LAB 7
CONFIGURING NETWORK CONNECTIONS

This lab contains the following exercises and activities:

Exercise 7.1 Using the Network and Sharing Center
Exercise 7.2 Enabling Network Map
Exercise 7.3 Manually Configuring TCP/IP
Exercise 7.4 Testing Network Connections
Lab Challenge 7.1 Using Nslookup.exe

BEFORE YOU BEGIN

The lab environment consists of student workstations connected to a local area network, along with a server that functions as the domain controller for a domain called contoso.com. The computers required for this lab are listed in Table 7-1.

Table 7-1
Computers required for Lab 7

<table>
<thead>
<tr>
<th>Computer</th>
<th>Operating System</th>
<th>Computer Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Server</td>
<td>Windows Server 2008 R2</td>
<td>RWDC01</td>
</tr>
<tr>
<td>Workstation 1</td>
<td>Windows 7 Enterprise</td>
<td>NYC-CLa</td>
</tr>
<tr>
<td>Workstation 2</td>
<td>Windows 7 Enterprise</td>
<td>NYC-CLb</td>
</tr>
</tbody>
</table>
In addition to the computers, you will also require the software listed in Table 7-2 to complete Lab 7.

**Table 7-2**
Software required for Lab 7

<table>
<thead>
<tr>
<th>Software</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab 7 student worksheet</td>
<td>Lab07_worksheet.rtf (provided by instructor)</td>
</tr>
</tbody>
</table>

**Working with Lab Worksheets**

Each lab in this manual requires that you answer questions, shoot screen shots, and perform other activities that you will document in a worksheet named for the lab, such as Lab07_worksheet.rtf. Your instructor will provide you with access to the worksheets. It is recommended that you use a USB flash drive to store your worksheets, so that you can submit them to your instructor for review. As you perform the exercises in each lab, open the appropriate worksheet file using WordPad, fill in the required information, and save the file to your flash drive.

**SCENARIO**

You are a Windows 7 technical specialist for Contoso, Ltd., a company with workstations in a variety of different environments. The IT director wants to create a permanent software testing lab where engineers can run updates and new applications prior to deploying them on the network. The lab will consist of a network that can function in complete isolation from the company’s production network. You have been assigned the task of building the lab network using Windows 7 computers borrowed from the production network.

**After completing this lab, you will be able to:**

- Use the Windows 7 Network and Sharing Center
- Use Network Map
- Manually configure the Windows 7 TCP/IP client
- Test network connections with Ping.exe

**Estimated lab time: 55 minutes**
Exercise 7.1 Using the Network and Sharing Center

Overview
On a Windows 7 computer, the Network and Sharing Center provides access to most of the operating system’s networking tools and configuration parameters. In Exercise 7.1, you examine the current Sharing and Discovery settings on one of the computers that will become part of the lab network.

Completion time 10 minutes

1. Turn on the NYC-CL1 workstation and log on using the contoso\Administrator account and the password Pa$$w0rd.

2. Click Start and then click Control Panel. The Control Panel window appears.

3. Click Network and Internet > Network and Sharing Center. The Network and Sharing Center control panel appears, as shown in Figure 7-1.

4. Click See full map. The network map fails to appear.
5. Click the back arrow to return to the Network and Sharing Center control panel.

6. Click *Change advanced sharing settings*. The *Change sharing options for different network profiles* window appears.

7. In Table 7-3, note the current state of the advanced Sharing and Discovery settings.

<table>
<thead>
<tr>
<th>Setting</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network discovery</td>
<td>On</td>
</tr>
<tr>
<td>File and printer sharing</td>
<td>On</td>
</tr>
<tr>
<td>Public folder sharing</td>
<td>Off</td>
</tr>
<tr>
<td>Media streaming</td>
<td>Off</td>
</tr>
<tr>
<td>File sharing connections</td>
<td>128-bit</td>
</tr>
</tbody>
</table>

8. Click the back arrow to return to the Network and Sharing Center control panel.

9. Leave the computer logged on for the next exercise.

**Exercise 7.2 Enabling Network Map**

- **Overview**: In Exercise 7.2, you use local Group Policy to enable Network Map to display a diagram of the network, so you can plan the software deployments for the lab network at a later time.

  - **Completion time**: 10 minutes

1. Click Start, and in the *Search programs and files* box, type `mmc` and press Enter. A blank Microsoft Management Console window appears.

2. Click File > Add/Remove Snap-in. The Add or Remove Snap-ins dialog box appears, as shown in Figure 7-2.

4. Click Finish to accept the default Local Computer Group Policy Object.

5. Click OK to close the Add or Remove Snap-ins dialog box. The Local Computer Policy node appears in the MMC console.

6. Browse to the Computer Configuration\Administrative Templates\Network\Link-Layer Topology Discovery folder.

7. Double click the Turn on Mapper I/O (LLTLDIO) driver policy. The Turn on Mapper I/O (LLTLDIO) driver dialog box appears, as shown in Figure 7-3.
8. Click Enabled and then select the *Allow operation while in domain* check box. Then click OK.

9. Double click the *Turn on Responder (RSPNDR) driver* policy. The Turn on Responder (RSPNDR) driver dialog box appears.

10. Click Enabled and then select the *Allow operation while in domain* check box. Then click OK.

11. Switch back to the Network and Sharing Center control panel and click *See full map* again. The Network Map window appears, displaying a diagram of the network.
If you are working in a classroom lab, you might have to wait for other students to configure their workstations before the Network Map appears. In a virtual lab, you will have to repeat this entire exercise on your NYC-CLb workstation before the Network Map can appear.

12. Take a screen shot of the Network Map window by pressing Alt+Prt Scr, and then paste the resulting image into the Lab07_worksheet file in the page provided by pressing Ctrl+V.

**Question 3** Why does the RWDC01 computer not appear on the Network Map display?

13. Leave the computer logged on for the next exercise.

**Exercise 7.3** Manually Configuring TCP/IP

**Overview** Because the lab network you are constructing for Contoso, Ltd. must be isolated from the production network, you do not want the lab computers to obtain their TCP/IP settings from the DHCP servers on the production network. Therefore, in Exercise 7.3 you manually configure the TCP/IP client to use static IP addresses.

| Completion time | 15 minutes |

1. Click Start. Then click All Programs > Accessories > Command Prompt. A Command Prompt window appears.

2. In the Command Prompt window, type `ipconfig /all` and press Enter.

3. Using the information in the Ipconfig.exe display, note your workstation’s current TCP/IP configuration settings in Table 7-4.

<table>
<thead>
<tr>
<th>TCP/IP Setting</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPv4 Address</td>
<td></td>
</tr>
<tr>
<td>Subnet Mask</td>
<td></td>
</tr>
<tr>
<td>Default Gateway</td>
<td></td>
</tr>
<tr>
<td>DNS Servers</td>
<td></td>
</tr>
</tbody>
</table>

**Question 4** How did the computer obtain these settings? How can you determine this?
4. In the Command Prompt window, type `ipconfig /release` and press Enter.

Question 5

What is the result of this command?

5. In the Network and Sharing Center control panel, click *Change adapter settings*. The Network Connections window appears.

6. Right click the Local Area Connection icon and, from the context menu, select Properties. The Local Area Connection Properties sheet appears.

7. Select Internet Protocol Version 4 (TCP/IPv4) from the components list and click Properties. The Internet Protocol Version 4 (TCP/IPv4) Properties sheet appears, as shown in Figure 7-4.

![Internet Protocol Version 4 (TCP/IPv4) Properties](image)

**Figure 7-4**
The Internet Protocol Version 4 (TCP/IPv4) Properties sheet
8. Select *Use the following IP address.*

9. In the IP address text box, type the IPv4 Address value from Table 7-4, changing the address from 10.10.0.x to 10.10.1.x.

10. In the Subnet mask text box, type the Subnet Mask value from Table 7-4.

11. In the Preferred DNS server text box, type the DNS Server value from Table 7-4.

**Question 6**

Which of the parameters in the Internet Protocol Version 4 (TCP/IPv4) Properties sheet would you have to omit for your computer to be unable to resolve a computer name into its IP address?

12. Take a screen shot of the Internet Protocol Version 4 (TCP/IPv4) Properties sheet by pressing Alt+Prt Scr, and then paste the resulting image into the Lab07_worksheet file in the page provided by pressing Ctrl+V.


14. Click OK to close the Local Area Connection Properties sheet.

15. In the Command Prompt window, run the `ipconfig /all` command again.

**Question 7**

How does the `Ipconfig` display differ from the first time you ran the `ipconfig /all` command?

16. Leave the computer logged on for the next exercise.

**NOTE**

*If you are working in a virtual lab environment, you must repeat this entire exercise on your NYC-CLb workstation before proceeding to Exercise 7.4.*

### Exercise 7.4  Testing Network Connections

<table>
<thead>
<tr>
<th>Overview</th>
<th>After manually configuring the Windows 7 TCP/IP client, you must test it by trying to connect to the other computers on the network. In Exercise 7.4, you use the Ping utility to test the computer’s communications capabilities.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completion time</td>
<td>10 minutes</td>
</tr>
</tbody>
</table>
1. In the Command Prompt window, type `ping 127.0.0.1` and press Enter.

   **Question 8**  \[What is the result?\]

   **Question 9**  \[What does this result prove about the computer's network connectivity?\]

   **Question 10**  \[What would be the result if you unplugged your computer's network cable before executing the ping 127.0.0.1 command?\]

2. In the Command Prompt window, type `ping rwdc01` and press Enter.

   **Question 11**  \[What is the result of the ping test, and what does it prove?\]

   **Question 12**  \[What is the IP address of RWDC01?\]

   **Question 13**  \[How was the computer able to resolve the name RWDC01 into its IP address?\]

3. Using the IP address of another computer on the network, test your connectivity to it using the command `ping ipaddress`.

   **NOTE**  \[If you are working in a classroom lab, ask your lab partner for the IP address of his or her workstation. If you are working in a virtual lab environment, use the IP address of your NYC-CLb workstation.\]

   **Question 14**  \[What was the result of the test, and what does this result prove?\]
4. From the other workstation, ping your computer using the IP address you assigned to it in Exercise 7.3.

<table>
<thead>
<tr>
<th>Question 15</th>
<th>What was the result of the test, and what does this result prove?</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Question 16</th>
<th>Was it necessary to perform this last test? Why or why not?</th>
</tr>
</thead>
</table>

5. Log off of the computer.

**LAB CHALLENGE 7.1: USING NSLOOKUP.EXE**

Completion time 10 minutes

Nslookup.exe is a command line utility that enables administrators to test specific functionalities of the Domain Name System (DNS). To complete this challenge, you must list the proper Nslookup commands that will perform the following tasks:

- Display the NSLOOKUP prompt.
- Set the default domain name to contoso.com.
- Set RWDC01 to function as the default DNS server.
- Resolve the name of your workstation.