

SharePoint Server for Business Intelligence

SharePoint Business Intelligence Content Team

Step-by-Step

Microsoft

SharePoint Server for Business Intelligence

SharePoint Business Intelligence Content Team

Summary: Step-by-step, learn how to install and configure SharePoint Server 2010 and SQL Server 2008 to create a robust infrastructure to support business intelligence.

Category: Step-by-Step

Applies to: SharePoint Server 2010, SQL Server 2008, SQL Server 2008 R2

Source: TechNet Library ([link to source content](#))

E-book publication date: June 2012

Copyright © 2012 by Microsoft Corporation

All rights reserved. No part of the contents of this book may be reproduced or transmitted in any form or by any means without the written permission of the publisher.

Microsoft and the trademarks listed at

<http://www.microsoft.com/about/legal/en/us/IntellectualProperty/Trademarks/EN-US.aspx> are trademarks of the Microsoft group of companies. All other marks are property of their respective owners.

The example companies, organizations, products, domain names, email addresses, logos, people, places, and events depicted herein are fictitious. No association with any real company, organization, product, domain name, email address, logo, person, place, or event is intended or should be inferred.

This book expresses the author's views and opinions. The information contained in this book is provided without any express, statutory, or implied warranties. Neither the authors, Microsoft Corporation, nor its resellers, or distributors will be held liable for any damages caused or alleged to be caused either directly or indirectly by this book.

Contents

Configuring a BI infrastructure: Hands-on labs.....	6
Create a baseline environment for a BI test environment	7
Hyper-V quick start for creating a BI test environment.....	8
Enable Hyper-V.....	8
Configure a virtual network.....	8
Create virtual machines.....	9
Load an operating system	10
Set up a domain controller for a BI test environment.....	12
Video demonstration	12
Configure the domain controller.....	13
Add a virtual machine to the virtual domain in a BI test environment	15
Video demonstration	15
Configuring the virtual machine	16
Set up accounts for a BI test environment.....	18
Video demonstration	18
Configure accounts	18
Set up SQL Server for a BI test environment	22
Video demonstration	22
Configure a local administrator	22
Install SQL Server 2008 R2.....	23
Configure logins.....	24
Configure SQL Server network protocols.....	25
Install the Contoso sample database	25
Install and configure SharePoint Server 2010 for a BI test environment	27
Video demonstration	27
Install SharePoint Server 2010	27
Configure the top-level Web site.....	30
Configure Secure Store Service for a BI test environment.....	32
Video demonstration	32
Deploy the Secure Store Service.....	32
Configure a Business Intelligence Center for a test environment.....	35
Video demonstration	35
Configuring a Business Intelligence Center	35
Adding links to the Quick Launch	37
Next steps.....	38
Configure Excel Services for a BI test environment.....	40

Deploy Excel Services.....	40
Configure trusted file locations and trusted data connection libraries	42
Configure Excel client data access	43
Configure the Excel Services unattended service account for a BI test environment.....	45
Configure a data access account	45
Configure Secure Store Service	46
Configure Excel Services	48
Publishing a workbook with an external data source	48
Testing data refresh	50
Configure Excel Services data access by using external data connections in a BI test environment	52
Configure a data access account	52
Configure Secure Store.....	53
Create and publish an ODC file	55
Testing data refresh	56
Configure Excel Services data access by using embedded data connections.....	59
Configure a data access account	59
Configure the Secure Store Service application.....	60
Create and publish an Excel workbook that uses an embedded data connection	62
Configure PowerPivot for SharePoint for a BI test environment.....	65
Create a managed account for SQL Server Analysis Services	65
Deploy PowerPivot for SharePoint.....	66
Configure a PowerPivot service application	68
Configure data refresh for PowerPivot for SharePoint.....	70
Configure Secure Store service for PowerPivot for SharePoint	71
Verify that PowerPivot for SharePoint is configured correctly	73
Test data refresh.....	75
Configure Visio Services for a BI test environment.....	77
Video demonstration	77
Deploy Visio Services	78
Configure Visio Services Global Settings.....	80
Configure Visio client access.....	80
Configure the Visio Services unattended service account in a BI test environment.....	82
Video demonstration	82
Creating sample data	83
Configure a data access account	84
Configure Secure Store.....	84
Configure Visio Services	86
Grant database access to the diagram author	86
Publishing a data-connected web drawing.....	87
Configure Visio Services data access by using Secure Store in a BI test environment	91
Video demonstration	91
Creating sample data.....	92

Configure a data access account	93
Configure Secure Store.....	94
Grant database access to the diagram author	95
Create an Office Data Connection file.....	96
Create a data-connected Web drawing by using an ODC file.....	97
Configure PerformancePoint Services for a BI test environment	100
Configure data access for PerformancePoint Services.....	103
Configure a data access account	103
Configure the unattended service account.....	104
Verify that user permissions are configured correctly.....	106
Enable Reporting Services in an integrated SharePoint Server BI test environment.....	113
Changing SQL Reporting Services from Native mode to Integrated mode in a BI test environment ...	114
Install SharePoint Server 2010 components on the Reporting Server computer.....	114
Configure SSRS in SharePoint integrated mode.....	115
Configure SharePoint Server 2010 for Reporting Services integration	116
Configure Report Builder 3.0 for use in SharePoint BI test environment.....	117
Enable content type management	117
Add Report Server content types.....	117

Configuring a BI infrastructure: Hands-on labs

Published: May 26, 2011

This series of articles gives you hands-on experience configuring the various business intelligence services available in Microsoft SharePoint Server 2010. This involves configuring a SharePoint Server 2010 farm in an isolated test environment and then walking through a series of labs to complete the exact procedures necessary to configure the various business intelligence service applications.

This series includes labs for configuring:

- Excel Services
- Visio Services
- PerformancePoint Services

In each case, there is a lab for configuring the service application and its associated accounts and additional labs for configuring data access.

The first part of this series of labs is a set of labs to create the baseline environment on which the other labs build. This includes creating the SharePoint Server 2010 farm and configuring the Secure Store Service and creating a Business Intelligence Center.

The baseline environment is built by using Windows Server 2008 Hyper-V technology. Although you could build the environment by using other virtualization technologies or physical hardware, those options are not discussed in these labs.

To build the baseline environment, you need a computer that is running Windows Server 2008 or Windows Server 2008 R2 with Hyper-V enabled.

Note:

Instructions for configuring Hyper-V are included in case you have not already configured it.

The computer that you use for the baseline environment must have at least 8 GB of RAM and 100 GB of free disk space. Additional RAM will improve performance, as will distributing the virtual machines across multiple physical disks.

Important:

The labs in this series give you hands-on experience configuring the business intelligence offerings in SharePoint Server 2010 by using an isolated Hyper-V test environment. These labs should not be used to create a production deployment of SharePoint Server 2010 on Hyper-V. For information about how to deploy your production SharePoint Server 2010 farm by using Hyper-V, see [Virtual machine guidance \(SharePoint Server 2010\)](#).

To get started with the labs, see [Create a baseline environment for a BI test environment](#).

Create a baseline environment for a BI test environment

Published: May 26, 2011

This series of hands-on labs describe how to create a Microsoft SharePoint Server 2010 farm in an isolated Hyper-V test environment. This is the baseline environment that you will use for completing the further labs for configuring the business intelligence service applications available in SharePoint Server 2010.

Important:

The labs in this series give you hands-on experience configuring the business intelligence offerings in SharePoint Server 2010 by using an isolated Hyper-V test environment. These labs should not be used to create a production deployment of SharePoint Server 2010 on Hyper-V. For information about how to deploy your production SharePoint Server 2010 farm by using Hyper-V, see [Virtual machine guidance \(SharePoint Server 2010\)](#).

Creating the baseline environment consists of the following steps:

1. Configure Hyper-V on the host computer
2. Set up a virtual machine with a domain controller for the virtual test domain
3. Add additional virtual machines to the virtual domain
4. Set up accounts that are needed to deploy the SharePoint Server 2010 farm
5. Set up Microsoft SQL Server 2008 R2
6. Install and configure SharePoint Server 2010
7. Configure the Secure Store Service
8. Create a Business Intelligence Center

A hands-on lab is provided for each of these steps.

Note:

These labs assume that you are using Windows Server 2008 R2 and SQL Server 2008 R2. Windows Server 2008 and Microsoft SQL Server 2008 can also be used, although there may be some minor differences in procedures. Also, you may be unable to complete some labs, such as those using PowerPivot for SharePoint 2010, if you are using SQL Server 2008.

To get started creating the baseline environment, see [Hyper-V quick start for creating a BI test environment](#), or, if you have already configured Hyper-V, see [Set up a domain controller for a BI test environment](#).

Hyper-V quick start for creating a BI test environment

Published: May 26, 2011

Important:

This article is part of the [Configuring a BI infrastructure: Hands-on labs](#) series. This is the first article in the series that describes how to set up a baseline test environment for the labs. The articles in this series should be read sequentially, starting with this article, as the procedures in each build on those in the last.

Hyper-V is the Microsoft virtualization solution. It is built into most versions of Windows Server 2008 and Windows Server 2008 R2. It offers an ideal platform to deploy a full-scale Microsoft SharePoint Server 2010 test environment for business intelligence without the need to purchase multiple servers. This article describes the steps that you must follow to enable Hyper-V and create virtual machines. If you are already familiar with Hyper-V, you can move on the next article, [Set up a domain controller for a BI test environment](#).

Enable Hyper-V

The first step is to enable Hyper-V. Hyper-V is a server role on Windows Server 2008 or Windows Server 2008 R2. To enable it, log on to the computer as an administrator and perform the following procedure.

To enable Hyper-V

1. Click **Start**, click **Administrative Tools**, and then click **Server Manager**.
2. In the left pane, click **Roles**.
3. In the right pane, click **Add Roles**.
4. If the Before You Begin page is displayed, click **Next**.
5. On the Select Server Roles page, select the **Hyper-V** check box, and then click **Next**.
6. On the Hyper-V page, click **Next**.
7. On the Create Virtual Networks page, leave the network adapter check boxes cleared, and then click **Next**.
8. On the Confirm Installation Selections page, click **Install**.
9. On the Installation Results page, click **Close**.
10. Restart the server.

Configure a virtual network

Once Hyper-V is enabled, you must create a virtual network within Hyper-V so that the virtual machines can communicate with one another. Two virtual networks are required:

- An internal virtual network that allows the virtual machines to communicate with one another

- An external virtual network that allows the virtual machines to communicate with your corporate network and the Internet (This is required specifically during installation of Microsoft SharePoint Server 2010 to download the prerequisites.)

To configure an internal network, perform the following procedure.

To configure an internal virtual network

1. Click **Start**, click **Administrative Tools**, and then click **Hyper-V Manager**.
2. In the left pane, click the node of the local computer.
3. In the right pane, click **Virtual Network Manager**.
4. Click **Internal**, and then click **Add**.
5. In the **Name** text box, type **Internal Network**.
6. Ensure that the **Internal only** option is selected, and then click **OK**.

Once the internal network is created, create an external network by using the following procedure.

To configure an external virtual network

1. Click **Start**, click **Administrative Tools**, and then click **Hyper-V Manager**.
2. In the left pane, click the node of the local computer.
3. In the right pane, click **Virtual Network Manager**.
4. Click **External**, and then click **Add**.
5. In the **Name** text box, type **External Network**.
6. Select the **External** option, and select a network adapter from the drop-down list.
7. Select the **Allow management operating system to share this network adapter** check box.
8. Click **OK**.
9. On the **Apply Network Changes** dialog box, click **Yes**.

Create virtual machines

When you have completed network configuration, you can start adding virtual machines to Hyper-V. To complete all the steps in this series of articles, you need the following virtual machines:

Virtual machine	Operating System	Description	RAM
Contoso-DC	Windows Server 2008 R2	Domain controller	512 MB
Contoso-SQL	Windows Server 2008 R2	Microsoft SQL Server 2008 R2	2048 MB
Contoso-AppSrv	Windows Server 2008 R2	SharePoint Server 2010	2048 MB
Contoso-Client	Windows 7	Windows 7	1536 MB

Note:

To perform the steps in the Excel Services labs, you must install Microsoft Excel 2010 on the Contoso-Client virtual machine. To perform the steps in the Visio Services labs, you must install

Microsoft Visio Professional 2010 or Microsoft Visio Premium 2010 on the Contoso-Client virtual machine.

Perform the following procedure for each virtual machine that you want to create.

To create a virtual machine

1. Click **Start**, click **Administrative Tools**, and then click **Hyper-V Manager**.
2. In the left pane, click the node of the local computer.
3. In the right pane, click **New**, and then click **Virtual Machine**.
4. On the Before You Begin page, click **Next**.
5. In the **Name** text box, type the name for the virtual machine from the previous table, and then click **Next**.

Important:

The **Name** text box specifies a name for the virtual machine in Hyper-V. This does not configure the computer name for the virtual machine itself. After you install the operating system on the virtual machine, you must configure the computer name to match the name in the previous table.

6. On the Assign Memory page, type the appropriate memory value from the table above.

Note:

The memory table assumes that you are using a host computer with 8 GB RAM. If you have additional RAM available, we recommend that you increase the RAM allocated to your virtual machines, particularly to the Contoso-AppSrv and Contoso-SQL virtual machines.

7. On the Configure Networking page, select **External Network** from the drop-down list, and then click **Next**.
8. On the Connect Virtual Hard Disk page, leave the default values, and then click **Next**.
9. On the Installation Options page, leave the **Install an operating system later** option selected and then click **Next**.
10. Click **Finish**.

Load an operating system

Once a virtual machine is created that has an empty hard disk, the next step is to install an operating system. Product Short Name 2010 requires Windows Server 2008 or Windows Server 2008 R2. We recommend that you use Windows Server 2008 or Windows Server 2008 R2 for each server virtual machine that you create. Perform the following procedure to install an operating system on a virtual machine.

To load an operating system on a virtual machine

1. In Hyper-V Manager, right-click the virtual machine on which you want to load an operating system, and then click **Settings**.
2. In the left pane, click **DVD Drive**.
3. In the right pane, select the **Image file** option.
4. Click **Browse**, and locate the ISO file that contains the operating system.

5. Click **OK**.
6. In Hyper-V Manager, double-click the virtual machine on which you want to load the operating system.
7. In the **Virtual Machine Connection** window, click the Start icon on the toolbar.
8. Install the operating system.

When you have created all of the virtual machines that you need and installed operating systems on each, the next step is to set up a domain controller. See the next article, [Set up a domain controller for a BI test environment](#).

Set up a domain controller for a BI test environment

Published: May 26, 2011

Important:

This article is part of the baseline setup for the [Configuring a BI infrastructure: Hands-on labs](#) series. To complete the steps in this article, you must first have completed [Hyper-V quick start for creating a BI test environment](#).

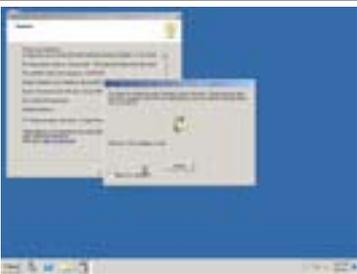
This article describes how to set up a domain controller on a virtual machine that is running Windows Server 2008 or Windows Server 2008 R2. This article and the remaining articles in this series assume that you have created the following infrastructure of virtual machines:

Virtual machine	Operating system
Contoso-DC	Windows Server 2008 or Windows Server 2008 R2
Contoso-SQL	Windows Server 2008 or Windows Server 2008 R2
Contoso-AppSrv	Windows Server 2008 or Windows Server 2008 R2
Contoso-Client	Windows 7

To perform the procedures in this article, log on to the Contoso-DC virtual machine as an administrator.

Video demonstration

This video shows how to set up the Contoso-DC domain controller for use in these labs.

 <p>Running time: 4:58</p>	 <p>Watch the video.</p>  <p>For an optimal viewing experience, download the video.</p> <p>Right-click the link, and then click Save Target As to download a copy. Clicking the link opens a .wmv file in the default video viewer for full-resolution viewing.</p>
--	--

Configure the domain controller

The first step in setting up a domain controller is to set a static IP address. Domain controllers require static IP addresses to function correctly.

Important:

Before you start, ensure that the network connection on the Contoso-DC virtual machine is set to **Internal Network**.

In this series of articles, we are using the 10.0.0.0 – 10.255.255.255 IP address range that is reserved for private networks. This address range is used on the internal network for the virtual domain. In situations where the **External Network** is used (such as for downloading Microsoft SharePoint Server 2010 prerequisites from the Internet), we assume that your existing corporate network will assign an appropriate IP address to the network adapter by using dhcp.

Depending on the network configuration, you may be able to use the 10.0.0.0 – 10.255.255.255 IP address range on a network adapter connected to your corporate network. This would enable you to span the virtual machines across multiple physical host computers. However, you should beware of potential IP address conflicts when you use static IP addresses of any kind on a shared network.

Perform the following procedure to configure a static IP address.

To configure a static IP address

1. Click **Start**, and then click **Control Panel**.
2. Click **Network and Internet**.
3. Click **Network and Sharing Center**.
4. Click **Change Adapter Settings**.
5. Right-click the local area connection, and then click **Properties**.
6. On the **Local Area Connection Properties** dialog box, clear the **Internet Protocol Version 6 (TCP/IPv6)** check box.
7. Select **Internet Protocol Version 4 (TCP/IPv4)** and then click **Properties**.
8. On the **Internet Protocol Version 4 (TCP/IPv4) Properties** dialog box, select the **Use the following IP address** option, and then type **10.0.0.1** in the **IP address** box.
9. In the **Subnet mask** box, type **255.0.0.0**.
10. Select the **Use the following DNS server addresses** option, and then type **10.0.0.1** in the **Preferred DNS server** box.
11. Click **OK**.
12. Click **Close**.
13. Click **Close**.

Once you have set the static IP address, you are ready to promote the virtual machine to a domain controller. This is performed at a command prompt by using the **dcpromo** command.

Note:

The password that you chose for the local administrator account for this virtual machine becomes the domain administrator password as soon as the domain controller has been configured.

Perform the following procedure to configure the domain controller.

To configure the domain controller

1. Click **Start**, click **Run**, type **dcpromo**, and then click **OK**.
2. On the Welcome to the Active Directory Domain Services Installation Services page, click **Next**.
3. On the Operating System Compatibility page, click **Next**.
4. On the Choose a Deployment Configuration page, select the **Create a new domain in a new forest** option, and then click **Next**.
5. In the Name the Forest Root Domain page, type **contoso.local** in the **FQDN of the forest root domain** box, and then click **Next**.
6. On the Set Forest Functional Level page, select **Windows Server 2008** from the dropdown list, and then click **Next**.
7. On the Set Domain Functional Level page, select **Windows Server 2008** from the dropdown list, and then click **Next**.
8. On the Additional Domain Controller Options page, ensure that the **DNS server** check box is selected, and then click **Next**.
9. On the warning dialog box, click **Yes**.
10. On the Location for Database, Log Files, and SYSVOL page, keep the default values, and then click **Next**.
11. On the Directory Services Restore Mode Administrator Password page, type and confirm a password, and then click **Next**.
12. On the Summary page, click **Next**.
13. When the wizard has finished running, click **Finish**.
14. Restart the virtual machine.

Once the domain controller setup is complete, you can add the other virtual machines to the domain. See the next article, [Add a virtual machine to the virtual domain in a BI test environment](#).

Add a virtual machine to the virtual domain in a BI test environment

Published: May 26, 2011

Important:

This article is part of the baseline setup for the [Configuring a BI infrastructure: Hands-on labs](#) series. To complete the steps in this article, you must first have completed [Set up a domain controller for a BI test environment](#).

This article describes adding virtual machines to the contoso.local domain. For Microsoft SharePoint Server 2010 to function correctly, you must add the remaining virtual machines to the domain before you install Microsoft SQL Server and SharePoint Server 2010.

For this series of articles, we assume the following IP address, operating system, and minimum memory configuration for the domain:

Virtual machine	Operating system	IP address	RAM
Contoso-DC	Windows Server 2008 R2	10.0.0.1	512 MB
Contoso-SQL	Windows Server 2008 R2	10.0.0.2	2048 MB
Contoso-AppSrv	Windows Server 2008 R2	10.0.0.3	2048 MB
Contoso-Client	Windows 7	10.0.0.4	1536 MB

Note:

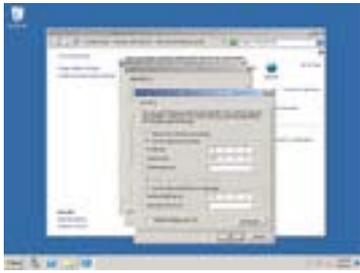
The memory configurations in this table are the minimum recommended for this configuration. They enable you to deploy this environment on a host computer that has 8 gigabyte (GB) of RAM. If you experience performance issues, add memory, especially to the Contoso-AppSrv virtual machine.

Note:

To perform the steps in the Excel Services labs, you must install Microsoft Excel 2010 on the Contoso-Client virtual machine. To perform the steps in the Visio Services labs, you must install Microsoft Visio Professional 2010 or Microsoft Visio Premium 2010 on the Contoso-Client virtual machine.

Video demonstration

This video shows how to add a virtual machine to the domain.



Running time: 3:55



[Watch the video.](#)

For an optimal viewing experience,
[download the video.](#)

Right-click the link, and then click **Save Target As** to download a copy. Clicking the link opens a .wmv file in the default video viewer for full-resolution viewing.

Configuring the virtual machine

Perform the following procedure for the Contoso-SQL, Contoso-AppSrv, and Contoso-Client virtual machines. Use the IP addresses listed in the table.

Important:

As with the domain controller, each virtual machine must have the virtual network adapter set to Internal Network before you configure the static IP address.

To configure a static IP address

1. Click **Start**, and then click **Control Panel**.
2. Click **Network and Internet**.
3. Click **Network and Sharing Center**.
4. Click **Change Adapter Settings**.
5. Right-click **local area connection**, and then click **Properties**.
6. On the **Local Area Connection Properties** dialog box, clear the **Internet Protocol Version 6 (TCP/IPv6)** check box.
7. Select **Internet Protocol Version 4 (TCP/IPv4)**, and then click **Properties**.
8. On the **Internet Protocol Version 4 (TCP/IPv4) Properties** dialog box, select the **Use the following IP address** option, and then type the IP address for the virtual machine that you are configuring in the **IP address** box.
9. In the **Subnet mask** box, type **255.0.0.0**.
10. Select the **Use the following DNS server addresses** option, and then type **10.0.0.1** in the **Preferred DNS server** box.
11. Click **OK**.
12. Click **Close**.

Once the static IP address has been configured for each virtual machine, you can join the virtual machine to the contoso.local domain. Perform the following procedure on the Contoso-SQL, Contoso-AppSrv, and Contoso-Client virtual machines.

 **Note:**

The default Windows Server 2008 firewall settings can interfere with the ability to join the computer to a domain. If you have problems joining the virtual machines to the domain, contact a network administrator for help. Because this is a private network that is not connected to the corporate network or the Internet, you can also consider turning off Windows Firewall.

To connect to the domain

1. Click **Start**, right-click **Computer**, and then click **Properties**.
2. Under **Computer, name, domain, and workgroup settings**, click **Change settings**.
3. On the **Computer Name** tab, click **Change**.
4. Select the **Domain** option, and then type **contoso.local**.

 **Important:**

Make sure the **Computer name** in this dialog box matches the virtual machine name in the previous table. If it does not, repeat this procedure after you join the domain and change the computer name to match the name in the table.

5. Click **OK**.
6. In the **Windows Security** dialog box, type **Contoso\Administrator** for the user name, and type the password for that account. (This is the administrator password that you configured for the Contoso-DC virtual machine.)
7. Click **OK**.
8. On the **Welcome to the domain** dialog box, click **OK**.
9. On the **Computer Name/Domain Changes** dialog box, click **OK**.
10. Click **Close**.
11. Restart the virtual machine.

Once the virtual machines have been joined to the contoso.local domain, the next step is to set up the domain accounts that you need for SharePoint Server 2010 and its associated applications. See the next article, [Set up accounts for a BI test environment](#).

Set up accounts for a BI test environment

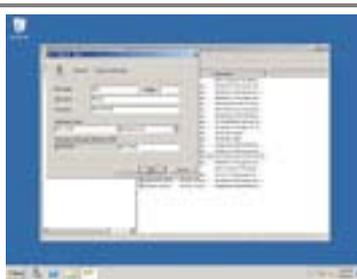
Published: May 26, 2011

Important:

This article is part of the baseline setup for the [Configuring a BI infrastructure: Hands-on labs](#) series. To complete the steps in this article, you must first have completed [Add a virtual machine to the virtual domain in a BI test environment](#).

Video demonstration

This video shows how to add the required accounts for use in these labs.

 <p>Running time: 5:45</p>	 <p>Watch the video.</p>  <p>For an optimal viewing experience, download the video.</p> <p>Right-click the link, and then click Save Target As to download a copy. Clicking the link opens a .wmv file in the default video viewer for full-resolution viewing.</p>
--	--

Configure accounts

To configure Microsoft SharePoint Server 2010 in a server farm environment, there are several domain accounts needed to provide the most optimal and secure configuration. This article describes how to create accounts and groups at the domain level for use in the remaining configuration steps in this series of articles.

Account	Domain account	Description
SQL Server Administrator	Contoso\SQLAdmin	Administrator account for SQL Server 2008. Local Administrator on Contoso-SQL.
Farm Administrator	Contoso\FarmAdmin	Farm Administrator for the SharePoint Server 2010 farm. Local Administrator on Contoso-AppSrv.
SQL Server service account	Contoso\SQLSvc	Domain account for running SQL

Account	Domain account	Description
		Server services.
Client user account	Contoso\John.Woods	Domain user account for testing BI functionality.
Client user account	Contoso\Susan.Burk	Domain user account for testing BI functionality.
Client user account	Contoso\Cindy.White	Domain user account for testing BI functionality.
Client user account	Contoso\David.Hamilton	Domain user account for testing BI functionality.
Client user account	Contoso\Jill.Frank	Domain user account for testing BI functionality.

To create these accounts, you must be logged on to Contoso-DC as the domain administrator (contoso\administrator).

 **Note:**

Additional accounts will be created for SharePoint Server 2010 service applications and for data access as part of the other hands-on labs in this series.

Perform the following procedure for each account listed in the table.

To create an Active Directory account

1. Click **Start**, click **Administrative Tools**, and then click **Active Directory Users and Computers**.
2. Expand the domain node.
3. Right-click **Users**, click **New**, and then click **User**.
4. For a user account (for example, John Woods or Susan Burk) type the first and last name in the **First name** and **Last name** text boxes. For a service account, leave these text boxes blank.
5. In the **Full name** box, for service accounts, type the name of the account (for example, **FarmAdmin**).

 **Note:**

This text box is automatically populated for user accounts when you specify the **First name** and **Last name** fields.

6. In the **User logon name** box, type the logon name for the account. For service accounts, this is the same as **Full name**; for user accounts this should be in the format first.last (for example, Susan.Burk).
7. Click **Next**.
8. Type and confirm a password for the account.
9. Clear the **User must change password at next logon** check box.
10. Select the **Password never expires** check box.
11. Click **Next**.
12. Click **Finish**.

Leave Active Directory Users and Computers open for the next procedure.

Once you have created the user accounts listed in the previous table, you must create an Active Directory group to contain these accounts. These groups are used to grant access to the Business Intelligence Center that we will create later in this series of labs.

We will create the groups listed in the following table.

Group	Description
BICenterRead	Provides Read access to the BI Center.
BICenterContribute	Provides Contribute access to the BI Center.
BICenterDesign	Provides Design access to the BI Center.
BICenterFullControl	Provides Full Control access to the BI Center.

Use the following procedure to create each Active Directory group.

To create an Active Directory group

1. In Active Directory Users and Computers, right-click **Users**, click **New**, and then click **Group**.
2. In the **Group name** text box, type the name of the group that you are creating from the previous table.
3. Click **OK**.

Leave Active Directory Users and Computers open for the next procedure.

Once the groups have been created, you must add a user to each group, as specified in the following table.

Add this user	To this group
Contoso\John.Woods	BICenterRead
Contoso\Susan.Burk	BICenterContribute
Contoso\Cindy.White	BICenterDesign
Contoso\David.Hamilton	BICenterFullControl

Use the following procedure to add the specified user to each group.

To add users to an Active Directory group

1. In Active Directory Users and Computers, click **Users**.
2. In the pane on the right side, double-click the group to which you want to add a user.
3. On the **Members** tab, click **Add**.
4. In the **Enter the object names to select** box, type the name of the user whom you want to add to the group (for example, contoso\john.woods for the BICenterRead group).

5. Click **OK**.

6. Confirm that the appropriate user is now listed on the **Members** tab, and then click **OK**.

After you have created the required user accounts and groups and populated the groups in the Active Directory directory service, you can start to install software. The first step is to install SQL Server 2008. See the next article, [Set up SQL Server for a BI test environment](#).

Set up SQL Server for a BI test environment

Published: May 26, 2011

Important:

This article is part of the baseline setup for the [Configuring a BI infrastructure: Hands-on labs](#) series. To complete the steps in this article, you must first have completed [Set up accounts for a BI test environment](#).

This article describes how to install and configure Microsoft SQL Server 2008 for use with Microsoft SharePoint Server 2010. SharePoint Server 2010 requires one of the following versions of Microsoft SQL Server:

- Microsoft SQL Server 2008 R2
- Microsoft SQL Server 2008 with Service Pack 1 (SP1) and Cumulative Update 2
- Microsoft SQL Server 2005 SP3 with Cumulative Update package 3 for SQL Server 2005 Service Pack 3

This article describes installing and configuring SQL Server 2008 R2.

Video demonstration

This video shows how to set up SQL Server 2008 R2 on the Contoso-SQL virtual machine.



Running time: 11:13



[Watch the video.](#)



For an optimal viewing experience, [download the video.](#)

Right-click the link, and then click **Save Target As** to download a copy. Clicking the link opens a .wmv file in the default video viewer for full-resolution viewing.

Configure a local administrator

We recommend that you install SQL Server 2008 R2 while logged on with the SQL Server administrator domain account (Contoso\SQLAdmin). Prior to doing this, you must add this account to the Administrators group on the Contoso-SQL virtual machine.

Log on to the Contoso-SQL virtual machine with the domain administrator account (Contoso\administrator) and perform the following procedure to add the Contoso\SQLAdmin account to the local Administrators group.

To add a local administrator

1. Log on to the virtual machine where you want to install SQL Server as a domain administrator (Contoso\Administrator).
2. Click **Start**, click **Administrative tools**, and then click **Computer Management**.
3. Expand **Local Users and Groups**, and then click **Groups**.
4. In the pane on the right side, right-click **Administrators**, and then click **Properties**.
5. Click **Add**.
6. Type the name of the SQL Server administrator account (Contoso\SQLAdmin), and then click **OK**.
7. Click **OK**.
8. Log off the virtual machine.

To perform the remaining procedures in this article, log on to the Contoso-SQL virtual machine with the Contoso\SQLAdmin account.

Install SQL Server 2008 R2

The first step is to install SQL Server 2008. SQL Server 2008 requires .NET Framework version 3.5. If .NET Framework 3.5 is currently not installed, you must install it or enable it as a feature in Windows Server 2008 before you continue.

Perform the following procedure to install SQL Server 2008 on Contoso-SQL.

To install SQL Server 2008 R2

1. Attach the SQL Server 2008 R2 DVD to the virtual machine DVD drive.
2. Log on to the Contoso-SQL virtual machine as the SQL Server administrator (Contoso\SQLAdmin).
3. On the SQL Server DVD, double-click setup.exe.
4. If a **SQL Server 2008 R2 setup requires Microsoft .NET Framework** dialog box is displayed, click **OK**.
5. In the **SQL Server Installation Center**, in the pane on the left side, click **Installation**.
6. In the pane on the right side, click **New installation or add features to an existing installation**.
7. On the Setup Support Rules page, click **OK**.
8. On the product key page, type your product key, and then click **Next**.
9. On the License Terms page, review the license agreement and, if you agree, select the **I accept the license terms** check box, and then click **Next**.
10. On the Setup Support Files page, click **Install**.
11. On the Setup Support Rules page, click **Next**.
12. On the Setup Role page, select the **SQL Server Feature Installation** option, and then click **Next**.
13. On the Feature Selection page, select the following check boxes:
 - **Database Engine Services**
 - **Analysis Services**
 - **Reporting Services**
 - **Management Tools - Complete**

 **Note:**

We also recommend that you install SQL Server Books Online.

14. Click **Next**.
15. On the Installation Rules page, click **Next**.
16. On the Instance Configuration page, leave the **Default instance** option selected, and then click **Next**.
17. On the Disk Space Requirements page, click **Next**.
18. On the Server Configuration page, change the **Startup Type** for **SQL Server Agent** from **Manual** to **Automatic**.
19. Click **Use the same account for all SQL Server services**, type **Contoso\SQLSvc** for the **Account Name**, type the password for that account, and then click **OK**.
20. Click **Next**.
21. On the Database Engine Configuration page, select the **Mixed Mode** option, and type and confirm a password for the built-in SQL Server administrator account.
22. Click **Add Current User** to add the current user account as a SQL Server administrator.
23. Click **Next**.
24. On the Analysis Services Configuration page, click **Add Current User** to add the current user account as an Analysis Services administrator.
25. Click **Next**.
26. On the Reporting Services Configuration page, select the **Install the native mode default configuration** option, and then click **Next**.
27. On the Error and Usage Reporting page, leave the default values and then click **Next**.
28. On the Installation Rules page, click **Next**.
29. On the Ready to Install page, click **Install**.
30. When the setup process is complete, click **Close**.

Configure logins

When SQL Server 2008 R2 has been installed, the next step is to create a logon for the Farm Administrator account (Contoso\FarmAdmin) to provide the necessary permissions for SharePoint Server 2010 installation and configuration.

Perform the following procedure to create a logon for the Farm Administrator account.

To create a logon for the Farm Admin

1. Click **Start**, click **All Programs**, click **Microsoft SQL Server 2008 R2**, and then click **SQL Server Management Studio**.
2. On the **Connect to Server** dialog box, type **Contoso-SQL** in the **Server name** text box, and connect to the **Database Engine**.
3. In SQL Server Management Studio, expand **Security**, right-click **Logins**, and then click **New Login**.
4. In the **Login name** box, type **Contoso\FarmAdmin**.
5. In the pane on the left side, click **Server Roles**.

6. Select the **sysadmin** and **dbcreator** server roles.
7. Click **OK**.

Configure SQL Server network protocols

SharePoint Server 2010 requires that SQL Server 2008 allow connections over TCP/IP. Depending on your SQL Server configuration, this may be enabled by default. Use the following procedure to confirm that TCP/IP access is enabled.

To enable connections over TCP/IP

1. Click **Start**, click **All Programs**, click **Microsoft SQL Server 2008 R2**, click **Configuration Tools**, and then click **SQL Server Configuration Manager**.
2. Expand the **SQL Server Network Configuration** node.
3. Click **Protocols for MSSQLSERVER**.
4. In the **Protocol Name** list, confirm that **TCP/IP** is **Enabled**. If it is not, right-click **TCP/IP**, and then click **Enable**.
5. If TCP/IP was disabled, restart the SQL Server service for the new setting to take effect.

 **Note:**

To restart the service, in Management Studio, right click the **Contoso-SQL** node at the top of **Object Explorer**, and then click **Restart**.

After SQL Server configuration is complete, the next step is to install SharePoint Server 2010 on the Contoso-AppSrv virtual machine. See the next article, [Install and configure SharePoint Server 2010 for a BI test environment](#).

Install the Contoso sample database

Several of the labs in this series use sample data from the *Microsoft Contoso BI Demo Dataset for Retail Industry*. To install this dataset, you first have to download the files from the [Microsoft Download Center](#) (<http://go.microsoft.com/fwlink/p/?LinkId=219170>). Download ContosoBIdemoBAK.exe.

You must install this file on the Contoso-SQL virtual machine. You can put the file on the virtual machine by using one of the following methods:

- Create an ISO file that contains the downloaded file and attach it to the Virtual DVD drive on Contoso-SQL.
- Burn the file onto a physical DVD and place the DVD in the DVD drive of the host computer that is running Hyper-V. Then, connect the Contoso-SQL virtual machine to the physical DVD drive.
- Create a network file share that contains the file, and then connect to that file share from Contoso-SQL.

 **Note:**

You may have to add an additional virtual network adapter to Contoso-SQL to gain access to a file share that is outside the Contoso domain.

Which method that you choose depends largely on your environment.

Once you have downloaded the file and copied it to the Contoso-SQL virtual machine, use the following procedures to install the sample data.

First, create a folder for the backup files.

To create a backup folder

1. Click **Start**, click **All Programs**, click **Accessories**, and then click **Windows Explorer**.
2. In the pane on the left side, click **Computer**.
3. In the pane on the right side, double-click **Local Disk (C:)**.
4. Right-click the pane on the right side, click **New**, and then click **Folder**.
5. Name the folder **BackupFiles**.

Once the folder has been created, you can unzip the contents of the ContosoBIdemoBAK.exe file to that folder. Use the following procedure to unzip the ContosoBIdemoBAK.exe file and restore the database backups to SQL Server.

To install the ContosoRetailDW database

1. On the Contoso-SQL virtual machine, locate the ContosoBIdemoBAK.exe file.
2. Double-click ContosoBIdemoBAK.exe.
3. On the **WinZip Self-Extractor** dialog box, click **Browse**.
4. On the **Browse for folder** dialog box, browse to the **C:\BackupFiles** folder, and then click **OK**.
5. On the **WinZip Self-Extractor** dialog box, click **Unzip**.
6. On the success dialog box, click **OK**.
7. Click **Close**.
8. Open SQL Server Management Studio and connect to the Database Engine.
9. Right-click **Databases**, and then click **Restore database**.
10. In the **To database** text box, type **ContosoRetailDW**.
11. Select the **From device** option, and then click the browse button.
12. On the **Specify Backup** dialog box, click **Add**.
13. Browse to the **C:\BackupFiles** folder, click **ContosoRetailDW.bak**, and then click **OK**.
14. On the **Specify Backup** dialog box, click **OK**.
15. Select the check box for **ContosoRetailDW-Full Database Backup**, and then click **OK**.
16. On the success dialog box, click **OK**.

Install and configure SharePoint Server 2010 for a BI test environment

Published: May 26, 2011

Important:

This article is part of the baseline setup for the [Configuring a BI infrastructure: Hands-on labs](#) series. To complete the steps in this article, you must first have completed [Set up SQL Server for a BI test environment](#).

This article describes how to install SharePoint Server 2010 on the Contoso-AppSrv virtual machine.

Video demonstration

This video shows how to set up the Contoso-DC domain controller for use in these labs.



Running time: 8:40



[Watch the video.](#)



For an optimal viewing experience, [download the video.](#)

Right-click the link, and then click **Save Target As** to download a copy. Clicking the link opens a .wmv file in the default video viewer for full-resolution viewing.

Install SharePoint Server 2010

The first step in installing Microsoft SharePoint Server 2010 is to install the SharePoint Server 2010 prerequisites. These can be automatically downloaded from the Internet and installed by the SharePoint Server 2010 prerequisite installer tool that is built into SharePoint Server 2010 setup.

Important:

The Enterprise edition of SharePoint Server 2010 is required for the scenarios in this hands-on labs series.

For the Contoso-AppSrv virtual machine to be able to download the necessary updates, you must add a second virtual network connection to the Contoso-AppSrv virtual machine and connect it to the External Network connection.

 **Note:**

To add a network connection, the virtual machine must be turned off. When the virtual machine is off, right-click the virtual machine in Virtual Machine Manager, and then click **Settings**. On the Settings page, select **Network Adapter** in the **Add Hardware** section, and connect it to **External Network**.

 **Note:**

If you cannot create an internet connection from the virtual machine, you can download the prerequisites from the Internet and create an ISO file that you can attach to the virtual machine DVD drive. For more information about what prerequisites are required, see [Determine hardware and software requirements \(SharePoint Server 2010\)](#). For information about how to install the prerequisites from a network share, see [Install prerequisites from a network share \(SharePoint Server 2010\)](#).

For installation of SharePoint Server 2010 and its prerequisites, use the Contoso\FarmAdmin account. This account must be a local administrator on the Contoso-AppSrv virtual machine.

Log on to the Contoso-AppSrv virtual machine with the domain administrator account (Contoso\administrator) and perform the following procedure to add the Contoso\FarmAdmin account to the Administrators group.

To add a local administrator

1. Log on to the virtual machine where you want to install SharePoint Server 2010 by using the Contoso\Administrator domain administrator account.
2. Click **Start**, click **Administrative tools**, and then click **Computer Management**.
3. Expand **Local Users and Groups**, and then click **Groups**.
4. In the pane on the right side, right-click **Administrators**, and then click **Properties**.
5. Click **Add**.
6. Type the name of the SQL Server administrator account (Contoso\FarmAdmin), and then click **OK**.
7. Click **OK**.
8. Log off the virtual machine.

To perform the remaining procedures in this article, log on to the Contoso-AppSrv virtual machine with the Contoso\FarmAdmin account.

To install the SharePoint Server 2010 prerequisites, perform the following procedure.

To install SharePoint Server 2010 prerequisites

1. On the SharePoint Server 2010 DVD, run default.hta.
2. On the SharePoint Server 2010 opening page, click **Install software prerequisites**.
3. Follow the wizard to complete installation of all prerequisites.

 **Note:**

Depending on your configuration, you may have to restart your computer during this process.

4. When the wizard has finished, click **Finish**.

Once the prerequisites have been installed, you can install SharePoint Server 2010 itself. Perform the following procedure to install SharePoint Server 2010 on Contoso-AppSrv.

To install SharePoint Server 2010

1. On the SharePoint Server 2010 DVD, run default.hta.
2. On the SharePoint Server 2010 opening page, click **Install SharePoint Server**.
3. On the Enter your Product Key page, type your product key, and then click **Continue**.
4. On the Read the Microsoft Software License Terms page, read the license agreement and accept the terms by selecting the **I accept the terms of this agreement** check box.
5. Click **Continue**.
6. On the Choose the installation you want page, click **Server Farm**.
7. On the Server Type page, select the **Complete – Install all components option**.
8. Click **Install Now**.
9. On the Run Configuration Wizard page, leave the **Run the SharePoint Products and Technologies Configuration Wizard now** check box selected, and then click **Close**.
10. On the Welcome to SharePoint Products page, click **Next**.
11. On the warning dialog box, click **Yes**.
12. On the Connect to a server farm page, select the **Create a new server farm** option, and then click **Next**.
13. On the Specify Configuration Database Settings page:
 - a) In the **Database server** box, type the name of the database server (Contoso-SQL) where you want to host the SharePoint Server 2010 databases.
 - b) In the **Database name** text box, keep the default database name of **SharePoint_Config**.
 - c) Type the user name and password of the database access account (Contoso\FarmAdmin).
 - d) Click **Next**.

 **Note:**

If the wizard is unable to connect to Contoso-SQL, check the firewall settings in Windows Server.

14. On the Specify Farm Security Settings page, type and confirm a pass phrase for the farm, and then click **Next**.
15. On the Configure SharePoint Central Administration web Application page, select the **Specify port number** check box, and type **8080** in the text box.

 **Note:**

In a production environment, you can choose any unused port or leave the default. We recommend that you choose a number that is easy to remember.

16. Click **Next**.
17. On the Completing the SharePoint Products Configuration Wizard page, click **Next**.
18. On the Configuration Successful page, click **Finish**.

Once SharePoint Server 2010 configuration has been completed, the SharePoint Central Administration Web site opens.
19. On the Help Make SharePoint Better page, select the **No, I don't wish to participate** option, and then click **OK**.

 **Note:**

Because this is an isolated test environment, this system will be unable to upload error reports.

20. On the Configure your SharePoint farm page, click **Cancel** to cancel the farm configuration wizard. When SharePoint Server 2010 configuration has been completed, the next step is to create a top-level Web site.

Configure the top-level Web site

A Web application is required to host the top-level web site. Perform the following procedure to create a Web application.

To create a Web application

1. In Central Administration, in the **Application Management** section, click **Manage Web applications**.
2. On the toolbar, click **New**.
3. On the Create New Web Application page, keep the default values, and then click **OK**.
4. When the Web application has been created, click **OK**.

The next step is to create a top-level Web site and give users Read permission to that site.

Note:

In a production environment you should carefully consider which users should be given permissions to a SharePoint site and at what level. In this case, we are granting Read permission to all users on the top-level site, and we will grant additional permissions to specific users on the Business Intelligence Center that we will be creating in a later lab.

Use the following procedure to create the top-level site.

To create a top-level Web site

1. On the Central Administration home page, in the **Application Management** section, click **Create site collections**.
2. Confirm that **Web Application** is set to **http://contoso-appsrv/**.
3. Type **Contoso** in the **Title** box.
4. In the **Primary Site Collection Administrator** section, type **FarmAdmin**.
5. Click **OK**.

Now that the top-level site has been created, we will grant users access to it. Use the following procedure to grant users Read access to the site.

To set Read permission on the top-level Web site

1. Navigate to the root site (<http://contoso-appsrv/>).
2. Click **Site Actions**.
3. Click **Site Permissions**.
4. Click **Grant Permissions**.
5. In the **Users/Groups** box, type **NT AUTHORITY\Authenticated Users**.
6. Under **Give Permission**, select **Contoso Visitors [Read]**.
7. Click **OK**.

The next step is to configure the Secure Store Service. See the next article, [Configure Secure Store Service for a BI test environment](#).

This page intentionally left blank

Configure Secure Store Service for a BI test environment

Published: May 26, 2011

Important:

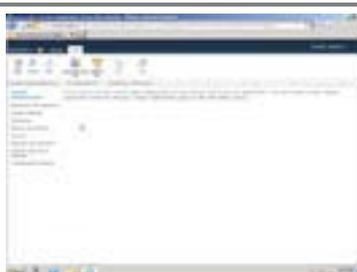
This article is part of the baseline setup for the [Configuring a BI infrastructure: Hands-on labs](#) series. To complete the steps in this article, you must first have completed [Install and configure SharePoint Server 2010 for a BI test environment](#).

In this article we deploy Secure Store Service. Secure Store provides a means of storing encrypted credentials for use in accessing data sources. It is used by Excel Services, Visio Services, and PerformancePoint Services to provide data refresh for data-connected reports, dashboards, and web drawings.

In a production environment, correct deployment of Secure Store requires careful planning. For information about how to plan and deploy Secure Store in your production environment, see [Plan the Secure Store service \(SharePoint Server 2010\)](#) and [Configure the Secure Store Service \(SharePoint Server 2010\)](#).

Video demonstration

This video shows how to deploy the Secure Store Service for use in these labs.

 <p>Running time: 5:05</p>	 <p>Watch the video.</p>  <p>For an optimal viewing experience, download the video.</p> <p>Right-click the link, and then click Save Target As to download a copy. Clicking the link opens a .wmv file in the default video viewer for full-resolution viewing.</p>
--	--

Deploy the Secure Store Service

In this lab, we will deploy the Secure Store Service for use in the later labs in this series. This includes the following tasks:

- Creating an Active Directory account to run the Secure Store Service application pool
- Registering that account as a managed account in Microsoft SharePoint Server 2010
- Starting Secure Store Service on an application server in the farm

- Creating a Secure Store Service service application
- Generating an encryption key

The first step is to create an Active Directory account for the Secure Store Service application pool. Use the following procedure to create the account.

To create an account for the application pool

1. Log in to Contoso-DC by using the Contoso\administrator account.
2. On the Contoso-DC virtual machine, click **Start**, click **Administrative Tools**, and then click **Active Directory Users and Computers**.
3. Expand the **contoso.local** node.
4. Right-click **Users**, click **New**, and then click **User**.
5. In the **Full name** text box and the **User logon name** text box, type **SecStrAcct**.
6. Click **Next**.
7. In the **Password** and **Confirm password** text boxes, type a password for the account.
8. Clear the **User must change password at next logon** check box.
9. Select the **Password never expires** check box.
10. Click **Next**.
11. Click **Finish**.
12. Log off Contoso-DC.

Before the account can be used to run a SharePoint Server 2010 application pool, it must be registered as a managed account. Use the following procedure to register the managed account.

To register a managed account

1. Log in to Contoso-AppSrv by using the Contoso\FarmAdmin account.
2. Click **Start**, click **All Programs**, click **Microsoft SharePoint 2010 Products**, and then click **SharePoint 2010 Central Administration**.
3. On the Central Administration home page, in the left navigation, click **Security**.
4. On the Security page, under **General Security**, click **Configure managed accounts**.
5. On the Managed Accounts page, click **Register Managed Account**.
6. In the **User name** text box, type **Contoso\SecStrAcct**.
7. In the **Password** text box, type the password for the Contoso\SecStrAcct account.
8. Click **OK**.

In order for Secure Store to work, you must start Secure Store Service on at least one application server in the farm.

Note:

In a production environment we recommend that you run Secure Store Service in a separate application pool that is not used for any other service.

In the case of this lab, Contoso-AppSrv is the only application server in the farm, so we start the service on that server. Use the following procedure to start Secure Store Service.

To start Secure Store Service

1. On the Central Administration home page, in the **System Settings** section, click **Manage services on server**.
2. Above the **Service** list, click the **Server** drop-down list, and then click **Change Server**.
Note that the application server, Contoso-AppSrv, is listed together with Contoso-SQL. In a farm with multiple application servers, you would use this dialog box to select the server where you want to run Secure Store Service, and then start the service as shown later in this procedure.
3. Click **CONTOSO-APPSRV**.
4. In the **Service** list, click **Start** next to **Secure Store Service**.

Once the service is running, the next step is to create a Secure Store Service service application. Use the following procedure to create the service application.

To create a Secure Store Service service application

1. On the Central Administration home page, in the **Application Management** section, click **Manage service applications**.
2. On the Manage Service Applications page, click **New**, and then click **Secure Store Service**.
3. In the **Service Application Name** text box, type **Secure Store Service**.
4. Leave the default database settings.



Note:

In a production environment we recommend that you use a separate instance of SQL Server for the Secure Store database.

5. Select the **Create new application pool** option and in the **Application pool name** text box, type **SecureStoreAppPool**.
6. Under **Select a security account for this application pool**, select the **Configurable** option, and from the drop-down list, select **Contoso\SecStrAcct**.
7. Click **OK**.
8. When the Secure Store Service service application has been successfully created, click **OK**.
Before you can use Secure Store, you must first generate an encryption key. Use the following procedure to generate the key.

To generate a key

1. On the Central Administration home page, in the **Application Management** section, click **Manage service applications**.
2. Click the Secure Store Service service application link.
3. On the Secure Store Service Application page, in the ribbon, click **Generate New Key**.
4. Type and confirm a pass phrase for the key, and then click **OK**.

Now that Secure Store configuration is complete, the next step is to create a Business Intelligence Center. See the next lab, [Configure a Business Intelligence Center for a test environment](#).

Configure a Business Intelligence Center for a test environment

Published: May 26, 2011

Important:

This article is part of the baseline setup for the [Configuring a BI infrastructure: Hands-on labs](#) series. To complete the steps in this article, you must first have completed [Configure Secure Store Service for a BI test environment](#).

At this point, you have installed and configured Microsoft SharePoint Server 2010 but have not enabled certain services, such as Excel Services in Microsoft SharePoint Server 2010 or PerformancePoint Services in Microsoft SharePoint Server 2010. Those services enable robust business intelligence capabilities in SharePoint Server. However by using the baseline SharePoint Server environment that you previously configured, you do have certain capabilities that are available to you. For example, you can set up a Business Intelligence Center.

The Business Intelligence Center gives you a central location to store items, such as status indicators, reports, and dashboards. When you enable Excel Services and PerformancePoint Services, you will already have a location to store reports and dashboard content.

Video demonstration

This video shows how to set up a Business Intelligence Center.



Running time: 6:27



[Watch the video.](#)



For an optimal viewing experience, [download the video.](#)

Right-click the link, and then click **Save Target As** to download a copy. Clicking the link opens a .wmv file in the default video viewer for full-resolution viewing.

Configuring a Business Intelligence Center

When you create and configure a Business Intelligence Center, you create a new site collection and select the Business Intelligence Center site template. The Business Intelligence Center is a top-level site on Contoso-AppSrv.

To create a Business Intelligence Center

1. Log in to Contoso-AppSrv using the Contoso\FarmAdmin account.
2. Click **Start**, click **All Programs**, click **Microsoft SharePoint 2010 Products**, and then click **SharePoint 2010 Central Administration**.
3. In Central Administration, in the **Application Management** section, click **Create site collections**.
4. In the **Title and Description** section, in the **Title** box, type **BI Center**.
5. In the **Web Site Address** section, type **BICenter** in the box.
Thus, the complete URL for this site collection is http://contoso-appsrv/sites/bicenter.
6. In the **Template Selection** section, click the **Enterprise** tab, and then click **Business Intelligence Center**.
7. In the **Primary Site Collection Administrator** section, type **FarmAdmin**.
8. Click **OK**.
9. When the top-level site (Business Intelligence Center) is successfully created, click **OK**.

The next step is to assign user permissions by using the accounts we set up in [Set up accounts for a BI test environment](#). We will assign permissions for the Business Intelligence Center as listed in the following table:

Account	Permissions
Contoso\BICenterRead	Read Read permissions enable users to view information in the Business Intelligence Center.
Contoso\BICenterContribute	Contribute Contribute permissions enable users to view and create items, such as reports, and save them to this site.
Contoso\BICenterDesign	Design Design permissions enable users to view, create, and publish items that include dashboards.
Contoso\BICenterFullControl	Full Control Full Control permissions enable users to view, create, and publish dashboard content, and to view or edit user permissions

First, we will assign Read permissions to the Contoso\BICenterRead group.

To set Read permissions on the Business Intelligence Center

1. Navigate to the Business Intelligence Center (http://contoso-appsrv/sites/bicenter).

2. Click **Site Actions**.
3. Click **Site Permissions**.
4. Click **Grant Permissions**.
5. In the **Users/Groups** box, type **Contoso\BICenterRead**.
6. Under **Grant Permission**, select **BICenter Visitors [Read]**.
7. Click **OK**. Keep the **Permissions: BICenter** page open.

Next, we will assign Contribute permissions to the Contoso\BICenterContribute group.

To set Contribute permissions on the Business Intelligence Center

1. In the **Permissions: BICenter** page, click **Grant Permissions**.
2. In the **Users/Groups** box, type **Contoso\BICenterContribute**.
3. Under **Grant Permission**, select **BICenter Members [Contribute]**.
4. Click **OK**. Keep the **Permissions: BICenter** page open.

The next step is to assign Design permissions to the Contoso\BICenterDesign group.

To set Design permissions on the Business Intelligence Center

1. In the **Permissions: BICenter** page, click **Grant Permissions**.
2. In the **Users/Groups** box, type **Contoso\BICenterDesign**.
3. Under **Grant Permission**, select **Designers [Design, Limited Access]**.
4. Click **OK**. Keep the **Permissions: BICenter** page open.

Finally, we will assign Full Control permissions to the Contoso\BICenterFullControl group.

To set Full Control permissions on the Business Intelligence Center

1. In the **Permissions: BICenter** page, click **Grant Permissions**.
2. In the **Users/Groups** box, type **Contoso\BICenterFullControl**.
3. Under **Grant Permission**, select **BICenter Owners [Full Control]**.
4. Click **OK**.

Note:

You will be unable to create and use some kinds of Web Parts in the Business Intelligence Center until Excel Services and PerformancePoint Services are enabled. For example, you cannot view or use Excel Services samples or PerformancePoint functionality.

Although we do not cover this in the labs, you can now use the Business Intelligence Center to create Web Part Pages, status indicators, and status lists. For more information, see [Getting started with SharePoint status indicators](#).

Adding links to the Quick Launch

After you have created and configured the Business Intelligence Center, your next step is to add links to the Quick Launch. In the Business Intelligence Center, we will add a Documents library link and a link to the main team site. Then, in the main team site, we will add a link to the Business Intelligence Center.

In the Business Intelligence Center, the Documents library will contain reports and files, such as Excel Services workbooks, Visio Services files, and more. The Documents library for the Business Intelligence Center already exists. It was created automatically when we created the Business

Intelligence Center. We only have to add the Documents library on the Business Intelligence Center Quick Launch, and then add a link to the main team site.

To add the Documents library and a link to the Quick Launch in the Business Intelligence Center

1. In the Business Intelligence Center, click **Site Actions**, and then click **View All Site Content**.
2. Right-click **Documents**, and then click **Copy shortcut**.
3. In the Business Intelligence Center, click **Site Actions**, and then click **Site Settings**.
4. Under **Look and Feel**, click **Navigation**.
5. In the **Navigation Editing and Sorting** section, click **Current Navigation**, and then click **Add Link**.
6. In the dialog box that opens, type **Documents** in the **Title** box, paste the link that you copied in Step 2, and then click **OK** to close the dialog box. (Do not close the navigation settings yet.)
7. In the **Navigation Editing and Sorting** section, select **Documents**, and then click **Move Up** until Documents is the first item listed under **Current Navigation**.
8. In the **Navigation Editing and Sorting** section, click **Global Navigation**, and then click **Add Link**.
9. In the **Title** box, type **Contoso**.
10. In the **URL** box, type **http://contoso-appsrv**, and then click **OK**.
11. Click **OK** to close navigation settings. Verify that **Documents** appears at the top of the list in the Quick Launch.

To make it easier for site users to locate the Business Intelligence Center, you can add a link on the main team site Quick Launch.

To add a link on the main team site Quick Launch

1. Browse to the main team site (<http://contoso-appsrv/>).
2. Click **Site Actions**, and then click **Site Settings**.
3. Under **Look and Feel**, click **Quick Launch**.
4. Click **New Navigation Link**.
5. In the URL section, in the **Type the Web address** box, type **http://contoso-appsrv/sites/bicenter**.
6. In the **Type the description** box, type **Business Intelligence Center**.
7. Click **OK**.

Next steps

Now that you have finished setting up your baseline test environment, you can choose to configure additional services. For more information, see any of the following resources:

- [Configure Excel Services for a BI test environment](#)
- [Configure Visio Services for a BI test environment](#)
- [Configure PerformancePoint Services for a BI test environment](#)
- [Enable Reporting Services in an integrated SharePoint Server BI test environment](#)
- [Configure Access Services for a BI test environment](#)

Concepts

[Create a baseline environment for a BI test environment](#)

Configure Excel Services for a BI test environment

Published: May 26, 2011

Important:

This article is part of the [Configuring a BI infrastructure: Hands-on labs](#) series. To complete the steps in this article, you must first have completed:

- All steps in the [Create a baseline environment for a BI test environment](#) series of articles.

Excel Services in Microsoft SharePoint Server 2010 is a service application that lets users share and view Microsoft Excel workbooks. The service also enables administrators to specify permission settings in Microsoft SharePoint Server 2010 to control what users can see or do with each workbook.

Configuring Excel Services consists of three steps:

- Deploying Excel Services on the SharePoint Server 2010 farm
- Configuring trusted file locations and trusted data connection libraries
- Configuring data access for authors of Excel workbooks

Deploy Excel Services

Deploying Excel Services consists of the following steps:

- Creating an Active Directory account for the application pool under which the Excel Services service application will run
- Registering that account as a managed account in SharePoint Server 2010
- Starting the Excel Calculation Services service
- Creating an Excel Services service application

The first step in deploying Excel Services is to create an account in the Active Directory directory service to run the application pool for the Excel Services service application. Use the following procedure to create the account.

To create an account for the application pool

1. Log on to Contoso-DC using the Contoso\administrator account.
2. On the Contoso-DC virtual machine, click **Start**, click **Administrative Tools**, and then click **Active Directory Users and Computers**.
3. Expand the **contoso.local** node.
4. Right-click **Users**, click **New**, and then click **User**.
5. In the **Full name** box and the **User logon name** box, type **ExcelAppPool**.
6. Click **Next**.
7. In the **Password** and **Confirm password** boxes, type a password for the account.
8. Clear the **User must change password at next logon** check box.

9. Select the **Password never expires** check box.
10. Click **Next**.
11. Click **Finish**.
12. Log off Contoso-DC.

Once you have created the account, it must be registered as a managed account in SharePoint Server 2010. Doing so makes the account available to service applications when you create them. Use the following procedure to register the managed account.

To register a managed account

1. Log in to Contoso-AppSrv using the Contoso\FarmAdmin account.
2. Click **Start**, click **All Programs**, click **Microsoft SharePoint 2010 Products**, and then click **SharePoint 2010 Central Administration**.
3. On the SharePoint Central Administration Web site home page, in the left navigation, click **Security**.
4. On the Security page, under **General Security**, click **Configure managed accounts**.
5. On the Managed Accounts page, click **Register Managed Account**.
6. In the **User name** box, type **Contoso\ExcelAppPool**.
7. In the **Password** box, type the password for the Contoso\ExcelAppPool account.
8. Click **OK**.

By default, the application pool account does not have the required access to the SharePoint content database. Access to this database is required for Excel Services. Use the following procedure to grant the required database access to the application pool account.

To grant content database access to the managed account

1. On Contoso-AppSrv, click **Start**, click **All Programs**, click **Microsoft SharePoint 2010 Products**, right-click **SharePoint 2010 Management Shell**, and then click **Run as Administrator**.
2. At the Windows PowerShell Command Prompt, type the following (press Enter after each line):

```
$w = Get-SPWebApplication -identity http://contoso-appsrv  
$w.GrantAccessToProcessIdentity("Contoso\ExcelAppPool")
```

Once you have granted database access to the application pool account, you must start the Excel Calculation Services. This is the SharePoint Server 2010 service that performs all processing and activities associated with Excel Services.

You must start this service on at least one application server. In a production environment, you would choose a server or servers on which to run the service, depending on your capacity requirements.

Use the following procedure to start the Excel Calculation Services service.

To start the Excel Calculation Services service

1. On the Central Administration home page, in the **System Settings** section, click **Manage services on server**.
2. Above the **Service** list, click the **Server** drop-down, and then click **Change Server**.
Note that the application server, Contoso-AppSrv, is listed together with Contoso-SQL. In a farm with multiple application servers, you would use this dialog box to select the server where you want to run Secure Store Service, and then start the service as shown later in this article.
3. Click **CONTOSO-APPSRV**.

4. In the **Service** list, click **Start** next to **Excel Calculation Services**.

Once the service is started, you must create an Excel Services service application. Use the following procedure to create the service application.

To create an Excel Services service application

1. On the Central Administration home page, under **Application Management**, click **Manage service applications**.
2. On the Manage Service Applications page, click **New**, and then click **Excel Services Application**.
3. In the **Name** section, type **Excel Services** in the text box.
4. Select the **Create new application pool** option and type **ExcelServicesAppPool** in the text box.
5. Select the **Configurable** option, and from the drop-down list, select **CONTOSO\excelappool**.
6. Click **OK**.

Configure trusted file locations and trusted data connection libraries

In [Configure a Business Intelligence Center for a test environment](#), we created a Business Intelligence Center which includes a document library and a data connection library. In order for data access to function, Excel Services must be configured to trust these libraries.

Use the following procedure to create a trusted file location for the document library in the Business Intelligence Center.

To create a trusted file location

1. On the Central Administration home page, under **Application Management**, click **Manage services applications**.
2. In the list of service applications, click **Excel Services**.
3. Click **Trusted File Locations**.
4. On the Trusted File Locations page, click **Add Trusted File Location**.
5. In the **Location** section:
 - a) Type **http://Contoso-AppSrv/sites/BICenter/Documents** in the **Address** text box.
 - b) Select the **Children trusted** check box.
6. In the **External Data** section:
 - a) Under **Allow External Data**, select the **Trusted data connection libraries and embedded** option.
 - b) In the **Automatic refresh** and **Manual refresh** text boxes, type **0**.

Note:

In a production environment, you would not typically set these values to 0. (Setting the cache values to 0 can cause additional resource utilization on the server.) However, in this series of labs, we are testing data refresh for data-connected workbooks, and setting the cache settings to 0 enables us to see data refresh results immediately.

7. Click **OK**.

By creating a trusted file location, we can now publish data-connected workbooks with embedded data connections. However, for Excel Services to correctly render data-connected workbooks with external data connections, we must create a trusted data connection library.

To create a trusted data connection library

1. On the Central Administration home page, in the **Application Management** section, click **Manage service applications**.
2. In the list of service applications, click **Excel Services**.
3. Click **Trusted Data Connection Libraries**.
4. On the Trusted Data Connection Libraries page, click **Add Trusted Data Connection Library**.
5. In the **Address** box, type `http://Contoso-AppSrv/sites/BICenter/Data%20Connections%20for%20PerformancePoint`.
6. Click **OK**.

When you have completed all of the previous procedures, Excel Services configuration is complete. The next step is to configure data access for the users who will create data-connected Excel workbooks.

Configure Excel client data access

In the following Excel Services labs, we will be configuring data refresh for Excel workbooks by using Secure Store Service. However, you should know that there are differences in the way that Excel Services and the Excel client application authenticate with data sources.

Although Excel Services can use Secure Store Service to authenticate with a data source when rendering a data-connected workbook, Microsoft Excel does not use Secure Store for data authentication. Excel requires that workbook authors have direct database access in order to access external data from the workbook.

In this case, we will create an Active Directory group to contain our workbook authors, and then create a SQL Server logon for that Active Directory group. We will then grant db_datareader access for this group to the ContosoRetailDW database which we will use in successive Excel Services labs.

To create an Active Directory group

1. Log on to Contoso-DC by using the Contoso\administrator account.
2. On the Contoso-DC virtual machine, click **Start**, click **Administrative Tools**, and then click **Active Directory Users and Computers**.
3. Expand the **contoso.local** node.
4. Right-click **Users**, click **New**, and then click **Group**.
5. In the **Group Name** box, type **ExcelWorkbookAuthors**, and then click **OK**.

Next, we need to add users to the group. In this case, we will add the user Susan Burk to the group because Susan Burk has Contribute access to the Business Intelligence Center where we will publish our data-connected workbooks in successive Excel Services labs.

Note:

Although we are only adding a single user to the group in this lab, in a production scenario you would add all the workbook authors to the group. (Using a group provides easier administration than adding individual logons for each user.) Depending on how your data is organized in your

production environment, you may want to use multiple groups if different sets of users need access to different databases.

To populate the ExcelWorkbookAuthors Active Directory group

1. In Active Directory Users and Computers, double-click the **ExcelWorkbookAuthors** group.
2. On the **Members** tab, click **Add**.
3. In the **Enter object names to select** box, type **Contoso\Susan.Burk**, and then click **OK**.
4. Verify that **Susan Burk** appears in the **Members** list, and then click **OK**.

Now that the Susan Burk account has been added to the ExcelWorkbookAuthors group, the next step is to create a SQL Server logon for that group and grant that logon Read access to the ContosoRetailDW database.

To create a SQL Server logon

1. Log on to Contoso-SQL by using the Contoso\SQLAdmin account.
2. Click **Start**, click **All Programs**, click **Microsoft SQL Server 2008 R2**, and then click **SQL Server Management Studio**.
3. Connect to the **Database Engine**.
4. Expand the **Security** node.
5. Right-click **Logins**, and then click **New Login**.
6. On the **Login – New** page, click **Search**.
7. On the **Select User or Group** dialog box, click **Object Types**.
8. On the **Object Types** dialog box, select the **Groups** check box, and then click **OK**.
9. On the **Select User or Group** dialog box, in the **Enter the object name to select** box, type **Contoso\ExcelWorkbookAuthors**, and then click **OK**.
10. In the pane on the left side, click **User Mapping**.
11. Under **Users mapped to this login**, select the **Map** check box for the **ContosoRetailDW** database.
12. Under **Database role membership for: ContosoRetailDW**, select the **db_datareader** check box.
13. Click **OK**.

When you have completed all of the previous procedures, Excel Services will be operational and ready to use. The next step is to configure security access to your data sources. The following labs cover how to configure security access by using Secure Store Service:

- [Configure the Excel Services unattended service account for a BI test environment](#)
- [Configure Excel Services data access by using embedded data connections](#)
- [Configure Excel Services data access by using external data connections in a BI test environment](#)

Configure the Excel Services unattended service account for a BI test environment

Published: May 26, 2011

Important:

This article is part of the [Configuring a BI infrastructure: Hands-on labs](#) series. To complete the steps in this article, you must first have completed:

- All steps in the [Create a baseline environment for a BI test environment](#) series of articles.
- All steps in [Configure Excel Services for a BI test environment](#)

Excel Services in Microsoft SharePoint Server 2010 provides three methods of using Secure Store to refresh the external data source in a workbook:

- The unattended service account
- A data connection embedded in the workbook
- A data connection through an Office Data Connection (ODC) file

This lab covers the unattended service account option. For more information about how to use an embedded connection, see [Configure Excel Services data access by using embedded data connections](#). For more information about how to use an ODC file, see [Configure Excel Services data access by using external data connections in a BI test environment](#).

Using the unattended service account involves configuring an Active Directory account access to your data, storing the credentials for this account in Secure Store, and configuring Excel Services to use this account when it needs to refresh the data in workbook.

The following steps are required to configure the unattended service account in Excel Services.

- Configure a data access account
- Configure the Secure Store Service
- Configure the Excel Services Global Settings

In this lab, we will also create a sample PivotTable report in Microsoft Excel that uses the ContosoRetailDW database and publish it to the Business Intelligence Center to confirm that data refresh is working.

Configure a data access account

When you configure the unattended service account, you have to grant the account access to the data source to which your Excel Services account will be connected. The unattended service account requires an Active Directory account for data access. Use the following procedure to create an Active Directory account for data access.

To create an Active Directory account for data access

1. Log on to Contoso-DC as Contoso\Administrator.
2. Click **Start**, click **Administrative Tools**, and then click **Active Directory Users and Computers**.
3. Expand the **contoso.local** node.

4. Right-click **Users**, click **New**, and then click **User**.
5. In the **Full name** and **User logon name** boxes, type **ExcelUnattended**.
6. Click **Next**.
7. Type and confirm a password for the account.
8. Clear the **User must change password at next logon** check box.
9. Select the **Password never expires** check box.
10. Click **Next**, and then click **Finish**.

Once the account has been created, the next step is to grant that account Read access to the required data. In a production scenario, you would grant access to whatever data source that you need to access from your Excel 2010 workbook. Use the following procedure to create a SQL Server logon and grant that logon Data Reader access to the ContosoRetailDW table.

To create a SQL Server logon

1. Log on to Contoso-SQL as Contoso\SQLAdmin.
2. Click **Start**, click **All Programs**, click **Microsoft SQL Server 2008 R2**, and then click **SQL Server Management Studio**.
3. On the **Connect to Server** dialog box, select **Database Engine** as the **Server type**, type **Contoso-SQL** in the **Server name** box, and then click **Connect**.
4. In Object Explorer, expand **Security**.
5. Right-click **Logins**, and then click **New Login**.
6. In the **Login name** box, type **Contoso\ExcelUnattended**.
7. Under **Select a page**, click **User Mapping**.
8. Select the **Map** check box for the ContosoRetailDW database, and then, under **Database role membership for: ContosoRetailDW**, select the **db_datareader** check box.
9. Click **OK**.

With the account created and granted the appropriate data access, we can now configure Secure Store Service.

Configure Secure Store Service

Secure Store Service uses a target application to define connection parameters and authorized users. The unattended service account is generally considered a catch-all account that is used for general data access, so usually all users are granted access to the unattended service account through the target application.

In order to grant all users data access through the unattended service account, the account that is running the Excel Services application pool is added as a Member of the Secure Store target application. In [Configure Excel Services for a BI test environment](#), we created the Contoso\ExcelAppPool account to run the Excel Services application pool. However, in a production environment you may not know what this account is, so we will describe the steps to determine the application pool account.

To find the Windows identity assigned to the Excel Services application pool

1. Log in to Contoso-AppSrv using the Contoso\FarmAdmin account.

2. Click **Start**, click **All Programs**, click **Microsoft SharePoint 2010 Products**, and then click **SharePoint 2010 Central Administration**.
3. On the SharePoint Central Administration Web site home page, click **Security**.
4. On the Security page, under **General Security**, click **Configure service accounts**.
5. On the Service Account page, in the **Credential Management** section, from the drop-down list, select the application pool that runs Excel Services Application (in this case, **Service Application Pool - ExcelServicesAppPool**).
When this option is selected, the name of the Excel Services Application appears in the box underneath the drop-down list (in this case, **Excel Services**).
6. Note that **Contoso\ExcelAppPool** is displayed in the **Select an account for this component** drop-down list. This is the Windows identity that you will need for the **Members** list when you configure the unattended service account in Secure Store.
7. Click **Cancel**

Once you have determined which account is being used to run the application pool for the Excel Services service application, the next step is to create a target application in Secure Store for the unattended service account. Use the following procedure to create the target application.

To create a target application for the unattended service account

1. On the Central Administration home page, under **Application Management**, click **Manage service applications**.
2. Click the **Secure Store Service** service application.
3. On the ribbon, click **New**.
4. In the **Target Application ID** box, type **ExcelServicesUnattended**.
5. In the **Display Name** box, type **ExcelServicesUnattended**.
6. In the **Contact E-mail** box, type **farmadmin@contoso.local**.

Note:

Although e-mail notifications are not configured in this environment, **Contact E-mail** is a required field.

7. In the **Target Application Type** drop-down list, select **Group**.
8. Click **Next**.
9. Leave the default credential fields, and then click **Next**.
10. On the Specify the membership settings page:
 - In the **Target Application Administrators** box, type **Contoso\FarmAdmin**.
 - In the **Members** box, because we will use the target application to store credentials for the unattended service account, type the Excel Services application pool account that we located in the previous procedure (**Contoso\ExcelAppPool**).
11. Click **OK**.

Once the target application has been created, you must specify which credentials should be used by it. The target application credentials are those to which data access has been granted — in our case, the Contoso\ExcelUnattended account to which we granted db_datareader access to the ContosoRetailDW database.

Use the following procedure to set the credentials for the target application.

To set the credentials for the target application

1. On the Secure Store Service Application page, in the **Target Application ID** column, point to **ExcelServicesUnattended**, click the arrow that appears, and then click **Set Credentials**.
2. In the **Windows User Name** box, type **Contoso\ExcelUnattended**.
3. Type and confirm the password for the Contoso\ExcelUnattended account.
4. Click **OK**.

With the credentials set for the target application, the Secure Store Service configuration for the unattended service account is complete. The next step is to configure Excel Services to use this target application for the unattended service account.

Configure Excel Services

The unattended service account configuration is part of the Excel Services Global Settings. Use the following procedure to configure the unattended service account in Excel Services.

To configure Excel Services Global Settings

1. On the Central Administration home page, in the **Application Management** section, click **Manage service applications**.
2. On the Manage Service Applications page, click **Excel Services**.
3. On the Manage the Excel Services page, click **Global Settings**.
4. On the Excel Services Settings page, in the **External Data** section, in the **Application ID** box, type **ExcelServicesUnattended**.
5. Click **OK**.

With the Excel Services Global Settings configured, setup of the unattended service account is complete. In the next section, we create an Excel workbook with external data and publish it to the SharePoint document library in the Business Intelligence Center. We then test data refresh by using the unattended service account.

Publishing a workbook with an external data source

To test the configuration of the unattended service account, we must first create a workbook with an external data connection. Use the following procedure to create the workbook.

To create a workbook with an external data connection

1. Log on to Contoso-Client by using the Contoso\Susan.Burk account.
2. Click **Start**, click **All Programs**, click **Microsoft Office**, and then click **Microsoft Excel 2010**.
3. On the **Data** tab, in the **Get External Data** group, click **From Other Sources**, and then click **From SQL Server**. This starts the Data Connection Wizard, which has three pages.
4. In the **Server name** box, type **Contoso-SQL**.
5. Under **Log on credentials**, click the **Use Windows Authentication** option, and then click **Next** to go to page 2 of the Data Connection Wizard.
6. In the **Select the database that contains the data you want** section, select **ContosoRetailDW**. In the **Connect to a specific table** section, select **DimStore**, and then click **Next**.
7. On the Save Data Connection File and Finish page, click **Finish**.

 **Note:**

If you are prompted to overwrite the connection file, click **Yes**.

8. On the **Import Data** dialog box, select the **PivotTable Report** option, and then click **OK**.
9. In the pane on the right side, in the **Pivot Table Field List**:
 - a) Select the **SellingAreaSize** check box.
 - b) Select the **StoreType** check box.

Leave the Excel workbook open for the next procedure.

We now have a data-connected workbook that contains a report. However, we must modify the Excel 2010 settings before we publish the workbook to the document library. By default, the Excel 2010 settings are configured to use Windows authentication, which is not the correct setting for using the unattended service account. Use the following procedure to modify the Excel 2010 authentication settings in the workbook that we just created.

To configure Excel Services authentication settings

1. In the Excel workbook, on the **Data** tab, click **Connections**.
2. On the **Workbook Connections** dialog box, click **Properties**.
3. On the **Connection Properties** dialog box, on the **Definition** tab, click **Authentication Settings**.
4. On the **Excel Services Authentication Settings** dialog box, select the **None** option, and then click **OK**.
5. On the **Connection Properties** dialog box, click **OK**.

 **Note:**

If you see a warning that the link to the external connection file will be removed, click **Yes**. (Although Excel requires you to save a connection file, that file is not required by Excel Services for authentication.)

6. On the **Workbook Connections** dialog box, click **Close**.

Leave the Excel workbook open for the next procedure.

Now that we have set the Excel Services authentication settings, the next step is to publish the workbook to the document library in the Business Intelligence Center and confirm that data refresh is working correctly.

To publish a workbook to a SharePoint document library

1. In the Excel workbook, click **File**, click **Save & Send**, and then click **Save to SharePoint**.
2. In the **Locations** section, click **Browse for a location**, and then click **Save As**.
3. On the **Save As** dialog box, in the URL box, type **http://Contoso-AppSrv/sites/BICenter**, and then press Enter.

 **Note:**

It may take several moments for the file list to refresh.

4. In the **Document Libraries** list, double-click **Documents**.
5. In the **File name** box, type **SellingAreas.xlsx**.
6. Ensure that the **Open with Excel in the browser** check box is selected, and then click **Save**.

Once the workbook has been saved to the document library, it will automatically load in a browser. The next step is to confirm that data refresh is working correctly.

Leave the browser that displays the SellingAreas.xlsx workbook open for the procedures in the next section.

Testing data refresh

To confirm that data refresh works with the unattended service account, we will follow these steps:

- Refresh the data currently displayed in the browser on Contoso-Client
- Change a value in the ContosoRetailDW database
- Refresh the data displayed in the browser on Contoso-Client again and confirm that the new information is displayed

First, we will refresh the existing data. Use the following procedure to refresh the data in the browser.

To refresh a data-connected workbook by using Excel Services

1. In the browser, on the **Data** drop-down list, click **Refresh All Connections**.

 **Note:**

If a warning message appears, click **OK**.

If the unattended service account is configured correctly, the data will refresh without error, although we will not see any changes in data values at this point. The next step is to change a value in the ContosoRetailDW database and confirm that the changes appear in the workbook.

To update data in the ContosoRetailDW database

1. Log on to Contoso-SQL by using the Contoso\SQLAdmin account.
2. Click **Start**, click **All Programs**, click **Microsoft SQL Server 2008 R2**, and then click **SQL Server Management Studio**.
3. On the **Connect to Server** dialog box, select **Database Engine** for the **Server type**, and then click **Connect**.
4. In the toolbar, click **New Query**.
5. Copy the following query to the query window:

```
USE [ContosoRetailDW]
GO
UPDATE dbo.DimStore set dbo.DimStore.SellingAreaSize = 500 where dbo.DimStore.StoreType =
'Catalog'
GO
```

6. In the toolbar, click **Execute**.

7. Return to Contoso-Client where the SellingArea.xlsx workbook is displayed.

Return to the Contoso-Client virtual machine, where SellingAreas.xlsx is displayed in the browser.

Note the currently displayed number for the Catalog row in the spreadsheet. We updated this row to a value of 500 in the DimStore table, so the new value should appear when we refresh the workbook. Use the following procedure to refresh the workbook.

 **Note:**

If you see a warning that the page has expired, click **OK** and restart the procedure.

To refresh a data-connected workbook by using Excel Services

1. In the browser, on the **Data** drop-down list, click **Refresh All Connections**.

 **Note:**

If a warning message appears, click **OK**.

The new value of 500 should now appear in the Catalog row of the report, confirming that data refresh through the unattended service account is working.

 **Note:**

The Excel Services cache settings affect how quickly the new results appear when you refresh the workbook. In the [Configure Excel Services for a BI test environment](#) lab, we set the cache settings to zero (0), allowing immediate refresh. In a production environment, refresh will likely take longer depending on how you configure the cache.

Configure Excel Services data access by using external data connections in a BI test environment

Published: May 26, 2011

Important:

This article is part of the [Configuring a BI infrastructure: Hands-on labs](#) series. To complete the steps in this article, you must first have completed:

- All steps in the [Create a baseline environment for a BI test environment](#) series of articles.
- All steps in the [Configure Excel Services for a BI test environment](#) article.

Excel Services in Microsoft SharePoint Server 2010 provides three methods of using Secure Store to refresh the external data source in a workbook:

- The unattended service account
- A data connection embedded in the workbook
- A data connection through an Office Data Connection (ODC) file

This lab covers the Office Data Connection file option. For more information about how to use an embedded connection, see [Configure Excel Services data access by using embedded data connections](#). For more information about how to use the unattended service account, see [Configure the Excel Services unattended service account for a BI test environment](#).

In this lab we create a PivotTable report on Microsoft Excel 2010 that uses an external data connection to Microsoft SQL Server 2008 R2. Next, we explain how to save this PivotTable report on Microsoft SharePoint Server 2010, and then how to confirm that data refresh is working correctly.

Configure a data access account

When you configure data access through Secure Store, you must grant the account access to the data source to which your Excel Services workbook will be connected. For the purposes of this lab, we will continue to use the Contoso database sample data which we can use in a data-connected workbook that we will publish to a SharePoint document library.

To create an Active Directory account for data access

1. Log on to Contoso-DC as Contoso\Administrator.
2. Click **Start**, click **Administrative Tools**, and then click **Active Directory Users and Computers**.
3. Expand the **contoso.local** node.
4. Right-click **Users**, click **New**, and then click **User**.
5. In the **Full name** and **User logon name** boxes, type **ExcelODCAccess**.
6. Click **Next**.
7. Type and confirm a password for the account.

8. Clear the **User must change password at next logon** check box.
9. Select the **Password never expires** check box.
10. Click **Next**, and then click **Finish**.

Once the account is created, the next step is to grant that account Read access to the required data. In a production scenario, you would grant access to whatever data source that you have to access from your Excel Services workbook. In this lab we will grant access to the ContosoRetailDW database. Use the following procedure to create a SQL Server logon and grant that logon Data Reader access to the database.

To create a SQL Server logon

1. Log on to Contoso-SQL as Contoso\SQLAdmin.
2. Click **Start**, click **All Programs**, click **Microsoft SQL Server 2008 R2**, and then click **SQL Server Management Studio**.
3. On the **Connect to Server** dialog box, select **Database Engine** as the **Server type**, type **Contoso-SQL** in the **Server name** box, and then click **Connect**.
4. In Object Explorer, expand **Security**.
5. Right-click **Logins**, and then click **New Login**.
6. In the **Login name** box, type **Contoso\ExcelODCAccess**.
7. Under **Select a page**, click **User Mapping**.
8. Select the **Map** check box for the ContosoRetailDW database, and then under **Database role membership for: ContosoRetailDW**, select the **db_datareader** check box.
9. Click **OK**.

Configure Secure Store

Earlier in this lab series, we configured Secure Store Service in the [Configure Secure Store Service for a BI test environment](#) article. Now we must create a target application for Excel Services with a series of procedures. These procedures explain how to create an Active Directory group in the virtual network, how to create the target application in Secure Store, and finally how to assign credentials to this target application.

In the Secure Store target application, we will map a specific group of users to the Contoso\ExcelODCAccess account that we created in the previous section. Although these users will never have direct access to this account, Excel Services will use this account on their behalf to refresh data-connected workbooks.

To avoid the complexity of administering individual users, we will create an Active Directory group to contain them.

To create an Active Directory group for user data access

1. Log on to Contoso-DC as Contoso\Administrator.
2. Click **Start**, click **Administrative Tools**, and then click **Active Directory Users and Computers**.
3. Expand the **contoso.local** node.
4. Right-click **Users**, click **New**, and then click **Group**.
5. In the **Group name** box, type **ExcelODCAccessGroup**.
6. Click **OK**.

After the group account is created in Active Directory, we must now populate the group with user accounts to which we want to give data access through Secure Store. The following procedure explains how to do this.

To populate the data access group

1. In Active Directory Users and Computers, in the users list, double-click the **ExcelODCAccessGroup** group.
2. On the **Members** tab, click **Add**.
3. On the **Select Users** dialog box, type **Contoso\susan.burk**; **Contoso\john.woods**, and then click **OK**.
4. The **Members** tab should now show Susan Burk and John Woods as members of the group.
5. Click **OK**.

Now that you have created Active Directory accounts for data access, you can create a target application for Excel Services to use with an Office Data Connection (ODC). Use the following procedure to create and configure the target application.

To create a target application

1. Log in to Contoso-AppSrv using the Contoso\FarmAdmin account.
2. Click **Start**, click **All Programs**, click **Microsoft SharePoint 2010 Products**, and then click **SharePoint 2010 Central Administration**.
3. On the SharePoint Central Administration Web site home page, in the **Application Management** section, click **Manage service applications**.
4. Click the **Secure Store Service** service application.
5. On the ribbon, click **New**.
6. In the **Target Application ID** box, type **ExcelServicesODC**.
7. In the **Display Name** box, type **ExcelServicesODC**.
8. In the **Contact E-mail** box, type **farmadmin@contoso.local**.

Note:

Although e-mail notifications are not configured in this environment, **Contact E-mail** is a required field.

9. In the **Target Application Type** drop-down list, select **Group**.
10. Click **Next**.
11. Leave the default credential fields, and then click **Next**.
12. On the Specify the membership settings page:
 - In the **Target Application Administrators** box, type **Contoso\FarmAdmin**.
 - In the **Members** box, type **Contoso\ExcelODCAccessGroup**.
 - Click **OK**.

Once the target application has been created, the next step is to associate the data access account that we created (Contoso\ExcelODCAccess) with the target application. Use the following procedure to set the credentials for the target application.

To set the credentials for the target application

1. On the Secure Store Service Application page, in the **Target Application ID** column, point to **ExcelServicesODC**, click the arrow that appears, and then click **Set Credentials**.
2. In the **Windows User Name** box, type **Contoso\ExcelODCAccess**.
3. Type and confirm the password for the Contoso\ExcelODCAccess account.
4. Click **OK**.

Create and publish an ODC file

Now that Secure Store has been configured, the next step is to create the ODC file and publish it to a trusted data connection library. Use the following procedure to create an ODC file that has a connection to the ContosoRetailDW database.

To create and publish an ODC file

1. Log on to the Contoso-Client virtual machine by using the Contoso\Susan.Burk account.
2. Click **Start**, click **All Programs**, click **Microsoft Office**, and then click **Microsoft Excel 2010**.
3. On the **Data** tab, click **From Other Sources**, and then click **From SQL Server**.
4. On the Connect to Database Server page of the Data Connection Wizard, type **Contoso-SQL** in the **Server name** box, and then click **Next**.
5. On the Select Database and Table page, select **ContosoRetailDW** from the drop-down list.
6. In the list of tables, select **DimProduct**, and then click **Next**.
7. Click **Finish**.

 **Note:**

If you are prompted to overwrite the ODC file on the local disk, click **Yes**.

8. On the **Import Data** dialog box, select the **PivotTable Report** option, and then click **OK**.
9. On the **Data** tab, click **Connections**.
10. On the **Workbook Connections** dialog box, click **Properties**.
11. On the **Connection Properties** dialog box, on the **Definition** tab, click **Authentication Settings**.
12. On the **Excel Services Authentication Settings** dialog box, select the **SSS** option, type **ExcelServicesODC** in the **SSS ID** box, and then click **OK**.
13. On the **Connection Properties** dialog box, click **Export Connection File**.
14. On the **File Save** dialog box, in the URL box, type **http://Contoso-AppSrv/sites/BICenter**, and then press Enter.

 **Note:**

It may take several moments for the list to refresh with content from the BI Center.

15. In the list of **All Site Content**, double-click **Data Connections**.
16. In the **File name** box, type **DimProductTable**, and then click **Save**.
17. On the **Data Connections** dialog box, select **Office Data Connection File** from the **Content Type** drop-down list, and then click **OK**.
18. On the **Connection Properties** dialog box, click **OK**, and then, on the **Workbook Connections** dialog box, click **Close**.
19. Exit Microsoft Excel.

 **Note:**

You do not have to save the workbook.

Remain logged on to Contoso-Client as Susan Burk for the next procedure.

We have now successfully published an ODC file that contains a data connection to the DimProduct table of the ContosoRetailDW database and uses the ExcelServicesODC target application in Secure Store for authentication.

Testing data refresh

In this section we will test what we previously configured by publishing a data-connected Excel workbook that uses the DimProductTable.odc file that we published earlier for data connectivity. Use the following procedure to create and publish a pivot table.

To create and publish a pivot table

1. On Contoso-Client, click **Start**, click **All Programs**, click **Microsoft Office**, and then click **Microsoft Excel 2010**.
2. On the **Data** tab, click **Existing Connections**.
3. On the **Existing Connections** dialog box, click **Browse for More**.
4. On the **Select Data Source** dialog box, in the URL box, type **http://Contoso-AppSrv/sites/BICenter**, and then press Enter.

 **Note:**

It may take several moments for the list to refresh with content from the BI Center.

5. In the list of **All Site Content**, double-click **Data Connections**.
6. On the list of **Data Connections**, select **DimProductTable**, and then click **Open**.
7. On the **Import Data** dialog box, select the **PivotTable Report** option, and then click **OK**.
8. In the **Pivot Table Field List**:
 - a) Drag **Manufacturer** to the **Row Labels** box.
 - b) Drag **ProductName** to the **Values** box.
9. Click **File**, click **Save & Send**, click **Save to SharePoint**, click **Browse for a location**, and then click **Save As**.
10. On the **Save As** dialog box, in the URL box, type **http://Contoso-AppSrv/sites/BICenter**, and then press Enter.

 **Note:**

It may take several moments for the list to refresh with content from the BI Center.

11. In the **All Site Content** list, double-click **Documents**.
12. In the **File name** box, type **ProductsPerVendor.xlsx**.
13. Confirm that the **Open with Excel in the browser** check box is selected, and then click **Save**. The workbook will render in the browser. Leave the browser open for the following procedures. To confirm that data refresh works by using the ODC file and Secure Store, we will follow these steps:

- Refresh the data currently displayed in the browser on Contoso-Client
- Change a value in the ContosoRetailDW database

- Refresh the data displayed in the browser on Contoso-Client again and confirm that the new information is displayed

First, we will refresh the existing data. Use the following procedure to refresh the data in the browser.

To refresh a data-connected workbook by using Excel Services

1. In the browser, on the **Data** drop-down list, click **Refresh All Connections**.

Note:

If a warning message appears, click **OK**.

If everything is configured correctly, the data will refresh without error, although we will not see any changes in values at this point. The next step is to change a value in the ContosoRetailDW database and confirm that the changes appear in the workbook.

To update data in the ContosoRetailDW database

1. Log on to Contoso-SQL by using the Contoso\SQLAdmin account.
2. Click **Start**, click **All Programs**, click **Microsoft SQL Server 2008 R2**, and then click **SQL Server Management Studio**.
3. On the **Connect to Server** dialog box, select **Database Engine** for the **Server type**, and then click **Connect**.
4. In the toolbar, click **New Query**.
5. Copy the following query to the query window:

```
USE [ContosoRetailDW]
GO
UPDATE dbo.DimProduct set dbo.DimProduct.Manufacturer = 'Contoso, Ltd' where
dbo.DimProduct.Manufacturer = 'Northwind Traders'
GO
```

6. In the toolbar, click **Execute**.

Note:

After the query runs, you should see **(47 row(s) affected)** in the **Messages** window.

Return to the Contoso-Client virtual machine, where ProductPerVendor.xlsx is displayed in the browser.

Note the currently displayed number of products provided by Northwind Traders is 47, and the number provided by Contoso, Ltd is 710 in the spreadsheet. We changed all the products from Northwind Traders to Contoso, Ltd in the DimManufacturer table, so the new value should appear when we refresh the workbook. Use the following procedure to refresh the workbook.

Note:

If you see a warning that the page has expired, click **OK** and restart the procedure.

To refresh a data-connected workbook by using Excel Services

1. In the browser, on the **Data** drop-down list, click **Refresh All Connections**.

Note:

If a warning message appears, click **OK**.

Notice that Northwind Traders has now disappeared from the report and the number of products provided by Contoso, Ltd has changed from 710 to 757, confirming that data refresh through the ODC file and Secure Store is working.

 **Note:**

The Excel Services cache settings affect how quickly the new results appear when you refresh the workbook. In the [Configure Excel Services for a BI test environment](#) lab, we set the cache settings to zero (0), allowing immediate refresh. In a production environment, refresh will likely take longer depending on how you configure the cache.

Configure Excel Services data access by using embedded data connections

Published: May 26, 2011

Important:

This article is part of the [Configuring a BI infrastructure: Hands-on labs](#) series. To complete the steps in this article, you must first have completed:

- All steps in the [Create a baseline environment for a BI test environment](#) series of articles.
- All steps in the [Configure Excel Services for a BI test environment](#) article.

Excel Services in Microsoft SharePoint Server 2010 uses three methods of connecting to external data:

- You can use an unattended service account. For more information, see [Configure the Excel Services unattended service account for a BI test environment](#).
- You can use an Office Data Connection (ODC) file. For more information, see [Configure Excel Services data access by using external data connections in a BI test environment](#).
- You can embed an ODC file in a workbook. This article describes how to this.

To configure Excel Services data access to use embedded data connections, we will use the following process:

1. [Configure a data access account](#)
2. [Configure the Secure Store Service application](#)
3. [Create and publish an Excel workbook that uses an embedded data connection](#)
4. [Verify that data updates in an Excel Services file](#)

Configure a data access account

To configure Excel Services to use embedded data connections, we begin by configuring a data access account. We then grant this account Read access to data that is stored in SQL Server.

Note:

We will be using the ContosoRetailDW dataset that we installed when we set up SQL Server. For more information, see [Set up SQL Server for a BI test environment](#).

To create an Active Directory account for data access

1. Log into Contoso-DC using the Contoso\administrator account.
2. Click **Start**, click **Administrative Tools**, and then click **Active Directory Users and Computers**.
3. Expand the **contoso.local** node.
4. Right-click **Users**, click **New**, and then click **User**.
5. In the **Full name** and **User logon name** text boxes, type **ExcelDataEmbed**, and then click **Next**.
6. Type and confirm a password for the account.
7. Clear the **User must change password at next logon** check box.

8. Select the **Password never expires** check box.

9. Click **Next**, and then click **Finish**.

Now that the ExcelDataEmbed account is created, the next step is to grant that account read access to the required data. Use the following procedure to create a SQL Server logon and grant Read access to the database.

To create a SQL Server logon

1. Log in to Contoso-SQL using the Contoso\SQLAdmin account.

2. Click **Start**, click **All Programs**, click **Microsoft SQL Server 2008 R2**, and then click **SQL Server Management Studio**.

3. On the **Connect to Server** dialog box, select **Database Engine** as the **Server type**, type **Contoso-SQL** in the **Server name** text box, and then click **Connect**.

4. In **Object Explorer**, expand **Security**.

5. Right-click **Logins**, and then click **New Login**.

The **Login – New** dialog box opens.

6. Next to the **Login name** text box, type **Contoso\ExcelDataEmbed**.

7. In the Login – New dialog box, in the **Select a page** pane, click **User Mapping**.

A list of databases appears.

8. Select the **Map** check box for the ContosoRetailDW database, and then in the **Database role membership for: ContosoRetailDW** section, select the **db_datareader** check box.

9. Click **OK** to close the Login – New dialog box. Notice that the Contoso\ExcelDataEmbed data access account is now displayed in the **Logins** list.

Now that we have created a data access account, the next step is to configure the Secure Store Service application.

Configure the Secure Store Service application

To configure the Secure Store Service application, we begin by creating an Active Directory group. This group will be used to provide data access to Excel users who are using embedded data connections.

To create an Active Directory group for user data access

1. Log into Contoso-DC using the Contoso\Administrator account.

2. Click **Start**, click **Administrative Tools**, and then click **Active Directory Users and Computers**.

3. Expand the **contoso.local** node.

4. Right-click **Users**, click **New**, and then click **Group**.

The New Object – Group dialog box opens.

5. In the **Group name** box, type **ExcelDataEmbedGroup**, and then click **OK**.

Notice that ExcelDataEmbedGroup now appears in the list of groups and users.

6. Double-click **ExcelDataEmbedGroup** to open it for editing.

7. Click the **Members** tab, and then click **Add**.

The **Select Users, Contacts, Computers, Services Accounts, or Groups** dialog box opens.

8. In the Enter the object names to select box, type **Contoso\susan.burk; Contoso\john.woods**, and then click **Check Names**.

The user accounts are verified and then appear as hyperlinks.

9. Click **OK** to close the Select Users, Contacts, Computers, Services Accounts, or Groups dialog box.
10. Click **OK** to close the ExcelDataEmbedGroup Properties dialog box.

Now that we have created our Active Directory accounts, the next step is to configure the Secure Store Service application. We begin by creating a target application.

To create a target application

1. Log into Contoso-AppSrv using the Contoso\FarmAdmin account.
2. Click **Start**, click **All Programs**, click **Microsoft SharePoint 2010 Products**, and then click **SharePoint 2010 Central Administration**.
3. On the Central Administration home page, under **Application Management**, click **Manage service applications**.
4. Click the **Secure Store Service** application.
5. On the ribbon, click **New**.
6. In the **Target Application ID** text box, type **ExcelServicesEmbeddedData**.
7. In the **Display Name** text box, type **Excel Services Embedded Data**.
8. In the **Contact E-mail** text box, type **farmadmin@contoso.local**.

Note:

Although e-mail notifications are not configured in this environment, you must specify an email address in the **Contact E-mail** box.

9. In the **Target Application Type** drop-down list, select **Group**, and then click **Next**.
10. Keep the default credential fields, and then click **Next**.
11. On the **Specify the membership settings** page, in the **Target Application Administrators** box, type **Contoso\FarmAdmin**.
12. In the **Members** box, type **Contoso\ExcelDataEmbedGroup**, and then click **OK**. Do not leave the page yet.
13. Position the pointer on **ExcelServicesEmbeddedData**, click the down arrow that appears, and then click **Set Credentials**.
The Set Credentials for Secure Store Target Application (Group) page opens.
14. In the **Windows User Name** box, type **Contoso\ExcelDataEmbed**.
15. Type and confirm the password for the Contoso\ExcelDataEmbed account, and then click **OK**.
16. Click **OK**.

Now that we have configured Excel Services data access to use embedded data connections, the next step is to create and publish an Excel workbook that uses an embedded connection. We will then use this workbook to verify that data updates correctly in Excel Services.

Create and publish an Excel workbook that uses an embedded data connection

In this section, we describe how to create a PivotTable report that uses data that is stored in SQL Server and publish the workbook to SharePoint Server. We will then refresh the data in the workbook that uses the embedded connection.

Creating a PivotTable report by using a SQL Server table

For this report, we use a table that is stored in SQL Server.

To create a PivotTable report by using external SQL Server data

1. Log into Contoso-Client using the Contoso\Susan.Burk account.
2. In Microsoft Excel 2010, on the **Data** tab, in the **Get External Data** group, click **From Other Sources**, and then click **From SQL Server**. The Data Connection Wizard opens.
3. In the **Server name** box, type **Contoso-SQL**, and then click **Next**.
4. Use the **Select the database that contains the data that you want** to select **ContosoRetailDW**.
5. Select the **Connect to a specific table** check box, and then select **DimStore**. Then, click **Next**.
6. In the **Description** box, type **Contoso Stores**, and then click **Finish**.

The Import Data dialog box opens.

 **Note:**

If you are prompted to replace the ODC file that is located on your local computer, click **Yes**.

7. In the **Select how you want to view this data in your workbook** section, click **PivotTable Report**, and then click **OK**.
An empty PivotTable report opens.
8. In the **PivotTable Field List** pane, drag **StoreType** to the **Row Labels** section.
9. Drag **EmployeeCount** to the **Values** section.
The PivotTable report updates to display a count of stores that have employees.
10. In the **Values** section, click the down arrow for **EmployeeCount**, and then click **Value Field Settings**.
11. In the **Summarize value field by** section, click **Sum**, and then click **OK**.

Notice that the PivotTable report updates to display the total number of employees for each kind of store.

Do not close the workbook. Keep it open for the next procedure.

At this point, we have created and saved a PivotTable report in Excel. However, we have not yet embedded the external data connection information in the workbook. The next step is to configure and embed that connection.

To embed external data connection information in an Excel workbook

1. In Excel 2010, on the **Data** tab, in the **Connections** group, click **Connections**.
The Workbook Connections dialog box opens.
2. Select the **Contoso-sql ContosoRetailDW DimStore** connection, and then click **Properties**.

The Connection Properties dialog box opens.

3. Select the **Definition** tab.
4. In the Excel Services section, click **Authentication Settings**.
The Excel Services Authentication Settings dialog box opens.
5. Select **SSS**, and in the **SSS ID** box, type **ExcelServicesEmbeddedData**.
6. Click **OK** to close the Excel Services Authentication Settings dialog box, and then click **OK** to close the Connection Properties dialog box.
7. If a warning appears that states that the link to the external odc file will be removed, click **Yes**.
8. In the Workbook Connections dialog box, click **Close**. Do not close the workbook yet.

At this point, we have created a workbook that contains an embedded data connection. The next step is to publish the workbook to SharePoint Server.

To publish the ContosoStores workbook

1. In Excel, click the **File** tab, and then click **Save & Send**.
2. Click **Save to SharePoint**.
3. Under **Locations**, click **Browse for a location**, and then click **Save As**.
The Save As dialog box opens.
4. In the location box at the top of the window, type **http://contoso-appsrv/sites/BICenter/Documents**.

Note:

It might take some time for the Save As dialog box to refresh and show the site content.

5. In the **File name** box, type **ContosoStores.xlsx**.
6. Select the **Open with Excel in the browser** check box, and then click **Save**.

A browser window opens and displays the ContosoStores workbook.

At this point, we have created and published a workbook that uses an embedded data connection. The next and final step is to verify that the data updates correctly.

Verify that data updates in an Excel Services file

In this section, we verify that data in the Excel workbook updates by using the embedded connection correctly. We begin by viewing the ContosoStores workbook in a browser window. We modify a row in the SQL Server database that is used by the workbook, and then confirm that the workbook displays the updated data as expected.

On the Contoso-Client computer, the ContosoStores workbook is open in a browser window. Notice that the PivotTable report shows the number of employees for each kind of store.

- Catalog: 120 employees
- Online: 340 employees
- Reseller: 44 employees
- Store: 10535 employees

The next step is to modify a row of data in the table that is used by the ContosoStores workbook. We will change one of the Reseller stores to Store. This will change the number of employees for both the Reseller and Store groups.

To update data in the ContosoRetailDW database

1. Log into Contoso-SQL using the Contoso\SQLAdmin account.
2. Click **Start**, click **All Programs**, click **Microsoft SQL Server 2008 R2**, and then click **SQL Server Management Studio**.
3. On the **Connect to Server** dialog box, select **Database Engine** for the **Server type**, and then click **Connect**.
4. In the toolbar, click **New Query**.
5. Type the following query to the query window:

```
USE [ContosoRetailDW]
GO
UPDATE dbo.DimStore set dbo.DimStore.StoreType = 'Store' where
dbo.DimStore.StoreDescription = 'Contoso Europe Reseller'
GO
```
6. In the toolbar, click **Execute**.

In the **Messages** pane, **(1 row(s) affected)** appears.

Now that we have changed one of the stores from Reseller to Store, the number of employees for those kinds of stores should have changed, too.

On the Contoso-Client computer, view the workbook. The PivotTable report should now show the following information:

- Catalog: 120 employees
- Online: 340 employees
- Reseller: 32 employees
- Store: 10547 employees

We see that after we changed that single row of data, Reseller went from 44 employees to 32, and Store went from 10535 employees to 10547 employees. The store that we changed has 12 employees. Therefore, this is correct. We have confirmed that data is refreshing as expected in the workbook.

Concepts

[Configure Excel Services for a BI test environment](#)

[Configure PerformancePoint Services for a BI test environment](#)

[Configure Visio Services for a BI test environment](#)

Configure PowerPivot for SharePoint for a BI test environment

Published: September 27, 2011

This article is part of the [Configuring a BI infrastructure: Hands-on labs](#) series. To complete the steps in this article, you must first have completed:

- [Create a baseline environment for a BI test environment](#)
- [Configure Excel Services for a BI test environment](#)

Microsoft SQL Server PowerPivot for Microsoft SharePoint supports query processing and data refresh for published Excel workbooks that contain PowerPivot data. This article describes how to configure PowerPivot for SharePoint 2010 in a virtual environment that already has SharePoint Server 2010 and SQL Server 2008 R2 installed and configured.

Configuring PowerPivot for SharePoint consists of the following steps:

- [Create a managed account for SQL Server Analysis Services](#)
- [Deploy PowerPivot for SharePoint](#)
- [Configure a PowerPivot service application](#)
- [Configure data refresh for PowerPivot for SharePoint](#)
- [Configure Secure Store service for PowerPivot for SharePoint](#)
- [Verify that PowerPivot for SharePoint is configured correctly](#)
- [Test data refresh](#)

Create a managed account for SQL Server Analysis Services

To configure PowerPivot for SharePoint, you must have a service account for the SQL Server Analysis Services instance that is installed with PowerPivot for SharePoint. Use the following procedure to create an Active Directory account for Analysis Services.

To create an Active Directory account for Analysis Services

1. Log on to Contoso-DC as Contoso\Administrator.
2. Click **Start**, click **Administrative Tools**, and then click **Active Directory Users and Computers**.
3. Expand the **contoso.local** node.
4. Right-click **Users**, click **New**, and then click **User**.
5. In the **Full name** and **User logon name** boxes, type **PowerPivotSSAS**.
6. Click **Next**.
7. Type and confirm a password for the account.
8. Clear the **User must change password at next logon** check box.
9. Select the **Password never expires** check box.

10. Click **Next**, and then click **Finish**.

Once the account is created, the next step is to deploy PowerPivot for SharePoint.

Deploy PowerPivot for SharePoint

Deploying PowerPivot for SharePoint consists of the following steps:

- Installing PowerPivot for SharePoint on a SharePoint Server farm
- Deploying the PowerPivot solution package to a SharePoint Web Application
- Activating PowerPivot feature integration for the Business Intelligence Center

The first step is to install PowerPivot for SharePoint on the Contoso-AppSrv computer.

Tip:

In our test environment, we are using a single computer for SharePoint Server. In a production environment where you might have more than one computer that is running SharePoint Server, install PowerPivot for SharePoint on the computer that has the SharePoint Central Administration Web site installed.

To install PowerPivot for SharePoint 2010 on an existing SharePoint Server 2010 farm

1. Attach the SQL Server 2008 R2 DVD to the DVD drive for the Contoso-AppSrv virtual machine.
2. Log on to Contoso-AppSrv by using the Contoso\FarmAdmin account.
3. On the SQL Server DVD, double-click **setup.exe**.
The SQL Server Installation Center opens.
4. Click **Installation**, and then click **New installation or add features to an existing installation**.
The SQL Server setup window opens.
5. On the **Setup Support Rules** page, click **OK**.
6. On the **Product Key** page, type the product key for your version of SQL Server, and then click **Next**.
7. On the **License Terms** page, select **I accept the license terms**, and then click **Next**.
8. On the **Setup Support Files** page, click **Install**.
9. On the **Setup Support Files** page, click **Next**.
10. On the **Setup Role** page, select **SQL Server PowerPivot for SharePoint**, and in the **Add PowerPivot for SharePoint to list**, select **Existing Farm**. Then click **Next**.
11. On the **Feature Selection** page, click **Next**.
12. On the **Installation Rules** page, click **Next**.
13. On the **Instance Configuration** page, in the **Instance ID** box, select the default **PowerPivot** text, and type **ContosoAppSrv**, and then click **Next**.
14. On the **Disk Space Requirements** page, click **Next**.
15. On the **Server Configuration** page, in the **SQL Server Analysis Services** row, specify the Contoso\PowerPivotSSAS account and password. Then click **Next**.
16. On the **Analysis Services Configuration**, click **Add Current User**, and then click **OK**.
17. On the **Analysis Services Configuration** page, click **Next**.

18. On the **Error Reporting** page, click **Next**.
19. On the **Installation Configuration Rules** page, click **Next**.
20. On the **Ready to Install** page, click **Install**.

The installation process runs.

 **Tip:**

It might take several minutes for the installation process to finish.

21. After the installation process is complete, you must restart the computer. On the **Complete** page, click **Close**. Then restart the Contoso-AppSrv computer.

The next step is to deploy a PowerPivot solution to the SharePoint Web application that you created when you set up the baseline environment.

To deploy the PowerPivot solution package

1. Log into the Contoso-AppSrv computer by using the Contoso\FarmAdmin account.
2. Click the **Start** button, select **All Programs**, select **Microsoft SharePoint 2010 Products**, and then select **SharePoint 2010 Central Administration**.
3. In SharePoint 2010 Central Administration, click **System Settings**, and then click **Manage farm solutions**.

 **Note:**

There are two separate solution packages visible: powerpivotfarm.wsp and powerpivotwebapp.wsp. The first solution, powerpivotfarm.wsp, is deployed automatically when you install the first PowerPivot for SharePoint instance. You do not have to deploy this again. The second solution, powerpivotwebapp.wsp, is deployed automatically for Central Administration. However, you must deploy this solution manually for each SharePoint Web application that supports PowerPivot for SharePoint data access.

In this case, we have one Web application. In a production environment, there are likely more than one Web application.

4. Click **powerpivotwebapp.wsp**, and then click **Deploy Solution**.
5. In the **Deploy To?** section, use the **Choose a Web application to deploy this solution** list to select **http://contoso-appsrv/**.
6. Click **OK**.

The next step is to configure the Business Intelligence Center to work with PowerPivot data. To do this, follow these steps.

To enable PowerPivot feature integration with the Business Intelligence Center

1. Browse to the Business Intelligence Center (<http://contoso-appsrv/sites/bicenter>).
2. Click **Site Actions**, and then click **Site Settings**.
3. In the **Site Collection Administration** section, click **Site Collection Features**.
4. Next to **PowerPivot Feature Integration for Site Collections**, click **Activate**.
5. Close the browser window.

Now that PowerPivot for SharePoint is installed, the next step is to configure a PowerPivot service application.

Configure a PowerPivot service application

Tip:

The procedures in this section describe how to configure a PowerPivot service application for a test environment that uses a particular configuration. For more detailed information about how to configure a PowerPivot service application for production environments, see [Create and Configure a PowerPivot Service Application](http://go.microsoft.com/fwlink/p/?LinkId=226553) (<http://go.microsoft.com/fwlink/p/?LinkId=226553>).

Configuring PowerPivot for SharePoint consists of the following steps:

- Starting the Claims to Windows Token Service
- Creating an Active Directory account for the application pool under which the PowerPivot service application will run
- Registering that account as a managed account in SharePoint Server 2010
- Creating a PowerPivot service application
- Configuring Excel Services to support PowerPivot workbooks

Begin by starting the Claims to Windows Token Service, which is used to enable access to data that is stored on another computer. In this case, we will be accessing data that is stored on the Contoso-SQL computer.

To start the Claims to Windows Token Service

1. Click **Start**, click **All Programs**, click **Microsoft SharePoint 2010 Products**, and then click **SharePoint 2010 Central Administration**.
2. In Central Administration, click **System Settings**, and then click **Manage services on server**.
3. Start the Claims to Windows Token Service.
4. Verify that both SQL Server Analysis Services and SQL ServerPowerPivot System Service are started.

The next step is to create an Active Directory account. This account will be used for the PowerPivot for SharePoint Service application.

To create an Active Directory account for PowerPivot for SharePoint

1. Log on to Contoso-DC as Contoso\Administrator.
2. Click **Start**, click **Administrative Tools**, and then click **Active Directory Users and Computers**.
3. Expand the **contoso.local** node.
4. Right-click **Users**, click **New**, and then click **User**.
5. In the **Full name** and **User logon name** boxes, type **PowerPivotAppPool**.
6. Click **Next**.
7. Type and confirm a password for the account.
8. Clear the **User must change password at next logon** check box.
9. Select the **Password never expires** check box.
10. Click **Next**, and then click **Finish**.

The next step is to register the managed account in SharePoint Server.

To register the PowerPivotAppPool account in SharePoint Server

1. Log on to Contoso-AppSrv by using the Contoso\FarmAdmin account.
2. Click **Start**, click **All Programs**, click **Microsoft SharePoint 2010 Products**, and then click **SharePoint 2010 Central Administration**.
3. On the SharePoint Central Administration Web site home page, in the left navigation, click **Security**.
4. On the Security page, under **General Security**, click **Configure managed accounts**.
5. On the Managed Accounts page, click **Register Managed Account**.
6. In the **User name** box, type **Contoso\PowerPivotAppPool**.
7. In the **Password** box, type the password for the Contoso\PowerPivotAppPool account.
8. Click **OK**.

The next step is to create a PowerPivot service application.

To create a PowerPivot service application

1. In Central Administration, click **Application Management**, and then click **Manage service applications**.
2. In the **Service Applications** ribbon, click **New**, and then click **SQL Server PowerPivot Service Application**.

The **Create New PowerPivot Service Application** dialog box appears.

3. In the **Name** box, type **PowerPivotServiceApplication1**.
4. In the **Application Pool** section, select **Create a new application pool**, and in the **Application pool name** box, type **PowerPivotServAppPool**.
5. Use the **Configurable** list to select **Contoso\PowerPivotAppPool**.
6. In the **Database Server** list, specify **Contoso-SQL**, and keep the default database name.
7. In the **Database authentication** section, keep the default setting, **Windows Authentication**.
8. In the **Default** section, select the check box for **Add the proxy for this PowerPivot service application to the default proxy group**, and then click **OK**.
9. After your service application is successfully created, click **OK** in the confirmation page.

The service application appears in the Contoso farm service application list together with the other service applications. You might have to refresh the page to see it.

The next step is to configure Excel Services to support PowerPivot workbooks. To do this, you increase the maximum file size for Excel Services and edit external data settings.

To configure Excel Services to support PowerPivot workbooks

1. In Central Administration, click **Application Management**, and then click **Manage service applications**.
2. Click **Excel Services**.
3. Click **Trusted File Locations**.
4. Click **http://contoso-appsrv/sites/bicenter/documents**.
5. In the **Workbook Properties** section, in the **Maximum Workbook Size** box, type **50**.
Increasing the workbook size makes it possible to work with more data in PowerPivot for Excel.
6. In the **External Data** section, under **Allow External Data**, select **Trusted data connection libraries and embedded**.

7. In the **External Data** section, clear the **Refresh warning enabled** check box.

8. Click **OK**.

Now that you have installed and configured PowerPivot for SharePoint, your next step is to configure data refresh for PowerPivot for SharePoint.

Configure data refresh for PowerPivot for SharePoint

Configuring data refresh for PowerPivot data in Excel workbooks consists of the following steps:

- Creating an Active Directory account for the PowerPivot unattended data refresh account
- Granting Read permissions to access the data during data refresh

The first step is to create an Active Directory account.

To create an Active Directory account for PowerPivot data refresh

1. Log on to Contoso-DC by using the Contoso\Administrator account.
2. Click **Start**, click **Administrative Tools**, and then click **Active Directory Users and Computers**.
3. Expand the **contoso.local** node.
4. Right-click **Users**, click **New**, and then click **New User**.
5. In the **Full name** and **User logon name** boxes, type **PowerPivotUnattended**, and then click **Next**.
6. Type and confirm a password for the account.
7. Clear the **User must change password at next logon** check box.
8. Select the **Password never expires** check box.
9. Click **Next**, and then click **Finish**.

Once the Active Directory account is created, the next step is to grant Read permissions to that account in SQL Server.

To grant Read permissions to the PowerPivot unattended data refresh account in SQL Server

1. Log on to the Contoso-SQL computer by using the Contoso\SQLAdmin account.
2. Click **Start**, click **All Programs**, click **Microsoft SQL Server 2008 R2**, and then click **SQL Server Management Studio**.
3. In the **Connect to Server** dialog box, specify the following settings:
 - In the **Server type** list, select **Database Engine**.
 - In the **Server name** box, type **Contoso-SQL**.
Then click **Connect**.
4. In the **Object Explorer** pane, expand **Security**.
5. Right-click **Logins**, and then click **New Login**.
6. In the **Login name** box, type **Contoso\PowerPivotUnattended**.
7. In the **Select a Page** section, click **User Mapping**.
8. Select the **Map** check box for the ContosoRetailDW database, and then, under **Database role membership for: ContosoRetailDW**, select the **db_datareader** check box.
9. Click **OK**.

10. Close SQL Server Management Studio, and then log off the Contoso-SQL computer. The next step is to create a Secure Store target application.

Configure Secure Store service for PowerPivot for SharePoint

Configuring Secure Store Service for PowerPivot for SharePoint consists of the following steps:

- Creating a PowerPivot target application for the Secure Store Service
- Specifying the target application identity for the PowerPivot unattended data refresh account
- Granting Contribute permissions to the PowerPivot unattended data refresh account in SharePoint Server

The first step is to create a PowerPivot target application for Secure Store Service.

To create a PowerPivot target application for Secure Store Service

1. Log on to Contoso-AppSrv by using the Contoso\FarmAdmin account.
2. Click **Start**, click **All Programs**, click **Microsoft SharePoint 2010 Products**, and then click **SharePoint 2010 Central Administration**.
3. On the Central Administration home page, in the **Application Management** section, click **Manage service applications**.
4. In the list of service applications, click **Secure Store Service**.
5. In the ribbon, on the **Edit** tab, click **New**.
6. On the **Target Application Settings** page, specify the following settings:
 - In the **Target Application ID** box, type **PowerPivotDataRefresh**.
 - In the **Display Name** box, type **PowerPivotDataRefresh**.
 - In the **Contact E-mail** box, type an e-mail address. For our example, we use **farmadmin@contoso.local**.
 - In the **Target Application Type** list, select **Group**.
 - In the **Target Application Page URL** section, select **None**.Then click **Next**.
7. On the **Specify the credential fields for your Secure Store Target Application** page, keep the default values, and then click **Next**.
8. On the **Create New Secure Store Service Application** page, specify the following settings
 - In the **Target Application Administrators** box, type **Contoso\FarmAdmin**.
 - In the **Members** box, type the name of the application pool identity for the PowerPivot service application. For our example, we use **PowerPivotAppPool**.Then click **OK**.

The list of Secure Store Service target applications is displayed. Do not close this window.

The next step is to set credentials for the target application.

To set credentials for the PowerPivot target application

1. Begin with the list of Secure Store Service target applications open. Select the check box next to **PowerPivotDataRefresh**.
2. In the ribbon, on the **Edit** tab, in the **Credentials** section, click **Set**.
3. On the **Set Credentials for Secure Store Target Application (Group)** page, specify the following settings:
 - In the **Windows User Name** box, type **Contoso\PowerPivotUnattended**.
 - In the **Windows Password** and the **Confirm Windows Password** boxes, type the password for the Contoso\PowerPivotUnattended account.Then click **OK**.

The list of Secure Store Service target applications is displayed. Do not close this window.

The next step is to specify a PowerPivot unattended data refresh account.

To specify a target application identity for the PowerPivot unattended data refresh account

1. In Central Administration, in the **Application Management** section, click **Manage service applications**.
2. In the list of service applications, click the name of the PowerPivot service application. For our example, we click **PowerPivotServiceApplication1**.
The PowerPivot Management Dashboard opens.
3. In the **Actions** section, click **Configure service application settings**.
The PowerPivot Settings page opens.
4. In the **Data Refresh** section, in the **PowerPivot Unattended Data Refresh Account** box, type the name of the target application identity. For our example, we use **PowerPivotDataRefresh**.
Then click **OK**.
5. Close Central Administration, but remain logged in to the Contoso\FarmAdmin account.

The next step is to grant Contribute permissions to the PowerPivotUnattended account in SharePoint Server. This enables users to open PowerPivot workbooks from a SharePoint library and save it after refreshing data.

To grant Contribute permissions to the PowerPivot unattended data refresh account in SharePoint Server

1. Open a Web browser and navigate to the Contoso team site. For our example, the Web site address (URL) is <http://contoso-appsrv>.
2. Click **BI Center** to open the Business Intelligence Center.
3. Click **Site Actions**, and then click **Site Permissions**.
4. In the ribbon, on the **Edit** tab, click **Grant Permissions**.
5. In the **Grant Permissions** dialog box, specify the following settings:
 - In the **Users/Groups** box, type the name of the PowerPivot unattended data refresh account. For our example we use **Contoso\PowerPivotUnattended**.
 - In the **Grant Permissions** section, select **Add users to a SharePoint group (recommended)**, and then select **Business Intelligence Center Members [Contribute]**.Then click **OK**.

6. Close the Web browser, and then log off the Contoso-AppSrv computer.

Now that PowerPivot for SharePoint is deployed, the next step is to verify that PowerPivot for SharePoint is configured correctly.

Verify that PowerPivot for SharePoint is configured correctly

Verifying that PowerPivot for SharePoint is configured correctly consists of the following steps:

- Installing the PowerPivot add-in for Excel on a client computer
- Creating and publishing a PowerPivot workbook to SharePoint Server

Before you can install the PowerPivot add-in for Excel, you must verify that Microsoft .NET Framework 3.5.1 is installed on the client computer.

Important:

Before you begin to perform the tasks that are described in this section, make sure that you have Internet access on the Contoso-Client virtual machine.

To install the Microsoft .NET Framework 3.5.1

1. Log on to Contoso-Client by using the Contoso\Administrator account.
2. Click **Start**, and then click **Control Panel**.
3. Click **Programs**.
4. In the **Programs and Features** section, click **Turn Windows features on or off**.
The **Windows Features** dialog box appears.
5. Select the **Microsoft .NET Framework 3.5.1** check box, and then click **OK**.
6. After Microsoft .NET Framework is installed, close the Control Panel. Do not log off the computer. The next step is to download and install PowerPivot for Excel.

To install PowerPivot for Excel

1. Open a web browser.
2. In the address line, type <http://go.microsoft.com/fwlink/?LinkID=224183>.
The Microsoft Download Center page for Microsoft SQL Server 2008 R2 - PowerPivot for Microsoft Excel 2010 – RTM opens.
3. Click the **Download** button for PowerPivot for Excel.
4. If a dialog box appears that prompts you to run or save the application, click **Run**.
The PowerPivot for Excel Setup dialog box appears.
5. On the welcome page, click **Next**.
6. On the **License Agreement** page, select **I accept the terms in the license agreement**, and then click **Next**.
7. On the **Registration Information** page, in the **Name** box, type your name, and then click **Next**.
8. On the **Ready to Install the Program** page, click **Install**.
9. On the **Completing the PowerPivot for Excel installation** page, click **Finish**.
10. Close the web browser. Log off the computer.

The next step is to open Microsoft Excel and create a PowerPivot workbook.

To create a PowerPivot workbook

1. Log on to the Contoso-Client computer by using the Contoso\Susan.Burk account.
2. Click **Start**, click **All Programs**, click **Microsoft Office**, and then click **Microsoft Excel 2010**.
3. If Excel opens and displays a Microsoft Office Customization Installer dialog box, click **Install**. PowerPivot for Excel adds a PowerPivot tab to the Excel workbook.
4. In Excel, on the **PowerPivot** tab, in the **Launch** group, click **PowerPivot Window**.
The PowerPivot window opens.
5. On the **Home** tab, click **From Database**, and then click **From SQL Server**.
The **Table Import Wizard** dialog box appears.
6. On the **Connect to a Microsoft SQL Server Database** page, in the **Server name** box, type **Contoso-SQL**.
7. Use the **Database name** list to select **ContosoRetailDW**, and then click **Test Connection**.
8. If your connection is successful, click **Next**.
9. On the **Choose How to Import the Data** page, select the **Select from a list of tables and views to choose the data to import** option, and then click **Next**.
10. In the **Select Tables and Views** page, select the check box next to the **DimPromotion** table, and then click **Finish**.
The **Importing** page indicates that 28 rows of data were transferred.
11. Click **Close** to close the Table Importing Wizard.
The data is displayed in the PowerPivot window.
12. On the **Home** tab, in the **Reports** group, click PivotTable down arrow, and then click **PivotChart**.
The Create PivotChart dialog box appears.
13. Select **Existing Worksheet**, and then click **OK**.
An empty chart opens in Excel.
14. In the **PowerPivot Field List** pane, select the check boxes for **PromotionDescription** and **DiscountPercent**.
The chart updates to display data.
15. From the **PowerPivot Field List** pane, drag **StartDate** to the **Slicers Horizontal** box.
A box that contains slicers is added to the page, over the PivotChart report.
Do not close the workbook.

The next step is to publish the workbook to SharePoint Server.

To publish the workbook

1. In Excel, click the **File** tab, and then click **Save & Send**.
2. Click **Save to SharePoint**.
3. Under **Locations**, click **Browse for a location**, and then click **Save As**.
The Save As dialog box appears.
4. In the location box at the top of the window, type **http://contoso-appsrv/sites/BICenter/Documents**.

 **Note:**

It might take some time for the Save As dialog box to refresh and show the site content.

5. In the **File name** box, type **ContosoPromotions.xlsx**.
6. Select the **Open with Excel in the browser** check box, and then click **Save**.
A browser window opens and displays a cached version of the ContosoPromotions workbook.
7. In the browser window, click a slicer, such as one that has an August date. Notice that the word “school” is misspelled as “scholl.” This is an error in the underlying database that we will correct, and then you can see how data refresh works.
Close the browser window.

The next step is to configure data refresh settings for the PowerPivot workbook.

To configure data refresh settings for the PowerPivot workbook

1. Open a web browser and navigate to the Business Intelligence Center Documents library. For example, we use <http://contoso-appsrv/sites/bicenter/documents>.
2. Point to the ContosoPromotions file, click the down arrow that appears, and then click **Manage PowerPivot Data Refresh**.
3. On the **Manage Data Refresh** page, select the **Enable** check box, and then click **OK**.

You have successfully installed and configured PowerPivot for SharePoint.

To see how the slicers work, click different slicers. The PivotChart report is updated to display information for that particular Start Date. To apply more than one slicer, hold down the Ctrl key, click the slicers that you want to use, and then release the Ctrl key and the mouse.

The next step is to verify that data refresh is working correctly.

Test data refresh

To confirm that data refresh works for PowerPivot workbooks, we follow these steps:

- Refresh the data currently displayed in the browser on the Contoso-Client computer
- Change a value in the ContosoRetailDW database
- Refresh the data displayed in the browser on Contoso-Client again and confirm that the new information is displayed

First, we refresh the existing data. Use the following procedure to refresh the data in the browser.

To refresh the ContosoPromotions workbook in a browser window

1. Begin with the ContosoPromotions workbook open in a browser window.
In the browser, on the **Data** drop-down list, click **Refresh All Connections**.

 **Note:**

If a warning message appears, click **OK**.

If PowerPivot for SharePoint is configured correctly, the data will refresh without error, although we will not see any changes in data values at this point. The next step is to change a value in the ContosoRetailDW database and confirm that the changes appear in the workbook.

To update data in the ContosoRetailDW database

1. Log on to Contoso-SQL by using the Contoso\SQLAdmin account.

2. Click **Start**, click **All Programs**, click **Microsoft SQL Server 2008 R2**, and then click **SQL Server Management Studio**.
3. On the **Connect to Server** dialog box, select **Database Engine** for the **Server type**, and then click **Connect**.
4. In the toolbar, click **New Query**.
5. Copy the following query to the query window:

```
USE [ContosoRetailDW]
GO
UPDATE dbo.DimPromotion set dbo.DimPromotion.PromotionName = 'European Back-to-School
Promotion' where dbo.DimPromotion.PromotionName = 'European Back-to-Scholl Promotion'
GO
UPDATE dbo.DimPromotion set dbo.DimPromotion.PromotionDescription = 'European Back-to-
School Promotion' where dbo.DimPromotion.PromotionDescription = 'European Back-to-Scholl
Promotion'
GO
```

6. In the toolbar, click **Execute**.

The next step is to return to the Contoso-Client virtual machine and refresh ContosoPromotions.xlsx in the browser window.

 **Note:**

If you see a warning that the page has expired, click **OK** and restart the procedure.

To refresh the ContosoPromotions workbook

1. Log on to Contoso-Client computer by using the Contoso\Susan.Burk account.
2. Open a Web browser, navigate to the Business Intelligence Center Documents library, and open the ContosoPromotions.xlsx file.

For example, we use the Web site address <http://contoso-appsrv/sites/bicenter/documents/contosopromotions.xlsx>.

The workbook opens in a browser window.

3. In the browser, on the **Data** drop-down list, click **Refresh All Connections**.

 **Note:**

If a warning message appears, click **OK**.

4. In the slicer section, click an August date.
Notice that the report now displays the correct spelling of “school.”

Concepts

[Configuring a BI infrastructure: Hands-on labs](#)

Other Resources

[PowerPivot for SharePoint \(http://go.microsoft.com/fwlink/p/?LinkId=226555\)](http://go.microsoft.com/fwlink/p/?LinkId=226555)

Configure Visio Services for a BI test environment

Published: May 26, 2011

Summary: This lab covers how to deploy a Visio Services service application and how to configure data access for users connecting data to shapes in Visio.

Important:

This article is part of the [Configuring a BI infrastructure: Hands-on labs](#) series. To complete the steps in this article, you must first have completed:

- All steps in the [Create a baseline environment for a BI test environment](#) series of articles.

Visio Services in Microsoft SharePoint Server 2010 is a service application that lets users share and view Microsoft Visio Web drawings. The service also enables data-connected Microsoft Visio 2010 Web drawings to be refreshed and updated from various data sources.

This lab consists of three sections:

- **Deploy Visio Services:** In this section, we deploy the Visio Services service application on the Microsoft SharePoint Server 2010 farm.
- **Configure Visio Services Global Settings:** In this section, we configure the cache settings for Visio Services so that we can easily demonstrate data refresh in later labs.
- **Configure Visio client access:** In this section, we configure user data access from Microsoft Visio Premium 2010.

Video demonstration

This video shows how to configure Visio Services for use in these labs.



Running time: 10:03



[Watch the video.](#)

For an optimal viewing experience, [download the video.](#)

Right-click the link, and then click **Save Target As** to download a copy. Clicking the link opens a .wmv file in the default video viewer for full-resolution viewing.

Deploy Visio Services

Deploying Visio Services consists of the following steps:

- Creating an Active Directory account for the application pool under which the Visio Services service application will run.
- Registering that account as a managed account in SharePoint Server 2010.
- Starting the Visio Graphics Service.
- Creating a Visio Services service application.

The first step in deploying Visio Services is to create an account in the Active Directory directory service to run the application pool for the Visio Services service application. Use the following procedure to create the account.

To create an account for the application pool

1. Log on to Contoso-DC by using the Contoso\administrator account.
2. On the Contoso-DC virtual machine, click **Start**, click **Administrative Tools**, and then click **Active Directory Users and Computers**.
3. Expand the **contoso.local** node.
4. Right-click **Users**, click **New**, and then click **User**.
5. In the **Full name** text box and the **User logon name** text box, type **VisioAppPool**.
6. Click **Next**.
7. In the **Password** and **Confirm password** text boxes, type a password for the account.
8. Clear the **User must change password at next logon** check box.
9. Select the **Password never expires** check box.
10. Click **Next**.
11. Click **Finish**.
12. Log off Contoso-DC.

Once you have created the account, it must be registered as a managed account in SharePoint Server 2010. Doing so makes the account available to service applications when you create them. Use the following procedure to register the managed account.

To register a managed account

1. Log in to Contoso-AppSrv using the Contoso\FarmAdmin account.
2. Click **Start**, click **All Programs**, click **Microsoft SharePoint 2010 Products**, and then click **SharePoint 2010 Central Administration**.
3. On the Central Administration home page, in the left navigation, click **Security**.
4. On the Security page, under **General Security**, click **Configure managed accounts**.
5. On the Managed Accounts page, click **Register Managed Account**.
6. In the User name text box, type **Contoso\VisioAppPool**.
7. In the **Password** text box, type the password for the Contoso\VisioAppPool account.
8. Click **OK**.

By default, the application pool account does not have the required access to the SharePoint content database. Access to this database is required for rendering data-connected Web drawings. Use the following procedure to grant the required database access to the application pool account.

To grant content database access to the managed account

1. On Contoso-AppSrv, click **Start**, click **All Programs**, click **Microsoft SharePoint 2010 Products**, right-click **SharePoint 2010 Management Shell**, and then click **Run as Administrator**.
2. At the Windows PowerShell Command Prompt, type the following (press Enter after each line):
`Windows PowerShell`
`$w = Get-SPWebApplication -identity http://contoso-appsrv`
`$w.GrantAccessToProcessIdentity("Contoso\VisioAppPool")`

Once you have granted database access to the application pool account, you must start the Visio Graphics Service. This is the SharePoint Server 2010 service that performs all processing and activities associated with Visio Services.

You must start this service on at least one application server. In a production environment, you would choose a server or servers on which to run the service, depending on your capacity requirements.

Use the following procedure to start the Visio Graphics Service.

To start the Visio Graphics Service

1. On the Central Administration home page, under **System Settings**, click **Manage services on server**.
2. Above the **Service** list, click the **Server** drop-down list, and then click **Change Server**.
Note that the application server, Contoso-AppSrv, is listed together with Contoso-SQL. In a farm with multiple application servers, you would use this dialog box to select the server where you want to run Secure Store Service, and then start the service as shown here.
3. Click **CONTOSO-APPSRV**.
4. In the **Service** list, click **Start** next to **Visio Graphics Service**.

Once the Visio Graphics Service has been started, you must create a Visio Services service application. Use the following procedure to create the service application.

To create a Visio Graphics Service service application

1. On the Central Administration home page, in the **Application Management** section, click **Manage service applications**.
2. On the Manage Service Applications page, click **New**, and then click **Visio Graphics Service**.
3. In the **Visio Graphics Service Application Name** section, type **Visio Services** in the text box.
4. Select the **Create new application pool** option and type **VisioServicesAppPool** in the **Application pool name** text box.
5. Select the **Configurable** option, and from the drop-down list, select **CONTOSO\VisioAppPool**.
6. Click **OK**.

Once the service application has been created, the next step is to configure the data refresh settings in Visio Services Global Settings.

Configure Visio Services Global Settings

To efficiently demonstrate data refresh in the following Visio Services labs, we must change the default cache settings to allow for immediate data refresh.

To configure the Visio Services minimum cache age

1. On the Central Administration home page, under **Application Management**, click **Manage service applications**.
2. In the list of service applications, click **Visio Services**.
3. Click **Global Settings**.
4. In the **Minimum Cache Age** text box, type **0**.
5. Click **OK**.

In a production environment, setting the minimum cache age to zero (0) could put unnecessary strain on the server. We recommend that you leave the cache settings at their default values for best performance in a production environment. However, for this series of labs we want to be able to show immediate data refresh to validate that we have correctly configured data connectivity.

Once you have finished configuring the cache settings in Visio Services Global Settings, the next step is to configure data access for diagram authors working in Microsoft Visio Professional 2010 and Visio Premium 2010.

Configure Visio client access

In the following Visio Services labs, we will be configuring data refresh for Visio Web drawings by using Secure Store Service. However, be aware that there are differences in the way that Visio Services and the Visio client application authenticate with data sources.

Although Visio Services can use Secure Store Service to authenticate with a data source when rendering a data-connected Web drawing, Visio Professional 2010 and Visio Premium 2010 do not use Secure Store Service for data authentication. Visio Professional 2010 and Visio Premium 2010 require that diagram authors have direct database access in order to link data to shapes in Visio.

In this case, we will create an Active Directory group to contain our diagram authors, and then create a SQL Server logon for that Active Directory group. In the following labs, we will grant the needed database access to this Active Directory group before creating a Visio diagram.

To create an Active Directory group

1. Log on to Contoso-DC by using the Contoso\administrator account.
2. On the Contoso-DC virtual machine, click **Start**, click **Administrative Tools**, and then click **Active Directory Users and Computers**.
3. Expand the **contoso.local** node.
4. Right-click **Users**, click **New**, and then click **Group**.
5. In the **Group Name** text box, type **VisioDiagramAuthors**, and then click **OK**.

Next, we need to add users to the group. In this case, we will add the user Susan Burk to the group because Susan Burk has Contribute access to the Business Intelligence Center where we will be publishing our data-connected Web drawings in the following Visio Services labs.

To populate the VisioDiagramAuthors Active Directory group

1. In **Active Directory Users and Computers**, double-click the **VisioDiagramAuthors** group.
 2. On the **Members** tab, click **Add**.
 3. In the **Enter object names to select** box, type **Contoso\Susan.Burk**, and then click **OK**.
 4. Verify that **Susan Burk** appears in the **Members** list, and then click **OK**.
- Now that the Susan Burk account is added to the VisioDiagramAuthors group, the next step is to create a SQL Server logon for that group.

To create a SQL Server logon

1. Log on to Contoso-SQL by using the Contoso\SQLAdmin account.
2. Click **Start**, click **All Programs**, click **Microsoft SQL Server 2008 R2**, and then click **SQL Server Management Studio**.
3. Connect to the **Database Engine**.
4. Expand the **Security** node.
5. Right-click **Logins**, and then click **New Login**.
6. On the **Login – New** page, click **Search**.
7. On the **Select User or Group** dialog box, click **Object Types**.
8. On the **Object Types** dialog box, select the **Groups** check box, and then click **OK**.
9. On the **Select User or Group** dialog box, in the **Enter the object name to select** box, type **Contoso\VisioDiagramAuthors**, and then click **OK**.
10. On the **Login – New** page, click **OK**.

When you have completed all of the previous procedures, Visio Services will be operational and ready to use. The next step is to configure security access to your data sources. The following labs cover how to configure security access by using Secure Store Service:

- [Configure the Visio Services unattended service account in a BI test environment](#)
- [Configure Visio Services data access by using Secure Store in a BI test environment](#)

Other Resources

[Configure Kerberos authentication for SharePoint 2010 Products \(white paper\)](#)

[Data authentication for Visio Services \(SharePoint Server 2010\)](#)

Configure the Visio Services unattended service account in a BI test environment

Published: May 26, 2011

Summary: Read this example for a demonstration of how to connect data in a remote database to a Visio diagram by using an ODC file.

♦ Important:

This article is part of the [Configuring a BI infrastructure: Hands-on labs](#) series. To complete the steps in this article, you must first have completed:

- All steps in the [Create a baseline environment for a BI test environment](#) series of articles.
- All steps in [Configure Visio Services for a BI test environment](#)

Visio Services in Microsoft SharePoint Server 2010 provides two methods of using Secure Store to refresh data in a data-connected Web drawing. One is by using the unattended service account and the other is by using an Office Data Connection (ODC) file. This lab covers the unattended service account option. For more information about how to use an ODC file, see [Configure Visio Services data access by using Secure Store in a BI test environment](#).

Using the unattended service account involves configuring access to your data for an Active Directory account, storing the credentials for this account in Secure Store, and configuring Visio Services to use this account when it needs to refresh the data in a data-connected Web drawing.

The following steps are required to configure the unattended service account in Visio Services.

- Configure a data access account
- Configure Secure Store
- Configure the Visio Services Global Settings

In this lab, we will also create a small sample table in SQL Server and publish a Web drawing with data connected to the SQL Server table.

Video demonstration

This video shows how to set up the unattended service account for Visio Services.

	<p>Running time: 15:49</p> <p> Watch the video.</p> <p> For an optimal viewing experience, download the video.</p> <p>Right-click the link, and then click Save Target As to download a copy. Clicking the link opens a .wmv file in the default video viewer for full-</p>
--	--

Creating sample data

When you configure the unattended service account, you have to grant the account access to the data source to which your Visio Web drawing will be connected. For the purposes of this lab, we will create a SQL Server table. The table contains some simple data that we can use in a data-connected Web drawing which we will publish to the SharePoint document library in the Business Intelligence Center.

Use the following procedure to create the SQL Server table.

To create a table with sample data

1. Log on to Contoso-SQL by using the Contoso\SQLAdmin account.
2. Click **Start**, click **All Programs**, click **Microsoft SQL Server 2008 R2**, and then click **SQL Server Management Studio**.
3. On the **Connect to Server** dialog box, select **Database Engine** for the **Server type**, and then click **Connect**.
4. On the toolbar, click **New Query**.
5. Copy the following query to the query window:

```
USE [master]
GO
CREATE DATABASE CorporateDirectory;
GO
USE [CorporateDirectory]
GO
CREATE TABLE [dbo].[Office](
  [Name] [varchar] (50) NULL,
  [Office] [varchar] (50) NULL
) ON [PRIMARY]
GO
INSERT INTO Office ([Name], [Office])
VALUES ('John Woods', '1501');
GO
INSERT INTO Office ([Name], [Office])
VALUES ('Susan Burk', '1502');
GO
INSERT INTO Office ([Name], [Office])
VALUES ('Cindy White', '1503');
GO
INSERT INTO Office ([Name], [Office])
VALUES ('David Hamilton', '1504');
GO
```

6. On the toolbar, click **Execute**.

With the sample table created, the next step is to create an Active Directory account for use as the unattended service account.

Configure a data access account

The unattended service account requires an Active Directory account for data access. Use the following procedure to create the account.

To create an Active Directory account for data access

1. Log on to Contoso-DC as Contoso\Administrator.
2. Click **Start**, click **Administrative Tools**, and then click **Active Directory Users and Computers**.
3. Expand the **contoso.local** node.
4. Right-click **Users**, click **New**, and then click **User**.
5. In the **Full name** and **User logon name** text boxes, type **VisioUnattended**.
6. Click **Next**.
7. Type and confirm a password for the account.
8. Clear the **User must change password at next logon** check box.
9. Select the **Password never expires** check box.
10. Click **Next**, and then click **Finish**.

Once the account has been created, the next step is to grant that account read access to the required data. In a production scenario, you would grant access to whatever data source you need to access from your Visio Web drawing. In this lab we will grant access to the sample SQL Server database that we created earlier. Use the following procedure to create a SQL Server logon and grant that logon data reader access to the CorporateDirectory database.

To create a SQL Server logon

1. Log on to Contoso-SQL as Contoso\SQLAdmin.
2. Click **Start**, click **All Programs**, click **Microsoft SQL Server 2008 R2**, and then click **SQL Server Management Studio**.
3. On the **Connect to Server** dialog box, select **Database Engine** as the **Server type**, type **Contoso-SQL** in the **Server name** box, and then click **Connect**.
4. In Object Explorer, expand **Security**.
5. Right-click **Logins**, and then click **New Login**.
6. In the **Login name** box, type **Contoso\VisioUnattended**.
7. Under **Select a page**, click **User Mapping**.
8. Select the **Map** check box for the CorporateDirectory database, and then under **Database role membership for:CorporateDirectory**, select the **db_datareader** check box.
9. Click **OK**.

With the account created and granted the appropriate data access, we can now configure Secure Store.

Configure Secure Store

Secure Store uses a *target application* to define connection parameters and authorized users. The unattended service account is generally considered a catch-all account that is used for general data

access, so usually all users are granted access to the unattended service account through the target application.

Use the following procedure to create a target application for the unattended service account.

To create a target application for the unattended service account

1. Log in to Contoso-AppSrv using the Contoso\FarmAdmin account.
2. Click **Start**, click **All Programs**, click **Microsoft SharePoint 2010 Products**, and then click **SharePoint 2010 Central Administration**.
3. On the SharePoint Central Administration Web site home page, in the **Application Management** section, click **Manage service applications**.
4. Click the **Secure Store Service** service application.
5. On the ribbon, click **New**.
6. In the **Target Application ID** box, type **VisioServicesUnattended**.
7. In the **Display Name** box, type **VisioServicesUnattended**.
8. In the **Contact E-mail** box, type **farmadmin@contoso.local**.

Note:

Although e-mail notifications are not configured in this environment, **Contact E-mail** is a required field.

9. In the **Target Application Type** drop-down list, select **Group**.
10. Click **Next**.
11. Leave the default credential fields, and then click **Next**.
12. On the Specify the membership settings page:
 - a) In the **Target Application Administrators** box, type **Contoso\FarmAdmin**.
 - b) In the **Members** box, type **All Authenticated Users**.

Note:

In a production scenario, you would typically include all users here. You can restrict the users who have access to the unattended service account to a specific Active Directory group if you want, but be aware that only one unattended service account can be created per Visio Services service application.

- c) Click **OK**.

Once the target application has been created, you must specify which credentials should be used by it. The target application credentials are those to which data access has been granted — in our case, the Contoso\VisioUnattended account to which we granted db_datareader access to the CorporateDirectory database.

Use the following procedure to set the credentials for the target application.

To set the credentials for the target application

1. On the Secure Store Service Application page, in the **Target Application ID** column, point to **VisioServicesUnattended**, click the arrow that appears, and then click **Set Credentials**.
2. In the **Windows User Name** box, type **Contoso\VisioUnattended**.
3. Type and confirm the password for the Contoso\VisioUnattended account.
4. Click **OK**.

With the credentials set for the target application, the Secure Store configuration for the unattended service account is complete. The next step is to configure Visio Services to use this target application for the unattended service account.

Configure Visio Services

The unattended service account configuration is part of the Visio Services Global Settings. Use the following procedure to configure the unattended service account in Visio Services.

To configure Visio Services Global Settings

1. On the Central Administration home page, under **Application Management**, click **Manage service applications**.
2. On the Manage Service Applications page, click **Visio Services**.
3. On the Manage the Visio Graphics Service page, click **Global Settings**.
4. On the Visio Graphics Service Settings page, in the **External Data** section, in the **Application ID** box, type **VisioServicesUnattended**.
5. Click **OK**.

With the Visio Services Global Settings configured, setup of the unattended service account is complete. In the next section, we will create a data-connected Web drawing, publish it to a SharePoint document library, and render it by using Visio Services. This enables us to test data refresh by using the unattended service account.

Grant database access to the diagram author

When Visio Services renders a data-connected Web drawing, it can use Secure Store and the unattended service account to refresh the data. However, Microsoft Visio does not use Secure Store or the unattended service account, but instead requires the user to have direct database access to work with a data-connected diagram. Because of this, in order to create a data-connected diagram in Visio, we must first grant Read access to the CorporateDirectory database to the user who will create the diagram.

In [Configure Visio Services for a BI test environment](#), we created an Active Directory group named VisioDiagramAuthors for granting database access to diagram authors. We must now grant db_datareader access to that group for the CorporateDirectory database.

Use the following procedure to grant database access to the Contoso\VisioDiagramAuthors group.

To grant database access to a user

1. Log on to Contoso-SQL as Contoso\SQLAdmin.
2. Click **Start**, click **All Programs**, click **Microsoft SQL Server 2008 R2**, and then click **SQL Server Management Studio**.
3. Connect to the **Database Engine**.
4. In SQL Server Management Studio, expand **Security**, and then expand **Logins**.
5. Right-click the **Contoso\VisioDiagramAuthors** login, and then click **Properties**.
6. In the pane on the left side, click **User Mapping**.
7. Select the **Map** check box for the **CorporateDirectory** database.

8. In the **Database role membership for: CorporateDirectory** list, select the **db_datareader** check box, and then click **OK**.

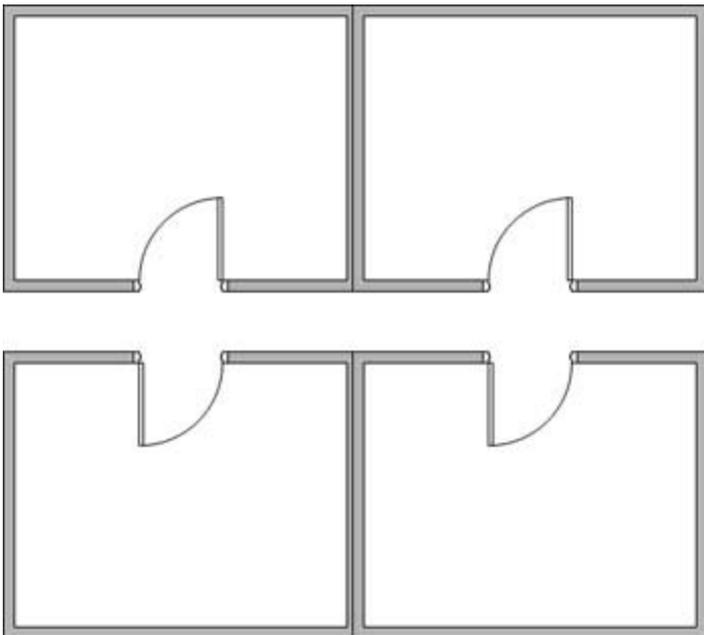
Publishing a data-connected web drawing

To confirm that we have successfully configured Visio Services and the unattended service account, we will create a data-connected Web drawing that uses the CorporateDirectory table that we created in SQL Server.

To create a diagram

1. Log on to Contoso-Client by using the Contoso\Susan.Burk account.
2. Click **Start**, click **All Programs**, click **Microsoft Office**, and then click **Microsoft Visio 2010**.
3. On the Choose a Template page, in the **Template Categories** section, click **Maps and Floor Plans**.
4. Click **Floor Plan**, and then click **Create**.
5. From the Shapes list, drag four Room shapes onto the page and organize them in two rows of two with a small space between the rows.
6. Drag a Door shape onto the bottom wall of each of the top two Room shapes.
7. Drag a Door shape onto the top wall of each of the bottom two Room shapes.

You should now have a diagram that resembles the following:



The next step is to connect the data in the CorporateDirectory database to the floor plan that we just created.

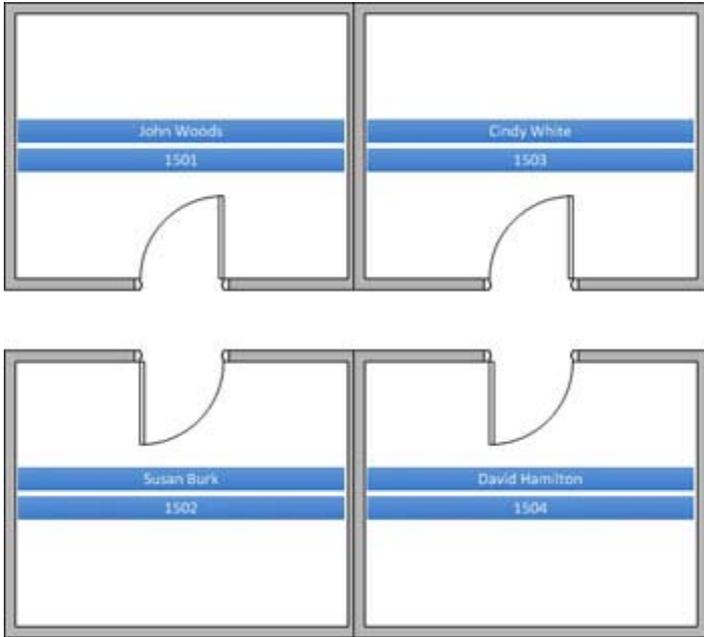
To connect the Visio diagram to data

1. On the ribbon, click the **Data** tab, and then click **Link Data to Shapes**.
2. On the Data Selector page of the wizard, click **Microsoft SQL Server database**, and then click **Next**.

3. On the Connect to Database Server page, type **Contoso-SQL** in the **Server name** box, and then click **Next**.
 4. On the Select Database and Table page select **CorporateDirectory** from the drop-down list, and then click **Next**.
 5. On the Save Data Connection File and Finish page, click **Finish**.
-  **Note:**
- If you are prompted to overwrite the existing data connection file, click **Yes**.
6. On the Select Data Connection page, click **Next**.
 7. On the Connect to data page, click **Next**.
 8. On the Configure Refresh Unique Identifier page, clear the **Name** check box and select the **Office** check box.
 9. Click **Finish**.
 10. On the drawing page:
 - a) From the **External Data** section, drag **John Woods** to the upper-left office in the drawing.
 - b) Select the upper-left office in the drawing, and then on the **Data** tab, click **Data Graphics**, and then click **Edit Data Graphic**.
 - c) Select the **Name** row in the **Data Field** list, and then in the **Default position** section, select **Left** from the **Horizontal** drop-down list.
 - d) With the **Name** row still selected, click **Edit Item**.
 - e) From the **Style** list, select **Heading 3**, and then click **OK**.
 - f) Select the **Office** row in the **Data Field** list, and then in the **Default position** section, ensure that **Horizontal** is set to **Left**.
 - g) With the **Office** row still selected, click **Edit Item**.
 - h) From the **Style** list, select **Heading 3**, and then click **OK**.
 - i) Click **OK**.
 - j) From the **External Data** section, drag **Susan Burk** to the lower-left office in the diagram (under **John Woods**).
 - k) From the **External Data** section, drag **Cindy White** to the upper-right office in the diagram (to the right side of **John Woods**).
 - l) From the **External Data** section, drag **David Hamilton** to the lower-right office in the diagram (under **Cindy White**).

11. Leave the diagram open for the next procedure.

You should now see a diagram similar to the following.



The next step is to publish this diagram to the Business Intelligence Center as a data-connected Web drawing.

To publish a data-connected Web drawing

1. Click **File**, and then click **Save & Send**.
2. Click **Save to SharePoint**.
3. Under **Locations**, click **Browse for a location**.
4. Under **File Types**, click **Web Drawing**.
5. Click **Save As**.
6. On the **Save As** dialog box, type **http://contoso-appsrv/sites/BICenter** in the location box at the top, and then press Enter.

 **Note:**

It may take some time for the dialog box to refresh and show the site content.

7. In the **All Site Content** list, double-click **Documents**.
 8. Ensure that the **Automatically view files in browser** check box is selected.
 9. In the **File name** box, type **Floor plan**, and then click **Save**.
- The Web drawing renders in a browser window.
10. When the drawing is displayed, if a **Refresh Disabled** warning is displayed, click **Enable (always)**.

Leave this browser window open for the data refresh test procedure that follows.

The rendered Web drawing shows the data currently in the CorporateDirectory database. To test the data refresh mechanism, we can modify the data in the Office table in SQL Server and then refresh the Web drawing to see the change.

Use the following procedure to modify the data in SQL Server and then refresh the Web drawing.

 **Note:**

Remain logged in to Contoso-Client as Susan Burk while you do this procedure.

To test Visio Services data refresh

1. Log on to Contoso-SQL by using the Contoso\SQLAdmin account.
2. Click **Start**, click **All Programs**, click **Microsoft SQL Server 2008 R2**, and then click **SQL Server Management Studio**.
3. On the **Connect to Server** dialog box, select **Database Engine** for the **Server type**, and then click **Connect**.
4. In the toolbar, click **New Query**.
5. Copy the following query to the query window:

```
USE [CorporateDirectory]
GO
UPDATE dbo.Office set dbo.Office.Name = 'David Hamilton' where dbo.Office.Office = '1501'
GO
UPDATE dbo.Office set dbo.Office.Name = 'John Woods' where dbo.Office.Office = '1504'
GO
```
6. In the toolbar, click **Execute**.
7. Return to Contoso-Client where the Server Status Web drawing is displayed.
Note that in the original drawing, John Woods is in office 1501 and David Hamilton is in office 1504.
8. On the **Visio Web Access** toolbar, click **Refresh**.
Note that John Woods and David Hamilton have now swapped offices, reflecting the manual changes we made in SQL Server.



Note:

The Visio Services cache settings affect how quickly the new results appear when you refresh the drawing. In the [Configure Visio Services for a BI test environment](#) lab, we set the cache settings to zero (0), allowing immediate refresh. In a production environment, refresh will likely take longer depending on how you configure the cache.

Other Resources

[Plan Visio Services security \(SharePoint Server 2010\)](#)

Configure Visio Services data access by using Secure Store in a BI test environment

Published: May 26, 2011

Summary: Read this example for a demonstration of how to connect data in a remote database to a Visio diagram by using an ODC file.

Important:

This article is part of the [Configuring a BI infrastructure: Hands-on labs](#) series. To complete the steps in this article, you must first have completed:

- All steps in the [Create a baseline environment for a BI test environment](#) series of articles.
- All steps in [Configure Visio Services for a BI test environment](#)

Visio Services in Microsoft SharePoint Server 2010 provides two methods of using Secure Store to refresh data in a data-connected Web drawing. One is by using the unattended service account and the other is by using an Office Data Connection (ODC) file. This lab covers the ODC file option. For more information about how to use the unattended service account, see [Configure the Visio Services unattended service account in a BI test environment](#).

Note:

ODC files must be created in Microsoft Excel 2007 or Microsoft Excel 2010. You must have Excel together with Microsoft Visio Professional 2010 or Microsoft Visio Premium 2010 installed on the Contoso-Client virtual machine to complete this lab.

Using the unattended service account involves configuring access to your data for an Active Directory account, storing the credentials for this account in Secure Store, and configuring Visio Services to use this account when it needs to refresh the data in a data-connected Web drawing.

The following steps are required to configure the unattended service account in Visio Services.

- Configure a data access account
- Configure Secure Store
- Configure the Visio Services Global Settings

In this lab, we will also create a small sample table in SQL Server and publish a Web drawing with data connected to the SQL Server table.

Video demonstration

This video shows how to set up data access for Visio Services using Secure Store.



Running time: 14:41



[Watch the video.](#)

[download the video.](#)

For an optimal viewing experience, Right-click the link, and then click **Save Target As** to download a copy. Clicking the link opens a .wmv file in the default video viewer for full-resolution viewing.

Creating sample data

When configuring data access through Secure Store, you have to grant the account access to the data source to which your Visio Web drawing will be connected. For the purposes of this lab, we will create a SQL Server table. The table contains some simple data which we can use in a data-connected Web drawing which we will publish to a document library in the Business Intelligence Center.

Use the following procedure to create the SQL Server table.

To create a table with sample data

1. Log on to Contoso-SQL by using the Contoso\SQLAdmin account.
2. Click **Start**, click **All Programs**, click **Microsoft SQL Server 2008 R2**, and then click **SQL Server Management Studio**.
3. On the **Connect to Server** dialog box, select **Database Engine** for the **Server type**, and then click **Connect**.
4. On the toolbar, click **New Query**.
5. Copy the following query to the query window:

```
USE [master]
GO
CREATE DATABASE ServerStatus;
GO
USE [ServerStatus]
GO
CREATE TABLE [dbo].[Status](
  [Server] [varchar](50) NULL,
  [Status] [bit] NULL
) ON [PRIMARY]
GO
INSERT INTO Status ([SERVER], [Status])
VALUES ('Seattle', 'TRUE');
GO
INSERT INTO Status ([SERVER], [Status])
VALUES ('New York', 'TRUE');
GO
INSERT INTO Status ([SERVER], [Status])
```

```
VALUES ('London', 'FALSE');  
GO
```

6. On the toolbar, click **Execute**.

With the sample table created, the next step is to create an Active Directory account for use as the data access account.

Configure a data access account

Secure Store maps users designated to have data access to an account that has data access. For this lab, we will create an Active Directory account and give it access to the ServerStatus database that we created in the previous section. Use the following procedure to create the account.

To create an Active Directory account for data access

1. Log into Contoso-DC as Contoso\Administrator.
2. Click **Start**, click **Administrative Tools**, and then click **Active Directory Users and Computers**.
3. Expand the **contoso.local** node.
4. Right-click **Users**, click **New**, and then click **User**.
5. In the **Full name** and **User logon name** boxes, type **VisioDataAccess**.
6. Click **Next**.
7. Type and confirm a password for the account.
8. Clear the **User must change password at next logon** check box.
9. Select the **Password never expires** check box.
10. Click **Next**, and then click **Finish**.

Once the account has been created, the next step is to grant that account read access to the required data. In a production scenario, you would grant access to whatever data source that you need to access from your Visio Web drawing. In this lab we will grant access to the sample SQL Server that we created earlier. Use the following procedure to create a SQL Server logon and grant that logon data reader access to the ServerStatus table.

To create a SQL Server logon

1. Log on to Contoso-SQL as Contoso\SQLAdmin.
2. Click **Start**, click **All Programs**, click **Microsoft SQL Server 2008 R2**, and then click **SQL Server Management Studio**.
3. On the **Connect to Server** dialog box, select **Database Engine** as the **Server type**, type **Contoso-SQL** in the **Server name** box, and then click **Connect**.
4. In Object Explorer, expand **Security**.
5. Right-click **Logins**, and then click **New Login**.
6. In the **Login name** box, type **Contoso\VisioDataAccess**.
7. Under **Select a page**, click **User Mapping**.
8. Select the **Map** check box for the ServerStatus database, and then under **Database role membership for: ServerStatus**, select the **db_datareader** check box.
9. Click **OK**.

Now that the Contoso\VisioDataAccess account has access to the ServerStatus database that we created, the next step is to configure Secure Store.

Configure Secure Store

Configuring Secure Store involves three steps:

- Determine which users should have data access through Secure Store
- Create a Secure Store target application that contains those users
- Map the target application to the credentials that have data access

Generally, you will want to provide data access to multiple users. The easiest way to manage that is by creating an Active Directory group and then populating that group with the users to whom you want to grant data access.

Use the following procedure to create the Active Directory group.

To create an Active Directory group for user data access

1. Log on to Contoso-DC using the Contoso\Administrator account.
2. Click **Start**, click **Administrative Tools**, and then click **Active Directory Users and Computers**.
3. Expand the **contoso.local** node.
4. Right-click **Users**, click **New**, and then click **Group**.
5. In the **Group name** box type **VisioDataAccessGroup**.
6. Click **OK**.

Next, we will populate the group with the users to whom we want to grant data access. In this case, we will use the Susan Burk and John Woods accounts. Use the following procedure to populate the VisioDataAccessGroup.

To populate the data access group

1. In **Active Directory Users and Computers**, in the users list, double-click the **VisioDataAccessGroup** group.
2. On the **Members** tab, click **Add**.
3. On the **Select Users** dialog box, type **Contoso\susan.burk**; **Contoso\john.woods**, and then click **OK**.

The **Members** tab should now show Susan Burk and John Woods as members of the group.

4. Click **OK**.

The next step is to create a Secure Store target application that contains the VisioDataAccessGroup group. Use the following procedure to create the target application.

To create a target application

1. Log on to the Contoso-AppSrv virtual machine using the Contoso\FarmAdmin account.
2. Click **Start**, click **All Programs**, click **Microsoft SharePoint 2010 Products**, and then click **SharePoint 2010 Central Administration**.
3. On the Central Administration home page, under **Application Management**, click **Manage service applications**.
4. Click the **Secure Store Service** service application.

5. On the ribbon, click **New**.
6. In the **Target Application ID** box, type **VisioServicesData**.
7. In the **Display Name** box, type **VisioServicesData**.
8. In the **Contact E-mail** box, type **farmadmin@contoso.local**.



Note:

Although e-mail notifications are not configured in this environment, **Contact E-mail** is a required field.

9. In the **Target Application Type** drop-down list, select **Group**.
10. Click **Next**.
11. Leave the default credential fields, and then click **Next**.
12. On the Specify the membership settings page:
 - a) In the **Target Application Administrators** box, type **Contoso\FarmAdmin**.
 - b) In the **Members** box, type **Contoso\VisioDataAccessGroup**.
 - c) Click **OK**.

Now that the target application has been created, we must associate it with the credentials that have data access (the Contoso\VisioDataAccess account). Use the following procedure to set the credentials for the target application.

To set the credentials for the target application

1. On the Secure Store Service Application page, in the **Target Application ID** column, point to **VisioServicesData**, click the arrow that appears, and then click **Set Credentials**.
2. In the **Windows User Name** box, type **Contoso\VisioDataAccess**.
3. Type and confirm the password for the Contoso\VisioDataAccess account.
4. Click **OK**.

The Secure Store configuration is now complete. In the next section, we will configure data access for the Microsoft Visio user who will be creating data-connected Web drawings.

Grant database access to the diagram author

When Visio Services renders a data-connected Web drawing, it can use Secure Store to refresh the data. However, Excel and Visio do not use Secure Store, but instead require the user to have direct database access to work with an ODC file or a data-connected diagram. Because of this, we must first grant Read access to the ServerStatus database to the user who will create the diagram.

In [Configure Visio Services for a BI test environment](#), we created an Active Directory group named VisioDiagramAuthors for granting database access to diagram authors. We must now grant db_datareader access to that group for the ServerStatus database.

Use the following procedure to grant database access to the Contoso\VisioDiagramAuthors group.

To grant database access to a user

1. Log on to Contoso-SQL by using the Contoso\SQLAdmin account.
2. Click **Start**, click **All Programs**, click **Microsoft SQL Server 2008 R2**, and then click **SQL Server Management Studio**.
3. Connect to the **Database Engine**.

4. In SQL Server Management Studio, expand **Security**, and then expand **Logins**.
5. Right-click the **Contoso\VisioDiagramAuthors** logon, and then click **Properties**.
6. In the pane on the left side, click **User Mapping**.
7. Select the **Map** check box for the **ServerStatus** database.
8. In the **Database role membership for: ServerStatus** list, select the **db_datareader** check box, and then click **OK**.

With configuration of database access for the Contoso\VisioDiagramAuthors group complete, the next step is to create an Office Data Connection file.

Create an Office Data Connection file

Visio cannot create an Office Data Connection (ODC) file, so we must create one in Excel, publish it to a data connection library, and then connect to it from Visio.

Use the following procedure to create and publish the ODC file in Excel.

To create and publish an ODC file

1. Log on to Contoso-Client as Contoso\Susan.Burk.
 2. Click **Start**, click **All Programs**, click **Microsoft Office**, and then click **Microsoft Excel 2010**.
 3. In Excel, on the **Data** tab, click **From Other Sources**, and then click **From SQL Server**.
 4. In the **Server name** box, type **Contoso-SQL**, and then click **Next**.
 5. From the **Select the database that contains the data you want** list, select **ServerStatus**, and then click **Next**.
 6. On the Save Data Connection File and Finish page, click **Finish**.
-  **Note:**
If you are prompted to overwrite the ODC file, click **Yes**.
7. On the **Import Data** dialog box, select the **Table** option, and then click **OK**.
 8. On the **Data** tab, click **Connections**.
 9. Select the **ServerStatus** data connection, and then click **Properties**.
 10. On the **Connection Properties** dialog box, on the **Definition** tab, click **Authentication Settings**.
 11. Select the **SSS** option, and in the **SSS ID** box, type the name of the Secure Store target application, **VisioServicesData**.
 12. Click **OK**.
 13. On the **Connection Properties** dialog box, click **Export Connection File**.
 14. In the **File Save** dialog box, type **http://Contoso-AppSrv/sites/BICenter** in the URL box, and then press Enter.
-  **Note:**
It may take some time for the dialog box to refresh and show the site content.
15. Double-click **Data Connections**.
 16. In the **File name** box, type **ServerStatus.odc**, and then click **Save**.
 17. On the **Web File Properties** dialog box, select **Office Data Connection File** from the **Content Type** drop-down list, and then click **OK**.

18. On the **Connection Properties** dialog box, click **Cancel**.
19. On the **Workbook Connections** dialog box, click **Close**.
20. Exit Excel.

 **Note:**

There is no need to save the Excel workbook. We have exported the ODC file and that is all we need to create a data connection from Visio.

Remain logged on to the Contoso-Client virtual machine as Susan Burk.

Now that the ODC file has been created and published, we can create a data-connected Web drawing.

Create a data-connected Web drawing by using an ODC file

In this section, we create a data-connected Web drawing, and then publish it to the document library in the Business Intelligence center. This helps us confirm that data refresh through Secure Store is working correctly.

Use the following procedure to create the Web drawing.

To create a data-connected Web drawing by using an ODC file

1. Click **Start**, click **All Programs**, click **Microsoft Office**, and then click **Microsoft Visio 2010**.
2. On the Choose a Template page, in the **Template Categories** section, click **Network**.
3. Click **Detailed Network Diagram**, and then click **Create**.
4. On the ribbon, click the **Data** tab, and then click **Link Data to Shapes**.
5. On the Data Selector page of the wizard, click **Previously created connection**, and then click **Next**.
6. On the Select Data Connection page, click **Browse**.
7. On the **Existing Connections** dialog box, click **Browse for More**.
8. In the **Data Selector** dialog box, type **http://Contoso-AppSrv/sites/BICenter** in the URL box, and then press Enter.

 **Note:**

It may take some time for the dialog box to refresh and show the site content.

9. Double-click **Data Connections**.
10. Click the **ServerStatus** data connection, and then click **Open**.
11. On the Select Data Connection page, click **Finish**.
12. On the blank drawing page:
 - Drag three Server icons from the **Shapes** area onto the page.
 - Drag each row from the data table in the **External Data** section to one of the shapes.
Each shape should now have a data graphic connected to it indicating the server name and status (1 or 0).

You should now have a diagram similar to the following.



Server	Seattle
Status	1



Server	New York
Status	1



Server	London
Status	0

The next step is to publish the diagram as a data-connected Web drawing and then confirm that data refresh is working correctly.

Use the following procedure to publish the drawing.

To publish a data-connected Web drawing

1. Click **File**, and then click **Save & Send**.
2. Click **Save to SharePoint**.
3. Under **Locations**, click **Browse for a location**.
4. Under **File Types**, click **Web Drawing**.
5. Click **Save As**.
6. On the **Save As** dialog box, type **http://Contoso-AppSrv/sites/BICenter** in the location box at the top, and then press Enter.

 **Note:**

It may take some time for the dialog box to refresh and show the site content.

7. In the **All Site Content** list, double-click **Documents**.
8. In the **File name** box, type **Server Status**, and then click **Save**.
The Web drawing will render in a browser window.
9. When the drawing is displayed, if a **Refresh Disabled** warning is displayed, click **Enable (always)**.
Note the server statuses displayed:

- Seattle – Online (1)
- New York – Online (1)
- London – Offline (0)

Leave this browser window open for the data refresh test procedure that follows.

The rendered Web drawing shows the data currently in the ServerStatus database. To test the data refresh mechanism, we can modify the data in the Status table in SQL Server and then refresh the Web drawing to see the change.

Use the following procedure to modify the data in SQL Server and then refresh the Web drawing.

 **Note:**

Remain logged on to Contoso-Client as Susan Burk while you do this procedure.

To test Visio Services data refresh

1. Log into Contoso-SQL using the Contoso\SQLAdmin account.
2. Click **Start**, click **All Programs**, click **Microsoft SQL Server 2008 R2**, and then click **SQL Server Management Studio**.
3. On the **Connect to Server** dialog box, select **Database Engine** for the **Server type**, and then click **Connect**.
4. In the toolbar, click **New Query**.
5. Copy the following query to the query window:

```
USE [ServerStatus]
GO
UPDATE dbo.Status set dbo.Status.status = 1 where dbo.Status.server = 'London'
GO
```
6. In the toolbar, click **Execute**.
7. Return to Contoso-Client where the Server Status Web drawing is displayed.
Note that the London server still shows Offline (0).
8. On the **Visio Web Access** toolbar, click **Refresh**.
Note that the London server now shows Online (1), reflecting the manual changes we made in SQL Server.

 **Note:**

The Visio Services cache settings affect how quickly the new results appear when you refresh the drawing. In this lab, we set the cache settings to zero (0), allowing immediate refresh. In a production environment, refresh will likely take longer depending on how you configure the cache.

Other Resources

[Plan Visio Services security \(SharePoint Server 2010\)](#)

Configure PerformancePoint Services for a BI test environment

Published: May 26, 2011

Important:

This article is part of the [Configuring a BI infrastructure: Hands-on labs](#) series. To complete the steps in this article, you must first have completed:

- All steps in the [Create a baseline environment for a BI test environment](#) series of articles.

PerformancePoint Services in Microsoft SharePoint Server 2010 is a performance-management service that you can use to monitor and analyze your business by using dashboards, scorecards, reports, and key performance indicators (KPIs).

Deploying PerformancePoint Services consists of the following steps:

- Creating an Active Directory account for the application pool under which the PerformancePoint Services service application will run
- Registering that account as a managed account in Microsoft SharePoint Server 2010
- Starting the PerformancePoint Service
- Creating a PerformancePoint Services service application

The first step in deploying PerformancePoint Services is to create an account in the Active Directory directory service to run the application pool for the PerformancePoint Services service application. Use the following procedure to create the account.

To create an account for the application pool

1. Log in to Contoso-DC by using the Contoso\administrator account.
2. On the Contoso-DC virtual machine, click **Start**, click **Administrative Tools**, and then click **Active Directory Users and Computers**.
3. Expand the **contoso.local** node.
4. Right-click **Users**, click **New**, and then click **User**.
5. In the **Full name** box and the **User logon name** box, type **PPSAppPool**.
6. Click **Next**.
7. In the **Password** and **Confirm password** boxes, type a password for the account.
8. Clear the **User must change password at next logon** check box.
9. Select the **Password never expires** check box.
10. Click **Next**.
11. Click **Finish**.
12. Log off Contoso-DC.

Once the Active Directory account has been created, it must be registered in SharePoint Server 2010 before it can be used to run an application pool. Use the following procedure to register the account.

To register a managed account

1. Log on to Contoso-AppSrv by using the Contoso\FarmAdmin account.
2. Click **Start**, click **All Programs**, click **Microsoft SharePoint 2010 Products**, and then click **SharePoint 2010 Central Administration**.
3. On the SharePoint Central Administration Web site home page, in the left navigation, click **Security**.
4. On the Security page, under **General Security**, click **Configure managed accounts**.
5. On the Managed Accounts page, click **Register Managed Account**.
6. In the **User name** box, type **Contoso\PPSAppPool**.
7. In the **Password** box, type the password for the Contoso\PPSAppPool account.
8. Click **OK**.

By default, the application pool account does not have the required access to the SharePoint content database. Access to this database is required by PerformancePoint Services. Use the following procedure to grant the required database access to the application pool account.

To grant content database access to the managed account

1. On Contoso-AppSrv, click **Start**, click **All Programs**, click **Microsoft SharePoint 2010 Products**, right-click **SharePoint 2010 Management Shell**, and then click **Run as Administrator**.
2. At the Windows PowerShell Command Prompt, type the following and press Enter after each line:

```
$w = Get-SPWebApplication -identity http://contoso-appsrv  
$w.GrantAccessToProcessIdentity("Contoso\PPSAppPool")
```

Once you have granted database access to the application pool account, you must start the PerformancePoint Service. This is the SharePoint Server 2010 service that performs all processing and activities associated with PerformancePoint Services.

You must start this service on at least one application server. In a production environment, you would choose a server or servers on which to run the service, depending on your capacity requirements.

Use the following procedure to start the PerformancePoint Service.

To start the PerformancePoint Service

1. On the Central Administration home page, under **System Settings**, click **Manage services on server**.
2. Above the **Service** list, click the **Server** drop-down, and then click **Change Server**.
Note that the application server, Contoso-AppSrv, is listed together with Contoso-SQL. In a farm that has multiple application servers, you would use this dialog box to select the server where you want to run Secure Store Service, and then start the service as shown later in this article.
3. Click **CONTOSO-APPSRV**.
4. In the **Service** list, click **Start** next to **PerformancePoint Service**.

Once the PerformancePoint Service has been started, you must create a PerformancePoint Services service application. Use the following procedure to create the service application.

To create a PerformancePoint Services service application

1. On the Central Administration home page, under **Application Management**, click **Manage service applications**.

2. On the Manage Service Applications page, click **New**, and then click **PerformancePoint Service Application**.
3. In the **Name** section, type **PerformancePoint Services** in the box.
4. Select the **Add this service application's proxy to the farm's default proxy list** check box.
5. Select the **Create new application pool** option and type **PPSAppPool** in the **Application pool name** box.
6. Select the **Configurable** option and, from the drop-down list, select **CONTOSO\ppsappool**.
7. Click **Create**.
8. When the service application has been successfully created, click **OK**.

When you have completed all of the previous procedures, PerformancePoint Services is operational and ready to use. The next step is to configure security access to your data sources. The following lab covers configuring security access by using Secure Store Service:

- [Configure data access for PerformancePoint Services](#)

Configure data access for PerformancePoint Services

Published: May 26, 2011

Important:

This article is part of the [Configuring a BI infrastructure: Hands-on labs](#) series. To complete the steps in this article, you must first have completed:

- All steps in the [Create a baseline environment for a BI test environment](#) series of articles.
- All steps in [Configure PerformancePoint Services for a BI test environment](#)

PerformancePoint Services uses an unattended service account to connect to database servers. By using the unattended service account involves configuring an Active Directory account access to your data, storing the credentials for this account in Secure Store, and configuring PerformancePoint Services to use this account to access data.

The following steps are required to configure data access in PerformancePoint Services.

- [Configure a data access account](#)
- [Configure the unattended service account](#)
- [Verify that user permissions are configured correctly](#)

The first step is to create an Active Directory account for use as the unattended service account.

Configure a data access account

To configure a data access account for PerformancePoint Services, we begin by creating an Active Directory account.

To create an Active Directory account for data access

1. Log into Contoso-DC as Contoso\Administrator.
2. Click **Start**, click **Administrative Tools**, and then click **Active Directory Users and Computers**.
3. Expand the **contoso.local** node.
4. Right-click **Users**, click **New**, and then click **User**.
5. In the **Full name** and **User logon name** text boxes, type **PPSUnattended**.
6. Click **Next**.
7. Type and confirm a password for the account.
8. Clear the **User must change password at next logon** check box.
9. Select the **Password never expires** check box.
10. Click **Next**, and then click **Finish**.

Next, we create a SQL Server logon. This account will be used to view data that is stored in SQL Server.

To create a SQL Server logon

1. Log in to Contoso-SQL as Contoso\SQLAdmin.
2. Click **Start**, click **All Programs**, click **Microsoft SQL Server 2008 R2**, and then click **SQL Server Management Studio**.
3. On the **Connect to Server** dialog box, select **Database Engine** as the **Server type**, type **Contoso-SQL** in the **Server name** text box, and then click **Connect**.
4. In Object Explorer, expand **Security**.
5. Right click **Logins**, and then click **New Login**.
6. In the **Login name** text box, type **Contoso\PPSUnattended**.
7. Under **Select a page**, click **User Mapping**.
8. Select the **Map** check box for the ContosoRetailDW database, and then under **Database role membership for: ContosoRetailDW**, select the **db_datareader** check box.
9. Click **OK**.

Now that the data access account is configured, the next step is to configure the unattended service account for PerformancePoint Services.

Configure the unattended service account

To configure the unattended service account, we begin by specifying an unattended service account for PerformancePoint. We do this by editing PerformancePoint Services Global Settings.

To configure PerformancePoint Services Global Settings

1. Log into Contoso-AppSrv as Contoso\FarmAdmin.
2. Click **Start**, click **All Programs**, click **Microsoft SharePoint 2010 Products**, and then click **SharePoint 2010 Central Administration**.
3. On the Central Administration home page, under **Application Management**, click **Manage service applications**.
4. On the Manage Service Applications page, click **PerformancePoint Services**.
5. On the Manage the PerformancePoint Services page, click **PerformancePoint Service Application Settings**.
6. On the PerformancePoint Service Application Settings page, in the **SecureStore and Unattended Service Account** section:
 - a) In the **User Name** text box, type **Contoso\PPSUnattended**.
 - b) In the **Password** text box, type the password for the Contoso\PPSUnattended account.
7. Click **OK**.

Now that we have configured PerformancePoint Services, the next step is to test connectivity. We do this by creating a PerformancePoint data connection.

To test PerformancePoint Services connectivity

1. In the Business Intelligence Center (<http://contoso-appsrv/sites/BICenter>), click **Monitor Key Performance**, and then click **Start using PerformancePoint Services**.
The PerformancePoint site template opens.
2. Click **Run Dashboard Designer**.

3. In the **Application Run – Security Warning** dialog box, click **Run**.
Dashboard Designer opens.
4. In the **Workspace Browser**, click **Data Connections**. Then, on the **Create** tab in the ribbon, click **Data Source**.
The Select a Data Source Template dialog box opens.
5. In the **Category** pane, click **All**, and in the **Template** pane, click **SQL Server Table**. Then click **OK**.
The data connection opens for editing.
6. In the center pane, on the **Editor** tab, specify the following settings:
 - a) In the **Connection Settings** section, select **Use Standard Connection**.
 - b) In the **Server** box, type **Contoso-SQL**.
 - c) Use the **Database** list to select **ContosoRetailDW**.
 - d) Use the **Table** list to select **dbo.DimProductCategory**.
7. In the **Data Source Settings** section, click **Test Data Source**. If the connection is successful, then the unattended service account is configured correctly.
8. In the center pane, click the **Properties** tab. In the **Name** box, type **Product Categories**.
9. In the **Workspace Browser**, right-click the data connection, and then click **Save**.
This saves the data connection that you previously created to the Data Connections list in the Business Intelligence Center.
10. In the Business Intelligence Center (<http://contoso-appsrv/sites/bicenter>), click **Data Connections**.
Notice the data source that you created is listed in the Data Connections document library.
11. Close Dashboard Designer. If a Dashboard Designer dialog box opens that prompts you to save changes to dashboard items, click **Don't Save**.



Note:

By default, PerformancePoint dashboard items are saved to the following SharePoint list and libraries in the Business Intelligence Center:

- Data connections are saved to the Data Connections list
- Key performance indicators (KPIs), scorecards, reports, dashboard pages, and dashboard filters are saved to the PerformancePoint Content list
- Published dashboards are saved to the Dashboards document library

By saving items as we create them one at a time, any changes to those items are automatically saved to SharePoint Server. For example, we saved our data connection to SharePoint Server in Step 8.

When you see the Dashboard Designer dialog box that prompts you to save changes to items, you are actually being asked whether you want to create a workspace file that you would then save to your local computer. The workspace file does not contain the actual dashboard items, but does contain definitions of those dashboard items, which is useful for dashboard content migration scenarios that are not covered in these labs.

12. Log off the Contoso-AppSrv computer.

Now that PerformancePoint Services is enabled and configured, the next step is to verify that user permissions are assigned correctly.

Verify that user permissions are configured correctly

During the process of setting up the BI test environment, we created certain accounts and groups, and we assigned permissions for those accounts. These accounts and permissions are summarized in the following table:

User Name	Group	Permissions
Contoso\Jill.Frank	None.	None.
Contoso\John.Woods	BICenterRead	Read Read permissions enable users to view information in the Business Intelligence Center.
Contoso\Susan.Burk	BICenterContribute	Contribute Contribute permissions enable users to view and create items, such as reports, and save them to this site.
Contoso\Cindy.White	BICenterDesign	Design Design permissions enable users to view, create, and publish items that include dashboards.
Contoso\David.Hamilton	BICenterFullControl	Full Control Full Control permissions enable users to view, create, and publish dashboard content, and to view or edit user permissions

To verify that user permissions are configured correctly, we will log on to the Contoso-Client computer by using each user's credentials and attempt to perform one or more tasks that are subject to user permissions restrictions. These procedures help show how permissions work with PerformancePoint Services and the Business Intelligence Center.

We begin by verifying that unauthorized users cannot access the Business Intelligence Center.

Verifying that unauthorized users cannot access the Business Intelligence Center

Contoso\Jill.Frank was not assigned permissions to access the Business Intelligence Center. To verify that unauthorized users cannot view information in the Business Intelligence Center, we attempt to open the Business Intelligence Center by using Jill's user credentials.

To attempt to open the Business Intelligence Center by using an unauthorized account

1. Log into the Contoso-Client computer by using the Contoso\Jill.Frank user account.
2. Open a web browser.
3. In the address line, type **http://contoso-appsrv**.
The main team site opens.
4. In the Quick Launch, click **Business Intelligence Center**.
You receive an **Error: Access Denied** message.
5. Log off the Contoso-Client computer.

The error message indicates that Jill Frank does not have permissions to access the Business Intelligence Center. This confirms that user permissions are configured correctly for this user account.

Next, we will verify that Read permissions are working correctly.

Verifying that Read permissions are configured correctly

John Woods was assigned Read permission, which means he should be able to view, but not edit, content in the Business Intelligence Center. Users who have Read permissions can also open Dashboard Designer. However, they cannot create PerformancePoint dashboard content.

To verify that Read permissions are configured correctly, we will attempt to create a KPI using the Contoso\John.Woods account.

To attempt to create a KPI by using Dashboard Designer

1. Log into the Contoso-Client computer by using the Contoso\John.Woods user account.
2. Open a web browser.
3. In the address line, type **http://contoso-appsrv**.
The main team site opens.
4. In the Quick Launch, click **Business Intelligence Center**.
The Business Intelligence Center opens.
5. In the Business Intelligence Center, click **Monitor Key Performance**, and then click **Start using PerformancePoint Services**.
The PerformancePoint site template opens.
6. Click **Run Dashboard Designer**.
7. In the **Application Run – Security Warning** dialog box, click **Run**.
Dashboard Designer opens.

Important:

Dashboard Designer will open for all users who have at least Read access assigned on the Business Intelligence Center. However, users who have only Read permissions assigned will be unable to create any items by using Dashboard Designer.

8. In the **Workspace Browser**, click **PerformancePoint Content**.
9. Click the **Create** tab, and then click **KPI**.
The Select a KPI Template dialog box opens.
10. Select **Blank KPI**, and then click **OK**.
You receive an error message that indicates that you do not have permissions to create a KPI.
11. Close Dashboard Designer. If a Dashboard Designer dialog box opens that prompts you to save changes to dashboard items, click **Don't Save**.

12. Log off the Contoso-Client computer.

The error message appeared when you tried to create a KPI indicates that John Woods does not have permissions to create items by using Dashboard Designer. This confirms that user permissions are configured correctly for this user account.

Next, we will verify that Contribute permissions are working correctly.

Verifying that Contribute permissions are configured correctly

Susan Burk was assigned Contribute permissions, which means she should be able to create dashboard items, such as reports, scorecards, filters, and dashboard pages. However, Susan should be unable to publish dashboards. To verify that users who have Contribute cannot publish dashboards, we will attempt to create and publish a dashboard that contains a scorecard by using the Contoso\Susan.Burk account.

We begin by creating a basic scorecard that uses fixed values that we will specify.

To create a basic scorecard

1. Log into the Contoso-Client computer by using the Contoso\Susan.Burk user account.
2. Open a web browser.
3. In the address line, type **http://contoso-appsrv**.
The main team site opens.
4. In the Quick Launch, click **Business Intelligence Center**.
The Business Intelligence Center opens.
5. In the Business Intelligence Center, click **Monitor Key Performance**, and then click **Start using PerformancePoint Services**.
The PerformancePoint site template opens.
6. Click **Run Dashboard Designer**.
7. In the **Application Run – Security Warning** dialog box, click **Run**.
Dashboard Designer opens.
8. In the **Workspace Browser**, click **PerformancePoint Content**.
9. Click the **Create** tab, and then click **Scorecard**.
The Select a Scorecard Template dialog box opens.

10. In the **Category** pane, select **Standard**, and in the **Template** pane, select **Fixed Values Scorecard**. Then click **OK**.
The Create a Fixed Values Scorecard wizard opens.
 11. On the Select KPIs to Import page, specify the following:
 - In the **KPI Name** column, select the default text that says “New KPI”, and then type **Unit Sales**.
 - In the **Actual** column, type a number, such as **500**.
 - In the **Target** column, type a number, such as **525**.Then, click **Next**.
 12. On the Locations page, verify that the **Create KPIs in** list has **PerformancePoint Content**, and then click **Finish**.
The scorecard opens for editing.
 13. In the center pane, click the **Properties** tab.
 14. In the **Name** box, type **Sales Scorecard**.
 15. In the **Workspace Browser**, right-click the scorecard, and then click **Save**.
This saves the scorecard to the PerformancePoint Content list in the Business Intelligence Center.
- The basic scorecard is completed. The next step is to create a dashboard page. (Contribute permissions enable users to create but not publish dashboard pages.)

To create a dashboard page

1. On the **Create** tab, in the **Dashboard Items** group, click **Dashboard**.
The Select a Dashboard Page Template dialog box opens.
2. Select **1 Zone**, and then click **OK**.
The dashboard opens for editing.
3. Notice that in the **Workspace Browser**, the text “New Dashboard” is highlighted. Type **Sales Dashboard**, and then press the Enter key to rename the dashboard.
4. In the **Details** pane, expand **Scorecards**, and then expand **PerformancePoint Content**.
5. Drag the **Sales Scorecard** to the zone in the **Dashboard Content** section.
6. In the **Workspace Browser**, right-click the **Sales Dashboard**, and then click **Save**.
This saves the dashboard page to the PerformancePoint Content list in the Business Intelligence Center.

As expected, Susan was able to create a scorecard and a dashboard page. The next step is to attempt to publish the dashboard.

To attempt to publish a dashboard

1. In the **Workspace Browser**, right-click the **Sales Dashboard**, and then click **Deploy to SharePoint**.
The **Deploy To** dialog box opens.
2. Keep the default settings, and then click **OK**.
You receive an error message that indicates that you cannot deploy the dashboard. The message indicates that the document library “sites/BICenter/Dashboards” is unavailable.
3. Close Dashboard Designer. If a Dashboard Designer dialog box opens that prompts you to save changes to dashboard items, click **Don't Save**.

The error message that opened when Susan tried to publish a dashboard indicates that she does not have sufficient permissions to perform that task. This confirms that user permissions are configured correctly for this user account.

Next, we will verify that Design permissions are working correctly.

Verifying that Design permissions are configured correctly

Cindy White was assigned Design permissions, which means she should be able to view, create, and edit dashboard items, such as reports, scorecards, filters, and dashboard pages. In addition, Cindy should be able to publish dashboards. However, users who have Design permissions should be unable to view or edit user permissions for the Business Intelligence Center. To verify that Design permissions are configured correctly, we will first publish the dashboard that we created earlier in this article. Then, we will attempt to view and edit user permissions for the dashboard by using the Contoso\Cindy.White account.

We begin by publishing the Sales Dashboard.

To publish the Sales Dashboard

1. Log into the Contoso-Client computer by using the Contoso\Cindy.White user account.
2. In the address line, type **http://contoso-appsrv**.
The main team site opens.
3. In the Quick Launch, click **Business Intelligence Center**.
The Business Intelligence Center opens.
4. In the Business Intelligence Center, click **Monitor Key Performance**, and then click **Start using PerformancePoint Services**.
The PerformancePoint site template opens.
5. Click **Run Dashboard Designer**.
6. In the **Application Run – Security Warning** dialog box, click **Run**.
Dashboard Designer opens.
7. In the **Workspace Browser**, click **PerformancePoint Content**.
8. In the center pane, on the **SharePoint** tab, double-click **Sales Dashboard** to open it for editing.
9. In the **Workspace Browser**, right-click the **Sales Dashboard**, and then click **Deploy to SharePoint**.
The **Deploy To** dialog box opens.
10. Keep the default settings, and then click **OK**.
The dashboard is published to SharePoint Server and opens in a web browser.
Keep this window open.

The dashboard has published successfully. The next step is to attempt to view and edit user permissions.

There are two ways to view or edit user permissions:

- You can use the Item Permissions toolbar command in a SharePoint list or library
- You can use the Permissions toolbar command in Dashboard Designer

We will attempt to view and edit user permissions by using both methods.

We begin by trying to view and edit permissions by using the Item Permissions toolbar command in the PerformancePoint Content list.

To attempt to view and edit item permissions in a SharePoint list

1. In the browser window where the dashboard is displayed, in the Quick Launch, click **PerformancePoint Content**.
The PerformancePoint Content SharePoint list opens and displays the dashboard items that we created earlier by using the Contoso\Susan.Burk account.
2. Locate an item, such as the Sales Scorecard, and select the check box to the left of the item's name.
3. In the ribbon, click the **Items** tab. Notice that in the **Manage** group, the **Item Permissions** toolbar command is not enabled.
This indicates that Cindy White cannot view or edit user permissions for dashboard items.

Now we attempt to view and edit user permissions by using the Permissions toolbar command in Dashboard Designer.

To attempt to view and edit user permissions in Dashboard Designer

1. In Dashboard Designer, in the **Workspace Browser**, click **PerformancePoint Content**.
2. On the **Home** tab, in the **Item** group, click **Permissions**.
You receive an **Error: Access Denied** message.
The error message indicates that you do not have permissions to view and edit user permissions for PerformancePoint dashboard content.
3. Close the page that displays the error message, and then close Dashboard Designer. If a Dashboard Designer dialog box opens that prompts you to save changes to dashboard items, click **Don't Save**.
4. Log off the Contoso-Client computer.

Cindy White can create and edit dashboard items and publish dashboards, but she cannot view or edit user permissions. This confirms that user permissions are configured correctly for this user account.

Next, we will verify that Full Control permissions are working correctly.

Verifying that Full Control permissions are configured correctly

David Hamilton was assigned Full Control permissions, which means that he can view, create, and edit dashboard items. In addition, David Hamilton can publish dashboards and view or edit user permissions for dashboard content.

We can verify this by viewing user permissions for the Sales Scorecard that was created and published earlier in this article.

We will use two methods to view and edit permissions:

- We will use the Item Permissions toolbar command in the PerformancePoint Content list
- We will use the Permissions toolbar command in Dashboard Designer

To view or edit item permissions in a SharePoint list

1. Log into the Contoso-Client computer by using the Contoso\David.Hamilton user account.
2. In the address line, type **http://contoso-appsrv**.

The main team site opens.

3. In the Quick Launch, click **Business Intelligence Center**.

The Business Intelligence Center opens.

4. In the Quick Launch, click **PerformancePoint Content**.

The PerformancePoint Content SharePoint list opens and displays the dashboard items that we created earlier by using the Contoso\Susan.Burk account.

5. Locate an item, such as the Sales Scorecard, and select the check box to the left of the item's name.
6. In the ribbon, click the **Items** tab, and in the **Manage** group, click the **Item Permissions** toolbar command.

A permissions page opens, where you can view or edit user permissions.

To view or edit user permissions in Dashboard Designer

1. In the browser window, in address line, type **http://contoso-appsrv**.

The main team site opens.

2. In the Quick Launch, click **Business Intelligence Center**.

The Business Intelligence Center opens.

3. In the Business Intelligence Center, click **Monitor Key Performance**, and then click **Start using PerformancePoint Services**.

The PerformancePoint site template opens.

4. Click **Run Dashboard Designer**.

5. In the **Application Run – Security Warning** dialog box, click **Run**.

Dashboard Designer opens.

6. In Dashboard Designer, in the **Workspace Browser**, click **PerformancePoint Content**.

In the center pane, the Unit Sales KPI, Sales Scorecard, and Sales Dashboard are listed.

7. Double-click Sales Scorecard to open it for editing.

8. On the **Home** tab, in the **Item** group, click **Permissions**.

A permissions page opens, where you can view or edit user permissions.

9. Close the permissions page, and then close Dashboard Designer. If a Dashboard Designer dialog box opens that prompts you to save changes to dashboard items, click **Don't Save**.

10. Log off the Contoso-Client computer.

You have successfully configured PerformancePoint Services.

Concepts

[Set up accounts for a BI test environment](#)

[Configure a Business Intelligence Center for a test environment](#)

Enable Reporting Services in an integrated SharePoint Server BI test environment

In our baseline configuration, SQL Server Reporting Services is installed in native mode. To use any of the Reporting Services features on SharePoint Server such as PowerPivot, Access Services, or Report Builder 3.0, you must change your configuration of SQL Server Reporting Services to SharePoint integrated mode. The articles in this section instruct how to change from native to integrated mode and how to configure and start Report Builder 3.0 from the Business Intelligence Center.

In this section:

- [Changing SQL Reporting Services from Native mode to Integrated mode in a BI test environment](#)
- [Configure Report Builder 3.0 for use in SharePoint BI test environment](#)

Changing SQL Reporting Services from Native mode to Integrated mode in a BI test environment

Published: February 7, 2012

In our baseline configuration, SQL Server Reporting Services is installed in native mode. To use any of the Reporting Services features on SharePoint such as PowerPivot, Access Services, or Report Builder 3.0, you must change your configuration of SQL Server Reporting Services to SharePoint integrated mode. This article describes the steps that are required to switch to integrated mode.

Install SharePoint Server 2010 components on the Reporting Server computer

To use a reporting server in the SharePoint farm, you first have to install SharePoint Server components on the Contoso-SQL computer.

Note:

You must have an internet connection to perform this procedure. Refer to [Create a baseline environment for a BI test environment](#) for instructions.

To install SharePoint Server 2010 prerequisites

1. Log on to the Contoso-SQL virtual machine with the Contoso\SQLAdmin account.
2. On the SharePoint Server 2010 DVD, run default.hta.
3. On the SharePoint Server 2010 opening page, click **Install software prerequisites**.
4. Follow the wizard to complete installation of all prerequisites.

Note:

Depending on your configuration, you may have to restart your computer during this process.

5. When the wizard has finished, click **Finish**.

Once the prerequisites are installed, you can install SharePoint Server 2010 itself. Perform the following procedure to install SharePoint Server 2010 on Contoso-AppSrv.

To install SharePoint Server 2010

1. On the SharePoint Server 2010 DVD, run default.hta.
2. On the SharePoint Server 2010 opening page, click **Install SharePoint Server**.
3. On the Enter your Product Key page, type your product key, and then click **Continue**.
4. On the Read the Microsoft Software License Terms page, read the license agreement and accept the terms by selecting the **I accept the terms of this agreement** check box.
5. Click **Continue**.

6. On the Choose the installation you want page, click **Server Farm**.
7. On the Server Type page, select the **Complete – Install all components option**.
8. Click **Install Now**.
9. On the Run Configuration Wizard page, leave the **Run the SharePoint Products and Technologies Configuration Wizard now** check box selected, and then click **Close**.
10. On the Welcome to SharePoint Products page, click **Next**.
11. On the warning dialog box, click **Yes**.
12. On the Connect to a server farm page, select the **Connect to an existing server farm** option, and then click **Next**.
13. On the Specify Configuration Database Settings page:
 - a) In the **Database server** box, type the name of the database server (Contoso-SQL).
 - b) In the **Database name** text box, keep the default database name of **SharePoint_Config**.
 - c) Type the user name and password of the database access account (Contoso\SQLAdmin).
 - d) Click **Next**.

 **Note:**

If the wizard cannot connect to Contoso-SQL, check the firewall settings in Windows Server.

- e) On the Completing the SharePoint Products and Technologies Configuration Wizard page, click **Next**.
- f) Select **Do not use this machine to host the web site**. Click **OK**.
- g) On the Configuration Successful page, click **Finish**.

Configure SSRS in SharePoint integrated mode

To configure SSRS in SharePoint integrated mode

1. Log on to Contoso-SQL as Contoso\SQLAdmin.
2. Click **Start**, select **All Programs, Microsoft SQL Server 2008 R2, and Configuration Tools**, and then click **Reporting Services Configuration Manager**.
3. In the baseline line configuration, SQL Server Reporting Services is installed on the default instance. The server name CONTOSO-SQL and the report server instance, MSSQLSERVER, are shown as the defaults. Click **Connect**.
4. On the report server status page, notice that the current **Report Server mode** is **Native**.
5. From the left navigation pane, click **Database**.
6. Click **Change Database**.
7. Select **Create a new report server database**, and then click **Next**.
8. Accept defaults for server name and credentials. Click **Next**.
9. In the **Database Name** box type **BILabReportServer** and change **Report Server Mode** to **SharePoint integrated mode**. Click **Next**.
10. Accept the default credentials and then click **Next**.
11. Verify the summary, and make sure that **Report Server Mode** is set to **SharePoint integrated mode**. Click **Next**.

12. Click **Finish**.
13. In the left navigation pane of **Reporting Services Configuration Manager**, click **Web service URL**, and then click the URL link to open it.

 **Note:**

You will receive an error because you must still configure Reporting Services integration in SharePoint Server.

Configure SharePoint Server 2010 for Reporting Services integration

Finish the configuration of integrating Reporting Services with SharePoint Server 2010 by completing the following steps:

To configure SharePoint Server 2010 for Reporting Services integration

1. Log on to Contoso-AppSrv as Contoso\FarmAdmin.
2. Open **SharePoint Central Administration**.
3. On the left navigation pane, click **General Application Settings**. In the center page in the **Reporting Services** section, click **Reporting Services Integration**.
4. In the Report Server Web Service URL field, type **http://CONTOSO-SQL/REPORTSERVER**.
5. In the **Authentication Mode** section, select **Trusted Account**.
6. In the **Credentials** box, enter the user name **CONTOSO\SQLAdmin** and the password.
7. In the **Activate the reporting services feature** section, select **Activate feature in all existing site collections**.
8. Click **OK**.

Concepts

[Create a baseline environment for a BI test environment](#)

[Configure Report Builder 3.0 for use in SharePoint BI test environment](#)

Configure Report Builder 3.0 for use in SharePoint BI test environment

Published: February 7, 2012

When you are using the BI Center template, the Microsoft SQL Server Reporting Services (SSRS) content types are already available. However, as we have switched to SQL Server Reporting Services integration after the initial installation, you must manually enable the SQL Server Reporting Services content types.

Enable content type management

To enable content type management

1. Open the library for which you want to enable multiple content types. On the library menu bar, you should see the following menus: **New**, **Upload**, **Actions**, and **Settings**. If you do not see **Settings**, you do not have permission to add a content type.
2. On the **Library Tools** ribbon tab, click the **Library** tab.
3. On the **Settings** ribbon group, click **Library Settings**.
4. In the **General Settings** section, click **Advanced settings**.
5. In the **Content Types** section, select **Yes** to allow management of content types.
6. Change any other settings that you want, and then click **OK**.

Add Report Server content types

To add Report Server content types to the document library on the BI Center

1. Go the BI Center, and from the Quick Launch pane, click **Documents**.
2. On the **Library Tools** ribbon tab, click the **Library** tab.
3. On the **Settings** ribbon group, click **Library Settings**.
4. In the **Content Types** section, click **Add** from the existing site content types.
5. In the **Select Content Types** section, in **Select site content types from**, click the arrow to select **Reporting Services**.
6. In the **Available Site Content Types** list, click **Report Builder**, and then click **Add** to move the selected content type to the **Content types to add** list.
7. To add **Report Model** and **Report Data Source** content types, repeat steps 5 and 6.
8. Click **OK**.

Concepts

[Create a baseline environment for a BI test environment](#)

[Changing SQL Reporting Services from Native mode to Integrated mode in a BI test environment](#)