Introduction

Below is a task topic and a related concept topic. I wrote these as an assignment for one of my first technical writing courses. While I had written a task topic before, this was my first time writing a concept topic.

My biggest struggle in writing these was overcoming my faulty knowledge of what ping is. I was used to the term ping from my videogaming hobby, but my research showed me how the term refers to the program. By researching further and reexamining my initial assumptions, I believe I helped my intended audience further.

Contacting Another Device

To contact a device on a local network (also called an adapter), we "ping" it, sending a signal that allows us to establish and check a connection with that device--a control message.
If the device responds with an audible "ping," we know that the device is reachable.
If no signal comes back, the device may be offline, or there may be some problem with the network.
This way of reaching out to the device, and hopefully getting a message back, follows a set of rules that all devices know—a standard sequence of signals and responses, formally known as a protocol.
Because we are using one or more networks when we exchange control messages rather than actual data, this technique is known as the Internet Control Message Protocol (ICMP). For this process, you use the Enterprise Server system. This system allows you to check if a device can be pinged.

Prerequisite: *To access System Enterprise, you need a user account.*

1. Open and log into the Enterprise Server system.
2. Open the Network Parameters menu.
3. On the Network Parameters menu, choose Ping.

    A list of Adapter Parameters now appears. This list includes the name of each device, the slot it occupies, and the hardware number associated with that device.
    [example screenshot]
    Each local network is considered a device, with its own slot and hardware address.

4. Choose an adapter from the list, then press Enter.

    A list of items you can ping now appears.
    [example screenshot]

This list contains all local devices on the chosen adapter. Each device has an address, described in the way that the Internet Protocol prescribes. This address is called an IP address. Here are some examples:
[example screenshot]

5. Choose an IP address from the list, then press Enter.
   - If you have reached the device, a pinging noise will sound.
   - If the device cannot be reached, no pinging noise will sound. A numbered code will appear instead. The code indicates why the device cannot be reached. The following table shows what the codes mean:

Numbered Code	Code Meaning
0	Destination Network Unreachable
1	Destination Host Unreachable
2	Destination Protocol Unreachable
3	Destination Port Unreachable
4	Fragmentation Required, DF Flag Set
5	Source Route Failed
6	Destination Network Unknown
7	Destination Host Unknown
8	Source Host Isolated
9	Network Administratively Prohibited
10	Host Administratively Prohibited
11	Network Unreachable for TOS
12	Host Unreachable
13	Communication Administratively Prohibited
14	Host Precedence Violation
15	Precedence Cutoff in Effect

About Ping

Ping is a program that tests the reaction time of your internet connection. It measures how quickly you get a response after sending out a request.

The Ping Program measures the reaction time in milliseconds to reach an internet address. A quicker response means that it takes less time to reach the network address in question. By contrast, a slower response means that it takes more time to reach the network address.

How the Ping Program Works

Below is an example of the message printed by the Ping program, showing how long it takes to reach a certain website.

```
$ ping -c 5 www.example.com
PING www.example.com (93.184.216.34): 56 data bytes
64 bytes from 93.184.216.34: icmp_seq=0 ttl=56 time=11.632 ms
64 bytes from 93.184.216.34: icmp_seq=1 ttl=56 time=11.726 ms
64 bytes from 93.184.216.34: icmp_seq=2 ttl=56 time=10.683 ms
64 bytes from 93.184.216.34: icmp_seq=3 ttl=56 time=9.674 ms
64 bytes from 93.184.216.34: icmp_seq=4 ttl=56 time=11.127 ms

--- www.example.com ping statistics ---
5 packets transmitted, 5 packets received, 0.0% packet loss
round-trip min/avg/max/stddev = 9.674/10.968/11.726/0.748 ms
```

Here, the Ping program makes five attempts to contact the server for the website www.example.com by sending out packets. Each attempt is a packet (or part of the message) sent. The program then records how long each attempt took to receive a response. This gives us a reaction time.

Finally, the program displays the statistics gathered from the test. These include the minimum reaction time, the average reaction time, the maximum reaction time, and the standard deviation between the attempts. In the example, the minimum reaction time is 9.674 milliseconds, while the maximum reaction time is 11.726 milliseconds. The statistics also record if any of the packets were lost in the attempts.

Contributing Factors

Factors that can contribute to the speed of the reaction time include the number ongoing processes present on the device, the number of programs using the connection, and the use of wired connection (such as with an Ethernet cable) or wireless (such as a Wi-Fi connection). Distance from the server in question can also affect the reaction time. If someone from San Francisco is trying to reach the internet address of a server in New York, they may experience a slower reaction time than someone from Boston trying to reach the same address.

More Information

Ping was developed by Mike Muuss in 1983 at the Ballistic Research Laboratory, now known as the US Army Research Laboratory. Muuss originally created the Ping program after noticing odd behavior with an IP address that he was working with. Inspired by comments from a colleague, he developed the program as a tool to troubleshoot problems with a network he was working with. According to Muuss, the program uses timed messages "to probe the 'distance' to the target machine." Because he had worked with Sonar and Radar devices, he based the name Ping off of the pinging sound made by Sonar.

The concept of Ping is very widespread amongst people who play videogames, though they mistakenly refer to the reaction time as "the ping." Certain games host online servers on which players can play together, and they look at their reaction times to see how responsive their connection to the server is. In general, players tend to prefer that their reaction time be under 100 milliseconds.

If their reaction time is higher, they tend to experience greater delays in server responses to their actions; in the worst cases, they cannot connect to the server at all or will disconnect in the middle of their actions. To counteract longer reaction times, players prefer wired connections via Ethernet cables and limit the number of programs running that use the same connection.

Related Links:

[Mike Muuss' Story of the PING Program](#)