

# [MS-QDEIF]:

## Query Definition Interoperability Format

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## Revision Summary

Date	Revision History	Revision Class	Comments
3/29/2016	1.0	New	Released new document.
7/15/2016	1.0	None	No changes to the meaning, language, or formatting of the technical content.
9/14/2016	1.0	None	No changes to the meaning, language, or formatting of the technical content.
9/22/2016	2.0	Major	Significantly changed the technical content.
9/19/2017	2.1	Minor	Clarified the meaning of the technical content.
4/27/2018	3.0	Major	Significantly changed the technical content.
8/28/2018	4.0	Major	Significantly changed the technical content.
5/19/2020	4.1	Minor	Clarified the meaning of the technical content.
4/22/2021	5.0	Major	Significantly changed the technical content.
8/17/2021	6.0	Major	Significantly changed the technical content.

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# 1 Introduction

The Query Definition Interoperability Format defines a file format that can be used to transport query definitions between client applications.

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:

**Power Query Formula:** A script language that defines how a query filters and combines data from one or more supported data sources.

**spreadsheet data model:** A local Online Analytical Processing (OLAP) storage of data used by a spreadsheet application.

**worksheet:** A single logical container for a set of tabular data and other objects in a workbook.

**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](#).

### 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](mailto:dochelp@microsoft.com). We will assist you in finding the relevant information.

[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>

### 1.2.2 Informative References

[MSDOCS-MLANG] Microsoft Corporation, "<https://docs.microsoft.com/en-us/powerquery-m/power-query-m-language-specification>".

[MSFT-Support] Microsoft Corporation, "Support", <http://support.microsoft.com/>

[XML] World Wide Web Consortium, "Extensible Markup Language (XML) 1.0 (Fourth Edition)", W3C Recommendation 16 August 2006, edited in place 29 September 2006, <http://www.w3.org/TR/2006/REC-xml-20060816/>

### 1.3 Overview

The Query Definition Interoperability Format contains information about a set of queries, including the **Power Query Formula** of each query as well as metadata that describes their groups and relationships. A typical scenario for using this structure is an application that enables the user to copy or export queries from one document and paste or import them into another document within the same application, or a different application.

### 1.4 Relationship to Protocols and Other Structures

This file format makes use of the structures that are defined in the following references:

- [\[XML\]](#) describes the XML format.
- [\[MSDOCS-MLANG\]](#) describes the Power Query Formula language.

### 1.5 Applicability Statement

This data structure is used to transport information about queries that utilize Power Query technology. It is applicable for scenarios where the queries are transported between different client applications, for example via the operating system clipboard or stored as part of a larger file.

### 1.6 Versioning and Localization

This document covers versioning issues in the following areas:

- **Structure Versions:** Version information related to this structure is stored within the structure. For more details, see section [2.1](#).
- **Localization:** Locale-specific information related to this structure is stored within the structure. For more details, see section 2.1.

### 1.7 Vendor-Extensible Fields

None.

## 2 Structures

### 2.1 Mashup Element

The Query Definition Interoperability Format consists of a root XML element described by the following **XML schema** fragment.

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

  <xs:element name="Mashup">
    <xs:complexType>
      <xs:all>
        <xs:element name="Client" type="xs:string"/></xs:element>
        <xs:element name="Version" type="version"/></xs:element>
        <xs:element name="MinVersion" type="version"/></xs:element>
        <xs:element name="Culture" type="culture"/></xs:element>
        <xs:element name="SafeCombine" type="xs:boolean"/></xs:element>
        <xs:element name="Items" type="Items"/></xs:element>
        <xs:element name="EmbeddedContents" type="EmbeddedContents"/></xs:element>
      </xs:all>
    </xs:complexType>
  </xs:element>

  <xs:simpleType name="version">
    <xs:restriction base="xs:string">
      <xs:pattern value="[0-9]+\.[0-9]+(\.[0-9]+(\.[0-9]+)?)?" />
    </xs:restriction>
  </xs:simpleType>

  <xs:simpleType name="culture">
    <xs:restriction base="xs:string">
      <xs:enumeration value="en-us" />
      <!-- Other culture names as specified by RFC1766 -->
    </xs:restriction>
  </xs:simpleType>

</xs:schema>
```

**Client:** The name of the client that created this XML document.

**Version:** The Power Query client version that created this set of queries.

**MinVersion:** The minimum Power Query client version that is able to consume this set of queries.

**Culture:** The culture to be used when parsing date/time strings.

**SafeCombine:** Whether Privacy Level settings are used when combining data. See the [\[MSFT-Support\]](#) article "Privacy Levels (Power Query)" for more information.

**Items:** The list of items (section [2.2](#)).

**EmbeddedContents:** The list of embedded contents (section [2.5](#)).

### 2.2 Items Complex Type

The following XML schema fragment describes the **Items** complex type.

```
<xs:complexType name="Items">
```

```

<xs:choice maxOccurs="unbounded">
  <xs:element name="Query" type="Query" minOccurs="0"></xs:element>
  <xs:element name="QueryGroup" type="QueryGroup" minOccurs="0"></xs:element>
</xs:choice>
</xs:complexType>

```

**Query:** Specifies a query (section [2.3](#)).

**Query Group:** Specifies a query group (section [2.4](#)).

## 2.3 Query Complex Type

The following XML schema fragment describes the **Query** complex type.

```

<xs:complexType name="Query">
  <xs:sequence>
    <xs:element name="Description" type="xs:string" minOccurs="0"></xs:element>
    <xs:element name="Formula" type="xs:string"></xs:element>
    <xs:any minOccurs="0" maxOccurs="unbounded" processContents="lax"></xs:any>
  </xs:sequence>
  <xs:attribute name="Name" type="xs:string"></xs:attribute>
</xs:complexType>

```

**Name:** The name of the query.

**Description:** The description of the query.

**Formula:** The **Power Query Formula** of the query.

**Note:** The following elements are added to the query.

Name	Data Type	Description
LoadToWorksheet	Boolean	Whether the query is loaded to the <b>worksheet</b> .
LoadToDataModel	Boolean	Whether the query has been loaded to the <b>spreadsheet data model</b> .
IsParameterQuery <a href="#">&lt;1&gt;</a>	Boolean	Whether the query is a parameter query.

## 2.4 Query Group Complex Type

The following XML schema fragment describes the **Query Group** complex type.

```

<xs:complexType name="QueryGroup">
  <xs:sequence>
    <xs:element name="Description" type="xs:string" minOccurs="0"></xs:element>
    <xs:element name="Items" type="Items"></xs:element>
    <xs:any minOccurs="0" maxOccurs="unbounded" processContents="lax"></xs:any>
  </xs:sequence>
  <xs:attribute name="Name" type="xs:string"></xs:attribute>
</xs:complexType>

```

**Name:** The name of the query group.

**Description:** The description of the query group.

**Items:** The list of items (section [2.2](#)) in the query group.

## 2.5 Embedded Contents Complex Type

The following XML schema fragment describes the **Embedded Contents** complex type.

```
<xs:complexType name="EmbeddedContents">
  <xs:sequence>
    <xs:element name="Content" minOccurs="0" maxOccurs="unbounded">
      <xs:complexType>
        <xs:simpleContent>
          <xs:extension base="xs:base64Binary">
            <xs:attribute name="Name" type="xs:string"/></xs:attribute>
            <xs:attribute name="Type" type="xs:string"/></xs:attribute>
          </xs:extension>
        </xs:simpleContent>
      </xs:complexType>
    </xs:element>
  </xs:sequence>
</xs:complexType>
```

**Content:** The Base64-encoded string of the binary contents.

**Name:** The name of the binary content.

**Type:** The MIME type of the binary content.

### 3 Structure Examples

The following shows an example of the XML content.

```
<Mashup xmlns="http://schemas.microsoft.com/DataMashup">
  <Client>excel</Client>
  <Version>2.29.4217.221</Version>
  <MinVersion>1.5.3296.0</MinVersion>
  <Culture>en-US</Culture>
  <SafeCombine>true</SafeCombine>
  <Items>
    <Query Name="Query1">
      <Description>This is my query.</Description>
      <Formula>
        <![CDATA[
          let
            Source = Sql.Databases("localhost"),
            AdventureWorks = Source{[Name="AdventureWorks"]}[Data],
            Sales_Customer = AdventureWorks{[Schema="Sales",Item="Customer"]}[Data],
            #"Kept First Rows" = Table.FirstN(Sales_Customer,100)
          in
            #"Kept First Rows"
          ]]>
      </Formula>
    </Query>
    <QueryGroup Name="Group1">
      <Description>Query Group 1</Description>
      <Items>
        <Query Name="Query2">
          <Description>This is my query.</Description>
          <Formula>
            <![CDATA[
              let
                Source = Embedded.Value("91DA385E-F438-4158-8960-9834B5C531E4"),
              in
                Source
            ]]>
          </Formula>
        </Query>
        <QueryGroup Name="EmptyGroup">
          <Description />
          <Items />
        </QueryGroup>
      </Items>
    </QueryGroup>
  </Items>
  <EmbeddedContents>
    <Content Name="91DA385E-F438-4158-8960-9834B5C531E4" Type="text/plain">
      SGVsbG8sIFdvcmxkIQ==
    </Content>
  </EmbeddedContents>
</Mashup>
```

## **4 Security**

### **4.1 Security Considerations for Implementers**

None.

### **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 updates to those products.

- Microsoft Excel 2016 Update for March 2016
- Microsoft Excel 2019
- Microsoft Excel 2021

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 2.3](#): Added in Microsoft Excel 2016 Update for July 2016.

## 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](mailto:dochelp@microsoft.com).

Section	Description	Revision class
<a href="#">5</a> Appendix A: Product Behavior	Updated list of supported products.	major

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