

[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 1.5, 1.8, 1.9, 2, and 3 of this specification are normative. All other sections and examples in this specification are informative.

1.1 Glossary

This document uses the following terms:

absolute URL: The full Internet address of a page or other World Wide Web resource. The absolute URL includes a protocol, such as "http," a network location, and an optional path and file name — for example, <http://www.treyresearch.net/>.

alert: A message that is passed to a protocol client to notify it when specific criteria are met.

Augmented Backus-Naur Form (ABNF): A modified version of Backus-Naur Form (BNF), commonly used by Internet specifications. ABNF notation balances compactness and simplicity with reasonable representational power. ABNF differs from standard BNF in its definitions and uses of naming rules, repetition, alternatives, order-independence, and value ranges. For more information, see [\[RFC5234\]](#).

caption: One or more characters that can be used as a label for display purposes or as an identifier.

content database: A database that is stored on a back-end database server and contains stored procedures, site collections, and the contents of those site collections.

control button: A button in the user interface.

data culture: The language that is used to specify number formatting for data.

data macro: A component that implements application logic and enables recognition of built-in actions and tasks for list items.

data source: A database, web service, disk, file, or other collection of information from which data is queried or submitted. Supported data sources vary based on application and data provider.

data type: A property of a field that defines the kind of data that is stored in the field, or defines the kind of data returned by an expression when the expression is evaluated.

expression: A combination of operators, symbols, constants, literal values, functions, names of fields or columns, controls, and properties that evaluates to a single value.

fallback data culture: A data culture that is selected through an algorithm as a substitute for a data culture that is not installed or is otherwise unavailable.

fallback UI culture: A user interface (UI) culture that is selected through an algorithm as a substitute for a UI culture that is not installed or is otherwise unavailable.

field: A container for metadata within a SharePoint list and associated list items.

filter: A mechanism by which a set of data is scoped to display only those entries that meet specified logical criteria.

globally unique identifier (GUID): A term used interchangeably with universally unique identifier (UUID) in Microsoft protocol technical documents (TDs). Interchanging the usage of these terms does not imply or require a specific algorithm or mechanism to generate the value.

Specifically, the use of this term does not imply or require that the algorithms described in [\[RFC4122\]](#) or [\[C706\]](#) must be used for generating the **GUID**. See also universally unique identifier (UUID).

Help topic identifier: A unique identifier for an article that contains Help content.

host data language: The **data culture** of a site.

license key: An array of bytes that enables access to a control according to the usage policies for that control.

list: A container within a SharePoint site that stores list items. A list has a customizable schema that is composed of one or more fields.

list item: An individual entry within a SharePoint list. Each list item has a schema that maps to fields in the list that contains the item, depending on the content type of the item.

primary key: A field or set of fields that uniquely identifies each record in a table. A primary key cannot contain a null value.

result set: A list of records that results from running a stored procedure or query, or applying a filter. The structure and content of the data in a result set varies according to the implementation.

root element: The top-level element in an XML document. It contains all other elements and is not contained by any other element, as described in [\[XML\]](#).

row: A collection of columns that contains property values that describe a single item in a set of items that match the restriction specified in a query.

session: A representation of application data in system memory. It is used to maintain state for application data that is being manipulated or monitored on a protocol server by a user.

session identifier: A key that enables an application to make reference to a session.

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

site identifier: A GUID that is used to identify a site in a site collection.

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

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

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

SOAP fault detail: A string containing a human-readable explanation of a **SOAP fault**, which is not intended for algorithmic processing. See [\[SOAP1.2-1/2007\]](#) section 5.4.5 for more information.

state changing: A type of operation that changes the state of a session.

time zone: A geographical area that observes the same local time. The local time has a positive, zero, or negative offset from Coordinated Universal Time (UTC). The offset can be different during standard time and daylight saving time.

time zone bias: The positive, zero, or negative offset in minutes from Coordinated Universal Time (UTC). For example, Middle European Time (MET, GMT+01:00) has a time zone bias of "-60"

because it is one hour ahead of UTC. Pacific Standard Time (PST, GMT-08:00) has a time zone bias of "+480" because it is eight hours behind UTC.

time zone daylight bias: The positive, zero, or negative offset in minutes that is added to the time zone bias during daylight saving time. For example, daylight saving time advances the clock by one hour. The time zone daylight bias is set to "-60".

time zone daylight date: The date and time when the change from standard time to daylight saving time occurs.

time zone standard bias: A positive, zero, or negative offset in minutes that is added to the time zone bias outside daylight saving time.

time zone standard date: The date and time when the change from daylight saving time to standard time occurs.

UI culture: The language that is used to display strings and graphical elements in a user interface.

user display name: A user profile property that contains the preferred name of a user. See also display name.

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

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

WSDL operation: A single action or function of a web service. The execution of a WSDL operation typically requires the exchange of messages between the service requestor and the service provider.

XML: The Extensible Markup Language, as described in [[XML1.0](#)].

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

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

XML schema: A description of a type of XML document that is typically expressed in terms of constraints on the structure and content of documents of that type, in addition to the basic syntax constraints that are imposed by **XML** itself. An XML schema provides a view of a document type at a relatively high level of abstraction.

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

1.2 References

Links to a document in the Microsoft Open Specifications library point to the correct section in the most recently published version of the referenced document. However, because individual documents in the library are not updated at the same time, the section numbers in the documents may not match. You can confirm the correct section numbering by checking the [Errata](#).

1.2.1 Normative References

We conduct frequent surveys of the normative references to assure their continued availability. If you have any issue with finding a normative reference, please contact dochelp@microsoft.com. 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](#)".

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

[MS-PWVPDP] Microsoft Corporation, "[PowerPoint Web Viewer Presentation Data 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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[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/>

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1.2.2 Informative References

None.

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

- Multiple sessions (2) can exist at the same time.
- **Result sets** are not shared across sessions.
- 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:

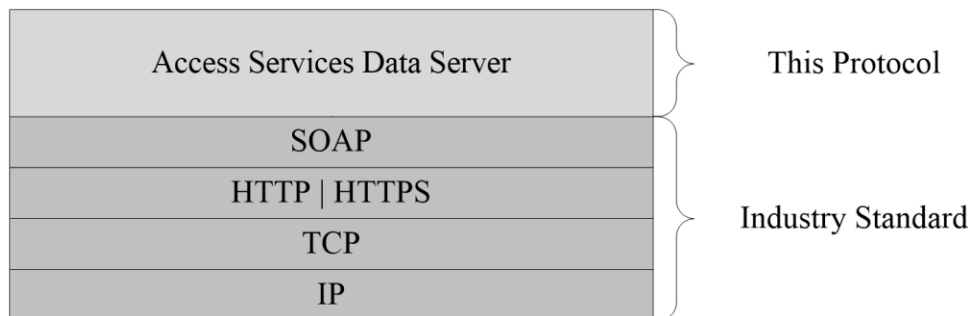


Figure 1: This protocol in relation to other protocols

1.5 Prerequisites/Preconditions

This protocol operates against a protocol server that exposes one or more endpoint URIs that are known by protocol clients. The endpoint 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 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** 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	http://schemas.datacontract.org/2004/07/Microsoft.Office.Access.Server	
q2	http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/	
q3	http://microsoft.com/wsd/types/	
soap	http://schemas.xmlsoap.org/wsd/soap/	[SOAP1.1]
tns	http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/	

Prefi x	Namespace URI	Reference
tns1	http://schemas.microsoft.com/2003/10/Serialization/	
tns2	http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/Imports	
wsaw	http://www.w3.org/2006/05/addressing/wsd	
wSDL	http://schemas.xmlsoap.org/wsd/	[WSDL]
xs	http://www.w3.org/2001/XMLSchema	[XMLSCHEMA 1] [XMLSCHEMA 2]

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
AccessServerMessage	The AccessServerMessage complex type is used to return alert information to the protocol client.
ArrayOfAnyType	An array of anyType ([MS-PWVPDP] section 2.2.4.1) elements.
ArrayOfKeyValuePair	An array of KeyValuePair elements.
CommandParameter	The CommandParameter complex type is an input used by some protocol server operations.
CommandResult	The CommandResult complex type is an operation response message used by all protocol server operations.
KeyValuePair	The KeyValuePair complex type is used as a container for a key and its associated value.
ServerHealthInformation	The ServerHealthInformation complex type is used to return information about the health of the protocol server.
ServerHealthInformation	The ServerHealthInformation complex type is used to return information about the health of the protocol server.
WorkOnBehalf	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** 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="q1: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="q1: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="q1:AccessServerMessageId"/>
    <xs:element minOccurs="0" name="Severity" type="q1:AccessServerMessageSeverity"/>
    <xs:element minOccurs="0" name="Type" type="q1:AccessServerMessageType"/>
  </xs:sequence>
</xs:complexType>
```

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

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

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

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. MUST be present. MUST be in the language UI culture of the session.

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.

HelpTopicId: The **Help topic identifier**.

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

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

Type: The type of the alert 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="tns: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="q2: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="q2:CommandParameterFlags"/>
  </xs:sequence>
</xs:complexType>

```

WorkbookId: The **session identifier** 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="q2: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>
```

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**.

2.2.4.7 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="q1: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="q2: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
AccessServerMessageButtons	AccessServerMessageButtons specifies the control buttons associated with an alert that the protocol server returns to the protocol client. The list MUST contain only the value "OK".
AccessServerMessageId	The AccessServerMessageId type is an enumeration of alerts returned from the protocol server.
AccessServerMessageSeverity	AccessServerMessageSeverity specifies the severity of the alert that the protocol server returns to the protocol client.
AccessServerMessageType	AccessServerMessageType specifies the type of the alert that the protocol server returns to the protocol client.
CommandParameterFlags	MUST NOT be used.

Simple type	Description
guid	The guid type specifies a GUID value, as specified in [RFC4122] .
ServerStateFlags	ServerStateFlags specifies the state of the protocol server.
ServerStateFlags	ServerStateFlags is an enumeration specifying the state of the protocol server.
SessionIdentifier	The SessionIdentifier string is used to uniquely identify a session on the protocol server, and to contain information about the session.

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** 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** 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:restriction>
</xs:simpleType>
```

```

<xs:enumeration value="InternalServerError"/>
<xs:enumeration value="ManagementUIInternalServerError"/>
<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: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_CannotReferenceMVOrAttachmentFields"/>
<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 list items .
WriteRecordsPermissionsFailure	The user does not have permissions to

Value	Meaning
	create or edit the requested list items.
EditValueListPermissionsFailure	MUST NOT be used.
NotMemberOfRole	The user does not have sufficient rights to complete the operation.
MaxSessionsPerUserExceeded	The user has exceeded the maximum number of sessions 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 license key is invalid.
NewWorkbookSessionTimeout	A session 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 list exceeded the maximum number of list items allowed in a list by the protocol server.
DataException_InvalidPageNumber	The specified page attribute for an absolute URL 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.
QueryException_InvalidSourceUsageWithoutJoin	A query contains more than one Reference element that is not used in any Join

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

Value	Meaning
QueryException_InvalidParameterName	The Name attribute value of a Parameter element in a query is invalid.
QueryException_InvalidParameterType	The Type attribute value of a Parameter element in a query is invalid.
QueryException_InvalidReferenceSourceName	The Source attribute value of a Reference element in a query is invalid.
QueryException_InvalidReferenceSourceType	The Type attribute value of a Reference element in a query is invalid.
QueryException_InvalidRestrictionExpression	The value of a Restriction element in a query is invalid.
QueryException_InvalidReferenceInExpression	A reference used in an Expression element in a query is invalid.
QueryException_InvalidReferenceInExpression_OutsideOfQuery	A reference used in an Expression element in a query is invalid.
QueryException_AmbiguousReferenceInExpression	The source of a reference used in an Expression 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 Join element in a query is invalid.
QueryException_InvalidExecutionState	Query execution failed.
QueryException_FailedFetchListData	Failed to fetch a data source .
QueryException_FailedCalculatedFieldEvaluation	Failed to evaluate an Expression element of a Property element in a query.
QueryException_RequiredParameterNotSupplied	A required parameter is not supplied.
QueryException_InvalidListOrQueryReference	The Source attribute value of a Reference element in a query is not in the content database .
QueryException_BulkUpdatesNotSupported	MUST NOT be used.
QueryException_MissingKeyColumn	MUST NOT be used.
QueryException_CannotSetKeyColumn	The value of a primary key 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.

Value	Meaning
QueryException_MultiTableUpdatesNotSupported	A data update operation failed because more than one data source 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 rows 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.
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.

Value	Meaning
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.
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.

Value	Meaning
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.
MacroExecutionException_CannotReferenceMVOAttachmentFields	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.

Value	Meaning
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.
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** 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 is of type error.
Warning	MUST NOT be used.
Information	The alert is of type information.
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** 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 is of type alert.
Status	The alert 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.
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** on the protocol server, and to contain information about the session.

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. 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. 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, 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
QueryException_AmbiguousValuesProvided
QueryException_InvalidCompiledQueryVersion
QueryException_InvalidSourceUsageWithoutJoin
QueryException_InvalidExpression
QueryException_InvalidLikeArgumentsExpression
QueryException_InvalidLikeFieldTypeInExpression
QueryException_InvalidInArgumentsExpression
QueryException_InvalidAxlEncoding
QueryException_InvalidOrderPropertyName
QueryException_InvalidOrderSourceName
QueryException_InvalidJoinLeftSourceName
QueryException_InvalidJoinRightSourceName
QueryException_InvalidJoinLeftPropertyName
QueryException_InvalidJoinRightPropertyName
QueryException_InvalidJoinType

Identifier
QueryException_InvalidJoinPropertyType
QueryException_InvalidPropertyElement
QueryException_InvalidResultPropertySource
QueryException_InvalidResultPropertyName
QueryException_InvalidResultPropertyAlias
QueryException_InvalidResultExpression
QueryException_DuplicateResultAliases
QueryException_InvalidParameterName
QueryException_InvalidParameterType
QueryException_InvalidReferenceSourceName
QueryException_InvalidReferenceSourceType
QueryException_InvalidRestrictionExpression
QueryException_InvalidReferenceInExpression
QueryException_InvalidReferenceInExpression_OutsideOfQuery
QueryException_AmbiguousReferenceInExpression
QueryException_FailedFilterOperation
QueryException_FailedFilterEvaluation_CalcLibGeneral
QueryException_FailedFilterEvaluation_DivZero
QueryException_FailedSortOrFilterOperation
QueryException_QueryNotCompiled
QueryException_InvalidCompiledQueryFormat
QueryException_InvalidJoinUsage
QueryException_InvalidExecutionState
QueryException_FailedFetchListData
QueryException_FailedCalculatedFieldEvaluation
QueryException_RequiredParameterNotSupplied
QueryException_InvalidListOrQueryReference
QueryException_BulkUpdatesNotSupported
QueryException_MissingKeyColumn
QueryException_CannotSetKeyColumn
QueryException_CannotUpdateNonUpdatableColumn
QueryException_MultiTableUpdatesNotSupported

Identifier
QueryException_RequiredFieldNotSupplied
QueryException_QueryCompiling
QueryException_QueryCompilationFailure
QueryException_ServerUpgraded
QueryThrottleMaxSourcesExceeded
QueryThrottleMaxOutputsExceeded
QueryThrottleMaxRowsExceeded
QueryThrottleMaxRowsPerSourceExceeded
QueryThrottleMaxOutputCalculatedColumnsExceeded
QueryThrottleMaxOrderByColumnsExceeded
QueryThrottleOuterJoinsDisabled
QueryThrottleRemotableQueriesDisabled

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** 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** 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 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** that results from running a query specified by either a source or an ad hoc query. Rows are visible if they satisfy the filter criteria. Rows are hidden if they do not satisfy the filter criteria. If no filter criteria are specified, all rows are visible. Only visible rows 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 count to return. The row indices are consecutive integer values starting at zero and ending at one less than the total number visible rows.

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 in the result set, by retrieving it from the original list, after any list item is inserted, updated, or deleted. In this case, the protocol server will modify the row according to the current values in the original list.

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

3.1.2 Timers

3.1.2.1 Session Timeout

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

3.1.4.1 CloseSession

The **CloseSession** operation closes a **session** 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="tns: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="tns: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="tns: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 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
AccessServiceSoap_CloseSession_InputMessage	The request WSDL message for the CloseSession WSDL operation .
AccessServiceSoap_CloseSession_OutputMessage	The response WSDL message for the CloseSession 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
CloseSession	The input data for the CloseSession WSDL operation .
CloseSessionResponse	The result data for the CloseSession 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:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="parameter" type="q2: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:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="CloseSessionResult" type="q2: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** in the **content database** and also deletes the **row** 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="tns: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="tns: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="tns: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, 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 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 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
WriteRecordsPermissionsFailure	See section 2.2.5.2 .
DataException_ValidationFailed	See section 2.2.5.2 .

Identifier	Description
DataException_DataOperationFailed	See section 2.2.5.2.

3.1.4.2.1 Messages

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

Message	Description
AccessServiceSoap_DeleteData_InputMessage	The request WSDL message for the DeleteData WSDL operation .
AccessServiceSoap_DeleteData_OutputMessage	The response WSDL message for the DeleteData 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
DeleteData	The input data for the DeleteData WSDL operation .
DeleteDataResponse	The result data for the DeleteData 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:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="parameter" type="q2: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="tns:ArrayOfKeyValuePair"/>
      <xs:element minOccurs="0" maxOccurs="1" name="oldValues"
        type="tns: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** 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** as the **moniker** element for the input to an **OpenResultSet** operation (section [3.1.4.10.2.1](#)).

listName: The **data source** 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** 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:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="DeleteDataResult" type="q2: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="tns: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="tns: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/FixupRowAccessServerMessageFault" name="AccessServerMessageFault"
    message="tns:AccessServiceSoap_FixupRow_AccessServerMessageFault_FaultMessage"
    xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
</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** 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
AccessServiceSoap_FixupRow_InputMessage	The request WSDL message for the FixupRow WSDL operation .
AccessServiceSoap_FixupRow_OutputMessage	The response WSDL message for the FixupRow 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
FixupRow	The input data for the FixupRow WSDL operation .
FixupRowResponse	The result data for the FixupRow 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:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="parameter" type="q2: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="tns:ArrayOfKeyValuePair"/>
      <xs:element minOccurs="0" maxOccurs="1" name="values" type="tns:ArrayOfKeyValuePair"/>
    </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>

```

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

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

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

keys: The **row** 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 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:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="FixupRowResult" type="q2:CommandResult"/>
      <xs:element minOccurs="0" maxOccurs="1" name="tableXml" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="aggregateValues"
type="tns:ArrayOfAnyType"/>
      <xs:element minOccurs="1" maxOccurs="1" name="totalRowCount" type="xs:int"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>

```

```
</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** in a **result set**, and then returns a subset of those rows.

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="tns: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="tns: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="tns: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 in the result set, as specified by the **startRowIndex** and **maximumRows** elements.
- The subset of rows returned is specified by **startRowIndex** and **maximumRows** as follows:
 - If the **maximumRows** element is zero ("0"), the protocol server returns all visible rows 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 in the result set, the protocol server returns all visible rows in the result set with indices greater than or equal to **startRowIndex**.
 - Otherwise the protocol server returns all visible rows 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
GetRecordsPermissionsFailure	See section 2.2.5.2.
OrderingException_InvalidSpecification	See section 2.2.5.2.
OrderingException_InvalidColumnName	See section 2.2.5.2.
InvalidFilterExpression	See section 2.2.5.2.

3.1.4.4.1 Messages

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

Message	Description
AccessServiceSoap_GetData_InputMessage	The request WSDL message for the GetData WSDL operation .
AccessServiceSoap_GetData_OutputMessage	The response WSDL message for the GetData 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
GetData	The input data for the GetData WSDL operation .
GetDataResponse	The result data for the GetData 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:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="parameter" type="q2: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="tns: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** 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** 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** to return from the result set.

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

maximumRows: Specifies the maximum number of rows 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 [3.1.4.4.1](#), 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:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="GetDataResult" type="q2:CommandResult"/>
      <xs:element minOccurs="0" maxOccurs="1" name="tableXml" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="aggregateValues"
        type="tns: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**, 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**.

- 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 in the **result set**.

totalRowCount: Specifies the number of rows 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
CacheCommands	The CacheCommands type is a list of enumeration 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 specified by the startRowIndex element from the data source specified in the source element for the OpenResultSet operation (section 3.1.4.10.2.1) that created the result set.
ApplyFilter	Filter the result set as specified in the filter element (section 3.1.4.4.2.1). 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 sortExpression element (section 3.1.4.4.2.1).

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="tns: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="tns: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/GetDistinctValuesAccessServerMessageFault"
    name="AccessServerMessageFault"
    message="tns: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** 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
AccessServiceSoap_GetDistinctValues_InputMessage	The request WSDL message for the GetDistinctValues WSDL operation .
AccessServiceSoap_GetDistinctValues_OutputMessage	The response WSDL message for the GetDistinctValues 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
GetDistinctValues	The input data for the GetDistinctValues WSDL operation .
GetDistinctValuesResponse	The result data for the GetDistinctValues 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:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="parameter" type="q2: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** 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 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:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="GetDistinctValuesResult" type="q2: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**, 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="tns: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="tns: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/AccessServerIntern
```

```

alService/AccessServiceSoap/GetHealthScoreAccessServerMessageFault"
name="AccessServerMessageFault"
message="tns: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
AccessServiceSoap_GetHealthScore_InputMessage	The request WSDL message for the GetHealthScore WSDL operation .
AccessServiceSoap_GetHealthScore_OutputMessage	The response WSDL message for the GetHealthScore 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
GetHealthScore	The input data for the GetHealthScore WSDL operation .
GetHealthScoreResponse	The result data for the GetHealthScore 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>
```

3.1.4.6.2.2 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:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="GetHealthScoreResult" type="q2: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/AccessServerIntern
```

```

alService/AccessServiceSoap/GetMacroState"
message="tns: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/AccessServerIntern
alService/AccessServiceSoap/GetMacroStateResponse"
message="tns: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/AccessServerIntern
alService/AccessServiceSoap/GetMacroStateAccessServerMessageFault"
name="AccessServerMessageFault"
message="tns: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** 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.
- 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
AccessServiceSoap_GetMacroState_InputMessage	The request WSDL message for the GetMacroState WSDL operation .
AccessServiceSoap_GetMacroState_OutputMessage	The response WSDL message for the GetMacroState 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
GetMacroState	The input data for the GetMacroState WSDL operation .
GetMacroStateResponse	The result data for the GetMacroState 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:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="parameter" type="q2: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:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="GetMacroStateResult" type="q2:CommandResult"/>
      <xs:element minOccurs="0" maxOccurs="1" name="instance"
        type="tns: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
DataMacroInstanceState	The DataMacroInstanceState 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="tns: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="tns: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** in the **content database** and also inserts a **row** 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/AccessServerInternalService/AccessServiceSoap/InsertData"
    message="tns: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="tns: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="tns: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 (section [3.1.1](#)) with the **fields** 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 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 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 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**.
- 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 2.2.5.2 .
DataException_ValidationFailed	See section 2.2.5.2 .
DataException_DataOperationFailed	See section 2.2.5.2 .
DataException_MaxRecordsInTableExceeded	See section 2.2.5.2 .

3.1.4.8.1 Messages

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

Message	Description
AccessServiceSoap_InsertData_InputMessage	The request WSDL message for the InsertData WSDL operation .
AccessServiceSoap_InsertData_OutputMessage	The response WSDL message for the InsertData 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
InsertData	The input data for the InsertData WSDL operation .
InsertDataResponse	The result data for the InsertData 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:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="parameter" type="q2: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="tns: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** 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** as the **moniker** element for the input to an **OpenResultSet** operation (section [3.1.4.10.2.1](#)).

listName: The **data source** 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:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="InsertDataResult" type="q2: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** 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="tns: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="tns: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="tns: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 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
AccessServiceSoap_KeepAlive_InputMessage	The request WSDL message for the KeepAlive WSDL

Message	Description
	operation.
AccessServiceSoap_KeepAlive_OutputMessage	The response WSDL message for the KeepAlive 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
KeepAlive	The input data for the KeepAlive WSDL operation .
KeepAliveResponse	The result data for the KeepAlive 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:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="parameter" type="q2: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:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="KeepAliveResult" type="q2: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** 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="tns: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="tns: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="tns: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** 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 specified by **startRowIndex** and **maximumRows** as follows:
 - If the **maximumRows** element is set to zero ("0"), the protocol server returns all visible rows 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 in the result set, the protocol server returns all visible rows in the result set with indices greater than or equal to **startRowIndex**.
 - Otherwise, the protocol server returns all visible rows 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 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 2.2.5.2 .
OrderingException_InvalidSpecification	See section 2.2.5.2 .
OrderingException_InvalidColumnName	See section 2.2.5.2 .
InvalidFilterExpression	See section 2.2.5.2 .
InvalidAggregateExpression	See section 2.2.5.2 .

3.1.4.10.1 Messages

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

Message	Description
AccessServiceSoap_OpenResultSet_InputMessage	The request WSDL message for the OpenResultSet WSDL operation .
AccessServiceSoap_OpenResultSet_OutputMessage	The response WSDL message for the

Message	Description
	OpenResultSet 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
OpenResultSet	The input data for the OpenResultSet WSDL operation .
OpenResultSetResponse	The result data for the OpenResultSet 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:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="parameter" type="q2: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="tns: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="tns: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** containing the application. MUST be present.

source: The **data source** 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** 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 double . If one or more of the values in the column cannot be converted to type double , the protocol server MUST return OpenResultSetResponse , with an aggregateValues element that contains an anyType element whose value is set to "#error".	Double , as specified in [XMLSCHEMA2] section 3.2.5.
Average	Average of all values in the column, all of which MUST be convertible to type double . If one or more of the values in the column cannot be converted to type double , the protocol server MUST return OpenResultSetResponse , with an aggregateValues element that contains an anyType element whose value is set to "#error".	Double , as specified in [XMLSCHEMA2] section 3.2.5.

Function Name	Result	Result Type
Counta	Total number of rows for which the value of the column is not NULL.	Int , as specified in [XMLSCHEMA2] section 3.2.17.

moniker: A unique identifier for the result set within a **session**. 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 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 in the result set.
- If a filter is applied to the result set, MUST be less than the number of rows in the filtered result set.

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

autoResync: The synchronization behavior of the result set. If **autoResync** is set to "true", the protocol server refreshes the row in the result set, by retrieving it from the original **list**, after a **list item** is inserted, updated, or deleted. Otherwise, it will simply insert, update, or delete the row in the result set according to the current session. It is not refreshed with the current values from the original list. 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:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="OpenResultSetResult" type="q2:CommandResult"/>
      <xs:element minOccurs="0" maxOccurs="1" name="tableXml" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="aggregateValues"
type="tns: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**.

- 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 in the result set. If a filter is applied to the result set, specifies the number of rows 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
ArrayOfString	The ArrayOfString complex type is used to specify an array of strings .

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**.

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="tns: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="tns: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="tns: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 in the response message to be used in any future operations against the newly created session. 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
AccessServiceSoap_OpenSession_InputMessage	The request WSDL message for the OpenSession WSDL operation .
AccessServiceSoap_OpenSession_OutputMessage	The response WSDL message for the OpenSession 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
OpenSession	The input data for the OpenSession WSDL operation .
OpenSessionResponse	The result data for the OpenSession 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:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="parameter" type="q2:CommandParameter"/>
      <xs:element
        xmlns:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="cultureParameter"
        type="q2: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:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="OpenSessionResult" type="q2: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** of the newly created **session**. 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
CultureCommandParameter	The CultureCommandParameter is used to specify UI culture , data culture and host data language related information when creating a new session .

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**.

```

<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.

- 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]:

TimeZone	=	Bias "#" StandardDate "#" StandardBias "#" DaylightDate "#" DaylightBias
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="tns: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="tns: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="tns: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 2.2.5.2 .
DataException_DataOperationFailed	See section 2.2.5.2 .

3.1.4.12.1 Messages

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

Message	Description
AccessServiceSoap_RunDataMacro_InputMessage	The request WSDL message for the RunDataMacro

Message	Description
	WSDL operation.
AccessServiceSoap_RunDataMacro_OutputMessage	The response WSDL message for the RunDataMacro 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
RunDataMacro	The input data for the RunDataMacro WSDL operation .
RunDataMacroResponse	The result data for the RunDataMacro 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:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="parameter" type="q2: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="tns:ArrayOfKeyValuePair"/>
      <xs:element minOccurs="0" maxOccurs="1" name="NewItemFields"
type="tns:ArrayOfKeyValuePair"/>
      <xs:element minOccurs="0" maxOccurs="1" name="macroParameters"
type="tns: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** containing the application. MUST be present.

listName: MUST be the title of the **list** associated with the **data macro** to be triggered. MUST be present. MUST be the title of a list contained in the site 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 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** in the list item, and the corresponding **Value** element contains the data for that field 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.
 - 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 in the list item, and the corresponding **Value** element contains the data for that field 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.
 - 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:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="RunDataMacroResult" type="q2: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** 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/AccessServerInternalService/AccessServiceSoap/UpdateCache"
    message="tns: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/AccessServerInternalService/AccessServiceSoap/UpdateCacheResponse"
    message="tns: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/AccessServerInternalService/AccessServiceSoap/UpdateCacheAccessServerMessageFault"
    name="AccessServerMessageFault"
    message="tns: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 from the result set using the given **key** and updates the columns specified in **values**. If the operation fails, no columns in the row 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
AccessServiceSoap_UpdateCache_InputMessage	The request WSDL message for the UpdateCache WSDL operation .
AccessServiceSoap_UpdateCache_OutputMessage	The response WSDL message for the UpdateCache 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
UpdateCache	The input data for the UpdateCache WSDL operation .
UpdateCacheResponse	The result data for the UpdateCache 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:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="parameter" type="q2: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="tns: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** 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** 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** 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 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:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="UpdateCacheResult" type="q2: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** in the **content database** and also updates the **row** 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="tns: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/AccessServerIntern
alService/AccessServiceSoap/UpdateDataResponse"
message="tns: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/AccessServerIntern
alService/AccessServiceSoap/UpdateDataAccessServerMessageFault"
name="AccessServerMessageFault"
message="tns: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 in the result set with a primary key equal to the primary key of the updated list item.
- If the list item and row 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 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**.
- 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 2.2.5.2 .
DataException_ValidationFailed	See section 2.2.5.2 .
DataException_DataOperationFailed	See section 2.2.5.2 .
DeleteConflict	See section 2.2.5.2 .
UpdateConflict	See section 2.2.5.2 .

3.1.4.14.1 Messages

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

Message	Description
AccessServiceSoap_UpdateData_InputMessage	The request WSDL message for the UpdateData WSDL operation .
AccessServiceSoap_UpdateData_OutputMessage	The response WSDL message for the UpdateData 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
UpdateData	The input data for the UpdateData WSDL operation .
UpdateDataResponse	The result data for the UpdateData 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:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="parameter" type="q2: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="tns:ArrayOfKeyValuePair"/>
      <xs:element minOccurs="0" maxOccurs="1" name="values" type="tns:ArrayOfKeyValuePair"/>
      <xs:element minOccurs="0" maxOccurs="1" name="oldValues"
        type="tns: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: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** 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** as the **moniker** element for the input to an **OpenResultSet** operation (section [3.1.4.10.2.1](#)).

listName: The **data source** 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** 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 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 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:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="UpdateDataResult" type="q2: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** 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. The protocol server responds with a **session identifier**.
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** 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.

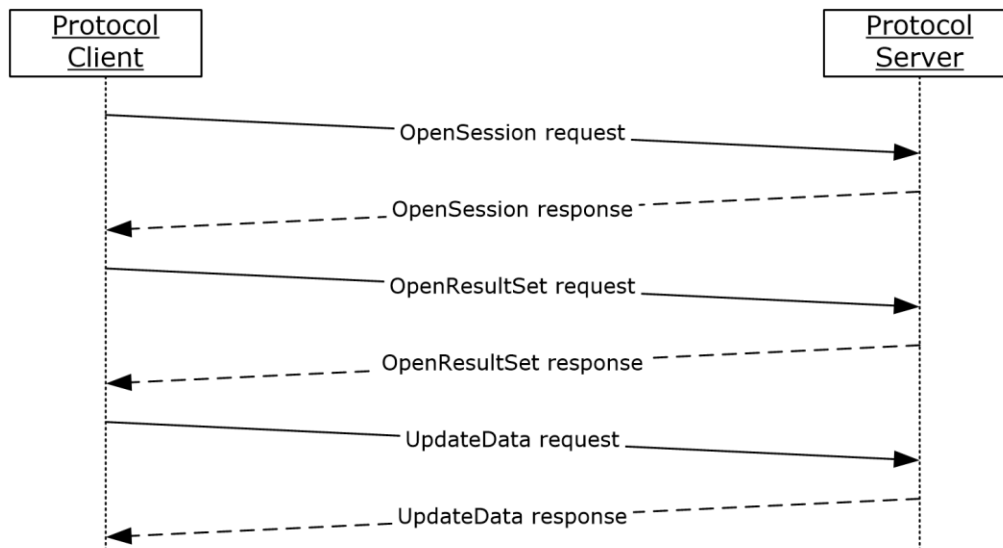


Figure 2: Information flow for data operation between protocol client and protocol server

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>
      <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>
    <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#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. The value of the **TimeZoneSerialization** element is the time zone information for the session.

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.V22.21DwFJM2813YcOKcHqjWp90.5.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</sessionId>
  </OpenSessionResponse>
</s:Body>

```

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

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/AccessServerInternalServ
ice/">
    <parameter>
      <WorkbookId
xmlns="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalServic
e/">1.V22.21DwFJM2813YcOKcHqjWp90.5.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</WorkbookId>
      <StateId
xmlns="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalServic
e/">-1</StateId>
      <UserFriendlyDisplayName>Andrew Cencini</UserFriendlyDisplayName>
      <Zone
xmlns="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalServic
e/" />
      <RequestSiteId
xmlns="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalServic
e/">bebf895a-f22a-49d5-b8b0-f65d01d0a399</RequestSiteId>
      <CompleteResponseTimeout
xmlns="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalServic
e/">0</CompleteResponseTimeout>
      <Flags
xmlns="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalServic
e/"></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. 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="."/></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>
        </DocumentElement>
      </diffgr:diffgram>
    </tableXml>
  </OpenResultSetResponse>

```



```

<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. 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.V22.21DwFJM2813YcOKcHqqjWp90.5.en-US5.en-US73.+0480#0000-11-00-01T02:00:00#0000#0000-03-00-02T02:00:00#0000#-006036.00000000-0000-0000-0000-0000000000001.U</d4pl:WorkbookId>
      <d4pl:StateId>-1</d4pl:StateId>
      <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:d6p1="http://www.w3.org/2001/XMLSchema"
i:type="d6p1:string">UpdateData Test</Value>
    </KeyValuePair>
</values>
<oldValues>
    <KeyValuePair>
        <Key xmlns:d6p1="http://www.w3.org/2001/XMLSchema"
i:type="d6p1:string">Comment</Key>
        <Value xmlns:d6p1="http://www.w3.org/2001/XMLSchema" i:type="d6p1:string">Insert
Test</Value>
    </KeyValuePair>
</oldValues>
    <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/AccessServerInternalServ
ice/">
        <UpdateDataResult>
            <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>
            <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: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/AccessServerInternalService/">
<CloseSessionResult>
<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>
</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**. 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" encoding="UTF-8"?>
<wsdl:definitions xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
xmlns:tns="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternal
Service/" xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"
targetNamespace="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIn
ternalService/" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
  <wsdl:types>
    <xs:schema
xmlns:tns2="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/Imports"
targetNamespace="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIn
ternalService/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/AccessServerInternal
Service/">
        <xs:import
namespace="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalSe
rvice/">
      </xs:schema>
    </wsdl:types>
    <wsdl:portType name="AccessServiceSoap">
      <wsdl:operation name="GetHealthScore">
        <wsdl:input
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/GetHealthScore"
message="tns:AccessServiceSoap GetHealthScore InputMessage"/>
        <wsdl:output
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/GetHealthScoreResponse"
message="tns:AccessServiceSoap_GetHealthScore_OutputMessage"/>
        <wsdl:fault
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/GetHealthScoreAccessServerMessageFault"
name="AccessServerMessageFault"
message="tns:AccessServiceSoap_GetHealthScore_AccessServerMessageFault_FaultMessage"/>
      </wsdl:operation>
      <wsdl:operation name="GetMacroState">
        <wsdl:input
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/GetMacroState"
message="tns:AccessServiceSoap_GetMacroState_InputMessage"/>
        <wsdl:output
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/GetMacroStateResponse"
message="tns:AccessServiceSoap_GetMacroState_OutputMessage"/>
        <wsdl:fault
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/GetMacroStateAccessServerMessageFault"
name="AccessServerMessageFault"
message="tns: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="tns:AccessServiceSoap RunDataMacro InputMessage"/>
        <wsdl:output
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
```

```

alService/AccessServiceSoap/RunDataMacroResponse"
message="tns:AccessServiceSoap RunDataMacro OutputMessage"/>
  <wsdl:fault
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/RunDataMacroAccessServerMessageFault"
name="AccessServerMessageFault"
message="tns: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="tns:AccessServiceSoap_OpenSession_InputMessage"/>
    <wsdl:output
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/OpenSessionResponse"
message="tns:AccessServiceSoap_OpenSession_OutputMessage"/>
    <wsdl:fault
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/OpenSessionAccessServerMessageFault"
name="AccessServerMessageFault"
message="tns: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="tns:AccessServiceSoap_CloseSession_InputMessage"/>
      <wsdl:output
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/CloseSessionResponse"
message="tns:AccessServiceSoap_CloseSession_OutputMessage"/>
      <wsdl:fault
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/CloseSessionAccessServerMessageFault"
name="AccessServerMessageFault"
message="tns: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="tns:AccessServiceSoap_KeepAlive_InputMessage"/>
        <wsdl:output
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/KeepAliveResponse"
message="tns:AccessServiceSoap_KeepAlive_OutputMessage"/>
        <wsdl:fault
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/KeepAliveAccessServerMessageFault"
name="AccessServerMessageFault"
message="tns: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="tns:AccessServiceSoap_OpenResultSet_InputMessage"/>
          <wsdl:output
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/OpenResultSetResponse"
message="tns:AccessServiceSoap_OpenResultSet_OutputMessage"/>
          <wsdl:fault
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/OpenResultSetAccessServerMessageFault"
name="AccessServerMessageFault"
message="tns: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="tns:AccessServiceSoap_GetData_InputMessage"/>
    <wsdl:output
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/GetDataResponse"
message="tns:AccessServiceSoap_GetData_OutputMessage"/>
    <wsdl:fault
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/GetDataAccessServerMessageFault" name="AccessServerMessageFault"
message="tns: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="tns:AccessServiceSoap_InsertData_InputMessage"/>
    <wsdl:output
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/InsertDataResponse"
message="tns:AccessServiceSoap_InsertData_OutputMessage"/>
    <wsdl:fault
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/InsertDataAccessServerMessageFault"
name="AccessServerMessageFault"
message="tns: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="tns:AccessServiceSoap_UpdateData_InputMessage"/>
    <wsdl:output
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/UpdateDataResponse"
message="tns:AccessServiceSoap_UpdateData_OutputMessage"/>
    <wsdl:fault
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/UpdateDataAccessServerMessageFault"
name="AccessServerMessageFault"
message="tns: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="tns:AccessServiceSoap_FixupRow_InputMessage"/>
    <wsdl:output
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/FixupRowResponse"
message="tns:AccessServiceSoap_FixupRow_OutputMessage"/>
    <wsdl:fault
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/FixupRowAccessServerMessageFault" name="AccessServerMessageFault"
message="tns: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="tns:AccessServiceSoap_DeleteData_InputMessage"/>
    <wsdl:output
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/DeleteDataResponse"
message="tns:AccessServiceSoap_DeleteData_OutputMessage"/>
    <wsdl:fault
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/DeleteDataAccessServerMessageFault"
name="AccessServerMessageFault"
message="tns: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="tns:AccessServiceSoap_UpdateCache_InputMessage"/>
          <wsdl:output
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/UpdateCacheResponse"
message="tns:AccessServiceSoap_UpdateCache_OutputMessage"/>
          <wsdl:fault
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/UpdateCacheAccessServerMessageFault"
name="AccessServerMessageFault"
message="tns: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="tns:AccessServiceSoap_GetDistinctValues_InputMessage"/>
          <wsdl:output
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/GetDistinctValuesResponse"
message="tns:AccessServiceSoap_GetDistinctValues_OutputMessage"/>
          <wsdl:fault
wsaw:Action="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/AccessServiceSoap/GetDistinctValuesAccessServerMessageFault"
name="AccessServerMessageFault"
message="tns:AccessServiceSoap_GetDistinctValues_AccessServerMessageFault_FaultMessage"/>
        </wsdl:operation>
      </wsdl:portType>
      <wsdl:binding name="DefaultBinding_AccessServiceSoap" type="tns: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 name="KeepAlive">
        <soap:operation
soapAction="http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerIntern
alService/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
alService/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
alService/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
alService/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:q1="http://schemas.datacontract.org/2004/07/Microsoft.Office.Access.Server"
name="detail" element="q1:AccessServerMessage"/>
    </wsdl:part>
</wsdl:message>
<wsdl:message name="AccessServiceSoap_CloseSession_InputMessage">
    <wsdl:part name="parameters" element="tns:CloseSession"/>
</wsdl:part>
</wsdl:message>
<wsdl:message name="AccessServiceSoap_CloseSession_OutputMessage">
    <wsdl:part name="parameters" element="tns:CloseSessionResponse"/>
</wsdl:part>
</wsdl:message>
<wsdl:message name="AccessServiceSoap_DeleteData_AccessServerMessageFault_FaultMessage">
    <wsdl:part
xmlns:q1="http://schemas.datacontract.org/2004/07/Microsoft.Office.Access.Server"
name="detail" element="q1:AccessServerMessage"/>
    </wsdl:part>
</wsdl:message>
<wsdl:message name="AccessServiceSoap_DeleteData_InputMessage">
    <wsdl:part name="parameters" element="tns>DeleteData"/>
</wsdl:part>
</wsdl:message>
<wsdl:message name="AccessServiceSoap_DeleteData_OutputMessage">
    <wsdl:part name="parameters" element="tns>DeleteDataResponse"/>
</wsdl:part>
</wsdl:message>
<wsdl:message name="AccessServiceSoap_FixupRow_AccessServerMessageFault_FaultMessage">
    <wsdl:part
xmlns:q1="http://schemas.datacontract.org/2004/07/Microsoft.Office.Access.Server"
name="detail" element="q1:AccessServerMessage"/>
    </wsdl:part>
</wsdl:message>
<wsdl:message name="AccessServiceSoap_FixupRow_InputMessage">
    <wsdl:part name="parameters" element="tns:FixupRow"/>
</wsdl:part>
</wsdl:message>
<wsdl:message name="AccessServiceSoap_FixupRow_OutputMessage">
    <wsdl:part name="parameters" element="tns:FixupRowResponse"/>
</wsdl:part>
</wsdl:message>
<wsdl:message name="AccessServiceSoap_GetData_AccessServerMessageFault_FaultMessage">
    <wsdl:part
xmlns:q1="http://schemas.datacontract.org/2004/07/Microsoft.Office.Access.Server"
name="detail" element="q1:AccessServerMessage"/>
    </wsdl:part>
</wsdl:message>
<wsdl:message name="AccessServiceSoap_GetData_InputMessage">
    <wsdl:part name="parameters" element="tns:GetData"/>
</wsdl:part>
</wsdl:message>
<wsdl:message name="AccessServiceSoap_GetData_OutputMessage">
    <wsdl:part name="parameters" element="tns:GetDataResponse"/>
</wsdl:part>
</wsdl:message>

```

```

    <wsdl:message
name="AccessServiceSoap_GetDistinctValues_AccessServerMessageFault_FaultMessage">
    <wsdl:part
xmlns:q1="http://schemas.datacontract.org/2004/07/Microsoft.Office.Access.Server"
name="detail" element="q1:AccessServerMessage"/>
    </wsdl:message>
    <wsdl:message name="AccessServiceSoap_GetDistinctValues_InputMessage">
    <wsdl:part name="parameters" element="tns:GetDistinctValues"/>
    </wsdl:message>
    <wsdl:message name="AccessServiceSoap_GetDistinctValues_OutputMessage">
    <wsdl:part name="parameters" element="tns:GetDistinctValuesResponse"/>
    </wsdl:message>
    <wsdl:message
name="AccessServiceSoap_GetHealthScore_AccessServerMessageFault_FaultMessage">
    <wsdl:part
xmlns:q1="http://schemas.datacontract.org/2004/07/Microsoft.Office.Access.Server"
name="detail" element="q1:AccessServerMessage"/>
    </wsdl:message>
    <wsdl:message name="AccessServiceSoap_GetHealthScore_InputMessage">
    <wsdl:part name="parameters" element="tns:GetHealthScore"/>
    </wsdl:message>
    <wsdl:message name="AccessServiceSoap_GetHealthScore_OutputMessage">
    <wsdl:part name="parameters" element="tns:GetHealthScoreResponse"/>
    </wsdl:message>
    <wsdl:message name="AccessServiceSoap_GetMacroState_AccessServerMessageFault_FaultMessage">
    <wsdl:part
xmlns:q1="http://schemas.datacontract.org/2004/07/Microsoft.Office.Access.Server"
name="detail" element="q1:AccessServerMessage"/>
    </wsdl:message>
    <wsdl:message name="AccessServiceSoap_GetMacroState_InputMessage">
    <wsdl:part name="parameters" element="tns:GetMacroState"/>
    </wsdl:message>
    <wsdl:message name="AccessServiceSoap_GetMacroState_OutputMessage">
    <wsdl:part name="parameters" element="tns:GetMacroStateResponse"/>
    </wsdl:message>
    <wsdl:message name="AccessServiceSoap_InsertData_AccessServerMessageFault_FaultMessage">
    <wsdl:part
xmlns:q1="http://schemas.datacontract.org/2004/07/Microsoft.Office.Access.Server"
name="detail" element="q1:AccessServerMessage"/>
    </wsdl:message>
    <wsdl:message name="AccessServiceSoap_InsertData_InputMessage">
    <wsdl:part name="parameters" element="tns:InsertData"/>
    </wsdl:message>
    <wsdl:message name="AccessServiceSoap_InsertData_OutputMessage">
    <wsdl:part name="parameters" element="tns:InsertDataResponse"/>
    </wsdl:message>
    <wsdl:message name="AccessServiceSoap_KeepAlive_AccessServerMessageFault_FaultMessage">
    <wsdl:part
xmlns:q1="http://schemas.datacontract.org/2004/07/Microsoft.Office.Access.Server"
name="detail" element="q1:AccessServerMessage"/>
    </wsdl:message>
    <wsdl:message name="AccessServiceSoap_KeepAlive_InputMessage">
    <wsdl:part name="parameters" element="tns:KeepAlive"/>
    </wsdl:message>
    <wsdl:message name="AccessServiceSoap_KeepAlive_OutputMessage">
    <wsdl:part name="parameters" element="tns:KeepAliveResponse"/>
    </wsdl:message>
    <wsdl:message name="AccessServiceSoap_OpenResultSet_AccessServerMessageFault_FaultMessage">
    <wsdl:part
xmlns:q1="http://schemas.datacontract.org/2004/07/Microsoft.Office.Access.Server"
name="detail" element="q1:AccessServerMessage"/>
    </wsdl:message>
    <wsdl:message name="AccessServiceSoap_OpenResultSet_InputMessage">
    <wsdl:part name="parameters" element="tns:OpenResultSet"/>
    </wsdl:message>
    <wsdl:message name="AccessServiceSoap_OpenResultSet_OutputMessage">
    <wsdl:part name="parameters" element="tns:OpenResultSetResponse"/>
    </wsdl:message>
    <wsdl:message name="AccessServiceSoap_OpenSession_AccessServerMessageFault_FaultMessage">

```

```

    <wsdl:part
xmlns:q1="http://schemas.datacontract.org/2004/07/Microsoft.Office.Access.Server"
name="detail" element="q1:AccessServerMessage"/>
  </wsdl:message>
  <wsdl:message name="AccessServiceSoap_OpenSession_InputMessage">
    <wsdl:part name="parameters" element="tns:OpenSession"/>
  </wsdl:message>
  <wsdl:message name="AccessServiceSoap_OpenSession_OutputMessage">
    <wsdl:part name="parameters" element="tns:OpenSessionResponse"/>
  </wsdl:message>
  <wsdl:message name="AccessServiceSoap_RunDataMacro_AccessServerMessageFault_FaultMessage">
    <wsdl:part
xmlns:q1="http://schemas.datacontract.org/2004/07/Microsoft.Office.Access.Server"
name="detail" element="q1:AccessServerMessage"/>
    </wsdl:message>
    <wsdl:message name="AccessServiceSoap_RunDataMacro_InputMessage">
      <wsdl:part name="parameters" element="tns:RunDataMacro"/>
    </wsdl:message>
    <wsdl:message name="AccessServiceSoap_RunDataMacro_OutputMessage">
      <wsdl:part name="parameters" element="tns:RunDataMacroResponse"/>
    </wsdl:message>
    <wsdl:message name="AccessServiceSoap_UpdateCache_AccessServerMessageFault_FaultMessage">
      <wsdl:part
xmlns:q1="http://schemas.datacontract.org/2004/07/Microsoft.Office.Access.Server"
name="detail" element="q1:AccessServerMessage"/>
      </wsdl:message>
      <wsdl:message name="AccessServiceSoap_UpdateCache_InputMessage">
        <wsdl:part name="parameters" element="tns:UpdateCache"/>
      </wsdl:message>
      <wsdl:message name="AccessServiceSoap_UpdateCache_OutputMessage">
        <wsdl:part name="parameters" element="tns:UpdateCacheResponse"/>
      </wsdl:message>
      <wsdl:message name="AccessServiceSoap_UpdateData_AccessServerMessageFault_FaultMessage">
        <wsdl:part
xmlns:q1="http://schemas.datacontract.org/2004/07/Microsoft.Office.Access.Server"
name="detail" element="q1:AccessServerMessage"/>
        </wsdl:message>
        <wsdl:message name="AccessServiceSoap_UpdateData_InputMessage">
          <wsdl:part name="parameters" element="tns:UpdateData"/>
        </wsdl:message>
        <wsdl:message name="AccessServiceSoap_UpdateData_OutputMessage">
          <wsdl:part name="parameters" element="tns:UpdateDataResponse"/>
        </wsdl:message>
      </wsdl:definitions>

```

7 Appendix B: Full XML Schema

Schema name	Prefix	Section
http://microsoft.com/wsdl/types/	q3	7.1
http://schemas.datacontract.org/2004/07/Microsoft.Office.Access.Server	q1	7.2
http://schemas.microsoft.com/2003/10/Serialization/	tns1	7.3
http://schemas.microsoft.com/office/Access/Server/WebServices/AccessServerInternalService/	tns	7.4
http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/	q2	7.5

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" encoding="UTF-8"?>
<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" encoding="UTF-8"?>
<xs:schema xmlns:q1="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="q1: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="q1: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="q1:AccessServerMessageId"/>
      <xs:element minOccurs="0" name="Severity" type="q1:AccessServerMessageSeverity"/>
      <xs:element minOccurs="0" name="Type" type="q1:AccessServerMessageType"/>
    </xs:sequence>
  </xs:complexType>
  <xs:element name="AccessServerMessage" nillable="true" type="q1: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="ql:AccessServerMessageButtons"/>
<xs:complexType name="ServerHealthInformation">
    <xs:sequence>
        <xs:element minOccurs="0" name="HealthScore" type="xs:float"/>
        <xs:element minOccurs="0" name="StateFlags" type="ql:ServerStateFlags"/>
    </xs:sequence>
</xs:complexType>
<xs:element name="ServerHealthInformation" nillable="true"
type="ql: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="ql: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: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:restriction>
</xs:simpleType>

```

```

<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_InvalidAxl"/>
<xs:enumeration value="MacroCompilationException_UnexpectedAxlElement"/>
<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_CannotReferenceMVOrAttachmentFields"/>
<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="q1: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="q1: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="q1:AccessServerMessageType"/>
</xs:schema>

```

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

```

<?xml version="1.0" encoding="UTF-8"?>
<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" encoding="UTF-8"?>
<xs:schema
  xmlns:tns="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:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/"
          minOccurs="0" maxOccurs="1" name="GetHealthScoreResult" type="q2:CommandResult"/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="GetMacroState">
    <xs:complexType>
      <xs:sequence>
        <xs:element
          xmlns:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/"
          minOccurs="0" maxOccurs="1" name="parameter" type="q2: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:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/"
          minOccurs="0" maxOccurs="1" name="GetMacroStateResult" type="q2:CommandResult"/>
        <xs:element minOccurs="0" maxOccurs="1" name="instance" type="tns:DataMacroInstanceState"/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:complexType name="DataMacroInstanceState">
    <xs:sequence>

```

```

    <xs:element minOccurs="1" maxOccurs="1" name="State" type="tns: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="tns:ArrayOfKeyValuePair"/>
  </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="tns: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:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalSer
vice/" minOccurs="0" maxOccurs="1" name="parameter" type="q2: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="tns:ArrayOfKeyValuePair"/>
      <xs:element minOccurs="0" maxOccurs="1" name="newItemFields"
type="tns:ArrayOfKeyValuePair"/>
      <xs:element minOccurs="0" maxOccurs="1" name="macroParameters"
type="tns: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:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalSer
vice/" minOccurs="0" maxOccurs="1" name="RunDataMacroResult" type="q2:CommandResult"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
<xs:element name="OpenSession">
  <xs:complexType>
    <xs:sequence>
      <xs:element
xmlns:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalSer
vice/" minOccurs="0" maxOccurs="1" name="parameter" type="q2:CommandParameter"/>
      <xs:element
xmlns:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalSer
vice/" minOccurs="0" maxOccurs="1" name="cultureParameter"
type="q2: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:sequence>
  </xs:complexType>
</xs:element>
<xs:element name="OpenSessionResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element
xmlns:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="OpenSessionResult" type="q2: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:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="parameter" type="q2: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:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="CloseSessionResult" type="q2:CommandResult"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
<xs:element name="KeepAlive">
  <xs:complexType>
    <xs:sequence>
      <xs:element
xmlns:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="parameter" type="q2: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:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="KeepAliveResult" type="q2:CommandResult"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
<xs:element name="OpenResultSet">
  <xs:complexType>
    <xs:sequence>
      <xs:element
xmlns:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="parameter" type="q2: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="tns: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="tns:ArrayOfString"/>
      <xs:element minOccurs="0" maxOccurs="1" name="moniker" type="xs:string"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>

```

```

        <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:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalSer
vice/" minOccurs="0" maxOccurs="1" name="OpenResultSetResult" type="q2:CommandResult"/>
            <xs:element minOccurs="0" maxOccurs="1" name="tableXml" type="xs:string"/>
            <xs:element minOccurs="0" maxOccurs="1" name="aggregateValues"
type="tns: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:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalSer
vice/" minOccurs="0" maxOccurs="1" name="parameter" type="q2: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="tns: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:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalSer
vice/" minOccurs="0" maxOccurs="1" name="GetDataResult" type="q2:CommandResult"/>

```

```

        <xs:element minOccurs="0" maxOccurs="1" name="tableXml" type="xs:string"/>
        <xs:element minOccurs="0" maxOccurs="1" name="aggregateValues"
type="tns: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:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalSer
vice/" minOccurs="0" maxOccurs="1" name="parameter" type="q2: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="tns: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:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalSer
vice/" minOccurs="0" maxOccurs="1" name="InsertDataResult" type="q2: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:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalSer
vice/" minOccurs="0" maxOccurs="1" name="parameter" type="q2: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="tns:ArrayOfKeyValuePair"/>
            <xs:element minOccurs="0" maxOccurs="1" name="values"
type="tns:ArrayOfKeyValuePair"/>
            <xs:element minOccurs="0" maxOccurs="1" name="oldValues"
type="tns: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:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalSer
vice/" minOccurs="0" maxOccurs="1" name="UpdateDataResult" type="q2: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:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalSer
vice/" minOccurs="0" maxOccurs="1" name="parameter" type="q2: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="tns:ArrayOfKeyValuePair"/>
    <xs:element minOccurs="0" maxOccurs="1" name="values"
type="tns: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:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalSer
vice/" minOccurs="0" maxOccurs="1" name="FixupRowResult" type="q2:CommandResult"/>
      <xs:element minOccurs="0" maxOccurs="1" name="tableXml" type="xs:string"/>
      <xs:element minOccurs="0" maxOccurs="1" name="aggregateValues"
type="tns: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:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalSer
vice/" minOccurs="0" maxOccurs="1" name="parameter" type="q2: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="tns:ArrayOfKeyValuePair"/>
      <xs:element minOccurs="0" maxOccurs="1" name="oldValues"
type="tns: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:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalSer
vice/" minOccurs="0" maxOccurs="1" name="DeleteDataResult" type="q2: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:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalSer
vice/" minOccurs="0" maxOccurs="1" name="parameter" type="q2: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="tns: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>
<xs:element name="UpdateCacheResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element
xmlns:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="UpdateCacheResult" type="q2:CommandResult"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
<xs:element name="GetDistinctValues">
  <xs:complexType>
    <xs:sequence>
      <xs:element
xmlns:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="parameter" type="q2: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>
<xs:element name="GetDistinctValuesResponse">
  <xs:complexType>
    <xs:sequence>
      <xs:element
xmlns:q2="http://schemas.microsoft.com/office/Excel/Server/WebServices/ExcelServerInternalService/" minOccurs="0" maxOccurs="1" name="GetDistinctValuesResult" type="q2: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" encoding="UTF-8"?>
<xs:schema
xmlns:q2="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="q2: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>
<xs:complexType name="ServerHealthInformation">
  <xs:sequence>
    <xs:element minOccurs="1" maxOccurs="1" name="StateFlags" type="q2: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="q2: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="q2: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 updates to those products.

- Microsoft SharePoint Server 2010
- Microsoft SharePoint Server 2013
- Microsoft SharePoint Server 2016

Exceptions, if any, are noted in this section. If an update version, service pack or Knowledge Base (KB) number appears with a product name, the behavior changed in that update. The new behavior also applies to subsequent updates unless otherwise specified. If a product edition appears with the product version, behavior is different in that product edition.

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

[<1> Section 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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