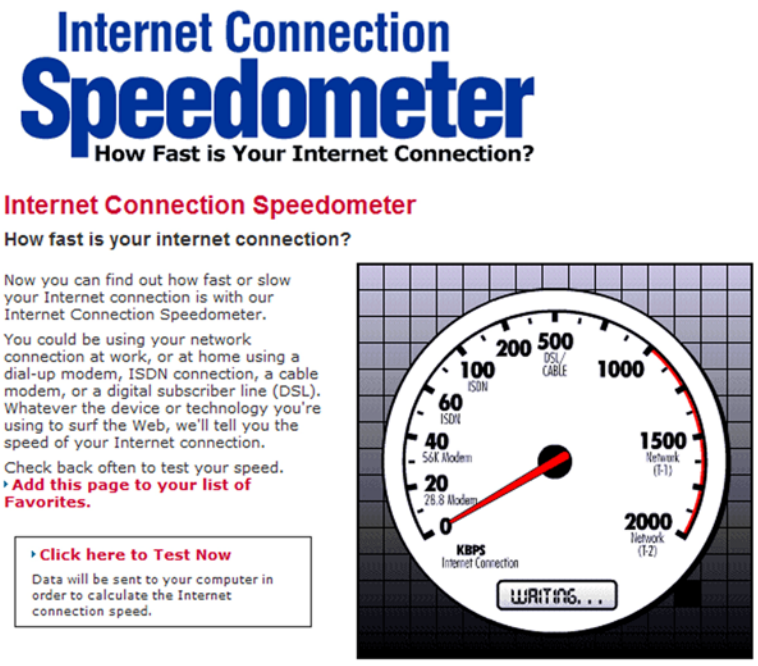
Testing Internet Connection Speeds

Systems Management

Name: _____

Introduction

In this laboratory activity, you will test the speed of your Internet connection with the McAfee Internet Connection Speedometer utility. This is a free utility that can be run directly from the McAfee Web site. You will search for this utility using the key words *McAfee* and *Speedometer*. These words will produce many hits because the McAfee Internet Connection Speedometer is popular and free and can be accessed at many Web sites. To avoid using a Web site that requires you to register your e-mail address and other information, look for McAfee in the URL. This will provide you with a connection directly to the McAfee Web site.



After accessing the McAfee Internet Connection Speedometer utility, you will see a screen similar to the following. To test the speed of your Internet connection, select **Click here to Test Now**. Your Internet connection speed will be indicated on the animated speedometer. The speedometer indicates the speed for the total number of packets received from the destination. The calculated download speed is based on the average of all packets sent and is indicated beside the bright red text that reads **Your Internet Connection Speed Results**. Internet connection speed refers to the data transfer rate from the Internet to your computer. Basically that means the amount of time it takes your computer to download a given amount of data. Internet connection speeds are usually measured in Kbps (kilobits per second, or thousands of bits per second) or KBps (kilobytes per second). Nowadays with the technological improvements in data transfer speeds, Internet connection speeds can also be measured in Mbps (megabits per second, or millions of bits per second) or MBps (megabytes per second). For example, if you had a 28.8K (28,800 bps) modem, then it would take at least 4 - 5 minutes to download a 1MB file. If you had digital subscriber line (DSL), the same 1MB file would take approximately 10 - 20 seconds.

Notice the 56 k modem, ISDN, and DSL/Cable areas indicated on the speedometer. The speeds listed in these areas represent common, advertised speeds. Advertised speeds, however, can be deceiving. Several factors affect access/download speed: network traffic, control messages sent in half-duplex communication, data encapsulation, and caching.

A high amount of traffic on the network (local and Internet) can slow transmission. Transmission over the Internet may be forced to take a longer, alternate route because of congestion or downed routers. Control messages sent to and from the destination and source can also slow transmission. For example, after several blocks of data are received, a message is sent to the source verifying the data was received. Since most Internet connections are half-duplex, the download sequence must stop in order to send an acknowledgement that the data sent so far has been received. A half-duplex system can only transmit in one direction at a time; therefore, the source and destination must take turns transmitting.

Data encapsulation also affects speed. A single block of data transmitted across the network contains the desired data plus information such as the IP address, MAC address, and assorted information required by the protocol to properly function. The desired data account for only a portion of the entire block of data. You will learn more about data encapsulation in later laboratory activities.

Another factor that affects speed is the operating system's browser cache. A copy of a frequently accessed Web page is stored in a cache so that it can be instantly displayed the next time the page is requested. Proxy servers cache Web pages to reduce network traffic, and many ISP providers run connections speeds by drawing information from a cache. Therefore, the indicated speed will be lower than if the Web page was drawn from the cache.

Procedure

_____ 1. Log on to a workstation

_____ 2. Access the Internet and conduct a search using the key words *McAfee* and *Speedometer.* The search will generate many hits. Look for a hit that contains *McAfee* in the URL and access its Web site.

_____ 3. Run the McAfee Internet Connection Speedometer test and complete the following chart:

Test #	Speed in kbps
1.	
2.	
3.	
4.	
5.	
Average	

_____ 4. After running five (5) tests, calculate and record the average speed. To calculate the average speed, add the five speeds together and divide by five.

_____ 5. Based on the average speed recorded in the chart, calculate how long it would take to download a 500 MB file.

_____ 6. Read the information on the Web page that explains how the test is conducted.

_____ 7. Answer the review questions before disconnecting from the Internet and shutting down the workstation.

Review Questions

1. What formula does the McAfee Internet Connection Speedometer utility use to test the connection speed? _____

2. What are some factors that affect advertised access/download speeds? _____

3. Why do results from each test vary? (Answer can be found on the McAfee Internet Connection Speedometer utility page.) _____

4. Rank the four Internet access types as shown on the speedometer by indicating the dial speed for each: 56 k modem, DSL/Cable, and ISDN, T1 and T2.
   Slowest = _____
   Midrange = _____
   Fastest = _____