Lab - Troubleshoot Network Problems (Instructor Version)

**Instructor Note**: Red font color or gray highlights indicate text that appears in the instructor copy only.

# Introduction

In this lab, you will diagnose the causes of network problems and solve them.

# Recommended Equipment

* Two computers running Windows
* A wireless router
* Two Ethernet cables
* Internet access

# Scenario

You must solve network problems for a customer. You may need to troubleshoot both the router and two computers. Make sure you document and solve the problems, and then document the solutions.

There are several possible errors. Solve one problem at a time until you can successfully establish a connection between the two computers.

To better identify which steps should be done on which computer, the lab will refer to them as computer01, computer02, or both.

# Lab Setup

**Instructor Note**: Set up the wireless router and computers with two or more problems from the list below. To validate that all problems have been solved, the student must demonstrate a successful connection between the two computers.

**Note**: If you set up more than one troubleshooting problem for accessing shared resources, you will need to create a different folder and file for each troubleshooting problem.

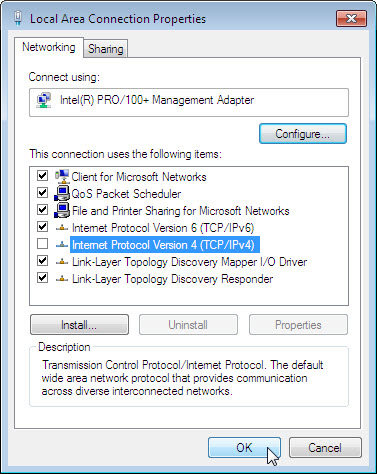
**Instructor Note**: Students might not solve problems in the order shown in the instructor document. Students might notice more than one problem at a time while troubleshooting. Remind students to correct and document one problem at a time.

**List of Problems**:

1. Computer01 has TCP/IP disabled.
2. Computer02 cannot connect to the wireless router. The DHCP server has been disabled.
3. Disconnected cable between both computers and router.
4. Incorrect static IP address on computer01.
5. Disabled NIC.
6. Configure the router to block computer02 MAC address.
7. Set router DHCP to provide only 1 IP address.
8. Disable TCP/IP on computer01.

To disconnect TCP/IP on computer01:

Click **Start** and type **control panel** in the search field and press **Enter**. Click **Network and Sharing Center** > click **Change adapter settings** > double-click the desired network adaptor **>** click **Properties**. Unselect **Internet Protocol Version 4 (TCP/IPv4) > OK**.



1. Computer02 cannot connect to the network.
   1. Disable the DHCP server on the wireless router.
   2. Configure computer01 with a static IP address, subnet mask, and default gateway within the same network as the wireless router. For example, if the wireless router has an IP address of 192.168.1.1 and a subnet mask of 255.255.255.0, set the computer01 to have an IP address of 192.168.1.10 with a subnet mask of 255.255.255.0 and a gateway address of 192.168.1.1.
   3. Release and renew the IP address on computer02 so computer02 has 169.254.x.x for the IP address.
2. Disconnect the Ethernet cable between the computers and wireless router. To make this harder to diagnose, pull out the connector only far enough to disconnect, but not all the way out.
3. Set a static IP address to a different subnet range for computer01.

To set a static IP address on computer01:

Click **Start** and type **control panel** in the search field and press **Enter**. Click **Network and Sharing Center** > click **Change adapter settings >** double-clickthe desired network adaptor **>** click **Properties**. Click **Internet Protocol Version 4 (TCP/IPv4) >** Click **Properties >** Enter the static IP address and default gateway > click **OK**.

1. Disable the computer NIC.

To disable the computer NIC:

Click **Start** and type **control panel** in the search field and press **Enter**. Click **Network and Sharing Center** **> Change adapter settings** > Right-click the desired network adaptor > Select **disable**.

1. Configure the router to block the MAC address for the computer. It may be necessary to turn on MAC address filtering and enter the MAC address of only one computer. This depends on the wireless router configuration options.
2. Configure the router to assign only one DHCP address.
3. Duplicate IP address.

Determine the IP address on computer01 assigned by DHCP server. Then configure computer02 the same IP address as computer01.

# Instructions

## Log on to the computers.

* + 1. List the computer name used for computer01 and computer02. Use these names whenever the lab refers to computer01 and computer02.

Computer01 name:

Type your answers here.

Answers may vary.

Computer02 name:

Type your answers here.

Answers may vary.

* + 1. Log on to **computer01** and **computer02** with accounts that have administrative privileges.

## Troubleshoot network problems.

Use a command prompt to display IP address information, open the network control panel and review the adapter configuration, and log on to the router and review all of the configuration options to troubleshoot the router or computers for problems. Answer the following questions after each problem is solved.

### Questions:

* + 1. What problem did you find?

Type your answers here.

* + - 1. Answers may vary, for example: Computers cannot ping each other.
      2. Computer02 has a link local block 169.254.x.x address.
      3. Link lights not lit for used LAN ports.
      4. Cannot ping the default gateway.
      5. No network access.
      6. No network access.
      7. No network access.
      8. No network access for computer02.
    1. What is a possible cause?

Type your answers here.

* + - 1. The TCP/IP configuration is not configured correctly on computer01.
      2. Computer02 is not obtaining an IP address via DHCP.
      3. The cable connections can be the issue.
      4. The TCP/IP configuration is not configured correctly on computer01.
      5. The network is not connected.
      6. The network is not connected.
      7. The network is not connected.
      8. The network is not connected for computer02.
    1. What steps did you take to determine the problem?

Type your answers here.

* + - 1. Examine computer01 NIC settings.
      2. Examine the router settings.
      3. Examine cable connections between computers and wireless router.
      4. Examine computer01 NIC settings.
      5. Tried to access the network.
      6. Ping other computer or the default gateway on the network.
      7. Tried to access the network.
      8. Examine the IP addresses of both computers.
    1. What is causing the problem?

Type your answers here.

* + - 1. Computer01 has TCP/IP disabled.
      2. The router has DHCP disabled, computer02 has 169.254.x.x address.
      3. Disconnected cable between both computers and router.
      4. Computer01 has an incorrect static IP address and default gateway.
      5. Disabled NIC.
      6. MAC address block for the network.
      7. Router DHCP provides only 1 IP address.
      8. Computer02 has a link local block 169.254.x.x address.
    1. List the steps taken to fix the problem.

Type your answers here.

* + - 1. Enable TCP/IP for computer01.
      2. Enable DHCP for the wireless router, renew computer02 IP address.
      3. Reconnect cables between computers and wireless router.
      4. Change IP address on computer01.
      5. Enabled the computer’s NIC.
      6. Remove blocked MAC address from the router.
      7. Increase router to hand out more IP address via DHCP.
      8. Change the static IP address to an available IP address or obtain the IP address via a DHCP server.
    1. If you could verify end-to-end connectivity, you have successfully solved all the networking problems.

Ping from Computer01 to Computer02 successfully?

Type your answers here.

yes

Ping from Computer02 to Computer01 successfully?

Type your answers here.

yes

Ping from Computer01 to Default Gateway successfully?

Type your answers here.

yes

Ping from Computer02 to Default Gateway successfully?

Type your answers here.

yes

End of Document