

## [MS-BDCMP]:

# Business Data Catalog Metadata Web Service Protocol

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## Revision Summary

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# 1 Introduction

The Business Data Catalog Metadata Web Service Protocol enables a protocol client to retrieve information about interfaces of software systems that store business data and annotations of these interfaces.

Sections 1.8, 2, and 3 of this specification are normative and can contain the terms MAY, SHOULD, MUST, MUST NOT, and SHOULD NOT as defined in [\[RFC2119\]](#). Sections 1.5 and 1.9 are also normative but do not contain those terms. All other sections and examples in this specification are informative.

## 1.1 Glossary

The following terms are specific to this document:

**AccessChecker:** A type of **MethodInstance** that can be called to retrieve the permissions that the calling security principal (2) has for each of a collection of EntityInstances identified by the specified EntityInstanceIds.

**business logic:** The part of an application that processes data according to the requirements defined in a **line-of-business (LOB) system**. It refers to the routines that perform the data entry, update, query, and report processing, and more specifically to the processing that takes place behind the scenes rather than the presentation logic that is required to display the data.

**ComparisonFilter:** A **FilterDescriptor** type that is used when querying a line-of-business (LOB) system. An LOB system can compare a ComparisonFilter value with the value of a specific Field of a set of EntityInstances and only those EntityInstances where the Field values pass the comparison test can be returned.

**Entity:** A type of DataClass that represents a type of business data object that is stored in a line-of-business (LOB) system and whose instances have a persistent EntityInstanceId.

**EntityInstance:** A set of Field (4) values that have a unique identity that represents a specific instance of an Entity, and are stored in a line-of-business (LOB) system.

**FilterDescriptor:** A type of **MetadataObject** that describes a normalized way of gathering input from users. A FilterDescriptor is defined by its type and the Method that contains it.

**Finder:** A type of **MethodInstance** that can be called to return a collection of zero or more EntityInstances of a specific Entity. Finder input is defined by the FilterDescriptors that are contained in the Method that contains the Finder.

**front-end web server:** A server that hosts webpages, performs processing tasks, and accepts requests from protocol clients and sends them to the appropriate back-end server for further processing.

**GenericInvoker:** A type of **MethodInstance** that can be called to perform a specific task in a line-of-business (LOB) system. GenericInvoker input and output is specific to the Method.

**Hypertext Transfer Protocol (HTTP):** An application-level protocol for distributed, collaborative, hypermedia information systems (text, graphic images, sound, video, and other multimedia files) on the World Wide Web.

**Hypertext Transfer Protocol Secure (HTTPS):** An extension of HTTP that securely encrypts and decrypts web page requests. In some older protocols, "Hypertext Transfer Protocol over Secure Sockets Layer" is still used (Secure Sockets Layer has been deprecated). For more information, see [\[SSL3\]](#) and [\[RFC5246\]](#).



**IdEnumerator:** A type of **MethodInstance** that can be called to return the Field (4) values that represent the identity of EntityInstances of a specific Entity. IdEnumerator input is defined by the FilterDescriptors that are contained in the Method that contains the IdEnumerator.

**language code identifier (LCID):** A 32-bit number that identifies the user interface human language dialect or variation that is supported by an application or a client computer.

**LastIdFilter:** A **FilterDescriptor** type that is used when querying a line-of-business (LOB) system in which data is to be returned in chunks. When requesting a new chunk, the filter can be populated with the EntityInstanceId of the last EntityInstance.

**LimitFilter:** A **FilterDescriptor** type that is used when querying a line-of-business (LOB) system. Its value can be interpreted as a limit on the number of EntityInstances that are returned when the Method to which it belongs is called.

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

**LobSystem:** A type of **MetadataObject** that represents a specific version of a line-of business (LOB) system. An LOB system can be a database or a web service.

**LobSystemInstance:** A type of **MetadataObject** that represents a specific deployed instance of a **line-of-business (LOB) system**, as represented by a **LobSystem**. LobSystemInstances are contained by LobSystems. LobSystemInstance Properties describe how to connect to an instance of the LobSystem that contains them by providing information such as the server name, connection string, and authentication mode.

**localized name:** The descriptive name of a **MetadataObject** for a specific locale.

**metadata model:** A collection of semantically related **MetadataObjects** that define how to interact with a specific line-of-business (LOB) system.

**metadata store:** A database that is stored on a back-end database server and contains all stored procedures and storage for the **MetadataObject** types.

**MetadataObject:** An abstract data structure that consists of a set of attributes (1) that represent a LobSystem, LobSystemInstance, DataClass, Entity, Method, MethodInstance, Parameter, TypeDescriptor, Identifier, FilterDescriptor, Action, ActionParameter, or Association.

**MetadataObjectId:** An attribute (1) that uniquely identifies a **MetadataObject** that is stored in a metadata store.

**Method:** A type of **MetadataObject** that represents a piece of executable **business logic** in a line-of-business (LOB) system. Methods are contained by DataClasses and they contain Parameters.

**MethodInstance:** A type of **MetadataObject** that associates a normalized or stereotypical semantic with a Method that represents a native API in a line-of-business (LOB) system. MethodInstances identify which part of the data that is returned by a Method is relevant for the semantic by defining a **ReturnTypeDescriptor**. MethodInstances are contained by Methods.

**RangeFilter:** A **FilterDescriptor** type that is used when querying a line-of-business (LOB) system. An LOB system can compare its minimum and maximum value with the value of a specific field of the set of EntityInstances and only those EntityInstances where field values that lie between the minimum and maximum are returned.

**ReturnTypeDescriptor:** An attribute (1) of a **MethodInstance**. It is the TypeDescriptor that identifies the portion of a Method's return or output Parameters to extract and return as the result of executing the MethodInstance. It defines the View of the EntityInstances returned, with its child TypeDescriptors denoting the Fields of the View.

**Scalar:** A type of **MethodInstance** that can be called to return a scalar value.

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

**SOAP:** A lightweight protocol for exchanging structured information in a decentralized, distributed environment. **SOAP** uses XML technologies to define an extensible messaging framework, which provides a message construct that can be exchanged over a variety of underlying protocols. The framework has been designed to be independent of any particular programming model and other implementation-specific semantics. SOAP 1.2 supersedes SOAP 1.1. See [\[SOAP1.2-1/2003\]](#).

**SOAP action:** The HTTP request header field used to indicate the intent of the **SOAP** request, using a URI value. See [\[SOAP1.1\]](#) section 6.1.1 for more information.

**SOAP body:** A container for the payload data being delivered by a SOAP message to its recipient. See [\[SOAP1.2-1/2007\]](#) section 5.3 for more information.

**SOAP fault:** A container for error and status information within a SOAP message. See [\[SOAP1.2-1/2007\]](#) section 5.4 for more information.

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

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

**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 [\[RFC1738\]](#).

**ViewAccessor:** A type of **MethodInstance** that can be called to return a different View for a given EntityInstance of a specific Entity, without changing the EntityInstanceId of the EntityInstance.

**Web Services Description Language (WSDL):** An XML format for describing network services as a set of endpoints that operate on messages that contain either document-oriented or procedure-oriented information. The operations and messages are described abstractly and are bound to a concrete network protocol and message format in order to define an endpoint. Related concrete endpoints are combined into abstract endpoints, which describe a network service. WSDL is extensible, which allows the description of endpoints and their messages regardless of the message formats or network protocols that are used.

**WildcardFilter:** A **FilterDescriptor** type that is used when querying a line-of-business (LOB) system. Its value represents a pattern of regular and wildcard characters that is matched against the value of a particular Field (4) of the set of EntityInstances. The LOB system returns only those EntityInstances whose Field values match the specified pattern.

**WSDL message:** An abstract, typed definition of the data that is communicated during a WSDL operation [\[WSDL\]](#). Also, an element that describes the data being exchanged between web service providers and clients.

**XML namespace:** A collection of names that is used to identify elements, types, and attributes in XML documents identified in a URI reference [\[RFC3986\]](#). A combination of XML namespace and local name allows XML documents to use elements, types, and attributes that have the same names but come from different sources. For more information, see [\[XMLNS-2ED\]](#).

**XML namespace prefix:** An abbreviated form of an **XML namespace**, as described in [\[XML\]](#).

**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.

[ECMA-335] ECMA, "Common Language Infrastructure (CLI): Partitions I through VI", Standard ECMA-335, <http://www.ecma-international.org/flat/publications/Standards/Ecma-335.htm>

[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>

[RFC2616] Fielding, R., Gettys, J., Mogul, J., et al., "Hypertext Transfer Protocol -- HTTP/1.1", RFC 2616, June 1999, <http://www.rfc-editor.org/rfc/rfc2616.txt>

[SOAP1.1] Box, D., Ehnebuske, D., Kakivaya, G., et al., "Simple Object Access Protocol (SOAP) 1.1", May 2000, <http://www.w3.org/TR/2000/NOTE-SOAP-20000508/>

[SOAP1.2/1] Gudgin, M., Hadley, M., Mendelsohn, N., Moreau, J., and Nielsen, H.F., "SOAP Version 1.2 Part 1: Messaging Framework", W3C Recommendation, June 2003, <http://www.w3.org/TR/2003/REC-soap12-part1-20030624>

[SOAP1.2/2] Gudgin, M., Hadley, M., Mendelsohn, N., Moreau, J., and Nielsen, H.F., "SOAP Version 1.2 Part 2: Adjuncts", W3C Recommendation, June 2003, <http://www.w3.org/TR/2003/REC-soap12-part2-20030624>

[WSDL] Christensen, E., Curbera, F., Meredith, G., and Weerawarana, S., "Web Services Description Language (WSDL) 1.1", W3C Note, March 2001, <http://www.w3.org/TR/2001/NOTE-wsdl-20010315>

[XMLNS] Bray, T., Hollander, D., Layman, A., et al., Eds., "Namespaces in XML 1.0 (Third Edition)", W3C Recommendation, December 2009, <http://www.w3.org/TR/2009/REC-xml-names-20091208/>

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

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

## 1.2.2 Informative References

[RFC2818] Rescorla, E., "HTTP Over TLS", RFC 2818, May 2000, <http://www.rfc-editor.org/rfc/rfc2818.txt>

## 1.3 Overview

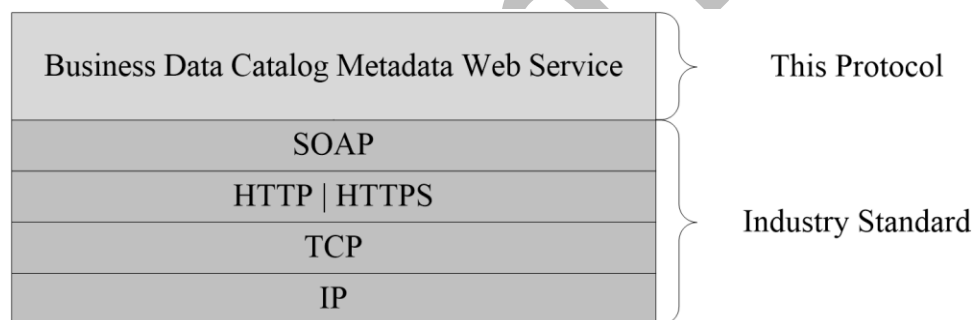
Enterprises have a variety of data stored in various **line-of-business (LOB) systems**. Typically, this data is accessible only through the proprietary programming interface of these software systems. It is desirable to be able to provide access to such data via a set of normalized interfaces so that users do not have to learn system-specific or adapter-specific programming patterns for each software system. To provide such access to data, it is useful to describe or model the LOB systems using a set of **MetadataObjects** and store the resulting **metadata models** in a **metadata store**.

Once a metadata store of metadata models is established, there are many scenarios that require access to metadata models on computers that are not servers. For example, a user may want to browse the catalog of **LobSystems** and the **Entities** in each **LobSystem** available on a **front-end Web server**, but from inside a custom application that is written for a client computer in an enterprise. For this purpose, this protocol provides remote access to a subset of the MetadataObjects over a Web service-based protocol.

## 1.4 Relationship to Other Protocols

This protocol uses the **SOAP** message protocol for formatting request and response messages, as described in [\[SOAP1.1\]](#), [\[SOAP1.2/1\]](#) and [\[SOAP1.2/2\]](#). It transmits those messages by using **HTTP**, as described in [\[RFC2616\]](#), or **Hypertext Transfer Protocol over Secure Sockets Layer (HTTPS)**, as described in [\[RFC2818\]](#).

The following diagram shows the underlying messaging and transport stack used by the protocol:



**Figure 1: This protocol in relation to other protocols**

## 1.5 Prerequisites/Preconditions

This protocol operates against a **site** that is identified by a **URL** that is known by protocol clients. The protocol server endpoint is formed by appending `"/_vti_bin/businessdatacatalog.asmx"` to the URL of the site, for example `http://www.contoso.com/Repository/_vti_bin/businessdatacatalog.asmx`.

This protocol assumes that authentication has been performed by the underlying protocols.

## 1.6 Applicability Statement

None.

## 1.7 Versioning and Capability Negotiation

This document covers versioning issues in the following areas:

- **Supported transports:** This protocol uses multiple transports with SOAP as specified in section [2.1](#).
- **Localization:** This protocol includes text strings in various messages. Localization considerations for such strings are specified in sections [2.2](#) and [3.1.4](#).

## 1.8 Vendor-Extensible Fields

None.

## 1.9 Standards Assignments

None.

Preliminary

## 2 Messages

In the following sections, the schema definition might differ from the processing rules imposed by the protocol. The **WSDL** in this specification matches the WSDL that shipped with the product and provides a base description of the schema. The text that introduces the WSDL might specify differences that reflect actual Microsoft product behavior. For example, the schema definition might allow for an element to be **empty**, **null**, or **not present** but the behavior of the protocol as specified restricts the same elements to being **non-empty**, **not null**, and **present**.

### 2.1 Transport

Protocol servers **MUST** support SOAP over HTTP. Protocol servers **SHOULD** additionally support SOAP over HTTPS for securing communication with protocol clients.

Protocol messages **MUST** be formatted as specified either in [\[SOAP1.1\]](#) section 4 or in [\[SOAP1.2/1\]](#) section 5. Protocol server faults **MUST** be returned either using HTTP status codes as specified in [\[RFC2616\]](#) section 10 or using **SOAP faults** as specified either in [\[SOAP1.1\]](#) section 4.4 or in [\[SOAP1.2/1\]](#) section 5.4.

### 2.2 Common Message Syntax

This section contains common definitions that are used by this protocol. The syntax of the definitions uses **XML schema**, as specified in [\[XMLSCHEMA1\]](#) and [\[XMLSCHEMA2\]](#), and WSDL, as specified in [\[WSDL\]](#).

#### 2.2.1 Namespaces

This protocol specifies and references various **XML namespaces** using the mechanisms specified in [\[XMLNS\]](#). Although this specification associates an **XML namespace prefix** for each XML namespace that is used, the choice of any particular XML namespace prefix is implementation-specific and not significant for interoperability.

Prefix	Namespace URI	Reference
soap	<a href="http://schemas.xmlsoap.org/wsdl/soap/">http://schemas.xmlsoap.org/wsdl/soap/</a>	<a href="#">[SOAP1.1]</a>
tns	<a href="http://schemas.microsoft.com/OfficeServer/BusinessDataCatalog/">http://schemas.microsoft.com/OfficeServer/BusinessDataCatalog/</a>	
s	<a href="http://www.w3.org/2001/XMLSchema">http://www.w3.org/2001/XMLSchema</a>	<a href="#">[XMLSCHEMA1]</a> <a href="#">[XMLSCHEMA2]</a>
soap12	<a href="http://schemas.xmlsoap.org/wsdl/soap12/">http://schemas.xmlsoap.org/wsdl/soap12/</a>	<a href="#">[SOAP1.2/1]</a> <a href="#">[SOAP1.2/2]</a>
(none)	<a href="http://schemas.microsoft.com/OfficeServer/BusinessDataCatalog/">http://schemas.microsoft.com/OfficeServer/BusinessDataCatalog/</a>	
wsdl	<a href="http://schemas.xmlsoap.org/wsdl/">http://schemas.xmlsoap.org/wsdl/</a>	<a href="#">[WSDL]</a>
mime	<a href="http://schemas.xmlsoap.org/wsdl/mime/">http://schemas.xmlsoap.org/wsdl/mime/</a>	<a href="#">[WSDL]</a>
http	<a href="http://schemas.xmlsoap.org/wsdl/http/">http://schemas.xmlsoap.org/wsdl/http/</a>	<a href="#">[WSDL]</a>
tm	<a href="http://microsoft.com/wsdl/mime/textMatching/">http://microsoft.com/wsdl/mime/textMatching/</a>	<a href="#">[WSDL]</a>
soapenc	<a href="http://schemas.xmlsoap.org/soap/encoding/">http://schemas.xmlsoap.org/soap/encoding/</a>	

## 2.2.2 Messages

This specification does not define any common WSDL message definitions.

## 2.2.3 Elements

This specification does not define any common XML schema element definitions.

## 2.2.4 Complex Types

The following table summarizes the set of common XML schema complex type definitions defined by this specification. XML schema complex type definitions that are specific to a particular operation are described with the operation.

Complex type	Description
<b>ArrayOfInt</b>	This complex type MUST be an array of elements with type integer.
<b>ArrayOfString</b>	This complex type MUST be an array of elements with type string.
<b>MethodStruct</b>	This complex type MUST contain information about a <b>Method</b> .

### 2.2.4.1 ArrayOfInt

The **ArrayOfInt** complex type MUST be an array of elements with type integer and is defined as follows.

```
<s:complexType name="ArrayOfInt">
  <s:sequence>
    <s:element name="int" type="s:int" minOccurs="0" maxOccurs="unbounded"/>
  </s:sequence>
</s:complexType>
```

**int:** An integer.

### 2.2.4.2 ArrayOfString

The **ArrayOfString** complex type MUST be an array of elements with type string and is defined as follows.

```
<s:complexType name="ArrayOfString">
  <s:sequence>
    <s:element name="string" type="s:string" nillable="true" minOccurs="0"
maxOccurs="unbounded"/>
  </s:sequence>
</s:complexType>
```

**string:** A string, if it is not nil.

### 2.2.4.3 MethodStruct

The **MethodStruct** complex type contains information about a Method. The following are the constraints that this complex type MUST satisfy:

- A **localized name** at any index of the **localizedNames** element of this complex type MUST be in the language represented by the **language code identifier (LCID)** at the same index of the **lcids** element.
- The name of a unit of **business logic** at any index of the **propertyTypes** element of this complex type MUST belong to the property with the name at the same index of the **propertyNames** element.
- A value at any index of the **propertyValues** element of this complex type MUST belong to the Property with the name at the same index of the **propertyNames** element.

This complex type is defined as follows.

```
<s:complexType name="MethodStruct">
  <s:sequence>
    <s:element name="id" type="s:unsignedInt" minOccurs="1" maxOccurs="1"/>
    <s:element name="name" type="s:string" minOccurs="1" maxOccurs="1"/>
    <s:element name="entityId" type="s:unsignedInt" minOccurs="1" maxOccurs="1"/>
    <s:element name="isStatic" type="s:boolean" minOccurs="1" maxOccurs="1"/>
    <s:element name="lcids" type="tns:ArrayOfInt" minOccurs="0" maxOccurs="1"/>
    <s:element name="localizedNames" type="tns:ArrayOfString" minOccurs="0" maxOccurs="1"/>
    <s:element name="propertyNames" type="tns:ArrayOfString" minOccurs="0" maxOccurs="1"/>
    <s:element name="propertyTypes" type="tns:ArrayOfString" minOccurs="0" maxOccurs="1"/>
    <s:element name="propertyValues" type="tns:ArrayOfString" minOccurs="0" maxOccurs="1"/>
  </s:sequence>
</s:complexType>
```

**id:** The **MetadataObjectId** of the **Method** represented with an element of this complex type. The value of this element MUST be in the range from 1 through 0x7fffffff.

**name:** The name of the **Method** represented with an element of this complex type. This element MUST be present. The value of this element MUST have at least 1, at most 255 **Unicode** characters.

**entityId:** The **MetadataObjectId** of the Entity that the **Method** represented with an element of this complex type is contained by.

**isStatic:** The element MUST identify if the **Method** is static or not. If a **Method** is static, it can be invoked without an **EntityInstance**. If the value is **true**, the **Method** is a static **Method**. If the value is **false**, the **Method** is not a static **Method**.

**lcids:** The list of LCIDs for the localized names in the **localizedNames** element.

**localizedNames:** The list of localized names of the **Method** represented with an element of this complex type. Each localized name string in this list MUST have at least 1, and at most 255 Unicode characters.

**propertyNames:** The names of the **Properties** of **Method** represented with an element of this complex type. Each name string in this list of **Property** names MUST have at least 1, and at most 255 Unicode characters.

**propertyTypes:** The names of units of business logic (2) for the **Properties** of the **Method** represented with an element of this complex type.

**propertyValues:** The values of the **Properties** of the **Method** represented with an element of this complex type.



### **2.2.5 Simple Types**

This specification does not define any common XML schema simple type definitions.

### **2.2.6 Attributes**

This specification does not define any common XML schema attribute definitions.

### **2.2.7 Groups**

This specification does not define any common XML schema group definitions.

### **2.2.8 Attribute Groups**

This specification does not define any common XML schema attribute group definitions.

Preliminary

## 3 Protocol Details

In the following sections, the schema might be less restrictive than the processing rules imposed by the protocol. The WSDL in this specification matches the WSDL that shipped with the product and provides a base description of the schema. The text that introduces the WSDL specifies additional restrictions that reflect actual Microsoft product behavior. For example, the schema definition might allow for an element to be **empty**, **null**, or **not present** but the behavior of the protocol as specified restricts the same elements to being **non-empty**, **not null**, and **present**.

The client side of this protocol is simply a pass-through. That is, no additional timers or other state is required on the client side of this protocol. Calls made by the higher-layer protocol or application are passed directly to the transport, and the results returned by the transport are passed directly back to the higher-layer protocol or application.

Except where specified, protocol clients SHOULD interpret HTTP status codes returned by the protocol server as specified in [\[RFC2616\]](#) section 10.

This protocol allows protocol servers to notify protocol clients of application-level faults using SOAP faults. Except where specified, these SOAP faults are not significant for interoperability, and protocol clients can interpret them in an implementation-specific manner.

This protocol allows protocol servers to perform implementation-specific authorization checks and notify protocol clients of authorization faults either using HTTP status codes or using SOAP faults as specified previously in this section.

This protocol allows protocol servers to perform implementation-specific localization of text in various messages. Except where specified, the localization of this text is an implementation-specific behavior of the protocol server and is not significant for interoperability.

### 3.1 Server Details

#### 3.1.1 Abstract Data Model

This section describes a conceptual model of possible data organization that an implementation maintains to participate in this protocol. The described organization is provided to facilitate the explanation of how the protocol behaves. This document does not mandate that implementations adhere to this model as long as their external behavior is consistent with that described in this document.

The server MUST maintain lists of the following **MetadataObject** types: **LobSystemInstance**, **Method**, **MethodInstance**, **Entity**, and **FilterDescriptor**. The server MUST maintain a set of relationships between these **MetadataObject** types. These relationships are as follows:

- Each **Entity** is contained by a **LobSystem**.
- Each **LobSystemInstance** is contained by a **LobSystem**.
- Each **Method** is contained by an **Entity**.
- Each **MethodInstance** is contained by a **Method**.
- Each **FilterDescriptor** is contained by a **Method**.

The server MUST follow these rules:

- All **LobSystems** contained by the metadata store MUST have unique names.

- All **LobSystemInstances** contained by the **LobSystems** contained by the metadata store MUST have unique names.
- All **Entities** contained by a particular **LobSystem** MUST have unique names.
- All **Methods** contained by a particular **Entity** MUST have unique names.
- All **MethodInstances** contained by all **Methods** contained by a particular **Entity** MUST have unique names.
- All **FilterDescriptors** contained by a particular **Method** MUST have unique names.
- All **MetadataObjectIds** MUST be globally unique.

### 3.1.2 Timers

None.

### 3.1.3 Initialization

None.

### 3.1.4 Message Processing Events and Sequencing Rules

The following table summarizes the list of WSDL operations as defined by this specification:

Operation	Description
<b>GetEntitiesForLobSystemInstance</b>	Retrieves the <b>Entities</b> contained by an <b>LobSystem</b> containing a particular <b>LobSystemInstance</b> .
<b>GetFilterDescriptorsForMethod</b>	Retrieves the <b>FilterDescriptors</b> contained by a particular <b>Method</b> .
<b>GetLobSystemInstances</b>	Retrieves the <b>LobSystemInstances</b> in the Metadata store.
<b>GetMethodForMethodInstance</b>	Retrieves the <b>Method</b> containing a particular <b>MethodInstance</b> .
<b>GetMethodInstancesForEntity</b>	Retrieves the <b>MethodInstances</b> contained by the <b>Methods</b> contained by a particular <b>Entity</b> .
<b>GetMethodsForEntity</b>	Retrieves the <b>Methods</b> contained by a particular <b>Entity</b> .

#### 3.1.4.1 GetEntitiesForLobSystemInstance

This operation is used to retrieve the **Entities** contained by the **LobSystem** that contains a particular **LobSystemInstance** and is defined as follows.

```
<wsdl:operation name="GetEntitiesForLobSystemInstance">
```

```

    <wsdl:input message="tns:GetEntitiesForLobSystemInstanceSoapIn" />
    <wsdl:output message="tns:GetEntitiesForLobSystemInstanceSoapOut" />
</wsdl:operation>

```

The client sends a **GetEntitiesForLobSystemInstanceSoapIn** request message, and the server responds with a **GetEntitiesForLobSystemInstanceSoapOut** response message, as follows:

1. The caller of this operation MUST specify the **MetadataObjectId** of an **LobSystemInstance**.
2. This operation MUST return all **Entities** contained by the **LobSystem** that contains the **LobSystemInstance** specified in the request.

This operation MUST return a SOAP fault in each of the following cases:

- The **MetadataObjectId** provided in the request does not match the **MetadataObjectId** of any of the existing **LobSystemInstances** in the metadata store.
- The **LobSystemInstance** with the **MetadataObjectId** provided in the request violates implementation-specific integrity constraints.
- Any one of the **Entities** to be returned from this operation violates implementation-specific integrity constraints.
- The **MetadataObjectId** value provided in the request is not in the range specified in section [3.1.4.1.2.1](#).

### 3.1.4.1.1 Messages

The following table summarizes the set of WSDL message definitions that are specific to this operation.

Message	Description
<b>GetEntitiesForLobSystemInstanceSoapIn</b>	Contains the request for <b>GetEntitiesForLobSystemInstance</b> operation.
<b>GetEntitiesForLobSystemInstanceSoapOut</b>	Contains the response from <b>GetEntitiesForLobSystemInstance</b> operation.

The following **WSDL message** definitions are specific to this operation.

#### 3.1.4.1.1.1 GetEntitiesForLobSystemInstanceSoapIn

This message MUST contain the request for **GetEntitiesForLobSystemInstance** operation.

The **SOAP action** value of the message is defined as follows:

```
http://schemas.microsoft.com/OfficeServer/BusinessDataCatalog/GetEntitiesForLobSystemInstance
```

The **SOAP body** contains a **GetEntitiesForLobSystemInstance** element. This element MUST contain the **MetadataObjectId** of a **LobSystemInstance** that is contained by the **LobSystem** that the requested **Entities** are contained by.

#### 3.1.4.1.1.2 GetEntitiesForLobSystemInstanceSoapOut

This message MUST contain the response from **GetEntitiesForLobSystemInstance** operation. The name element of all the **Entities** in this message MUST have unique values.

The SOAP body contains a **GetEntitiesForLobSystemInstanceResponse** element. This element MUST contain the list of **Entities** contained by the **LobSystem** that contains the given **LobSystemInstance**.

### 3.1.4.1.2 Elements

The following table summarizes the XML schema element definitions that are specific to this operation.

Element	Description
<b>GetEntitiesForLobSystemInstance</b>	The value of this element MUST be the input to <b>GetEntitiesForLobSystemInstance</b> operation.
<b>GetEntitiesForLobSystemInstanceResponse</b>	The value of this element MUST be the response from <b>GetEntitiesForLobSystemInstance</b> operation.

#### 3.1.4.1.2.1 GetEntitiesForLobSystemInstance

The value of this element MUST be the input to **GetEntitiesForLobSystemInstance** operation defined as follows.

```
<s:element name="GetEntitiesForLobSystemInstance">
  <s:complexType>
    <s:sequence>
      <s:element name="lobSystemInstanceId" type="s:unsignedInt" minOccurs="1"
maxOccurs="1"/>
    </s:sequence>
  </s:complexType>
</s:element>
```

**lobSystemInstanceId:** The **MetadataObjectId** for the **LobSystemInstance**. The value of this element MUST be in the range from 1 through 0x7fffffff.

#### 3.1.4.1.2.2 GetEntitiesForLobSystemInstanceResponse

The value of this element MUST be the response from **GetEntitiesForLobSystemInstance** operation defined as follows.

```
<s:element name="GetEntitiesForLobSystemInstanceResponse">
  <s:complexType>
    <s:sequence>
      <s:element name="GetEntitiesForLobSystemInstanceResult" type="tns:ArrayOfEntityStruct"
minOccurs="0" maxOccurs="1"/>
    </s:sequence>
  </s:complexType>
</s:element>
```

**GetEntitiesForLobSystemInstanceResult:** The list of **Entities**. This element MUST be present in the successful response.

### 3.1.4.1.3 Complex Types

The following table summarizes the XML schema complex type definitions that are specific to this operation.

Complex type	Description
<b>ArrayOfEntityStruct</b>	An array of elements with type <b>EntityStruct</b> .
<b>EntityStruct</b>	Contains information about <b>Entities</b> .

### 3.1.4.1.3.1 ArrayOfEntityStruct

The **ArrayOfEntityStruct** complex type MUST be an array of elements with type **EntityStruct** defined as follows.

```
<s:complexType name="ArrayOfEntityStruct">
  <s:sequence>
    <s:element name="EntityStruct" type="tns:EntityStruct" nillable="true" minOccurs="0"
maxOccurs="unbounded"/>
  </s:sequence>
</s:complexType>
```

**EntityStruct:** These elements MUST contain information about **Entities**. This element MUST be present in the successful response.

### 3.1.4.1.3.2 EntityStruct

The **EntityStruct** complex type MUST contain information about an **Entity**. The following are the constraints that this complex type MUST satisfy:

- A localized name at any index of the **localizedNames** element of this complex type MUST be in the language represented by the language code identifier (LCID) at the same index of the **lcids** element.
- The name of a unit of business logic (2)<3> at any index of the **propertyTypes** element of this complex type MUST belong to the **Property** with the name at the same index of the **propertyNames** element.
- A value at any index of the **propertyValues** element of this complex type MUST belong to the **Property** with the name at the same index of the **propertyNames** element.

This complex type is defined as follows.

```
<s:complexType name="EntityStruct">
  <s:sequence>
    <s:element name="id" type="s:unsignedInt" minOccurs="1" maxOccurs="1"/>
    <s:element name="name" type="s:string" minOccurs="1" maxOccurs="1"/>
    <s:element name="lcids" type="tns:ArrayOfInt" minOccurs="0" maxOccurs="1"/>
    <s:element name="localizedNames" type="tns:ArrayOfString" minOccurs="0" maxOccurs="1"/>
    <s:element name="lobSystemId" type="s:unsignedInt" minOccurs="1" maxOccurs="1"/>
    <s:element name="propertyNames" type="tns:ArrayOfString" minOccurs="0" maxOccurs="1"/>
    <s:element name="propertyTypes" type="tns:ArrayOfString" minOccurs="0" maxOccurs="1"/>
    <s:element name="propertyValues" type="tns:ArrayOfString" minOccurs="0" maxOccurs="1"/>
  </s:sequence>
</s:complexType>
```

**id:** The **MetadataObjectId** of the **Entity** represented with an element of this complex type. The value of this element **MUST** be in the range from 1 through 0x7fffffff.

**name:** The name of the **Entity** represented with an element of this type. This element **MUST** be present. The value of this element **MUST** have at least 1, at most 255 Unicode characters.

**lcids:** The list of LCIDs for the localized names in the **localizedNames** element.

**localizedNames:** The list of localized names of the **Entity** represented with an element of this complex type. Each localized name string in this list **MUST** have at least 1, at most 255 Unicode characters.

**lobSystemId:** The **MetadataObjectId** of the **LobSystem** that the **Entity** represented with an element of this complex type is contained by.

**propertyNames:** The names of the **Properties** of the **Entity** represented with an element of this complex type. Each name string in this list of **Property** names **MUST** have at least 1, at most 255 Unicode characters.

**propertyTypes:** The names of units of business logic (2)<4> for the **Properties** of the **Entity** represented with an element of this complex type.

**propertyValues:** The values of the **Properties** of the **Entity** represented with an element of this complex type.

#### 3.1.4.1.4 Simple Types

None.

#### 3.1.4.1.5 Attributes

None.

#### 3.1.4.1.6 Groups

None.

#### 3.1.4.1.7 Attribute Groups

None.

#### 3.1.4.2 GetFilterDescriptorsForMethod

This operation is used to retrieve the **FilterDescriptors** contained by a particular **Method** and is defined as follows.

```
<wsdl:operation name="GetFilterDescriptorsForMethod">
  <wsdl:input message="tns:GetFilterDescriptorsForMethodSoapIn" />
  <wsdl:output message="tns:GetFilterDescriptorsForMethodSoapOut" />
</wsdl:operation>
```

The client sends a **GetFilterDescriptorsForMethodSoapIn** request message, and the server responds with a **GetFilterDescriptorsForMethodSoapOut** response message, as follows:

1. The caller of this operation **MUST** specify a **Method MetadataObjectId**.
2. This operation **MUST** return all **FilterDescriptors** for which the value could be provided by the callers<5> contained by the **Method** specified in the request.

This operation MUST return a SOAP fault in each of the following cases:

- The provided **MetadataObjectId** in the request does not match any of the existing **Method MetadataObjectIds** in the metadata store.
- The **Method** with the **MetadataObjectId** provided in the request violates implementation-specific integrity constraints.
- Any one of the **FilterDescriptors** to be returned from this operation violates implementation-specific integrity constraints.
- The **MetadataObjectId** value provided in the request is not in the range specified in section [3.1.4.2.2.1](#).

### 3.1.4.2.1 Messages

The following table summarizes the set of WSDL message definitions that are specific to this operation.

Message	Description
<b>GetFilterDescriptorsForMethodSoapIn</b>	Contains the request for <b>GetFilterDescriptorsForMethod</b> operation.
<b>GetFilterDescriptorsForMethodSoapOut</b>	Contains the response from the <b>GetFilterDescriptorsForMethod</b> operation.

#### 3.1.4.2.1.1 GetFilterDescriptorsForMethodSoapIn

This message MUST contain the request for **GetFilterDescriptorsForMethod** operation.

The SOAP action value of the message is defined as follows:

`http://schemas.microsoft.com/OfficeServer/BusinessDataCatalog/GetFilterDescriptorsForMethod`

The SOAP body contains a **GetFilterDescriptorsForMethod** element. This element MUST contain the **MetadataObjectId** of the **Method** by which the requested **FilterDescriptors** are contained.

#### 3.1.4.2.1.2 GetFilterDescriptorsForMethodSoapOut

This message MUST contain the response from the **GetFilterDescriptorsForMethod** operation. The name element of all the **FilterDescriptors** in this message MUST have unique values.

The SOAP body contains a **GetFilterDescriptorsForMethodResponse** element. This element MUST contain the list of **FilterDescriptors** contained by the given **Method**.

### 3.1.4.2.2 Elements

The following table summarizes the XML schema element definitions that are specific to this operation.

Element	Description
<b>GetFilterDescriptorsForMethod</b>	The value of this element MUST be the input to <b>GetFilterDescriptorsForMethod</b> operation.



Element	Description
<b>GetFilterDescriptorsForMethodResponse</b>	The value of this element MUST be the response from <b>GetFilterDescriptorsForMethod</b> operation.

### 3.1.4.2.2.1 GetFilterDescriptorsForMethod

The value of this element MUST be the input to **GetFilterDescriptorsForMethod** operation defined as follows.

```
<s:element name="GetFilterDescriptorsForMethod">
  <s:complexType>
    <s:sequence>
      <s:element name="methodId" type="s:unsignedInt" minOccurs="1" maxOccurs="1"/>
    </s:sequence>
  </s:complexType>
</s:element>
```

**methodId:** The **MetadataObjectId** for the **Method**. The value of this element MUST be in the range from 1 through 0x7fffffff.

### 3.1.4.2.2.2 GetFilterDescriptorsForMethodResponse

The value of this element MUST be the response from **GetFilterDescriptorsForMethod** operation defined as follows.

```
<s:element name="GetFilterDescriptorsForMethodResponse">
  <s:complexType>
    <s:sequence>
      <s:element name="GetFilterDescriptorsForMethodResult"
type="tns:ArrayOfFilterDescriptorStruct" minOccurs="0" maxOccurs="1"/>
    </s:sequence>
  </s:complexType>
</s:element>
```

**GetFilterDescriptorsForMethodResult:** The list of **FilterDescriptors**. This element MUST be present in the successful response.

### 3.1.4.2.3 Complex Types

The following table summarizes the XML schema complex type definitions that are specific to this operation.

Complex type	Description
<b>ArrayOfFilterDescriptorStruct</b>	An array of elements with type <b>FilterDescriptorStruct</b> .
<b>FilterDescriptorStruct</b>	Contains information about a <b>FilterDescriptor</b> .

#### 3.1.4.2.3.1 ArrayOfFilterDescriptorStruct

The **ArrayOfFilterDescriptorStruct** complex type MUST be an array of elements with type **FilterDescriptorStruct** defined as follows.

```
<s:complexType name="ArrayOfFilterDescriptorStruct">
  <s:sequence>
    <s:element name="FilterDescriptorStruct" type="tns:FilterDescriptorStruct"
      nillable="true" minOccurs="0" maxOccurs="unbounded"/>
  </s:sequence>
</s:complexType>
```

**FilterDescriptorStruct:** These elements MUST contain information about **FilterDescriptors**, if they are not nil.

### 3.1.4.2.3.2 FilterDescriptorStruct

The **FilterDescriptorStruct** complex type MUST contain information about a **FilterDescriptor**. The following are the constraints that this complex type MUST satisfy:

- A localized name at any index of the **localizedNames** element of this complex type MUST be in the language represented by the language code identifier (LCID) at the same index of the **lcids** element.
- The name of a unit of business logic (2)<6> at any index of the **propertyTypes** element of this complex type MUST belong to the **Property** with the name at the same index of the **propertyNames** element.
- A value at any index of the **propertyValues** element of this complex type MUST belong to the **Property** with the name at the same index of the **propertyNames** element.

This complex type is defined as follows.

```
<s:complexType name="FilterDescriptorStruct">
  <s:sequence>
    <s:element name="id" type="s:unsignedInt" minOccurs="1" maxOccurs="1"/>
    <s:element name="name" type="s:string" minOccurs="1" maxOccurs="1"/>
    <s:element name="typeName" type="s:string" minOccurs="1" maxOccurs="1"/>
    <s:element name="methodId" type="s:unsignedInt" minOccurs="1" maxOccurs="1"/>
    <s:element name="lcids" type="tns:ArrayOfInt" minOccurs="0" maxOccurs="1"/>
    <s:element name="localizedNames" type="tns:ArrayOfString" minOccurs="0" maxOccurs="1"/>
    <s:element name="propertyNames" type="tns:ArrayOfString" minOccurs="0" maxOccurs="1"/>
    <s:element name="propertyTypes" type="tns:ArrayOfString" minOccurs="0" maxOccurs="1"/>
    <s:element name="propertyValues" type="tns:ArrayOfString" minOccurs="0" maxOccurs="1"/>
  </s:sequence>
</s:complexType>
```

**id:** The **MetadataObjectId** of the **FilterDescriptor** represented with an element of this complex type. The value of this element MUST be in the range from 1 through 0x7fffffff.

**name:** The name of the **FilterDescriptor** represented with an element of this complex type. This element MUST be present. The value of this element MUST have at least 1, at most 255 Unicode characters.

**typeName:** The name of the unit of business logic (2)<7> of the **FilterDescriptor** represented with an element of this complex type. This element MUST be present. The value MUST be in the following table.

Value	Description
Microsoft.Office.Server.ApplicationRegistry.Runtime.LimitFilter	Indicates that a <b>FilterDescriptor</b> describes a <b>LimitFilter</b> .
Microsoft.Office.Server.ApplicationRegistry.Runtime.EqualsFilter	Indicates that a <b>FilterDescriptor</b> describes a <b>ComparisonFilter</b> with its comparator set to "==".
Microsoft.Office.Server.ApplicationRegistry.Runtime.WildcardFilter	Indicates that a <b>FilterDescriptor</b> describes a <b>WildcardFilter</b> .
Microsoft.Office.Server.ApplicationRegistry.Runtime.RangeFilter	Indicates that a <b>FilterDescriptor</b> describes a <b>RangeFilter</b> .
Microsoft.Office.Server.ApplicationRegistry.Runtime.LastIdFilter	Indicates that a <b>FilterDescriptor</b> describes a <b>LastIdFilter</b> .
Microsoft.Office.Server.ApplicationRegistry.Runtime.ComparisonFilter	Indicates that a <b>FilterDescriptor</b> describes a <b>ComparisonFilter</b> .

**methodId:** The **MetadataObjectId** of the **Method** that the **FilterDescriptor** represented with an element of this complex type is contained by. The value of this element MUST be in the range 1 through 0x7fffffff.

**lcids:** The list of LCIDs for the localized names in the **localizedNames** element.

**localizedNames:** The list of localized names of the **FilterDescriptor** represented with an element of this complex type. Each localized name string in this list MUST have at least 1, at most 255 Unicode characters.

**propertyNames:** The names of the **Properties** of the **FilterDescriptor** represented with an element of this complex type. Each name string in this list of **Property** names MUST have at least 1, at most 255 Unicode characters.

**propertyTypes:** The names of units of business logic (2) [<8>](#) for the **Properties** of the **FilterDescriptor** represented with an element of this complex type.

**propertyValues:** The values of the **Properties** of the **FilterDescriptor** represented with an element of this complex type.

#### 3.1.4.2.4 Simple Types

None.

#### 3.1.4.2.5 Attributes

None.

#### 3.1.4.2.6 Groups

None.

#### 3.1.4.2.7 Attribute Groups

None.

### 3.1.4.3 GetLobSystemInstances

This operation is used to get all the **LobSystemInstances** in the metadata store and is defined as follows.

```
<wsdl:operation name="GetLobSystemInstances">
  <wsdl:input message="tns:GetLobSystemInstancesSoapIn" />
  <wsdl:output message="tns:GetLobSystemInstancesSoapOut" />
</wsdl:operation>
```

The client sends a **GetLobSystemInstancesSoapIn** request message, and the server responds with a **GetLobSystemInstancesSoapOut** response message.

This operation MUST return all the **LobSystemInstances** in the metadata store.

This operation MUST return a SOAP fault if any of the **LobSystemInstances** to be returned violates implementation-specific integrity constraints.

#### 3.1.4.3.1 Messages

The following table summarizes the set of WSDL message definitions that are specific to this operation.

Message	Description
<b>GetLobSystemInstancesSoapIn</b>	Contains the request for <b>GetLobSystemInstances</b> operation.
<b>GetLobSystemInstancesSoapOut</b>	Contains the response from <b>GetLobSystemInstances</b> operation.

#### 3.1.4.3.1.1 GetLobSystemInstancesSoapIn

This message MUST contain the request for **GetLobSystemInstances** operation.

The SOAP action value of the message is defined as follows:

```
http://schemas.microsoft.com/OfficeServer/BusinessDataCatalog/GetLobSystemInstances
```

The SOAP body contains a **GetLobSystemInstances** element.

#### 3.1.4.3.1.2 GetLobSystemInstancesSoapOut

This message MUST contain the response from **GetLobSystemInstances** operation.

The SOAP body contains a **GetLobSystemInstancesResponse** element. This element MUST contain the list of **LobSystemInstances** in the metadata store.

#### 3.1.4.3.2 Elements

The following table summarizes the XML schema element definitions that are specific to this operation.

Element	Description
<b>GetLobSystemInstances</b>	The value of this element MUST be the input to the <b>GetLobSystemInstances</b> operation.
<b>GetLobSystemInstancesResponse</b>	The value of this element MUST be the response from <b>GetLobSystemInstances</b> operation.

### 3.1.4.3.2.1 GetLobSystemInstances

The value of this element MUST be the input to **GetLobSystemInstances** operation defined as follows.

```
<s:element name="GetLobSystemInstances">
  <s:complexType/>
</s:element>
```

### 3.1.4.3.2.2 GetLobSystemInstancesResponse

This element MUST be the response from **GetLobSystemInstances** operation defined as follows.

```
<s:element name="GetLobSystemInstancesResponse">
  <s:complexType>
    <s:sequence>
      <s:element name="GetLobSystemInstancesResult" type="tns:ArrayOfLobSystemInstanceStruct"
minOccurs="0" maxOccurs="1"/>
    </s:sequence>
  </s:complexType>
</s:element>
```

**GetLobSystemInstancesResult:** The list of **LobSystemInstances**. This element MUST be present in the successful response.

### 3.1.4.3.3 Complex Types

The following table summarizes the XML schema complex type definitions that are specific to this operation.

Complex type	Description
<b>ArrayOfLobSystemInstanceStruct</b>	An array of elements with type <b>LobSystemInstanceStruct</b> (section <a href="#">3.1.4.3.3.2</a> ).
<b>LobSystemInstanceStruct</b>	Contains information about an <b>LobSystemInstance</b> .

#### 3.1.4.3.3.1 ArrayOfLobSystemInstanceStruct

The **ArrayOfLobSystemInstanceStruct** complex type MUST be an array of elements with type **LobSystemInstanceStruct** (section [3.1.4.3.3.2](#)). This complex type is defined as follows.

```
<s:complexType name="ArrayOfLobSystemInstanceStruct">
```

```

    <s:sequence>
      <s:element name="LobSystemInstanceStruct" type="tns:LobSystemInstanceStruct"
nillable="true" minOccurs="0" maxOccurs="unbounded"/>
    </s:sequence>
  </s:complexType>

```

**LobSystemInstanceStruct:** These elements MUST contain information about **LobSystemInstances**, if they are not nil.

### 3.1.4.3.3.2 LobSystemInstanceStruct

The **LobSystemInstanceStruct** complex type MUST contain the information about an **LobSystemInstance**. This complex type MUST satisfy the following conditions:

- A localized name at any index of the **localizedNames** element of this complex type MUST be in the language represented by the language code identifier (LCID) at the same index of the **lcids** element.
- The name of a unit of business logic (2) [<9>](#) at any index of the **propertyTypes** element of this complex type MUST belong to the Property with the name at the same index of the **propertyNames** element.
- A value at any index of the **propertyValues** element of this complex type MUST belong to the Property with the name at the same index of the **propertyNames** element.

This complex type is defined as follows.

```

<s:complexType name="LobSystemInstanceStruct">
  <s:sequence>
    <s:element name="id" type="s:unsignedInt" minOccurs="1" maxOccurs="1"/>
    <s:element name="name" type="s:string" minOccurs="0" maxOccurs="1"/>
    <s:element name="lcids" type="tns:ArrayOfInt" minOccurs="0" maxOccurs="1"/>
    <s:element name="localizedNames" type="tns:ArrayOfString" minOccurs="0" maxOccurs="1"/>
    <s:element name="lobSystemId" type="s:unsignedInt" minOccurs="1" maxOccurs="1"/>
    <s:element name="propertyNames" type="tns:ArrayOfString" minOccurs="0" maxOccurs="1"/>
    <s:element name="propertyTypes" type="tns:ArrayOfString" minOccurs="0" maxOccurs="1"/>
    <s:element name="propertyValues" type="tns:ArrayOfString" minOccurs="0" maxOccurs="1"/>
  </s:sequence>
</s:complexType>

```

**id:** The **MetadataObjectId** of the **LobSystemInstance** represented with an element of this complex type. The value of this element MUST be in the range 1 through 0x7fffffff.

**name:** The name of the **LobSystemInstance** represented with an element of this complex type. This element MUST be present. The value of this element MUST have at least 1, at most 255 Unicode characters.

**lcids:** The list of LCIDs for the localized names in the **localizedNames** element.

**localizedNames:** The list of localized names of the **LobSystemInstance** represented with an element of this complex type. Each localized name string in this list MUST have at least 1, and at most 255, Unicode characters.

**lobSystemId:** The **MetadataObjectId** of the **LobSystem** that the **LobSystemInstance** represented with an element of this complex type is contained by. The value of this element MUST be in the range from 1 through 0x7fffffff.

**propertyNames:** The names of the **Properties** of the **LobSystemInstance** represented with an element of this complex type. Each name string in this list of **Property** names MUST have at least 1, and at most 255, Unicode characters.

**propertyTypes:** The names of units of business logic (2) <10> for the **Properties** of the **LobSystemInstance** represented with an element of this complex type.

**propertyValues:** The values of the **Properties** of the **LobSystemInstance** represented with an element of this complex type.

#### 3.1.4.3.4 Simple Types

None.

#### 3.1.4.3.5 Attributes

None.

#### 3.1.4.3.6 Groups

None.

#### 3.1.4.3.7 Attribute Groups

None.

#### 3.1.4.4 GetMethodForMethodInstance

This operation is used to retrieve the **Method** for a particular **MethodInstance** and is defined as follows.

```
<wsdl:operation name="GetMethodForMethodInstance">
  <wsdl:input message="tns:GetMethodForMethodInstanceSoapIn" />
  <wsdl:output message="tns:GetMethodForMethodInstanceSoapOut" />
</wsdl:operation>
```

The client sends a **GetMethodForMethodInstanceSoapIn** request message, and the server responds with a **GetMethodForMethodInstanceSoapOut** response message, as follows:

1. The caller of this operation MUST specify a **MethodInstance MetadataObjectId** and send it in.
2. This operation MUST return the **Method** containing the **MethodInstance** specified in the request.

This operation MUST return a SOAP fault in each of the following cases:

- The provided **MetadataObjectId** in the request does not match any of the existing **Method MetadataObjectIds** in the metadata store.
- The **Method** with the **MetadataObjectId** provided in the request violates implementation-specific integrity constraints.
- The **MethodInstance** to be returned from this operation violates implementation-specific integrity constraints.
- The **MetadataObjectId** value provided in the request is not in the range specified in section [3.1.4.4.2.1](#)

#### 3.1.4.4.1 Messages

The following table summarizes the set of WSDL message definitions that are specific to this operation.

Message	Description
<b>GetMethodForMethodInstanceSoapIn</b>	Contains the request for <b>GetMethodForMethodInstance</b> operation.
<b>GetMethodForMethodInstanceSoapOut</b>	Contains the response from <b>GetMethodForMethodInstance</b> operation.

### 3.1.4.4.1.1 GetMethodForMethodInstanceSoapIn

This message MUST contain the request for **GetMethodForMethodInstance** operation.

The SOAP action value of the message is defined as follows:

```
http://schemas.microsoft.com/OfficeServer/BusinessDataCatalog/GetMethodForMethodInstance
```

The SOAP body contains a **GetMethodForMethodInstance** element. This element MUST contain the **MetadataObjectId** of the **MethodInstance** that the requested **Method** contains.

### 3.1.4.4.1.2 GetMethodForMethodInstanceSoapOut

This message MUST contain the response from **GetMethodForMethodInstance** operation.

The SOAP body contains a **GetMethodForMethodInstanceResponse** element. This element MUST contain the Method containing the given MethodInstance.

### 3.1.4.4.2 Elements

The following table summarizes the XML schema element definitions that are specific to this operation.

Element	Description
<b>GetMethodForMethodInstance</b>	The value of this element MUST be the input to <b>GetMethodForMethodInstance</b> operation.
<b>GetMethodForMethodInstanceResponse</b>	The value of this element MUST be the response from <b>GetMethodForMethodInstance</b> operation.

### 3.1.4.4.2.1 GetMethodForMethodInstance

The value of this element MUST be the input to **GetMethodForMethodInstance** operation defined as follows.

```
<s:element name="GetMethodForMethodInstance">
  <s:complexType>
    <s:sequence>
      <s:element name="methodInstanceId" type="s:unsignedInt" minOccurs="1" maxOccurs="1"/>
    </s:sequence>
  </s:complexType>
</s:element>
```



**methodInstanceId:** The **MetadataObjectId** for a **MethodInstance**. The value of this element MUST be in the range from 1 through 0x7fffffff.

#### 3.1.4.4.2.2 GetMethodForMethodInstanceResponse

This element contains the response from **GetMethodForMethodInstance** operation defined as follows.

```
<s:element name="GetMethodForMethodInstanceResponse">
  <s:complexType>
    <s:sequence>
      <s:element name="GetMethodForMethodInstanceResult" type="tns:MethodStruct"
minOccurs="0" maxOccurs="1"/>
    </s:sequence> </s:complexType>
</s:element>
```

**GetMethodForMethodInstanceResult:** This element MUST contain information about the Method. This element MUST be present in the successful response.

#### 3.1.4.4.3 Complex Types

None.

#### 3.1.4.4.4 Simple Types

None.

#### 3.1.4.4.5 Attributes

None.

#### 3.1.4.4.6 Groups

None.

#### 3.1.4.4.7 Attribute Groups

None.

#### 3.1.4.5 GetMethodInstancesForEntity

This operation is used to retrieve **MethodInstances** contained by the **Methods** contained by a particular **Entity**. This operation is defined as follows.

```
<wsdl:operation name="GetMethodInstancesForEntity">
  <wsdl:input message="tns:GetMethodInstancesForEntitySoapIn" />
  <wsdl:output message="tns:GetMethodInstancesForEntitySoapOut" />
</wsdl:operation>
```

The client sends a **GetMethodInstancesForEntitySoapIn** request message, and the server responds with a **GetMethodInstancesForEntitySoapOut** response message, as follows:

1. The caller of this operation MUST specify an **Entity MetadataObjectId**.
2. This operation MUST return all **MethodInstances** contained by the **Methods** contained by the **Entity** specified in the request.

This operation MUST return a SOAP fault in each of the following cases:

- The provided **MetadataObjectId** in the request does not match any of the existing **Entity MetadataObjectIds** in the metadata store.
- The **Entity** with the **MetadataObjectId** provided in the request violates implementation-specific integrity constraints.
- Any one of the **MethodInstances** to be returned from this operation violates implementation-specific integrity constraints.
- The **MetadataObjectId** value provided in the request is not in the range specified in section [3.1.4.5.2.1](#).

### 3.1.4.5.1 Messages

The following table summarizes the set of WSDL message definitions that are specific to this operation.

Message	Description
<b>GetMethodInstancesForEntitySoapIn</b>	Contains the request for <b>GetMethodInstancesForEntity</b> operation.
<b>GetMethodInstancesForEntitySoapOut</b>	Contains the response from <b>GetMethodInstancesForEntity</b> operation.

#### 3.1.4.5.1.1 GetMethodInstancesForEntitySoapIn

This message MUST contain the request for **GetMethodInstancesForEntity** operation.

The SOAP action value of the message is defined as follows:

`http://schemas.microsoft.com/OfficeServer/BusinessDataCatalog/GetMethodInstancesForEntity`

The SOAP body contains a **GetMethodInstancesForEntity** element. This element MUST contain the **MetadataObjectId** of the **Entity** by which the **Methods** containing the requested **MethodInstances** are contained.

#### 3.1.4.5.1.2 GetMethodInstancesForEntitySoapOut

This message MUST contain the response from **GetMethodInstancesForEntity** operation. The **name** element of all the **MethodInstances** in this message MUST have unique values.

The SOAP body contains a **GetMethodInstancesForEntityResponse** element. This element MUST contain the list of **MethodInstances** contained by the **Methods** contained by the given **Entity**.

### 3.1.4.5.2 Elements

The following table summarizes the XML schema element definitions that are specific to this operation.

Element	Description
<b>GetMethodInstancesForEntity</b>	The value of this element MUST be the input to

Element	Description
	<b>GetMethodInstancesForEntity</b> operation.
<b>GetMethodInstancesForEntityResponse</b>	The value of this element MUST be the response from <b>GetMethodInstancesForEntity</b> operation.

### 3.1.4.5.2.1 GetMethodInstancesForEntity

The value of this element MUST be the input to **GetMethodInstancesForEntity** operation defined as follows.

```
<s:element name="GetMethodInstancesForEntity">
  <s:complexType>
    <s:sequence>
      <s:element name="entityId" type="s:unsignedInt" minOccurs="1" maxOccurs="1"/>
    </s:sequence>
  </s:complexType>
</s:element>
```

**entityId:** The **MetadataObjectId** for the **Entity**. The value of this element MUST be in range from 1 through 0x7fffffff.

### 3.1.4.5.2.2 GetMethodInstancesForEntityResponse

This element MUST contain the response from **GetMethodInstancesForEntity** operation defined as follows.

```
<s:element name="GetMethodInstancesForEntityResponse">
  <s:complexType>
    <s:sequence>
      <s:element name="GetMethodInstancesForEntityResult"
type="tns:ArrayOfMethodInstanceStruct" minOccurs="0" maxOccurs="1"/>
    </s:sequence>
  </s:complexType>
</s:element>
```

**GetMethodInstancesForEntityResult:** The list of **MethodInstances**. This element MUST be present in the successful response.

### 3.1.4.5.3 Complex Types

The following table summarizes the XML schema complex type definitions that are specific to this operation.

Complex type	Description
<b>ArrayOfMethodInstanceStruct</b>	An array of elements with type <b>MethodInstanceStruct</b> .
<b>MethodInstanceStruct</b>	Contains information about an <b>MethodInstance</b> .

### 3.1.4.5.3.1 ArrayOfMethodInstanceStruct

The **ArrayOfMethodInstanceStruct** complex type MUST be an array of elements with type **MethodInstanceStruct** defined as follows.

```
<s:complexType name="ArrayOfMethodInstanceStruct">
  <s:sequence>
    <s:element name="MethodInstanceStruct" type="tns:MethodInstanceStruct" nillable="true"
minOccurs="0" maxOccurs="unbounded"/>
  </s:sequence>
</s:complexType>
```

**MethodInstanceStruct:** These elements' values MUST be information about **MethodInstances**, if they are not nil.

### 3.1.4.5.3.2 MethodInstanceStruct

The **MethodInstanceStruct** complex type MUST contain information about a **MethodInstance**. The following are the constraints that this complex type MUST satisfy:

- A localized name at any index of the **localizedNames** element of this complex type MUST be in the language represented by the language code identifier (LCID) at the same index of the **lcids** element.
- The name of a unit of business logic (2) [<11>](#) at any index of the **propertyTypes** element of this complex type MUST belong to the **Property** with the name at the same index of the **propertyNames** element.
- A value at any index of the **propertyValues** element of this complex type MUST belong to the **Property** with the name at the same index of the **propertyNames** element.

This complex type is defined as follows.

```
<s:complexType name="MethodInstanceStruct">
  <s:sequence>
    <s:element name="id" type="s:unsignedInt" minOccurs="1" maxOccurs="1"/>
    <s:element name="name" type="s:string" minOccurs="1" maxOccurs="1"/>
    <s:element name="methodId" type="s:unsignedInt" minOccurs="1" maxOccurs="1"/>
    <s:element name="returnTypeDescriptorId" type="s:unsignedInt" minOccurs="1"
maxOccurs="1"/>
    <s:element name="methodInstanceType" type="tns:MethodInstanceType" minOccurs="1"
maxOccurs="1"/>
    <s:element name="lcids" type="tns:ArrayOfInt" minOccurs="0" maxOccurs="1"/>
    <s:element name="localizedNames" type="tns:ArrayOfString" minOccurs="0" maxOccurs="1"/>
    <s:element name="propertyNames" type="tns:ArrayOfString" minOccurs="0" maxOccurs="1"/>
    <s:element name="propertyTypes" type="tns:ArrayOfString" minOccurs="0" maxOccurs="1"/>
    <s:element name="propertyValues" type="tns:ArrayOfString" minOccurs="0" maxOccurs="1"/>
  </s:sequence>
</s:complexType>
```

**id:** The **MetadataObjectId** of the **MethodInstance** represented with an element of this complex type. The value of this element MUST be in range from 1 through 0x7fffffff.

**name:** The name of the **MethodInstance** represented with an element of this complex type. This element MUST be present. The value of this element MUST have at least 1, at most 255 Unicode characters.

**methodId:** The **MetadataObjectId** of the **Method** that the **MethodInstance** represented with an element of this complex type is contained by. The value of this element MUST be in the range 1 through 0x7fffffff.

**returnTypeDescriptorId:** The **MetadataObjectId** of the **ReturnPropertyDescriptor** of the **MethodInstance** represented with an element of this complex type. The value of this element MUST be in the range 1 through 0x7fffffff.

**methodInstanceType:** The **MethodInstance** type of the **MethodInstance** represented with an element of this complex type.

**lcids:** If this element exists, its value MUST be the list of LCIDs for the localized names in the **localizedNames** element.

**localizedNames:** The list of localized names of the **MethodInstance** represented with an element of this complex type. Each localized name string in this list MUST have at least 1, at most 255 Unicode characters.

**propertyNames:** The names of the **Properties** of the **MethodInstance** represented with an element of this complex type. Each name string in this list of **Property** names MUST have at least 1, at most 255 Unicode characters.

**propertyTypes:** The names of units of business logic (2) <12> for the **Properties** of the **MethodInstance** represented with an element of this complex type.

**propertyValues:** The values of the **Properties** of the **MethodInstance** represented with an element of this complex type.

#### 3.1.4.5.4 Simple Types

The following table summarizes the XML schema simple type definitions that are specific to this operation.

Simple type	Description
<b>MethodInstanceType</b>	Defines a <b>MethodInstance</b> type.

##### 3.1.4.5.4.1 MethodInstanceType

The **MethodInstanceStruct** simple type MUST define a **MethodInstance** type. This simple type is defined as follows.

```
<s:simpleType name="MethodInstanceType">
  <s:restriction base="s:string">
    <s:enumeration value="Finder"/>
    <s:enumeration value="SpecificFinder"/>
    <s:enumeration value="ViewAccessor"/>
    <s:enumeration value="GenericInvoker"/>
    <s:enumeration value="IdEnumerator"/>
    <s:enumeration value="AccessChecker" />
    <s:enumeration value="Scalar" />
  </s:restriction>
</s:simpleType>
```

The following table defines possible values for this simple type.

Value	Description
Finder	A <b>MethodInstance</b> type of <b>Finder</b> .
SpecificFinder	A <b>MethodInstance</b> type of <b>SpecificFinder</b> .
ViewAccessor	A <b>MethodInstance</b> type of <b>ViewAccessor</b> .
GenericInvoker	A <b>MethodInstance</b> type of <b>GenericInvoker</b> .
IdEnumerator	A <b>MethodInstance</b> type of <b>IdEnumerator</b> .
AccessChecker	A <b>MethodInstance</b> type of <b>AccessChecker</b> .
Scalar	A <b>MethodInstance</b> type of <b>Scalar</b> .

### 3.1.4.5.5 Attributes

None.

### 3.1.4.5.6 Groups

None.

### 3.1.4.5.7 Attribute Groups

None.

### 3.1.4.6 GetMethodsForEntity

This operation is used to retrieve the **Methods** contained by a particular **Entity** and is defined as follows.

```
<wsdl:operation name="GetMethodsForEntity">
  <wsdl:input message="tns:GetMethodsForEntitySoapIn" />
  <wsdl:output message="tns:GetMethodsForEntitySoapOut" />
</wsdl:operation>
```

The client sends a **GetMethodsForEntitySoapIn** request message, and the server responds with a **GetMethodsForEntitySoapOut** response message, as follows:

1. The caller of this operation MUST specify an **Entity MetadataObjectId**.
2. This operation MUST return all **Methods** contained by the **Entity** specified in the request.

This operation MUST return a SOAP fault in each of the following cases:

- The provided **MetadataObjectId** in the request does not match any of the existing **Entity MetadataObjectIds** in the metadata store.
- The **Entity** with the **MetadataObjectId** provided in the request violates implementation-specific integrity constraints.
- Any one of the **Methods** to be returned from this operation violates implementation-specific integrity constraints.
- The **MetadataObjectId** value provided in the request is not in the range specified in section [3.1.4.6.2.1](#).

### 3.1.4.6.1 Messages

The following table summarizes the set of WSDL message definitions that are specific to this operation.

Message	Description
<b>GetMethodsForEntitySoapIn</b>	Contains the request for <b>GetMethodsForEntity</b> operation.
<b>GetMethodsForEntitySoapOut</b>	Contains the response from <b>GetMethodsForEntity</b> operation.

#### 3.1.4.6.1.1 GetMethodsForEntitySoapIn

This message MUST contain the request for **GetMethodsForEntity** operation.

The SOAP action value of the message is defined as follows:

```
http://schemas.microsoft.com/OfficeServer/BusinessDataCatalog/GetMethodsForEntity
```

The SOAP body contains a **GetMethodsForEntity** element. This element MUST contain the **MetadataObjectId** of the **Entity** that the requested **Methods** are contained by.

#### 3.1.4.6.1.2 GetMethodsForEntitySoapOut

This message MUST contain the response from **GetMethodsForEntity** operation. The **name** element of all the Methods in this message MUST have unique values.

The SOAP body contains a **GetMethodsForEntityResponse** element. This element MUST contain the list of **Methods** contained by the given **Entity**.

### 3.1.4.6.2 Elements

The following table summarizes the XML schema element definitions that are specific to this operation.

Element	Description
<b>GetMethodsForEntity</b>	The value of this element MUST be the input to <b>GetMethodsForEntity</b> operation.
<b>GetMethodsForEntityResponse</b>	The value of this element MUST be the response from <b>GetMethodsForEntityResponse</b> operation.

#### 3.1.4.6.2.1 GetMethodsForEntity

The value of this element MUST be the input to **GetMethodsForEntity** operation defined as follows.

```
<s:element name="GetMethodsForEntity">  
  <s:complexType>
```

```

    <s:sequence>
      <s:element name="entityId" type="s:unsignedInt" minOccurs="1" maxOccurs="1"/>
    </s:sequence>
  </s:complexType>
</s:element>

```

**entityId:** The **MetadataObjectId** of the **Entity**. The value of this element MUST be in the range from 1 through 0x7fffffff.

### 3.1.4.6.2.2 GetMethodsForEntityResponse

This element MUST contain the response from **GetMethodsForEntityResponse** operation defined as follows.

```

<s:element name="GetMethodsForEntityResponse">
  <s:complexType>
    <s:sequence>
      <s:element name="GetMethodsForEntityResult" type="tns:ArrayOfMethodStruct"
minOccurs="0" maxOccurs="1"/>
    </s:sequence>
  </s:complexType>
</s:element>

```

**GetMethodsForEntityResult:** The list of **Methods**. This element MUST be present in the successful response.

### 3.1.4.6.3 Complex Types

The following table summarizes the XML schema complex type definitions that are specific to this operation.

Complex type	Description
<b>ArrayOfMethodStruct</b>	An array of elements with type <b>MethodStruct</b> .

#### 3.1.4.6.3.1 ArrayOfMethodStruct

The **ArrayOfMethodStruct** complex type MUST be an array of elements with type **MethodStruct** defined as follows.

```

<s:complexType name="ArrayOfMethodStruct">
  <s:sequence>
    <s:element name="MethodStruct" type="tns:MethodStruct" nillable="true" minOccurs="0"
maxOccurs="unbounded"/>
  </s:sequence>
</s:complexType>

```

**MethodStruct:** These elements MUST contain information about **Methods**, if they are not nil.

#### 3.1.4.6.4 Simple Types

None.



#### **3.1.4.6.5 Attributes**

None.

#### **3.1.4.6.6 Groups**

None.

#### **3.1.4.6.7 Attribute Groups**

None.

#### **3.1.5 Timer Events**

None.

#### **3.1.6 Other Local Events**

None.

Preliminary

## 4 Protocol Examples

### 4.1 Retrieve Methods Containing MethodInstances of Type Finder on an Entity

In this scenario, the client finds an **Entity** with a name known by the client. This **Entity** is contained by a **LobSystem** that contains an **LobSystemInstance** with a **MetadataObjectId** known by the client. Once the **Entity** is found, the client searches for the **Methods** that contain **MethodInstances** with a **MethodInstance** type **Finder** on this **Entity**.

The following are the steps of this scenario:

1. The client issues a **GetEntitiesForLobSystemInstance** request (section [3.1.4.1.2.1](#)) with the known **MetadataObjectId** of a **LobSystemInstance** to get all the **Entities** contained by the **LobSystem** containing that **LobSystemInstance**.

```
<?xml version="1.0" encoding="utf-8"?>
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"><soap:Body><GetEntitiesForLobSystemInstance
xmlns="http://schemas.microsoft.com/OfficeServer/BusinessDataCatalog/"><lobSystemInstanceId>1
90</lobSystemInstanceId></GetEntitiesForLobSystemInstance></soap:Body></soap:Envelope>
```

2. The response to this request contains the name of the **Entities**, as well as other information about them.

```
<?xml version="1.0" encoding="utf-8"?>
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema">
  <soap:Body>
    <GetEntitiesForLobSystemInstanceResponse
xmlns="http://schemas.microsoft.com/OfficeServer/BusinessDataCatalog/">
      <GetEntitiesForLobSystemInstanceResult>
        <EntityStruct>
          <id>193</id>
          <name>Product</name>
          <lcids>
            <int>0</int>
            <int>1033</int>
            <int>2056</int>
          </lcids>
          <localizedNames>
            <string>Product2</string>
            <string>Product</string>
            <string>Name</string>
          </localizedNames>
          <lobSystemId>190</lobSystemId>
          <propertyNames>
            <string>Title</string>
            <string>DefaultAction</string>
          </propertyNames>
          <propertyTypes>
            <string>System.String</string>
            <string>System.String</string>
          </propertyTypes>
          <propertyValues>
            <string>EnglishProductName</string>
            <string>View Profile</string>
          </propertyValues>
        </EntityStruct>
        <EntityStruct>
          <id>217</id>
          <name>ProductCategory</name>
```

```

        <lcids>
            <int>0</int>
            <int>1033</int>
        </lcids>
        <localizedNames>
            <string>ProductCategory</string>
            <string>Product Category</string>
        </localizedNames>
        <lobSystemId>190</lobSystemId>
        <propertyNames>
            <string>Title</string>
            <string>DefaultAction</string>
        </propertyNames>
        <propertyTypes>
            <string>System.String</string>
            <string>System.String</string>
        </propertyTypes>
        <propertyValues>
            <string>EnglishProductCategoryName</string>
            <string>View Profile</string>
        </propertyValues>
    </EntityStruct>
</GetEntitiesForLobSystemInstanceResult>
</GetEntitiesForLobSystemInstanceResponse>
</soap:Body>
</soap:Envelope>

```

3. The client searches for the known name among the **Entities** that are retrieved in step 1, and finds the particular **Entity**.
4. The client issues a **GetMethodInstancesForEntity** request (section [3.1.4.5.2.1](#)) with the **MetadataObjectId** of the **Entity** found in step 2.

```

<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema">
  <soap:Body>
    <GetMethodInstancesForEntity
xmlns="http://schemas.microsoft.com/OfficeServer/BusinessDataCatalog/">
      <entityId>193</entityId>
    </GetMethodInstancesForEntity>
  </soap:Body>
</soap:Envelope>

```

5. The response to this request contains the **MethodInstance** types of the **MethodInstances** as well as other information about them.

```

<?xml version="1.0" encoding="utf-8"?>
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema">
  <soap:Body>
    <GetMethodInstancesForEntityResponse
xmlns="http://schemas.microsoft.com/OfficeServer/BusinessDataCatalog/">
      <GetMethodInstancesForEntityResult>
        <MethodInstanceStruct>
          <id>212</id>
          <name>ProductGenericInvokerInstance</name>
          <methodId>195</methodId>
          <returnTypeDescriptorId>207</returnTypeDescriptorId>
          <methodInstanceType>GenericInvoker</methodInstanceType>
          <lcids>
            <int>0</int>
            <int>1033</int>
          </lcids>
        </MethodInstanceStruct>
      </GetMethodInstancesForEntityResult>
    </GetMethodInstancesForEntityResponse>
  </soap:Body>
</soap:Envelope>

```

```

</lcids>
<localizedNames>
  <string>name</string>
  <string>genericInvoker</string>
</localizedNames>
<propertyNames>
  <string>Title</string>
  <string>Description</string>
</propertyNames>
<propertyTypes>
  <string>System.String</string>
  <string>System.String</string>
</propertyTypes>
<propertyValues>
  <string>EnglishGenericInvokerInstanceName</string>
  <string>Product GenericInvoker Instance Description</string>
</propertyValues>
</MethodInstanceStruct>
<MethodInstanceStruct>
  <id>214</id>
  <name>ProductFinderInstance</name>
  <methodId>195</methodId>
  <returnTypeDescriptorId>207</returnTypeDescriptorId>
  <methodInstanceType>Finder</methodInstanceType>
  <lcids>
    <int>0</int>
    <int>1033</int>
  </lcids>
  <localizedNames>
    <string>name</string>
    <string>finder</string>
  </localizedNames>
  <propertyNames>
    <string>Title</string>
    <string>Description</string>
  </propertyNames>
  <propertyTypes>
    <string>System.String</string>
    <string>System.String</string>
  </propertyTypes>
  <propertyValues>
    <string>EnglishProductFinderInstanceName</string>
    <string>Product Finder Instance Description</string>
  </propertyValues>
</MethodInstanceStruct>
<MethodInstanceStruct>
  <id>215</id>
  <name>ProductSpecificFinderInstance</name>
  <methodId>195</methodId>
  <returnTypeDescriptorId>207</returnTypeDescriptorId>
  <methodInstanceType>SpecificFinder</methodInstanceType>
  <lcids>
    <int>0</int>
    <int>1033</int>
  </lcids>
  <localizedNames>
    <string>name</string>
    <string>specificFinder</string>
  </localizedNames>
  <propertyNames>
    <string>Title</string>
    <string>Description</string>
  </propertyNames>
  <propertyTypes>
    <string>System.String</string>
    <string>System.String</string>
  </propertyTypes>
  <propertyValues>
    <string>EnglishProductSpecificFinderInstanceName</string>

```

```

        <string>Product SpecificFinder Instance Description</string>
    </propertyValues>
</MethodInstanceStruct>
</GetMethodInstancesForEntityResult>
</GetMethodInstancesForEntityResponse>
</soap:Body>
</soap:Envelope>

```

6. The client searches for the known **MethodInstance** type among the **MethodInstances** that are retrieved in step 3. As a result of this search, it finds a list of **MethodInstances**.
7. The client issues a **GetMethodForMethodInstance** request (section [3.1.4.4](#)) for the **Finder MethodInstance** in the list found in step 3.

```

<xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema">
  <soap:Body>
    <GetMethodForMethodInstance
xmlns="http://schemas.microsoft.com/OfficeServer/BusinessDataCatalog/">
      <methodInstanceId>214</methodInstanceId>
    </GetMethodForMethodInstance >
  </soap:Body>
</soap:Envelope>

```

8. The client creates a list of **Method** from the response to the request issued in step 4.

```

<?xml version="1.0" encoding="utf-8"?>
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema">
  <soap:Body>
    <GetMethodForMethodInstanceResponse
xmlns="http://schemas.microsoft.com/OfficeServer/BusinessDataCatalog/">
      <GetMethodForMethodInstanceResult>
        <id>195</id>
        <name>GetProducts</name>
        <entityId>193</entityId>
        <isStatic>true</isStatic>
        <lcids><int>0</int>
          <int>1033</int>
        </lcids>
        <localizedNames>
          <string>Product</string>
          <string>Products</string>
        </localizedNames>
        <propertyNames>
          <string>RdbCommandText</string>
          <string>RdbCommandType</string>
        </propertyNames><propertyTypes>
          <string>System.String</string>
          <string>System.Data.CommandType</string>
        </propertyTypes>
        <propertyValues>
          <string>SELECT * FROM DimProduct WHERE (ProductKey &gt;= @MinProductKey) AND
(ProductKey &lt;= @MaxProductKey) AND (EnglishProductName LIKE @EnglishProductName) AND
(EnglishDescription LIKE @EnglishDescription) AND (Status='Current')</string>
          <string>Text</string>
        </propertyValues>
      </GetMethodForMethodInstanceResult>
    </GetMethodForMethodInstanceResponse>
  </soap:Body>
</soap:Envelope>

```

## 4.2 Retrieve FilterDescriptors Contained by a Method That Contains a Particular MethodInstance

In this scenario, the client finds a set of **FilterDescriptors** contained by the **Method** that contains a particular **MethodInstance**. This **MethodInstance** has a **MetadataObjectId** known by the client.

The following are the steps of this scenario:

1. The client issues a **GetMethodForMethodInstance** request (section [3.1.4.4](#)) with the known **MetadataObjectId** of a **MethodInstance** to get the **Method** containing the **MethodInstance**.

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema">
  <soap:Body>
    <GetMethodForMethodInstance
xmlns="http://schemas.microsoft.com/OfficeServer/BusinessDataCatalog/">
      <methodInstanceId>214</methodInstanceId>
    </GetMethodForMethodInstance >
  </soap:Body>
</soap:Envelope>
```

2. The response to this request contains the **MetadataObjectId** for that **Method** as well as other information about it.

```
<?xml version="1.0" encoding="utf-8"?>
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema">
  <soap:Body>
    <GetMethodForMethodInstanceResponse
xmlns="http://schemas.microsoft.com/OfficeServer/BusinessDataCatalog/">
      <GetMethodForMethodInstanceResult>
        <id>195</id>
        <name>GetProducts</name>
        <entityId>193</entityId>
        <isStatic>true</isStatic>
        <lcids>
          <int>0</int>
          <int>1033</int>
        </lcids>
        <localizedNames>
          <string>Product</string>
          <string>Products</string>
        </localizedNames>
        <propertyNames>
          <string>RdbCommandText</string>
          <string>RdbCommandType</string>
        </propertyNames>
        <propertyTypes>
          <string>System.String</string>
          <string>System.Data.CommandType</string>
        </propertyTypes>
        <propertyValues>
          <string>SELECT * FROM DimProduct WHERE (ProductKey >= @MinProductKey) AND
(ProductKey <= @MaxProductKey) AND (EnglishProductName LIKE @EnglishProductName) AND
(EnglishDescription LIKE @EnglishDescription) AND (Status='Current')</string>
          <string>Text</string>
        </propertyValues>
      </GetMethodForMethodInstanceResult>
    </GetMethodForMethodInstanceResponse>
  </soap:Body>
</soap:Envelope>
```

3. The client issues a **GetFilterDescriptorsForMethod** request (section [3.1.4.2](#)) with the **Method MetadataObjectId** found in step 1.

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema">
  <soap:Body>
    <GetFilterDescriptorsForMethod
xmlns="http://schemas.microsoft.com/OfficeServer/BusinessDataCatalog/">
      <methodId>195</methodId>
    </GetFilterDescriptorsForMethod>
  </soap:Body>
</soap:Envelope>
```

4. The response to this request contains a list of **FilterDescriptors**.



```
<?xml version="1.0" encoding="utf-8"?>
<soap:Envelope xmlns:soap="http://www.w3.org/2003/05/soap-envelope"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema">
  <soap:Body>
    <GetFilterDescriptorsForMethodResponse
xmlns="http://schemas.microsoft.com/OfficeServer/BusinessDataCatalog/">
      <GetFilterDescriptorsForMethodResult>
        <FilterDescriptorStruct>
          <id>354</id>
          <name>limtFilter</name>

          <typeName>Microsoft.Office.Server.ApplicationRegistry.Runtime.LimitFilter</typeName>
          <methodId>195</methodId>
          <lcids>
            <int>0</int>
            <int>1033</int>
          </lcids>
          <localizedNames>
            <string>name</string>
            <string>key</string>
          </localizedNames>
          <propertyNames>
            <string>limitComparator</string>
          </propertyNames>
          <propertyTypes>
            <string>System.String</string>
          </propertyTypes>
          <propertyValues>
            <string>limit</string>
          </propertyValues>
        </FilterDescriptorStruct>
        <FilterDescriptorStruct>
          <id>355</id>
          <name>WildcardFilter</name>

          <typeName>Microsoft.Office.Server.ApplicationRegistry.Runtime.WildcardFilter</typeName>
          <methodId>195</methodId>
          <lcids>
            <int>0</int>
          </lcids>
          <localizedNames>
            <string>name</string>
          </localizedNames>
          <propertyNames>
            <string>UsedForDisambiguation</string>
          </propertyNames>
          <propertyTypes>
            <string>System.Boolean</string>
          </propertyTypes>
        </FilterDescriptorStruct>
      </GetFilterDescriptorsForMethodResult>
    </GetFilterDescriptorsForMethodResponse>
  </soap:Body>
</soap:Envelope>
```

```

        <propertyValues>
          <string>True</string>
        </propertyValues>
      </FilterDescriptorStruct>
    <FilterDescriptorStruct>
      <id>356</id>
      <name>equalFilter</name>
    </FilterDescriptorStruct>
  </typeName>Microsoft.Office.Server.ApplicationRegistry.Runtime.ComparisonFilter</typeName>
  <methodId>195</methodId>
  <lcids>
    <int>0</int>
    <int>1033</int>
  </lcids>
  <localizedNames>
    <string>name</string>
    <string>key</string>
  </localizedNames>
  <propertyNames>
    <string>UsedForDisambiguation</string>
    <string>Comparator</string>
  </propertyNames>
  <propertyTypes>
    <string>System.Boolean</string>
    <string>System.String</string>
  </propertyTypes>
  <propertyValues>
    <string>True</string>
    <string>Equals</string>
  </propertyValues>
</FilterDescriptorStruct>
<FilterDescriptorStruct>
  <id>360</id>
  <name>lastIdFilter</name>
</FilterDescriptorStruct>
</typeName>Microsoft.Office.Server.ApplicationRegistry.Runtime.LastIdFilter</typeName>
<methodId>195</methodId>
<lcids>
  <int>0</int>
  <int>1033</int>
</lcids>
<localizedNames>
  <string>name</string>
  <string>Id</string>
</localizedNames>
<propertyNames>
  <string>lastIdComparator</string>
</propertyNames>
<propertyTypes>
  <string>System.String</string>
</propertyTypes>
<propertyValues>
  <string>lastId</string>
</propertyValues>
</FilterDescriptorStruct>
<FilterDescriptorStruct>
  <id>363</id>
  <name>comparisionFilter</name>
</FilterDescriptorStruct>
</typeName>Microsoft.Office.Server.ApplicationRegistry.Runtime.ComparisonFilter</typeName>
<methodId>353</methodId>
<lcids>
  <int>0</int>
  <int>1033</int>
</lcids>
<localizedNames>
  <string>name</string>
  <string>compare</string>
</localizedNames>

```



```
<propertyNames>
  <string>comparator</string>
</propertyNames>
<propertyTypes>
  <string>System.String</string>
</propertyTypes>
<propertyValues>
  <string>comparator1</string>
</propertyValues>
</FilterDescriptorStruct>
</GetFilterDescriptorsForMethodResult>
</GetFilterDescriptorsForMethodResponse>
</soap:Body>
</soap:Envelope>
```

Preliminary

## **5 Security**

### **5.1 Security Considerations for Implementers**

None.

### **5.2 Index of Security Parameters**

None.

Preliminary

## 6 Appendix A: Full WSDL

For ease of implementation, the full WSDL and schema are provided in this appendix.

```
<?xml version="1.0" encoding="utf-8"?>
  <wsdl:definitions xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
xmlns:tm="http://microsoft.com/wsdl/mime/textMatching/"
xmlns:soapenc="http://schemas.xmlsoap.org/soap/encoding/"
xmlns:mime="http://schemas.xmlsoap.org/wsdl/mime/"
xmlns:tns="http://schemas.microsoft.com/OfficeServer/BusinessDataCatalog/"
xmlns:s="http://www.w3.org/2001/XMLSchema"
xmlns:soap12="http://schemas.xmlsoap.org/wsdl/soap12/"
xmlns:http="http://schemas.xmlsoap.org/wsdl/http/"
targetNamespace="http://schemas.microsoft.com/OfficeServer/BusinessDataCatalog/"
xmlns:wSDL="http://schemas.xmlsoap.org/wsdl/">Business Data Catalog
Metadata Web Service</wsdl:definitions>
<wsdl:types>
  <s:schema elementFormDefault="qualified"
targetNamespace="http://schemas.microsoft.com/OfficeServer/BusinessDataCatalog/">
    <s:element name="GetLobSystemInstances">
      <s:complexType />
    </s:element>
    <s:element name="GetLobSystemInstancesResponse">
      <s:complexType>
        <s:sequence>
          <s:element minOccurs="0" maxOccurs="1" name="GetLobSystemInstancesResult"
type="tns:ArrayOfLobSystemInstanceStruct" />
        </s:sequence>
      </s:complexType>
    </s:element>
    <s:complexType name="ArrayOfLobSystemInstanceStruct">
      <s:sequence>
        <s:element minOccurs="0" maxOccurs="unbounded" name="LobSystemInstanceStruct"
nillable="true" type="tns:LobSystemInstanceStruct" />
      </s:sequence>
    </s:complexType>
    <s:complexType name="LobSystemInstanceStruct">
      <s:sequence>
        <s:element minOccurs="1" maxOccurs="1" name="id" type="s:unsignedInt" />
        <s:element minOccurs="0" maxOccurs="1" name="name" type="s:string" />
        <s:element minOccurs="0" maxOccurs="1" name="lcids" type="tns:ArrayOfInt" />
        <s:element minOccurs="0" maxOccurs="1" name="localizedNames"
type="tns:ArrayOfString" />
        <s:element minOccurs="1" maxOccurs="1" name="lobSystemId" type="s:unsignedInt" />
        <s:element minOccurs="0" maxOccurs="1" name="propertyNames"
type="tns:ArrayOfString" />
        <s:element minOccurs="0" maxOccurs="1" name="propertyTypes"
type="tns:ArrayOfString" />
        <s:element minOccurs="0" maxOccurs="1" name="propertyValues"
type="tns:ArrayOfString" />
      </s:sequence>
    </s:complexType>
    <s:complexType name="ArrayOfInt">
      <s:sequence>
        <s:element minOccurs="0" maxOccurs="unbounded" name="int" type="s:int" />
      </s:sequence>
    </s:complexType>
    <s:complexType name="ArrayOfString">
      <s:sequence>
        <s:element minOccurs="0" maxOccurs="unbounded" name="string" nillable="true"
type="s:string" />
      </s:sequence>
    </s:complexType>
    <s:element name="GetEntitiesForLobSystemInstance">
      <s:complexType>
```

```

        <s:sequence>
            <s:element minOccurs="1" maxOccurs="1" name="lobSystemInstanceId"
type="s:unsignedInt" />
        </s:sequence>
    </s:complexType>
</s:element>
<s:element name="GetEntitiesForLobSystemInstanceResponse">
    <s:complexType>
        <s:sequence>
            <s:element minOccurs="0" maxOccurs="1"
name="GetEntitiesForLobSystemInstanceResult" type="tns:ArrayOfEntityStruct" />
        </s:sequence>
    </s:complexType>
</s:element>
<s:complexType name="ArrayOfEntityStruct">
    <s:sequence>
        <s:element minOccurs="0" maxOccurs="unbounded" name="EntityStruct"
nillable="true" type="tns:EntityStruct" />
    </s:sequence>
</s:complexType>
<s:complexType name="EntityStruct">
    <s:sequence>
        <s:element minOccurs="1" maxOccurs="1" name="id" type="s:unsignedInt" />
        <s:element minOccurs="1" maxOccurs="1" name="name" type="s:string" />
        <s:element minOccurs="0" maxOccurs="1" name="lcids" type="tns:ArrayOfInt" />
        <s:element minOccurs="0" maxOccurs="1" name="localizedNames"
type="tns:ArrayOfString" />
        <s:element minOccurs="1" maxOccurs="1" name="lobSystemId" type="s:unsignedInt"
/>
        <s:element minOccurs="0" maxOccurs="1" name="propertyNames"
type="tns:ArrayOfString" />
        <s:element minOccurs="0" maxOccurs="1" name="propertyTypes"
type="tns:ArrayOfString" />
        <s:element minOccurs="0" maxOccurs="1" name="propertyValues"
type="tns:ArrayOfString" />
    </s:sequence>
</s:complexType>
<s:element name="GetMethodInstancesForEntity">
    <s:complexType>
        <s:sequence>
            <s:element minOccurs="1" maxOccurs="1" name="entityId" type="s:unsignedInt" />
        </s:sequence>
    </s:complexType>
</s:element>
<s:element name="GetMethodInstancesForEntityResponse">
    <s:complexType>
        <s:sequence>
            <s:element minOccurs="0" maxOccurs="1"
name="GetMethodInstancesForEntityResult" type="tns:ArrayOfMethodInstanceStruct" />
        </s:sequence>
    </s:complexType>
</s:element>
<s:complexType name="ArrayOfMethodInstanceStruct">
    <s:sequence>
        <s:element minOccurs="0" maxOccurs="unbounded" name="MethodInstanceStruct"
nillable="true" type="tns:MethodInstanceStruct" />
    </s:sequence>
</s:complexType>
<s:complexType name="MethodInstanceStruct">
    <s:sequence>
        <s:element minOccurs="1" maxOccurs="1" name="id" type="s:unsignedInt" />
        <s:element minOccurs="1" maxOccurs="1" name="name" type="s:string" />
        <s:element minOccurs="1" maxOccurs="1" name="methodId" type="s:unsignedInt" />
        <s:element minOccurs="1" maxOccurs="1" name="returnTypeDescriptorId"
type="s:unsignedInt" />
        <s:element minOccurs="1" maxOccurs="1" name="methodInstanceType"
type="tns:MethodInstanceType" />
        <s:element minOccurs="0" maxOccurs="1" name="lcids" type="tns:ArrayOfInt" />

```

```

        <s:element minOccurs="0" maxOccurs="1" name="localizedNames"
type="tns:ArrayOfString" />
        <s:element minOccurs="0" maxOccurs="1" name="propertyNames"
type="tns:ArrayOfString" />
        <s:element minOccurs="0" maxOccurs="1" name="propertyTypes"
type="tns:ArrayOfString" />
        <s:element minOccurs="0" maxOccurs="1" name="propertyValues"
type="tns:ArrayOfString" />
    </s:sequence>
</s:complexType>
<s:simpleType name="MethodInstanceType">
    <s:restriction base="s:string">
        <s:enumeration value="Finder" />
        <s:enumeration value="SpecificFinder" />
        <s:enumeration value="ViewAccessor" />
        <s:enumeration value="GenericInvoker" />
        <s:enumeration value="IdEnumerator" />
        <s:enumeration value="AccessChecker" />
        <s:enumeration value="Scalar" />
    </s:restriction>
</s:simpleType>
<s:element name="GetMethodsForEntity">
    <s:complexType>
        <s:sequence>
            <s:element minOccurs="1" maxOccurs="1" name="entityId" type="s:unsignedInt" />
        </s:sequence>
    </s:complexType>
</s:element>
<s:element name="GetMethodsForEntityResponse">
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type="tns:ArrayOfMethodStruct" />
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    </s:complexType>
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    <s:sequence>
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        <s:element minOccurs="1" maxOccurs="1" name="name" type="s:string" />
        <s:element minOccurs="1" maxOccurs="1" name="entityId" type="s:unsignedInt" />
        <s:element minOccurs="1" maxOccurs="1" name="isStatic" type="s:boolean" />
        <s:element minOccurs="0" maxOccurs="1" name="lcids" type="tns:ArrayOfInt" />
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type="tns:ArrayOfString" />
        <s:element minOccurs="0" maxOccurs="1" name="propertyNames"
type="tns:ArrayOfString" />
        <s:element minOccurs="0" maxOccurs="1" name="propertyTypes"
type="tns:ArrayOfString" />
        <s:element minOccurs="0" maxOccurs="1" name="propertyValues"
type="tns:ArrayOfString" />
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type="s:unsignedInt" />
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    </s:complexType>
</s:element>
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    <s:complexType>

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type="tns:MethodStruct" />
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    </s:complexType>
</s:element>
<s:element name="GetFilterDescriptorsForMethod">
    <s:complexType>
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        </s:sequence>
    </s:complexType>
</s:element>
<s:element name="GetFilterDescriptorsForMethodResponse">
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name="GetFilterDescriptorsForMethodResult" type="tns:ArrayOfFilterDescriptorStruct" />
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</s:element>
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type="tns:ArrayOfString" />
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    <wsdl:part name="parameters" element="tns:GetLobSystemInstances" />
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    <wsdl:part name="parameters" element="tns:GetLobSystemInstancesResponse" />
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```

```

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<wsdl:message name="GetFilterDescriptorsForMethodSoapIn">
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</wsdl:message>
<wsdl:message name="GetFilterDescriptorsForMethodSoapOut">
  <wsdl:part name="parameters" element="tns:GetFilterDescriptorsForMethodResponse" />
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    <wsdl:output message="tns:GetLobSystemInstancesSoapOut" />
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    <wsdl:output message="tns:GetEntitiesForLobSystemInstanceSoapOut" />
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    <wsdl:output message="tns:GetMethodForMethodInstanceSoapOut" />
  </wsdl:operation>
  <wsdl:operation name="GetFilterDescriptorsForMethod">
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</wsdl:portType>
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  <wsdl:output>
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</wsdl:operation>
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    <soap:body use="literal" />
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  <wsdl:input>
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  <wsdl:output>
    <soap:body use="literal" />
  </wsdl:output>
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  <wsdl:operation name="GetMethodForMethodInstance">
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  <wsdl:input>
    <soap:body use="literal" />
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  <wsdl:output>
    <soap:body use="literal" />
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</wsdl:operation>
  <wsdl:operation name="GetFilterDescriptorsForMethod">
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soapAction="http://schemas.microsoft.com/OfficeServer/BusinessDataCatalog/GetFilterDescriptorsForMethod" style="document" />
  <wsdl:input>
    <soap:body use="literal" />
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</wsdl:binding>
</wsdl:service>

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```

        </wsdl:input>
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        </wsdl:output>
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    <wsdl:operation name="GetMethodsForEntity">
        <soap:operation
soapAction="http://schemas.microsoft.com/OfficeServer/BusinessDataCatalog/GetMethodsForEntity
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        <wsdl:input>
            <soap:body use="literal" />
        </wsdl:input>
        <wsdl:output>
            <soap:body use="literal" />
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    </wsdl:operation>
    <wsdl:operation name="GetMethodForMethodInstance">
        <soap:operation
soapAction="http://schemas.microsoft.com/OfficeServer/BusinessDataCatalog/GetMethodForMethodI
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        </wsdl:input>
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            <soap:body use="literal" />
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            <soap12:body use="literal" />

```



```

        </wsdl:input>
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        <wsdl:output>
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```

Preview

## 7 Appendix B: Product Behavior

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

- Microsoft Office SharePoint Server 2007
- Microsoft SharePoint Server 2010
- Microsoft SharePoint Server 2013
- Microsoft SharePoint Server 2016 Preview

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

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

<1> [Section 2.2.4.3](#): A data type providing business logic that conforms to the [\[ECMA-335\]](#) specification and can be executed by the Microsoft .NET Framework.

<2> [Section 2.2.4.3](#): A data type providing business logic that conforms to the [\[ECMA-335\]](#) specification and can be executed by the .NET Framework.

<3> [Section 3.1.4.1.3.2](#): A data type providing business logic that conforms to the [\[ECMA-335\]](#) specification and can be executed by the .NET Framework.

<4> [Section 3.1.4.1.3.2](#): A data type providing business logic that conforms to the [\[ECMA-335\]](#) specification and can be executed by the .NET Framework.

<5> [Section 3.1.4.2](#): This operation can return **FilterDescriptors** of the following types: ComparisonFilter, LastIdFilter, LimitFilter, RangeFilter, WildcardFilter.

<6> [Section 3.1.4.2.3.2](#): A data type providing business logic that conforms to the [\[ECMA-335\]](#) specification and can be executed by the .NET Framework.

<7> [Section 3.1.4.2.3.2](#): A data type providing business logic that conforms to the [\[ECMA-335\]](#) specification and can be executed by the .NET Framework.

<8> [Section 3.1.4.2.3.2](#): A data type providing business logic that conforms to the [\[ECMA-335\]](#) specification and can be executed by the .NET Framework.

<9> [Section 3.1.4.3.3.2](#): A data type providing business logic that conforms to the [\[ECMA-335\]](#) specification and can be executed by the .NET Framework.

<10> [Section 3.1.4.3.3.2](#): A data type providing business logic that conforms to the [\[ECMA-335\]](#) specification and can be executed by the .NET Framework.

<11> [Section 3.1.4.5.3.2](#): A data type providing business logic that conforms to the [\[ECMA-335\]](#) specification and can be run by the .NET Framework.

<12> [Section 3.1.4.5.3.2](#): A data type providing business logic that conforms to the [\[ECMA-335\]](#) specification and can be executed by the .NET Framework.

## 8 Change Tracking

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

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

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

- A document revision that incorporates changes to interoperability requirements or functionality.
- The removal of a document from the documentation set.

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

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

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

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

- New content added.
- Content updated.
- Content removed.
- New product behavior note added.
- Product behavior note updated.
- Product behavior note removed.
- New protocol syntax added.
- Protocol syntax updated.
- Protocol syntax removed.
- New content added due to protocol revision.
- Content updated due to protocol revision.
- Content removed due to protocol revision.
- New protocol syntax added due to protocol revision.
- Protocol syntax updated due to protocol revision.
- Protocol syntax removed due to protocol revision.
- Obsolete document removed.

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

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

- **Protocol syntax** refers to data elements (such as packets, structures, enumerations, and methods) as well as interfaces.
- **Protocol revision** refers to changes made to a protocol that affect the bits that are sent over the wire.

The changes made to this document are listed in the following table. For more information, please contact [dochelp@microsoft.com](mailto:dochelp@microsoft.com).

Section	Tracking number (if applicable) and description	Major change (Y or N)	Change type
<a href="#">Z</a> Appendix B: Product Behavior	Updated list of supported products.	Y	Content updated due to protocol revision.

Preliminary

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