[MS-OXWSPSNTIF]:
Push Notifications Web Service Protocol

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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	1.2.0	Minor	Updated the technical content.
05/05/2010	1.2.1	Editorial	Revised and edited the technical content.
08/04/2010	1.3	Minor	Clarified the meaning of the technical content.
11/03/2010	2.0	Major	Significantly changed the technical content.
03/18/2011	2.1	Minor	Clarified the meaning of the technical content.
08/05/2011	3.0	Major	Significantly changed the technical content.
10/07/2011	3.0	No change	No changes to the meaning, language, or formatting of the technical content.
01/20/2012	4.0	Major	Significantly changed the technical content.
04/27/2012	4.0	No change	No changes to the meaning, language, or formatting of the technical content.
07/16/2012	4.0	No change	No changes to the meaning, language, or formatting of the technical content.
10/08/2012	4.1	Minor	Clarified the meaning of the technical content.
02/11/2013	4.1	No change	No changes to the meaning, language, or formatting of the technical content.
07/26/2013	4.1	No change	No changes to the meaning, language, or formatting of the technical content.
11/18/2013	4.2	Minor	Clarified the meaning of the technical content.
02/10/2014	4.2	No change	No changes to the meaning, language, or formatting of the technical content.
04/30/2014	4.3	Minor	Clarified the meaning of the technical content.
07/31/2014	4.4	Minor	Clarified the meaning of the technical content.
10/30/2014	4.4	No change	No changes to the meaning, language, or formatting of the technical content.

Table of Contents

1   Introduction

The Push Notifications Web Service Protocol enables clients to receive subscribed event updates sent by the 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 do not contain those terms. All other sections and examples in this specification are informative.

1.1   Glossary

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

> **endpoint**
> **Hypertext Transfer Protocol (HTTP)**
> **Hypertext Transfer Protocol over Secure Sockets Layer (HTTPS)**
> **SOAP**
> **SOAP action**
> **SOAP body**
> **SOAP header**
> **Uniform Resource Locator (URL)**
> **web server**
> **Web Services Description Language (WSDL)**
> **WSDL message**
> **WSDL port type**
> **XML namespace**
> **XML namespace prefix**
> **XML schema**

The following terms are specific to this document:

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

1.2   References

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

1.2.1   Normative References

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

[MS-OXWSCDATA] Microsoft Corporation, "Common Web Service Data Types".

[MS-OXWSNTIF] Microsoft Corporation, "Notifications Web Service Protocol".

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

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

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

[WSDLSOAP] Angelov, D., Ballinger, K., Butek, R., et al., "WSDL 1.1 Binding Extension for SOAP 1.2", W3C Member Submission, April 2006, http://www.w3.org/Submission/2006/SUBM-wsdl11soap12-20060405/

[WSIBASIC] Ballinger, K., Ehnebuske, D., Gudgin, M., et al., Eds., "Basic Profile Version 1.0", Final Material, April 2004, http://www.ws-i.org/Profiles/BasicProfile-1.0-2004-04-16.html

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

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

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

1.2.2   Informative References

[MS-OXDSCLI] Microsoft Corporation, "Autodiscover Publishing and Lookup Protocol".

[MS-OXGLOS] Microsoft Corporation, "Exchange Server Protocols Master Glossary".

[MS-OXPROTO] Microsoft Corporation, "Exchange Server Protocols System Overview".

[MS-OXWSADISC] Microsoft Corporation, "Autodiscover Publishing and Lookup SOAP-Based Web Service Protocol".

1.3   Overview

This protocol provides clients with subscribed event updates that are sent by the server. Clients subscribe to these notifications, as described in [MS-OXWSNTIF], by creating a push subscription that specifies where the server is to send notifications. The clients then create a web service that enables them to receive the notifications sent to them by the server.

1.4   Relationship to Other Protocols

A client that implements this protocol can use the Autodiscover Publishing and Lookup SOAP-Based Web Service Protocol, as described in [MS-OXWSADISC], or the Autodiscover Publishing and Lookup Protocol, as described in [MS-OXDSCLI], to identify the target **endpoint** (4) to use for each operation.

This protocol uses the Simple Object Access Protocol (SOAP) Protocol, as described in [SOAP1.1], to specify the structure information exchanged between the client and server. This protocol uses the

XML Protocol, as described in [XMLSCHEMA1] and [XMLSCHEMA2], to describe the message content sent to and from the server.

This protocol uses **SOAP** over HTTP, as described in [RFC2616], and SOAP over **HTTPS**, as described in [RFC2818], as shown in the following layering diagram.
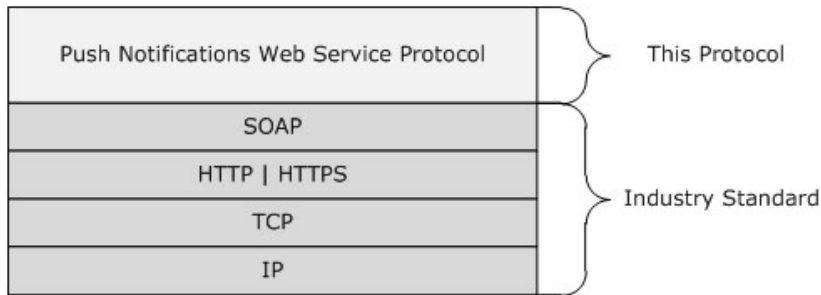

Figure 1: This protocol in relation to other protocols

The notification information that is sent to this protocol is used when requests are made by using the Notifications Web Service Protocol [MS-OXWSNTIF].

For conceptual background information and overviews of the relationships and interactions between this and other protocols, see [MS-OXPROTO].

1.5 Prerequisites/Preconditions

The endpoint (4) **URL** that is returned by either the Autodiscover Publishing Lookup SOAP-Based Web Service Protocol, as described in [MS-OXWSADISC], or the Autodiscover Publishing and Lookup Protocol, as described in [MS-OXDSCLI], is required to form the **HTTP** request to the **web server** that hosts this protocol. The operations that this protocol defines cannot be accessed unless the correct endpoint (4) is identified in the HTTP web requests that target this protocol.

1.6 Applicability Statement

The protocol specified in this document is applicable to tightly coupled client/server environments in which the client and the server are always connected. This protocol is not applicable to environments in which the client connects to the server periodically. If clients are loosely coupled with the server, the Notifications Web Service Protocol, as described in [MS-OXWSNTIF], is applicable.

1.7 Versioning and Capability Negotiation

This document covers versioning issues in the following areas:

- **Supported Transports:** This protocol uses multiple transports with SOAP 1.1, as specified in section 2.1 and in [SOAP1.1].

- **Protocol Versions:** This protocol specifies only one **WSDL port type** version. The **WSDL** version of the request is identified by using the **t:RequestServerVersion** element, as described in [MS-OXWSCDATA] section 2.2.3.9.

- **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**: This protocol does not support version negotiation.

1.8   Vendor-Extensible Fields

None.

1.9   Standards Assignments

None.

2 Messages

In the following sections, the schema definition might differ from the processing rules imposed by the protocol. The WSDL in this specification provides a base description of the protocol. The schema in this specification provides a base description of the message syntax. The text that specifies the WSDL and schema might specify restrictions that reflect actual protocol 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**, or **present**.

2.1 Transport

The SOAP version supported is SOAP 1.1. For more details, see [SOAP1.1].

This protocol relies on the web server that hosts the application to perform authentication. This protocol MUST support SOAP over HTTP, as specified in [RFC2616]. The protocol SHOULD use secure communications by means of HTTPS, as defined in [RFC2818].

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 namespace prefix** for each XML namespace that is used, the choice of any particular XML namespace prefix is implementation-specific and not significant for interoperability.

Prefix	Namespace URI	Reference
soap	http://schemas.xmlsoap.org/wsdl/soap/	[SOAP1.1]
tns	http://schemas.microsoft.com/exchange/services/2006/messages	
s	http://www.w3.org/2001/XMLSchema	[XMLSCHEMA1]
wsdl	http://schemas.xmlsoap.org/wsdl/	[WSDL]
t	http://schemas.microsoft.com/exchange/services/2006/types	
m	http://schemas.microsoft.com/exchange/services/2006/messages	
soap12	http://schemas.xmlsoap.org/wsdl/soap12/	[WSDLSOAP]
xs	http://www.w3.org/2001/XMLSchema	[XMLSCHEMA1]
wsi	http://ws-i.org/schemas/conformanceClaim/	[WSIBASIC]

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

This specification does not define any common XML schema complex type definitions.

2.2.5 Simple Types

This specification does not define any common XML schema simple type definitions.

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

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 that are returned by the transport are passed directly back to the higher-layer protocol or application.

3.1   ExchangeServicePortType Server Details

This protocol defines a single port type with one operation.

3.1.1   Abstract Data Model

None.

3.1.2   Timers

None.

3.1.3   Initialization

None.

3.1.4   Message Processing Events and Sequencing Rules

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

Operation name	Description
SendNotification	Sends subscription information from the server to the client application.

3.1.4.1   SendNotification Operation

The **SendNotification** operation sends subscription information from the server to the client application.

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

```
<wsdl:operation name="SendNotification">
   <wsdl:input message="tns:SendNotificationSoapIn" />
   <wsdl:output message="tns:SendNotificationSoapOut" />
</wsdl:operation>
```

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

```
<wsdl:operation name="SendNotification">
   <soap:operation
soapAction="http://schemas.microsoft.com/exchange/services/2006/messages/SendNotification" />
   <wsdl:input>
      <soap:header message="tns:SendNotificationSoapIn" part="RequestVersion" use="literal"/>
      <soap:body parts="request" use="literal" />
   </wsdl:input>
   <wsdl:output>
      <soap:body use="literal" />
```

```
        </wsdl:output>
    </wsdl:operation>
```

3.1.4.1.1 Messages

The following table lists and describes the WSDL message definitions that are specific to the **SendNotification** operation.

Message name	Description
SendNotificationSoapIn	Specifies a request to the **SendNotification** operation.
SendNotificationSoapOut	Specifies a response from the **SendNotification** operation.

3.1.4.1.1.1 tns:SendNotificationSoapIn Message

The **SendNotificationSoapIn** WSDL message specifies the **SendNotification** operation request to send a notification to the client application.

```
<wsdl:message name="SendNotificationSoapIn">
        <wsdl:part name="request" element="tns:SendNotification" />
        <wsdl:part name="RequestVersion" element="t:RequestServerVersion"/>
</wsdl:message>
```

The **SendNotificationSoapIn** WSDL message is the input message for the **SOAP action** http://schemas.microsoft.com/exchange/services/2006/messages/SendNotification.

The parts of the **SendNotificationSoapIn** WSDL message are listed and described in the following table.

Part name	Element/type	Description
request	**tns:SendNotification** (section 3.1.4.1.2.1)	Specifies the **SOAP body** of the request.
RequestVersion	**t:RequestServerVersion** ([MS-OXWSCDATA] section 2.2.3.9)	Specifies a **SOAP header** that identifies the schema version for the **SendNotification** operation request.

3.1.4.1.1.2 tns:SendNotificationSoapOut Message

The **SendNotificationSoapOut** WSDL message specifies the response to the **SendNotification** operation request.

```
<wsdl:message name="SendNotificationSoapOut">
        <wsdl:part name="SendNotificationResult" element="tns:SendNotificationResult" />
</wsdl:message>
```

The **SendNotificationSoapOut** WSDL message is the output message for the SOAP action http://schemas.microsoft.com/exchange/services/2006/messages/SendNotification.

The parts of the **SendNotificationSoapOut** WSDL message are listed and described in the following table.

Part name	Element/type	Description
SendNotificationResult	**tns:SendNotificationResult** (section 3.1.4.1.2.2)	Specifies SOAP body of the response message.

3.1.4.1.2 Elements

The following table lists and describes the XML schema element definitions that are specific to the **SendNotification** operation.

Element name	Description
SendNotification	Specifies the push notifications that are sent by the server to the client application.
SendNotificationResult	Specifies the response of a client application to a push notification.

3.1.4.1.2.1 SendNotification Element

The **SendNotification** element specifies the push notifications that are sent by the server to the client application.

```
<xs:element name="SendNotification"
  type="m:SendNotificationResponseType"
 />
```

3.1.4.1.2.2 SendNotificationResult Element

The **SendNotificationResul**t element specifies the response of a client application to a push notification.

```
<xs:element name="SendNotificationResult"
  type="m:SendNotificationResultType"
 />
```

3.1.4.1.3 Complex Types

The following table lists and describes the XML schema complex type definitions that are specific to the **SendNotification** operation.

Complex type name	Description
SendNotificationResponseMessageType	Specifies the status and result of a single **SendNotification** operation request.
SendNotificationResponseType	Specifies the push notifications that are sent by the server to the client application.
SendNotificationResultType	Specifies the response of a client application to a push notification.

3.1.4.1.3.1   m:SendNotificationResponseMessageType Complex Type

The **SendNotificationResponseMessageType** complex type specifies the status and result of a single **SendNotification** operation request. The **SendNotificationResponseMessageType** complex type extends the **ResponseMessageType** complex type, as specified in [MS-OXWSCDATA] section 2.2.4.57.

```
<xs:complexType name="SendNotificationResponseMessageType">
  <xs:complexContent>
    <xs:extension
      base="m:ResponseMessageType"
    >
      <xs:sequence>
        <xs:element name="Notification"
          type="t:NotificationType"
          minOccurs="1"
        />
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

The following table lists and describes the child elements of the **SendNotificationResponseMessageType** complex type.

Element name	Type	Description
Notification	**t:NotificationType** ([MS-OXWSNTIF] section 2.2.4.8)	Specifies the subscription and the events that have occurred since the last notification.

3.1.4.1.3.2   m:SendNotificationResponseType Complex Type

The **SendNotificationResponseType** complex type specifies the push notifications that are sent by the server to the client application. The **SendNotificationResponseType** complex type extends the **BaseResponseMessageType** complex type, as specified in [MS-OXWSCDATA] section 2.2.4.16.

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

3.1.4.1.3.3   m:SendNotificationResultType Complex Type

The **SendNotificationResultType** complex type specifies the response of a client application to a push notification.

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

```
  <xs:sequence>
    <xs:element name="SubscriptionStatus"
      type="t:SubscriptionStatusType"
      />
  </xs:sequence>
</xs:complexType>
```

The following table lists and describes the child elements of the **SendNotificationResultType** complex type.

Element name	Type	Description
SubscriptionStatus	**t:SubscriptionStatusType** (section 3.1.4.1.4.1)	Specifies the status of a push subscription.

3.1.4.1.4 Simple Types

The following table lists and describes the XML schema simple type definitions that are specific to the **SendNotification** operation.

Simple type name	Description
SubscriptionStatusType	Specifies the status type of a push subscription.

3.1.4.1.4.1 t:SubscriptionStatusType Simple Type

The **SubscriptionStatusType** simple type specifies the status of a push subscription.

```
<xs:simpleType name="SubscriptionStatusType">
  <xs:restriction
    base="xs:string"
  >
    <xs:enumeration
      value="OK"
    />
    <xs:enumeration
      value="Unsubscribe"
    />
  </xs:restriction>
</xs:simpleType>
```

The following table lists and describes the values that are defined by the **SubscriptionStatusType** simple type.

Value name	Description
OK	Specifies that the server will continue to send notifications.
Unsubscribe	Specifies that the server will stop sending notifications and end the subscription.

3.1.4.1.5   Attributes

None.

3.1.4.1.6   Groups

None.

3.1.4.1.7   Attribute Groups

None.

3.1.5   Timer Events

None.

3.1.6   Other Local Events

None.

4 Protocol Examples

None.

5 Security

5.1 Security Considerations for Implementers

None.

5.2 Index of Security Parameters

None.

6 Appendix A: Full WSDL

The XML files that are listed in the following table are required in order to implement the functionality described in this document.

File name	Description	Section
MS-OXWSPSNTIF.wsdl	Contains the WSDL for the implementation of this protocol.	6
MS-OXWSPSNTIF-messages.xsd	Contains the XML schema message definitions that are used in this protocol.	7.1
MS-OXWSPSNTIF-types.xsd	Contains the XML schema type definitions that are used in this protocol.	7.2

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-OXWSPSNTIF-types.xsd or MS-OXWSPSNTIF-messages.xsd schemas have to be placed in the common folder along with the files listed in the table.

This section provides the contents of the MS-OXWSPSNTIF.wsdl file.

```
<?xml version="1.0" encoding="utf-8"?>
<wsdl:definitions xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
                  xmlns:soap12="http://schemas.xmlsoap.org/wsdl/soap12/"
                  xmlns:tns="http://schemas.microsoft.com/exchange/services/2006/messages"
                  xmlns:s="http://www.w3.org/2001/XMLSchema"

targetNamespace="http://schemas.microsoft.com/exchange/services/2006/messages"
                  xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/"
                  xmlns:t="http://schemas.microsoft.com/exchange/services/2006/types">
    <wsdl:types>
        <xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema">
            <xs:import
namespace="http://schemas.microsoft.com/exchange/services/2006/messages" schemaLocation="MS-
OXWSPSNTIF-messages.xsd"/>
        </xs:schema>
    </wsdl:types>
    <wsdl:message name="SendNotificationSoapIn">
        <wsdl:part name="request" element="tns:SendNotification" />
        <wsdl:part name="RequestVersion" element="t:RequestServerVersion"/>
    </wsdl:message>
    <wsdl:message name="SendNotificationSoapOut">
        <wsdl:part name="SendNotificationResult" element="tns:SendNotificationResult" />
    </wsdl:message>
    <wsdl:portType name="NotificationServicePortType">
        <wsdl:operation name="SendNotification">
            <wsdl:input message="tns:SendNotificationSoapIn" />
            <wsdl:output message="tns:SendNotificationSoapOut" />
        </wsdl:operation>
    </wsdl:portType>


    <wsdl:binding name="NotificationServiceBinding" type="tns:NotificationServicePortType">
        <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 transport="http://schemas.xmlsoap.org/soap/http" style="document" />

        <wsdl:operation name="SendNotification">
            <soap:operation
soapAction="http://schemas.microsoft.com/exchange/services/2006/messages/SendNotification" />
            <wsdl:input>
                <soap:header message="tns:SendNotificationSoapIn" part="RequestVersion"
use="literal"/>
                <soap:body parts="request" use="literal" />
            </wsdl:input>
            <wsdl:output>
                <soap:body use="literal" />
            </wsdl:output>
        </wsdl:operation>

    </wsdl:binding>

    <wsdl:binding name="NotificationServiceBinding12" type="tns:NotificationServicePortType">
        <soap12:binding transport="http://schemas.xmlsoap.org/soap/http" style="document" />

        <wsdl:operation name="SendNotification">
            <soap12:operation
soapAction="http://schemas.microsoft.com/exchange/services/2006/messages/SendNotification" />
            <wsdl:input>
                <soap12:header message="tns:SendNotificationSoapIn" part="RequestVersion"
use="literal"/>
                <soap12:body parts="request" use="literal" />
            </wsdl:input>
            <wsdl:output>
                <soap12:body use="literal" />
            </wsdl:output>
        </wsdl:operation>

    </wsdl:binding>

</wsdl:definitions>
```

7 Appendix B: Full XML Schema

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

Schema name	Prefix	Section
Messages schema	m:	7.1
Types schema	t:	7.2

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-OXWSPSNTIF-types.xsd or MS-OXWSPSNTIF-messages.xsd schemas have to be placed in the common folder along with the files listed in the table.

7.1 Messages Schema

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

MS-OXWSPSNTIF-messages.xsd includes the files listed in the following table. To operate correctly, these files have to be 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 7.1
MS-OXWSNTIF-types.xsd	[MS-OXWSNTIF] section 7.2

```xml
<?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="Exchange2013" id="messages">
    <xs:import namespace="http://schemas.microsoft.com/exchange/services/2006/types"
schemaLocation="MS-OXWSNTIF-types.xsd"/>
    <xs:import namespace="http://schemas.microsoft.com/exchange/services/2006/types"
schemaLocation="MS-OXWSPSNTIF-types.xsd"/>
    <xs:include schemaLocation="MS-OXWSCDATA-messages.xsd"/>
    <xs:complexType name="SendNotificationResponseMessageType">
        <xs:complexContent>
            <xs:extension base="m:ResponseMessageType">
                <xs:sequence>
                    <xs:element name="Notification" type="t:NotificationType"/>
                </xs:sequence>
            </xs:extension>
        </xs:complexContent>
    </xs:complexType>
    <xs:complexType name="SendNotificationResponseType">
        <xs:complexContent>
            <xs:extension base="m:BaseResponseMessageType"/>
        </xs:complexContent>
    </xs:complexType>
    <xs:element name="SendNotification" type="m:SendNotificationResponseType"/>
```

```
        <xs:complexType name="SendNotificationResultType">
            <xs:sequence>
                <xs:element name="SubscriptionStatus" type="t:SubscriptionStatusType"/>
            </xs:sequence>
        </xs:complexType>
        <xs:element name="SendNotificationResult" type="m:SendNotificationResultType"/>
    </xs:schema>
```

7.2   Types Schema

This section provides the contents of the MS-OXWSPSNTIF-types.xsd file.

```
<?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/messages"
xmlns:xs="http://www.w3.org/2001/XMLSchema"
targetNamespace="http://schemas.microsoft.com/exchange/services/2006/types"
elementFormDefault="qualified" version="Exchange2013" id="types">
    <xs:import namespace="http://www.w3.org/XML/1998/namespace"/>
    <xs:simpleType name="SubscriptionStatusType">
        <xs:restriction base="xs:string">
            <xs:enumeration value="OK"/>
            <xs:enumeration value="Unsubscribe"/>
        </xs:restriction>
    </xs:simpleType>
</xs:schema>
```

8   Appendix C: Product Behavior

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

- Microsoft Exchange Server 2007

- Microsoft Exchange Server 2010

- Microsoft Exchange Server 2013

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

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

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