[MS-APPMWSP]:

SharePoint App Management Web Service Protocol

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Revision Summary

Date	Revision History	Revision Class	Comments
1/20/2012	0.1	New	Released new document.
4/11/2012	0.1	No Change	No changes to the meaning, language, or formatting of the technical content.
7/16/2012	0.1	No Change	No changes to the meaning, language, or formatting of the technical content.
9/12/2012	0.1	No Change	No changes to the meaning, language, or formatting of the technical content.
10/8/2012	1.0	Major	Significantly changed the technical content.
2/11/2013	1.0	No Change	No changes to the meaning, language, or formatting of the technical content.
7/30/2013	1.0	No Change	No changes to the meaning, language, or formatting of the technical content.
11/18/2013	1.0	No Change	No changes to the meaning, language, or formatting of the technical content.
2/10/2014	1.0	No Change	No changes to the meaning, language, or formatting of the technical content.
4/30/2014	1.0	No Change	No changes to the meaning, language, or formatting of the technical content.
7/31/2014	1.0	No Change	No changes to the meaning, language, or formatting of the technical content.
8/24/2015	2.0	Major	Significantly changed the technical content.

Table of Contents

1 Introduction

The SharePoint App Management Web Service Protocol enables protocol clients to retrieve connection information for a set of databases.

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

1.1 Glossary

The following terms are specific to this document:

connection string: A series of arguments, delimited by a semicolon, that defines the location of a database and how to connect to it.

data range: A set of consecutive scale-out partition keys.

endpoint: A communication port that is exposed by an application server for a specific shared service and to which messages can be addressed.

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).

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

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

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

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

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

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

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

Uniform Resource Identifier (URI): A string that identifies a resource. The URI is an addressing mechanism defined in Internet Engineering Task Force (IETF) Uniform Resource Identifier (URI): Generic Syntax [RFC3986].

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 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.

[ISO/IEC9075-2:2008] ISO/IEC, "Information technology -- Database languages -- SQL -- Part 2: Foundation (SQL/Foundation)", INCITS/ISO/IEC 9075-2:2008, January 2009, http://webstore.ansi.org/RecordDetail.aspx?sku=INCITS%2fISO%2fIEC+9075-2-2008

Note There is a charge to download the specification.

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

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997, http://www.rfc-editor.org/rfc/rfc2119.txt

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

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

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

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

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

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

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

1.2.2 Informative References

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

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

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

1.3 Overview

This protocol enables a protocol client to retrieve the mapping of a set of **data ranges** to a set of databases. It allows the protocol client to retrieve a set of data ranges that the protocol server maintains and the corresponding database **connection strings**, as well as a flag for each database indicating whether the database is cloud-based.

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].

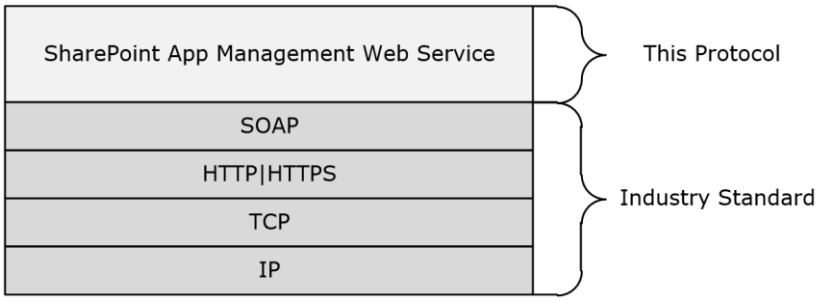

Figure 1: This protocol in relation to other protocols

1.5 Prerequisites/Preconditions

This protocol operates against a protocol server that exposes one or more **endpoint Uniform Resource Identifiers (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 appropriate 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 intended for use by protocol clients and protocol servers that are connected by high-bandwidth, low-latency network connections.

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

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 [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 [SOAP1.2/1] 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 that are used by this protocol. The syntax of the definitions uses **XML schema**, as specified in [XMLSCHEMA1] and [XMLSCHEMA2], and **WSDL**, as specified in [WSDL].

2.2.1 Namespaces

This 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
soap	http://schemas.xmlsoap.org/wsdl/soap/	[SOAP1.1]
tns	http://schemas.microsoft.com/2003/10/Serialization/	
tns1	http://schemas.microsoft.com/sharepoint/soap/	
tns2	http://schemas.microsoft.com/sharepoint/soap/Imports	
wsaw	http://www.w3.org/2006/05/addressing/wsdl	
wsdl	http://schemas.xmlsoap.org/wsdl/	[WSDL]
xs	http://www.w3.org/2001/XMLSchema	[XMLSCHEMA1] [XMLSCHEMA2]

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
AppManagementServiceFault	The **AppManagementServiceFault** complex type contains information about a protocol-server-side error. This complex type MUST be formatted as a SOAP fault, as specified in [SOAP1.2/1] section 5.4.

2.2.4.1 AppManagementServiceFault

Namespace: http://schemas.microsoft.com/sharepoint/soap/

The **AppManagementServiceFault** complex type contains information about a protocol-server-side error. This complex type MUST be formatted as a SOAP fault, as specified in [SOAP1.2/1] section 5.4.

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

Message: Specifies the message that describes the protocol-server-side error.

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
char	The **char** simple type is a **Unicode** character value.
duration	The **duration** simple type represents a duration of time.
guid	The **guid** simple type is a **GUID**.

2.2.5.1 char

Namespace: http://schemas.microsoft.com/2003/10/Serialization/

The **char** simple type is a Unicode character value.

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

2.2.5.2 duration

Namespace: http://schemas.microsoft.com/2003/10/Serialization/

The **duration** simple type represents a duration of time.

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

2.2.5.3 guid

Namespace: http://schemas.microsoft.com/2003/10/Serialization/

The **guid** simple type is a GUID.

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

2.2.6 Attributes

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

2.2.7 Groups

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

2.2.8 Attribute Groups

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

3 Protocol Details

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

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

Except where specified, protocol clients SHOULD interpret HTTP status codes returned by the protocol server as specified in [RFC2616], section 10, Status Code Definitions.

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

3.1 IAppManagementServiceApplication Server Details

3.1.1 Abstract Data Model

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

The protocol server maintains a set of data ranges such that there is no overlap between any two data ranges. Data range 1 with start point s1 and end point e1 is defined as not having overlap with the data range 2 with start point s2 and end point e2, if e2 ≤s1 or s2 ≥ e1. The comparison operators ≤ and ≥ have the same meaning as the binary value comparison defined in [ISO/IEC9075-2:2008]. Also, the protocol server maintains a mapping between these data ranges and a set of databases.

3.1.2 Timers

None.

3.1.3 Initialization

None.

3.1.4 Message Processing Events and Sequencing Rules

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

Operation	Description
GetAppManagementDatabaseMap	This operation retrieves the mapping of data ranges to a set of databases.

3.1.4.1 GetAppManagementDatabaseMap

This operation retrieves the mapping of data ranges to a set of databases.

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

```
<wsdl:operation name="GetAppManagementDatabaseMap"
xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
  <wsdl:input
wsaw:Action="http://schemas.microsoft.com/sharepoint/soap/IAppManagementServiceApplication/Ge
tAppManagementDatabaseMap"
message="tns1:IAppManagementServiceApplication GetAppManagementDatabaseMap InputMessage"
xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
  <wsdl:output
wsaw:Action="http://schemas.microsoft.com/sharepoint/soap/IAppManagementServiceApplication/Ge
tAppManagementDatabaseMapResponse"
message="tns1:IAppManagementServiceApplication_GetAppManagementDatabaseMap_OutputMessage"
xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
  <wsdl:fault
wsaw:Action="http://schemas.microsoft.com/sharepoint/soap/IAppManagementServiceApplication/Ge
tAppManagementDatabaseMapAppManagementServiceFaultFault"
name="AppManagementServiceFaultFault"
message="tns1:IAppManagementServiceApplication_GetAppManagementDatabaseMap_AppManagementServi
ceFaultFault FaultMessage" xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
</wsdl:operation>
```

The protocol client sends an **IAppManagementServiceApplication_GetAppManagementDatabaseMap_InputMessage** (section 3.1.4.1.1.1) request WSDL message and the protocol server MUST respond with an **IAppManagementServiceApplication_GetAppManagementDatabaseMap_OutputMessage** (section 3.1.4.1.1.2) response WSDL message, as follows:

1. The protocol server MUST respond with a SOAP fault containing the complex type **AppManagementServiceFault** if any data range violates the implementation-specific integrity constraints.

2. Otherwise, the protocol server MUST return the mapping of the data range to the databases.

3.1.4.1.1 Messages

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

Message	Description
IAppManagementServiceApplication_GetAppManagementDatabaseMap_InputMessage	The request WSDL message for the **GetAppManagementDatabaseMap** WSDL operation.
IAppManagementServiceApplication_GetAppManagementDatabaseMap_OutputMessage	The response WSDL message for the **GetAppManagementDatabaseMap** WSDL operation.

3.1.4.1.1.1 IAppManagementServiceApplication_GetAppManagementDatabaseMap_InputMessage

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

The **SOAP action** value is:

```
http://schemas.microsoft.com/sharepoint/soap/IAppManagementServiceApplication/GetAppManagementDatabaseMap
```

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

3.1.4.1.1.2 IAppManagementServiceApplication_GetAppManagementDatabaseMap_OutputMessage

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

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

3.1.4.1.2 Elements

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

Element	Description
GetAppManagementDatabaseMap	The input data for the **GetAppManagementDatabaseMap** WSDL operation.
GetAppManagementDatabaseMapResponse	The result data for the **GetAppManagementDatabaseMap** WSDL operation.

3.1.4.1.2.1 GetAppManagementDatabaseMap

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

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

3.1.4.1.2.2 GetAppManagementDatabaseMapResponse

The **GetAppManagementDatabaseMapResponse** element specifies the result data for the **GetAppManagementDatabaseMap** WSDL operation.

```
<xs:element name="GetAppManagementDatabaseMapResponse"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="GetAppManagementDatabaseMapResult" nillable="true"
type="tns1:ArrayOfAppMngMapEntryData"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

GetAppManagementDatabaseMapResult: The mapping of the data ranges to the databases.

3.1.4.1.3 Complex Types

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

Complex type	Description
AppMngMapEntryData	An entry that represents the mapping from a data range to a database.
ArrayOfAppMngMapEntryData	The mapping between a set of data ranges to a set of databases.

3.1.4.1.3.1 ArrayOfAppMngMapEntryData

Namespace: http://schemas.microsoft.com/sharepoint/soap/

The mapping from a set of data ranges to a set of databases.

```
<xs:complexType name="ArrayOfAppMngMapEntryData" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="AppMngMapEntryData" nillable="true"
type="tns1:AppMngMapEntryData"/>
  </xs:sequence>
</xs:complexType>
```

AppMngMapEntryData: An entry that represents the mapping from a data range to a database.

3.1.4.1.3.2 AppMngMapEntryData

Namespace: http://schemas.microsoft.com/sharepoint/soap/

The mapping from a data range to a database.

```
<xs:complexType name="AppMngMapEntryData" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element minOccurs="0" name="CompositeKeyEnd" nillable="true" type="xs:base64Binary"/>
    <xs:element minOccurs="0" name="CompositeKeyStart" nillable="true"
type="xs:base64Binary"/>
    <xs:element minOccurs="0" name="ConnectionString" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="IsSqlAzure" type="xs:boolean"/>
  </xs:sequence>
</xs:complexType>
```

CompositeKeyEnd: The end point of a data range.

CompositeKeyStart: The start point of a data range.

ConnectionString: The connection string to the database that the data range is mapped to.

IsSqlAzure: A flag that indicates whether the database is a cloud-based database<1>.

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.

3.1.5 Timer Events

None.

3.1.6 Other Local Events

None.

4 Protocol Examples

To retrieve the mapping of the set of data ranges to the set of databases maintained by a protocol server, a protocol client constructs the following message:

```
<s:Envelope xmlns:s="http://schemas.xmlsoap.org/soap/envelope/">
  <s:Body>
    <GetAppManagementDatabaseMap
xmlns="http://schemas.microsoft.com/sharepoint/soap/"/>
  </s:Body>
</s:Envelope>
```

The protocol server then responds with the following:

```
<s:Envelope xmlns:s="http://schemas.xmlsoap.org/soap/envelope/">
  <s:Body>
    <GetAppManagementDatabaseMapResponse
xmlns="http://schemas.microsoft.com/sharepoint/soap/">
      <GetAppManagementDatabaseMapResult xmlns:i="http://www.w3.org/2001/XMLSchema-
instance">
        <AppMngMapEntryData>
          <CompositeKeyEnd i:nil="true"/>

<CompositeKeyStart>AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA</CompositeKeyStart>
          <ConnectionString>Data Source=ContosoDBServer;Initial
Catalog=appmanagement;Integrated Security=True;Enlist=False;Pooling=True;Max Pool
Size=100;Connect Timeout=15</ConnectionString>
          <IsSqlAzure>false</IsSqlAzure>
        </AppMngMapEntryData>
      </GetAppManagementDatabaseMapResult>
    </GetAppManagementDatabaseMapResponse>
  </s:Body>
</s:Envelope>
```

5 Security

5.1 Security Considerations for Implementers

None.

5.2 Index of Security Parameters

None.

6 Appendix A: Full WSDL

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

```
<?xml version="1.0" encoding="UTF-8"?>
<wsdl:definitions xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
xmlns:tns1="http://schemas.microsoft.com/sharepoint/soap/"
xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"
targetNamespace="http://schemas.microsoft.com/sharepoint/soap/"
xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
  <wsdl:types>
    <xs:schema xmlns:tns2="http://schemas.microsoft.com/sharepoint/soap/Imports"
targetNamespace="http://schemas.microsoft.com/sharepoint/soap/Imports">
      <xs:import namespace="http://schemas.microsoft.com/2003/10/Serialization/"/>
      <xs:import namespace="http://schemas.microsoft.com/sharepoint/soap/"/>
    </xs:schema>
  </wsdl:types>
  <wsdl:portType name="IAppManagementServiceApplication">
    <wsdl:operation name="GetAppManagementDatabaseMap">
      <wsdl:input
wsaw:Action="http://schemas.microsoft.com/sharepoint/soap/IAppManagementServiceApplication/Ge
tAppManagementDatabaseMap"
message="tns1:IAppManagementServiceApplication_GetAppManagementDatabaseMap_InputMessage"/>
      <wsdl:output
wsaw:Action="http://schemas.microsoft.com/sharepoint/soap/IAppManagementServiceApplication/Ge
tAppManagementDatabaseMapResponse"
message="tns1:IAppManagementServiceApplication_GetAppManagementDatabaseMap_OutputMessage"/>
      <wsdl:fault
wsaw:Action="http://schemas.microsoft.com/sharepoint/soap/IAppManagementServiceApplication/Ge
tAppManagementDatabaseMapAppManagementServiceFaultFault"
name="AppManagementServiceFaultFault"
message="tns1:IAppManagementServiceApplication_GetAppManagementDatabaseMap_AppManagementServi
ceFaultFault_FaultMessage"/>
    </wsdl:operation>
  </wsdl:portType>
  <wsdl:binding name="DefaultBinding_IAppManagementServiceApplication"
type="tns1:IAppManagementServiceApplication">
    <soap:binding transport="http://schemas.xmlsoap.org/soap/http"/>
    <wsdl:operation name="GetAppManagementDatabaseMap">
      <soap:operation
soapAction="http://schemas.microsoft.com/sharepoint/soap/IAppManagementServiceApplication/Get
AppManagementDatabaseMap" style="document"/>
      <wsdl:input>
        <soap:body use="literal"/>
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal"/>
      </wsdl:output>
      <wsdl:fault name="AppManagementServiceFaultFault">
        <soap:fault use="literal" name="AppManagementServiceFaultFault" namespace=""/>
      </wsdl:fault>
    </wsdl:operation>
  </wsdl:binding>
  <wsdl:message
name="IAppManagementServiceApplication_GetAppManagementDatabaseMap_AppManagementServiceFaultF
ault_FaultMessage">
    <wsdl:part name="detail" element="tns1:AppManagementServiceFault"/>
  </wsdl:message>
  <wsdl:message
name="IAppManagementServiceApplication_GetAppManagementDatabaseMap_InputMessage">
    <wsdl:part name="parameters" element="tns1:GetAppManagementDatabaseMap"/>
  </wsdl:message>
  <wsdl:message
name="IAppManagementServiceApplication GetAppManagementDatabaseMap OutputMessage">
    <wsdl:part name="parameters" element="tns1:GetAppManagementDatabaseMapResponse"/>
  </wsdl:message>
```

```
</wsdl:definitions>
```

7 Appendix B: Full XML Schema

Schema name	Prefix	Section
http://schemas.microsoft.com/2003/10/Serialization/	tns	7.1
http://schemas.microsoft.com/sharepoint/soap/	tns1	7.2

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

7.1 http://schemas.microsoft.com/2003/10/Serialization/ Schema

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:tns="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="tns:char"/>
  <xs:simpleType name="char">
    <xs:restriction base="xs:int"/>
  </xs:simpleType>
  <xs:element name="duration" nillable="true" type="tns: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="tns: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>
```

7.2 http://schemas.microsoft.com/sharepoint/soap/ Schema

```
<?xml version="1.0" encoding="UTF-8"?>
```

```
<xs:schema xmlns:tns1="http://schemas.microsoft.com/sharepoint/soap/"
elementFormDefault="qualified"
targetNamespace="http://schemas.microsoft.com/sharepoint/soap/"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:element name="GetAppManagementDatabaseMap">
    <xs:complexType>
      <xs:sequence/>
    </xs:complexType>
  </xs:element>
  <xs:element name="GetAppManagementDatabaseMapResponse">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="GetAppManagementDatabaseMapResult" nillable="true"
type="tns1:ArrayOfAppMngMapEntryData"/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:complexType name="ArrayOfAppMngMapEntryData">
    <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded" name="AppMngMapEntryData"
nillable="true" type="tns1:AppMngMapEntryData"/>
    </xs:sequence>
  </xs:complexType>
  <xs:element name="ArrayOfAppMngMapEntryData" nillable="true"
type="tns1:ArrayOfAppMngMapEntryData"/>
  <xs:complexType name="AppMngMapEntryData">
    <xs:sequence>
      <xs:element minOccurs="0" name="CompositeKeyEnd" nillable="true"
type="xs:base64Binary"/>
      <xs:element minOccurs="0" name="CompositeKeyStart" nillable="true"
type="xs:base64Binary"/>
      <xs:element minOccurs="0" name="ConnectionString" nillable="true" type="xs:string"/>
      <xs:element minOccurs="0" name="IsSqlAzure" type="xs:boolean"/>
    </xs:sequence>
  </xs:complexType>
  <xs:element name="AppMngMapEntryData" nillable="true" type="tns1:AppMngMapEntryData"/>
  <xs:complexType name="AppManagementServiceFault">
    <xs:sequence>
      <xs:element minOccurs="0" name="Message" nillable="true" type="xs:string"/>
    </xs:sequence>
  </xs:complexType>
  <xs:element name="AppManagementServiceFault" nillable="true"
type="tns1:AppManagementServiceFault"/>
</xs:schema>
```

8 Appendix C: Product Behavior

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

- Microsoft SharePoint Foundation 2013
- Microsoft SharePoint Server 2016 Preview

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

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

<1> Section 3.1.4.1.3.2: On SharePoint Foundation 2013, this flag indicates if the database is a SQL Azure database.

9 Change Tracking

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

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

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

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

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

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

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

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

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

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

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

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

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

Section	Tracking number (if applicable) and description	Major change (Y or N)	Change type
8 Appendix C: Product Behavior	Updated list of supported products.	Y	Content updated due to protocol revision.

10 Index

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V

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