[MS-OXWSTASK]:

Tasks Web Service Protocol

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Revision Summary

Date	Revision History	Revision Class	Comments
7/15/2009	1.0	Major	Initial Availability.
11/4/2009	1.1.0	Minor	Updated the technical content.
2/10/2010	1.1.0	None	Version 1.1.0 release
5/5/2010	1.1.1	Editorial	Revised and edited the technical content.
8/4/2010	1.2	Minor	Clarified the meaning of the technical content.
11/3/2010	2.0	Major	Significantly changed the technical content.
3/18/2011	2.1	Minor	Clarified the meaning of the technical content.
8/5/2011	3.0	Major	Significantly changed the technical content.
10/7/2011	3.0	None	No changes to the meaning, language, or formatting of the technical content.
1/20/2012	4.0	Major	Significantly changed the technical content.
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11/18/2013	4.2	Minor	Clarified the meaning of the technical content.
2/10/2014	4.2	None	No changes to the meaning, language, or formatting of the technical content.
4/30/2014	5.0	Major	Significantly changed the technical content.
7/31/2014	5.1	Minor	Clarified the meaning of the technical content.
10/30/2014	5.2	Minor	Clarified the meaning of the technical content.
5/26/2015	6.0	Major	Significantly changed the technical content.
9/14/2015	6.0	None	No changes to the meaning, language, or formatting of the technical content.
6/13/2016	6.0	None	No changes to the meaning, language, or formatting of the technical content.
9/14/2016	6.0	None	No changes to the meaning, language, or formatting of the technical content.
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7/24/2018	7.0	Major	Significantly changed the technical content.

Date	Revision History	Revision Class	Comments
10/1/2018	8.0	Major	Significantly changed the technical content.
12/11/2018	8.1	Minor	Clarified the meaning of the technical content.

Table of Contents

1 Introduction

The Tasks Web Service Protocol enables clients to create, update, move, copy, and delete task items on a server. The protocol also enables clients to get the properties of an existing task item.

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

1.1 Glossary

This document uses the following terms:

delegate: A user or resource that has permissions to act on behalf of another user or resource.

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

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

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

Inbox folder: A special folder that is the default location for Message objects received by a user or resource.

mailbox: A **message store** that contains email, calendar items, and other Message objects for a single recipient.

message store: A unit of containment for a single hierarchy of Folder objects, such as a mailbox or public folders.

Sent Items folder: A special folder that is the default location for storing copies of Message objects after they are submitted or sent.

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

SOAP message: An **XML** document consisting of a mandatory SOAP envelope, an optional SOAP header, and a mandatory SOAP body. See [SOAP1.2-1/2007] section 5 for more information.

Tasks folder: A Folder object that contains Task objects.

Uniform Resource Locator (URL): A string of characters in a standardized format that identifies a document or resource on the World Wide Web. The format is as specified in [RFC1738].

web server: A server computer that hosts websites and responds to requests from applications.

Web Services Description Language (WSDL): An XML format for describing network services as a set of endpoints that operate on messages that contain either document-oriented or procedure-oriented information. The operations and messages are described abstractly and are bound to a concrete network protocol and message format in order to define an endpoint.

Related concrete endpoints are combined into abstract endpoints, which describe a network service. WSDL is extensible, which allows the description of endpoints and their messages regardless of the message formats or network protocols that are used.

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

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

WSDL port type: A named set of logically-related, abstract **Web Services Description Language (WSDL)** operations and messages.

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

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

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

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

1.2 References

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

1.2.1 Normative References

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

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

[MS-OXWSCORE] Microsoft Corporation, "Core Items Web Service Protocol".

[MS-OXWSFOLD] Microsoft Corporation, "Folders and Folder Permissions Web Service Protocol".

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

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

[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", W3C Note, May 2000, https://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, https://www.w3.org/TR/2001/NOTE-wsdl-20010315

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

[XMLSCHEMA1/2] Thompson, H., Beech, D., Maloney, M., and Mendelsohn, N., Eds., "XML Schema Part 1: Structures Second Edition", W3C Recommendation, October 2004, https://www.w3.org/TR/2004/REC-xmlschema-1-20041028/

[XMLSCHEMA2/2] Biron, P., and Malhotra, A., Eds., "XML Schema Part 2: Datatypes Second Edition", W3C Recommendation, October 2004, https://www.w3.org/TR/2004/REC-xmlschema-2-20041028/

1.2.2 Informative References

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

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

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

[MS-OXWSSRCH] Microsoft Corporation, "Mailbox Search Web Service Protocol".

1.3 Overview

The Tasks Web Service Protocol provides clients with the ability to create, update, and delete task items on the server. Clients create task items by using the **CreateItem** operation, as described in [MS-OXWSCORE] section 3.1.4.2, or get properties of an existing task item by using the **GetItem** operation, as described in [MS-OXWSCORE] section 3.1.4.4. Clients can update, delete, or copy tasks on the server by using the **UpdateItem** operation [MS-OXWSCORE] section 3.1.4.9), the **DeleteItem** operation ([MS-OXWSCORE] section 3.1.4.3), and the **CopyItem** operation ([MS-OXWSCORE] section **Error! Hyperlink reference not valid.**), respectively. Clients can move task items on the server by using the **MoveItem** operation, as described in [MS-OXWSCORE] section 3.1.4.7.

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** to use for each operation.

This protocol uses the 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 [XMLSCHEMA1/2] and [XMLSCHEMA2/2], to describe the message content sent to and from the server.

The Tasks 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.

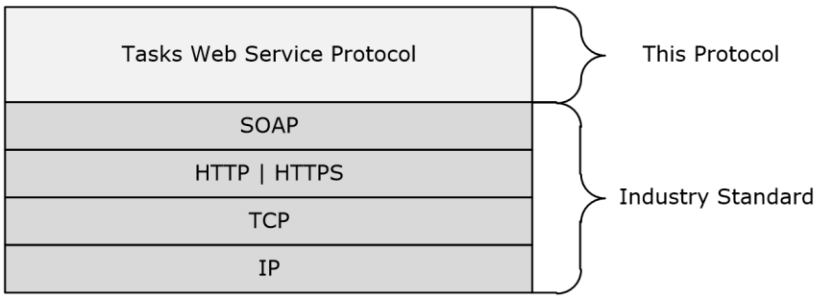

Figure 1: This protocol in relation to other protocols.

When requests are made by using the Core Items Web Service Protocol [MS-OXWSCORE], the task information that is returned by the Tasks Web Service Protocol will be used if the targets of the requests are task items.

This protocol can use the Task item identifier returned by the Mailbox Search Web Service Protocol, as described in [MS-OXWSSRCH], to manipulate the Task item.

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 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 is identified in the HTTP Web requests that target this protocol.

To access this protocol, all callers are authenticated. This protocol relies on the web server that hosts the application to perform authentication.

1.6 Applicability Statement

The protocol specified in this document is applicable to environments that create, delete, and update task items.

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.
- **Protocol Versions:** This protocol has 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, and the version of the server responding to the request is identified by using the **t:ServerVersionInfo** element, as described in [MS-OXWSCDATA] section 2.2.3.10.
- **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 sections 2.2 and 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 details, see [SOAP1.1].

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

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 [XMLSCHEMA1/2] and [XMLSCHEMA2/2], and **WSDL** as defined in [WSDL].

2.2.1 Namespaces

This specification defines and references various **XML namespaces** by using the mechanisms that are 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	[XMLSCHEMA1/2]
(none)	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 Messages

This specification does not define any common **WSDL message** definitions.

2.2.3 Elements

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

2.2.4 Complex Types

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

Complex type name	Description
DailyRegeneratingPatternType	Specifies the interval, in days, at which a task is regenerated.
MonthlyRegeneratingPatternType	Specifies the interval, in months, at which a task is regenerated.
RegeneratingPatternBaseType	Specifies the base type for all regenerating patterns.
TaskRecurrenceType	Specifies the recurrence pattern for tasks.
TasksFolderType	Specifies a **Tasks folder** that is contained in a **mailbox**.
TaskType	Specifies a task in the **message store**.
WeeklyRegeneratingPatternType	Specifies the interval, in weeks, at which a task is regenerated.
YearlyRegeneratingPatternType	Specifies the interval, in years, at which a task is regenerated.

2.2.4.1 t:DailyRegeneratingPatternType Complex Type

The **DailyRegeneratingPatternType** complex type specifies the interval, in days, at which a task is regenerated. The **DailyRegeneratingPatternType** complex type extends the **RegeneratingPatternBaseType** complex type, as specified in section 2.2.4.3.

```
<xs:complexType name="DailyRegeneratingPatternType">
  <xs:complexContent>
    <xs:extension
      base="t:RegeneratingPatternBaseType"
     />
  </xs:complexContent>
</xs:complexType>
```

2.2.4.2 t:MonthlyRegeneratingPatternType Complex Type

The **MonthlyRegeneratingPatternType** complex type specifies the interval, in months, at which a task is regenerated. The **MonthlyRegeneratingPatternType** complex type extends the **RegeneratingPatternBaseType** complex type, as specified in section 2.2.4.3.

```
<xs:complexType name="MonthlyRegeneratingPatternType">
  <xs:complexContent>
    <xs:extension
      base="t:RegeneratingPatternBaseType"
     />
  </xs:complexContent>
</xs:complexType>
```

2.2.4.3 t:RegeneratingPatternBaseType Complex Type

The **RegeneratingPatternBaseType** complex type specifies the base type for all regenerating patterns. The **RegeneratingPatternBaseType** complex type extends the **IntervalRecurrencePatternBaseType** complex type, as specified in [MS-OXWSCDATA] section 2.2.4.40.

```
<xs:complexType name="RegeneratingPatternBaseType"
  abstract="true"
>
  <xs:complexContent>
    <xs:extension
      base="t:IntervalRecurrencePatternBaseType"
     />
  </xs:complexContent>
</xs:complexType>
```

2.2.4.4 t:TaskRecurrenceType Complex Type

The **TaskRecurrenceType** complex type specifies the recurrence pattern for tasks.

```
<xs:complexType name="TaskRecurrenceType">
  <xs:sequence>
    <xs:group
      ref="t:TaskRecurrencePatternTypes"
     />
    <xs:group
      ref="t:RecurrenceRangeTypes"
     />
  </xs:sequence>
</xs:complexType>
```

The following table lists and describes the groups of the **TaskRecurrenceType** complex type.

Reference name	Description
t:TaskRecurrencePatternTypes (section 2.2.7.1)	Specifies recurrence information for recurring tasks.
t:RecurrenceRangeTypes ([MS-OXWSCDATA] section 2.2.7.2)	Specifies recurrence patterns with numbered recurrences, nonending recurrence patterns, and recurrence patterns with a set start date and end date.

2.2.4.5 t:TasksFolderType Complex Type

The **TasksFolderType** complex type specifies a **Tasks folder** that is contained in a **mailbox**. The **TasksFolderType** complex type extends the **FolderType** complex type, as specified in [MS-OXWSFOLD] section 2.2.4.12.

```
<xs:complexType name="TasksFolderType">
  <xs:complexContent>
    <xs:extension
      base="t:FolderType"
     />
  </xs:complexContent>
</xs:complexType>
```

2.2.4.6 t:TaskType Complex Type

The **TaskType** complex type specifies a task in the **message store**. The **TaskType** complex type extends the **ItemType** complex type, as specified in [MS-OXWSCORE] section 2.2.4.24.

```
<xs:complexType name="TaskType">
  <xs:complexContent>
    <xs:extension
      base="t:ItemType"
    >
      <xs:sequence>
        <xs:element name="ActualWork"
          type="xs:int"
          minOccurs="0"
         />
        <xs:element name="AssignedTime"
          type="xs:dateTime"
          minOccurs="0"
         />
        <xs:element name="BillingInformation"
          type="xs:string"
          minOccurs="0"
         />
        <xs:element name="ChangeCount"
          type="xs:int"
          minOccurs="0"
         />
        <xs:element name="Companies"
          type="t:ArrayOfStringsType"
          minOccurs="0"
         />
        <xs:element name="CompleteDate"
          type="xs:dateTime"
          minOccurs="0"
         />
        <xs:element name="Contacts"
          type="t:ArrayOfStringsType"
          minOccurs="0"
         />
        <xs:element name="DelegationState"
          type="t:TaskDelegateStateType"
          minOccurs="0"
         />
        <xs:element name="Delegator"
          type="xs:string"
          minOccurs="0"
         />
        <xs:element name="DueDate"
          type="xs:dateTime"
          minOccurs="0"
         />
        <xs:element name="IsAssignmentEditable"
          type="xs:int"
          minOccurs="0"
         />
        <xs:element name="IsComplete"
          type="xs:boolean"
          minOccurs="0"
         />
        <xs:element name="IsRecurring"
          type="xs:boolean"
          minOccurs="0"
         />
        <xs:element name="IsTeamTask"
```

```
            type="xs:boolean"
            minOccurs="0"
           />
          <xs:element name="Mileage"
            type="xs:string"
            minOccurs="0"
           />
          <xs:element name="Owner"
            type="xs:string"
            minOccurs="0"
           />
          <xs:element name="PercentComplete"
            type="xs:double"
            minOccurs="0"
           />
          <xs:element name="Recurrence"
            type="t:TaskRecurrenceType"
            minOccurs="0"
           />
          <xs:element name="StartDate"
            type="xs:dateTime"
            minOccurs="0"
           />
          <xs:element name="Status"
            type="t:TaskStatusType"
            minOccurs="0"
           />
          <xs:element name="StatusDescription"
            type="xs:string"
            minOccurs="0"
           />
          <xs:element name="TotalWork"
            type="xs:int"
            minOccurs="0"
           />
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
```

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

Element name	Type	Description
ActualWork	**xs:int** [XMLSCHEMA2/2] section 3.3.17	Specifies an integer value that specifies the actual amount of time that is spent on a task.
AssignedTime	**xs:dateTime** [XMLSCHEMA2/2] section 3.2.7	Specifies an instance of the **DateTime** structure that contains the time when a task is assigned to a contact. This element is read-only for the client.
BillingInformation	**xs:string** [XMLSCHEMA2/2] section 3.2.1	Specifies a string value that contains billing information for a task.
ChangeCount	**xs:int**	Specifies an integer value that specifies the number of times the task has changed since it was created. This element is read-only for the client.
Companies	**t:ArrayOfStringsType** ([MS-OXWSCDATA] section 2.2.4.13)	Specifies an instance of an array of type **string** that represents a collection of companies that are associated with a task.
CompleteDate	**xs:dateTime**	Specifies an instance of the **DateTime** structure

Element name	Type	Description
		that represents the date on which a task is completed.
Contacts	**t:ArrayOfStringsType**	Specifies an instance of an array of type **string** that contains a list of contacts that are associated with a task.
DelegationState	**t:TaskDelegateStateType** (section 2.2.5.1)	Specifies one of the valid **TaskDelegateStateType** simple type enumeration values that represent the status of a delegated task.
Delegator	**xs:string**	Specifies a **string** value that contains the name of the delegator who assigned a task. This element is read-only for the client.
DueDate	**xs:dateTime**	Specifies an instance of the **DateTime** structure that represents the date when a task is due.
IsAssignmentEditable	**xs:int**	Specifies an **integer** value that represents whether the assignment of the task is editable. This element is read-only for the client.
IsComplete	**xs:boolean** [XMLSCHEMA2/2] section 3.2.2	Specifies a **Boolean** value that indicates whether a task has been completed. This element is read-only for the client.
IsRecurring	**xs:boolean**	Specifies a **Boolean** value that indicates whether a task is part of a recurring task. This element is read-only for the client.
IsTeamTask	**xs:boolean**	Specifies a **Boolean** value that indicates whether a task is owned by a team. This element is read-only for the client.
Mileage	**xs:string**	Specifies a **string** value that represents the mileage for a task.
Owner	**xs:string**	Specifies a **string** value that represents the owner of a task. Once the task item is created, this property is read-only for the client.<1>
PercentComplete	**xs:double** [XMLSCHEMA2/2] section 3.2.5	Specifies a **double** value from 0 through 100 that describes the completion status of a task.
Recurrence	**t:TaskRecurrenceType** section 2.2.4.4	Specifies an instance of the **TaskRecurrenceType** complex type that contains recurrence information for a recurring task.
StartDate	**xs:dateTime**	Specifies an instance of the **DateTime** structure that represents the start date of a task.
Status	**t:TaskStatusType** (section 2.2.5.2)	Specifies one of the valid **TaskStatusType** simple type enumeration values that represent the status of a task.
StatusDescription	**xs:string**	Specifies a **string** value that contains an explanation of the status of a task. This element is read-only for the client.
TotalWork	**xs:int**	Specifies an **integer** value that represents the total amount of work that is associated with a

Element name	Type	Description
		task.

Setting **CompleteDat**e has the same effect as setting **PercentComplete** to **100** or **Status** to **Completed**. In a request that sets at least two of these properties, the last processed property will determine the value that is set for these elements. For example, if **PercentComplete** is **100**, **CompleteDate** is **January 1, 2007**, and **Status** is **NotStarted**, and the properties are streamed in that order, the effect will be to set the **Status** of the task to **NotStarted**, the **CompleteDate** to **null**, and **PercentComplete** to **0**.

2.2.4.7 t:WeeklyRegeneratingPatternType Complex Type

The **WeeklyRegeneratingPatternType** complex type specifies the interval, in weeks, at which a task is regenerated. The **WeeklyRegeneratingPatternType** complex type extends the **RegeneratingPatternBaseType** complex type, as specified in section 2.2.4.3.

```
<xs:complexType name="WeeklyRegeneratingPatternType">
  <xs:complexContent>
    <xs:extension
      base="t:RegeneratingPatternBaseType"
     />
  </xs:complexContent>
</xs:complexType>
```

2.2.4.8 t:YearlyRegeneratingPatternType Complex Type

The **YearlyRegeneratingPatternType** complex type specifies the interval, in years, at which a task is regenerated. The **YearlyRegeneratingPatternType** complex type extends the **RegeneratingPatternBaseType** complex type, as specified in section 2.2.4.3.

```
<xs:complexType name="YearlyRegeneratingPatternType">
  <xs:complexContent>
    <xs:extension
      base="t:RegeneratingPatternBaseType"
     />
  </xs:complexContent>
</xs:complexType>
```

2.2.5 Simple Types

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

Simple type name	Description
TaskDelegateStateType	Specifies the status types of a delegated task. This enumeration is never set.
TaskStatusType	Specifies the status types of a task item.

2.2.5.1 t:TaskDelegateStateType Simple Type

The **TaskDelegateStateType** simple type specifies the status types of a delegated task. The values for this simple type are never set.

```
<xs:simpleType name="TaskDelegateStateType">
  <xs:restriction
    base="xs:string"
  >
    <xs:enumeration
      value="Accepted"
     />
    <xs:enumeration
      value="Declined"
     />
    <xs:enumeration
      value="Max"
     />
    <xs:enumeration
      value="NoMatch"
     />
    <xs:enumeration
      value="Owned"
     />
    <xs:enumeration
      value="OwnNew"
     />
  </xs:restriction>
</xs:simpleType>
```

The following table lists the values that are defined by the **TaskDelegateStateType** simple type.

Value name	Meaning
Accepted	Specifies that the task has been accepted.
Declined	Specifies that the task has been declined.
Max	Not used.
NoMatch	Not used.
Owned	Specifies that this is a new task request that has been sent, but the **delegate** has not yet responded to the request.
OwnNew	Specifies that this is not a delegated task or that the task request has been created but not sent. This value is also used for a task request message, whether it's in the owner's **Sent Items folder** or the delegate's **Inbox folder**.

2.2.5.2 t:TaskStatusType Simple Type

The **TaskStatusType** simple type specifies the status of a task item.

```
<xs:simpleType name="TaskStatusType">
  <xs:restriction
    base="xs:string"
  >
    <xs:enumeration
```

```
        value="Completed"
       />
      <xs:enumeration
        value="Deferred"
       />
      <xs:enumeration
        value="InProgress"
       />
      <xs:enumeration
        value="NotStarted"
       />
      <xs:enumeration
        value="WaitingOnOthers"
       />
    </xs:restriction>
  </xs:simpleType>
```

The following table lists the values that are defined by the **TaskStatusType** simple type.

Value name	Meaning
Completed	Specifies that the task is completed.
Deferred	Specifies that the task is deferred.
InProgress	Specifies that the task is in progress.
NotStarted	Specifies that the task is not started.
WaitingOnOthers	Specifies that the task is waiting on other tasks.

2.2.6 Attributes

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

2.2.7 Groups

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

Group name	Description
TaskRecurrencePatternTypes	Specifies recurrence information for recurring tasks.

2.2.7.1 TaskRecurrencePatternTypes Group

The **TaskRecurrencePatternTypes** group specifies recurrence information for recurring tasks.

```
<xs:group name="TaskRecurrencePatternTypes">
  <xs:sequence>
    <xs:choice>
      <xs:element name="RelativeYearlyRecurrence"
        type="t:RelativeYearlyRecurrencePatternType"
```

```
        />
      <xs:element name="AbsoluteYearlyRecurrence"
        type="t:AbsoluteYearlyRecurrencePatternType"
       />
      <xs:element name="RelativeMonthlyRecurrence"
        type="t:RelativeMonthlyRecurrencePatternType"
       />
      <xs:element name="AbsoluteMonthlyRecurrence"
        type="t:AbsoluteMonthlyRecurrencePatternType"
       />
      <xs:element name="WeeklyRecurrence"
        type="t:WeeklyRecurrencePatternType"
       />
      <xs:element name="DailyRecurrence"
        type="t:DailyRecurrencePatternType"
       />
      <xs:element name="DailyRegeneration"
        type="t:DailyRegeneratingPatternType"
       />
      <xs:element name="WeeklyRegeneration"
        type="t:WeeklyRegeneratingPatternType"
       />
      <xs:element name="MonthlyRegeneration"
        type="t:MonthlyRegeneratingPatternType"
       />
      <xs:element name="YearlyRegeneration"
        type="t:YearlyRegeneratingPatternType"
       />
    </xs:choice>
  </xs:sequence>
</xs:group>
```

The following table lists and describes the child elements of the **TaskRecurrencePatternTypes** group.

Element name	Type	Description
RelativeYearlyRecurrence	**t:RelativeYearlyRecurrencePatternType** ([MS-OXWSCDATA] section 2.2.4.61)	Specifies a relative yearly recurrence pattern for a recurring task.
AbsoluteYearlyRecurrence	**t:AbsoluteYearlyRecurrencePatternType** ([MS-OXWSCDATA] section 2.2.4.2)	Specifies a yearly recurrence pattern for a recurring task.
RelativeMonthlyRecurrence	**t:RelativeMonthlyRecurrencePatternType** ([MS-OXWSCDATA] section 2.2.4.60)	Specifies a relative monthly recurrence pattern for a recurring task.
AbsoluteMonthlyRecurrence	**t:AbsoluteMonthlyRecurrencePatternType** ([MS-OXWSCDATA] section 2.2.4.1)	Specifies a monthly recurrence pattern for a recurring task.
WeeklyRecurrence	**t:WeeklyRecurrencePatternType** ([MS-OXWSCDATA] section 2.2.4.75)	Specifies the weekly interval at which and the days on which a task recurs.
DailyRecurrence	**t:DailyRecurrencePatternType** ([MS-OXWSCDATA] section 2.2.4.24)	Specifies the interval, in days, at which a task recurs.

Element name	Type	Description
DailyRegeneration	**t:DailyRegeneratingPatternType** (section 2.2.4.1)	Specifies how many days after the completion of the current task the next occurrence will happen.
WeeklyRegeneration	**t:WeeklyRegeneratingPatternType** (section 2.2.4.7)	Specifies how many weeks after the completion of the current task the next occurrence will happen.
MonthlyRegeneration	**t:MonthlyRegeneratingPatternType** (section 2.2.4.2)	Specifies how many months after the completion of the current task the next occurrence will happen.
YearlyRegeneration	**t:YearlyRegeneratingPatternType** (section 2.2.4.8)	Specifies how many years after the completion of the current task the next occurrence will happen.

2.2.8 Attribute Groups

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

2.2.9 Common Data Structures

This specification does not define any common XML schema data structures.

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 Tasks Web Service Protocol defines a single port type with six operations. The operations enable client implementations to get, create, delete, update, move, and copy tasks on the server.

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
CopyItem	Copies task items on the server.
CreateItem	Creates task items on the server.
DeleteItem	Deletes task items on the server.
GetItem	Gets task items on the server.
MoveItem	Moves task items on the server.
UpdateItem	Updates task items on the server.

3.1.4.1 CopyItem Operation

This protocol uses the **CopyItem** operation, as specified in [MS-OXWSCORE] section 3.1.4.1, to copy task items.

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

```
<wsdl:operation name="CopyItem">
            <wsdl:input message="tns:CopyItemSoapIn" />
            <wsdl:output message="tns:CopyItemSoapOut" />
</wsdl:operation>
```

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

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

Message format	Description
tns:CopyItemSoapIn ([MS-OXWSCORE] section 3.1.4.1.1.1)	Specifies the **SOAP message** that defines the task item to be copied. The **CopyItem** operation (as specified in [MS-OXWSCORE] section 3.1.4.1) that specifies the **XML** request MUST contain the **t:TargetFolderIdType** complex type (as specified in [MS-OXWSFOLD] section 2.2.4.16) and the **t:ItemIdType** complex type (as specified in [MS-OXWSCORE] section 2.2.4.25). All other type elements in **t:NonEmptyArrayOfBaseItemIdsType** element MUST NOT be included.
tns:CopyItemSoapOut ([MS-OXWSCORE] section 3.1.4.1.1.2)	Specifies the SOAP message that is returned by the server in response.

3.1.4.1.1 Messages

None.

3.1.4.1.2 Elements

None.

3.1.4.1.3 Complex Types

None.

3.1.4.1.4 Simple Types

None.

3.1.4.1.5 Attributes

None.

3.1.4.1.6 Groups

None.

3.1.4.1.7 Attribute Groups

None.

3.1.4.2 CreateItem Operation

This protocol uses the **CreateItem** operation, as specified in [MS-OXWSCORE] section 3.1.4.2, to create task items.

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

```
<wsdl:operation name="CreateItem">
     <wsdl:input message="tns:CreateItemSoapIn" />
     <wsdl:output message="tns:CreateItemSoapOut" />
</wsdl:operation>
```

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

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

Message format	Description
tns:CreateItemSoapIn ([MS-OXWSCORE] section 3.1.4.2.1.1)	Specifies the **SOAP message** that defines the task item to be created. The **t:NonEmptyArrayOfAllItemsType** complex type (as specified in [MS-OXWSCDATA] section 2.2.4.46) of the **CreateItem** operation (as specified in [MS-OXWSCORE] section 3.1.4.2) that specifies the **XML** request MUST contain one or more **t:TaskType** complex types(as specified in section 2.2.4.6). All other elements MUST be empty.
tns:CreateItemSoapOut ([MS-OXWSCORE] section 3.1.4.2.1.2)	Specifies the SOAP message that is returned by the server in response.

3.1.4.2.1 Messages

None.

3.1.4.2.2 Elements

None.

3.1.4.2.3 Complex Types

None.

3.1.4.2.4 Simple Types

None.

3.1.4.2.5 Attributes

None.

3.1.4.2.6 Groups

None.

3.1.4.2.7 Attribute Groups

None.

3.1.4.3 DeleteItem Operation

This protocol uses the **DeleteItem** operation, as specified in [MS-OXWSCORE] section 3.1.4.3, to delete task items.

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

```
<wsdl:operation name="DeleteItem">
   <wsdl:input message="tns:DeleteItemSoapIn" />
   <wsdl:output message="tns:DeleteItemSoapOut" />
</wsdl:operation>
```

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

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

Message format	Description
tns:DeleteItemSoapIn ([MS-OXWSCORE] section 3.1.4.3.1.1)	Specifies the **SOAP message** that defines the task item to be deleted. The **t:NonEmptyArrayOfBaseItemIdsType** complex type (as specified in [MS-OXWSCORE] section 2.2.4.31) of the **DeleteItem** operation (as specified in [MS-OXWSCORE] section 3.1.4.3) that specifies the **XML** request MUST contain one or more **t:ItemIdType** complex type elements (as specified in [MS-OXWSCORE] section 2.2.4.25). All other elements MUST be empty.
tns:DeleteItemSoapOut ([MS-OXWSCORE] section	Specifies the SOAP message that is returned by the server in response.

Message format	Description
3.1.4.3.1.2)	

3.1.4.3.1 Messages

None.

3.1.4.3.2 Elements

None.

3.1.4.3.3 Complex Types

None.

3.1.4.3.4 Simple Types

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

Simple type name	Description
AffectedTaskOccurrencesType	Specifies whether an occurrence of a task or a master task with all recurring tasks associated with the master task is deleted.

3.1.4.3.4.1 t:AffectedTaskOccurrencesType Simple Type

The **AffectedTaskOccurrencesType** simple type specifies whether an occurrence of a task or a master task with all recurring tasks associated with the master task is deleted.

```
<xs:simpleType name="AffectedTaskOccurrencesType">
  <xs:restriction
    base="xs:string"
  >
    <xs:enumeration
      value="AllOccurrences"
     />
    <xs:enumeration
      value="SpecifiedOccurrenceOnly"
     />
  </xs:restriction>
</xs:simpleType>
```

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

Value name	Description
AllOccurrences	Specifies that a **DeleteItem** operation request, as specified in [MS-OXWSCORE] section 3.1.4.3, deletes the master task and all recurring tasks that are associated with the master task.

Value name	Description
SpecifiedOccurrenceOnly	Specifies that a **DeleteItem** operation request, as specified in [MS-OXWSCORE] section 3.1.4.3, deletes only the current occurrence of a task.

3.1.4.3.5 Attributes

None.

3.1.4.3.6 Groups

None.

3.1.4.3.7 Attribute Groups

None.

3.1.4.4 GetItem Operation

This protocol uses the **GetItem** operation, as specified in [MS-OXWSCORE] section 3.1.4.4, to get task items.

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

```
<wsdl:operation name="GetItem">
   <wsdl:input message="tns:GetItemSoapIn" />
   <wsdl:output message="tns:GetItemSoapOut" />
</wsdl:operation>
```

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

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

Message format	Description
tns:GetItemSoapIn ([MS-OXWSCORE] section 3.1.4.4.1.1)	Specifies the **SOAP message** that defines the task item to be retrieved. The **t:NonEmptyArrayOfBaseItemIdsType** complex type (as specified in [MS-OXWSCORE] section 2.2.4.31) of the **GetItem** operation (as specified in [MS-OXWSCORE] section 3.1.4.4) that specifies the **XML** request MUST contain the **t:ItemResponseShapeType** complex type element (as specified in [MS-OXWSCDATA] section 2.2.4.42) and the **t:ItemIdType** complex type element (as specified in [MS-OXWSCORE] section 2.2.4.25).

Message format	Description
tns:GetItemSoapOut ([MS-OXWSCORE] section 3.1.4.4.1.2)	Specifies the SOAP message that is returned by the server in response. The server returns a **t:GetItemResponseType** complex type element, which extends the **BaseResponseMessageType** complex type, as specified in [MS-OXWSCDATA] section 2.2.4.18, that contains properties associated with the task item.

3.1.4.4.1 Messages

None.

3.1.4.4.2 Elements

None.

3.1.4.4.3 Complex Types

None.

3.1.4.4.4 Simple Types

None.

3.1.4.4.5 Attributes

None.

3.1.4.4.6 Groups

None.

3.1.4.4.7 Attribute Groups

None.

3.1.4.5 MoveItem Operation

This protocol uses the **MoveItem** operation, as specified in [MS-OXWSCORE] section 3.1.4.7, to move task item elements.

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

```
<wsdl:operation name="MoveItem">
   <wsdl:input message="tns:MoveItemSoapIn" />
   <wsdl:output message="tns:MoveItemSoapOut" />
</wsdl:operation>
```

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

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

   <wsdl:input>
      <soap:header message="tns:MoveItemSoapIn" part="Impersonation" use="literal"/>
      <soap:header message="tns:MoveItemSoapIn" part="MailboxCulture" use="literal"/>
```

```
        <soap:header message="tns:MoveItemSoapIn" part="RequestVersion" use="literal"/>
        <soap:body parts="request" use="literal"/>
      </wsdl:input>
      <wsdl:output>
        <soap:body parts="MoveItemResult" use="literal"/>
        <soap:header message="tns:MoveItemSoapOut" part="ServerVersion" use="literal"/>
      </wsdl:output>
    </wsdl:operation>
```

Message format	Description
tns:MoveItemSoapIn ([MS-OXWSCORE] section 3.1.4.7.1.1)	Specifies the **SOAP message** that defines the task item to be moved. The **MoveItem** operation (as specified in [MS-OXWSCORE] section 3.1.4.7) that specifies the **XML** request MUST contain the **t:TargetFolderIdType** complex type element (as specified in [MS-OXWSFOLD] section 2.2.4.16) and **t:ItemIdType** complex type element (as specified in [MS-OXWSCORE] section 2.2.4.25). All other type elements in t:NonEmptyArrayOfBaseItemIdsType element MUST be empty.
tns:MoveItemSoapOut ([MS-OXWSCORE] section 3.1.4.7.1.2)	Specifies the SOAP message that is returned by the server in response.

3.1.4.5.1 Messages

None.

3.1.4.5.2 Elements

None.

3.1.4.5.3 Complex Types

None.

3.1.4.5.4 Simple Types

None.

3.1.4.5.5 Attributes

None.

3.1.4.5.6 Groups

None.

3.1.4.5.7 Attribute Groups

None.

3.1.4.6 UpdateItem Operation

This protocol uses the **UpdateItem** operation, as specified in [MS-OXWSCORE] section 3.1.4.9, to update task item elements.

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

```
<wsdl:operation name="UpdateItem">
   <wsdl:input message="tns:UpdateItemSoapIn" />
   <wsdl:output message="tns:UpdateItemSoapOut" />
</wsdl:operation>
```

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

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

Message format	Description
tns:UpdateItemSoapIn ([MS-OXWSCORE] section 3.1.4.9.1.1)	Specifies the **SOAP message** that defines the task item to be updated.
tns:UpdateItemSoapOut ([MS-OXWSCORE] section 3.1.4.9.1.2)	Specifies the SOAP message that is returned by the server in response.

3.1.4.6.1 Messages

None.

3.1.4.6.2 Elements

None.

3.1.4.6.3 Complex Types

None.

3.1.4.6.4 Simple Types

None.

3.1.4.6.5 Attributes

None.

3.1.4.6.6 Groups

None.

3.1.4.6.7 Attribute Groups

None.

3.1.5 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-OXWSTASK.wsdl	Contains the **WSDL** for the implementation of this protocol.	6
MS-OXWSTASK-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-OXWSTASK-types.xsd schema have to be placed in the common folder along with the files listed in the table.

This section contains the contents of the MS-OXWSTASK.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="Exchange2016"
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" schemaLocation="MS-
OXWSCORE-types.xsd"/>
               <xs:include schemaLocation="MS-OXWSCORE-messages.xsd"/>
               <!-- Add global elements and types from messages.xsd -->
          </xs:schema>
          <xs:schema id="types" elementFormDefault="qualified" version="Exchange2016"
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:message name="GetItemSoapIn">
          <wsdl:part name="request" element="tns:GetItem"/>
          <wsdl:part name="Impersonation" element="t:ExchangeImpersonation"/>
          <wsdl:part name="MailboxCulture" element="t:MailboxCulture"/>
          <wsdl:part name="RequestVersion" element="t:RequestServerVersion"/>
          <wsdl:part name="TimeZoneContext" element="t:TimeZoneContext"/>
     </wsdl:message>
     <wsdl:message name="GetItemSoapOut">
          <wsdl:part name="GetItemResult" element="tns:GetItemResponse"/>
          <wsdl:part name="ServerVersion" element="t:ServerVersionInfo"/>
     </wsdl:message>
     <wsdl:message name="CreateItemSoapIn">
          <wsdl:part name="request" element="tns:CreateItem"/>
          <wsdl:part name="Impersonation" element="t:ExchangeImpersonation"/>
          <wsdl:part name="MailboxCulture" element="t:MailboxCulture"/>
          <wsdl:part name="RequestVersion" element="t:RequestServerVersion"/>
          <wsdl:part name="TimeZoneContext" element="t:TimeZoneContext"/>
     </wsdl:message>
```

```
<wsdl:message name="CreateItemSoapOut">
     <wsdl:part name="CreateItemResult" element="tns:CreateItemResponse"/>
     <wsdl:part name="ServerVersion" element="t:ServerVersionInfo"/>
</wsdl:message>
<wsdl:message name="DeleteItemSoapIn">
     <wsdl:part name="request" element="tns:DeleteItem"/>
     <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="DeleteItemSoapOut">
     <wsdl:part name="DeleteItemResult" element="tns:DeleteItemResponse"/>
     <wsdl:part name="ServerVersion" element="t:ServerVersionInfo"/>
</wsdl:message>
<wsdl:message name="UpdateItemSoapIn">
     <wsdl:part name="request" element="tns:UpdateItem"/>
     <wsdl:part name="Impersonation" element="t:ExchangeImpersonation"/>
     <wsdl:part name="MailboxCulture" element="t:MailboxCulture"/>
     <wsdl:part name="RequestVersion" element="t:RequestServerVersion"/>
     <wsdl:part name="TimeZoneContext" element="t:TimeZoneContext"/>
</wsdl:message>
<wsdl:message name="UpdateItemSoapOut">
     <wsdl:part name="UpdateItemResult" element="tns:UpdateItemResponse"/>
     <wsdl:part name="ServerVersion" element="t:ServerVersionInfo"/>
</wsdl:message>
<wsdl:message name="MoveItemSoapIn">
     <wsdl:part name="request" element="tns:MoveItem"/>
     <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="MoveItemSoapOut">
     <wsdl:part name="MoveItemResult" element="tns:MoveItemResponse"/>
     <wsdl:part name="ServerVersion" element="t:ServerVersionInfo"/>
</wsdl:message>
<wsdl:message name="CopyItemSoapIn">
     <wsdl:part name="request" element="tns:CopyItem"/>
     <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="CopyItemSoapOut">
     <wsdl:part name="CopyItemResult" element="tns:CopyItemResponse"/>
     <wsdl:part name="ServerVersion" element="t:ServerVersionInfo"/>
</wsdl:message>
<wsdl:portType name="ExchangeServicePortType">
     <wsdl:operation name="GetItem">
          <wsdl:input message="tns:GetItemSoapIn"/>
          <wsdl:output message="tns:GetItemSoapOut"/>
     </wsdl:operation>
     <wsdl:operation name="CreateItem">
          <wsdl:input message="tns:CreateItemSoapIn"/>
          <wsdl:output message="tns:CreateItemSoapOut"/>
     </wsdl:operation>
     <wsdl:operation name="DeleteItem">
          <wsdl:input message="tns:DeleteItemSoapIn"/>
          <wsdl:output message="tns:DeleteItemSoapOut"/>
     </wsdl:operation>
     <wsdl:operation name="UpdateItem">
          <wsdl:input message="tns:UpdateItemSoapIn"/>
          <wsdl:output message="tns:UpdateItemSoapOut"/>
     </wsdl:operation>
     <wsdl:operation name="MoveItem">
          <wsdl:input message="tns:MoveItemSoapIn"/>
          <wsdl:output message="tns:MoveItemSoapOut"/>
     </wsdl:operation>
     <wsdl:operation name="CopyItem">
          <wsdl:input message="tns:CopyItemSoapIn"/>
          <wsdl:output message="tns:CopyItemSoapOut"/>
```

```
          </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="GetItem">
               <soap:operation
soapAction="http://schemas.microsoft.com/exchange/services/2006/messages/GetItem"/>
               <wsdl:input>
                    <soap:header message="tns:GetItemSoapIn" part="Impersonation"
use="literal"/>
                    <soap:header message="tns:GetItemSoapIn" part="MailboxCulture"
use="literal"/>
                    <soap:header message="tns:GetItemSoapIn" part="RequestVersion"
use="literal"/>
                    <soap:header message="tns:GetItemSoapIn" part="TimeZoneContext"
use="literal"/>
                    <soap:body parts="request" use="literal"/>
               </wsdl:input>
               <wsdl:output>
                    <soap:body parts="GetItemResult" use="literal"/>
                    <soap:header message="tns:GetItemSoapOut" part="ServerVersion"
use="literal"/>
               </wsdl:output>
          </wsdl:operation>
          <wsdl:operation name="CreateItem">
               <soap:operation
soapAction="http://schemas.microsoft.com/exchange/services/2006/messages/CreateItem"/>
               <wsdl:input>
                    <soap:header message="tns:CreateItemSoapIn" part="Impersonation"
use="literal"/>
                    <soap:header message="tns:CreateItemSoapIn" part="MailboxCulture"
use="literal"/>
                    <soap:header message="tns:CreateItemSoapIn" part="RequestVersion"
use="literal"/>
                    <soap:header message="tns:CreateItemSoapIn" part="TimeZoneContext"
use="literal"/>
                    <soap:body parts="request" use="literal"/>
               </wsdl:input>
               <wsdl:output>
                    <soap:body parts="CreateItemResult" use="literal"/>
                    <soap:header message="tns:CreateItemSoapOut" part="ServerVersion"
use="literal"/>
               </wsdl:output>
          </wsdl:operation>
          <wsdl:operation name="DeleteItem">
               <soap:operation
soapAction="http://schemas.microsoft.com/exchange/services/2006/messages/DeleteItem"/>
               <wsdl:input>
                    <soap:header message="tns:DeleteItemSoapIn" part="Impersonation"
use="literal"/>
                    <soap:header message="tns:DeleteItemSoapIn" part="MailboxCulture"
use="literal"/>
                    <soap:header message="tns:DeleteItemSoapIn" part="RequestVersion"
use="literal"/>
                    <soap:body parts="request" use="literal"/>
               </wsdl:input>
               <wsdl:output>
                    <soap:body parts="DeleteItemResult" use="literal"/>
                    <soap:header message="tns:DeleteItemSoapOut" part="ServerVersion"
use="literal"/>
               </wsdl:output>
          </wsdl:operation>
          <wsdl:operation name="UpdateItem">
               <soap:operation
soapAction="http://schemas.microsoft.com/exchange/services/2006/messages/UpdateItem"/>
```

```
                <wsdl:input>
                     <soap:header message="tns:UpdateItemSoapIn" part="Impersonation"
use="literal"/>
                     <soap:header message="tns:UpdateItemSoapIn" part="MailboxCulture"
use="literal"/>
                     <soap:header message="tns:UpdateItemSoapIn" part="RequestVersion"
use="literal"/>
                     <soap:header message="tns:UpdateItemSoapIn" part="TimeZoneContext"
use="literal"/>
                     <soap:body parts="request" use="literal"/>
                </wsdl:input>
                <wsdl:output>
                     <soap:body parts="UpdateItemResult" use="literal"/>
                     <soap:header message="tns:UpdateItemSoapOut" part="ServerVersion"
use="literal"/>
                </wsdl:output>
           </wsdl:operation>
           <wsdl:operation name="MoveItem">
                <soap:operation
soapAction="http://schemas.microsoft.com/exchange/services/2006/messages/MoveItem"/>
                <wsdl:input>
                     <soap:header message="tns:MoveItemSoapIn" part="Impersonation"
use="literal"/>
                     <soap:header message="tns:MoveItemSoapIn" part="MailboxCulture"
use="literal"/>
                     <soap:header message="tns:MoveItemSoapIn" part="RequestVersion"
use="literal"/>
                     <soap:body parts="request" use="literal"/>
                </wsdl:input>
                <wsdl:output>
                     <soap:body parts="MoveItemResult" use="literal"/>
                     <soap:header message="tns:MoveItemSoapOut" part="ServerVersion"
use="literal"/>
                </wsdl:output>
           </wsdl:operation>
           <wsdl:operation name="CopyItem">
                <soap:operation
soapAction="http://schemas.microsoft.com/exchange/services/2006/messages/CopyItem"/>
                <wsdl:input>
                     <soap:header message="tns:CopyItemSoapIn" part="Impersonation"
use="literal"/>
                     <soap:header message="tns:CopyItemSoapIn" part="MailboxCulture"
use="literal"/>
                     <soap:header message="tns:CopyItemSoapIn" part="RequestVersion"
use="literal"/>
                     <soap:body parts="request" use="literal"/>
                </wsdl:input>
                <wsdl:output>
                     <soap:body parts="CopyItemResult" use="literal"/>
                     <soap:header message="tns:CopyItemSoapOut" part="ServerVersion"
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
Types schema	t:	7.2

This file has 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 schema have to be placed in the common folder along with the files listed in the table.

7.1 Messages Schema

This protocol does not use a messages schema file.

7.2 Types Schema

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

MS-OXWSTASK-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** and the types schema file for this protocol.

File name	Defining specification
MS-OXWSCFOLD-types.xsd	[MS-OXWSFOLD] section 7.2

```
<?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="Exchange2016" id="types">
     <xs:import namespace="http://www.w3.org/XML/1998/namespace"/>
     <xs:include schemaLocation="MS-OXWSFOLD-types.xsd"/>
     <xs:simpleType name="AffectedTaskOccurrencesType">
          <xs:restriction base="xs:string">
               <xs:enumeration value="AllOccurrences"/>
               <xs:enumeration value="SpecifiedOccurrenceOnly"/>
          </xs:restriction>
     </xs:simpleType>
     <xs:complexType name="RegeneratingPatternBaseType" abstract="true">
          <xs:complexContent>
               <xs:extension base="t:IntervalRecurrencePatternBaseType"/>
          </xs:complexContent>
     </xs:complexType>
     <xs:complexType name="DailyRegeneratingPatternType">
          <xs:complexContent>
               <xs:extension base="t:RegeneratingPatternBaseType"/>
          </xs:complexContent>
     </xs:complexType>
     <xs:complexType name="WeeklyRegeneratingPatternType">
          <xs:complexContent>
               <xs:extension base="t:RegeneratingPatternBaseType"/>
          </xs:complexContent>
     </xs:complexType>
     <xs:complexType name="MonthlyRegeneratingPatternType">
          <xs:complexContent>
               <xs:extension base="t:RegeneratingPatternBaseType"/>
          </xs:complexContent>
     </xs:complexType>
```

```
      <xs:complexType name="YearlyRegeneratingPatternType">
            <xs:complexContent>
                  <xs:extension base="t:RegeneratingPatternBaseType"/>
            </xs:complexContent>
      </xs:complexType>
      <xs:simpleType name="TaskStatusType">
            <xs:restriction base="xs:string">
                  <xs:enumeration value="NotStarted"/>
                  <xs:enumeration value="InProgress"/>
                  <xs:enumeration value="Completed"/>
                  <xs:enumeration value="WaitingOnOthers"/>
                  <xs:enumeration value="Deferred"/>
            </xs:restriction>
      </xs:simpleType>
      <xs:simpleType name="TaskDelegateStateType">
            <xs:restriction base="xs:string">
                  <xs:enumeration value="NoMatch"/>
                  <xs:enumeration value="OwnNew"/>
                  <xs:enumeration value="Owned"/>
                  <xs:enumeration value="Accepted"/>
                  <xs:enumeration value="Declined"/>
                  <xs:enumeration value="Max"/>
            </xs:restriction>
      </xs:simpleType>
      <xs:complexType name="TaskType">
            <xs:complexContent>
                  <xs:extension base="t:ItemType">
                        <xs:sequence>
                              <xs:element name="ActualWork" type="xs:int" minOccurs="0"/>
                              <xs:element name="AssignedTime" type="xs:dateTime" minOccurs="0"/>
                              <xs:element name="BillingInformation" type="xs:string"
minOccurs="0"/>
                              <xs:element name="ChangeCount" type="xs:int" minOccurs="0"/>
                              <xs:element name="Companies" type="t:ArrayOfStringsType"
minOccurs="0"/>
                              <xs:element name="CompleteDate" type="xs:dateTime" minOccurs="0"/>
                              <xs:element name="Contacts" type="t:ArrayOfStringsType"
minOccurs="0"/>
                              <xs:element name="DelegationState" type="t:TaskDelegateStateType"
minOccurs="0"/>
                              <xs:element name="Delegator" type="xs:string" minOccurs="0"/>
                              <xs:element name="DueDate" type="xs:dateTime" minOccurs="0"/>
                              <xs:element name="IsAssignmentEditable" type="xs:int"
minOccurs="0"/>
                              <xs:element name="IsComplete" type="xs:boolean" minOccurs="0"/>
                              <xs:element name="IsRecurring" type="xs:boolean" minOccurs="0"/>
                              <xs:element name="IsTeamTask" type="xs:boolean" minOccurs="0"/>
                              <xs:element name="Mileage" type="xs:string" minOccurs="0"/>
                              <xs:element name="Owner" type="xs:string" minOccurs="0"/>
                              <xs:element name="PercentComplete" type="xs:double" minOccurs="0"/>
                              <xs:element name="Recurrence" type="t:TaskRecurrenceType"
minOccurs="0"/>
                              <xs:element name="StartDate" type="xs:dateTime" minOccurs="0"/>
                              <xs:element name="Status" type="t:TaskStatusType" minOccurs="0"/>
                              <xs:element name="StatusDescription" type="xs:string"
minOccurs="0"/>
                              <xs:element name="TotalWork" type="xs:int" minOccurs="0"/>
                        </xs:sequence>
                  </xs:extension>
            </xs:complexContent>
      </xs:complexType>
      <xs:complexType name="TaskRecurrenceType">
            <xs:sequence>
                  <xs:group ref="t:TaskRecurrencePatternTypes"/>
                  <xs:group ref="t:RecurrenceRangeTypes"/>
            </xs:sequence>
      </xs:complexType>
      <xs:complexType name="TasksFolderType">
            <xs:complexContent>
```

```
                <xs:extension base="t:FolderType"/>
            </xs:complexContent>
        </xs:complexType>
    </xs:schema>
```

8 Appendix C: Product Behavior

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

- Microsoft Exchange Server 2007
- Microsoft Exchange Server 2010
- Microsoft Exchange Server 2013
- Microsoft Exchange Server 2016
- Microsoft Exchange Server 2019

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

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

<1> Section 2.2.4.6: The **Owner** element is read-only for the client on Exchange 2007 and Exchange 2010.

9 Change Tracking

This section identifies changes that were made to this document since the last release. Changes are classified as Major, Minor, or None.

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.
- A document revision that captures changes to protocol functionality.

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 **None** means that no new technical changes were introduced. Minor editorial and formatting changes may have been made, but the relevant technical content is identical to the last released version.

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

Section	Description	Revision class
All	Updated references.	Minor
2.2.5.1 t:TaskDelegateStateType Simple Type	Updated the definition of the Accepted value.	Minor

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