60" alt="">
    </a>
  </div>

  <main class="form-signin">
    <form action="" method="POST">

      <h1 class="h3 mb-3">Welcome to MPT</h1>
      <p style="opacity: 0.7;">Login by entering information below</p>
      <input type="hidden" name="csrfmiddlewaretoken" value="CQscgKcNAP4F6GM4zwMNk0LxghWLK5A2ixaiMSX6MY7N6CfQFQyWDOgJNZ4GyPg2">
      <div class="form-floating">
        <input type="email" name="email" class="form-control top" placeholder="Email" required>
        <label for="inputEmail">Email</label>
      </div>
      <div class="form-floating">
        <input type="password" name="password" class="form-control bottom" placeholder="Password" required>
        <label for="inputPassword">Password</label>
      </div>

      <p><a href=""><strong>Forgot password?</strong></a></p>

      <label class="checkbox-container" style="opacity: 0.85;font-size: 0.9rem;">
        <input type="checkbox">
        <span class="checkmark"></span>
        Remember Me
      </label>

      <button class="w-100 btn btn-lg btn-primary" style="text-align: center;" type="submit">Login</button>
      <p style="opacity: 0.8;">Don't have an account? <a href="/Sign-Up"><strong>Register</strong></a></p>

    </form>

    <div>




    </div>
  </main>

  <!-- Bootstrap cdn -->
```

- **wget**

```
honeybadger@DESKTOP-E3POLBL:~$ wget mpt.hayden.co.in
--2022-07-17 20:06:34--  http://mpt.hayden.co.in/
Resolving mpt.hayden.co.in (mpt.hayden.co.in)... 104.208.84.186, 108.162.194.113, 162.159.38.113, ...
Connecting to mpt.hayden.co.in (mpt.hayden.co.in)|104.208.84.186|:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 2894 (2.8K) [text/html]
Saving to: 'index.html'

index.html                          100%[=================================================================>]   2.83K  --.-KB/s    in 0s

2022-07-17 20:06:34 (70.6 MB/s) - 'index.html' saved [2894/2894]
```

	• **ssh** 
REFERENCES	• B.A. Forouzan, "Data Communications and Networking", TMH, Fourth Edition. • https://www.networkworld.com/article/2697039/unix- topnetworking-commands-and-what-they-tell-you.html • https://www.youtube.com/watch?v=rurs7cdT5cc • https://www.youtube.com/watch?v=V_3t2wBBB1U • https://www.youtube.com/watch?v=75lCgcXP4dc