[MS-BDCMP]:
Business Data Catalog Metadata Web Service Protocol Specification

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Revision Summary

Date	Revision History	Revision Class	Comments
04/04/2008	0.1		Initial Availability
06/27/2008	1.0	Major	Revised and edited the technical content
12/12/2008	1.01	Editorial	Revised and edited the technical content
07/13/2009	1.02	Major	Changes made for template compliance
08/28/2009	1.03	Editorial	Revised and edited the technical content
11/06/2009	1.04	Editorial	Revised and edited the technical content
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03/31/2010	2.01	Editorial	Revised and edited the technical content
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Date	Revision History	Revision Class	Comments
01/20/2012	3.0	Major	Significantly changed the technical content.

Table of Contents

1 Introduction

This document specifies the Business Data Catalog Metadata Web Service Protocol, which 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 contain RFC 2119 language. Sections 1.5 and 1.9 are also normative but cannot contain RFC 2119 language. All other sections and examples in this specification are informative.

1.1 Glossary

The following terms are defined in [MS-GLOS]:

Hypertext Transfer Protocol (HTTP)
Hypertext Transfer Protocol over Secure Sockets Layer (HTTPS)
language code identifier (LCID)
Unicode

The following terms are defined in [MS-OFCGLOS]:

AccessChecker
business logic
ComparisonFilter
Entity
EntityInstance
FilterDescriptor
Finder
front-end Web server
GenericInvoker
IdEnumerator
LastIdFilter
LimitFilter
line-of-business (LOB) system
LobSystem
LobSystemInstance
localized name
metadata model
metadata store
MetadataObject
MetadataObjectId
Method
MethodInstance
RangeFilter
ReturnTypeDescriptor
Scalar
Simple Object Access Protocol (SOAP)
site
SOAP action
SOAP body
SOAP fault
SpecificFinder
Uniform Resource Locator (URL)
ViewAccessor
Web Services Description Language (WSDL)

WildcardFilter
WSDL message
XML namespace
XML namespace prefix
XML schema

The following terms are specific to this document:

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

1.2 References

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

1.2.1 Normative References

We conduct frequent surveys of the normative references to assure their continued availability. If you have any issue with finding a normative reference, please contact dochelp@microsoft.com. We will assist you in finding the relevant information. Please check the archive site, http://msdn2.microsoft.com/en-us/library/E4BD6494-06AD-4aed-9823-445E921C9624, as an additional source.

[ECMA-335] ECMA International, "Common Language Infrastructure (CLI) Partitions I to VI", ECMA-335, June 2006, http://www.ecma-international.org/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.ietf.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

[XML10] World Wide Web Consortium, "Extensible Markup Language (XML) 1.0 (Third Edition)", February 2004, http://www.w3.org/TR/REC-xml

[XMLINFOSET] World Wide Web Consortium, "XML Information Set (Second Edition)", February 2004, http://www.w3.org/TR/2004/REC-xml-infoset-20040204

[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.S., Ed., Beech, D., Ed., Maloney, M., Ed., and Mendelsohn, N., Ed., "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

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

[MS-OFCGLOS] Microsoft Corporation, "Microsoft Office Master Glossary".

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

1.3 Protocol Overview (Synopsis)

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:

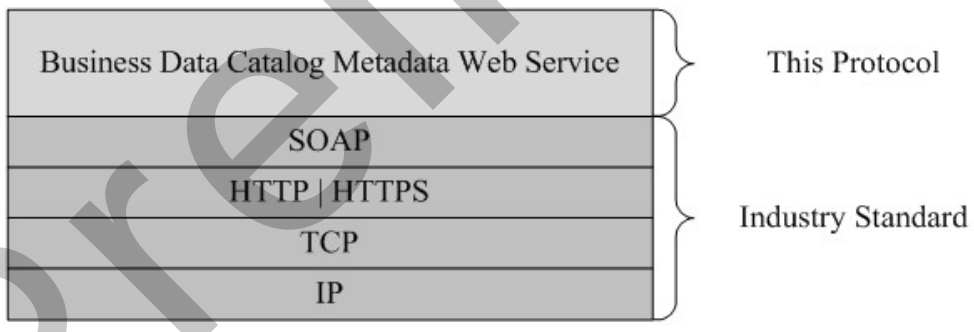

Figure 1: This protocol in relation to other protocols

1.5 Prerequisites/Preconditions

This protocol operates against a **site (2)** 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.

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**, **present**, and **not null**.

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	http://schemas.xmlsoap.org/wsdl/soap/	[SOAP1.1]
tns	http://schemas.microsoft.com/OfficeServer/BusinessDataCatalog/	
s	http://www.w3.org/2001/XMLSchema	[XMLSCHEMA1] [XMLSCHEMA2]
soap12	http://schemas.xmlsoap.org/wsdl/soap12/	[SOAP1.2/1] [SOAP1.2/2]
(none)	http://schemas.microsoft.com/OfficeServer/BusinessDataCatalog/	
wsdl	http://schemas.xmlsoap.org/wsdl/	[WSDL]
mime	http://schemas.xmlsoap.org/wsdl/mime/	[WSDL]
http	http://schemas.xmlsoap.org/wsdl/http/	[WSDL]
tm	http://microsoft.com/wsdl/mime/textMatching/	[WSDL]
soapenc	http://schemas.xmlsoap.org/soap/encoding/	

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
ArrayOfInt	This complex type MUST be an array of elements with type integer.
ArrayOfString	This complex type MUST be an array of elements with type string.
MethodStruct	This complex type MUST contain information about a **Method**.

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 (2)**<1> 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 1through 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, 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, at most 255 Unicode characters.

propertyTypes: The names of units of business logic (2)<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.

2.2.9 Common Data Structures

This specification does not define any common XML schema data structures.

3 Protocol Details

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**, **present**, and **not null**.

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] Status Code Definitions 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 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 an **LobSystem**.
- Each **LobSystemInstance** is contained by an **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
GetEntitiesForLobSystemInstance	Retrieves the **Entities** contained by an **LobSystem** containing a particular **LobSystemInstance**.
GetFilterDescriptorsForMethod	Retrieves the **FilterDescriptors** contained by a particular **Method**.
GetLobSystemInstances	Retrieves the **LobSystemInstances** in the Metadata store.
GetMethodForMethodInstance	Retrieves the **Method** containing a particular **MethodInstance**.
GetMethodInstancesForEntity	Retrieves the **MethodInstances** contained by the **Methods** contained by a particular **Entity**.
GetMethodsForEntity	Retrieves the **Methods** contained by a particular **Entity**.

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="GetEntitiesForLobSystemInstanceSoapIn" />
  <wsdl:output message="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
GetEntitiesForLobSystemInstanceSoapIn	Contains the request for **GetEntitiesForLobSystemInstance** operation.
GetEntitiesForLobSystemInstanceSoapOut	Contains the response from **GetEntitiesForLobSystemInstance** 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 an **LobSystemInstance** which 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 action value of the message is defined as follows:

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

The SOAP body contains a **GetEntitiesForLobSystemInstanceResponse** element. This element MUST contain the list of **Entities** contained by the **LobSystem** which 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
GetEntitiesForLobSystemInstance	The value of this element MUST be the input to **GetEntitiesForLobSystemInstance** operation.
GetEntitiesForLobSystemInstanceResponse	The value of this element MUST be the response from **GetEntitiesForLobSystemInstance** 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
ArrayOfEntityStruct	An array of elements with type **EntityStruct.**
EntityStruct	Contains information about **Entities**.

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 0xf.

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.

3.1.4.2 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="GetFilterDescriptorsForMethodSoapIn" />
  <wsdl:output message="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
GetFilterDescriptorsForMethodSoapIn	Contains the request for **GetFilterDescriptorsForMethod** operation.
GetFilterDescriptorsForMethodSoapOut	Contains the response from the **GetFilterDescriptorsForMethod** 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 action value of the message is defined as follows:

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

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
GetFilterDescriptorsForMethod	The value of this element MUST be the input to **GetFilterDescriptorsForMethod** operation.
GetFilterDescriptorsForMethodResponse	The value of this element MUST be the response from **GetFilterDescriptorsForMethod** 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
ArrayOfFilterDescriptorStruct	An array of elements with type **FilterDescriptorStruct.**
FilterDescriptorStruct	Contains information about a **FilterDescriptor.**

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 **FilterDescriptor** describes a **LimitFilter**.
Microsoft.Office.Server.ApplicationRegistry.Runtime.EqualsFilter	Indicates that a **FilterDescriptor** describes a **ComparisonFilter** with its comparator set to "==".
Microsoft.Office.Server.ApplicationRegistry.Runtime.WildcardFilter	Indicates that a **FilterDescriptor** describes a **WildcardFilter**.
Microsoft.Office.Server.ApplicationRegistry.Runtime.RangeFilter	Indicates that a **FilterDescriptor** describes a **RangeFilter**.

Value	Description
Microsoft.Office.Server.ApplicationRegistry.Runtime.LastIdFilter	Indicates that a **FilterDescriptor** describes a **LastIdFilter**.
Microsoft.Office.Server.ApplicationRegistry.Runtime.ComparisonFilter	Indicates that a **FilterDescriptor** describes a ComparisonFilter.

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.

3.1.4.3 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="GetLobSystemInstancesSoapIn" />
  <wsdl:output message="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
GetLobSystemInstancesSoapIn	Contains the request for **GetLobSystemInstances** operation.

Message	Description
GetLobSystemInstancesSoapOut	Contains the response from **GetLobSystemInstances** 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 action value of the message is defined as follows:

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

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
GetLobSystemInstances	The value of this element MUST be the input to **GetLobSystemInstances** operation.
GetLobSystemInstancesResponse	The value of this element MUST be the response from **GetLobSystemInstances** 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
ArrayOfLobSystemInstanceStruct	An array of elements with type **LobSystemInstanceStruct** (section 3.1.4.3.3.2).
LobSystemInstanceStruct	Contains information about an **LobSystemInstance.**

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**. The following are the constraints that 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="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 **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, 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, 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.

3.1.4.4 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="GetMethodForMethodInstanceSoapIn" />
  <wsdl:output message="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
GetMethodForMethodInstanceSoapIn	Contains the request for **GetMethodForMethodInstance** operation.
GetMethodForMethodInstanceSoapOut	Contains the response from **GetMethodForMethodInstance** 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 action value of the message is defined as follows:

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

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
GetMethodForMethodInstance	The value of this element MUST be the input to **GetMethodForMethodInstance** operation.
GetMethodForMethodInstanceResponse	The value of this element MUST be the response from **GetMethodForMethodInstance** 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.

3.1.4.5 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="GetMethodInstancesForEntitySoapIn" />
  <wsdl:output message="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
GetMethodInstancesForEntitySoapIn	Contains the request for **GetMethodInstancesForEntity** operation.
GetMethodInstancesForEntitySoapOut	Contains the response from **GetMethodInstancesForEntity** 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 action value of the message is defined as follows:

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

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
GetMethodInstancesForEntity	The value of this element MUST be the input to **GetMethodInstancesForEntity** operation.
GetMethodInstancesForEntityResponse	The value of this element MUST be the response from **GetMethodInstancesForEntity** 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
ArrayOfMethodInstanceStruct	An array of elements with type **MethodInstanceStruct**.
MethodInstanceStruct	Contains information about an **MethodInstance.**

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 **ReturnTypeDescriptor** of the MethodInstance represented with an element of this complex type. The value of this element MUST be in the range 1through 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
MethodInstanceType	Defines a **MethodInstance** 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 **MethodInstance** type of **Finder**.
SpecificFinder	A **MethodInstance** type of **SpecificFinder**.
ViewAccessor	A **MethodInstance** type of **ViewAccessor**.
GenericInvoker	A **MethodInstance** type of **GenericInvoker**.
IdEnumerator	A **MethodInstance** type of **IdEnumerator**.
AccessChecker	A **MethodInstance** type of **AccessChecker**.
Scalar	A **MethodInstance** type of **Scalar**.

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="GetMethodsForEntitySoapIn" />
    <wsdl:output message="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
GetMethodsForEntitySoapIn	Contains the request for **GetMethodsForEntity** operation.
GetMethodsForEntitySoapOut	Contains the response from **GetMethodsForEntity** 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 action value of the message is defined as follows:

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

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
GetMethodsForEntity	The value of this element MUST be the input to **GetMethodsForEntity** operation.
GetMethodsForEntityResponse	The value of this element MUST be the response from **etMethodsForEntityResponse** 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
ArrayOfMethodStruct	An array of elements with type **MethodStruct**.

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.

3.1.5 Timer Events

None.

3.1.6 Other Local Events

None.

4 Protocol Examples

4.1 Retrieve Methods Containing MethodInstances of Type Finder on a Entity

In this scenario, the client finds an **Entity** with a name known by the client. This **Entity** is contained by an **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 an **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><GetEntitiesForLobSystemInstan
ce
xmlns="http://schemas.microsoft.com/OfficeServer/BusinessDataCatalog/"><lobSystemInsta
nceId>190</lobSystemInstanceId></GetEntitiesForLobSystemInstance></soap:Body></soap:En
velope>
```

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 response to this request contains the names of the **Entities** as well as other information about them.

4. The client searches for the known name among the **Entities** which are retrieved in step 1 and finds the particular **Entity**.

5. 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>
```

6. 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>
               <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>
```

7. The client searches for the known **MethodInstance** type among the **MethodInstances** which are retrieved in step 3. As a result of this search, it finds a list of **MethodInstances**.

8. The client issues a **GetMethodForMethodInstance** request (section 3.1.4.4) for the **Finder MethodInstance** in the list found in step 4.

```
<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>
```

9. The client creates a list of **Method** from the response to the request issued in step 5.

```
<?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 &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>
```

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>
               <propertyValues>
                  <string>True</string>
               </propertyValues>
            </FilterDescriptorStruct>
            <FilterDescriptorStruct>
               <id>356</id>
               <name>equalFilter</name>

<typeName>Microsoft.Office.Server.ApplicationRegistry.Runtime.ComparisonFilter</typeNa
me>
```

```
                  <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>

<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>

<typeName>Microsoft.Office.Server.ApplicationRegistry.Runtime.ComparisonFilter</typeNa
me>
                  <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>
```

5 Security

5.1 Security Considerations for Implementers

None.

5.2 Index of Security Parameters

None.

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/">
<wsdl:documentation xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">Business Data Catalog
Metadata Web Service</wsdl:documentation>
<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="1" maxOccurs="1" name="name" type="s:string" />
               <s:element minOccurs="1" 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" />
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         <s:complexType name="ArrayOfInt">
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               <s:element minOccurs="0" maxOccurs="unbounded" name="int" type="s:int" />
            </s:sequence>
         </s:complexType>
         <s:complexType name="ArrayOfString">
```

```
            <s:sequence>
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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">
```

```
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nillable="true" type="tns:MethodInstanceStruct" />
            </s:sequence>
         </s:complexType>
         <s:complexType name="MethodInstanceStruct">
            <s:sequence>
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               <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">
         <s:complexType>
            <s:sequence>
               <s:element minOccurs="0" maxOccurs="1" name="GetMethodsForEntityResult"
type="tns:ArrayOfMethodStruct" />
            </s:sequence>
         </s:complexType>
      </s:element>
         <s:complexType name="ArrayOfMethodStruct">
            <s:sequence>
               <s:element minOccurs="0" maxOccurs="unbounded" name="MethodStruct"
nillable="true" type="tns:MethodStruct" />
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         </s:complexType>
         <s:complexType name="MethodStruct">
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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" />
                <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:element name="GetMethodForMethodInstance">
          <s:complexType>
             <s:sequence>
                <s:element minOccurs="1" maxOccurs="1" name="methodInstanceId"
type="s:unsignedInt" />
             </s:sequence>
          </s:complexType>
       </s:element>
       <s:element name="GetMethodForMethodInstanceResponse">
          <s:complexType>
             <s:sequence>
                <s:element minOccurs="0" maxOccurs="1" name="GetMethodForMethodInstanceResult"
type="tns:MethodStruct" />
             </s:sequence>
          </s:complexType>
       </s:element>
       <s:element name="GetFilterDescriptorsForMethod">
          <s:complexType>
             <s:sequence>
                <s:element minOccurs="1" maxOccurs="1" name="methodId" type="s:unsignedInt" />
             </s:sequence>
          </s:complexType>
       </s:element>
       <s:element name="GetFilterDescriptorsForMethodResponse">
          <s:complexType>
             <s:sequence>
                <s:element minOccurs="0" maxOccurs="1"
name="GetFilterDescriptorsForMethodResult" type="tns:ArrayOfFilterDescriptorStruct" />
             </s:sequence>
          </s:complexType>
       </s:element>
          <s:complexType name="ArrayOfFilterDescriptorStruct">
             <s:sequence>
                <s:element minOccurs="0" maxOccurs="unbounded" name="FilterDescriptorStruct"
nillable="true" type="tns:FilterDescriptorStruct" />
             </s:sequence>
          </s:complexType>
          <s:complexType name="FilterDescriptorStruct">
             <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="typeName" type="s:string" />
                <s:element minOccurs="1" maxOccurs="1" name="methodId" type="s:unsignedInt" />
                <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:schema>
   </wsdl:types>
   <wsdl:message name="GetLobSystemInstancesSoapIn">
      <wsdl:part name="parameters" element="tns:GetLobSystemInstances" />
   </wsdl:message>
   <wsdl:message name="GetLobSystemInstancesSoapOut">
      <wsdl:part name="parameters" element="tns:GetLobSystemInstancesResponse" />
   </wsdl:message>
   <wsdl:message name="GetEntitiesForLobSystemInstanceSoapIn">
      <wsdl:part name="parameters" element="tns:GetEntitiesForLobSystemInstance" />
   </wsdl:message>
   <wsdl:message name="GetEntitiesForLobSystemInstanceSoapOut">
      <wsdl:part name="parameters" element="tns:GetEntitiesForLobSystemInstanceResponse" />
   </wsdl:message>
   <wsdl:message name="GetMethodInstancesForEntitySoapIn">
      <wsdl:part name="parameters" element="tns:GetMethodInstancesForEntity" />
   </wsdl:message>
   <wsdl:message name="GetMethodInstancesForEntitySoapOut">
      <wsdl:part name="parameters" element="tns:GetMethodInstancesForEntityResponse" />
   </wsdl:message>
   <wsdl:message name="GetMethodsForEntitySoapIn">
      <wsdl:part name="parameters" element="tns:GetMethodsForEntity" />
   </wsdl:message>
   <wsdl:message name="GetMethodsForEntitySoapOut">
      <wsdl:part name="parameters" element="tns:GetMethodsForEntityResponse" />
   </wsdl:message>
   <wsdl:message name="GetMethodForMethodInstanceSoapIn">
      <wsdl:part name="parameters" element="tns:GetMethodForMethodInstance" />
   </wsdl:message>
   <wsdl:message name="GetMethodForMethodInstanceSoapOut">
      <wsdl:part name="parameters" element="tns:GetMethodForMethodInstanceResponse" />
   </wsdl:message>
   <wsdl:message name="GetFilterDescriptorsForMethodSoapIn">
      <wsdl:part name="parameters" element="tns:GetFilterDescriptorsForMethod" />
   </wsdl:message>
   <wsdl:message name="GetFilterDescriptorsForMethodSoapOut">
      <wsdl:part name="parameters" element="tns:GetFilterDescriptorsForMethodResponse" />
   </wsdl:message>
   <wsdl:portType name="BdcWebServiceSoap">
      <wsdl:operation name="GetLobSystemInstances">
         <wsdl:input message="tns:GetLobSystemInstancesSoapIn" />
         <wsdl:output message="tns:GetLobSystemInstancesSoapOut" />
      </wsdl:operation>
      <wsdl:operation name="GetEntitiesForLobSystemInstance">
         <wsdl:input message="tns:GetEntitiesForLobSystemInstanceSoapIn" />
         <wsdl:output message="tns:GetEntitiesForLobSystemInstanceSoapOut" />
      </wsdl:operation>
      <wsdl:operation name="GetMethodInstancesForEntity">
         <wsdl:input message="tns:GetMethodInstancesForEntitySoapIn" />
         <wsdl:output message="tns:GetMethodInstancesForEntitySoapOut" />
      </wsdl:operation>
```

```
      <wsdl:operation name="GetMethodsForEntity">
         <wsdl:input message="tns:GetMethodsForEntitySoapIn" />
         <wsdl:output message="tns:GetMethodsForEntitySoapOut" />
      </wsdl:operation>
      <wsdl:operation name="GetMethodForMethodInstance">
         <wsdl:input message="tns:GetMethodForMethodInstanceSoapIn" />
         <wsdl:output message="tns:GetMethodForMethodInstanceSoapOut" />
      </wsdl:operation>
      <wsdl:operation name="GetFilterDescriptorsForMethod">
         <wsdl:input message="tns:GetFilterDescriptorsForMethodSoapIn" />
         <wsdl:output message="tns:GetFilterDescriptorsForMethodSoapOut" />
      </wsdl:operation>
   </wsdl:portType>
   <wsdl:binding name="BdcWebServiceSoap" type="tns:BdcWebServiceSoap">
      <soap:binding transport="http://schemas.xmlsoap.org/soap/http" />
      <wsdl:operation name="GetLobSystemInstances">
         <soap:operation
soapAction="http://schemas.microsoft.com/OfficeServer/BusinessDataCatalog/GetLobSystemInstanc
es" style="document" />
         <wsdl:input>
            <soap:body use="literal" />
         </wsdl:input>
         <wsdl:output>
            <soap:body use="literal" />
         </wsdl:output>
      </wsdl:operation>
      <wsdl:operation name="GetEntitiesForLobSystemInstance">
         <soap:operation
soapAction="http://schemas.microsoft.com/OfficeServer/BusinessDataCatalog/GetEntitiesForLobSy
stemInstance" style="document" />
         <wsdl:input>
            <soap:body use="literal" />
         </wsdl:input>
         <wsdl:output>
            <soap:body use="literal" />
         </wsdl:output>
      </wsdl:operation>
      <wsdl:operation name="GetMethodInstancesForEntity">
         <soap:operation
soapAction="http://schemas.microsoft.com/OfficeServer/BusinessDataCatalog/GetMethodInstancesF
orEntity" style="document" />
         <wsdl:input>
            <soap:body use="literal" />
         </wsdl:input>
         <wsdl:output>
            <soap:body use="literal" />
         </wsdl:output>
      </wsdl:operation>
      <wsdl:operation name="GetMethodsForEntity">
         <soap:operation
soapAction="http://schemas.microsoft.com/OfficeServer/BusinessDataCatalog/GetMethodsForEntity
" style="document" />
         <wsdl:input>
            <soap:body use="literal" />
         </wsdl:input>
         <wsdl:output>
            <soap:body use="literal" />
         </wsdl:output>
      </wsdl:operation>
      <wsdl:operation name="GetMethodForMethodInstance">
```

```
         <soap:operation
soapAction="http://schemas.microsoft.com/OfficeServer/BusinessDataCatalog/GetMethodForMethodI
nstance" style="document" />
         <wsdl:input>
            <soap:body use="literal" />
         </wsdl:input>
         <wsdl:output>
             <soap:body use="literal" />
         </wsdl:output>
      </wsdl:operation>
      <wsdl:operation name="GetFilterDescriptorsForMethod">
         <soap:operation
soapAction="http://schemas.microsoft.com/OfficeServer/BusinessDataCatalog/GetFilterDescriptor
sForMethod" style="document" />
         <wsdl:input>
            <soap:body use="literal" />
         </wsdl:input>
         <wsdl:output>
            <soap:body use="literal" />
         </wsdl:output>
      </wsdl:operation>
   </wsdl:binding>
   <wsdl:binding name="BdcWebServiceSoap12" type="tns:BdcWebServiceSoap">
      <soap12:binding transport="http://schemas.xmlsoap.org/soap/http" />
      <wsdl:operation name="GetLobSystemInstances">
         <soap12:operation
soapAction="http://schemas.microsoft.com/OfficeServer/BusinessDataCatalog/GetLobSystemInstanc
es" style="document" />
         <wsdl:input>
            <soap12:body use="literal" />
         </wsdl:input>
         <wsdl:output>
            <soap12:body use="literal" />
         </wsdl:output>
      </wsdl:operation>
      <wsdl:operation name="GetEntitiesForLobSystemInstance">
         <soap12:operation
soapAction="http://schemas.microsoft.com/OfficeServer/BusinessDataCatalog/GetEntitiesForLobSy
stemInstance" style="document" />
         <wsdl:input>
            <soap12:body use="literal" />
         </wsdl:input>
         <wsdl:output>
            <soap12:body use="literal" />
         </wsdl:output>
      </wsdl:operation>
      <wsdl:operation name="GetMethodInstancesForEntity">
         <soap12:operation
soapAction="http://schemas.microsoft.com/OfficeServer/BusinessDataCatalog/GetMethodInstancesF
orEntity" style="document" />
         <wsdl:input>
            <soap12:body use="literal" />
         </wsdl:input>
         <wsdl:output>
            <soap12:body use="literal" />
         </wsdl:output>
      </wsdl:operation>
      <wsdl:operation name="GetMethodsForEntity">
```

```
         <soap12:operation
soapAction="http://schemas.microsoft.com/OfficeServer/BusinessDataCatalog/GetMethodsForEntity
" style="document" />
         <wsdl:input>
            <soap12:body use="literal" />
         </wsdl:input>
         <wsdl:output>
            <soap12:body use="literal" />
         </wsdl:output>
      </wsdl:operation>
      <wsdl:operation name="GetMethodForMethodInstance">
         <soap12:operation
soapAction="http://schemas.microsoft.com/OfficeServer/BusinessDataCatalog/GetMethodForMethodI
nstance" style="document" />
         <wsdl:input>
            <soap12:body use="literal" />
         </wsdl:input>
         <wsdl:output>
            <soap12:body use="literal" />
         </wsdl:output>
      </wsdl:operation>
      <wsdl:operation name="GetFilterDescriptorsForMethod">
         <soap12:operation
soapAction="http://schemas.microsoft.com/OfficeServer/BusinessDataCatalog/GetFilterDescriptor
sForMethod" style="document" />
         <wsdl:input>
            <soap12:body use="literal" />
         </wsdl:input>
         <wsdl:output>
            <soap12:body use="literal" />
         </wsdl:output>
      </wsdl:operation>
   </wsdl:binding>
</wsdl:definitions>
```

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 15 Technical 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 .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 the [MS-BDCMP] protocol document between the June 2011 and January 2012 releases. Changes are classified as New, Major, Minor, Editorial, or No change.

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

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

- A document revision that incorporates changes to interoperability requirements or functionality.
- An extensive rewrite, addition, or deletion of major portions of content.
- The removal of a document from the documentation set.
- Changes made for template compliance.

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

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

The revision class **No change** means that no new technical or language changes were introduced. The technical content of the document is identical to the last released version, but minor editorial and formatting changes, as well as updates to the header and footer information, and to the revision summary, may have been made.

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

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

- Protocol syntax updated due to protocol revision.
- Protocol syntax removed due to protocol revision.
- New content added for template compliance.
- Content updated for template compliance.
- Content removed for template compliance.
- Obsolete document removed.

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

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

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

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

Section	Tracking number (if applicable) and description	Major change (Y or N)	Change type
1.4 Relationship to Other Protocols	Modified terminology by using informative instead of normative language.	N	Content updated for template compliance.
2 Messages	Clarified the description by replacing "restrictions" with the term "differences", which the WSDL might specify.	N	Content updated.
2.1 Transport	Added references to [SOAP1.1], [SOAP1.2/1], and [RFC2616].	N	Content updated.
2.2.2 Messages	Clarified the description by replacing "common XML Schema message definitions" with "common WSDL message definitions".	N	Content updated.
2.2.4.3 MethodStruct	Added maxOccurs values to the fragment.	N	Content updated.
2.2.4.3 MethodStruct	Updated the description by saying the entityId is the MetadataObjectId of the "'Entity' that the Method represented...".	N	Content updated.
2.2.9 Common Data Structures	Added the section and brief description.	N	New content added.

Section	Tracking number (if applicable) and description	Major change (Y or N)	Change type
3 Protocol Details	Clarified the description by replacing "restrictions" with the term "differences", which the WSDL might specify.	N	Content updated.
3.1.4.1.1 Messages	Added a table that summarizes the set of WSDL message definitions.	N	Content updated.
3.1.4.1.1.1 GetEntitiesForLobSystemInstanceSoapIn	Added the name of the requested operation.	N	Content updated.
3.1.4.1.1.2 GetEntitiesForLobSystemInstanceSoapOut	Added the name of the operation that sends a response.	N	Content updated.
3.1.4.1.2 Elements	Added a table that summarizes the XML schema element definitions.	N	Content updated.
3.1.4.1.2.2 GetEntitiesForLobSystemInstanceResponse	Added the name of the operation that sends a response.	N	Content updated.
3.1.4.1.3 Complex Types	Added a table that summarizes the XML schema complex type definitions.	N	Content updated.
3.1.4.2.1 Messages	Added a table that summarizes the set of WSDL message definitions.	N	Content updated.
3.1.4.2.2 Elements	Added a table that summarizes the XML schema element definitions.	N	Content updated.
3.1.4.2.3 Complex Types	Added a table that summarizes the XML schema complex type definitions.	N	Content updated.
3.1.4.2.3.2 FilterDescriptorStruct	Updated the comparator for the ComparisonFilter from '==' to "==".	N	Content updated.
3.1.4.3.1 Messages	Added a table that summarizes the set of WSDL message definitions.	N	Content updated.
3.1.4.3.2 Elements	Added a table that summarizes the XML schema element definitions.	N	Content updated.
3.1.4.3.3 Complex Types	Added a table that summarizes the XML schema complex type definitions.	N	Content updated.
3.1.4.3.3.1 ArrayOfLobSystemInstanceStruct	Clarified the description by adding a link to the type	N	Content updated.

Section	Tracking number (if applicable) and description	Major change (Y or N)	Change type
	associated with this complex type.		
3.1.4.4.1 Messages	Added a table that summarizes the set of WSDL message definitions.	N	Content updated.
3.1.4.4.2 Elements	Added a table that summarizes the XML schema element definitions.	N	Content updated.
3.1.4.5.1 Messages	Added a table that summarizes the set of WSDL message definitions.	N	Content updated.
3.1.4.5.2 Elements	Added a table that summarizes the XML schema element definitions.	N	Content updated.
3.1.4.5.3 Complex Types	Added a table that summarizes the XML schema complex type definitions.	N	Content updated.
3.1.4.5.3.1 ArrayOfMethodInstanceStruct	Clarified the description by adding a link to the type associated with this complex type.	N	Content updated.
3.1.4.5.4 Simple Types	Added a table that summarizes the XML schema simple type definitions.	N	Content updated.
3.1.4.5.4.1 MethodInstanceType	Clarified the sentence describing the table, by updating the description from "defines the allowable values" to "defines possible values".	N	Content updated.
3.1.4.6.1 Messages	Added a table that summarizes the set of WSDL message definitions.	N	Content updated.
3.1.4.6.2 Elements	Added a table that summarizes the XML schema element definitions.	N	Content updated.
3.1.4.6.3 Complex Types	Added a table that summarizes the XML schema complex type definitions.	N	Content updated.
3.1.4.6.3.1 ArrayOfMethodStruct	Clarified the description by adding a link to the type associated with this complex type.	N	Content updated.
4.1	Updated the section title to begin	N	Content

Section	Tracking number (if applicable) and description	Major change (Y or N)	Change type
Retrieve Methods Containing MethodInstances of Type Finder on a Entity	with "Retrieve" instead of "Retrieving".		updated.
4.1 Retrieve Methods Containing MethodInstances of Type Finder on a Entity	Added the name of the request that the client issues to get all the Entities contained by the LobSystem containing that LobSystemInstance.	N	Content updated.
4.1 Retrieve Methods Containing MethodInstances of Type Finder on a Entity	Updated the response to the GetEntitiesForLobSystemInstance request by adding the xmlns:soap, xmlns:xsi, xmlns:xsd, and xmlns information.	N	Content updated.
4.1 Retrieve Methods Containing MethodInstances of Type Finder on a Entity	Added the name of the request that the client issues with the MetadataObjectId of the Entity; also updated the associated fragment for this request and the response.	N	Content updated.
4.1 Retrieve Methods Containing MethodInstances of Type Finder on a Entity	Added the name of the request that the client issues for the Finder MethodInstance; also updated the associated fragment.	N	Content updated.
4.1 Retrieve Methods Containing MethodInstances of Type Finder on a Entity	Updated the fragment containing the list of methods that is based on the response to the GetMethodInstancesForEntity request.	N	Content updated.
4.2 Retrieve FilterDescriptors Contained by a Method That Contains a Particular MethodInstance	Updated the section title to begin with "Retrieve" instead of "Retrieving".	N	Content updated.
4.2 Retrieve FilterDescriptors Contained by a Method That Contains a Particular MethodInstance	Added the name of the request that the client issues with the known MetadataObjectId of a MethodInstance to get the Method containing the MethodInstance.	N	Content updated.
4.2 Retrieve FilterDescriptors Contained by a Method That Contains a Particular MethodInstance	Added the name of the request that is used with the Method MetadataObjectId, and updated the fragment associated with the request.	N	Content updated.
4.2 Retrieve FilterDescriptors Contained by a Method That Contains a Particular	Updated the fragment containing the list of FilterDescriptors.	N	Content updated.

Section	Tracking number (if applicable) and description	Major change (Y or N)	Change type
MethodInstance			
6 Appendix A: Full WSDL	Updated the introduction by including the schema as part of what is provided in the appendix.	N	Content updated.
6 Appendix A: Full WSDL	Updated the minOccurs from 1 to 0 for the MethodStruct complex type propertyNames, propertyTypes, and propertyValues values.	N	Content updated.
7 Appendix B: Product Behavior	Updated the list of applicable product versions.	N	Content updated.
7 Appendix B: Product Behavior	Updated the product list.	Y	Content updated.
7 Appendix B: Product Behavior	Added O15 Product ID.	Y	Content updated.

9 Index

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