In this lab, you will complete a migration of a Windows Server 2008 R2 domain environment to Windows Server 2012 R2 with no downtime to clients. All roles currently held including FSMO, DHCP and DNS will be transferred to enable the Windows Server 2008 R2 domain controller to be retired.
Migrating Active Directory to Windows Server 2012 R2

Introduction

Estimated time to complete this lab
90 minutes

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

- Promote a Windows Server 2012 R2 member server to a domain controller.
- Complete the transfer of FSMO roles from a Windows Server 2008 R2 domain controller to a Windows Server 2012 R2 domain controller.
- Transfer DNS and DHCP roles to a Windows Server 2012 R2 server.

Prerequisites
Before working on this lab, you must have:

- Experience with Active Directory.
- Experience with DHCP and DNS.

Overview of the lab
In this lab, you will complete a migration of a Windows Server 2008 R2 domain environment to Windows Server 2012 R2 with no downtime to clients. All roles currently held including FSMO, DHCP and DNS will be transferred to enable the Windows Server 2008 R2 domain controller to be retired.

Virtual machine technology
This lab is completed using virtual machines that run on Windows Server 2012 Hyper-V technology. To log on to the virtual machines, press CTRL+ALT+END and enter your logon credentials.

Computers in this lab
This lab uses computers as described in the following table. Before you begin the lab, you must ensure that the virtual machines are started and then log on to the computers.

<table>
<thead>
<tr>
<th>Virtual Machine</th>
<th>Role</th>
<th>Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC08</td>
<td>Windows Server 2008 R2 domain controller</td>
<td>Windows Server 2008 R2 domain controller with DNS and DHCP roles installed and configured</td>
</tr>
<tr>
<td>DC12</td>
<td>Windows Server 2012 R2 member server</td>
<td>Windows Server 2012 R2 installed</td>
</tr>
<tr>
<td>Client1</td>
<td>Windows 8.1 client</td>
<td>Windows 8.1 client with the RSAT tools installed</td>
</tr>
</tbody>
</table>

Credentials for all virtual machines are Contoso\Administrator with a password of Passw0rd!

Note regarding pre-release software
Portions of this lab may include software that is not yet released, and as such may still contain active or known issues. While every effort has been made to ensure this lab functions as written, unknown or unanticipated results may be encountered as a result of using pre-release software.
Note regarding user account control
Some steps in this lab may be subject to user account control. User account control is a technology which provides additional security to computers by requesting that users confirm actions that require administrative rights. Tasks that generate a user account control confirmation are denoted using a shield icon. If you encounter a shield icon, confirm your action by selecting the appropriate button in the dialog box that is presented.

Note on activation
The virtual machines for these labs may have been built by using software that has not been activated. This is by design in the lab to prevent the redistribution of activated software. The unactivated state of software has been taken into account in the design of the lab. Consequently, the lab is in no way affected by this state. For operating systems other than Windows 8.1, please click Cancel or Close if prompted by an activation dialog box. If you are prompted by an Activate screen for Windows 8.1, press the Windows key to display the Start screen.
Exercise 1: Prepare for Active Directory Migration

In this exercise, you will first examine the current infrastructure to ensure that you are aware of how the Active Directory is currently configured. This is important in any environment to ensure that there is current documentation of the infrastructure. You will then begin the process of migration by preparing the domain controller for migration and by promoting a member server to be an additional domain controller in the current domain.

Examine the current environment

In this task, you will examine the current configuration of the contoso.com active directory infrastructure.

- Log on to Client1 as Contoso\Administrator using the password Passw0rd!
- 1. On the Start screen, type Server and then press ENTER to open Server Manager.
- 2. In Server Manager, click Tools, and then click Active Directory Users and Computers.
- 3. In Active Directory Users and Computers, click contoso.com, and then on the Action menu, click Operations Masters.
- 4. Click the PDC tab.
- 5. Click the Infrastructure tab.
- 6. Click the RID tab.
  - Note that all the FSMO roles are currently held by the single domain controller. In a production environment this is more likely to be spread across multiple domain controllers.
- 7. Click Close.
- 8. In Active Directory Users and Computers, expand contoso.com, and then click Domain Controllers.
  - Note that there is only a single domain controller currently in the domain.
- 9. Right-click DC08, and then click Properties.
  - Note that DC08 is a domain controller and located in the Default-First-Site-Name Active Directory site.
- 10. Click OK.
- 11. Right-click contoso.com, and then click Properties.
  - The minimum domain functional level and forest functional level for the migration to Windows Server 2012 R2 is Windows Server 2003.
- 12. Click OK.
- 14. In Server Manager, click Tools, and then click DHCP.
- 15. In DHCP, in the Actions pane, click More Actions, and then click Add Server.
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16. Select **This authorized DHCP server**, and then click **OK**.
   
   - DC08 is currently the only authorized DHCP server in the network.

17. In DHCP, expand **DC08**, and then click **IPv4**.
   
   - Note that there is a single DHCP scope named Internal.

18. Minimize the DHCP console.
19. In Server Manager, click **Tools**, and then click **DNS**.
20. In the **Connect to DNS Server** dialog box, click **The following computer**.
21. Type **DC08**, and then click **OK**.

22. In **DNS**, expand **DC08**, and then click **Forward Lookup Zones**. In **DNS**, expand **DC08/Forward Lookup Zones**, and then click **Contoso.com**.
   
   - DC08 is currently the only DNS server hosting the contoso.com zone.

23. Close the DNS console.
24. Switch to **DC08**, and then log on as **Contoso\Administrator** using the password **Passw0rd!**

**Prepare the Active Directory forest for migration**

In this task, you will prepare the existing Active Directory forest for migration to Windows Server 2012 R2.

Ensure you are logged on to **DC08** as **Contoso\Administrator** using the password **Passw0rd!**

1. On the Start menu, right-click **Command Prompt**, and then click **Run as administrator**.
2. At the command prompt, type the following command, and then press **ENTER**.

   ```
   C:\Lab Files\Win2012R2\support\adprep\adprep.exe /forestprep
   ```
   
   - The contents of the Windows Server 2012 R2 ISO have been copied to C:\Lab Files\Win2012R2.

3. Type **C** and then press **ENTER** to confirm the schema change.
   
   - Wait for the ADPREP command to complete before moving to the next task.
4. Close the **Command Prompt**.
5. Switch to **Client1**, and then log on as **Contoso\Administrator** using the password **Passw0rd!**

**Promote an additional domain controller**

In this task, you will promote DC12 to be an additional domain controller in the contoso.com domain.

Ensure you are logged on to **Client1** as **Contoso\Administrator** using the password **Passw0rd!**

1. In Server Manager, right-click **All Servers**, and then click **Add Servers**.
2. In Name (CN), type **DC**, and then click **Find Now**.
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3. Select **DC08** and **DC12**, and then click the arrow to add to the Selected list.

4. Click **OK**.
   - Note that DC08 has had WMF 3.0 and the .NET Framework 3.0 installed. In addition, Windows Remote Management has been configured using the QuickConfig command.

5. In Server Manager, in All Servers, scroll down to Roles and Features, and then in Roles and Features, click **Tasks**, and then click **Add Roles and Features**.

6. In the Add Roles and Features Wizard, on the Before you Begin page, click **Next**.

7. On the Installation Type page, ensure **Role-based or feature-based installation** is selected, and then click **Next**.

8. On the Server Selection page, ensure DC12 is selected, and then click **Next**.
   - Note that only DC12 is listed as the Add Roles and Features wizard will only allow the management of Windows Server 2012 and above servers.

9. On the Select server roles page, select **Active Directory Domain Services**, and then in the **Add Roles and Features Wizard** dialog box, click **Add Features**.

10. Click **Next**.

11. On the Features page, click **Next**.

12. On the Active Directory Domain Services page, click **Next**.

13. On the Confirm installation selections page, check the **Restart the destination server automatically if required** check box, and then click **Install**.
   - Wait for the installation to complete before proceeding to the next step.

14. Click **Close**.

15. In Server Manager, click on **AD DS**.
   - Note the message that advises that further configuration is required for DC12.

16. Next to the message, **Configuration required for Active Directory Domain Service at DC12**, click **More**.

17. In the All Servers Task Details window, click **Promote this server to a domain controller**.

18. In the Active Directory Domain Service Configuration Wizard, on the Deployment Configuration page, ensure **Add a domain controller to an existing domain** is selected, and then click **Change**.

19. In the Windows Security dialog box, enter the username **Administrator** and the password **Passw0rd!**, and then click **OK**.

20. On the Deployment Configuration page, click **Next**.
21. On the Domain Controller Options page, leave the default capabilities and site information settings, enter the DSRM password of Passw0rdl, and then click Next.

22. On the DNS Options page, click Next.

23. On the Additional Options page, click Next.


25. On the Preparation Options page, click Next.
   
   Note that the domain preparation would normally not be required in this step as you would have performed the preparation using the ADPREP /domainprep command on the Windows Server 2008 R2 domain controller. However, if this has not been performed then it can be performed as part of the addition of a Windows Server 2012 R2 domain controller.

   
   Note the Windows PowerShell script that could be saved to quickly perform this same configuration on an additional server.

27. Close Notepad.


29. On the Prerequisites Check page, click Install.

30. After the installation has completed, click Close.

31. Close the All Server Task Details window.

32. Maximize Active Directory Users and Computers.


34. Click Refresh.
   
   Note that DC12 is now a domain controller in the contoso.com domain.

   Leave the Active Directory Users and Computers console open for the next exercise.
Exercise 2: Migrate the Active Directory **FSMO Roles**

In this exercise, you will migrate the roles currently held by the Windows 2008 R2 domain controller to the new Windows Server 2012 R2 domain controller. This will include all of the FSMO roles, such as RID Master and Operations Master. The goal is to have no impact on the end users while performing the steps for the migration and to ensure that once the Windows Server 2008 R2 domain controller is demoted there will be no ongoing disruption.

**Transfer the FSMO roles**

In this task, you will transfer all of the FSMO roles from their current location on DC08 to the new domain controller, DC12.

1. Ensure you are logged on to **Client1 as Contoso\Administrator** using the password **Passw0rd!** with the Active Directory Users and Computers console open from the previous exercise.
2. In Active Directory Users and Computers, in the explorer pane, click **Active Directory Users and Computers [DC08.contoso.com]**.
3. On the Action menu, click **Change Domain Controller**.
4. In the Change Directory Server dialog box, click **DC12.contoso.com**, and then click **OK**.
   - If DC12.contoso.com does not appear, this can be due to a refresh that has not completed. You can manually enter DC12.contoso.com and proceed.
5. In Active Directory Users and Computers, click **contoso.com**, and then in the Action menu, click **Operations Masters**.
6. On the RID tab, click **Change**.
7. In the Active Directory Domain Services dialog box, click **Yes**, and then click **OK**.
8. On the PDC tab, click **Change**.
9. In the Active Directory Domain Services dialog box, click **Yes**, and then click **OK**.
10. On the Infrastructure tab, click **Change**.
11. In the Active Directory Domain Services dialog box, click **Yes** and then click **OK**.
12. Click **Close**.
13. Close **Active Directory Users and Computers**.
14. In Server Manager, on the Tools menu, click **Active Directory Domains and Trusts**.
15. In the Active Directory Domains and Trusts dialog box, click **OK**.
16. In the Action menu, click **Change Active Directory Domain Controller**.
17. In the Change Directory Server dialog box, click **DC12.contoso.com**, and then click **OK**.
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18. In the Operations Master dialog box, click Change.
19. In the Active Directory Domains and Trusts dialog box, click Yes, and then click OK.
20. Click Close.
22. On the Start screen, type CMD, right-click Command Prompt, and then click Run As Administrator.
23. At the command prompt, type the following command, and then press ENTER.
   ```
   Regsvr32 schmmgmt.dll
   ```
   This command enables the Active Directory Schema management console snap-in.
   Leave the command prompt window open.
24. In the RegSvr32 dialog box, click OK.
25. On the Start screen, type MMC, and then select MMC from the results.
26. In Console1, on the File menu, click Add/Remove Snap-ins.
27. In Add or Remove Snap-ins, select Active Directory Schema, and then click Add.
28. Click OK.
29. In Console1, select Console Root/Active Directory Schema, and then on the Action menu, click Change Active Directory Domain Controller.
30. In the Change Directory Server dialog box, click DC12.contoso.com, and then click OK.
   If DC12.contoso.com does not appear, this can be due to a refresh that has not completed. You can manually enter DC12.contoso.com and proceed.
31. In the Active Directory Schema dialog box, click OK.
32. In Console1, on the Action menu, click Operations Master.
33. In the Operations Master dialog box, click Change.
34. In the Active Directory Schema dialog box, click Yes, and then click OK.
35. Click Close.
36. Close Console1 without saving settings.
37. At the command prompt, type the following command, and then press ENTER.
   ```
   Netdom query fsmo
   ```
This command will take some time to complete. You can move onto the next exercise and then come back. When it does complete you will note that all the FSMO roles are now on DC12.contoso.com. If you receive a notice that “The parameter is incorrect”, wait a few moments and try again.

Leave the command prompt window open.

38. Switch to DC12, and then log on as Contoso\Administrator using the password Passw0rd!
Exercise 3: Migrate Infrastructure Roles

In this exercise, you will migrate the DNS and DHCP roles currently held by the Windows 2008 R2 domain controller to the new Windows Server 2012 R2 domain controller. The goal is to have no impact on the end users while performing the steps for the migration and to ensure that once the Windows Server 2008 R2 domain controller is demoted then there will be no ongoing disruption. All existing DHCP leases and settings will be migrated.

Transfer the DNS role

In this task, you will transfer DNS from the current setting of DC08 to the new domain controller. As it is an Active Directory-integrated DNS, the DNS configuration will be removed when DC08 is demoted. In order to ensure that DNS resolution is not interrupted during the migration process, the DHCP configuration will also be updated.

Ensure you are logged on to DC12 as Contoso\Administrator using the password Passw0rd!

1. On the Start screen, type IP, and then press ENTER.
2. In the Results for “ip” screen, click View network connections.
3. Right-click Ethernet, and then click Properties.
4. Select Internet Protocol Version 4 (TCP/IPv4), and then click Properties.
5. Modify the Preferred DNS server address to 192.168.0.2, and then click OK.
6. Click CLOSE.
7. Switch to Client1, and then ensure you are logged on as Contoso\Administrator using the password Passw0rd!
8. Maximize the DHCP console.
9. Navigate to DHCP/DC08/IPv4/Server Options, and then click 006 DNS Servers.
11. In Server Options, in Server name, type DC12, and then click Resolve.
12. Click Add.
13. In IP Address, click 192.168.0.1, and then click Remove.
14. Click OK.
15. At the command prompt, type the following commands, pressing ENTER after each line.

```bash
ipconfig /release
ipconfig /renew
ipconfig /all
```
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- Note that the DNS server is now 192.168.0.2.
- In a production environment, an administrator would make the change in DHCP, wait until the lease expired, and then proceed to remove the DNS service. Ideally, in the days prior to the migration, modify the DHCP lease value to be shorter.

16. Switch to DC08, and then ensure you logged on as Contoso\Administrator using the password Passw0rd!

17. On the Start menu, in Start Search, type IP, and then press ENTER.

18. Right-click Local Area Connection, and then click Properties.

19. Select Internet Protocol Version 4 (TCP/IPv4), and then click Properties.

20. Modify the Preferred DNS server address to 192.168.0.2, and then click OK.

21. Click Close.

22. Switch to Client1, and then ensure you are logged on as Contoso\Administrator using the password Passw0rd!

Transfer the DHCP role

In this task, you will transfer DHCP from the current setting of DC08 to the new domain controller. First, you will install the DHCP role on DC12, and then transfer the DHCP database. So as to ensure that there is as little disruption as possible, you will ensure that the current leases are transferred as well as the configuration.

- Ensure you are logged on to Client1 as Contoso\Administrator using the password Passw0rd!

1. In Server Manager, in All Servers, scroll down to Roles and Features, and then in Roles and Features, click Tasks, and then click Add Roles and Features.

2. In the Add Roles and Features Wizard, on the Before you Begin page, click Next.

3. On the Installation Type page, ensure Role-based or feature-based installation is selected, and then click Next.

4. On the Server Selection page, ensure DC12 is selected, and then click Next.

- Note that only DC12 is listed, as the Add Roles and Features wizard will only allow the management of Windows Server 2012 and above servers.

5. On the Select server roles page, select DHCP Server, and then in the Add Roles and Features Wizard dialog box, click Add Features.

6. Click Next.

7. On the Features page, click Next.

8. On the DHCP Server page, click Next.
10. After the installation has completed, click Close.
11. On the Start menu, type powershell and click on the Windows PowerShell icon to open a Windows PowerShell session.
12. At the Windows PowerShell prompt, type in the following commands, pressing ENTER after each line.

```
\MD c:\Export
\MD c:\dhcpbackup
Export-DhcpServer -ComputerName dc08.contoso.com -Leases -File "C:\export\dhcpexp.xml" -verbose
```

The export command exports the DHCP configuration of DC08 to a file named dhcpexp.xml.

13. At the Windows PowerShell prompt, type the following command, and then press ENTER.

```
\Import-DhcpServer -ComputerName DC12.contoso.com -Leases -File "C:\export\dhcpexp.xml" -BackupPath C:\dhcpbackup\ -Verbose
```

The import command imports the previously exported configuration to DC12.

14. Type Y, and then press ENTER.
   - Wait until the import completes prior to moving to the next step.

15. Maximize the DHCP console.
16. In the Explorer pane, select DHCP.
17. On the Action menu, click Add server.
18. In the Add server window, in This server, type DC12, and then click OK.
19. In the Explorer pane, expand DHCP/DC12.
   - Note that there is a scope named Internal created. DC12 is not authorized as yet to service requests for addresses.
20. In the Explorer pane, select DC08, and then on the Action menu, click Unauthorize.
21. In the DHCP dialog box, click Yes.
22. In the Explorer pane, select DC12, and then on the Action menu, click Authorize.
23. Click Refresh.
   - It will take several minutes for the unauthorization of DC08 and the authorization of DC12 to complete.
   - To monitor the progress, click Refresh until the arrows next to DC12/IPv4 and DC12/IPv6 are showing as green. If the process is taking a long time for DC12 to show as authorized after DC08 has been unauthorized, right-click DC12, select All tasks, and then click Restart.
   - Wait until DC12 is authorized before proceeding to the next step.
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24. At the command prompt, type the following command, and then press ENTER.

* Ipconfig /all

* Note that the DHCP server address is 192.168.0.1 and the IP address is 192.168.0.100.

25. At the command prompt, type the following command, pressing ENTER after each line.

* Ipconfig /release
* Ipconfig /renew
* Ipconfig /all

* Note that the DHCP server is now 192.168.0.2 and the leased IP address is still 192.168.0.100.

26. Switch to **DC08**, and then ensure that you are logged on as **Contoso\Administrator** using the password **Password!**
Exercise 4: Remove the Windows Server 2008 R2 Domain Controller

In this exercise, you will demote DC08 from the contoso.com domain. As all the roles have been migrated to DC12 this will have no impact on the domain or the users. This is the final step required to ensure that the domain controller will be able to be safely removed from the environment.

Demote the Windows Server 2008 domain controller

In this task, you will demote DC08 from being a domain controller in the domain. For the time being it will still retain the DHCP and DNS roles, however now that you have transferred all the Active Directory FSMO roles you can remove Active Directory Domain Services.

Ensure you are logged on to DC08 as Contoso\Administrator using the password Passw0rd!

1. On the Start menu, in Start Search, type dcpromo, and then press ENTER.
2. In the Active Directory Domain Services Installation Wizard, click Next.
3. In the Active Directory Domain Services Installation Wizard dialog box, click OK.
   - You can ignore the warning regarding the global catalog server as you have configured DC12 to be a Global Catalog server.
4. On the Delete the Domain page, click Next.
   - There is a momentary pause between step 4 and 5.
5. On the Administrator Password page, in password and confirm password, type Passw0rd!, and then click Next.
6. On the Summary page, click Next.
7. After completing the removal, click Finish.
8. Click Restart Now.
9. Wait for DC08 to finish restarting, and then log on as Contoso\DC08\Administrator using the password Passw0rd!
   - Wait for the restart and log on to complete before moving onto the next task.
   - If you receive a prompt to restart the computer, click Restart Later;
   - If you receive an Activation prompt, select click Activate later Ask me later, and then click OK.
   - At this point, DC08 is now a member server in the contoso.com domain. To complete the removal you will remove it from the domain.
10. Open Server Manager.
12. In the System Properties dialog box, on the Computer Name tab, click Change.
13. In the Computer Name/Domain Changes dialog box, click Workgroup.
14. In Workgroup, type Workgroup, and then click OK.
15. In the Computer Name/Domain Changes dialog box, click OK.
16. If prompted for credentials, enter Contoso\Administrator using the password of.
17. In the Computer Name/Domain Changes dialog box, click OK.
18. In the System Properties dialog box, click Close.
19. In Workgroup, type Workgroup, and then click OK.
20. In the Computer Name/Domain Changes dialog box, click OK.
21. If prompted for credentials, enter Contoso\Administrator using the password of.
22. In the Computer Name/Domain Changes dialog box, click OK.
23. Switch to Client1, and then ensure you are logged on as Contoso\Administrator using the password Password!
24. In Server Manager, click Tools, and then click Active Directory Users and Computers.
26. DC12 is now the only domain controller in the domain.
28. In Server Manager, click Tools, and then click DNS.
29. In the Explorer pane, right-click DC08, and then click Delete.
30. In the DNS dialog box, click Yes.
31. On the Action menu, click Connect to DNS Server.
33. In the Connect to DNS Server dialog box, click The following computer.
34. Type DC12, and then click OK.
35. In DNS, expand DC12/Forward Lookup Zones, and then click Contoso.com.
36. Note that there is no entry for DC08. The removal of DC08 from the domain automatically deleted any entries in DNS for the server.

This is the end of the lab.