

[MS-ODCFF]: Office Data Connection File Format

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Date	Revision History	Revision Class	Comments
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Preliminary

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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 and can contain the terms MAY, SHOULD, MUST, MUST NOT, and SHOULD NOT as defined in RFC 2119. All other sections and examples in this specification are informative.

1.1 Glossary

The following terms are defined in [\[MS-GLOS\]](#):

authentication
credential
UTF-8
XML

The following terms are defined in [\[MS-OFCGLOS\]](#):

application identifier
catalog
child element
connection
connection string
container
cube
data connection
data provider
data source
Hypertext Markup Language (HTML)
list
Multipurpose Internet Mail Extensions (MIME)
OLAP
query
single sign-on (SSO)
Structured Query Language (SQL)
Uniform Resource Locator (URL)
white space
XML schema

The following terms are specific to this document:

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.

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

1.2 References

References to Microsoft Open Specifications documentation do not include a publishing year because links are to the latest version of the technical documents, which are updated frequently. References to other documents include a publishing year when one is available.

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. Please check the archive site, <http://msdn2.microsoft.com/en-us/library/E4BD6494-06AD-4aed-9823-445E921C9624>, as an additional source.

[MS-ODATA] Microsoft Corporation, "[Open Data Protocol \(OData\) Specification](#)".

[MS-ODBCSTR] Microsoft Corporation, "[ODBC Connection String Structure Specification](#)".

[MS-OLEDBSTR] Microsoft Corporation, "[OLEDB Connection String Structure Specification](#)".

[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>

[RFC3066] Alvestrand, H., "Tags for the Identification of Language", RFC 3066, January 2001, <http://www.ietf.org/rfc/rfc3066.txt>

1.2.2 Informative References

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

[MSDN-ODBC] Microsoft Corporation, "ODBC Programmer's Reference", <http://msdn.microsoft.com/en-us/library/ms714177.aspx>

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

[MSFT-ODBCODCO] Microsoft Corporation, "ODBC--Open Database Connectivity Overview", March 2007, <http://support.microsoft.com/kb/110093>

[MS-GLOS] Microsoft Corporation, "[Windows Protocols Master Glossary](#)".

[MS-OFGLGLOS] Microsoft Corporation, "[Microsoft Office Master Glossary](#)".

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 (1)**. 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.

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 (1). This information includes:

- Data provider-specific **connection string** that is used to establish and open a connection (2) to the data source (1).
- **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 (1) (as opposed to an application using a cached version of the data connection (2) information).
- Specific **authentication (2)** information to use for the data source (1). 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).

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.

1.7 Vendor-Extensible Fields

None.

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 (1), which is specified by the ConnectionString element.
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 (1), 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 (1) .
Default	Specifies that the CommandText element specifies text that will be interpreted by the data connection (1) to the data source (1), specified by the ConnectionString element. The text will be passed by the data connection (1) to the data source (1) without change.
TableCollection <2>	Specifies that the CommandText element specifies the list (1) of table names that can be read from the data connection (1) to the data source (1), which is specified by the ConnectionString element. The table names in the list (1) MUST be separated by commas. Each table name in the list (1) 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 (2).

The following table specifies the enumeration values for this type.

Enumeration value	Meaning
None	Use no authentication (2).
Stored	Use single sign-on (SSO) authentication (2).
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 (1). 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".

Child element	Meaning
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 .
SSOApplicationID	The application identifier (2) used for SSO authentication (2). SHOULD be specified only when CredentialMethod is "Stored".
CredentialsMethod	Specifies the method to use for authentication (2). If the value is "Stored", the value of SSOApplicationID will be used for the SSO application identifier (2). 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:sequence>
  </xs:complexType>
</xs:schema>
```

```

<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>

```

2.2.2 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-ODBC] .

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 (1). 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 (1) and the data to query.

2.6 Document Properties

Document properties are used to provide for the following:

- 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
<code><meta http-equiv=Content-Type content="text/x-ms-odc; charset=utf-8"></code>	Specifies that the file content has the Multipurpose Internet Mail Extensions (MIME) type "text/x-ms-odc", and that the encoding is UTF-8.
<code><meta name=ProgId content=value></code>	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 tabular result within a database.
<code><meta name=SourceType content=value></code>	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

HTML element	Meaning
	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.
<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>

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 (1) 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 (1) 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.

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


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 (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=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 (1), named "Adventure Works."

It also contains authentication (2) 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 (2), "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 (1). 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">
  <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>
```

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 (2), 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 (2), which is used to look up the credentials, is persisted in the ODC file.

4.2 Index of Security Fields

None.

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 released service packs:

- Microsoft® Office Excel® 2007
- Microsoft® Excel® 2010
- Microsoft® Excel® 2013 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 2.1.1:](#) This value is available only in Excel 2013 Preview.

[<2> Section 2.1.2:](#) This value is available only in Excel 2013 Preview.

[<3> Section 2.2.1:](#) the 2007 Office system and Microsoft Office 2010 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 Microsoft Office 2010 recognize the following language tags:

Language	Locale	Language Tag
Afrikaans	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
Arabic	Lebanon	ar-LB
Arabic	Libya	ar-LY
Arabic	Morocco	ar-MA

Language	Locale	Language Tag
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
Azeri (Cyrillic)	Azerbaijan	az-AZ-Cyrl
Azeri (Latin)	Azerbaijan	az-AZ-Latn
Bashkir	Russia	ba-RU
Basque	Basque	eu-ES
Belarusian	Belarus	be-BY
Bengali	Bangladesh	bn-BD
Bengali (Bengali Script)	India	bn-IN
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
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

Language	Locale	Language Tag
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
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

Language	Locale	Language Tag
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
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

Language	Locale	Language Tag
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
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

Language	Locale	Language Tag
Oriya (Oriya 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
Sanskrit	India	sa-IN
Serbian (Cyrillic)	Bosnia and Herzegovina	sr-BA-Cyrl
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

Language	Locale	Language Tag
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
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
Bhutanese	Bhutan	bo-BT
Tibetan	PRC	bo-CN
Turkish	Turkey	tr-TR
Turkmen	Turkmenistan	tk-TM

Language	Locale	Language Tag
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
Sakha	Russia	sah-RU
Yi	PRC	ii-CN
Yoruba	Nigeria	yo-NG

<4> [Section 2.2.1:](#) the 2007 Office system does not create this element.

6 Change Tracking

This section identifies changes that were made to the [MS-ODCFF] protocol document between the April 2012 and July 2012 releases. 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.
- An extensive rewrite, addition, or deletion of major portions of content.
- The removal of a document from the documentation set.
- Changes made for template compliance.

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 language and 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 or language changes were introduced. The technical content of the document is identical to the last released version, but minor editorial and formatting changes, as well as updates to the header and footer information, and to the revision summary, may have been made.

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.
- New content added for template compliance.
- Content updated for template compliance.
- Content removed for template compliance.
- 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 protocol@microsoft.com.

Section	Tracking number (if applicable) and description	Major change (Y or N)	Change type
4.1 Security Considerations for Implementers	Created new section; content moved from "Security Considerations" section.	N	Content updated for template compliance.
4.2 Index of Security Fields	Added new section with content of "None."	N	New content added for template compliance.

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