

Windows Networking Utilities

Instructions

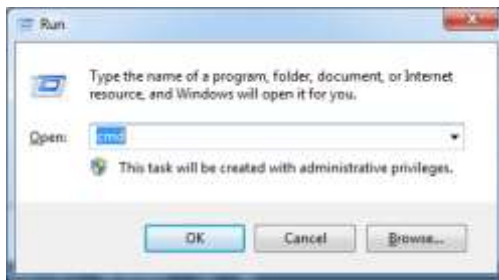
Despite the ease of use of the Windows graphical user interface (GUI), the command-line interface remains a useful way to perform many diagnostic tasks. This assignment will have you use several important network troubleshooting tools such as **ipconfig**, **ping**, **trace route**, and **nslookup**. Complete the following steps preferably at your home or anywhere outside of the classroom laboratory.

Part A

1. Start a command line prompt by pressing the Windows and R keys



A run dialog like the one below will appear



2. Type in **cmd** and click **OK**
3. When the command line window appears, type in the command:
ipconfig/all >Desktop\HW1a.txt

This command creates a text file on your Desktop that contains the networking information about the computer.

4. Go to your Desktop and open the HW1a.txt to verify the information that should be in the file by answering the following questions. Add the answers to the end of the text file.
 - a. What is the Physical address of your computer? _____
 - b. What is the IPv4 address of your computer? _____
 - c. What is the IP address of your Default Gateway? _____
 - d. What is the address of the DHCP Server? _____
 - e. What are the addresses of the DNS Servers? _____

5. Open a web browser and go to **google.com**.
6. Type **my ip address** into the search field and click **Search**
 - a. What does Google say your IP address is? _____
7. Attach the HW1a.txt file to the assignment.

Part B

1. Return to the command line window and type in the command:
ping -?

The ping command is a software utility used to test the reachability of a host on an Internet Protocol (IP) network and to measure the round-trip time for messages sent from the originating host to a destination computer and back. Using the **-?** displays a complete list of available command line options. Briefly review the options listed.

2. Type in the command:
cls

This command clears the screen of the command line window.

3. Type in the command:
ping -t google.com >Desktop\HW1b.txt

This command will send continuous ping packets writing the results to the text file HW1b.txt until you stop the ping command.

4. Wait about 2 minutes and then type:
ctrl + c

This stops the ping command.

5. Go to your Desktop and open the HW2b.txt to verify the information that should be in the file by answering the following questions. Add the answers to the end of the text file.

a. Did you have any lost packets? _____

Much as it sounds, if you have anything less than complete success in transmitting and receiving "packets" of data then you are experiencing a problem with your Internet connection to the host. It can mean much slower download and upload speeds, poor quality VoIP audio, pauses with streaming media and what seems like time warping in games -- your connection may even come to a total standstill! Packet loss is a metric where anything greater than 0% should cause concern.

b. What was the average round trip time of the ping packets? _____

So what does this mean in terms of how good is your connection to any given host? Well it's hard to talk in specific terms because it depends on what you are doing online. For example, you want pings less than 100ms for gaming applications, but general browsing of web sites will not be affected even if the ping times are between 150-200ms. In general, less than 50ms ping is really good, 50-100ms ping is good to average, above 150ms is where you are going to start having problems with games.

6. Attach the HW1b.txt file to the assignment.

Part C

1. Return to the command line window and type in the command:
tracert umflint.edu >Desktop\HW1c.txt

Like the ping command, trace route (tracert) is a Windows utility that traces a packet from your computer to an Internet host, but it also shows us the path traffic takes through each router to reach the website server. This command writes the route data to the text file HW1c.txt.

Trace route also displays the delays that occur at each stop. If you're having issues reaching a website and that website is working properly, it's possible there's a problem somewhere on the path between your computer and the website's servers. Trace route shows us the path traffic takes to reach the website. It also displays the delays that occur at each stop. If you're having issues reaching a website and that website is working properly, it's possible there's a problem somewhere on the path between your computer and the website's servers.

2. Wait several minutes for the command line prompt to return indicating that the trace is complete, then go to your Desktop and open the HW2c.txt file to verify the information that should be in the file.

Check the trace route for "***" in place of the router name. The line will end with "Request Timed Out." This may mean that the router has a firewall that is blocking your computer or it may indicate the source of the breakdown that is preventing you from reaching a website. Unless that router belongs to your Internet service provider, all you can do is wait for the router to become operable again; however, you at least will know that the problem is not on your end, saving you the time and trouble of attempting unnecessary repairs or adjustments.

3. Attach the HW1c.txt file to the assignment.

Part D

1. Make sure that all web browsers are closed.
2. Return to the command line window and press the up arrow key ↑ repeatedly which scrolls back through your earlier commands until you reach the **cls** command and press enter to clear the screen.
3. Type in the command:
ipconfig/displaydns

This command displays the contents of the DNS resolver cache.

DNS is like a telephone directory that is used to translate the URL you type into a web browser to an IP address it can use. Every time your computer has to resolve an address issue it's cached in your systems DNS cache so it doesn't need to ask a DNS server the next time that URL is used.

4. Type in the command:
ipconfig/flushdns

This command will flush and reset your computers resolver cache.

5. Press the up arrow key ↑ repeatedly until you reach the **ipconfig/displaydns** command and press enter.

The message “Could not display the DNS resolver cache.” should appear indicating that your DNS resolver cache is reset.

6. Open a web browser and navigate to the URL **umflint.edu**
7. Press the up arrow key ↑ repeatedly until you reach the **ipconfig/displaydns** command and type in the additional command **>Desktop\HW1d.txt**
8. Press the **enter** key after verifying that you have the command:
ipconfig/displaydns >Desktop\HW1d.txt
9. Attach the HW1d.txt file to the assignment.