Student Name:

Laboratory Goals / Objectives

The primary purpose of this lab is to familiarise yourself with the available commands used to glean network information. Upon completion of the lab you should be proficient in the use of the commands and know exactly what they do.

arp is the Address Resolution Protocol, ARP is used in conjunction with the IP protocol to map 32bit Internet Protocol address to a physical MAC (Medium Access Control) address. The MAC address is unique address number formatted in hexadecimal format. An example is A8:C2:EB:1C:DE:43.

hostname this command will return the hostname of the machine upon which the command was executed.

ipconfig is a utility that is utilised to display the network setting that are currently assigned to the system.

nbtstat displays protocol statistics and current TCP/IP connections using NetBIOS over TCP/IP (NBT)

net is used to view, update and fix the network settings of the machine.

netsh allows users to change network settings such as the IP address, or change the address from a dynamic address to a static address.

netstat allows for the display of network protocol statistics and information.

nslookup enables a user to lookup an IP address of a domain or host on a network.

pathping is similar to the tracert command, but provides the ability to locate areas that have high network latency or network loss.

ping allows one to determine if a TCP/IP based device is operational.

route allows for the viewing and updating of the systems routing table.

systeminfo provides general information about the system as well as some networking information.

tracert allows one to visually see a network packet being sent and received as well as the number of hops required for the packet to arrive at its destination.

Note: Some of the tools may be used from an online interface available at: http://network-tools.com/

Questions

The following questions are to be filled in individually by each student.

1. What happens when a device issues an ARP request? What is the command to list the arp tables and give an example of the resultant output?

2. What is the hostname of the computer you are currently using? How using the windows GUI environment can this information be acquired?

3. What feed back is given when the ipconfig command is executed? What is the command to view detailed information?
What data is displayed when the /displaydns switch is used?
What does a Subnet Mast of 255.255.0.0 signify?
What is the address of the DHCP Server and DNS Servers?

4. What command could you use to detect if a network printer is active, and give an example, including what output to expect?

5. Using systeminfo what type of processor does the PC have, and what operating systems support this command?

6. What command should one use to find the ip address of www.ucc.ie? What is the base 10 equivalent of this address?

Hint to convert the IP address 45.32.128.240 to base 10 the formula is: $45 \times (256)^3 + 32 \times (256)^2 + 128 \times (256)^1 + 240$