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LAB # 01: TCP/IP UTILITIES

1. Tracert

Tracert is a utility that can be used to determine the route and hop count to a destinatio n. Example of tracert is shown below:

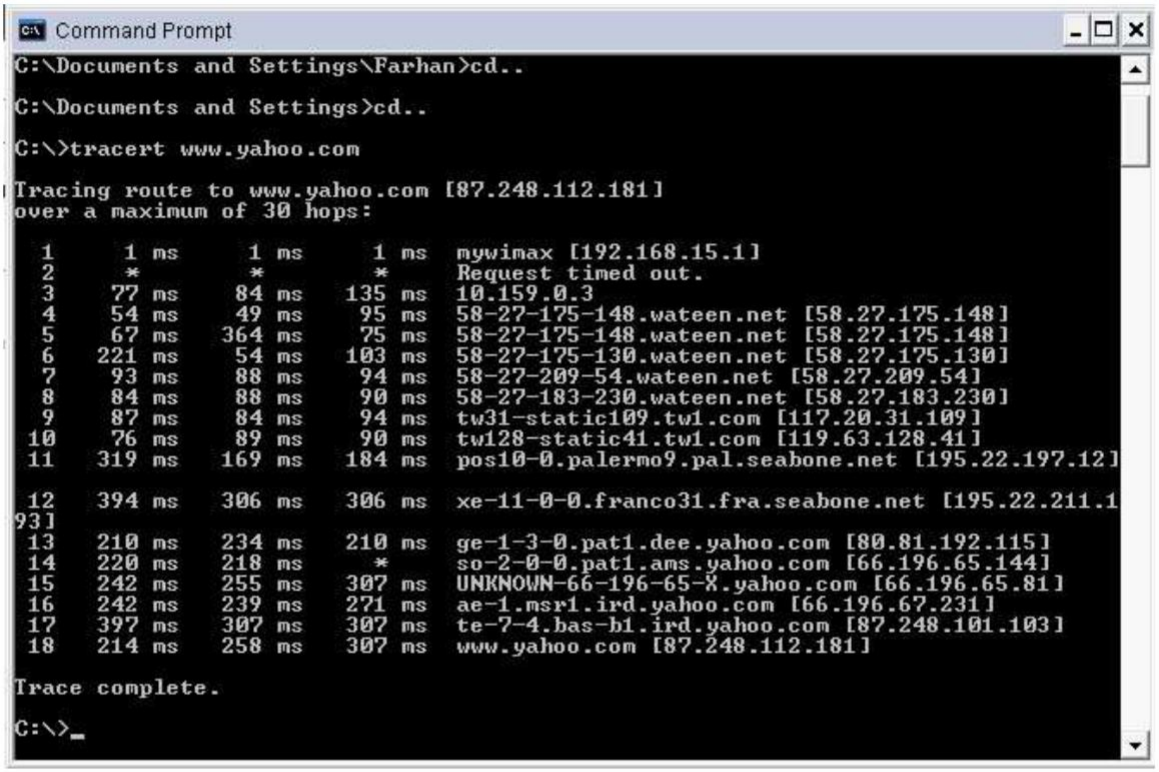

Figure 1. Tracert

You can use IP Address instead of Domain Name

Figure 2. Tracert with Domain Name

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2. PING

PING stands for "Packet Internet Groper" and it is a diagnostic tool that is used to check whether a host is reachable or not. Target can be either a name or IP address.

Syntax:

Ping *www.uit.edu*
Ping *ip address (you can mention ip address instead of domain name)*
Ping *ip address or Domain name* **–n** *number of packets you want to sent*
Ping **–a** *ip address.(will first resolve ip to its domain name)*

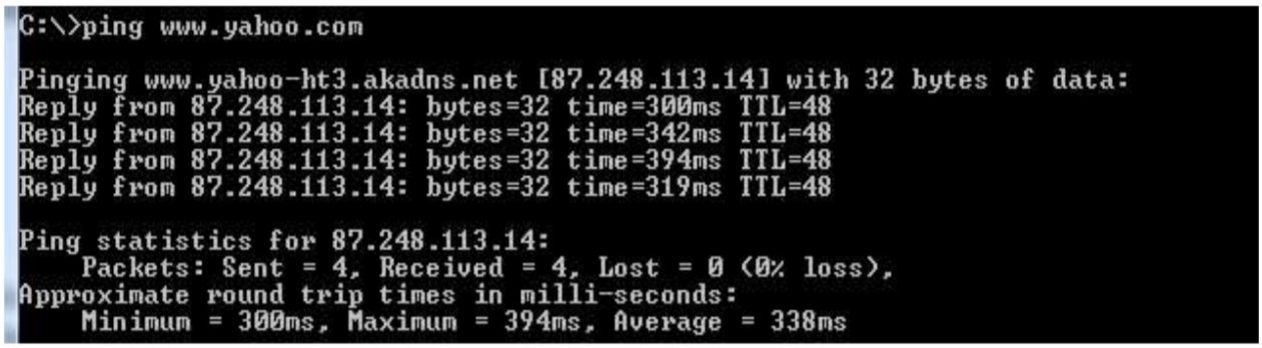

Figure 3. Ping with Domain Name

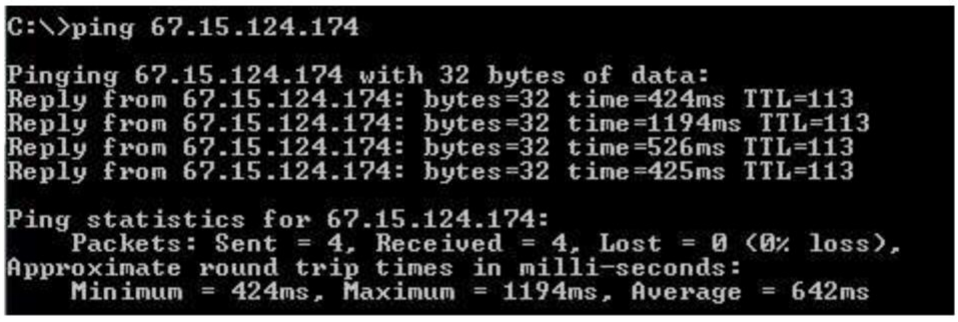

Figure 4. Ping with IP

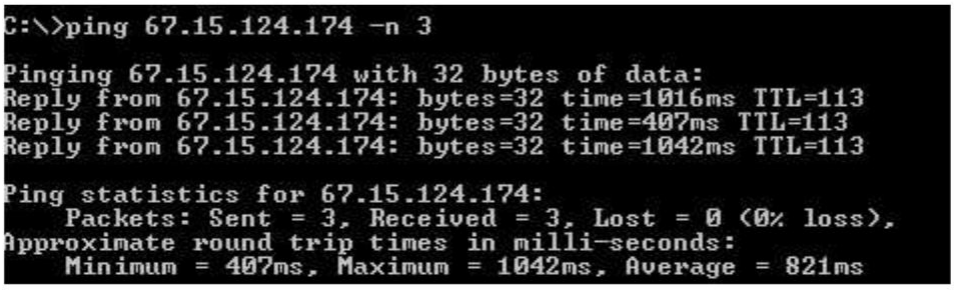

Figure 5. Ping -n

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```
C:\>ping -a 87.248.113.14

Pinging f1.us.www.vip.ird.yahoo.com [87.248.113.14] with 32 bytes of data:
Reply from 87.248.113.14: bytes=32 time=368ms TTL=48
Reply from 87.248.113.14: bytes=32 time=274ms TTL=48
Reply from 87.248.113.14: bytes=32 time=267ms TTL=48
Reply from 87.248.113.14: bytes=32 time=314ms TTL=48
```

Figure 6. Ping -a

3. ARP

ARP is "Address Resolution Protocol". It is used to resolve IP address to MAC address.

arp –a (will show a list of relevant IP addresses and their corresponding MAC addresses)

```
C:\>arp -a

Interface: 192.168.1.35 --- 0xb
  Internet Address      Physical Address      Type
  192.168.1.1           00-19-cb-75-85-b0     dynamic
  192.168.1.255         ff-ff-ff-ff-ff-ff     static
  224.0.0.22            01-00-5e-00-00-16     static
  224.0.0.252           01-00-5e-00-00-fc     static
  239.255.255.250       01-00-5e-7f-ff-fa     static
  255.255.255.255       ff-ff-ff-ff-ff-ff     static
```

Figure 7. Arp

We can also set a MAC address against an IP address through the following command

arp –s *ip address MAC address*

4. Nslookup

Nslookup utility is used to test and troubleshoot domain name servers. Nslookup has two modes. Interactive mode enables you to query name servers for information about hosts and domains, or to print a list of hosts in a domain. Non- interactive mode prints only the name and requested details for one host or domain. Non-interative mode is useful for a single query.

To enter the interactive mode of Nslookup, type nslookup without any arguments at a command prompt, or use only a hypen as the first argument and specify a domain name server in the second. The default DNS name server will be used if you don't enter anything for the second argument.

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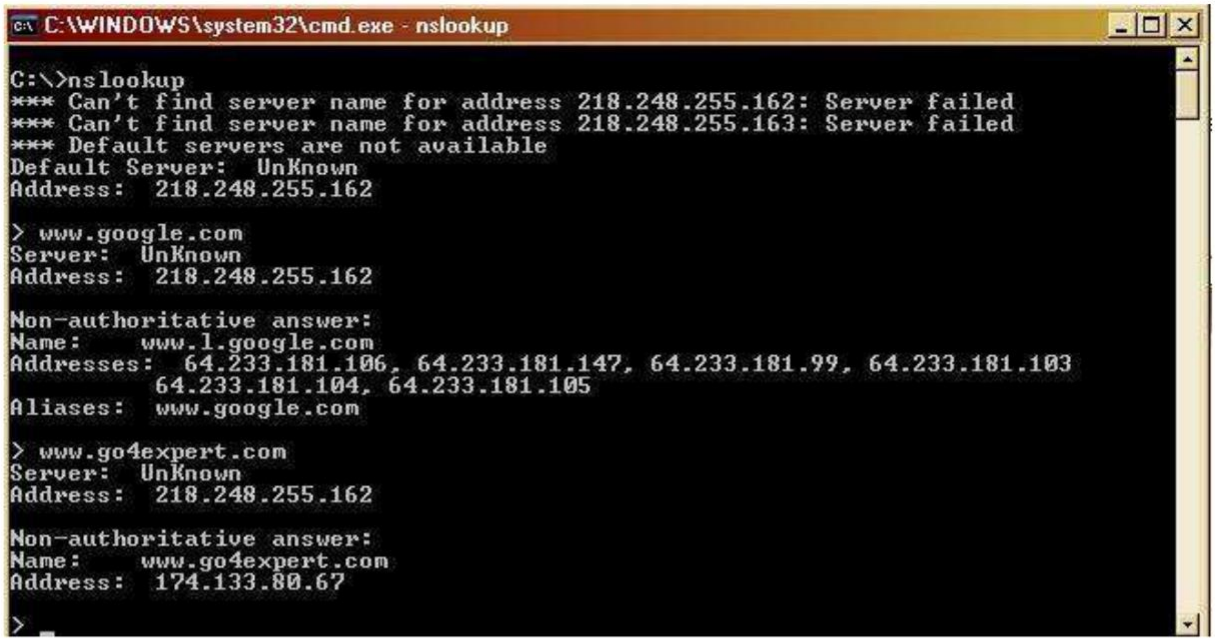

Figure 11. Nslookup

To use non-interactive mode, in the first argument, enter the name or IP address of the computer you want to look up. In the second argument, enter the name or IP address of a domain name server. The default DNS name server will be used if you don't enter anything for the second argument.

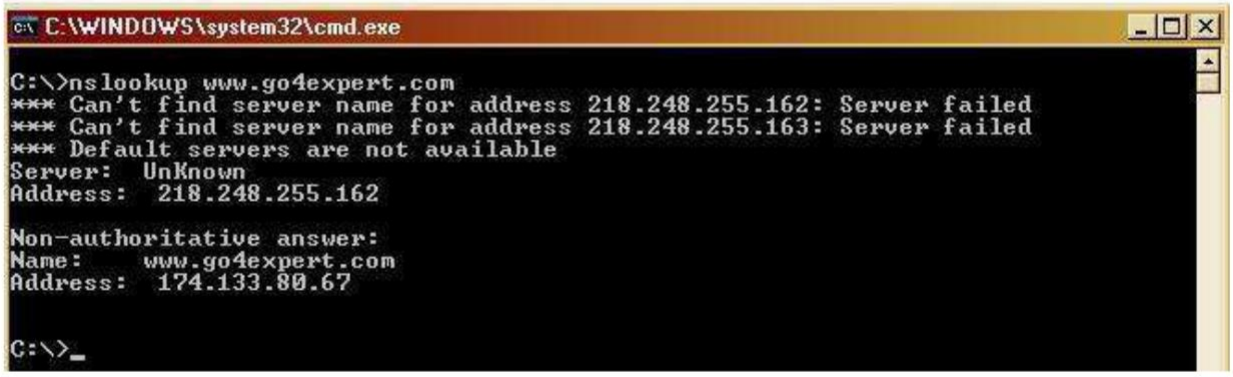

Figure 12. Nslookup with Domain Name

(note:- nslookup works equally well in unix.)

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5. Ftp

Transfers files to and from a computer running a File Transfer Protocol (FTP) server service such as Internet Information Services. **Ftp** can be used interactively or in batch mode by processing ASCII text files. **Syntax**

ftp [**-v**] [**-d**] [**-i**] [**-n**] [**-g**] [**-s:***FileName*] [**-a**] [**-w:***WindowSize*] [**-A**] [*Host*]

Parameters

-v : Suppresses the display of FTP server responses.

-d : Enables debugging, displaying all commands passed between the FTP client and FTP server.

-i : Disables interactive prompting during multiple file transfers.

-n : Suppresses the ability to log on automatically when the initial connection is made.

-g : Disables file name globbing. **Glob** permits the use of the asterisk (*) and question mark (?) as wildcard characters in local file and path names.

-s: ***FileName*** **:** Specifies a text file that contains **ftp** commands. These commands run automatically after **ftp** starts. This parameter allows no spaces. Use this parameter instead of redirection (<).

-a : Specifies that any local interface can be used when binding the FTP data connection.

-w: ***WindowSize*** **:** Specifies the size of the transfer buffer. The default window size is 4096 bytes.

-A : Logs onto the FTP server as anonymous.

Host **:** Specifies the computer name, IP address, or IPv6 address of the FTP server to which to connect. The host name or address, if specified, must be the last parameter on the line.

/? : Displays help at the command prompt.

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Do it Yourself

Task 01: Explore the syntax **"ipconfig"** and **"winipcfg".** Note down your observations?
Ans:
Ipconfig: assigned IP, subnet mask and default gateway addresses were displayed.

Winipcfg: IP and DNS addresses were displayed.

Task 02: Answer following questions

1) State the size of MAC address both in Bytes and Bits
   Ans: 6 Bytes and 48 bits

2) Differentiate between IP and MAC address
   Ans:

   IP Address: IP stands for Internet Protocol. It is the logical address of a device. The size of an IP address is 32 bits.

   MAC Address: MAC stands for Media Access Control. It is the physical address of a device. The size of a MAC address is 48 bits.

3) What is a gateway
   Ans: Gateway is a device used to connect two different networks.

4) What is the purpose of loop-back address?
   Ans: The loop-back address allows the testing of an ethernet card without a physical network.

5) PING stands for _____Packet Internet Groper_____

6) What is the difference between ipconfig and ipconfig/all commands?
   Ans:

   ipconfig: This command displays all the current TCP/IP network information of the device and refreshes DHCP and DNS settings.

   ipconfig /all: This command retrieves all the detailed and thorough TCP/IP network information.

7) What is Nslookup stands for? What is the significance of this utility? What is Non-authoritative answer?
Ans:

NSLOOKUP stands for “from name server lookup”. It is used to test domain name servers.

Non-authoritative answer is the answer received from DNS server for the queried domain name for which the DNS server does not have the original zone files.

8) Write a command to transfer “abc.txt” file from PC having IP address 192.168.2.21 to PC having IP address 192.168.100.1. Also write a command to get the same file from the PC having IP address 192.168.100.1.

Ans: We use the following command to transfer file:
Ftp> put abc.txt

We use the following command to get the file:
Ftp> get abc.txt