

## Module 4: Implementing and administering AD DS sites and replication

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### Lab: Implementing AD DS sites and replication

(VMs: 20742B-LON-DC1, 20742B-TOR-DC1)

#### Exercise 1: Modifying the default site

##### Task 1: Install the Toronto domain controller

1. On **TOR-DC1**, click **Start**, and then click **Server Manager**.
2. In **Server Manager**, click **Manage**, and then from the drop-down list, click **Add Roles and Features**.
3. On the **Before you begin** page, click **Next**.
4. On the **Select installation type** page, confirm that **Role-based or feature-based installation** is selected, and then click **Next**.
5. On the **Select destination server** page, ensure that **Select a server from the server pool** is selected and that **TOR-DC1.adatum.com** is highlighted, and then click **Next**.
6. On the **Select server roles** page, select the **Active Directory Domain Services** check box.
7. On the **Add features that are required for Active Directory Domain Services?** page, click **Add Features**, and then click **Next**.
8. On the **Select features** page, click **Next**.
9. On the **Active Directory Domain Services** page, click **Next**.
10. On the **Confirm installation selections** page, click **Install**.

*Note: This might take a few minutes to complete.*

11. When the AD DS binaries have installed, do not click **Close**, but click the blue **Promote this server to a domain controller** link.
12. In the **Deployment Configuration** window, click **Add a domain controller to an existing domain**, and then click **Next**.
13. In the **Domain Controller Options** window, ensure that both the **Domain Name system (DNS) server** and **Global Catalog (GC)** check boxes are selected.
14. Confirm that **Site name:** is set to **Default-First-Site-Name**, and then under **Type the Directory Services Restore Mode (DSRM) password**, type **Pa55w.rd** in both the **Password** and **Confirm password** boxes. Click **Next**.

15. On the **DNS Options** page, click **Next**.
16. In the **Additional Options** page, click **Next**.
17. In the **Paths** window, click **Next**.
18. In the **Review Options** window, click **Next**.
19. In the **Prerequisites Check** window, click **Install**. The server will restart automatically.
20. After **TOR-DC1** restarts, sign in as **Adatum\Administrator** with the password **Pa55w.rd**

### **Task 2: Rename the default site**

1. If necessary, on **LON-DC1**, open the **Server Manager** console.
2. In **Server Manager**, click **Tools**, and then click **Active Directory Sites and Services**.
3. In **Active Directory Sites and Services**, in the navigation pane, expand **Sites**.
4. Right-click **Default-First-Site-Name**, and then click **Rename**.
5. Type **LondonHQ** and then press Enter.
6. Expand **LondonHQ**, expand the **Servers** folder, and then verify that both **LON-DC1** and **TOR-DC1** belong to the **LondonHQ** site.

### **Task 3: Configure IP subnets that are associated with the default site**

1. If necessary, on **LON-DC1**, open the **Server Manager** console, and then open **Active Directory Site and Services**.
2. In the **Active Directory Sites and Services** console, in the navigation pane, expand **Sites**, and then click the **Subnets** folder.
3. Right-click **Subnets**, and then click **New Subnet**.
4. In the **New Object – Subnet** dialog box, under **Prefix**, type **172.16.0.0/24**
5. Under **Select a site object for this prefix**, click **LondonHQ**, and then click **OK**.

**Results:** After completing this exercise, you should have successfully reconfigured the default site and assigned IP address subnets to the site.

## **Exercise 2: Creating additional sites and subnets**

### **Task 1: Create the AD DS sites for Toronto**

1. If necessary, on **LON-DC1**, open the **Server Manager** console, click **Tools**, and then click **Active Directory Sites and Services**.

2. In the **Active Directory Sites and Services** console, in the navigation pane, right-click **Sites**, and then click **New Site**.
3. In the **New Object – Site** dialog box, in the **Name** text box, type **Toronto**
4. Under **Select a site link object for this site**, select **DEFAULTIPSITELINK**, and then click **OK**.
5. In the **Active Directory Domain Services** dialog box, click **OK**. The Toronto site displays in the navigation pane.
6. In the **Active Directory Sites and Services** console, in the navigation pane, right-click **Sites**, and then click **New Site**.
7. In the **New Object – Site** dialog box, in the **Name** text box, type **TestSite**
8. Under **Select a site link object for this site**, select **DEFAULTIPSITELINK**, and then click **OK**. The test site displays in the navigation pane.

### **Task 2: Create IP subnets that are associated with the Toronto sites**

1. If necessary, on **LON-DC1**, open the **Server Manager** console, click **Tools**, and then click **Active Directory Sites and Services**.
2. In the **Active Directory Sites and Services** console, in the navigation pane, expand **Sites**, and then click the **Subnets** folder.
3. Right-click **Subnets**, and then click **New Subnet**.
4. In the **New Object – Subnet** dialog box, under **Prefix**, type **172.16.1.0/24**
5. Under **Select a site object for this prefix**, click **Toronto**, and then click **OK**.
6. Right-click **Subnets**, and then click **New Subnet**.
7. In the **New Object – Subnet** dialog box, under **Prefix**, type **172.16.100.0/24**
8. Under **Select a site object for this prefix**, click **TestSite**, and then click **OK**.
9. In the navigation pane, click the **Subnets** folder. Verify in the details pane that the two subnets are created and associated with their appropriate site.

**Note:** *There are three subnets in total (172.16.0.0 was created in Exercise 1, Task 3, “Configure IP subnets that are associated with the default site”).*

**Results:** *After completing this exercise, you should have successfully created two additional sites representing the IP subnet addresses in Toronto.*

## **Exercise 3: Configuring AD DS replication**

### **Task 1: Configure site links between AD DS sites**

1. If necessary, on **LON-DC1**, open the **Server Manager** console, click **Tools**, and then click **Active Directory Sites and Services**.
2. In the **Active Directory Sites and Services** console, in the navigation pane, expand **Sites**, expand **Inter-Site Transports**, and then click the **IP** folder.
3. Right-click **IP**, and then click **New Site Link**.
4. In the **New Object – Site Link** dialog box, in the **Name** text box, type **TOR-TEST**
5. Under **Sites not in this site link**, press Ctrl on the keyboard, click **Toronto**, click **TestSite**, click **Add**, and then click **OK**.
6. Right-click **TOR-TEST**, and then click **Properties**.
7. In the **TOR-TEST Properties** dialog box, click **Change Schedule**.
8. In the **Schedule for TOR-TEST** dialog box, highlight the range from **Monday 9 AM** to **Friday 3 PM**, as follows:
  - o Click the **Monday at 9:00AM** tile, press and hold the mouse button, and then drag the cursor to the **Friday at 3:00 PM** tile.
9. Click **Replication Not Available**, and then click **OK**.
10. Click **OK** to close **TOR-TEST Properties**.
11. Right-click **DEFAULTIPSITELINK**, and then click **Rename**.
12. Type **LON-TOR** and then press Enter.
13. Right-click **LON-TOR**, and then click **Properties**.
14. Under **Sites in this site link**, click **TestSite**, and then click **Remove**.
15. In the **Replicate Every** spin box, change the value to **60** minutes, and then click **OK**.

### **Task 2: Move TOR-DC1 to the Toronto site**

1. If necessary, on **LON-DC1**, click **Tools**, and then click **Active Directory Sites and Services**.
2. In the **Active Directory Sites and Services** console, in the navigation pane, expand **Sites**, expand **LondonHQ**, and then expand the **Servers** folder.
3. Right-click **TOR-DC1**, and then click **Move**.
4. In the **Move Server** dialog box, click **Toronto**, and then click **OK**.
5. In the navigation pane, expand the **Toronto** site, expand **Servers**, and then click **TOR-DC1**.

### **Task 3: Monitor AD DS site replication**

1. On **LON-DC1**, click **Start**, and then click the **Windows PowerShell** icon.
2. At the **Windows PowerShell** prompt, type the following, and then press Enter:

### ***Repadmin /kcc***

This command recalculates the inbound replication topology for the server.

3. At the **Windows PowerShell** command prompt, type the following command, and then press Enter: ***Repadmin /showrepl***

4. Verify that the last replication with **TOR-DC1** was successful.

5. At the **Windows PowerShell** command prompt, type the following command, and then press Enter: ***Repadmin /bridgeheads***

This command displays the bridgehead servers for the site topology.

6. At the **Windows PowerShell** command prompt, type the following, and then press Enter: ***Repadmin /replsummary***

This command displays a summary of replication tasks. Verify that no errors appear.

7. At the **Windows PowerShell** command prompt, type the following, and then press Enter: ***DCDiag /test:replications***

8. Verify that all connectivity and replication tests pass successfully.

9. Switch to **TOR-DC1**, and then repeat steps 1 through 8 to view information from **TOR-DC1**. For step 4, verify that the last replication with **LON-DC1** was successful.

***Results:*** After completing this exercise, you should have successfully configured site links and monitored replication.

## **Exercise 4: Monitoring and troubleshooting AD DS replication**

### **Task 1: Produce an error**

1. If necessary, on **LON-DC1**, open **Server Manager**.
2. In **Server Manager**, click **Tools**, and then click **Active Directory Sites and Services**.
3. In the **Active Directory Sites and Services** console, in the navigation pane, expand **Sites**, expand **LondonHQ**, expand the **Servers** folder, expand **LON-DC1**, and then select **NTDS Settings**.
4. In the details pane, right-click the **TOR-DC1** connection object, and then click **Replicate Now**.
5. In the **Replicate Now** dialog box, click **OK**.
6. In **Active Directory Sites and Services**, examine all the objects you created

earlier, and then on the taskbar, click the **Windows PowerShell** icon.

7. At the **Windows PowerShell** command prompt, type the following, and then press Enter:

```
Get-ADReplicationUpToDatenessVectorTable –Target “adatum.com”
```

**Note:** This cmdlet will show you the last several replication events. Make a note of the date and time of the last (top) event.

8. Go to **TOR-DC1**.

9. Click **Start**, and then click **Windows PowerShell**.

10. At the **Windows PowerShell** command prompt, type the following, and then press Enter after each command:

```
CD \Labfiles\Mod04
```

```
.\Mod04Ex4.ps1
```

### **Task 2: Monitor AD DS site replication**

1. If necessary, on **TOR-DC1**, open the **Server Manager** console, click **Tools**, and then click **Active Directory Sites and Services**.

2. In the **Active Directory Sites and Services** console, in the navigation pane, expand **Sites**, expand **Toronto**, expand **Servers**, expand **TOR-DC1**, and then select **NTDS Settings**.

3. In the details pane, right click **LON-DC1**, and then select **Replicate Now**.

4. Click **OK** on the **Replicate Now** pop-up.

5. On **TOR-DC1**, on the taskbar, click the **Windows PowerShell** icon.

6. At the **Windows PowerShell** command prompt, type the following, and then press Enter:

```
Get-ADReplicationUpToDatenessVectorTable –Target “adatum.com”
```

**Note:** This cmdlet will show you the last several replication events. Note that the last date and time shown (**Replication from LON-DC1**) is not updating. This indicates that one-way replication is not occurring.

7. At the **Windows PowerShell** command prompt, type the following, and then press Enter: **Get-AdReplicationSubnet –filter \***

**Note:** This cmdlet will show detailed information about any subnets assigned to any sites. Note that nothing is returned.

8. At the **Windows PowerShell** command prompt, type the following, and then press Enter: ***Get-AdReplicationSiteLink -filter \****

**Note:** This cmdlet will show detailed information about any site links assigned to particular sites. Note that nothing is returned.

### **Task 3: Troubleshoot AD DS replication**

1. If necessary, on **TOR-DC1**, open **Windows PowerShell**.

2. At the **Windows PowerShell** command prompt, type the following, and then press Enter: ***ipconfig /all***

3. Examine the results. The DNS server address should be **10.0.0.1**.

4. At the **Windows PowerShell** command prompt, type the following, and then press Enter:

***Get-DnsClient | Set-DnsClientServerAddress -ServerAddresses ("172.16.0.10", "172.16.0.25")***

5. Run the ***ipconfig /all*** command again. The DNS server addresses should be **172.16.0.10** and **172.16.0.25**

6. If necessary, on **TOR-DC1**, open the **Server Manager** console, click **Tools**, and then click **Active Directory Sites and Services**.

7. In the **Active Directory Sites and Services** console, in the navigation pane, expand **Sites**, expand **Toronto**, expand **Servers**, expand **TOR-DC1**, and then select **NTDS Settings**.

8. In the details pane, right click **LON-DC1**, and then select **Replicate Now**.

9. In the **Replication Now** window, click **OK**.

10. In **Active Directory Sites and Services**, examine all objects that you created earlier. Are any missing?

11. On **TOR-DC1**, open **File Explorer**. Browse to **C:\Labfiles\Mod04**

12. Right-click the **Mod04EX4Fix.ps1** file, and then select **Run with PowerShell**. Type **Y** when prompted about execution policy, and then press Enter.

13. In **Active Directory Sites and Services**, examine all the objects that you created earlier. Ensure that the site link has been created in the **Inter-Site Transports** node, and subnets have been created in the **Subnets** node.

14. On **LON-DC1** and **TOR-DC1**, close all open windows, and then sign out of both virtual machines.

**Results:** *After completing this exercise, you should have successfully diagnosed and resolved replication issues.*

**Task 3: Prepare for the next module**

When you finish the lab, revert the virtual machines to their initial state. To do this, complete the following steps:

1. On the host computer, start **Hyper-V Manager**.
2. On the **Virtual Machines** list, right-click **20742B-LON-DC1**, and then click **Revert**.
3. In the **Revert Virtual Machine** dialog box, click **Revert**.
4. Repeat steps 2 and 3 for **20742B-TOR-DC1**.