Lab 1: System Tools for Network Host Identification

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Due: Thursday, January 23 (class time)

Objective:

In this lab you will become familiar with standard system tools for finding identification information for a machine (host) on a network.

Preparation:

For this lab you will need to use Linux in addition to Windows on the computers in the lab. You will run Linux by accessing one of our servers that runs Linux. In future labs we will have you run a virtual machine on a lab machine to run Linux.

You will need to use various system commands to find the information required. In both the Linux and Windows environment you will be entering system commands from a command prompt.

Note: This first lab is to be completed individually -- not in pairs.

Instructions:

1. Login to one of the computers in Walsh 101 and use PuTTY to access one of the department's servers that runs Linux (try frege). PuTTY is software that allows remote access to a machine using ssl/ssh. Using PuTTY identify the host you want to access then answer 'Yes' to the PuTTY Security Alert. Login to the remote host using csstudent with password: abc123.

   Find the host name (DNS name), IP address, and hardware (MAC) address of the (Linux) host you are logged in to. Use a Google search if necessary to learn how to do this. Report the information you find and describe the command(s) you used to find this information.

   What does "MAC" stand for?

2. Use the ping command to identify 3 other hosts that are reachable from the remote host you logged into. For each one give the host name, IP address, and hardware address. Describe how you found this information.

   Note: You may find one or more of the following system tools useful for obtaining this information: *ping*, *nslookup*, *ifconfig*, and *arp*.

Note: You may need to issue the command using the full pathname which would be `/sbin/<command>`

3. Investigate the host *localhost*. What is the IP address of localhost? What is its hardware address? What is the purpose of the localhost? Describe how you found this information.

4. You can obtain the *routing table* of your host with the command

```
netstat -rn
```

The *default router* is the host that handles any IP traffic not destined for one of the IP addresses appearing in the table. The entry for the default router has destination field 0.0.0.0 What is the IP address of the default router? What is the host name of the default router? Describe how you found this information.

5. Find the host name and IP address of the DNS server – the host responsible for translating host names to IP addresses. Describe how you found this information.

6. Now logout of the Linux machine and open up a command window in Windows 7.

   Find the host name, IP address, and hardware address of the lab machine you are working at. Again report the information you find and describe the command(s) you used to find this information.

7. Ping 3 other lab machines. For each one give the host name, IP address, and hardware address. Describe how you found this information.

   Can you ping one of the department servers from the lab machine? Which one did you ping? What is its host name, IP address, and hardware address?

8. Find the host name and IP address of the DNS server (according to your lab machine). Is it the same as what you found in step 5? How did you find this information?

9. How do you display the routing table in Windows? What is the IP address and host name of the default router? Is this the same as you found in step 4?

Extra Credit:

The IP used on the Internet is being converted to a new version known as IPv6. Give the IPv6 address of the host (lab machine) you have been working on.

Extra Credit:

Find the manufacturer of the network card (NIC) of one of the other hosts on the network. Describe how you can find the manufacturer of the network card in one of the other hosts on the network.

Hand in:

Hand in a lab write-up which includes observations and descriptions you recorded. Include a cover page with a title, your name, and the date.

Assignment Type (see Academic Practices and Policies Document):

Help Policy in Effect for This Assignment: Individual Project with Limited Collaboration

In particular, you may discuss the assignment and concepts related to the assignment with the following persons, in addition to an instructor in this course: any member of your group; any St. Bonaventure Computer Science instructor; and any student enrolled in CS 254.

You may use the following materials produced by other students: materials produced by members of your group.