[MS-OBPAS]: Office Broadcast Participant Service

Revision Summary

Date	Revision History	Revision Class	Comments
01/20/2012	0.1	New	Released new document.
04/11/2012	0.1	No change	No changes to the meaning, language, or formatting of the technical content.
07/16/2012	0.1	No change	No changes to the meaning, language, or formatting of the technical content.
10/08/2012	1.0	Major	Significantly changed the technical content.
02/11/2013	1.0	No change	No changes to the meaning, language, or formatting of the technical content.
07/30/2013	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.
02/10/2014	1.0	No change	No changes to the meaning, language, or formatting of the technical content.
04/30/2014	1.0	No change	No changes to the meaning, language, or formatting of the technical content.
07/31/2014	1.0	No change	No changes to the meaning, language, or formatting of the technical content.

Table of Contents

1 Introduction

The Office Broadcast Participant Service Protocol enables a protocol client to retrieve information about the state of a document being shared on a protocol server.

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 does not contain those terms. All other sections and examples in this specification are informative.

1.1 Glossary

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

Hypertext Transfer Protocol (HTTP)
Hypertext Transfer Protocol over Secure Sockets Layer (HTTPS)
SOAP
SOAP action
SOAP body
SOAP fault
XML namespace

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

broadcast session
presentation slide
slide show
time code
Uniform Resource Locator (URL)
Web Services Description Language (WSDL)
WSDL message
WSDL operation
XML namespace prefix
XML schema

The following terms are specific to this document:

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

1.2 References

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

1.2.1 Normative References

We conduct frequent surveys of the normative references to assure their continued availability. If you have any issue with finding a normative reference, please contact dochelp@microsoft.com. We will assist you in finding the relevant information.

[MS-OBPRS] Microsoft Corporation, "Office Broadcast Presentation Service".

[MS-WOPI] Microsoft Corporation, "Web Application Open Platform Interface 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.ietf.org/rfc/rfc2616.txt

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

[RFC4627] Crockford, D., "The application/json Media Type for Javascript Object Notation (JSON)", RFC 4627, July 2006, http://www.ietf.org/rfc/rfc4627.txt

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

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

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

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

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

[XMLSCHEMA1] Thompson, H.S., 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., and Malhotra, A., Eds., "XML Schema Part 2: Datatypes", W3C Recommendation, May 2001, http://www.w3.org/TR/2001/REC-xmlschema-2-20010502/

1.2.2 Informative References

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

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

1.3 Overview

When meeting remotely, it is useful to share the current view of a document so others can follow along with the document sharer. To share this view in real-time and allow attendees to follow along with the presenter as they move through the document, information regarding the presenter's current view of the document needs to be shared between the presenter and attendees.

This protocol enables a protocol client to send requests to a protocol server allowing the client to join an in-progress document **broadcast session**, and to retrieve data about the state of a broadcast session on the protocol server.

1.4 Relationship to Other Protocols

This protocol uses the **Simple Object Access Protocol (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 **Hypertext Transfer Protocol (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:

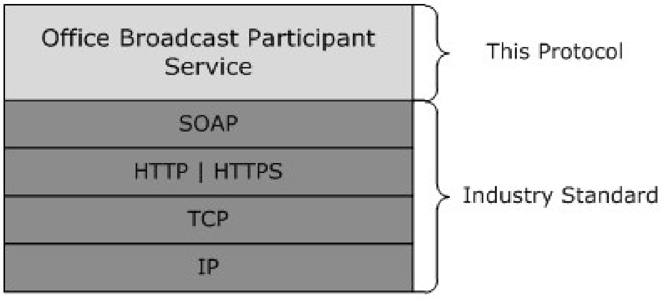

Figure 1: This protocol in relation to other protocols

This protocol works in conjunction with the Office Broadcast Presentation Service protocol as described in [MS-OBPRS] and uses the Web Application Open Platform Interface protocol for file retrieval as described in [MS-WOPI].

1.5 Prerequisites/Preconditions

This protocol operates between a protocol client and a protocol server that is identified by a **URL** that is known by protocol clients. The protocol server endpoint is formed by appending "/m/met/Participant.svc" to the URL of the site, for example: http://www.example.com/m/met/Participant.svc

This protocol requires that a broadcast session be started and in progress prior to joining it. Broadcast sessions can be started using the Office Broadcast Presentation Service Protocol as defined in [MS-OBPRS].

This protocol requires that files being used in broadcast sessions be identified and accessed as specified in [MS-WOPI].

This protocol assumes that authentication has been performed by the underlying protocols.

1.6 Applicability Statement

This protocol is designed to join in-progress broadcast sessions on the protocol server and to retrieve broadcast session information on the protocol server.

1.7 Versioning and Capability Negotiation

This protocol uses multiple transports with SOAP, as specified in section 2.1.

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. Protocol servers SHOULD additionally support SOAP over HTTPS for securing communication with clients.

Protocol messages MUST be formatted as specified either in [SOAP1.1] section 4 or in [SOAP1.2/1] section 5. Protocol server faults MUST be returned either using HTTP Status Codes, as specified in [RFC2616] section 10 or using **SOAP faults**, as specified in either [SOAP1.1] section 4.4 or in [SOAP1.2/1] section 5.4.

2.2 Common Message Syntax

This section contains common definitions that are used by this protocol. The syntax of the definitions uses **XML schema**, as specified in [XMLSCHEMA1] and [XMLSCHEMA2], and WSDL, as specified in [WSDL].

2.2.1 Namespaces

This 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.datacontract.org/2004/07/Microsoft.Office.Server.Broadcast.Interface.Data	
tns1	http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Broadcast.Pipe.Interface	
tns2	http://schemas.microsoft.com/2003/10/Serialization/Arrays	
tns3	http://schemas.microsoft.com/2003/10/Serialization/	
tns4	http://schemas.microsoft.com/office/Broadcast/Server/WebServices/BroadcastParticipantService/	
tns5	http://schemas.microsoft.com/office/Broadcast/Server/WebServices/BroadcastParticipantService/Imports	
wsaw	http://www.w3.org/2006/05/addressing/wsdl	
wsdl	http://schemas.xmlsoap.org/wsdl/	[WSDL]

Prefix	Namespace URI	Reference
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
ArrayOfKeyValueOfstringstring	A complex type that specifies a list of key/value pairs.
ArrayOfPPTBroadcastAnimationStepData	A complex type that specifies a list of **PPTBroadcastAnimationStepData** (section 2.2.4.5) elements. Each element in the list specifies a step in an animation timeline. Each entry in the list MUST have a unique value in its **TimelineId** (section 2.2.4.5) field.
ArrayOfPPTBroadcastMediaStateData	A complex type that specifies a list of **PPTBroadcastMediaStateData** (section 2.2.4.6) elements. Each element in the list specifies a state for a multimedia object. Each entry in the list MUST have a unique value in its **MediaId** field.
EnumTypes	This complex type is reserved and MUST be ignored.
PPTBroadcastAnimationStepData	A complex type that specifies a step in an animation timeline.
PPTBroadcastMediaStateData	A complex type that specifies a state for a multimedia object such as an embedded video clip.
PPTStateData	A complex type that specifies data about the state of a broadcast session of a presentation.
ServiceError	A complex type that specifies error information returned from the protocol server to a protocol client.
ServiceResult	A complex type that specifies the result of a protocol method. The protocol server returns this type to the protocol client containing either a successful **Result** element or an **Error** element.
WordStateData	A complex type that specifies data about the state of a

Complex type	Description
	broadcast session of a document.

2.2.4.1 ArrayOfKeyValueOfstringstring

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

A complex type that specifies a list of key/value pairs.

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

KeyValueOfstringstring: A key/value pair. This element MUST be present.

KeyValueOfstringstring.Key: An **xs:string** ([XMLSCHEMA2] section 3.2.1) element that specifies the key in a key/value pair. This element MUST be present.

KeyValueOfstringstring.Value: An **xs:string** ([XMLSCHEMA2] section 3.2.1) element that specifies the value in a key/value pair. This element MUST be present.

2.2.4.2 ArrayOfPPTBroadcastAnimationStepData

Namespace:
http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Broadcast.Interface.Data

A complex type that specifies a list of **PPTBroadcastAnimationStepData** (section 2.2.4.5) elements. Each element in the list specifies a step in an animation timeline. Each entry in the list MUST have a unique value in its **TimelineId** (section 2.2.4.5) field.

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

PPTBroadcastAnimationStepData: Specifies a **PPTBroadcastAnimationStepData** (section 2.2.4.5) element. The element MUST be present.

2.2.4.3 ArrayOfPPTBroadcastMediaStateData

Namespace: http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Broadcast.Interface.Data

A complex type that specifies a list of **PPTBroadcastMediaStateData** (section 2.2.4.6) elements. Each element in the list specifies a state for a multimedia object. Each entry in the list MUST have a unique value in its **MediaId** field.

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

PPTBroadcastMediaStateData: Specifies a **PPTBroadcastMediaStateData** element. This element MUST be present.

2.2.4.4 EnumTypes

Namespace: http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Broadcast.Interface.Data

This complex type is reserved and MUST be ignored.

```
<xs:complexType name="EnumTypes" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element minOccurs="0" name="AppType" type="tns:AppType"/>
    <xs:element minOccurs="0" name="BroadcastAppCapability" 
type="tns:BroadcastAppCapability"/>
    <xs:element minOccurs="0" name="BroadcastDataKey" type="tns:BroadcastDataKey"/>
    <xs:element minOccurs="0" name="BroadcastState" type="tns:BroadcastState"/>
    <xs:element minOccurs="0" name="PPTMediaPlaybackState" type="tns:PPTMediaPlaybackState"/>
    <xs:element minOccurs="0" name="PPTSlideShowState" type="tns:PPTSlideShowState"/>
  </xs:sequence>
</xs:complexType>
```

AppType: This element is reserved and MUST be ignored.

BroadcastAppCapability: This element is reserved and MUST be ignored.

BroadcastDataKey: This element is reserved and MUST be ignored.

BroadcastState: This element is reserved and MUST be ignored.

PPTMediaPlaybackState: This element is reserved and MUST be ignored.

PPTSlideShowState: This element is reserved and MUST be ignored.

2.2.4.5 PPTBroadcastAnimationStepData

Namespace: http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Broadcast.Interface.Data

A complex type that specifies a step in an animation timeline.

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

Step: An **xs:int** ([XMLSCHEMA2] section 3.3.17) element that specifies the step number in the animation timeline given by the **TimelineId** field. This element MUST be present.

TimelineId: An **xs:string** ([XMLSCHEMA2] section 3.2.1) element that specifies an identifier of the animation timeline. This element MUST be present.

2.2.4.6 PPTBroadcastMediaStateData

Namespace:
http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Broadcast.Interface.Data

A complex type that specifies a state for a multimedia object such as an embedded video clip.

```
<xs:complexType name="PPTBroadcastMediaStateData"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element minOccurs="0" name="AtPosition" type="xs:double"/>
    <xs:element minOccurs="0" name="MediaId" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="State" type="tns:PPTMediaPlaybackState"/>
  </xs:sequence>
</xs:complexType>
```

AtPosition: An **xs:double** ([XMLSCHEMA2] section 3.2.5) element that specifies the **time code** of the multimedia object identified by the **MediaId** field when the **State** field is changed. This element MUST be present.

MediaId: An **xs:string** ([XMLSCHEMA2] section 3.2.1) element that specifies an identifier of the multimedia object. This element MUST be present.

State: A **PPTMediaPlaybackState** (section 2.2.5.9) element that specifies the playback state of the multimedia object identified by the **MediaId** field. This element MUST be present.

2.2.4.7 PPTStateData

Namespace:
http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Broadcast.Interface.Data

A complex type that specifies data about the state of a broadcast session of a presentation.

```
<xs:complexType name="PPTStateData" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element minOccurs="0" name="AnimationStepDataList" nillable="true"
type="tns:ArrayOfPPTBroadcastAnimationStepData"/>
    <xs:element minOccurs="0" name="MediaStateDataList" nillable="true"
type="tns:ArrayOfPPTBroadcastMediaStateData"/>
```

```
    <xs:element minOccurs="0" name="PPTSlideShowState" type="tns:PPTSlideShowState"/>
    <xs:element minOccurs="0" name="SlideId" type="xs:unsignedInt"/>
    <xs:element minOccurs="0" name="SlideIndex" type="xs:unsignedInt"/>
  </xs:sequence>
</xs:complexType>
```

AnimationStepDataList: An **ArrayOfPPTBroadcastAnimationStepData** (section 2.2.4.2) element that specifies the state of each of the animation timelines. This element MUST be present.

MediaStateDataList: An **ArrayOfPPTBroadcastMediaStateData** (section 2.2.4.3) element that specifies the state of each of the multimedia objects. This element MUST be present.

PPTSlideShowState: A **PPTSlideShowState** (section 2.2.5.10) element that specifies the current state of the **slide show**. This element MUST be present.

SlideId: An **xs:unsignedInt** ([XMLSCHEMA2] section 3.3.22) element that specifies the identifier of the **presentation slide**. This element MUST be present.

SlideIndex: An **xs:unsignedInt** ([XMLSCHEMA2] section 3.3.22) element that specifies the zero-based ordered index of the presentation slide. This element MUST be present if **SlideId** is equal to 0. This element MUST be ignored if **SlideId** is not equal to 0.

2.2.4.8 ServiceError

Namespace: http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Broadcast.Pipe.Interface

A complex type that specifies error information returned from the protocol server to a protocol client.

```
<xs:complexType name="ServiceError" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element minOccurs="0" name="Message" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="RecommendedActions" type="tns1:ClientActions"/>
    <xs:element minOccurs="0" name="Title" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="Type" type="tns1:ServiceErrorType"/>
  </xs:sequence>
</xs:complexType>
```

Message: An **xs:string** ([XMLSCHEMA2] section 3.2.1) element that specifies the error message description. The string length MUST be greater than zero if the **Type** element has a value of **ApplicationError**. This element MUST be present.

RecommendedActions: This element is reserved and MUST be ignored.

Title: An **xs:string** ([XMLSCHEMA2] section 3.2.1) element that specifies the error title. The string length MUST be greater than zero if the **Type** element has a value of **ApplicationError**. This element MUST be present.

Type: A **ServiceErrorType** (section 2.2.5.11) element that specifies the error type. This element MUST be present.

2.2.4.9 ServiceResult

Namespace: http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Broadcast.Pipe.Interface

A complex type that specifies the result of a protocol method. The protocol server returns this type to the protocol client containing either a successful **Result** element or an **Error** element.

```
<xs:complexType name="ServiceResult" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element minOccurs="0" name="Error" nillable="true" type="tns1:ServiceError"/>
    <xs:element minOccurs="0" name="Result" nillable="true" type="xs:anyType"/>
  </xs:sequence>
</xs:complexType>
```

Error: An optional **ServiceError** (section 2.2.4.8) element that specifies an error result of a protocol message response. This element MUST be NULL if the **Result** element is not NULL.

Result: An optional **xs:anyType** ([XMLSCHEMA1] section 3.4.7) element that specifies a successful result of a protocol message response. This element MUST be NULL if the **Error** element is not NULL.

2.2.4.10 WordStateData

Namespace: http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Broadcast.Interface.Data

A complex type that specifies data about the state of a broadcast session of a document.

```
<xs:complexType name="WordStateData" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:sequence>
    <xs:element minOccurs="0" name="Offset" type="xs:double"/>
    <xs:element minOccurs="0" name="Page" type="xs:int"/>
  </xs:sequence>
</xs:complexType>
```

Offset: An **xs:double** ([XMLSCHEMA2] section 3.2.5) element that specifies a percentage offset from the top of the page defined by the **Page** field. This element MUST be present.

Page: An **xs:int** ([XMLSCHEMA2] section 3.3.17) element that specifies the one-based ordered index of the current page within the set of all pages of the document. This element MUST be present.

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
AppType	A simple type that specifies an enumeration of all the possible broadcast session types.

Simple type	Description
BroadcastAppCapability	This simple type is reserved and MUST be ignored.
BroadcastDataKey	A simple type that specifies an enumeration of a set of keys to data stored in the protocol server for a given session.
BroadcastState	A simple type that specifies an enumeration of all the possible broadcast session states.
char	A simple type that is reserved. The protocol client and protocol server MUST NOT use this as the type of any element. The protocol client and protocol server MUST ignore it if receiving an element of this type.
ClientActions	A simple type that is reserved and MUST be ignored.
duration	A simple type that is reserved. The protocol client and protocol server MUST NOT use this as the type of any element. The protocol client and protocol server MUST ignore it if receiving an element of this type.
guid	A simple type that is reserved. The protocol client and protocol server MUST NOT use this as the type of any element. The protocol client and protocol server MUST ignore it if receiving an element of this type.
PPTMediaPlaybackState	A simple type that specifies an enumeration of the different states a multimedia object can be in.
PPTSlideShowState	A simple type that specifies an enumeration of all the possible slide show states.
ServiceErrorType	A simple type that specifies an enumeration of a set of protocol errors returned by the protocol server to the protocol client.

2.2.5.1 AppType

Namespace: http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Broadcast.Interface.Data

A simple type that specifies an enumeration of all the possible broadcast session types.

```
<xs:simpleType name="AppType" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:restriction base="xs:string">
    <xs:enumeration value="PPT"/>
    <xs:enumeration value="Word"/>
  </xs:restriction>
</xs:simpleType>
```

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

Value	Meaning
PPT	The broadcast session is of a presentation.
Word	The broadcast session is of a document.

2.2.5.2 BroadcastAppCapability

Namespace:
http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Broadcast.Interface.Data

This simple type is reserved and MUST be ignored.

```
<xs:simpleType name="BroadcastAppCapability" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:restriction base="xs:string">
    <xs:enumeration value="SessionTimeout"/>
    <xs:enumeration value="SessionIdleTimeOut"/>
    <xs:enumeration value="SupportVideo"/>
    <xs:enumeration value="SupportAudio"/>
    <xs:enumeration value="SupportNotes"/>
    <xs:enumeration value="MediaExtensions"/>
    <xs:enumeration value="MaxMediaSize"/>
  </xs:restriction>
</xs:simpleType>
```

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

Value	Meaning
SessionTimeout	Reserved and MUST be ignored.
SessionIdleTimeOut	Reserved and MUST be ignored.
SupportVideo	Reserved and MUST be ignored.
SupportAudio	Reserved and MUST be ignored.
SupportNotes	Reserved and MUST be ignored.
MediaExtensions	Reserved and MUST be ignored.
MaxMediaSize	Reserved and MUST be ignored.

2.2.5.3 BroadcastDataKey

Namespace:
http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Broadcast.Interface.Data

A simple type that specifies an enumeration of a set of keys to data stored in the protocol server for a given session.

```
<xs:simpleType name="BroadcastDataKey" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:restriction base="xs:string">
    <xs:enumeration value="AppType"/>
    <xs:enumeration value="SequenceNumber"/>
    <xs:enumeration value="FileVersion"/>
    <xs:enumeration value="OriginalFileName"/>
    <xs:enumeration value="BroadcastState"/>
    <xs:enumeration value="AppSpecificStateData"/>
    <xs:enumeration value="NotesUrl"/>
    <xs:enumeration value="DataVersion"/>
  </xs:restriction>
```

```
</xs:simpleType>
```

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

Value	Meaning
AppType	This key is used to specify an application type in the **Key** field of a **KeyValueOfstringstring** element in an **ArrayOfKeyValueOfstringstring** element (section 2.2.4.1).
SequenceNumber	This key is used to specify a monotonically increasing sequence number in the **Key** field of a **KeyValueOfstringstring** element in an **ArrayOfKeyValueOfstringstring** element.
FileVersion	This key is used to specify a monotonically increasing file version number in the **Key** field of a **KeyValueOfstringstring** element in an **ArrayOfKeyValueOfstringstring** element.
OriginalFileName	This key is used to specify the file name of the document being shared in the broadcast session in the **Key** field of a **KeyValueOfstringstring** element in an **ArrayOfKeyValueOfstringstring** element.
BroadcastState	This key is used to specify a **BroadcastState** (section 2.2.5.4) for the broadcast session in the **Key** field of a **KeyValueOfstringstring** element in an **ArrayOfKeyValueOfstringstring** element.
AppSpecificStateData	This key is used to specify application specific data for the broadcast session in the **Key** field of a **KeyValueOfstringstring** element in an **ArrayOfKeyValueOfstringstring** element.
NotesUrl	This key is used to specify the URL of the notes page linked to the document being broadcast in the **Key** field of a **KeyValueOfstringstring** element in an **ArrayOfKeyValueOfstringstring** element.
DataVersion	This key is used to specify a data version field in the **Key** field of a **KeyValueOfstringstring** element in an **ArrayOfKeyValueOfstringstring** element.

2.2.5.4 BroadcastState

Namespace:
http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Broadcast.Interface.Data

A simple type that specifies an enumeration of all the possible broadcast session states.

```
<xs:simpleType name="BroadcastState" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:restriction base="xs:string">
    <xs:enumeration value="BroadcastNotStartedYet"/>
    <xs:enumeration value="BroadcastStarted"/>
    <xs:enumeration value="BroadcastEnded"/>
  </xs:restriction>
</xs:simpleType>
```

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

Value	Meaning
BroadcastNotStartedYet	The broadcast session has not started yet.
BroadcastStarted	The broadcast session has started but not ended yet.
BroadcastEnded	The broadcast session has ended.

2.2.5.5 char

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

A simple type that is reserved. The protocol client and protocol server MUST NOT use this as the type of any element. The protocol client and protocol server MUST ignore it if receiving an element of this type.

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

2.2.5.6 ClientActions

Namespace: http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Broadcast.Pipe.Interface

A simple type that is reserved and MUST be ignored.

```
<xs:simpleType name="ClientActions" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:list>
    <xs:simpleType>
      <xs:restriction base="xs:string">
        <xs:enumeration value="None"/>
        <xs:enumeration value="Dismiss"/>
        <xs:enumeration value="Close"/>
        <xs:enumeration value="OpenInClient"/>
        <xs:enumeration value="Refresh"/>
      </xs:restriction>
    </xs:simpleType>
  </xs:list>
</xs:simpleType>
```

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

Value	Meaning
None	Reserved and MUST be ignored.
Dismiss	Reserved and MUST be ignored.
Close	Reserved and MUST be ignored.
OpenInClient	Reserved and MUST be ignored.
Refresh	Reserved and MUST be ignored.

2.2.5.7 duration

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

A simple type that is reserved. The protocol client and protocol server MUST NOT use this as the type of any element. The protocol client and protocol server MUST ignore it if receiving an element of this type.

```
<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>
```

2.2.5.8 guid

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

A simple type that is reserved. The protocol client and protocol server MUST NOT use this as the type of any element. The protocol client and protocol server MUST ignore it if receiving an element of this type.

```
<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>
```

2.2.5.9 PPTMediaPlaybackState

Namespace:
http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Broadcast.Interface.Data

A simple type that specifies an enumeration of the different states a multimedia object can be in.

```
<xs:simpleType name="PPTMediaPlaybackState" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:restriction base="xs:string">
    <xs:enumeration value="Paused"/>
    <xs:enumeration value="Playing"/>
    <xs:enumeration value="Stopped"/>
  </xs:restriction>
</xs:simpleType>
```

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

Value	Meaning
Paused	The multimedia object is in a paused state.
Playing	The multimedia object is in a playing state.

Value	Meaning
Stopped	The multimedia object is in a stopped state.

2.2.5.10 PPTSlideShowState

Namespace: http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Broadcast.Interface.Data

A simple type that specifies an enumeration of all the possible slide show states.

```
<xs:simpleType name="PPTSlideShowState" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:restriction base="xs:string">
    <xs:enumeration value="BlackScreen"/>
    <xs:enumeration value="WhiteScreen"/>
    <xs:enumeration value="Normal"/>
    <xs:enumeration value="SlideShowEnded"/>
  </xs:restriction>
</xs:simpleType>
```

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

Value	Meaning
BlackScreen	The slide show is displaying a black screen.
WhiteScreen	The slide show is displaying a white screen.
Normal	The slide show is displaying presentation slides.
SlideShowEnded	The slide show has ended.

2.2.5.11 ServiceErrorType

Namespace: http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Broadcast.Pipe.Interface

A simple type that specifies an enumeration of a set of protocol errors returned by the protocol server to the protocol client.

```
<xs:simpleType name="ServiceErrorType" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:restriction base="xs:string">
    <xs:enumeration value="UnknownError"/>
    <xs:enumeration value="ApplicationError"/>
    <xs:enumeration value="Timeout"/>
    <xs:enumeration value="ServiceBusy"/>
    <xs:enumeration value="SessionFull"/>
  </xs:restriction>
</xs:simpleType>
```

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

Value	Meaning
UnknownError	The protocol server encountered an unknown error.
ApplicationError	The protocol server encountered an application error.
Timeout	The protocol server timed out.
ServiceBusy	The protocol server is busy.
SessionFull	The protocol cannot allow more attendees to join a broadcast session.

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 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 that are made by the higher-layer protocol or application are passed directly to the transport, and the results that are returned by the transport are passed directly to the higher-layer protocol or application.

Except where specified, protocol clients SHOULD interpret Hypertext Transfer Protocol (HTTP) status codes that are returned by the protocol server as specified in [RFC2616], section 10.

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

This protocol allows protocol servers to perform implementation-specific authorization checks and to notify protocol clients of authorization faults by using either HTTP status codes or SOAP faults, as specified previously in this section.

3.1 Server Details

The following high-level sequence diagram illustrates the operation of the participant client protocol.

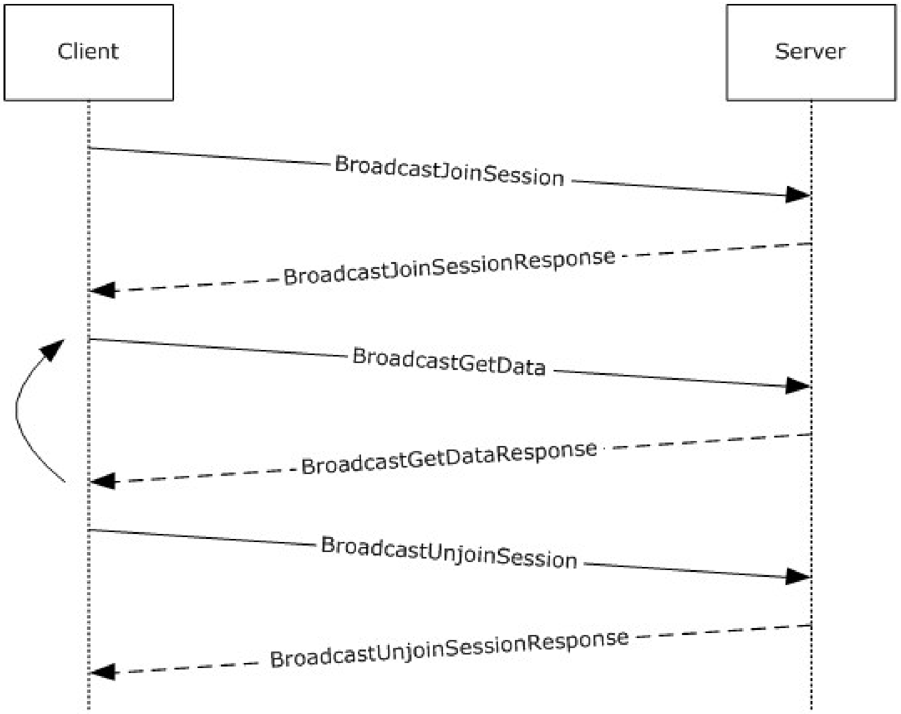

Figure 2: Office Broadcast Participant Service high-level sequence diagram for participant clients

The operation begins when a protocol client acting as broadcast session participant sends a **BroadcastJoinSession** (section 3.1.4.2) message. The server responds with a BroadcastJoinSessionResponse message indicating the results of the operation. If the join is successful, the protocol client sends one or more **BroadcastGetData** (section 3.1.4.1) messages, and the protocol server responds to each with a BroadcastGetDataResponse message containing the current state of the broadcast session. When the participant client wishes to leave the broadcast, the protocol client sends a **BroadcastUnjoinSession** (section 3.1.4.3) message and the protocol server responds with a BroadcastUnjoinSessionResponse message to acknowledge the request.

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.

Note that the abstract interface notation "(Public)" indicates that the abstract data model element can be directly accessed from outside this protocol.

SessionId (Public): An entity that represents a unique identifier for a broadcast session.

BroadcastState (Public): An entity that represents the state of the broadcast session.

AppSpecificStateData (Public): An entity that represents state specific to the application for which this protocol is being used.

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
BroadcastGetData	The **BroadcastGetData** operation is used by the protocol client to retrieve information about the current state of the broadcast session on the protocol server.
BroadcastJoinSession	The **BroadcastJoinSession** operation is used to join a protocol client to a broadcast session.
BroadcastPing	The **BroadcastPing** operation is used by a protocol client to check if the protocol server is available.
BroadcastUnjoinSession	The **BroadcastUnjoinSession** operation is used to disjoin a protocol client from a broadcast session.

3.1.4.1 BroadcastGetData

The **BroadcastGetData** operation is used by the protocol client to retrieve information about the current state of the broadcast session on the protocol server.

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

```
<wsdl:operation name="BroadcastGetData" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
  <wsdl:input
wsaw:Action="http://schemas.microsoft.com/office/Broadcast/Server/WebServices/BroadcastPartic
ipantService/IParticipantService/BroadcastGetData"
message="tns4:IParticipantService_BroadcastGetData_InputMessage"
xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
  <wsdl:output
wsaw:Action="http://schemas.microsoft.com/office/Broadcast/Server/WebServices/BroadcastPartic
ipantService/IParticipantService/BroadcastGetDataResponse"
message="tns4:IParticipantService_BroadcastGetData_OutputMessage"
xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
</wsdl:operation>
```

The protocol client sends a **BroadcastGetDataSoapIn** request message, and the protocol server MUST respond with a **BroadcastGetDataSoapOut** response message.

3.1.4.1.1 Messages

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

Message	Description
IParticipantService_BroadcastGetData_InputMessage	The request WSDL message for the **BroadcastGetData** WSDL operation.
IParticipantService_BroadcastGetData_OutputMessage	The response WSDL message for the **BroadcastGetData** WSDL operation.

3.1.4.1.1.1 IParticipantService_BroadcastGetData_InputMessage

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

The **SOAP action** value is:

```
http://schemas.microsoft.com/office/Broadcast/Server/WebServices/BroadcastParticipantService/
IParticipantService/BroadcastGetData
```

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

3.1.4.1.1.2 IParticipantService_BroadcastGetData_OutputMessage

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

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

3.1.4.1.2 Elements

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

Element	Description
BroadcastGetData	The input data for the **BroadcastGetData** WSDL operation.
BroadcastGetDataResponse	The result data for the **BroadcastGetData** WSDL operation.

3.1.4.1.2.1 BroadcastGetData

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

```
<xs:element name="BroadcastGetData" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType>
    <xs:sequence>
      <xs:element
xmlns:tns="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Broadcast.Interfac
e.Data" minOccurs="0" name="user" nillable="true" type="tns:BroadcastUser"/>
      <xs:element minOccurs="0" name="sequenceNumber" type="xs:int"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

user: A **BroadcastUser** (section 3.1.4.1.3.1) element that is obtained by making a **BroadcastJoinSession** (section 3.1.4.2.2.1) web method call. This element MUST be present.

sequenceNumber: An **xs:int** ([XMLSCHEMA2] section 3.3.17) element that specifies the sequence number of the data returned by the previous **BroadcastGetData** (section 3.1.4.1.2.1) operation, if any. A value of 0 MUST be passed if this is the first **BroadcastGetData** operation performed by the protocol client. A value of 0 MAY be passed at any time. This element MUST be present.

3.1.4.1.2.2 BroadcastGetDataResponse

The **BroadcastGetDataResponse** element specifies the result data for the **BroadcastGetData** WSDL operation.

```
<xs:element name="BroadcastGetDataResponse" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType>
    <xs:sequence>
      <xs:element
xmlns:tns1="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Broadcast.Pipe.In
terface" minOccurs="0" name="BroadcastGetDataResult" nillable="true"
type="tns1:ServiceResult"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

BroadcastGetDataResult: A **ServiceResult** (section 2.2.4.9) element that specifies the result of the operation. This element MUST be present.

If the **Error** child element of the **ServiceResult** element is not NULL, the **Result** child element MUST be NULL.

If the **Error** child element of the **ServiceResult** element is NULL, the **Result** child element MUST follow the following specified behavior:

1. If the **sequenceNumber** parameter to the **BroadcastGetData** (section 3.1.4.1.2.1) operation is nonzero and is greater than or equal to the sequence number most recently received by the protocol server from an Office Broadcast Presentation Service [MS-OBPRS] protocol client, the **Result** child element MUST NOT be present. This indicates to the protocol client that the state data of the broadcast session has not changed.

2. In all other cases, the **Result** child element MUST be present and MUST be an **ArrayOfKeyValueOfStringString** (section 2.2.4.1) element. The **ArrayOfKeyValueOfStringString** contains **KeyValueOfStringString** child elements where the **Key** child element MUST be a **BroadcastDataKey** (section 2.2.5.3) enumeration value of type xs:string ([XMLSCHEMA2] section 3.2.1). The **Value** child of a **KeyValueOfStringString** element MUST conform to the following table, and all the values are returned as **xs:string** ([XMLSCHEMA2] section 3.2.1) format.

Key	Values
AppType	MUST be an **AppType** (section 2.2.5.2) enumeration value of type **xs:string** ([XMLSCHEMA2] section 3.2.1) element.
SequenceNumber	MUST be an **xs:string** ([XMLSCHEMA2] section 3.2.1) element reformatted from an **xs:int** ([XMLSCHEMA2] section 3.3.17) element.
FileVersion	MUST be an **xs:string** ([XMLSCHEMA2] section 3.2.1) element reformatted from an **xs:int** ([XMLSCHEMA2] section 3.3.17) element.
OriginalFileName	MUST be an **xs:string** ([XMLSCHEMA2] section 3.2.1) element.
BroadcastState	MUST be a **BroadcastState** (section 2.2.5.10) enumeration value of type **xs:string** ([XMLSCHEMA2] section 3.2.1) element.
AppSpecificStateData	MUST be a JSON [RFC4627] serialization of a **PPTStateData** (section 2.2.4.7) element if the **AppType** is **PPT** or a JSON [RFC4627] serialization of a **WordStateData** (section 2.2.4.10) element if the **AppType** is **Word**.
NotesUrl	MUST be an **xs:string** ([XMLSCHEMA2] section 3.2.1) element.
DataVersion	MUST be an **xs:string** ([XMLSCHEMA2] section 3.2.1) element reformatted from an **xs:int** ([XMLSCHEMA2] section 3.3.17) element with a value of "2".

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
BroadcastUser	A complex type that specifies a user of a broadcast session.

3.1.4.1.3.1 BroadcastUser

Namespace: http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Broadcast.Interface.Data

A complex type that specifies a user of a broadcast session.

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

SessionId: An **xs:string** ([XMLSCHEMA2] section 3.2.1) element that specifies the identifier of the broadcast session on the protocol server. This element MUST be present.

UserToken: An **xs:string** ([XMLSCHEMA2] section 3.2.1) element that specifies the identifier of a user of the broadcast session on the protocol server. This element MUST be present.

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 BroadcastJoinSession

The **BroadcastJoinSession** operation is used to join a protocol client to a broadcast session.

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

```
<wsdl:operation name="BroadcastJoinSession" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
  <wsdl:input 
wsaw:Action="http://schemas.microsoft.com/office/Broadcast/Server/WebServices/BroadcastPartic
ipantService/IParticipantService/BroadcastJoinSession" 
message="tns4:IParticipantService_BroadcastJoinSession_InputMessage" 
xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
  <wsdl:output 
wsaw:Action="http://schemas.microsoft.com/office/Broadcast/Server/WebServices/BroadcastPartic
ipantService/IParticipantService/BroadcastJoinSessionResponse" 
message="tns4:IParticipantService_BroadcastJoinSession_OutputMessage" 
xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
</wsdl:operation>
```

The protocol client sends a **BroadcastJoinSessionSoapIn** request message, and the protocol server MUST respond with a **BroadcastJoinSessionSoapOut** response message.

3.1.4.2.1 Messages

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

Message	Description
IParticipantService_BroadcastJoinSession_InputMessage	The request WSDL message for the **BroadcastJoinSession** WSDL operation.
IParticipantService_BroadcastJoinSession_OutputMessage	The response WSDL message for the **BroadcastJoinSession** WSDL operation.

3.1.4.2.1.1 IParticipantService_BroadcastJoinSession_InputMessage

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

The SOAP action value is:

```
http://schemas.microsoft.com/office/Broadcast/Server/WebServices/BroadcastParticipantService/
IParticipantService/BroadcastJoinSession
```

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

3.1.4.2.1.2 IParticipantService_BroadcastJoinSession_OutputMessage

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

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

3.1.4.2.2 Elements

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

Element	Description
BroadcastJoinSession	The input data for the **BroadcastJoinSession** WSDL operation.
BroadcastJoinSessionResponse	The result data for the **BroadcastJoinSession** WSDL operation.

3.1.4.2.2.1 BroadcastJoinSession

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

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

```
        <xs:element minOccurs="0" name="sessionId" nillable="true" type="xs:string"/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
```

sessionId: An **xs:string** ([XMLSCHEMA2] section 3.2.1) element that specifies an identifier for the broadcast session. This identifier MUST conform to the pattern **WOPISrc=<source>&access_token=<token>**, where **<source>** is the **WOPISrc** parameter as defined in [MS-WOPI] section 3.1.5.1.1.2.3.3, and **<token>** is the <token> parameter as defined in [MS-WOPI] section 2.2.2.

3.1.4.2.2.2 BroadcastJoinSessionResponse

The **BroadcastJoinSessionResponse** element specifies the result data for the **BroadcastJoinSession** WSDL operation.

```
<xs:element name="BroadcastJoinSessionResponse" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType>
    <xs:sequence>
      <xs:element 
xmlns:tns1="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Broadcast.Pipe.In
terface" minOccurs="0" name="BroadcastJoinSessionResult" nillable="true" 
type="tns1:ServiceResult"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

BroadcastJoinSessionResult: A **ServiceResult** (section 2.2.4.9) element that specifies the result of the operation. This element MUST be present. The **Result** child element MUST be a **BroadcastUser** (section 3.1.4.1.3.1) if the **Error** child element is not 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 BroadcastUnjoinSession

The **BroadcastUnjoinSession** operation is used to disjoin a protocol client from a broadcast session.

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

```
<wsdl:operation name="BroadcastUnjoinSession" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
  <wsdl:input
wsaw:Action="http://schemas.microsoft.com/office/Broadcast/Server/WebServices/BroadcastPartic
ipantService/IParticipantService/BroadcastUnjoinSession"
message="tns4:IParticipantService_BroadcastUnjoinSession_InputMessage"
xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
  <wsdl:output
wsaw:Action="http://schemas.microsoft.com/office/Broadcast/Server/WebServices/BroadcastPartic
ipantService/IParticipantService/BroadcastUnjoinSessionResponse"
message="tns4:IParticipantService_BroadcastUnjoinSession_OutputMessage"
xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
</wsdl:operation>
```

The protocol client sends a **BroadcastUnjoinSessionSoapIn** request message, and the protocol server MUST respond with a **BroadcastUnjoinSessionSoapOut** response message.

3.1.4.3.1 Messages

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

Message	Description
IParticipantService_BroadcastUnjoinSession_InputMessage	The request WSDL message for the **BroadcastUnjoinSession** WSDL operation.
IParticipantService_BroadcastUnjoinSession_OutputMessage	The response WSDL message for the **BroadcastUnjoinSession** WSDL operation.

3.1.4.3.1.1 IParticipantService_BroadcastUnjoinSession_InputMessage

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

The SOAP action value is:

```
http://schemas.microsoft.com/office/Broadcast/Server/WebServices/BroadcastParticipantService/
IParticipantService/BroadcastUnjoinSession
```

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

3.1.4.3.1.2 IParticipantService_BroadcastUnjoinSession_OutputMessage

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

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

3.1.4.3.2 Elements

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

Element	Description
BroadcastUnjoinSession	The input data for the **BroadcastUnjoinSession** WSDL operation.
BroadcastUnjoinSessionResponse	The result data for the **BroadcastUnjoinSession** WSDL operation.

3.1.4.3.2.1 BroadcastUnjoinSession

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

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

sessionId: An **xs:string** ([XMLSCHEMA2] section 3.2.1) element that specifies the broadcast session to disjoin from. This element MUST be present.

3.1.4.3.2.2 BroadcastUnjoinSessionResponse

The **BroadcastUnjoinSessionResponse** element specifies the result data for the **BroadcastUnjoinSession** WSDL operation.

```
<xs:element name="BroadcastUnjoinSessionResponse"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType>
    <xs:sequence>
      <xs:element
xmlns:tns1="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Broadcast.Pipe.In
terface" minOccurs="0" name="BroadcastUnjoinSessionResult" nillable="true"
type="tns1:ServiceResult"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

BroadcastUnjoinSessionResult: A **ServiceResult** (section 2.2.4.9) element that specifies the result of the operation. This element MUST be present. If the **Result** child element is present, it MUST be ignored by the protocol client.

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 BroadcastPing

The **BroadcastPing** operation is used by a protocol client to check if the protocol server is available.

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

```
<wsdl:operation name="BroadcastPing" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
  <wsdl:input
wsaw:Action="http://schemas.microsoft.com/office/Broadcast/Server/WebServices/BroadcastPartic
ipantService/IParticipantService/BroadcastPing"
message="tns4:IParticipantService_BroadcastPing_InputMessage"
xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
  <wsdl:output
wsaw:Action="http://schemas.microsoft.com/office/Broadcast/Server/WebServices/BroadcastPartic
ipantService/IParticipantService/BroadcastPingResponse"
message="tns4:IParticipantService_BroadcastPing_OutputMessage"
xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"/>
</wsdl:operation>
```

The protocol client sends a **BroadcastPingSoapIn** request message, as specified in section 3.1.4.4.1.1, and the protocol server MUST respond with a **BroadcastPingSoapOut** response message, as specified in section 3.1.4.4.1.2.

3.1.4.4.1 Messages

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

Message	Description
IParticipantService_BroadcastPing_InputMessage	The request WSDL message for the **BroadcastPing** WSDL operation.
IParticipantService_BroadcastPing_OutputMessage	The response WSDL message for the **BroadcastPing** WSDL operation.

3.1.4.4.1.1 IParticipantService_BroadcastPing_InputMessage

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

The SOAP action value is:

```
http://schemas.microsoft.com/office/Broadcast/Server/WebServices/BroadcastParticipantService/
IParticipantService/BroadcastPing
```

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

3.1.4.4.1.2 IParticipantService_BroadcastPing_OutputMessage

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

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

3.1.4.4.2 Elements

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

Element	Description
BroadcastPing	The input data for the **BroadcastPing** WSDL operation.
BroadcastPingResponse	The result data for the **BroadcastPing** WSDL operation.

3.1.4.4.2.1 BroadcastPing

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

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

3.1.4.4.2.2 BroadcastPingResponse

The **BroadcastPingResponse** element specifies the result data for the **BroadcastPing** WSDL operation.

```
<xs:element name="BroadcastPingResponse" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType>
    <xs:sequence>
      <xs:element minOccurs="0" name="BroadcastPingResult" type="xs:boolean"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

BroadcastPingResult: An **xs:boolean** ([XMLSCHEMA2] section 3.2.2) element. This element MUST be present and MUST be set to true.

3.1.4.4.3 Complex Types

None.

3.1.4.4.4 Simple Types

None.

3.1.4.4.5 Attributes

None.

3.1.4.4.6 Groups

None.

3.1.4.4.7 Attribute Groups

None.

3.1.5 Timer Events

None.

3.1.6 Other Local Events

None.

4 Protocol Examples

The following examples contain sample interactions between protocol clients and protocol servers.

4.1 Attendee Client Example

The attendee protocol client begins by sending a request to the protocol server to join the broadcast session. The following **BroadcastJoinSessionSoapIn** (section 3.1.4.2) message is sent to the protocol server:

```
<s:Envelope xmlns:s="http://schemas.xmlsoap.org/soap/envelope/">
<s:Body>
<BroadcastJoinSession
xmlns="http://schemas.microsoft.com/office/Broadcast/Server/WebServices/BroadcastParticipantS
ervice/">
<sessionId>WOPISrc=http://machinename/th/handler/wopi/files/anonymous~PPTTest.pptx&amp;access
_token=VAR</sessionId>
</BroadcastJoinSession>
</s:Body>
</s:Envelope>
```

The protocol server responds with a message to acknowledge the request and to provide host information and an identifier for the broadcast session to be used by the attendee protocol client for future requests. The following **BroadcastJoinSessionSoapOut** (section 3.1.4.2) message is sent to the attendee protocol client:

```
<s:Envelope xmlns:s="http://schemas.xmlsoap.org/soap/envelope/">
<s:Body>
<BroadcastJoinSessionResponse
xmlns="http://schemas.microsoft.com/office/Broadcast/Server/WebServices/BroadcastParticipantS
ervice/">
<BroadcastJoinSessionResult
xmlns:a="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Broadcast.Pipe.Inter
face" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
<a:Error i:nil="true"/>
<a:Result i:type="b:BroadcastUser"
xmlns:b="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Broadcast.Interface.
Data">
<b:SessionId>WOPISrc=http://machinename/th/handler/wopi/files/anonymous~PPTTest.pptx&amp;acce
ss_token=VAR</b:SessionId>
<b:UserToken>b5ea6891-bb86-4544-a74c-847ce4c2edee</b:UserToken>
</a:Result>
</BroadcastJoinSessionResult>
</BroadcastJoinSessionResponse>
</s:Body>
</s:Envelope>
```

Next, the attendee protocol client requests information about the current state of the broadcast session from the protocol server. The following **BroadcastGetDataSoapIn** (section 3.1.4.1) message is sent to the protocol server:

```
<s:Envelope xmlns:s="http://schemas.xmlsoap.org/soap/envelope/">
<s:Body>
<BroadcastGetData
xmlns="http://schemas.microsoft.com/office/Broadcast/Server/WebServices/BroadcastParticipantS
ervice/">
```

```
<user
xmlns:a="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Broadcast.Interface.
Data" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
<a:SessionId>WOPISrc=http://machinename/th/handler/wopi/files/anonymous~PPTTest.pptx&amp;acce
ss_token=VAR</a:SessionId>
<a:UserToken>b5ea6891-bb86-4544-a74c-847ce4c2edee</a:UserToken>
</user>
<sequenceNumber>0</sequenceNumber>
</BroadcastGetData>
</s:Body>
</s:Envelope>
```

The protocol server responds with information about the current state of the broadcast session. The following **BroadcastGetDataSoapOut** (section 3.1.4.1) message is sent to the attendee protocol client:

```
<s:Envelope
xmlns:s="http://schemas.xmlsoap.org/soap/envelope/"><s:Body><BroadcastGetDataResponse
xmlns="http://schemas.microsoft.com/office/Broadcast/Server/WebServices/BroadcastParticipantS
ervice/">
<BroadcastGetDataResult
xmlns:a="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Broadcast.Pipe.Inter
face" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
<a:Error i:nil="true"/>
<a:Result i:type="b:ArrayOfKeyValueOfstringstring"
xmlns:b="http://schemas.microsoft.com/2003/10/Serialization/Arrays">
<b:KeyValueOfstringstring>
<b:Key>AppType</b:Key>
<b:Value>PPT</b:Value>
</b:KeyValueOfstringstring>
<b:KeyValueOfstringstring>
<b:Key>BroadcastState</b:Key>
<b:Value>BroadcastStarted</b:Value>
</b:KeyValueOfstringstring>
<b:KeyValueOfstringstring>
<b:Key>SequenceNumber</b:Key>
<b:Value>5</b:Value>
</b:KeyValueOfstringstring>
<b:KeyValueOfstringstring>
<b:Key>FileVersion</b:Key>
<b:Value>1</b:Value>
</b:KeyValueOfstringstring>
<b:KeyValueOfstringstring>
<b:Key>OriginalFileName</b:Key>
<b:Value>file.pptx</b:Value>
</b:KeyValueOfstringstring>
<b:KeyValueOfstringstring>
<b:Key>NotesUrl</b:Key>
<b:Value>http://url</b:Value>
</b:KeyValueOfstringstring>
<b:KeyValueOfstringstring>
<b:Key>DataVersion</b:Key>
<b:Value>2</b:Value>
</b:KeyValueOfstringstring>
<b:KeyValueOfstringstring>
<b:Key>AppSpecificStateData</b:Key>
<b:Value>{"SlideId":258,"SlideIndex":0,"AnimationStepDataList":[{"TimelineId":"timeline_1","S
tep":1},{"TimelineId":"timeline_2","Step":2}],"MediaStateDataList":[{"MediaId":"306s4f1","Sta
te":1,"AtPosition":0.015},{"MediaId":"55s21","State":0,"AtPosition":34.53}],"PPTSlideShowStat
e":2}</b:Value>
</b:KeyValueOfstringstring>
</a:Result>
</BroadcastGetDataResult>
</BroadcastGetDataResponse>
</s:Body>
</s:Envelope>
```

The attendee protocol client continues to send **BroadcastGetDataSoapIn** (section 3.1.4.1) messages to request the latest state of the broadcast session.

Finally, the attendee protocol client disjoins from the broadcast session by sending the **BroadcastUnjoinSessionSoapIn** (section 3.1.4.3) message to the protocol server:

```
<s:Envelope xmlns:s="http://schemas.xmlsoap.org/soap/envelope/">
<s:Body>
<BroadcastUnjoinSession
xmlns="http://schemas.microsoft.com/office/Broadcast/Server/WebServices/BroadcastParticipantS
ervice/">
<sessionId>WOPISrc=http://machinename/th/handler/wopi/files/anonymous~PPTTest.pptx&amp;access
_token=VAR</sessionId>
</BroadcastUnjoinSession>
</s:Body>
</s:Envelope>
```

The protocol server responds by sending the **BroadcastUnjoinSessionSoapOut** (section 3.1.4.3) message to the attendee protocol client:

```
<s:Envelope xmlns:s="http://schemas.xmlsoap.org/soap/envelope/">
<s:Body>
<BroadcastUnjoinSessionResponse
xmlns="http://schemas.microsoft.com/office/Broadcast/Server/WebServices/BroadcastParticipantS
ervice/">
<BroadcastUnjoinSessionResult
xmlns:a="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Broadcast.Pipe.Inter
face" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
<a:Error i:nil="true"/>
<a:Result i:nil="true"/>
</BroadcastUnjoinSessionResult>
</BroadcastUnjoinSessionResponse>
</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"?>
<wsdl:definitions
xmlns:tns4="http://schemas.microsoft.com/office/Broadcast/Server/WebServices/BroadcastPartici
pantService/" xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"
targetNamespace="http://schemas.microsoft.com/office/Broadcast/Server/WebServices/BroadcastPa
rticipantService/" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
  <wsdl:types>
    <xs:schema
xmlns:tns5="http://schemas.microsoft.com/office/Broadcast/Server/WebServices/BroadcastPartici
pantService/Imports"
targetNamespace="http://schemas.microsoft.com/office/Broadcast/Server/WebServices/BroadcastPa
rticipantService/Imports">
      <xs:import
namespace="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Broadcast.Interfac
e.Data"/>
      <xs:import
namespace="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Broadcast.Pipe.Int
erface"/>
      <xs:import namespace="http://schemas.microsoft.com/2003/10/Serialization/"/>
      <xs:import namespace="http://schemas.microsoft.com/2003/10/Serialization/Arrays"/>
      <xs:import
namespace="http://schemas.microsoft.com/office/Broadcast/Server/WebServices/BroadcastParticip
antService/"/>
    </xs:schema>
  </wsdl:types>
  <wsdl:portType name="IParticipantService">
    <wsdl:operation name="BroadcastJoinSession">
      <wsdl:input
wsaw:Action="http://schemas.microsoft.com/office/Broadcast/Server/WebServices/BroadcastPartic
ipantService/IParticipantService/BroadcastJoinSession"
message="tns4:IParticipantService_BroadcastJoinSession_InputMessage"/>
      <wsdl:output
wsaw:Action="http://schemas.microsoft.com/office/Broadcast/Server/WebServices/BroadcastPartic
ipantService/IParticipantService/BroadcastJoinSessionResponse"
message="tns4:IParticipantService_BroadcastJoinSession_OutputMessage"/>
    </wsdl:operation>
    <wsdl:operation name="BroadcastUnjoinSession">
      <wsdl:input
wsaw:Action="http://schemas.microsoft.com/office/Broadcast/Server/WebServices/BroadcastPartic
ipantService/IParticipantService/BroadcastUnjoinSession"
message="tns4:IParticipantService_BroadcastUnjoinSession_InputMessage"/>
      <wsdl:output
wsaw:Action="http://schemas.microsoft.com/office/Broadcast/Server/WebServices/BroadcastPartic
ipantService/IParticipantService/BroadcastUnjoinSessionResponse"
message="tns4:IParticipantService_BroadcastUnjoinSession_OutputMessage"/>
    </wsdl:operation>
    <wsdl:operation name="BroadcastGetData">
      <wsdl:input
wsaw:Action="http://schemas.microsoft.com/office/Broadcast/Server/WebServices/BroadcastPartic
ipantService/IParticipantService/BroadcastGetData"
message="tns4:IParticipantService_BroadcastGetData_InputMessage"/>
      <wsdl:output
wsaw:Action="http://schemas.microsoft.com/office/Broadcast/Server/WebServices/BroadcastPartic
ipantService/IParticipantService/BroadcastGetDataResponse"
message="tns4:IParticipantService_BroadcastGetData_OutputMessage"/>
    </wsdl:operation>
    <wsdl:operation name="BroadcastPing">
      <wsdl:input 
wsaw:Action="http://schemas.microsoft.com/office/Broadcast/Server/WebServices/BroadcastPartic
ipantService/IParticipantService/BroadcastPing" 
message="tns4:IParticipantService_BroadcastPing_InputMessage"/>
      <wsdl:output 
wsaw:Action="http://schemas.microsoft.com/office/Broadcast/Server/WebServices/BroadcastPartic
ipantService/IParticipantService/BroadcastPingResponse" 
message="tns4:IParticipantService_BroadcastPing_OutputMessage"/>
    </wsdl:operation>
  </wsdl:portType>
  <wsdl:binding name="DefaultBinding_IParticipantService" type="tns4:IParticipantService">
    <soap:binding transport="http://schemas.xmlsoap.org/soap/http"/>
    <wsdl:operation name="BroadcastJoinSession">
      <soap:operation 
soapAction="http://schemas.microsoft.com/office/Broadcast/Server/WebServices/BroadcastPartici
pantService/IParticipantService/BroadcastJoinSession" style="document"/>
      <wsdl:input>
        <soap:body use="literal"/>
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal"/>
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="BroadcastUnjoinSession">
      <soap:operation 
soapAction="http://schemas.microsoft.com/office/Broadcast/Server/WebServices/BroadcastPartici
pantService/IParticipantService/BroadcastUnjoinSession" style="document"/>
      <wsdl:input>
        <soap:body use="literal"/>
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal"/>
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="BroadcastGetData">
      <soap:operation 
soapAction="http://schemas.microsoft.com/office/Broadcast/Server/WebServices/BroadcastPartici
pantService/IParticipantService/BroadcastGetData" style="document"/>
      <wsdl:input>
        <soap:body use="literal"/>
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal"/>
      </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="BroadcastPing">
      <soap:operation 
soapAction="http://schemas.microsoft.com/office/Broadcast/Server/WebServices/BroadcastPartici
pantService/IParticipantService/BroadcastPing" style="document"/>
      <wsdl:input>
        <soap:body use="literal"/>
      </wsdl:input>
      <wsdl:output>
        <soap:body use="literal"/>
      </wsdl:output>
    </wsdl:operation>
  </wsdl:binding>
  <wsdl:message name="IParticipantService_BroadcastGetData_InputMessage">
    <wsdl:part name="parameters" element="tns4:BroadcastGetData"/>
  </wsdl:message>
  <wsdl:message name="IParticipantService_BroadcastGetData_OutputMessage">
    <wsdl:part name="parameters" element="tns4:BroadcastGetDataResponse"/>
  </wsdl:message>
  <wsdl:message name="IParticipantService_BroadcastJoinSession_InputMessage">
    <wsdl:part name="parameters" element="tns4:BroadcastJoinSession"/>
  </wsdl:message>
  <wsdl:message name="IParticipantService_BroadcastJoinSession_OutputMessage">
    <wsdl:part name="parameters" element="tns4:BroadcastJoinSessionResponse"/>
  </wsdl:message>
  <wsdl:message name="IParticipantService_BroadcastPing_InputMessage">
    <wsdl:part name="parameters" element="tns4:BroadcastPing"/>
  </wsdl:message>
  <wsdl:message name="IParticipantService_BroadcastPing_OutputMessage">
    <wsdl:part name="parameters" element="tns4:BroadcastPingResponse"/>
  </wsdl:message>
  <wsdl:message name="IParticipantService_BroadcastUnjoinSession_InputMessage">
    <wsdl:part name="parameters" element="tns4:BroadcastUnjoinSession"/>
  </wsdl:message>
  <wsdl:message name="IParticipantService_BroadcastUnjoinSession_OutputMessage">
    <wsdl:part name="parameters" element="tns4:BroadcastUnjoinSessionResponse"/>
  </wsdl:message>
</wsdl:definitions>
```

7 Appendix B: Full XML Schema

Schema name	Prefix	Section
http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Broadcast.Interface.Data	tns	7.1
http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Broadcast.Pipe.Interface	tns1	7.2
http://schemas.microsoft.com/2003/10/Serialization/Arrays	tns2	7.3
http://schemas.microsoft.com/2003/10/Serialization/	tns3	7.4
http://schemas.microsoft.com/office/Broadcast/Server/WebServices/BroadcastParticipantService/	tns4	7.5

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

7.1 http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Broadcast.Interface.Data Schema

```
<?xml version="1.0"?>
<xs:schema
xmlns:tns="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Broadcast.Interfac
e.Data" elementFormDefault="qualified"
targetNamespace="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Broadcast.In
terface.Data" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType name="BroadcastUser">
    <xs:sequence>
      <xs:element minOccurs="0" name="SessionId" nillable="true" type="xs:string"/>
      <xs:element minOccurs="0" name="UserToken" nillable="true" type="xs:string"/>
    </xs:sequence>
  </xs:complexType>
  <xs:element name="BroadcastUser" nillable="true" type="tns:BroadcastUser"/>
  <xs:complexType name="PPTStateData">
    <xs:sequence>
      <xs:element minOccurs="0" name="AnimationStepDataList" nillable="true"
type="tns:ArrayOfPPTBroadcastAnimationStepData"/>
      <xs:element minOccurs="0" name="MediaStateDataList" nillable="true"
type="tns:ArrayOfPPTBroadcastMediaStateData"/>
      <xs:element minOccurs="0" name="PPTSlideShowState" type="tns:PPTSlideShowState"/>
      <xs:element minOccurs="0" name="SlideId" type="xs:unsignedInt"/>
      <xs:element minOccurs="0" name="SlideIndex" type="xs:unsignedInt"/>
    </xs:sequence>
  </xs:complexType>
  <xs:element name="PPTStateData" nillable="true" type="tns:PPTStateData"/>
  <xs:complexType name="ArrayOfPPTBroadcastAnimationStepData">
    <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded" name="PPTBroadcastAnimationStepData"
nillable="true" type="tns:PPTBroadcastAnimationStepData"/>
    </xs:sequence>
  </xs:complexType>
  <xs:element name="ArrayOfPPTBroadcastAnimationStepData" nillable="true"
type="tns:ArrayOfPPTBroadcastAnimationStepData"/>
  <xs:complexType name="PPTBroadcastAnimationStepData">
```

```
    <xs:sequence>
      <xs:element minOccurs="0" name="Step" type="xs:int"/>
      <xs:element minOccurs="0" name="TimelineId" nillable="true" type="xs:string"/>
    </xs:sequence>
  </xs:complexType>
  <xs:element name="PPTBroadcastAnimationStepData" nillable="true"
type="tns:PPTBroadcastAnimationStepData"/>
  <xs:complexType name="ArrayOfPPTBroadcastMediaStateData">
    <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded" name="PPTBroadcastMediaStateData"
nillable="true" type="tns:PPTBroadcastMediaStateData"/>
    </xs:sequence>
  </xs:complexType>
  <xs:element name="ArrayOfPPTBroadcastMediaStateData" nillable="true"
type="tns:ArrayOfPPTBroadcastMediaStateData"/>
  <xs:complexType name="PPTBroadcastMediaStateData">
    <xs:sequence>
      <xs:element minOccurs="0" name="AtPosition" type="xs:double"/>
      <xs:element minOccurs="0" name="MediaId" nillable="true" type="xs:string"/>
      <xs:element minOccurs="0" name="State" type="tns:PPTMediaPlaybackState"/>
    </xs:sequence>
  </xs:complexType>
  <xs:element name="PPTBroadcastMediaStateData" nillable="true"
type="tns:PPTBroadcastMediaStateData"/>
  <xs:simpleType name="PPTMediaPlaybackState">
    <xs:restriction base="xs:string">
      <xs:enumeration value="Paused"/>
      <xs:enumeration value="Playing"/>
      <xs:enumeration value="Stopped"/>
    </xs:restriction>
  </xs:simpleType>
  <xs:element name="PPTMediaPlaybackState" nillable="true" type="tns:PPTMediaPlaybackState"/>
  <xs:simpleType name="PPTSlideShowState">
    <xs:restriction base="xs:string">
      <xs:enumeration value="BlackScreen"/>
      <xs:enumeration value="WhiteScreen"/>
      <xs:enumeration value="Normal"/>
      <xs:enumeration value="SlideShowEnded"/>
    </xs:restriction>
  </xs:simpleType>
  <xs:element name="PPTSlideShowState" nillable="true" type="tns:PPTSlideShowState"/>
  <xs:complexType name="WordStateData">
    <xs:sequence>
      <xs:element minOccurs="0" name="Offset" type="xs:double"/>
      <xs:element minOccurs="0" name="Page" type="xs:int"/>
    </xs:sequence>
  </xs:complexType>
  <xs:element name="WordStateData" nillable="true" type="tns:WordStateData"/>
  <xs:complexType name="EnumTypes">
    <xs:sequence>
      <xs:element minOccurs="0" name="AppType" type="tns:AppType"/>
      <xs:element minOccurs="0" name="BroadcastAppCapability"
type="tns:BroadcastAppCapability"/>
      <xs:element minOccurs="0" name="BroadcastDataKey" type="tns:BroadcastDataKey"/>
      <xs:element minOccurs="0" name="BroadcastState" type="tns:BroadcastState"/>
      <xs:element minOccurs="0" name="PPTMediaPlaybackState"
type="tns:PPTMediaPlaybackState"/>
      <xs:element minOccurs="0" name="PPTSlideShowState" type="tns:PPTSlideShowState"/>
    </xs:sequence>
  </xs:complexType>
  <xs:element name="EnumTypes" nillable="true" type="tns:EnumTypes"/>
  <xs:simpleType name="AppType">
    <xs:restriction base="xs:string">
      <xs:enumeration value="PPT"/>
      <xs:enumeration value="Word"/>
    </xs:restriction>
  </xs:simpleType>
  <xs:element name="AppType" nillable="true" type="tns:AppType"/>
  <xs:simpleType name="BroadcastAppCapability">
    <xs:restriction base="xs:string">
      <xs:enumeration value="SessionTimeout"/>
      <xs:enumeration value="SessionIdleTimeOut"/>
      <xs:enumeration value="SupportVideo"/>
      <xs:enumeration value="SupportAudio"/>
      <xs:enumeration value="SupportNotes"/>
      <xs:enumeration value="MediaExtensions"/>
      <xs:enumeration value="MaxMediaSize"/>
    </xs:restriction>
  </xs:simpleType>
  <xs:element name="BroadcastAppCapability" nillable="true"
type="tns:BroadcastAppCapability"/>
  <xs:simpleType name="BroadcastDataKey">
    <xs:restriction base="xs:string">
      <xs:enumeration value="AppType"/>
      <xs:enumeration value="SequenceNumber"/>
      <xs:enumeration value="FileVersion"/>
      <xs:enumeration value="OriginalFileName"/>
      <xs:enumeration value="BroadcastState"/>
      <xs:enumeration value="AppSpecificStateData"/>
      <xs:enumeration value="NotesUrl"/>
      <xs:enumeration value="DataVersion"/>
    </xs:restriction>
  </xs:simpleType>
  <xs:element name="BroadcastDataKey" nillable="true" type="tns:BroadcastDataKey"/>
  <xs:simpleType name="BroadcastState">
    <xs:restriction base="xs:string">
      <xs:enumeration value="BroadcastNotStartedYet"/>
      <xs:enumeration value="BroadcastStarted"/>
      <xs:enumeration value="BroadcastEnded"/>
    </xs:restriction>
  </xs:simpleType>
  <xs:element name="BroadcastState" nillable="true" type="tns:BroadcastState"/>
</xs:schema>
```

7.2 http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Broadcast.Pipe.Interface Schema

```
<?xml version="1.0"?>
<xs:schema
xmlns:tns1="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Broadcast.Pipe.In
terface" elementFormDefault="qualified"
targetNamespace="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Broadcast.Pi
pe.Interface" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:import namespace="http://schemas.microsoft.com/2003/10/Serialization/"/>
  <xs:complexType name="ServiceResult">
```

```
    <xs:sequence>
      <xs:element minOccurs="0" name="Error" nillable="true" type="tns1:ServiceError"/>
      <xs:element minOccurs="0" name="Result" nillable="true" type="xs:anyType"/>
    </xs:sequence>
  </xs:complexType>
  <xs:element name="ServiceResult" nillable="true" type="tns1:ServiceResult"/>
  <xs:complexType name="ServiceError">
    <xs:sequence>
      <xs:element minOccurs="0" name="Message" nillable="true" type="xs:string"/>
      <xs:element minOccurs="0" name="RecommendedActions" type="tns1:ClientActions"/>
      <xs:element minOccurs="0" name="Title" nillable="true" type="xs:string"/>
      <xs:element minOccurs="0" name="Type" type="tns1:ServiceErrorType"/>
    </xs:sequence>
  </xs:complexType>
  <xs:element name="ServiceError" nillable="true" type="tns1:ServiceError"/>
  <xs:simpleType name="ClientActions">
    <xs:list>
      <xs:simpleType>
        <xs:restriction base="xs:string">
          <xs:enumeration value="None"/>
          <xs:enumeration value="Dismiss"/>
          <xs:enumeration value="Close"/>
          <xs:enumeration value="OpenInClient"/>
          <xs:enumeration value="Refresh"/>
        </xs:restriction>
      </xs:simpleType>
    </xs:list>
  </xs:simpleType>
  <xs:element name="ClientActions" nillable="true" type="tns1:ClientActions"/>
  <xs:simpleType name="ServiceErrorType">
    <xs:restriction base="xs:string">
      <xs:enumeration value="UnknownError"/>
      <xs:enumeration value="ApplicationError"/>
      <xs:enumeration value="Timeout"/>
      <xs:enumeration value="ServiceBusy"/>
      <xs:enumeration value="SessionFull"/>
    </xs:restriction>
  </xs:simpleType>
  <xs:element name="ServiceErrorType" nillable="true" type="tns1:ServiceErrorType"/>
</xs:schema>
```

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

```
<?xml version="1.0"?>
<xs:schema xmlns:tns2="http://schemas.microsoft.com/2003/10/Serialization/Arrays"
elementFormDefault="qualified"
targetNamespace="http://schemas.microsoft.com/2003/10/Serialization/Arrays"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:complexType name="ArrayOfKeyValueOfstringstring">
    <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded" name="KeyValueOfstringstring">
        <xs:complexType>
          <xs:sequence>
            <xs:element name="Key" nillable="true" type="xs:string"/>
            <xs:element name="Value" nillable="true" type="xs:string"/>
          </xs:sequence>
        </xs:complexType>
      </xs:element>
    </xs:sequence>
  </xs:complexType>
  <xs:element name="ArrayOfKeyValueOfstringstring" nillable="true"
type="tns2:ArrayOfKeyValueOfstringstring"/>
</xs:schema>
```

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

```
<?xml version="1.0"?>
<xs:schema xmlns:tns3="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="tns3:char"/>
  <xs:simpleType name="char">
    <xs:restriction base="xs:int"/>
  </xs:simpleType>
  <xs:element name="duration" nillable="true" type="tns3: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="tns3: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>
```

7.5 http://schemas.microsoft.com/office/Broadcast/Server/WebServices/BroadcastParticipantService/ Schema

```
<?xml version="1.0"?>
<xs:schema elementFormDefault="qualified"
targetNamespace="http://schemas.microsoft.com/office/Broadcast/Server/WebServices/BroadcastPa
rticipantService/" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:element name="BroadcastJoinSession">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="sessionId" nillable="true" type="xs:string"/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="BroadcastJoinSessionResponse">
    <xs:complexType>
      <xs:sequence>
        <xs:element
xmlns:tns1="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Broadcast.Pipe.In
terface" minOccurs="0" name="BroadcastJoinSessionResult" nillable="true"
type="tns1:ServiceResult"/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="BroadcastUnjoinSession">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="sessionId" nillable="true" type="xs:string"/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="BroadcastUnjoinSessionResponse">
    <xs:complexType>
      <xs:sequence>
        <xs:element
xmlns:tns1="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Broadcast.Pipe.In
terface" minOccurs="0" name="BroadcastUnjoinSessionResult" nillable="true"
type="tns1:ServiceResult"/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="BroadcastGetData">
    <xs:complexType>
      <xs:sequence>
        <xs:element
xmlns:tns="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Broadcast.Interfac
e.Data" minOccurs="0" name="user" nillable="true" type="tns:BroadcastUser"/>
        <xs:element minOccurs="0" name="sequenceNumber" type="xs:int"/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="BroadcastGetDataResponse">
    <xs:complexType>
      <xs:sequence>
        <xs:element
xmlns:tns1="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Broadcast.Pipe.In
terface" minOccurs="0" name="BroadcastGetDataResult" nillable="true"
type="tns1:ServiceResult"/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="BroadcastPing">
    <xs:complexType>
      <xs:sequence/>
    </xs:complexType>
  </xs:element>
  <xs:element name="BroadcastPingResponse">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="BroadcastPingResult" type="xs:boolean"/>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:import
namespace="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Broadcast.Interfac
e.Data"/>
  <xs:import
namespace="http://schemas.datacontract.org/2004/07/Microsoft.Office.Server.Broadcast.Pipe.Int
erface"/>
</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 Lync Server 2013
- Microsoft OneNote 2013

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

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

9 Change Tracking

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

10 Index