

## Using Address Resolution Protocol

### Estimated Time: 25 Minutes

The goal of this lab is to help you learn about the address resolution protocol, or ARP. ARP is critical to the function of TCP/IP because it associates physical address information from the second layer of the OSI model (a MAC address) to the third Layer an IP address.

The ARP cache is a database that maps Layer 3 IP address (logical addresses) to layer 2 MAC address (Physical addresses). In Windows 2000 if an ARP cache entry is not used within two minutes, it is deleted. If it is used, it will remain in the cache for another two minutes (up to a maximum of 10 Minutes). ARP can be a valuable troubleshooting tool for discovering the identity of a machine whose IP address you know, or for solving the problem of two machines trying to use the same IP address.

After completing this lab, you will be able to:

- ✓ View the ARP cache
- ✓ Place an IP address to MAC address mapping in the ARP cache
- ✓ Understand the purpose of ARP

### Activity:

1. Click start, point to programs, point to Accessories, and then click the Command Prompt. The command prompt screen appears.
2. Type Ipconfig /all. The TCP/IP settings for this computer displays.
3. Record both your IP address, and the IP address of at least one of your neighbors
  - a. Your computer:
  - b. Your Neighbor's
4. Record the MAC address of each one:
  - a. Your computer:
  - b. Your Neighbor's:
5. At computer one, type arp /?. This will show you a list of all the options you can use with the ARP command, and a brief description of how to use them.
6. Type arp -a at the command prompt. You may see a mapping of IP addresses to MAC addresses. This mapping is stored in the ARP cache. More likely however, you will see a message indicating that no entries are found in the ARP cache.
7. At your computer, type Ping followed by the IP address of your neighbor's computer. This command sends an Internet Control Message Protocol (ICMP) message to the other computer requesting a response. Note, however, that the computer must first make an ARP request to find the other computer's MAC address.
8. At the command prompt on your computer type arp -a again. Record the result. What do you notice about the MAC addresses listed in your ARP table?