

[MS-OXWSNTIF]: Notifications Web Service Protocol Specification

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Revision Summary

Date	Revision History	Revision Class	Comments
07/15/2009	1.0	Major	Initial Availability.
11/04/2009	1.1.0	Minor	Updated the technical content.
02/10/2010	1.1.0	None	Version 1.1.0 release
05/05/2010	2.0.0	Major	Updated and revised the technical content.
08/04/2010	3.0	Major	Significantly changed the technical content.
11/03/2010	4.0	Major	Significantly changed the technical content.
03/18/2011	4.1	Minor	Clarified the meaning of the technical content.

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1 Introduction

the Notifications Web Service Protocol is responsible for pull notifications from the server.

Sections 1.8, 2, and 3 of this specification are normative and contain RFC 2119 language. Sections 1.5 and 1.9 are also normative but cannot contain RFC 2119 language. 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)
XML

The following terms are defined in [\[MS-OXGLOS\]](#):

free/busy status
mailbox
Simple Object Access Protocol (SOAP)
SOAP body
SOAP header
Web Services Description Language (WSDL)
WSDL message
WSDL port type
XML namespace
XML schema

The following terms are specific to this document:

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

1.2 References

1.2.1 Normative References

We conduct frequent surveys of the normative references to assure their continued availability. If you have any issue with finding a normative reference, please contact dochelp@microsoft.com. We will assist you in finding the relevant information. Please check the archive site, <http://msdn2.microsoft.com/en-us/library/E4BD6494-06AD-4aed-9823-445E921C9624>, as an additional source.

[MS-OXWSCDATA] Microsoft Corporation, "[Common Web Service Data Types](#)", July 2009.

[MS-OXWSCORE] Microsoft Corporation, "[Core Items Web Service Protocol Specification](#)", July 2009.

[MS-OXWSFOLD] Microsoft Corporation, "[Folders and Folder Permissions Web Service Protocol Specification](#)", July 2009.

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

[RFC3066] Alvestrand, H., "Tags for the Identification of Language", RFC 3066, January 2001, <http://www.ietf.org/rfc/rfc3066.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/>

[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] World Wide Web Consortium, "Namespaces in XML 1.0 (Third Edition)", W3C Recommendation 8 December 2009, <http://www.w3.org/TR/REC-xml-names/>

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

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

1.2.2 Informative References

[MS-GLOS] Microsoft Corporation, "[Windows Protocols Master Glossary](#)", March 2007.

[MS-OXGLOS] Microsoft Corporation, "[Exchange Server Protocols Master Glossary](#)", April 2008.

[MS-OXWSPSNTIF] Microsoft Corporation, "[Push Notifications Web Service Protocol Specification](#)", July 2009.

[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>

1.3 Overview

The Notifications Web Service Protocol is used to enable clients to pull notifications from the server. Clients subscribe to updates and receive the updates through pull notifications, by which the client periodically requests information from the server.

1.4 Relationship to Other Protocols

The Notifications Web Service Protocol uses **SOAP** over **HTTP**, as described in [\[RFC2616\]](#), and SOAP over **HTTPS**, as described in [\[RFC2818\]](#), as shown in the following layering diagram.

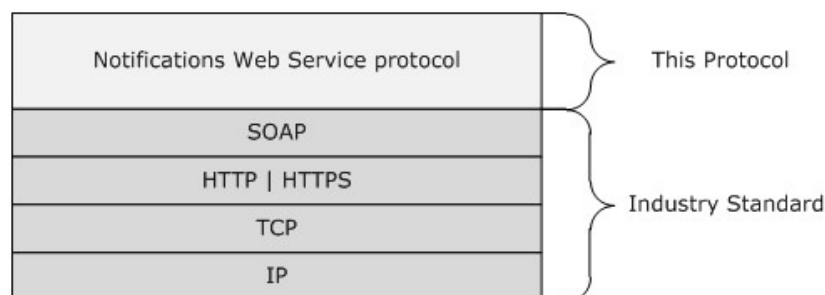


Figure 1: This protocol in relation to other protocols.

The information that is returned by the Notifications Web Service Protocol is used when requests are made by using the Push Notifications Web Service Protocol [\[MS-OXWSPSNTIF\]](#).

1.5 Prerequisites/Preconditions

None.

1.6 Applicability Statement

The protocol specified in this document is applicable to environments that incorporate notifications.

1.7 Versioning and Capability Negotiation

This document covers versioning issues in the following areas:

- **Supported Transports:** This protocol uses SOAP 1.1, as specified in section [2.1](#).
- **Protocol Versions:** This protocol specifies only one **WSDL port type** version.
- **Security and Authentication Methods:** This protocol relies on the Web server that is hosting it to perform authentication.
- **Localization:** This protocol includes text strings in various messages. Localization considerations for such strings are specified in section [3.1.4](#).
- Capability Negotiation: None.

1.8 Vendor Extensible Fields

None.

1.9 Standards Assignments

None.

2 Messages

2.1 Transport

The SOAP version supported is SOAP 1.1. For details, see [\[SOAP1.1\]](#).

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 defined in [\[XMLSCHEMA1\]](#) and [\[XMLSCHEMA2\]](#), and **WSDL** as defined in [\[WSDL\]](#).

2.2.1 Namespaces

This specification defines and references various **XML namespaces** by using the mechanisms specified in [\[XMLNS\]](#). Although this specification associates a specific XML namespaces prefix for each XML namespaces that is used, the choice of any particular XML namespaces 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/exchange/services/2006/messages	
s	http://www.w3.org/2001/XMLSchema	[XMLSCHEMA1]
targetNamespace	http://schemas.microsoft.com/exchange/services/2006/messages	
wsdl	http://schemas.xmlsoap.org/wsdl/	[WSDL]
t	http://schemas.microsoft.com/exchange/services/2006/types	

2.2.2 Simple Types

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

Simple Type	Description
WatermarkType	Specifies an event bookmark in the mailbox event queue.
SubscriptionIdType	Specifies the identifier for a subscription.

2.2.2.1 t:WatermarkType Simple Type

The **WatermarkType** simple type specifies an event bookmark in the mailbox event queue.

```
<xs:simpleType name="WatermarkType">
  <xs:restriction
    base="t:NonEmptyStringType"
  />
</xs:simpleType>
```

2.2.2.2 t:SubscriptionIdType Simple Type

The **SubscriptionIdType** simple type specifies the identifier for a subscription.

```
<xs:simpleType name="SubscriptionIdType">
  <xs:restriction
    base="t:NonEmptyStringType"
  />
</xs:simpleType>
```

2.2.3 Complex Types

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

Complex Type	Description
GetEventsResponseMessageType	Specifies the status and result of a single GetEvents request.
SubscribeResponseMessageType	Specifies the status and result of a single Subscribe request.
ModifiedEventType	Specifies an event in which an item or folder is modified.
MovedCopiedEventType	Specifies a moved or copied event notification.
NotificationType	Specifies information about the subscription and the events that have occurred since the last notification.

2.2.3.1 m:GetEventsResponseMessageType Complex Type

The **GetEventsResponseMessageType** complex type specifies the status and result of a single **GetEvents** request.

```
<xs:complexType name="GetEventsResponseMessageType">
  <xs:complexContent>
    <xs:extension
      base="m:ResponseMessageType"
    >
      <xs:sequence>
        <xs:element name="Notification"
          type="t:NotificationType"
          minOccurs="0"
        />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

The following table lists the child elements of the **GetEventsResponseMessageType** complex type.

Element	Type	Description
Notification	t:NotificationType (section 2.2.3.8)	Specifies information about the subscription and the events that have occurred since the last notification.

2.2.3.2 m:GetStreamingEventsResponseMessageType Complex Type

The **GetStreamingEventsResponseMessageType** complex type specifies the status and result of a single **GetStreamingEvents** operation request. [<1>](#) The **GetStreamingEventsResponseMessageType** complex type extends the **ResponseMessageType** complex type, as specified in [\[MS-OXWSCDATA\]](#) section 2.2.3.52.

```
<xs:complexType name="GetStreamingEventsResponseMessageType">
  <xs:complexContent>
    <xs:extension
      base="m:ResponseMessageType"
    >
      <xs:sequence>
        <xs:element name="Notifications"
          type="t:NonEmptyArrayOfNotificationsType"
          minOccurs="0"
        />
        <xs:element name="ErrorSubscriptionIds"
          type="t:NonEmptyArrayOfSubscriptionIdsType"
          minOccurs="0"
        />
        <xs:element name="ConnectionStatus"
          type="t:ConnectionStatusType"
          minOccurs="0"
        />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

The following table lists the child elements of the **GetStreamingEventsResponseMessageType** complex type.

Element	Type	Description
Notifications	NonEmptyArrayOfNotificationsType (section 3.1.4.2.2.5de)	Specifies a list of information about the subscription and the events that have occurred since the last notification.
ErrorSubscriptionIds	NonEmptyArrayOfSubscriptionIdsType (section 3.1.4.2.2.4)	Specifies a list of subscription IDs that are invalid.
ConnectionStatus	ConnectionStatusType (section 3.1.4.2.1.2)	Specifies a text description of the status of a streaming subscription.

2.2.3.3 m:SubscribeResponseMessageType Complex Type

The **SubscribeResponseMessageType** complex type specifies the status and result of a single **Subscribe** operation request, as specified in section [3.1.4.3](#).

```
<xs:complexType name="SubscribeResponseMessageType">
  <xs:complexContent>
    <xs:extension
      base="m:ResponseMessageType"
    >
      <xs:sequence>
        <xs:element name="SubscriptionId"
          type="t:SubscriptionIdType"
          minOccurs="0"
        />
        <xs:element name="Watermark"
          type="t:WatermarkType"
          minOccurs="0"
        />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

The following table lists the child elements of the **SubscribeResponseMessageType** complex type.

Element	Type	Description
SubscriptionId	t:SubscriptionIdType (section 2.2.2.2)	Specifies the identifier for a subscription.
Watermark	t:WatermarkType (section 2.2.2.1)	Specifies an event bookmark in the mailbox event queue.

2.2.3.4 t:BaseNotificationEventType Complex Type

The **BaseNotificationEventType** complex type specifies the base type for event notifications.

```
<xs:complexType name="BaseNotificationEventType"
  minOccurs="0"
>
  <xs:sequence>
    <xs:element name="Watermark"
      type="t:WatermarkType"
      minOccurs="0"
    />
  </xs:sequence>
</xs:complexType>
```

The following table lists the child elements of the **BaseNotificationEventType** complex type.

Element	Type	Description
Watermark	t:WatermarkType (section 2.2.2.1)	Specifies an event bookmark in the mailbox event queue. <2>

2.2.3.5 t:BaseObjectChangedEventType Complex Type

The **BaseObjectChangedEventType** complex type specifies create, delete, and new mail events.

```
<xs:complexType name="BaseObjectChangedEventType">
  <xs:complexContent>
    <xs:extension
      base="t:BaseNotificationEventType"
    >
      <xs:sequence>
        <xs:element name="TimeStamp"
          type="xs:dateTime"
        />
        <xs:choice>
          <xs:element name="FolderId"
            type="t:FolderIdType"
          />
          <xs:element name="ItemId"
            type="t:ItemIdType"
          />
        </xs:choice>
        <xs:element name="ParentFolderId"
          type="t:FolderIdType"
        />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

The following table lists the child elements of the BaseObjectChangedEventType complex type.

Element	Type	Description
TimeStamp	xs:dateTime [XMLSCHEMA2]	Specifies the time stamp of a changed item or folder mailbox event.
FolderId	t:FolderIdType ([MS-OXWSCDATA] section 2.2.3.29)	Specifies a FolderIdType object that identifies the changed store item.
ItemId	t:ItemIdType ([MS-OXWSCORE] section 2.2.3.13)	Specifies an ItemIdType object that identifies the changed store item.
ParentFolderId	t:FolderIdType	Specifies the parent folder identifier of the changed item or folder.

2.2.3.6 t:ModifiedEventType Complex Type

The **ModifiedEventType** complex type specifies an event in which an item or folder is modified.

```
<xs:complexType name="ModifiedEventType">
```

```

<xs:complexContent>
  <xs:extension
    base="t:BaseObjectChangedEventType"
  >
    <xs:sequence>
      <xs:element name="UnreadCount"
        type="xs:int"
        minOccurs="0"
      />
    </xs:sequence>
  </xs:extension>
</xs:complexContent>
</xs:complexType>

```

The following table lists the child elements of the **ModifiedEventType** complex type.

Element	Type	Description
UnreadCount	xs:int [XMLSCHEMA2]	Specifies the count of unread items within a given folder. <3>

2.2.3.7 t:MovedCopiedEventType Complex Type

The **MovedCopiedEventType** complex type specifies a moved or copied event notification.

```

<xs:complexType name="MovedCopiedEventType">
  <xs:complexContent>
    <xs:extension
      base="t:BaseObjectChangedEventType"
    >
      <xs:sequence>
        <xs:choice>
          <xs:element name="OldFolderId"
            type="t:FolderIdType"
          />
          <xs:element name="OldItemId"
            type="t:ItemIdType"
          />
        </xs:choice>
        <xs:element name="OldParentFolderId"
          type="t:FolderIdType"
        />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>

```

The following table lists the child elements of the **MovedCopiedEventType** complex type.

Element	Type	Description
OldFolderId	t:FolderIdType ([MS-OXWSCDATA] section 2.2.3.29)	Specifies the old identifier for a copied or moved folder.

Element	Type	Description
OldItemId	t:ItemIdType ([MS-OXWSCORE] section 2.2.3.13)	Specifies the old identifier for a copied or moved item.
OldParentFolderId	t:FolderIdType	Specifies the identifier of the original parent folder of an item or folder that was moved.

2.2.3.8 t:NotificationType Complex Type

The **NotificationType** complex type specifies information about the subscription and the events that have occurred since the last notification.

```

<xs:complexType name="NotificationType">
  <xs:sequence>
    <xs:element name="SubscriptionId"
      type="t:SubscriptionIdType"
    />
    <xs:element name="PreviousWatermark"
      type="t:WatermarkType"
      minOccurs="0"
    />
    <xs:element name="MoreEvents"
      type="xs:boolean"
      minOccurs="0"
    />
    <xs:choice
      maxOccurs="unbounded"
    >
      <xs:element name="CopiedEvent"
        type="t:MovedCopiedEventType"
      />
      <xs:element name="CreatedEvent"
        type="t:BaseObjectChangedEventType"
      />
      <xs:element name="DeletedEvent"
        type="t:BaseObjectChangedEventType"
      />
      <xs:element name="ModifiedEvent"
        type="t:ModifiedEventType"
      />
      <xs:element name="MovedEvent"
        type="t:MovedCopiedEventType"
      />
      <xs:element name="NewMailEvent"
        type="t:BaseObjectChangedEventType"
      />
      <xs:element name="StatusEvent"
        type="t:BaseNotificationEventType"
      />
      <xs:element name="FreeBusyChangedEvent"
        type="t:BaseObjectChangedEventType"
      />
    </xs:choice>
  </xs:sequence>
</xs:complexType>

```

The following table lists the child elements of the **NotificationType** complex type.

Element	Type	Description
SubscriptionId	t:SubscriptionIdType (section 2.2.2.2)	Specifies the identifier for a subscription.
PreviousWatermark	t:WatermarkType (section 2.2.2.1)	Specifies the watermark of the latest event that was successfully communicated to the client for the subscription. <4>
MoreEvents	xs:boolean [XMLSCHEMA2]	Specifies a value that indicates whether more events to be delivered to the client exist in the queue. <5>
CopiedEvent	t:MovedCopiedEventType (section 2.2.3.7)	Specifies a copied event notification. <6>
CreatedEvent	t:BaseObjectChangedEventType (section 2.2.3.5)	Specifies a created event notification.
DeletedEvent	t:BaseObjectChangedEventType	Specifies a deleted event notification.
ModifiedEvent	t:ModifiedEventType (section 2.2.3.6)	Specifies a modified event notification.
MovedEvent	t:MovedCopiedEventType	Specifies a moved event notification.
NewMailEvent	t:BaseObjectChangedEventType	Specifies a new e-mail event notification.
StatusEvent	t:BaseNotificationEventType (section 2.2.3.4)	Specifies a status event notification.
FreeBusyChangedEvent	t:BaseObjectChangedEventType	Specifies an event in which an item's free/busy status has changed. <7>

2.2.4 Elements

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

2.2.5 Attributes

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

2.2.6 Groups

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

2.2.7 Attribute Groups

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

2.2.8 Messages

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

3 Protocol Details

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

3.1 ExchangeServicePortType Server Details

The Notifications Web Service Protocol defines a single port type with four operations, as listed in the following table.

--	--

3.1.1 Abstract Data Model

The Notifications Web Service Protocol is a stateless protocol.

3.1.2 Timers

None.

3.1.3 Initialization

None.

3.1.4 Message Processing Events and Sequencing

This protocol includes the operations that are listed in the following table.

Operation	Description
GetEvents	Gets events for a pull notification subscription.
GetStreamingEvents	Gets events for a streaming notification subscription.
Subscribe	Creates a subscription to notifications of events on mailboxes.
Unsubscribe	Removes a subscription to notifications of events on mailboxes.

3.1.4.1 GetEvents

The **GetEvents** operation gets events for a pull notification subscription.

The following is the WSDL port type specification for the **GetEvents** operation.

```
<wsdl:operation name="GetEvents" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
  <wsdl:input message="tns:GetEventsSoapIn" />
  <wsdl:output message="tns:GetEventsSoapOut" />
</wsdl:operation>
```

The following is the WSDL binding specification for the GetEvents operation.

```

<wsdl:operation name="GetEvents">
  <soap:operation
    soapAction="http://schemas.microsoft.com/exchange/services/2006/messages/GetEvents" />
  <wsdl:input>
    <soap:header message="tns:GetEventsSoapIn" part="Impersonation" use="literal"/>
    <soap:header message="tns:GetEventsSoapIn" part="MailboxCulture" use="literal"/>
    <soap:header message="tns:GetEventsSoapIn" part="RequestVersion" use="literal"/>
    <soap:body parts="request" use="literal" />
  </wsdl:input>
  <wsdl:output>
    <soap:body parts="GetEventsResult" use="literal" />
    <soap:header message="tns:GetEventsSoapOut" part="ServerVersion" use="literal"/>
  </wsdl:output>
</wsdl:operation>

```

3.1.4.1.1 Complex Types

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

Complex type	Description
GetEventsResponseType	The response from the GetEvents operation.
GetEventsType	A request to get events for a pull notification subscription.

3.1.4.1.1.1 m:GetEventsResponseType Complex Type

The **GetEventsResponseType** complex type specifies a response to a **GetEvents** operation request. The **GetEventsResponseType** complex type extends the **BaseResponseMessageType** complex type, as specified in [\[MS-OXWSCDATA\]](#) section 2.2.3.15.

```

<xs:complexType name="GetEventsResponseType">
  <xs:complexContent>
    <xs:extension
      base="m:BaseResponseMessageType"
      />
  </xs:complexContent>
</xs:complexType>

```

3.1.4.1.1.2 m:GetEventsType Complex Type

The **GetEventsType** complex type specifies a request to get events for a pull notification subscription.

```

<xs:complexType name="GetEventsType">
  <xs:complexContent>
    <xs:extension
      base="m:BaseRequestType"
      >
    <xs:sequence>
      <xs:element name="SubscriptionId"
        type="t:SubscriptionIdType"

```

```

    />
    <xs:element name="Watermark"
      type="t:WatermarkType"
    />
  </xs:sequence>
</xs:extension>
</xs:complexContent>
</xs:complexType>

```

The following table lists the child elements of the **GetEventsType** complex type.

Element	Type	Description
SubscriptionId	t:SubscriptionIdType (section 2.2.2.2)	Specifies the identifier of a subscription.
Watermark	t:WatermarkType (section 2.2.2.1)	Specifies a string that represents an event bookmark in the mailbox event queue.

3.1.4.1.2 Elements

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

Element	Description
GetEvents	A request to the GetEvents operation that is used by pull clients to request notifications from the server.
GetEventsResponse	A response to the GetEvents operation.

3.1.4.1.2.1 GetEvents Element

The **GetEvents** element specifies the operation that is used by pull clients to request notifications from the server.

```

<xs:element name="GetEvents"
  type="m:GetEventsType"
/>

```

3.1.4.1.2.2 GetEventsResponse Element

The **GetEventsResponse** element specifies a response to a **GetEvents** operation request.

```

<xs:element name="GetEventsResponse"
  type="m:GetEventsResponseType"
/>

```

3.1.4.1.3 Messages

The following **WSDL message** definitions are specific to this operation.

Message	Description
GetEventsSoapIn	Specifies the GetEvents operation WSDL message .
GetEventsSoapOut	Specifies the GetEvents operation response WSDL message.

3.1.4.1.3.1 tns:GetEventsSoapIn Message

The **GetEventsSoapIn** WSDL message contains four parts, as described in the following table.

Part Name	Element/Type	Description
request	tns:GetEvents (section 3.1.4.1.2.1)	Specifies the SOAP body of the request.
Impersonation	t:ExchangeImpersonation ([MS-OXWSCDATA] section 2.2.4.2)	Specifies a SOAP header that identifies the user whom the client application is impersonating.
MailboxCulture	t:MailboxCulture ([MS-OXWSCDATA] section 2.2.4.5)	Specifies a SOAP header that identifies the culture to use for accessing the mailbox. The cultures are defined by [RFC3066] .
RequestVersion	t:RequestServerVersion ([MS-OXWSCDATA] section 2.2.4.7)	Specifies a SOAP header that identifies the schema version for the GetEvents operation (section 3.1.4.1) request.

3.1.4.1.3.2 tns:GetEventsSoapOut Message

The **GetEventsSoapOut** message contains two parts, as described in the following table.

Part Name	Element/Type	Description
GetEventsResult	tns:GetEventsResponse (section 3.1.4.1.2.2)	Specifies the SOAP body of the response message.
ServerVersion	t:ServerVersionInfo ([MS-OXWSCDATA] section 2.2.4.8)	Specifies a SOAP header that identifies the schema version for the GetEventsSoapOut message.

3.1.4.2 GetStreamingEvents

The **GetStreamingEvents** operation gets events for a streaming notification subscription. [<8>](#)

The following is the WSDL port type specification for the **GetStreamingEvents** operation.

```
<wsdl:operation name="GetStreamingEvents">
  <wsdl:input message="tns:GetStreamingEventsSoapIn" />
  <wsdl:output message="tns:GetStreamingEventsSoapOut" />
</wsdl:operation>
```

The following is the WSDL binding specification for the **GetStreamingEvents** operation.

```

<wsdl:operation name="GetStreamingEvents">
  <soap:operation
soapAction="http://schemas.microsoft.com/exchange/services/2006/messages/GetEvents" />
  <wsdl:input>
    <soap:header message="tns:GetStreamingEventsSoapIn" part="Impersonation"
use="literal"/>
    <soap:header message="tns:GetStreamingEventsSoapIn" part="MailboxCulture"
use="literal"/>
    <soap:header message="tns:GetStreamingEventsSoapIn" part="RequestVersion"
use="literal"/>
    <soap:body parts="request" use="literal" />
  </wsdl:input>
  <wsdl:output>
    <soap:body parts="GetStreamingEventsResult" use="literal" />
    <soap:header message="tns:GetStreamingEventsSoapOut" part="ServerVersion"
use="literal"/>
  </wsdl:output>
</wsdl:operation>

```

3.1.4.2.1 Simple Types

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

Simple type	Description
StreamingSubscriptionConnectionTimeoutType	Specifies the number of minutes to keep a connection open.
ConnectionStatusType	Specifies a text description of the status of a streaming subscription.

3.1.4.2.1.1 t:StreamingSubscriptionConnectionTimeoutType Simple Type

The **StreamingSubscriptionConnectionTimeoutType** simple type specifies the number of minutes to keep a connection open.

```

<xs:simpleType name="StreamingSubscriptionConnectionTimeoutType">
  <xs:restriction
base="xs:int"
>
  <xs:minInclusive
value="1"
/>
  <xs:maxInclusive
value="30"
/>
</xs:restriction>
</xs:simpleType>

```

3.1.4.2.1.2 t:ConnectionStatusType Simple Type

The **ConnectionStatusType** simple type specifies a text description of the status of a streaming subscription.

```

<xs:simpleType name="ConnectionStatusType">
  <xs:restriction
    base="xs:string"
  >
    <xs:enumeration
      value="OK"
    />
    <xs:enumeration
      value="Closed"
    />
  </xs:restriction>
</xs:simpleType>

```

The following values are defined by the **ConnectionStatusType** simple type:

Value	Description
OK	The connection is good.
Closed	The connection is closed.

3.1.4.2.2 Complex Types

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

Message	Description
GetStreamingEventsType	Specifies a request to get streaming notifications from the server.
GetStreamingEventsType	Specifies a response from the GetStreamingEvents operation.
StreamingSubscriptionRequestType	Specifies a subscription to a streaming event notification subscription.
NonEmptyArrayOfNotificationsType	Specifies an array of invalid subscription IDs.
NonEmptyArrayOfNotificationsType	Specifies an array of information about the subscription and the events that have occurred since the last notification.

3.1.4.2.2.1 m:GetStreamingEventsType Complex Type

The **GetStreamingEventsType** complex type specifies a request to get streaming notifications from the server. The **GetStreamingEventsType** complex type extends the **BaseRequestType** complex type, as specified in [\[MS-OXWSCDATA\]](#) section 2.2.3.14.

```

<xs:complexType>
  <xs:complexContent>
    <xs:extension
      base="m:BaseRequestType"
    >
      <xs:sequence>
        <xs:element name="SubscriptionIds"
          type="t:NonEmptyArrayOfSubscriptionIdsType"
        />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>

```

```

    />
    <xs:element name="ConnectionTimeout"
      type="t:StreamingSubscriptionConnectionTimeoutType"
    />
  </xs:sequence>
</xs:extension>
</xs:complexContent>
</xs:complexType>

```

The following table lists the child elements of the **GetStreamingEventsType** complex type.

Element	Type	Description
SubscriptionIds	t:NonEmptyArrayOfSubscriptionIdsType (section 3.1.4.2.2.4)	Specifies the identifier for a subscription that is queried for events.
ConnectionTimeout	t:StreamingSubscriptionConnectionTimeoutType (section 3.1.4.2.1.1)	Specifies the number of minutes to keep a connection open.

3.1.4.2.2.2 m:GetStreamingEventsResponseType Complex Type

The **GetStreamingEventsResponseType** complex type represents a response to a **GetStreamingEvents** operation request. The **GetStreamingEventsResponseType** complex type extends the **BaseResponseMessageType** complex type, as specified in [\[MS-OXWSCDATA\]](#) section 2.2.3.15.

```

<xs:complexType>
  <xs:complexContent>
    <xs:extension
      base="m:BaseResponseMessageType"
    />
  </xs:complexContent>
</xs:complexType>

```

3.1.4.2.2.3 t:StreamingSubscriptionRequestType Complex Type

The **StreamingSubscriptionRequestType** complex type specifies a subscription to a streaming event notification subscription.

```

<xs:complexType>
  <xs:sequence>
    <xs:element name="FolderIds"
      type="t:NonEmptyArrayOfBaseFolderIdsType"
      minOccurs="0"
    />
    <xs:element name="EventTypes"
      type="t:NonEmptyArrayOfNotificationEventTypesType"
    />
  </xs:sequence>
</xs:complexType>

```


The following table lists the child elements of the **StreamingSubscriptionRequestType** complex type.

Element	Type	Description
FolderIds	t:NonEmptyArrayOfBaseFolderIdsType ([MS-OXWSFOLD] section 3.1.4.6.3.3)	Specifies an array of folder identifiers that are used to identify folders to monitor for event notifications.
EventTypes	t:NonEmptyArrayOfNotificationEventTypesType (section 3.1.4.3.2.4)	Specifies a collection of event notifications that are used to create a subscription.

3.1.4.2.2.4 t:NonEmptyArrayOfSubscriptionIdsType Complex Type

The **NonEmptyArrayOfSubscriptionIdsType** complex type specifies an array of invalid subscription IDs.

```
<xs:complexType>
  <xs:sequence>
    <xs:element name="SubscriptionId"
      type="t:SubscriptionIdType"
      maxOccurs="unbounded"
    />
  </xs:sequence>
</xs:complexType>
```

The following table lists the child elements of the **NonEmptyArrayOfSubscriptionIdsType** complex type.

Element	Type	Description
SubscriptionId	t:SubscriptionIdType (section 2.2.2.2)	Specifies the identifier for a subscription.

3.1.4.2.2.5 t:NonEmptyArrayOfNotificationsType Complex Type

The **NonEmptyArrayOfNotificationsType** complex type specifies an array of information about the subscription and the events that have occurred since the last notification.

```
<xs:complexType>
  <xs:sequence>
    <xs:element name="Notification"
      type="t:NotificationType"
      maxOccurs="unbounded"
      minOccurs="0"
    />
  </xs:sequence>
</xs:complexType>
```

The following table lists the child elements of the **NonEmptyArrayOfNotificationsType** complex type.

Element	Type	Description
Notification	t:NotificationType (section 2.2.3.8)	Specifies information about the subscription and the events that have occurred since the last notification.

3.1.4.2.3 Elements

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

Message	Description
GetStreamingEvents	Specifies the operation that is used by clients to request streaming notifications from the server.
GetStreamingEventsResponse	Specifies a response to a GetStreamingEvents operation request.

3.1.4.2.3.1 GetStreamingEvents Element

The **GetStreamingEvents** element specifies the operation that is used by clients to request streaming notifications from the server.

```
<xs:element name="GetStreamingEvents"
  type="m:GetStreamingEventsType"
 />
```

3.1.4.2.3.2 GetStreamingEventsResponse Element

The **GetStreamingEventsResponse** element specifies a response to a **GetStreamingEvents** operation request.

```
<xs:element name="GetStreamingEventsResponse"
  type="m:GetStreamingEventsResponseType"
 />
```

3.1.4.2.4 Messages

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

Message	Description
GetStreamingEventsSoapIn	Specifies the GetStreamingEvents operation WSDL message.
GetStreamingEventsSoapOut	Specifies the GetStreamingEvents response operation WSDL message.

3.1.4.2.4.1 tns:GetStreamingEventsSoapIn

The **GetStreamingEventsSoapIn** WSDL message contains four parts, as described in the following table.

Part name	Element/type	Description
request	tns:GetStreamingEvents (section 3.1.4.2.3.1)	Specifies the SOAP body of the request.
Impersonation	t:ExchangeImpersonation ([MS-OXWSCDATA] section 2.2.4.2)	Specifies a SOAP header that identifies the user whom the client application is impersonating.
MailboxCulture	t:MailboxCulture ([MS-OXWSCDATA] section 2.2.4.5)	Specifies a SOAP header that identifies the culture to use for accessing the mailbox. The cultures are defined by [RFC3066] .
RequestVersion	t:RequestServerVersion ([MS-OXWSCDATA] section 2.2.4.7)	Specifies a SOAP header that identifies the schema version for the GetStreamingEvents operation request.

3.1.4.2.4.2 tns:GetStreamingEventsSoapOut

The **GetStreamingEventsSoapOut** message contains two parts, as described in the following table.

Part name	Element/type	Description
GetStreamingEventsResult	GetStreamingEventsResponse (section 3.1.4.2.3.2)	Specifies the SOAP body of the response message.
ServerVersion	t:ServerVersionInfo ([MS-OXWSCDATA] section 2.2.4.8)	Specifies a SOAP header that identifies the schema version for the GetStreamingEvents operation (section 3.1.4.2) message.

3.1.4.3 Subscribe

The **Subscribe** operation creates a subscription to notifications of events on mailboxes in the mail server database.

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

```
<wsdl:operation name="Subscribe" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">
  <wsdl:input message="tns:SubscribeSoapIn" />
  <wsdl:output message="tns:SubscribeSoapOut" />
</wsdl:operation>
```

The following is the WSDL binding specification of the **Subscribe** operation.

```
<wsdl:operation name="Subscribe">
  <soap:operation
    soapAction="http://schemas.microsoft.com/exchange/services/2006/messages/Subscribe" />
  <wsdl:input>
```

```

    <soap:header message="tns:SubscribeSoapIn" part="Impersonation" use="literal"/>
    <soap:header message="tns:SubscribeSoapIn" part="MailboxCulture" use="literal"/>
    <soap:header message="tns:SubscribeSoapIn" part="RequestVersion" use="literal"/>
    <soap:body parts="request" use="literal" />
  </wsdl:input>
  <wsdl:output>
    <soap:body parts="SubscribeResult" use="literal" />
    <soap:header message="tns:SubscribeSoapOut" part="ServerVersion" use="literal"/>
  </wsdl:output>
</wsdl:operation>

```

3.1.4.3.1 Simple Types

The following XML schema simple type definitions are specific to this operation.

Simple type	Description
NotificationEventTypeType	Specifies the event types that are reported in a notification.
SubscriptionTimeoutType	Specifies the duration that a subscription can remain idle without a GetEvents operation request from the client
SubscriptionStatusFrequencyType	Specifies the frequency, in minutes, at which push notification status will be sent to the client.

3.1.4.3.1.1 t:NotificationEventTypeType Simple Type

The **NotificationEventTypeType** simple type specifies the event types that are reported in a notification.

```

<xs:simpleType name="NotificationEventTypeType">
  <xs:restriction>
    <xs:enumeration
      value="CopiedEvent"
    />
    <xs:enumeration
      value="CreatedEvent"
    />
    <xs:enumeration
      value="DeletedEvent"
    />
    <xs:enumeration
      value="ModifiedEvent"
    />
    <xs:enumeration
      value="MovedEvent"
    />
    <xs:enumeration
      value="NewMailEvent"
    />
    <xs:enumeration
      value="FreeBusyChangedEvent"
    />
  </xs:restriction>
</xs:simpleType>

```

The following values are defined by the **NotificationEventTypeType** simple type:

Value	Description
CopiedEvent	Identifies the notification as a copied event.
CreatedEvent	Identifies the notification as a created event.
DeletedEvent	Identifies the notification as a deleted event.
ModifiedEvent	Identifies the notification as a modified event.
MovedEvent	Identifies the notification as a moved event.
NewMailEvent	Identifies the notification as a new mail event.
FreeBusyChangedEvent	Identifies the notification as a free/busy changed event. <9>

3.1.4.3.1.2 t:SubscriptionTimeoutType Simple Type

The **SubscriptionTimeoutType** simple type specifies the duration that a subscription can remain idle without a **GetEvents** operation request from the client.

```
<xs:simpleType name="SubscriptionTimeoutType">
  <xs:restriction
    base="xs:int"
  >
    <xs:minInclusive
      value="1"
    />
    <xs:maxInclusive
      value="1440"
    />
  </xs:restriction>
</xs:simpleType>
```

3.1.4.3.1.3 t:SubscriptionStatusFrequencyType Simple Type

The **SubscriptionStatusFrequencyType** simple type specifies the frequency, in minutes, at which push notification status will be sent to the client when the subscription is idle.

```
<xs:simpleType name="SubscriptionStatusFrequencyType">
  <xs:restriction
    base="xs:int"
  >
    <xs:minInclusive
      value="1"
    />
    <xs:maxInclusive
      value="1440"
    />
  </xs:restriction>
```

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

3.1.4.3.2 Complex Types

The following XML schema complex type definitions are specific to this operation.

Complex type	Description
SubscribeResponseType	Specifies a response to a Subscribe operation.
SubscribeType	Specifies a request to subscribe to notifications of events on mailboxes.
BaseSubscriptionRequestType	Specifies the base class for descendant classes that form the notification requests.
NonEmptyArrayOfNotificationEventTypesType	Specifies an array of event notification types that are used to create a subscription.
PullSubscriptionRequestType	Specifies a subscription to a pull-based event notification subscription.
PushSubscriptionRequestType	Specifies a subscription to a push-based event notification.

3.1.4.3.2.1 m:SubscribeResponseType Complex Type

The **SubscribeResponseType** complex type specifies a response to a **Subscribe** operation request.

```
<xs:complexType name="SubscribeResponseType">  
  <xs:complexContent>  
    <xs:extension  
      base="m:BaseResponseMessageType"  
    />  
  </xs:complexContent>  
</xs:complexType>
```

3.1.4.3.2.2 m:SubscribeType Complex Type

The **SubscribeType** complex type specifies a request to subscribe to notifications of events on mailboxes.

```
<xs:complexType name="SubscribeType">  
  <xs:complexContent>  
    <xs:extension  
      base="m:BaseRequestType"  
    >  
    <xs:choice>  
      <xs:element name="PullSubscriptionRequest"  
        type="t:PullSubscriptionRequestType"  
      />  
      <xs:element name="PushSubscriptionRequest"
```

```

        type="t:PushSubscriptionRequestType"
      />
    <xs:element name="StreamingSubscriptionRequest"
      type="t:StreamingSubscriptionRequestType"
    />
  </xs:choice>
</xs:extension>
</xs:complexContent>
</xs:complexType>

```

The following table lists the child element of the **SubscribeType** complex type.

Element	Type	Description
PullSubscriptionRequest	t:PullSubscriptionRequestType (section 3.1.4.3.2.5)	Specifies a pull subscription type.
PushSubscriptionRequest	t:PushSubscriptionRequestType (section 3.1.4.3.2.6)	Specifies a push subscription type.
StreamingSubscriptionRequest	t:StreamingSubscriptionRequestType (section 3.1.4.2.2.3)	Specifies a subscription to a streaming event notification. <10>

3.1.4.3.2.3 t:BaseSubscriptionRequestType Complex Type

The **BaseSubscriptionRequestType** complex type specifies the base class for descendant classes that form the notification requests.

```

<xs:complexType name="BaseSubscriptionRequestType"
  abstract="true"
>
  <xs:sequence>
    <xs:element name="FolderIds"
      type="t:NonEmptyArrayOfBaseFolderIdsType"
    />
    <xs:element name="EventTypes"
      type="t:NonEmptyArrayOfNotificationEventTypesType"
    />
    <xs:element name="Watermark"
      type="t:WatermarkType"
      minOccurs="0"
    />
  </xs:sequence>
</xs:complexType>

```

The following table lists the child elements of the **BaseSubscriptionRequestType** complex type.

Element	Type	Description
FolderIds	t:NonEmptyArrayOfBaseFolderIdsType ([MS-OXWSFOLD] section 3.1.4.6.3.3)	Specifies an array of folder identifiers that are used to

Element	Type	Description
		identify folders to monitor for event notifications.
EventTypes	t:NonEmptyArrayOfNotificationEventTypesType (section 3.1.4.3.2.4)	Specifies the monitored event types for a notification subscription.
Watermark	t:WatermarkType (section 2.2.2.1)	Specifies an event bookmark in the mailbox event queue.

3.1.4.3.2.4 t:NonEmptyArrayOfNotificationEventTypesType Complex Type

The **NonEmptyArrayOfNotificationEventTypesType** complex type specifies an array of event notification types that are used to create a subscription. [<11>](#)

```
<xs:complexType name="NonEmptyArrayOfNotificationEventTypesType">
  <xs:choice
    maxOccurs="unbounded"
  >
    <xs:element name="EventType"
      type="t:NotificationEventTypeType"
    />
  </xs:choice>
</xs:complexType>
```

The following table lists the child elements of the **NonEmptyArrayOfNotificationEventTypesType** complex type.

Element	Type	Description
EventType	t:NotificationEventTypeType (section 3.1.4.3.1.1)	Specifies a requested event notification type that is used to create a subscription.

3.1.4.3.2.5 t:PullSubscriptionRequestType Complex Type

The **PullSubscriptionRequestType** complex type specifies a subscription to a pull-based event notification subscription.

```
<xs:complexType name="PullSubscriptionRequestType">
  <xs:complexContent>
    <xs:extension
      base="t:BaseSubscriptionRequestType"
    >
      <xs:sequence>
        <xs:element name="Timeout"
          type="t:SubscriptionTimeoutType"
        />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```


The following table lists the child elements of the **PullSubscriptionRequestType** complex type

Element	Type	Description
Timeout	t:SubscriptionTimeoutType (section 3.1.4.3.1.2)	Specifies the duration that a subscription can remain idle without a GetEvents request from the client.

3.1.4.3.2.6 t:PushSubscriptionRequestType Complex Type

The **PushSubscriptionRequestType** complex type specifies a subscription to a push-based event notification.

```
<xs:complexType name="PushSubscriptionRequestType">
  <xs:complexContent>
    <xs:extension
      base="t:BaseSubscriptionRequestType"
    >
      <xs:sequence>
        <xs:element name="StatusFrequency"
          type="t:SubscriptionStatusFrequencyType"
        />
        <xs:element name="URL"
          type="xs:string"
        />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

The following table lists the child elements of the **PushSubscriptionRequestType** complex type.

Element	Type	Description
StatusFrequency	t:SubscriptionStatusFrequencyType (section 3.1.4.3.1.3)	Specifies the frequency, specified in minutes, in which push notification status will be sent to the client when the subscription is idle.
URL	xs:string [XMLSCHEMA2]	Specifies the location of the client Web service for push notifications.

3.1.4.3.3 Elements

The following XML schema element definitions are specific to this operation.

Element	Description
Subscribe	Specifies the properties that are used to create subscriptions.
SubscribeResponse	Specifies a response to a Subscribe operation request.

3.1.4.3.3.1 Subscribe Element

The **Subscribe** element specifies the properties that are used to create subscriptions.

```
<xs:element name="Subscribe"
  type="m:SubscribeType"
/>
```

3.1.4.3.3.2 SubscribeResponse Element

The **SubscribeResponse** element specifies a response to a **Subscribe** operation request.

```
<xs:element name="SubscribeResponse"
  type="m:SubscribeResponseType"
/>
```

3.1.4.3.4 Messages

The following WSDL message definitions are specific to this operation.

Message	Description
SubscribeSoapIn	Specifies the Subscribe operation WSDL message.
SubscribeSoapOut	Specifies the Subscribe response operation WSDL message.

3.1.4.3.4.1 tns:SubscribeSoapIn Message

The **SubscribeSoapIn** message contains four parts, as described in the following table.

Part Name	Element/Type	Description
request	tns:Subscribe	Specifies the SOAP body of the request.
Impersonation	t:ExchangeImpersonation ([MS-OXWSCDATA] section 2.2.4.2)	Specifies a SOAP header that identifies the user whom the client application is impersonating.
MailboxCulture	t:MailboxCulture ([MS-OXWSCDATA] section 2.2.4.5)	Specifies a SOAP header that identifies the culture to use for accessing the mailbox. The cultures are defined by [RFC3066] .
RequestVersion	t:RequestServerVersion ([MS-OXWSCDATA] section 2.2.4.7)	Specifies a SOAP header that identifies the schema version for the Subscribe operation request.

3.1.4.3.4.2 tns:SubscribeSoapOut Message

The **SubscribeSoapOut** message contains two parts, as described in the following table.

Part Name	Element/Type	Description
SubscribeResult	tns:SubscribeResponse	Specifies the SOAP body of the response message.
ServerVersion	t:ServerVersionInfo (IMS-OXWSCDATA section 2.2.4.8)	Specifies a SOAP header that identifies the schema version for the Subscribe operation (section 3.1.4.3) message.

3.1.4.4 Unsubscribe

The **Unsubscribe** operation removes a subscription to notifications of events on mailboxes.

The following is the WSDL port type specification for the Unsubscribe operation.

```
<wsdl:operation name="Unsubscribe">
  <wsdl:input message="tns:UnsubscribeSoapIn" />
  <wsdl:output message="tns:UnsubscribeSoapOut" />
</wsdl:operation>
```

The following is the WSDL binding specification for the Unsubscribe operation.

```
<wsdl:operation name="Unsubscribe">
  <soap:operation
soapAction="http://schemas.microsoft.com/exchange/services/2006/messages/Unsubscribe" />
  <wsdl:input>
    <soap:header message="tns:UnsubscribeSoapIn" part="Impersonation" use="literal"/>
    <soap:header message="tns:UnsubscribeSoapIn" part="MailboxCulture" use="literal"/>
    <soap:header message="tns:UnsubscribeSoapIn" part="RequestVersion" use="literal"/>
    <soap:body parts="request" use="literal" />
  </wsdl:input>
  <wsdl:output>
    <soap:body parts="UnsubscribeResult" use="literal" />
    <soap:header message="tns:UnsubscribeSoapOut" part="ServerVersion" use="literal"/>
  </wsdl:output>
</wsdl:operation>
```

3.1.4.4.1 Complex Types

The following XML schema complex type definitions are specific to this operation.

Complex type	Description
UnsubscribeResponseType	Specifies a response to an Unsubscribe operation request.
UnsubscribeType	Specifies a request to end a pull notification subscription.

3.1.4.4.1.1 m:UnsubscribeResponseType Complex Type

The **UnsubscribeResponseType** complex type specifies a response to an **Unsubscribe** operation request.

```
<xs:complexType name="UnsubscribeResponseType">
  <xs:complexContent>
```

```

    <xs:extension
      base="m:BaseResponseMessageType"
    />
  </xs:complexContent>
</xs:complexType>

```

3.1.4.4.1.2 m:UnsubscribeType Complex Type

The **UnsubscribeType** complex type specifies a request to end a pull notification subscription.

```

<xs:complexType name="UnsubscribeType">
  <xs:complexContent>
    <xs:extension
      base="m:BaseRequestType"
    >
      <xs:sequence>
        <xs:element name="SubscriptionId"
          type="t:SubscriptionIdType"
        />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>

```

The following table lists the child elements of the **UnsubscribeType** complex type.

Element	Type	Description
SubscriptionId	t:SubscriptionIdType (section 2.2.2.2)	Specifies the subscription identifier of a subscription to cancel.

3.1.4.4.2 Elements

The following XML schema element definitions are specific to this operation.

Element	Description
Unsubscribe	Specifies the properties used to unsubscribe from a subscription.
UnsubscribeResponse	Specifies a response to an Unsubscribe operation request.

3.1.4.4.2.1 Unsubscribe Element

The **Unsubscribe** element specifies the properties used to unsubscribe from a subscription.

```

<xs:element name="Unsubscribe"
  type="m:UnsubscribeType"
/>

```

3.1.4.4.2 UnsubscribeResponse Element

The **UnsubscribeResponse** element specifies a response to an **Unsubscribe** operation request.

```
<xs:element name="UnsubscribeResponse"
  type="m:UnsubscribeResponseType"
/>
```

3.1.4.4.3 Messages

The following WSDL message definitions are specific to this operation.

Message	Description
UnsubscribeSoapIn	Specifies the Unsubscribe operation WSDL message.
UnsubscribeSoapOut	Specifies the Unsubscribe response operation WSDL message.

3.1.4.4.3.1 tns:UnsubscribeSoapIn Message

The **UnsubscribeSoapIn** message contains four parts, as described in the following table.

Part Name	Element/Type	Description
request	tns:Unsubscribe	Specifies the SOAP body of the request.
Impersonation	t:ExchangeImpersonation ([MS-OXWSCDATA] section 2.2.4.2)	Specifies a SOAP header that identifies the user whom the client application is impersonating.
MailboxCulture	t:MailboxCulture ([MS-OXWSCDATA] section 2.2.4.5)	Specifies a SOAP header that identifies the culture to use for accessing the mailbox. The cultures are defined by [RFC3066] .
RequestVersion	t:RequestServerVersion ([MS-OXWSCDATA] section 2.2.4.7)	Specifies a SOAP header that identifies the schema version for the Unsubscribe operation request.

3.1.4.4.3.2 tns:UnsubscribeSoapOut Message

The **UnsubscribeSoapOut** message contains two parts, as described in the following table.

Part Name	Element/Type	Description
UnsubscribeResult	tns:UnsubscribeResponse	Specifies the SOAP body of the response message.
ServerVersion	t:ServerVersionInfo ([MS-OXWSCDATA] section 2.2.4.8)	Specifies a SOAP header that identifies the schema version for the UnsubscribeSoapOut message.

3.1.5 Timer Events

None.

3.1.6 Other Local Events

None.

4 Protocol Examples

None.

5 Security

5.1 Security Considerations for Implementers

The Notifications Web Service Protocol does not use any additional security mechanisms.

5.2 Index of Security Parameters

None.

6 Appendix A: Full WSDL

The following table lists the **XML** files that are required in order to implement the functionality that is specified in this document. The contents of each file are included in this section.

File name	Description	Section
MS-OXWSNTIF.wsdl	Contains the WSDL for the implementation of this protocol.	6.1
MS-OXWSNTIF-types.xsd	Contains the XML schema type definitions that are used in this protocol.	6.2
MS-OXWSNTIF-messages.xsd	Contains the XML schema message definitions that are used in this protocol.	6.3

These files have to be placed in a common folder in order for the WSDL to validate and operate. Also, any schema files that are included in or imported into the MS-OXWSNTIF-types.xsd or MS-OXWSNTIF-messages.xsd schemas have to be placed in the common folder along with the files.

6.1 WSDL

This section contains the contents of the MS-OXWSNTIF.wsdl file.

```
<?xml version="1.0" encoding="utf-8"?>
<wsdl:definitions xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
xmlns:tns="http://schemas.microsoft.com/exchange/services/2006/messages"
xmlns:s="http://www.w3.org/2001/XMLSchema" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/"
xmlns:t="http://schemas.microsoft.com/exchange/services/2006/types"
targetNamespace="http://schemas.microsoft.com/exchange/services/2006/messages">
  <wsdl:types>
    <xs:schema id="messages" elementFormDefault="qualified" version="Exchange2010_SP1"
xmlns:m="http://schemas.microsoft.com/exchange/services/2006/messages"
xmlns:tns="http://schemas.microsoft.com/exchange/services/2006/messages"
xmlns:t="http://schemas.microsoft.com/exchange/services/2006/types"
xmlns:xs="http://www.w3.org/2001/XMLSchema"
targetNamespace="http://schemas.microsoft.com/exchange/services/2006/messages"
xmlns="http://schemas.microsoft.com/exchange/services/2006/messages">
      <xs:import namespace="http://schemas.microsoft.com/exchange/services/2006/types"/>
      <xs:include schemaLocation="MS-OXWSNTIF-messages.xsd" />
      <xs:include schemaLocation="MS-OXWSCDATA-messages.xsd"/>
      <!-- Add global elements and types from messages.xsd -->
    </xs:schema>
    <xs:schema id="types" elementFormDefault="qualified" version="Exchange2010_SP1"
xmlns:t="http://schemas.microsoft.com/exchange/services/2006/types"
targetNamespace="http://schemas.microsoft.com/exchange/services/2006/types"
xmlns="http://schemas.microsoft.com/exchange/services/2006/types"
xmlns:tns="http://schemas.microsoft.com/exchange/services/2006/types"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
      <xs:import namespace="http://www.w3.org/XML/1998/namespace"/>
      <!-- Add global elements and types from types.xsd -->
    </xs:schema>
  </wsdl:types>
  <wsdl:portType name="ExchangeServicePortType">
    <wsdl:operation name="Subscribe">
      <wsdl:input message="tns:SubscribeSoapIn" />
      <wsdl:output message="tns:SubscribeSoapOut" />
    </wsdl:operation>
    <wsdl:operation name="Unsubscribe">
      <wsdl:input message="tns:UnsubscribeSoapIn" />
    </wsdl:operation>
  </wsdl:portType>
</wsdl:definitions>
```

```

        <wsdl:output message="tns:UnsubscribeSoapOut" />
    </wsdl:operation>
    <wsdl:operation name="GetEvents">
        <wsdl:input message="tns:GetEventsSoapIn" />
        <wsdl:output message="tns:GetEventsSoapOut" />
    </wsdl:operation>
    <wsdl:operation name="GetStreamingEvents">
        <wsdl:input message="tns:GetStreamingEventsSoapIn" />
        <wsdl:output message="tns:GetStreamingEventsSoapOut" />
    </wsdl:operation>
</wsdl:portType>
<wsdl:binding name="ExchangeServiceBinding" type="tns:ExchangeServicePortType">
    <wsdl:documentation>
        <wsi:Claim conformsTo="http://ws-i.org/profiles/basic/1.0" xmlns:wsi="http://ws-
i.org/schemas/conformanceClaim/" />
    </wsdl:documentation>
    <soap:binding style="document" transport="http://schemas.xmlsoap.org/soap/http"/>
    <wsdl:operation name="Subscribe">
        <soap:operation
soapAction="http://schemas.microsoft.com/exchange/services/2006/messages/Subscribe" />
        <wsdl:input>
            <soap:header message="tns:SubscribeSoapIn" part="Impersonation"
use="literal"/>
            <soap:header message="tns:SubscribeSoapIn" part="MailboxCulture"
use="literal"/>
            <soap:header message="tns:SubscribeSoapIn" part="RequestVersion"
use="literal"/>
            <soap:body parts="request" use="literal" />
        </wsdl:input>
        <wsdl:output>
            <soap:body parts="SubscribeResult" use="literal" />
            <soap:header message="tns:SubscribeSoapOut" part="ServerVersion"
use="literal"/>
        </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="Unsubscribe">
        <soap:operation
soapAction="http://schemas.microsoft.com/exchange/services/2006/messages/Unsubscribe" />
        <wsdl:input>
            <soap:header message="tns:UnsubscribeSoapIn" part="Impersonation"
use="literal"/>
            <soap:header message="tns:UnsubscribeSoapIn" part="MailboxCulture"
use="literal"/>
            <soap:header message="tns:UnsubscribeSoapIn" part="RequestVersion"
use="literal"/>
            <soap:body parts="request" use="literal" />
        </wsdl:input>
        <wsdl:output>
            <soap:body parts="UnsubscribeResult" use="literal" />
            <soap:header message="tns:UnsubscribeSoapOut" part="ServerVersion"
use="literal"/>
        </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetEvents">
        <soap:operation
soapAction="http://schemas.microsoft.com/exchange/services/2006/messages/GetEvents" />
        <wsdl:input>
            <soap:header message="tns:GetEventsSoapIn" part="Impersonation"
use="literal"/>

```

```

        <soap:header message="tns:GetEventsSoapIn" part="MailboxCulture"
use="literal"/>
        <soap:header message="tns:GetEventsSoapIn" part="RequestVersion"
use="literal"/>
        <soap:body parts="request" use="literal" />
        </wsdl:input>
        <wsdl:output>
        <soap:body parts="GetEventsResult" use="literal" />
        <soap:header message="tns:GetEventsSoapOut" part="ServerVersion"
use="literal"/>
        </wsdl:output>
    </wsdl:operation>
    <wsdl:operation name="GetStreamingEvents">
        <soap:operation
soapAction="http://schemas.microsoft.com/exchange/services/2006/messages/GetEvents" />
        <wsdl:input>
        <soap:header message="tns:GetStreamingEventsSoapIn" part="Impersonation"
use="literal"/>
        <soap:header message="tns:GetStreamingEventsSoapIn" part="MailboxCulture"
use="literal"/>
        <soap:header message="tns:GetStreamingEventsSoapIn" part="RequestVersion"
use="literal"/>
        <soap:body parts="request" use="literal" />
        </wsdl:input>
        <wsdl:output>
        <soap:body parts="GetStreamingEventsResult" use="literal" />
        <soap:header message="tns:GetStreamingEventsSoapOut" part="ServerVersion"
use="literal"/>
        </wsdl:output>
    </wsdl:operation>
</wsdl:binding>
<wsdl:message name="SubscribeSoapIn">
    <wsdl:part name="request" element="tns:Subscribe" />
    <wsdl:part name="Impersonation" element="t:ExchangeImpersonation"/>
    <wsdl:part name="MailboxCulture" element="t:MailboxCulture"/>
    <wsdl:part name="RequestVersion" element="t:RequestServerVersion"/>
</wsdl:message>
<wsdl:message name="SubscribeSoapOut">
    <wsdl:part name="SubscribeResult" element="tns:SubscribeResponse" />
    <wsdl:part name="ServerVersion" element="t:ServerVersionInfo"/>
</wsdl:message>
<wsdl:message name="UnsubscribeSoapIn">
    <wsdl:part name="request" element="tns:Unsubscribe" />
    <wsdl:part name="Impersonation" element="t:ExchangeImpersonation"/>
    <wsdl:part name="MailboxCulture" element="t:MailboxCulture"/>
    <wsdl:part name="RequestVersion" element="t:RequestServerVersion"/>
</wsdl:message>
<wsdl:message name="UnsubscribeSoapOut">
    <wsdl:part name="UnsubscribeResult" element="tns:UnsubscribeResponse" />
    <wsdl:part name="ServerVersion" element="t:ServerVersionInfo"/>
</wsdl:message>
<wsdl:message name="GetEventsSoapIn">
    <wsdl:part name="request" element="tns:GetEvents" />
    <wsdl:part name="Impersonation" element="t:ExchangeImpersonation"/>
    <wsdl:part name="MailboxCulture" element="t:MailboxCulture"/>
    <wsdl:part name="RequestVersion" element="t:RequestServerVersion"/>
</wsdl:message>
<wsdl:message name="GetEventsSoapOut">
    <wsdl:part name="GetEventsResult" element="tns:GetEventsResponse" />
    <wsdl:part name="ServerVersion" element="t:ServerVersionInfo"/>

```

```

</wsdl:message>
<wsdl:message name="GetStreamingEventsSoapIn">
  <wsdl:part name="request" element="tns:GetStreamingEvents" />
  <wsdl:part name="Impersonation" element="t:ExchangeImpersonation"/>
  <wsdl:part name="MailboxCulture" element="t:MailboxCulture"/>
  <wsdl:part name="RequestVersion" element="t:RequestServerVersion"/>
</wsdl:message>
<wsdl:message name="GetStreamingEventsSoapOut">
  <wsdl:part name="GetStreamingEventsResult" element="tns:GetStreamingEventsResponse" />
  <wsdl:part name="ServerVersion" element="t:ServerVersionInfo"/>
</wsdl:message>
</wsdl:definitions>

```

6.2 Types Schema

This section contains the contents of the MS-OXWSNTIF-types.xsd file and information about additional files that this schema file requires to operate correctly.

MS-OXWSNTIF-types.xsd includes the file listed in the following table. To operate correctly, this file has to be present in the folder that contains the WSDL, types, and messages schema files for this protocol.

File name	Defining specification
MS-OXWSCDATA-types.xsd	[MS-OXWSCDATA] section 6.3

```

<?xml version="1.0" encoding="utf-8"?>
<xs:schema xmlns:t="http://schemas.microsoft.com/exchange/services/2006/types"
xmlns:tns="http://schemas.microsoft.com/exchange/services/2006/types"
xmlns:xs="http://www.w3.org/2001/XMLSchema"
targetNamespace="http://schemas.microsoft.com/exchange/services/2006/types"
elementFormDefault="qualified" version="Exchange2010_SP1" id="types">
  <xs:import namespace="http://www.w3.org/XML/1998/namespace"/>
  <xs:include schemaLocation="MS-OXWSCDATA-types.xsd"/>
  <xs:complexType name="BaseNotificationEventType">
    <xs:sequence>
      <xs:element name="Watermark" type="t:WatermarkType" minOccurs="0"/>
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="BaseObjectChangedEventType">
    <xs:complexContent>
      <xs:extension base="t:BaseNotificationEventType">
        <xs:sequence>
          <xs:element name="TimeStamp" type="xs:dateTime"/>
          <xs:choice>
            <xs:element name="FolderId" type="t:FolderIdType"/>
            <xs:element name="ItemId" type="t:ItemIdType"/>
          </xs:choice>
          <xs:element name="ParentFolderId" type="t:FolderIdType"/>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="BaseSubscriptionRequestType" abstract="true">
    <xs:sequence>
      <xs:element name="FolderIds" type="t:NonEmptyArrayOfBaseFolderIdsType"
minOccurs="0"/>
      <xs:element name="EventTypes" type="t:NonEmptyArrayOfNotificationEventTypesType"/>

```

```

    <xs:element name="Watermark" type="t:WatermarkType" minOccurs="0"/>
  </xs:sequence>
  <xs:attribute name="SubscribeToAllFolders" type="xs:boolean" use="optional"/>
</xs:complexType>
<xs:complexType name="ModifiedEventType">
  <xs:complexContent>
    <xs:extension base="t:BaseObjectChangedEventType">
      <xs:sequence>
        <xs:element name="UnreadCount" type="xs:int" minOccurs="0"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:complexType name="MovedCopiedEventType">
  <xs:complexContent>
    <xs:extension base="t:BaseObjectChangedEventType">
      <xs:sequence>
        <xs:choice>
          <xs:element name="OldFolderId" type="t:FolderIdType"/>
          <xs:element name="OldItemId" type="t:ItemIdType"/>
        </xs:choice>
          <xs:element name="OldParentFolderId" type="t:FolderIdType"/>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
<xs:complexType name="NonEmptyArrayOfNotificationEventTypesType">
  <xs:choice maxOccurs="unbounded">
    <xs:element name="EventType" type="t:NotificationEventTypeType"/>
  </xs:choice>
</xs:complexType>
<xs:complexType name="NotificationType">
  <xs:sequence>
    <xs:element name="SubscriptionId" type="t:SubscriptionIdType"/>
    <xs:element name="PreviousWatermark" type="t:WatermarkType" minOccurs="0"/>
    <xs:element name="MoreEvents" type="xs:boolean" minOccurs="0"/>
    <xs:choice maxOccurs="unbounded">
      <xs:element name="CopiedEvent" type="t:MovedCopiedEventType"/>
      <xs:element name="CreatedEvent" type="t:BaseObjectChangedEventType"/>
      <xs:element name="DeletedEvent" type="t:BaseObjectChangedEventType"/>
      <xs:element name="ModifiedEvent" type="t:ModifiedEventType"/>
      <xs:element name="MovedEvent" type="t:MovedCopiedEventType"/>
      <xs:element name="NewMailEvent" type="t:BaseObjectChangedEventType"/>
      <xs:element name="StatusEvent" type="t:BaseNotificationEventType"/>
      <xs:element name="FreeBusyChangedEvent" type="t:BaseObjectChangedEventType"/>
    </xs:choice>
  </xs:sequence>
</xs:complexType>
<xs:simpleType name="NotificationEventTypeType">
  <xs:restriction base="xs:string">
    <xs:enumeration value="CopiedEvent"/>
    <xs:enumeration value="CreatedEvent"/>
    <xs:enumeration value="DeletedEvent"/>
    <xs:enumeration value="ModifiedEvent"/>
    <xs:enumeration value="MovedEvent"/>
    <xs:enumeration value="NewMailEvent"/>
    <xs:enumeration value="FreeBusyChangedEvent"/>
  </xs:restriction>
</xs:simpleType>

```

```

<xs:complexType name="PushSubscriptionRequestType">
  <xs:complexContent>
    <xs:extension base="t:BaseSubscriptionRequestType">
      <xs:sequence>
        <xs:element name="StatusFrequency" type="t:SubscriptionStatusFrequencyType"/>
        <xs:element name="URL" type="xs:string"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:complexType name="PullSubscriptionRequestType">
  <xs:complexContent>
    <xs:extension base="t:BaseSubscriptionRequestType">
      <xs:sequence>
        <xs:element name="Timeout" type="t:SubscriptionTimeoutType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:simpleType name="SubscriptionIdType">
  <xs:restriction base="t:NonEmptyStringType"/>
</xs:simpleType>
<xs:simpleType name="WatermarkType">
  <xs:restriction base="t:NonEmptyStringType"/>
</xs:simpleType>
<xs:simpleType name="SubscriptionTimeoutType">
  <xs:restriction base="xs:int">
    <xs:minInclusive value="1"/>
    <xs:maxInclusive value="1440"/>
  </xs:restriction>
</xs:simpleType>
<xs:simpleType name="SubscriptionStatusFrequencyType">
  <xs:restriction base="xs:int">
    <xs:minInclusive value="1"/>
    <xs:maxInclusive value="1440"/>
  </xs:restriction>
</xs:simpleType>
<xs:complexType name="StreamingSubscriptionRequestType">
  <xs:sequence>
    <xs:element name="FolderIds" type="t:NonEmptyArrayOfBaseFolderIdsType"
minOccurs="0"/>
    <xs:element name="EventTypes" type="t:NonEmptyArrayOfNotificationEventTypesType"/>
  </xs:sequence>
  <xs:attribute name="SubscribeToAllFolders" type="xs:boolean" use="optional"/>
</xs:complexType>
<xs:complexType name="NonEmptyArrayOfSubscriptionIdsType">
  <xs:sequence>
    <xs:element name="SubscriptionId" type="t:SubscriptionIdType"
maxOccurs="unbounded"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="NonEmptyArrayOfNotificationsType">
  <xs:sequence>
    <xs:element name="Notification" type="t:NotificationType" minOccurs="0"
maxOccurs="unbounded"/>
  </xs:sequence>
</xs:complexType>
<xs:simpleType name="StreamingSubscriptionConnectionTimeoutType">
  <xs:restriction base="xs:int">

```

```

        <xs:minInclusive value="1"/>
        <xs:maxInclusive value="30"/>
    </xs:restriction>
</xs:simpleType>
<xs:simpleType name="ConnectionStatusType">
    <xs:restriction base="xs:string">
        <xs:enumeration value="OK"/>
        <xs:enumeration value="Closed"/>
    </xs:restriction>
</xs:simpleType>
</xs:schema>

```

6.3 Messages Schema

This section contains the contents of the MS-OXWSNTIF-messages.xsd file and information about additional files that this schema file requires to operate correctly.

MS-OXWSNTIF-messages.xsd includes the files listed in the following table. To operate correctly, these files have to be present in the folder that contains the WSDL, types schema, and messages schema files for this protocol.

File name	Defining specification
MS-OXWSCDATA-messages.xsd	[MS-OXWSCDATA] section 6.2
MS-OXWSNTIF-types.xsd	Section 6.2

```

<?xml version="1.0" encoding="utf-8"?>
<xs:schema xmlns:m="http://schemas.microsoft.com/exchange/services/2006/messages"
xmlns:tns="http://schemas.microsoft.com/exchange/services/2006/messages"
xmlns:t="http://schemas.microsoft.com/exchange/services/2006/types"
xmlns:xs="http://www.w3.org/2001/XMLSchema"
targetNamespace="http://schemas.microsoft.com/exchange/services/2006/messages"
elementFormDefault="qualified" version="Exchange2010_SP1" id="messages">
    <!-- CHANGE THE SCHEMA LOCATION TO REFLECT THE TYPES XSD ASSOCIATED WITH THIS DOCUMENT
    <xs:import namespace="http://schemas.microsoft.com/exchange/services/2006/types"
    schemaLocation="types.xsd"/>
    <xs:include/>
-->
    <xs:import namespace="http://schemas.microsoft.com/exchange/services/2006/types"
    schemaLocation="MS-OXWSNTIF-types.xsd"/>
    <xs:include schemaLocation="MS-OXWSCDATA-messages.xsd"/>
    <xs:complexType name="GetEventsType">
        <xs:complexContent>
            <xs:extension base="m:BaseRequestType">
                <xs:sequence>
                    <xs:element name="SubscriptionId" type="t:SubscriptionIdType"/>
                    <xs:element name="Watermark" type="t:WatermarkType"/>
                </xs:sequence>
            </xs:extension>
        </xs:complexContent>
    </xs:complexType>
    <xs:element name="GetEvents" type="m:GetEventsType"/>
    <xs:complexType name="GetEventsResponseMessageType">
        <xs:complexContent>
            <xs:extension base="m:ResponseMessageType">
                <xs:sequence>

```

```

        <xs:element name="Notification" type="t:NotificationType" minOccurs="0"/>
    </xs:sequence>
</xs:extension>
</xs:complexContent>
</xs:complexType>
<xs:complexType name="GetEventsResponseType">
    <xs:complexContent>
        <xs:extension base="m:BaseResponseMessageType"/>
    </xs:complexContent>
</xs:complexType>
<xs:element name="GetEventsResponse" type="m:GetEventsResponseType"/>
<xs:complexType name="SubscribeType">
    <xs:complexContent>
        <xs:extension base="m:BaseRequestType">
            <xs:choice>
                <xs:element name="PullSubscriptionRequest"
type="t:PullSubscriptionRequestType"/>
                <xs:element name="PushSubscriptionRequest"
type="t:PushSubscriptionRequestType"/>
                <xs:element name="StreamingSubscriptionRequest"
type="t:StreamingSubscriptionRequestType"/>
            </xs:choice>
        </xs:extension>
    </xs:complexContent>
</xs:complexType>
<xs:complexType name="GetStreamingEventsType">
    <xs:complexContent>
        <xs:extension base="m:BaseRequestType">
            <xs:sequence>
                <xs:element name="SubscriptionIds"
type="t:NonEmptyArrayOfSubscriptionIdsType"/>
                <xs:element name="ConnectionTimeout"
type="t:StreamingSubscriptionConnectionTimeoutType"/>
            </xs:sequence>
        </xs:extension>
    </xs:complexContent>
</xs:complexType>
<xs:element name="GetStreamingEvents" type="m:GetStreamingEventsType"/>
<xs:complexType name="GetStreamingEventsResponseMessageType">
    <xs:complexContent>
        <xs:extension base="m:ResponseMessageType">
            <xs:sequence>
                <xs:element name="Notifications" type="t:NonEmptyArrayOfNotificationsType"
minOccurs="0"/>
                <xs:element name="ErrorSubscriptionIds"
type="t:NonEmptyArrayOfSubscriptionIdsType" minOccurs="0"/>
                <xs:element name="ConnectionStatus" type="t:ConnectionStatusType"
minOccurs="0"/>
            </xs:sequence>
        </xs:extension>
    </xs:complexContent>
</xs:complexType>
<xs:complexType name="GetStreamingEventsResponseType">
    <xs:complexContent>
        <xs:extension base="m:BaseResponseMessageType"/>
    </xs:complexContent>
</xs:complexType>
<xs:element name="GetStreamingEventsResponse" type="m:GetStreamingEventsResponseType"/>
<xs:element name="Subscribe" type="m:SubscribeType"/>
<xs:complexType name="SubscribeResponseMessageType">

```



```

    <xs:complexContent>
      <xs:extension base="m:ResponseMessageType">
        <xs:sequence>
          <xs:element name="SubscriptionId" type="t:SubscriptionIdType" minOccurs="0"/>
          <xs:element name="Watermark" type="t:WatermarkType" minOccurs="0"/>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="SubscribeResponseType">
    <xs:complexContent>
      <xs:extension base="m:BaseResponseMessageType"/>
    </xs:complexContent>
  </xs:complexType>
  <xs:element name="SubscribeResponse" type="m:SubscribeResponseType"/>
  <xs:complexType name="UnsubscribeType">
    <xs:complexContent>
      <xs:extension base="m:BaseRequestType">
        <xs:sequence>
          <xs:element name="SubscriptionId" type="t:SubscriptionIdType"/>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:element name="Unsubscribe" type="m:UnsubscribeType"/>
  <xs:complexType name="UnsubscribeResponseType">
    <xs:complexContent>
      <xs:extension base="m:BaseResponseMessageType"/>
    </xs:complexContent>
  </xs:complexType>
  <xs:element name="UnsubscribeResponse" type="m:UnsubscribeResponseType"/>
</xs:schema>

```

7 Appendix B: Product Behavior

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

- Microsoft® Exchange Server 2007
- Microsoft® Exchange Server 2010 Service Pack 1 (SP1)

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

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

[<1> Section 2.2.3.2: **GetStreamingEventsResponseMessageType**](#) is not part of the schema for Exchange 2010.

[<2> Section 2.2.3.4:](#) Exchange 2010 does not include the **minOccurs** value .

[<3> Section 2.2.3.6:](#) In Exchange 2010, the **UnreadCount** element includes a **maxOccurs** value of "1".

[<4> Section 2.2.3.8:](#) Exchange 2010 does not include the minOccurs value for the element..

[<5> Section 2.2.3.8:](#) Exchange 2010 does not include the minOccurs value for this element.

[<6> Section 2.2.3.8:](#) In Exchange 2010, the <xs:choice> element includes a minOccurs value of 1.

[<7> Section 2.2.3.8:](#) Exchange 2010 does not include the **FreeBusyChangedEvent** element.

[<8> Section 3.1.4.2:](#) Exchange 2010 does not include the **GetStreamingEvents** operation.

[<9> Section 3.1.4.3.1.1:](#) Exchange 2010 does not include the **FreeBusyChangedEvent** enumeration value.

[<10> Section 3.1.4.3.2.2:](#) Exchange 2010 does not include the **StreamingSubscriptionRequest** element.

[<11> Section 3.1.4.3.2.4:](#) In Exchange 2010, the <xs:choice> element has a **minOccurs** value of "1".

8 Change Tracking

This section identifies changes that were made to the [MS-OXWSNTIF] protocol document between the November 2010 and March 2011 releases. 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.
- An extensive rewrite, addition, or deletion of major portions of content.
- The removal of a document from the documentation set.
- Changes made for template compliance.

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 language and 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 or language changes were introduced. The technical content of the document is identical to the last released version, but minor editorial and formatting changes, as well as updates to the header and footer information, and to the revision summary, may have been made.

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.
- New content added for template compliance.
- Content updated for template compliance.
- Content removed for template compliance.
- 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 protocol@microsoft.com.

Section	Tracking number (if applicable) and description	Major change (Y or N)	Change type
3 Protocol Details	Removed empty client details section.	N	Content updated.
3.1.4.1 GetEvents	Added WSDL binding specification.	N	Content updated.
3.1.4.2 GetStreamingEvents	Added WSDL binding specification.	N	Content updated.
3.1.4.3 Subscribe	Added WSDL binding specification.	N	Content updated.
3.1.4.4 Unsubscribe	Added WSDL port type and binding specification.	N	Content updated.
6.3 Messages Schema	58926 - Updated the name of the xsd file in the description.	N	Content updated.

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