

Computer Networks Lab (CS 212)
Lab Assignment – 1
Introduction to Networking Tools
Date of Announcement: 11th Jan 2020
Date Of Submission: 18 Jan 2020(5:30pm)
Mode of Submission : Moodle

1. Background:

In this experiment, you will learn about some network communication utilities in Linux. When you work in a distributed environment, you need to communicate with remote users and you also need to access remote Unix machines. There are several Unix utilities that help users compute in a networked, distributed environment.

You will learn to use the utilities **ping, route, traceroute, arp, ifconfig, host.**

Look at **/etc/hostname; /etc/hosts; /etc/network/interfaces; /etc/resolv.conf; /etc/protocols; /etc/services** and understand what the files are for.

At the end of this exercise, you would have some basic understanding of how a host stores network information and configure network

Useful References: Read Unix man pages.

(Note : You can run the unix command with man to get the information regarding the command. Ex: man ifconfig)

2. Warm-up Questions

1. What is your machine's hostname and IP address? How did you get this information?
2. What is the next hop router's IP address and MAC address? How did you get this information?
3. What is the local DNS server's IP address? How did you get this information?
4. What do the numbers in the file `/etc/protocols` represent?
5. What is the port number associated with applications: ssh, ftp, nfs, smtp (email)? How did you get this information?
6. How many of these questions can you answer for the phone running on android/ios?

3. Questions:

1. Goal: The Unix utility Ping can be used to find the RTT to various Internet hosts.

Read the man page for ping, and use it to find the RTT to various websites that may be of interest to you. You may also try the following websites: www.amazon.in, www.google.com, www.youtube.com

Report

(a) Explain the results that you obtain; For example, the success and failure of the Ping,

(b) What are the reasons for the values of RTTs that you see.

(The above mentioned webpages are not mandatory .You can try with your interesting website, but we should be able to get output for the same)

2. Read the man page for the Unix utility Traceroute and use it for the websites that you pinged in the previous experiment.

Report:

(a) Explain what you see. Whenever successful, draw a network map from your machine to the destination, which includes the hop addresses obtained from Traceroute.

(b) How can you change the maximum hop number?

(c) What do the three timestamps signify in the result of Traceroute?

(d) What is the use of TTL (Time To Live) field in ICMP packets?

3.

Goal: Look at the following files and understand what they are for /etc/hostname /etc/hosts /etc/network/interfaces /etc/resolv.conf /etc/protocols /etc/services

Report:

(a) What's your machine's hostname and IP address? How did you get this information?

(b) What is the next hop router's IP address and MAC address? How did you get this information?

(c) What is the local DNS server's IP address? How did you get this information?

(d) What do the numbers in the file /etc/protocols represent?

(e) What is the port number associated with applications: ssh, ftp, nfs, smtp (email)? How did you get this information?

Submission Details:

Make a directory and submit the screenshots of the results obtained in the Question No.1 & 2.

Submit the network configuration files for Question 3. Then create a report(.pdf file) explaining the answers for each question and also with respect to screenshots and network configuration files.

Now tar your screenshots, network configuration files and report (.pdf) as follows and upload on moodle :

```
tar -zcvf < rollnumber > _lab01.tgz
```

Submit the file < rollnumber > _lab01.tgz for grading

Penalty

1. 1 day late submission - 10% penalty
2. 2 days or more late submission - 25% penalty
3. Plagiarism catch - 0 marks