2

The Domain Naming System: Introductory Concepts and Procedures

LAB EXERCISES

2.01 Installing Domain Naming System (DNS) and Zone File for First Time
2.02 Configuring a Standard Primary Forward and Reverse Lookup Zone
2.03 Adding Delegated Zone for DNS
   - Lab Analysis Test
   - Key Term Quiz
   - Lab Wrap-Up
   - Lab Solutions
You pick up the phone and call a number. This phone number contains an area code, prefix, and customer number (401-555-1212), not too unlike an IP address (192.168.32.15). Your call is connected. The phone company logs your phone number, (area code-prefix-number), into their database having made that phone call (your IP address) which allows you to travel over the network. If you don’t recall the phone number of the person or company you’re calling, what do you do? You look in a phone book, such as the white pages or yellow pages (search engine). If you’ve called the number before and don’t remember it, you look in your personal phone directory that lists the person or company alphabetically (bookmarks or favorites). Or, you’ve programmed the number into your phone’s memory and just press speed-dial (pull down menu in the URL field).

DNS provides such a service. It’s when you call directory assistance for someone’s phone number. It resolves a web site’s (host) name entered in the URL field of your browser to the site’s IP address.

In this chapter, you’ll practice setting up DNS services. First you’ll install the services on your server. Then, you’ll need to configure a root server and create the first zone. You’ll also need to create a second standard primary forward and reverse lookup zone. Lastly, you’ll create a delegated zone that will handle name-to-IP address resolutions.

**LAB EXERCISE 2.01**

**Installing DNS and Zone File for First Time**

Your company, Big-bITe Consultants, has sent you to San Antonio, Texas to help South-of-the-Border Importers set up their DNS. The company, which imports food products from Mexico and South America, employs 1,500 employees in three buildings. They wish to use their intranet to give their employees access to personal payroll information, check stub information, yearly deductions and earnings, access to their benefits status, sick time and vacation time balances, medical insurance information, and so on.

Your first task is to install the DNS component of Windows 2000 and set up a primary DNS zone for the company’s headquarters building. Your IT service
The manager has faxed the company’s HR director, Ida Dewnought-Gnow, a profile form. You have the following information from that form:

<table>
<thead>
<tr>
<th>IP address of server</th>
<th>192.128.32.01</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subnet mask</td>
<td>255.255.255.0</td>
</tr>
<tr>
<td>DNS server</td>
<td>192.128.32.01</td>
</tr>
<tr>
<td>Gateway</td>
<td>192.128.32.10</td>
</tr>
<tr>
<td>Name of registered domain</td>
<td>southernbell.com</td>
</tr>
</tbody>
</table>

### Learning Objectives

In this lab, you’ll install DNS on a root server and configure it with its first zone. By the end of this lab, you’ll be able to:

- Install DNS
- Create a root server
- Create and configure a DNS zone

### Lab Materials and Setup

This lab will require the following items:

- A working computer
- Installed network card
- Windows 2000 Server software

You should also have a Windows 2000 Server CD handy if you need to extract files not found on the hard drive. Also, it is recommended that prior to DNS installation, the server have a static IP address, subnet mask, and gateway (optional).

### Getting Down to Business

To install Domain Naming Service (DNS) and create your first DNS zone, you’ll need to complete the following steps.
Step 1. To start the installation process, go to Networking Services.

Step 2. When the wizard is finished click OK to complete the installation.

Now that you’ve installed DNS, your next task is to configure a zone for the name server.

Step 3. Launch DNS Console.

Step 4. Configure the server as the first DNS server on the network.

Step 5. Create a standard primary forward lookup zone.

Step 6. Enter the domain name.

Step 7. Follow the wizard steps to create a reverse lookup zone. Finish the process.

LAB EXERCISE 2.02

Configuring a Standard Primary Forward and Reverse Lookup Zone

In part one of this case study, you utilized the DNS initial configuration wizard to establish the standard primary and reverse lookup zones for southernbell.com.

In part two of this case study, you’ll proceed with the configuration of the DNS server by creating a second standard primary forward lookup zone and a reverse lookup zone for the hr subdomain of southernbell.com. The information you need to configure the server is:

<table>
<thead>
<tr>
<th>Name of primary zone</th>
<th>hr.southernbell.com</th>
</tr>
</thead>
<tbody>
<tr>
<td>IP address of reverse lookup zone</td>
<td>192.128.32</td>
</tr>
</tbody>
</table>
Learning Objectives

The forward lookup zone resolves the domain’s name, returns the IP address associated with it, and connects you with the web site. The reverse lookup zone does the opposite; it resolves an IP address with the domain name associated with the number. By the end of this lab, you will know how to:

- Create a standard primary forward lookup zone
- Create a reverse lookup zone

Lab Material and Setup

This lab will require the following:

- A working computer
- Installed network card
- Windows 2000 Server software

Getting Down to Business

To begin configuring the Primary forward lookup zone and reverse lookup zone:

**Step 1.** Launch DNS Console.

**Step 2.** Choose New Zone Wizard.

**Step 3.** Follow the wizard to configure a standard primary forward zone.

**Step 4.** Create a new DNS file.

**Step 5.** Make sure the Create reverse lookup zone is checked.

**Step 6.** Follow the wizard to configure a standard primary reverse lookup zone and finish the configuration process.
LAB EXERCISE 2.03

Adding Delegated Zone for DNS

In part three of this case study, you'll proceed with the configuration of a delegated zone and assignment of the server within the zone that will service requests for personal payroll information from employees.

The information you need to configure the server is as follows:

<table>
<thead>
<tr>
<th>Name of delegated zone</th>
<th>payroll</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of server in delegated zone</td>
<td>numbers.southernbell.com</td>
</tr>
</tbody>
</table>

Learning Objectives

In this lab exercise, you’ll create a zone delegated to handle DNS queries as a secondary source. The queries designated to the existing domain will be referred to the name server in the delegated zone. By the end of this lab, you will know how to:

- Create a delegated zone

Lab Materials and Setup

This lab will require the following:

- A working computer
- Installed network card
- Windows 2000 Server software

Getting Down to Business

Step 1. Launch DNS Console.

Step 2. Right-click the southernbell.com domain.
Step 3. From the context menu, select New Delegation.

Step 4. Type in the delegated domain.

Step 5. Select the name server which will host the delegated zone.

Step 6. Follow the wizard to complete the process.
LAB ANALYSIS TEST

1. While creating a DNS standard primary zone, Josh, a junior network administrator, forgets to create a reverse lookup zone. List the steps he would need to take to accomplish this task.

2. Madeline, the human resource director, is questioning why you’ve been called in to create a second zone for her DNS server. Although she knows nothing about the process, she would like a brief explanation in layman’s terms. Give your explanation below.

3. You receive a call from Josh again, with a question about the configuration requirements for a server before installing DNS. He doesn’t remember what they are. Would you help him out? Write your answer to Josh below.

4. Why would you need to implement a delegated zone for DNS?

5. What functions do forward lookup zone and reverse lookup zone perform?
KEY TERM QUIZ

Use the following vocabulary terms to complete the sentences below. Not all of the terms will be used. Definitions of these terms can be found in *MCSE Windows 2000 Directory Services Study Guide* (ISBN: 0-07-212380-X).

- domain
- domain naming service (DNS)
- Dynamic Host Configuration Protocol (DHCP)
- forward lookup zone
- reverse lookup zone
- zone
- delegated zone
- record type
- hierarchy
- lease

1. A __________________ is a DNS zone table, which lists host names and the corresponding IP address.

2. A __________________ receives DNS queries that are referred from another server for resolution.

3. A __________________ is a special DNS zone table that contains IP address pointers to the corresponding host name.

4. A hierarchical naming system used to resolve a host name with its IP address is called __________________.

5. A domain for which a DNS server has authority is called a __________________.
LAB WRAP-UP

In this chapter we’ve been introduced to the domain naming system (DNS). This system provides your network with a host server whose database associates the name of a web site with its corresponding IP address.

The labs had you perform basic installation functions; zone creation with primary lookup zone and reverse lookup zone; and create a delegated zone to help resolve web site names to their IP address within another lower domain. You’ve seen that the process is straightforward, with the help of the built-in wizards.
LAB SOLUTIONS FOR CHAPTER 2

In this section, you'll find solutions to the lab exercises, lab analysis test, and key term quiz.

Lab Solution 2.01
Your task is to install DNS, a component of Windows 2000, and set up a primary DNS zone for the company's headquarters building. The information you need is the server’s IP address (192.128.32.01), the subnet mask (255.255.255.0) which indicates which parts of the IP address make up the domain address, the DNS server (192.128.32.01), gateway (192.128.32.10), and name of registered domain (southernbell.com).

This lab has you install DNS on a root server and configure it with its first zone. By the end of this lab, you will have performed the following:

- Install DNS
- Create a root server
- Create and configure a DNS zone

To start the installation process:

**Step 1.** Launch Add/Remove programs from the control panel.

**Step 2.** Select the Add/Remove Windows Components button.

**Step 3.** Select Networking Services from the Components Wizard dialog box.

**Step 4.** Check the DNS box and click OK as shown in Figure 2-1.

**Step 5.** When the wizard is finished click OK to complete the installation. Now that you’ve installed DNS, your next task is to configure a zone for the name server.

**Step 6.** Launch DNS Console through the admin tools.

**Step 7.** Right-click on the name server.
Step 8. Choose Configure the Server and click Next.

Step 9. Select Network radio button as shown in Figure 2-2.

Step 10. Select Yes, Create a forward lookup zone and click Next.

Step 11. Select Choose Standard Primary.

Step 12. Click Next and enter the domain name.

Step 13. Select Create a reverse lookup zone as shown in Figure 2-3.

Step 14. Follow the wizard steps to create a reverse lookup zone.

Step 15. Click Next to finish.
FIGURE 2-2
Select Network radio button

FIGURE 2-3
Select Create a reverse lookup zone

Lab Solution 2.02
In part two of this case study, this lab continues with the configuration of the DNS server by creating a second standard primary forward lookup zone and a reverse lookup zone. The information needed to configure the server is:

<table>
<thead>
<tr>
<th>Company domain name</th>
<th>southernbell.com</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of primary zone</td>
<td>hr.southernbell.com</td>
</tr>
<tr>
<td>IP address of reverse lookup zone</td>
<td>192.128.32</td>
</tr>
</tbody>
</table>

The forward lookup zone resolves the subdomain’s name, hr (human resources), and returns the IP address associated with it then connects you with the web site. The reverse lookup zone does the opposite; it resolves an IP address with the domain name associated with the number. This lab has you:

- Create a standard primary forward lookup zone
- Create a reverse lookup zone

To start configuring the primary forward lookup zone and reverse lookup zone:

Step 1. Launch DNS console through the Admin Tools.
Step 2. Right-click on the name server.
Step 3. Choose New Zone Wizard and click Next.
Step 4. Follow the wizard to configure a standard primary forward zone.
Step 5. Enter the zone name, hr.southernbell.com.
Step 7. Click Finish to complete the configuration.
Step 8. Make sure the Create reverse lookup zone is checked.
Step 9. Follow the wizard to configure a standard primary reverse lookup zone as shown in Figure 2-4.

Step 10. Once you’ve made the necessary entries click Finish.

Lab Solution 2.03
In the last part of this case study, you finished configuring DNS with a delegated zone and assigned a server within the zone that will service requests for personal payroll information from employees.

You were given the following information:

<table>
<thead>
<tr>
<th>Name of delegated zone</th>
<th>payroll</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of server in delegated zone</td>
<td>numbers.southernbell.com (192.128.32.3)</td>
</tr>
</tbody>
</table>

You have created a zone delegated to handle DNS queries as a secondary source. The queries designated to the existing domain will be referred to the name server in the delegated zone.

Step 1. Launch DNS console.

Step 2. Right-click on the zone you would like to delegate.

Step 3. From the context menu select New Delegation.

Step 4. Type in the delegated domain as shown in Figure 2-5.

Step 5. Select the name server which will host the delegated zone as shown in Figure 2-6.

Step 6. Click Finish.

ANSWERS TO LAB ANALYSIS TEST

1. Click Start | Administrative Tools | DNS. Right-click on the name server, choose New Zone Wizard, select Reverse Look Zone.

2. A DNS zone is a logical grouping of hostnames. When creating a new zone, for example hr.southerbell.com, the information for the human resources host is stored there.
3. Prior to installing DNS, the server needs a static IP address, subnet mask, and gateway (optional).

4. A delegated zone assumes some of the responsibility for zone database management. It’s a way of partitioning the database into zones that is based on certain criteria, such as geographical location and department organization.

5. The forward lookup zone holds resource records that map web site, or host names to IP addresses. The reverse lookup zone resolves IP addresses by pointing back to the web site or host name.

**ANSWERS TO KEY TERM QUIZ**

1. forward lookup zone
2. delegated zone
3. reverse lookup zone
4. domain naming service (DNS)
5. zone