[MS-BCSDPFFS]:

Business Connectivity Services Deployment Package File Format

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Revision Summary

Date	Revision History	Revision Class	Comments
7/13/2009	0.1	Major	Initial Availability
8/28/2009	0.2	Editorial	Revised and edited the technical content
11/6/2009	0.3	Editorial	Revised and edited the technical content
2/19/2010	1.0	Major	Updated and revised the technical content
3/31/2010	1.01	Editorial	Revised and edited the technical content
4/30/2010	1.02	Major	Updated and revised the technical content
6/7/2010	1.03	Editorial	Revised and edited the technical content
6/29/2010	1.04	Editorial	Changed language and formatting in the technical content.
7/23/2010	1.04	No Change	No changes to the meaning, language, or formatting of the technical content.
9/27/2010	1.04	No Change	No changes to the meaning, language, or formatting of the technical content.
11/15/2010	1.04	No Change	No changes to the meaning, language, or formatting of the technical content.
12/17/2010	1.04	No Change	No changes to the meaning, language, or formatting of the technical content.
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6/10/2011	1.04	No Change	No changes to the meaning, language, or formatting of the technical content.
1/20/2012	1.5	Minor	Clarified the meaning of the technical content.
4/11/2012	1.5	No Change	No changes to the meaning, language, or formatting of the technical content.
7/16/2012	1.5	No Change	No changes to the meaning, language, or formatting of the technical content.
9/12/2012	1.5	No Change	No changes to the meaning, language, or formatting of the technical content.
10/8/2012	1.6	Minor	Clarified the meaning of the technical content.
2/11/2013	1.6	No Change	No changes to the meaning, language, or formatting of the technical content.
7/30/2013	1.7	Minor	Clarified the meaning of the technical content.
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4/30/2014	1.7	No Change	No changes to the meaning, language, or formatting of the technical content.
7/31/2014	1.8	Minor	Clarified the meaning of the technical content.
10/30/2014	1.8	No Change	No changes to the meaning, language, or formatting of the technical content.
3/16/2015	2.0	Major	Significantly changed the technical content.

Table of Contents

1 Introduction

The Business Connectivity Services Deployment Package File Format describes the contents of a deployment package for a Business Connectivity Services solution, the Business Connectivity Services specific extensions to the Office Server ClickOnce application manifest as described in [MS-OSCO], and a Business Connectivity Services specific file format representing the properties of an external list.

A typical Business Connectivity Services deployment package includes files describing the data model, custom forms, business logic and any additional files (for example, icons and images) required to run the Business Connectivity Services solution on a protocol client.

The extensions to the Office Server ClickOnce application manifest as described in [MS-OSCO] focus on configuring the update behavior of Business Connectivity Services solutions and other Business Connectivity Services specific solution properties. It allows a protocol client to determine the solution type for a Business Connectivity Services solution.

The external list properties can be used to create a user experience on the client similar to that on the server. For example, an external list view for customer contact information on the server can be recreated as a list view in a rich client application based on the query and view definitions described in the external list properties.

Sections 1.7 and 2 of this specification are normative and can contain the terms MAY, SHOULD, MUST, MUST NOT, and SHOULD NOT as defined in [RFC2119]. All other sections and examples in this specification are informative.

1.1 Glossary

The following terms are specific to this document:

add-in: Supplemental functionality that is provided by an external application or macro to extend the capabilities of an application.

complex type: An element that can contain other elements or attributes (1) and appears as <complexType> in an XML document. See also **simple type**.

external content type: A type of DataClass object that is stored in a line-of-business (LOB) system and whose instances have a persistent EntityInstanceId. Also referred to as Entity.

external list: A container that is within a SharePoint site and that references a set of EntityInstances that are sourced from a line-of-business (LOB) system. It has a customizable schema that is composed of one or more Fields (4).

form template: A file or set of files that defines the data structure, appearance, and behavior of a form (2).

globally unique identifier (GUID): A term used interchangeably with universally unique identifier (UUID) in Microsoft protocol technical documents (TDs). Interchanging the usage of these terms does not imply or require a specific algorithm or mechanism to generate the value. Specifically, the use of this term does not imply or require that the algorithms specified in [RFC4122] or [C706] must be used for generating the **GUID**. See also universally unique identifier (UUID).

line-of-business (LOB) system: A software system that is used to store business data and can also contain business rules and business logic (2) that support business processes.

LobSystemInstance: A type of MetadataObject that represents a specific deployed instance of a **line-of-business (LOB) system**, as represented by a LobSystem. LobSystemInstances are

contained by LobSystems. LobSystemInstance Properties describe how to connect to an instance of the LobSystem that contains them by providing information such as the server name, connection string, and authentication mode.

simple type: An element that can contain only text and appears as <simpleType> in an XML document or any attribute (1) of an element. Attributes are considered simple types because they contain only text. See also **complex type**.

SpecificFinder: A type of MethodInstance that can be called to return a specific EntityInstance of a specific Entity given its EntityInstanceId. SpecificFinder input is defined and ordered by the Identifiers that are associated with the Entity that is associated with the Method that is associated with the SpecificFinder.

Unicode: A character encoding standard developed by the Unicode Consortium that represents almost all of the written languages of the world. The **Unicode** standard [UNICODE5.0.0/2007] provides three forms (UTF-8, UTF-16, and UTF-32) and seven schemes (UTF-8, UTF-16, UTF-16 BE, UTF-16 LE, UTF-32, UTF-32 LE, and UTF-32 BE).

view: See form view (Microsoft InfoPath), list view (SharePoint Products and Technologies), or View (Microsoft Business Connectivity Services).

view identifier: A GUID that is used to uniquely identify a view.

website: A group of related pages and data within a SharePoint site collection. The structure and content of a site is based on a site definition. Also referred to as SharePoint site and site.

MAY, SHOULD, MUST, SHOULD NOT, MUST NOT: These terms (in all caps) are used as defined in [RFC2119]. All statements of optional behavior use either MAY, SHOULD, or SHOULD NOT.

1.2 References

1.2.1 Normative References

We conduct frequent surveys of the normative references to assure their continued availability. If you have any issue with finding a normative reference, please contact dochelp@microsoft.com. We will assist you in finding the relevant information.

[MS-BDCMFFS] Microsoft Corporation, "Business Data Connectivity Model File Format Specification".

[MS-IPFF2] Microsoft Corporation, "InfoPath Form Template Format Version 2".

[MS-OSCO] Microsoft Corporation, "Office Server ClickOnce Manifest Structure Specification".

[MS-WSSCAML] Microsoft Corporation, "Collaborative Application Markup Language (CAML) Structure".

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997, http://www.rfc-editor.org/rfc/rfc2119.txt

[XMLSCHEMA1] Thompson, H., Beech, D., Maloney, M., and Mendelsohn, N., Eds., "XML Schema Part 1: Structures", W3C Recommendation, May 2001, http://www.w3.org/TR/2001/REC-xmlschema-1-20010502/

[XMLSCHEMA2] Biron, P.V., Ed. and Malhotra, A., Ed., "XML Schema Part 2: Datatypes", W3C Recommendation, May 2001, http://www.w3.org/TR/2001/REC-xmlschema-2-20010502/

1.2.2 Informative References

[AdventureWorks] Microsoft Corporation, "AdventureWorks Sample Databases", SQL Server 2008 Books Online (July 2009), http://msdn.microsoft.com/en-us/library/ms124501.aspx

[C706] The Open Group, "DCE 1.1: Remote Procedure Call", C706, August 1997, https://www2.opengroup.org/ogsys/catalog/c706

[RFC4122] Leach, P., Mealling, M., and Salz, R., "A Universally Unique Identifier (UUID) URN Namespace", RFC 4122, July 2005, http://www.ietf.org/rfc/rfc4122.txt

[UNICODE5.0.0/2007] The Unicode Consortium, "Unicode 5.0.0", 2007, http://www.unicode.org/versions/Unicode5.0.0/

1.3 Overview

This document describes the deployment package structure for Business Connectivity Services solutions and the schema for two structures: the post deployment configuration of a Business Connectivity Services solution and the client representation of an **external list** definition.

The bulk of the deployment package schema is described in [MS-OSCO]. A Business Connectivity Services deployment package always includes a file describing how the solution can connect to and interact with **line-of-business (LOB) systems**. The schema for this file is described in [MS-BDCMFFS]. For a Business Connectivity Services solution based on an external list, the deployment package also includes an external list manifest file, specified in the **Error! Reference source not found.** section of this document. Optionally, a deployment package can include custom form definitions, code representing business logic, configuration files and resource files.

There are additional configuration settings for Business Connectivity Services solutions that are defined in the configuration for post deployment processing. The schema for these settings is specified in section 2.1. It extends the post action data schema of the Office Server ClickOnce application manifest schema as described in [MS-OSCO]. The configuration settings enable a protocol client to determine the identity and type of the Business Connectivity Services solution, its components.

The external list manifest file format enables a protocol client to create and configure a client representation of an external list on the server. It allows a protocol client to determine the details about a data source required to configure the client-side user interface to retrieve and display the data in an equivalent way to the server object. For example, a list item representing contact information for a customer on a web page can be rendered in a dedicated contact management application on the client.

1.4 Relationship to Protocols and Other Structures

[MS-OSCO] describes the Office Server ClickOnce manifest schema, and [MS-BDCMFFS] describes the Business Data Connectivity model file format.

1.5 Applicability Statement

ClickOnce Extensions

This structure applies only to solutions that require custom configuration for protocol clients for solution types and update behavior beyond what ClickOnce provides.

Entity List Information

None.

1.6   Versioning and Localization

Structure version: This protocol does not specify any version.

Localization: This structure does not specify any locale-specific processes or data.

1.7   Vendor-Extensible Fields

None.

2 Structures

A Business Connectivity Services deployment package consists of files that describe a Business Connectivity Services solution. The package MUST contain following files:

▪ A Business Connectivity Services Deployment Manifest file. The Business Connectivity Services deployment manifest file describes the composition of a Business Connectivity Services solution, and it also contains information used by the protocol client to identify the publisher and ensure the integrity of the files in the package. The Business Connectivity Services deployment manifest file is the first file downloaded to the protocol client. The file name extension MUST be ".vsto" and the file MUST conform to the format specified in [MS-OSCO] section 2.1. The value of the element **mapFileExtensions** of **complex type** deploymentType defined in [MS-OSCO] section 2.1.2.3.1 MUST be true.

▪ A Business Connectivity Services Application Manifest file. The Business Connectivity Services Application Manifest includes references to all other files included in the packages. The file name extension MUST be ".manifest" and the file MUST conform to the format specified in [MS-OSCO] section 2.2. The application manifest MUST contain a **solution** element as a child element of postActionDataType defined in [MS-OSCO] section 2.2.5.3.9 and the solution element MUST conform to the format specified in section 2.1 of this document. The value of the element **entryPoint** of the **entryPointsType** defined in [MS-OSCO] section 2.2.5.3.3 MUST be set as follows:

  ▪ The **class** attribute MUST be set to "Microsoft.Office.BusinessApplications.Runtime.OutlookAddIn".

  ▪ The **assemblyIdentity** element MUST have the **name** attribute set to "Microsoft.Office.BusinessApplications.Runtime", the **version** attribute set to 14.0.0.0, the **language** attribute set to "neutral", and the **processorArchitecture** attribute set to "msil".

▪ The value of the **entryPoint** element of **postActionType** defined in [MS-OSCO] section 2.2.5.3.8 MUST be set as follows:

  ▪ The **class** attribute MUST be set to "Microsoft.Office.BusinessApplications.Runtime.DeploymentAction.SolutionDeploymentAction".

  ▪ The **assemblyIdentity** element MUST have the **name** attribute set to "Microsoft.Office.BusinessApplications.Runtime", the **version** attribute set to 14.0.0.0, the **language** attribute set to "neutral", and the **processorArchitecture** attribute set to "msil".

▪ An XML file that specifies **external content type** definitions associated with the external list used in the solution. The name of the file MUST be metadata.xml.deploy, and the format MUST conform to the Metadata Model structure format defined in [MS-BDCMFFS] section 2.1.

The package MUST also contain following files if the package is for a Business Connectivity Services solution based on an external list:

▪ External List View Schema files. The format of the file MUST conform to [MS-WSSCAML] section 2.3.2.17. The name of this file MUST be the **view identifier** of the external list appended with ".xml.deploy".

▪ An XML file that specifies the deployment related properties of the external list on which the solution is based. The file format MUST conform to section 2.2 of this document. The name of the file MUST be ExternalListManifest.xml.deploy.

The package MAY contain following file:

▪ A **form template**. The file MUST conform to the format specified in [MS-IPFF2].

2.1 urn:schemas-microsoft-com:oba.v1

2.1.1 Elements

2.1.1.1 solution

Target namespace: urn:schemas-microsoft-com:oba.v1

A **SolutionType** element (section 2.1.4.3) that specifies the properties of the solution to be installed.

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment specifies the contents of this element.

```
<xs:element name="solution" type="obav1:SolutionType"/>
```

See section 5.1 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.1.2 Attributes

None.

2.1.3 Complex Types

2.1.3.1 AddInsType

Target namespace: urn:schemas-microsoft-com:oba.v1

Referenced by: AddInsType

A complex type that specifies the locations of a list of **add-ins**. This type is deprecated from the protocol and MUST be ignored.

Child Elements:

addin: An **AddinType** element (section 2.1.4.5) that specifies the location of an add-in. This element is deprecated from the protocol and MUST be ignored.

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment specifies the contents of this complex type.

```
<xs:complexType name="AddInsType">
  <xs:sequence>
    <xs:element name="addin" type="obav1:AddinType" minOccurs="0" maxOccurs="unbounded"/>
  </xs:sequence>
</xs:complexType>
```

See section 5.1 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.1.3.2 AddinType

Target namespace: urn:schemas-microsoft-com:oba.v1

Referenced by: AddInsType

A complex type that specifies the location of an add-in. This type is deprecated from the protocol and MUST be ignored.

Attributes:

url: An **xs:string** attribute ([XMLSCHEMA2] section 3.2.1) that specifies the URL of an add-in.

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment specifies the contents of this complex type.

```
<xs:complexType name="AddinType">
  <xs:attribute name="url" type="xs:string"/>
</xs:complexType>
```

See section 5.1 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.1.3.3 ExpirationType

Target namespace: urn:schemas-microsoft-com:oba.v1

Referenced by: UpdateType

A complex type that specifies the minimum interval of time between two update checks.

Attributes:

maximumAge: An **xs:positiveInteger** attribute ([XMLSCHEMA2] section 3.3.25) that specifies the number of interval units.

unit: An **IntervalUnit** attribute (section 2.1.5.1) that specifies the unit of time. Together with the value of **maximumAge**, it specifies the minimum interval of time to wait before the solution MUST check for an update.

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment specifies the contents of this complex type.

```
<xs:complexType name="ExpirationType">
  <xs:attribute name="maximumAge" type="xs:positiveInteger" default="7"/>
  <xs:attribute name="unit" type="obav1:IntervalUnit" default="days"/>
</xs:complexType>
```

See section 5.1 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.1.3.4 SolutionType

Target namespace: urn:schemas-microsoft-com:oba.v1

Referenced by: solution

A complex type that specifies the components of a solution.

Child Elements:

addins: An **AddInsType** element (section 2.1.4.2) that specifies the locations of all the solution add-ins. This element is deprecated from the protocol and MUST<1> be ignored.

update: An **UpdateType** element (section 2.1.4.1) that specifies the update behavior of the solution.

Attributes:

solutionId: An **xs:string** attribute ([XMLSCHEMA2] section 3.2.1) that specifies the **GUID** of the solution.

isSimpleSolution: An **xs:string** attribute ([XMLSCHEMA2] section 3.2.1) that specifies whether the solution is a Business Connectivity Services solution based on an external list. The value of **isSimpleSolution** MUST be **true** or **false**. This attribute MUST be ignored if the value of **isDataOnly** is **true**. If the value of **isDataOnly** is **false** and the value of **isSimpleSolution** is **true**, the deployment package is for a Business Connectivity Services solution based on an external list. If the value is **false**, the deployment package is not for a Business Connectivity Services solution based on an external list.

isSolution: An **xs:string** attribute ([XMLSCHEMA2] section 3.2.1). This attribute is deprecated from the protocol and MUST<2> be ignored.

isDataOnly: An **xs:string** attribute ([XMLSCHEMA2] section 3.2.1) that specifies if the solution is a data only solution. The client MUST only deploy data model, MUST not register add-ins.

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment specifies the contents of this complex type.

```
<xs:complexType name="SolutionType">
  <xs:sequence>
    <xs:element name="addins" type="obav1:AddInsType" minOccurs="0" maxOccurs="1"/>
    <xs:element name="update" type="obav1:UpdateType" minOccurs="0" maxOccurs="1"/>
  </xs:sequence>
  <xs:attribute name="solutionId" type="xs:string" use="required"/>
  <xs:attribute name="isSimpleSolution" type="xs:string" use="optional"/>
  <xs:attribute name="isSolution" type="xs:string" use="optional"/>
  <xs:attribute name="isDataOnly" type="xs:string" use="optional"/>
</xs:complexType>
```

See section 5.1 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.1.3.5 UpdateType

Target namespace: urn:schemas-microsoft-com:oba.v1

Referenced by: SolutionType

A complex type that specifies the update behavior of a solution. It specifies whether and how often the solution MAY<3> check for updates.

Child Elements:

expiration: An **ExpirationType** element (section 2.1.4.4) that specifies the minimum interval of time to wait before the solution MAY<4> check for an update.

Attributes:

enabled: An **xs:boolean** attribute ([XMLSCHEMA2] section 3.2.2) that specifies whether update check is enabled for the solution. If the value is true, the client MAY<5> check for the update for a Business Connectivity Service solution when the minimum interval of time specified by **expiration** has passed since the last time the client checked for an update. If the value is false, the solution MUST NOT check for updates automatically.

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment specifies the contents of this complex type.

```
<xs:complexType name="UpdateType">
  <xs:sequence>
    <xs:element name="expiration" type="obav1:ExpirationType" minOccurs="0" maxOccurs="1"/>
  </xs:sequence>
  <xs:attribute name="enabled" type="xs:boolean" use="required"/>
</xs:complexType>
```

See section 5.1 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.1.4 Simple Types

2.1.4.1 IntervalUnit

Target namespace: urn:schemas-microsoft-com:oba.v1

Referenced by: ExpirationType

A **simple type** that specifies the unit of the **maximumAge** time interval. The value MUST be "days", "hours" or "weeks", as defined in the following table.

Value	Meaning
days	The time interval is given in days.
hours	The time interval is given in hours.
weeks	The time interval is given in weeks.

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment specifies the contents of this simple type.

```
<xs:simpleType name="IntervalUnit">
  <xs:restriction base="xs:string">
    <xs:enumeration value="days"/>
    <xs:enumeration value="hours"/>
    <xs:enumeration value="weeks"/>
  </xs:restriction>
</xs:simpleType>
```

See section 5.1 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.2 http://schemas.microsoft.com/office/2006/03/OfficeBusinessApplication

2.2.1 Elements

2.2.1.1 List

Target namespace: http://schemas.microsoft.com/office/2006/03/OfficeBusinessApplication

A **ListType** element (section 2.2.4.1) that specifies the deployment related properties of the external list.

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment specifies the contents of this element.

```
<xs:element name="List" type="oba:ListType"/>
```

See section 5.1 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.2.2 Attributes

None.

2.2.3 Complex Types

2.2.3.1 EntityType

Target namespace: http://schemas.microsoft.com/office/2006/03/OfficeBusinessApplication

Referenced by: ListType

The complex type specifies the deployment related properties of an external content type.

Attributes:

LobSystemInstance: An **xs:string** attribute ([XMLSCHEMA2] section 3.2.1) that specifies the name of the **LobSystemInstance** of the external content type. The value MUST have at least 1, and at most 255 **Unicode** characters.

EntityNamespace: An **xs:string** attribute ([XMLSCHEMA2] section 3.2.1) that specifies the namespace of the external content type. The value MUST have at least 1, and at most 255 Unicode characters.

EntityName: An **xs:string** attribute ([XMLSCHEMA2] section 3.2.1) that specifies the name of the external content type. The value MUST have at least 1, and at most 255 Unicode characters.

SpecificFinder: An **xs:string** attribute ([XMLSCHEMA2] section 3.2.1) that specifies the name of a **SpecificFinder** of the external content type. The value MUST have at least 1, and at most 255 Unicode characters

DefaultViewId: An **xs:string** attribute ([XMLSCHEMA2] section 3.2.1) that specifies the default view identifier of the external list based on this external content type.

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment specifies the contents of this complex type.

```
<xs:complexType name="EntityType">
  <xs:attribute name="LobSystemInstance" form="unqualified" type="xs:string"/>
  <xs:attribute name="EntityNamespace" form="unqualified" type="xs:string"/>
  <xs:attribute name="EntityName" form="unqualified" type="xs:string"/>
  <xs:attribute name="SpecificFinder" form="unqualified" type="xs:string"/>
  <xs:attribute name="DefaultViewId" form="unqualified" type="xs:string"/>
</xs:complexType>
```

See section 5.1 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.2.3.2 FormType

Target namespace: http://schemas.microsoft.com/office/2006/03/OfficeBusinessApplication

Referenced by: ListType

A complex type that specifies the default views of the forms that are used to create, display and edit an item of an external list.

Attributes:

CreateView: An **xs:string** attribute ([XMLSCHEMA2] section 3.2.1) that specifies the **view** name of the form that is used to create a new item for the external list. If the view name string is empty, default form view MUST be used.

DisplayView: An **xs:string** attribute ([XMLSCHEMA2] section 3.2.1) that specifies the view name of the form that is used to display an item of the external list. If the view name string is empty, default form view MUST be used.

EditView: An **xs:string** attribute ([XMLSCHEMA2] section 3.2.1) that specifies the view name of the form that is used to edit an item of the external list. If the view name string is empty, default form view MUST be used.

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment specifies the contents of this complex type.

```
<xs:complexType name="FormType">
  <xs:attribute name="CreateView" form="unqualified" type="xs:string"/>
  <xs:attribute name="DisplayView" form="unqualified" type="xs:string"/>
  <xs:attribute name="EditView" form="unqualified" type="xs:string"/>
</xs:complexType>
```

See section 5.1 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.2.3.3 ListType

Target namespace: http://schemas.microsoft.com/office/2006/03/OfficeBusinessApplication

Referenced by: List

A complex type that specifies the deployment-related properties of an external list.

Child Elements:

Entity: An **EntityType** element (section 2.2.4.2) that specifies the deployment-related properties of the external content type that the external list is based on.

Views: A **ViewsType** element (section 2.2.4.3) that specifies the properties of all the views of the external list.

Form: A **FormType** element (section 2.2.4.4) that specifies the default views of the forms that are used to create, display, and edit an item of the external list. If any view name specified by the attribute **CreateView**, **DisplayView**, or **EditView** of this element is not empty, a form template MUST be included in the deployment package, and a view with the specified name MUST be defined in the form template.

Attributes:

Title: An **xs:string** attribute ([XMLSCHEMA2] section 3.2.1) that specifies the title of the external list.

SiteId: An **xs:string** attribute ([XMLSCHEMA2] section 3.2.1) that specifies the identifier of the **website** associated with the external list.

SiteTitle: An **xs:string** attribute ([XMLSCHEMA2] section 3.2.1) that specifies the title of the website associated with the external list.

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment specifies the contents of this complex type.

```
<xs:complexType name="ListType">
  <xs:sequence>
    <xs:element name="Entity" type="oba:EntityType" minOccurs="1" maxOccurs="1"/>
    <xs:element name="Views" type="oba:ViewsType" minOccurs="1" maxOccurs="1"/>
    <xs:element name="Form" type="oba:FormType" minOccurs="0" maxOccurs="1"/>
  </xs:sequence>
  <xs:attribute name="Title" form="unqualified" type="xs:string"/>
  <xs:attribute name="SiteId" form="unqualified" type="xs:string"/>
  <xs:attribute name="SiteTitle" form="unqualified" type="xs:string"/>
</xs:complexType>
```

See section 5.1 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.2.3.4 ViewsType

Target namespace: http://schemas.microsoft.com/office/2006/03/OfficeBusinessApplication

Referenced by: ListType

A complex type that specifies the properties of a list of views.

Child Elements:

View: A **ViewType** element (section 2.2.4.5) that specifies the view identifier and display name of the external list view.

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment specifies the contents of this complex type.

```
<xs:complexType name="ViewsType">
  <xs:sequence>
    <xs:element name="View" type="oba:ViewType" minOccurs="0" maxOccurs="unbounded"/>
  </xs:sequence>
</xs:complexType>
```

See section 5.1 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.2.3.5 ViewType

Target namespace: http://schemas.microsoft.com/office/2006/03/OfficeBusinessApplication

Referenced by: ViewsType

The complex type that specifies the deployment related properties of an external list view.

Attributes:

Id: An **xs:string** attribute ([XMLSCHEMA2] section 3.2.1) that specifies the GUID of the external list view.

DisplayName: An **xs:string** attribute ([XMLSCHEMA2] section 3.2.1) that specifies the display name of the external list view.

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment specifies the contents of this complex type.

```
<xs:complexType name="ViewType">
  <xs:attribute name="Id" form="unqualified" type="xs:string"/>
  <xs:attribute name="DisplayName" form="unqualified" type="xs:string"/>
</xs:complexType>
```

See section 5.1 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.2.4 Simple Types

None.

3   Structure Examples

The following example describes the contents of the deployment package for a typical scenario where the user deploys a Business Connectivity Services solution based on an external list offline to the client. This example uses an external list based on the Customer table from the [AdventureWorks] database.

The deployment package consists of the following files:

- Business Connectivity Services Deployment Manifest file

- Business Connectivity Services Application Manifest file

- External List View Schema file

- Entity List Information file

- BDC Model file

3.1   Business Connectivity Services Deployment Manifest File

The Business Connectivity Services Deployment Manifest file conforms to the Office Server ClickOnce deployment manifest schema as described in [MS-OSCO] section 2.1.

File name: c30d5708-62c9-43fd-ab4f-66a270fa4401.vsto

```
<?xml version="1.0" encoding="utf-8"?>
<asmv1:assembly xsi:schemaLocation="urn:schemas-microsoft-com:asm.v1 assembly.adaptive.xsd"
manifestVersion="1.0" xmlns:dsig="http://www.w3.org/2000/09/xmldsig#" xmlns="urn:schemas-
microsoft-com:asm.v2" xmlns:asmv1="urn:schemas-microsoft-com:asm.v1"
xmlns:asmv2="urn:schemas-microsoft-com:asm.v2" xmlns:xrml="urn:mpeg:mpeg21:2003:01-REL-R-NS"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <assemblyIdentity name="c30d5708-62c9-43fd-ab4f-66a270fa4401" version="1.0.0.2"
publicKeyToken="e7be6b6c1584dd2d" language="neutral" processorArchitecture="msil"
xmlns="urn:schemas-microsoft-com:asm.v1" />
  <description asmv2:publisher="DefaultPublisher" asmv2:product="ExternalList"
xmlns="urn:schemas-microsoft-com:asm.v1" />
  <deployment install="false" mapFileExtensions="true" />
  <dependency>
    <dependentAssembly dependencyType="install" codebase="1a71432d-a42b-488d-b997-
a33981706d4e\c30d5708-62c9-43fd-ab4f-66a270fa4401.manifest" size="9218">
      <assemblyIdentity name="c30d5708-62c9-43fd-ab4f-66a270fa4401" version="1.0.0.2"
publicKeyToken="e7be6b6c1584dd2d" language="neutral" processorArchitecture="msil"
type="win32" />
      <hash>
        <dsig:Transforms>
          <dsig:Transform Algorithm="urn:schemas-microsoft-com:HashTransforms.Identity" />
        </dsig:Transforms>
        <dsig:DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1" />
        <dsig:DigestValue>nZXIGW1lasvVwpy29MwRtbUrlYw=</dsig:DigestValue>
      </hash>
    </dependentAssembly>
  </dependency>
  <publisherIdentity name="CN=domain\user_name"
issuerKeyHash="d3b77cca297a35c9bdf34b571cfbf56a8f7eecdd" />
  <Signature Id="StrongNameSignature" xmlns="http://www.w3.org/2000/09/xmldsig#">
    <SignedInfo>
      <CanonicalizationMethod Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#" />
      <SignatureMethod Algorithm="http://www.w3.org/2000/09/xmldsig#rsa-sha1" />
      <Reference URI="">
        <Transforms>
          <Transform Algorithm="http://www.w3.org/2000/09/xmldsig#enveloped-signature" />
```

```
        <Transform Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#" />
      </Transforms>
      <DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1" />
      <DigestValue>djOVkf9pLtr+Ty336MelDxA4zMw=</DigestValue>
    </Reference>
  </SignedInfo>

<SignatureValue>RYTzCo+6VOBHfyVVi/tb3dZ/7vgL67vfcIaP+PIu1UTX6G7wceT8116H5lzXNcrl0wbNwL7LGZPqu
H5OIyV3kZtOpp3Xi4SW2x91//4NYY3sZ+GsKUAbkLS2fYH0CNSNBrWbdBVUf6iqS9PhGFWueohghf5zLiYCL8MYyD5uvF
w=</SignatureValue>
    <KeyInfo Id="StrongNameKeyInfo">
      <KeyValue>
        <RSAKeyValue>

<Modulus>zL0sC9HlOd126c6MJjua/TOSyyKQXI3bPGY8yzoTh6dafUBP0hz/0OO8yltiJogOjJouFHUFdLhDuylS98io
OF/ipTNwrNcdovtqWLrtMxD0hZ71N2tF5yEyEn1eNFQbprRN3LI0Ez18vgMwDHy/u5CDPW+EglMKdqVclC/IEjM=</Mod
ulus>
        <Exponent>AQAB</Exponent>
      </RSAKeyValue>
    </KeyValue>
    <msrel:RelData xmlns:msrel="http://schemas.microsoft.com/windows/rel/2005/reldata">
      <r:license xmlns:r="urn:mpeg:mpeg21:2003:01-REL-R-NS"
xmlns:as="http://schemas.microsoft.com/windows/pki/2005/Authenticode">
        <r:grant>
          <as:ManifestInformation Hash="cccc38100fa5c7e8f72d4ffeda2e69ff91953376"
Description="" Url="">
            <as:assemblyIdentity name="c30d5708-62c9-43fd-ab4f-66a270fa4401"
version="1.0.0.2" publicKeyToken="e7be6b6c1584dd2d" language="neutral"
processorArchitecture="msil" xmlns="urn:schemas-microsoft-com:asm.v1" />
          </as:ManifestInformation>
          <as:SignedBy />
          <as:AuthenticodePublisher>
            <as:X509SubjectName>CN=domain\user_name</as:X509SubjectName>
          </as:AuthenticodePublisher>
        </r:grant>
        <r:issuer>
          <Signature Id="AuthenticodeSignature" xmlns="http://www.w3.org/2000/09/xmldsig#">
            <SignedInfo>
              <CanonicalizationMethod Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#"
/>
              <SignatureMethod Algorithm="http://www.w3.org/2000/09/xmldsig#rsa-sha1" />
              <Reference URI="">
                <Transforms>
                  <Transform Algorithm="http://www.w3.org/2000/09/xmldsig#enveloped-
signature" />
                  <Transform Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#" />
                </Transforms>
                <DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1" />
                <DigestValue>RgctFiv/PenecRcsro9z6HbqQdM=</DigestValue>
              </Reference>
            </SignedInfo>

<SignatureValue>DLgPJk2rZED338K8k6ZFxuWFRIKg1DLtc/KQG5jD2kqbIWs61X9o14LduOyyi+/uNMpkK5ED+2X6N
LElGQxvfp05QjwTxsRbmf05cT5rUubykqPEde1LejmUg/W3Pow/0kS+06Hmxhn7/GmNZbFIsyXO2V33O2Cb1ofqelZ0wV
8=</SignatureValue>
            <KeyInfo>
              <KeyValue>
                <RSAKeyValue>

<Modulus>zL0sC9HlOd126c6MJjua/TOSyyKQXI3bPGY8yzoTh6dafUBP0hz/0OO8yltiJogOjJouFHUFdLhDuylS98io
OF/ipTNwrNcdovtqWLrtMxD0hZ71N2tF5yEyEn1eNFQbprRN3LI0Ez18vgMwDHy/u5CDPW+EglMKdqVclC/IEjM=</Mod
ulus>
                  <Exponent>AQAB</Exponent>
                </RSAKeyValue>
              </KeyValue>
              <X509Data>

<X509Certificate>MIIB5jCCAVOgAwIBAgIQTPcmZZHSKa1PCFsSn1++HDAJBgUrDgMCHQUAMCkxJzAlBgNVBAMeHgBS
```

```
AEUARABNAE8ATgBEAFwATwBmAGYAVAAyADMANTAeFw0xMDAxMTQwMjI2MzRaFw0xOTAxMDIwMDAwMDBaMCkxJzAlBgNVB
AMeHgBSAEUARABNAE8ATgBEAFwATwBmAGYAVAAyADMANTCBnzANBgkqhkiG9w0BAQEFAAOBjQAwgYkCgYEAzL0sC9HlOd
126c6MJjua/TOSyyKQXI3bPGY8yzoTh6dafUBP0hz/0OO8yltiJogOjJouFHUFdLhDuylS98ioOF/ipTNwrNcdovtqWLr
tMxD0hZ71N2tF5yEyEn1eNFQbprRN3LI0Ez18vgMwDHy/u5CDPW+EglMKdqVclC/IEjMCAwEAAaMXMBUwEwYDVR0lBAww
CgYIKwYBBQUHAwMwCQYFKw4DAh0FAAOBgQDJLFkC9FSc/DwPub3Ol9i5JpaKdaNWKSrsekeE3HfHSzcCft3/wBL7EnTHT
cTCTnfOOnwXEKVbeJC/CaV8PVowg/RvoVrlUBHa4sW8xBi4+NtIqWruy9WHP3lZ1GLGEEW5RLwNBWfnZeKWHODlnJzt2/
Vwsr1aMl1ygKBelRmdHg==</X509Certificate>
                    </X509Data>
                </KeyInfo>
            </Signature>
        </r:issuer>
      </r:license>
    </msrel:RelData>
  </KeyInfo>
</Signature>
</asmv1:assembly>
```

3.2 Business Connectivity Services Application Manifest File

The Business Connectivity Services Application Manifest file is an extension of the Office Server ClickOnce application manifest schema as described in [MS-OSCO] section 2.2. The extension to the Office Server ClickOnce application manifest consists of the XML element obav1:solution which specifies the parameters for the solution update check.

File name: c30d5708-62c9-43fd-ab4f-66a270fa4401.manifest

```
<?xml version="1.0" encoding="utf-8"?>
<asmv1:assembly xsi:schemaLocation="urn:schemas-microsoft-com:asm.v1 assembly.adaptive.xsd"
manifestVersion="1.0" xmlns:dsig="http://www.w3.org/2000/09/xmldsig#" xmlns="urn:schemas-
microsoft-com:asm.v2" xmlns:asmv1="urn:schemas-microsoft-com:asm.v1"
xmlns:asmv2="urn:schemas-microsoft-com:asm.v2" xmlns:xsi="http://www.w3.org/2001/XMLSchema-
instance">
  <asmv1:assemblyIdentity name="c30d5708-62c9-43fd-ab4f-66a270fa4401" version="1.0.0.2"
publicKeyToken="e7be6b6c1584dd2d" language="neutral" processorArchitecture="msil"
type="win32" />
  <application />
  <entryPoint>
    <co.v1:customHostSpecified xmlns:co.v1="urn:schemas-microsoft-com:clickonce.v1" />
  </entryPoint>
  <trustInfo>
    <security xmlns="urn:schemas-microsoft-com:asm.v2">
      <applicationRequestMinimum>
        <PermissionSet Unrestricted="true" ID="Custom" SameSite="site" />
        <defaultAssemblyRequest permissionSetReference="Custom" />
      </applicationRequestMinimum>
      <requestedPrivileges xmlns="urn:schemas-microsoft-com:asm.v3">
        <requestedExecutionLevel level="asInvoker" />
      </requestedPrivileges>
    </security>
  </trustInfo>
  <dependency>
    <dependentOS>
      <osVersionInfo>
        <os majorVersion="4" minorVersion="10" buildNumber="0" servicePackMajor="0" />
      </osVersionInfo>
    </dependentOS>
  </dependency>
  <dependency>
    <dependentAssembly dependencyType="preRequisite" allowDelayedBinding="true">
      <assemblyIdentity name="Microsoft.Windows.CommonLanguageRuntime" version="2.0.50727.0"
/>
    </dependentAssembly>
  </dependency>
  <file name="03fcc009-72df-454b-8c89-bbb7d811b5a3.xml" size="677">
    <hash>
```

```
      <dsig:Transforms>
        <dsig:Transform Algorithm="urn:schemas-microsoft-com:HashTransforms.Identity" />
      </dsig:Transforms>
      <dsig:DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1" />
      <dsig:DigestValue>dhsAZIAQWXN0GiZZa7483zh6xhk=</dsig:DigestValue>
    </hash>
  </file>
  <file name="ExternalListManifest.xml" size="570">
    <hash>
      <dsig:Transforms>
        <dsig:Transform Algorithm="urn:schemas-microsoft-com:HashTransforms.Identity" />
      </dsig:Transforms>
      <dsig:DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1" />
      <dsig:DigestValue>CouVSoFHiaC1tX9gud3LabMZ1vA=</dsig:DigestValue>
    </hash>
  </file>
  <file name="metadata.xml" size="53794">
    <hash>
      <dsig:Transforms>
        <dsig:Transform Algorithm="urn:schemas-microsoft-com:HashTransforms.Identity" />
      </dsig:Transforms>
      <dsig:DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1" />
      <dsig:DigestValue>ZQc9PfIk6erGs+cMIHTfLvSoI+w=</dsig:DigestValue>
    </hash>
  </file>
  <file name="template.xsn" size="9321">
    <hash>
      <dsig:Transforms>
        <dsig:Transform Algorithm="urn:schemas-microsoft-com:HashTransforms.Identity" />
      </dsig:Transforms>
      <dsig:DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1" />
      <dsig:DigestValue>wwI31KsQv40z+vyV2I1bsFfOflo=</dsig:DigestValue>
    </hash>
  </file>
  <vstav3:addIn xmlns:vstav3="urn:schemas-microsoft-com:vsta.v3">
    <vstav3:entryPointsCollection xmlns:vstav3="urn:schemas-microsoft-com:vsta.v3">
      <vstav3:entryPoints>
        <vstav3:entryPoint
class="Microsoft.Office.BusinessApplications.Runtime.OutlookAddIn">
          <assemblyIdentity name="Microsoft.Office.BusinessApplications.Runtime"
version="14.0.0.0" publicKeyToken="94de0004b6e3fcc5" language="neutral"
processorArchitecture="msil" />
        </vstav3:entryPoint>
      </vstav3:entryPoints>
    </vstav3:entryPointsCollection>
    <vstav3:update enabled="false" xmlns:vstav3="urn:schemas-microsoft-com:vsta.v3" />
    <vstav3:postActions xmlns:vstav3="urn:schemas-microsoft-com:vsta.v3">
      <vstav3:postAction>
        <vstav3:entryPoint
class="Microsoft.Office.BusinessApplications.Runtime.DeploymentAction.SolutionDeploymentActio
n">
          <assemblyIdentity name="Microsoft.Office.BusinessApplications.Runtime"
version="14.0.0.0" publicKeyToken="94de0004b6e3fcc5" language="neutral"
processorArchitecture="msil" />
        </vstav3:entryPoint>
        <vstav3:postActionData>
          <obav1:solution solutionId="c30d5708-62c9-43fd-ab4f-66a270fa4401"
isSimpleSolution="True" isSolution="True" xmlns:obav1="urn:schemas-microsoft-com:oba.v1">
            <obav1:addins />
            <obav1:update enabled="true">
              <obav1:expiration maximumAge="7" unit="days" />
            </obav1:update>
          </obav1:solution>
        </vstav3:postActionData>
      </vstav3:postAction>
    </vstav3:postActions>
    <vstav3:application xmlns:vstav3="urn:schemas-microsoft-com:vsta.v3">
      <vstov4:customizations xmlns:vstov4="urn:schemas-microsoft-com:vsto.v4">
```

```
<vstov4:customization>
  <vstov4:appAddIn application="Outlook" loadBehavior="2" keyName="OutlookAddIn1">
    <vstov4:friendlyName>OutlookAddIn1</vstov4:friendlyName>
    <vstov4:description>OutlookAddIn1</vstov4:description>
  </vstov4:appAddIn>
</vstov4:customization>
        </vstov4:customizations>
      </vstav3:application>
  </vstav3:addIn>
  <publisherIdentity name="CN=domain\user_name"
issuerKeyHash="d3b77cca297a35c9bdf34b571cfbf56a8f7eecdd" />
  <Signature Id="StrongNameSignature" xmlns="http://www.w3.org/2000/09/xmldsig#">
    <SignedInfo>
      <CanonicalizationMethod Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#" />
      <SignatureMethod Algorithm="http://www.w3.org/2000/09/xmldsig#rsa-sha1" />
      <Reference URI="">
        <Transforms>
          <Transform Algorithm="http://www.w3.org/2000/09/xmldsig#enveloped-signature" />
          <Transform Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#" />
        </Transforms>
        <DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1" />
        <DigestValue>bysVdOftdJo0X2ggS1cI4d7PF2c=</DigestValue>
      </Reference>
    </SignedInfo>

<SignatureValue>se/KIMuEVxlMyoW9FThLkyH+F5kj2mRvD5Yyi92OjHtKWZFFsPfDbTMNVvavh3sNZnyktyY8YdqHT
1q48Xhf4YBpoIvecBEYWJTO1VasczzF1ATQg21yIAmRw6W124sKa3QMV9KXjh/0kuCnjwytlzUJnG+4nWDlY7jdxpDmdx
E=</SignatureValue>
    <KeyInfo Id="StrongNameKeyInfo">
      <KeyValue>
        <RSAKeyValue>

<Modulus>zL0sC9HlOd126c6MJjua/TOSyyKQXI3bPGY8yzoTh6dafUBP0hz/0OO8yltiJogOjJouFHUFdLhDuylS98io
OF/ipTNwrNcdovtqWLrtMxD0hZ71N2tF5yEyEn1eNFQbprRN3LI0Ez18vgMwDHy/u5CDPW+EglMKdqVclC/IEjM=</Mod
ulus>
          <Exponent>AQAB</Exponent>
        </RSAKeyValue>
      </KeyValue>
      <msrel:RelData xmlns:msrel="http://schemas.microsoft.com/windows/rel/2005/reldata">
        <r:license xmlns:r="urn:mpeg:mpeg21:2003:01-REL-R-NS"
xmlns:as="http://schemas.microsoft.com/windows/pki/2005/Authenticode">
          <r:grant>
            <as:ManifestInformation Hash="6717cfdee108574b20685f349a74ede774152b6f"
Description="" Url="">
              <as:assemblyIdentity name="c30d5708-62c9-43fd-ab4f-66a270fa4401"
version="1.0.0.2" publicKeyToken="e7be6b6c1584dd2d" language="neutral"
processorArchitecture="msil" type="win32" />
            </as:ManifestInformation>
            <as:SignedBy />
            <as:AuthenticodePublisher>
              <as:X509SubjectName>CN=domain\user name</as:X509SubjectName>
            </as:AuthenticodePublisher>
          </r:grant>
          <r:issuer>
            <Signature Id="AuthenticodeSignature" xmlns="http://www.w3.org/2000/09/xmldsig#">
              <SignedInfo>
                <CanonicalizationMethod Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#"
/>
                <SignatureMethod Algorithm="http://www.w3.org/2000/09/xmldsig#rsa-sha1" />
                <Reference URI="">
                  <Transforms>
                    <Transform Algorithm="http://www.w3.org/2000/09/xmldsig#enveloped-
signature" />
                    <Transform Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#" />
                  </Transforms>
                  <DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1" />
                  <DigestValue>u/kg55tTzZv1Cgwq6DxDOYEQpYE=</DigestValue>
                </Reference>
```

```
            </SignedInfo>

<SignatureValue>EbOYHfvr622RRX850Q8OFTtzhmKxGFHgORDu3F4gtZsFlPRLV1uBTh87nRqxrK6tLohyX26F32RyQ
VR7169eCOw8NcBxCYVm2I9bC/KrmZX+pXiP1J+N8EyhFofIHG5zeyH1iw3CaDcYP0g3lddAlBBFWtD3Jc5j2f9u6HRK1X
k=</SignatureValue>
              <KeyInfo>
                <KeyValue>
                  <RSAKeyValue>

<Modulus>zL0sC9HlOd126c6MJjua/TOSyyKQXI3bPGY8yzoTh6dafUBP0hz/0OO8yltiJogOjJouFHUFdLhDuylS98io
OF/ipTNwrNcdovtqWLrtMxD0hZ71N2tF5yEyEn1eNFQbprRN3LI0Ez18vgMwDHy/u5CDPW+EglMKdqVclC/IEjM=</Mod
ulus>
                  <Exponent>AQAB</Exponent>
                </RSAKeyValue>
              </KeyValue>
              <X509Data>

<X509Certificate>MIIB5jCCAVOgAwIBAgIQTPcmZZHSKa1PCFsSn1++HDAJBgUrDgMCHQUAMCkxJzAlBgNVBAMeHgBS
AEUARABNAE8ATgBEAFwATwBmAGYAVAAyADMANTAeFw0xMDAxMTQwMjI2MzRaFw0xOTAxMDIwMDAwMDBaMCkxJzAlBgNVB
AMeHgBSAEUARABNAE8ATgBEAFwATwBmAGYAVAAyADMANTCBnzANBgkqhkiG9w0BAQEFAAOBjQAwgYkCgYEAzL0sC9HlOd
126c6MJjua/TOSyyKQXI3bPGY8yzoTh6dafUBP0hz/0OO8yltiJogOjJouFHUFdLhDuylS98ioOF/ipTNwrNcdovtqWLr
tMxD0hZ71N2tF5yEyEn1eNFQbprRN3LI0Ez18vgMwDHy/u5CDPW+EglMKdqVclC/IEjMCAwEAAaMXMBUwEwYDVR0lBAww
CgYIKwYBBQUHAwMwCQYFKw4DAh0FAAOBgQDJLFkC9FSc/DwPub3Ol9i5JpaKdaNWKSrsekeE3HfHSzcCft3/wBL7EnTHT
cTCTnfOOnwXEKVbeJC/CaV8PVowg/RvoVrlUBHa4sW8xBi4+NtIqWruy9WHP3lZ1GLGEEW5RLwNBWfnZeKWHODlnJzt2/
Vwsr1aMl1ygKBelRmdHg==</X509Certificate>
              </X509Data>
            </KeyInfo>
          </Signature>
        </r:issuer>
      </r:license>
    </msrel:RelData>
  </KeyInfo>
</Signature>
</asmv1:assembly>
```

3.3   External List View Schema File

The External List View Schema file conforms to the schema described in [MS-WSSCAML] section 2.3.2.17. The file contains information about the views of the external list for which the deployment package is created. The following is an example view of an external list, which is based on an external content type, which is based on the Customer table from [AdventureWorks] database.

File name: 03fcc009-72df-454b-8c89-bbb7d811b5a3.xml.deploy

```
<View Name="{03FCC009-72DF-454B-8C89-BBB7D811B5A3}" DefaultView="TRUE" MobileView="TRUE"
MobileDefaultView="TRUE" Type="HTML" DisplayName="Customer"
Url="/Lists/ExternalList/CustomerQuery Item List.aspx" Level="1" BaseViewID="1"
ContentTypeID="0x" ImageUrl="/_layouts/images/generic.png">
  <Method Name="CustomerQuery Item List"/>
  <Query>
    <OrderBy>
      <FieldRef Name="CustomerID"/>
    </OrderBy>
  </Query>
  <ViewFields>
    <FieldRef Name="CustomerID" ListItemMenu="TRUE" LinkToItem="TRUE"/>
    <FieldRef Name="TerritoryID"/>
    <FieldRef Name="AccountNumber"/>
    <FieldRef Name="CustomerType"/>
    <FieldRef Name="ModifiedDate"/>
  </ViewFields>
  <RowLimit Paged="TRUE">30</RowLimit>
  <Aggregations Value="Off"/>
```

```
</View>
```

3.4 Entity List Information File

The Entity List Information file contains the properties of the external list on which the solution is based.

File name: ExternalListManifest.xml.deploy

```
<?xml version="1.0" encoding="utf-8"?>
<List Title="ExternalList" SiteId="2e231fc1-e608-4f52-aef3-23244b6abc5b" SiteTitle="Example
Site" xmlns="http://schemas.microsoft.com/office/2006/03/OfficeBusinessApplication">
  <Entity LobSystemInstance="AdventureWorks" EntityNamespace="http://example.com"
EntityName="Customer" SpecificFinder="CustomerRead Item" DefaultViewId="03fcc009-72df-454b-
8c89-bbb7d811b5a3" />
  <Views>
    <View Id="03fcc009-72df-454b-8c89-bbb7d811b5a3" DisplayName="Customer" />
  </Views>
  <Form CreateView="" DisplayView="Read Item" EditView="" />
</List>
```

3.5 BDC Model File

The BDC Model file conforms to schema described in [MS-BDCMFFS]. It contains the external content type definition associated with the external list included in the package.

File name: metadata.xml.deploy

```
<?xml version="1.0" encoding="utf-16" standalone="yes"?>
<Model xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://schemas.microsoft.com/windows/2007/BusinessDataCatalog
BDCMetadata.xsd" Name="MC Sample" IsCached="false"
xmlns="http://schemas.microsoft.com/windows/2007/BusinessDataCatalog">
  <AccessControlList>
    <AccessControlEntry Principal="domain\user name">
      <Right BdcRight="Edit" />
      <Right BdcRight="Execute" />
      <Right BdcRight="SetPermissions" />
      <Right BdcRight="SelectableInClients" />
    </AccessControlEntry>
  </AccessControlList>
  <LobSystems>
    <LobSystem Type="Database" Name="AdventureWorks">
      <Properties>
        <Property Name="WildcardCharacter" Type="System.String">%</Property>
      </Properties>
      <AccessControlList>
        <AccessControlEntry Principal="domain\user name">
          <Right BdcRight="Edit" />
          <Right BdcRight="Execute" />
          <Right BdcRight="SetPermissions" />
          <Right BdcRight="SelectableInClients" />
        </AccessControlEntry>
      </AccessControlList>
      <Proxy />
      <LobSystemInstances>
        <LobSystemInstance Name="AdventureWorks">
          <Properties>
            <Property Name="AuthenticationMode" Type="System.String">PassThrough</Property>
            <Property Name="DatabaseAccessProvider" Type="System.String">SqlServer</Property>
```

```xml
            <Property Name="RdbConnection Data Source"
Type="System.String">example.com</Property>
            <Property Name="RdbConnection Initial Catalog"
Type="System.String">AdventureWorks</Property>
            <Property Name="RdbConnection Integrated Security"
Type="System.String">SSPI</Property>
            <Property Name="RdbConnection Pooling" Type="System.String">True</Property>
          </Properties>
        </LobSystemInstance>
      </LobSystemInstances>
      <Entities>
        <Entity Namespace="http://example.com" Version="1.0.0.0"
EstimatedInstanceCount="10000" Name="Customer" DefaultDisplayName="Customer">
          <Properties>
            <Property Name="OutlookItemType" Type="System.String">Post</Property>
          </Properties>
          <AccessControlList>
            <AccessControlEntry Principal="domain\user_name">
              <Right BdcRight="Edit" />
              <Right BdcRight="Execute" />
              <Right BdcRight="SetPermissions" />
              <Right BdcRight="SelectableInClients" />
            </AccessControlEntry>
          </AccessControlList>
          <Identifiers>
            <Identifier TypeName="System.Int32" Name="CustomerID" />
          </Identifiers>
          <Methods>
            <Method Name="CustomerCreate Item" DefaultDisplayName="Create Item Customer">
              <Properties>
                <Property Name="BackEndObject" Type="System.String">Customer</Property>
                <Property Name="BackEndObjectType"
Type="System.String">SqlServerTable</Property>
                <Property Name="RdbCommandText" Type="System.String">INSERT INTO
[AdventureWorks].[Sales].[Customer]([TerritoryID] , [CustomerType] , [rowguid] ,
[ModifiedDate]) VALUES(@TerritoryID , @CustomerType , @rowguid , @ModifiedDate) SELECT
[CustomerID] FROM [AdventureWorks].[Sales].[Customer] WHERE [CustomerID] =
@@IDENTITY</Property>
                <Property Name="RdbCommandType" Type="System.Data.CommandType, System.Data,
Version=2.0.0.0, Culture=neutral, PublicKeyToken=b77a5c561934e089">Text</Property>
                <Property Name="Schema" Type="System.String">Sales</Property>
              </Properties>
              <AccessControlList>
                <AccessControlEntry Principal="domain\user_name">
                  <Right BdcRight="Edit" />
                  <Right BdcRight="Execute" />
                  <Right BdcRight="SetPermissions" />
                  <Right BdcRight="SelectableInClients" />
                </AccessControlEntry>
              </AccessControlList>
              <Parameters>
                <Parameter Direction="In" Name="@TerritoryID">
                  <TypeDescriptor TypeName="System.Nullable`1[[System.Int32, mscorlib,
Version=2.0.0.0, Culture=neutral, PublicKeyToken=b77a5c561934e089]]" CreatorField="true"
Name="TerritoryID" />
                </Parameter>
                <Parameter Direction="In" Name="@CustomerType">
                  <TypeDescriptor TypeName="System.String" CreatorField="true"
Name="CustomerType">
                    <Properties>
                      <Property Name="Size" Type="System.Int32">1</Property>
                    </Properties>
                  </TypeDescriptor>
                </Parameter>
                <Parameter Direction="In" Name="@rowguid">
                  <TypeDescriptor TypeName="System.Guid" CreatorField="true" Name="rowguid"
/>
                </Parameter>
```

```
                        <Parameter Direction="In" Name="@ModifiedDate">
                          <TypeDescriptor TypeName="System.DateTime" CreatorField="true"
Name="ModifiedDate">
                            <Interpretation>
                              <NormalizeDateTime LobDateTimeMode="UTC" />
                            </Interpretation>
                          </TypeDescriptor>
                        </Parameter>
                        <Parameter Direction="Return" Name="Customer">
                          <TypeDescriptor TypeName="System.Data.IDataReader, System.Data,
Version=2.0.0.0, Culture=neutral, PublicKeyToken=b77a5c561934e089" IsCollection="true"
Name="Customer">
                            <TypeDescriptors>
                              <TypeDescriptor TypeName="System.Data.IDataRecord, System.Data,
Version=2.0.0.0, Culture=neutral, PublicKeyToken=b77a5c561934e089" Name="CustomerElement">
                                <TypeDescriptors>
                                  <TypeDescriptor TypeName="System.Int32" ReadOnly="true"
IdentifierName="CustomerID" Name="CustomerID" />
                                </TypeDescriptors>
                              </TypeDescriptor>
                            </TypeDescriptors>
                          </TypeDescriptor>
                        </Parameter>
                      </Parameters>
                      <MethodInstances>
                        <MethodInstance Type="Creator" ReturnParameterName="Customer"
ReturnTypeDescriptorPath="Customer[0]" Default="true" Name="CustomerCreate Item"
DefaultDisplayName="Customer">
                          <AccessControlList>
                            <AccessControlEntry Principal="domain\user_name">
                              <Right BdcRight="Edit" />
                              <Right BdcRight="Execute" />
                              <Right BdcRight="SetPermissions" />
                              <Right BdcRight="SelectableInClients" />
                            </AccessControlEntry>
                          </AccessControlList>
                        </MethodInstance>
                      </MethodInstances>
                    </Method>
                    <Method Name="CustomerRead Item" DefaultDisplayName="Read Item Customer">
                      <Properties>
                        <Property Name="BackEndObject" Type="System.String">Customer</Property>
                        <Property Name="BackEndObjectType"
Type="System.String">SqlServerTable</Property>
                        <Property Name="RdbCommandText" Type="System.String">SELECT [CustomerID] ,
[TerritoryID] , [AccountNumber] , [CustomerType] , [rowguid] , [ModifiedDate] FROM
[AdventureWorks].[Sales].[Customer] WHERE [CustomerID] = @CustomerID</Property>
                        <Property Name="RdbCommandType" Type="System.Data.CommandType, System.Data,
Version=2.0.0.0, Culture=neutral, PublicKeyToken=b77a5c561934e089">Text</Property>
                        <Property Name="Schema" Type="System.String">Sales</Property>
                      </Properties>
                      <AccessControlList>
                        <AccessControlEntry Principal="domain\user_name">
                          <Right BdcRight="Edit" />
                          <Right BdcRight="Execute" />
                          <Right BdcRight="SetPermissions" />
                          <Right BdcRight="SelectableInClients" />
                        </AccessControlEntry>
                      </AccessControlList>
                      <Parameters>
                        <Parameter Direction="In" Name="@CustomerID">
                          <TypeDescriptor TypeName="System.Int32" IdentifierName="CustomerID"
Name="CustomerID" />
                        </Parameter>
                        <Parameter Direction="Return" Name="Customer">
                          <TypeDescriptor TypeName="System.Data.IDataReader, System.Data,
Version=2.0.0.0, Culture=neutral, PublicKeyToken=b77a5c561934e089" IsCollection="true"
Name="Customer">
```

```xml
                <TypeDescriptors>
                  <TypeDescriptor TypeName="System.Data.IDataRecord, System.Data,
Version=2.0.0.0, Culture=neutral, PublicKeyToken=b77a5c561934e089" Name="CustomerElement">
                    <TypeDescriptors>
                      <TypeDescriptor TypeName="System.Int32" ReadOnly="true"
IdentifierName="CustomerID" Name="CustomerID" />
                      <TypeDescriptor TypeName="System.Nullable`1[[System.Int32,
mscorlib, Version=2.0.0.0, Culture=neutral, PublicKeyToken=b77a5c561934e089]]"
Name="TerritoryID" />
                      <TypeDescriptor TypeName="System.String" ReadOnly="true"
Name="AccountNumber">
                        <Properties>
                          <Property Name="OfficeProperty"
Type="System.String">Subject</Property>
                          <Property Name="Size" Type="System.Int32">10</Property>
                        </Properties>
                      </TypeDescriptor>
                      <TypeDescriptor TypeName="System.String" Name="CustomerType">
                        <Properties>
                          <Property Name="RequiredInForms"
Type="System.Boolean">true</Property>
                          <Property Name="Size" Type="System.Int32">1</Property>
                        </Properties>
                      </TypeDescriptor>
                      <TypeDescriptor TypeName="System.Guid" Name="rowguid">
                        <Properties>
                          <Property Name="RequiredInForms"
Type="System.Boolean">true</Property>
                        </Properties>
                      </TypeDescriptor>
                      <TypeDescriptor TypeName="System.DateTime" Name="ModifiedDate">
                        <Properties>
                          <Property Name="RequiredInForms"
Type="System.Boolean">true</Property>
                        </Properties>
                        <Interpretation>
                          <NormalizeDateTime LobDateTimeMode="UTC" />
                        </Interpretation>
                      </TypeDescriptor>
                    </TypeDescriptors>
                  </TypeDescriptor>
                </TypeDescriptors>
              </TypeDescriptor>
            </Parameter>
          </Parameters>
          <MethodInstances>
            <MethodInstance Type="SpecificFinder" ReturnParameterName="Customer"
ReturnTypeDescriptorPath="Customer[0]" Default="true" Name="CustomerRead Item"
DefaultDisplayName="Customer">
              <Properties>
                <Property Name="LastDesignedOfficeItemType"
Type="System.String">Post</Property>
              </Properties>
              <AccessControlList>
                <AccessControlEntry Principal="domain\user_name">
                  <Right BdcRight="Edit" />
                  <Right BdcRight="Execute" />
                  <Right BdcRight="SetPermissions" />
                  <Right BdcRight="SelectableInClients" />
                </AccessControlEntry>
              </AccessControlList>
            </MethodInstance>
          </MethodInstances>
        </Method>
        <Method Name="CustomerUpdate Item" DefaultDisplayName="Update Item Customer">
          <Properties>
            <Property Name="BackEndObject" Type="System.String">Customer</Property>
```

```xml
                    <Property Name="BackEndObjectType"
Type="System.String">SqlServerTable</Property>
                    <Property Name="RdbCommandText" Type="System.String">UPDATE
[AdventureWorks].[Sales].[Customer] SET [TerritoryID] = @TerritoryID , [CustomerType] =
@CustomerType , [rowguid] = @rowguid , [ModifiedDate] = @ModifiedDate WHERE [CustomerID] =
@CustomerID</Property>
                    <Property Name="RdbCommandType" Type="System.Data.CommandType, System.Data,
Version=2.0.0.0, Culture=neutral, PublicKeyToken=b77a5c561934e089">Text</Property>
                    <Property Name="Schema" Type="System.String">Sales</Property>
                </Properties>
                <AccessControlList>
                  <AccessControlEntry Principal="domain\user_name">
                    <Right BdcRight="Edit" />
                    <Right BdcRight="Execute" />
                    <Right BdcRight="SetPermissions" />
                    <Right BdcRight="SelectableInClients" />
                  </AccessControlEntry>
                </AccessControlList>
                <Parameters>
                  <Parameter Direction="In" Name="@CustomerID">
                    <TypeDescriptor TypeName="System.Int32" UpdaterField="true"
IdentifierName="CustomerID" Name="CustomerID" />
                  </Parameter>
                  <Parameter Direction="In" Name="@TerritoryID">
                    <TypeDescriptor TypeName="System.Nullable`1[[System.Int32, mscorlib,
Version=2.0.0.0, Culture=neutral, PublicKeyToken=b77a5c561934e089]]" UpdaterField="true"
Name="TerritoryID" />
                  </Parameter>
                  <Parameter Direction="In" Name="@CustomerType">
                    <TypeDescriptor TypeName="System.String" UpdaterField="true"
Name="CustomerType">
                      <Properties>
                        <Property Name="Size" Type="System.Int32">1</Property>
                      </Properties>
                    </TypeDescriptor>
                  </Parameter>
                  <Parameter Direction="In" Name="@rowguid">
                    <TypeDescriptor TypeName="System.Guid" UpdaterField="true" Name="rowguid"
/>
                  </Parameter>
                  <Parameter Direction="In" Name="@ModifiedDate">
                    <TypeDescriptor TypeName="System.DateTime" UpdaterField="true"
Name="ModifiedDate">
                      <Interpretation>
                        <NormalizeDateTime LobDateTimeMode="UTC" />
                      </Interpretation>
                    </TypeDescriptor>
                  </Parameter>
                </Parameters>
                <MethodInstances>
                  <MethodInstance Type="Updater" Name="CustomerUpdate Item"
DefaultDisplayName="Customer">
                    <AccessControlList>
                      <AccessControlEntry Principal="domain\user_name">
                        <Right BdcRight="Edit" />
                        <Right BdcRight="Execute" />
                        <Right BdcRight="SetPermissions" />
                        <Right BdcRight="SelectableInClients" />
                      </AccessControlEntry>
                    </AccessControlList>
                  </MethodInstance>
                </MethodInstances>
              </Method>
              <Method Name="CustomerDelete Item" DefaultDisplayName="Delete Item Customer">
                <Properties>
                  <Property Name="BackEndObject" Type="System.String">Customer</Property>
                  <Property Name="BackEndObjectType"
Type="System.String">SqlServerTable</Property>
```

```xml
                    <Property Name="RdbCommandText" Type="System.String">DELETE FROM
[AdventureWorks].[Sales].[Customer] WHERE [CustomerID] = @CustomerID</Property>
                    <Property Name="RdbCommandType" Type="System.Data.CommandType, System.Data,
Version=2.0.0.0, Culture=neutral, PublicKeyToken=b77a5c561934e089">Text</Property>
                    <Property Name="Schema" Type="System.String">Sales</Property>
                </Properties>
                <AccessControlList>
                    <AccessControlEntry Principal="domain\user_name">
                        <Right BdcRight="Edit" />
                        <Right BdcRight="Execute" />
                        <Right BdcRight="SetPermissions" />
                        <Right BdcRight="SelectableInClients" />
                    </AccessControlEntry>
                </AccessControlList>
                <Parameters>
                    <Parameter Direction="In" Name="@CustomerID">
                        <TypeDescriptor TypeName="System.Int32" IdentifierName="CustomerID"
Name="CustomerID" />
                    </Parameter>
                </Parameters>
                <MethodInstances>
                    <MethodInstance Type="Deleter" Name="CustomerDelete Item"
DefaultDisplayName="Customer">
                        <AccessControlList>
                            <AccessControlEntry Principal="domain\user_name">
                                <Right BdcRight="Edit" />
                                <Right BdcRight="Execute" />
                                <Right BdcRight="SetPermissions" />
                                <Right BdcRight="SelectableInClients" />
                            </AccessControlEntry>
                        </AccessControlList>
                    </MethodInstance>
                </MethodInstances>
            </Method>
            <Method Name="CustomerQuery Item List" DefaultDisplayName="Customer Query Item
List">
                <Properties>
                    <Property Name="BackEndObject" Type="System.String">Customer</Property>
                    <Property Name="BackEndObjectType"
Type="System.String">SqlServerTable</Property>
                    <Property Name="RdbCommandText" Type="System.String">SELECT [CustomerID] ,
[TerritoryID] , [AccountNumber] , [CustomerType] , [rowguid] , [ModifiedDate] FROM
[AdventureWorks].[Sales].[Customer]</Property>
                    <Property Name="RdbCommandType" Type="System.Data.CommandType, System.Data,
Version=2.0.0.0, Culture=neutral, PublicKeyToken=b77a5c561934e089">Text</Property>
                    <Property Name="Schema" Type="System.String">Sales</Property>
                </Properties>
                <AccessControlList>
                    <AccessControlEntry Principal="domain\user_name">
                        <Right BdcRight="Edit" />
                        <Right BdcRight="Execute" />
                        <Right BdcRight="SetPermissions" />
                        <Right BdcRight="SelectableInClients" />
                    </AccessControlEntry>
                </AccessControlList>
                <Parameters>
                    <Parameter Direction="Return" Name="Customer">
                        <TypeDescriptor TypeName="System.Data.IDataReader, System.Data,
Version=2.0.0.0, Culture=neutral, PublicKeyToken=b77a5c561934e089" IsCollection="true"
Name="Customer">
                            <TypeDescriptors>
                                <TypeDescriptor TypeName="System.Data.IDataRecord, System.Data,
Version=2.0.0.0, Culture=neutral, PublicKeyToken=b77a5c561934e089" Name="CustomerElement">
                                    <TypeDescriptors>
                                        <TypeDescriptor TypeName="System.Int32" ReadOnly="true"
IdentifierName="CustomerID" Name="CustomerID" />
```

```xml
                                <TypeDescriptor TypeName="System.Nullable`1[[System.Int32,
mscorlib, Version=2.0.0.0, Culture=neutral, PublicKeyToken=b77a5c561934e089]]"
Name="TerritoryID" />
                                <TypeDescriptor TypeName="System.String" ReadOnly="true"
Name="AccountNumber">
                                  <Properties>
                                    <Property Name="Size" Type="System.Int32">10</Property>
                                  </Properties>
                                </TypeDescriptor>
                                <TypeDescriptor TypeName="System.String" Name="CustomerType">
                                  <Properties>
                                    <Property Name="RequiredInForms"
Type="System.Boolean">true</Property>
                                    <Property Name="Size" Type="System.Int32">1</Property>
                                  </Properties>
                                </TypeDescriptor>
                                <TypeDescriptor TypeName="System.Guid" Name="rowguid">
                                  <Properties>
                                    <Property Name="RequiredInForms"
Type="System.Boolean">true</Property>
                                  </Properties>
                                </TypeDescriptor>
                                <TypeDescriptor TypeName="System.DateTime" Name="ModifiedDate">
                                  <Properties>
                                    <Property Name="RequiredInForms"
Type="System.Boolean">true</Property>
                                  </Properties>
                                  <Interpretation>
                                    <NormalizeDateTime LobDateTimeMode="UTC" />
                                  </Interpretation>
                                </TypeDescriptor>
                              </TypeDescriptors>
                            </TypeDescriptor>
                          </TypeDescriptors>
                        </TypeDescriptor>
                      </Parameter>
                    </Parameters>
                    <MethodInstances>
                      <MethodInstance Type="Finder" ReturnParameterName="Customer" Default="true"
Name="CustomerQuery Item List" DefaultDisplayName="Customer">
                        <AccessControlList>
                          <AccessControlEntry Principal="domain\user_name">
                            <Right BdcRight="Edit" />
                            <Right BdcRight="Execute" />
                            <Right BdcRight="SetPermissions" />
                            <Right BdcRight="SelectableInClients" />
                          </AccessControlEntry>
                        </AccessControlList>
                      </MethodInstance>
                    </MethodInstances>
                  </Method>
                  <Method Name="CustomerIdentifier Enumerator" DefaultDisplayName="Customer
Identifier Enumerator">
                    <Properties>
                      <Property Name="BackEndObject" Type="System.String">Customer</Property>
                      <Property Name="BackEndObjectType"
Type="System.String">SqlServerTable</Property>
                      <Property Name="RdbCommandText" Type="System.String">SELECT [CustomerID] ,
[TerritoryID] , [AccountNumber] , [CustomerType] , [rowguid] , [ModifiedDate] FROM
[AdventureWorks].[Sales].[Customer]</Property>
                      <Property Name="RdbCommandType" Type="System.Data.CommandType, System.Data,
Version=2.0.0.0, Culture=neutral, PublicKeyToken=b77a5c561934e089">Text</Property>
                      <Property Name="Schema" Type="System.String">Sales</Property>
                    </Properties>
                    <AccessControlList>
                      <AccessControlEntry Principal="domain\user_name">
                        <Right BdcRight="Edit" />
                        <Right BdcRight="Execute" />
```

```
                    <Right BdcRight="SetPermissions" />
                    <Right BdcRight="SelectableInClients" />
                  </AccessControlEntry>
                </AccessControlList>
                <Parameters>
                  <Parameter Direction="Return" Name="Customer">
                    <TypeDescriptor TypeName="System.Data.IDataReader, System.Data,
Version=2.0.0.0, Culture=neutral, PublicKeyToken=b77a5c561934e089" IsCollection="true"
Name="Customer">
                      <TypeDescriptors>
                        <TypeDescriptor TypeName="System.Data.IDataRecord, System.Data,
Version=2.0.0.0, Culture=neutral, PublicKeyToken=b77a5c561934e089" Name="CustomerElement">
                          <TypeDescriptors>
                            <TypeDescriptor TypeName="System.Int32" ReadOnly="true"
IdentifierName="CustomerID" Name="CustomerID" />
                            <TypeDescriptor TypeName="System.Nullable`1[[System.Int32,
mscorlib, Version=2.0.0.0, Culture=neutral, PublicKeyToken=b77a5c561934e089]]"
Name="TerritoryID" />
                            <TypeDescriptor TypeName="System.String" ReadOnly="true"
Name="AccountNumber">
                              <Properties>
                                <Property Name="Size" Type="System.Int32">10</Property>
                              </Properties>
                            </TypeDescriptor>
                            <TypeDescriptor TypeName="System.String" Name="CustomerType">
                              <Properties>
                                <Property Name="RequiredInForms"
Type="System.Boolean">true</Property>
                                <Property Name="Size" Type="System.Int32">1</Property>
                              </Properties>
                            </TypeDescriptor>
                            <TypeDescriptor TypeName="System.Guid" Name="rowguid">
                              <Properties>
                                <Property Name="RequiredInForms"
Type="System.Boolean">true</Property>
                              </Properties>
                            </TypeDescriptor>
                            <TypeDescriptor TypeName="System.DateTime" Name="ModifiedDate">
                              <Properties>
                                <Property Name="RequiredInForms"
Type="System.Boolean">true</Property>
                              </Properties>
                              <Interpretation>
                                <NormalizeDateTime LobDateTimeMode="UTC" />
                              </Interpretation>
                            </TypeDescriptor>
                          </TypeDescriptors>
                        </TypeDescriptor>
                      </TypeDescriptors>
                    </TypeDescriptor>
                  </Parameter>
                </Parameters>
                <MethodInstances>
                  <MethodInstance Type="IdEnumerator" ReturnParameterName="Customer"
Default="true" Name="CustomerIdentifier Enumerator" DefaultDisplayName="Customer">
                    <AccessControlList>
                      <AccessControlEntry Principal="domain\user name">
                        <Right BdcRight="Edit" />
                        <Right BdcRight="Execute" />
                        <Right BdcRight="SetPermissions" />
                        <Right BdcRight="SelectableInClients" />
                      </AccessControlEntry>
                    </AccessControlList>
                  </MethodInstance>
                </MethodInstances>
              </Method>
            </Methods>
          </Entity>
```

```
        </Entities>
      </LobSystem>
    </LobSystems>
  </Model>
```

4   Security

4.1   Security Considerations for Implementers

Both ClickOnce extensions and the External List Information file are used to store or transmit well-formed, strongly typed tabular data. They do not introduce any security mechanisms, leaving those to the data store and communication transport where applicable.

4.2   Index of Security Fields

None.

5   Appendix A: Full XML Schemas

For ease of implementation, the following sections provide the full XML schema for this protocol.

Schema name	Prefix	Section
ClickOnceExtensions Structure XML Schema	obav1	5.1
OfficeBusinessApplication Schema	mstns	5.2

5.1   urn:schemas-microsoft-com:oba.v1 Schema

```
<xs:schema id="OBASolution" targetNamespace="urn:schemas-microsoft-com:oba.v1"
xmlns:obav1="urn:schemas-microsoft-com:oba.v1" xmlns:xs="http://www.w3.org/2001/XMLSchema"
attributeFormDefault="unqualified" elementFormDefault="qualified">
  <xs:element name="solution" type="obav1:SolutionType"/>
  <xs:complexType name="UpdateType">
    <xs:sequence>
      <xs:element name="expiration" type="obav1:ExpirationType" minOccurs="0" maxOccurs="1"/>
    </xs:sequence>
    <xs:attribute name="enabled" type="xs:boolean" use="required"/>
  </xs:complexType>
  <xs:complexType name="AddInsType">
    <xs:sequence>
      <xs:element name="addin" type="obav1:AddinType" minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:complexType>
  <xs:simpleType name="IntervalUnit">
    <xs:restriction base="xs:string">
      <xs:enumeration value="days"/>
      <xs:enumeration value="hours"/>
      <xs:enumeration value="weeks"/>
    </xs:restriction>
  </xs:simpleType>
  <xs:complexType name="SolutionType">
    <xs:sequence>
      <xs:element name="addins" type="obav1:AddInsType" minOccurs="0" maxOccurs="1"/>
      <xs:element name="update" type="obav1:UpdateType" minOccurs="0" maxOccurs="1"/>
    </xs:sequence>
    <xs:attribute name="solutionId" type="xs:string" use="required"/>
    <xs:attribute name="isSimpleSolution" type="xs:string" use="optional"/>
    <xs:attribute name="isSolution" type="xs:string" use="optional"/>
    <xs:attribute name="isDataOnly" type="xs:string" use="optional"/>
  </xs:complexType>
  <xs:complexType name="ExpirationType">
    <xs:attribute name="maximumAge" type="xs:positiveInteger" default="7"/>
    <xs:attribute name="unit" type="obav1:IntervalUnit" default="days"/>
  </xs:complexType>
  <xs:complexType name="AddinType">
    <xs:attribute name="url" type="xs:string"/>
  </xs:complexType>
</xs:schema>
```

5.2   http://schemas.microsoft.com/office/2006/03/OfficeBusinessApplication Schema

```
<xs:schema id="List"
targetNamespace="http://schemas.microsoft.com/office/2006/03/OfficeBusinessApplication"
xmlns:oba="http://schemas.microsoft.com/office/2006/03/OfficeBusinessApplication"
xmlns:mstns="http://schemas.microsoft.com/office/2006/03/OfficeBusinessApplication"
xmlns="http://schemas.microsoft.com/office/2006/03/OfficeBusinessApplication"
```

```
xmlns:xs="http://www.w3.org/2001/XMLSchema" attributeFormDefault="qualified"
elementFormDefault="qualified">
  <xs:element name="List" type="oba:ListType"/>
  <xs:complexType name="ListType">
    <xs:sequence>
      <xs:element name="Entity" type="oba:EntityType" minOccurs="1" maxOccurs="1"/>
      <xs:element name="Views" type="oba:ViewsType" minOccurs="1" maxOccurs="1"/>
      <xs:element name="Form" type="oba:FormType" minOccurs="0" maxOccurs="1"/>
    </xs:sequence>
    <xs:attribute name="Title" form="unqualified" type="xs:string"/>
    <xs:attribute name="SiteId" form="unqualified" type="xs:string"/>
    <xs:attribute name="SiteTitle" form="unqualified" type="xs:string"/>
  </xs:complexType>
  <xs:complexType name="EntityType">
    <xs:attribute name="LobSystemInstance" form="unqualified" type="xs:string"/>
    <xs:attribute name="EntityNamespace" form="unqualified" type="xs:string"/>
    <xs:attribute name="EntityName" form="unqualified" type="xs:string"/>
    <xs:attribute name="SpecificFinder" form="unqualified" type="xs:string"/>
    <xs:attribute name="DefaultViewId" form="unqualified" type="xs:string"/>
  </xs:complexType>
  <xs:complexType name="ViewsType">
    <xs:sequence>
      <xs:element name="View" type="oba:ViewType" minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="FormType">
    <xs:attribute name="CreateView" form="unqualified" type="xs:string"/>
    <xs:attribute name="DisplayView" form="unqualified" type="xs:string"/>
    <xs:attribute name="EditView" form="unqualified" type="xs:string"/>
  </xs:complexType>
  <xs:complexType name="ViewType">
    <xs:attribute name="Id" form="unqualified" type="xs:string"/>
    <xs:attribute name="DisplayName" form="unqualified" type="xs:string"/>
  </xs:complexType>
</xs:schema>
```

6 Appendix B: Product Behavior

The information in this specification is applicable to the following Microsoft products or supplemental software. References to product versions include released service packs.

- Microsoft Office 2010 suites

- Microsoft SharePoint Server 2010

- Microsoft SharePoint Workspace 2010

- Microsoft Office 2013

- Microsoft SharePoint Server 2013

- Microsoft Office 2016 Preview

Exceptions, if any, are noted below. If a service pack or Quick Fix Engineering (QFE) number appears with the product version, behavior changed in that service pack or QFE. The new behavior also applies to subsequent service packs of the product unless otherwise specified. If a product edition appears with the product version, behavior is different in that product edition.

Unless otherwise specified, any statement of optional behavior in this specification that is prescribed using the terms SHOULD or SHOULD NOT implies product behavior in accordance with the SHOULD or SHOULD NOT prescription. Unless otherwise specified, the term MAY implies that the product does not follow the prescription.

<1> Section 2.1.3.4: The ClickOnceExtensions generated by Microsoft SharePoint Server 2010 Enterprise and SharePoint Server 2013 always include an empty **addins** element, but Microsoft Office Professional Plus 2010 and Office 2013 always ignore this element.

<2> Section 2.1.3.4: This attribute is included in the ClickOnceExtensions generated by SharePoint Server 2010 Enterprise and SharePoint Server 2013, and the value is always **true**, but Office Professional Plus 2010 and Office 2013 ignore this attribute.

<3> Section 2.1.3.5: Office Professional Plus 2010 and Office 2013 do not check for updates automatically.

<4> Section 2.1.3.5: Office Professional Plus 2010 and Office 2013 do not check for updates automatically.

<5> Section 2.1.3.5: Office Professional Plus 2010 and Office 2013 do not check for updates automatically.

7 Change Tracking

This section identifies changes that were made to this document since the last release. Changes are classified as New, Major, Minor, Editorial, or No change.

The revision class **New** means that a new document is being released.

The revision class **Major** means that the technical content in the document was significantly revised. Major changes affect protocol interoperability or implementation. Examples of major changes are:

▪ A document revision that incorporates changes to interoperability requirements or functionality.

▪ The removal of a document from the documentation set.

The revision class **Minor** means that the meaning of the technical content was clarified. Minor changes do not affect protocol interoperability or implementation. Examples of minor changes are updates to clarify ambiguity at the sentence, paragraph, or table level.

The revision class **Editorial** means that the formatting in the technical content was changed. Editorial changes apply to grammatical, formatting, and style issues.

The revision class **No change** means that no new technical changes were introduced. Minor editorial and formatting changes may have been made, but the technical content of the document is identical to the last released version.

Major and minor changes can be described further using the following change types:

▪ New content added.

▪ Content updated.

▪ Content removed.

▪ New product behavior note added.

▪ Product behavior note updated.

▪ Product behavior note removed.

▪ New protocol syntax added.

▪ Protocol syntax updated.

▪ Protocol syntax removed.

▪ New content added due to protocol revision.

▪ Content updated due to protocol revision.

▪ Content removed due to protocol revision.

▪ New protocol syntax added due to protocol revision.

▪ Protocol syntax updated due to protocol revision.

▪ Protocol syntax removed due to protocol revision.

▪ Obsolete document removed.

Editorial changes are always classified with the change type **Editorially updated**.

Some important terms used in the change type descriptions are defined as follows:

- **Protocol syntax** refers to data elements (such as packets, structures, enumerations, and methods) as well as interfaces.

- **Protocol revision** refers to changes made to a protocol that affect the bits that are sent over the wire.

The changes made to this document are listed in the following table. For more information, please contact dochelp@microsoft.com.

Section	Tracking number (if applicable) and description	Major change (Y or N)	Change type
6 Appendix B: Product Behavior	Updated list of supported products.	Y	Content updated due to protocol revision.

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