Computer Networks

Lab # 02:

Network Commands

Objective:

The objective of this lab is to learn different network related commands.

Scope:

On completion of this lab students shall be familiar with basic networking commands

Useful Concept:

2.1 Learn various network related commands

To know and learn about various network related commands [**ping**, **tracert**]

2.2 PING Command

Ping is a basic Internet program that lets you verify that a particular IP 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 are trying to reach is actually operating. Various options available in the ping command:

 -t → repetitively send packets.

 -n→ number of echo to be sent

 -l → sending buffer size [Max: 65500 bytes]

 -f → do not fragment the packets

 -r count → record route for count hops [3rd layer device]

 -j → loose source route [Optionally it can follow different route].

 -k → strict source route [MUST follow the route specified by us].

Note: For loopback address 127.0.0.0 – 127.255.255.255, you can ping it and get returns even when you are offline (not connected to any network). If you don't get any valid replies, then there's a problem with the computer's Network settings.

Example:

- In order to send a packet to a host [148.66.137.120] with size of 60000 bytes each.

  ping -l 60000 148.66.137.120

- Now we wish to send the packets repetitively.

  ping -t -l 60000 148.66.137.120

- In order to send a packet with a size of 1000 bytes and permit fragmenting.

  ping -l 1000 148.66.137.120

- In order to send a packet with a size of 2000 bytes and don't permit fragmenting.

  Ping -f -l 2000 148.66.137.120

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- In order to use loose route to a destination.

  ping –j 10.221.0.64 10.140.1.201

- In order to use strict route to a destination.

  ping –k 10.221.0.64 10.140.1.201

  - This will generate destination host unreachable message because this is not the first device that the ping will meet.

  ping –k 172.16.0.253 10.140.1.201

  - This will work fine because this is the first device that the ping will meet.

2.3   TRACERT Command

If someone would like to know how he goes from his house to his office he could just tell the list of the crossroads where he passes. The same way we can ask the data sent over from your computer to the web server which way does it go, through which devices? We ask it by using the utility called traceroute. In most computers today you can use this tool from the command line: In UNIX machines it is called traceroute, in MS Windows machines it is called tracert.

Various options available in the tracert command:

-d → don't resolve addresses to hostnames.

-h maximum_hops → Maximum number of hops to search for target

-j host_list → loose source router along host list.

-w time-out → wait timeout milliseconds for each reply.

Example:

- To check the options available in tracert,

    tracert

- To check the trace from your PC to a server

    tracert 196.1.64.1

- If you don't want the names of the PC or devices on the way,

    tracert –d 196.1.64.1

- To check the loose route trace from your PC to a server

    tracert –j 10.221.0.64 10.140.1.201

1) Find the route from your PC to any other computer [Website]

2) Find the route from your PC to yahoo server [yahoo.com]

3) Using the answers of the above to determine what is the *first device* your packet reaches, in order to move from the network to the destination host/IP.