[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
04/30/2010	2.02	Editorial	Revised and edited the technical content
06/07/2010	2.03	Editorial	Revised and edited the technical content
06/29/2010	2.04	Editorial	Changed language and formatting in the technical content.
07/23/2010	2.04	No change	No changes to the meaning, language, or formatting of the technical content.
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12/17/2010	2.04	No change	No changes to the meaning, language, or formatting of 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.

1.1 Glossary

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

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
site
SOAP action
SOAP body
SOAP fault
SpecificFinder
URL (Uniform Resource Locator)
ViewAccessor
WildcardFilter
WSDL (Web Services Description Language)
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

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.ietf.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

[RFC2818] Rescorla, E., "HTTP Over TLS", RFC 2818, May 2000, http://www.ietf.org/rfc/rfc2818.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] World Wide Web Consortium, "Namespaces in XML 1.0 (Third Edition)", W3C Recommendation 8 December 2009, http://www.w3.org/TR/REC-xml-names/

[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", March 2007.

[MS-OFCGLOS] Microsoft Corporation, "Microsoft Office Master Glossary", June 2008.

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

The Business Data Catalog Metadata Web Service Protocol uses the SOAP messaging protocol for formatting requests and responses as specified either in [SOAP1.1] or in [SOAP1.2/1] and [SOAP1.2/2]. It transmits these messages using the HTTP protocol as specified in [RFC2616] or the HTTPS protocol as specified in [RFC2818].

The following diagram shows the underlying messaging and transport stack that the protocol uses:

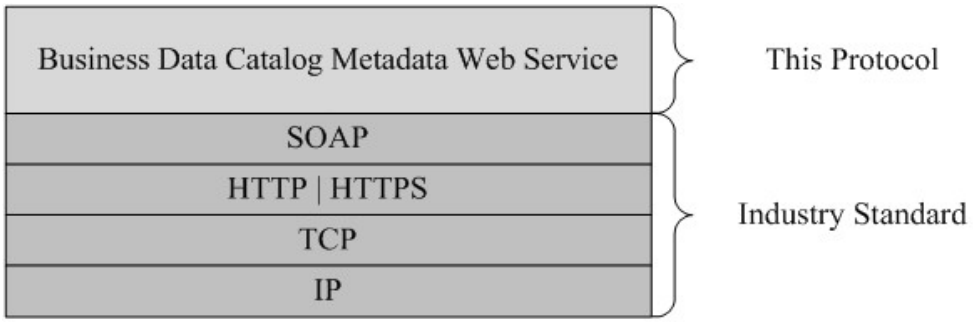

Figure 1: This protocol in relation to other protocols

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 Common Message Syntax and Message Processing Events and Sequences.

1.8 Vendor-Extensible Fields

None.

1.9 Standards Assignments

None.

2 Messages

In the following sections, the schema definition might be less restrictive than the processing rules imposed by the protocol. The **WSDL** in this specification matches the WSDL that shipped with the product and provides a base description of the schema. The text that introduces the WSDL specifies additional restrictions that reflect actual Microsoft product behavior. For example, the schema definition might allow for an element to be empty, null, or not present but the behavior of the protocol as specified restricts the same elements to being non-empty, 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 used by this protocol. The syntax of the definitions uses XML Schema, as specified in [XMLSCHEMA1] and [XMLSCHEMA2], and Web Services Description Language, 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 XML Schema 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.

```
<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.

```
<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.

```
<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"/>
    <s:element name="localizedNames" type="tns:ArrayOfString" minOccurs="0"/>
    <s:element name="propertyNames" type="tns:ArrayOfString" minOccurs="0"/>
    <s:element name="propertyTypes" type="tns:ArrayOfString" minOccurs="0"/>
    <s:element name="propertyValues" type="tns:ArrayOfString" minOccurs="0"/>
  </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 [1, 0x7fffffff] range.

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 then the Method is a static Method. If the value is FALSE then 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.

3 Protocol Details

In the following sections, the schema definition might be less restrictive than the processing rules imposed by the protocol. The WSDL in this specification matches the WSDL that shipped with the product and provides a base description of the schema. The text that introduces the WSDL specifies additional restrictions that reflect actual Microsoft product behavior. For example, the schema definition might allow for an element to be empty, null, or not present but the behavior of the protocol as specified restricts the same elements to being non-empty, 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], section 10, Status Code Definitions.

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

The server MUST follow these rules:

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

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

3.1.2 Timers

None.

3.1.3 Initialization

None.

3.1.4 Message Processing Events and Sequencing Rules

Operation	Description
GetEntitiesForLobSystemInstance	Retrieves the Entities contained by a 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.

```
<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:

- The caller of this operation MUST specify the MetadataObjectId of a LobSystemInstance.

- 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 **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:

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

The **SOAP body** contains a **GetEntitiesForLobSystemInstance** element. This element MUST contain the MetadataObjectId of a 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:

```
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 XML Schema element definitions are specific to this operation.

3.1.4.1.2.1 GetEntitiesForLobSystemInstance

This value of this element MUST be the input to GetEntitiesForLobSystemInstance operation.

```
<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 [1, 0x7fffffff] range.

3.1.4.1.2.2 GetEntitiesForLobSystemInstanceResponse

The value of this element MUST be the response from GetEntitiesForLobSystemInstance operation.

```
<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 XML Schema complex type definitions are specific to this operation.

3.1.4.1.3.1 ArrayOfEntityStruct

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

```
<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.

```
<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 [1, 0x7fffffff] range.

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.

```
<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:

- The caller of this operation MUST specify a Method MetadataObjectId.
- 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 WSDL message definitions are specific to this 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:

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

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

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:

```
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 XML Schema element definitions are specific to this operation.

3.1.4.2.2.1 GetFilterDescriptorsForMethod

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

```
<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 [1, 0x7fffffff] range.

3.1.4.2.2.2 GetFilterDescriptorsForMethodResponse

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

```
<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 XML Schema complex type definitions are specific to this operation.

3.1.4.2.3.1 ArrayOfFilterDescriptorStruct

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

```
<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.

```
<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 [1, 0x7fffffff] range.

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 '=='.

Value	Description
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**.
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 [1, 0x7fffffff] range.

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.

```
<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 WSDL message definitions are specific to this 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:

```
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:

```
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 XML Schema element definitions are specific to this operation.

3.1.4.3.2.1 GetLobSystemInstances

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

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

3.1.4.3.2.2 GetLobSystemInstancesResponse

This element MUST be the response from **GetLobSystemInstances** operation.

```
<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 XML Schema complex type definitions are specific to this operation.

3.1.4.3.3.1 ArrayOfLobSystemInstanceStruct

The **ArrayOfLobSystemInstanceStruct** complex type MUST be an array of elements with type LobSystemInstanceStruct.

```
<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 a LobSystemInstance. 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)<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.

```
<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="1"
maxOccurs="1"/>
    <s:element name="propertyTypes" type="tns:ArrayOfString" minOccurs="1"
maxOccurs="1"/>
    <s:element name="propertyValues" type="tns:ArrayOfString" minOccurs="1"
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 [1, 0x7fffffff] range.

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 [1, 0x7fffffff] range.

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.

```
<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:

- The caller of this operation MUST specify a MethodInstance MetadataObjectId and send it in.
- 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 WSDL message definitions are specific to this 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:

```
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:

```
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 XML Schema element definitions are specific to this operation.

3.1.4.4.2.1 GetMethodForMethodInstance

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

```
<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 [1, 0x7fffffff] range.

3.1.4.4.2.2 GetMethodForMethodInstanceResponse

This element contains the response from **GetMethodForMethodInstance** operation.

```
<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.

```
<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:

- The caller of this operation MUST specify an Entity MetadataObjectId.
- 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 WSDL message definitions are specific to this 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:

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

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

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:

```
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 XML Schema element definitions are specific to this operation.

3.1.4.5.2.1 GetMethodInstancesForEntity

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

```
<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 [1, 0x7fffffff] range.

3.1.4.5.2.2 GetMethodInstancesForEntityResponse

This element MUST contain the response from **GetMethodInstancesForEntity** operation.

```
<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 XML Schema complex type definitions are specific to this operation.

3.1.4.5.3.1 ArrayOfMethodInstanceStruct

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

```
<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.

```
<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 [1, 0x7fffffff] range.

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 [1, 0x7fffffff] range.

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 [1, 0x7fffffff] range.

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 XML Schema simple definitions are specific to this operation.

3.1.4.5.4.1 MethodInstanceType

The **MethodInstanceStruct** simple type MUST define a MethodInstance type.

```
<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 the allowable 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**.

Value	Description
Scalar	A MethodInstance type of **Scalar**.

3.1.4.6 GetMethodsForEntity

This operation is used to retrieve the Methods contained by a particular Entity.

```
<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:

- The caller of this operation MUST specify an Entity MetadataObjectId.
- 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 WSDL message definitions are specific to this 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:

```
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:

```
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 XML Schema element definitions are specific to this operation.

3.1.4.6.2.1 GetMethodsForEntity

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

```
<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 [1, 0x7fffffff] range.

3.1.4.6.2.2 GetMethodsForEntityResponse

This element MUST contain the response from **GetMethodsForEntityResponse** operation.

```
<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 XML Schema complex type definitions are specific to this operation.

3.1.4.6.3.1 ArrayOfMethodStruct

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

```
<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 Retrieving Methods Containing MethodInstances with a MethodInstance Type Finder on a Particular Entity

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

The following are the steps of this scenario:

- The client issues a GetEntitiesForLobSystemInstance request with the known MetadataObjectId of a LobSystemInstance to get all the Entities contained by the LobSystem containing that LobSystemInstance.

<?xml version="1.0" encoding="utf-8<soap:Envelope
xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"><soap:Body><GetEntitiesForLobSystemInstance
xmlns="http://schemas.microsoft.com/OfficeServer/BusinessDataCatalog/"><lobSystemInstanceId>190</lobSystemInstanceId></GetEntitiesForLobSystemInstance></soap:Body></soap:Envelope>

- 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>

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

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

3. The client issues a GetMethodInstancesForEntity request 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>

- 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>

1. 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.

2. The client issues a GetMethodForMethodInstance request for the Finder MethodInstance in the list found in step 4.

<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>

- 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 >= @MinProductKey) AND (ProductKey <= @MaxProductKey) AND (EnglishProductName LIKE @EnglishProductName) AND (EnglishDescription LIKE @EnglishDescription) AND (Status='Current')</string><string>Text</string></propertyValues></GetMethodForMethodInstanceResult></GetMethodForMethodInstanceResponse></soap:Body></soap:Envelope>

4.2 Retrieving FilterDescriptors Contained by a Method which Contains a Particular MethodInstance:

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

The following are the steps of this scenario:

- The client issues a GetMethodForMethodInstance request 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>

- 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><st

ring>SELECT * FROM DimProduct WHERE (ProductKey >= @MinProductKey) AND (ProductKey <= @MaxProductKey) AND (EnglishProductName LIKE @EnglishProductName) AND (EnglishDescription LIKE @EnglishDescription) AND (Status='Current')</string><string>Text</string></propertyValues></GetMethodForMethodInstanceResult></GetMethodForMethodInstanceResponse></soap:Body></soap:Envelope>

- The client issues a GetFilterDescriptorsForMethod request 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>

- 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</typeName><methodId>195</methodId><lcids><int>0</int><int>1033</int></lcids><localizedNames><string>name</string><string>key</string></localizedNames><propertyNames><string>UsedForDisambiguation</string><string>Comparator</string></propertyNames><propertyTypes><string>System.Boolean</string><string>System.String</string></propertyTypes><propertyValues><string>True</string><string>Equals</string></propertyValues></FilterDescriptorStruct>

<FilterDescriptorStruct><id>360</id><name>lastIdFilter</name><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</typeName><methodId>353</methodId><lcids><int>0</int><int>1033</int></lcids><localizedNames><string>name</string><string>compare</string></localizedNames><propertyNa

mes><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 is provided in the following code:

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

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

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

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  </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

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 could return the FilterDescriptors of the following type: 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 executed 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

No table of changes is available. The document is either new or has had no changes since its last release.

9 Index

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