

Business Connectivity Services

Hands-on Lab

Released:

Terms of Use

This document is provided “as-is”. Information and views expressed in this document, including URL and other Internet Web site references, may change without notice. You bear the risk of using it.

Some examples depicted herein are provided for illustration only and are fictitious. No real association or connection is intended or should be inferred.

This document does not provide you with any legal rights to any intellectual property in any Microsoft product. You may copy and use this document for your internal, reference purposes.

© 2011 Microsoft Corporation. All rights reserved.

.

**This document reflects current views and assumptions as of the date of development and is subject to change.  Actual and future results and trends may differ materially from any forward-looking statements.  Microsoft assumes no responsibility for errors or omissions in the materials.**

**THIS DOCUMENT IS FOR INFORMATIONAL AND TRAINING PURPOSES ONLY AND IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, WHETHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, AND NON-INFRINGEMENT.**

|  |  |
| --- | --- |
| About the Author | |
| **Author**: | **Ravi Vridhagiri** |
| **Bio**: | As Chief Technology Officer for OnTerra Systems, Ravi Vridhagiri is responsible for development of OnTerra’s new product offerings, and plays a prime role in OnTerra’s technology consulting commissions. He is a Microsoft-certified Technology Specialist in SharePoint application development – with more than 12 years of experience in various technology solution design and project implementations. He has extensive experience in Microsoft technologies, specifically Microsoft SharePoint, Microsoft C#, .NET, and more. He also is a certified Project Management Professional (PMP).  Mr. Vridhagiri earned a Bachelor of Science in Mechanical Engineering from the University of Madras in India in 1999. He went on to earn a Master’s of Business Administration (with specializations in Management of Information Systems and Finance) from the Rutgers University Business School in 2009. |
|  |  |

“About the Authors” is an important item as it establishes the credibility of the text by explaining how much experience the author team has in the field. Add as many “About the Authors” as needed from the Quick Parts Gallery. Change “Author” to a different title, such as “Subject Matter Expert” if that is more appropriate. Include SMEs who assisted with the development of the course. Add this to every Module.

Table of Contents

[Lab Environment 1](#_Toc288592021)

[Lab Overview 2](#_Toc288592022)

[Exercise 1: External Content Types 4](#_Toc288592023)

[Exercise 2: Pass-Through and RevertToSelf Authentication 17](#_Toc288592024)

[Exercise 3: Business Connectivity Services & Office Clients 24](#_Toc288592025)

[Exercise 4: Using Secure Store Services with BCS 34](#_Toc288592026)

[Exercise 5: Export and Import BDC Models 43](#_Toc288592027)

[Exercise 6: Profile Pages, BDC Actions and BCS Search 48](#_Toc288592028)

[Appendix 58](#_Toc288592029)

# Lab Environment

Several paragraphs – or longer – describing an overview of the module including a description of why this content is important and a concise description of the main points of the module

During this lab, you will work in a simulated environment with the following computers or virtual machines:

###### Computers and Virtual Machines Used in This Lab

|  |  |  |
| --- | --- | --- |
| Icon | Computer Name | Description |
|  | DEMO2010A | This computer is configured as a stand-alone server running Windows Server 2008 with SharePoint Server 2010, SQL Server and Visual Studio 2010. |

###### Logon Credentials

The lab environment might require you to log on to the Hands-on Lab Environment using the following credentials, unless specified differently throughout the lab manual:

|  |  |
| --- | --- |
| Username | Password |
| Administrator | pass@word1 |

###### AdventureWorks Database

The AdventureWorks database is a set of sample databases that are currently available for Microsoft SQL Server 2005 and Microsoft SQL Server 2008. The AdventureWorks sample database installer is located on the DEMO2010A virtual machine at **C:\AdventureWorksDB\AdventureWorks2008R2\_RTM.exe** and the instructions can be found in the Appendix of this document.

# Lab Overview

Several paragraphs – or longer – describing an overview of the lab including a description of the lab and why certain topics are covered. This is also called the ‘LAB ABSTRACT’ that will be used for hand-off to conferences as part of the content hand-off process

###### Abstract

Business Connectivity Services includes a set of presentation features, a connectivity framework and tooling within SharePoint Designer and Visual Studio that enables developers and IT Pros to connect to external data and services and to surface this data in SharePoint and Office 2010.

During this lab, you will perform several exercises to achieve a better understanding of the capabilities and functionality of Business Connectivity Services in SharePoint 2010.

In the first exercise you will connect to the customers table in the Adventure Works database. You will start by defining an external content type in SharePoint Designer 2010 and finish by creating a new External List using the external content type.

You will then learn to use Pass-through and RevertToSelf authentication security modes for accessing services and databases.

You will learn to leverage the Business Connectivity Service's rich client extensions to allow users to interact with external systems from the Microsoft Office 2010 client applications such as Microsoft Outlook 2010 and Microsoft Word 2010.

You will use the new single sign-on service in SharePoint 2010 - the Secure Store Service - to store a set of credentials and use it to access the Adventure Works database.

You will learn to use the SharePoint Designer 2010 and SharePoint Central Administration to export, import, and manage BDC models.

By the end of this lab you will have created Profile Pages, BDC actions, and configured SharePoint search to search the external data.

###### Learning Objectives

After completing the exercises in this lab, you will be able to:

* Create external content types (ECT) using SharePoint Designer 2010
* Use Pass-through and RevertToSelf authentication modes in BCS
* Link the BCS data in office client applications such as Microsoft Word and Outlook.
* Store user credentials in a secure store and use it to access the data in a SQL Server database.
* Export, import and manage BDC models.
* Create Profile Pages, BCD actions and configure SharePoint search to search the external data.

**Estimated time to complete this lab: *120* minutes**

# Exercise : External Content Types

Each exercise consists of a scenario and learning objectives, the scenario describes the purpose of the exercices, while the objectives are listed and have bullet points.

#### Scenario

This exercise walks you through building an external content type (ECT) for Business Connectivity Services using SharePoint Designer 2010 without writing any code. You will learn to discover your database, connect to a database table, a view, or a stored procedure, and then return the required data. You will create an external content type named Customer that is based on the DimCustomer table in the Adventure Works sample database.

After completing this exercise, you will be able to:

* Use the Business Connectivity Service application to connect to a SQL database.
* Create external content types.
* Create forms and external lists from an external content type.
* Add, delete and update database data from SharePoint.

|  |  |
| --- | --- |
| Task | Detailed Steps |
|  | Complete these steps by connecting to the computer DEMO2010A. |
| Create external content type  You will be creating an external content type for **Customers** table. A **Contact** type best represents the format of the SharePoint list and is used for Office client integration. | Steps need to have BOLD when you indicate a certain path or a step to click and execute, always use numbering for each of the steps that need to be executed. .   1. Click **Start | All Programs | SharePoint | Microsoft SharePoint Designer 2010** menu 2. Click **Open Site.** 3. Type **http://intranet.contoso.com** as the **Site name** in the **Open Site** dialog box. 4. Click **OK**. 5. On the left pane, under **Site Objects**, select **External Content Types**. 6. On the ribbon, click **External Content Type.** 7. In the External Content Type Information section, select Contact as the **Office Item Type**. 8. Click the **New external content type** link. 9. Type **Customers**, and then hit the Tab key. |
| Configure the database operations.  *By clicking* ***Create All Operations****, you are creating an external content type with read, write, and delete capabilities)*  *Set the CustomerKey as the Primary Key for the external content type. The Office Properties map the columns for use in Office client applications.* | 1. On the ribbon, click Operations **Design View**. 2. Click **Add Connections**. 3. In the **External Data Source Type Selection** dialog box, choose **SQL Server**. C:\Users\ADMINI~1\AppData\Local\Temp\1\SNAGHTML14fd70e9.PNG 4. Click **OK**. 5. In the **SQL Server Connection** dialog box, type the following:    * Database Server: **Demo2010A**    * Database Name: **AdventureWorksDW**    * Select **Connect with User's Identity**      1. Click **OK**. 2. Expand **AdventureWorksDW** in the **Data Source Explorer**. 3. Expand **Tables.** 4. Right-click **DimCustomer**. 5. Click **Create All Operations**. 6. Click **Next**. 7. In the Parameters Configuration, select **CustomerKey, CustomerAlternateKey, FirstName, LastName, BirthDate, EmailAddress** and **Phone**.  C:\Users\ADMINI~1\AppData\Local\Temp\1\SNAGHTML15068a62.PNG 8. Select **FirstName** and set the **Office Property** to **First Name (FirstName)**. C:\Users\ADMINI~1\AppData\Local\Temp\1\SNAGHTML150885a1.PNG 9. Similarly, set the **Office Properties** for the other data source elements as follows:  * LastName: **Last Name (LastName)** * BirthDate: **BirthDay (BirthDay)** * EmailAddress: **Email 1 Address (Email1Addresss)** * Phone: Primary Telephone Number **(PrimaryTelephoneNumber)**  1. Select **CustomerKey**, and then select **Map to Identifier**. C:\Users\ADMINI~1\AppData\Local\Temp\1\SNAGHTML150e841b.PNG 2. Click **Next**. |
| Filter the data coming from the database table.  *The default settings of this virtual machine (Demo2010A) have a throttling mechanism to limit the data flow from exceeding a certain volume to be rendered in a SharePoint list. By setting a filter, You have limited the number of records that will be rendered.*  *The throttling can be increased, however, by using the Powershell command. This is out of scope for this lab.* | 1. Click **Add Filter Parameter**. 2. Select **CustomerKey** as Data Source element. 3. Click **(Click to Add)**. 4. Create a new filter condition as follows:    * Filter Type: **Comparison**    * Operator: **Greater Than**    * Filter Field: **CustomerKey** 5. Click **OK**. 6. Set the Default value to **29400** C:\Users\ADMINI~1\AppData\Local\Temp\SNAGHTML1dc1c30.PNG 7. Click **Finish**. 8. Click the **Save** icon to save the external content type. |
| Create an External List.  *This action creates a SharePoint list that is linked to the DimCustomer table in the Adventure Works database. Changes made to the List or to the database are immediately reflected in both the sources* | 1. On the ribbon, click **Create Lists & Form**. 2. Type **AW Customers** as List Name. 3. Accept the default settings for the **Read Item Operation** and **System Instance**. Click **OK.** |
| Test the External list | 1. Open Internet Explorer browser and browse to **http://intranet.contoso.com/** 2. On the top right corner of the page, click the **System Account** drop-down menu. 3. Click **Sign in as Different User**. 4. In the **Windows Security** dialog box, type the following:  * **contoso\alans** * **pass@word1**      1. Click **OK**. 2. On the **Site Actions** menu, click **View All Site Contents.** 3. On the left navigation bar, click **Lists**. 4. Under lists, click **AW Customers**. 5. You will see a **"Access denied by Business Data Connectivity"** message.  *This is expected behavior. The currently logged in user does not yet have the permission to access the data from the database.* |
| Configure user access and permissions to the external content type. | 1. Open a new Internet Explorer browser and browse to the **SharePoint Central Administration site. (http://demos2010a:2010)** 2. Under **Application Management**, click **Manage Service applications**. 3. From the list of service application, click **Business Data Connectivity Service**. C:\Users\ADMINI~1\AppData\Local\Temp\SNAGHTML1dfa6f2.PNG 4. Click **Customers** 5. On the ribbon, click **Set Object Permissions**. 6. Click the Address book icon. 7. In the **Select People and Group Webpage dialog**, select "**All Users**", and then select "**All Authenticated Users**". Click **Add**. 8. Click **OK**. 9. Click **Add**. 10. Select all the permissions (**Edit, Execute, Selectable In Clients** and **Set Permissions**) 11. Select **Propagate permissions to all methods of this external content type**. 12. Click **OK**. |
| Test the user access to the external list | 1. Go back to the open browser window (AW Customers list) and refresh the browser page. *You should now be able to see all the customers from the Adventureworks database where CustomerKey is greater than 29400*. 2. On the ribbon, under **List Tools,** click **Items**. 3. Click **New Item**. 4. Add a new list item as follows. 5. Click **Save**. 6. Click the column header CustomerKey to sort the items in the list in descending order. 7. Check the list item that you just added. C:\Users\ADMINI~1\AppData\Local\Temp\SNAGHTML1e5daae.PNG |
| **NOTE: The steps 65 to 71 are Optional** | |
| Test the database table DimCustomer for new records | 1. Click **Start** | **All Programs** | **Microsoft SQL Server 2008 R2** | **SQL Server Management studio** menu. 2. Select **DEMO2010A** as Server Name, and **Windows Authentication** as Authentication, and click **Connect**. 3. Click New Query. 4. Type   select top 10 \* from AdventureWorksDW.dbo.DimCustomer where EmailAddress = 'contoso.user@contoso.com' 5. Click **Execute**. 6. You should be able to see the SharePoint external list item that you added in the database table 7. Similarly, try editing and/or deleting items from either the SharePoint external list or from the DimCustomer table via the SQL Server Management studio (using SQL queries). A change in one source will be immediately reflected in the other. |

# Exercise : Pass-Through and RevertToSelf Authentication

Each exercise consists of a scenario and learning objectives, the scenario describes the purpose of the exercices, while the objectives are listed and have bullet points.

#### Scenario

In this exercise you will learn about the different authentication modes that are available when Business Data Catalog is used to connect to a database or a Web service. You will first use the pass-through authentication to connect to the Adventure Works database. You will then change the connection property of the external content type to use the RevertToSelf authentication mode, and finally you will examine the application pool settings to understand how the calls are impersonated as the underlying account that is configured for the IIS application pool.

After completing this exercise, you will be able to:

* Use the pass-through authentication mode in an external content type to connect to a SQL Server database.
* Use the RevertToSelf authentication mode in an external content type to connect to a SQL Server database.

|  |  |
| --- | --- |
| Task | Detailed Steps |
|  | Complete these steps by connecting to the computer DEMO2010A. |
| Configure the BCS service application  *Windows PowerShell is Microsoft's task automation framework, consisting of a command-line shell and associated scripting language built on top of - and integrated with - the .NET Framework.* | 1. Click **Start | All Programs | Microsoft SharePoint 2010 Products | SharePoint 2010 Management Shell** menu 2. Type the following in the command prompt   **$bcsServiceApp = Get-SPServiceApplication | where {$\_ -match "Business Data Connectivity Service"}**     1. Type the following command: **$bcsServiceApp.RevertToSelfAllowed** 2. If the response is **False**, the RevertToSelf authentication support is not enabled. You need to enable it.  *(Note: By default the RevertToSelf authentication support is not enabled on the DEMO2010A virtual machine)* 3. To Enable RevertToSelf authentication support, type the following:   **$bcsServiceApp.RevertToSelfAllowed = $true**  **$bcsServiceApp.Update()**  **$bcsServiceApp.RevertToSelfAllowed**    The RevertToSelf Authentication support for BCS is now enabled.   1. Close the PowerShell command window. |
| Use the pass-through authentication mode.  *In the pass-through mode, the service application passes the client's authentication information to the back-end server. BCS supports pass-through authentication for both database and Web service connections.* | 1. Click **Start | All Programs | SharePoint | SharePoint Designer 2010** menu. 2. Click **Open Site.** 3. Type **http://intranet.contoso.com** as the **Site name** in the **Open Site** dialog box. 4. Click **OK**. 5. On the left pane, under **Site Objects**, select **External Content Types** 6. Click the **Customer** content type that you created in the exercise 1. 7. Click **AdventureworksDW** , the name of **External System** 8. The **Connection Properties** dialog box is different from what it was in exercise 1. The authentication mode from exercise 1 has been carried over as User’s **Identity**. This is the pass-through authentication. 9. Click the **Save** icon to save the external content type. 10. Test the **AW Customers** list again by adding/deleting/modifying the list items (Follow the instructions in exercise 1) |
| Use the RevertToSelf authentication mode  *RevertToSelf authentication impersonates the credentials of the underlying account that is configured for the IIS application pool.* | 1. Click **AdventureWorksDW** , the name of **External System.** 2. In the **Connection Properties** dialog, change the Authentication Mode from **User's Identity** to **BDC Identity**.      1. Click **OK**. The changes made are automatically saved. 2. This type of authentication is called the **RevertToSelf** Authentication. |
| Configure the Application pool and set the application pool identity for impersonation. | 1. If you want to change the application pool account, refer to the TechNet article - **Specify an Identity for an Application Pool in IIS 7** at http://technet.microsoft.com/en-us/library/cc771170(WS.10).aspx 2. Test the **AW Customers** list again by adding/deleting/modifying the list items (Follow the instructions in exercise 1) |

# Exercise : Business Connectivity Services & Office Clients

Each exercise consists of a scenario and learning objectives, the scenario describes the purpose of the exercices, while the objectives are listed and have bullet points.

#### Scenario

In this exercise you will explore the BDC client runtime on client computers that use the data from the Business Data Connectivity service to connect to and execute operations on external systems. You will then leverage the Business Connectivity Service's rich client extensions to allow users to interact with external systems from the Microsoft Office 2010 client applications such as Microsoft Outlook 2010 and Microsoft Word 2010. You will create a connection to a SharePoint external list from Microsoft Outlook 2010 and understand how this integration helps users perform tasks within the familiar user interface. Finally, you will use the document properties in Microsoft Word 2010 to insert the external data in a Word document.

After completing this exercise, you will be able to:

* View, create or edit external business data from Outlook 2010
* Insert external data, such as customer information into a Microsoft Word 2010 document.

|  |  |
| --- | --- |
| Task | Detailed Steps |
|  | Complete these steps by connecting to the computer 2010A. |
| Configure the Microsoft Office customization tool | 1. Open Internet Explorer browser and browse to the **Customers** external list that you created in Lab 1. 2. On the ribbon, under **List tools**, click **List**. 3. Click **Connect to Outlook**. C:\Users\ADMINI~1\AppData\Local\Temp\SNAGHTML1ea90c4.PNG 4. In the **Microsoft Office Customization Installer** dialog, click **Install**. 5. The Installation should take a few seconds to a few minutes. 6. Click **Close** once the installation is complete. |
| BCS Data in Microsoft Outlook 2010  *The SharePoint external list is displayed as an address book because the external content type was created as a contact type. The synchronization process understands the type and chooses the address book format in Outlook.* | 1. Click **Start | All Programs | Microsoft Office | Microsoft Outlook 2010** menu. 2. On the left pane, click **SharePoint External Lists**. 3. Click **Team Site - Customers**., the external list that you created in exercise 1. 4. You should be able to see the customers in an address book format. C:\Users\ADMINI~1\AppData\Local\Temp\SNAGHTML1f17f08.PNG 5. Right-click a **contact**, and click **Create**. You have the option to create an email message or a meeting request or assign a task to the selected contact. C:\Users\ADMINI~1\AppData\Local\Temp\SNAGHTML1fb4209.PNG 6. On the left pane, right-click the **Team Site - Customers** SharePoint external list and click **Sync now**. This will synchronize the data between Microsoft Outlook and the SQL Server |
| BCS Data in Microsoft Word 2010 | 1. To understand the integration of BCS data with Microsoft Word 2010, you need to create a new document library, and then associate the business data with the documents you upload into this document library. |
| Create SharePoint document library | 1. Open Internet Explorer browser and browse to **http://intranet.contoso.com**. 2. On the **Site Actions** menu, click **More Options**. 3. Select the **Document Library** template. 4. Type **Customer Contracts** as name of the document library, and then click **Create**. C:\Users\ADMINI~1\AppData\Local\Temp\SNAGHTML20bfd3c.PNG |
| Create External Data column | 1. On the ribbon, under **Library Tools**, click **Library**. 2. Click **Create Column**. 3. Type **Customer** as the name of the column and select **External Data** as the column type. 4. In the **Additional Column Settings**, click the external content type picker icon. 5. Select the **Customer** external content type (Created in Lab 1), and then click **OK**. C:\Users\ADMINI~1\AppData\Local\Temp\SNAGHTML218a3a8.PNG 6. Select **FirstName**, **LastName**, **EmailAddress** and **Phone.** Select **Add to default view,** and then click **OK**. |
| Create document template | 1. On the ribbon, click **Library settings**.. 2. Under **General Settings**, click **Advanced Settings**. 3. Under **Document Template**, click **Edit Template**. The document template will attempt to open in Microsoft Word 2010. 4. Click **OK** if prompted. 5. On the **Insert** tab, click **Quick Parts**, and then click Document Property 6. A flyout menu with FirstName, LastName, EmailAddress and Phone number belonging to the external column data will be displayed. Add these 4 properties to the document by clicking each one of them.   C:\Users\ADMINI~1\AppData\Local\Temp\SNAGHTML223dc26.PNG   1. Format the document by adding text as shown in the image below. Place the document properties in appropriate locations in the document as shown.C:\Users\ADMINI~1\AppData\Local\Temp\SNAGHTML14ab5da6.PNG 2. Click the **Save** icon to save the Template 3. Close Word 2010. |
| BCS data in Microsoft Word 2010 | 1. Navigate to the **Contract Documents** document library. 2. On the ribbon, under **Library tools**, click **Documents**. 3. Click **New Document**. 4. A new Word document based on the contract template will open up in Word 2010. 5. Add some contractual details in the body of the document. Type **Insurance Contract** as **Title**. C:\Users\ADMINI~1\AppData\Local\Temp\SNAGHTML14af2335.PNG 6. Save this document as **ContractDocument1.** The document is automatically saved to the **Contract Documents** document library. 7. Close the Word document. 8. In the document library, click on the drop-down menu on the newly created document. 9. Click **Edit Properties**. 10. Click the external content picker button next to the **Customer** field. 11. The list of customers from the external content type will be displayed. Select (or find) a customer (Ex: **Damien Anderson**) and click **OK**. C:\Users\ADMINI~1\AppData\Local\Temp\SNAGHTML231eb82.PNG 12. Click **Save**. 13. This newly created contract document is now associated with the selected customer. 14. Click **ContractDocument1** to open it in Microsoft Word 2010. 15. You will see that the document properties are populated with business data (Customer Information). 16. Close the document. |

# Exercise : Using Secure Store Services with BCS

Each exercise consists of a scenario and learning objectives, the scenario describes the purpose of the exercices, while the objectives are listed and have bullet points.

#### Scenario

In this exercise you will learn the basics of Secure Store Service and its role in authenticating calls to an external system. You will understand how the Secure Store Service facilitates a secure communication channel to the Adventure Works database when used with the Business Data Connectivity service. As a part of this exercise, you will create a new SQL user account with read/write permissions to the Adventure Works database. You will then store these credentials in the SharePoint Secure Store, and enable BCS to impersonate this user account to communicate with the database.

After completing this exercise, you will be to:

* Create SQL user accounts with read/write permissions to a database
* Store the credentials of a SQL user account in SharePoint Secure store.
* Configure the external content type to impersonate a user identity when accessing external data.

|  |  |
| --- | --- |
| Task | Detailed Steps |
|  | Complete these steps by connecting to the computer DEMO2010A. |
| Create a new SQL user account | 1. Click **Start** | **All Programs** | **Microsoft SQL Server 2008 R2** | **SQL Server Management studio** menu. 2. Select **DEMO2010A** as Server Name, and **Windows Authentication** as Authentication, and click **Connect**. 3. Expand **Security**, and then expand **Logins**. 4. Right-click **Logins,** and then click **New Login**. C:\Users\ADMINI~1\AppData\Local\Temp\SNAGHTML25d01a1.PNG 5. Select the **SQL Authentication**. 6. Type the following:  * Login Name: **ContosoSqlUser** * Password: **pass@word1**  1. **Un-Check** ***Enforce Password Policy***. C:\Users\ADMINI~1\AppData\Local\Temp\SNAGHTML25f0098.PNG 2. Click **OK**. 3. Expand **Databases**, then expand **AdventureWorksDW,** then expand **Security,** and then expand **Users**. 4. Right-click **Users,** and then click **New User**. 5. Type **Contoso SQL User** as User name. 6. Type **ContosoSqlUser** as Login Name. 7. In the **Database Role membership**, select **db\_owner**.  C:\Users\ADMINI~1\AppData\Local\Temp\SNAGHTML18d68b21.PNG 8. Click **OK**. 9. Close the SQL Server Management Studio. |
| Set up the Secure Store | 1. Open an Internet Explorer browser and browse to the **SharePoint Central Administration** site (**http://demo2010a:2010**) 2. Under **Application Management**, click **Manage Service applications**. 3. Click **Secure Store Service**. 4. On the ribbon, click **New**. 5. Set the following **Target Application Settings**.    * Target Application ID : **Customer\_SSS**    * Display Name: **Customer SSS**    * Contact E-mail: **administrator@contoso.com**    * Target Application Type: **Individual**     Click **Next**.   1. Create fields for **User Name** and **Password** as follows. Set both of the fields to be masked by selecting the checkboxes next to the fields. 2. Click **Next**. 3. Type **Contoso\Administrator** as the **Target Application Administrator**. 4. Click **OK**. 5. A new Secure Service Store target application ID has been created. |
| Configure the permissions for the external content type  *You need to use the account in the secure store to authenticate the connection to the SQL Server. This also means that you need to remove All Authenticated users from the authenticated users list for the external content type (Customers).* | 1. Navigate back to the SharePoint Central Administrationsite. 2. Under **Application Management**, click **Manage service applications**. 3. Click **Business Data Connectivity Service**. 4. Select **Customer,** and click **Set Object Permissions**. C:\Users\ADMINI~1\AppData\Local\Temp\SNAGHTML27201a2.PNG 5. Select **All Authenticated Users,** and then click **Remove**. 6. Type **Contoso\Administrator,** and then click **Add**. 7. Select **Set Permissions**. (Note: You need to select at least one user/group in the Access Control List with **SetPermissions** rights to avoid creating a non-manageable object) 8. Click **OK**. 9. Close the SharePoint Central Administration site. |
| Change the authentication mode for the external content type | 1. Click **Start | All Programs | SharePoint | SharePoint Designer 2010.** 2. Click **Open Site.** 3. Type **http://intranet.contoso.com** as the **Site name** in the **Open Site** dialog box. 4. Click **OK**. 5. On the left pane, under **Site Objects**, click **External Content Types**. 6. Click **Customer**. (This is the external content type that was created in Exercise 1 of this lab) 7. On the ribbon, click **Edit Connection Properties**. 8. In the **Connection Properties** section, change the **Authentication Mode** to **Impersonate Custom Identity**. 9. Type **Customer\_SSS** as theSecure Store Application ID. 10. Click **OK**. |
| Test access to the external list. | 1. Open an Internet Explorer browser and navigate to **http://intranet.contoso.com/lists/customers** 2. Log on as **contoso\davids**; password: **pass@word1** 3. Click the link, **Click here to authenticate**. 4. If you see a warning message, ignore it by clicking the **Continue to this Site** link. 5. Enter the following user name and password  User Name: **ContosoSqlUser** Password: **pass@word1** (**Confirm** the User name and Password)      1. Click **OK**. 2. You should now have access to the customers external list. The connection is authenticated with the underlying account information that is stored in the Secure Store. You can test by adding, deleting or modifying the records in the customers list. A change in the list is immediately reflected in the SQL Server database. |

# Exercise : Export and Import BDC Models

Each exercise consists of a scenario and learning objectives, the scenario describes the purpose of the exercices, while the objectives are listed and have bullet points.

#### Scenario

In this exercise you will learn the basics of a BDC model. You will export an external content type as a BDC model file, and then explore the data structure such as Entities and Methods that abstract out the complex details about an external system. You will then learn to import the BDC model into a different SharePoint environment.

After completing this exercise, you will be able to:

* Export an external content type as a BDC Model
* Analyze the contents of the BDC Model.
* Import a BDC Model as an external content type.

|  |  |
| --- | --- |
| Task | Detailed Steps |
|  | Complete these steps by connecting to the computer DEMO2010A. |
| Export an external content type as a BDC Model  *A BDC model is an XML file that contains sets of descriptions of one or more external content types, their related external systems, and information that is specific to the environment, such as authentication properties.* | 1. Click **Start | All Programs | SharePoint | Microsoft SharePoint Designer 2010** menu 2. Click **Open Site.** 3. Type **http://intranet.contoso.com** as the **Site name** in the **Open Site** dialog box. 4. Click **OK**. 5. On the left pane, under **Site Objects**, click **External Content Types**. 6. Right-click the **Customer** external content type and then click **Export BDC Model**. 7. Type **Customer BDC Model** as the as the BDC Model Name. 8. Click **OK**. 9. In the **File Save As** dialog box, type **Customer BDC Model**, and save the BDC Model file to your local drive. |
| Examine the BDC Model file  *The metadata in a model defines the fields of data in each external content type, the operations that are supported on the external system (to support tasks such as reading, writing, and querying the external system), and connectivity information* | 1. Click Start Notepad (From Start menu -> Run. Type Notepad and click OK) 2. On the **File** menu, click **Open**. 3. Browse to the **Customer BDC Model.bdcm** file and open it. 4. Examine the contents of the XML file. The **LOBSystemInstances** section shows details such as the type of authentication, the type of LOB systems (SQL Server in this case), the name of the database etc. C:\Users\ADMINI~1\AppData\Local\Temp\SNAGHTMLbb0e27f.PNG 5. Similarly the **Entities** section displays the columns from the database tables that are included in this external content type C:\Users\ADMINI~1\AppData\Local\Temp\SNAGHTMLbbb09dc.PNG 6. Finally, the BDC Model file also displays the **permissions** information. C:\Users\ADMINI~1\AppData\Local\Temp\SNAGHTMLbbd17d1.PNG 7. Close the **Customer BDC Model.bdcm** without saving the changes. |
| Import a BDC Model  *For the purpose of this lab, you will use the DEMO2010A virtual machine for importing the BDC model. However, in a real-world scenario, you will export the model from a development environment and import it into a staging or production environment.* | 1. Open an Internet Explorer browser and browse to the **SharePoint Central Administration site. (http://demos2010a:2010)** 2. Under **Application Management**, click **Manage Service applications**. 3. From the list of service applications, click **Business Data Connectivity Service**. C:\Users\ADMINI~1\AppData\Local\Temp\SNAGHTML1ee041f.PNG 4. Select **Customers,** and then click the **Delete** button on the ribbon. *Note: You are deleting an already existing external content type so that you can re-import the BDC model. Since the same development environment is being used for both importing and exporting, this clean-up step is necessary. If this external content type is not deleted, the import process will fail.* 5. On the ribbon, select BDC **Models** from the drop-down list. 6. On the ribbon, click **Import**. 7. Click the browse button, and browse to the **Customer BDC Model.bdcm** file. 8. Select **Model** as the file type. 9. In **Advanced settings**, select all the 3 options - **Localized names**, **Properties** and **Permission**. Leave the value in the **Use Custom Environment Settings** blank. 10. Click **Import**. 11. Ignore any warning messages. Click **OK** after the import process is complete. You should now see the imported Model in the Service Application Information page. C:\Users\ADMINI~1\AppData\Local\Temp\SNAGHTMLbcd530d.PNG 12. On the ribbon, select External **Content Type** from the drop-down list. 13. The external content type is now imported. You can now create lists and forms using the imported external content type by following the instructions in Exercise 1. |

# Exercise : Profile Pages, BDC Actions and BCS Search

Each exercise consists of a scenario and learning objectives, the scenario describes the purpose of the exercices, while the objectives are listed and have bullet points.

#### Scenario

In this exercise you will be introduced to the concepts of Profile Pages, BDC actions and BCS search. You will first configure the external content type Profile Page host to enable Profile Page creation. You will use the Profile Page to display the external data. You will then create custom actions for the entities in the BDC. Using custom actions, you will learn how to allow users to navigate to a custom Webpage to display business data. Finally, you will create a SharePoint Server search crawl to crawl and index external data by using external content types.

After completing this exercise, you be able to:

* Create Profile Pages
* Display external data in a Profile Page.
* Create custom BDC actions
* Configure SharePoint Search to crawl, index and search external data.
* Display the search results in a Profile Page.

|  |  |
| --- | --- |
| Task | Detailed Steps |
|  | Complete these steps by connecting to the computer DEMO2010A. |
| Create Profile Pages  *A Profile Page in BCS displays external content (entity instance) information. It is also used to display the search results when you use SharePoint to search external data.* | 1. Open an Internet Explorer browser and browse to **http://intranet.contoso.com** 2. On the **Site Actions** menu, click **More Options**. 3. Select the **Basic Search Center** template. Type **Profile Pages** as the title of the site, and **profilepages** as URL, and then click **Create**. 4. Open a new Internet Explorer browser and browse to the **SharePoint Central Administration site. (http://demos2010a:2010)** 5. Under **Application Management**, click **Manage Service applications**. 6. From the list of service applications, click **Business Data Connectivity Service**. 7. On the ribbon, click **Configure**. 8. Select **Enable Profile Page creation**. Type **http://intranet.contoso.com/profilepages** , the URL of the Profile Page site.  C:\Users\ADMINI~1\AppData\Local\Temp\SNAGHTMLe98531b.PNG 9. Click **OK**. 10. On the drop-down list for the **Customer** external content type Customer, click **Create/Upgrade Profile Page**. 11. Click **OK**. 12. Wait for the Profile Page to be created for this content type. The Profile Page creation can take a few minutes. 13. Click **OK**. |
| Test the Profile Page  *This error message is expected, as the URL does not contain a valid* ***CustomerKey*** *yet. Note the query string in the URL : CustomerKey={0}. A valid customer key is missing which caused this lookup error.*  *The Search Service, when configured to search the external BCS content, will display Customer information in these profiles pages* | 1. Refresh the Internet Explorer browser window. 2. In the **Default Action** column, you will see the URL of the Profile Page C:\Users\ADMINI~1\AppData\Local\Temp\SNAGHTML1796702b.PNG 3. Click the default action URL. 4. The following error message is displayed 5. Replace the **CustomerKey={0}** with a valid CustomerKey (ex: **CustomerKey=29404**). You can get the list of valid customers’ keys from the **Customers** external list that you created in Exercise 1 of this lab. C:\Users\ADMINI~1\AppData\Local\Temp\SNAGHTMLec61daa.PNG 6. The Profile Page displays the customer Information.  C:\Users\ADMINI~1\AppData\Local\Temp\SNAGHTML179b8c43.PNG |
| Create custom BDC actions.  *You also can create custom actions for entities in the BDC. Custom actions allow users to navigate to any custom page to display business data.*  *BDC actions are typically used when passing BCS data as parameters to web services to submit or receive data. Another interesting example would be to pass the address field of a customer to Bing Maps locator (http://bing.com/maps) to view the geographic details from the Bing Maps site.* | 1. Navigate back to **Business Data Connectivity Service** page. 2. On the drop-down list for the **Customer** external content type Customer, click **Add Action**. 3. Type **Bing Search** as Action Name. 4. Type **http://www.bing.com/search?q={0}+{1}** as URL. 5. Select **YES** for **Launch action in new web browser window**. 6. Add **FirstName** as Parameter 0 and **LastName** as Parameter 1. 7. The below image shows the mapping between the URL and the Parameter Property 8. Click **OK**. 9. Navigate back to a customer Profile Page. (Steps 18 and 19 in this exercise) C:\Users\ADMINI~1\AppData\Local\Temp\SNAGHTMLee0dd80.PNG 10. Click the **Bing Search** link. 11. The BCS data is passed as a query string to external URLs (In this case, it is passed to Bing Search site for searching internet records of this customer) C:\Users\ADMINI~1\AppData\Local\Temp\SNAGHTMLee4c81d.PNG |
| Configure the Search Service application for the Web application | 1. Navigate back to the **SharePoint Central Administration** home. **(http://demo2010a:2010)** 2. Under **Application Management**, click **Manage web applications** 3. Click **Intranet** 4. On the ribbon, click **Service Connections**. 5. In the Configure Service Application Associations dialog box, select **[custom]** from the drop-down list. 6. Select all the service applications in the dialog box except **FASTQuery [default]** 7. On **Search Service Application**, click **[set as default]**   Click **OK.** |
| Configure BCS search | 1. Navigate back to the **SharePoint Central Administration** home**. (http://demos2010a:2010)** 2. Under **Application Management**, click on **Manage Service applications**. 3. From the list of service applications, click **Search Service Application**.  C:\Users\ADMINI~1\AppData\Local\Temp\SNAGHTML1f0a9df.PNG 4. On the left navigation, under **Crawling**, click **Content Sources**. 5. Click **New Content Source**. 6. Type **BCS Data** as the name of the content source. 7. Select **Line of Business Data** as the type of content 8. Select **Business Data Connectivity Service** from the drop-down list 9. Select **Crawl selected external data source,** and then select **AdventureWorksDW**      1. Select **Start full crawl of this content source**. 2. Click **OK**. 3. It will take a few minutes for the service to crawl the contents. While the content is being crawled, the status will be **Crawling Full**. C:\Users\ADMINI~1\AppData\Local\Temp\SNAGHTML1e8b5f10.PNG 4. Refresh the page every few seconds. The crawling is complete when the Status changes to **Idle**. C:\Users\ADMINI~1\AppData\Local\Temp\SNAGHTML1e8c3091.PNG |
| View and explore the crawl logs | 1. On the BCS Data content source drop-down menu, click **View Crawl Log**. 2. Click **URL**. 3. Explore the crawled URLs. Each entity in the customer external content type is crawled and indexed.C:\Users\ADMINI~1\AppData\Local\Temp\SNAGHTMLf109107.PNG 4. Click any of these URL in the list. You will be taken to the respective customer Profile Page. |
| Test the search results | 1. Browse to the Profile Page, **http://intranet.contoso.com/profilepages/** 2. Type **Chloe Ross**, the name of a customer from AW Customers external list. 3. Click the search button. 4. Check the search results. This shows that the SharePoint Search service application used BCS to crawled the external data and made it available via SharePoint Search center  C:\Users\ADMINI~1\AppData\Local\Temp\SNAGHTML1e957001.PNG 5. Click **Customer\_1.aspx**. The profile page that you created is used to display the customer information.   **You have now completed this Lab** |

# Appendix

This Appendix provides information about the actual lab manual and labcode, as well as the virtual machine requirements needed for this lab. Use this page to keep information about lab updates / modifications and corrections to the manual, as well as the uniquely defined labcode.

|  |  |  |
| --- | --- | --- |
| Labcode | Manual Version | Last Update |
|  | Version 7 |  |

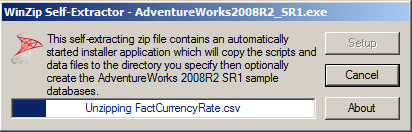
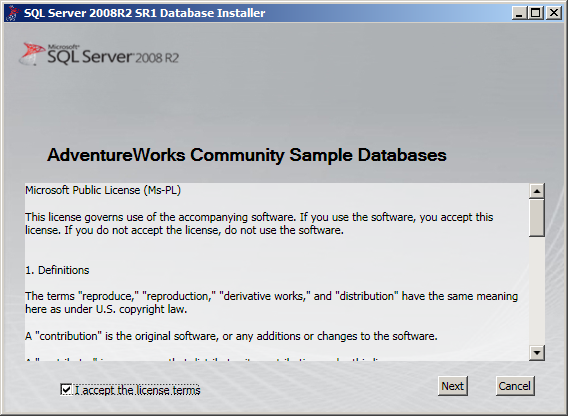
**Lab Notes**

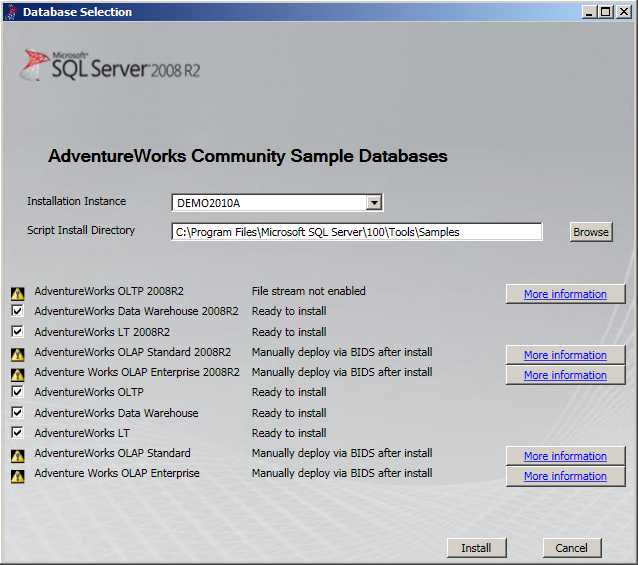
|  |  |
| --- | --- |
| Description | Details |
|  |  |

**Virtual Machine Requirements**

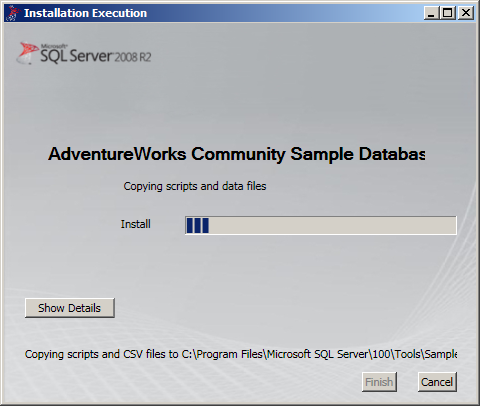
|  |  |
| --- | --- |
| Virtual Machine Name | Details |
|  |  |

**Adventureworks Database Installation Instructions**

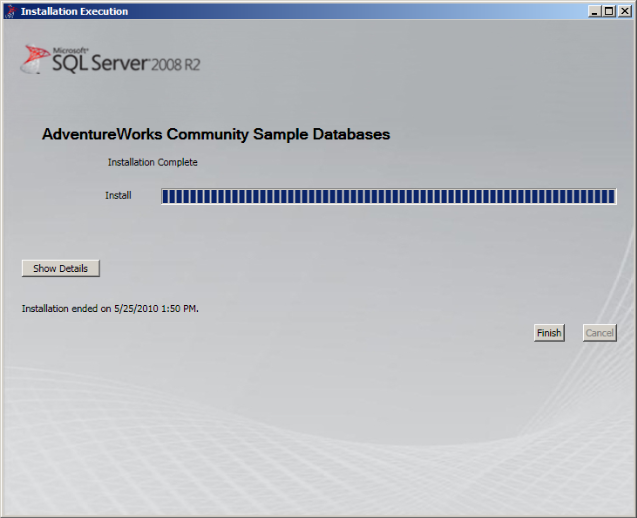
1. The AdventureWorks sample database installer is located on the DEMO2010A Virtual machine at **C:\AdventureWorksDB\AdventureWorks2008R2\_RTM.exe**
2. Click the **AdventureWorks2008R2\_RTM.exe**
3. Allow the installation files to be extracted.  
   
4. Click, **I accept the license terms** and then click **Next**.  
   
5. Select **DEMO2010A** as the **Installation Instance**, and then click **Install**.



1. Wait for the installation to complete



1. Click the **Finish** button



The AdventureWorks sample database installation is now complete.