LAB 12
DEPLOYING AND CONFIGURING THE DNS SERVICE

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This lab contains the following exercises and activities:

Exercise 12.1	Designing a DNS Namespace
Lab Challenge	Remote DNS Administration
Exercise 12.2	Creating a DNS Zone
Exercise 12.3	Creating DNS Domains
Exercise 12.4	Creating DNS Resource Records
Lab Challenge	Using Reverse Name Resolution

BEFORE YOU BEGIN

The lab environment consists of computers connected to a local area network, along with a server that functions as the domain controller for a domain called *adatum.com*. The computers required for this lab are listed in Table 12-1.

Table 12-1
Computers Required for Lab 12

Computer	*Operating System*	*Computer Name*
Domain controller	Windows Server 2016	SERVERA
Member server	Windows Server 2016	SERVERB
Member server	Windows Server 2016	SERVERC

In addition to the computers, you also require the software listed in Table 12-2 to complete Lab 12.

Table 12-2
Software Required for Lab 12

Software	*Location*
Lab 12 student worksheet	Lab12_worksheet.docx (provided by instructor)

Working with Lab Worksheets

Each lab in this manual requires that you answer questions, take screen shots, and perform other activities that you will document in a worksheet named for the lab, such as Lab12_worksheet.docx. It is recommended that you use a USB flash drive to store your worksheets, so you can submit them to your instructor for review. As you perform the exercises in each lab, open the appropriate worksheet file, fill in the required information, and save the file to your flash drive.

After completing this lab, you will be able to:

- Design a DNS namespace
- Configure remote DNS administration
- Create and manage DNS zones, domains, and resource records
- Configure reverse name resolution

Estimated lab time: 90 minutes

Exercise 12.1	Designing a DNS Namespace
Overview	Your firm is launching a new division, which will have its own DNS namespace, and your first task is to design that namespace by specifying appropriate domain and host names for the computers in the division.
Mindset	Why is it practical and necessary to have a policy in place for the naming of your organization's domains and hosts?
Completion time	20 minutes

1. Design a DNS namespace for your organization that conforms to the following guidelines.

- The root domain name for the organization is **adatum.com**. All of the additional domains you create must be subordinate to this domain.
- The internal network must be in a different domain from the external network.
- The organization consists of three internal divisions: Sales, Human Resources, and Production. Each division must be represented by a separate subdomain in the namespace.
- Each division has departmental servers performing various roles and as many as 200 workstations, only some of which are shown in the diagram. Your host names should identify the function of each computer.
- Three servers on an external perimeter network host the company's Internet services: Web, FTP, and e-mail. These servers must be in the domain adatum.com.

2. On the worksheet shown in Figure 12-1 and in your Lab 12 worksheet file, write the domain names and the fully qualified domain names you have selected for the computers in the appropriate spaces.

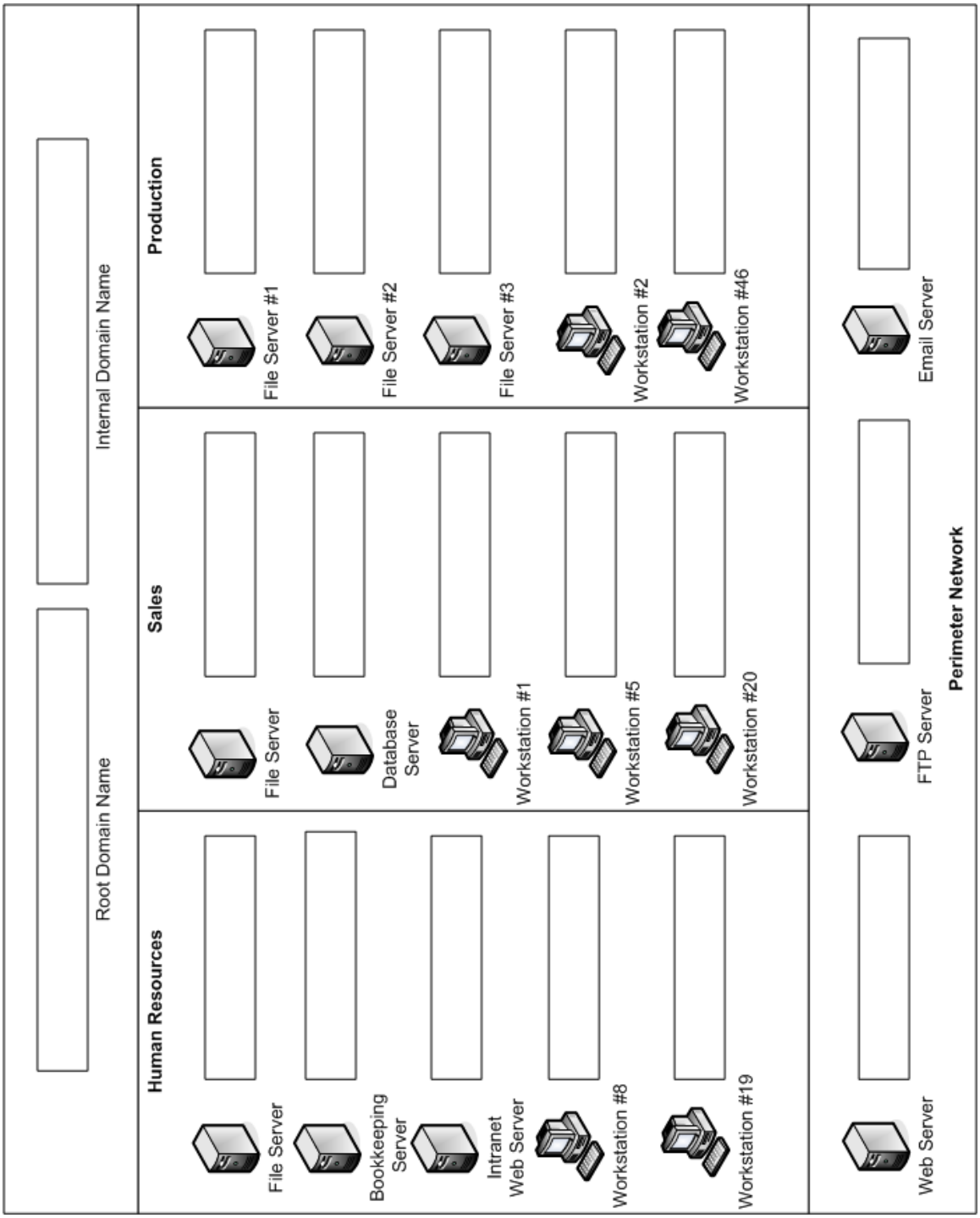


Figure 12-1
DNS Namespace Design Worksheet

End of exercise.

Lab Preparation	Remote DNS Administration
Overview	To complete this challenge, you must configure **SERVERC** to manage the DNS server running on SERVERA using the DNS console.
Completion time	10 minutes

1. Log on **SERVERC** as domain administrator, launch **Server Manager**.

2. Click **Manage** > **Add Roles and Features**

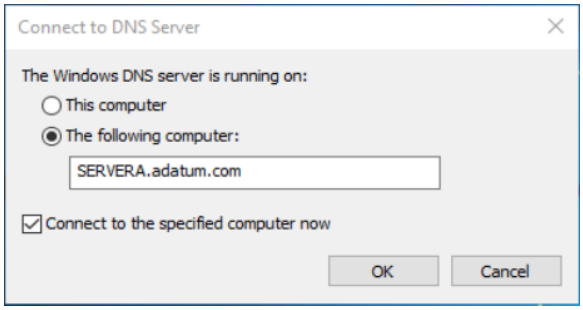
3. Select SERVERC from the server pool, click Next.

4. Skip "Select server role" by clicking Next.

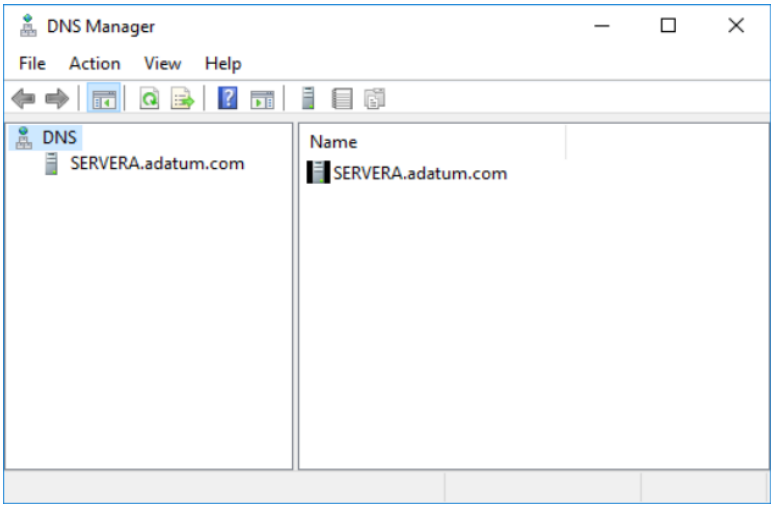
5. In "Select features", select **Remote Server Administration Tools** > **Role Administration Tools** > **DNS Server Tools**, click Next.

6. Click Install, wait until it shows "Installation succeeded on SERVERC.adatum.com", click Close.

7. In Server Manager, click **Tools** > **DNS**, connect to SERVERA.adatum.com.



The DSN Manager Console appears.



[SCREEN SHOT 1] Take a screen shot of the Connect to DNS Server dialog box by pressing Alt+Prt Scr and then paste the resulting images into the Lab 12 worksheet file in the page provided by pressing Ctrl+V.

End of exercise. You can leave the windows open for the next exercise.

Exercise 12.2	Creating a DNS Zone
Overview	The zone is the administrative division that DNS servers use to separate domains. The first step in implementing the DNS namespace you designed is to create a zone representing your root domain.
Mindset	What is the relationship between DNS zones and DNS domains?
Completion time	10 minutes

1. On **SERVERC**, in Server Manager, click **Tools** > **DNS**. The DNS Manager console appears.

2. Expand the SERVERA node and select the **Forward Lookup Zones** folder (see Figure 12-2).

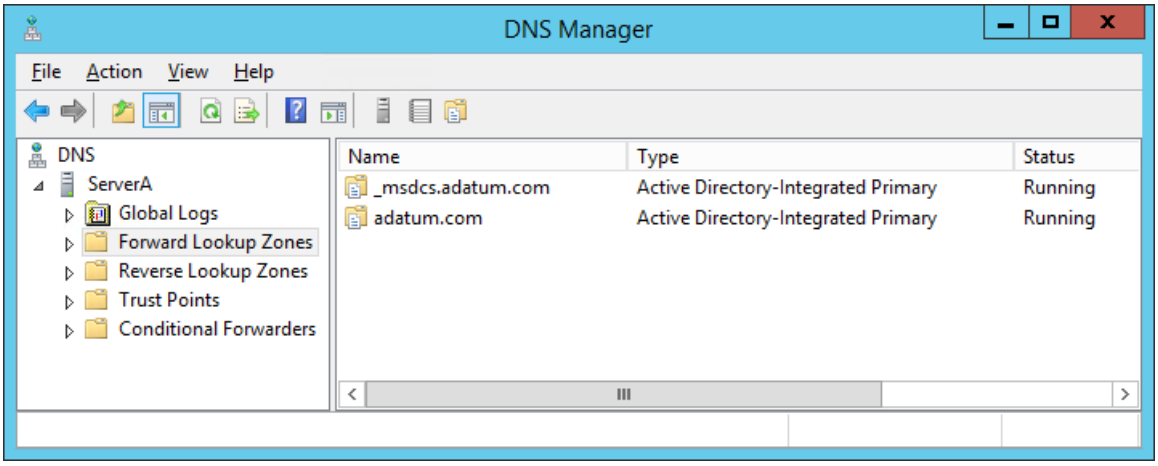


Figure 12-2
The DNS Manager console

Question 1	*Why is a zone for the root domain of your DNS namespace already present in the Forward Lookup Zones folder?*

3. **Right-click** the Forward Lookup Zones folder and, from the context menu, select **New Zone**. The New Zone Wizard appears.

4. Click Next to bypass the Welcome page. The *Zone Type* page appears.

5. Leave the *Primary Zone* option and the *Store the zone in Active Directory* check box selected and click Next. The *Active Directory Zone Replication Scope* page appears.

6. Click Next to accept the default setting. The *Zone Name* page appears.

7. In the *Zone name* text box, type the internal domain name from the diagram you created in Exercise 12.1, for example, int.adatum.com, click *Next*. The *Dynamic Update* page appears.

8. Select the ***Allow both nonsecure and secure dynamic updates*** option and click Next. The *Completing the New Zone Wizard* page appears.

9. Click Finish. The new zone appears in the Forward Lookup Zones folder in the console.

Question 2	*What resource records appear in the new zone you created by default?*

End of exercise. You can leave the windows open for the next exercise.

Exercise 12.3	Creating DNS Domains
Overview	A single zone on a DNS server can encompass multiple domains, as long as the domains are contiguous. In this exercise, you create the departmental domains you specified in your namespace design.
Mindset	What is the difference between creating a second-level domain and a third-level domain?
Completion time	10 minutes

1. On **SERVERC**, in the DNS Manager console, **right-click** the zone you created using the internal domain name from your namespace in Exercise 12.2 and, from the context menu, select **New Domain**. The New DNS Domain dialog box appears, as shown in Figure 12-3.

   (If New Domain option is in gray, double click the internal domain name, then right click)

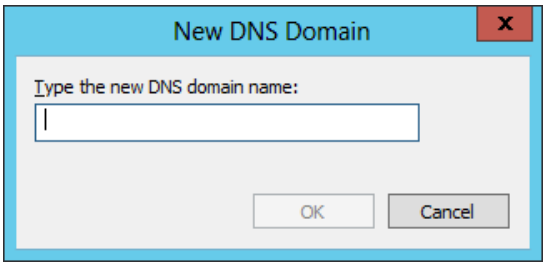


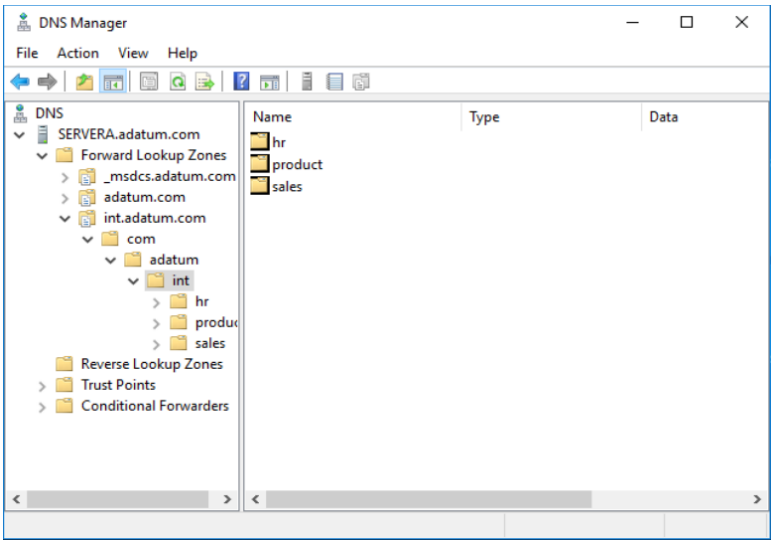
Figure 12-3
The New DNS Domain dialog box

2. In the *Type the new DNS domain name* text box, type the name of the Human Resources domain you specified in your namespace design, for example, hr.int.adatum.com, click OK.

NOTE	*When you create a domain within a zone, you specify the name for the new domain relative to the zone name. For example, to create the hr.int.contoso.com domain in the int.contoso.com zone, you would specify only the hr name in the New DNS Domain dialog box.*

2. Repeat steps 1 to 2 to create the domains for the Sales and Production departments from your namespace design.

[SCREEN SHOT 2] Take a screen shot of DNS Manager showing zones and domains by pressing Alt+Prt Scr and then paste the resulting images into the Lab 12 worksheet file in the page provided by pressing Ctrl+V.

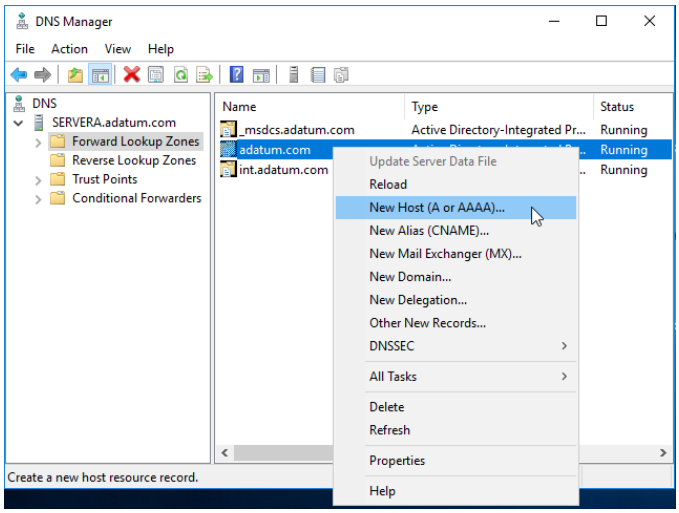


Question 3	*What resource records appear in the new domains you created by default?*

End of exercise. You can leave the windows open for the next exercise.

Exercise 12.4	Creating DNS Resource Records
Overview	Now that you have created the zones and domains for your namespace, you can begin to populate them with the resource records that the DNS server uses to resolve host names into IP addresses.
Mindset	What good are zones and domains without resource records?
Completion time	20 minutes

1. On **SERVERC**, in the DNS Manager console "Forward Lookup Zone", expand and right-click your root domain zone (**adatum.com**) and, from the context menu, select **New Host (A or AAAA)**.



The New Host dialog box appears, as shown in Figure 12-4.

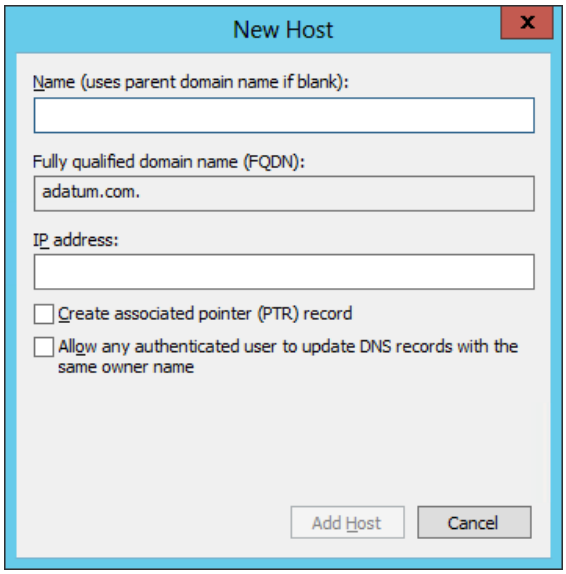


Figure 12-4
The New Host dialog box

2. In the Name text box, type the host name of the Internet web server you specified in your namespace design, for example, www.adatum.com

3. In the IP Address text box, type **10.10.0.10**.

Question 4	*What must you do before you can select the Create associated pointer (PTR) record check box in the New Host dialog box?*

4. Click **Add Host**. A DNS message box appears, stating that the resource record was created.

5. Click OK. A new, blank Add Host dialog box appears.

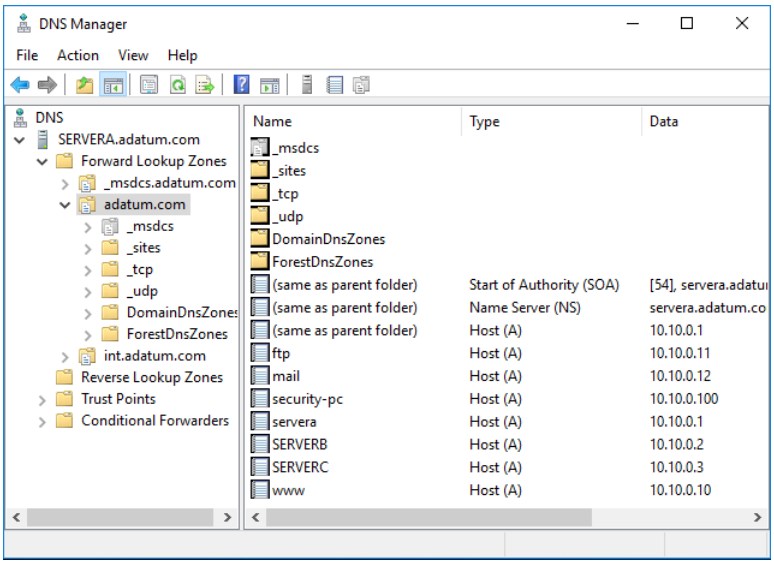
6. Repeat steps 2 to 4 to create Host records for the Internet **FTP** and Internet **e-mail** servers in your namespace design, using the IP addresses 10.10.0.11 and 10.10.0.12, respectively.

7. **(OPTIONAL)** In the three domains you created in Exercise 12.3, create Host resource records for all of the remaining computers in your namespace design, placing each computer within its appropriate subdomain; Human Resources, Sales, or Production, using the names you specified in your diagram and different IP addresses in the 10.10.0.10 to 10.10.0.30 range.

NOTE	*For the purposes of this exercise, the actual IP addresses you use when creating your resource records do not matter. In an actual DNS deployment, you must either specify an appropriate IP address for each host, based on the subnet to which the computer is connected, or rely on DHCP to create the resource records for the computers.*

8. Click Done to close the Add Host dialog box.

9. **[SCREEN SHOT 3]** Take a screen shot of the DNS Manager console, showing the resource records you created in Adatum.com domain, by pressing Alt+Prt Scr, and then paste the resulting image into the Lab 12 worksheet file in the page provided by pressing Ctrl+V.



10. Close the DNS Manager console.

End of exercise. You can leave the windows open for the next exercise.

Lab Challenge	Using Reverse Name Resolution
Overview	Reverse name resolution is when a resolver sends an IP address to a DNS server and receives a host name in return, rather than sending a host name and receiving an IP address.
Completion time	20 minutes

To complete this challenge, you must configure the DNS server on SERVERA to perform reverse name resolutions for all of the resource records you created in Exercise 12.4.

List the basic tasks you performed to complete the challenge and then take a screen shot of the DNS Manager console, showing the elements you created during the challenge, by pressing Alt+Prt Scr, and then paste the resulting image into the Lab 12 worksheet file in the page provided by pressing Ctrl+V.

Create an IPv4 reverse lookup zone in the in-addr.arpa domain, named with the subnet address you used when creating your forward lookup resource records.

Create a Pointer (PTR) record in the reverse lookup zone corresponding to each of the Host resource records created previously.

End of lab. You can log off or start a different lab. If you want to restart this lab, you'll need to click the End Lab button in order for the lab to be reset.