[MS-ODCFF]:

Office Data Connection File Format

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1 Introduction

The Office Data Connection (ODC) File Format Structure is used for specifying data connection information that can be used to retrieve data from a database.

Sections 1.7 and 2 of this specification are normative. All other sections and examples in this specification are informative.

1.1 Glossary

This document uses the following terms:

application identifier: A string that is used to look up information in a single sign-on (SSO) database.

authentication: The act of proving an identity to a server while providing key material that binds the identity to subsequent communications.

catalog: A table that defines the structure and relationships of a set of tables in a database.

child element: In an XML document, an element that is subordinate to and is contained by another element, which is referred to as the parent element.

connection: (1) A link between two devices that uses the Simple Symmetric Transport Protocol (SSTP). Each connection can support one or more SSTP sessions.

(2) A link that two physical machines or applications share to pass data back and forth.

connection string: A series of arguments, delimited by a semicolon, that defines the location of a database and how to connect to it.

container: A data model that is used to store published presence information and a list of subscribers who are permitted to view that information. It enables a publisher to publish different data values of the same category and instance, which enables different subscribers to see different values.

credential: Previously established, **authentication** data that is used by a security principal to establish its own identity. When used in reference to the Netlogon Protocol, it is the data that is stored in the NETLOGON_CREDENTIAL structure.

cube: A set of data that is organized and summarized into a multidimensional structure that is defined by a set of dimensions and measures.

data connection: (1) A link between an application and a data source. Data connections can be used to query and submit data.

(2) A collection of information, such as the type and location, that defines how to connect to an external data source, such as a database, web service, SharePoint list, or **XML** file.

data provider: A known data source that is specific to a target type and that provides data to a collector type.

data source: A database, web service, disk, file, or other collection of information from which data is queried or submitted. Supported data sources vary based on application and data provider.

document repository: A location that is used to store documents. A document repository is typically hosted on a server and is subject to document management policies for the documents that are stored on it.

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Get & Transform: A set of features new to Microsoft Excel 2016 which provides fast, easy data gathering and shaping capabilities

Hypertext Markup Language (HTML): An application of the Standard Generalized Markup Language (SGML) that uses tags to mark elements in a document, as described in [HTML].

list: A container within a SharePoint site that stores list items. A list has a customizable schema that is composed of one or more fields.

Multipurpose Internet Mail Extensions (MIME): A set of extensions that redefines and expands support for various types of content in email messages, as described in [RFC2045], [RFC2046], and [RFC2047].

Online Analytical Processing (OLAP): A technology that uses multidimensional structures to provide access to data for analysis. The source data for OLAP is stored in data warehouses in a relational database. See also **cube**.

query: A formalized instruction to a data source to either extract data or perform a specified action. A query can be in the form of a query expression, a method-based query, or a combination of the two. The data source can be in different forms, such as a relational database, XML document, or in-memory object. See also search query.

single sign-on (SSO): A process that enables users who have a domain user account to log on to a network and gain access to any computer or resource in the domain without entering their **credentials** multiple times.

Structured Query Language (SQL): A database query and programming language that is widely used for accessing, querying, updating, and managing data in relational database systems.

Uniform Resource Locator (URL): A string of characters in a standardized format that identifies a document or resource on the World Wide Web. The format is as specified in [RFC1738].

UTF-8: A byte-oriented standard for encoding Unicode characters, defined in the Unicode standard. Unless specified otherwise, this term refers to the UTF-8 encoding form specified in [UNICODE5.0.0/2007] section 3.9.

white space: A character that represents a blank space in typography and is not rendered on a screen.

XML: The Extensible Markup Language, as described in [XML1.0].

XML schema: A description of a type of XML document that is typically expressed in terms of constraints on the structure and content of documents of that type, in addition to the basic syntax constraints that are imposed by **XML** itself. An XML schema provides a view of a document type at a relatively high level of abstraction.

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

Links to a document in the Microsoft Open Specifications library point to the correct section in the most recently published version of the referenced document. However, because individual documents in the library are not updated at the same time, the section numbers in the documents may not match. You can confirm the correct section numbering by checking the Errata.

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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-ODATA] Microsoft Corporation, "Open Data Protocol (OData)".

[MS-ODBCSTR] Microsoft Corporation, "ODBC Connection String Structure".

[MS-OLEDBSTR] Microsoft Corporation, "OLEDB Connection String Structure".

[MS-QDEIF] Microsoft Corporation, "Query Definition Interoperability Format".

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

[RFC3066] Alvestrand, H., "Tags for the Identification of Languages", BCP 47, RFC 3066, January 2001, https://www.rfc-editor.org/info/rfc3066

1.2.2 Informative References

[MSDN-IIS] Microsoft Corporation, "Internet Information Services (IIS)", http://msdn.microsoft.com/en-us/library/aa286507.aspx

[MSDN-OLEDBP-OI] Microsoft Corporation, "OLE DB Programming", http://msdn.microsoft.com/en-us/library/502e07a7(VS.80).aspx

[MSDN-OpenDBConnectivity] Microsoft Corporation, "Microsoft Open Database Connectivity (ODBC)", http://msdn.microsoft.com/en-us/library/ms710252.aspx

[MSFT-ODBCODCO] Microsoft Corporation, "ODBC--Open Database Connectivity Overview", March 2007, https://www.betaarchive.com/wiki/index.php?title=Microsoft_KB_Archive/110093

1.3 Structure Overview (Synopsis)

The Office Data Connection (ODC) files contain **data connection (1)** information that can be used by applications for connecting to, and retrieving data from, a **data source**. ODC files are useful for storing data connection (1) information that can be reused and centrally managed.

1.3.1 Basic Structure of an ODC File

An ODC file is a **Hypertext Markup Language (HTML)** file that contains embedded sections of **XML**.

1.3.1.1 HTML

The **HTML** in an ODC file contains information about the **data connection (1)** which the file represents. This information can be used to allow applications to quickly discover information about the data connection (1) without the need to interpret **data provider**-specific data connection (1) information. This information includes:

- Type of data connection (1).
- General data provider that is used.
- Name of the **catalog** or table where the data resides.
- Title for the document.

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The HTML also provides structure so that a Web browser can display a simple rendering of information about the data connection (1).

1.3.1.2 XML for Document Properties

The **XML** in an ODC file is used for specifying more information about the **data connection (1)**. This information includes:

- A human-readable name.
- Keywords.
- A human-readable description.

1.3.1.3 XML for a Data Connection

The **XML** in an ODC file determines the core **connection (2)** information for the **data source**. This information includes:

- **Data provider**-specific **connection string** that is used to establish and open a connection (2) to the data source.
- **Query** text that is used to fetch data.
- Name of the specific table or **cube** from which to fetch data.
- Hints about how the query text, cube, or table name is interpreted.
- Flag indicating that the ODC file is always used to connect to and query the data source (as opposed to an application using a cached version of the **data connection (2)** information).
- Specific **authentication** information to use for the data source. If a server application is using the ODC file to fetch data, this information will often be used for connecting to the data sources.

1.4 Relationship to Protocols and Other Structures

None.

1.5 Applicability Statement

The ODC file format can be used to persist **data connection (2)** information in cases where a **connection string** and a string representation of the data that is sought, such as a **Structured Query Language (SQL) query**, is available. An ODC file provides a **container** to preserve the relevant data connection (2) information in a compact file. It is appropriate to use ODC files to broadly share data connection (2) information among many client applications and server applications, subject to an organization's security policy. It is not appropriate to use ODC files as containers for logic that is not related to data connections (1).

Other structures or protocols that depend on this format need to be able to parse **HTML** and **XML** structures.

1.6 Versioning and Localization

None.

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1.7 Vendor-Extensible Fields

None.

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2 Structures

2.1 Simple Types

2.1.1 ST_ConnectionType

Specifies the database **connection (2)** type.

The following table specifies the enumeration values for this type.

Enumeration value	Meaning
OLEDB	Specifies an OLE DB connection (2) type. For more information about OLE DB, see [MSDN-OLEDBP-OI].
ODBC	Specifies an ODBC (Open Database Connectivity) connection (2) type. For more information about ODBC, see [MSFT-ODBCODCO].
DATAFEED<1>	Specifies a data feed connection (2) type. For more details about data feeds, see [MS-ODATA].

The following table lists all other types that reference this type.

Referenced by
CT_Connection

The following **XML schema** fragment defines this element.

```
<xs:schema
  targetNamespace="urn:schemas-microsoft-com:office:odc"
  elementFormDefault="qualified"
  xmlns="urn:schemas-microsoft-com:office:odc"
  xmlns:xs="http://www.w3.org/2001/XMLSchema">

  <xs:simpleType name="ST_ConnectionType">
    <xs:restriction base="xs:string">
      <xs:enumeration value="OLEDB" />
      <xs:enumeration value="ODBC" />
      <xs:enumeration value="DATAFEED" />
    </xs:restriction>
  </xs:simpleType>

</xs:schema>
```

2.1.2 ST_CommandType

Specifies how to use the **CommandText** element, as defined in the **CT_Connection** complex type (section 2.2.1), to obtain data from a **data connection (1)**.

The following table specifies the enumeration values for this type.

Enumeration value	Meaning
Table	Specifies that the **CommandText** element specifies the name of a table that can be read from the data connection (1) to the **data source**, which is specified by the **ConnectionString** element.

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Enumeration value	Meaning
SQL	Specifies that the **CommandText** element specifies text that can be interpreted, as an **SQL query**, by the data connection (1) to the data source, specified by the **ConnectionString** element.
Cube	Specifies that the **CommandText** element specifies the name of a **cube** within an **OLAP** database.
List	Specifies that the **CommandText** element specifies the **XML** of a **list**.
Default	Specifies that the **CommandText** element specifies text that will be interpreted by the data connection (1) to the data source, specified by the **ConnectionString** element. The text will be passed by the data connection (1) to the data source without change.
TableCollection<2>	Specifies that the **CommandText** element specifies the list of table names that can be read from the data connection (1) to the data source, which is specified by the **ConnectionString** element. The table names in the list MUST be separated by commas. Each table name in the list MUST be enclosed in quotes.

The following table lists all other types that reference this type.

Referenced by
CT_Connection

The following **XML schema** fragment defines this element.

```
<xs:schema
  targetNamespace="urn:schemas-microsoft-com:office:odc"
  elementFormDefault="qualified"
  xmlns="urn:schemas-microsoft-com:office:odc"
  xmlns:xs="http://www.w3.org/2001/XMLSchema">

  <xs:simpleType name="ST_CommandType">
    <xs:restriction base="xs:string">
      <xs:enumeration value="Table" />
      <xs:enumeration value="SQL" />
      <xs:enumeration value="Cube" />
      <xs:enumeration value="List" />
      <xs:enumeration value="Default" />
      <xs:enumeration value="TableCollection" />
    </xs:restriction>
  </xs:simpleType>

</xs:schema>
```

2.1.3 ST_CredentialsMethod

Specifies the method used for **authentication**.

The following table specifies the enumeration values for this type.

Enumeration value	Meaning
None	Use no authentication.
Stored	Use **single sign-on (SSO)** authentication.

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Enumeration value	Meaning
Integrated	Use Integrated Windows Authentication. For more information, see [MSDN-IIS].

The following table lists all other types which reference this type.

Referenced by
CT_Connection

The following **XML schema** fragment defines this element.

```
<xs:schema
  targetNamespace="urn:schemas-microsoft-com:office:odc"
  elementFormDefault="qualified"
  xmlns="urn:schemas-microsoft-com:office:odc"
  xmlns:xs="http://www.w3.org/2001/XMLSchema">

  <xs:simpleType name="ST_CredentialsMethod">
    <xs:restriction base="xs:string">
      <xs:enumeration value="Integrated" />
      <xs:enumeration value="None" />
      <xs:enumeration value="Stored" />
    </xs:restriction>
  </xs:simpleType>

</xs:schema>
```

2.2 Complex Types

2.2.1 CT_Connection

Specifies the properties of the **connection (2)**. The following table specifies the **child elements** of this type.

Child element	Meaning
ConnectionString	Specifies a **connection string** to establish a **data connection (1)** to the **data source**. If **Type** is "ODBC", the string is specified by [MS-ODBCSTR]. If **Type** is "OLEDB", the string is specified by [MS-OLEDBSTR]. If **Type** is "DATAFEED", the string is specified by [MS-ODATA].
CommandType	Specifies the command type. This element MUST be present when **Type** is "OLEDB" and **CommandText** is present as a non-empty element. This element MUST be present when **Type** is "DATAFEED" with the value of "TableCollection". This element MUST NOT be present when **Type** is "ODBC".
Parameter	Specifies information about a parameter in a **SQL query**. This element MUST NOT be present when **Type** is "OLEDB" or "DATAFEED".
CommandText	If **Type** is "ODBC", this specifies a SQL query. If **Type** is "OLEDB" or "DATAFEED", this specifies that text be interpreted according to the **CommandType**.

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Child element	Meaning
SSOApplicationID	The **application identifier** used for **SSO authentication**. SHOULD be specified only when **CredentialsMethod** is "Stored".
CredentialsMethod	Specifies the method to use for authentication. If the value is "Stored", the value of **SSOApplicationID** will be used for the SSO application identifier. If this element is not present, the value is "Integrated".
AlwaysUseConnectionFile	Specifies whether to always use the ODC file when the data is displayed or refreshed. If **true**, this specifies when establishing another data connection (1) that the ODC file is to be read again. If this element is not present, the value is **false**.
Culture	Specifies the language associated with the data connection (2). MUST<3> be a language tag as specified by [RFC3066].<4> If this element is not present, the data connection (2) is using the server language.

The following table specifies the attributes of this type.

Attributes	Meaning
Type	Specifies the connection (2) type.

The following table lists all other types which reference this type.

Referenced by
OfficeDataConnection

The following **XML schema** fragment defines this element.

```
<?xml version="1.0" encoding="utf-8" ?>
<xs:schema
  targetNamespace="urn:schemas-microsoft-com:office:odc"
  elementFormDefault="qualified"
  xmlns="urn:schemas-microsoft-com:office:odc"
  xmlns:xs="http://www.w3.org/2001/XMLSchema">

  <xs:complexType name="CT_Connection">
    <xs:sequence>
      <xs:element name="ConnectionString" type="xs:string" />
      <xs:element name="CommandType" minOccurs="0" type="ST_CommandType" />
      <xs:element name="Parameter" minOccurs="0" maxOccurs="unbounded"
        type="CT_Parameter" />
      <xs:element name="CommandText" minOccurs="0" type="xs:string" />
      <xs:element name="SSOApplicationID" minOccurs="0" type="xs:string" />
      <xs:element name="CredentialsMethod" minOccurs="0"
        type="ST_CredentialsMethod" default="Integrated" />
      <xs:element name="AlwaysUseConnectionFile" minOccurs="0"
        type="xs:boolean" default="true" />
      <xs:element name="Culture" minOccurs="0" type="xs:string" />
    </xs:sequence>
    <xs:attribute name="Type" type="ST_ConnectionType" form="qualified"
      use="required" />
  </xs:complexType>

</xs:schema>
```


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2.2.2 CT_PowerQueryConnection

Specifies the properties of the **Get & Transform data connection (1)**. The following table specifies the **child elements** of this type.

Child element	Meaning
ConnectionString	Specifies a **connection string** to establish a data connection (1) to the **data source**. This string is specified by [MS-OLEDBSTR].
CommandType	Specifies the command type. This element MUST be present.
CommandText	This specifies that text is interpreted according to the **CommandType**.
SSOApplicationID	The **application identifier** used for **SSO authentication**. SHOULD be specified only when **CredentialsMethod** is "Stored".
CredentialsMethod	Specifies the method to use for authentication. If the value is "Stored", the value of **SSOApplicationID** will be used for the SSO application identifier.
AlwaysUseConnectionFile	Specifies whether to always use the ODC file when the data is displayed or refreshed. If **true**, this specifies when establishing another data connection (1) that the ODC file is to be read again.

The following table specifies the attributes of this type.

Attributes	Meaning
Type	Specifies the **connection (2)** type. MUST be "OLEDB".

The following table lists all other types which reference this type.

Referenced by
OfficeDataConnection

The following **XML schema** fragment defines this element.

```
<?xml version="1.0" encoding="utf-8" ?>
<xs:schema
  targetNamespace="urn:schemas-microsoft-com:office:odc"
  elementFormDefault="qualified"
  xmlns="urn:schemas-microsoft-com:office:odc"
  xmlns:xs="http://www.w3.org/2001/XMLSchema">

  <xs:complexType name="CT_PowerQueryConnection">
    <xs:sequence>
      <xs:element name="ConnectionString" type="xs:string" />
      <xs:element name="CommandType" minOccurs="0" type="ST_CommandType" />
      <xs:element name="CommandText" minOccurs="0" type="xs:string" />
      <xs:element name="SSOApplicationID" minOccurs="0" type="xs:string" />
      <xs:element name="CredentialsMethod" minOccurs="0"
        type="ST_CredentialsMethod" default="Integrated" />
      <xs:element name="AlwaysUseConnectionFile" minOccurs="0"
        type="xs:boolean" default="false" />
    </xs:sequence>
```


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```
    <xs:attribute name="Type" type="ST_ConnectionType" form="qualified" use="required" />
</xs:complexType>

</xs:schema>
```

2.2.3 CT_Parameter

Specifies information about a parameter in an **SQL query** of an ODBC **connection (2)** type. For more information about ODBC, see [MSFT-ODBCODCO].

The following table specifies the **child elements** of this type.

Child element	Meaning
Name	Specifies the name of the parameter.
DataType	Specifies the type of the parameter. For more information, see [MSDN-OpenDBConnectivity].

The following **XML schema** fragment defines this element.

```
<?xml version="1.0" encoding="utf-8" ?>
<xs:schema
  targetNamespace="urn:schemas-microsoft-com:office:odc"
  elementFormDefault="qualified"
  xmlns="urn:schemas-microsoft-com:office:odc"
  xmlns:xs="http://www.w3.org/2001/XMLSchema">

  <xs:complexType name="CT_Parameter">
    <xs:sequence>
      <xs:element name="Name" type="xs:string" />
      <xs:element name="DataType" type="xs:int" />
    </xs:sequence>
  </xs:complexType>
</xs:schema>
```

2.3 File Structure

The Office Data Connection (ODC) file format persists settings that can be used to establish a **data connection (1)** to a **data source**. The persistence is formatted as **HTML**, which specifies descriptive text that is associated with the data connection (1) and the settings of the data connection (1).

2.4 Character Encoding

The content of the file MUST be encoded as **UTF-8**.

2.5 HTML

The **HTML** specifies:

- Document properties (section 2.6) used to describe the intent of the **data connection (1)**.
- Data connection (1) settings (section 2.7) used to specify the **data source** and the data to **query**.

2.6 Document Properties

Document properties are used to provide for the following:

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- Descriptive text that is associated with the **data connection (1)**.
- Property name/value pairs that are used by a **document repository** to categorize the data connection (1) definition.

Document properties enable a document repository to display descriptive text associated with the data connection (1) to a user.

2.6.1 Meta Elements

HTML Element	Meaning
`<meta http-equiv=Content-Type content="text/x-ms-odc; charset=utf-8">`	Specifies that the file content has the **Multipurpose Internet Mail Extensions (MIME)** type "text/x-ms-odc", and that the encoding is **UTF-8**.
`<meta name=ProgId content=value>`	Specifies the **data connection (1)** type. The possible values are: ODC.Cube Specifies a data connection (1) to a **cube** within an **OLAP** database. ODC.Database Specifies a data connection (1) to a database. ODC.Table Specifies a data connection (1) to a tabular result within a database. ODC.TableCollection Specifies a data connection (1) to a collection of tabular results within a database.
`<meta name=SourceType content=value>`	Specifies the database API; MUST be present. The possible values are: OLEDB Specifies to use OLE DB. For more information about OLE DB, see [MSDN-OLEDBP-OI]. ODBC Specifies to use ODBC. For more information about ODBC, see [MSFT-ODBCODCO]. DATAFEED Specifies to use DATAFEED. For more details about data feeds, see [MS-ODATA].
`<meta name=Catalog content=value>`	Specifies the **catalog** that the **connection string** refers to, if any.
`<meta name=Schema content=value>`	Specifies the schema that the connection string refers to, if any.

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HTML Element	Meaning
`<meta name=Table content=value>`	Specifies the table that the connection string refers to, if any.

2.6.2 Title Element

HTML Element	Meaning
`<title>value</title>`	Specifies a descriptive name given to the **data connection (1)**.

2.6.3 Office Document Properties XML

If Office Document Properties **XML** is present, it MUST be within the **HEAD** element of the **HTML**. It MUST be encapsulated in an element that has the name **xml** with a single attribute that has the name **id** and the value **docprops**. It MUST use the namespace prefix **o**.

2.6.3.1 DocumentProperties (Office Document Properties)

Child element	Meaning
Description	Specifies the description for the **data connection (1)**.
Name	Specifies a descriptive name for the data connection (1).
Keywords	Specifies the keywords that are associated with the data connection (1). The keywords are delimited by **white space**.

The following **XML schema** fragment defines this element.

```
<?xml version="1.0" encoding="utf-8" ?>
<xs:schema
  targetNamespace="urn:schemas-microsoft-com:office:office"
  elementFormDefault="qualified"
  xmlns="urn:schemas-microsoft-com:office:office"
  xmlns:xs="http://www.w3.org/2001/XMLSchema">

  <xs:element name="DocumentProperties">
    <xs:complexType>
      <xs:sequence>
        <xs:element name="Description" minOccurs="0" type="xs:string" />
        <xs:element name="Name" minOccurs="0" type="xs:string" />
        <xs:element name="Keywords" minOccurs="0" type="xs:string" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>

</xs:schema>
```


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2.7 Data Connection Settings

The settings for the **data connection (1)** provide:

- The database API used to establish the data connection (1).
- The **data source** of the data connection (1).
- The parameters that qualify the data to **query**.

2.7.1 Office Data Connection XML

The Office Data Connection **XML** specifies the **data connection (1)** settings, and MUST be present. It MUST be within the HEAD element of the **HTML**, and MUST be encapsulated in an element having the name **xml** with a single attribute having the name **id** and the value **msodc**. The Office Data Connection XML MUST use the namespace prefix **odc.** The root XML closing element tag "OfficeDataConnection" MUST have no space preceding the XML ending delimiter ">".

2.7.1.1 OfficeDataConnection (Office Data Connection)

Child element	Meaning
SourceFile	Specifies the **Uniform Resource Locator (URL)** to the **data source** file.
Connection	Specifies the settings for the **data connection (1)**. If two **Connection** elements are present, the first specifies the preferred **connection (1)**, and the second specifies an alternative in cases where the first cannot be used.
PowerQueryConnection	Specifies the settings only for the **Get & Transform** data connection (1). If this element is present, more than one **Connection** element MUST NOT be present. If a **Connection** element is present, that **Connection** element SHOULD be ignored unless the application does not support loading ODC files containing a Get & Transform data connection (1).
PowerQueryMashupData	Specifies the settings for the Get & Transform queries that are associated with the Get & Transform data connection (1). This element MUST be present if and only if a **PowerQueryConnection** element is present. These settings are represented by an **XML** file that is **HTML** encoded inside this child element. This XML is specified in [MS-QDEIF].

The following **XML schema** fragment defines this element.

```
<?xml version="1.0" encoding="utf-8" ?>
<xs:schema
  targetNamespace="urn:schemas-microsoft-com:office:odc"
  elementFormDefault="qualified"
  xmlns="urn:schemas-microsoft-com:office:odc"
  xmlns:xs="http://www.w3.org/2001/XMLSchema">

  <xs:element name="OfficeDataConnection">
    <xs:complexType>
      <xs:sequence>
```


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```
        <xs:element name="SourceFile" minOccurs="0" type="xs:string" />
        <xs:element name="Connection" minOccurs="”0” maxOccurs="2" type="CT_Connection" />
        <xs:element name="PowerQueryConnection" minOccurs="0" maxOccurs="1"
type="CT_PowerQueryConnection" />
        <xs:element name="PowerQueryMashupData" minOccurs="0" maxOccurs="1" type="xs:string"
/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
</xs:schema>
```


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3 Structure Examples

3.1 Retrieving Data From an SQL Source

This example shows what the ODC file contents contain for a typical scenario of fetching data from an **SQL**-based **data source**.

The **HTML** for this example is as follows.

```
<html xmlns:o="urn:schemas-microsoft-com:office:office"
  xmlns="http://www.w3.org/TR/REC-html40">
<head>
<meta http-equiv=Content-Type content="text/x-ms-odc; charset=utf-8">
<meta name=ProgId content=ODC.Table>
<meta name=SourceType content=ODBC>
<title>Northwind</title>
<xml id=docprops><o:DocumentProperties
  xmlns:o="urn:schemas-microsoft-com:office:office"
  xmlns="http://www.w3.org/TR/REC-html40">
  <o:Name>Northwind</o:Name>
 </o:DocumentProperties>
</xml><xml id=msodc><odc:OfficeDataConnection
  xmlns:odc="urn:schemas-microsoft-com:office:odc"
  xmlns="http://www.w3.org/TR/REC-html40">
  <odc:Connection odc:Type="ODBC">
   <odc:ConnectionString>DRIVER=SQL Server;SERVER=mysqlserver;APP=2007 Microsoft Office
system;Trusted_Connection=Yes</odc:ConnectionString>
   <odc:CommandText>SELECT * FROM Northwind.dbo.Invoices Invoices</odc:CommandText>
  </odc:Connection>
 </odc:OfficeDataConnection>
</xml>
</head>

</html>
```

3.2 Retrieving OLAP Data and Refreshing It in a Server Environment

This example shows an ODC file that contains a **connection (1)** to an **OLAP data source**, named "Adventure Works."

It also contains **authentication** instructions for a server application. The <CredentialsMethod> element specifies that stored **credentials** are to be retrieved for the user. The file also specifies the stored **application identifier**, "Application1", in the <SSOApplicationID> element.

The client applications are instructed to always use the content of the ODC file for generating connections to the data source. This is specified by the presence of the <AlwaysUseConnectionFile> element.

The **HTML** for this example is as follows.

```
<html xmlns:o="urn:schemas-microsoft-com:office:office"
xmlns="http://www.w3.org/TR/REC-html40">
<head><meta http-equiv=Content-Type content="text/x-ms-odc; charset=utf-8">
<meta name=ProgId content=ODC.Cube>
<meta name=SourceType content=OLEDB>
<meta name=Catalog content="Adventure Works DW">
<meta name=Table content="Adventure Works">
<title>Adventure Works</title>
<xml id=docprops><o:DocumentProperties
  xmlns:o="urn:schemas-microsoft-com:office:office"
  xmlns="http://www.w3.org/TR/REC-html40">
```


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```
  <o:Name>Adventure Works</o:Name>
 </o:DocumentProperties>
</xml><xml id=msodc><odc:OfficeDataConnection
  xmlns:odc="urn:schemas-microsoft-com:office:odc"
  xmlns="http://www.w3.org/TR/REC-html40">
  <odc:Connection odc:Type="OLEDB">
   <odc:ConnectionString>Provider=MSOLAP.3;Integrated Security=SSPI;Persist Security
Info=True;Data Source=myolapserver;Initial Catalog=Adventure Works DW</odc:ConnectionString>
   <odc:CommandType>Cube</odc:CommandType>
   <odc:CommandText>Adventure Works</odc:CommandText>
   <odc:SSOApplicationID>Application1</odc:SSOApplicationID>
   <odc:CredentialsMethod>Stored</odc:CredentialsMethod>
   <odc:AlwaysUseConnectionFile/>
  </odc:Connection>
 </odc:OfficeDataConnection>
</xml>

</html>
```

3.3 Retrieving Data From an SQL Source using Get & Transform

This example shows what the ODC file contents contain for a typical scenario of fetching data from an **SQL**-based **data source** using **Get & Transform**.

The **HTML** for this example is as follows.

```
<html xmlns:o="urn:schemas-microsoft-com:office:office"
xmlns="http://www.w3.org/TR/REC-html40">
<head>
<meta http-equiv=Content-Type content="text/x-ms-odc; charset=utf-8">
<meta name=ProgId content=ODC.Table>
<meta name=SourceType content=OLEDB>
<title>Query - DimCustomer</title>
<xml id=docprops><o:DocumentProperties
  xmlns:o="urn:schemas-microsoft-com:office:office"
  xmlns="http://www.w3.org/TR/REC-html40">
  <o:Description>Connection to the 'DimCustomer' query in the workbook.</o:Description>
  <o:Name>Query - DimCustomer</o:Name>
 </o:DocumentProperties>
</xml><xml id=msodc><odc:OfficeDataConnection
  xmlns:odc="urn:schemas-microsoft-com:office:odc"
  xmlns="http://www.w3.org/TR/REC-html40">
  <odc:PowerQueryConnection odc:Type="OLEDB">
   <odc:ConnectionString>Provider=Microsoft.Mashup.OleDb.1;Data
Source=$Workbook$;Location=DimCustomer</odc:ConnectionString>
   <odc:CommandType>SQL</odc:CommandType>
   <odc:CommandText>SELECT * FROM [DimCustomer]</odc:CommandText>
  </odc:PowerQueryConnection>
  <odc:PowerQuery>&lt;?xml version=&quot;1.0&quot; encoding=&quot;utf-
16&quot;?&gt;&#13;&#10;&lt;Mashup xmlns:xsd=&quot;http://www.w3.org/2001/XMLSchema&quot;
xmlns:xsi=&quot;http://www.w3.org/2001/XMLSchema-instance&quot;
xmlns=&quot;http://schemas.microsoft.com/DataMashup&quot;&gt;&#13;&#10;
&lt;Client&gt;excel&lt;/Client&gt;&#13;&#10;
&lt;Version&gt;2.32.0.0&lt;/Version&gt;&#13;&#10;
&lt;MinVersion&gt;2.21.0.0&lt;/MinVersion&gt;&#13;&#10;  &lt;Culture&gt;en-
US&lt;/Culture&gt;&#13;&#10;  &lt;SafeCombine&gt;true&lt;/SafeCombine&gt;&#13;&#10;
&lt;Items&gt;&#13;&#10;    &lt;Query Name=&quot;DimCustomer&quot;&gt;&#13;&#10;
&lt;Formula&gt;&lt;![CDATA[let&#13;&#10;    Source =
Sql.Databases(&quot;mysqlserver&quot;),&#13;&#10;    AdventureWorksDW2012 =
Source{[Name=&quot;AdventureWorksDW2012&quot;]}[Data],&#13;&#10;    dbo_DimCustomer =
AdventureWorksDW2012{[Schema=&quot;dbo&quot;,Item=&quot;DimCustomer&quot;]}[Data]&#13;&#10;in
&#13;&#10;    dbo_DimCustomer]]&gt;&lt;/Formula&gt;&#13;&#10;
&lt;RefreshWhenRefreshingAll xsi:nil=&quot;true&quot; /&gt;&#13;&#10;
&lt;/Query&gt;&#13;&#10;  &lt;/Items&gt;&#13;&#10;&lt;/Mashup&gt;</odc:PowerQuery>
 </odc:OfficeDataConnection>
</xml>
```


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```
</head>
</html>
```

3.4 Dual-Mode Structure Example to be Used by New and Old Office Versions

This example shows what the ODC file contents contain for a typical scenario of fetching data from an **SQL**-based **data source** using **Get & Transform**. The file also contains the contents for a narrowed backward-compatible version of the Get & Transform **data connection (1)**, to be used by older versions of Office and Office versions that do not support ODC files with Get & Transform data connections (1).

The **HTML** for this example is as follows.

```
<html xmlns:o="urn:schemas-microsoft-com:office:office" xmlns="http://www.w3.org/TR/REC-
html40">
<head>
<meta http-equiv=Content-Type content="text/x-ms-odc; charset=utf-8">
<meta name=ProgId content=ODC.Table>
<meta name=SourceType content=OLEDB>
<title>Query - DimCustomer</title>
<xml id=docprops><o:DocumentProperties
  xmlns:o="urn:schemas-microsoft-com:office:office"
  xmlns="http://www.w3.org/TR/REC-html40">
  <o:Description>Connection to the 'DimCustomer' query in the workbook.</o:Description>
  <o:Name>Query - DimCustomer</o:Name>
 </o:DocumentProperties>
</xml><xml id=msodc><odc:OfficeDataConnection
  xmlns:odc="urn:schemas-microsoft-com:office:odc"
  xmlns="http://www.w3.org/TR/REC-html40">
  <odc:Connection odc:Type="OLEDB">
   <odc:ConnectionString>Provider=SQLOLEDB;Data Source=mysqlserver;Initial
Catalog=mysqldatabase;Packet Size=4096;Auto Translate=True;Use Encryption for Data=False;Tag
with column collation when possible=False;Persist Security Info=False;</odc:ConnectionString>
   <odc:CommandType>Table</odc:CommandType>
<odc:CommandText>&quot;mysqldatabase&quot;.&quot;dbo&quot;.&quot;DimCustomer&quot;</odc:Comma
ndText>
  </odc:Connection>
  <odc:PowerQueryConnection odc:Type="OLEDB">
   <odc:ConnectionString>Provider=Microsoft.Mashup.OleDb.1;Data
Source=$Workbook$;Location=DimCustomer</odc:ConnectionString>
   <odc:CommandType>SQL</odc:CommandType>
   <odc:CommandText>SELECT * FROM [DimCustomer]</odc:CommandText>
  </odc:PowerQueryConnection>
  <odc:PowerQueryMashupData>&lt;Mashup xmlns:xsd=&quot;http://www.w3.org/2001/XMLSchema&quot;
xmlns:xsi=&quot;http://www.w3.org/2001/XMLSchema-instance&quot;
xmlns=&quot;http://schemas.microsoft.com/DataMashup&quot;&gt;&lt;Client&gt;excel&lt;/Client&g
t;&lt;Version&gt;2.42.4611.241&lt;/Version&gt;&lt;MinVersion&gt;2.21.0.0&lt;/MinVersion&gt;&l
t;Culture&gt;en-
US&lt;/Culture&gt;&lt;SafeCombine&gt;true&lt;/SafeCombine&gt;&lt;Items&gt;&lt;Query
Name=&quot;DimCustomer&quot;&gt;&lt;Formula&gt;&lt;![CDATA[let&#13;&#10;    Source =
Sql.Databases(&quot;mysqlserver&quot;),&#13;&#10;    mysqldatabase =
Source{[Name=&quot;mysqldatabase&quot;]}[Data],&#13;&#10;    dbo_DimCustomer =
mysqldatabase{[Schema=&quot;dbo&quot;,Item=&quot;DimCustomer&quot;]}[Data]&#13;&#10;in&#13;&#
10;    dbo_DimCustomer]]&gt;&lt;/Formula&gt;&lt;IsParameterQuery xsi:nil=&quot;true&quot;
/&gt;&lt;/Query&gt;&lt;/Items&gt;&lt;/Mashup&gt;</odc:PowerQueryMashupData>
 </odc:OfficeDataConnection>
</xml>
</head>
</html>
```


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4 Security Considerations

4.1 Security Considerations for Implementers

Implementers and consumers of the ODC file format need to take into consideration that ODC files contain sensitive information. Implementers are encouraged to treat these files as sensitive resources and protect them appropriately. ODC files often contain the following:

- Internal information, such as server names, table names, or **query** information.
- Username and passwords. These strings are often stored in plaintext in an ODC file. Implementers might consider storing ODC files encrypted, or reevaluate their policies for allowing user **credentials** to be stored in a file.

The key to stored credentials. To help facilitate server-based **authentication**, ODC files can contain information to allow servers to retrieve credentials on behalf of a user from a centrally located credential store. In this case, an **application identifier**, which is used to look up the credentials, is persisted in the ODC file.

4.2 Index of Security Fields

None.

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5 Appendix A: Product Behavior

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

- Microsoft Office Excel 2007
- Microsoft Excel 2010
- Microsoft Excel 2013
- Microsoft Excel 2016
- Microsoft Excel 2019
- Microsoft Excel 2021
- Microsoft Excel LTSC 2024

Exceptions, if any, are noted in this section. If an update version, service pack or Knowledge Base (KB) number appears with a product name, the behavior changed in that update. The new behavior also applies to subsequent updates 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 2.1.1: This value is only supported in Excel 2013.

<2> Section 2.1.2: This value is only supported in Excel 2013.

<3> Section 2.2.1: The 2007 Microsoft Office system and Microsoft Office 2010 suites does not load a file in which this element contains a value that it does not recognize, or is not recognized by the underlying operating system. The 2007 Office system and Office 2010 recognize the following language tags:

Language	Locale	Language Tag
Africaans	South Africa	af-ZA
Albanian	Albanian	sq-AL
Alsatian	France	gsw-FR
Amharic	Ethiopia	am-ET
Arabic	Algeria	ar-DZ
Arabic	Bahrain	ar-BH
Arabic	Egypt	ar-EG
Arabic	Iraq	ar-IQ
Arabic	Jordan	ar-JO
Arabic	Kuwait	ar-KW

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Language	Locale	Language Tag
Arabic	Lebanon	ar-LB
Arabic	Libya	ar-LY
Arabic	Morocco	ar-MA
Arabic	Oman	ar-OM
Arabic	Qatar	ar-QA
Arabic	Saudi Arabia	ar-SA
Arabic	Syria	ar-SY
Arabic	Tunisia	ar-TN
Arabic	U.A.E.	ar-AE
Arabic	Yemen	ar-YE
Armenian	Armenia	hy-AM
Assamese	India	as-IN
Azerbaijani (Cyrillic)	Azerbaijan	az-AZ-Cyrl
Azerbaijani (Latin)	Azerbaijan	az-AZ-Latn
Bangla	Bangladesh	bn-BD
Bangla (Bangla Script)	India	bn-IN
Bashkir	Russia	ba-RU
Basque	Basque	eu-ES
Belarusian	Belarus	be-BY
Bhutanese	Bhutan	bo-BT
Bosnian (Cyrillic)	Bosnia and Herzegovina	bs-BA-Cyrl
Bosnian (Latin)	Bosnia and Herzegovina	bs-BA-Latn
Breton	France	br-FR
Bulgarian	Bulgaria	bg-BG
Catalan	Catalan	ca-ES
Chinese	Hong Kong SAR	zh-HK
Chinese	Macao SAR	zh-MO
Chinese	PRC	zh-CN

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Language	Locale	Language Tag
Chinese	Singapore	zh-SG
Chinese	Taiwan	zh-TW
Corsican	France	co-FR
Croatian	Croatia	hr-HR
Croatian (Latin)	Bosnia and Herzegovina	hr-BA-Latn
Czech	Czech Republic	cs-CZ
Danish	Denmark	da-DK
Dari	Afghanistan	prs-AF
Divehi	Maldives	div-MV
Dutch	Belgium	nl-BE
Dutch	Netherlands	nl-NL
English	Australia	en-AU
English	Belize	en-BZ
English	Canada	en-CA
English	Caribbean	en-CB
English	India	en-IN
English	Ireland	en-IE
English	Jamaica	en-JM
English	Malaysia	en-MY
English	New Zealand	en-NZ
English	Philippines	en-PH
English	South Africa	en-ZA
English	Trinidad	en-TT
English	United Kingdom	en-GB
English	United States	en-US
English	Zimbabwe	en-ZW
Estonian	Estonia	et-EE
Faroese	Faroe Islands	fo-FO

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Language	Locale	Language Tag
Filipino	Philippines	fil-PH
Finnish	Finland	fi-FI
French	Belgium	fr-BE
French	Canada	fr-CA
French	France	fr-FR
French	Luxembourg	fr-LU
French	Monaco	fr-MC
French	Switzerland	fr-CH
Frisian	Netherlands	fy-NL
Galician	Galician	gl-ES
Georgian	Georgia	ka-GE
German	Austria	de-AT
German	Germany	de-DE
German	Liechtenstein	de-LI
German	Luxembourg	de-LU
German	Switzerland	de-CH
Greek	Greece	el-GR
Greenlandic	Greenland	kl-GL
Gujarati (Gujarati Script)	India	gu-IN
Hausa (Latin)	Nigeria	ha-NG-Latn
Hebrew	Israel	he-IL
Hindi	India	hi-IN
Hungarian	Hungary	hu-HU
Icelandic	Iceland	is-IS
Igbo	Nigeria	ig-NG
Inari Sami	Finland	smn-FI
Indonesian	Indonesia	id-ID
Inuktitut (Latin)	Canada	iu-CA-Latn

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Language	Locale	Language Tag
Inuktitut (Syllabics)	Canada	iu-CA-Cans
Irish	Ireland	ga-IE
isiXhosa / Xhosa	South Africa	xh-ZA
isiZulu / Zulu	South Africa	zu-ZA
Italian	Italy	it-IT
Italian	Switzerland	it-CH
Japanese	Japan	ja-JP
Kannada (Kannada Script)	India	kn-IN
Kazakh	Kazakhstan	kk-KZ
Khmer	Cambodia	kh-KH
K'iche	Guatemala	qut-GT
Kinyarwanda	Rwanda	rw-RW
Konkani	India	kok-IN
Korean	Korea	ko-KR
Kyrgyz	Kyrgyzstan	ky-KG
Lao	Lao PDR	lo-LA
Latvian	Latvia	lv-LV
Lithuanian	Lithuania	lt-LT
Lower Sorbian	Germany	wee-DE
Lule Sami	Norway	smj-NO
Lule Sami	Sweden	smj-SE
Luxembourgish	Luxembourg	lb-LU
Macedonian (FYROM)	Macedonia, Former Yugoslav Republic of	mk-MK
Malay	Brunei	ms-BN
Malay	Malaysia	ms-MY
Malayalam (Malayalam Script)	India	ml-IN
Maltese	Malta	mt-MT
Maori	New Zealand	mi-NZ

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Language	Locale	Language Tag
Mapudungun	Chile	arn-CL
Marathi	India	mr-IN
Mohawk	Mohawk	moh-CA
Mongolian (Cyrillic)	Mongolia	mn-MN
Mongolian (Mongolian)	PRC	mn-CN-Mong
Nepali	Nepal	ne-NP
Northern Sami	Finland	se-FI
Northern Sami	Norway	se-NO
Northern Sami	Sweden	se-SE
Norwegian (Bokmål)	Norway	nb-NO
Norwegian (Nynorsk)	Norway	nn-NO
Occitan	France	oc-FR
Odia (Odia Script)	India	or-IN
Pashto	Afghanistan	ps-AF
Persian	Iran	fa-IR
Polish	Poland	pl-PL
Portuguese	Brazil	pt-BR
Portuguese	Portugal	pt-PT
Punjabi (Gurmukhi Script)	India	pa-IN
Quechua	Bolivia	quz-BO
Quechua	Ecuador	quz-EC
Quechua	Peru	quz-PE
Romanian	Romania	ro-RO
Romansh	Switzerland	rm-CH
Russian	Russia	ru-RU
Sakha	Russia	sah-RU
Sanskrit	India	sa-IN
Serbian (Cyrillic)	Bosnia and Herzegovina	sr-BA-Cyrl

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Language	Locale	Language Tag
Serbian (Cyrillic)	Serbia	sr-SP-Cyrl
Serbian (Latin)	Bosnia and Herzegovina	sr-BA-Latn
Serbian (Latin)	Serbia	sr-SP-Latn
Sesotho sa Leboa / Northern Sotho	South Africa	ns-ZA
Setswana / Tswana	South Africa	tn-ZA
Sinhala	Sri Lanka	si-LK
Skolt Sami	Finland	sms-FI
Slovak	Slovakia	sk-SK
Slovenian	Slovenia	sl-SI
Southern Sami	Norway	sma-NO
Southern Sami	Sweden	sma-SE
Spanish	Argentina	es-AR
Spanish	Bolivia	es-BO
Spanish	Chile	es-CL
Spanish	Columbia	es-CO
Spanish	Costa Rica	es-CR
Spanish	Dominican Republic	es-DO
Spanish	Ecuador	es-EC
Spanish	El Salvador	es-SV
Spanish	Guatemala	es-GT
Spanish	Honduras	es-HN
Spanish	Mexico	es-MX
Spanish	Nicaragua	es-NI
Spanish	Panama	es-PA
Spanish	Paraguay	es-PY
Spanish	Peru	es-PE
Spanish	Puerto Rico	es-PR
Spanish	Spain	es-ES

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Language	Locale	Language Tag
Spanish	United States	es-US
Spanish	Uruguay	es-UY
Spanish	Venezuela	es-VE
Swahili	Kenya	sw-KE
Swedish	Finland	sv-FI
Swedish	Sweden	sv-SE
Syriac	Syria	syr-SY
Tajik (Cyrillic)	Tajikistan	tg-TJ-Cyrl
Tamazight (Latin)	Algeria	tmz-DZ-Latn
Tamil	India	ta-IN
Tatar	Russia	tt-RU
Telugu (Telugu Script)	India	te-IN
Thai	Thailand	th-TH
Tibetan	PRC	bo-CN
Turkish	Turkey	tr-TR
Turkmen	Turkmenistan	tk-TM
Uighur	PRC	ug-CN
Ukrainian	Ukraine	uk-UA
Upper Sorbian	Germany	wen-DE
Urdu	Pakistan	ur-PK
Uzbek (Cyrillic)	Uzbekistan	uz-UZ-Cyrl
Uzbek (Latin)	Uzbekistan	uz-UZ-Latn
Vietnamese	Viet Nam	vi-VN
Welsh	United Kingdom	cy-GB
Wolof	Senegal	wo-SN
Yi	PRC	ii-CN
Yoruba	Nigeria	yo-NG

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<4> Section 2.2.1: The 2007 Office system does not create this element.

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6 Change Tracking

This section identifies changes that were made to this document since the last release. Changes are classified as Major, Minor, or None.

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.
- A document revision that captures changes to protocol functionality.

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 **None** means that no new technical changes were introduced. Minor editorial and formatting changes may have been made, but the relevant technical content is identical to the last released version.

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

Section	Description	Revision class
5 Appendix A: Product Behavior	Updated list of supported products.	Major

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