Exercise 1: Date to complete the task : 25th July 2013

I . NETWORKING COMMANDS

Execute the following commands and write down the details acquired.

1. IPCONFIG

a. Gather the TCP/IP configuration information?

b. Gather the more detailed TCP/IP configuration information?

c. What is the DNS Servers IP address?

d. What is your host MAC address(physical address) of your system?

e. What is the host IP address of your system?

f. What is the default gateway for your system?

2. HOSTNAME

a. Find the name of your system?

b. What is the significance of the name?

3. PING

a. What is the IP address of www.vit.ac.in ?

b. Check whether TCP/IP is properly installed and functioning on your system.?

c. Indicate what percentage of packets sent resulted in a successful response. For the packets from which you received a response, write down the minimum, average, and maximum round trip times in milliseconds. Note that ping reports these times to you if you tell it how many packets to send on the command line

i. Explain the differences in minimum round trip time to each of these hosts.

d. Now send pings with 56, 512 and 1024 byte packets to the 4 hosts above. Write down the minimum, average, and maximum round trip times in milliseconds for each of the 12 pings. Why are the minimum round-trip times to the same hosts different when using 56, 512, and 1024 byte packets?

e. For the following hosts, intranet.vit.ac.in, send 100 packets that have a length of 56 data bytes. Indicate what percentage of the packets resulted in a successful response.

f. For some of the hosts, you may not have received any responses for the packets you sent. What are some reasons as to why you might have not gotten a response?

g. For the following hosts, record the route to this host and identify how many hops taken for the packet to travel to this host?

i. intranet.vit.ac.in

ii. www.vit.ac.in

iii. www.google.co.in

4. NETSTAT

a. What is netstat and what is it used for?

b. What kind of informations can be obtained by the netstat command?

c. What parameters for netstat should you use to show all the TCP connections established? Include a printout of this list for your machine. Be sure to explain what all fields are.

d. What does netstat -r show? What is each of the fields in this output?

e. Display the addresses and port numbers in numerical form?

f. netstat can be used to display network interface status. What option of netstat does this? By using netstat, figure out the number of interfaces on your machine.

g. By simply opening a browser connection to both the HTTP (port 80) and FTP (port 21) servers (while still offline!) what will be status of netstat command?

h. Find the local address and port numbers in numerical form?

5. TRACEROUTE or TRACERT

a. Explain in detail how traceroute works.

b. what kind of informations can be obtained by the traceroute command?

c. Perform a traceroute from your machine to www.vit.ac.in. Include a copy of the output and explain what happened including a description of what each of the fields means.

d. Perform a traceroute for the following machines within 5 hops:

i. intranet.vit.ac.in

ii. www.google.co.in

e. Determine an IP address for a machine that you know definitely does not exist.

Do a traceroute to that machine. Include a copy of the result.

f. Identify a completely different (in all octets) IP address for a non-existant machine. Do a traceroute to this machine. Include a copy of this result.

6. ARP

a. How do you show the full ARP table for your machine? Capture a printout of what it is. Explain each column of what is printed.

b. How long do entries stay cached in the ARP table? Describe a trial-and-error method to discover the timeout value.

c. In the MS-DOS prompt type arp –a and press Enter. Are there any entries in the ARP table? Do not be surprised if there are no entries. Any addresses that are unused will be removed after a couple of minutes.

d. Try pinging a couple of local addresses and a website. Then re-run the arp command.Which addresses are listed?

7. NSLOOKUP

a. What is the IP address and name of the machine acad.intranet.vit.ac.in and mail.vit.ac.in?

b. What local machine is this information coming from? Why is it coming from this machine?

c. Here is the problem: I want to find the IP address of where my email to somebody@gmail.vit.ac.in goes. What you really need to do is find the ``mail exchanger'' for gmail.vit.ac.in. There is an option in nslookup that tells you what the mail exchanger is for gmail.vit.ac.in. Figure out the exact syntax of the format of this command, and execute it. Now what is the IP address of where my email to gmail.vit.ac.in goes?

8. PATHPING

a. How PATHPING works?

b. Pathping to www.vit.ac.in, intranet.vit.ac.in, academics.vit.ac.in measure the Network latency and network loss at every hop?

c. Test connectivity to each hop with Layer-2 priority tags for the destination www.google.co.in