

# [MS-ADS]: Access Services Data Server Protocol

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# 1 Introduction

The Access Services Data Server Protocol enables a protocol client to execute and monitor tasks on a server application.

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

## 1.1 Glossary

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

- absolute URL**
- alert**
- Augmented Backus-Naur Form (ABNF)**
- caption**
- content database**
- control button**
- data culture**
- data macro**
- data source**
- data type**
- endpoint**
- expression**
- fallback data culture**
- fallback UI culture**
- field**
- filter**
- GUID**
- Help topic identifier**
- host data language**
- Hypertext Transfer Protocol (HTTP)**
- Hypertext Transfer Protocol over Secure Sockets Layer (HTTPS)**
- license key**
- list**
- list item**
- primary key**
- result set**
- root element**
- row**
- session**
- session identifier**
- site**
- site identifier**
- SOAP**
- SOAP action**
- SOAP body**
- SOAP fault**
- SOAP fault detail**
- state changing**
- time zone**
- time zone bias**

**time zone daylight bias**  
**time zone daylight date**  
**time zone standard bias**  
**time zone standard date**  
**UI culture**  
**Uniform Resource Identifier (URI)**  
**user display name**  
**Web Services Description Language (WSDL)**  
**WSDL message**  
**WSDL operation**  
**XML**  
**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 defined 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](mailto:dochelp@microsoft.com). We will assist you in finding the relevant information.

[MS-ASWS] Microsoft Corporation, "[Access Services Protocol](#)".

[MS-AXL] Microsoft Corporation, "[Access Application Transfer Protocol Structure Specification](#)".

[MS-DSDIFFGRAM] Microsoft Corporation, "[SharePoint Web Services: DataSet DiffGram Structure](#)".

[MS-PWVPDP] Microsoft Corporation, "[PowerPoint Web Viewer Presentation Data Protocol](#)".

[MS-SPSTWS] Microsoft Corporation, "[SharePoint Security Token Service Web Service Protocol](#)".

[RFC1766] Alvestrand, H., "Tags for the Identification of Languages", RFC 1766, March 1995, <http://www.ietf.org/rfc/rfc1766.txt>

[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>

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[RFC3339] Klyne, G. and Newman, C., "Date and Time on the Internet: Timestamps", RFC 3339, July 2002, <http://www.ietf.org/rfc/rfc3339.txt>

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[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/>

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

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

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

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

[XMLSchemaInstance] W3C, "XML Schema Instance", 1999, <http://www.w3.org/1999/XMLSchema-instance>

## 1.2.2 Informative References

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

[MS-SPTWS] Microsoft Corporation, "[Service Platform Topology Web Service Protocol](#)".

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

[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>

## 1.3 Protocol Overview (Synopsis)

This protocol is used for managing data maintained by a protocol server, which provides access to a protocol client, which renders the data provided by the protocol server. The communication is always initiated by the protocol client using different operations, whose functionality is outlined in section [1.3.2](#). A typical scenario for this protocol is opening a **result set** and updating data.

### 1.3.1 Session-based Protocol

The protocol is **session** (2) based and uses a unique **session identifier** (2). This session identifier (2) is generated when a new session (2) is created and is used thereafter to refer to that particular session (2).

- Multiple sessions (2) can exist at the same time.

- Result sets are not shared across sessions (2).
- Sessions (2) can be created and closed independently.

### 1.3.2 Protocol Operations

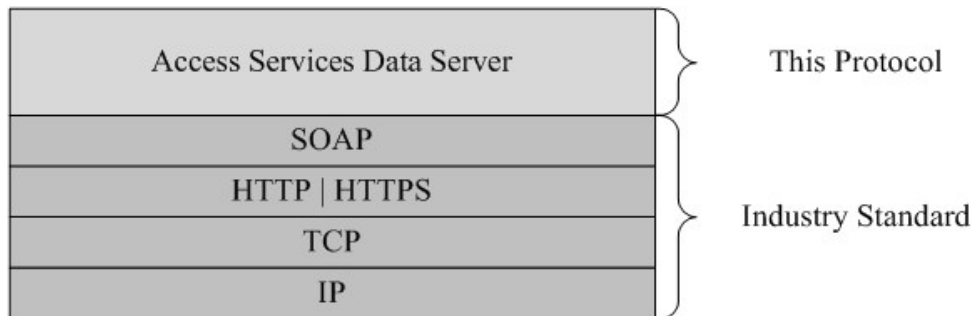
The protocol provides the following sets of functionality:

- Create, read, update and delete data.
- Get information about the protocol server.
- Trigger a data macro.
- Get information about a data macro.

### 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 protocol server that exposes one or more **endpoint (4) URIs** that are known by protocol clients. The endpoint (4) URI of the protocol server and the transport that is used by the protocol server are either known by the protocol client or obtained by using the discovery mechanism that is described in [\[MS-SPTWS\]](#).

The protocol client obtains the requisite ApplicationClassId and ApplicationVersion values and the endpoint (4) URI of the protocol server that provides the discovery mechanism, as described in [\[MS-SPTWS\]](#), by means that are independent of either protocol.

This protocol requires the protocol client to have permission to call the methods on the protocol server.

The protocol client implements the token-based security mechanisms that are required by the protocol server and related security protocols, as described in [\[MS-SPSTWS\]](#).

## 1.6 Applicability Statement

This protocol is applicable in the following scenarios:

1. Managing sessions (2) between protocol client and protocol server.
2. Creating, reading, updating, or deleting data on the protocol server.
3. Executing a **data macro** on the protocol server.
4. Monitoring the health of the protocol server.

## 1.7 Versioning and Capability Negotiation

This document covers versioning issues in the following areas:

- **Supported Transports:** This protocol can be implemented by using transports that support sending Simple Object Access Protocol (SOAP) messages, as described in section 2.1.
- **Protocol Versions:** This protocol is not versioned.

**Capability Negotiation:** This protocol does not support version negotiation.

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

### 2.1 Transport

Protocol servers **MUST** support SOAP over HTTP or HTTPS.

All protocol messages **MUST** be transported by using HTTP bindings at the transport level.

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

If the HTTPS transport is used, a server certificate **MUST** be deployed.

This protocol **MAY** transmit an additional SOAP header, the **ServiceContext** header, as specified in [\[MS-SPSTWS\]](#).

This protocol does not define any means for activating a protocol server or protocol client. The protocol server **MUST** be configured and begin listening in an implementation-specific way. In addition, the protocol client **MUST** know the format and transport that is used by the protocol server, for example, the SOAP format over an HTTP transport.

### 2.2 Common Message Syntax

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

#### 2.2.1 Namespaces

This specification defines and references various **XML namespaces** using the mechanisms specified in [\[XMLNS\]](#). Although this specification associates a specific **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
q1	<a href="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/">http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/</a>	
q3	<a href="http://microsoft.com/wsdl/types/">http://microsoft.com/wsdl/types/</a>	
soap	<a href="http://schemas.xmlsoap.org/wsdl/soap/">http://schemas.xmlsoap.org/wsdl/soap/</a>	<a href="#">[SOAP1.1]</a>
tns	<a href="http://schemas.datacontract.org/2004/07/Microsoft.Office.Access.Server">http://schemas.datacontract.org/2004/07/Microsoft.Office.Access.Server</a>	
tns1	<a href="http://schemas.microsoft.com/2003/10/Serialization/">http://schemas.microsoft.com/2003/10/Serialization/</a>	

Prefix	Namespace URI	Reference
tns2	http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/	
tns3	http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/Imports	
wsaw	http://www.w3.org/2006/05/addressing/wsdl	
wsdl	http://schemas.xmlsoap.org/wsdl/	<a href="#">[WSDL]</a>
xs	http://www.w3.org/2001/XMLSchema	<a href="#">[XMLSCHEM A1]</a> <a href="#">[XMLSCHEM A2]</a>

### 2.2.2 Messages

This specification does not define any common **WSDL message** definitions.

### 2.2.3 Elements

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

### 2.2.4 Complex Types

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

Complex type	Description
<b>AccessServerMessage</b>	The <b>AccessServerMessage</b> complex type is used to return <b>alert</b> (2) information to the protocol client.
<b>ArrayOfAnyType</b>	An array of <b>anyType</b> ( <a href="#">[MS-PWVPPD]</a> section 2.2.4.1) elements.
<b>ArrayOfKeyValuePair</b>	An array of <b>KeyValuePair</b> elements.
<b>CommandParameter</b>	The <b>CommandParameter</b> complex type is an input used by some protocol server operations.
<b>CommandResult</b>	The <b>CommandResult</b> complex type is an operation response message used by all protocol server operations.
<b>KeyValuePair</b>	The <b>KeyValuePair</b> complex type is used as a container for a key and its associated value.
<b>ServerHealthInformation</b>	The <b>ServerHealthInformation</b> complex type is used to return information about the health of the protocol server.
<b>ServerHealthInformation</b>	The <b>ServerHealthInformation</b> complex type is used to return information about the health of the protocol server.
<b>WorkOnBehalf</b>	MUST NOT be used.

## 2.2.4.1 AccessServerMessage

**Namespace:** <http://schemas.datacontract.org/2004/07/Microsoft.Office.Access.Server>

The **AccessServerMessage** complex type is used to return alert (2) information to the protocol client.

```
<xs:complexType name="AccessServerMessage" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element minOccurs="0" name="Buttons" type="tns:AccessServerMessageButtons"/>
    <xs:element minOccurs="0" name="Caption" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="Description" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="ErrorNumber" nillable="true" type="xs:int"/>
    <xs:element minOccurs="0" name="ExtendedDescription" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="HealthInformation" nillable="true"
type="tns:ServerHealthInformation"/>
    <xs:element minOccurs="0" name="HelpDisplayText" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="HelpTopicId" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="Id" type="tns:AccessServerMessageId"/>
    <xs:element minOccurs="0" name="Severity" type="tns:AccessServerMessageSeverity"/>
    <xs:element minOccurs="0" name="Type" type="tns:AccessServerMessageType"/>
  </xs:sequence>
</xs:complexType>
```

**Buttons:** The **control buttons** of the alert (2) as specified in **AccessServerMessageButtons** (section [2.2.5.1](#)). MUST be present.

**Caption:** A **caption** for the alert (2). MUST be present. MUST be in the language **UI culture** of the session (2).

**Description:** A text description of the alert (2). MUST be present. MUST NOT be empty. MUST be in the language UI culture of the session (2).

**ErrorNumber:** The error number returned by the data macro. See [\[MS-AXL\]](#) section 2.2.5.1.14.

**ExtendedDescription:** An extended description of the alert (2). MUST be present. MUST be in the language UI culture of the session (2).

**HealthInformation:** The health information of the protocol server as specified in **ServerHealthInformation** (section [2.2.4.7](#)). MUST be present.

**HelpDisplayText:** A description of the help topic MUST be present. MUST be in the language UI culture of the session (2).

**HelpTopicId:** The **Help topic identifier**.

**Id:** The identifier of the alert (2) as specified in **AccessServerMessageId** (section [2.2.5.2](#)). MUST be present.

**Severity:** The severity of the alert (2) as specified in **AccessServerMessageSeverity** (section [2.2.5.3](#)). MUST be present.

**Type:** The type of the alert (2) as specified in **AccessServerMessageType** (section [2.2.5.4](#)). MUST be present.



## 2.2.4.2 ArrayOfAnyType

### Namespace:

http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/

An array of **anyType** ([\[MS-PWVPDP\]](#) section 2.2.4.1) elements.

```
<xs:complexType name="ArrayOfAnyType" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="anyType" nillable="true"/>
  </xs:sequence>
</xs:complexType>
```

**anyType:** An **anyType** value.

## 2.2.4.3 ArrayOfKeyValuePair

### Namespace:

http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/

An array of **KeyValuePair** elements.

```
<xs:complexType name="ArrayOfKeyValuePair" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="KeyValuePair"
      type="tns2:KeyValuePair"/>
  </xs:sequence>
</xs:complexType>
```

**KeyValuePair:** A **KeyValuePair** as specified in section [2.2.4.6](#). Each **KeyValuePair** in the **ArrayOfKeyValuePair** element MUST have a unique value in its **Key** element.

## 2.2.4.4 CommandParameter

### Namespace:

http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/

The **CommandParameter** complex type is an input used by some protocol server operations.

The following applies to the **CommandParameter** complex type, unless extended or overridden by an operation specification:

```
<xs:complexType name="CommandParameter" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="1" name="WorkbookId" type="xs:string"/>
    <xs:element minOccurs="1" maxOccurs="1" name="StateId" type="xs:int"/>
    <xs:element minOccurs="0" maxOccurs="1" name="WorkOnBehalfRequest"
      type="q1:WorkOnBehalf"/>
    <xs:element minOccurs="0" maxOccurs="1" name="ProtocolClientId" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="UserFriendlyDisplayName" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="Zone" type="xs:string"/>
    <xs:element xmlns:q3="http://microsoft.com/wsdl/types/" minOccurs="1" maxOccurs="1"
      name="RequestSiteId" type="q3:guid"/>
    <xs:element xmlns:q3="http://microsoft.com/wsdl/types/" minOccurs="1" maxOccurs="1"
      name="CorrelationId" type="q3:guid"/>
  </xs:sequence>
</xs:complexType>
```

```

    <xs:element minOccurs="0" maxOccurs="1" name="RequestId" type="xs:string"/>
    <xs:element minOccurs="1" maxOccurs="1" name="CompleteResponseTimeout" type="xs:int"/>
    <xs:element minOccurs="1" maxOccurs="1" name="Flags" type="q1:CommandParameterFlags"/>
  </xs:sequence>
</xs:complexType>

```

**WorkbookId:** The session identifier (2) that is returned in the **sessionId** of the **OpenSessionResponse** element, as specified in section [3.1.4.11.2.2](#).

- If present, MUST NOT be empty and MUST be as specified in section [2.2.5.9](#).
- For all operations other than **OpenSession** (section [3.1.4.11](#)), MUST be present and MUST have a value that was obtained from a previous call to the **OpenSession** operation.

**StateId:** MUST be "-1".

**WorkOnBehalfRequest:** MUST NOT be present.

**ProtocolClientId:** MUST NOT be present.

**UserFriendlyDisplayName:** The **user display name**. MUST be present.

**Zone:** MUST be present. MUST be empty.

**RequestSiteId:** The **site identifier**. MUST be present.

**CorrelationId:** An identifier for the operation.

**RequestId:** MUST NOT be present.

**CompleteResponseTimeout:** MUST be zero ("0").

**Flags:** MUST be present. Value MUST be ignored.

#### 2.2.4.5 CommandResult

**Namespace:**

<http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/>

The **CommandResult** complex type is an operation response message used by all protocol server operations.

The following applies to the **CommandResult** complex type, unless extended or overridden by an operation specification:

```

<xs:complexType name="CommandResult" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="1" name="TransientEditSessionToken"
      type="xs:string"/>
    <xs:element minOccurs="1" maxOccurs="1" name="StateId" type="xs:int"/>
    <xs:element minOccurs="0" maxOccurs="1" name="SpreadsheetData" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="HealthInformation"
      type="q1:ServerHealthInformation"/>
    <xs:element minOccurs="1" maxOccurs="1" name="SecondsBeforeNextPoll" type="xs:int"/>
    <xs:element minOccurs="1" maxOccurs="1" name="EditSessionIsDirty" type="xs:boolean"/>
    <xs:element minOccurs="1" maxOccurs="1" name="EditSessionHasMultipleCollaborationUsers"
      type="xs:boolean"/>
  </xs:sequence>
</xs:complexType>

```

```
<xs:element minOccurs="0" maxOccurs="1" name="RequestId" type="xs:string"/>
</xs:sequence>
</xs:complexType>
```

**TransientEditSessionToken:** MUST NOT be used.

**StateId:** MUST be zero ("0").

**SpreadsheetData:** MUST NOT be used.

**HealthInformation:** The health information of the protocol server, as specified in section [2.2.4.8](#).

**SecondsBeforeNextPoll:** MUST be zero ("0").

**EditSessionIsDirty:** MUST be "false".

**EditSessionHasMultipleCollaborationUsers:** MUST be "false".

**RequestId:** MUST NOT be used.

### 2.2.4.6 KeyValuePair

**Namespace:**

<http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/>

The **KeyValuePair** complex type is used as a container for a key and its associated value.

```
<xs:complexType name="KeyValuePair" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="1" name="Key"/>
    <xs:element minOccurs="1" maxOccurs="1" name="Value" nillable="true"/>
  </xs:sequence>
</xs:complexType>
```

**Key:** Specifies a value that uniquely identifies the **KeyValuePair** within an **ArrayOfKeyValuePair** (section [2.2.4.3](#)). MUST be present. MUST be of type string ([\[XMLSCHEMA2\]](#) section 3.2.1) or int ([\[XMLSCHEMA2\]](#) section 3.3.17)

**Value:** Data associated with a given **Key**, which has any value as long as the document remains well formed, as specified in [\[XML\]](#) section 2. MUST be present. MUST be formatted in the **data culture** of the session (2).

### 2.2.4.7 ServerHealthInformation

**Namespace:** <http://schemas.datacontract.org/2004/07/Microsoft.Office.Access.Server>

The **ServerHealthInformation** complex type is used to return information about the health of the protocol server.

```
<xs:complexType name="ServerHealthInformation" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element minOccurs="0" name="HealthScore" type="xs:float"/>
    <xs:element minOccurs="0" name="StateFlags" type="tns:ServerStateFlags"/>
  </xs:sequence>
```

```
</xs:complexType>
```

**HealthScore:** An indication of the health of the protocol server. A float value that specifies the server performance health ranging between 0 and 100, wherein a score of 0 specifies excellent server health and a score of 100 specifies very poor server health. MUST be present.

**StateFlags:** The state of the protocol server. MUST be present. MUST contain zero or more values from **ServerStateFlags**, as specified in section [2.2.5.7](#).

#### 2.2.4.8 ServerHealthInformation

**Namespace:**

<http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/>

The **ServerHealthInformation** complex type is used to return information about the health of the protocol server.

```
<xs:complexType name="ServerHealthInformation" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element minOccurs="1" maxOccurs="1" name="StateFlags" type="q1:ServerStateFlags"/>
    <xs:element minOccurs="1" maxOccurs="1" name="HealthScore" type="xs:float"/>
  </xs:sequence>
</xs:complexType>
```

**StateFlags:** The state of the protocol server. MUST be present. MUST contain zero or more values from **ServerStateFlags**, as specified in section [2.2.5.8](#).

**HealthScore:** An indication of the health of the protocol server. A float value that specifies the server performance health ranging between 0 and 100, wherein a score of 0 specifies excellent server health and a score of 100 specifies very poor server health. MUST be present.

#### 2.2.4.9 WorkOnBehalf

**Namespace:**

<http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/>

MUST NOT be used.

```
<xs:complexType name="WorkOnBehalf" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="1" name="UserName" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="UserSid" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="UserToken" type="xs:base64Binary"/>
    <xs:element minOccurs="1" maxOccurs="1" name="UserTokenTtl" type="xs:int"/>
  </xs:sequence>
</xs:complexType>
```

**UserName:**

**UserSid:**

**UserToken:**

**UserTokenTtl:**

## 2.2.5 Simple Types

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

Simple type	Description
<b>AccessServerMessageButtons</b>	<b>AccessServerMessageButtons</b> specifies the control buttons associated with an alert (2) that the protocol server returns to the protocol client. The list MUST contain only the value "OK".
<b>AccessServerMessageId</b>	The <b>AccessServerMessageId</b> type is an enumeration of alerts (2) returned from the protocol server.
<b>AccessServerMessageSeverity</b>	<b>AccessServerMessageSeverity</b> specifies the severity of the alert (2) that the protocol server returns to the protocol client.
<b>AccessServerMessageType</b>	<b>AccessServerMessageType</b> specifies the type of the alert (2) that the protocol server returns to the protocol client.
<b>CommandParameterFlags</b>	MUST NOT be used.
<b>guid</b>	The <b>guid</b> type specifies a <b>GUID</b> value, as specified in <a href="#">[RFC4122]</a> .
<b>ServerStateFlags</b>	<b>ServerStateFlags</b> specifies the state of the protocol server.
<b>ServerStateFlags</b>	<b>ServerStateFlags</b> is an <b>enumeration</b> specifying the state of the protocol server.
<b>SessionIdentifier</b>	The <b>SessionIdentifier</b> string is used to uniquely identify a session (2) on the protocol server, and to contain information about the session (2).

### 2.2.5.1 AccessServerMessageButtons

**Namespace:** <http://schemas.datacontract.org/2004/07/Microsoft.Office.Access.Server>

**AccessServerMessageButtons** specifies the control buttons associated with an alert (2) that the protocol server returns to the protocol client. The list MUST contain only the value "OK".

```
<xs:simpleType name="AccessServerMessageButtons" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:list>
    <xs:simpleType>
      <xs:restriction base="xs:string">
        <xs:enumeration value="None"/>
        <xs:enumeration value="OK"/>
        <xs:enumeration value="Cancel"/>
        <xs:enumeration value="Yes"/>
        <xs:enumeration value="No"/>
      </xs:restriction>
    </xs:simpleType>
  </xs:list>
</xs:simpleType>
```

The following table specifies the allowable values for the **AccessServerMessageButtons** simple type.

Value	Meaning
None	MUST NOT be used.
OK	An OK control button.
Cancel	MUST NOT be used.
Yes	MUST NOT be used.
No	MUST NOT be used.

### 2.2.5.2 AccessServerMessageId

**Namespace:** <http://schemas.datacontract.org/2004/07/Microsoft.Office.Access.Server>

The **AccessServerMessageId** type is an enumeration of alerts (2) returned from the protocol server.

```
<xs:simpleType name="AccessServerMessageId" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:restriction base="xs:string">
    <xs:enumeration value="Blank"/>
    <xs:enumeration value="InternalError"/>
    <xs:enumeration value="ManagementUIInternalError"/>
    <xs:enumeration value="GetRecordsPermissionsFailure"/>
    <xs:enumeration value="WriteRecordsPermissionsFailure"/>
    <xs:enumeration value="EditValueListPermissionsFailure"/>
    <xs:enumeration value="NotMemberOfRole"/>
    <xs:enumeration value="MaxSessionsPerUserExceeded"/>
    <xs:enumeration value="SiteCollectionCpuQuotaExceeded"/>
    <xs:enumeration value="SessionMemoryQuotaExceeded"/>
    <xs:enumeration value="SiteCollectionMemoryQuotaExceeded"/>
    <xs:enumeration value="RetryError"/>
    <xs:enumeration value="MaxRequestDurationExceeded"/>
    <xs:enumeration value="ProductExpired"/>
    <xs:enumeration value="NewWorkbookSessionTimeout"/>
    <xs:enumeration value="DataException_DataOperationFailed"/>
    <xs:enumeration value="DataException_CacheOperationInvalid"/>
    <xs:enumeration value="DataException_ValidationFailed"/>
    <xs:enumeration value="DataException_MaxRecordsInTableExceeded"/>
    <xs:enumeration value="DataException_InvalidPageNumber"/>
    <xs:enumeration value="DataException_DataMacroNotFound"/>
    <xs:enumeration value="InvalidFilterExpression"/>
    <xs:enumeration value="InvalidAggregateExpression"/>
    <xs:enumeration value="InvalidArgument"/>
    <xs:enumeration value="NullArgument"/>
    <xs:enumeration value="WebServiceUpdateIdConflict"/>
    <xs:enumeration value="QueryException_AmbiguousValuesProvided"/>
    <xs:enumeration value="QueryException_InvalidCompiledQueryVersion"/>
    <xs:enumeration value="QueryException_InvalidSourceUsageWithoutJoin"/>
    <xs:enumeration value="QueryException_InvalidExpression"/>
    <xs:enumeration value="QueryException_InvalidLikeArgumentsExpression"/>
    <xs:enumeration value="QueryException_InvalidLikeFieldTypeInExpression"/>
    <xs:enumeration value="QueryException_InvalidInArgumentsExpression"/>
    <xs:enumeration value="QueryException_InvalidAxlEncoding"/>
    <xs:enumeration value="QueryException_InvalidOrderPropertyName"/>
    <xs:enumeration value="QueryException_InvalidOrderSourceName"/>
    <xs:enumeration value="QueryException_InvalidJoinLeftSourceName"/>
  </xs:restriction>
</xs:simpleType>
```

```
<xs:enumeration value="QueryException_InvalidJoinRightSourceName"/>
<xs:enumeration value="QueryException_InvalidJoinLeftPropertyName"/>
<xs:enumeration value="QueryException_InvalidJoinRightPropertyName"/>
<xs:enumeration value="QueryException_InvalidJoinType"/>
<xs:enumeration value="QueryException_InvalidJoinPropertyType"/>
<xs:enumeration value="QueryException_InvalidPropertyElement"/>
<xs:enumeration value="QueryException_InvalidResultPropertySource"/>
<xs:enumeration value="QueryException_InvalidResultPropertyName"/>
<xs:enumeration value="QueryException_InvalidResultPropertyAlias"/>
<xs:enumeration value="QueryException_InvalidResultExpression"/>
<xs:enumeration value="QueryException_DuplicateResultAliases"/>
<xs:enumeration value="QueryException_InvalidParameterName"/>
<xs:enumeration value="QueryException_InvalidParameterType"/>
<xs:enumeration value="QueryException_InvalidReferenceSourceName"/>
<xs:enumeration value="QueryException_InvalidReferenceSourceType"/>
<xs:enumeration value="QueryException_InvalidRestrictionExpression"/>
<xs:enumeration value="QueryException_InvalidReferenceInExpression"/>
<xs:enumeration value="QueryException_InvalidReferenceInExpression_OutsideOfQuery"/>
<xs:enumeration value="QueryException_AmbiguousReferenceInExpression"/>
<xs:enumeration value="QueryException_FailedFilterOperation"/>
<xs:enumeration value="QueryException_FailedFilterEvaluation_CalcLibGeneral"/>
<xs:enumeration value="QueryException_FailedFilterEvaluation_DivZero"/>
<xs:enumeration value="QueryException_FailedSortOrFilterOperation"/>
<xs:enumeration value="QueryException_QueryNotCompiled"/>
<xs:enumeration value="QueryException_InvalidCompiledQueryFormat"/>
<xs:enumeration value="QueryException_InvalidJoinUsage"/>
<xs:enumeration value="QueryException_InvalidExecutionState"/>
<xs:enumeration value="QueryException_FailedFetchListData"/>
<xs:enumeration value="QueryException_FailedCalculatedFieldEvaluation"/>
<xs:enumeration value="QueryException_RequiredParameterNotSupplied"/>
<xs:enumeration value="QueryException_InvalidListOrQueryReference"/>
<xs:enumeration value="QueryException_BulkUpdatesNotSupported"/>
<xs:enumeration value="QueryException_MissingKeyColumn"/>
<xs:enumeration value="QueryException_CannotSetKeyColumn"/>
<xs:enumeration value="QueryException_CannotUpdateNonUpdatableColumn"/>
<xs:enumeration value="QueryException_MultiTableUpdatesNotSupported"/>
<xs:enumeration value="QueryException_RequiredFieldNotSupplied"/>
<xs:enumeration value="QueryException_QueryCompiling"/>
<xs:enumeration value="QueryException_QueryCompilationFailure"/>
<xs:enumeration value="QueryException_InvalidCircularExpressionReference"/>
<xs:enumeration value="QueryException_LicenseExpired"/>
<xs:enumeration value="QueryException_ServerUpgraded"/>
<xs:enumeration value="QueryThrottleMaxSourcesExceeded"/>
<xs:enumeration value="QueryThrottleMaxOutputsExceeded"/>
<xs:enumeration value="QueryThrottleMaxRowsExceeded"/>
<xs:enumeration value="QueryThrottleMaxRowsPerSourceExceeded"/>
<xs:enumeration value="QueryThrottleMaxOutputCalculatedColumnsExceeded"/>
<xs:enumeration value="QueryThrottleMaxOrderByColumnsExceeded"/>
<xs:enumeration value="QueryThrottleOuterJoinsDisabled"/>
<xs:enumeration value="QueryThrottleRemotableQueriesDisabled"/>
<xs:enumeration value="OrderingException_InvalidSpecification"/>
<xs:enumeration value="OrderingException_InvalidColumnName"/>
<xs:enumeration value="InvalidMetroFile"/>
<xs:enumeration value="InvalidAccessVersion"/>
<xs:enumeration value="InvalidTemplateVersion"/>
<xs:enumeration value="TemplateNotWebCompatible"/>
<xs:enumeration value="TemplateMaxSizeExceeded"/>
<xs:enumeration value="UpdateConflict"/>
<xs:enumeration value="DeleteConflict"/>
```

```
<xs:enumeration value="FieldSchemaChange_UpdateConflict"/>
<xs:enumeration value="FieldSchemaChange_ListNotFoundInMSysASO"/>
<xs:enumeration value="FieldSchemaChange_CompilationFailed"/>
<xs:enumeration value="ObjectCompilation_ObjectCompilationFailed"/>
<xs:enumeration value="ObjectCompilation_ListNotFound"/>
<xs:enumeration value="MacroCompilationException_InvalidAx1"/>
<xs:enumeration value="MacroCompilationException_UnexpectedAx1Element"/>
<xs:enumeration value="MacroCompilationException_InvalidAction"/>
<xs:enumeration value="MacroCompilationException_InvalidEventName"/>
<xs:enumeration value="MacroCompilationException_RequiredArgumentMissing"/>
<xs:enumeration value="MacroCompilationException_ArgumentValueNotSpecified"/>
<xs:enumeration value="MacroCompilationException_InvalidActionArgument"/>
<xs:enumeration value="MacroCompilationException_InvalidActionArgumentCount"/>
<xs:enumeration value="MacroCompilationException_InvalidParameter"/>
<xs:enumeration value="MacroCompilationException_MacroParameterLimitExceeded"/>
<xs:enumeration value="MacroCompilationException_MacroActionsLimitExceeded"/>
<xs:enumeration value="MacroCompilationException_MacroCallStackDepthExceeded"/>
<xs:enumeration value="MacroCompilationException_MacroSaveFailed"/>
<xs:enumeration value="MacroCompilationException_MacroAssociationFailed"/>
<xs:enumeration value="MacroCompilationException_InvalidControlName"/>
<xs:enumeration value="MacroCompilationException_Recursion"/>
<xs:enumeration value="MacroExecutionException_FailedToEvaluateExpression"/>
<xs:enumeration value="MacroExecutionException_MissingParameterToDataMacro"/>
<xs:enumeration value="MacroExecutionError_InvalidParameterName"/>
<xs:enumeration value="MacroExecutionException_FailedToResolveExpression"/>
<xs:enumeration value="MacroExecutionException_WrongExpressionVariableFormat"/>
<xs:enumeration value="MacroExecutionException_VariableNotFound"/>
<xs:enumeration value="MacroExecutionException_NoDataContext"/>
<xs:enumeration value="MacroExecutionException_KnownExpressionEvaluationErrorCode"/>
<xs:enumeration value="MacroExecutionException_FailedToExecuteQuery"/>
<xs:enumeration value="MacroExecutionException_FailedMoveToNextItem"/>
<xs:enumeration value="MacroExecutionException_FailedToSetField"/>
<xs:enumeration value="MacroExecutionException_FailedToCancelRecordChange"/>
<xs:enumeration value="MacroExecutionException_FailedToDeleteRecord"/>
<xs:enumeration value="MacroExecutionException_ChangeConflict"/>
<xs:enumeration value="MacroExecutionException_FailedToSetLocalVar"/>
<xs:enumeration value="MacroExecutionException_FailedToSetReturnVar"/>
<xs:enumeration value="MacroExecutionException_TooManyReturnVars"/>
<xs:enumeration value="MacroExecutionException_ReturnVarTooLong"/>
<xs:enumeration value="MacroExecutionException_InvalidReturnVarName"/>
<xs:enumeration value="MacroExecutionException_FailedToSaveItem"/>
<xs:enumeration value="MacroExecutionException_FailedToFindItemWithID"/>
<xs:enumeration value="MacroExecutionException_FailedToAddItem"/>
<xs:enumeration value="MacroExecutionException_FailedToDeleteListItem"/>
<xs:enumeration value="MacroExecutionException_FailedToUpdateListItem"/>
<xs:enumeration value="MacroExecutionException_FailedToSetFieldToValue"/>
<xs:enumeration value="MacroExecutionException_CannotFindField"/>
<xs:enumeration value="MacroExecutionException_CannotResolveIdentifier"/>
<xs:enumeration value="MacroExecutionException_CannotFindVariableOrParam"/>
<xs:enumeration value="MacroExecutionException_CannotReferenceMVOOrAttachmentFields"/>
<xs:enumeration value="MacroExecutionException_ComplexFieldInUpdatedFunc"/>
<xs:enumeration value="MacroExecutionException_CannotFindItemWithAlias"/>
<xs:enumeration value="MacroExecutionException_CannotUpdateReadOnlyItem"/>
<xs:enumeration value="MacroExecutionException_FailedToConfigureSendEmail"/>
<xs:enumeration value="MacroExecutionException_OutboundEmailNotConfigured"/>
<xs:enumeration value="MacroExecutionException_FailedToEnumerateList"/>
<xs:enumeration value="MacroExecutionException_FailedToStartMacro"/>
<xs:enumeration value="MacroExecutionException_TypeMismatch"/>
<xs:enumeration value="MacroExecutionException_CannotStartEventMacro"/>
```



```

<xs:enumeration value="MacroExecutionException_FailedToStopMacro"/>
<xs:enumeration value="MacroExecutionException_FailedToStopAllMacros"/>
<xs:enumeration value="MacroExecutionException_ExecutionFailed"/>
<xs:enumeration value="MacroExecutionException_FailedToRaiseError"/>
<xs:enumeration value="MacroExecutionException_FailedToLogEvent"/>
<xs:enumeration value="MacroExecutionException_MacroRecursionLimitExceeded"/>
<xs:enumeration value="MacroExecutionException_MacroLimitExceeded"/>
<xs:enumeration value="MacroExecutionException_InvalidUpdatedFunction"/>
<xs:enumeration value="MacroExecutionException_IntegerExpressionExpected"/>
<xs:enumeration value="MacroExecutionException_FailedToStartEditRecord"/>
<xs:enumeration value="MacroExecutionException_FailedToExecuteEditRecord"/>
<xs:enumeration value="MacroExecutionException_OperationNotAllowedInEditRecordBlock"/>
<xs:enumeration value="MacroExecutionException_OperationMustBeInEditRecordBlock"/>
<xs:enumeration value="MacroExecutionException_InvalidOperationOnItem"/>
<xs:enumeration value="MacroExecutionException_InvalidObject"/>
<xs:enumeration value="MacroExecutionException_FieldCannotBeUpdated"/>
<xs:enumeration value="MacroExecutionError_FailedToSetOnErrorBehavior"/>
<xs:enumeration value="MacroExecutionException_InsertRecordFailed"/>
<xs:enumeration value="MacroExecutionException_CannotQueryIDInCreateRecord"/>
<xs:enumeration value="MacroExecutionException_InvalidEditInForEachRecord"/>
<xs:enumeration value="MacroExecutionException_InvalidCreateRecordInForEachRecord"/>
<xs:enumeration value="MacroExecutionException_InvalidCalcColumnReference"/>
<xs:enumeration value="MacroExecutionException_ListItemNotFound"/>
<xs:enumeration value="FormRenderFailure"/>
<xs:enumeration value="FormCompilationFailure"/>
<xs:enumeration value="SettingValidationFailed"/>
<xs:enumeration value="SettingApplicationNameNotFound"/>
<xs:enumeration value="SettingApplicationIdNotFound"/>
<xs:enumeration value="SettingApplicationProxyNameNotFound"/>
<xs:enumeration value="FailedToRetrieveAccessServiceApplication"/>
<xs:enumeration value="CompilationInProgress"/>
<xs:enumeration value="CompilationFailed"/>
</xs:restriction>
</xs:simpleType>

```

The following table specifies the allowable values for the **AccessServerMessageId** simple type.

Value	Meaning
Blank	MUST NOT be used.
InternalError	The protocol server has encountered an unexpected error.
ManagementUIInternalError	MUST NOT be used.
GetRecordsPermissionsFailure	The user does not have permissions to view the requested <b>list items</b> .
WriteRecordsPermissionsFailure	The user does not have permissions to create or edit the requested list items.
EditValueListPermissionsFailure	MUST NOT be used.
NotMemberOfRole	The user does not have sufficient rights to complete the operation.

Value	Meaning
MaxSessionsPerUserExceeded	The user has exceeded the maximum number of sessions (2) allowed by the protocol server.
SiteCollectionCpuQuotaExceeded	MUST NOT be used.
SessionMemoryQuotaExceeded	MUST NOT be used.
SiteCollectionMemoryQuotaExceeded	MUST NOT be used.
RetryError	The operation could not be finished at this time but the request might succeed if it is sent again by the protocol client.
MaxRequestDurationExceeded	The request failed because it took too long to process.
ProductExpired	The protocol server returns this error when the application <b>license key</b> is invalid.
NewWorkbookSessionTimeout	A session (2) has timed out. Default session timeout is 1800 seconds.
DataException_DataOperationFailed	A data change operation failed.
DataException_CacheOperationInvalid	MUST NOT be used.
DataException_ValidationFailed	Data validation failed.
DataException_MaxRecordsInTableExceeded	The specified <b>list</b> (1) exceeded the maximum number of list items allowed in a list (1) by the protocol server.
DataException_InvalidPageNumber	The specified page attribute for an <b>absolute URL</b> is invalid.
DataException_DataMacroNotFound	A data macro cannot be found.
InvalidFilterExpression	The provided filter expression is not valid.
InvalidAggregateExpression	The provided aggregate expression is invalid.
InvalidArgument	An argument provided to the operation is invalid.
NullArgument	MUST NOT be used.
WebServiceUpdateIdConflict	MUST NOT be used.
QueryException_AmbiguousValuesProvided	A query failed to execute because more than one value is provided for the same field.
QueryException_InvalidCompiledQueryVersion	MUST NOT be used.

Value	Meaning
QueryException_InvalidSourceUsageWithoutJoin	A query contains more than one <b>Reference</b> element that is not used in any <b>Join</b> elements.
QueryException_InvalidExpression	The value of an <b>Expression</b> element in a query is invalid.
QueryException_InvalidLikeArgumentsExpression	An argument used in a <b>LIKE</b> expression in a query is invalid.
QueryException_InvalidLikeFieldTypeInExpression	The <b>reference</b> field type used in a <b>LIKE</b> expression in a query is invalid.
QueryException_InvalidInArgumentsExpression	An argument used in an <b>IN</b> expression in a query is invalid.
QueryException_InvalidAxlEncoding	A query is not a valid <b>CT_Query</b> , as specified in <a href="#">[MS-AXL]</a> section 2.2.3.20.
QueryException_InvalidOrderPropertyName	The <b>Name</b> attribute value of an <b>Order</b> element in a query is invalid.
QueryException_InvalidOrderSourceName	The <b>Source</b> attribute value of an <b>Order</b> element in a query is invalid.
QueryException_InvalidJoinLeftSourceName	The <b>Left</b> attribute value of a <b>Join</b> element in a query is invalid.
QueryException_InvalidJoinRightSourceName	The <b>Right</b> attribute value of a <b>Join</b> element in a query is invalid.
QueryException_InvalidJoinLeftPropertyName	The <b>LeftProperty</b> attribute value of a <b>Join</b> element in a query is invalid.
QueryException_InvalidJoinRightPropertyName	The <b>RightProperty</b> attribute value of a <b>Join</b> element in a query is invalid.
QueryException_InvalidJoinType	The <b>Type</b> attribute value of a <b>Join</b> element in a query is invalid.
QueryException_InvalidJoinPropertyType	The field types of <b>LeftProperty</b> and <b>RightProperty</b> in a <b>Join</b> element cannot be joined together in a query.
QueryException_InvalidPropertyElement	A <b>Property</b> element in a query is invalid.
QueryException_InvalidResultPropertySource	The <b>Source</b> attribute value of a <b>Property</b> element in a <b>Results</b> element in a query is invalid.
QueryException_InvalidResultPropertyName	The <b>Name</b> attribute value of a <b>Property</b> element in a <b>Results</b> element in a query is invalid.
QueryException_InvalidResultPropertyAlias	The <b>Alias</b> attribute value of a <b>Property</b> element in a <b>Results</b> element in a query is invalid.

Value	Meaning
QueryException_InvalidResultExpression	The <b>Expression</b> element of a <b>Property</b> element in a <b>Results</b> element in a query is invalid.
QueryException_DuplicateResultAliases	An <b>Alias</b> attribute value is used in more than one <b>Property</b> elements in a query.
QueryException_InvalidParameterName	The <b>Name</b> attribute value of a <b>Parameter</b> element in a query is invalid.
QueryException_InvalidParameterType	The <b>Type</b> attribute value of a <b>Parameter</b> element in a query is invalid.
QueryException_InvalidReferenceSourceName	The <b>Source</b> attribute value of a <b>Reference</b> element in a query is invalid.
QueryException_InvalidReferenceSourceType	The <b>Type</b> attribute value of a <b>Reference</b> element in a query is invalid.
QueryException_InvalidRestrictionExpression	The value of a <b>Restriction</b> element in a query is invalid.
QueryException_InvalidReferenceInExpression	A reference used in an <b>Expression</b> element in a query is invalid.
QueryException_InvalidReferenceInExpression_OutsideOfQuery	A reference used in an <b>Expression</b> element in a query is invalid.
QueryException_AmbiguousReferenceInExpression	The source of a reference used in an <b>Expression</b> element in a query is ambiguous.
QueryException_FailedFilterOperation	Filter operation failed.
QueryException_FailedFilterEvaluation_CalcLibGeneral	Failed to filter result because of expression evaluation error.
QueryException_FailedFilterEvaluation_DivZero	Failed to filter result because of a divide by zero error.
QueryException_FailedSortOrFilterOperation	A sort or filter operation failed.
QueryException_QueryNotCompiled	A query is not compiled.
QueryException_InvalidCompiledQueryFormat	A compiled query format is invalid.
QueryException_InvalidJoinUsage	A <b>Join</b> element in a query is invalid.
QueryException_InvalidExecutionState	Query execution failed.
QueryException_FailedFetchListData	Failed to fetch a <b>data source</b> (1).
QueryException_FailedCalculatedFieldEvaluation	Failed to evaluate an <b>Expression</b> element of a <b>Property</b> element in a

Value	Meaning
	query.
QueryException_RequiredParameterNotSupplied	A required parameter is not supplied.
QueryException_InvalidListOrQueryReference	The <b>Source</b> attribute value of a <b>Reference</b> element in a query is not in the <b>content database</b> .
QueryException_BulkUpdatesNotSupported	MUST NOT be used.
QueryException_MissingKeyColumn	MUST NOT be used.
QueryException_CannotSetKeyColumn	The value of a <b>primary key</b> MUST NOT be updated through a query.
QueryException_CannotUpdateNonUpdatableColumn	A data update operation failed because one of the fields is not in an updatable list (1).
QueryException_MultiTableUpdatesNotSupported	A data update operation failed because more than one data source (1) is used.
QueryException_RequiredFieldNotSupplied	A query failed to execute because one of the required fields is not supplied.
QueryException_QueryCompiling	A query failed to execute because it is not compiled.
QueryException_QueryCompilationFailure	A query failed to execute because its compilation failed.
QueryException_InvalidCircularExpressionReference	MUST NOT be used.
QueryException_LicenseExpired	The application license key is invalid.
QueryException_ServerUpgraded	A query failed to execute because its compiled format is no longer supported.
QueryThrottleMaxSourcesExceeded	MUST NOT be used.
QueryThrottleMaxOutputsExceeded	MUST NOT be used.
QueryThrottleMaxRowsExceeded	The query returned more <b>rows</b> (1) than is allowed by the protocol server.
QueryThrottleMaxRowsPerSourceExceeded	MUST NOT be used.
QueryThrottleMaxOutputCalculatedColumnsExceeded	MUST NOT be used.
QueryThrottleMaxOrderByColumnsExceeded	MUST NOT be used.
QueryThrottleOuterJoinsDisabled	MUST NOT be used.
QueryThrottleRemotableQueriesDisabled	MUST NOT be used.
OrderingException_InvalidSpecification	The provided sort expression is invalid.

<b>Value</b>	<b>Meaning</b>
OrderingException_InvalidColumnName	The provided sort expression references an invalid column name.
InvalidMetroFile	MUST NOT be used.
InvalidAccessVersion	MUST NOT be used.
InvalidTemplateVersion	MUST NOT be used.
TemplateNotWebCompatible	MUST NOT be used.
TemplateMaxSizeExceeded	MUST NOT be used.
UpdateConflict	The attempt to update the list item failed because the list item was modified by another user.
DeleteConflict	The attempt to update the list item failed because the list item was deleted by another user.
FieldSchemaChange_UpdateConflict	MUST NOT be used.
FieldSchemaChange_ListNotFoundInMSysASO	MUST NOT be used.
FieldSchemaChange_CompilationFailed	MUST NOT be used.
ObjectCompilation_ObjectCompilationFailed	MUST NOT be used.
ObjectCompilation_ListNotFound	MUST NOT be used.
MacroCompilationException_InvalidAxl	MUST NOT be used.
MacroCompilationException_UnexpectedAxlElement	MUST NOT be used.
MacroCompilationException_InvalidAction	MUST NOT be used.
MacroCompilationException_InvalidEventName	MUST NOT be used.
MacroCompilationException_RequiredArgumentMissing	MUST NOT be used.
MacroCompilationException_ArgumentValueNotSpecified	MUST NOT be used.
MacroCompilationException_InvalidActionArgument	MUST NOT be used.
MacroCompilationException_InvalidActionArgumentCount	MUST NOT be used.
MacroCompilationException_InvalidParameter	MUST NOT be used.
MacroCompilationException_MacroParameterLimitExceeded	MUST NOT be used.
MacroCompilationException_MacroActionsLimitExceeded	MUST NOT be used.
MacroCompilationException_MacroCallStackDepthExceeded	MUST NOT be used.
MacroCompilationException_MacroSaveFailed	MUST NOT be used.
MacroCompilationException_MacroAssociationFailed	MUST NOT be used.

<b>Value</b>	<b>Meaning</b>
MacroCompilationException_InvalidControlName	MUST NOT be used.
MacroCompilationException_Recursion	MUST NOT be used.
MacroExecutionException_FailedToEvaluateExpression	MUST NOT be used.
MacroExecutionException_MissingParameterToDataMacro	MUST NOT be used.
MacroExecutionError_InvalidParameterName	MUST NOT be used.
MacroExecutionException_FailedToResolveExpression	MUST NOT be used.
MacroExecutionException_WrongExpressionVariableFormat	MUST NOT be used.
MacroExecutionException_VariableNotFound	MUST NOT be used.
MacroExecutionException_NoDataContext	MUST NOT be used.
MacroExecutionException_KnownExpressionEvaluationErrorCode	MUST NOT be used.
MacroExecutionException_FailedToExecuteQuery	MUST NOT be used.
MacroExecutionException_FailedMoveToNextItem	MUST NOT be used.
MacroExecutionException_FailedToSetField	MUST NOT be used.
MacroExecutionException_FailedToCancelRecordChange	MUST NOT be used.
MacroExecutionException_FailedToDeleteRecord	MUST NOT be used.
MacroExecutionException_ChangeConflict	MUST NOT be used.
MacroExecutionException_FailedToSetLocalVar	MUST NOT be used.
MacroExecutionException_FailedToSetReturnVar	MUST NOT be used.
MacroExecutionException_TooManyReturnVars	MUST NOT be used.
MacroExecutionException_ReturnVarTooLong	MUST NOT be used.
MacroExecutionException_InvalidReturnVarName	MUST NOT be used.
MacroExecutionException_FailedToSaveItem	MUST NOT be used.
MacroExecutionException_FailedToFindItemWithID	MUST NOT be used.
MacroExecutionException_FailedToAddItem	MUST NOT be used.
MacroExecutionException_FailedToDeleteListItem	MUST NOT be used.
MacroExecutionException_FailedToUpdateListItem	MUST NOT be used.
MacroExecutionException_FailedToSetFieldToValue	MUST NOT be used.
MacroExecutionException_CannotFindField	MUST NOT be used.
MacroExecutionException_CannotResolveIdentifier	MUST NOT be used.
MacroExecutionException_CannotFindVariableOrParam	MUST NOT be used.

<b>Value</b>	<b>Meaning</b>
MacroExecutionException_CannotReferenceMVOrAttachmentFields	MUST NOT be used.
MacroExecutionException_ComplexFieldInUpdatedFunc	MUST NOT be used.
MacroExecutionException_CannotFindItemWithAlias	MUST NOT be used.
MacroExecutionException_CannotUpdateReadOnlyItem	MUST NOT be used.
MacroExecutionException_FailedToConfigureSendEmail	MUST NOT be used.
MacroExecutionException_OutboundEmailNotConfigured	MUST NOT be used.
MacroExecutionException_FailedToEnumerateList	MUST NOT be used.
MacroExecutionException_FailedToStartMacro	MUST NOT be used.
MacroExecutionException_TypeMismatch	MUST NOT be used.
MacroExecutionException_CannotStartEventMacro	MUST NOT be used.
MacroExecutionException_FailedToStopMacro	MUST NOT be used.
MacroExecutionException_FailedToStopAllMacros	MUST NOT be used.
MacroExecutionException_ExecutionFailed	MUST NOT be used.
MacroExecutionException_FailedToRaiseError	MUST NOT be used.
MacroExecutionException_FailedToLogEvent	MUST NOT be used.
MacroExecutionException_MacroRecursionLimitExceeded	MUST NOT be used.
MacroExecutionException_MacroLimitExceeded	MUST NOT be used.
MacroExecutionException_InvalidUpdatedFunction	MUST NOT be used.
MacroExecutionException_IntegerExpressionExpected	MUST NOT be used.
MacroExecutionException_FailedToStartEditRecord	MUST NOT be used.
MacroExecutionException_FailedToExecuteEditRecord	MUST NOT be used.
MacroExecutionException_OperationNotAllowedInEditRecordBlock	MUST NOT be used.
MacroExecutionException_OperationMustBeInEditRecordBlock	MUST NOT be used.
MacroExecutionException_InvalidOperationOnItem	MUST NOT be used.
MacroExecutionException_InvalidObject	MUST NOT be used.
MacroExecutionException_FieldCannotBeUpdated	MUST NOT be used.
MacroExecutionError_FailedToSetOnErrorBehavior	MUST NOT be used.
MacroExecutionException_InsertRecordFailed	MUST NOT be used.
MacroExecutionException_CannotQueryIDInCreateRecord	MUST NOT be used.
MacroExecutionException_InvalidEditInForEachRecord	MUST NOT be used.



Value	Meaning
MacroExecutionException_InvalidCreateRecordInForEachRecord	MUST NOT be used.
MacroExecutionException_InvalidCalcColumnReference	MUST NOT be used.
MacroExecutionException_ListItemNotFound	MUST NOT be used.
FormRenderFailure	MUST NOT be used.
FormCompilationFailure	MUST NOT be used.
SettingValidationFailed	MUST NOT be used.
SettingApplicationNameNotFound	MUST NOT be used.
SettingApplicationIdNotFound	MUST NOT be used.
SettingApplicationProxyNameNotFound	MUST NOT be used.
FailedToRetrieveAccessServiceApplication	MUST NOT be used.
CompilationInProgress	Operation cannot be finished because the application is locked while it is being updated.
CompilationFailed	Operation cannot be finished because the application is in an invalid state.

### 2.2.5.3 AccessServerMessageSeverity

**Namespace:** <http://schemas.datacontract.org/2004/07/Microsoft.Office.Access.Server>

**AccessServerMessageSeverity** specifies the severity of the alert (2) that the protocol server returns to the protocol client.

```
<xs:simpleType name="AccessServerMessageSeverity"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:restriction base="xs:string">
    <xs:enumeration value="Error"/>
    <xs:enumeration value="Warning"/>
    <xs:enumeration value="Information"/>
    <xs:enumeration value="Progress"/>
    <xs:enumeration value="GettingStarted"/>
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the allowable values for the **AccessServerMessageSeverity** simple type.

Value	Meaning
Error	The alert (2) is of type error.
Warning	MUST NOT be used.
Information	The alert (2) is of type information.

Value	Meaning
Progress	MUST NOT be used.
GettingStarted	MUST NOT be used.

#### 2.2.5.4 AccessServerMessageType

**Namespace:** http://schemas.datacontract.org/2004/07/Microsoft.Office.Access.Server

**AccessServerMessageType** specifies the type of the alert (2) that the protocol server returns to the protocol client.

```
<xs:simpleType name="AccessServerMessageType" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:restriction base="xs:string">
    <xs:enumeration value="Alert"/>
    <xs:enumeration value="Status"/>
    <xs:enumeration value="Confirmation"/>
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the allowable values for the **AccessServerMessageType** simple type.

Value	Meaning
Alert	The alert (2) is of type alert.
Status	The alert (2) is of type status.
Confirmation	MUST NOT be used.

#### 2.2.5.5 CommandParameterFlags

**Namespace:**

http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/

MUST NOT be used.

```
<xs:simpleType name="CommandParameterFlags" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:list>
    <xs:simpleType>
      <xs:restriction base="xs:string">
        <xs:enumeration value="ForceOneTimeRecalc"/>
        <xs:enumeration value="SuppressOneTimeRecalc"/>
      </xs:restriction>
    </xs:simpleType>
  </xs:list>
</xs:simpleType>
```

The following table specifies the allowable values for the **CommandParameterFlags** simple type.

Value	Meaning
ForceOneTimeRecalc	MUST NOT be used.

Value	Meaning
SuppressOneTimeRecalc	MUST NOT be used.

### 2.2.5.6 guid

**Namespace:** http://microsoft.com/wsdl/types/

The **guid** type specifies a GUID value, as specified in [RFC4122](#).

```
<xs:simpleType name="guid" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:restriction base="xs:string">
    <xs:pattern value="[0-9a-fA-F]{8}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{12}"/>
  </xs:restriction>
</xs:simpleType>
```

### 2.2.5.7 ServerStateFlags

**Namespace:** http://schemas.datacontract.org/2004/07/Microsoft.Office.Access.Server

**ServerStateFlags** specifies the state of the protocol server.

```
<xs:simpleType name="ServerStateFlags" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:list>
    <xs:simpleType>
      <xs:restriction base="xs:string">
        <xs:enumeration value="None"/>
        <xs:enumeration value="Probation"/>
        <xs:enumeration value="ShuttingDown"/>
      </xs:restriction>
    </xs:simpleType>
  </xs:list>
</xs:simpleType>
```

The following table specifies the allowable values for the **ServerStateFlags** simple type.

Value	Meaning
None	No state is set.
Probation	MUST NOT be used.
ShuttingDown	The protocol server is shutting down.

### 2.2.5.8 ServerStateFlags

**Namespace:**

http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/

**ServerStateFlags** is an **enumeration** specifying the state of the protocol server.

```
<xs:simpleType name="ServerStateFlags" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:list>
```

```

<xs:simpleType>
  <xs:restriction base="xs:string">
    <xs:enumeration value="ShuttingDown"/>
  </xs:restriction>
</xs:simpleType>
</xs:list>
</xs:simpleType>

```

The following table specifies the allowable values for the **ServerStateFlags** simple type.

Value	Meaning
ShuttingDown	The protocol server is shutting down.

### 2.2.5.9 SessionIdentifier

**Namespace:**

http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/

The **SessionIdentifier** string is used to uniquely identify a session (2) on the protocol server, and to contain information about the session (2).

The **SessionIdentifier** MUST have the following layout:

(Numeric values in parts 1, 3, 5, 6, 8, 10, 12, and 14 MUST follow the integer type representation, as specified in [\[XMLSCHEMA2\]](#) section 3.3.13.)

**Part 1:** MUST be the value "1", followed by a period (".").

**Part 2:** MUST be "V".

**Part 3:** The number of characters in part 4, followed by a period (".").

**Part 4:** A unique string. MUST be greater than or equal to 20 and less than or equal to 32647 characters long.

**Part 5:** The sum of the number of characters in parts 6-11, followed by a period (".").

**Part 6:** The number of characters in part 7, followed by a period (".").

**Part 7:** The UI culture of the session (2). A language tag, as specified in [\[RFC1766\]](#) Section 2.

**Part 8:** The number of characters in part 9, followed by a period (".").

**Part 9:** The data culture of the session (2). A language tag, as specified in [\[RFC1766\]](#) Section 2.

**Part 10:** The number of characters in part 11, followed by a period (".").

**Part 11:** The **time zone** of the session (2), as specified in **CultureCommandParameter** complex type (section [3.1.4.11.3.1](#)).

**Part 12:** The number of characters in part 13, followed by a period (".").

**Part 13:** MUST be set to an empty GUID.

**Part 14:** MUST be the value "1", followed by a period (".").

**Part 15:** MUST be "U".

```
<xs:simpleType name="SessionIdentifier" xmlns:xs="http://www.w3.org/2001/XMLSchema">  
  <xs:restriction base="xs:string"/>  
</xs:simpleType>
```

## 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 Faults

In the event of an application error, the protocol server returns a SOAP fault as a response to the operation, as specified in [\[SOAP1.1\]](#), section 4.4 or [\[SOAP1.2/1\]](#) section 5.4.

- The protocol client MUST ignore all elements of the SOAP fault, except for the **SOAP fault detail** element.
- The SOAP fault detail element MUST contain the protocol server alert specified in section [2.2.4.1](#).

### 2.2.9.1 Common Fault Identifiers

The following table is the list of fault identifiers specified in section [2.2.5.2](#) returned by operations specified in section [3.1.4](#).

Identifier
NotMemberOfRole
MaxSessionsPerUserExceeded
SiteCollectionCpuQuotaExceeded
SessionMemoryQuotaExceeded
SiteCollectionMemoryQuotaExceeded
RetryError
MaxRequestDurationExceeded
ProductExpired
NewWorkbookSessionTimeout
InvalidArgument
InternalError

## 2.2.9.2 Query Fault Identifiers

The following table is the list of fault identifiers specified in section [2.2.5.2](#) returned by operations specified in section [3.1.4.4](#) and section [3.1.4.10](#).

Identifier
<b>QueryException_AmbiguousValuesProvided</b>
<b>QueryException_InvalidCompiledQueryVersion</b>
<b>QueryException_InvalidSourceUsageWithoutJoin</b>
<b>QueryException_InvalidExpression</b>
<b>QueryException_InvalidLikeArgumentsExpression</b>
<b>QueryException_InvalidLikeFieldTypeInExpression</b>
<b>QueryException_InvalidInArgumentsExpression</b>
<b>QueryException_InvalidAxlEncoding</b>
<b>QueryException_InvalidOrderPropertyName</b>
<b>QueryException_InvalidOrderSourceName</b>
<b>QueryException_InvalidJoinLeftSourceName</b>
<b>QueryException_InvalidJoinRightSourceName</b>
<b>QueryException_InvalidJoinLeftPropertyName</b>
<b>QueryException_InvalidJoinRightPropertyName</b>
<b>QueryException_InvalidJoinType</b>
<b>QueryException_InvalidJoinPropertyType</b>
<b>QueryException_InvalidPropertyElement</b>
<b>QueryException_InvalidResultPropertySource</b>
<b>QueryException_InvalidResultPropertyName</b>
<b>QueryException_InvalidResultPropertyAlias</b>
<b>QueryException_InvalidResultExpression</b>
<b>QueryException_DuplicateResultAliases</b>
<b>QueryException_InvalidParameterName</b>
<b>QueryException_InvalidParameterType</b>
<b>QueryException_InvalidReferenceSourceName</b>
<b>QueryException_InvalidReferenceSourceType</b>
<b>QueryException_InvalidRestrictionExpression</b>

Identifier
<b>QueryException_InvalidReferenceInExpression</b>
<b>QueryException_InvalidReferenceInExpression_OutsideOfQuery</b>
<b>QueryException_AmbiguousReferenceInExpression</b>
<b>QueryException_FailedFilterOperation</b>
<b>QueryException_FailedFilterEvaluation_CalcLibGeneral</b>
<b>QueryException_FailedFilterEvaluation_DivZero</b>
<b>QueryException_FailedSortOrFilterOperation</b>
<b>QueryException_QueryNotCompiled</b>
<b>QueryException_InvalidCompiledQueryFormat</b>
<b>QueryException_InvalidJoinUsage</b>
<b>QueryException_InvalidExecutionState</b>
<b>QueryException_FailedFetchListData</b>
<b>QueryException_FailedCalculatedFieldEvaluation</b>
<b>QueryException_RequiredParameterNotSupplied</b>
<b>QueryException_InvalidListOrQueryReference</b>
<b>QueryException_BulkUpdatesNotSupported</b>
<b>QueryException_MissingKeyColumn</b>
<b>QueryException_CannotSetKeyColumn</b>
<b>QueryException_CannotUpdateNonUpdatableColumn</b>
<b>QueryException_MultiTableUpdatesNotSupported</b>
<b>QueryException_RequiredFieldNotSupplied</b>
<b>QueryException_QueryCompiling</b>
<b>QueryException_QueryCompilationFailure</b>
<b>QueryException_ServerUpgraded</b>
<b>QueryThrottleMaxSourcesExceeded</b>
<b>QueryThrottleMaxOutputsExceeded</b>
<b>QueryThrottleMaxRowsExceeded</b>
<b>QueryThrottleMaxRowsPerSourceExceeded</b>
<b>QueryThrottleMaxOutputCalculatedColumnsExceeded</b>
<b>QueryThrottleMaxOrderByColumnsExceeded</b>

Identifier
<b>QueryThrottleOuterJoinsDisabled</b>
<b>QueryThrottleRemotableQueriesDisabled</b>



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

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

### 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.

**Session:** An entity that gives context to operations done against application data. A session (2) is associated with one or more result sets, which are modified by **state changing** operations.

**Request:** An entity that represents a running request on the protocol server.

**Ad Hoc Query:** A **CT\_Query** element, as specified in [\[MS-AXL\]](#) section 2.2.3.20. The attribute **Name** of the element MUST NOT be present.

**Named Query:** An entity stored in the content database representing a **CT\_Query** element, as specified in [\[MS-AXL\]](#) section 2.2.3.20. The attribute **Name** of the element MUST be specified.

**Source:** A list (1) or a named query in the content database. One or more sources MUST be referenced in a **CT\_Query** element.

**Data Source:** A source or an ad hoc query.

**Updatable List:** The list (1) in a data source against which insert, update, and delete data operations are applied. A source MUST contain zero or one such lists as follows:

- For a data source based on a single list (1), that list is the updatable list (1).
- For queries with more than one source, the sources in the query MUST be connected by joins. Each join is specified by a **CT\_Join** element, as specified in [\[MS-AXL\]](#) section 2.2.3.12. Call the source specified in the **Left** attribute  $S_L$ , the source specified in the **Right** attribute  $S_R$ , the property specified in the **LeftProperty** attribute  $P_L$ , the property specified in the **RightProperty** attribute  $P_R$ , and the join type specified in the **Type** attribute  $T$ .

If a graph is defined by considering each source as a node, and each **CT\_Join** as an edge between its sources  $S_L$  and  $S_R$ , the graph:

- MUST be connected and acyclic; that is, the graph MUST be a tree.

- MUST not have more than one edge between two given nodes.

For each **CT\_Join**,  $S_L$  is updatable in relation to  $S_R$  if all of the following conditions hold:

- T is "Inner" or "Left Outer."
- $P_R$  is a primary key field.
- $P_L$  is not a primary key field.

$S_R$  is updatable in relation to  $S_L$  if all of the following conditions hold:

- T is "Inner" or "Right Outer."
- $P_L$  is a primary key field.
- $P_R$  is not a primary key field.

Otherwise,  $S_R$  is not updatable in relation to  $S_L$  and  $S_L$  is not updatable in relation to  $S_R$ .

In a given query, the updatable source is the source that is updatable in relation to all of the sources that it is connected to in the graph. Because the graph is a tree, there is at most one of these updatable sources.

If the updatable source in a query is a list, that list is the updatable list for the query.

If the updatable source in a query ( $Q_1$ ) is another query ( $Q_2$ ), the updatable list is the updatable list for that query ( $Q_2$ ).

**Result Set:** A set of rows (1) that results from running a query specified by either a source or an ad hoc query. Rows (1) are visible if they satisfy the filter criteria. Rows (1) are hidden if they do not satisfy the filter criteria. If no filter criteria are specified, all rows (1) are visible. Only visible rows (1) are available for data operations.

A protocol client requests a subset of the rows (1) in a result set by specifying a starting index and a maximum row (1) count to return. The row (1) indices are consecutive integer values starting at zero and ending at one less than the total number visible rows (1).

Sort, filter, and aggregate data operations MUST remain applied for the lifetime of the result set (**NewWorkbookSessionTimeout**, section [3.1.5.1](#)), or until they are changed or cleared by another data operation.

**Data Macro:** A set of built-in activities that act upon list items, as specified in the **CT\_DataMacro** element specified in [\[MS-AXL\]](#) section 2.2.3.49. A protocol client triggers a data macro indirectly through **InsertData** (section [3.1.4.8](#)), **UpdateData** (section [3.1.4.14](#)), or **DeleteData** (section [3.1.4.2](#)), or explicitly by calling **RunDataMacro** (section [3.1.4.12](#)). The status of a data macro instance is obtained by calling **GetMacroState** (section [3.1.4.7](#)).

**Auto Resync:** The refresh behavior of the result set. If the **autoResync** input element passed to the **OpenResultSet** Operation (section [3.1.4.10.2.1](#)) is set to "true", the protocol server automatically refreshes the row (1) in the result set, by retrieving it from the original list (1), after any list item is inserted, updated, or deleted. In this case, the protocol server will modify the row (1) according to the current values in the original list (1).

Otherwise, the protocol server will simply insert, update or delete the row (1) in the result set according to the current session (2). The row (1) will not be refreshed with the current values from the original list (1).

## 3.1.2 Timers

### 3.1.2.1 Session Timeout

The **Session Timeout** timer measures the time it takes for a session (2) to time out. See section [3.1.5.1](#).

### 3.1.3 Initialization

None.

### 3.1.4 Message Processing Events and Sequencing Rules

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

Operation	Description
<b>CloseSession</b>	The <b>CloseSession</b> operation closes a session (2) on the protocol server.
<b>DeleteData</b>	This operation deletes a list item from a list (1) in the content database and also deletes the row (1) from the result set unless this behavior is overridden by the <b>autoResync</b> flag.
<b>FixupRow</b>	This operation returns the results of performing a hypothetical update on the result set.
<b>GetData</b>	This operation performs sort, filter, and synchronization operations on the rows (1) in a result set, and then returns a subset of those rows (1).
<b>GetDistinctValues</b>	This operation returns a single column from a result set with duplicate values removed.
<b>GetHealthScore</b>	This operation returns information about the health of the protocol server.
<b>GetMacroState</b>	This operation is used to get the state of a data macro instance.
<b>InsertData</b>	This operation inserts a list item into a list (1) in the content database and also inserts a row (1) into the result set.
<b>KeepAlive</b>	This operation extends the time a session (2) has remaining before it times out.
<b>OpenResultSet</b>	This operation opens a result set for the given <b>source</b> and returns a subset of rows (1) from the result set.
<b>OpenSession</b>	This operation creates a new session (2).
<b>RunDataMacro</b>	This operation triggers a data macro.
<b>UpdateCache</b>	This operation updates a row (1) in the result set.
<b>UpdateData</b>	This operation updates a list item in a list (1) in the content database and also updates the row (1) in the result set.

#### 3.1.4.1 CloseSession

The **CloseSession** operation closes a session (2) on the protocol server.

The following is the WSDL port type specification of the **CloseSession WSDL operation**.

```

<wsdl:operation name="CloseSession" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
  <wsdl:input
    wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/CloseSession"
    message="tns2:AccessServiceSoap_CloseSession_InputMessage"
    xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
  <wsdl:output
    wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/CloseSessionResponse"
    message="tns2:AccessServiceSoap_CloseSession_OutputMessage"
    xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
  <wsdl:fault
    wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/CloseSessionAccessServerMessageFault"
    name="AccessServerMessageFault"
    message="tns2:AccessServiceSoap_CloseSession_AccessServerMessageFault_FaultMessage"
    xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
</wsdl:operation>

```

The protocol client sends an **AccessServiceSoap\_CloseSession\_InputMessage** request message and the protocol server responds with an **AccessServiceSoap\_CloseSession\_OutputMessage** response message as follows:

- The protocol server closes the session (2) specified in the **WorkbookId** of the **CommandParameter**.
- In the event of an application error on the protocol server during this operation, a SOAP fault is returned, as specified in section [2.2.9](#). The **Id** element of the **AccessServerMessage** MUST be one of the values specified in section [2.2.9.1](#).

### 3.1.4.1.1 Messages

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

Message	Description
<b>AccessServiceSoap_CloseSession_InputMessage</b>	The request WSDL message for the <b>CloseSession</b> WSDL operation.
<b>AccessServiceSoap_CloseSession_OutputMessage</b>	The response WSDL message for the <b>CloseSession</b> WSDL operation.

#### 3.1.4.1.1.1 AccessServiceSoap\_CloseSession\_InputMessage

The request WSDL message for the **CloseSession** WSDL operation.

The **SOAP action** value is:

```

http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/CloseSession

```

The **SOAP body** contains the **CloseSession** element.

### 3.1.4.1.1.2 AccessServiceSoap\_CloseSession\_OutputMessage

The response WSDL message for the **CloseSession** WSDL operation.

The SOAP body contains the **CloseSessionResponse** element.

### 3.1.4.1.2 Elements

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

Element	Description
<b>CloseSession</b>	The input data for the <b>CloseSession</b> WSDL operation.
<b>CloseSessionResponse</b>	The result data for the <b>CloseSession</b> WSDL operation.

#### 3.1.4.1.2.1 CloseSession

The **CloseSession** element specifies the input data for the **CloseSession** WSDL operation.

```
<xs:element name="CloseSession" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType>
    <xs:sequence>
      <xs:element
        xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="parameter" type="q1:CommandParameter"/>
      <xs:element xmlns:q3="http://microsoft.com/wsdl/types/" minOccurs="1" maxOccurs="1"
        name="correlationId" type="q3:guid"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

**parameter:** A **CommandParameter**, as specified in section [2.2.4.4](#). MUST be present.

**correlationId:** An identifier for the operation.

#### 3.1.4.1.2.2 CloseSessionResponse

The **CloseSessionResponse** element specifies the result data for the **CloseSession** WSDL operation.

```
<xs:element name="CloseSessionResponse" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType>
    <xs:sequence>
      <xs:element
        xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="CloseSessionResult" type="q1:CommandResult"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

**CloseSessionResult:** A **CommandResult**, as specified in section [2.2.4.5](#). MUST be present.

### 3.1.4.1.3 Complex Types

None.

### 3.1.4.1.4 Simple Types

None.

### 3.1.4.1.5 Attributes

None.

### 3.1.4.1.6 Groups

None.

### 3.1.4.1.7 Attribute Groups

None.

### 3.1.4.2 DeleteData

This operation deletes a list item from a list (1) in the content database and also deletes the row (1) from the result set unless this behavior is overridden by the **autoResync** flag.

The following is the WSDL port type specification of the **DeleteData** WSDL operation.

```
<wsdl:operation name="DeleteData" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
  <wsdl:input
    wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/DeleteData"
    message="tns2:AccessServiceSoap_DeleteData_InputMessage"
    xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
  <wsdl:output
    wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/DeleteDataResponse"
    message="tns2:AccessServiceSoap_DeleteData_OutputMessage"
    xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
  <wsdl:fault
    wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/DeleteDataAccessServerMessageFault"
    name="AccessServerMessageFault"
    message="tns2:AccessServiceSoap_DeleteData_AccessServerMessageFault_FaultMessage"
    xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
</wsdl:operation>
```

The protocol client sends an **AccessServiceSoap\_DeleteData\_InputMessage** request message and the protocol server responds with an **AccessServiceSoap\_DeleteData\_OutputMessage** response message as follows:

- The protocol server deletes from the updatable list (1), as specified in section [3.1.1](#), the list item that has a primary key equal to the **Key** element of the first **KeyValuePair** in the **keys** element.
- If the result set was opened by an **OpenResultSet** operation with the **autoResync** element, as specified in section [3.1.4.10.2.1](#), set to "true", and the list item was successfully deleted, the protocol server deletes from the result set the row (1) with a primary key equal to the primary

key of the deleted list item. If **autoResync** was "false", the protocol server MUST NOT delete the row (1) from the result set, even though the list item was successfully deleted.

- In the event of an application error on the protocol server during this operation, a SOAP fault is returned, as specified in section [2.2.9](#). The **Id** element of the **AccessServerMessage** MUST be one of the values specified in section [2.2.9.1](#) or one of the values in the following table.

Identifier	Description
<b>WriteRecordsPermissionsFailure</b>	See section <a href="#">2.2.5.2</a> .
<b>DataException_ValidationFailed</b>	See section <a href="#">2.2.5.2</a> .
<b>DataException_DataOperationFailed</b>	See section <a href="#">2.2.5.2</a> .

### 3.1.4.2.1 Messages

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

Message	Description
<b>AccessServiceSoap_DeleteData_InputMessage</b>	The request WSDL message for the <b>DeleteData</b> WSDL operation.
<b>AccessServiceSoap_DeleteData_OutputMessage</b>	The response WSDL message for the <b>DeleteData</b> WSDL operation.

#### 3.1.4.2.1.1 AccessServiceSoap\_DeleteData\_InputMessage

The request WSDL message for the **DeleteData** WSDL operation.

The SOAP action value is:

```
http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/DeleteData
```

The SOAP body contains the **DeleteData** element.

#### 3.1.4.2.1.2 AccessServiceSoap\_DeleteData\_OutputMessage

The response WSDL message for the **DeleteData** WSDL operation.

The SOAP body contains the **DeleteDataResponse** element.

### 3.1.4.2.2 Elements

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

Element	Description
<b>DeleteData</b>	The input data for the <b>DeleteData</b> WSDL operation.

Element	Description
<b>DeleteDataResponse</b>	The result data for the <b>DeleteData</b> WSDL operation.

### 3.1.4.2.2.1 DeleteData

The **DeleteData** element specifies the input data for the **DeleteData** WSDL operation.

```
<xs:element name="DeleteData" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType>
    <xs:sequence>
      <xs:element
        xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="parameter" type="q1:CommandParameter"/>
      <xs:element minOccurs="0" maxOccurs="1" name="webUrl" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="moniker" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="listName" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="keys" type="tns2:ArrayOfKeyValuePair"/>
      <xs:element minOccurs="0" maxOccurs="1" name="oldValues"
        type="tns2:ArrayOfKeyValuePair"/>
      <xs:element xmlns:q3="http://microsoft.com/wsdl/types/" minOccurs="1" maxOccurs="1"
        name="correlationId" type="q3:guid"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

**parameter:** A **CommandParameter**, as specified in section [2.2.4.4](#). MUST be present.

**webUrl:** An absolute URL specifying the location of the **site** (2) containing the application. MUST be present.

**moniker:** The identifier for a result set. MUST be present. MUST contain an identifier that was previously supplied during the session (2) as the **moniker** element for the input to an **OpenResultSet** operation (section [3.1.4.10.2.1](#)).

**listName:** The data source (1) for the result set as specified for the **source** element for the input to an **OpenResultSet** operation (section [3.1.4.10.2.1](#)). MUST be present.

**keys:** Specifies the list item to delete.

- MUST be present, and MUST contain exactly one **KeyValuePair** (section [2.2.4.6](#)).
- The **Key** element of the **KeyValuePair** MUST be of type **xs:int** and MUST be a primary key for a row (1) in the result set.
- The **Value** element of the **KeyValuePair** MUST be ignored.

**oldValues:** MUST be present and MUST contain at least one **KeyValuePair** (section [2.2.4.6](#)).

**correlationId:** An identifier for the operation.

### 3.1.4.2.2.2 DeleteDataResponse

The **DeleteDataResponse** element specifies the result data for the **DeleteData** WSDL operation.

```
<xs:element name="DeleteDataResponse" xmlns:xs="http://www.w3.org/2001/XMLSchema">
```



```

<xs:complexType>
  <xs:sequence>
    <xs:element
      xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/"
      minOccurs="0" maxOccurs="1" name="DeleteDataResult" type="q1:CommandResult"/>
    <xs:element minOccurs="1" maxOccurs="1" name="recordsDeleted" type="xs:int"/>
    <xs:element minOccurs="0" maxOccurs="1" name="dataMacroId" type="xs:string"/>
  </xs:sequence>
</xs:complexType>
</xs:element>

```

**DeleteDataResult:** A **CommandResult**, as specified in section [2.2.4.5](#). MUST be present.

**recordsDeleted:** MUST be "1".

**dataMacroId:** If the operation triggers a data macro, the protocol server MUST return the identifier of the instance of the data macro in this element. Otherwise, this element MUST NOT be present.

### 3.1.4.2.3 Complex Types

None.

### 3.1.4.2.4 Simple Types

None.

### 3.1.4.2.5 Attributes

None.

### 3.1.4.2.6 Groups

None.

### 3.1.4.2.7 Attribute Groups

None.

### 3.1.4.3 FixupRow

This operation returns the results of performing a hypothetical update on the result set.

The following is the WSDL port type specification of the **FixupRow** WSDL operation.

```

<wsdl:operation name="FixupRow" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
  <wsdl:input
    wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/FixupRow"
    message="tns2:AccessServiceSoap_FixupRow_InputMessage"
    xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
  <wsdl:output
    wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/FixupRowResponse"
    message="tns2:AccessServiceSoap_FixupRow_OutputMessage"
    xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
  <wsdl:fault
    wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/FixupRowFault"
    message="tns2:AccessServiceSoap_FixupRow_Fault"
    xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
</wsdl:operation>

```

```

alService/AccessServiceSoap/FixupRowAccessServerMessageFault" name="AccessServerMessageFault"
message="tns2:AccessServiceSoap_FixupRow_AccessServerMessageFault_FaultMessage"
xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsd1"/>
</wsdl:operation>

```

The protocol client sends an **AccessServiceSoap\_FixupRow\_InputMessage** request message and the protocol server responds with an **AccessServiceSoap\_FixupRow\_OutputMessage** response message as follows:

- The protocol server fetches a copy of a row (1) from the result set using the given **key**, and updates the columns specified in **values** in the copy. The result set is not modified. If the update succeeds, the protocol server returns the updated values of all columns in the row.
- In the event of an application error on the protocol server during this operation, a SOAP fault is returned, as specified in section [2.2.9](#). The **Id** element of the **AccessServerMessage** MUST be one of the common fault identifiers specified in section [2.2.9.1](#) or one of the query fault identifiers specified in section [2.2.9.2](#).

### 3.1.4.3.1 Messages

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

Message	Description
<b>AccessServiceSoap_FixupRow_InputMessage</b>	The request WSDL message for the <b>FixupRow</b> WSDL operation.
<b>AccessServiceSoap_FixupRow_OutputMessage</b>	The response WSDL message for the <b>FixupRow</b> WSDL operation.

#### 3.1.4.3.1.1 AccessServiceSoap\_FixupRow\_InputMessage

The request WSDL message for the **FixupRow** WSDL operation.

The SOAP action value is:

```

http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/FixupRow

```

The SOAP body contains the **FixupRow** element.

#### 3.1.4.3.1.2 AccessServiceSoap\_FixupRow\_OutputMessage

The response WSDL message for the **FixupRow** WSDL operation.

The SOAP body contains the **FixupRowResponse** element.

### 3.1.4.3.2 Elements

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

Element	Description
<b>FixupRow</b>	The input data for the <b>FixupRow</b> WSDL operation.
<b>FixupRowResponse</b>	The result data for the <b>FixupRow</b> WSDL operation.

### 3.1.4.3.2.1 FixupRow

The **FixupRow** element specifies the input data for the **FixupRow** WSDL operation.

```
<xs:element name="FixupRow" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType>
    <xs:sequence>
      <xs:element
        xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="parameter" type="q1:CommandParameter"/>
      <xs:element minOccurs="0" maxOccurs="1" name="webUrl" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="moniker" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="keys" type="tns2:ArrayOfKeyValuePair"/>
      <xs:element minOccurs="0" maxOccurs="1" name="values" type="tns2:ArrayOfKeyValuePair"/>
      <xs:element xmlns:q3="http://microsoft.com/wsdl/types/" minOccurs="1" maxOccurs="1"
        name="correlationId" type="q3:guid"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

**parameter:** A **CommandParameter**, as specified in section [2.2.4.4](#). MUST be present.

**webUrl:** An absolute URL specifying the location of the site (2) containing the application. MUST be present.

**moniker:** The identifier for a result set. MUST contain an identifier that was previously supplied during the session (2) as the **moniker** element for the input to an **OpenResultSet** operation (section [3.1.4.10.2.1](#)).

**keys:** The row (1) to operate on.

- MUST be present, and MUST contain exactly one **KeyValuePair** (section [2.2.4.6](#)).

The **Key** element of the **KeyValuePair** MUST contain a primary key value for a row (1) in the result set.

**values:** An array of key and value pairs where each **Key** element specifies the name of a column in the result set, and the corresponding **Value** element contains the data for that column in the row.

- MUST be present.
- MUST contain at least one **KeyValuePair** (section [2.2.4.6](#)).
- For each **KeyValuePair**
  - The **Value** element MUST be the correct **data type** for the column in the result set.
  - The **Value** element MUST either be empty and with the **nil** ([\[XMLSchemaInstance\]](#)) attribute set to "true" or have the **type** ([\[XMLSchemaInstance\]](#)) attribute set to one of the following:
    - boolean ([\[XMLSCHEMA2\]](#) section 3.2.2)

- dateTime ([\[XMLSCHEMA2\]](#) section 3.2.7)
- double ([\[XMLSCHEMA2\]](#) section 3.2.5)
- string ([\[XMLSCHEMA2\]](#) section 3.2.1)
- int ([\[XMLSCHEMA2\]](#) section 3.3.17)

**correlationId:** An identifier for the operation.

### 3.1.4.3.2.2 FixupRowResponse

The **FixupRowResponse** element specifies the result data for the **FixupRow** WSDL operation.

```
<xs:element name="FixupRowResponse" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType>
    <xs:sequence>
      <xs:element
        xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="FixupRowResult" type="q1:CommandResult"/>
      <xs:element minOccurs="0" maxOccurs="1" name="tableXml" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="aggregateValues"
        type="tns2:ArrayOfAnyType"/>
      <xs:element minOccurs="1" maxOccurs="1" name="totalRowCount" type="xs:int"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

**FixupRowResult:** A **CommandResult**, as specified in section [2.2.4.5](#). MUST be present.

**tableXml:** **XML** containing the content of the returned row, as specified for the **tableXml** element of the **OpenResultSetResponse** element (section [3.1.4.10.2.2](#)).

**aggregateValues:** MUST NOT be present.

**totalRowCount:** MUST be "1".

### 3.1.4.3.3 Complex Types

None.

### 3.1.4.3.4 Simple Types

None.

### 3.1.4.3.5 Attributes

None.

### 3.1.4.3.6 Groups

None.

### 3.1.4.3.7 Attribute Groups

None.

### 3.1.4.4 GetData

This operation performs sort, filter, and synchronization operations on the rows (1) in a result set, and then returns a subset of those rows (1).

The following is the WSDL port type specification of the **GetData** WSDL operation.

```
<wsdl:operation name="GetData" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
  <wsdl:input
    wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/GetData" message="tns2:AccessServiceSoap_GetData_InputMessage"
    xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
  <wsdl:output
    wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/GetDataResponse"
    message="tns2:AccessServiceSoap_GetData_OutputMessage"
    xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
  <wsdl:fault
    wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/GetDataAccessServerMessageFault" name="AccessServerMessageFault"
    message="tns2:AccessServiceSoap_GetData_AccessServerMessageFault_FaultMessage"
    xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
</wsdl:operation>
```

The protocol client sends an **AccessServiceSoap\_GetData\_InputMessage** request message and the protocol server responds with an **AccessServiceSoap\_GetData\_OutputMessage** response message as follows:

- The protocol server first executes any actions specified by the **cacheCommands** element. Next the protocol server returns a subset of the visible rows (1) in the result set, as specified by the **startRowIndex** and **maximumRows** elements.
- The subset of rows (1) returned is specified by **startRowIndex** and **maximumRows** as follows:
  - If the **maximumRows** element is zero ("0"), the protocol server returns all visible rows (1) in the result set starting with zero, overriding the value specified in **startRowIndex**.
  - If the **maximumRows** element is greater than zero and **startRowIndex** + **maximumRows** exceeds the number of visible rows (1) in the result set, the protocol server returns all visible rows (1) in the result set with indices greater than or equal to **startRowIndex**.
  - Otherwise the protocol server returns all visible rows (1) in the result set with indices starting at **startRowIndex** and ending at **startRowIndex** + **maximumRows** - 1.
- In the event of an application error on the protocol server during this operation, a SOAP fault is returned, as specified in section 2.2.9. The **Id** element of the **AccessServerMessage** MUST be one of the values specified in section 2.2.9.1, one of the values specified in section 2.2.9.2, or one of the values in the following table.

Identifier	Description
<b>GetRecordsPermissionsFailure</b>	See section <a href="#">2.2.5.2</a> .
<b>OrderingException_InvalidSpecification</b>	See section <a href="#">2.2.5.2</a> .
<b>OrderingException_InvalidColumnName</b>	See section <a href="#">2.2.5.2</a> .
<b>InvalidFilterExpression</b>	See section <a href="#">2.2.5.2</a> .

### 3.1.4.4.1 Messages

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

Message	Description
<b>AccessServiceSoap_GetData_InputMessage</b>	The request WSDL message for the <b>GetData</b> WSDL operation.
<b>AccessServiceSoap_GetData_OutputMessage</b>	The response WSDL message for the <b>GetData</b> WSDL operation.

#### 3.1.4.4.1.1 AccessServiceSoap\_GetData\_InputMessage

The request WSDL message for the **GetData** WSDL operation.

The SOAP action value is:

```
http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/GetData
```

The SOAP body contains the **GetData** element.

#### 3.1.4.4.1.2 AccessServiceSoap\_GetData\_OutputMessage

The response WSDL message for the **GetData** WSDL operation.

The SOAP body contains the **GetDataResponse** element.

### 3.1.4.4.2 Elements

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

Element	Description
<b>GetData</b>	The input data for the <b>GetData</b> WSDL operation.
<b>GetDataResponse</b>	The result data for the <b>GetData</b> WSDL operation.

#### 3.1.4.4.2.1 GetData

The **GetData** element specifies the input data for the **GetData** WSDL operation.

```
<xs:element name="GetData" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType>
    <xs:sequence>
      <xs:element
        xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="parameter" type="q1:CommandParameter"/>
      <xs:element minOccurs="0" maxOccurs="1" name="webUrl" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="moniker" type="xs:string"/>
      <xs:element minOccurs="1" maxOccurs="1" name="startRowIndex" type="xs:int"/>
      <xs:element minOccurs="1" maxOccurs="1" name="maximumRows" type="xs:int"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

```

    <xs:element minOccurs="1" maxOccurs="1" name="cacheCommands"
type="tns2:CacheCommands"/>
    <xs:element minOccurs="0" maxOccurs="1" name="sortExpression" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="filter" type="xs:string"/>
    <xs:element xmlns:q3="http://microsoft.com/wsdl/types/" minOccurs="1" maxOccurs="1"
name="correlationId" type="q3:guid"/>
  </xs:sequence>
</xs:complexType>
</xs:element>

```

**parameter:** A **CommandParameter**, as specified in section [2.2.4.4](#). MUST be present.

**webUrl:** An absolute URL specifying the location of the site (2) containing the application. MUST be present.

**moniker:** The identifier for a result set. MUST be present. MUST contain an identifier that was previously supplied during the session (2) as the **moniker** element for the input to an **OpenResultSet** operation (section [3.1.4.10.2.1](#)).

**startRowIndex:** Specifies the index of the first visible row (1) to return from the result set.

- MUST be nonnegative.
- MUST be less than the number of visible rows (1) in the result set.

**maximumRows:** Specifies the maximum number of rows (1) to return.

- If **cacheCommands** contains "RefreshData", MUST be "1".
- If **cacheCommands** does not contain "RefreshData", MUST be nonnegative.

**cacheCommands:** A list of actions, as specified in section [3.1.4.4.4.1](#), to perform on the result set. If both "ApplyFilter" and "ClearFilter" are specified, the protocol server MUST return a SOAP fault, as specified in section [3.1.4.4](#).

**sortExpression:** Specifies the sort order to apply to the result set. If **cacheCommands** contains "ApplySort":

- MUST be present.
- MUST contain a **CT\_AdHocOrdering**, as specified in [\[MS-AXL\]](#) section 2.2.3.7.

The protocol server MUST ignore this element if **cacheCommands** does not contain "ApplySort".

**filter:** Specifies the **filter** criteria to apply to the result set. If present, MUST be an **expression**, as specified in [\[MS-AXL\]](#) section 2.5.2, and MUST only reference columns present in the result set.

The protocol server MUST ignore this element if **cacheCommands** does not contain "ApplyFilter".

**correlationId:** An identifier for the operation.

### 3.1.4.4.2.2 GetDataResponse

The **GetDataResponse** element specifies the result data for the **GetData** WSDL operation.

```

<xs:element name="GetDataResponse" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType>

```

```

<xs:sequence>
  <xs:element
    xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/"
    minOccurs="0" maxOccurs="1" name="GetDataResult" type="q1:CommandResult"/>
  <xs:element minOccurs="0" maxOccurs="1" name="tableXml" type="xs:string"/>
  <xs:element minOccurs="0" maxOccurs="1" name="aggregateValues"
    type="tns2:ArrayOfAnyType"/>
  <xs:element minOccurs="1" maxOccurs="1" name="totalRowCount" type="xs:int"/>
</xs:sequence>
</xs:complexType>
</xs:element>

```

**GetDataResult:** A **CommandResult**, as specified in section [2.2.4.5](#). MUST be present.

**tableXml:** XML containing the content of the returned rows (1), as specified for the **tableXml** element of the **OpenResultSetResponse** element (section [3.1.4.10.2.2](#)). MUST be present.

**aggregateValues:** An array of values containing the results of evaluating the expressions specified in the **aggregateExpressions** element (section [3.1.4.10.2.1](#)) used as an input to an **OpenResultSet** operation previously during the session (2).

- The index of each evaluated result in the **aggregateValues** array MUST match the index of the corresponding expression in the **aggregateExpressions** array.
- The aggregate values MUST result from evaluating the expression over all visible rows (1) in the result set.

**totalRowCount:** Specifies the number of rows (1) in the result set view.

### 3.1.4.4.3 Complex Types

None.

### 3.1.4.4.4 Simple Types

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

Simple type	Description
<b>CacheCommands</b>	The <b>CacheCommands</b> type is a list of <b>enumeration</b> values specifying operations to perform on the result set.

#### 3.1.4.4.4.1 CacheCommands

**Namespace:**

<http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/>

The **CacheCommands** type is a list of **enumeration** values specifying operations to perform on the result set. If multiple values are specified, all of the specified operations MUST be performed, except for combinations prohibited by the following table.

```

<xs:simpleType name="CacheCommands" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:list>
    <xs:simpleType>

```



```

<xs:restriction base="xs:string">
  <xs:enumeration value="RefreshData"/>
  <xs:enumeration value="ApplyFilter"/>
  <xs:enumeration value="ClearFilter"/>
  <xs:enumeration value="ApplySort"/>
</xs:restriction>
</xs:simpleType>
</xs:list>
</xs:simpleType>

```

The following table specifies the allowable values for the **CacheCommands** simple type.

Value	Meaning
RefreshData	Refresh the row (1) specified by the <b>startRowIndex</b> element from the data source (1) specified in the <b>source</b> element for the <b>OpenResultSet</b> operation (section <a href="#">3.1.4.10.2.1</a> ) that created the result set.
ApplyFilter	Filter the result set as specified in the <b>filter</b> element (section <a href="#">3.1.4.4.2.1</a> ). MUST NOT be present if "ClearFilter" is present.
ClearFilter	Remove any filtering applied to the result set. MUST NOT be present if "ApplyFilter" is present.
ApplySort	Sort the result set as specified by the <b>sortExpression</b> element (section <a href="#">3.1.4.4.2.1</a> ).

#### 3.1.4.4.5 Attributes

None.

#### 3.1.4.4.6 Groups

None.

#### 3.1.4.4.7 Attribute Groups

None.

#### 3.1.4.5 GetDistinctValues

This operation returns a single column from a result set with duplicate values removed.

The following is the WSDL port type specification of the **GetDistinctValues** WSDL operation.

```

<wsdl:operation name="GetDistinctValues" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
  <wsdl:input
    wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/GetDistinctValues"
    message="tns2:AccessServiceSoap_GetDistinctValues_InputMessage"
    xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
  <wsdl:output
    wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/GetDistinctValuesResponse"
    message="tns2:AccessServiceSoap_GetDistinctValues_OutputMessage"
    xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
  <wsdl:fault
    wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/GetDistinctValuesFault"
    message="tns2:AccessServiceSoap_GetDistinctValuesFault"
    xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
</wsdl:operation>

```

```

alService/AccessServiceSoap/GetDistinctValuesAccessServerMessageFault"
name="AccessServerMessageFault"
message="tns2:AccessServiceSoap_GetDistinctValues_AccessServerMessageFault_FaultMessage"
xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
</wsdl:operation>

```

The protocol client sends an **AccessServiceSoap\_GetDistinctValues\_InputMessage** request message and the protocol server responds with an **AccessServiceSoap\_GetDistinctValues\_OutputMessage** response message as follows:

- The protocol server returns a table consisting of a single column. Each row (1) of the table contains a distinct value from the column specified by **columnName** in the result set specified by **moniker**.
- In the event of an application error on the protocol server during this operation, a SOAP fault is returned, as specified in section [2.2.9](#). The **Id** element of the **AccessServerMessage** MUST be one of the values specified in section [2.2.9.1](#).

### 3.1.4.5.1 Messages

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

Message	Description
<b>AccessServiceSoap_GetDistinctValues_InputMessage</b>	The request WSDL message for the <b>GetDistinctValues</b> WSDL operation.
<b>AccessServiceSoap_GetDistinctValues_OutputMessage</b>	The response WSDL message for the <b>GetDistinctValues</b> WSDL operation.

#### 3.1.4.5.1.1 AccessServiceSoap\_GetDistinctValues\_InputMessage

The request WSDL message for the **GetDistinctValues** WSDL operation.

The SOAP action value is:

```

http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/GetDistinctValues

```

The SOAP body contains the **GetDistinctValues** element.

#### 3.1.4.5.1.2 AccessServiceSoap\_GetDistinctValues\_OutputMessage

The response WSDL message for the **GetDistinctValues** WSDL operation.

The SOAP body contains the **GetDistinctValuesResponse** element.

### 3.1.4.5.2 Elements

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

Element	Description
<b>GetDistinctValues</b>	The input data for the <b>GetDistinctValues</b> WSDL operation.
<b>GetDistinctValuesResponse</b>	The result data for the <b>GetDistinctValues</b> WSDL operation.

### 3.1.4.5.2.1 GetDistinctValues

The **GetDistinctValues** element specifies the input data for the **GetDistinctValues** WSDL operation.

```
<xs:element name="GetDistinctValues" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType>
    <xs:sequence>
      <xs:element
        xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="parameter" type="q1:CommandParameter"/>
      <xs:element minOccurs="0" maxOccurs="1" name="moniker" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="columnName" type="xs:string"/>
      <xs:element minOccurs="1" maxOccurs="1" name="maximumRows" type="xs:int"/>
      <xs:element xmlns:q3="http://microsoft.com/wsdl/types/" minOccurs="1" maxOccurs="1"
        name="correlationId" type="q3:guid"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

**parameter:** A **CommandParameter**, as specified in section [2.2.4.4](#). MUST be present.

**moniker:** The identifier for a result set. MUST contain an identifier that was previously supplied during the session (2) as the **moniker** element for the input to an **OpenResultSet** operation (section [3.1.4.10.2.1](#)).

**columnName:** The name of the column to return values from. MUST be present. MUST be the name of a column in the result set.

**maximumRows:** The maximum number of values to return. Zero means that there is no limit on the number of values to return. MUST NOT be less than zero.

**correlationId:** An identifier for the operation.

### 3.1.4.5.2.2 GetDistinctValuesResponse

The **GetDistinctValuesResponse** element specifies the result data for the **GetDistinctValues** WSDL operation.

```
<xs:element name="GetDistinctValuesResponse" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType>
    <xs:sequence>
      <xs:element
        xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="GetDistinctValuesResult" type="q1:CommandResult"/>
      <xs:element minOccurs="0" maxOccurs="1" name="tableXml" type="xs:string"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

**GetDistinctValuesResult:** A **CommandResult**, as specified in section [2.2.4.5](#). MUST be present.

**tableXml:** XML containing the content of the returned rows (1), as specified for the **tableXml** element of the **OpenResultSetResponse** element (section [3.1.4.10.2.2](#)).

### 3.1.4.5.3 Complex Types

None.

### 3.1.4.5.4 Simple Types

None.

### 3.1.4.5.5 Attributes

None.

### 3.1.4.5.6 Groups

None.

### 3.1.4.5.7 Attribute Groups

None.

## 3.1.4.6 GetHealthScore

This operation returns information about the health of the protocol server.

The following is the WSDL port type specification of the **GetHealthScore** WSDL operation.

```
<wsdl:operation name="GetHealthScore" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
  <wsdl:input
    wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/GetHealthScore"
    message="tns2:AccessServiceSoap_GetHealthScore_InputMessage"
    xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
  <wsdl:output
    wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/GetHealthScoreResponse"
    message="tns2:AccessServiceSoap_GetHealthScore_OutputMessage"
    xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
  <wsdl:fault
    wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/GetHealthScoreAccessServerMessageFault"
    name="AccessServerMessageFault"
    message="tns2:AccessServiceSoap_GetHealthScore_AccessServerMessageFault_FaultMessage"
    xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
</wsdl:operation>
```

The protocol client sends an **AccessServiceSoap\_GetHealthScore\_InputMessage** request message and the protocol server responds with an **AccessServiceSoap\_GetHealthScore\_OutputMessage** response message as follows:

- In the event of an application error on the protocol server during this operation, the protocol server MUST return a SOAP fault response. The SOAP fault detail MUST contain an

**AccessServerMessage**, as specified in section [2.2.4.1](#), whose **Id** element MUST be **InternalError** (section [2.2.5.2](#)).

### 3.1.4.6.1 Messages

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

Message	Description
<b>AccessServiceSoap_GetHealthScore_InputMessage</b>	The request WSDL message for the <b>GetHealthScore</b> WSDL operation.
<b>AccessServiceSoap_GetHealthScore_OutputMessage</b>	The response WSDL message for the <b>GetHealthScore</b> WSDL operation.

#### 3.1.4.6.1.1 AccessServiceSoap\_GetHealthScore\_InputMessage

The request WSDL message for the **GetHealthScore** WSDL operation.

The SOAP action value is:

```
http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/GetHealthScore
```

The SOAP body contains the **GetHealthScore** element.

#### 3.1.4.6.1.2 AccessServiceSoap\_GetHealthScore\_OutputMessage

The response WSDL message for the **GetHealthScore** WSDL operation.

The SOAP body contains the **GetHealthScoreResponse** element.

### 3.1.4.6.2 Elements

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

Element	Description
<b>GetHealthScore</b>	The input data for the <b>GetHealthScore</b> WSDL operation.
<b>GetHealthScoreResponse</b>	The result data for the <b>GetHealthScore</b> WSDL operation.

#### 3.1.4.6.2.1 GetHealthScore

The **GetHealthScore** element specifies the input data for the **GetHealthScore** WSDL operation.

```
<xs:element name="GetHealthScore" xmlns:xs="http://www.w3.org/2001/XMLSchema">  
  <xs:complexType/>  
</xs:element>
```

### 3.1.4.6.2 GetHealthScoreResponse

The **GetHealthScoreResponse** element specifies the result data for the **GetHealthScore** WSDL operation.

```
<xs:element name="GetHealthScoreResponse" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType>
    <xs:sequence>
      <xs:element
        xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="GetHealthScoreResult" type="q1:CommandResult"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

**GetHealthScoreResult:** A **CommandResult**, as specified in section [2.2.4.5](#). MUST be present. The **HealthInformation** element of the **CommandResult** MUST be present.

### 3.1.4.6.3 Complex Types

None.

### 3.1.4.6.4 Simple Types

None.

### 3.1.4.6.5 Attributes

None.

### 3.1.4.6.6 Groups

None.

### 3.1.4.6.7 Attribute Groups

None.

### 3.1.4.7 GetMacroState

This operation is used to get the state of a data macro instance.

The following is the WSDL port type specification of the **GetMacroState** WSDL operation.

```
<wsdl:operation name="GetMacroState" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
  <wsdl:input
    wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/GetMacroState"
    message="tns2:AccessServiceSoap_GetMacroState_InputMessage"
    xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
  <wsdl:output
    wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/GetMacroStateResponse"
    message="tns2:AccessServiceSoap_GetMacroState_OutputMessage"
    xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
```

```

    <wsdl:fault
      wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/GetMacroStateAccessServerMessageFault"
      name="AccessServerMessageFault"
      message="tns2:AccessServiceSoap_GetMacroState_AccessServerMessageFault_FaultMessage"
      xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
  </wsdl:operation>

```

The protocol client sends an **AccessServiceSoap\_GetMacroState\_InputMessage** request message and the protocol server responds with an **AccessServiceSoap\_GetMacroState\_OutputMessage** response message as follows:

- The protocol server retrieves the state information for the data macro instance specified in the **macroInstanceId** element of the request message for the session (2) identified by the **WorkbookId** element of the **parameter** element in the request message.
- The state information is returned to the protocol client in the **instance** element of the response message.
- If the **State** element of the **instance** element in the response message is "Complete" or "Error", the protocol client MUST NOT call this operation again with the same value for the **macroInstanceId** element of the request message within the same session (2).
- In the event of an application error on the protocol server during this operation, a SOAP fault is returned, as specified in section [2.2.9](#). The **Id** element of the **AccessServerMessage** MUST be one of the values specified in section [2.2.9.1](#).

### 3.1.4.7.1 Messages

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

Message	Description
<b>AccessServiceSoap_GetMacroState_InputMessage</b>	The request WSDL message for the <b>GetMacroState</b> WSDL operation.
<b>AccessServiceSoap_GetMacroState_OutputMessage</b>	The response WSDL message for the <b>GetMacroState</b> WSDL operation.

#### 3.1.4.7.1.1 AccessServiceSoap\_GetMacroState\_InputMessage

The request WSDL message for the **GetMacroState** WSDL operation.

The SOAP action value is:

```

http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/GetMacroState

```

The SOAP body contains the **GetMacroState** element.

#### 3.1.4.7.1.2 AccessServiceSoap\_GetMacroState\_OutputMessage

The response WSDL message for the **GetMacroState** WSDL operation.

The SOAP body contains the **GetMacroStateResponse** element.

### 3.1.4.7.2 Elements

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

Element	Description
<b>GetMacroState</b>	The input data for the <b>GetMacroState</b> WSDL operation.
<b>GetMacroStateResponse</b>	The result data for the <b>GetMacroState</b> WSDL operation.

#### 3.1.4.7.2.1 GetMacroState

The **GetMacroState** element specifies the input data for the **GetMacroState** WSDL operation.

```
<xs:element name="GetMacroState" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType>
    <xs:sequence>
      <xs:element
        xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="parameter" type="q1:CommandParameter"/>
      <xs:element minOccurs="0" maxOccurs="1" name="macroInstanceId" type="xs:string"/>
      <xs:element xmlns:q3="http://microsoft.com/wsdl/types/" minOccurs="1" maxOccurs="1"
        name="correlationId" type="q3:guid"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

**parameter:** A **CommandParameter**, as specified in section [2.2.4.4](#). MUST be present.

**macroInstanceId:** The identifier of a data macro instance for which to obtain state information.

- MUST be present.
- MUST specify a value obtained in one of the following ways:
  - MUST be the value specified in the **macroInstanceId** element of a previous call to **RunDataMacro** (section [3.1.4.12.2.1](#)).
  - MUST be the value specified in the **dataMacroId** element of the response message from a previous call to **InsertData** (section [3.1.4.8](#)), **UpdateData** (section [3.1.4.14](#)), or **DeleteData** (section [3.1.4.2](#)).

**correlationId:** An identifier for the operation.

#### 3.1.4.7.2.2 GetMacroStateResponse

The **GetMacroStateResponse** element specifies the result data for the **GetMacroState** WSDL operation.

```
<xs:element name="GetMacroStateResponse" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType>
    <xs:sequence>
```



```

    <xs:element
      xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/"
      minOccurs="0" maxOccurs="1" name="GetMacroStateResult" type="q1:CommandResult"/>
    <xs:element minOccurs="0" maxOccurs="1" name="instance"
      type="tns2:DataMacroInstanceState"/>
  </xs:sequence>
</xs:complexType>
</xs:element>

```

**GetMacroStateResult:** A **CommandResult**, as specified in section [2.2.4.5](#). MUST be present.

**instance:** The current state of the data macro instance, as specified in section [3.1.4.7.3.1](#).

### 3.1.4.7.3 Complex Types

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

Complex type	Description
<b>DataMacroInstanceState</b>	The <b>DataMacroInstanceState</b> complex type provides information about a data macro instance.

#### 3.1.4.7.3.1 DataMacroInstanceState

**Namespace:**

<http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/>

The **DataMacroInstanceState** complex type provides information about a data macro instance.

```

<xs:complexType name="DataMacroInstanceState" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element minOccurs="1" maxOccurs="1" name="State" type="tns2:DataMacroState"/>
    <xs:element minOccurs="1" maxOccurs="1" name="ErrorNumber" type="xs:int"/>
    <xs:element minOccurs="0" maxOccurs="1" name="ErrorDescription" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="ReturnVars"
      type="tns2:ArrayOfKeyValuePair"/>
  </xs:sequence>
</xs:complexType>

```

**State:** The state of the data macro instance, as specified in section [3.1.4.7.4.1](#).

**ErrorNumber:** The error number returned by the data macro. See [\[MS-AXL\]](#) section 2.2.5.1.14.

**ErrorDescription:** The error description returned by the data macro. See [\[MS-AXL\]](#) section 2.2.5.1.14.

**ReturnVars:** Specifies the return variables, as specified in [\[MS-AXL\]](#) section 2.1.3.3.3, of the data macro. This MUST be an **ArrayOfKeyValuePair**, as specified by section [2.2.4.3](#), that MUST contain a **KeyValuePair** for each return variable returned from the data macro, and the **Key** of the **KeyValuePair** MUST be the same as the name of the return variable it is representing.

### 3.1.4.7.4 Simple Types

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

Simple type	Description
DataMacroState	Specifies the state of a data macro instance.

#### 3.1.4.7.4.1 DataMacroState

**Namespace:**

<http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/>

Specifies the state of a data macro instance.

```
<xs:simpleType name="DataMacroState" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:restriction base="xs:string">
    <xs:enumeration value="Error"/>
    <xs:enumeration value="Running"/>
    <xs:enumeration value="Complete"/>
  </xs:restriction>
</xs:simpleType>
```

The following table specifies the allowable values for the **DataMacroState** simple type.

Value	Meaning
Error	An error occurred during run of the data macro instance.
Running	The data macro instance is still executing.
Complete	The data macro instance has finished.

#### 3.1.4.7.5 Attributes

None.

#### 3.1.4.7.6 Groups

None.

#### 3.1.4.7.7 Attribute Groups

None.

#### 3.1.4.8 InsertData

This operation inserts a list item into a list (1) in the content database and also inserts a row (1) into the result set.

The following is the WSDL port type specification of the **InsertData** WSDL operation.

```
<wsdl:operation name="InsertData" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
```

```

    <wsdl:input
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/InsertData"
message="tns2:AccessServiceSoap_InsertData_InputMessage"
xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
    <wsdl:output
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/InsertDataResponse"
message="tns2:AccessServiceSoap_InsertData_OutputMessage"
xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
    <wsdl:fault
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/InsertDataAccessServerMessageFault"
name="AccessServerMessageFault"
message="tns2:AccessServiceSoap_InsertData_AccessServerMessageFault_FaultMessage"
xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
</wsdl:operation>

```

The protocol client sends an **AccessServiceSoap\_InsertData\_InputMessage** request message and the protocol server responds with an **AccessServiceSoap\_InsertData\_OutputMessage** response message as follows:

- The protocol server adds a new list item into the updatable list (1) (section [3.1.1](#)) with the **fields** (2) of the list item filled in as specified by the **values** element (section [3.1.4.8.2.1](#)).
- If the list item was successfully inserted, the protocol server adds a row (1) to the result set with a primary key equal to the primary key of the list item, and with its columns filled in as specified by the **values** element.
- If the list item and row (1) were successfully added, and the result set was opened by an **OpenResultSet** operation with the **autoResync** element (section [3.1.4.10.2.1](#)) set to "true", the protocol server retrieves the current values of all columns in the row. Otherwise, if the list item and row (1) were successfully added, and the result set was opened by an **OpenResultSet** operation with the **autoResync** element (section [3.1.4.10.2.1](#)) set to "false", the protocol server retrieves the values from the current session (2).
- In the event of an application error on the protocol server during this operation, a SOAP fault is returned, as specified in section [2.2.9](#). The **Id** element of the **AccessServerMessage** MUST be one of the values specified in section [2.2.9.1](#) or one of the values in the following table.

Identifier	Description
WriteRecordsPermissionsFailure	See section <a href="#">2.2.5.2</a> .
DataException_ValidationFailed	See section <a href="#">2.2.5.2</a> .
DataException_DataOperationFailed	See section <a href="#">2.2.5.2</a> .
DataException_MaxRecordsInTableExceeded	See section <a href="#">2.2.5.2</a> .

### 3.1.4.8.1 Messages

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

Message	Description
<b>AccessServiceSoap_InsertData_InputMessage</b>	The request WSDL message for the <b>InsertData</b> WSDL operation.
<b>AccessServiceSoap_InsertData_OutputMessage</b>	The response WSDL message for the <b>InsertData</b> WSDL operation.

### 3.1.4.8.1.1 AccessServiceSoap\_InsertData\_InputMessage

The request WSDL message for the **InsertData** WSDL operation.

The SOAP action value is:

```
http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/InsertData
```

The SOAP body contains the **InsertData** element.

### 3.1.4.8.1.2 AccessServiceSoap\_InsertData\_OutputMessage

The response WSDL message for the **InsertData** WSDL operation.

The SOAP body contains the **InsertDataResponse** element.

### 3.1.4.8.2 Elements

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

Element	Description
<b>InsertData</b>	The input data for the <b>InsertData</b> WSDL operation.
<b>InsertDataResponse</b>	The result data for the <b>InsertData</b> WSDL operation.

#### 3.1.4.8.2.1 InsertData

The **InsertData** element specifies the input data for the **InsertData** WSDL operation.

```
<xs:element name="InsertData" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType>
    <xs:sequence>
      <xs:element
        xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="parameter" type="q1:CommandParameter"/>
      <xs:element minOccurs="0" maxOccurs="1" name="webUrl" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="moniker" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="listName" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="values" type="tns2:ArrayOfKeyValuePair"/>
      <xs:element xmlns:q3="http://microsoft.com/wsdl/types/" minOccurs="1" maxOccurs="1"
        name="correlationId" type="q3:guid"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

</xs:element>

**parameter:** A **CommandParameter**, as specified in section [2.2.4.4](#). MUST be present.

**webUrl:** An absolute URL specifying the location of the site (2) containing the application. MUST be present.

**moniker:** The identifier for a result set. MUST be present. MUST contain an identifier that was previously supplied during the session (2) as the **moniker** element for the input to an **OpenResultSet** operation (section [3.1.4.10.2.1](#)).

**listName:** The data source (1) for the result set as specified for the **source** element for the input to an **OpenResultSet** operation (section [3.1.4.10.2.1](#)). MUST be present.

**values:** An array of key and value pairs where each **Key** element specifies the name of a column in the result set, and the corresponding **Value** element contains the data for that column in the new row.

- MUST be present.
- MUST contain at least one **KeyValuePair** (section [2.2.4.6](#)).
- For each **KeyValuePair**:
  - The **Key** element MUST be equal to the name of a column in the result set.
  - The **Value** element MUST be the correct data type for the column in the result set.
  - The **Value** element MUST either be empty and with the **nil** ([\[XMLSchemaInstance\]](#)) attribute set to "true" or have the **type** ([\[XMLSchemaInstance\]](#)) attribute set to one of the following:
    - boolean ([\[XMLSCHEMA2\]](#) section 3.2.2)
    - dateTime ([\[XMLSCHEMA2\]](#) section 3.2.7)
    - double ([\[XMLSCHEMA2\]](#) section 3.2.5)
    - string ([\[XMLSCHEMA2\]](#) section 3.2.1)
    - int ([\[XMLSCHEMA2\]](#) section 3.3.17)

**correlationId:** An identifier for the operation.

### 3.1.4.8.2.2 InsertDataResponse

The **InsertDataResponse** element specifies the result data for the **InsertData** WSDL operation.

```
<xs:element name="InsertDataResponse" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType>
    <xs:sequence>
      <xs:element
        xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="InsertDataResult" type="q1:CommandResult"/>
      <xs:element minOccurs="1" maxOccurs="1" name="recordsInserted" type="xs:int"/>
      <xs:element minOccurs="0" maxOccurs="1" name="dataMacroId" type="xs:string"/>
    </xs:sequence>
  </xs:complexType>
```

</xs:element>

**InsertDataResult:** A **CommandResult**, as specified in section [2.2.4.5](#). MUST be present.

**recordsInserted:** MUST be "1".

**dataMacroId:** If the operation triggers a data macro, the protocol server MUST return the identifier of the instance of the data macro in this element. Otherwise, this element MUST NOT be present.

### 3.1.4.8.3 Complex Types

None.

### 3.1.4.8.4 Simple Types

None.

### 3.1.4.8.5 Attributes

None.

### 3.1.4.8.6 Groups

None.

### 3.1.4.8.7 Attribute Groups

None.

### 3.1.4.9 KeepAlive

This operation extends the time a session (2) has remaining before it times out.

The following is the WSDL port type specification of the **KeepAlive** WSDL operation.

```
<wsdl:operation name="KeepAlive" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
  <wsdl:input
    wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/KeepAlive"
    message="tns2:AccessServiceSoap_KeepAlive_InputMessage"
    xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
  <wsdl:output
    wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/KeepAliveResponse"
    message="tns2:AccessServiceSoap_KeepAlive_OutputMessage"
    xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
  <wsdl:fault
    wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/KeepAliveAccessServerMessageFault"
    name="AccessServerMessageFault"
    message="tns2:AccessServiceSoap_KeepAlive_AccessServerMessageFault_FaultMessage"
    xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
</wsdl:operation>
```

The protocol client sends an **AccessServiceSoap\_KeepAlive\_InputMessage** request message and the protocol server responds with an **AccessServiceSoap\_KeepAlive\_OutputMessage** response message as follows:

- The protocol server resets the time remaining for the session (2) specified in the **WorkbookId** of the **CommandParameter** to its original timeout value, as specified section [3.1.2.1](#).
- In the event of an application error on the protocol server during this operation, a SOAP fault is returned, as specified in section [2.2.9](#). The **Id** element of the **AccessServerMessage** MUST be one of the values specified in section [2.2.9.1](#).

### 3.1.4.9.1 Messages

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

Message	Description
<b>AccessServiceSoap_KeepAlive_InputMessage</b>	The request WSDL message for the <b>KeepAlive</b> WSDL operation.
<b>AccessServiceSoap_KeepAlive_OutputMessage</b>	The response WSDL message for the <b>KeepAlive</b> WSDL operation.

#### 3.1.4.9.1.1 AccessServiceSoap\_KeepAlive\_InputMessage

The request WSDL message for the **KeepAlive** WSDL operation.

The SOAP action value is:

```
http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/KeepAlive
```

The SOAP body contains the **KeepAlive** element.

#### 3.1.4.9.1.2 AccessServiceSoap\_KeepAlive\_OutputMessage

The response WSDL message for the **KeepAlive** WSDL operation.

The SOAP body contains the **KeepAliveResponse** element.

### 3.1.4.9.2 Elements

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

Element	Description
<b>KeepAlive</b>	The input data for the <b>KeepAlive</b> WSDL operation.
<b>KeepAliveResponse</b>	The result data for the <b>KeepAlive</b> WSDL operation.

### 3.1.4.9.2.1 KeepAlive

The **KeepAlive** element specifies the input data for the **KeepAlive** WSDL operation.

```
<xs:element name="KeepAlive" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType>
    <xs:sequence>
      <xs:element
        xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="parameter" type="q1:CommandParameter"/>
      <xs:element xmlns:q3="http://microsoft.com/wsdl/types/" minOccurs="1" maxOccurs="1"
        name="correlationId" type="q3:guid"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

**parameter:** A **CommandParameter**, as specified in section [2.2.4.4](#). MUST be present.

**correlationId:** An identifier for the operation.

### 3.1.4.9.2.2 KeepAliveResponse

The **KeepAliveResponse** element specifies the result data for the **KeepAlive** WSDL operation.

```
<xs:element name="KeepAliveResponse" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType>
    <xs:sequence>
      <xs:element
        xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="KeepAliveResult" type="q1:CommandResult"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

**KeepAliveResult:** A **CommandResult**, as specified in section [2.2.4.5](#). MUST be present.

### 3.1.4.9.3 Complex Types

None.

### 3.1.4.9.4 Simple Types

None.

### 3.1.4.9.5 Attributes

None.

### 3.1.4.9.6 Groups

None.

### 3.1.4.9.7 Attribute Groups

None.



### 3.1.4.10 OpenResultSet

This operation opens a result set for the given **source** and returns a subset of rows (1) from the result set.

The following is the WSDL port type specification of the **OpenResultSet** WSDL operation.

```
<wsdl:operation name="OpenResultSet" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
  <wsdl:input
    wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/OpenResultSet"
    message="tns2:AccessServiceSoap_OpenResultSet_InputMessage"
    xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
  <wsdl:output
    wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/OpenResultSetResponse"
    message="tns2:AccessServiceSoap_OpenResultSet_OutputMessage"
    xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
  <wsdl:fault
    wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/OpenResultSetAccessServerMessageFault"
    name="AccessServerMessageFault"
    message="tns2:AccessServiceSoap_OpenResultSet_AccessServerMessageFault_FaultMessage"
    xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
</wsdl:operation>
```

The protocol client sends an **AccessServiceSoap\_OpenResultSet\_InputMessage** request message and the protocol server responds with an **AccessServiceSoap\_OpenResultSet\_OutputMessage** response message as follows:

- The protocol server retrieves data from the content database using the given **source** and **restriction**.
- The protocol server stores the data in a result set identified by the **moniker** within the session (2) identified by the **WorkbookId** element of the **parameter** element in the request message. The protocol server also stores expressions defined by **sortExpression**, **filterExpression**, and **aggregateExpressions** elements in the result set.
- The protocol server returns a subset of rows (1) specified by **startRowIndex** and **maximumRows** as follows:
  - If the **maximumRows** element is set to zero ("0"), the protocol server returns all visible rows (1) from the result set starting with zero, overriding the value specified in **startRowIndex**.
  - If the **maximumRows** element is greater than zero and **startRowIndex** + **maximumRows** exceeds the number of visible rows (1) in the result set, the protocol server returns all visible rows (1) in the result set with indices greater than or equal to **startRowIndex**.
  - Otherwise, the protocol server returns all visible rows (1) from the result set with indices starting at **startRowIndex** and ending at **startRowIndex** + **maximumRows** - 1.
- The functions defined in **aggregateExpressions** are evaluated only against visible rows (1) in the result set.
- In the event of an application error on the protocol server during this operation, a SOAP fault is returned, as specified in section [2.2.9](#). The **Id** element of the **AccessServerMessage** MUST be one of the values specified in section [2.2.9.1](#), one of the values specified in section [2.2.9.2](#), or one of the values in the following table.

Identifier	Description
GetRecordsPermissionsFailure	See section <a href="#">2.2.5.2</a> .
OrderingException_InvalidSpecification	See section <a href="#">2.2.5.2</a> .
OrderingException_InvalidColumnName	See section <a href="#">2.2.5.2</a> .
InvalidFilterExpression	See section <a href="#">2.2.5.2</a> .
InvalidAggregateExpression	See section <a href="#">2.2.5.2</a> .

### 3.1.4.10.1 Messages

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

Message	Description
<b>AccessServiceSoap_OpenResultSet_InputMessage</b>	The request WSDL message for the <b>OpenResultSet</b> WSDL operation.
<b>AccessServiceSoap_OpenResultSet_OutputMessage</b>	The response WSDL message for the <b>OpenResultSet</b> WSDL operation.

#### 3.1.4.10.1.1 AccessServiceSoap\_OpenResultSet\_InputMessage

The request WSDL message for the **OpenResultSet** WSDL operation.

The SOAP action value is:

```
http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/OpenResultSet
```

The SOAP body contains the **OpenResultSet** element.

#### 3.1.4.10.1.2 AccessServiceSoap\_OpenResultSet\_OutputMessage

The response WSDL message for the **OpenResultSet** WSDL operation.

The SOAP body contains the **OpenResultSetResponse** element.

### 3.1.4.10.2 Elements

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

Element	Description
<b>OpenResultSet</b>	The input data for the <b>OpenResultSet</b> WSDL operation.
<b>OpenResultSetResponse</b>	The result data for the <b>OpenResultSet</b> WSDL operation.

### 3.1.4.10.2.1 OpenResultSet

The **OpenResultSet** element specifies the input data for the **OpenResultSet** WSDL operation.

```
<xs:element name="OpenResultSet" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType>
    <xs:sequence>
      <xs:element
        xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="parameter" type="q1:CommandParameter"/>
      <xs:element minOccurs="0" maxOccurs="1" name="webUrl" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="source" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="restriction" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="queryParameters"
        type="tns2:ArrayOfKeyValuePair"/>
      <xs:element minOccurs="0" maxOccurs="1" name="sortExpression" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="filterExpression" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="aggregateExpressions"
        type="tns2:ArrayOfString"/>
      <xs:element minOccurs="0" maxOccurs="1" name="moniker" type="xs:string"/>
      <xs:element minOccurs="1" maxOccurs="1" name="startRowIndex" type="xs:int"/>
      <xs:element minOccurs="1" maxOccurs="1" name="maximumRows" type="xs:int"/>
      <xs:element minOccurs="1" maxOccurs="1" name="autoResync" type="xs:boolean"/>
      <xs:element xmlns:q3="http://microsoft.com/wsdl/types/" minOccurs="1" maxOccurs="1"
        name="correlationId" type="q3:guid"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

**parameter:** A **CommandParameter**, as specified in section [2.2.4.4](#). MUST be present.

**webUrl:** An absolute URL specifying the location of the site (2) containing the application. MUST be present.

**source:** The data source (1) for a result set. MUST be present. It MUST be one of the following:

- The **title**, as specified in [\[MS-ASWS\]](#) section 3.1.1.1.1.2, of an object in the content database. The **type**, as specified in [\[MS-ASWS\]](#) section 3.1.1.1.1.4, of this object MUST be either zero ("0") or "1".
- An **AXL** element containing a **CT\_Query** expression, as specified in [\[MS-AXL\]](#) section 2.2.3.20.

**restriction:** A **CT\_Expression**, as specified in [\[MS-AXL\]](#) section 2.2.3.1. Only rows (1) in the source that return "true" for this restriction expression are included in the result set.

**queryParameters:** The value of each parameter, as specified in [\[MS-AXL\]](#) section 2.2.3.17, required in the **source**. MUST be present for every parameter defined in the **source**.

- The **Key** element is the name of the parameter.
- The **Value** element is the value of the parameter in the correct data type.

**sortExpression:** The sort order to apply to the result set. If present and not empty, MUST contain an **Ordering** element, as specified in [\[MS-AXL\]](#) section 2.2.1.3.

**filterExpression:** Specifies the filter criteria to apply to the result set. If present and not empty, MUST contain an expression, as specified in [\[MS-AXL\]](#) section 2.5.5.

**aggregateExpressions:** An array of **strings**, each containing an aggregate expression for the result set. MUST follow the syntax rule of **CT\_Expression**, as specified in [\[MS-AXL\]](#) section 2.2.3.1. Each expression MUST contain exactly one function with exactly one column as an argument. Details of all supported aggregate functions are specified in the following table.

Function Name	Result	Result Type
Sum	Sum of all values in the column, all of which MUST be convertible to type <b>double</b> . If one or more of the values in the column cannot be converted to type <b>double</b> , the protocol server MUST return <b>OpenResultSetResponse</b> , with an <b>aggregateValues</b> element that contains an <b>anyType</b> element whose value is set to "#error".	<b>Double</b> , as specified in <a href="#">[XMLSCHEMA2]</a> section 3.2.5.
Average	Average of all values in the column, all of which MUST be convertible to type <b>double</b> . If one or more of the values in the column cannot be converted to type <b>double</b> , the protocol server MUST return <b>OpenResultSetResponse</b> , with an <b>aggregateValues</b> element that contains an <b>anyType</b> element whose value is set to "#error".	<b>Double</b> , as specified in <a href="#">[XMLSCHEMA2]</a> section 3.2.5.
Counta	Total number of rows (1) for which the value of the column is not NULL.	<b>Int</b> , as specified in <a href="#">[XMLSCHEMA2]</a> section 3.2.17.

**moniker:** A unique identifier for the result set within a session (2). MUST be present. If the moniker exists in the session (2), the protocol server replaces the old result set with the result set defined in this operation.

**startRowIndex:** The index of the first row (1) to return from the result set.

- MUST be nonnegative.
- MUST be zero to specify the first row.
- If no filter is applied to the result set, MUST be less than the number of rows (1) in the result set.
- If a filter is applied to the result set, MUST be less than the number of rows (1) in the filtered result set.

**maximumRows:** The maximum number of rows (1) to return. MUST be non-negative. If set to zero ("0"), the protocol server MUST return all rows (1) in the result set.

**autoResync:** The synchronization behavior of the result set. If **autoResync** is set to "true", the protocol server refreshes the row (1) in the result set, by retrieving it from the original list (1), after a list item is inserted, updated, or deleted. Otherwise, it will simply insert, update, or delete the row (1) in the result set according to the current session (2). It is not refreshed with the current values from the original list (1). The refresh behavior for each operation is specified in section [3.1.1](#).

**correlationId:** An identifier for the operation.

### 3.1.4.10.2.2 OpenResultSetResponse

The **OpenResultSetResponse** element specifies the result data for the **OpenResultSet** WSDL operation.

```

<xs:element name="OpenResultSetResponse" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType>
    <xs:sequence>
      <xs:element
        xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="OpenResultSetResult" type="q1:CommandResult"/>
      <xs:element minOccurs="0" maxOccurs="1" name="tableXml" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="aggregateValues"
        type="tns2:ArrayOfAnyType"/>
      <xs:element minOccurs="1" maxOccurs="1" name="totalRowCount" type="xs:int"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>

```

**OpenResultSetResult:** A **CommandResult**, as specified in section [2.2.4.5](#). MUST be present.

**tableXml:** XML containing the returned rows (1).

- MUST be present.
- MUST be a **DiffGram**, as specified in [\[MS-DSDIFFGRAM\]](#).
- The **root element** MUST be named **DataTable**.
- Each child of the **DocumentElement** child of the **diffgram** child of the **DataTable** element MUST be named **Data**.

**aggregateValues:** An array of values containing the results of the expressions specified in the **aggregateExpressions** element. The index of each value in the **aggregateValues** array MUST match the index of the corresponding expression in the **aggregateExpressions** array.

**totalRowCount:** If no filter is applied to the result set, specifies the number of rows (1) in the result set. If a filter is applied to the result set, specifies the number of rows (1) in the filtered result set.

### 3.1.4.10.3 Complex Types

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

Complex type	Description
<b>ArrayOfString</b>	The <b>ArrayOfString</b> complex type is used to specify an array of <b>strings</b> .

#### 3.1.4.10.3.1 ArrayOfString

**Namespace:**

<http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/>

The **ArrayOfString** complex type is used to specify an array of **strings**.

```

<xs:complexType name="ArrayOfString" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="string" nillable="true"
      type="xs:string"/>
  </xs:sequence>

```

```
</xs:complexType>
```

**string:** A **string** value.

#### 3.1.4.10.4 Simple Types

None.

#### 3.1.4.10.5 Attributes

None.

#### 3.1.4.10.6 Groups

None.

#### 3.1.4.10.7 Attribute Groups

None.

#### 3.1.4.11 OpenSession

This operation creates a new session (2).

The following is the WSDL port type specification of the **OpenSession** WSDL operation.

```
<wsdl:operation name="OpenSession" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
  <wsdl:input
    wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/OpenSession"
    message="tns2:AccessServiceSoap_OpenSession_InputMessage"
    xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
  <wsdl:output
    wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/OpenSessionResponse"
    message="tns2:AccessServiceSoap_OpenSession_OutputMessage"
    xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
  <wsdl:fault
    wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/OpenSessionAccessServerMessageFault"
    name="AccessServerMessageFault"
    message="tns2:AccessServiceSoap_OpenSession_AccessServerMessageFault_FaultMessage"
    xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
</wsdl:operation>
```

The protocol client sends an **AccessServiceSoap\_OpenSession\_InputMessage** request message and the protocol server responds with an **AccessServiceSoap\_OpenSession\_OutputMessage** response message as follows:

- If the operation succeeds, the protocol server **MUST** return the **SessionIdentifier** (section [2.2.5.9](#)) for the newly created session (2) in the response message to be used in any future operations against the newly created session (2). This **SessionIdentifier** **MUST** be returned in the **sessionId** element of the **OpenSessionResponse** element.

- In the event of an application error on the protocol server during this operation, a SOAP fault is returned, as specified in section [2.2.9](#). The **Id** element of the **AccessServerMessage** MUST be one of the values specified in section [2.2.9.1](#).

### 3.1.4.11.1 Messages

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

Message	Description
<b>AccessServiceSoap_OpenSession_InputMessage</b>	The request WSDL message for the <b>OpenSession</b> WSDL operation.
<b>AccessServiceSoap_OpenSession_OutputMessage</b>	The response WSDL message for the <b>OpenSession</b> WSDL operation.

#### 3.1.4.11.1.1 AccessServiceSoap\_OpenSession\_InputMessage

The request WSDL message for the **OpenSession** WSDL operation.

The SOAP action value is:

```
http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/OpenSession
```

The SOAP body contains the **OpenSession** element.

#### 3.1.4.11.1.2 AccessServiceSoap\_OpenSession\_OutputMessage

The response WSDL message for the **OpenSession** WSDL operation.

The SOAP body contains the **OpenSessionResponse** element.

### 3.1.4.11.2 Elements

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

Element	Description
<b>OpenSession</b>	The input data for the <b>OpenSession</b> WSDL operation.
<b>OpenSessionResponse</b>	The result data for the <b>OpenSession</b> WSDL operation.

#### 3.1.4.11.2.1 OpenSession

The **OpenSession** element specifies the input data for the **OpenSession** WSDL operation.

```
<xs:element name="OpenSession" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType>
    <xs:sequence>
```

```

    <xs:element
      xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="parameter" type="q1:CommandParameter"/>
    <xs:element
      xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="cultureParameter"
      type="q1:CultureCommandParameter"/>
    <xs:element xmlns:q3="http://microsoft.com/wsdl/types/" minOccurs="1" maxOccurs="1"
      name="correlationId" type="q3:guid"/>
  </xs:sequence>
</xs:complexType>
</xs:element>

```

**parameter:** A **CommandParameter**, as specified in section [2.2.4.4](#) MUST be present. **CommandParameter.WorkbookId** MUST NOT be present.

**cultureParameter:** A **CultureCommandParameter**, as specified in section [3.1.4.11.3.1](#). MUST be present.

**correlationId:** An identifier for the operation.

### 3.1.4.11.2.2 OpenSessionResponse

The **OpenSessionResponse** element specifies the result data for the **OpenSession** WSDL operation.

```

<xs:element name="OpenSessionResponse" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType>
    <xs:sequence>
      <xs:element
        xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="OpenSessionResult" type="q1:CommandResult"/>
      <xs:element minOccurs="0" maxOccurs="1" name="sessionId" type="xs:string"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>

```

**OpenSessionResult:** The result, as specified in [2.2.4.5](#). MUST be present.

**sessionId:** The session identifier (2) of the newly created session (2). MUST be present.

### 3.1.4.11.3 Complex Types

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

Complex type	Description
<b>CultureCommandParameter</b>	The <b>CultureCommandParameter</b> is used to specify UI culture, data culture and <b>host data language</b> related information when creating a new session (2).



### 3.1.4.11.3.1 CultureCommandParameter

#### Namespace:

http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/

The **CultureCommandParameter** is used to specify UI culture, data culture and host data language related information when creating a new session (2).

```
<xs:complexType name="CultureCommandParameter" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="1" name="UICultureName" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="DataCultureName" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="SharePointDataCultureName"
type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="TimeZoneSerialization" type="xs:string"/>
  </xs:sequence>
</xs:complexType>
```

**UICultureName:** A language tag, as specified in [\[RFC1766\]](#), section 2. Specifies the UI culture.

- MUST be present.
- MUST NOT be empty.
- MUST NOT be longer than 32768 characters.
- If the language represented by **UICultureName** is not supported on the protocol server, the protocol server SHOULD [<1>](#) fall back to some other supported language.

**DataCultureName:** A language tag, as specified in [\[RFC1766\]](#), section 2. Specifies the data culture.

- MUST be present.
- MUST NOT be empty.
- MUST NOT be longer than 32768 characters.
- The protocol server uses **SharePointDataCultureName** as a **fallback data culture** if **DataCultureName** is not supported.

**SharePointDataCultureName:** A language tag, as specified in [\[RFC1766\]](#), section 2. Specifies the host data language.

- MUST be present.
- MUST NOT be longer than 32768 characters.

**TimeZoneSerialization:** The time zone of the session (2).

- MUST be present.
- MUST be exactly 73 characters long.
- MUST have the following layout, which is specified using **Augmented Backus-Naur Form (ABNF)**, as specified in [\[RFC2234\]](#):

<b>TimeZone</b>	<b>=</b>	<b>Bias "#" StandardDate "#" StandardBias "#" DaylightDate "#" DaylightBias</b>
Bias	=	"+"\"-" 4DIGIT
StandardDate	=	Date %d84 Time
StandardBias	=	"+"\"-" 4DIGIT
DaylightDate	=	Date %d84 Time
DaylightBias	=	"+"\"-" 4DIGIT
Date	=	Year "-" Month "-" DayOfWeek "-" Day
Time	=	Hour ":" Minute ":" Second ":" Millisecond
Year	=	4DIGIT
Month	=	2DIGIT ; 01-12
DayOfWeek	=	2DIGIT ; 00-06 (Sunday-Saturday)
Day	=	2DIGIT ; 01-31
Hour	=	2DIGIT ; 00-23
Minute	=	2DIGIT ; 00-59
Second	=	2DIGIT ; 00-59
Millisecond	=	4DIGIT

The following restrictions MUST apply on the **TimeZoneSerialization**:

1. **Bias** MUST be the **time zone bias**.
2. **StandardDate** MUST be the **time zone standard date**.
3. **StandardBias** MUST be the **time zone standard bias**.
4. **DaylightDate** MUST be the **time zone daylight date**.
5. **DaylightBias** MUST be the **time zone daylight bias**.
6. The following restrictions are specified in [\[RFC3339\]](#):
  1. **Month** MUST be date-month.
  2. **Day** MUST be date-mday.
  3. **Hour** MUST be time-hour.
  4. **Minute** MUST time-minute.
  5. **Second** MUST be time-second.
7. **DayOfWeek** MUST have one of the values in the following table.

Value	Meaning
00	Sunday
01	Monday
02	Tuesday
03	Wednesday
04	Thursday
05	Friday
06	Saturday

#### 3.1.4.11.4 Simple Types

None.

#### 3.1.4.11.5 Attributes

None.

#### 3.1.4.11.6 Groups

None.

#### 3.1.4.11.7 Attribute Groups

None.

#### 3.1.4.12 RunDataMacro

This operation triggers a data macro.

The following is the WSDL port type specification of the **RunDataMacro** WSDL operation.

```
<wsdl:operation name="RunDataMacro" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
  <wsdl:input
    wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/RunDataMacro"
    message="tns2:AccessServiceSoap_RunDataMacro_InputMessage"
    xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
  <wsdl:output
    wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/RunDataMacroResponse"
    message="tns2:AccessServiceSoap_RunDataMacro_OutputMessage"
    xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
  <wsdl:fault
    wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/RunDataMacroAccessServerMessageFault"
    name="AccessServerMessageFault"
    message="tns2:AccessServiceSoap_RunDataMacro_AccessServerMessageFault_FaultMessage"
    xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
</wsdl:operation>
```

The protocol client sends an **AccessServiceSoap\_RunDataMacro\_InputMessage** request message and the protocol server responds with an

**AccessServiceSoap\_RunDataMacro\_OutputMessage** response message as follows:

- The protocol server triggers a new data macro instance.
  - If **macroName** is "AfterInsert", "AfterUpdate", or "AfterDelete", the protocol server triggers the data macro having an **Event** attribute in **CT\_DataMacro**, as specified in [\[MS-AXL\]](#) section 2.2.3.49, equal to **macroName**.
  - Otherwise the protocol server triggers the data macro having a **Name** attribute in **CT\_DataMacro** equal to **macroName**.
- In the event of an application error on the protocol server during this operation, a SOAP fault is returned, as specified in section [2.2.9](#). The **Id** element of the **AccessServerMessage** MUST be one of the values specified in section [2.2.9.1](#) or one of the following values:

Identifier	Meaning
DataException_DataMacroNotFound	See section <a href="#">2.2.5.2</a> .
DataException_DataOperationFailed	See section <a href="#">2.2.5.2</a> .

### 3.1.4.12.1 Messages

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

Message	Description
<b>AccessServiceSoap_RunDataMacro_InputMessage</b>	The request WSDL message for the <b>RunDataMacro</b> WSDL operation.
<b>AccessServiceSoap_RunDataMacro_OutputMessage</b>	The response WSDL message for the <b>RunDataMacro</b> WSDL operation.

#### 3.1.4.12.1.1 AccessServiceSoap\_RunDataMacro\_InputMessage

The request WSDL message for the **RunDataMacro** WSDL operation.

The SOAP action value is:

```
http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/RunDataMacro
```

The SOAP body contains the **RunDataMacro** element.

#### 3.1.4.12.1.2 AccessServiceSoap\_RunDataMacro\_OutputMessage

The response WSDL message for the **RunDataMacro** WSDL operation.

The SOAP body contains the **RunDataMacroResponse** element.

### 3.1.4.12.2 Elements

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

Element	Description
<b>RunDataMacro</b>	The input data for the <b>RunDataMacro</b> WSDL operation.
<b>RunDataMacroResponse</b>	The result data for the <b>RunDataMacro</b> WSDL operation.

#### 3.1.4.12.2.1 RunDataMacro

The **RunDataMacro** element specifies the input data for the **RunDataMacro** WSDL operation.

```
<xs:element name="RunDataMacro" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType>
    <xs:sequence>
      <xs:element
        xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="parameter" type="q1:CommandParameter"/>
      <xs:element minOccurs="0" maxOccurs="1" name="webUrl" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="listName" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="macroName" type="xs:string"/>
      <xs:element minOccurs="1" maxOccurs="1" name="itemID" type="xs:int"/>
      <xs:element minOccurs="0" maxOccurs="1" name="oldItemFields"
        type="tns2:ArrayOfKeyValuePair"/>
      <xs:element minOccurs="0" maxOccurs="1" name="NewItemFields"
        type="tns2:ArrayOfKeyValuePair"/>
      <xs:element minOccurs="0" maxOccurs="1" name="macroParameters"
        type="tns2:ArrayOfKeyValuePair"/>
      <xs:element minOccurs="0" maxOccurs="1" name="macroInstanceId" type="xs:string"/>
      <xs:element xmlns:q3="http://microsoft.com/wsdl/types/" minOccurs="1" maxOccurs="1"
        name="correlationId" type="q3:guid"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

**parameter:** A **CommandParameter**, as specified in section [2.2.4.4](#). MUST be present.

**webUrl:** An absolute URL specifying the location of the site (2) containing the application. MUST be present.

**listName:** MUST be the title of the list (1) associated with the data macro to be triggered. MUST be present. MUST be the title of a list (1) contained in the site (2) specified by **webUrl**.

**macroName:** MUST be present. MUST contain the name of a data macro as specified for the **Name** element of a **CT\_DataMacro**, as specified in [\[MS-AXL\]](#) section 2.2.3.49, or one of the following values:

- "AfterInsert"
- "AfterUpdate"
- "AfterDelete"

**itemID:** If **macroName** is "AfterInsert", "AfterUpdate", or "AfterDelete", this MUST be the primary key for a list item in the list (1) specified by the **listName** element. Otherwise, MUST be "1".

**oldItemFields:** If **macroName** is "AfterUpdate" or "AfterDelete" then:

- MUST be present.
- MUST be an array of key and value pairs where each **Key** element specifies the internal name of a field (2) in the list item, and the corresponding **Value** element contains the data for that field (2) prior to the update or delete operation on the list item.
- For each **KeyValuePair**:
  - The **Value** element MUST be the correct data type for the field (2).
  - The **Value** element MUST either be empty and with the **nil** ([\[XMLSchemaInstance\]](#)) attribute set to "true" or have the **type** ([\[XMLSchemaInstance\]](#)) attribute set to one of the following:
    - boolean ([\[XMLSCHEMA2\]](#) section 3.2.2)
    - dateTime ([\[XMLSCHEMA2\]](#) section 3.2.7)
    - double ([\[XMLSCHEMA2\]](#) section 3.2.5)
    - string ([\[XMLSCHEMA2\]](#) section 3.2.1)
    - int ([\[XMLSCHEMA2\]](#) section 3.3.17)

Otherwise, MUST NOT be present.

**newItemFields:** If **macroName** is "AfterInsert" or "AfterUpdate" then:

- MUST be present.
- MUST be an array of key and value pairs where each **Key** element specifies the internal name of a field (2) in the list item, and the corresponding **Value** element contains the data for that field (2) after the insert or update operation on the list item.
- For each **KeyValuePair**:
  - The **Value** element MUST be the correct data type for the field (2).
  - The **Value** element MUST either be empty and with the **nil** ([\[XMLSchemaInstance\]](#)) attribute set to "true" or have the **type** ([\[XMLSchemaInstance\]](#)) attribute set to one of the following:
    - boolean ([\[XMLSCHEMA2\]](#) section 3.2.2)
    - dateTime ([\[XMLSCHEMA2\]](#) section 3.2.7)
    - double ([\[XMLSCHEMA2\]](#) section 3.2.5)
    - string ([\[XMLSCHEMA2\]](#) section 3.2.1)
    - int ([\[XMLSCHEMA2\]](#) section 3.3.17)

Otherwise, MUST NOT be present.

**macroParameters:** Specifies the parameters for the data macro. MUST be present if the data macro requires parameters specified in the **Parameters** element of a **CT\_DataMacro**, as specified

in [\[MS-AXL\]](#) section 2.2.3.49. Comparisons between the **Key** in a **KeyValuePair** and the parameters in a data macro MUST be case insensitive. If a parameter is specified in more than one **KeyValuePair**, the protocol server MUST use the last **Value**. If any **Key** in **KeyValuePair** does not match a parameter in the data macro, it MUST be ignored.

**macroInstanceId:** An identifier for the data macro instance triggered by this operation.

**correlationId:** An identifier for the operation.

### 3.1.4.12.2 RunDataMacroResponse

The **RunDataMacroResponse** element specifies the result data for the **RunDataMacro** WSDL operation.

```
<xs:element name="RunDataMacroResponse" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType>
    <xs:sequence>
      <xs:element
        xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="RunDataMacroResult" type="q1:CommandResult"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

**RunDataMacroResult:** A **CommandResult**, as specified in section [2.2.4.5](#). MUST be present.

### 3.1.4.12.3 Complex Types

None.

### 3.1.4.12.4 Simple Types

None.

### 3.1.4.12.5 Attributes

None.

### 3.1.4.12.6 Groups

None.

### 3.1.4.12.7 Attribute Groups

None.

### 3.1.4.13 UpdateCache

This operation updates a row (1) in the result set.

The following is the WSDL port type specification of the **UpdateCache** WSDL operation.

```
<wsdl:operation name="UpdateCache" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
  <wsdl:input
    wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
```

```

alService/AccessServiceSoap/UpdateCache"
message="tns2:AccessServiceSoap_UpdateCache_InputMessage"
xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
  <wsdl:output
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/UpdateCacheResponse"
message="tns2:AccessServiceSoap_UpdateCache_OutputMessage"
xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
  <wsdl:fault
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/UpdateCacheAccessServerMessageFault"
name="AccessServerMessageFault"
message="tns2:AccessServiceSoap_UpdateCache_AccessServerMessageFault_FaultMessage"
xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
</wsdl:operation>

```

The protocol client sends an **AccessServiceSoap\_UpdateCache\_InputMessage** request message and the protocol server responds with an **AccessServiceSoap\_UpdateCache\_OutputMessage** response message as follows:

- The protocol server fetches a row (1) from the result set using the given **key** and updates the columns specified in **values**. If the operation fails, no columns in the row (1) are updated.
- In the event of an application error on the protocol server during this operation, a SOAP fault is returned, as specified in section [2.2.9](#). The **Id** element of the **AccessServerMessage** MUST be one of the values specified in section [2.2.9.1](#).

### 3.1.4.13.1 Messages

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

Message	Description
<b>AccessServiceSoap_UpdateCache_InputMessage</b>	The request WSDL message for the <b>UpdateCache</b> WSDL operation.
<b>AccessServiceSoap_UpdateCache_OutputMessage</b>	The response WSDL message for the <b>UpdateCache</b> WSDL operation.

#### 3.1.4.13.1.1 AccessServiceSoap\_UpdateCache\_InputMessage

The request WSDL message for the **UpdateCache** WSDL operation.

The SOAP action value is:

```

http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/UpdateCache

```

The SOAP body contains the **UpdateCache** element.

#### 3.1.4.13.1.2 AccessServiceSoap\_UpdateCache\_OutputMessage

The response WSDL message for the **UpdateCache** WSDL operation.

The SOAP body contains the **UpdateCacheResponse** element.



### 3.1.4.13.2 Elements

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

Element	Description
<b>UpdateCache</b>	The input data for the <b>UpdateCache</b> WSDL operation.
<b>UpdateCacheResponse</b>	The result data for the <b>UpdateCache</b> WSDL operation.

#### 3.1.4.13.2.1 UpdateCache

The **UpdateCache** element specifies the input data for the **UpdateCache** WSDL operation.

```
<xs:element name="UpdateCache" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType>
    <xs:sequence>
      <xs:element
        xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="parameter" type="q1:CommandParameter"/>
      <xs:element minOccurs="0" maxOccurs="1" name="webUrl" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="moniker" type="xs:string"/>
      <xs:element minOccurs="1" maxOccurs="1" name="key" type="xs:int"/>
      <xs:element minOccurs="0" maxOccurs="1" name="values" type="tns2:ArrayOfKeyValuePair"/>
      <xs:element xmlns:q3="http://microsoft.com/wsdl/types/" minOccurs="1" maxOccurs="1"
        name="correlationId" type="q3:guid"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

**parameter:** A **CommandParameter**, as specified in section [2.2.4.4](#). MUST be present.

**webUrl:** An absolute URL specifying the location of the site (2) containing the application. MUST be present.

**moniker:** The identifier for a result set. MUST be present. MUST contain an identifier that was previously supplied during the session (2) as the **moniker** element for the input to an **OpenResultSet** operation (section [3.1.4.10.2.1](#)).

**key:** The primary key of the row (1) in the result set to update.

**values:** An array of **KeyValuePair** elements as specified in section [2.2.4.6](#). MUST be present. For each **KeyValuePair**:

- **Key** element MUST be the name of a column in the result set.
- **Value** element MUST contain data of the correct data type for the column.

**correlationId:** An identifier for the operation.

#### 3.1.4.13.2.2 UpdateCacheResponse

The **UpdateCacheResponse** element specifies the result data for the **UpdateCache** WSDL operation.

```

<xs:element name="UpdateCacheResponse" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType>
    <xs:sequence>
      <xs:element
        xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="UpdateCacheResult" type="q1:CommandResult"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>

```

**UpdateCacheResult:** A **CommandResult**, as specified in section [2.2.4.5](#). MUST be present.

### 3.1.4.13.3 Complex Types

None.

### 3.1.4.13.4 Simple Types

None.

### 3.1.4.13.5 Attributes

None.

### 3.1.4.13.6 Groups

None.

### 3.1.4.13.7 Attribute Groups

None.

### 3.1.4.14 UpdateData

This operation updates a list item in a list (1) in the content database and also updates the row (1) in the result set.

The following is the WSDL port type specification of the **UpdateData** WSDL operation.

```

<wsdl:operation name="UpdateData" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
  <wsdl:input
    wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/UpdateData"
    message="tns2:AccessServiceSoap_UpdateData_InputMessage"
    xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
  <wsdl:output
    wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/UpdateDataResponse"
    message="tns2:AccessServiceSoap_UpdateData_OutputMessage"
    xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
  <wsdl:fault
    wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/UpdateDataAccessServerMessageFault"
    name="AccessServerMessageFault"
    message="tns2:AccessServiceSoap_UpdateData_AccessServerMessageFault_FaultMessage"
    xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>

```

</wsdl:operation>

The protocol client sends an **AccessServiceSoap\_UpdateData\_InputMessage** request message and the protocol server responds with an **AccessServiceSoap\_UpdateData\_OutputMessage** response message as follows:

- The protocol server attempts to update the list item in the updatable list, as specified in section [3.1.1](#), which has a primary key equal to the **Key** element of the first **KeyValuePair** of the **keys** element.
- If the columns in the result set specified by the **Key** elements of the **KeyValuePair** elements of the **oldValues** element contain data different from what is specified by the respective **Value** elements of the **KeyValuePair** elements of the **oldValues**, a SOAP fault MUST be returned.
- If the list item was successfully updated, then the protocol server updates the row (1) in the result set with a primary key equal to the primary key of the updated list item.
- If the list item and row (1) were successfully updated, and the result set was opened by an **OpenResultSet** operation with the **autoResync** element (section [3.1.4.10.2.1](#)) set to "true", the protocol server retrieves the current values of all columns in the row. Otherwise, if the list item and row (1) were successfully updated, and the result set was opened by an **OpenResultSet** operation with the **autoResync** element (section [3.1.4.10.2.1](#)) set to "false", the protocol server retrieves the values from the current session (2).
- In the event of an application error on the protocol server during this operation, a SOAP fault is returned, as specified in section [2.2.9](#). The **Id** element of the **AccessServerMessage** MUST be one of the values specified in section [2.2.9.1](#) or one of the values in the following table.

Identifier	Description
WriteRecordsPermissionsFailure	See section <a href="#">2.2.5.2</a> .
DataException_ValidationFailed	See section <a href="#">2.2.5.2</a> .
DataException_DataOperationFailed	See section <a href="#">2.2.5.2</a> .
DeleteConflict	See section <a href="#">2.2.5.2</a> .
UpdateConflict	See section <a href="#">2.2.5.2</a> .

### 3.1.4.14.1 Messages

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

Message	Description
<b>AccessServiceSoap_UpdateData_InputMessage</b>	The request WSDL message for the <b>UpdateData</b> WSDL operation.
<b>AccessServiceSoap_UpdateData_OutputMessage</b>	The response WSDL message for the <b>UpdateData</b> WSDL operation.

### 3.1.4.14.1.1 AccessServiceSoap\_UpdateData\_InputMessage

The request WSDL message for the **UpdateData** WSDL operation.

The SOAP action value is:

```
http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/UpdateData
```

The SOAP body contains the **UpdateData** element.

### 3.1.4.14.1.2 AccessServiceSoap\_UpdateData\_OutputMessage

The response WSDL message for the **UpdateData** WSDL operation.

The SOAP body contains the **UpdateDataResponse** element.

### 3.1.4.14.2 Elements

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

Element	Description
<b>UpdateData</b>	The input data for the <b>UpdateData</b> WSDL operation.
<b>UpdateDataResponse</b>	The result data for the <b>UpdateData</b> WSDL operation.

#### 3.1.4.14.2.1 UpdateData

The **UpdateData** element specifies the input data for the **UpdateData** WSDL operation.

```
<xs:element name="UpdateData" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType>
    <xs:sequence>
      <xs:element
        xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="parameter" type="q1:CommandParameter"/>
      <xs:element minOccurs="0" maxOccurs="1" name="webUrl" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="moniker" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="listName" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="keys" type="tns2:ArrayOfKeyValuePair"/>
      <xs:element minOccurs="0" maxOccurs="1" name="values" type="tns2:ArrayOfKeyValuePair"/>
      <xs:element minOccurs="0" maxOccurs="1" name="oldValues"
        type="tns2:ArrayOfKeyValuePair"/>
      <xs:element xmlns:q3="http://microsoft.com/wsdl/types/" minOccurs="1" maxOccurs="1"
        name="correlationId" type="q3:guid"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

**parameter:** A **CommandParameter**, as specified in section [2.2.4.4](#). MUST be present.

**webUrl:** An absolute URL specifying the location of the site (2) containing the application. MUST be present.

**moniker:** The identifier for a result set. MUST be present. MUST contain an identifier that was previously supplied during the session (2) as the **moniker** element for the input to an **OpenResultSet** operation (section [3.1.4.10.2.1](#)).

**listName:** The data source (1) for the result set as specified for the **source** element for the input to an **OpenResultSet** operation (section [3.1.4.10.2.1](#)). MUST be present.

**keys:** Specifies the row (1) to update.

- MUST be present, and MUST contain exactly one **KeyValuePair** (section [2.2.4.6](#)).
- The **Key** element of the **KeyValuePair** MUST contain a primary key value for a row (1) in the result set.

**values:** An array of key and value pairs where each **Key** element specifies the name of a column in the result set, and the corresponding **Value** element contains the data for that column in the row.

- MUST be present.
- MUST contain at least one **KeyValuePair** (section [2.2.4.6](#)).
- For each **KeyValuePair**:
  - The **Value** element MUST be the correct data type for the column in the result set.
  - The **Value** element MUST either be empty and with the **nil** ([XMLSchemaInstance](#)) attribute set to "true" or have the **type** ([XMLSchemaInstance](#)) attribute set to one of the following:
    - boolean ([XMLSCHEMA2](#) section 3.2.2)
    - dateTime ([XMLSCHEMA2](#) section 3.2.7)
    - double ([XMLSCHEMA2](#) section 3.2.5)
    - string ([XMLSCHEMA2](#) section 3.2.1)
    - int ([XMLSCHEMA2](#) section 3.3.17)

**oldValues:** An array of key and value pairs where each **Key** element specifies the name of a column in the result set, and the corresponding **Value** element contains the value of the column in the row (1) prior to the update operation.

- MUST be present.
- MUST contain at least one **KeyValuePair** (section [2.2.4.6](#)).
- For each **KeyValuePair**
  - The **Value** element MUST be the correct data type for the column specified by **Key**.
  - The **Value** element MUST either be empty and with the **nil** ([XMLSchemaInstance](#)) attribute set to "true" or have the **type** ([XMLSchemaInstance](#)) attribute set to one of the following:
    - boolean ([XMLSCHEMA2](#) section 3.2.2)
    - dateTime ([XMLSCHEMA2](#) section 3.2.7)
    - double ([XMLSCHEMA2](#) section 3.2.5)

- string ([\[XMLSCHEMA2\]](#) section 3.2.1)
- int ([\[XMLSCHEMA2\]](#) section 3.3.17)

**correlationId:** An identifier for the operation.

### 3.1.4.14.2.2 UpdateDataResponse

The **UpdateDataResponse** element specifies the result data for the **UpdateData** WSDL operation.

```
<xs:element name="UpdateDataResponse" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType>
    <xs:sequence>
      <xs:element
        xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="UpdateDataResult" type="q1:CommandResult"/>
      <xs:element minOccurs="1" maxOccurs="1" name="recordsUpdated" type="xs:int"/>
      <xs:element minOccurs="0" maxOccurs="1" name="dataMacroId" type="xs:string"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

**UpdateDataResult:** A **CommandResult**, as specified in section [2.2.4.5](#). MUST be present.

**recordsUpdated:** MUST be "1".

**dataMacroId:** If the operation triggers a data macro, the protocol server MUST return the identifier of the instance of the data macro in this element. Otherwise, this element MUST NOT be present.

### 3.1.4.14.3 Complex Types

None.

### 3.1.4.14.4 Simple Types

None.

### 3.1.4.14.5 Attributes

None.

### 3.1.4.14.6 Groups

None.

### 3.1.4.14.7 Attribute Groups

None.

### 3.1.5 Timer Events

#### 3.1.5.1 Session Timeout

The **Session Timeout** event completes a request for a timed out session (2) with a SOAP fault, as specified in section [2.2.9](#), with the value of the **Id** element of the **AccessServerMessage** (section [2.2.4.1](#)) set to **NewWorkbookSessionTimeout**.

#### 3.1.6 Other Local Events

None.

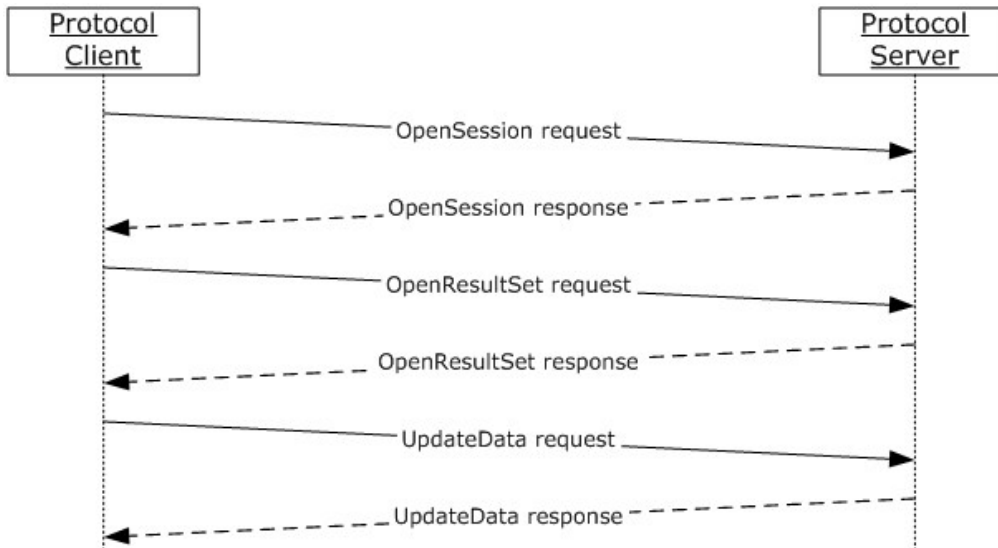
## 4 Protocol Examples

This example shows how to use methods described in this protocol for data operations between the protocol server and the protocol client.

The following information flow shows the sequence of actions:

1. The protocol client issues a request to open a new session (2).
2. The protocol server responds with a session identifier (2).
3. The protocol client requests data from a list stored on the protocol server.
4. The protocol server responds with a table of data from the result set.
5. The protocol client issues a request to update a row (1) in the list.
6. The protocol server responds with the confirmation of the update.
7. The protocol client issues a request to close a session (2).
8. The protocol server responds with the confirmation of the session (2) closure.

To simplify the example, the value of the **userToken** element has been omitted.



**Figure 2: Information flow for data operation between protocol client and protocol server**

The protocol client requests a new session (2) by sending the following message to the protocol server:

```
<s:Body xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <OpenSession
xmlns="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/">
    <parameter>
```



```

    <StateId
xmlns="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/">-1</StateId>
    <Confirmation
xmlns="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/">Blank</Confirmation>
    <ConfirmationChoice
xmlns="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/">false</ConfirmationChoice>
    <UserFriendlyDisplayName>Andrew Cencini</UserFriendlyDisplayName>
    <Zone
xmlns="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" />
    <RequestSiteId
xmlns="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/">beb895a-f22a-49d5-b8b0-f65d01d0a399</RequestSiteId>
    <CompleteResponseTimeout
xmlns="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/">0</CompleteResponseTimeout>
    <Flags
xmlns="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/"></Flags>
  </parameter>
  <cultureParameter>
    <UICultureName
xmlns="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/">en-US</UICultureName>
    <DataCultureName
xmlns="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/">en-US</DataCultureName>
    <SharePointDataCultureName
xmlns="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/"></SharePointDataCultureName>
    <TimeZoneSerialization
xmlns="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/">+0480#0000-11-00-01T02:00:00#0000#0000-03-00-02T02:00:00:0000#-0060</TimeZoneSerialization>
  </cultureParameter>
  <correlationId>A5F45088-7FA4-4e72-B1D6-1BD1A4B33FA1</correlationId>
</OpenSession>
</s:Body>

```

In the **cultureParameter** element of this request, the **UICultureName** and **DataCultureName** both have the value "en-US", specifying the UI culture and Data culture of this session (2). The value of the **TimeZoneSerialization** element is the time zone information for the session (2).

The protocol server responds with the following message, indicating the session (2) has been successfully opened:

```

<s:Body xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <OpenSessionResponse
xmlns="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/">
    <OpenSessionResult>
      <StateId
xmlns="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/">0</StateId>

```

```

    <HealthInformation
xmlns="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/">
    <StateFlags></StateFlags>
    <HealthScore>0</HealthScore>
</HealthInformation>
    <SecondsBeforeNextPoll
xmlns="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/">0</SecondsBeforeNextPoll>
    <EditSessionIsDirty
xmlns="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/">>false</EditSessionIsDirty>
    <EditSessionHasMultipleCollaborationUsers
xmlns="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/">>false</EditSessionHasMultipleCollaborationUsers>
    </OpenSessionResult>
    <sessionId>1.V22.21DwFJM2813YcOKcHqqjWp90.5.en-US5.en-US73.+0480#0000-11-00-01T02:00:00:0000#+0000#0000-03-00-02T02:00:00:0000#-006036.00000000-0000-0000-0000-00000000000001.U</sessionId>
    </OpenSessionResponse>
</s:Body>

```

The **sessionId** element in this response indicates the identifier of this session (2).

After the session (2) is set up, the protocol client requests data from a list named "NumbersAndLetters" in the content database by sending the following message to the protocol server:

```

<s:Body xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <OpenResultSet
xmlns="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/">
    <parameter>
      <WorkbookId
xmlns="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/">1.V22.21DwFJM2813YcOKcHqqjWp90.5.en-US5.en-US73.+0480#0000-11-00-01T02:00:00:0000#+0000#0000-03-00-02T02:00:00:0000#-006036.00000000-0000-0000-0000-00000000000001.U</WorkbookId>
      <StateId
xmlns="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/">-1</StateId>
      <Confirmation
xmlns="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/">Blank</Confirmation>
      <ConfirmationChoice
xmlns="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/">>false</ConfirmationChoice>
      <UserFriendlyDisplayName>Andrew Cencini</UserFriendlyDisplayName>
      <Zone
xmlns="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" />
      <RequestSiteId
xmlns="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/">bebf895a-f22a-49d5-b8b0-f65d01d0a399</RequestSiteId>
      <CompleteResponseTimeout
xmlns="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/">0</CompleteResponseTimeout>

```

```

    <Flags
xmlns="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/"></Flags>
  </parameter>
  <webUrl>http://www.microsoft.com/widgets</webUrl>
  <source>NumbersAndLetters</source>
  <sortExpression></sortExpression>
  <moniker>Default</moniker>
  <startRowIndex>0</startRowIndex>
  <maximumRows>3</maximumRows>
  <autoResync>true</autoResync>
  <correlationId>A5F45088-7FA4-4e72-B1D6-1BD1A4B33FA1</correlationId>
</OpenResultSet>
</s:Body>

```

In the request, the **WorkbookID** element has the same value as the value of the **sessionID** element in the **OpenSession** response the protocol client received for the current session (2). The **source** element has the value "NumbersAndLetters", indicating the data source for the result set. In this example, it is the "NumbersAndLetters" list in the content database.

The **webUrl** element has the value "http://www.microsoft.com/widgets". This is the absolute URL for the location of the application.

The protocol server responds with the following message:

```

<s:Body xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <OpenResultSetResponse
xmlns="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/">
    <OpenResultSetResult>
      <StateId
xmlns="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/">0</StateId>
      <HealthInformation
xmlns="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/">
        <StateFlags></StateFlags>
        <HealthScore>0</HealthScore>
      </HealthInformation>
      <SecondsBeforeNextPoll
xmlns="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/">0</SecondsBeforeNextPoll>
      <EditSessionIsDirty
xmlns="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/">>false</EditSessionIsDirty>
      <EditSessionHasMultipleCollaborationUsers
xmlns="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/">>false</EditSessionHasMultipleCollaborationUsers>
    </OpenResultSetResult>
    <tableXml>
      <DataTable>
        <xs:schema id="NewDataSet" xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns=""
xmlns:msdata="urn:schemas-microsoft-com:xml-msdata">
          <xs:element name="NewDataSet" msdata:IsDataSet="true" msdata:MainDataTable="Data"
msdata:UseCurrentLocale="true">
            <xs:complexType>
              <xs:choice minOccurs="0" maxOccurs="unbounded">
                <xs:element name="Data">

```

```

    <xs:complexType>
      <xs:sequence>
        <xs:element name="ID" type="xs:int"/></xs:element>
        <xs:element name="Number" type="xs:double" minOccurs="0"/></xs:element>
        <xs:element name="Letter" type="xs:string" minOccurs="0"/></xs:element>
        <xs:element name="Item_x0020_Child_x0020_Count" type="xs:int"
minOccurs="0"/></xs:element>
        <xs:element name="Folder_x0020_Child_x0020_Count" type="xs:int"
minOccurs="0"/></xs:element>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
</xs:choice>
</xs:complexType>
<xs:unique name="Constraint1" msdata:PrimaryKey="true">
  <xs:selector xpath="//Data"/></xs:selector>
  <xs:field xpath="ID"/></xs:field>
</xs:unique>
</xs:element>
</xs:schema>
<diffgr:diffgram xmlns:diffgr="urn:schemas-microsoft-com:xml-diffgram-v1"
xmlns:msdata="urn:schemas-microsoft-com:xml-msdata">
  <DocumentElement xmlns="">
    <Data diffgr:id="Data1" msdata:rowOrder="0" diffgr:hasChanges="inserted">
      <ID>1</ID>
      <Number>1</Number>
      <Letter>A</Letter>
      <Item_x0020_Child_x0020_Count>1</Item_x0020_Child_x0020_Count>
      <Folder_x0020_Child_x0020_Count>1</Folder_x0020_Child_x0020_Count>
    </Data>
    <Data diffgr:id="Data2" msdata:rowOrder="1" diffgr:hasChanges="inserted">
      <ID>2</ID>
      <Number>2</Number>
      <Letter>B</Letter>
      <Item_x0020_Child_x0020_Count>2</Item_x0020_Child_x0020_Count>
      <Folder_x0020_Child_x0020_Count>2</Folder_x0020_Child_x0020_Count>
    </Data>
    <Data diffgr:id="Data3" msdata:rowOrder="2" diffgr:hasChanges="inserted">
      <ID>3</ID>
      <Number>3</Number>
      <Letter>C</Letter>
      <Item_x0020_Child_x0020_Count>3</Item_x0020_Child_x0020_Count>
      <Folder_x0020_Child_x0020_Count>3</Folder_x0020_Child_x0020_Count>
    </Data>
  </DocumentElement>
</diffgr:diffgram>
</DataTable>
</tableXml>
<totalRowCount>200</totalRowCount>
</OpenResultSetResponse>
</s:Body>

```

The **table** element specifies a table containing the content of the returned rows (1). In this example, the table has 3 columns, "ID", "Number" and "Letter". The data returned is seen in the following table.

ID	Number	Letter
1	1	A
2	2	B
3	3	C

The value of the **totalRowCount** element is "200", meaning the data table opened on the protocol server has 200 records, although only 3 are returned in this response to the protocol client according to the **maximumRows** element in the **OpenResultSet** request.

After the session (2) is opened, the protocol client requests update data by sending the following message to the protocol server:

```
<s:Body>
  <UpdateData xmlns:i="http://www.w3.org/2001/XMLSchema-instance"
  xmlns="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/">
    <parameter
  xmlns:d4pl="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/">
      <d4pl:WorkbookId>1.V22.21DwFJM2813YcOKcHqgjWp90.5.en-US5.en-US73.+0480#0000-11-00-01T02:00:00#0000#0000-03-00-02T02:00:00#0000#-006036.00000000-0000-0000-0000-000000000001.U</d4pl:WorkbookId>
      <d4pl:StateId>-1</d4pl:StateId>
      <d4pl:Confirmation>Blank</d4pl:Confirmation>
      <d4pl:ConfirmationChoice>>false</d4pl:ConfirmationChoice>
      <d4pl:UserFriendlyDisplayName>MS-ADS Test</d4pl:UserFriendlyDisplayName>
      <d4pl:Zone />
      <d4pl:RequestSiteId>00000000-0000-0000-0000-000000000000</d4pl:RequestSiteId>
      <d4pl:CompleteResponseTimeout>0</d4pl:CompleteResponseTimeout>
      <d4pl:Flags>SuppressOneTimeRecalc</d4pl:Flags>
    </parameter>
    <webUrl>http://www.microsoft.com/widgets</webUrl>
    <moniker>Default</moniker>
    <listName>Comments</listName>
    <keys>
      <KeyValuePair>
        <Key xmlns:d6pl="http://www.w3.org/2001/XMLSchema" i:type="d6pl:int">9</Key>
        <Value i:nil="true" />
      </KeyValuePair>
    </keys>
    <values>
      <KeyValuePair>
        <Key xmlns:d6pl="http://www.w3.org/2001/XMLSchema" i:type="d6pl:string">Comment</Key>
        <Value xmlns:d6pl="http://www.w3.org/2001/XMLSchema" i:type="d6pl:string">UpdateData Test</Value>
      </KeyValuePair>
    </values>
    <oldValues>
      <KeyValuePair>
        <Key xmlns:d6pl="http://www.w3.org/2001/XMLSchema" i:type="d6pl:string">Comment</Key>
        <Value xmlns:d6pl="http://www.w3.org/2001/XMLSchema" i:type="d6pl:string">Insert Test</Value>
      </KeyValuePair>
    </oldValues>
  </UpdateData>
</s:Body>
```

```

    <correlationId>090d360f-b8ab-4ffa-87ba-a5de569b5d8b</correlationId>
  </UpdateData>
</s:Body>

```

The **listName** element in the request is specified as the source element for the input to an **OpenResultSet** operation.

The protocol server responds with the following message:

```

<s:Body xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema">
  <UpdateDataResponse
    xmlns="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/">
    <UpdateDataResult>
      <StateId
        xmlns="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/">0</StateId>
      <ExtendedInfo
        xmlns="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/">
        <Messages>
          </Messages>
        <WarnOnManualDataRefresh>false</WarnOnManualDataRefresh>
      </ExtendedInfo>
      <HealthInformation
        xmlns="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/">
        <StateFlags>
          </StateFlags>
        <HealthScore>0</HealthScore>
      </HealthInformation>
      <SecondsBeforeNextPoll
        xmlns="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/">0</SecondsBeforeNextPoll>
      <EditSessionIsDirty
        xmlns="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/">>false</EditSessionIsDirty>
      <EditSessionHasMultipleCollaborationUsers
        xmlns="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/">false</EditSessionHasMultipleCollaborationUsers>
    </UpdateDataResult>
    <recordsUpdated>1</recordsUpdated>
    <dataMacroId>524c7cd9b7cc4dd486069af733c4d42e</dataMacroId>
  </UpdateDataResponse>
</s:Body>

```

The protocol client requests close a session (2) by sending the following message to the protocol server:

```

<s:Body>
<CloseSession xmlns:i="http://www.w3.org/2001/XMLSchema-instance"
  xmlns="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/">
  <parameter
    xmlns:d4p1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/">

```

```

<d4p1:WorkbookId>1.V22.115QLq1gTGA0FVzoF71Ibz90.5.en-US5.en-US73.+0480#0000-11-00-
01T02:00:00:0000#+0000#0000-03-00-02T02:00:00:0000#+006036.00000000-0000-0000-0000-
0000000000001.U</d4p1:WorkbookId>
<d4p1:StateId>-1</d4p1:StateId>
<d4p1:Confirmation>Blank</d4p1:Confirmation>
<d4p1:ConfirmationChoice>>false</d4p1:ConfirmationChoice>
<d4p1:UserFriendlyDisplayName>MS-ADS Test</d4p1:UserFriendlyDisplayName>
<d4p1:Zone />
<d4p1:RequestSiteId>00000000-0000-0000-0000-000000000000</d4p1:RequestSiteId>
<d4p1:CompleteResponseTimeout>0</d4p1:CompleteResponseTimeout>
<d4p1:Flags>SuppressOneTimeRecalc</d4p1:Flags>
</parameter>
<correlationId>00000000-0000-0000-0000-000000000000</correlationId>
</CloseSession>
</s:Body>

```

The **WorkbookId** element in this request is the **SessionId** in the **OpenSession** response.

The protocol server responds with the following message, indicating the session (2) has been successfully closed:

```

<s:Body xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema">
<CloseSessionResponse
xmlns="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalServ
ice/">
<CloseSessionResult>
<StateId
xmlns="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalServic
e/">0</StateId>
<ExtendedInfo
xmlns="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalServic
e/">
<Messages>
</Messages>
<WarnOnManualDataRefresh>>false</WarnOnManualDataRefresh>
</ExtendedInfo>
<HealthInformation
xmlns="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalServic
e/">
<StateFlags>
</StateFlags>
<HealthScore>0</HealthScore>
</HealthInformation>
<SecondsBeforeNextPoll
xmlns="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalServic
e/">0</SecondsBeforeNextPoll>
<EditSessionIsDirty
xmlns="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalServic
e/">>false</EditSessionIsDirty>
<EditSessionHasMultipleCollaborationUsers
xmlns="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalServic
e/">>false</EditSessionHasMultipleCollaborationUsers>
</CloseSessionResult>
</CloseSessionResponse>
</s:Body>

```

## 5 Security

### 5.1 Security Considerations for Implementers

In addition to the security considerations applicable to the underlying protocols, there are security risks associated with exposing session identifiers (2). If the session identifier (2) is exposed, it is possible for an attacker to read information from, or modify data in, a session (2) on the protocol server. An implementer of this protocol needs to consider keeping session identifiers (2) protected. There could be some cases where it is desirable to expose the session identifier (2), however, an implementer is to use caution in how they expose session identifiers (2) and consider the security risks.

### 5.2 Index of Security Parameters

None.



## 6 Appendix A: Full WSDL

For ease of implementation, the full WSDL is provided in this appendix.

```
<?xml version="1.0"?>
<wsdl:definitions xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
xmlns:tns2="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/" xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"
targetNamespace="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
  <wsdl:types>
    <xs:schema
xmlns:tns3="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/Imports"
targetNamespace="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/Imports">
      <xs:import namespace="http://microsoft.com/wsdl/types/" />
      <xs:import
namespace="http://schemas.datacontract.org/2004/07/Microsoft.Office.Access.Server"/>
      <xs:import namespace="http://schemas.microsoft.com/2003/10/Serialization/" />
      <xs:import
namespace="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/" />
      <xs:import
namespace="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" />
    </xs:schema>
  </wsdl:types>
  <wsdl:portType name="AccessServiceSoap">
    <wsdl:operation name="GetHealthScore">
      <wsdl:input
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/GetHealthScore"
message="tns2:AccessServiceSoap_GetHealthScore_InputMessage" />
      <wsdl:output
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/GetHealthScoreResponse"
message="tns2:AccessServiceSoap_GetHealthScore_OutputMessage" />
      <wsdl:fault
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/GetHealthScoreAccessServerMessageFault"
name="AccessServerMessageFault"
message="tns2:AccessServiceSoap_GetHealthScore_AccessServerMessageFault_FaultMessage" />
    </wsdl:operation>
    <wsdl:operation name="GetMacroState">
      <wsdl:input
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/GetMacroState"
message="tns2:AccessServiceSoap_GetMacroState_InputMessage" />
      <wsdl:output
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/GetMacroStateResponse"
message="tns2:AccessServiceSoap_GetMacroState_OutputMessage" />
      <wsdl:fault
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/AccessServiceSoap/GetMacroStateAccessServerMessageFault"
name="AccessServerMessageFault"
message="tns2:AccessServiceSoap_GetMacroState_AccessServerMessageFault_FaultMessage" />
    </wsdl:operation>
    <wsdl:operation name="RunDataMacro">
```

```

    <wsdl:input
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/RunDataMacro"
message="tns2:AccessServiceSoap_RunDataMacro_InputMessage"/>
    <wsdl:output
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/RunDataMacroResponse"
message="tns2:AccessServiceSoap_RunDataMacro_OutputMessage"/>
    <wsdl:fault
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/RunDataMacroAccessServerMessageFault"
name="AccessServerMessageFault"
message="tns2:AccessServiceSoap_RunDataMacro_AccessServerMessageFault_FaultMessage"/>
    </wsdl:operation>
    <wsdl:operation name="OpenSession">
    <wsdl:input
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/OpenSession"
message="tns2:AccessServiceSoap_OpenSession_InputMessage"/>
    <wsdl:output
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/OpenSessionResponse"
message="tns2:AccessServiceSoap_OpenSession_OutputMessage"/>
    <wsdl:fault
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/OpenSessionAccessServerMessageFault"
name="AccessServerMessageFault"
message="tns2:AccessServiceSoap_OpenSession_AccessServerMessageFault_FaultMessage"/>
    </wsdl:operation>
    <wsdl:operation name="CloseSession">
    <wsdl:input
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/CloseSession"
message="tns2:AccessServiceSoap_CloseSession_InputMessage"/>
    <wsdl:output
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/CloseSessionResponse"
message="tns2:AccessServiceSoap_CloseSession_OutputMessage"/>
    <wsdl:fault
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/CloseSessionAccessServerMessageFault"
name="AccessServerMessageFault"
message="tns2:AccessServiceSoap_CloseSession_AccessServerMessageFault_FaultMessage"/>
    </wsdl:operation>
    <wsdl:operation name="KeepAlive">
    <wsdl:input
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/KeepAlive"
message="tns2:AccessServiceSoap_KeepAlive_InputMessage"/>
    <wsdl:output
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/KeepAliveResponse"
message="tns2:AccessServiceSoap_KeepAlive_OutputMessage"/>
    <wsdl:fault
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/KeepAliveAccessServerMessageFault"
name="AccessServerMessageFault"
message="tns2:AccessServiceSoap_KeepAlive_AccessServerMessageFault_FaultMessage"/>
    </wsdl:operation>
    <wsdl:operation name="OpenResultSet">
    <wsdl:input
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern

```

```

alService/AccessServiceSoap/OpenResultSet"
message="tns2:AccessServiceSoap_OpenResultSet_InputMessage"/>
  <wsdl:output
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/OpenResultSetResponse"
message="tns2:AccessServiceSoap_OpenResultSet_OutputMessage"/>
  <wsdl:fault
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/OpenResultSetAccessServerMessageFault"
name="AccessServerMessageFault"
message="tns2:AccessServiceSoap_OpenResultSet_AccessServerMessageFault_FaultMessage"/>
  </wsdl:operation>
  <wsdl:operation name="GetData">
    <wsdl:input
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/GetData" message="tns2:AccessServiceSoap_GetData_InputMessage"/>
    <wsdl:output
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/GetDataResponse"
message="tns2:AccessServiceSoap_GetData_OutputMessage"/>
    <wsdl:fault
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/GetDataAccessServerMessageFault" name="AccessServerMessageFault"
message="tns2:AccessServiceSoap_GetData_AccessServerMessageFault_FaultMessage"/>
    </wsdl:operation>
    <wsdl:operation name="InsertData">
      <wsdl:input
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/InsertData"
message="tns2:AccessServiceSoap_InsertData_InputMessage"/>
      <wsdl:output
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/InsertDataResponse"
message="tns2:AccessServiceSoap_InsertData_OutputMessage"/>
      <wsdl:fault
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/InsertDataAccessServerMessageFault"
name="AccessServerMessageFault"
message="tns2:AccessServiceSoap_InsertData_AccessServerMessageFault_FaultMessage"/>
      </wsdl:operation>
      <wsdl:operation name="UpdateData">
        <wsdl:input
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/UpdateData"
message="tns2:AccessServiceSoap_UpdateData_InputMessage"/>
        <wsdl:output
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/UpdateDataResponse"
message="tns2:AccessServiceSoap_UpdateData_OutputMessage"/>
        <wsdl:fault
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/UpdateDataAccessServerMessageFault"
name="AccessServerMessageFault"
message="tns2:AccessServiceSoap_UpdateData_AccessServerMessageFault_FaultMessage"/>
        </wsdl:operation>
        <wsdl:operation name="FixupRow">
          <wsdl:input
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/FixupRow"
message="tns2:AccessServiceSoap_FixupRow_InputMessage"/>
          <wsdl:output
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/FixupRowResponse"
message="tns2:AccessServiceSoap_FixupRow_OutputMessage"/>

```

```

    <wsdl:fault
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/FixupRowAccessServerMessageFault" name="AccessServerMessageFault"
message="tns2:AccessServiceSoap_FixupRow_AccessServerMessageFault_FaultMessage"/>
    </wsdl:operation>
    <wsdl:operation name="DeleteData">
    <wsdl:input
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/DeleteData"
message="tns2:AccessServiceSoap_DeleteData_InputMessage"/>
    <wsdl:output
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/DeleteDataResponse"
message="tns2:AccessServiceSoap_DeleteData_OutputMessage"/>
    <wsdl:fault
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/DeleteDataAccessServerMessageFault"
name="AccessServerMessageFault"
message="tns2:AccessServiceSoap_DeleteData_AccessServerMessageFault_FaultMessage"/>
    </wsdl:operation>
    <wsdl:operation name="UpdateCache">
    <wsdl:input
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/UpdateCache"
message="tns2:AccessServiceSoap_UpdateCache_InputMessage"/>
    <wsdl:output
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/UpdateCacheResponse"
message="tns2:AccessServiceSoap_UpdateCache_OutputMessage"/>
    <wsdl:fault
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/UpdateCacheAccessServerMessageFault"
name="AccessServerMessageFault"
message="tns2:AccessServiceSoap_UpdateCache_AccessServerMessageFault_FaultMessage"/>
    </wsdl:operation>
    <wsdl:operation name="GetDistinctValues">
    <wsdl:input
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/GetDistinctValues"
message="tns2:AccessServiceSoap_GetDistinctValues_InputMessage"/>
    <wsdl:output
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/GetDistinctValuesResponse"
message="tns2:AccessServiceSoap_GetDistinctValues_OutputMessage"/>
    <wsdl:fault
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/GetDistinctValuesAccessServerMessageFault"
name="AccessServerMessageFault"
message="tns2:AccessServiceSoap_GetDistinctValues_AccessServerMessageFault_FaultMessage"/>
    </wsdl:operation>
</wsdl:portType>
    <wsdl:binding name="DefaultBinding_AccessServiceSoap" type="tns2:AccessServiceSoap">
    <soap:binding transport="http://schemas.xmlsoap.org/soap/http"/>
    <wsdl:operation name="GetHealthScore">
    <soap:operation
soapAction="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/GetHealthScore" style="document"/>
    <wsdl:input>
    <soap:body use="literal"/>
    </wsdl:input>
    <wsdl:output>
    <soap:body use="literal"/>

```

```

    </wsdl:output>
    <wsdl:fault name="AccessServerMessageFault">
      <soap:fault use="literal" name="AccessServerMessageFault" namespace=""/>
    </wsdl:fault>
  </wsdl:operation>
  <wsdl:operation name="GetMacroState">
    <soap:operation
soapAction="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/GetMacroState" style="document"/>
    <wsdl:input>
      <soap:body use="literal"/>
    </wsdl:input>
    <wsdl:output>
      <soap:body use="literal"/>
    </wsdl:output>
    <wsdl:fault name="AccessServerMessageFault">
      <soap:fault use="literal" name="AccessServerMessageFault" namespace=""/>
    </wsdl:fault>
  </wsdl:operation>
  <wsdl:operation name="RunDataMacro">
    <soap:operation
soapAction="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/RunDataMacro" style="document"/>
    <wsdl:input>
      <soap:body use="literal"/>
    </wsdl:input>
    <wsdl:output>
      <soap:body use="literal"/>
    </wsdl:output>
    <wsdl:fault name="AccessServerMessageFault">
      <soap:fault use="literal" name="AccessServerMessageFault" namespace=""/>
    </wsdl:fault>
  </wsdl:operation>
  <wsdl:operation name="OpenSession">
    <soap:operation
soapAction="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/OpenSession" style="document"/>
    <wsdl:input>
      <soap:body use="literal"/>
    </wsdl:input>
    <wsdl:output>
      <soap:body use="literal"/>
    </wsdl:output>
    <wsdl:fault name="AccessServerMessageFault">
      <soap:fault use="literal" name="AccessServerMessageFault" namespace=""/>
    </wsdl:fault>
  </wsdl:operation>
  <wsdl:operation name="CloseSession">
    <soap:operation
soapAction="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/CloseSession" style="document"/>
    <wsdl:input>
      <soap:body use="literal"/>
    </wsdl:input>
    <wsdl:output>
      <soap:body use="literal"/>
    </wsdl:output>
    <wsdl:fault name="AccessServerMessageFault">
      <soap:fault use="literal" name="AccessServerMessageFault" namespace=""/>
    </wsdl:fault>
  </wsdl:operation>

```

```

</wsdl:operation>
<wsdl:operation name="KeepAlive">
  <soap:operation
soapAction="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
lService/AccessServiceSoap/KeepAlive" style="document"/>
  <wsdl:input>
    <soap:body use="literal"/>
  </wsdl:input>
  <wsdl:output>
    <soap:body use="literal"/>
  </wsdl:output>
  <wsdl:fault name="AccessServerMessageFault">
    <soap:fault use="literal" name="AccessServerMessageFault" namespace=""/>
  </wsdl:fault>
</wsdl:operation>
<wsdl:operation name="OpenResultSet">
  <soap:operation
soapAction="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
lService/AccessServiceSoap/OpenResultSet" style="document"/>
  <wsdl:input>
    <soap:body use="literal"/>
  </wsdl:input>
  <wsdl:output>
    <soap:body use="literal"/>
  </wsdl:output>
  <wsdl:fault name="AccessServerMessageFault">
    <soap:fault use="literal" name="AccessServerMessageFault" namespace=""/>
  </wsdl:fault>
</wsdl:operation>
<wsdl:operation name="GetData">
  <soap:operation
soapAction="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
lService/AccessServiceSoap/GetData" style="document"/>
  <wsdl:input>
    <soap:body use="literal"/>
  </wsdl:input>
  <wsdl:output>
    <soap:body use="literal"/>
  </wsdl:output>
  <wsdl:fault name="AccessServerMessageFault">
    <soap:fault use="literal" name="AccessServerMessageFault" namespace=""/>
  </wsdl:fault>
</wsdl:operation>
<wsdl:operation name="InsertData">
  <soap:operation
soapAction="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
lService/AccessServiceSoap/InsertData" style="document"/>
  <wsdl:input>
    <soap:body use="literal"/>
  </wsdl:input>
  <wsdl:output>
    <soap:body use="literal"/>
  </wsdl:output>
  <wsdl:fault name="AccessServerMessageFault">
    <soap:fault use="literal" name="AccessServerMessageFault" namespace=""/>
  </wsdl:fault>
</wsdl:operation>
<wsdl:operation name="UpdateData">

```

```

    <soap:operation
soapAction="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/UpdateData" style="document"/>
    <wsdl:input>
        <soap:body use="literal"/>
    </wsdl:input>
    <wsdl:output>
        <soap:body use="literal"/>
    </wsdl:output>
    <wsdl:fault name="AccessServerMessageFault">
        <soap:fault use="literal" name="AccessServerMessageFault" namespace=""/>
    </wsdl:fault>
</wsdl:operation>
<wsdl:operation name="FixupRow">
    <soap:operation
soapAction="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/FixupRow" style="document"/>
    <wsdl:input>
        <soap:body use="literal"/>
    </wsdl:input>
    <wsdl:output>
        <soap:body use="literal"/>
    </wsdl:output>
    <wsdl:fault name="AccessServerMessageFault">
        <soap:fault use="literal" name="AccessServerMessageFault" namespace=""/>
    </wsdl:fault>
</wsdl:operation>
<wsdl:operation name="DeleteData">
    <soap:operation
soapAction="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/DeleteData" style="document"/>
    <wsdl:input>
        <soap:body use="literal"/>
    </wsdl:input>
    <wsdl:output>
        <soap:body use="literal"/>
    </wsdl:output>
    <wsdl:fault name="AccessServerMessageFault">
        <soap:fault use="literal" name="AccessServerMessageFault" namespace=""/>
    </wsdl:fault>
</wsdl:operation>
<wsdl:operation name="UpdateCache">
    <soap:operation
soapAction="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/UpdateCache" style="document"/>
    <wsdl:input>
        <soap:body use="literal"/>
    </wsdl:input>
    <wsdl:output>
        <soap:body use="literal"/>
    </wsdl:output>
    <wsdl:fault name="AccessServerMessageFault">
        <soap:fault use="literal" name="AccessServerMessageFault" namespace=""/>
    </wsdl:fault>
</wsdl:operation>
<wsdl:operation name="GetDistinctValues">
    <soap:operation
soapAction="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/GetDistinctValues" style="document"/>
    <wsdl:input>

```

```

        <soap:body use="literal"/>
    </wsdl:input>
    <wsdl:output>
        <soap:body use="literal"/>
    </wsdl:output>
    <wsdl:fault name="AccessServerMessageFault">
        <soap:fault use="literal" name="AccessServerMessageFault" namespace=""/>
    </wsdl:fault>
</wsdl:operation>
</wsdl:binding>
<wsdl:message name="AccessServiceSoap_CloseSession_AccessServerMessageFault_FaultMessage">
    <wsdl:part
xmlns:tns="http://schemas.datacontract.org/2004/07/Microsoft.Office.Access.Server"
name="detail" element="tns:AccessServerMessage"/>
</wsdl:part>
</wsdl:message>
<wsdl:message name="AccessServiceSoap_CloseSession_InputMessage">
    <wsdl:part name="parameters" element="tns2:CloseSession"/>
</wsdl:part>
</wsdl:message>
<wsdl:message name="AccessServiceSoap_CloseSession_OutputMessage">
    <wsdl:part name="parameters" element="tns2:CloseSessionResponse"/>
</wsdl:part>
</wsdl:message>
<wsdl:message name="AccessServiceSoap_DeleteData_AccessServerMessageFault_FaultMessage">
    <wsdl:part
xmlns:tns="http://schemas.datacontract.org/2004/07/Microsoft.Office.Access.Server"
name="detail" element="tns:AccessServerMessage"/>
</wsdl:part>
</wsdl:message>
<wsdl:message name="AccessServiceSoap_DeleteData_InputMessage">
    <wsdl:part name="parameters" element="tns2>DeleteData"/>
</wsdl:part>
</wsdl:message>
<wsdl:message name="AccessServiceSoap_DeleteData_OutputMessage">
    <wsdl:part name="parameters" element="tns2>DeleteDataResponse"/>
</wsdl:part>
</wsdl:message>
<wsdl:message name="AccessServiceSoap_FixupRow_AccessServerMessageFault_FaultMessage">
    <wsdl:part
xmlns:tns="http://schemas.datacontract.org/2004/07/Microsoft.Office.Access.Server"
name="detail" element="tns:AccessServerMessage"/>
</wsdl:part>
</wsdl:message>
<wsdl:message name="AccessServiceSoap_FixupRow_InputMessage">
    <wsdl:part name="parameters" element="tns2:FixupRow"/>
</wsdl:part>
</wsdl:message>
<wsdl:message name="AccessServiceSoap_FixupRow_OutputMessage">
    <wsdl:part name="parameters" element="tns2:FixupRowResponse"/>
</wsdl:part>
</wsdl:message>
<wsdl:message name="AccessServiceSoap_GetData_AccessServerMessageFault_FaultMessage">
    <wsdl:part
xmlns:tns="http://schemas.datacontract.org/2004/07/Microsoft.Office.Access.Server"
name="detail" element="tns:AccessServerMessage"/>
</wsdl:part>
</wsdl:message>
<wsdl:message name="AccessServiceSoap_GetData_InputMessage">
    <wsdl:part name="parameters" element="tns2:GetData"/>
</wsdl:part>
</wsdl:message>
<wsdl:message name="AccessServiceSoap_GetData_OutputMessage">
    <wsdl:part name="parameters" element="tns2:GetDataResponse"/>
</wsdl:part>
</wsdl:message>
<wsdl:message
name="AccessServiceSoap_GetDistinctValues_AccessServerMessageFault_FaultMessage">
    <wsdl:part
xmlns:tns="http://schemas.datacontract.org/2004/07/Microsoft.Office.Access.Server"
name="detail" element="tns:AccessServerMessage"/>
</wsdl:part>
</wsdl:message>

```



```

<wsdl:message name="AccessServiceSoap_GetDistinctValues_InputMessage">
  <wsdl:part name="parameters" element="tns2:GetDistinctValues"/>
</wsdl:message>
<wsdl:message name="AccessServiceSoap_GetDistinctValues_OutputMessage">
  <wsdl:part name="parameters" element="tns2:GetDistinctValuesResponse"/>
</wsdl:message>
<wsdl:message
name="AccessServiceSoap_GetHealthScore_AccessServerMessageFault_FaultMessage">
  <wsdl:part
xmlns:tns="http://schemas.datacontract.org/2004/07/Microsoft.Office.Access.Server"
name="detail" element="tns:AccessServerMessage"/>
</wsdl:message>
<wsdl:message name="AccessServiceSoap_GetHealthScore_InputMessage">
  <wsdl:part name="parameters" element="tns2:GetHealthScore"/>
</wsdl:message>
<wsdl:message name="AccessServiceSoap_GetHealthScore_OutputMessage">
  <wsdl:part name="parameters" element="tns2:GetHealthScoreResponse"/>
</wsdl:message>
<wsdl:message name="AccessServiceSoap_GetMacroState_AccessServerMessageFault_FaultMessage">
  <wsdl:part
xmlns:tns="http://schemas.datacontract.org/2004/07/Microsoft.Office.Access.Server"
name="detail" element="tns:AccessServerMessage"/>
</wsdl:message>
<wsdl:message name="AccessServiceSoap_GetMacroState_InputMessage">
  <wsdl:part name="parameters" element="tns2:GetMacroState"/>
</wsdl:message>
<wsdl:message name="AccessServiceSoap_GetMacroState_OutputMessage">
  <wsdl:part name="parameters" element="tns2:GetMacroStateResponse"/>
</wsdl:message>
<wsdl:message name="AccessServiceSoap_InsertData_AccessServerMessageFault_FaultMessage">
  <wsdl:part
xmlns:tns="http://schemas.datacontract.org/2004/07/Microsoft.Office.Access.Server"
name="detail" element="tns:AccessServerMessage"/>
</wsdl:message>
<wsdl:message name="AccessServiceSoap_InsertData_InputMessage">
  <wsdl:part name="parameters" element="tns2:InsertData"/>
</wsdl:message>
<wsdl:message name="AccessServiceSoap_InsertData_OutputMessage">
  <wsdl:part name="parameters" element="tns2:InsertDataResponse"/>
</wsdl:message>
<wsdl:message name="AccessServiceSoap_KeepAlive_AccessServerMessageFault_FaultMessage">
  <wsdl:part
xmlns:tns="http://schemas.datacontract.org/2004/07/Microsoft.Office.Access.Server"
name="detail" element="tns:AccessServerMessage"/>
</wsdl:message>
<wsdl:message name="AccessServiceSoap_KeepAlive_InputMessage">
  <wsdl:part name="parameters" element="tns2:KeepAlive"/>
</wsdl:message>
<wsdl:message name="AccessServiceSoap_KeepAlive_OutputMessage">
  <wsdl:part name="parameters" element="tns2:KeepAliveResponse"/>
</wsdl:message>
<wsdl:message name="AccessServiceSoap_OpenResultSet_AccessServerMessageFault_FaultMessage">
  <wsdl:part
xmlns:tns="http://schemas.datacontract.org/2004/07/Microsoft.Office.Access.Server"
name="detail" element="tns:AccessServerMessage"/>
</wsdl:message>
<wsdl:message name="AccessServiceSoap_OpenResultSet_InputMessage">
  <wsdl:part name="parameters" element="tns2:OpenResultSet"/>
</wsdl:message>
<wsdl:message name="AccessServiceSoap_OpenResultSet_OutputMessage">

```

```

    <wsdl:part name="parameters" element="tns2:OpenResultSetResponse"/>
  </wsdl:message>
  <wsdl:message name="AccessServiceSoap_OpenSession_AccessServerMessageFault_FaultMessage">
    <wsdl:part
xmlns:tns="http://schemas.datacontract.org/2004/07/Microsoft.Office.Access.Server"
name="detail" element="tns:AccessServerMessage"/>
  </wsdl:message>
  <wsdl:message name="AccessServiceSoap_OpenSession_InputMessage">
    <wsdl:part name="parameters" element="tns2:OpenSession"/>
  </wsdl:message>
  <wsdl:message name="AccessServiceSoap_OpenSession_OutputMessage">
    <wsdl:part name="parameters" element="tns2:OpenSessionResponse"/>
  </wsdl:message>
  <wsdl:message name="AccessServiceSoap_RunDataMacro_AccessServerMessageFault_FaultMessage">
    <wsdl:part
xmlns:tns="http://schemas.datacontract.org/2004/07/Microsoft.Office.Access.Server"
name="detail" element="tns:AccessServerMessage"/>
  </wsdl:message>
  <wsdl:message name="AccessServiceSoap_RunDataMacro_InputMessage">
    <wsdl:part name="parameters" element="tns2:RunDataMacro"/>
  </wsdl:message>
  <wsdl:message name="AccessServiceSoap_RunDataMacro_OutputMessage">
    <wsdl:part name="parameters" element="tns2:RunDataMacroResponse"/>
  </wsdl:message>
  <wsdl:message name="AccessServiceSoap_UpdateCache_AccessServerMessageFault_FaultMessage">
    <wsdl:part
xmlns:tns="http://schemas.datacontract.org/2004/07/Microsoft.Office.Access.Server"
name="detail" element="tns:AccessServerMessage"/>
  </wsdl:message>
  <wsdl:message name="AccessServiceSoap_UpdateCache_InputMessage">
    <wsdl:part name="parameters" element="tns2:UpdateCache"/>
  </wsdl:message>
  <wsdl:message name="AccessServiceSoap_UpdateCache_OutputMessage">
    <wsdl:part name="parameters" element="tns2:UpdateCacheResponse"/>
  </wsdl:message>
  <wsdl:message name="AccessServiceSoap_UpdateData_AccessServerMessageFault_FaultMessage">
    <wsdl:part
xmlns:tns="http://schemas.datacontract.org/2004/07/Microsoft.Office.Access.Server"
name="detail" element="tns:AccessServerMessage"/>
  </wsdl:message>
  <wsdl:message name="AccessServiceSoap_UpdateData_InputMessage">
    <wsdl:part name="parameters" element="tns2:UpdateData"/>
  </wsdl:message>
  <wsdl:message name="AccessServiceSoap_UpdateData_OutputMessage">
    <wsdl:part name="parameters" element="tns2:UpdateDataResponse"/>
  </wsdl:message>
</wsdl:definitions>

```

## 7 Appendix B: Full XML Schema

Schema name	Prefix	Section
http://microsoft.com/wsdl/types/	q3	<a href="#">7.1</a>
http://schemas.datacontract.org/2004/07/Microsoft.Office.Access.Server	tns	<a href="#">7.2</a>
http://schemas.microsoft.com/2003/10/Serialization/	tns1	<a href="#">7.3</a>
http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/	tns2	<a href="#">7.4</a>
http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/	q1	<a href="#">7.5</a>

For ease of implementation, the following sections provide the full XML schema for this protocol.

### 7.1 http://microsoft.com/wsdl/types/ Schema

```
<?xml version="1.0"?>
<xs:schema elementFormDefault="qualified" targetNamespace="http://microsoft.com/wsdl/types/"
  xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:simpleType name="guid">
    <xs:restriction base="xs:string">
      <xs:pattern value="[0-9a-fA-F]{8}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-[0-9a-fA-F]{12}"/>
    </xs:restriction>
  </xs:simpleType>
</xs:schema>
```

### 7.2 http://schemas.datacontract.org/2004/07/Microsoft.Office.Access.Server Schema

```
<?xml version="1.0"?>
<xs:schema xmlns:tns="http://schemas.datacontract.org/2004/07/Microsoft.Office.Access.Server"
  elementFormDefault="qualified"
  targetNamespace="http://schemas.datacontract.org/2004/07/Microsoft.Office.Access.Server"
  xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:import namespace="http://schemas.microsoft.com/2003/10/Serialization/" />
  <xs:complexType name="AccessServerMessage">
    <xs:sequence>
      <xs:element minOccurs="0" name="Buttons" type="tns:AccessServerMessageButtons"/>
      <xs:element minOccurs="0" name="Caption" nillable="true" type="xs:string"/>
      <xs:element minOccurs="0" name="Description" nillable="true" type="xs:string"/>
      <xs:element minOccurs="0" name="ErrorNumber" nillable="true" type="xs:int"/>
      <xs:element minOccurs="0" name="ExtendedDescription" nillable="true" type="xs:string"/>
      <xs:element minOccurs="0" name="HealthInformation" nillable="true"
        type="tns:ServerHealthInformation"/>
      <xs:element minOccurs="0" name="HelpDisplayText" nillable="true" type="xs:string"/>
      <xs:element minOccurs="0" name="HelpTopicId" nillable="true" type="xs:string"/>
      <xs:element minOccurs="0" name="Id" type="tns:AccessServerMessageId"/>
      <xs:element minOccurs="0" name="Severity" type="tns:AccessServerMessageSeverity"/>
      <xs:element minOccurs="0" name="Type" type="tns:AccessServerMessageType"/>
    </xs:sequence>
  </xs:complexType>
```

```

<xs:element name="AccessServerMessage" nillable="true" type="tns:AccessServerMessage"/>
<xs:simpleType name="AccessServerMessageButtons">
  <xs:list>
    <xs:simpleType>
      <xs:restriction base="xs:string">
        <xs:enumeration value="None"/>
        <xs:enumeration value="OK"/>
        <xs:enumeration value="Cancel"/>
        <xs:enumeration value="Yes"/>
        <xs:enumeration value="No"/>
      </xs:restriction>
    </xs:simpleType>
  </xs:list>
</xs:simpleType>
<xs:element name="AccessServerMessageButtons" nillable="true"
type="tns:AccessServerMessageButtons"/>
<xs:complexType name="ServerHealthInformation">
  <xs:sequence>
    <xs:element minOccurs="0" name="HealthScore" type="xs:float"/>
    <xs:element minOccurs="0" name="StateFlags" type="tns:ServerStateFlags"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="ServerHealthInformation" nillable="true"
type="tns:ServerHealthInformation"/>
<xs:simpleType name="ServerStateFlags">
  <xs:list>
    <xs:simpleType>
      <xs:restriction base="xs:string">
        <xs:enumeration value="None"/>
        <xs:enumeration value="Probation"/>
        <xs:enumeration value="ShuttingDown"/>
      </xs:restriction>
    </xs:simpleType>
  </xs:list>
</xs:simpleType>
<xs:element name="ServerStateFlags" nillable="true" type="tns:ServerStateFlags"/>
<xs:simpleType name="AccessServerMessageId">
  <xs:restriction base="xs:string">
    <xs:enumeration value="Blank"/>
    <xs:enumeration value="InternalError"/>
    <xs:enumeration value="ManagementUIInternalError"/>
    <xs:enumeration value="GetRecordsPermissionsFailure"/>
    <xs:enumeration value="WriteRecordsPermissionsFailure"/>
    <xs:enumeration value="EditValueListPermissionsFailure"/>
    <xs:enumeration value="NotMemberOfRole"/>
    <xs:enumeration value="MaxSessionsPerUserExceeded"/>
    <xs:enumeration value="SiteCollectionCpuQuotaExceeded"/>
    <xs:enumeration value="SessionMemoryQuotaExceeded"/>
    <xs:enumeration value="SiteCollectionMemoryQuotaExceeded"/>
    <xs:enumeration value="RetryError"/>
    <xs:enumeration value="MaxRequestDurationExceeded"/>
    <xs:enumeration value="ProductExpired"/>
    <xs:enumeration value="NewWorkbookSessionTimeout"/>
    <xs:enumeration value="DataException_DataOperationFailed"/>
    <xs:enumeration value="DataException_CacheOperationInvalid"/>
    <xs:enumeration value="DataException_ValidationFailed"/>
    <xs:enumeration value="DataException_MaxRecordsInTableExceeded"/>
    <xs:enumeration value="DataException_InvalidPageNumber"/>
    <xs:enumeration value="DataException_DataMacroNotFound"/>
  </xs:restriction>
</xs:simpleType>

```

```

<xs:enumeration value="InvalidFilterExpression"/>
<xs:enumeration value="InvalidAggregateExpression"/>
<xs:enumeration value="InvalidArgument"/>
<xs:enumeration value="NullArgument"/>
<xs:enumeration value="WebServiceUpdateIdConflict"/>
<xs:enumeration value="QueryException_AmbiguousValuesProvided"/>
<xs:enumeration value="QueryException_InvalidCompiledQueryVersion"/>
<xs:enumeration value="QueryException_InvalidSourceUsageWithoutJoin"/>
<xs:enumeration value="QueryException_InvalidExpression"/>
<xs:enumeration value="QueryException_InvalidLikeArgumentsExpression"/>
<xs:enumeration value="QueryException_InvalidLikeFieldTypeInExpression"/>
<xs:enumeration value="QueryException_InvalidInArgumentsExpression"/>
<xs:enumeration value="QueryException_InvalidAxlEncoding"/>
<xs:enumeration value="QueryException_InvalidOrderPropertyName"/>
<xs:enumeration value="QueryException_InvalidOrderSourceName"/>
<xs:enumeration value="QueryException_InvalidJoinLeftSourceName"/>
<xs:enumeration value="QueryException_InvalidJoinRightSourceName"/>
<xs:enumeration value="QueryException_InvalidJoinLeftPropertyName"/>
<xs:enumeration value="QueryException_InvalidJoinRightPropertyName"/>
<xs:enumeration value="QueryException_InvalidJoinType"/>
<xs:enumeration value="QueryException_InvalidJoinPropertyType"/>
<xs:enumeration value="QueryException_InvalidPropertyElement"/>
<xs:enumeration value="QueryException_InvalidResultPropertySource"/>
<xs:enumeration value="QueryException_InvalidResultPropertyName"/>
<xs:enumeration value="QueryException_InvalidResultPropertyAlias"/>
<xs:enumeration value="QueryException_InvalidResultExpression"/>
<xs:enumeration value="QueryException_DuplicateResultAliases"/>
<xs:enumeration value="QueryException_InvalidParameterName"/>
<xs:enumeration value="QueryException_InvalidParameterType"/>
<xs:enumeration value="QueryException_InvalidReferenceSourceName"/>
<xs:enumeration value="QueryException_InvalidReferenceSourceType"/>
<xs:enumeration value="QueryException_InvalidRestrictionExpression"/>
<xs:enumeration value="QueryException_InvalidReferenceInExpression"/>
<xs:enumeration value="QueryException_InvalidReferenceInExpression_OutsideOfQuery"/>
<xs:enumeration value="QueryException_AmbiguousReferenceInExpression"/>
<xs:enumeration value="QueryException_FailedFilterOperation"/>
<xs:enumeration value="QueryException_FailedFilterEvaluation_CalcLibGeneral"/>
<xs:enumeration value="QueryException_FailedFilterEvaluation_DivZero"/>
<xs:enumeration value="QueryException_FailedSortOrFilterOperation"/>
<xs:enumeration value="QueryException_QueryNotCompiled"/>
<xs:enumeration value="QueryException_InvalidCompiledQueryFormat"/>
<xs:enumeration value="QueryException_InvalidJoinUsage"/>
<xs:enumeration value="QueryException_InvalidExecutionState"/>
<xs:enumeration value="QueryException_FailedFetchListData"/>
<xs:enumeration value="QueryException_FailedCalculatedFieldEvaluation"/>
<xs:enumeration value="QueryException_RequiredParameterNotSupplied"/>
<xs:enumeration value="QueryException_InvalidListOrQueryReference"/>
<xs:enumeration value="QueryException_BulkUpdatesNotSupported"/>
<xs:enumeration value="QueryException_MissingKeyColumn"/>
<xs:enumeration value="QueryException_CannotSetKeyColumn"/>
<xs:enumeration value="QueryException_CannotUpdateNonUpdatableColumn"/>
<xs:enumeration value="QueryException_MultiTableUpdatesNotSupported"/>
<xs:enumeration value="QueryException_RequiredFieldNotSupplied"/>
<xs:enumeration value="QueryException_QueryCompiling"/>
<xs:enumeration value="QueryException_QueryCompilationFailure"/>
<xs:enumeration value="QueryException_InvalidCircularExpressionReference"/>
<xs:enumeration value="QueryException_LicenseExpired"/>
<xs:enumeration value="QueryException_ServerUpgraded"/>
<xs:enumeration value="QueryThrottleMaxSourcesExceeded"/>

```

```

<xs:enumeration value="QueryThrottleMaxOutputsExceeded"/>
<xs:enumeration value="QueryThrottleMaxRowsExceeded"/>
<xs:enumeration value="QueryThrottleMaxRowsPerSourceExceeded"/>
<xs:enumeration value="QueryThrottleMaxOutputCalculatedColumnsExceeded"/>
<xs:enumeration value="QueryThrottleMaxOrderByColumnsExceeded"/>
<xs:enumeration value="QueryThrottleOuterJoinsDisabled"/>
<xs:enumeration value="QueryThrottleRemotableQueriesDisabled"/>
<xs:enumeration value="OrderingException_InvalidSpecification"/>
<xs:enumeration value="OrderingException_InvalidColumnName"/>
<xs:enumeration value="InvalidMetroFile"/>
<xs:enumeration value="InvalidAccessVersion"/>
<xs:enumeration value="InvalidTemplateVersion"/>
<xs:enumeration value="TemplateNotWebCompatible"/>
<xs:enumeration value="TemplateMaxSizeExceeded"/>
<xs:enumeration value="UpdateConflict"/>
<xs:enumeration value="DeleteConflict"/>
<xs:enumeration value="FieldSchemaChange_UpdateConflict"/>
<xs:enumeration value="FieldSchemaChange_ListNotFoundInMSysASO"/>
<xs:enumeration value="FieldSchemaChange_CompilationFailed"/>
<xs:enumeration value="ObjectCompilation_ObjectCompilationFailed"/>
<xs:enumeration value="ObjectCompilation_ListNotFound"/>
<xs:enumeration value="MacroCompilationException_InvalidAx1"/>
<xs:enumeration value="MacroCompilationException_UnexpectedAx1Element"/>
<xs:enumeration value="MacroCompilationException_InvalidAction"/>
<xs:enumeration value="MacroCompilationException_InvalidEventName"/>
<xs:enumeration value="MacroCompilationException_RequiredArgumentMissing"/>
<xs:enumeration value="MacroCompilationException_ArgumentValueNotSpecified"/>
<xs:enumeration value="MacroCompilationException_InvalidActionArgument"/>
<xs:enumeration value="MacroCompilationException_InvalidActionArgumentCount"/>
<xs:enumeration value="MacroCompilationException_InvalidParameter"/>
<xs:enumeration value="MacroCompilationException_MacroParameterLimitExceeded"/>
<xs:enumeration value="MacroCompilationException_MacroActionsLimitExceeded"/>
<xs:enumeration value="MacroCompilationException_MacroCallStackDepthExceeded"/>
<xs:enumeration value="MacroCompilationException_MacroSaveFailed"/>
<xs:enumeration value="MacroCompilationException_MacroAssociationFailed"/>
<xs:enumeration value="MacroCompilationException_InvalidControlName"/>
<xs:enumeration value="MacroCompilationException_Recursion"/>
<xs:enumeration value="MacroExecutionException_FailedToEvaluateExpression"/>
<xs:enumeration value="MacroExecutionException_MissingParameterToDataMacro"/>
<xs:enumeration value="MacroExecutionError_InvalidParameterName"/>
<xs:enumeration value="MacroExecutionException_FailedToResolveExpression"/>
<xs:enumeration value="MacroExecutionException_WrongExpressionVariableFormat"/>
<xs:enumeration value="MacroExecutionException_VariableNotFound"/>
<xs:enumeration value="MacroExecutionException_NoDataContext"/>
<xs:enumeration value="MacroExecutionException_KnownExpressionEvaluationErrorCode"/>
<xs:enumeration value="MacroExecutionException_FailedToExecuteQuery"/>
<xs:enumeration value="MacroExecutionException_FailedMoveToNextItem"/>
<xs:enumeration value="MacroExecutionException_FailedToSetField"/>
<xs:enumeration value="MacroExecutionException_FailedToCancelRecordChange"/>
<xs:enumeration value="MacroExecutionException_FailedToDeleteRecord"/>
<xs:enumeration value="MacroExecutionException_ChangeConflict"/>
<xs:enumeration value="MacroExecutionException_FailedToSetLocalVar"/>
<xs:enumeration value="MacroExecutionException_FailedToSetReturnVar"/>
<xs:enumeration value="MacroExecutionException_TooManyReturnVars"/>
<xs:enumeration value="MacroExecutionException_ReturnVarTooLong"/>
<xs:enumeration value="MacroExecutionException_InvalidReturnVarName"/>
<xs:enumeration value="MacroExecutionException_FailedToSaveItem"/>
<xs:enumeration value="MacroExecutionException_FailedToFindItemWithID"/>
<xs:enumeration value="MacroExecutionException_FailedToAddItem"/>

```

```

<xs:enumeration value="MacroExecutionException_FailedToDeleteListItem"/>
<xs:enumeration value="MacroExecutionException_FailedToUpdateListItem"/>
<xs:enumeration value="MacroExecutionException_FailedToSetFieldToValue"/>
<xs:enumeration value="MacroExecutionException_CannotFindField"/>
<xs:enumeration value="MacroExecutionException_CannotResolveIdentifier"/>
<xs:enumeration value="MacroExecutionException_CannotFindVariableOrParam"/>
<xs:enumeration value="MacroExecutionException_CannotReferenceMVOAttachmentFields"/>
<xs:enumeration value="MacroExecutionException_ComplexFieldInUpdatedFunc"/>
<xs:enumeration value="MacroExecutionException_CannotFindItemWithAlias"/>
<xs:enumeration value="MacroExecutionException_CannotUpdateReadOnlyItem"/>
<xs:enumeration value="MacroExecutionException_FailedToConfigureSendEmail"/>
<xs:enumeration value="MacroExecutionException_OutboundEmailNotConfigured"/>
<xs:enumeration value="MacroExecutionException_FailedToEnumerateList"/>
<xs:enumeration value="MacroExecutionException_FailedToStartMacro"/>
<xs:enumeration value="MacroExecutionException_TypeMismatch"/>
<xs:enumeration value="MacroExecutionException_CannotStartEventMacro"/>
<xs:enumeration value="MacroExecutionException_FailedToStopMacro"/>
<xs:enumeration value="MacroExecutionException_FailedToStopAllMacros"/>
<xs:enumeration value="MacroExecutionException_ExecutionFailed"/>
<xs:enumeration value="MacroExecutionException_FailedToRaiseError"/>
<xs:enumeration value="MacroExecutionException_FailedToLogEvent"/>
<xs:enumeration value="MacroExecutionException_MacroRecursionLimitExceeded"/>
<xs:enumeration value="MacroExecutionException_MacroLimitExceeded"/>
<xs:enumeration value="MacroExecutionException_InvalidUpdatedFunction"/>
<xs:enumeration value="MacroExecutionException_IntegerExpressionExpected"/>
<xs:enumeration value="MacroExecutionException_FailedToStartEditRecord"/>
<xs:enumeration value="MacroExecutionException_FailedToExecuteEditRecord"/>
<xs:enumeration value="MacroExecutionException_OperationNotAllowedInEditRecordBlock"/>
<xs:enumeration value="MacroExecutionException_OperationMustBeInEditRecordBlock"/>
<xs:enumeration value="MacroExecutionException_InvalidOperationOnItem"/>
<xs:enumeration value="MacroExecutionException_InvalidObject"/>
<xs:enumeration value="MacroExecutionException_FieldCannotBeUpdated"/>
<xs:enumeration value="MacroExecutionError_FailedToSetOnErrorBehavior"/>
<xs:enumeration value="MacroExecutionException_InsertRecordFailed"/>
<xs:enumeration value="MacroExecutionException_CannotQueryIDInCreateRecord"/>
<xs:enumeration value="MacroExecutionException_InvalidEditInForEachRecord"/>
<xs:enumeration value="MacroExecutionException_InvalidCreateRecordInForEachRecord"/>
<xs:enumeration value="MacroExecutionException_InvalidCalcColumnReference"/>
<xs:enumeration value="MacroExecutionException_ListItemNotFound"/>
<xs:enumeration value="FormRenderFailure"/>
<xs:enumeration value="FormCompilationFailure"/>
<xs:enumeration value="SettingValidationFailed"/>
<xs:enumeration value="SettingApplicationNameNotFound"/>
<xs:enumeration value="SettingApplicationIdNotFound"/>
<xs:enumeration value="SettingApplicationProxyNameNotFound"/>
<xs:enumeration value="FailedToRetrieveAccessServiceApplication"/>
<xs:enumeration value="CompilationInProgress"/>
<xs:enumeration value="CompilationFailed"/>
</xs:restriction>
</xs:simpleType>
<xs:element name="AccessServerMessageId" nillable="true" type="tns:AccessServerMessageId"/>
<xs:simpleType name="AccessServerMessageSeverity">
  <xs:restriction base="xs:string">
    <xs:enumeration value="Error"/>
    <xs:enumeration value="Warning"/>
    <xs:enumeration value="Information"/>
    <xs:enumeration value="Progress"/>
    <xs:enumeration value="GettingStarted"/>
  </xs:restriction>

```

```

</xs:simpleType>
<xs:element name="AccessServerMessageSeverity" nillable="true"
type="tns:AccessServerMessageSeverity"/>
<xs:simpleType name="AccessServerMessageType">
  <xs:restriction base="xs:string">
    <xs:enumeration value="Alert"/>
    <xs:enumeration value="Status"/>
    <xs:enumeration value="Confirmation"/>
  </xs:restriction>
</xs:simpleType>
<xs:element name="AccessServerMessageType" nillable="true"
type="tns:AccessServerMessageType"/>
</xs:schema>

```

### 7.3 <http://schemas.microsoft.com/2003/10/Serialization/> Schema

```

<?xml version="1.0"?>
<xs:schema xmlns:tns1="http://schemas.microsoft.com/2003/10/Serialization/"
attributeFormDefault="qualified" elementFormDefault="qualified"
targetNamespace="http://schemas.microsoft.com/2003/10/Serialization/"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:element name="anyType" nillable="true" type="xs:anyType"/>
  <xs:element name="anyURI" nillable="true" type="xs:anyURI"/>
  <xs:element name="base64Binary" nillable="true" type="xs:base64Binary"/>
  <xs:element name="boolean" nillable="true" type="xs:boolean"/>
  <xs:element name="byte" nillable="true" type="xs:byte"/>
  <xs:element name="dateTime" nillable="true" type="xs:dateTime"/>
  <xs:element name="decimal" nillable="true" type="xs:decimal"/>
  <xs:element name="double" nillable="true" type="xs:double"/>
  <xs:element name="float" nillable="true" type="xs:float"/>
  <xs:element name="int" nillable="true" type="xs:int"/>
  <xs:element name="long" nillable="true" type="xs:long"/>
  <xs:element name="QName" nillable="true" type="xs:QName"/>
  <xs:element name="short" nillable="true" type="xs:short"/>
  <xs:element name="string" nillable="true" type="xs:string"/>
  <xs:element name="unsignedByte" nillable="true" type="xs:unsignedByte"/>
  <xs:element name="unsignedInt" nillable="true" type="xs:unsignedInt"/>
  <xs:element name="unsignedLong" nillable="true" type="xs:unsignedLong"/>
  <xs:element name="unsignedShort" nillable="true" type="xs:unsignedShort"/>
  <xs:element name="char" nillable="true" type="tns1:char"/>
  <xs:simpleType name="char">
    <xs:restriction base="xs:int"/>
  </xs:simpleType>
  <xs:element name="duration" nillable="true" type="tns1:duration"/>
  <xs:simpleType name="duration">
    <xs:restriction base="xs:duration">
      <xs:pattern value="\-?P(\d*D)?(T(\d*H)?(\d*M)?(\d*(\.\d*)?S)?)?"/>
      <xs:minInclusive value="-P10675199DT2H48M5.4775808S"/>
      <xs:maxInclusive value="P10675199DT2H48M5.4775807S"/>
    </xs:restriction>
  </xs:simpleType>
  <xs:element name="guid" nillable="true" type="tns1:guid"/>
  <xs:simpleType name="guid">
    <xs:restriction base="xs:string">
      <xs:pattern value="[\da-fA-F]{8}-[\da-fA-F]{4}-[\da-fA-F]{4}-[\da-fA-F]{4}-[\da-fA-F]{12}"/>
    </xs:restriction>
  </xs:simpleType>

```



```

<xs:attribute name="FactoryType" type="xs:QName"/>
<xs:attribute name="Id" type="xs:ID"/>
<xs:attribute name="Ref" type="xs:IDREF"/>
</xs:schema>

```

## 7.4

### http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/ Schema

```

<?xml version="1.0"?>
<xs:schema
xmlns:tns2="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/" elementFormDefault="qualified"
targetNamespace="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/" xmlns:xs="http://www.w3.org/2001/XMLSchema"
attributeFormDefault="unqualified">
  <xs:element name="GetHealthScore">
    <xs:complexType/>
  </xs:element>
  <xs:element name="GetHealthScoreResponse">
    <xs:complexType>
      <xs:sequence>
        <xs:element
xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="GetHealthScoreResult" type="q1:CommandResult"/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="GetMacroState">
    <xs:complexType>
      <xs:sequence>
        <xs:element
xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="parameter" type="q1:CommandParameter"/>
        <xs:element minOccurs="0" maxOccurs="1" name="macroInstanceId" type="xs:string"/>
        <xs:element xmlns:q3="http://microsoft.com/wsdl/types/" minOccurs="1" maxOccurs="1"
name="correlationId" type="q3:guid"/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="GetMacroStateResponse">
    <xs:complexType>
      <xs:sequence>
        <xs:element
xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="GetMacroStateResult" type="q1:CommandResult"/>
        <xs:element minOccurs="0" maxOccurs="1" name="instance"
type="tns2:DataMacroInstanceState"/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:complexType name="DataMacroInstanceState">
    <xs:sequence>
      <xs:element minOccurs="1" maxOccurs="1" name="State" type="tns2:DataMacroState"/>
      <xs:element minOccurs="1" maxOccurs="1" name="ErrorNumber" type="xs:int"/>
      <xs:element minOccurs="0" maxOccurs="1" name="ErrorDescription" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="ReturnVars"
type="tns2:ArrayOfKeyValuePair"/>
    </xs:sequence>
  </xs:complexType>

```

```

    </xs:sequence>
  </xs:complexType>
  <xs:simpleType name="DataMacroState">
    <xs:restriction base="xs:string">
      <xs:enumeration value="Error"/>
      <xs:enumeration value="Running"/>
      <xs:enumeration value="Complete"/>
    </xs:restriction>
  </xs:simpleType>
  <xs:complexType name="ArrayOfKeyValuePair">
    <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded" name="KeyValuePair"
type="tns2:KeyValuePair"/>
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="KeyValuePair">
    <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="1" name="Key"/>
      <xs:element minOccurs="1" maxOccurs="1" name="Value" nillable="true"/>
    </xs:sequence>
  </xs:complexType>
  <xs:element name="RunDataMacro">
    <xs:complexType>
      <xs:sequence>
        <xs:element
xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalSer
vice/" minOccurs="0" maxOccurs="1" name="parameter" type="q1:CommandParameter"/>
        <xs:element minOccurs="0" maxOccurs="1" name="webUrl" type="xs:string"/>
        <xs:element minOccurs="0" maxOccurs="1" name="listName" type="xs:string"/>
        <xs:element minOccurs="0" maxOccurs="1" name="macroName" type="xs:string"/>
        <xs:element minOccurs="1" maxOccurs="1" name="itemID" type="xs:int"/>
        <xs:element minOccurs="0" maxOccurs="1" name="oldItemFields"
type="tns2:ArrayOfKeyValuePair"/>
        <xs:element minOccurs="0" maxOccurs="1" name="newItemFields"
type="tns2:ArrayOfKeyValuePair"/>
        <xs:element minOccurs="0" maxOccurs="1" name="macroParameters"
type="tns2:ArrayOfKeyValuePair"/>
        <xs:element minOccurs="0" maxOccurs="1" name="macroInstanceId" type="xs:string"/>
        <xs:element xmlns:q3="http://microsoft.com/wsdl/types/" minOccurs="1" maxOccurs="1"
name="correlationId" type="q3:guid"/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="RunDataMacroResponse">
    <xs:complexType>
      <xs:sequence>
        <xs:element
xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalSer
vice/" minOccurs="0" maxOccurs="1" name="RunDataMacroResult" type="q1:CommandResult"/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="OpenSession">
    <xs:complexType>
      <xs:sequence>
        <xs:element
xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalSer
vice/" minOccurs="0" maxOccurs="1" name="parameter" type="q1:CommandParameter"/>
        <xs:element
xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalSer

```

```

vice/" minOccurs="0" maxOccurs="1" name="cultureParameter"
type="q1:CultureCommandParameter"/>
  <xs:element xmlns:q3="http://microsoft.com/wsdl/types/" minOccurs="1" maxOccurs="1"
name="correlationId" type="q3:guid"/>
</xs:sequence>
</xs:complexType>
</xs:element>
<xs:element name="OpenSessionResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element
xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalSer
vice/" minOccurs="0" maxOccurs="1" name="OpenSessionResult" type="q1:CommandResult"/>
      <xs:element minOccurs="0" maxOccurs="1" name="sessionId" type="xs:string"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
<xs:element name="CloseSession">
  <xs:complexType>
    <xs:sequence>
      <xs:element
xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalSer
vice/" minOccurs="0" maxOccurs="1" name="parameter" type="q1:CommandParameter"/>
      <xs:element xmlns:q3="http://microsoft.com/wsdl/types/" minOccurs="1" maxOccurs="1"
name="correlationId" type="q3:guid"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
<xs:element name="CloseSessionResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element
xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalSer
vice/" minOccurs="0" maxOccurs="1" name="CloseSessionResult" type="q1:CommandResult"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
<xs:element name="KeepAlive">
  <xs:complexType>
    <xs:sequence>
      <xs:element
xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalSer
vice/" minOccurs="0" maxOccurs="1" name="parameter" type="q1:CommandParameter"/>
      <xs:element xmlns:q3="http://microsoft.com/wsdl/types/" minOccurs="1" maxOccurs="1"
name="correlationId" type="q3:guid"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
<xs:element name="KeepAliveResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element
xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalSer
vice/" minOccurs="0" maxOccurs="1" name="KeepAliveResult" type="q1:CommandResult"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
<xs:element name="OpenResultSet">
  <xs:complexType>
    <xs:sequence>

```

```

    <xs:element
xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalSer
vice/" minOccurs="0" maxOccurs="1" name="parameter" type="q1:CommandParameter"/>
    <xs:element minOccurs="0" maxOccurs="1" name="webUrl" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="source" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="restriction" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="queryParameters"
type="tns2:ArrayOfKeyValuePair"/>
    <xs:element minOccurs="0" maxOccurs="1" name="sortExpression" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="filterExpression" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="aggregateExpressions"
type="tns2:ArrayOfString"/>
    <xs:element minOccurs="0" maxOccurs="1" name="moniker" type="xs:string"/>
    <xs:element minOccurs="1" maxOccurs="1" name="startRowIndex" type="xs:int"/>
    <xs:element minOccurs="1" maxOccurs="1" name="maximumRows" type="xs:int"/>
    <xs:element minOccurs="1" maxOccurs="1" name="autoResync" type="xs:boolean"/>
    <xs:element xmlns:q3="http://microsoft.com/wsdl/types/" minOccurs="1" maxOccurs="1"
name="correlationId" type="q3:guid"/>
  </xs:sequence>
</xs:complexType>
</xs:element>
<xs:complexType name="ArrayOfString">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="string" nillable="true"
type="xs:string"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="ArrayOfAnyType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="anyType" nillable="true"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="OpenResultSetResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element
xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalSer
vice/" minOccurs="0" maxOccurs="1" name="OpenResultSetResult" type="q1:CommandResult"/>
      <xs:element minOccurs="0" maxOccurs="1" name="tableXml" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="aggregateValues"
type="tns2:ArrayOfAnyType"/>
      <xs:element minOccurs="1" maxOccurs="1" name="totalRowCount" type="xs:int"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
<xs:element name="GetData">
  <xs:complexType>
    <xs:sequence>
      <xs:element
xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalSer
vice/" minOccurs="0" maxOccurs="1" name="parameter" type="q1:CommandParameter"/>
      <xs:element minOccurs="0" maxOccurs="1" name="webUrl" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="moniker" type="xs:string"/>
      <xs:element minOccurs="1" maxOccurs="1" name="startRowIndex" type="xs:int"/>
      <xs:element minOccurs="1" maxOccurs="1" name="maximumRows" type="xs:int"/>
      <xs:element minOccurs="1" maxOccurs="1" name="cacheCommands"
type="tns2:CacheCommands"/>
      <xs:element minOccurs="0" maxOccurs="1" name="sortExpression" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="filter" type="xs:string"/>

```

```

        <xs:element xmlns:q3="http://microsoft.com/wsdl/types/" minOccurs="1" maxOccurs="1"
name="correlationId" type="q3:guid"/>
    </xs:sequence>
</xs:complexType>
</xs:element>
<xs:simpleType name="CacheCommands">
    <xs:list>
        <xs:simpleType>
            <xs:restriction base="xs:string">
                <xs:enumeration value="RefreshData"/>
                <xs:enumeration value="ApplyFilter"/>
                <xs:enumeration value="ClearFilter"/>
                <xs:enumeration value="ApplySort"/>
            </xs:restriction>
        </xs:simpleType>
    </xs:list>
</xs:simpleType>
<xs:element name="GetDataResponse">
    <xs:complexType>
        <xs:sequence>
            <xs:element
xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalSer
vice/" minOccurs="0" maxOccurs="1" name="GetDataResult" type="q1:CommandResult"/>
            <xs:element minOccurs="0" maxOccurs="1" name="tableXml" type="xs:string"/>
            <xs:element minOccurs="0" maxOccurs="1" name="aggregateValues"
type="tns2:ArrayOfAnyType"/>
            <xs:element minOccurs="1" maxOccurs="1" name="totalRowCount" type="xs:int"/>
        </xs:sequence>
    </xs:complexType>
</xs:element>
<xs:element name="InsertData">
    <xs:complexType>
        <xs:sequence>
            <xs:element
xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalSer
vice/" minOccurs="0" maxOccurs="1" name="parameter" type="q1:CommandParameter"/>
            <xs:element minOccurs="0" maxOccurs="1" name="webUrl" type="xs:string"/>
            <xs:element minOccurs="0" maxOccurs="1" name="moniker" type="xs:string"/>
            <xs:element minOccurs="0" maxOccurs="1" name="listName" type="xs:string"/>
            <xs:element minOccurs="0" maxOccurs="1" name="values"
type="tns2:ArrayOfKeyValuePair"/>
            <xs:element xmlns:q3="http://microsoft.com/wsdl/types/" minOccurs="1" maxOccurs="1"
name="correlationId" type="q3:guid"/>
        </xs:sequence>
    </xs:complexType>
</xs:element>
<xs:element name="InsertDataResponse">
    <xs:complexType>
        <xs:sequence>
            <xs:element
xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalSer
vice/" minOccurs="0" maxOccurs="1" name="InsertDataResult" type="q1:CommandResult"/>
            <xs:element minOccurs="1" maxOccurs="1" name="recordsInserted" type="xs:int"/>
            <xs:element minOccurs="0" maxOccurs="1" name="dataMacroId" type="xs:string"/>
        </xs:sequence>
    </xs:complexType>
</xs:element>
<xs:element name="UpdateData">
    <xs:complexType>
        <xs:sequence>

```

```

        <xs:element
xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="parameter" type="q1:CommandParameter"/>
        <xs:element minOccurs="0" maxOccurs="1" name="webUrl" type="xs:string"/>
        <xs:element minOccurs="0" maxOccurs="1" name="moniker" type="xs:string"/>
        <xs:element minOccurs="0" maxOccurs="1" name="listName" type="xs:string"/>
        <xs:element minOccurs="0" maxOccurs="1" name="keys" type="tns2:ArrayOfKeyValuePair"/>
        <xs:element minOccurs="0" maxOccurs="1" name="values"
type="tns2:ArrayOfKeyValuePair"/>
        <xs:element minOccurs="0" maxOccurs="1" name="oldValues"
type="tns2:ArrayOfKeyValuePair"/>
        <xs:element xmlns:q3="http://microsoft.com/wsdl/types/" minOccurs="1" maxOccurs="1"
name="correlationId" type="q3:guid"/>
    </xs:sequence>
</xs:complexType>
</xs:element>
<xs:element name="UpdateDataResponse">
    <xs:complexType>
        <xs:sequence>
            <xs:element
xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="UpdateDataResult" type="q1:CommandResult"/>
            <xs:element minOccurs="1" maxOccurs="1" name="recordsUpdated" type="xs:int"/>
            <xs:element minOccurs="0" maxOccurs="1" name="dataMacroId" type="xs:string"/>
        </xs:sequence>
    </xs:complexType>
</xs:element>
<xs:element name="FixupRow">
    <xs:complexType>
        <xs:sequence>
            <xs:element
xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="parameter" type="q1:CommandParameter"/>
            <xs:element minOccurs="0" maxOccurs="1" name="webUrl" type="xs:string"/>
            <xs:element minOccurs="0" maxOccurs="1" name="moniker" type="xs:string"/>
            <xs:element minOccurs="0" maxOccurs="1" name="keys" type="tns2:ArrayOfKeyValuePair"/>
            <xs:element minOccurs="0" maxOccurs="1" name="values"
type="tns2:ArrayOfKeyValuePair"/>
            <xs:element xmlns:q3="http://microsoft.com/wsdl/types/" minOccurs="1" maxOccurs="1"
name="correlationId" type="q3:guid"/>
        </xs:sequence>
    </xs:complexType>
</xs:element>
<xs:element name="FixupRowResponse">
    <xs:complexType>
        <xs:sequence>
            <xs:element
xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="FixupRowResult" type="q1:CommandResult"/>
            <xs:element minOccurs="0" maxOccurs="1" name="tableXml" type="xs:string"/>
            <xs:element minOccurs="0" maxOccurs="1" name="aggregateValues"
type="tns2:ArrayOfAnyType"/>
            <xs:element minOccurs="1" maxOccurs="1" name="totalRowCount" type="xs:int"/>
        </xs:sequence>
    </xs:complexType>
</xs:element>
<xs:element name="DeleteData">
    <xs:complexType>
        <xs:sequence>

```

```

    <xs:element
xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalSer
vice/" minOccurs="0" maxOccurs="1" name="parameter" type="q1:CommandParameter"/>
    <xs:element minOccurs="0" maxOccurs="1" name="webUrl" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="moniker" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="listName" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="keys" type="tns2:ArrayOfKeyValuePair"/>
    <xs:element minOccurs="0" maxOccurs="1" name="oldValues"
type="tns2:ArrayOfKeyValuePair"/>
    <xs:element xmlns:q3="http://microsoft.com/wsdl/types/" minOccurs="1" maxOccurs="1"
name="correlationId" type="q3:guid"/>
  </xs:sequence>
</xs:complexType>
</xs:element>
<xs:element name="DeleteDataResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element
xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalSer
vice/" minOccurs="0" maxOccurs="1" name="DeleteDataResult" type="q1:CommandResult"/>
      <xs:element minOccurs="1" maxOccurs="1" name="recordsDeleted" type="xs:int"/>
      <xs:element minOccurs="0" maxOccurs="1" name="dataMacroId" type="xs:string"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
<xs:element name="UpdateCache">
  <xs:complexType>
    <xs:sequence>
      <xs:element
xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalSer
vice/" minOccurs="0" maxOccurs="1" name="parameter" type="q1:CommandParameter"/>
      <xs:element minOccurs="0" maxOccurs="1" name="webUrl" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="moniker" type="xs:string"/>
      <xs:element minOccurs="1" maxOccurs="1" name="key" type="xs:int"/>
      <xs:element minOccurs="0" maxOccurs="1" name="values"
type="tns2:ArrayOfKeyValuePair"/>
      <xs:element xmlns:q3="http://microsoft.com/wsdl/types/" minOccurs="1" maxOccurs="1"
name="correlationId" type="q3:guid"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
<xs:element name="UpdateCacheResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element
xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalSer
vice/" minOccurs="0" maxOccurs="1" name="UpdateCacheResult" type="q1:CommandResult"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
<xs:element name="GetDistinctValues">
  <xs:complexType>
    <xs:sequence>
      <xs:element
xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalSer
vice/" minOccurs="0" maxOccurs="1" name="parameter" type="q1:CommandParameter"/>
      <xs:element minOccurs="0" maxOccurs="1" name="moniker" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="columnName" type="xs:string"/>
      <xs:element minOccurs="1" maxOccurs="1" name="maximumRows" type="xs:int"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>

```

```

        <xs:element xmlns:q3="http://microsoft.com/wsdl/types/" minOccurs="1" maxOccurs="1"
name="correlationId" type="q3:guid"/>
    </xs:sequence>
</xs:complexType>
</xs:element>
<xs:element name="GetDistinctValuesResponse">
    <xs:complexType>
        <xs:sequence>
            <xs:element
xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="GetDistinctValuesResult" type="q1:CommandResult"/>
                <xs:element minOccurs="0" maxOccurs="1" name="tableXml" type="xs:string"/>
            </xs:sequence>
        </xs:complexType>
    </xs:element>
<xs:simpleType name="SessionIdentifier">
    <xs:restriction base="xs:string"/>
</xs:simpleType>
<xs:import namespace="http://microsoft.com/wsdl/types/" />
<xs:import
namespace="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" />
</xs:schema>

```

## 7.5

### <http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/> Schema

```

<?xml version="1.0"?>
<xs:schema
xmlns:q1="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" elementFormDefault="qualified"
targetNamespace="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" xmlns:xs="http://www.w3.org/2001/XMLSchema">
    <xs:import namespace="http://microsoft.com/wsdl/types/" />
    <xs:complexType name="CommandResult">
        <xs:sequence>
            <xs:element minOccurs="0" maxOccurs="1" name="TransientEditSessionToken"
type="xs:string"/>
            <xs:element minOccurs="1" maxOccurs="1" name="StateId" type="xs:int"/>
            <xs:element minOccurs="0" maxOccurs="1" name="SpreadsheetData" type="xs:string"/>
            <xs:element minOccurs="0" maxOccurs="1" name="HealthInformation"
type="q1:ServerHealthInformation"/>
            <xs:element minOccurs="1" maxOccurs="1" name="SecondsBeforeNextPoll" type="xs:int"/>
            <xs:element minOccurs="1" maxOccurs="1" name="EditSessionIsDirty" type="xs:boolean"/>
            <xs:element minOccurs="1" maxOccurs="1" name="EditSessionHasMultipleCollaborationUsers"
type="xs:boolean"/>
            <xs:element minOccurs="0" maxOccurs="1" name="RequestId" type="xs:string"/>
        </xs:sequence>
    </xs:complexType>
    <xs:complexType name="ServerHealthInformation">
        <xs:sequence>
            <xs:element minOccurs="1" maxOccurs="1" name="StateFlags" type="q1:ServerStateFlags"/>
            <xs:element minOccurs="1" maxOccurs="1" name="HealthScore" type="xs:float"/>
        </xs:sequence>
    </xs:complexType>
    <xs:simpleType name="ServerStateFlags">
        <xs:list>

```



```

    <xs:simpleType>
      <xs:restriction base="xs:string">
        <xs:enumeration value="ShuttingDown"/>
      </xs:restriction>
    </xs:simpleType>
  </xs:list>
</xs:simpleType>
<xs:complexType name="CommandParameter">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="1" name="WorkbookId" type="xs:string"/>
    <xs:element minOccurs="1" maxOccurs="1" name="StateId" type="xs:int"/>
    <xs:element minOccurs="0" maxOccurs="1" name="WorkOnBehalfRequest"
type="q1:WorkOnBehalf"/>
    <xs:element minOccurs="0" maxOccurs="1" name="ProtocolClientId" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="UserFriendlyDisplayName"
type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="Zone" type="xs:string"/>
    <xs:element xmlns:q3="http://microsoft.com/wsdl/types/" minOccurs="1" maxOccurs="1"
name="RequestSiteId" type="q3:guid"/>
    <xs:element xmlns:q3="http://microsoft.com/wsdl/types/" minOccurs="1" maxOccurs="1"
name="CorrelationId" type="q3:guid"/>
    <xs:element minOccurs="0" maxOccurs="1" name="RequestId" type="xs:string"/>
    <xs:element minOccurs="1" maxOccurs="1" name="CompleteResponseTimeout" type="xs:int"/>
    <xs:element minOccurs="1" maxOccurs="1" name="Flags" type="q1:CommandParameterFlags"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="WorkOnBehalf">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="1" name="UserName" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="UserSid" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="UserToken" type="xs:base64Binary"/>
    <xs:element minOccurs="1" maxOccurs="1" name="UserTokenTtl" type="xs:int"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="CultureCommandParameter">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="1" name="UICultureName" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="DataCultureName" type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="SharePointDataCultureName"
type="xs:string"/>
    <xs:element minOccurs="0" maxOccurs="1" name="TimeZoneSerialization" type="xs:string"/>
  </xs:sequence>
</xs:complexType>
<xs:simpleType name="CommandParameterFlags">
  <xs:list>
    <xs:simpleType>
      <xs:restriction base="xs:string">
        <xs:enumeration value="ForceOneTimeRecalc"/>
        <xs:enumeration value="SuppressOneTimeRecalc"/>
      </xs:restriction>
    </xs:simpleType>
  </xs:list>
</xs:simpleType>
</xs:schema>

```

## 8 Appendix C: 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 SharePoint Server 2010
- Microsoft SharePoint Server 2013

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 3.1.4.11.3.1](#): SharePoint Server 2010 will attempt to fallback to a **fallback UI culture** when an unsupported UI culture is requested.

## 9 Change Tracking

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

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